



Impact of FIFO work arrangements on the mental health and wellbeing of FIFO workers

Report produced for the WA Mental Health Commission
(September 2018)



Foreword from the research team

On behalf of the team, I am pleased to present this important research. We bring together findings from a literature review with a comprehensive analysis of 59 FIFO studies, a survey of more than 3000 FIFO workers, in-depth interviews, surveys of FIFO partners and former FIFO workers, and a study that tracks how workers' experiences vary across five points of a swing.

The findings across all of these sources of evidence are remarkably consistent. The research shows that, even when taking account of associated risk factors such as age and education, there is a *greater risk of mental ill health amongst those workers operating under FIFO work arrangements*. Indeed, one third of the 3000 FIFO workers surveyed experience high or very high levels of psychological distress, as measured on an extensively validated scale.

This greater mental health risks for FIFO workers is a clear and critical finding. Irrespective of the many other detailed findings in this report, including some neutral or even positive aspects: the greater mental health risk for this population must be a central take away message.

Crucially, poorer mental health and riskier alcohol and other drug use are risk factors for suicide, and both of these risk factors are present in the FIFO sample. In addition, FIFO workers have a demographic profile (gender, age, education, job role) in which suicide likelihood is greater, while also reporting feelings of loneliness, stigma, bullying and perceived lack of autonomy. Altogether, this pattern of findings suggests that FIFO workers are likely to be at greater risk of suicide.

What is also clear from this research is that there is *much that can be done to mitigate or prevent these mental health risks*. The current research aligns with, and deepens, the findings of the 2015 WA Parliamentary Inquiry Report "The impact of FIFO work practices on mental health". Our research systematically links an array of factors (e.g., bullying, culture, rosters, coping styles) to the mental health, use of alcohol and other drugs, and wellbeing of FIFO workers. We identify 18 recommendations as to how employers, individual workers, and families can take active steps to improve the experience of FIFO work.

We urge industry, unions, government and other stakeholders to take the lead in embracing these recommendations. FIFO work arrangements are likely to be here for some time to come. By owning the issue, there is a chance to make a powerful difference to the lives of FIFO workers and their families. Indeed, addressing many of the recommendations will improve the mental health of all workers. And acting on many of the recommendations will not only reduce the mental health risks of FIFO work, but will foster greater productivity and use of worker talent as well.

FIFO workers and their families and friends have willingly entrusted their experiences to us. We hope that, by researchers, industry, government, and other stakeholders coming together, we can honour those experiences and lead the way to ensure the mental health and wellbeing of this crucial workforce for the Western Australian economy.

Yours sincerely,

ARC Laureate Fellow Sharon K. Parker

Research team, Reference group and Acknowledgements

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Research reference group

We would like to acknowledge the research reference group who have provided guidance, support and helped with reaching out to FIFO workers through their networks. The reference group includes members from the following groups:

- Australian Manufacturing Workers' Union (AMWU)
- Chamber of Minerals and Energy (CME)
- Construction Forestry Mining & Energy Union (CFMEU)
- Department of Mines, Industry Regulation and Safety (DMIRS)
- Family representatives
- Lifeline WA
- Unions WA
- WA Association for Mental Health (WAAMH)
- WA Mental Health Commission
- WA Network of Alcohol and Other Drug Agencies (WANADA)
- WA Primary Health Alliance (WAPHA)

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¹ The first two authors are joint first authors.

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Executive Summary

Impact of fly-in, fly-out work arrangements on the mental health and wellbeing of FIFO workers

Background to the Research

The resource industry is central to Western Australia's economy with mining contributing 29% of the gross state product in 2016–17². Western Australia is a vast state and the remote location of mineral and resource deposits requires workers to spend extended periods of time away from home. Fly-in, fly-out (FIFO) work practices are therefore common in Western Australia (WA), with the industry providing employment for an estimated 60,000 people³, of which the majority are male. The Education and Health Standing Committee has also estimated 9.3% of WA's population is directly impacted by FIFO work arrangements.

Mental health issues are a growing problem for Australia, and indeed, Western society. According to a study by Price Waterhouse Cooper⁴, untreated mental health conditions cost Australian employers \$10.9 billion every year (a combination of absenteeism, presenteeism and compensation claims). It is estimated that every \$1 invested by employers in interventions to improve mental health resulted in a return of \$2.30. For the resource sector the ROI was even higher at \$5.70.

For workplaces, health needs to be understood as more than the absence of ill-health, injury or disease. The World Health Organization (WHO) defines mental health as a state of wellbeing in which the individual realises their own potential, can cope with the normal stresses of life, can work productively and is able to make a contribution to their community. There is a growing body of research that demonstrates that good work design and a positive workplace culture enhances the wellbeing of employees. Therefore, it is important for employers to identify work practices which may harm their employees' mental health as well as those which support workers to thrive.

It is important to recognise the legal responsibilities of employers and identify the specific psychosocial risks of FIFO work arrangements (e.g. loneliness, accommodation, rosters and transitions). This represents an opportunity for the resource sector to build upon the initiatives that already exist in the sector (e.g. Chamber of Mineral and Energy's (CME) Blueprint for Mental Health and Wellbeing and the WA Department of Mines Code of Practice, currently under development). Incorporating the findings and recommendations from this and other research assists in understanding the range of variables so that employers can shape FIFO work to minimise the negative effects on employee mental health and support them to thrive. It is noted that the resource sector is widely committed to health and safety practices that cause "Zero Harm".

General statistics on mental health and suicide place FIFO workers in an "at risk" group in terms of their demographic of gender and age. "Excluding males aged 85 years and over, the age-specific deaths rates were the highest in males 30–34 and 40–44 years of age. Deaths from intentional self-

² Government of Western Australia, Department of jobs, Tourism, Science and Innovation, 2018

³ Chamber of Minerals and Energy of WA, 2015; as cited in Education and Health Standing Committee, 2015

⁴ Price Waterhouse Cooper (2014). Creating a mentally healthy workplace—Return on investment analysis. Retrieved from https://www.headsup.org.au/docs/default-source/resources/beyondblue_workplaceroi_finalreport_may-2014.pdf

harm occur among males at a rate three times greater than that for females.” Suicide numbers have been growing over the last ten years, with eight people per week taking their lives in WA⁵.

In recent years, FIFO workers have been the focus of community and political concern in Western Australia, with reports in the media related to the impact of FIFO work, mental health and suicide. This was the impetus to a WA Parliamentary Inquiry into the impact of FIFO work practices on mental health conducted by the Education and Health Standing Committee in 2015. The Inquiry concluded there was a need for further “independent research into the mental health impacts of fly-in, fly-out work arrangements on workers and their families”⁶.

In response to the WA Parliamentary Inquiry’s recommendation, the WA Mental Health Commission funded this research. Members of the research team are from Curtin University and UWA, and have specialist expertise in psychology, social work, use of alcohol and other drugs, suicide, mental health, work design, health and safety, FIFO work and multivariate statistical analysis. A reference group with representatives from key stakeholder groups (WA Mental Health Commission, industry, unions, mental health organisations, alcohol and other drug organisations and FIFO family representatives) provided advice and feedback on the design, implementation and interpretation of the research.

Research Questions and Methods

This research was commissioned to address the following Key Evaluation Questions (KEQ):

1. *What are the mental health impacts/benefits of FIFO work arrangements (if any) on (a) FIFO workers? and (b) FIFO families?*
2. *What are the possible harmful drinking habits, alcohol consumption and use of illicit drugs by FIFO workers and how does this use impact their mental health?*
3. *What positive/negative strategies do FIFO workers and their families use to reduce the mental health impact associated with FIFO work arrangements?*

The research drew on the concepts of mental health and wellbeing identified in the literature review. Five key measures were used to assess **mental health**:

- Psychological distress (e.g. generalized feelings of anxiety and depression in one’s life).
- Thwarted belonging (the extent to which individuals believe their need to belong is met or unmet). This dimension is part of a measure of suicide risk.
- Perceived burdensomeness (the extent to which they perceive themselves to be a burden on the people in their lives). This dimension is part of a measure of suicide risk.
- Suicidal intent (thoughts and plans about suiciding). This dimension is part of a measure of suicide risk.
- Burnout (mental exhaustion due to prolonged periods of stressors experienced on the job).

⁵ Australian Bureau of Statistics. (2016). Suicide In Australia. Retrieved from <http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/3303.0~2016~Main%20Features~Intentional%20self-harm:%20key%20characteristics~7>

⁶ Education and Health Standing Committee. (2015). The impact of FIFO work practices on mental health. Perth, Western Australia: Legislative Assembly, Parliament of Western Australia. Retrieved from <http://resources.news.com.au/files/2015/06/19/1227405/202450-fiforeport2.pdf>

Three key measures were used to assess workers' general **wellbeing**:

- Emotional wellbeing (life satisfaction and happiness).
- Psychological wellbeing (people's feelings of self-acceptance and personal growth).
- Social wellbeing (having trust in a good society).

In the Executive Summary, any reference to differences in, or prediction of, "mental health and wellbeing" means differences in (or prediction of) all five mental health measures and all three wellbeing measures. When referred to as "the majority", this means there are differences in, or prediction of, six or more measures.

Bullying, sleep, and physical pain were other factors associated with mental health and wellbeing, and were also addressed in the research.

The KEQ questions were addressed through application of four research methods:

<p>1. Literature Review</p>	<p>An initial literature review of existing FIFO research.</p>
<p>2. Survey Study</p>	<p>The main cross-sectional survey study that compared 3,108 FIFO participants against:</p> <ul style="list-style-type: none"> a) A benchmark group of 326 people who were representative of the broader West Australian FIFO population according to gender and working age; and b) Relevant comparative norm groups (e.g. Australian National Survey of Mental Health and Wellbeing, 2007; National Drug Strategy Household Survey, 2016) drawn from the wider general population. Appropriate norms were obtained for each measure, where possible. <p>The main survey study also included an analysis of work, family and personal factors that predict the mental health of FIFO workers.</p> <p>Two supplementary surveys included 373 FIFO partners and 487 former FIFO workers.</p>
<p>3. Longitudinal Study</p>	<p>A longitudinal study of 205 FIFO workers (working on either a 14/7 or 8/6 roster) that tracked mental health and other experiences five times across the swing.</p>
<p>4. Interview Study</p>	<p>An interview study with 24 FIFO workers and 16 families/friends. This study provided a qualitative, more in-depth understanding of FIFO workers' and their partners' experiences of fly-in, fly-out work, especially strategies used by individuals and families.</p>

Research Strengths and Limitations

The research has strengths and limitations. As far as possible, the research team sought to mitigate against the limitations.

Strengths. Strengths of the research include:

- That it is based on a comprehensive analysis of existing research.
- That a multi-method approach was used that enabled quantitative breadth (a large and diverse sample of FIFO workers completed the survey) as well as qualitative depth (detailed interviews with a sub-sample of FIFO workers).
- Present and past FIFO workers were included, as well as FIFO family and friends.
- That a longitudinal study tracked FIFO worker experiences across a full swing.

Limitations. The research also has limitations:

- Most importantly, the cross-sectional nature of the research means it is not possible to establish the causal impact of FIFO work on mental health. Doing so definitively would require a randomised control group design⁷ in which workers are measured, then randomly allocated to carry out either FIFO work or non-FIFO work, with both groups then being re-assessed over time.
- The sample obtained for the FIFO survey might not be representative of the FIFO working population. However, it is not possible to know whether participants in the research are fully representative of the FIFO working population. Participants in any research do so on a voluntary basis and it is possible that confounding attributes affect participation (e.g. those most negative about FIFO work might be more likely to do the survey; equally, those most negative about FIFO work might be more likely to not do the survey).
- The benchmark sample differed from the FIFO sample of demographic and occupational attributes. Specifically, the benchmark group was older, more educated and included more managerial and administrative jobs. This means that differences in these groups on other variables might be attributable to their demographic and occupational differences.

Mitigating causality limitations. With respect to causality, as well as cross-sectional survey comparisons, the weight of evidence is enhanced by the diversity of the research methods. For example:

- With respect to the main survey, as well as comparing the mental health of FIFO workers against a comparison group and norms, regression analyses were conducted to understand which individual, work, family and team factors statistically predict the mental health of FIFO workers.
- The surveys of past FIFO workers provide insights into how some FIFO workers perceive their experience after leaving this type of work arrangement.

⁷ Kendall, J. M. (2003). Designing a research project: randomised controlled trials and their principles. *Emergency Medicine Journal*, 20(2), 164-168.

- The interviews provide detailed descriptions of FIFO workers lived experiences, showing how, in the eyes of FIFO workers themselves, these arrangements affect their own lives and their families' lives.
- The longitudinal study of workers' experiences across a swing (both at work and away from work) enhances our understanding of the effect of transitions.

Whilst each research method individually can be critiqued, as in research in other complex domains, it is the triangulation of findings across multiple methods that tends to be most informative.

Mitigating representativeness. The research team took steps to obtain as representative a sample as possible. The survey distribution strategy deliberately relied on multiple stakeholder groups (e.g. unions, industry groups). The size of the sample of FIFO workers is also large, which increases the likelihood that the sample is representative.

Mitigating benchmark group differences. When comparing the benchmark and FIFO sample on the key mental health and wellbeing outcomes (see above), we statistically co-varied out the effects of age, education and professional role to minimise the extent that mental health differences can be solely attributed to occupational or demographic differences.

In this Executive Summary, all references to 'significant' refer to differences or associations that are statistically significant. A statistically significant effect means that the observed difference or association is "very unlikely to have occurred given no difference or association".

KEQ 1a: Mental health impacts/benefits of FIFO work arrangements on workers

The main findings in response to KEQ1a are drawn from the literature review, survey study, longitudinal study and interview study.

In the literature review, 59 research articles were taken into account. Although findings are mixed and the overall study quality is low, most studies report depression, anxiety and stress to be issues that are likely to be associated with FIFO work. One important limitation is that the literature does not provide an understanding of which aspects of FIFO work make this type of work potentially more or less mentally unhealthy. The research is also non-theoretical and lacking a grounding in the broader mental health literature.

Mental Health and Wellbeing – Key Findings

a) Findings for the **key measures** used to assess mental health and wellbeing:

- Psychological Distress⁸ (including feelings of anxiety and depression) scores were significantly higher for FIFO workers compared to the benchmark group, even after statistically controlling for demographic and occupational differences. Psychological distress of FIFO workers was also significantly higher than males in an Australian norm sample of 8841 individuals aged 16 and above.
- One third of FIFO workers (33%) reported experiencing “high” or “very high” psychological distress (as opposed to “low” and “moderate” levels of psychological distress). For the benchmark group, the percentage reporting high or very high psychological distress was 17%. The same figure was 10% for the norm group (see Figure 1 below).

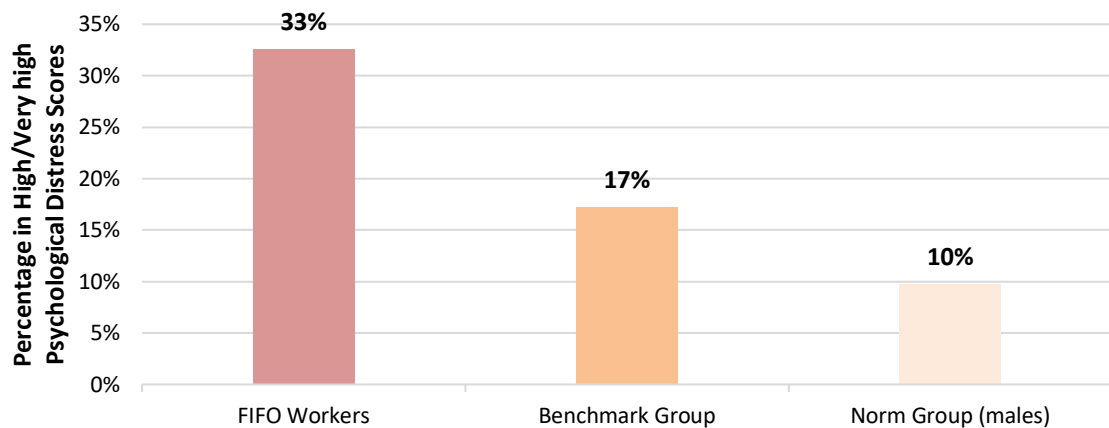


Figure 1. Percentage of participants within each sample (FIFO workers, benchmark and norm group) with high or very high psychological distress scores (as measured by the K10)

Psychological Distress

Suicide risk

Burnout

- With regard to suicide risk, compared to the benchmark group, FIFO workers scored significantly worse on thwarted belonging (but not burdensomeness) and significantly worse on suicidal intent.
 - These differences are no longer significant when differences in the samples are controlled for. In other words, differences in suicide risk appear to be attributable to the fact that the FIFO worker sample is less educated and more likely to have operators/technician/trade workers - two key attributes that tend to be associated with suicidal risk.
 - Relevant norm groups were not available for comparison.
- Burnout was found to be significantly higher for FIFO workers than for the benchmark group. No relevant norm group was available.

⁸ Non-specific psychological distress was measured using the K10 (Kessler-10) which captures feelings of depression, restlessness, fatigue, worthlessness and anxiety. There are data on the probability that a person will have a diagnosis of anxiety or depression (ABS, 2012, <http://www.abs.gov.au/ausstats/abs@.nsf/lookup/4817.0.55.001Chapter92007-08>). As high K10 scores mean a greater probability for such a diagnosis, the phrase “anxiety and depression” is used interchangeably with the term psychological distress.

Wellbeing

Wellbeing results are somewhat complex, suggesting either no differences or slightly worse general wellbeing for FIFO workers. Specifically:

- After controlling for age, education and job role, there were no significant differences between the FIFO workers and the benchmark group and a relevant norm group for psychological wellbeing (people’s feelings of self-acceptance and personal growth).
- After controlling for age, education and job role, there were no significant differences between the FIFO workers and the benchmark group on emotional wellbeing (feelings of happiness and satisfaction), although FIFO workers had worse emotional wellbeing compared to relevant norm groups.
- After controlling for age, education and job role, there were no significant differences between the FIFO workers and a relevant norm group, although compared to the benchmark, FIFO workers had worse social wellbeing (defined as having trust in a good society).

b) Findings for the **other factors** associated with mental health and wellbeing:

Sleep / Fatigue

- Sleep quality for FIFO workers was significantly worse when compared to the benchmark group. In interviews, FIFO workers also reported being particularly fatigued when transitioning from work to home.

Physical Pain

- After controlling for age, education and job role overall physical pain (neck, shoulders, wrists/hands, upper back and lower back) was similar to the benchmark group. In the norm group people experienced slightly more pain in the neck, shoulders and upper back than the FIFO workers, but FIFO workers had wrist/hands pain slightly more often. There was no difference for lower back pain.

Bullying

- FIFO workers report being bullied and witnessing bullying significantly more often than the benchmark group and the same pattern emerged when compared to the norm group. Research finds that bullying is linked to stress and mental health⁹.

⁹ Hansen, Å. M., Høgh, A., Persson, R., Karlson, B., Garde, A. H., & Ørbaek, P. (2006). Bullying at work, health outcomes, and physiological stress response. *Journal of psychosomatic research*, 60(1), 63-72.

Job Factors – Key Findings

Rosters
Isolation
Transitions
Work Design
Shifts
Team

- FIFO workers on even-time and shorter rosters (i.e. 2 weeks on/2weeks off, 8 days on/6 days off, 5 days on/2 days off) reported significantly better outcomes on all mental health and wellbeing measures compared to FIFO workers on longer rosters with less time for recovery (e.g., 4 weeks on and 1 week off, 3 weeks on/1 week off, 2 weeks on/1 week off) (see Figure 2 below).
- The interview study indicated that R&R needed to be of sufficient length for recovery and detachment from work, as well as to have quality time with family and friends.
- High compression rosters and travelling long distances which encroached on their limited time off added to stress and fatigue levels according to interviewees.

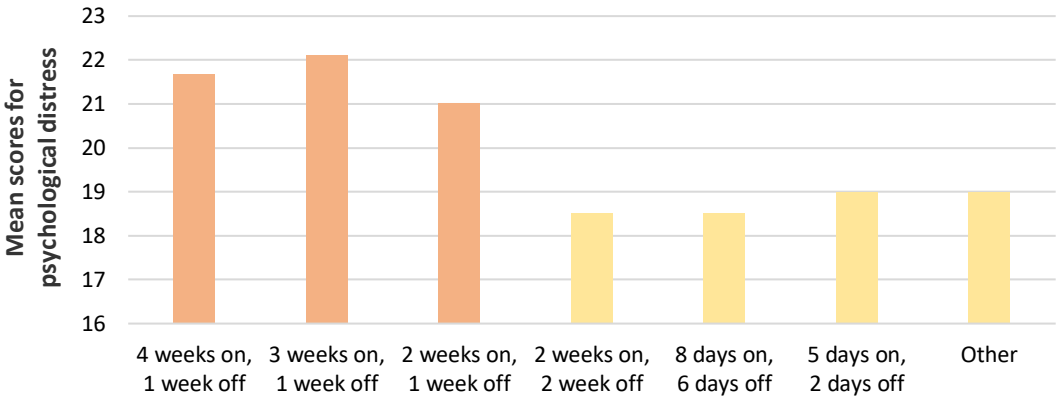


Figure 2. Mean scores of psychological distress for different rosters

- Isolation appears to be an important influence on FIFO worker mental health. Loneliness amongst FIFO workers was significantly linked to the majority of mental health and wellbeing measures. In interviews, FIFO workers reported feeling isolated due to being separated from family and missing out on important family events.
- The longitudinal study and the interview study, showed that many FIFO workers felt worst when transitioning to site (e.g. sadness, anxiety, not wanting to return to work) and felt better when transitioning home (e.g. happy, excited). For many, feeling happy when returning home was dampened by fatigue.
- Job insecurity, high workload and lack of autonomy (i.e. low choice/control over decisions and job tasks) were all significantly associated with poorer mental health and wellbeing for FIFO workers across the majority of the measures.
- Mental health and wellbeing varied by job and employment type. These aspects were worse across all mental health and wellbeing measures for contractors, construction workers, and camp, catering and logistical staff.
- FIFO workers working day shifts reported significantly better mental health and wellbeing whereas when working nightshifts they reported significantly worse mental health and wellbeing across the majority of measures.
- Better mental health outcomes (majority of measures) were experienced by FIFO workers when there was support from their line managers and across all measures when there was support from co-workers.

“Well, can we do it a different way?” And sometimes that helps. And sometimes you can actually talk with a supervisor or superintendent and go, “How about we do it this way?” [...] If you can talk to them about it, it's usually pretty good.



Figure 3. Illustrative quote from a FIFO worker about leadership and autonomy (see section 6 for the full set of themes)

Organisational and Worksite Factors – Key Findings

Camp & Accommodation	<ul style="list-style-type: none"> Workers who had a permanent room reported significantly better mental health and wellbeing compared to other accommodation arrangements. The variety of shared accommodation arrangements was not significantly linked to mental health and wellbeing. Some interviewees said they felt institutionalised, because of camp conditions such as poor quality of accommodation and food, unreliable internet connection, and the many rules and regimes. Some FIFO workers reported they found camp life lonely and felt it did not support meaningful connections, especially when there were limited opportunities for social interaction (e.g. only the wet mess). For the most part, the availability of recreational facilities such as gyms and pool tables was not significantly associated with the mental health and wellbeing of FIFO workers. For FIFO workers, the availability of recreational activities with a clear social element such as barbecues and social sports was significantly associated with better mental health and wellbeing in the survey.
Culture	<ul style="list-style-type: none"> If interviewees had a positive experience of the organisation, work environment, job expectations, leadership and work design they described feeling engaged, satisfied and happy at work.
Stigma	<ul style="list-style-type: none"> FIFO workers had significantly worse mental health and wellbeing across all measures when mental health issues were stigmatised in the workplace.

Family and Social Life Factors – Key Findings

Financial

- Most FIFO workers and families interviewed identified the financial benefits of FIFO work compared with job and remuneration opportunities locally.
- Most interviewed were motivated to undertake a FIFO role due to the financial benefits and many had a desire to better provide for their families.
- Having a financial plan, savings, manageable debt and an exit strategy was reported in interviews to be important for the mental health and wellbeing of FIFO workers. The need for these aspects was also identified as one of the most important pieces of advice that many FIFO interviewees would give to anyone considering FIFO work.
- Job insecurity was significantly linked with poorer mental health for FIFO workers. Interviewees confirmed that the persistent threat of redundancy affected their wellbeing, and this was exacerbated when financial stress already existed for FIFO workers and families.

Communication

- In interviews, the importance of communicating with family and friends whilst on site was identified as an important factor for mental health. In the main survey, adequate communication infrastructure such as internet (all measures) and the availability of landline telephones (majority of measures) was significantly linked to mental health and wellbeing. Mobile phones was linked to only two measures: better social wellbeing and lower psychological distress.



"...fly-in, fly-out means you don't create partnerships or you don't create friends in that sort of environment. It's actually very isolationist. So, it's not only isolation from the partner that stays at home...it's more isolated for the people that go up. They move you around the camp. You don't get the same room twice... crammed quarters, long work hours, which means that by the end of that day, you don't really make any friends. So you're there to work and that's all there is. So there's no social life. There's no interactions. It's just so isolating for the person individually as well as being in an isolated part of the world."

Figure 4. Illustrative quote from a FIFO worker about isolation, accommodation and social connection (see section 6 for the full set of themes)

KEQ 1b: Mental health impacts/benefits of FIFO work arrangements on families

Main findings in response to KEQ1B are drawn from the literature review, survey study, longitudinal study and interview study.

In the literature review findings were mixed, but tended towards showing more negative impacts of FIFO work on family mental health. FIFO partners in particular were identified to suffer most due to the FIFO work arrangements. Findings also suggested children and overall family functioning were affected, but to a lesser extent. This suggests that FIFO partners carry much of the burden of FIFO work, although the quality of the research reviewed means this finding should be interpreted cautiously.

Psychological Distress	<ul style="list-style-type: none"> • One third of FIFO partners (33% of the partner sample) showed high or very high levels of psychological distress; this figure was the same as that obtained for FIFO workers (33% of the FIFO worker sample). This figure was more than double the percentage for females in the Australian norm group (14%). • FIFO partners' mental health was significantly worse when the FIFO worker experienced loneliness and conflict between work and family (difficulty balancing competing demands). • If the FIFO worker felt happy with their personal relationship, this was linked to the partner having significantly better emotional wellbeing (feelings of satisfaction and happiness). If FIFO workers were not happy with their personal relationships, this was linked to worse thwarted belonging and burdensomeness scores for the partner.
Managing Transitions	<ul style="list-style-type: none"> • Interviews suggested that transitions were difficult times. Family wellbeing and functioning was negatively impacted during the phases of the FIFO worker leaving and returning home. • According to many interviewees, families generally felt excited when the FIFO worker returned home from site. For the partner the benefits of the FIFO worker being home again meant sharing in the family schedule and parenting responsibilities.
Managing Time Apart	<ul style="list-style-type: none"> • Whilst apart, partners said they felt the demands associated with being a "de-facto single parent" and lonely and overloaded at times. • Partners described missing the FIFO worker greatly when apart. The separation could be quite sad, difficult and emotional for both the partner and children at times. • Partners also described the benefits of developing independence, resourcefulness and increased emotional resilience to manage with the FIFO lifestyle. • Many partners acknowledged communication challenges and difficulties accommodating and adjusting to competing needs (between the FIFO worker, partner and children) especially during the transition from site to home.

FIFO Work

- 10% of the FIFO partners received an induction before the FIFO worker started FIFO employment. Receiving an induction was found to be significantly linked with the partners' psychological wellbeing, but not with other mental health and wellbeing measures.
- The financial benefits of FIFO work were described by many of the interviewees. Greater financial resources gave some partners the opportunity to stay at home to care for children or pursue other interests such as studying or establishing a business.

"I'm the pool boy, the handyman, the cook, taxi driver and everything."

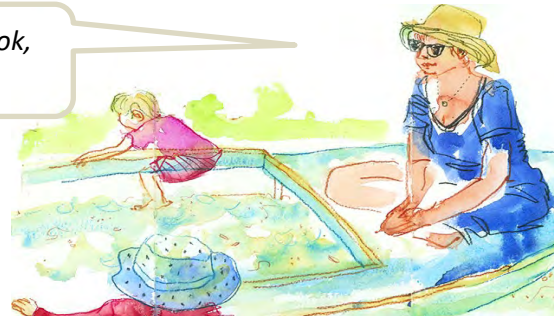


Figure 5. Illustrative quote from a FIFO partner about managing time apart (see section 6 for the full set of themes)

KEQ 2: Impact of the use of alcohol and other drugs on mental health

Main findings in response to KEQ2 are drawn from the literature review, survey study, longitudinal study and interview study.

Studies in the literature review predominantly focused on alcohol use. A slight majority of studies found that FIFO workers drink more than other workers or reported negative issues associated with alcohol use. These studies were predominantly descriptive and focused on the prevalence of alcohol use. No study suggested FIFO workers drink less than other individuals. Only one study directly tested the link between FIFO work attributes (i.e. roster, occupation group and work experience) with alcohol and other drug use.

Alcohol – Key Findings

Risky Drinking

- 71% of FIFO workers consumed more than two standard drinks on any day on average compared to the benchmark group (43%) and the norm group (26%). Consuming more than two standard drinks on any day is considered to be a measure of lifetime risky drinking.
- 62% of FIFO workers consumed 5+ standard drinks on a single occasion at least once a month which is more than the percentage of the benchmark group (39%) and the norm group (36%, see Figure 6). This is considered to be a measure of single occasion risky drinking.
- 44% of FIFO workers consumed 11+ standard drinks on a single drinking occasion in the past 12 months which is more than the percentage of the benchmark group (22%) and the norm group (16.1%).
- The frequency of drinking for FIFO workers (10.9% daily, 57.6% at least weekly) did not differ much from the benchmark group (12.9% daily, 50.5% at least weekly).

AUDIT	<ul style="list-style-type: none"> FIFO workers had significantly worse scores on the AUDIT (Alcohol Use Disorders Identification Test) compared to the benchmark group. The benchmark group scores were in the low-risk drinking category, whereas FIFO workers scored in the risky or hazardous category of the AUDIT.
Injury	<ul style="list-style-type: none"> 17% of FIFO workers injured themselves or somebody else because of drinking which is more often than the benchmark group (8%) and the norm group (9%).
Influences on Drinking	<ul style="list-style-type: none"> More autonomy (sense of choice and control) during time off work, but whilst still on site, was linked to lower alcohol consumption. Happy personal relationships and the willingness to seek support was linked to lower alcohol use. Perceived masculinity norms¹⁰, stigma, loneliness, home- work life conflict and difficulty with the psychological transitioning to and from work were associated with riskier drinking patterns.
Partners & Former FIFO	<ul style="list-style-type: none"> One third of the FIFO partner sample (33%) engaged in single occasion risky drinking (5+ standard drinks at least once a month). This is higher than the percentage of the norm group of 18+ year old Australian females (17.5%). 33% of the FIFO partner sample engaged in single occasion risky drinking, which is fewer than the number of FIFO workers (62%) who engage in this behaviour. Former FIFO workers had similar drinking behaviour to FIFO workers.



Figure 6. Single occasion drinking for FIFO workers in comparison with the benchmark group and the norm group

¹⁰ The behaviours perceived to be normal of the traditional male gender role.

Drugs – Key Findings

Substance use

Partners & Former

- 29% of FIFO workers had used drugs in the last 12 months and this percentage is higher than the benchmark group (12%) and the norm group (19%, see Figure 7).
 - FIFO workers used illicit drugs, in particular marijuana, cocaine, ecstasy, and meth/amphetamines more often than the benchmark and norm groups (see Figure 7).
 - Tranquilisers/sleeping pills were used by 17% of FIFO workers which is more than the percentage of the benchmark group (4%) and the norm group (2%).
 - 16% of FIFO workers smoked daily which is higher than the percentage of the benchmark group (10%) but similar to the norm group (15%).
-
- 19% of FIFO partners have used drugs in the last 12 months which is a higher percentage than the norm group (13%).
 - FIFO partners’ used drugs less (19%) compared with FIFO workers (29%).
 - Former FIFO workers use of drugs was found to be similar to FIFO workers.

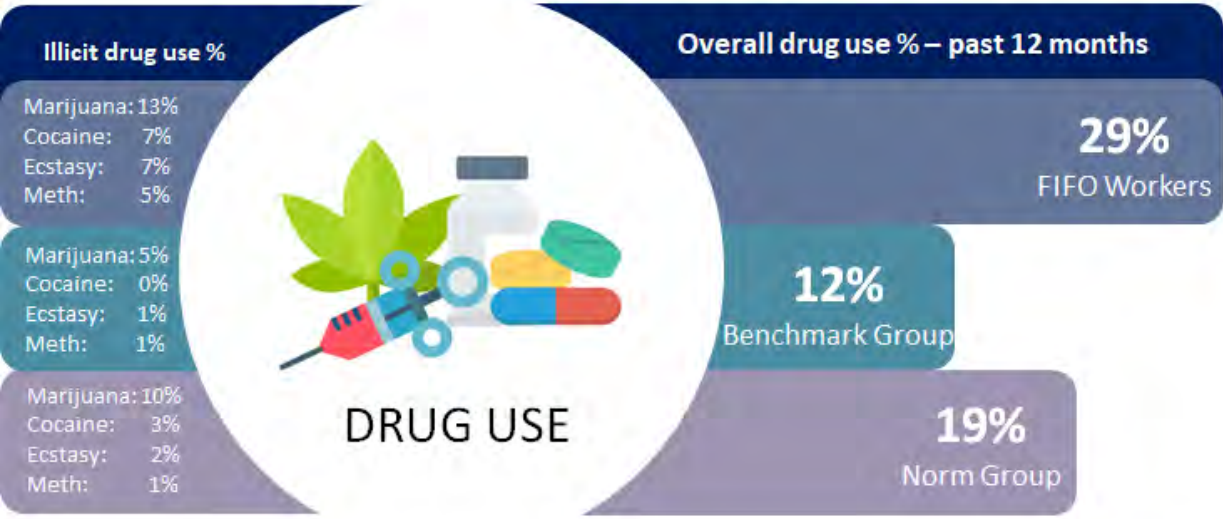


Figure 7. Drug use by FIFO workers in comparison with the benchmark group and the norm group

KEQ 3: Positive/negative strategies used by FIFO workers and their families

Main findings in response to KEQ 3 are drawn from the literature review, survey study, longitudinal study, and interview study.

The literature review found a few references to strategies used by some FIFO workers and their families. It is not clear how widespread they are used and to what extent the strategies actually work. No systematic evidence on the effectiveness of strategies employed by FIFO workers and their families to manage FIFO work arrangements can be identified from the existing literature.

Social Connections – Key Findings

Relationships

- FIFO workers who were happy with their personal relationships had significantly better mental health and wellbeing across all measures. Interviewees confirmed the importance of having strong, positive relationships and friendships.
- Survey findings showed the importance of having access to social activities on site; interviewees described that being pro-active and building relationships (both on and off site) was beneficial to mental health and wellbeing (majority of measures).

Communication

- Many FIFO workers and partners said discussing and planning ahead for rest and relaxation (R&R/time at home) to ensure a balance of family, social and individual needs was important.
- Interviewees highlighted the necessity of planning regular and quality communication with partner and family whilst on site (to fit in with family schedules and children’s needs).

Support – Key Findings

Recalling Support

- 26% of FIFO workers could not recall any available mental health support options on site.
- FIFO workers, when recalling mental health support options available on site, mostly identified Employee Assistance Programs (EAP: 61%) and helplines (28%). They also mentioned colleagues (11.4%), counselling (11.1%) and supervisors (9.8%) as support options available on site.

Using Support

- 60% of FIFO workers had personally used a mental health support option; mainly family and friends (34%), the EAP (22%) or a general practitioner (GP, 18%).
- 78% of FIFO partners had personally used a mental health support option; mainly family and friends (53%), a general practitioner (GP, 32%) or self-help (31%).

“We hear a lot of stories; we’ve seen people leave the bar or the wet mess with a six-pack, and that’s every night, and you’re going, there must be a lot of problems or that’s how they’re dealing with it.”



Figure 8. Illustrative quote from a FIFO worker about alcohol use (see section 6 for the full set of themes)

Coping Strategies – Key Findings

Coping Styles	<ul style="list-style-type: none"> The survey showed that FIFO workers who actively seek out support (coping style) have significantly better mental health and wellbeing (majority of measures). Disengaging as a coping style (giving up) was significantly negatively linked to mental health and wellbeing across all measures.
Autonomy	<ul style="list-style-type: none"> Autonomy during time off, on-site, had significant associations with mental health and wellbeing across the majority of measures. Autonomy at home and the recovery experience of FIFO workers (actions that workers take to recuperate from the demands of FIFO work) were significantly linked to mental health and wellbeing across the majority of measures.
Positive Mindset	<ul style="list-style-type: none"> Interviewees reported that a positive outlook or mindset, the ability to problem solve and resilience (bouncing back from challenges) were helpful in managing the FIFO lifestyle. If partners and colleagues also demonstrated these qualities it further enhanced wellbeing. Other positive strategies described were: reframing negative thinking, staying focussed on the present/mindfulness, goal setting and making tasks achievable, time-management strategies, gratitude practices and regular reminders of the reasons for doing FIFO.
Planning	<ul style="list-style-type: none"> Having a realistic understanding of the potential impact of FIFO work and the challenges before starting out, developing a plan with achievable goals (things to look forward to) and ensuring an exit strategy is in place, were all described as essential by many interviewees. Many Interviewees said it was important to have good financial literacy and avoid the “golden handcuffs” by keeping debt manageable and to have savings as a buffer for difficult times.
Alcohol	<ul style="list-style-type: none"> For FIFO workers, a significant link existed between mental health and wellbeing and alcohol, drug use and smoking. For the benchmark group, none of these links were significant. This suggests that FIFO workers might use alcohol and other drugs to cope with some of the challenges of FIFO work and many of those interviewed expressed concern about this being used as a strategy by their peers.

	Positive Strategies	Negative Strategies
Planning	<ul style="list-style-type: none"> – Make a plan (with partner/family) to include tenure for FIFO employment, financial goals, and exit strategy. – Consider (if possible) a roster and role that suits worker and family requirements. – Plan ahead for R&R time to ensure worker and family needs are accommodated. 	<ul style="list-style-type: none"> – No financial, contingency or exit plan and assumed job security. – Persisting with FIFO work arrangement when there is a significant impact on worker and/or family mental health and wellbeing. – No plan for R&R time and negative affect on family, loss of friendships and disengaging from social activities and hobbies.
Relationships	<ul style="list-style-type: none"> – Whilst on site, maintain regular communication with family and friends that accommodates everyone's routines. – Engage in active, open, and positive communication with loved ones. – Recognise differing family needs and be flexible, especially with children. – Foster relationships on site and talk to supportive colleagues and supervisors. 	<ul style="list-style-type: none"> – Poor understanding of each other's (FIFO worker and partner) needs and stressors when together and apart. – Not recognising the importance of regular and good communication for nurturing relationships with loved ones (i.e. family conflict and competing demands).
Support	<ul style="list-style-type: none"> – For both FIFO worker and partner, foster and maintain friendships and identify support networks in home community. – Support each other with family and household responsibilities during R&R period. – Build resilience and resourcefulness to manage time apart. – Seek help if needed and see this as a strength not a weakness. 	<ul style="list-style-type: none"> – Not seeking help due to organisation not being committed to mental health, stigma evident and leaders not supportive. – Not raising concerns due to fear of losing job and leaders with a poor management style.
Health	<ul style="list-style-type: none"> – When at work take regular breaks – Adopt healthy habits physical (exercise and nutrition) and mentally (wind down activities). – Ensure sufficient rest and manage fatigue during all stages of a swing. 	<ul style="list-style-type: none"> – Disengaging from feelings and withdrawing from social networks and activities – Not talking about concerns and 'putting on a brave face'. – Using alcohol as a form of coping. – Accepting or 'putting-up' with work encroaching on R&R time.

Figure 9. Overview of coping strategies identified in the interview study

Recommendations

As FIFO work is common in WA and will continue to be required into the future, it is important to direct attention towards mitigating or preventing the mental health risks associated with the FIFO work arrangements. The current research indicates there are ways in which the mental health risks associated with FIFO work arrangements can be mitigated or prevented.

Consistent with the idea that mental health is a shared responsibility between the organisation and the individual, research suggests there are steps that organisations and individual FIFO workers (and their families) can take to improve mental health.

Based on findings from this project, a large body of research across multiple industries and the expertise of the research team, it is recommended that employers and other stakeholders take active steps to mitigate against the mental health risks of FIFO work for workers and their families.

The Centre for Transformative Work Design's "Wellbeing at Work" model is used to identify three categories that employers and other stakeholders can engage in. These include the following:

- (1) **Mitigate illness.** Strategies that provide help to those employees already suffering from mental health issues.
- (2) **Prevent harm.** Strategies that build workforce capabilities and work systems that protect employees from risks to their mental health.
- (3) **Promote thriving.** Strategies that go beyond reducing mental ill health to those that promote positive wellbeing and employees who fulfil their full potential.

Within these categories, recommendations are made based on the findings of this research including those from the literature review, surveys, interviews and longitudinal study.

Recommendations to **mitigate illness**

Mitigate illness: work culture and mental health framework. The FIFO workers and their partners in this research experienced poorer mental health compared to the benchmark group and norms. It is therefore important to ensure that poor mental health is identified and effectively supported. Benefits of mitigating mental ill-health problems include: reducing instances of illness, injury or disease amongst FIFO workers, as well as reducing organisational costs such as those associated with absenteeism, turnover and workers' compensation claims.

This research highlighted the importance of having an overall supportive climate in which employees are respected and their mental health and wellbeing is taken seriously. The survey showed that, when the organisation was considered to place a high priority on employee health and safety, this is associated with better mental health.

Workplace mental health is a relatively new focus for organisations and requires specialist training, knowledge and skills. It is cross-disciplinary and the expertise could be drawn from organisational or health and safety specialists, human resources, nurses, social work or psychology.

Recommendation 1: Develop a culture that prioritises mental health

Organisations and leaders should demonstrate genuine commitment to improving the mental health of their workforce.

- Develop an overarching and integrated mental health framework linked to all aspects of the organisation's values, policies and procedures. This needs to be embedded in the workplace culture.
- Engage/employ/train skilled specialists in workplace mental health and wellbeing who are equipped to implement a mental health framework.
- Mental health should be given the same status and resources as other aspects of occupational health and safety.
- Engage employees at all levels to contribute and share in the responsibility for mental health and wellbeing within the workplace and camp accommodation.

Mitigate illness: legal responsibilities and psychosocial risks. Efforts to reduce mental health risks and to improve worker mental health are also consistent with OSH laws; the principal OSH law in being is the Occupational Safety and Health Act 1984 (WA), supported by the Occupational Safety and Health Regulations 1996 (WA). According to these regulations, "*duty-holders must ensure, as far as is*

practicable, that they are not exposing people to health and safety risks arising from the work” (with health including **mental** and physical health). Part of the Model work health and safety act includes: “that the health of workers and the conditions of the workplace are monitored to prevent injury or illness arising out of the conduct of the business or undertaking”.

In recent times, litigation cases in other industries, such as emergency services, highlight the legal responsibilities of employers to address psychosocial risk factors. Compensation claims due to mental health issues are also rising.

It must be acknowledged that, regardless of causality, the FIFO workforce experiences higher levels of psychological distress and is vulnerable to suicide. Failure to address this issue leaves the sector open to litigation, as has been the case in other industries and professions. The lens of mental health and wellbeing should be applied across all areas of the business to establish the work-related risks in line with the findings from this research.

All types of work have the potential for positive and negative impacts on mental health, and FIFO work is no exception. The known psychosocial risk factors¹¹ include:

- Excessive work demands (emotional, mental, physical)
- Low Control
- Poor support
- Lack of role clarity
- Poorly managed change
- Poorly managed relationships
- Low levels of recognition and reward
- Organisational injustice

Recommendation 2: Assess psychosocial risks and monitor the mental health of FIFO workers and the factors that affect their mental health

- Use psychometrically valid tools to assess the mental health of FIFO workers as well as the psychosocial risks (including FIFO-specific risks) that affect mental health.
- Benchmark and track FIFO worker mental health and psychosocial risks over time.
- Ensure the implementation and the process of any assessments are well designed such that workers feel safe to be honest and report risks without repercussions.
- Design interventions based on the assessed risks, and evaluate the interventions to assess their effectiveness.

Mitigate illness: leadership. A key finding was that leaders play a pivotal role in relation to worker mental health. The interviews suggested that supportive direct line supervisors were positive for FIFO worker mental health, whereas poor management skills had a negative impact. It is therefore vital that direct line managers have the skills and capabilities to create a positive work culture in which bullying is not accepted, it is possible to discuss mental health openly, and emotional and job support is provided. A positive work culture has a flow-on effect in terms of the recruitment, engagement and

¹¹ Safe Work Australia (2014). Preventing psychological injury under work health and safety laws Fact Sheet. Retrieved from <https://www.safeworkaustralia.gov.au/system/files/documents/1702/preventing-psychological-injury-under-whs-laws.pdf>

retention of staff (employer of choice) and business costs (turnover, sickness, compensation claims and production outcomes).

Recommendation 3: Provide mental health training for direct line managers

- Managers and front-line supervisors should be trained to understand mental health, to be able to identify the factors that affect worker mental health, and to provide appropriate support.
- Leaders should be recruited and promoted for their abilities to create a positive work culture and demonstrated people-management skills such as respect, trust building, problem solving, conflict resolution and empathy.
- Training, coaching and supervision of leaders to build their knowledge and skills should be prioritised by the organisation.
- There should be recognition of the time managers require to prevent and manage mental health issues.

Mitigate illness: stigma. Stigma and masculine norms were found to be significant factors that prevented FIFO workers from seeking help. Prejudice, discrimination and ignorance underpin stigma; therefore, education and initiatives that promote a culture of psychological safety are important to address these behaviours and attitudes. Stories and experiences from a diverse range of people who have experienced and overcome mental health challenges is one of the best ways to address stigma and break down masculine norms.

Recommendation 4: Address the stigma associated with mental health

- Organisations should strive to reduce the stigma related to mental health and monitor the effectiveness of anti-stigma interventions.
- Educate workers to recognise and understand mental health issues.
- Ensure regular opportunities to reinforce and challenge misconceptions and myths regarding mental health, such as during toolbox talks and return-to-work meetings.
- Establish a supportive environment in which people feel safe to share their experiences and ask for help.
- Encourage leaders to talk about their mental health, as this has been found to be particularly positive in addressing stigma in the workplace.

Mitigate illness: support services. FIFO workers and partners were aware of only a few support options, mainly the organisation's Employee Assistance Provider (EAP). Helplines were mentioned by less than a third, which is low given how broadly Lifeline, Beyond Blue and Suicide Call Back are communicated. Helplines have been shown to be effective in engaging individuals at serious risk of suicide and in reducing suicide risk among callers. Helplines are anonymous and address the concern that some people don't trust the confidentiality of EAP.

Industry, government and other relevant stakeholders should go beyond a one-size-fits-all approach and ensure that support options suit the constraints of FIFO work and the demographics of FIFO workers.

Recommendation 5: Educate and promote a broad range of support services

- Call numbers for EAP and helplines should be visible and readily available to all employees in the workplace and in the camp accommodation.
- Emergency 24/7 site contact number/persons should be available for workers and family.
- Ensure workers and family members have information about the organisation's EAP services including that sessions are no-cost and confidential.
- Organisations should raise awareness of a broad range of support options that are relevant and accessible for FIFO workers and their families, including: EAP, helplines, GP/Medicare mental health plans, private health fund provisions and other wellbeing programs, government and community services, e-mental health support, online resources and credible, evidence-based mobile phone apps.
- Information about available support should be promoted via different mediums and across the employment life cycle.

Mitigate illness: mental health emergencies. FIFO workers scored slightly worse on thwarted belonging (but not burdensomeness) and suicidal intent when compared to the benchmark group. These differences were mainly attributable to their education and job role.

Suicide-related outcomes in the study might be amplified when multiple factors are considered together. For example, the combination of riskier alcohol use and poor mental health is a concern because these factors influence suicidal thoughts and behaviours¹². Further, thwarted belonging is shown to be related to a lack of social support and feelings of loneliness¹³, as loneliness (and happiness with relationships) was related to all mental health and wellbeing outcomes in this study, including suicidal intent.

The research suggests that FIFO workers have riskier alcohol and other drug use compared to the benchmark and norm group. The research shows a significant relationship between substance use (alcohol and other drugs) and poor mental health and wellbeing in FIFO workers (this link was not found in the benchmark group). This suggests that alcohol and other drug use might be a coping strategy for mental health issues.

The high levels of other work-related risk factors such as bullying and fatigue, as well as individual factors such as poor coping style, relationship and financial stress, show a complex picture in which many factors impact mental health. Therefore, organisations need to plan for, and respond to, critical incidents and mental ill-health in a safe and supportive way.

¹² Wilcox, H. C., Conner, K. R., & Caine, E. D. (2004). Association of alcohol and drug use disorders and completed suicide: an empirical review of cohort studies. *Drug and alcohol dependence*, 76, S11–S19. doi: 10.1016/j.drugalcdep.2004.08.003. Slade, T., Johnston, A., Teesson, M., Whiteford, H., Burgess, P., Pirkis, J., Saw, S. (2009). The Mental Health of Australians 2. Report on the 2007 National Survey of Mental Health and Wellbeing. Department of Health and Ageing, Canberra.

¹³ Van Orden, K. A., Cukrowicz, K. C., Witte, T. K., & Joiner, T. E. (2012). Thwarted belongingness and perceived burdensomeness: Construct validity and psychometric properties of the Interpersonal Needs Questionnaire. *Psychological Assessment*, 24, 197–215. doi: <http://dx.doi.org/10.1037/a0025358>

Recommendation 6: Ensure strategies, policies and procedures are in place to manage mental health emergencies and injury

- Develop a suicide prevention plan and site (workplace and camp) evacuation policy for mental health emergencies.
- Ensure return-to-work and injury-management policies include employees experiencing mental ill-health and support strategies to return to work at the earliest opportunity.
- Ensure there are anti-bullying, alcohol and other drug, and fatigue management policies that recognise the interrelationship of these factors and their relationship with mental health.
- Implement workplace support programs with a proven track record and that are evidence based (e.g. employees trained in mental health first aid for on-site peer support).
- Ensure key personnel are trained appropriately to respond to mental health emergencies.

Recommendations to prevent harm (poor mental health)

Prevent harm: mental health awareness. As well as ensuring that signs of mental ill-health are identified and that support is given, it is crucial to take steps to prevent the emergence of mental ill-health. This recommendation is consistent with Work Health and Safety regulations to “prevent exposure to hazards”.

Improving the mental health literacy of all FIFO workers and their understanding of the range of factors that can impact mental health (e.g. alcohol, bullying, fatigue) and inform them about strategies to support wellbeing ensures the individual is better equipped to take responsibility for their own mental health. The findings demonstrated that active coping styles (e.g. seeking support) are better for mental health.

Recommendation 7: Increase mental health literacy through information and training for all workers

Educate and provide training to FIFO workers to enhance their understanding of mental health and associated factors, and strategies to support wellbeing, including:

- Mental health awareness across the spectrum of wellbeing.
- Alcohol and other drugs education to encourage alternatives to and the effective management of alcohol use, tranquilisers and sleeping pills.
- Anti-bullying and supportive workplace practices that address masculine norms.
- Fatigue management, which promotes good sleep hygiene practices and reduces workers’ reliance on alcohol and pharmaceutical interventions.
- Positive and active coping styles and self-care to support mental health and “fitness for work”, including seeking help.

Prevent harm: preparation and education for FIFO workers and families. FIFO workers in the interviews identified that it was important for new workers to do their due-diligence regarding the lifestyle prior to entering into the role and for them to be provided with information, strategies and tips to make FIFO work well.

The findings from the research showed that the psychological transitioning between work and home is associated with the mental health and wellbeing of FIFO workers. Returning back to site was found to be the most challenging transition phase and settling back into life at home also required a level of adjustment for both the FIFO worker and family.

The interview study showed that during their time on-site, the perceptions of FIFO workers and their partners differed in respect to the mental health and wellbeing of the FIFO worker. This could be due to a lack of understanding or communication difficulties or the adoption of a “brave face” to avoid worrying or burdening their partner.

Interviewees were, in general, making the FIFO lifestyle work well. FIFO workers and partners described many positive strategies to mitigate poor mental health (e.g. goal setting, reframing negative thinking, focusing on the present, reminding oneself of the reasons for doing FIFO, and individual and family rituals to help prepare for transitions). Findings also demonstrated that an active coping style and/or seeking support are better for mental health.

Recommendation 8: Prepare and educate FIFO workers and their families for FIFO work

- FIFO workers and partners should receive information about the benefits and challenges of a FIFO role and lifestyle prior to employment so they can make informed choices.
- Comprehensive inductions, education and ongoing training which support FIFO workers and partners to navigate the FIFO lifestyle could include:
 - Strategies to plan and manage FIFO for all family members, including children, for example, when missing important family events.
 - Educating workers and their families on common issues they may face, coping strategies and how to best to support each other.
 - Educating and assisting FIFO workers and partners to better understand and manage the transitions between FIFO and home life, as this is when many experience poor levels of mental health (return to site), fatigue and competing needs (return home).
 - Building skills for effective communication and strong relationships.
 - Tips and ideas from other FIFO families who make the lifestyle work well.
 - Financial literacy, budgeting and planning.
 - Planning for economic and life events across the employment lifecycle, including redundancy, retirement and career changes.

Prevent harm: communication. Communication with family is an important protective factor for mental health and wellbeing. Both the survey and interview studies revealed there was anxiety associated with the inability or limitations to connect with family and friends when on site. FIFO

workers need to have a reliable means to contact home when in camp, as well as the flexibility when at work during times of critical need. Good communication and technology infrastructure is essential.

Recommendation 9: Provide reliable communication options and foster connections with home

- Telephone and internet infrastructure should be adequate to ensure workers can stay connected to their family and social networks, especially at times of high demand.
- Organisations should foster an environment which recognises the importance of family and the challenges of separation and missing out on important events.
- Organisations should provide some flexibility for workers to be in contact with family members during work hours when there are extenuating circumstances.
- Provide a dedicated contact point or individual on site for family to contact in time-critical and highly important situations.
- Ensure FIFO workers are able to call 24/7 emergency helplines from their accommodation.

Prevent harm: support for family. The research found that partners of FIFO workers also experience higher levels of psychological distress than relevant norm groups and that this is partly associated with FIFO work arrangements. If the worker experienced job satisfaction and good social connections, then the partner had better mental health. Aspects of family stress could be alleviated by implementing many of the recommendations, as well as targeted initiatives that enhance family wellbeing.

Recommendation 10: Implement initiatives that support FIFO partners and families

- Organise family days, site visits and initiatives for partners and families to learn more about the FIFO worker's experience.
- Establish or link families, especially those new to FIFO, with support groups, mentors or buddy systems.
- Provide an on-site contact or "family liaison" person that partners can contact in an emergency or for advice.
- Develop resources to capture stories of how families make FIFO work well, useful services, tips and common problem-solving ideas.

Prevent harm: rosters. The research found that workers on different rosters and shifts had different levels of mental health. FIFO workers on rosters of 4 weeks on/1 week off, 3 weeks on/1 week off and 2 weeks on/1 week off had higher levels of psychological distress than those on other rosters.

The interview study suggested that having enough time off is important for recovery and quality time with family and friends (particularly after being away for weeks at a time). Travel in own time, long travel distances encroaching on R&R and returning home very fatigued were all raised by interviewees as issues that impacted wellbeing. The shift type was also found to impact mental health. Working night shifts is associated with worse mental health and wellbeing.

The data from this research lends itself to better determine optimal roster and shift structures, however this was beyond the scope of this study. Implications for increased business costs should be weighed against a healthier and happier workforce, reducing other costs and improving productivity.

Recommendation 11: Implement rosters and shift structures that optimise mental health and wellbeing

- Organisations should strive for even-time and shorter roster schedules.
- Risk assessments of transitions; travel to and from site and day-to-night shift changes should be undertaken to ascertain the impact on mental health and fatigue and potential for improvement.
- Options to move or be housed in the regional, local township should be considered and offered where possible.
- Organisations should investigate the wellbeing and health consequences of various work arrangements (e.g. days for a swing, nights for a swing versus dividing one swing into days and nights).
- Prepare and educate workers to manage these arrangements and optimise health (e.g. lighting and sleep hygiene) and provide adequate recovery time between day and night shift transitions.

Prevent harm: job factors. Factors that influenced the mental health and wellbeing of FIFO workers included different job and employment contracts, job insecurity, high workload and low levels of autonomy. Staff working in catering, camps and logistics, and those in construction or employed by contractors were found to have the poorest mental health.

Recommendation 12: Identify and monitor the impact of job roles, work design, workloads and employment contracts on mental health

- Identify and address the work design, cultural and other work factors that increase the vulnerability of certain job roles to poor wellbeing (i.e. employees in camps and catering, construction and workers employed by contractors).
- Proactively monitor workloads and other psychosocial risks in order to identify and address any individuals or roles that are overloaded.
- Make adjustments such as additional staff, job rotation, training or increased autonomy, with the specific adjustments depending on the specific psychosocial risks identified in a job.
- Organisations should ensure contracted companies and labour hire meet the same standards and protections (e.g. rosters, EAP) as those in place for their own employees.

Prevent harm: camp and community. Survey results showed the availability of social events on site were found to positively influence mental health and wellbeing, whereas the availability of recreational activities such as the gym and pool did not have significant links. Social isolation and loneliness both on site and at home were related to poorer mental health.

Some interviewees stated that good friends and team mates eased the transition back to site. Others said the wet mess was the only option for socialising while on site, which likely encouraged drinking and riskier habits. The research findings suggest value in creating a strong sense of community at accommodation villages and providing opportunities for building relationships and social interaction.

This promotes health and wellbeing, recovery from work, social connection and an increased sense of choice and control.

Recommendation 13: Build community and social connections

- Organisations should offer and promote a range of different activities on camps and accommodation sites that are social in nature and which cater to different interests (e.g. sporting activities, BBQs, games and quizzes, special interest clubs, music and entertainment events).
- Workers should be engaged in identifying, or take responsibility for organising, activities and events.
- Community engagement or activity officers could be employed or the role of lifestyle coordinators extended to enhance community and social aspects of accommodation villages.
- Villages should be designed to ensure there are a range of physical spaces for social activities and opportunities for interaction besides the wet mess.
- Contact and integration with local communities should be facilitated where possible, ensuring positive benefits for all.

Prevent harm: camp regulations. Greater autonomy whilst on camp was found to be associated with better mental health and less consumption of alcohol. Many interviewees referred to unnecessary rules and regulations in accommodation villages, restrictions to leaving camp or accessing the townships, being “fenced in” and under surveillance, dictating of meal times, sleep times, inflexible mess opening hours and dress codes during time off on camp. Whilst it is recognised that some of these practices may have arisen as an effort to protect workers, they can have the effect of making the FIFO camp experience like that of an “institution”, as described by many interviewees.

Recommendation 14: Review FIFO camp rules and regulations, and assess the impact on mental health

- Where possible, provide a greater level of autonomy for FIFO workers during time off on-site.
- Test the necessity of “rules” against the impact they have on FIFO worker mental health and wellbeing.
- Encourage trust, respect and responsibility and give workers an opportunity to relax and experience their time off in a positive way.

Prevent harm: camp accommodation. The research found a correlation between better mental health and permanent rooms. It is likely this is associated with a greater sense of belonging and community. It also enables workers to individualise their room and leave personal items, and is more akin to private accommodation.

Recommendation 15: Provide a permanent room at accommodation sites

- Organisations should enable workers to remain in the same “permanent” accommodation space where possible.
- Encourage a sense of security, place and belonging.

Prevent harm: finance. Job insecurity was associated with poorer mental health outcomes. This contributes to workers (and partners) feeling stressed about their future and income. For many interviewed, the motivation and benefits of FIFO work were financial, and were embedded in the desire to provide a better lifestyle and opportunities for their family. Sometimes, the prolonged uncertainty about potential job loss and the disruption to the workplace caused by ongoing redundancies during an economic downturn was a major stressor. This was particularly the case if the worker had substantial debt, no savings and limited alternative employment options.

Recommendation 16: Recognise the mental health risks of financial stress and job insecurity

- Organisations should put strategies in place to maximise permanent employment and minimise or ease job insecurity if experienced by workers.
- Educate and prepare workers for the economic cycle prior to employment and at inductions.
- Improve financial literacy through education.
- Promote discussion of career pathways as part of the supervision and performance management process.
- Keep workers informed of organisational change, job losses, contract renewal and future work opportunities within the organisation.
- Support workers to obtain alternative employment following end-of-contract through outplacement and recruitment agents, and provide avenues for upskilling.
- Manage redundancy processes, recognising the mental health impacts on the employee who is losing their job, and those involved with the decisions and implementation of redundancies, as well as the disruption to teams through the loss of colleagues and increased workloads.

Recommendations to promote thriving and positive mental health

Promote thriving: positive mental health. A healthy worker (absence of illness and injury), includes a worker being healthy and experiencing wellbeing across mental, physical and social dimensions. For example, a healthy FIFO worker would be physically healthy (e.g. in a healthy weight range, and free of injury), mentally/emotionally healthy (e.g. not suicidal, engaged in his or her work and confident), and socially healthy (e.g. not isolated, having supportive friends and family, feeling part of a community).

The concept of thriving or flourishing involves initiatives to enhance **positive** mental health and wellbeing. Just as physical health is more than the absence of illness and disease (for example, physical health includes good cardiovascular functioning and fitness), mental health is more than just the absence of anxiety, depression and stress. Positive mental health includes, for example: wellbeing, feelings of competence and worth, and engagement. Strategies for promoting thriving include, for example, high performance work designs, transformational leadership styles and strengths-based development. The benefits of promoting thriving include increases to employee engagement and proactivity and, thereby, increases to organisational innovation and productivity.

Although the focus of the current research was not on thriving, we note the potential for interventions which promote FIFO workers' wellbeing and capacity to flourish.

Recommendation 17: Identify and implement strategies and interventions to enable FIFO workers to thrive

This could include promotion of:

- High performance work design
- Meaningful work
- High quality connections
- Transformational leadership

Recommendations for additional research

Additional data analysis of the existing research could address some issues that were beyond the scope of this project. Further research could also be undertaken. One useful research strategy could be to follow up and track FIFO workers in the current sample over time to ask the question "how are things changing, for whom, and why?". If there are improvements in some workers' mental health relative to now, then the causes could be identified (e.g. changes to roster, permanent accommodation, mental health awareness training, place making and social activities on camp). This research could be done across the broad participant cohort or could also be undertaken for individual companies or sites.

The data presented in the current research could be used to carry out utility analyses to assess the economic and social value of mental-health-orientated interventions relative to the investment cost. Such analyses can be helpful for motivating employers and other relevant stakeholders to prioritise such interventions.

Recommendation 18: Identify and prioritise further research

Options could include:

- Expanded analyses of the data collected in this research.
- Conduct a follow-up study, including as many as possible of the existing study participants as a cost-effective way of reviewing progress for FIFO workers as a whole and as a powerful way to establish the impact of interventions.
- Conduct utility analyses to demonstrate the economic and social value of interventions to improve FIFO worker and family mental health.

2 Main report—Background and scope

The resources industry is key to Western Australia's economy. In 2015, Western Australia had \$53 billion of major resource projects under construction or committed, and \$50 billion under consideration. Further, in Western Australia, mining accounted for 29% of gross state product in 2016–17 (Government of Western Australia, Department of jobs, Tourism, Science and Innovation, 2018). Being such a central element to Western Australia's economy, the resources industry is therefore a significant part of people's lives in WA.

Work arrangements in these industries involve remote workplaces that make it necessary for workers to spend sustained periods of time away from home. The practice of fly-in, fly-out (FIFO) work is prevalent in Western Australia (WA), with an estimated 60,000 employees working in this type of arrangement (Chamber of Minerals and Energy of WA, 2015, as cited in Education and Health Standing Committee, 2015). When taking direct family members into account, it is suggested that 9.3% of WA's population is directly impacted by FIFO work (Education and Health Standing Committee, Parliament of Western Australia, Perth, 2015). The FIFO model enables mining companies to fulfil their economic, social and workforce needs (Costa, Silva, & Hui, 2006).

Working on a FIFO basis has unique aspects relative to other jobs. FIFO poses distinctive demands and strains on those working in FIFO jobs and their families. If FIFO work contributes to psychological distress in the workplace, there are substantial social and economic implications that flow from such effects. In Australia, according to the 2014/15 Australian Workers' Compensation Statistics (Safe Work Australia, 2017), there were 107,355 serious claims (i.e. resulting in an absence from work of one working week or more) across all injury/disorder and disease categories, and 5.7% were due to "mental disorders" (covering conditions such as anxiety, depression and breakdowns). In fact, mental disorders were the most common diseases related to claims and involved the longest absences from work compared to all other diseases (median absence of 11.2 weeks) (Safe Work Australia, 2017).

There is increasing evidence that work and workplaces can harm as well as maintain or enhance the mental health and wellbeing of their workers. This effect of work on mental health and wellbeing might be an especially important issue for FIFO workers given the prolonged exposure of these workers to the unique demands of such work.

All work can be stressful or have stressful periods at times, however, consistent with the above reasoning, general statistics on mental health and suicide suggest that overall FIFOs are an at-risk group in terms of gender and age (Australian Bureau of Statistics, 2007). An inquiry conducted by the Education and Health Standing Committee (2015) concluded that a lack of research and systematic investigation into the impact of FIFO work arrangements on mental health and wellbeing exists—thus a focus on mental health in these workers is of particular importance. As part of the recommendation by the Education and Health Standing Committee's inquiry (The impact of FIFO work practices on mental health, 2015), this research expands upon the evidence base on the extent of underlying systematic work problems impacting the mental health of FIFO workers.

Based on this, the current research has designed four studies to provide better insights into the Key Evaluation Questions (KEQ) identified in the Project Request, WA Mental Health Commission (MHC508):

- *KEQ 1: What are the mental health impacts/benefits of FIFO work arrangements (if any) on (a) workers? and (b) FIFO families?*
- *KEQ 2: What are the possible harmful drinking habits, alcohol consumption and use of illicit drugs (particularly use of short-acting illicit and new synthetic substances) by FIFO workers and how does this use impact their mental health?*
- *KEQ3: What positive/negative strategies do FIFO workers and their families use to reduce the mental health impact associated with FIFO work arrangements?*

These questions are addressed using four research studies (see Table 2.1), all of which contribute towards understanding the answers to the Key Evaluation Questions. Using multiple methods and reaching many participants in order to gain a representative sample of the FIFO population are some of the strengths of this research project, but it should be noted that the usual limitations of a survey apply, namely that causality cannot be inferred because FIFO workers have not been tracked in and out of FIFO work.

Table 2.1
Aims of research studies looking into FIFO mental health and wellbeing

Research study	Aim
Literature review	To provide an overview of the insights gathered to date and to identify patterns and themes, as well as possible gaps and issues related to the evidence generated so far, and to build a theoretical model that can guide further investigation.
Survey study	To assess statistical relationships of mental health and wellbeing of FIFO workers and their partners in comparison to a benchmark group and the general population, as well as the role of five groups of factors (person, job, team, organisation & worksite, and family & social life) that likely affect their mental health and wellbeing. It also addresses substance use and potential strategies that could be used in handling FIFO work arrangements.
Longitudinal study	To assess how the mental health and wellbeing of FIFO workers changes over the course of a roster, identifying differences between FIFO workers being on site and off site, including the periods of transitioning in between.
Interview study	To provide a more in-depth understanding of workers' and their partners' experiences within fly-in, fly-out work. This method complements insights that can be gathered via survey measures and looks into the strategies that FIFO workers and their partners use. The main focus of this study is on KEQ 3.

2.1 Research strengths and limitations

The research has strengths and limitations. As far as possible, the research team sought to mitigate against the limitations.

Strengths. Strengths of the research include:

- That it is based on a comprehensive analysis of existing research;
- That a multi-method approach was used that enabled quantitative breadth (a large and diverse sample of FIFO workers completed the survey) as well as qualitative depth (detailed interviews with a sub-sample of FIFO workers);
- Present and former FIFO workers were included, as well as FIFO workers' family and friends; and
- That a longitudinal study tracked FIFO worker experiences across a full swing.

Limitations. The research also has limitations:

- Most importantly, the cross-sectional nature of the research means it is not possible to establish the causal impact of FIFO work on mental health. Doing so definitively would require a randomised control group design¹⁴ in which workers are measured, then randomly allocated to carry out either FIFO work or non-FIFO work, with both groups then being re-assessed over time.
- The sample obtained for the FIFO survey might not be representative of the FIFO working population. However, it is not possible to know whether participants in the research are fully representative of the FIFO working population. Participants in any research do so on a voluntary basis and it possible that confounding attributes affect participation (e.g., those most negative about FIFO work might be more likely to do the survey; equally, those most negative about FIFO work might be more likely to not do the survey).
- The benchmark sample differed from the FIFO sample of demographic and occupational attributes. Specifically, the benchmark group was older, more educated and included more managerial and administrative jobs. This means that differences in these groups on other variables might be attributable to their demographic and occupational differences.

Mitigating causality limitations. With respect to causality, as well as cross-sectional survey comparisons, the weight of evidence is enhanced by the diversity of the research methods. For example:

- With respect to the main survey, as well as comparing the mental health of FIFO workers against a comparison group and norms, regression analyses were conducted to understand which individual, work, family, and team factors statistically predict the mental health of FIFO workers.
- The surveys of past FIFO workers provide insights into how some FIFO workers perceive their experience after leaving this type of work arrangement.
- The interviews provide detailed descriptions of FIFO workers lived experiences, showing how, in the eyes of FIFO workers themselves, these arrangements affect their own lives and their families' lives.

¹⁴ Kendall, J. M. (2003). Designing a research project: randomised controlled trials and their principles. *Emergency Medicine Journal*, 20(2), 164-168.

- The longitudinal study of workers' experiences across a swing (both at work and away from work) enhances our understanding of the effect of transitions.

Whilst each research method individually can be critiqued, as in research in other complex domains, it is the triangulation of findings across multiple methods that tends to be most informative.

Mitigating representativeness. The research team took steps to obtain as representative a sample as possible. The survey distribution strategy deliberately relied on multiple stakeholder groups (e.g. unions, industry groups). The size of the sample of FIFO workers is also large, which increases the likelihood the sample is representative.

Mitigating benchmark group differences. When comparing the benchmark and FIFO sample on the key mental health and wellbeing outcomes, we statistically co-varied out the effects of age, education and professional role to minimise the extent that mental health differences can be solely attributed to occupational or demographic differences.



Literature Review

Impact of fly-in, fly-out work arrangements on the mental health and wellbeing of FIFO workers

3.1 Literature review background and scope

The overall goal of this review is to provide a systematic review of the existing research into mental health in FIFO workers and their families.

Specifically, the aims of the review were:

- to provide a systematic overview of research findings on the impact of mental health, wellbeing, and drug and alcohol use in FIFO workers and their families
- to identify, through a thematic analysis of meta-analyses (i.e. studies identifying statistical patterns across a range of other studies) and reviews (i.e. studies summarising literature), the key work and workplace attributes that have been shown to affect mental health and wellbeing and that might also apply to FIFO mental health and wellbeing
- to illustrate some of the consequences of improved mental health and wellbeing at work, and
- to provide a theoretical model to guide future research.

Figure 3.1 shows the main categories that were considered in the thematic literature review, namely individual level attributes, job design attributes, team attributes, organisation and worksite attributes, and family and social life attributes. A particular focus on work and workplace attributes was chosen as researchers have found that individuals frequently identify work as providing a sense of purpose, acceptance within society and opportunities for development (Fossey & Harvey, 2010; Waddell & Burton, 2006; Barak et al., 2009; Parker & Wall, 1998) and may therefore play a pivotal role in a person’s protection from, and recovery from, mental health difficulties—particularly in FIFO workers who spend prolonged periods of time at work and in a work context even when off work, as these effects may be intensified.

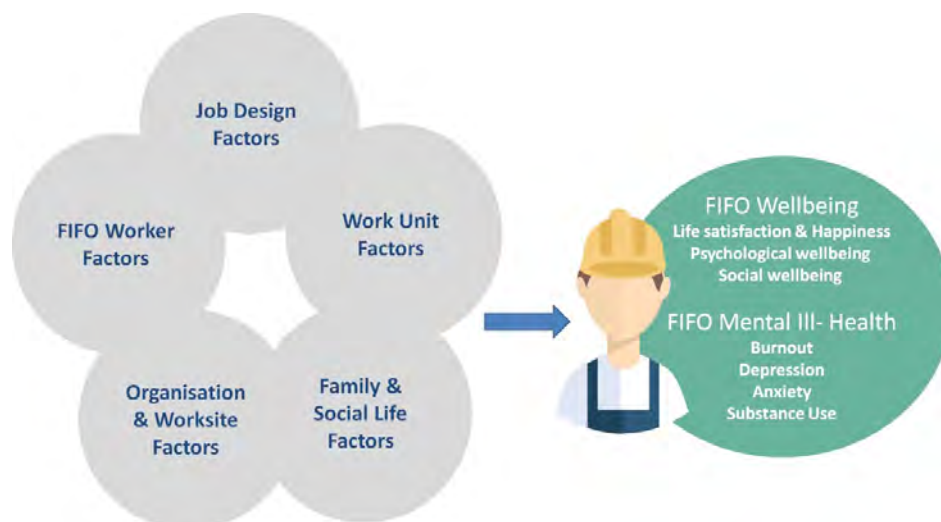


Figure 3.1. Overview of FIFO mental health and wellbeing factors (preliminary research model)

Definition of key concepts: fly-in, fly-out

A number of definitions of the term fly-in, fly-out can be identified from the literature. Watts (2004; for the Pilbara Regional Council) defines fly-in, fly-out (FIFO) as circumstances of work where the place of work is sufficiently isolated from the worker's place of residence to make daily commute impractical and that involves extended work hours. Storey (2001) identifies FIFO work and workplaces to involve “work in relatively remote locations where food and lodging accommodation

is provided for workers at the work site, but not for their families. Schedules are established whereby employees spend a fixed number of days working at the site, followed by a fixed number of days at home” (p. 135). Vojnovic, Michelson, Jackson and Bahn (2014) describe FIFO work as requiring employees to be in regular non-residential employment, involving a commute (typically by air) to work in a location far from their usual place of residence. They also identify prolonged periods of absence from home to be an inherent part of the FIFO working arrangements.

Henry, Hamilton, Watson and Macdonald (2013) extend these definitions by also including the terms long-distance commuting (LDC), and recognising the practice of ship-in, ship-out (SISO) and drive-in, drive-out (DIDO) via company bus or private vehicle as specific forms of FIFO work. They also identify that the majority of long distance commuting workers in Western Australia commute on a FIFO basis, with a minority using DIDO arrangements (The Chamber of Minerals and Energy, 2005).

Building on the definition by Storey (2001), Haslam McKenzie (2010) identifies the implications of working FIFO with regards to workers social and home life:

“Work commuters live separately from their home communities while at work and are usually separate from their family and friends unless they too work in the same location. The employer provides food and accommodation close to the mine site and the work rosters are usually compressed work weeks (where workers work longer shifts, compressing their standard work week into fewer days)” (p. 358).

Finally, the WA Mental Health Commission tender document has the following definition for FIFO work:

“Fly-in, fly-out is a method of employing people in remote areas by flying them temporarily to the work site instead of permanently relocating employees and their families. As a result, employees reside on site for the period of their roster.”

Based on these previous definitions, we conclude that a definition of FIFO should comprise of the following elements:

- place of work that is removed from the usual residence to the extent that it requires significant commuting
- involves a fixed and comprised work schedule over a number of days
- involves a fixed and comprised break period
- results in prolonged absence from friends and families, and
- employer provided food and accommodation close to the worksite.

Definition of key concepts: mental health

We identify the whole spectrum of FIFO workers’ mental ill-health to wellbeing as key to be considered in relation to mental health and wellbeing and the ways in which it is affected by work and workplaces. Mental health is not merely the absence of mental illness but rather a state of wellbeing (World Health Organization, 2013). The dual-factor model of mental health, as proposed by Greenspoon and Saklofske (2001), considers mental health to be a state that goes beyond the absence of mental illness in that it also includes a sense of subjective wellbeing. Mental health requires the absence of negative indicators of mental health (e.g. depression, anxiety, negative affect) and presence of positive indicators (e.g. life satisfaction, positive affect).

An effective investigation of mental health at work needs to consider the whole spectrum of mental health, ranging from thriving mental wellbeing to poor mental wellbeing and mental health disorders in relation to work. Research finds favourable working conditions can have a positive impact on worker wellbeing (Barak et al., 2009; Waddell & Burton, 2006; Parker, 2003, 2014; Parker, Chmiel, & Wall, 1997; Wu, Griffin, & Parker, 2015) and ideally FIFO work and workplaces would be designed to provide an opportunity to thrive.

Mental ill-health can include burnout (i.e. a mental state characterised by emotional exhaustion, depersonalisation and reduced personal accomplishment) (Maslach, 1982), harmful drinking habits, alcohol consumption and use of illicit drugs (particularly use of short-acting illicit and new synthetic substances) (Liang, Gilmore, & Chikritzhs, 2016; Naimi, Stockwell, Saitz, & Chikritzhs, 2017), as well as anxiety and depression (Murray, Lopez, & World Health Organization, 1996; Restifo, Kashyap, Hooke, & Page, 2015; Newnham Hooke & Page, 2010). These various negative outcomes have been identified as likely to be impacted by work and workplace attributes (LaMontagne et al., 2014; Bailey, Dollard, & Richards, 2015; Parker & Griffin, 2015).

As outlined above, mental wellbeing is a key aspect of mental health. We adopt the World Health Organization's (WHO) definition of mental health as a state of wellbeing in which the individual realises their own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to their community (World Health Organization, 2013).

This definition highlights three core components of mental health (Lamers, Westerhof, Bohlmeijer, ten Klooster, Keyes et al., 2011, see Figure 3.2):

1. *Emotional wellbeing*: positive feelings of satisfaction and happiness.
2. *Psychological wellbeing*: effective functioning of the individual (including aspects such as self-acceptance, personal growth, purpose in life, positive relations with others, autonomy and mastery).
3. *Social wellbeing*: effective functioning in community life (including aspects such as social integration, social contribution, social coherence, social actualisation and social acceptance).

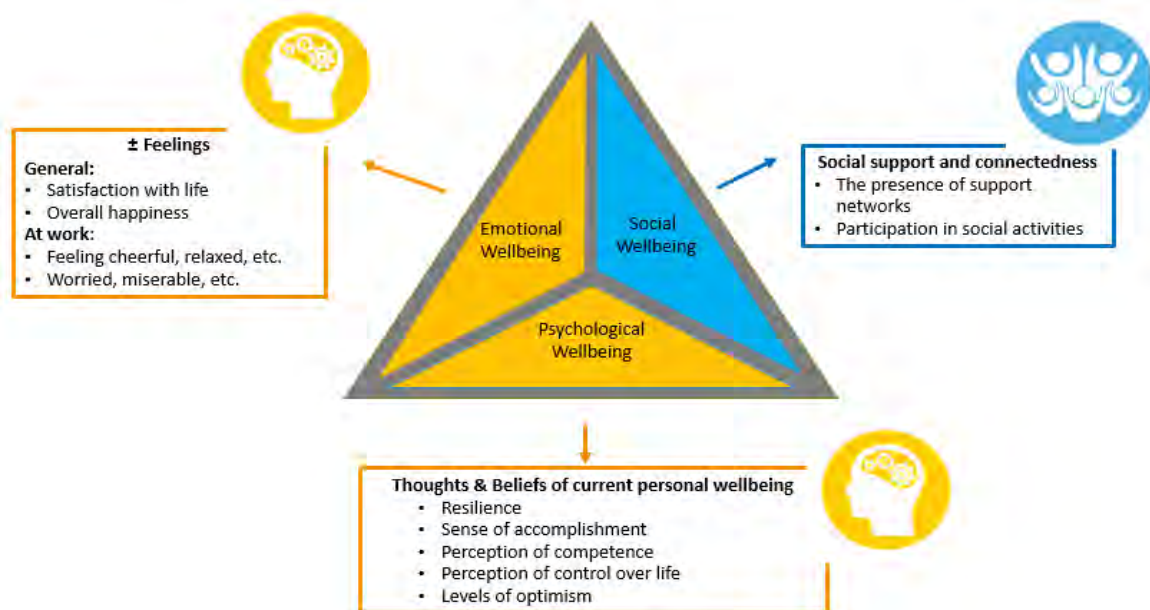


Figure 3.2. Three component model of wellbeing

Research terminology for the literature review

In our summary and assessment of the research identified via the systematic literature review, we refer to issues related to research methods and rigour. In this section we give a brief introduction of some of the issues that we as researchers would pick up on and consider when reviewing a paper and gauging its methodological rigour. To make this information more accessible, we provide an overview of all the terms used in this report in Section 8.

Research methods describe the techniques that scientists use to investigate and analyse phenomena. Research methods can be divided into qualitative and quantitative research (note: mixed-method approaches also exist and combine the two).

- Qualitative research often aims to define and explore a problem and to develop an approach towards it. This is often done via interviews, observations or open-ended questions in surveys that are posed to participants. Often, one of the outcomes of qualitative research is the development of a theoretical model that can systematically guide future research into a topic.
- Quantitative research aims to quantify an issue, establish its prevalence or to establish links and associations between constructs. As such, quantitative research is often employed to test the theoretical models that have been developed based on qualitative research or theoretical thinking (i.e. based on logic).

For both qualitative and quantitative research, criteria exist that allow researchers to evaluate the quality or rigour of the research. Rigour is not defined by a single attribute of a research study. Rather, it is determined via a combination of criteria. Some of the key criteria are theoretical foundation, sample size, attributes of the measures used and the method of analysis employed. For both qualitative and quantitative research these criteria are different.

Theoretical foundation

The theoretical foundation of a study considers the logic or reasoning behind exploring an issue and testing specific links between concepts. This criterion applies to both qualitative and quantitative research. However, in some cases qualitative research applies a theory-free approach, which is labelled a grounded theory approach (Glaser & Straus, 1967). For such approaches it is important for researchers to be aware of their own personal biases and theories and to report on those.

Basing research on theory supports researchers in building a coherent body of knowledge and to systematically investigate an issue. Generally, theoretical developments need to be free of the personal views of the researchers, build on previous thinking in an area or integrate thinking from another area. It also supports researchers in not falling for spurious links and associations that may exist in the data, but theoretically do not make sense.

Measures

The types of measures that are used in research are another criterion that can illustrate the rigour of research. In qualitative research these are often determined by the extent to which the questions or observations are structured and consistently presented to all participants. It is also important that the questions actually tap into what they are supposed to measure (i.e. their validity) and are not leading participants to respond or act in a certain way. Qualitative research often involves the direct

interaction of the researcher with the participants. This close interaction means that it is important for the researchers to be neutral and not bias or influence participants.

In quantitative survey research two of the main criteria are the validity and reliability of the measures used. Validity means that survey questions (i.e. items) actually measure what they were designed to measure (i.e. the specific concept and/or its subcomponents). Good scales (i.e. a number of items designed to measure the same concept) are developed via a careful process that can involve subject matter experts (i.e. face validity) and considers the internal structure and content of a concept and the extent to which that is represented by the items that have been developed (i.e. construct validity, usually assessed via factor analysis). To what extent the scale is able to distinguish its own concept from other related concepts (also construct validity) is also tested. Scales need to be developed so that they can capture the full range of variation in a concept that they are measuring, so that so-called ceiling effects are avoided where most people identify with the highest possible score on a test (i.e. most people would agree that having a day off is great).

Sample size

The assessment of rigour based on sample size differs depending on the type of study. Sample size is a criterion that can establish the representativeness of a study's findings in epidemiological studies. For qualitative research it is indicative of the extent to which a study is likely to have sufficiently explored a topic or problems space (i.e. has reached saturation) (Francis et al., 2010). In quantitative research that tests relationships and links between constructs, sample size determines the power of the analysis. Power is the extent to which a data set will be able to identify effects of small, medium or large effects. Broadly speaking, using a smaller sample means an analysis will be able to only identify large effect sizes (i.e. the very obviously important issues), but may overlook some other smaller effects (i.e. the not so very obviously relevant issues that are nonetheless important to understand an issue).

Comparison samples

Comparison samples are good practice in epidemiological studies and can provide insights into the prevalence of a certain phenomenon relative to other contexts or groups. One limitation of comparison samples is that it is extremely difficult to match two samples on all of their attributes. For example, FIFO samples can be compared to other workers in the same age group and professions that work locally; while their jobs and background will be similar, they may differ on a number of attributes. For example, it is possible that a certain type of individual is more likely to select FIFO employment. Moreover, the context of their work will never be completely identical. Comparison studies can provide an indication of prevalence but are limited in their ability to explain how differences come about.

Analysis

Analysis describes the tools that researchers employ to identify patterns and extract and condense information from the data that they have collected. These tools are different for qualitative and quantitative research.

In qualitative research analysis often involves the identification of themes and classifying content. An important criterion is the extent to which themes and content classes are clearly represented in the actual data and that connection with the data is evident to those reading the results. A further

key criterion is to what extent the themes and content classes are also identifiable by others. In systematic qualitative research inter-rater agreement is reported that statistically assesses the consistency with which two independent raters identify the same themes and patterns in data. This is an important indicator of rigour as it illustrates to what extent the analysis is not biased by a researcher's own view and opinion.

In quantitative research a range of statistical analyses are used, some that can compare groups and others that illustrate the connections between concepts. Describing these in more detail is beyond the scope of this report. However, it can broadly be said that researchers need to choose an analysis that can adequately answer the research questions. They also need to consider to what extent their data is actually suited for each analysis method (i.e. whether it is normally distributed, categorical, numeric, whether it is suited for a comparison) and the conclusions that they draw (e.g. can causality actually be assumed?). With regards to causality that can be established based on statistical analysis, the only direct way to establish the direction of an association (e.g. *A* influences *B*) is to conduct longitudinal research (information is collected across various time points). So-called cross-sectional data (all information is collected at one point in time) can only provide evidence for an association or link (i.e. *A* is connected with *B*, but it cannot be concluded whether *A* causes *B* or vice versa).

In statistical analysis inferences about a population are made from sample data, as in practice it is not possible to obtain data from each person that is part of the targeted population. Statistical significant results are found if the results are not attributed to chance. In statistics it is about probability, as it is not possible to find one hundred per cent certainty. Therefore, the risk to find an outcome that is random must be reduced. Most researchers use a cut-off of 5%, which means there is a 5% chance that the results found were actually random. Sometimes a stricter cut-off (of 0.5% or 0.1%) is chosen, if it seems necessary to reduce this risk even more. Research will indicate the probability values (p-values) of their findings for declaring a statistically significant finding. Conventionally this is a p-value smaller than .05.

3.2 Systematic literature: FIFO work and wellbeing

A systematic literature review was conducted to gain an overview of the existing evidence base concerning the mental health and wellbeing of FIFO workers with a focus on the four key evaluation questions. We followed established steps that are commonly used in systematic literature reviews published in scientific research (Liberati et al., 2009). These steps are outlined in Figure 3.3. The literature search is generally divided into two types of searches: an electronic search using databases and a hand search of material identified via other channels (subject matter experts, references identified in electronic search).

The electronic search was conducted using established scientific databases, which mostly contain articles from peer-reviewed journals (Scopus, PubMed, Web of Science, Psycinfo and Science Direct) and initially returned 5303 papers for the search terms specified in Figure 3.3. After screening the titles of the articles (Step 2) and removing the duplicates (Step 3), Step 4 involved the screening of the papers' abstracts. The abstract screening was conducted by two independent researchers who both assessed the applicability and relevance of each paper based on the criteria that a paper would need to address FIFO/DIDO work with a focus on work and workplaces, or workers or their families. Inter-rater agreement showed that the two researchers very consistently judged the articles' relevance (Krippendorff's $\alpha = .834$).

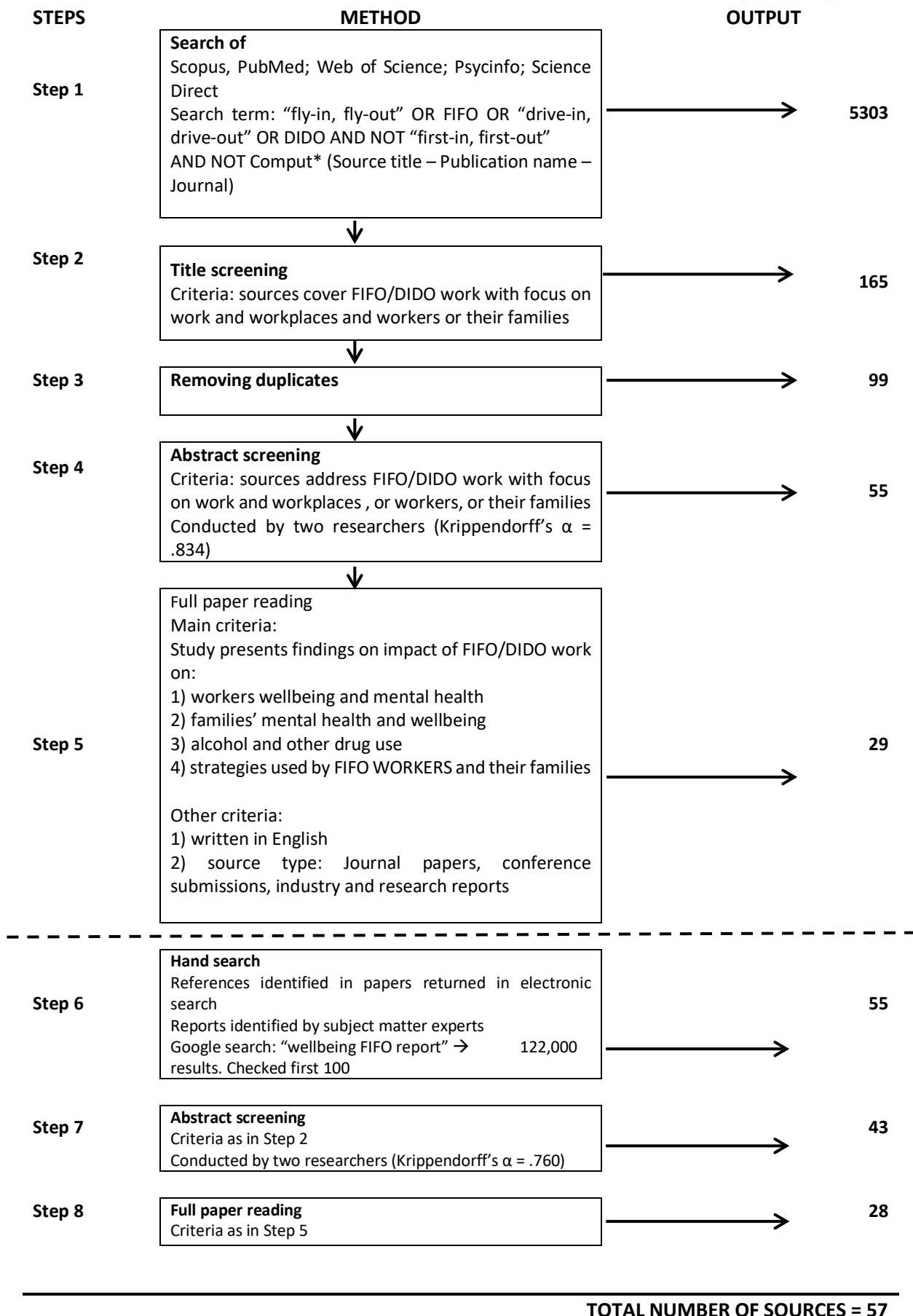


Figure 3.3. Overview of systematic literature search steps

The abstract screening resulted in 55 articles to be retained for full article reading (Step 5). While reading the full papers, researchers identified whether studies address the key evaluation questions and whether they provide research evidence with regards to these questions. It was decided to exclude commentaries or literature reviews that solely provide opinions or summarise others' findings. This decision was made to ensure that the search output would fairly represent the evidence base of unique insights. A total of 10% of the output of the electronic search was read by two researchers to check whether they would draw the same conclusions regarding paper inclusion, as well as the consistency of the specific content they would derive from the papers. Step 5 resulted in 29 papers being taken forward that complied with the stipulated criteria.

Next, starting with Step 6, the hand search was conducted. The hand search in principle followed the same process as the electronic search. The notable difference is that the initial article search was not conducted electronically. Instead, the initial search included the addition of references from the papers originally found in the electronic search, reports identified by subject matter experts and the results of a google search to find additional papers or reports. Subsequently, the same steps that were part of the electronic search were followed and the abstract screening was again done by two researchers. The researchers had a good consistency in identifying relevant papers from the abstracts with an inter-rater agreement of $\alpha = .760$. Following the abstract screening, 43 papers were retained to be fully read. While reading, the relevance of the articles and reports was again assessed and any papers that did not report empirical results were dismissed. Of the 43 papers and reports, 28 turned out to be relevant to the key evaluation questions. In total, 57 papers contained relevant information on the key evaluation questions and their results are condensed in the following sections. Two additional studies were published in 2018, bringing the total relevant papers up to 59.

3.2.1 Findings KEQ 1a: Mental health impacts/benefits and FIFO work

Thirty-three research publications, theses and reports that directly address the role of FIFO work for mental health and wellbeing were identified via the screening process outlined above (see Appendix A.1.1 for an overview of all studies included). The studies identified include interview studies (10 studies; most have smaller samples) and survey studies (18 studies) that are predominantly descriptive in their presentation of results. A small number of the identified studies are based on focus groups, company data and observations (see Figure 3.4 for overview of methods).

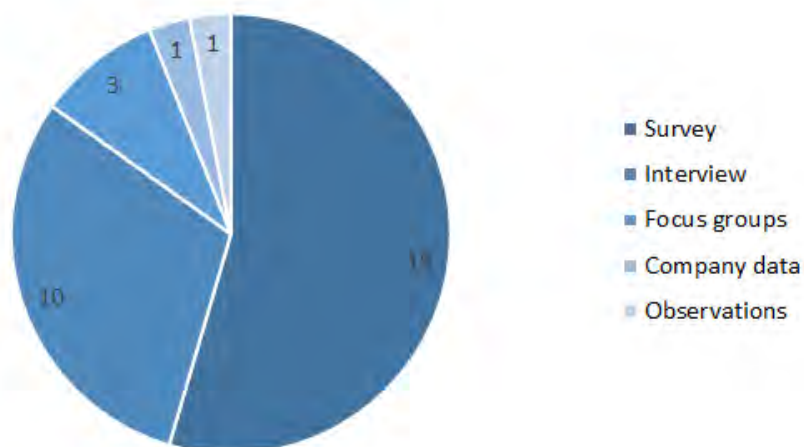


Figure 3.4. Overview of methods used in studies related to KEQ 1a

As such, the literature has progressed appropriately to the level of existing evidence in that it is mainly exploratory and descriptive. A number of studies provide evidence concerning general insights into FIFO perceptions of their workplaces and how they perceive their mental health (see Appendix A.1.1 for full study details). It should be noted that studies largely lack theoretical grounding and that the rigour of many of the studies is not at a high level.

The studies focus on a range of mental health and wellbeing attributes and also cover different FIFO work and workplace attributes. Figure 3.5 below give an overview of the issues covered.

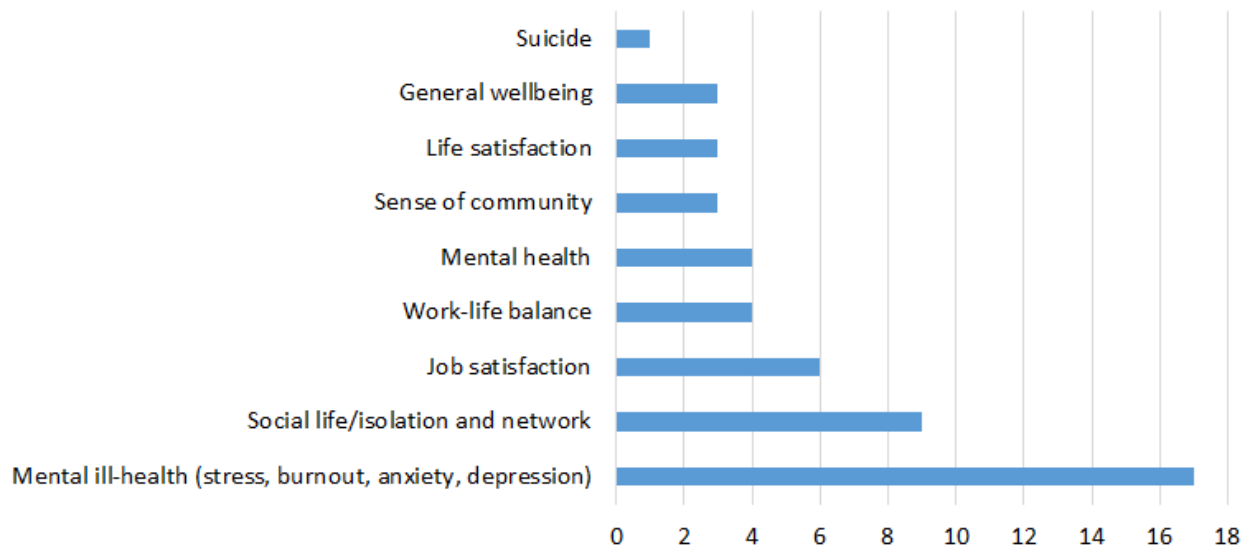


Figure 3.5. Overview of mental health and wellbeing aspects covered by studies related to KEQ1a

As Figure 3.5 shows, almost half of the studies focus on aspects of mental ill-health in FIFO workers, including stress, burnout, anxiety and depression. Other important wellbeing aspects considered in the literature are the social life of FIFO workers (i.e. social wellbeing, including having feelings of isolation and the social networks) and their job satisfaction (i.e. emotional wellbeing). Further, we identified four studies that look at FIFO workers' work-life balance and mental health. Finally, Figure 3.5 shows that sense of community, life satisfaction, general wellbeing and suicide have received only little attention in the current research.

Figure 3.6 gives an overview of the work and workplace attributes considered by studies researching mental health and wellbeing in FIFO workers. It should be noted that while these studies will often report frequencies of these attributes, they very rarely link a specific attribute with mental health or wellbeing. Studies predominantly investigate the mental health and wellbeing of FIFO workers with a focus on FIFO arrangements per se. However, 11 of the 31 studies report shift length or rosters of FIFO workers and seven consider the support FIFO workers get from the organisation, their supervisor or their co-workers. In regards to the mental health of FIFO workers, studies have also paid attention to the work demands of FIFO jobs and whether FIFO mental health may be connected to work-home conflict. Finally, studies have sought to identify to what extent aspects of mine sites (such as housing or commute distance) relate to the mental health and wellbeing of FIFO workers.

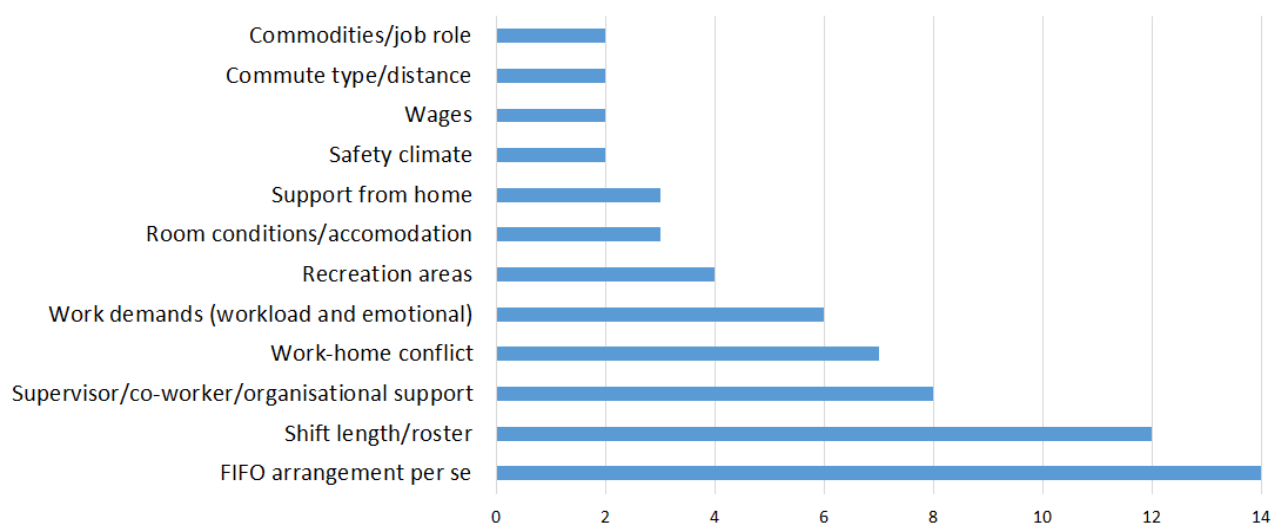


Figure 3.6. Overview of work and workplace attributes studied in relation to KEQ 1a

3.2.1.1 Comparison and descriptive studies

The articles and reports identified through the literature search mostly report negative issues concerning FIFO work in relation to wellbeing and mental health. However, findings are mixed in that some studies find FIFO workers to have worse mental health and wellbeing, better mental health and wellbeing or no difference compared to other workers. In fact, across the various facets and dimensions of mental health and wellbeing, within each study mixed results—including some negative, some positive and some neutral effects—are reported.

Therefore, the research to date does not provide definitive answers as to the role of FIFO work for mental health and wellbeing in workers. Further, most studies are not suited to drawing firm conclusions, as only a very small number of studies have directly tested the impact of FIFO work and its specific attributes on mental health. In other words, it is not clear what aspects of FIFO work and workplaces may contribute to FIFO mental health and wellbeing. Finally, a number of studies in this area suffer from poor rigour in methods, indicated by small sample sizes, use of unvalidated measures and a-theoretical approaches to the topic.

With regards to the level of mental health in FIFO workers, six studies report mental health and wellbeing in FIFO workers to be worse when directly compared to the mental health and wellbeing of workers in other forms of employment (Bowers et al., 2018; Lester et al., 2015; Considine et al., 2017; Gent, 2004; Henry, Hamilton, Watson, & McDonald et al., 2013; Sellenger & Oosthuizen, 2017). All of the studies that identified a negative effect of FIFO on wellbeing and mental health compared to other workers or populations assessed mental health using the K10 depression and anxiety measure (Kessler et al., 2002). One of the studies has a small sample size ($n = 23$) (Lester et al., 2015), however all others have samples ranging from $n = 105$ FIFO workers to $n = 1457$ FIFO workers. Overall, we assess that there are more studies in this group that also have higher methodological rigour compared to those that report FIFO workers to have better mental health and wellbeing (see below), but overall there is still a lack in rigour with respect to theoretical grounding and the validity of the measures used alongside the K10 measure.

In addition to the six studies that provide a direct comparison and find FIFO mental health to be worse, seven descriptive studies report negative impacts of FIFO work on mental health in workers.

- Out of these descriptive studies one survey study shows that FIFO workers find being away from family and missing out on important events stressful (Gent, 2004).
- The remaining six of these descriptive studies are all interview studies that have sample sizes ranging from $n = 10$ to $n = 47$, which is appropriate for the type of method used, but may not be representative of the FIFO population. The negative effects of FIFO that these interview studies report are all associated with the impact of FIFO work on the social and family life of workers. In particular, this included:
 - missing family and special occasions, including feeling depressed (Bradbury, 2011; Gent, 2004; Carter, 2008)
 - limitations in participating in hobbies or sports (Torkington, Larkins, & Gupta et al., 2011), and
 - more generally, the remainder of studies describe a general sense of social isolation and loneliness (Pirota, 2009; Sibbel, 2010).

In addition to these studies' findings, the Education and Health Standing Committee (2015) collated information on the number of suicides related to FIFO work between 2008 and 2014 and identified 24 occupations as associated with FIFO and six with FIFO specifically contained in the records obtained from the State Coroner (2014). It should be noted that the Commission found this information to not be readily available.

In contrast, out of the 33 studies that investigated FIFO mental health and wellbeing, three studies show that FIFO work is associated with better mental health in a direct comparison with those in other forms of employment or in a mining job living residentially (Bradbury 2011; Joyce, Tomlin, Somerford, & Weeramanthri et al., 2013; Velander, Schineanu, WenBin, & Richard et al., 2010). In particular, these studies found that FIFO workers are less anxious than comparison samples (Bradbury, 2011; Velander et al., 2010), and have lower scores on depression and stress (Velandar et al., 2010). These three studies are all survey studies (sample sizes range from $n = 47$ to $n = 591$) and two of them measure mental health via the Depression, Anxiety and Stress Survey (DASS-21) (Lovibond & Lovibond, 1995).

Other studies that do not provide a direct comparison of FIFO workers' mental health and wellbeing with other types of workers also report further benefits of FIFO work. Five studies describe and identify the benefits of FIFO work for worker mental health and wellbeing.

- One survey study reports that the majority of participants in FIFO employment reported good or very good mental health and above mid-point satisfaction (Barclay et al., 2013).
- One interview study reports that workers themselves describe that they enjoy the lifestyle (Torkington et al., 2011).
- Other descriptive evidence suggests FIFO work may have positive effects for mental health, originating from interview studies, all of which contain smaller sample sizes that are appropriate for the type of study and analysis chosen, but may not be fully representative of the FIFO population. These descriptive studies emphasise the benefits of the off-time that FIFO workers get during their rosters as it:
 - allows them to spend quality time with friends and family and general activities that enhance wellbeing (Bradbury, 2011; Carter, 2008), and
 - provides a clear division of work and time off (Sutherland, Chur-Hansen, & Winefield, 2017).

Finally, three studies identify no difference in the mental health of FIFO workers in comparison to other forms of employment (Bradbury, 2011; Clifford, 2009; Gent, 2004). Two of these studies also use the DASS-21 measure and one reported findings based on a general job satisfaction scale (Gent, 2004). Further, one descriptive study identified FIFO workers to have average job satisfaction and overall moderate levels of stress (Henry et al., 2013). This was a larger survey study ($n = 924$) and was assessed as showing no direct impact of FIFO work on wellbeing and mental health. Another study by Tuck, Temple, and Sipek (2013) reported the average levels of depression, stress, loneliness and anxiety to be at moderate levels in their sample of FIFO workers.

KEQ1a: A note on the mental health measures used in the literature

As noted above, comparison studies differed with regards to their findings of the level of FIFO mental health. Notably these studies also differed in the type of measure used. Studies finding more positive mental health or no difference in FIFO workers compared to others tended to use the DASS-21 measure, whereas those that report worse mental health in FIFO workers employed the K10. A number of differences in these measures might contribute to the inconstancy in findings. First, the DASS-21 measures depression, anxiety and stress, whereas the K10 measures anxiety and depression only. Second, the DASS-21 asks responders about the previous 10 days, whereas the K10 enquires about the previous 30 days. Finally, the DASS-21 measures anxiety with a focus on the physical symptoms of anxiety. The K10 does not cover these issues. Both measures overlap in their assessment of depression and the DASS-21 stress items are akin to the anxiety items in the K10. As such, we evaluate the K10 as the more valid measure in the FIFO context given that it targets a longer time frame that is likely to capture mental health more generally and across the on- and off-work phases of the roster.

3.2.1.2 Studies linking specific attributes of FIFO work with mental health or wellbeing

Next to the studies that generally describe or compare findings regarding FIFO per se, we were able to only identify three studies that directly link specific work and workplace attributes of FIFO workers with mental health outcomes. These studies are particularly useful in identifying possible work and workplace factors, as well as other factors that may affect mental health and wellbeing in FIFO workers.

A study by Albrecht and Anglim (2017) surveyed FIFO workers ($n = 52$) regarding their job resources (autonomy, support) and demands (workload, emotional demands) as well as their emotional exhaustion (i.e. burnout), and engagement over the course of one full on-site roster swing (longitudinal design). Their results show that:

- Engagement and supervisor support decline over the course of the roster, whereas emotional demand increased over time.
- Notably perceived support from supervisors, colleagues or the organisation was not associated with engagement.
- A positive link was found between autonomy and engagement (at day level) and day-level workload and emotional demands predicted emotional exhaustion. What this means is that FIFO workers who experience higher workload and higher demands are more emotionally drained each day.

Lester et al. (2015) studied distress, anxiety and depression (using the K10) in a sample of 23 FIFO workers. It should be noted that this sample size is small, so the results need to be interpreted with caution. They found that:

- roster types were not associated with level of psychological distress, and
- FIFO workers working on equal time rosters reported higher levels of distress than those on unequal time rosters (independent of whether these tend towards more days spend at work vs at home or the opposite).

Tuck et al. (2013) conducted a study using the DASS scale with a sample of $n = 157$ FIFO or DIDO workers. They found a number of FIFO workplace perceptions to be associated with lower levels of depression, anxiety and stress in FIFO workers, namely:

- satisfaction with accommodation
- satisfaction with recreation and social facilities
- satisfaction with on-site support
- satisfaction with contact with home
- perceived autonomy
- on-site sleep quality, and
- relatedness.

The latter were all linked with depression, anxiety and stress at $r \geq .40$. These findings suggest autonomy, on-site sleep quality and relatedness to be particularly relevant for mental health and wellbeing in FIFO workers.

Finally, Bowers et al. (2018) studied anxiety and depression (measured by the K10) in a sample of $n = 1124$ FIFO workers. They found anxiety and depression to be worse in workers:

- aged 25–34 years (versus workers aged 55 years or older)
- on a two weeks on/one week off roster (versus four weeks on/one week off)
- who were very or extremely stressed by their assigned tasks or job, their current relationship or their financial situation, and
- who reported stress related to stigmatisation of mental health problems.

These findings show the influence of a roster, with the four week on/one week off roster being less detrimental to mental health, and job factors having an influence on the depression and anxiety of FIFO workers as well.

3.2.1.3 Answering KEQ 1a

Three issues need to be considered when interpreting the inconsistency in findings in studies that compare FIFO workers per se with workers in other employment types. Firstly, it needs to be taken into account that the impact of FIFO work and workplaces on mental health may actually differ depending on the specific attributes of the work and workplaces. As such, specific work conditions can vary within FIFO work. The mixed findings on FIFO mental health and wellbeing in the research evidence suggests that focusing on FIFO per se may not be suited to providing definitive answers as to the ways in which FIFO affects workers. It supports the notion that to truly understand the ways in which FIFO affects workers' mental health a more refined approach towards the conditions and particular attributes of the work and workplaces is needed. In addition, we were able to only identify one longitudinal study, which means that conclusions about causality need to be drawn carefully.

Secondly, it needs to be taken into account to what extent other variables affect or modify the strength of association between FIFO work and mental health. Such variables could be the personal

attributes of the FIFO workers themselves, as these might shape the ways in which they engage with their environment.

Finally, a pattern emerged that indicates that the type of mental health measure used might possibly confound the type of effect of FIFO work on mental health and wellbeing. These findings suggest that the scales used need to be carefully scrutinised to assess their difference and relative utility in assessing mental health in FIFO workers. As pointed out, we evaluate the K10 to be the more valid measure in the FIFO context given its focus on a longer time frame that is likely to capture mental health more generally and across the on- and off-work phases of rosters.

In summary, study findings are inconsistent regarding the role of FIFO work for mental health. In part, this inconsistency reflects poor quality research designs and the use of varying measures. In addition, there is a lack of research that directly links specific attributes of FIFO work and workplaces to these outcomes. As such, it is not clear what the impact of FIFO work on worker mental health is although, on balance, our judgment based on the literature is that it is more likely to be negative.

3.2.2 Findings KEQ 1b: FIFO work and FIFO families

In relation to the impact of FIFO work on families, a total of 26 papers were identified. These studies include interview studies involving smaller samples (10 studies) and survey studies (12 studies), as well as other methods of data collection (see Figure 3.7 for overview and Appendix A.1.2 for study details). Compared to the literature of FIFO wellbeing and mental health, the studies on family mental health are stronger in their rigour and methods based on their stronger theoretical grounding, use of systematically developed and validated surveys, and larger sample sizes. However, it should be noted that they lack other features (e.g. longitudinal designs, multi-source data).

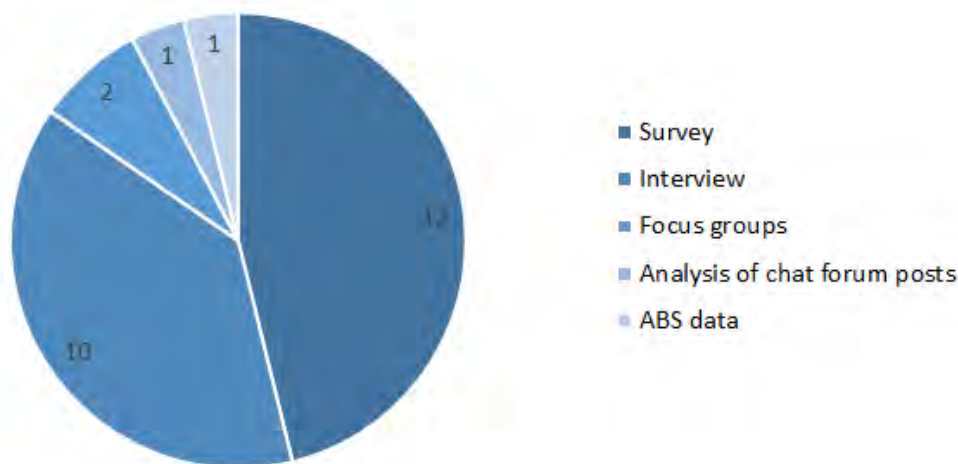


Figure 3.7. Overview of methods used in studies related to KEQ 1b

Figure 3.8 shows that family functioning is considered most frequently in relation to the impact of FIFO work on families (14 out of 26 papers in total describe this topic). Many studies look into partner mental health and wellbeing, and the work-family balance or conflict that could occur. Research also investigates the mental health and wellbeing of the children in FIFO families. Finally, only a few studies consider parenting strategies and family planning in relation to aspects of family mental health.

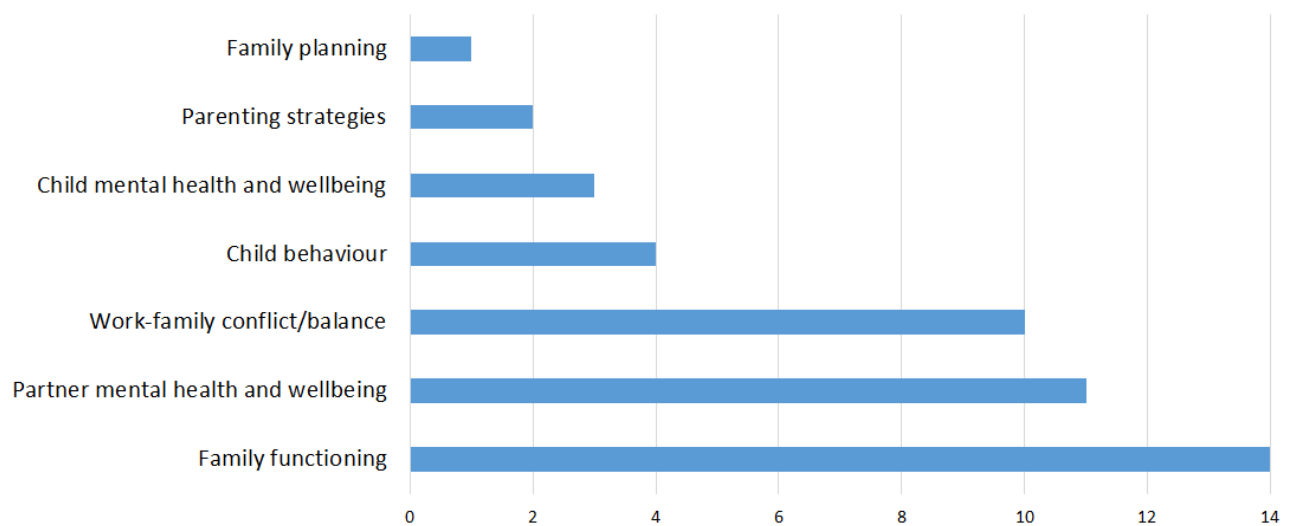


Figure 3.8. Overview of mental health and wellbeing aspects covered by studies related to KEQ 1b

In relation to the impact of FIFO work on mental health and wellbeing of families, Figure 3.9 below shows that most studies have studied this issue with a focus on FIFO arrangements per se (16 studies). The most commonly researched specific work and workplace attributes are the roster of the FIFO workers and the communication facilities that are available (respectively, 11 and 6 out of 26 studies). A smaller number of studies looked at job resources, job demands and commute arrangements and how they can be connected to the mental health and wellbeing of FIFO families.

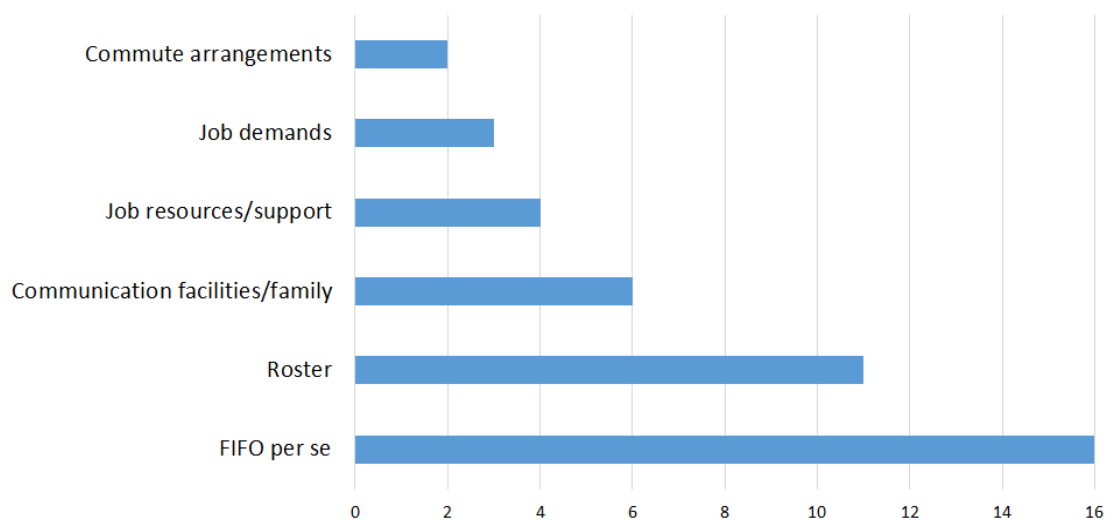


Figure 3.9. Overview of work and workplace attributes studied in relation to KEQ 1b

The papers regarding the impact of FIFO work on family wellbeing and mental health can be grouped into two topical themes. There are a number of studies that report findings with a focus on the impact on the FIFO partners and the relationships of FIFO workers with their partners. Another group of papers targets its investigation into the effects on children in FIFO families as well as the family functioning more generally. These studies are described separately here as the themes and results that emerge differ.

3.2.2.1 The impact of FIFO work arrangements on partners' mental health and wellbeing

Results regarding the impact of FIFO work on partners are mixed, although more studies report negative outcomes for partners than positive outcomes. It should be noted that findings are mixed

between studies (i.e. some studies report positive effects, others negatives), as well as within each study (i.e. the same study may report positive and negative effects for different aspects of mental health and wellbeing).

Overall, 10 studies out of the 26 identified show negative effects of FIFO on partners. Out of these 10 studies six provide a comparison with a non-FIFO partner sample, norm data or national comparison samples (Dittman, Henriquez, & Roxburgh, 2016; Lester et al., 2015; Bradbury, 2011; Gent, 2004) or compare FIFO partners with FIFO workers themselves (Clifford, 2009; Lester et al., 2015; Voysey, 2012).

The studies comparing FIFO partners to other groups show that partners are overall more stressed, depressed and anxious than

- non-FIFO partners (based on DASS and K10 comparison; Dittman et al., 2016; Lester et al., 2015; Bradbury, 2011), and
- the FIFO workers themselves (based on DASS, Clifford, 2009).

Two of these studies report:

- heightened cortisol levels (i.e. stress hormones) in FIFO partners, compared to FIFO workers themselves (Clifford, 2009)
- significant elevation of partner waking cortisol concentrations during the leave-to-work transition period compared to the stable periods of the roster; the Cortisol Awakening Response occurs within 30 minutes after waking up, and because it occurs independently of the circadian rhythm it is increasingly used as a measure of stress (Clifford, 2009)
- FIFO workers' roster and general FIFO dissatisfaction were significantly linked with partner stress (Clifford, 2009), and
- FIFO partners are particularly distressed during transition periods (before the FIFO worker heads back on site or returns) (Torkington et al., 2011, based on semi-structured interviews).

Out of the ten studies identified as reporting negative impacts of FIFO work on partner mental health and wellbeing, three studies have considered aspects of wellbeing beyond being stressed, depressed and anxious in FIFO partners (note that these three include descriptive studies as well as studies that also report comparison with other samples and will have been mentioned above). These studies consider satisfaction with rosters and relationship satisfaction.

- A study by Voysey (2012) showed that partners reported significantly lower roster satisfaction than FIFO workers themselves and that this effect occurred across all roster types. However, FIFO and partner roster satisfaction was found to be most disparate for rosters of a 21-workday length. For this type of roster, partners were particularly less satisfied than workers, who were most satisfied with a 21-day roster compared to all other roster types (assessed by asking about preferences in principle, not based on experience). Clifford (2009) reports that overall lifestyle and relationship dissatisfaction were moderately to strongly (positively) correlated with roster dissatisfaction and FIFO dissatisfaction in both partners and FIFO workers.
- Via a direct comparison, Gent (2004, using the DAS scale) identifies FIFO workers reported significantly lower dyadic adjustment, dyadic consensus and relationship satisfaction than the norm sample.

Finally, three interview and focus group studies conducted with FIFO workers and their partners all identify social isolation and loneliness as an issue that FIFO partners face (McTernan, Dollard, Tuckey, & Vandenberg, 2016; Watts, 2004; Fresle, 2010). However, social isolation and loneliness have not been considered in non-descriptive studies so it is not clear how widespread these challenges are. It is very likely that perceived loneliness is a mechanism (i.e. mediator) through which FIFO work arrangements indirectly affect distress in FIFO partners.

Out of the 26 studies identified as relevant to FIFO partner mental health and wellbeing, four studies find a positive impact of FIFO work on partners (Bradbury, 2011; Clifford, 2009; Gent, 2004; Watts, 2004). Out of these three studies, only two report a direct comparison of FIFO samples with other groups (i.e. Bradbury, 2011; Gent, 2004). Positive effects identified for the partners themselves were low self-reported levels of stress (Clifford, 2009), and partners being empowered by being on their own (Watts, 2004).

The other positive effect on partners occurs as a result of the relationships of FIFO partners with the FIFO workers themselves in that FIFO workers score higher on affectionate expression compared to DAS norm sample (Gent, 2004).

Finally, out of the 26 studies identified as relevant to FIFO partner and family wellbeing, a total of five studies show no effect of FIFO work on partners and relationships. Notably, only one of these studies concerns the partners' mental health directly and shows that partner psychological wellbeing is in the healthy range (Sibbel, 2010, based on GHQ survey norm sample).

The other four studies that show no effect of FIFO work on partners focus on the partner and FIFO relationships. These studies show that:

- relationship satisfaction is consistent with norms of married couples (Bradbury, 2011)
- relationship cohesion does not differ from norm scores (Gent, 2004)
- divorce rates are actually not different in FIFO workers compared to the general population in Australia (Greer & Stokes, 2011, based on ABS census data), and
- partner-reported relationship quality was not associated with the number of work days or the number of days off (Voysey, 2012).

In summary, although mixed, research generally points towards a negative impact of FIFO work on partners' mental health and wellbeing, and that some partners are likely to experience social isolation. Results also show that the relationship quality between FIFO workers and their partners does not differ compared to other couples.

3.2.2.2 The impact of FIFO work arrangements on family functioning and children

With regards to the impact of FIFO work on families a number of studies consider the impact on children as well as family functioning. These papers include 14 studies on family functioning, four studies that look into child behaviour and three studies that focus on child mental health and wellbeing. With regards to the impact of FIFO work arrangements on children and family functioning research is mixed, however, a small majority of findings show negative effects and these studies also tend to have a stronger methodological rigour.

Out of the studies that focus on FIFO work in relation to children and general family functioning a total of eight studies report negative effects. Four of these eight studies focus on the children themselves in terms of their behaviour and mental health. These studies reported that:

- FIFO work hours and shift length, as well as perceived impact of FIFO work on family functioning, were associated with child behavioural problems (Dittman et al., 1997).
- Fewer adolescent children of FIFO parents compared to adolescent children of non-FIFO parents were categorised in the normal range of depression (i.e. no depression). Likewise, more FIFO children were categorised within the borderline and abnormal categories of total difficulties in their study (Lester et al., 2016).
- Hyperactivity scores in FIFO children were higher than those of the norm. It should, however, be noted that the FIFO sample in this study was small ($n = 48$) (Bradbury, 2011).
- Children in FIFO families (pre-primary to 12 years old) are more likely than a comparison sample of children in non-FIFO families to be exposed to bullying, in person and via social media (Anglicare, 2013).
- Children of FIFO parents experience more pressure to succeed academically than a comparison sample of children in non-FIFO families (Anglicare, 2013).

Next to studies reporting negative issues in relation to FIFO for children, a further four studies report negative effects of FIFO on family functioning and relationships. These four studies report that:

- Family relationship quality was negatively affected by perceived FIFO impact (Dittman et al., 1997).
- Greater levels of FIFO-father absences are associated with greater perceptions of family dysfunction (stress with respect to communication, support and behaviour control within the family) reported by mothers (Kaczmarek & Sibbel, 2008), using comparison samples of military and community workers ($n = 30$ each).
- Communication, affective involvement and behavioural control were more dysfunctional in FIFO mothers than community mothers (Kaczmarek & Sibbel, 2008).
- FIFO families indicated less parental presence and family connectedness compared to non-FIFO families (Lester et al., 2015).
- Parental scores of disagreement reported by FIFO parents (rule disagreement, open conflict and parenting consistency) were significantly higher than expected norms (Bradbury, 2011).
- 56.8% of FIFO parents reported inter-parental conflict in the clinical range (Bradbury, 2011).

In addition, out of the studies that report negative issues in association with FIFO and families, three explorative interview studies describe that FIFO workers missing out on family events and children's milestones has a negative impact on families (Misan & Rudnik, 2015; Sutherland et al., 2011; Torkington et al., 2011). Misan and Rudnik (2015) also describe disruptions to family life due to the return of the FIFO worker from site. It is likely that these are issues that FIFO families experience, however, it is unclear to what extent FIFO workers and their families and children are actually affected by them.

Next, six studies were identified that report a positive effect of FIFO work arrangement on children and family functioning. Out of the six studies that report positive effects, only two directly compare FIFO families with norm families (using the FACES scale).

- The study by Taylor and Simonds (2009) reports that in FIFO families overall functioning, cohesion and flexibility scores were at a high level; satisfaction was high and communication was very good; and that, compared to norm data, the scores of the sample were a lot higher. It should, however, be noted that the authors only report mean scores and do not

consistently provide t-values, and their FIFO sample was small, so we are limited in our ability to assess the extent to which the reported differences are meaningful.

- A study by Bradbury (2011) shows that FIFO partners' attachment to their children was higher compared to a community-based sample (i.e. level of maternal care compared to PBI-R norm sample).

The remaining four studies out of those that report positive issues in relation to FIFO and children as well as family functioning are descriptive in their insights and report:

- benefits for children and partners of not having to relocate to remote locations (e.g. access to high quality education, sports clubs etc. (Misan & Rudnik, 2015; Sibbel, 2010)
- financial and other material benefits for families and children (Misan & Rudnik, 2015; Anglicare, 2013; MacBeth, Kaczmarek, & Sibbel, 2012), and
- benefits in the quality of relationship between FIFO workers and their children due to less interference from work during time off, clear separation of work and family, and the ability to spend quality time together while off work.

Finally, six studies identify no link between FIFO work and some of the children and family outcomes that they studied. Three of these studies report findings concerning family functioning and relationships that showed these aspects to be in the healthy range or identify them to not be an issue (Misan & Rudnik, 2015; Clifford, 2009; Sibbel, 2010). Another two studies report FIFO children's mental health, emotional problems, conduct problems, peer problems and prosocial issues to be within healthy norms (Kaczmarek & Sibbel, 2008; Sibbel, 2009).

In summary, research investigating the impact of FIFO work on children and family functioning is mixed. It is worth noting that the literature predominantly reports negative effects. However, there can also be positive effects, such as the FIFO parent spending high-quality time with children when at home or financial gains. In other words, it seems there are negatives and positives, with evidence of negative effects outweighing the positive outcomes.

3.2.2.3 Answering KEQ1b

In our overview of the findings on the impact of FIFO work on families, we reported findings concerned with the impact on FIFO partners, FIFO children and the overall family functioning separately. Across the two areas, similar patterns in terms of findings emerge in that results are mixed and tend towards showing negative effects. FIFO partners in particular were identified as suffering from stress and other negative effects based on FIFO arrangements. Children and overall family functioning were also affected negatively, but to a lesser extent, which suggests that FIFO partners carry a lot of the burden of FIFO work and act as a buffer towards their children. In some cases positive effects for families were noted, although we do not know how generalisable these findings are.

3.2.3 Findings KEQ 2: Use of alcohol and other drugs

A total of 18 studies were identified that present findings related to the use of alcohol and other drugs in FIFO workers. Alcohol and other drug use in FIFO workers has mostly been investigated via survey studies (used in 11 studies), followed by interview studies (four studies) and other methods, namely biological monitoring via a wrist band, census data and observations (see Figure 3.10 for overview of methods and Appendix A.1.3 for study details).

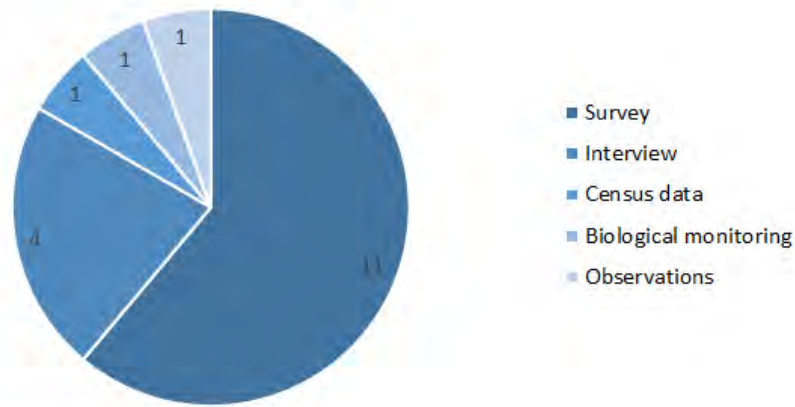


Figure 3.10. Overview of methods used in studies related to KEQ 2

As shown in Figure 3.11, studies predominantly focus on FIFO workers' alcohol use. A small number of studies also consider smoking, followed by use of illicit or prescription drugs, and caffeine.

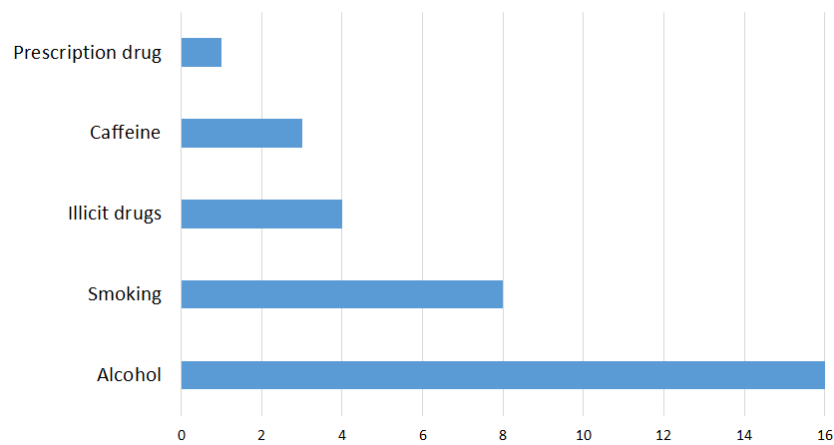


Figure 3.11. Overview of substances covered by studies related to KEQ 2

FIFO work and workplace attributes are not considered in detail in connection with different drug types, as the majority of studies focus on FIFO work per se (see Figure 3.12 below). Notably, only three studies investigate alcohol availability on site and the influence of rosters. The remaining studies also considered alcohol policies on site or different occupational groups.

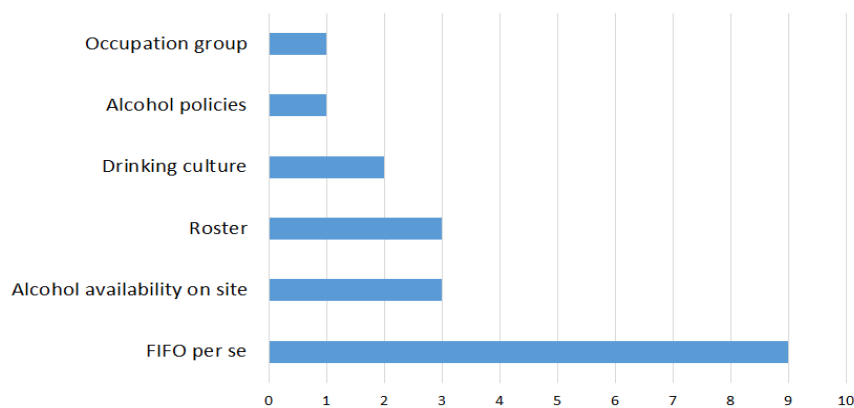


Figure 3.12. Overview of work and workplace attributes studied in relation to KEQ 2

Because of the limited amount of research concerning other drugs, we only summarise findings on alcohol use and smoking in FIFO workers. For the other drug types, insufficient information is available that would warrant a review.

Out of the studies that consider alcohol, a small majority of studies find that FIFO workers drink more than other workers or identify negative issues associated with alcohol use. No studies were identified that show a positive effect of FIFO on drinking habits. A number of studies solely describe the alcohol use habits of FIFO workers (Barclay et al., 2013; Muller, Carter, & Williamson, 2008; Paech, Ferguson, Banks, Dorrian, & Roach, 2014; Perring, Pham, Snow, & Buys, 2014; Carter, 2008; Gallegos, 2005; Henry et al., 2013; Tynan et al., 2017; Velander, 2010) or compare the amount of drinking on- and off-site (Tuck et al., 2013). Some of the descriptive studies identify high numbers of FIFO workers drinking at an at-risk level—45.7% of male and 17.0% female FIFO workers (Tynan et al., 2017)—and that one in four FIFO workers drank at binge-drinking level (Velandar et al., 2010).

A direct comparison of FIFO workers with other employment types was carried out by three studies, all of which find that FIFO workers consume more alcohol than others (Clifford, 2009; Dittman et al., 2016; Joyce et al., 2013).

- Dittman et al. (2016) report greater levels of problematic drinking in FIFO workers compared to a community based sample. However, it should be noted that their FIFO sample was small ($n = 52$) so may not be fully representative of the FIFO population.
- Joyce et al. (2013) only report percentages for their results, so it is not clear to what extent the difference identified is statistically meaningful.
- Clifford (2009) found FIFO workers to be significantly more likely to drink at long-term risk levels than Australian men (compared to Drug and Alcohol Office statistics 2007).

In addition to these three studies, a fourth study also reports that both FIFO workers and shift workers more often indicate drinking more than two or four alcoholic drinks per day than other employment types (Joyce et al., 2013). With regards to this finding, it needs to be considered that only the prevalences are reported and no statistical comparison. Without a statistical test of the differences it is hard to interpret the differences that are reported.

Out of the studies that report negative issues in relation to FIFO work and drinking, a number of studies do not provide a direct comparison of FIFO workers with other workers. These studies describe the level of alcohol consumption and also report negative impacts of alcohol use on FIFO workers. They report that:

- the number of on-site alcohol outlets in mining camps predicted assaults (domestic and non-domestic), determined through a census-based study (Gilmore, Liang, & Chikritzhs, 2016)
- FIFO workers ($n = 11$) describe non-drinkers as not fitting in and that the wet-mess is often the sole place for socialising (interview study by Torkington et al., 2011), and
- approximately one quarter of male employees drank at moderate or high short term and long-term risk levels during the leave period (Clifford, 2009).

Two studies report findings regarding drinking habits during work periods on site. They find that:

- FIFO workers were no more likely to engage in moderately- or highly-risky drinking patterns during the work period compared to a sex-matched national community sample (Clifford,

2009). It should, however, be noted that the comparison sample used by Clifford is very small ($n = 19$).

- FIFO workers consumed more alcohol at home than on site. This might be because a number of participants worked on sites where alcohol was not allowed or where restrictive alcohol policies were in place (Tuck et al., 2013).

It should also be noted that one study reports that the mean weekly alcohol consumption in FIFO workers was not significantly related to age, roster, occupation group or work experience (Clifford, 2009).

A number of interview studies identify drinking culture as an issue that FIFO workers recognise in their work and workplaces in relation to alcohol consumption (Gallegos, 2005; Henry et al., 2013; Perring et al., 2016). Two studies also considered the alcohol availability on site in relation to alcohol use of FIFO workers (Barclay et al., 2013; Sibbel, Kaczmarek & Drake, 2016). These studies report that:

- 77% of the FIFO workers had access to a wet mess on their site, but only 35% rated it as important (Barclay et al., 2013), and
- 56% of FIFO workers indicated that they were satisfied with having a wet mess and the range of alcohol that was served there was satisfactory to 51% of the workers, although compared to the issues on the quality of the food, the range of alcohol available was viewed as least important (Sibbel et al., 2016).

It should also be noted that the Education and Health Standing Committee (2015) identified that drinking may be used as self-medication by FIFO workers and that the mentality exists that workers deserve a drink at the end of the day because of tough work conditions. This observation was made based on information provided by mental health professionals. The committee also found that FIFO workers may tend to engage in drinking on rostered days off in which they do not return home, as there is a sense that there is “nothing else to do on site”.

Roster types were taken into account as a possible influencer of drug use by two studies.

- One of these studies (Paech et al., 2014) does not identify the actual influence of the roster on drinking habits of workers, they merely describe roster occurrence and alcohol use without linking them.
- The other study that considers roster types reports that the mean weekly alcohol consumption had no relationship with the type of roster, age, occupation group or work experience (Clifford, 2009).

A total of eight studies considered smoking in FIFO workers. Seven of these studies use survey methods and one was based on biological monitoring. These studies are predominantly descriptive and identify the prevalence of smoking in FIFO (Barclay et al., 2013; Muller et al., 2008; Paech et al., 2014; Henry et al., 2013; Velander et al., 2010). A number of studies identify the prevalence of smoking compared to the wider Australian population and found FIFO workers to be within bounds of these statistics (Clifford, 2009; Joyce et al., 2013). Joyce et al. (2013) report the number of FIFO workers who smoked to be almost identical to those who worked in shift work and to be higher than those who work in other types of employment. Finally, Tuck et al. (2013) note that FIFO workers tend to smoke more during their time on site compared to when they are on leave. Three of the

identified studies also considered other types of drugs, including prescription drugs (Barclay et al., 2013), caffeine (Paech et al., 2014; Henry et al., 2013), and illicit and recreational drugs (Carter, 2008; Clifford, 2009; Gent, 2004; Tynan et al., 2017). All of these studies are descriptive, which means that it is not clear to what extent smoking is related to FIFO workplace attributes.

3.2.3.1 Answering KEQ 2

Despite a very limited evidence base, studies on the use of alcohol and other drugs in FIFO workers illustrate the drinking habits and drug use patterns of FIFO workers, thereby partially answer KEQ2. Studies predominantly focus on alcohol use and a small majority of studies find that FIFO workers drink more than other workers or identify negative issues associated with alcohol use. It needs to be recognised that these studies are predominantly descriptive and focus on the prevalence of alcohol use. Notably, no study was identified that suggests FIFO workers drink less than other individuals. Further, only one study directly tests the link between FIFO work attributes (i.e. roster, occupation group and work experience) with alcohol and other drug use, which suggests a need for a more refined investigation into the ways in which FIFO work and workplaces affect FIFO workers' level of drinking and drug use.

3.2.4 Findings KEQ 3: Strategies used by FIFO workers and families

As shown in Figure 3.13 below, 25 studies were identified as reporting findings concerning strategies FIFO workers and their families use to reduce the mental health impact of FIFO work. Most of the research on this topic has been done via surveys (11 studies) and interviews (11 studies). Two studies used focus groups and one study included an analysis of chat forum posts made by FIFO partners (see Appendix A.1.4 for study details).

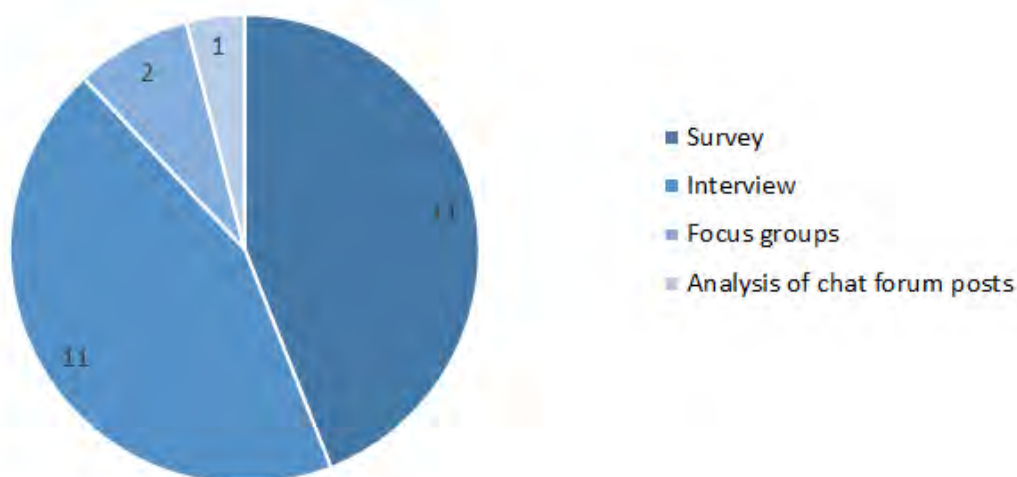


Figure 3.13. Overview of methods used in studies related to KEQ 3

As with the previously described research, findings reported on strategies are largely descriptive and not rooted in theory. In fact, our overview of the identified papers suggested to us that this area of research is particularly ill-structured and does not warrant a systematic review, as the focus and results are somewhat scattered and no coherent or recurrent themes could be identified. To our knowledge, no study exists that investigates the effectiveness of the various strategies in a FIFO context covered by the literature, thus it was not possible to provide a systematic analysis of the research. Rather, we identified three key themes that were raised:

- strategies employed by FIFO workers themselves individually
- strategies offered by companies, and
- strategies used by families.

3.2.4.1 *Strategies used by individual FIFO workers*

Strategies used by individual FIFO workers largely concerned coping strategies that they themselves engage in. For example, Henry et al. (2013) report that FIFO workers engage in various coping strategies, including accepting, avoiding, adapting, distracting and compromising. A number of their participants mentioned that they do not cope well and expressed a sense of powerlessness in being unable to change their situation. Bailey-Kruger (2012) identifies three psychosocial strategies that female FIFO workers use, namely embracing an identity that would allow them to fit in more readily, recognising the importance of getting along and maintaining positive relationships on site, as well as taking time away from colleagues to find some solitude away from colleagues and work topics.

A study by Barclay et al. (2013) reports valuing privacy as a strategy that FIFO workers recognise as positive for their mental health. Also, Carter (2008) notes that FIFO workers report that focusing on a routine helps them to cope while at work and that not thinking about what is going on at home can help to prevent them being upset about missing social or family occasions. They also aim to overcome these issues through regular contact with their partners. Notably, a paper by Tynan et al. (2016) systematically identifies the frequency with which FIFO workers rely on professional and non-professional contacts in their coping. Professional contacts that Tynan et al. consider are: drug and alcohol counsellor, psychologist, mental health nurse, psychiatrist, social worker, general practitioner, specialist doctor or surgeon, or chemist. Non-professional contacts they consider are: clergy, complementary therapist, friend or family. Gardner et al. (2018) found that FIFO workers cope by managing the multiple roles they have (on site and off site) and by maintaining support from family members.

3.2.4.2 *Strategies offered by companies*

Next, the research in this area describes some of the strategies on offer from companies. For example, a paper by Ebert and Strehlow (2016) investigated chaplaincy services and report that they provide relief from psychological discomfort. They identify that trust and confidentiality are key factors to the effectiveness of these services.

Misan and Rudnik (2015) report that FIFO workers were appreciative of company or management practices that acknowledged their distance to home and the difficulties involved with being far away from home. For example, companies providing support in case of family issues and allowing them to go home with short notice if necessary were valued and policies allowing workers to keep mobile phones were seen as a positive.

A study by Henry et al. (2013) also reports that most participants were aware of an Employee Assistance Program (EAP), but that only a minority had used EAPs. Notably, no research exists that explores why FIFO workers may not want to use these services. Other supports participants reported as available to them included nightly meditation, on-site safety officer and supervisors, managing lifestyle and fatigue courses, peer-support programs, personal trainers, on-site chaplains, unions and men's groups.

Voysey (2012) reported that most FIFO workers in their survey study were aware of EAPs but mostly relied on family and friends for support. Similarly findings by Sellenger and Oosthuizen (2017) show that the least popular coping methods of FIFO workers during difficult times were to contact the

EAP, speak to a medical professional and contact a mental health support group. On the contrary, the most popular coping methods were to contact family members and keep to self (not engage with anybody) and engage in positive thinking.

One paper also describes family days on site as useful opportunities for family members to experience the realities of the FIFO life (Haslam-McKenzie & Hoath, 2016). In another paper it was found that most participants felt organisational support to be lacking, tokenistic or stigmatised (Gardner et al., 2018).

3.2.4.3 Strategies used by families

Finally, with regard to strategies used by families, most focus on regular communication and the various strategies that are employed in relation to communication.

Most studies just generally mention communication as important (e.g. Torkington et al., 2011; Bradbury, 2011; Carter, 2008; Gallegos, 2005; MacBeth et al., 2012; Sibbel, 2010; Colquhoun et al., 2016; Fresle, 2010; Sellenger et al., 2017; Gardner et al., 2018). Notably, one study reports that family satisfaction was strongly associated with effective communication (Taylor & Simmonds, 2009). Further, Lester et al. (2015) report that FIFO workers value open and meaningful communication with their partners and children while they are on site and that they tend to prepare questions and topics that they can cover with their children.

One paper specifically explored to what extent FIFO families considered access to parenting programs a helpful coping mechanism (Dittman et al., 2016). Other studies generally identify social support networks as useful for family coping with FIFO (Fresle, 2010; Lester et al., 2015; Sibbel, 2010). Studies also cover such support via online forums (Pini & Mayes, 2012) and specifically identify community groups such as mother groups, play groups or sports clubs (Sibbel, 2010).

3.2.4.4 Answering KEQ 3

In summary, studies to date report some of the strategies used by some FIFO workers and their families, but it is not clear how widespread their use is and to what extent these actually work. No systematic evidence on the effectiveness of strategies employed by FIFO workers and their families to overcome the issues associated with FIFO work can be identified from the literature. As general themes, studies have identified strategies employed by FIFO workers themselves individually, strategies offered by companies and strategies used by families. More systematic research is needed that can help identify the effectiveness of these strategies more directly.

3.2.5 Additional topics that emerged from the literature search

During the systematic literature review 59 papers were identified as relevant in relation to the key evaluation questions concerning the mental health and wellbeing of FIFO workers and their families, alcohol and other drug use, and the strategies used by FIFO workers and their families to reduce the potential impact of FIFO work on mental health.

All articles were analysed with a focus on these three key evaluation questions. However, three further key themes emerged from the review that are relevant to FIFO work and that have been suggested to us by the reference group. As such, they do not align directly with the three key evaluation questions. However, these themes are important to identify as they recur in the FIFO literature and could provide relevant topics for future research. In particular, we identified issues on the topics of fatigue and sleep, physical health and suicide.

3.2.5.1 *Fatigue and sleep*

Fatigue and sleep issues were identified as recurring topics in multiple studies (17 studies). Most of the studies report anecdotal evidence from individual FIFO workers, or reported percentages of employees experiencing fatigue or sleep deprivation. Most studies suggest fatigue and sleep as being issues for FIFO workers.

For example, one survey study (Barclay et al., 2013) finds that the majority of FIFO workers reported having sleep disturbances. The median hours of sleep on site was 6.5 hours, and off-site was eight hours, according to a diary and survey study conducted by Muller et al. (2008). A study by Tuck et al. (2013) showed that participants get more sleep when at home than on site and that the quality of sleep was better for participants when at home than on site.

Clifford (2009) found that 30% of day shift employees reported being very tired—to the extent that it was difficult to perform activities or stay awake—at least once per week while working day shifts. Half of all rotating shift employees were very tired after their first night shift and 35.4% were very tired between night shifts. However, she found no significant differences in fatigue between employees (although they worked compressed rosters) and their partners in the work periods or leave periods. In this study, fatigue was not related to commuting arrangements, occupation groups or rosters amongst employees.

One study suggests that it is possible to intervene to improve fatigue by changing rosters. Specifically, Devine, Muller and Carter (2008) reported the impact of a management initiative to address fatigue management on site. They monitored staff perception changes as part of a larger intervention via focus groups conducted between 2011–2015 at a single mine site ($n = 123$ across 22 focus groups). In initial focus group meetings staff had identified that roster patterns, combined with sleeping difficulties on site, caused fatigue at work. Based on this feedback, management changed rosters to a 10-day shift. These changes were perceived to have improved fatigue issues. Following additional consultation, another change was made to an 8-day shift that staff felt significant improvement to the issue of fatigue and generally had a positive influence on overall health and wellbeing. This study does not report direct links of roster patterns on mental health. However, through the interventions and changes the impact of rosters on fatigue perceptions can be derived.

3.2.5.2 *Physical health*

The physical health of FIFO workers is another noticeable theme beyond the core scope of the key evaluation questions. The physical health of FIFO workers has been part of some of the studies that were identified during the systematic literature review. Overall, results are somewhat mixed.

A study by Barclay et al. (2013) shows that the majority of participants (75%) reported overall good or very good levels of physical and mental health, although in Barclay's study (2013) 45% of respondents reported themselves as being overweight. According to Barclay et al. (2013) this is in line with the Australian population average as described by the ABS (2012), where 55% of females and 74.1% of males in the 35- to 44-year-old age bracket are either overweight or obese.

Other studies had less positive results and reported FIFO workers as having a high chance of being overweight. Joyce et al. (2013) found that FIFO workers were more likely to be overweight or obese compared to other employment types. Another study indicated that male employees had higher BMI values than a comparison sample of Australian men (Clifford, 2009). However, her study found no differences between the BMI values of either female employees or female partners and a comparison sample of Australian women. Velander et al. (2010) also looked at obesity and writes

that 66.9% of their sample was overweight or obese, which is above percentage of 56.2% for rural and remote Australians of 15 years and older. Males were also twice as likely to be overweight compared to females in their study.

In summary, studies point to physical health as also being a relevant research subject concerning FIFO workers. This topic is likely to be relevant for future research.

3.2.5.3 Suicide

Suicide is an issue that is critical when considering FIFO mental health. The final report of the inquiry of the Education and Health Standing Committee into the impact of FIFO work practices on mental health (2015) shows that it is not easy to find clear and reliable data on the number of suicides amongst FIFO workers. The committee had to gather information from different sources, such as regulators, the coroner, the WA police and the industry itself. Injuries and deaths on the worksite must be reported to the Department of Mines and Petroleum (DMP), however, it is unclear whether a suicide in a FIFO accommodation of an employee not working on their shift should also be reported to the DMP. Also, suicides that occurred at home or away from the mine site will not be part of the information the DMP has available. The Coroner of Western Australia had information, but here it was felt that underreporting might be an issue. In summary, it wasn't possible for the committee to obtain a definitive number on suicides by FIFO workers.

As the work by the commission suggests, information, let alone research on FIFO suicide, are not readily available. Suicide among FIFO workers is mentioned as a concern in papers and reviews, and it is an important aspect to consider further in relation to FIFO employees. Besides the difficulties in obtaining numbers and comparing them to the Australian population, it is also inherently difficult to conduct research into suicide. We propose a focus for future research on investigating leading indicators of suicide, such as intent to commit suicide, stress and depression, extreme alcohol and other drug use, and feelings of loneliness or isolation.

A note on study methods and rigour

Throughout the summaries presented in the systematic literature review we have noted the fact that much of the research in the area of FIFO mental health is exploratory, with many studies being qualitative rather than quantitative, focusing on small sample sizes and in many cases lacking theoretical grounding. These issues have previously been noted by the Education and Health Standing Committee (2015) in its inquiry into FIFO mental health and have also been recognised by other researchers. For example, Albrecht and Anglim (2017) note that research in this area has been *“largely descriptive rather than inferential, and provides only limited insight into the factors that influence or cause FIFO worker wellbeing, burnout, and distress”* (p. 2). It needs to be acknowledged that exploratory work has its place in the research process and is very useful in mapping out the problem space and in identifying the specific research questions that need to be addressed.

Nonetheless, moving on from this exploratory phase, a more targeted focus via systematic quantitative research is needed. As part of this we identify a need for a theoretically-grounded model of the ways in which FIFO work can influence mental health and wellbeing. In the next section of this report, we take steps towards building this kind of model via a review of work and workplace factors that have been shown to have an impact on employee mental health more generally and via subject matter expert ratings of the applicability of these factors to FIFO mental health and wellbeing.

3.3 Psychosocial risk factors and wellbeing and mental health at work

One strategy for understanding FIFO work and mental health and wellbeing is to directly compare the mental health of FIFO workers to others, as carried out by some of the studies reviewed above. This strategy focuses on identifying whether the mental health of FIFO workers is worse, the same as or better than a group of similar, non-FIFO workers. This strategy has value for shining the light on FIFO workers as a group worthy of dedicated attention, but it does little to help identify what can be done to improve the mental health and wellbeing of FIFO workers.

In fact, the research into FIFO mental health and wellbeing has predominantly generated results that can be summarised as providing a black box view of the impact of FIFO workplaces on FIFO wellbeing (see Figure 3.14 below). Studies suggest that it is very likely that FIFO work has a negative effect on various outcomes, however, they leave unanswered how exactly this negative effect comes about. We propose that, in order to fully understand the role that FIFO work has for worker mental health and wellbeing, this black box needs to be opened.

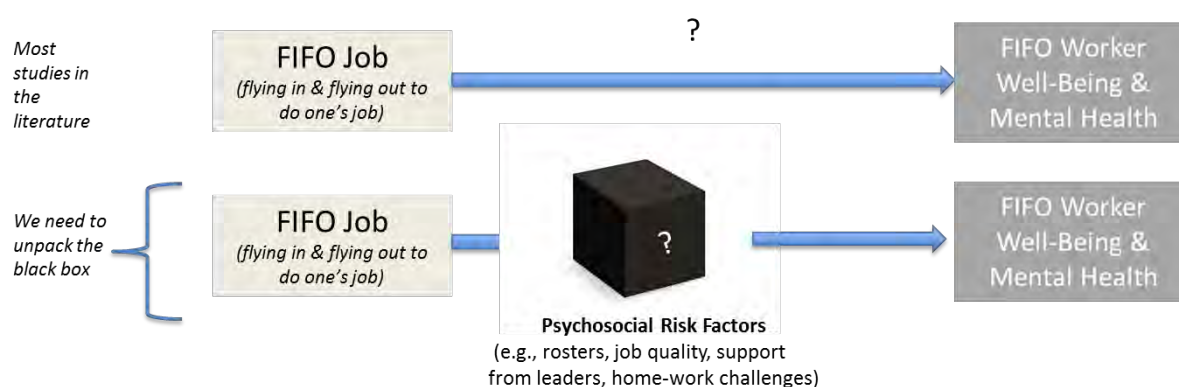


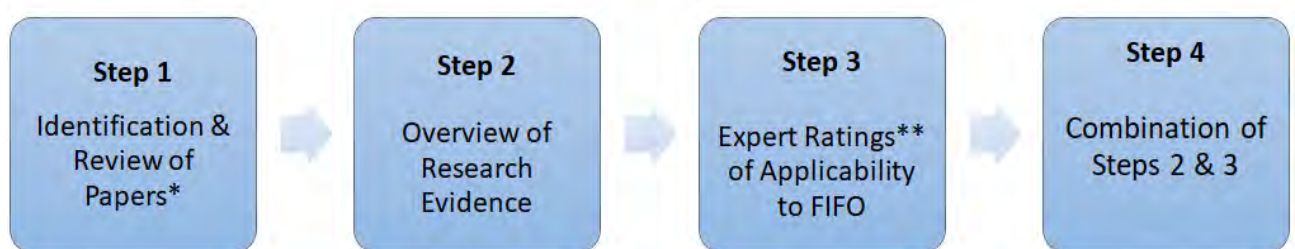
Figure 3.14. The Black box model of FIFO work and wellbeing

Opening the FIFO workplace black box means adopting an alternative and complementary approach that recognises that *work factors (e.g. leadership, rosters, job design) affect the mental health of all employees*, and therefore there is value in seeking to identify which work factors pose especially salient risks to FIFO workers' mental health, as well as how these work factors interact with individual and family attributes (Parker & Griffin, 2015; National Mental Health Commission and the Mentally Healthy Workplace Alliance, 2014).

From this perspective, research into work and workplace factors related to mental health and wellbeing in FIFO workers needs to be grounded in previous research and be specific to the context of FIFO work. Accordingly, we reviewed literature on the impact of work on wellbeing and mental health more generally to build on the wider knowledge in this area, while also recognising the specificity of the FIFO work context. Building on this literature, we work towards a research model that can provide a theoretical foundation for future research into FIFO worker mental health and wellbeing (i.e. filling and opening up the FIFO black box). We worked towards this goal as follows (see Figure 3.15).

Firstly, we considered what work and other factors are central to our understanding of wellbeing and mental health in relation to work more generally. It is very likely that these factors will also have a role to play in shaping FIFO wellbeing and mental health.

Secondly, there may be factors that have been overlooked in the general literature on work-related wellbeing and mental health, but that nonetheless are likely to have an impact on FIFO wellbeing and mental health. Similarly, some factors may vary in their relevance when viewed in a FIFO-specific context. In sum, we assessed the relevance of each factor based on 1) the existing evidence that speaks to their relevance and 2) the centrality of each factor to FIFO wellbeing and mental health. These two criteria were assessed following a process outlined in Figure 3.15. Through this process, we work towards building a model that can guide future investigation into FIFO work and workplace factors, and their link with mental health and wellbeing.



* Reviews and meta-analyses only, **Members of the reference group

Figure 3.15. Outline of thematic review process

3.3.1 Job design and other work features

The actual work that a FIFO worker conducts and the characteristics of the job are likely to affect their mental health. After all, workers spend significant amounts of time carrying out their work duties and the job itself is a key aspect to the FIFO work.

3.3.1.1 Rosters

In the context of FIFO work we evaluate the impact of FIFO roster patterns on worker wellbeing as key. There are currently no meta-analytic reviews that summarise the effects of roster characteristics on either wellbeing- or performance-related outcomes and, as such, there is arguably not enough scientific evidence to strongly substantiate claims that FIFO rostering negatively impacts employee wellbeing or productivity, or to make highly informed decisions about optimal roster characteristics.

We note that a quantitative summary of empirical evidence is hindered by the high variability in roster characteristics across industries and countries (Parkes, 2010). For example, a wide range of roster schedules with multiple combinations of roster lengths, work-leave ratios, night shift rotations and shift start times exist. Such a high variety of input variables leads to very few (if any) available studies on specific and comparable roster configurations hindering our (and other researchers') ability to draw firmer conclusions based on the evidence within the academic literature.

Research conducted specifically in the Australian mining sector is even scarcer and, in some cases, methodological weaknesses in the reported studies require the results to be interpreted with caution.

A chapter by Sibbel, Kaczmarek and Drake (2016, reporting data from 536 FIFO workers) shows that the most common rosters of FIFO workers in Western Australia were 2/1 weeks and 4/1 weeks. The most preferred rosters were, however, 8/6 days and even time rosters of 2/2 weeks. A comparison of FIFO workers on three types of rosters (time away from home = 14 days, < 14 days or > 14 days) revealed no difference in the level of stress experienced.

One comprehensive review into European offshore working time and its relation with performance, health and safety was that conducted by Parkes (2010). The review was based primarily on studies in the oil and gas industry and concluded that there was no clear evidence of adverse effects of longer low-compression rosters (three weeks on/three weeks off compared to two weeks on/two weeks off) beyond a weak trend of reduced alertness. There was also some evidence supporting an increased ratio of severe accidents in the third week.

Research shows that rosters can have an effect on employee attitudes. This might have further implications, as Clifford (2009) found that employees who are dissatisfied with their roster also planned to quit FIFO work in a nearer future than those who were satisfied. However, it should be noted that the findings regarding roster length are mixed and do not provide clear answers as to what an ideal roster length is. There is substantial evidence that night shift work has a negative impact on performance and increases the likelihood of negative wellbeing outcomes for individuals, both in the short-term and long-term (e.g. Parkes, 2010). Accordingly, we evaluate shift work patterns as a critical variable in relation to FIFO wellbeing.

Overall, the existing evidence does not support clear advantages for any particular roster pattern. The most systematic outcome is negative attitudes toward longer and more compressed rosters as well as overall preferences for rosters involving spending shorter periods of time at work and for more balanced recovery times. Rosters likely affect workers' experience of FIFO work as they set the framework within which workers experience their work (e.g. prolonged exposure to possibly bad work design), and can also affect experience of family and social life.

3.3.1.2 Shift Patterns

Another important aspect of FIFO work is the number of hours that employees work within one shift. Research on the relationship between shift length and wellbeing or performance outcomes clearly emphasises the negative consequences of shifts of 12 hours or more. Shifts of 12 hours or more have been found to increase fatigue significantly and are associated with higher rates of occupational injury or illness.

For example, Parkes (2010) in her review describes a large-scale study conducted by Dembe, Erickson, Delbos and Banks (2005), showing that overtime schedules, followed by schedules with extended hours/day (≥ 12 hrs), followed by schedules with extended hours per week (≥ 60 hrs) presented the greatest relative risk for occupational injuries or illnesses respectively. It's important to note here that these three risk factors could be encountered all at once in FIFO work. Dembe and colleagues (2005) reported that the risk of injury increased with the increasing length of the work schedule, even after controlling the total amount of time spent 'at risk' for injury. Also, this was not found to be impacted by riskier work conditions. The authors concluded that long working hours indirectly precipitate work accidents by inducing fatigue or stress in affected workers.

Further support for the increased risk of injury with increased shift length comes from a more recent review by Niu and colleagues (2011), which supported the idea that after working over 12.5 hours the risk of making an error is almost doubled (OR=1.94).

Furthermore, working extended hours can negatively impact on the employees' recovery for the following shift. Härmä, Sallinen, Puttonen, Salminen and Hublin (2008) suggest that if the time off between shifts is less or even close to the average sleep needed (7.5 hours), full recovery is not possible. The FIFO environment may present challenges for achieving the sleep required for recovery. Some evidence has shown that employees working and living in an Australian FIFO mining

operation averaged only six hours of sleep while on site, which is less than has been reported in offshore settings (Ferguson, Baker, Lamond, Kennaway, & Dawson, 2010).

A particular aspect that we would like to highlight here is related to the issue of transition times that might in some conditions actually prolong the amount of hours an employee works. In her review of the offshore work schedules, Parkes (2010) highlighted that the transitions to/from work at the beginning and end of each work tour might represent particularly sensitive periods. For example, having to travel long distances back home without an appropriate rest period has been associated with an increased risk for road accidents, especially if travel happens immediately after 12-hour night shifts. Similarly, having to drive at very early times to catch morning flights has also been associated with an increased risk for road accidents. The same review highlights that sometimes not enough recovery time is allowed after employees arrive at the work site and that if they go straight into 12-hour shifts they might experience increased fatigue, including the risks associated with it. Finally, in the same vein, Parkes (2010) highlights that commonly, the transition times to and from work accommodation, as well as handover procedures, might not be officially included in the 12-hour shift, despite requiring vigilance and effort from the employees; Parkes notes these activities do not constitute real recovery time. These additional activities might increase the workload well beyond the maximum 12 hours, which the research reviewed here indicates to be highly problematic.

Overall, evidence points to serious concerns for shifts that go beyond 12-hour work days, with shifts beyond 12 hours having negative outcomes for both employee wellbeing and performance.

Companies using 12-hour shift schedules need to carefully manage overtime and also consider the transition times (e.g. travel to accommodation, handovers) that could extend working hours beyond 12 hours.

3.3.1.3 Job Demands and Resources

We propose that the Job Demands—Job Resources Model (Bakker & Demerouti, 2007) is useful to understand both the effects of concurrent demands as well as how resources inherent in the workplace could buffer these effects (see also Safe Work Australia’s principles of good work design, 2017).

Job demands are aspects of the job that require sustained mental, emotional or physical effort or skills to deal with. Key job demands are as follows:

- Role conflict: Having conflicting or incompatible expectations or work goals.
- Role ambiguity: Being unclear about exactly what is expected to carry out one’s work well.
- Excess work load/role overload: A result of being under time pressure and having too many commitments and responsibilities.
- Unfavourable physical environment: Working in extreme temperatures, noise levels, lighting conditions.
- Emotionally demanding interactions with clients: Having to display positive emotions, which may require masking other forms of emotions.

Job resources represent those psychological aspects of work that are functional in achieving work goals and/or that reduce the negative effects of job demands. Key job resources include task significance, support, autonomy or rewards). It should be noted that most factors included in this section of the report fall within the categories of this theory more generally. Key job resources can include:

- support: availability of helping relationships and the quality of those relationships
- autonomy: being able to decide on aspects of a task and to control stressors
- feedback: receiving evaluative or corrective information about an action or performance, and
- task significance: judgments that one's job has a positive impact on other people, etc.

A number of meta-analyses and reviews have been published regarding the effects of job demands and job resources. Because of the large evidence base that is available we only include meta-analyses on the topic of demand and resources variables.

Stansfeld and Candy (2006) meta-analytically reviewed longitudinal studies (≥ 12 months) that covered work design factors in relation to phobic anxiety disorders, other anxiety disorders, obsessive-compulsive disorder, depressive episodes, recurrent depressive disorder, persistent mood disorders, other mood disorders and unspecified mood disorders. The studies had to either only include samples free of mental disorders or control for the initial level of mental health issues at the study onset. Stansfeld and Candy (2006) considered decision latitude, decision authority, psychological demands, job strain (the combination of high demands and low decision latitude), work social support measured as the quality of interpersonal relationships at work, the combination of high efforts and low rewards, and job insecurity. They identified 11 papers as fulfilling their criteria and as suitable for meta-analytical analysis. Their meta-analysis reports odd ratios for the risks of having the above listed mental disorders, depending on the work-design factors, and in so doing computes the risk of having a mental disorder by comparing mental health scores for those with the highest level of exposure to a work design factor and the lowest exposure to a work design factor. They find both decision latitude ($OR = 1.23$) and decision authority ($OR = 1.23$) to be moderately associated with mental health issues. The odds ratio for having a mental health disorder depending on job demands is reported to be $OR = 1.39$. Overall, the authors conclude that there is a moderate risk of mental disorder in association with these workplace attributes.

Another meta-analysis of 129 studies by Nahrgang, Morgeson and Hofmann (2011) considers job demands and resources in relation to burnout. Results showed that both physical risks and hazards, and complexity ($r_c = .28$, $r_c = .24$, respectively) but not physical demands were positively associated with burnout. Further, physical demands and job complexity were found to be significantly related to satisfaction ($r_c = -.44$, $r_c = -.36$, respectively). They also found decision-making authority, which represents a resource, to be negatively associated with burnout ($r_c = -.39$).

Crawford, LePine and Rich (2010) report meta-analytical findings that show a positive link between job demands and burnout ($p = .27$) based on 55 articles. Positive links were also found when the authors divided demands into challenges and hindrances. Job resources were found to have a negative relationship with burnout ($p = -.27$).

Finally, Alarcon (2011) reports meta-analytic findings based on 231 samples. He finds that role ambiguity ($\rho=.32$), role conflict ($\rho=.53$) and workload ($\rho=.49$) were all positively related to emotional exhaustion. On the contrary, control ($\rho= -.26$) and autonomy ($\rho=-.24$) were negatively linked with emotional exhaustion.

Role clarity is a job resource that has found particular support in the literature. It is usually researched via its lack thereof and approached via the concepts of perceived role ambiguity and role conflict. Role ambiguity describes a lack of clear expectations surrounding a role, and role conflict involves the incompatibility of demands facing an individual (Ilgen & Hollenbeck, 1991). Role

ambiguity, but not role conflict, is a key component of House's (1971) theory of path-goal leadership theory, suggesting that leaders are a key source of role clarity. Both concepts have been found to be associated with various negative outcomes for those who experience lack of role clarity or the presence of role conflict.

In a meta-analysis, Jackson and Schuler (1985) summarise the findings of 96 articles. Their findings show negative relations of role ambiguity with job satisfaction ($r = -.46$) and other related forms of satisfaction (work itself ($r = -.53$), supervision ($r = -.52$)). They also report higher levels of role ambiguity to be associated with higher levels of anxiety ($r = .47$). Similar links are reported for role conflict, including negative links with the three forms of satisfaction ($r_{general} = -.48$; $r_{work\ itself} = -.49$; $r_{supervision} = -.53$). Role conflict was also found to be linked with higher levels of anxiety ($r = .43$). The meta-analytic findings suggest that a number of third variables may shape these associations, in particular, Jackson and Schuler suggest organisational level.

Another meta-analysis by Abramis (1994) also summarises studies that tested the link between role ambiguity and job satisfaction. The meta-analysis reports findings based on 33 publications and finds a weighted average correlation between role ambiguity and satisfaction at $r = -.40$. Similarly to Jackson and Schuler (1985), Abramis also points to possible moderators of the link between role ambiguity and satisfaction, as they found varying strengths of association of the two concepts, suggesting that third variables may affect the strength of the link.

In conclusion, there is very strong evidence that job demands negatively affect mental health and wellbeing and that job resources can be beneficial for mental health and wellbeing. Further, the extended and prolonged periods that FIFO workers spend at work may enhance the effects of these work attributes on their wellbeing. The following sections summarise findings on other workplace factors in more detail that are not traditionally considered to be work demands or resources, but may be particularly applicable to FIFO workplaces.

Employment Volatility

Volatility of employment, or job insecurity, is a key variable in relation to FIFO wellbeing. Job insecurity is generally defined as "an overall concern about the continued existence of the job in the future" (Sverke, Hellgren, & Näswall, 2002, p. 243; see also De Witte, 1999). FIFO employments vary in length and continuity, as many are hired to perform work on a specific project. Once the project is completed some FIFO workers face termination of their contracts. Job security of FIFO workers is linked to the natural resources sector, whose volatility and impact on job security has been particularly evident in the last years.

A meta-analysis by Sverke et al. (2002) summarises findings from 72 peer-reviewed research papers on the topic of job security and its consequences, namely job attitudes (job satisfaction and job involvement), health (physical and mental health), organisational (organisational commitment and trust), as well as work-related behaviours (performance and turnover intention). Their analysis shows that job insecurity is negatively linked with mental health ($r_c = -.237$) as well as physical health ($r_c = -.159$).

A meta-analysis by Cheng and Chan (2008) extends the findings by Sverke et al. (2002). Its results are calculated based on 133 studies. The associations reported job insecurity and mental health ($r_c = -.28$) and physical health ($r_c = -.23$) that were slightly higher than those reported by Sverke et al., but overall consistent. Cheng and Chan (2008) also identified that the link between job insecurity and physical health varied depending on (i.e. was moderated by) organisational tenure in a way that the

effect was more pronounced in employees with longer tenure than those who had shorter tenure. They also found the link between job insecurity and physical and mental health varied depending on (i.e. was moderated by) age. Its effect on physical and mental health was more pronounced in older adults.

Both meta-analyses also report findings in relation to emotional wellbeing, namely job satisfaction, which was negatively associated with job security (Cheng & Chang, 2008 $r_c = -.32$; Sverke et al., 2002 $r_c = -.41$).

In a literature review, De Witte (1999) summarises the impact of job security as consistently negatively correlated with indicators of wellbeing at work, in particular satisfaction, as well as burnout. He also points to the association of job insecurity with indicators of psychological health such as anxiety, irritation and psychosomatic as well as physical health symptoms (e.g. increased blood pressure, physical complaints). He also summarises and discusses research findings that point to potential buffers of insecurity, such as open and explicit communication about future events (e.g. organisational changes), participation in the decision-making process and increasing organisational procedural justice.

The previously referenced meta-analysis by Stansfeld and Candy (2002) also considered job insecurity as a factor related to the risk of common mental health disorders. They report an odds-ratio of OR = 1.33 for job insecurity in relation to the mental disorders they include.

In summary, the existing meta-analytical and review findings point to job insecurity as a key factor in wellbeing and mental health. The extent to which job insecurity affects mental health and wellbeing is dependent on both attributes of the individual as well as organisational practices.

Rewards and recognition

Recognition and reward—including elements such as feedback (Loher, Noe, Moeller, et al, 1985), performance reviews, opportunities for development, rewards program, low or unfair pay (Leka, Griffiths, Cox, & World Health Organization, 2003), and lack of promotion prospects and under/over promotion (Leka et al., 2003)—are designed to motivate employees and to promote positive experiences at work. However, they can be potential stressors that need to be considered in an investigation of FIFO worker wellbeing and mental health. With a view to the FIFO work context, a large salary is likely to be a motivator for many workers going into this type of employment. However, some may perceive an imbalance in the reward and the costs that are associated with FIFO work. Such costs are likely to concern distance from family and friends. If there is a perceived imbalance between the rewards and the costs of FIFO this is likely to have an effect on mental health.

Related to rewards and recognition, the experience of injustice can be harmful to both workers and their organisation. Organisational justice refers to workers' perceptions of fairness at work. This can include perception of being treated fairly by the organisation and being able to count on the organisation's fairness (Ambrose & Schminke, 2009). Thus, we review meta-analyses concerned with rewards and recognition as well as justice perceptions.

Stansfeld and Candy (2002) find in a meta-analysis an effort–reward imbalance (that is, the extent to which a mismatch between workload (high demand) and long-term rewards exists) has an odds ratio for risk of mental disorder (longitudinal data = 1.84) when comparing those with the lowest and highest reward imbalance.

Lee and Ashforth (1996) report that unmet expectations are associated with all three dimensions of burnout (emotional exhaustion $r_c = .53$; depersonalisation $r_c = .19$; personal accomplishments $r_c = -.19$). They also find contingent rewards to have significant links with emotional exhaustion ($r_c = -.26$) and accomplishments only ($r_c = .14$).

A meta-analysis by Cohen-Charash and Spector (2001, based on 190 samples) identified that different aspects of organisational justice (procedural, distributive and interactional justice) are associated with job satisfaction (mean $r_{\text{procedural justice}} = .43$; mean $r_{\text{distributive justice}} = .47$; mean $r_{\text{interactional justice}} = .41$; field study results only), job performance (mean $r_{\text{procedural justice}} = .45$; mean $r_{\text{distributive justice}} = .13$; mean $r_{\text{interactional justice}} = .16$) and (negatively) with counterproductive work behaviours (mean $r_{\text{procedural justice}} = -.28$; mean $r_{\text{distributive justice}} = -.22$ mean). Procedural justice also affects commitment (mean $r_{\text{procedural justice}} = .50$; mean $r_{\text{distributive justice}} = .47$; mean $r_{\text{interactional justice}} = .38$ for example for affective commitment) and trust (mean $r_{\text{procedural justice}} = .49$; mean $r_{\text{distributive justice}} = .33$) (Cohen-Charash & Spector, 2002).

Additionally, Cropanzano and Wright (2011) summarised evidence showing that low justice is associated with ill health, absenteeism, lowered commitment and burnout. It should be noted that the studies they summarised mostly focused on distributive justice. Their review chapter does not provide any effect sizes.

Overall, the literature indicates that reward can be a motivator, however, if perceived as unfair or out of balance with the effort that needs to be made, it has been found to be detrimental to mental health. Thus, we evaluate rewards as also a factor that may need to be considered in investigations into FIFO work's impact on mental health and wellbeing. With regards to perceived justice, results suggest to some extent that perceptions of justice may be a key work factor that can affect wellbeing. While evidence is limited to outcomes such as satisfaction and commitment, studies have also considered burnout and ill-health. It is possible that these effects extend to other mental health and wellbeing aspects.

3.3.2 Work unit factors

Work units, or teams, are groups of people that are characterised by a common goal, some degree of interdependence and perceptions of being a unit. In addition, teams bring together individuals with varying roles and tasks, and differentiation in skills and knowledge is often needed to complete and manage complex tasks (West, 1996). Teams provide the immediate social context in which work takes place. This social context provides support but can also constitute a major source of stress (van Dierendonck, Haynes, Borrill, & Stride, 2004). In teams there are generally two types of members: leaders and co-workers.

3.3.2.1 Social support and quality of relationships

Social support can be defined as “the availability of helping relationships and the quality of those relationships” (Leavy, 1983, p. 5). The social support that teams provide can increase job satisfaction and reduce strain in workers. It has also been found to reduce work–family conflict (Kossek, Pichler, Bodner, & Hammer, 2011). It is a key job resource in Bakker and Demerouti's model (2007), however we list it here under work unit factors, as this is usually the level at which support occurs .

A meta-analysis by Viswesvaran, Sanchez and Fisher (1999) of 68 studies finds social support from leaders and co-workers reduces strain. They find a link of co-worker support with strain (R² = .15) and supervisor support with strain (R² = .20).

Humphrey et al. (2007) considered social support in their meta-analysis of job design factors in relation to burnout. Their results provided strong support for the link between social support and burnout ($r_{c \text{ social support}} = -.27$).

Further, the meta-analysis by Stansfeld and Candy (2002) in relation to mental disorders that have been described in the job-design section also shows lack of social support has an odds ratio for having a mental illness $OR = 1.32$. This finding indicates that lower levels of social support make the development of a mental illness more likely.

Chiaburu and Harrison (2008) reviewed 161 independent samples with a focus on social support and co-worker antagonism on a range of outcomes, including job satisfaction. They found leader support was slightly more predictive than co-worker support for satisfaction ($p_{\text{leader support}} = .32$ and $p_{\text{co-worker support}} = .270$). They also report co-worker antagonism to be negatively associated with job satisfaction ($p = -.30$).

Lee and Ashforth (1996) review findings concerning job factors in relation to the three dimensions of burnout (i.e. emotional exhaustion, depersonalisation, sense of accomplishments) based on 61 studies. They report a significant link of supervisor support with the two sub-dimensions of burnout studied (emotional exhaustion $r_c = -.37$; depersonalisation $r_c = -.24$) and for depersonalisation only for co-worker support (depersonalisation $r_c = -.22$). None of the support types they considered were associated with accomplishments.

A second aspect related to positive relationships in teams was the absence of task and relationship conflict, avoiding worker social isolation, and low levels of bullying, harassment and violence. Harassment is related to the wellbeing of individual workers, job satisfaction, commitment, physical and mental health, and withdrawal from the organisation, as well as symptoms of post-traumatic stress disorder (Bowling & Beehr, 2006).

A meta-analysis by De Dreu and Weingart (2003) summarises findings from 30 studies on conflicts with the distinction of relationship and task conflicts in teams. They describe relationship conflict as, for example, involving issues around personal taste, political preferences, values or interpersonal style. Task conflict is suggested to include conflicts about resource distribution, procedures and policies, and judgments and interpretation of facts. Their findings show significant links of both types of conflicts with team member satisfaction ($p_{\text{task conflict}} = -.32$; $p_{\text{relationship conflict}} = -.54$).

Overall, the literature provides a good basis for concluding that social support is a factor that needs to be considered in relation to FIFO wellbeing and mental health. Social support is linked with various indicators of mental health, with some studies showing a more important role of leader support rather than co-worker support. For conflict, a smaller evidence base is available as, to our knowledge, only one meta-analytical study points to the effect of conflict on social wellbeing (i.e. satisfaction). Nonetheless, it can be suggested that conflict may impact FIFO wellbeing and mental health. FIFO workers do not have similar opportunities to remove themselves from conflicts and the workplace, which may enhance the impact of conflict on their wellbeing. Otherwise, we would suggest that conflict is not a key priority variable as it a) may not affect all FIFO workers and b) somewhat overlaps with other concepts included in this section (i.e. low support, negative climates for psychosocial safety).

3.3.2.2 Leadership

Leadership can be defined as “the process of influencing others to understand and agree about what needs to be done and how to do it, and the process of facilitating individual and collective efforts to accomplish shared objectives” (Yukl, 2010, p. 26). At the core of most leadership theories are the ways in which leaders build relationships and motivate their followers by setting goals, as well as recognition and rewards. Good leaders can be described as inspiring and motivating employees by setting goals and explaining tasks and responsibilities clearly, as well as rewarding good performance, communicating a vision and stimulating employees intellectually.

With leadership as a general theme, Nahrgang et al.’s (2011) meta-analysis, already referenced in relation to job design factors, also considered leadership in their analysis. They subsumed styles of leadership (i.e. transformational), relationships between leaders and workers (i.e. leader–member exchange), trust and supervisor support under the label of leadership and as examples of good leadership. Their results provided strong support for the link between leadership with burnout ($r_{\text{leadership}} = -.36$).

Similarly, Kuoppala, Lamminpää, Liira and Vainio (2008) present meta-analytic results on the influence of leadership on employee wellbeing based on 27 studies. Reporting risk ratios, or relative risk, they find moderate evidence that leadership is associated with job wellbeing ($RR = 1.40$), sick leave ($RR = 0.73$) and disability pension ($RR = 0.46$).

The predominant themes in the leadership literature broadly focus on the ways in which leaders engage in activities that help structure tasks and motivate employees with a focus on the task (i.e. through rewards), often labelled transactional leadership style, and those that build relationships and inspire employees, often labelled transformational leadership style (Bass & Avolio, 1992; Rafferty & Griffin, 2004)

Meta-analyses that distinguish leadership styles along the lines of transactional and transformational leadership style show that both are linked with satisfaction. A meta-analytic review by Judge and Piccolo (2004) based on 87 studies reports a positive link of similar strength for both styles of leadership with job satisfaction ($p = .58$ for transformational leadership; $p = .64$ for transactional leadership (i.e. contingent reward)). When it comes to follower satisfaction with their leaders, the link is stronger for transformational leadership ($p = .71$) than transactional leadership (i.e. contingent reward $p = .55$).

In 2015 Dum Dum, Owe and Avolio conducted a meta-analysis on leadership that included 49 studies. They relate the dimensions of transformational and transactional leadership to a combined measure of effectiveness and satisfaction. They find transformational leadership to be linked with this combined outcome at $r_c = 0.46$ and transactional leadership subscales ranging from 0.05 to 0.51.

We conclude that there is strong evidence to suggest that leadership is a key factor affecting FIFO workers’ mental health. The relationships that leaders establish with their team members can be critical to shaping FIFO workers’ mental health and their wellbeing.

3.3.2.3 Positive work climate

Work climates in relation to mental health have been described via the term of psychosocial safety climate. In this case, safety refers to freedom from psychological and social risk or harm (Dollard & Bakker, 2010). The concept of organisational climate generally refers to “shared perceptions of organizational policies, practices, and procedures” (Reichers & Schneider, 1990, p. 22). It should be

noted that we did not identify any meta-analyses or reviews directly concerned with psychosocial safety climate. However, there are some key findings and conceptual reasons to suggest psychological safety team climate is a valuable factor to consider in relation to FIFO mental health.

A meta-analysis on psychological climate more generally (i.e. employees' perceptions of the norms and values inherent in their work contexts) summarised findings based on 94 studies (Parker, Baltes, Young, Huff, Altmann, LaCost, & Robert, 2003). The findings show that psychological climate per se is linked with job satisfaction ($r = .61$). While this is not direct evidence of an association of psychosocial safety climate it does to the important role of these types of work and workplace perceptions.

Individual studies show that psychosocial safety climate is linked with psychological health. For example, a longitudinal study (Dollard & Bakker, 2010) conducted with Australian Education Department employees shows that general psychological wellbeing (emotional demands $r = -.34$; psychological distress $r = -.20$; and emotional exhaustion $r = -.32$) are affected by psychosocial safety climate over the course of one year. Similar effects have been shown over time and across different organisational levels in a Malaysian sample (Idris, Dollard, & Yulita, 2014).

A study by Hall, Dollard, Winefield, Dormann, and Bakker (2013) shows a negative link of psychosocial safety climate with depression ($r = -.25$) in Australian workers. The authors also report that a positive psychosocial safety climate can buffer the effects of job demands on depression (i.e. interaction effect).

Even though no meta-analyses or reviews focussing on psychological safety climate exist at this stage, we put this concept forward as highly applicable to the research question. Given its explicit focus on perceptions of organisations' true priorities for the protection of worker psychological health (Hall, Dollard, & Coward, 2010), we evaluate it as a key work and workplace perception that may be associated with mental health and wellbeing in FIFO workers. The comparatively limited research in this area also suggests that we can make a key contribution to knowledge in this area.

3.3.3 Organisation and worksite factors

The wider context in which FIFO workers work will also have an impact on their mental health. This context entails the organisation that they work for, as well as the physical worksite where they carry out their work.

3.3.3.1 Accommodation and facilities

In relation to FIFO wellbeing, the accommodation, including sleeping arrangements (ranging from occupying the same room at each roster swing to modelling with someone working on an alternating shift, see Education and Health Standing Committee, Parliament of Western Australia, Perth, June 2015), needs to be considered. FIFO workers' accommodation is meant to be a home away from home. Personnel working offshore in the oil and gas industry have been described as exposed to a wide range of physical and psychosocial stressors based on their work environment and their accommodation (e.g cramped accommodation, lack of privacy and isolated location) (Parkes, 2012).

To our knowledge, the impact of different accommodation arrangements on FIFO worker wellbeing has so far not been investigated systematically. A chapter by Sibbel, Kaczmarek and Drake (2016, in Haslam McKenzie) provides an overview of the satisfaction levels of FIFO workers with their accommodation. They find that workers were satisfied with the proximity of facilities to their rooms and the quietness of the accommodation, and least satisfied with outdoor recreation areas. FIFO

workers also reported to be satisfied with the security and safety of their accommodation and the laundry facilities, and least satisfied with entertainment at their village. Workers also indicated dissatisfaction with issues related to communication (presumably to stay in contact with family and friends). The quality, choice and freshness of the food provided were also rated as highly important, as was the access to medical and counselling services on site. While these findings paint a picture of perceived priorities, they are not suited to identifying the actual impact of these village attributes on mental health and wellbeing. However, it is likely that the quality and type of accommodation and opportunities to socialise (i.e. wet mess, dry mess, etc.) will affect FIFO worker wellbeing, as this is considered critical for recovery from work. This can include having proper eating facilities (with high-quality food) on site that facilitate shared meals rather than eating alone. Sporting facilities and social events that support employees switching off from work, as well as the ability to leave the camp to go for a walk, may also aid recovery. With regard to sleeping arrangements we intend to follow the classification developed by the inquiry into the mental health of FIFO workers (Education and Health Standing Committee, 2015).

Overall there is no evidence that indicates any association of accommodation type with mental health and wellbeing. Nonetheless, residential arrangements are likely to be central to the FIFO lifestyle. We propose accommodation attributes be systematically investigated in order to understand whether they have a role in shaping mental health in FIFO workers, and to identify what elements of accommodation are most important to fostering mental health.

3.3.3.2 *Barriers to obtaining care*

Perceived barriers to care can potentially harm FIFO wellbeing. One particularly relevant barrier is the perceived stigma of seeking help. Stigma describes endorsement of prejudicial attitudes, negative emotions, discriminatory behaviours and, in some cases, disadvantageous social structures towards members of a group (Corrigan, 2000). Stigma is also perceived by minority members themselves (Mak, Poon, Pun, & Cheung, 2007).

Stigma to seeking mental health counselling or services in case of mental health issues captures possible concerns about career consequences, colleagues and supervisor views, as well as not wanting to take time off work (Gould, et al., 2010).

In a meta-analysis of 49 studies Mak et al. (2007) find a sample size weighted mean correlation of $r_w = -0.22$ between mental health and stigma. Further stigma was found to have a stronger link with positive mental health indicators compared to negative ones. The authors interpret this pattern as suggesting that stigma is more likely to have negative effects with regard to adjustment and growth rather than exacerbating psychological distress.

In a systematic review of 144 studies Clement, Schauman and Graham (2015) find the association between help seeking and stigma to be small to moderate (median $d = -0.27$). In particular, they found internalised and treatment stigma to be most frequently associated with reduced help-seeking. Their results also indicate that individuals are most concerned about disclosure and confidentiality in relation to their mental health problems.

Overall, there appears to be supportive evidence for the relevance of stigma in relation to mental health and help-seeking. Stigma is particularly applicable to a predominantly male FIFO workforce, as men have been found to be more reluctant to seek help about mental health issues and may in particular be affected by stigma concerns (Leong & Zachar, 1999).

3.3.3.3 Organisational climate for health and safety

A climate for health and safety is based on the perception of norms and actions that help to promote safe actions (Zohar, 2000). Generally, a positive overall safety climate is reflected in the emphasis on safety and, in more practical terms, how often and how openly people talk about safety issues, as well as by the priority that leaders assign to health and safety issues. Notably, safety climate is not identical to the actual priority or investment in health and safety that an organisation makes. Rather, it captures employee subjective (and shared) perceptions of the level of priority given to safety.

To our knowledge there are no studies testing the link between safety climate and mental health specifically. However, meta-analyses show that a safety climate is key for physical health.

A meta-analysis by Christian, Bradley, Wallace and Burke (2009) reviewed 90 studies on the topic of safety at work. They found that overall safety climate was moderately linked to safety performance at the individual level ($M_p = .49$) and at the group level ($M_p = .51$). Another meta-analysis by Beus, Payne, Bergman and Arthur (2010) finds that organisational safety climate had a moderate link to injuries ($p = -.24$).

Finally, a third meta-analysis conducted by Clarke (2006) reviewed results from 32 studies and showed that a more positive safety climate was associated with less accident involvement ($p = .22$).

The meta-analyses indicate that there is a solid evidence base for the role of safety climate in *physical* health and wellbeing. As stated above, to our knowledge there are no studies that test the link between safety climate and mental health. We postulate that safety climate may affect mental health in two ways. Firstly, it is likely that spill-over effects of the focus on physical health onto mental health can occur. Secondly, given that policies on safety and health should include both physical and mental health and wellbeing it may well be that these perceptions go hand in hand.

3.3.3.4 Change consultation

Change is an inevitable aspect of organisational life. We have not been able to identify any meta-analyses or reviews that consider the association of change management with wellbeing and mental health. However, poor management of the change process can contribute towards workers feeling anxious and uncertain about aspects of their work or employment status (McHugh, 1997).

Accordingly, the ways in which organisations manage change can affect FIFO workers' wellbeing. In particular, the extent to which staff are being consulted, have the opportunity to speak to their managers about the change and are clear about how the change will affect their work can impact wellbeing has been described in management standards developed for the UK's Health & Safety Executive (HSE; Cousins et al., 2004).

In summary, currently there are, to our knowledge, no empirical studies that associate change consultation with mental health and wellbeing outcomes. There are, however, some findings and government guidelines relating to change per se, although these primarily concern issues related to job security. Overall, this does not lend strong support to change consultation based on previous research.

3.3.4 Individual factors

Next to those factors that are inherent in FIFO work and workplaces, attributes of the FIFO workers themselves also need to be considered in an investigation of the impact of FIFO work on mental health and wellbeing. In particular, individual attributes will interact with the work and workspace factors, so not everyone will experience the work and the workplace in the same way. Moreover,

workers' mental health is likely to be affected differently by work and workplace attributes depending on their individual attributes.

3.3.4.1 *Perceptions of masculinity*

As described above, statistics on mental health and suicide suggest that men in particular are an at-risk group (Australian Bureau of Statistics, 2008). One factor that may further attenuate the effect of gender on wellbeing and mental health is the perception of masculinity norms. Perceptions of masculinity capture views on male gender role norms, which entail perceptions of rules or expectations regarding acceptable masculine and feminine actions and attitudes (Mahalik, Good, & Englar-Carson, 2003). Such effects have been proposed in relation to workplace safety and have been captured via the term "macho culture" (Reason, 1997; see also Ely & Meyerson, 2010).

Views on masculinity have been theorised to be linked with wellbeing (Courtenay, 2000). A meta-analysis by Nam et al. (2010, meta-analysis of 14 studies) supports this effect with regard to gender. Their results show that gender alone is a good predictor of attitudes towards seeking professional psychological help ($r = .17$).

An individual study by Sanchez and Crocker (2005) shows that investment in gender ideals (i.e. the relevance that is assigned to being similar to the "ideal" (wo)man) affects depression and symptoms of disordered eating.

No meta-analyses exist that investigate a link between gender norm perceptions and mental health, however, gender per se has been found to be a factor through individual studies and theorising; we propose that it be a key concept in recognition of the specific gendered nature of the FIFO context.

3.3.4.2 *Resilience*

Resilience is the ability to bounce back from negative emotional experiences and adapt to the changing demands of stressful experiences (Block & Block, 1980; Block & Kremen, 1996). Resilience has been considered along a continuum of it being a stable trait versus a variable state (Luthans, Avolio, Avey, & Norman, 2007). In our approach we follow Luthans et al's (2007) conceptualisation and view the concept as a flexible and fluctuating state. Nonetheless, we also include literature reviews on trait-like resilience here to provide a comprehensive overview of knowledge in this area.

A meta-analysis by Hu, Zhang and Wang (2015) reviews research on trait-like resilience in relation to negative and positive mental health outcomes. They review 60 studies to study this link, as well as possible third variables that can shape the effect of resilience on mental health. Their results show that resilience is associated with reduced negative indicators of mental health (mean effect size $r = -0.369$) and with increased positive outcomes of mental health (mean effect size $r = 0.503$). When comparing different age groups, they found the link between resilience and negative indicators of mental health to be strongest in adults ($r = -0.379$), compared to children and adolescents ($r = -0.273$). This was not the case for positive indicators. Further, the association between both positive and negative indicators of mental health were weaker in men ($r = -0.323$ for trait resilience and negative indicators of mental health and $r = 0.484$ for trait resilience—positive indicators of mental health) than women.

A meta-analysis by Avey, Reichard, Luthans and Mhatre (2011) inspects resilience as part of the compound concept of psychological capital, which also includes hope, optimism and efficacy in relation to satisfaction and wellbeing, as well as stress and anxiety. Corrected correlations show that

psychological capital positively relates to satisfaction ($r_c = 0.54$) and psychological wellbeing ($r_c = 0.57$), and negatively with stress and anxiety ($r_c = -0.29$).

Although Hu et al's (2015) meta-analysis is the only one we have identified from the literature that directly addresses the role of resilience for mental health, it lends strong support to the role of resilience in shaping mental health.

3.3.4.3 *Cognitive and behavioural patterns: coping styles*

Coping styles describe the ways which individuals tend to deal with pain and stressful life situations. In particular, these can be described along two dimensions (based on Suls & Fletcher, 1985). The first strategy is the avoidant coping style, which involves distraction and focussing attention away from a stressor. The second type of strategy is non-avoidant (also labelled attention), which means that attention is focussed on the source of stress. Using this framework, Suls and Fletcher (1985) review 19 studies in a meta-analysis. Their results show that for short-term outcomes, an avoidant coping style is more effective ($z_{ma} = 7.75$ for comparison of attention and avoidance strategies), whereas in the longer run attention is more effective ($z_{ma} = 4.31$ for comparison of attention and avoidance strategies).

In a meta-analysis of 44 studies Littleton, Horsley, John and Nelson (2007) review the role of these strategies for dealing with traumatic experiences (e.g. severe injury, sexual abuse, robbery). They report a significant positive association between avoidance coping and distress (mean $r_{\text{general distress}} = .38$, mean $r_{\text{depression}} = .39$; mean $r_{\text{post-traumatic stress symptoms}} = .32$) and did not find significant association between attention coping and distress. The results show that avoidance coping is detrimental to mental health.

In summary, only one meta-analysis has been identified that investigates coping styles in relation to mental health more generally. Results show that, in particular, avoidance strategies are not adaptive in dealing with mental health issues. In contrast, attention strategies are shown to generally have no impact and a positive effect in the long run. We propose that this constitutes only limited evidence for coping styles to be applicable to work experiences and stressors at work (e.g. it is not clear what stressors should be a focus in an investigation into FIFO coping styles).

3.3.4.4 *Recovery strategies*

How employees recover or unwind from their work is an important resource that can be carefully balanced to prevent the unfavourable outcomes of FIFO rosters. Recovery can involve psychological detachment from work, participation in activities that replenish mental resources (e.g. sport or exercise) and sleeping well (Sonnetag, Dormann, & Demerouti, 2010).

To our knowledge, no meta-analysis regarding the specifics of recovery during work breaks and time off exists to date. However, a meta-analysis by De Bloom et al. (2009, including 11 papers) summarises findings regarding the impact of vacation on health and wellbeing. The results suggest that vacation has positive effects on health and wellbeing ($d = 0.43$), but that these effects fade away soon after work resumption ($d = -0.38$).

Other studies indicate that the quality of recovery is important for preventing negative effects of accumulated demands over longer periods of intense work. For example, it has been found that fatigue and safety related outcomes are not only related to the number of shifts worked but also to how employees spend their recovery time during shifts (Mabbot & Lloyd, 2003). Recovery may include breaks or periods of low workload within shifts, as well as the time available and the

activities the employee engages in between shifts and during off-site recovery. For FIFO workers, recovery can include both how they spend their time off while on site, as well as how they recover during their rostered breaks. Possibilities to recover while on site will be shaped by the available options to engage socially with each other after work. For example, eating facilities and high-quality food that facilitate shared meals rather than eating alone may enable this. Sporting facilities or social events that support employees switching off from work may also aid recovery.

Although a meta-analysis only points to the effect of vacation on wellbeing, we propose that recovery activities both during time off and on site and roster breaks will be key in shaping FIFO mental health. We derive its relevance from the individual studies that show such effects and the limited options that FIFO workers have with respect to recovery given the long work hours and options while on site, as well as roster patterns that limit opportunities for recovery (e.g. regular attendance of hobby club etc.).

3.3.4.5 *Other individual level factors*

It should be noted that it is intended to also include further individual level attributes in the survey. These will include (amongst others) gender, age, background, profession, salary and financial strain.

3.3.5 **Family and social life factors**

FIFO work separates workers for prolonged periods of time from their families, homes and communities. The clear geographical separation of work and home life is likely to lead to greater incompatibility for FIFO workers and opportunities to build a social life outside of work.

3.3.5.1 *Work–family conflict*

FIFO work is not very compatible with a good work-life balance and the possibility of conflict at the work family interface is high. Work–family conflict (WFC) occurs when there are incompatible demands between the work and family roles of an individual that makes participation in both roles more difficult (Greenhaus & Beutell, 1985). Greenhaus and Allen (2011) summarised evidence that work–family conflict has negative links with health-related behaviours in a meta-analysis of 67 studies. Their summary indicates a link between WFC and general psychological strain ($r_w = .29$), depression ($r_w = .32$), burnout ($r_w = .42$), alcohol abuse ($r_w = .13$) and depression ($r_w = .32$).

Amstad, Meier, Fasel and Semmer (2011) review effect sizes from 98 articles. Their findings resemble those reported by Greenhaus and Allen (2011) as they showed a link between psychological strain ($r_w = .35$), depression ($r_w = .23$), substance use or abuse ($r_w = .08$) and anxiety ($r_w = .14$).

Nohe, Meier, Sonntag and Michel (2015) review longitudinal studies that had repeatedly measured work interference with family (WIF) or family interference with work (FIW) in relation to strain. Findings based on 30 studies showed a reciprocal association between WIF and strain in that WIF had a significant, but weak, link with strain ($\beta = .08$), and in turn strain predicted WIF ($\beta = .08$). The links between FIW and strain showed a similar pattern, but were smaller in effect size ($\beta = .03$ for FIW \rightarrow strain; $\beta = .05$ for FIW \rightarrow strain). The way in which strain and WFC interact and affect each other suggests a possible circular effect that perpetuates both WFC and strain.

Research suggests that the work–family conflict of FIFO work may particularly affect the FIFO workers themselves, rather than their children (Bradbury 2011; Kaczmarek & Sibbel, 2008) and overall family functioning (Taylor & Simmonds, 2009; Sibbel, 2010). Qualitative research also finds FIFO workers report feeling like outsiders at home (Torkington, Larkins, & Gupta, 2011).

In summary, these findings show that work–family conflict is a key factor affecting wellbeing and health outcomes in general employment. FIFO work is likely to pose unique challenges to families, making this concept a key factor for understanding the impact of FIFO work on wellbeing and psychological health. In relation to WFC, additional work and workplace aspects specific to FIFO need to be considered, such as the ability to communicate with family, as this can reduce WFC to some extent.

3.3.5.2 Partner and social network

Social support and social networks are described as buffers of stress that support resistance to some of the effects of stress and also have a direct positive effect on wellbeing (Schwarzer & Leppin, 1991). Studies describe perceptions of social support as a subjective concept that represents a stable trait or personality characteristic (Schwarzer & Leppin, 1991). In a previous section (see Section 5.5.2), we have already described the impact of social support from supervisors and team members on wellbeing. This section focuses on social support outside of the workplace.

A meta-analysis by Halbesleben (2006) considers both work sources of social support and non-work sources of social support in relation to three dimensions of burnout (reviewing 114 studies). His findings show that work-related support overall had stronger links (i.e. estimated population correlation $p_{\text{co-worker support}} = -.23$, $p_{\text{supervisor support}} = -.28$ with exhaustion, $p_{\text{co-worker support}} = -.23$; $p_{\text{supervisor support}} = -.24$ with depersonalisation, $p_{\text{co-worker support}} = .24$; $p_{\text{supervisor support}} = .24$ with personal accomplishment), compared to support from family and friends (i.e. estimated population correlation $p_{\text{family support}} = -.11$, $p_{\text{friends support}} = -.17$ with exhaustion, $p_{\text{family support}} = -.15$, $p_{\text{friends support}} = -.18$ with depersonalisation, $p_{\text{family support}} = .18$; $p_{\text{friends support}} = .21$ with personal accomplishment).

Other meta-analyses we have identified consider the link between wellbeing, social networks and social support in later life. These report similar effects to the ones described above. For example, Pinqart and Sörensen (2000) show that overall social networks are positively associated with life satisfaction ($r = .15$) and happiness ($r = .18$). Their findings show that the quality of social relations ($r = .22$ for life satisfaction, $r = .24$ for happiness), rather than the quantity ($r = .06$ for life satisfaction, $r = .14$ for happiness), is a better predictor of subjective wellbeing. While these findings may not be directly transferable to FIFO workers due to the difference in sample, they can be interpreted as giving an indication of the ways in which social support may affect wellbeing in FIFO. In fact, it can be proposed that FIFO may have a stronger effect on contact frequency than on the quality of relationships outside of work. The difference in strength of association between these two aspects of social support and wellbeing suggests this variable to be one that warrants further investigation.

Based on general findings of the effect of social support from family and friends, and the separation that FIFO life brings with it, we propose that social support is a factor to be considered in an investigation of FIFO wellbeing and mental health. In relation to this issue, we put forward that an investigation of the role of social support also needs to consider to what extent FIFO are given the opportunity for giving and receiving such support and the ways in which this is achieved, including flexibility in case of emergency, ability to call home, and capacity stay in contact with friends and family.

3.3.5.3 Support for families and partner attitudes towards work

Support for families and partner attitudes towards work are grouped together in this section for three reasons. Firstly, they are related, albeit distinct, concepts. Secondly, they share a common ground in the above described concept of work family conflict. Thirdly, in our search, we have not been able to identify meta-analyses that research these two variables' impact on wellbeing and

mental health on their own. Accordingly, we outline possible research questions that may generate insights into the ways in which FIFO work affects partner attitudes as outcomes. We also put forward questions regarding the ways in which perceptions of support for families and attitudes may shape the impact of FIFO work attributes on wellbeing and mental health as an outcome.

Perceptions of support for families and partner attitudes have been researched in relation to work–family conflict (only in relation to outcomes that are not related to mental health or wellbeing). Research in this area shows perceptions of support for families are related to less work–family conflict (Wayne, Casper, Matthews, & Allen, 2013), which then in turn affects mental health and wellbeing outcomes (see Section 3.5.5.2). This finding suggests an indirect link of perceived family support on mental health and wellbeing exerted via work–family conflict. As a research question, we would also put forward that perceptions and utilisation of available support may be a factor that shapes the extent to which FIFO work and workplace attributes affect wellbeing and mental health.

Further, partner attitudes towards FIFO may both be an important outcome of FIFO work as well as a factor that shapes the FIFO workers' own experience of their work. Firstly, FIFO partners are likely to observe the effect of FIFO on their next of kin and experience the impact this is having on their own life and family. Based on these experience and observations it is very likely that family members develop attitudes towards FIFO work. Secondly, partner attitudes, while important as an outcome, have been described to cross over into the employee attitudes towards their work and subsequently affect wellbeing (Westman, Bakker, Roziner, & Sonnentag 2011). That way, positive partner attitudes can buffer the effects of FIFO work on wellbeing, whereas negative attitudes might lead FIFO workers to experience their jobs more negatively, which subsequently might affect their wellbeing.

Overall, there is no strong support from meta-analyses or reviews for the role of perceived support for families. Moreover, this variable has a strong overlap with the concept of the work–family concept. Accordingly, we do not see a strong rationale for considering it in detail in the survey study. However, we propose an inclusion of questions around actual support that families rely on in the interview study, where rich information can be generated. Secondly, partner attitudes towards FIFO also have no strong evidence base showing they are related to wellbeing and mental health. However, this concept has less overlap with work–family conflict and we can identify several ways in which partner attitudes may affect FIFO workers through crossover effects. Thus, given sufficient space in the survey, we will consider taking this variable forward.

3.4 Working towards a model of FIFO work and mental health and wellbeing

In this section of the report, we have reviewed a range of different themes, or factors, in relation to mental health and wellbeing at work that fit within the preliminary model shown at the outset of the report (see Figure 3.1). These themes vary with regard to the evidence that already exists on their link with mental health and wellbeing, as well as their applicability to FIFO work and its specific influence on mental health and wellbeing. In order to work towards a model of FIFO work and workplace factors and their influence on mental health and wellbeing, we condense the information collated above and combine it with an assessment of each factor's applicability to FIFO mental health and wellbeing.

To assess the relative priority of each factor for FIFO mental health we provide an overview of the findings here. To achieve this, we have evaluated each above factors' applicability to the research question, regarding two issues: 1) its scientific evidence base that already exists, and 2) its applicability to FIFO mental health and wellbeing. In doing so, we combine a focus on key aspects

that are supported by a strong evidence base with those that are also likely to apply to FIFO work. This enables us to focus on key factors, and also to identify those work and workplace attributes that are likely to have a key role for FIFO mental health and wellbeing, but have so far not received detailed consideration from researchers. This approach enables us to identify gaps in the literature which we can address with the planned studies.

This exercise is being conducted to ensure we focus on key variables and concepts. In particular, we are keen to limit the issues that we focus on with a view of minimising the survey lengths as much as possible. We achieved this by following three steps.

Step 1

First we evaluated the extent of knowledge that already exists for each factor considered in this section. Table 3.16 below shows an assessment of each factor’s relevance solely in consideration of their evidence base. The rating was performed based on the quantity of meta-analyses that exist, as well as the strength of the effect sizes that these report. This was done using the following parameters (equally weighted):

Effect sizes (based on Cohen, 1964):

- If no meta-analyses or small ($d = .20$; $r = .10$) = red
- If medium ($d = .50$; $r = .30$) = orange
- If large ($d = .80$; $r = .50$) = green

Table 3.16
Overview of evidence base for each factor

Individual Factors	Job Factors	Work Unit Factors	Organisation & Worksite Factors	Family & Social Life Factors
Coping style	Demands and resources	Support & quality of relationships	Accommodation & facilities	Work-home conflict (incl. ability to communicate with family)
Masculinity norms	Reward and recognition	Leadership	Perceived barriers to care	Partner attitudes towards FIFO
Resilience	Rosters	Team climate (psychosocial safety climate)	Organisational climate for health & safety	Partner and social networks
Recovery strategies	Shift patterns		Change consultation	Support for families
	Employment volatility			

Step 2

The second step involved an assessment of the relative weight of each factor with regard to the specific nature of FIFO work. This assessment was carried out by four subject matter experts. All experts are work and organisational behaviour specialists. Three of them have experience in conducting research in FIFO industries and three are experts on wellbeing and work design. Raters were instructed to indicate the relevance of each work and workplace factor for mental health and wellbeing in FIFO workers (either as 1 = not very, 2 = somewhat or 3 = very).

The responses from all raters were collated via a median score as a measure of central tendency. The results are shown in Table 3.17. The colours were assigned as follows:

- Score < 2 = red
- Score =2 = orange
- Score > 2 = green

Table 3.17

Overview of proposed applicability to FIFO work context—expert ratings

Individual Factors	Job Factors	Work Unit Factors	Organisation & Worksite Factors	Family & Social Life Factors
Coping style	Demands and resources	Support & quality of relationships	Accommodation & facilities	Work-home conflict (incl. ability to communicate with family)
Masculinity norms	Reward and recognition	Leadership	Perceived barriers to care	Partner attitudes towards FIFO
Resilience	Rosters	Team climate (psychosocial safety climate)	Organisational climate for health & safety	Partner and social networks
Recovery strategies	Shift patterns		Change consultation	Support for families
	Employment volatility			

Note: support from leader can be captured via leadership—suggest to focus on this concept as part of leadership; support for families is implied in WFC—suggest focus in interviews to elicit information on specific support that is being relied on by families

Step 3

Next, we combined the assessment of the relevance of each factor based on the evidence base and their applicability to FIFO work. Combining the two tables was done via the following rules (see Table 3.18):

- 1) If the same colour was indicated in both tables the colour was retained
- 2) If yellow in combination with green occurred (independent of table) = yellow
- 3) If existing research evidence in Table 3.16 was red and the applicability to the FIFO context in Table 3.17 was yellow = light blue
- 4) If existing research evidence in Table 3.16 was red, the applicability to the FIFO context in Table 3.17 was green = dark blue

Table 3.18

Merged results from Table 1 & Table 2

Individual Factors	Job Factors	Work Unit Factors	Organisation & Worksite Factors	Family & Social Life Factors
Coping style	Demands and resources	Support & quality of Relationships	Accommodation & facilities	Work-home conflict (incl. ability to communicate with family)
Masculinity norms	Reward and recognition	Leadership	Perceived barriers to care	Partner attitudes towards FIFO
Resilience	Rosters	Team climate (psychosocial safety climate)	Organisational climate for health & safety	Partner and social networks
Recovery strategies	Shift patterns		Change consultation	Support for families
	Employment volatility			

Following this process enables us to identify key areas to focus on in order to understand the impact of FIFO work and workplace attributes, individual differences and family-related concepts on FIFO wellbeing and mental health. We suggest that all factors included in the model are relevant to the topic of FIFO work and its impact on mental health and wellbeing. However, research into different factors may need to adopt different strategies based on the colour indicated in Table 3.18. Factors marked in green, light blue and dark blue may be considered in greater depths. The factors highlighted in green have an established impact on health and wellbeing in workplaces in general and their influence is likely to also apply in a FIFO work context. The factors highlighted in light and dark blue are of value for creating new insights within the context of FIFO work due to their specific applicability to the topic. Notably, research into these factors will also make a wider and more general contribution to the research literature in the respective areas. Factors marked in yellow and red will also be relevant to investigation of the impact of FIFO work on mental health and wellbeing, however may warrant more explorative approaches. In summary, we put forward the model shown in Figure 3.19 below as the basis for future research into the specific impact of work and workplace factors on FIFO mental health and wellbeing.

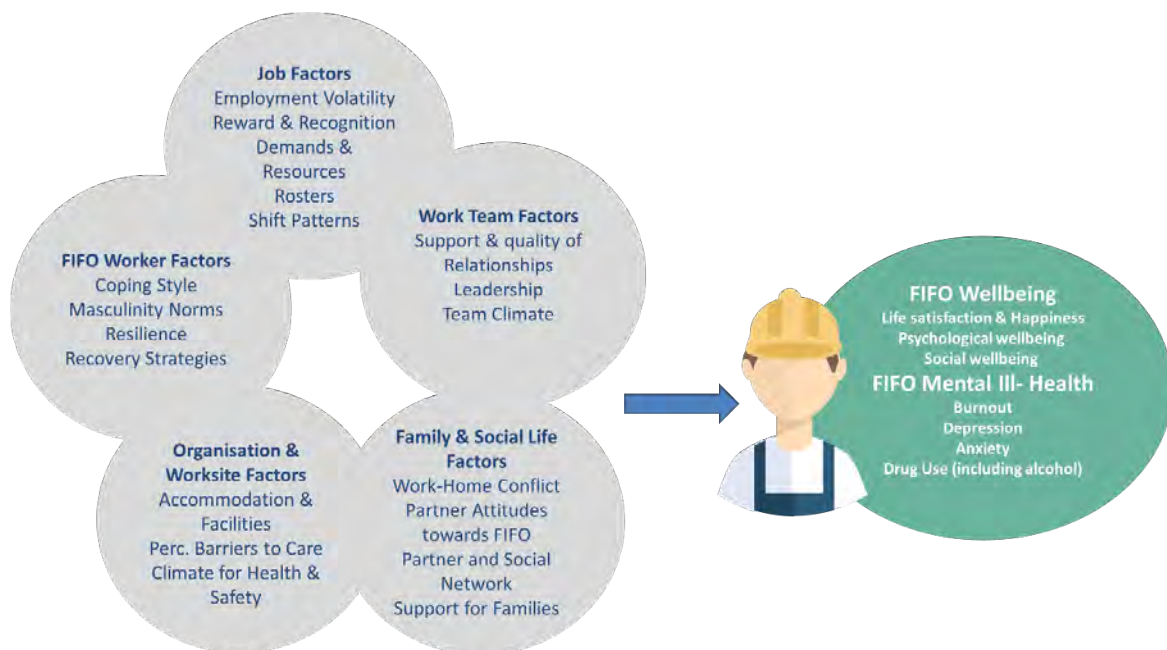


Figure 3.19. Preliminary research model of work and workplace factors and FIFO mental health

3.5 Wellbeing and work outcomes

As outlined above, work, workplaces and related contextual factors can affect worker wellbeing and mental health. In turn, these outcomes are then also related to other outcomes in relation to work. In this section we provide a brief overview of the effects of various aspects of wellbeing on such other outcomes. This overview is provided with a view to extend the model of work and workplace factors and FIFO mental health shown in Figure 3.19.

3.5.1 Emotional wellbeing: What are the outcomes of job satisfaction?

Job satisfaction is one of the most widely studied aspects of employee emotional wellbeing at work. Job satisfaction reflects an employee's feelings about work and their overall judgement of the quality of the work and workplace. Job satisfaction is based on many aspects of work (Leiter & Bakker, 2010) and is generally considered a more passive component of wellbeing in comparison to job engagement (Warr, 1987). Satisfaction can be a useful measure of emotional wellbeing as low

levels of satisfaction are associated with increased risk of psychological disorders such as anxiety and depression (Faragher, Cass, & Cooper, 2005).

The relationship between job satisfaction and work performance is probably one of the most investigated and discussed relationships in the field of organisational behaviour. Despite the intuitive appeal of this link, research presents some mixed findings. An early meta-analysis by Laffaldano and Muchinsky (1985) ($k = 74$, $n = 12,192$) found a low correlation ($r = .17$) between job satisfaction and performance, which led them to conclude that the relationship is weak. Later, Judge, Thoresen, Bono and Patton (2001) found a stronger association ($r = .30$) in their meta-analysis, which was based on a significantly greater number of studies and samples ($k = 312$, $n = 54,471$). A contrasting conclusion was drawn in a meta-analysis undertaken by Bowling (2007), who found that the link between satisfaction and performance could be explained by third variables such as personality, core self-evaluations, organisational-based self-esteem and locus of control.

Two explanations for the different findings can shed some light on this line of research. Firstly, the link between job satisfaction and performance is likely to be reciprocal with successful performance also leading to job satisfaction. In a study of employees over 10 years, Wu and Griffin (2012) show that job satisfaction is reciprocally related to key measures in the Bowling (2007) meta-analysis.

Secondly, meta-analyses conducted at the individual level do not capture the effect of employee satisfaction on business level outcomes. Ostroff (1993) showed that when job satisfaction was aggregated to the level of the business unit, it predicted business performance. Research at the business unit level shows some compelling links between satisfaction and performance. In a meta-analysis involving 7939 business units across 36 companies, Harter, Schmidt and Hayes (2002) reported that unit job satisfaction correlations were highest for employee turnover ($r = -.36$) and customer satisfaction/loyalty ($r = .32$), followed by safety ($r = -.20$), productivity ($r = .20$) and profitability ($r = .15$).

Job satisfaction also relates to a range of important health outcomes. A meta-analysis by Faragher, Cass and Cooper (2005) found that the overall association with health outcomes was strong ($r = .37$). Job satisfaction was also found to be strongly associated with subsequent mental/psychological problems such as depression ($r = .42$) and anxiety ($r = .42$), as well as physical illness ($r = .28$) (note: all correlations were converted to reflect the extent to which they confirmed (or refuted) the hypotheses that high levels of job satisfaction were associated with improved health).

Overall, we can draw from the existing literature that, at the individual level, job satisfaction has some clear implications for general mental and physical health and possibly reciprocal relationships with performance-related outcomes. Furthermore, when looking at job satisfaction at the work unit or business unit level, the implications for numerous business outcomes are clearly supported.

3.5.2 Psychological wellbeing: What are the outcomes of engagement/burnout?

Engagement and its negative counterpart, burnout, are elements of psychological wellbeing at work with well-established effects on productivity as well as overall physical and mental health. Whilst there is still debate in the literature regarding the definition of engagement, engaged employees can generally be characterised as having high levels of energy, being committed to the task and enthusiastic, and completely immersed in their activity (Schaufeli, 2002). On the other hand, burnout is characterised by emotional exhaustion, depersonalisation and reduced personal accomplishment (Maslach, 1982).

A meta-analysis of engagement by Halbesleben (2010) summarised almost 200 studies and showed that engagement reduced employee turnover ($\rho=-.26$), improved work performance ($\rho=.36$) and contributed positively to individual health ($\rho=.20$). Conversely, exhaustion reduced engagement ($\rho=-.44$), thus impeding on its positive effects.

In relation to safety outcomes, another meta-analysis by Nahrgang et al. (2011) showed that burnout was detrimental for safety compliance ($r_c=-.22$) and that it also contributed to more accidents ($r_c=.13$), more adverse events ($r_c=.29$) and other unsafe behaviours ($r_c=.32$). On the other hand, engagement was found to strongly promote safety compliance ($r_c=.61$) and contributed to reduced adverse events ($r_c=-.32$) and less unsafe behaviours ($r_c=-.28$). Moreover, this meta-analysis (Nahrgang et al., 2011) confirmed that job demands negatively impacted safety outcomes through a mechanism of health impairment, while engagement positively impacts on safety outcomes through a motivational mechanism. Their results also showed that the type of demands that explain most of the variance in results differed by industry; however, mining was unfortunately not among the industries represented in the studies that were considered. This might explain the lack of evidence on rosters within engagement-related research. However, aspects relating to rosters are clearly experienced as job demands by people working in the mining industry in Australia (Vojnovic et al., 2014) and therefore we can expect them to trigger similar mechanisms to those highlighted in this section.

Both meta-analyses described above highlighted that work demands increased burnout and reduced engagement, while job resources displayed the reversed pattern. The most influential resources were social support, leadership and a positive safety climate. Job demands were also found to hinder employee progress toward engagement, whereas job resources were found to mitigate burnout.

Primary studies of engagement provide some further specific insights. Looking at different types of performance, there is data to support the notion that in-role performance (carrying out one's duties) is mainly impacted by exhaustion, which in turn is predicted mainly by job demands. Conversely, extra-role performance (going beyond one's role/duties) is impacted mainly by engagement, which in turn is supported by job resources (Bakker et al., 2004). Taken together, these results suggest that increased demands at work can result in different forms of strain (fatigue, energy loss and health issues) that impact people's ability to adequately perform their role. At the same time, job resources are related to employee motivation (engagement or disengagement if the resources are lacking; commitment), which in turn has an impact on extra-role performance and turnover intentions.

The same pattern of outcomes for engagement is supported also at the business unit level, where the meta-analysis conducted by Harter, Schmidt & Hayes (2002) highlighted meaningful correlations with business performance outcomes. The true score correlations were highest for customer satisfaction/loyalty ($\rho=.33$), followed by safety ($\rho=-.32$) and employee turnover ($\rho=-.30$), but associations with productivity ($\rho=.25$) and profitability ($\rho=.17$) were also positive and generalisable. Although the type of engagement measurement used in studies analysed in this paper might present some theoretical inconsistencies, taken together these results seem to support an impact of engagement beyond individual performance outcomes.

Overall, the existing meta-analytic results presented here strongly support the idea that preventing exhaustion and supporting engagement can be an important competitive advantage for companies.

3.5.3 Social wellbeing: What are the outcomes of work-life integration?

Positive integration between work and non-work life is an important element of employee social wellbeing and we note that this element is likely one of the most sensitive to roster characteristics. As noted earlier, studies on FIFO work frequently report that being away from family and not being able to actively contribute to key family life events are the most common sources of dissatisfaction with FIFO work (Clifford, 2009). When work impedes on family life and vice-versa, a conflict may occur between these two important aspects of an individual's life. This conflict is widely recognised as a source of stress for employees (Cullen & Hammer, 2007) and is a risk factor for psychological ill health (e.g. mood, anxiety and substance abuse disorders) and physical health issues (e.g. musculoskeletal pain) (Allen, Herst, Bruck, & Sutton, 2000).

An existing meta-analysis by Allen and colleagues (2000) summarising 67 studies on the topic supports the widespread and serious consequences associated with work–family conflict. In terms of work outcomes, the most stable associations have been found with organisational commitment ($r = -.18$) and turnover intentions ($r = .29$). There were also correlations with job satisfaction ($r = -.23$) and performance ($r = -.10$).

Related to performance, conflict between work and family life has also been directly linked to worse safety compliance (core safety behaviours required) and safety participation (discretionary safety behaviours contributing to a safer environment) (Lapierre, Hammer, Truxillo, & Murphy, 2012), with reduced safety performance likely to be a consequence of cognitive failure (Lapierre et al., 2012).

It is important to highlight here that the consequences of work–family conflict go well beyond performance-related outcomes. The meta-analysis conducted by Allen and colleagues (2000) actually revealed stronger effects for all non-work outcomes they considered: life satisfaction ($r = -.28$), marital satisfaction ($r = -.24$) and family satisfaction ($r = -.17$). Stress-related outcomes were also pertinent, as work family conflict was shown to be associated with: psychological strain ($r = .34$), somatic/physical symptoms ($r = .30$), depression ($r = .34$), alcohol abuse ($r = .13$), burnout ($r = .40$), work-related stress ($r = .41$) and family-related stress ($r = .30$).

Overall, the evidence presented here indicates that difficulties in integrating aspects of work and family life will not only impact employees' performance related outcomes, but could also significantly affect aspects of general employee wellbeing.

As highlighted previously, whilst certain rosters might put employees at increased risk for work–family conflict there is not enough evidence to support the notion that certain roster arrangements definitely lead to work–family conflict, particularly as other elements might also come into play. However, we acknowledge that more family friendly rosters (in particular, shorter in length and lower compression rosters) could help prevent work–family conflict and the significant outcomes associated with it.

3.5.4 Physical wellbeing: What are the outcomes of stress and ill health?

When high job demands are not counterbalanced with adequate resources, the result can be work stress. The presence of work stressors predicts psychological, somatic and physiological strains. For example, there is a significant relationship between job strain and Cardiovascular Disease (CVD), particularly among men (Ganster & Rosen, 2013). Work stressors also have relatively strong relationships with emotional exhaustion, a dimension of job burnout that is a commonly used indicator of poor psychological wellbeing (Lee & Ashforth, 1996).

Employee ill health can have significant productivity consequences for organisations. Work strain, psychological illness and physical illness are associated with increased absenteeism (Darr & Johns, 2008), which has obvious productivity consequences in the form of lost working time. Another consequence of employee ill health that can be less obvious but can have greater productivity consequences is presenteeism (Johns, 2010). Presenteeism is defined as attending work when ill or not fully fit to work; it is described as the 'grey area' that exists between no productivity (i.e. absenteeism) and full work engagement (Johns, 2010). Absenteeism, presenteeism and reduced productivity are interrelated, with those who report being less healthy also reporting more sick days, more total absence, more subjective presenteeism and more productivity loss when present at work (Johns, 2010). Ill health may be more likely to result in presenteeism rather than absenteeism due to individual differences such as personality traits or contextual factors (such as tight workforce market). Personality traits include neuroticism (Johns, 2010) and contextual factors can be organisational policies (e.g. contractors not receiving sick-leave), job design (e.g. high work demands) or presenteeism cultures (e.g. high expectations of working even when unwell) (Johns, 2010).

Productivity loss due to presenteeism can vary depending on the conditions, although evidence suggests that presenteeism can be more costly than absenteeism. As an example, one study among workers at Dow Chemical Company found that work impairment attributed to presenteeism ranged from 17.8 to 36.4 per cent and increased with the number of chronic conditions reported. It was estimated that the average worker's health cost the company \$6721 due to presenteeism, \$661 due to absenteeism, and \$2278 due to direct health care (Johns, 2010). Among employees at Lockheed Martin, presenteeism from 28 medical conditions (e.g. migraine, flu, chronic back pain etc.) was estimated to have set the company back approximately \$34 million in one year. Within this estimate, depression alone was found in 14% of employees at Lockheed Martin with an average productivity loss of 7.6% among those with depression, costing the company \$786,600 (Hemp, 2004).

Evidence presented here supports that ill health and prolonged stress might come with serious implications for companies through their impact on the employees' ability to perform their duties at full capacity.

3.6 Summary: The full model of FIFO work, mental health and wellbeing

We identified 59 research articles that met the review criteria and which pertain to the questions raised. Studies' findings are mixed for all four key evaluation questions, however predominantly report negative effects of FIFO work. For example, with regards to KEQ1a, most research finds depression, anxiety and stress to be issues that are likely to be associated with FIFO work. Similarly with respect to KEQ1b, most studies report a negative impact of FIFO work on the community based partners. Further, all identified studies report that FIFO either is linked with an increase in substance use, or is not associated with alcohol consumption or other drug use (KEQ2). Finally, the literature on strategies used is highly exploratory and does not allow the drawing of any conclusions at this point.

Research on FIFO and wellbeing presents itself as a young research field, with a number of studies that are exploratory and qualitative. However, the quality of the research is limited. Across all four questions the research is predominantly descriptive, non-theoretical and of mixed rigour.

In addition, studies are predominantly based on whether workplaces involve a FIFO arrangement per se, and only very few studies consider the specific attributes of the work or the workplaces. As a consequence, the literature does not provide an understanding of what aspects of FIFO work make this type of work potentially more or less unhealthy. Paying greater attention to, for instance, FIFO rosters, job quality and management style provides a point of leverage for improving the health and wellbeing of FIFO workers, yet such a perspective has been hitherto relatively unexplored within the existing literature.

In addition, the systematic literature review indicated that, apart from a small number of recent studies, research on FIFO mental health in particular suffers from lack of theory and grounding in the wider workplace and mental health literature. With the aim of working towards a more refined theoretical understanding of FIFO work and their role for mental health, a thematic review of research into the role of workplace factors for mental health more generally is conducted. Drawing from this wider literature, we identify a number of workplace themes that are relevant to FIFO mental health and propose a model consisting of FIFO work, workplace and individual factors relevant to mental health. This model will guide the further investigation of this topic in the scope of this project.

Based on the summary provided in Section 3.7, an extension of the model previously proposed in Figure 3.19 is put forward (see Figure 3.20). An investigation into FIFO mental health and wellbeing should ideally consider the factors outlined below in terms of antecedents of FIFO mental health and wellbeing, and the specific aspects of mental health and wellbeing, as well as its outcomes. It needs to be recognised that it is very unlikely for one single study to be able to address all of the issues included in the model.

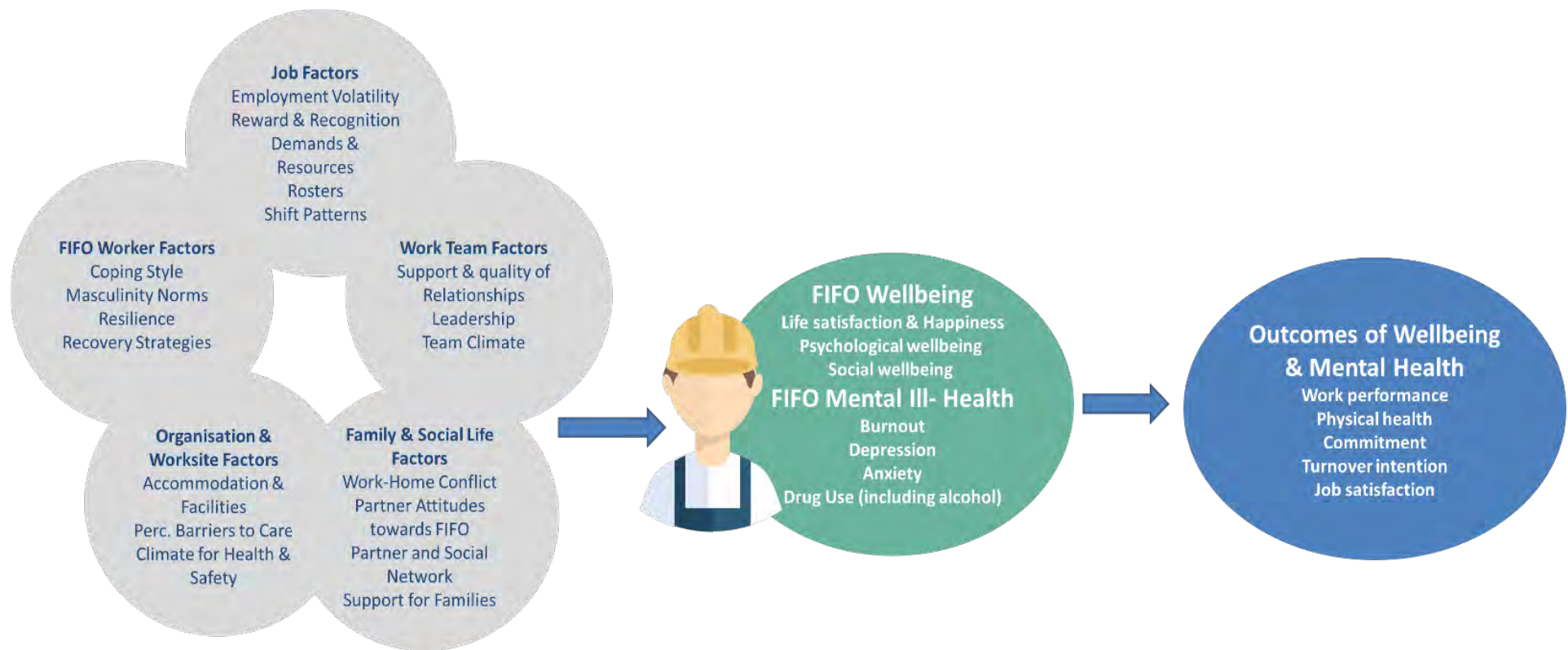


Figure 3.20. Full model of FIFO mental health and wellbeing

Survey Study

Impact of fly-in, fly-out work arrangements on the mental health and wellbeing of FIFO workers



4.1 Survey study background and scope

The aim of the survey study is to generate a clearer picture of the state of mental health and wellbeing in FIFO workers, as well as the role of five groups of factors (person, job, team, organisation and worksite, and family and social life) that likely affect their mental health and wellbeing.

The survey for FIFO workers was developed on the basis of the research model derived from the literature review (see Section 3), and was designed to address the three Key Evaluation Questions (KEQ) identified in the project request.

The approach used in the survey involves:

- Providing descriptive statistics and comparing the mental health, wellbeing and alcohol and other drug use of FIFO workers and families with non-FIFO working samples (a benchmark group and norm data).
- Informing on an understanding of the impact of FIFO work, workplace attributes and personal attributes on mental health, wellbeing and substance use in FIFO workers and their families. This step enables the identification of factors that affect FIFO mental health and wellbeing.
- Providing an overview of the mental health and wellbeing support options that FIFO workers and their families are aware of and make use of.

4.2 Research methods—FIFO workers and partners

We provide a brief overview of methods here (see Appendix B.1 for more detailed information).

4.2.1 Measures

Three surveys were developed: one for the FIFO workers, one for their partners and one for former FIFO workers. Each survey was developed through a multistage process (see Figure 4.1).

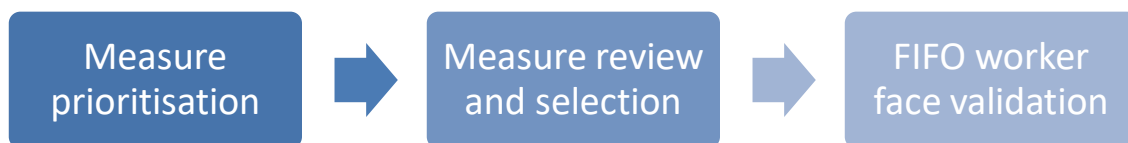


Figure 4.1. Survey development steps.

Scales for each of the key factors were identified according to the following criteria:

- validity and reliability
- the extent to which the measures are established scales in their respective fields (i.e. citation rates)
- the number of items (not too many, as that would impact survey length too much), and
- the availability of norms or comparison data.

Where no measure of a concept was available (for example, some of the FIFO specific concepts), the researchers developed scales using established procedures. The survey was piloted by four FIFO workers with diverse backgrounds in concordance with standard procedures for checking the usability and face validity of the survey. Consultation with the research reference group led to

further changes, including the addition of a survey targeted at former FIFO workers. All results on former FIFO workers have been made available through Appendix B.4.

The **FIFO worker survey** measured:

- mental health and wellbeing
- use of alcohol and other drugs
- each of the five categories of factors that might shape the above outcomes (person, job, team, organisation and worksite, and family and social life factors, see Appendix B.1.1)
- coping/support strategies, and
- demographics.

Table 4.2 shows the names, descriptions and reliabilities of the key scales used for all samples (FIFO workers, FIFO partners and the benchmark group) where this was applicable. Cronbach's Alpha reflects the internal consistency of the measures; it indicates that all scales had good reliability and validity. Only the reliabilities for coping—distraction and family separation were a bit lower, so the findings related to these scales need to be interpreted with caution. A full copy of the surveys is included in a separate document made available to the WA MHC.

In statistical analysis, inferences about a population are made from sample data, as in practice it is not possible to obtain data from each person that is part of the targeted population. Statistically significant results are found if the results are not attributed to chance. In statistics it is about probability, as it is not possible to find one hundred per cent certainty. Therefore, the risk to find an outcome that is random must be reduced. Most researchers use a cut-off of 5%, which means there is a 5% chance that the results found were actually random. Sometimes a stricter cut-off (of 0.5% or 0.1%) is chosen, if it seems necessary to reduce this risk even more. Research will indicate the probability values (p-values) of their findings for declaring a statistically significant finding. Conventionally this is a p-value smaller than .05.

For the comparison sections the conventional p-value of .05 is chosen. Where appropriate, we note that the effect might be quite small even though statistically significant. We adopt this approach because for some factors even small effects can be important (Lance & Vandenberg, 2009) and it is important to consider the implications of these effects (for example, on suicidal risk). Because of the large sample size of the study, even very small effects can be statistically significant at the .05 probability level. Regressions have high statistical power for identifying small effects. This power gives us confidence in assessing the differences between groups. However, to ensure that statistically significant effects are also large enough to be meaningful we adopt a conservative approach and set a threshold at the .005 and .001 probability levels for the regression analyses. We do this because our goal in the regression analyses is to identify the most important predictive factors within the context of an overall statistically significant link between the set of factors and the outcomes.

Table 4.2
Overview of scale descriptions, and reliabilities for FIFO workers, partners and benchmark group

Scale	Description	Example item	Number of items	Cronbach's Alpha		
				FIFO workers	Partners (view on themselves)	Benchmark
Mental health and wellbeing						
K10	The K10 (Kessler-10) measures non-specific psychological distress, including feelings of depression, restlessness, fatigue, worthlessness and anxiety. There are data on the probability that a person will have a diagnosis of anxiety or depression (ABS, 2012, tables F and G). As high K10 scores mean a greater probability for such a diagnosis, the phrase “anxiety and depression” is used interchangeably with the term “psychological distress”.	During the last 30 days about how often did you feel tired out for no good reason?	10	.92	.93	.91
Burnout	Burnout is a state of mental exhaustion due to prolonged periods of stressors experienced on the job. Burnout is typically measured through the dimensions of exhaustion, cynicism and inefficacy.	Please indicate how often you feel as described in the statements below. I feel ... emotionally drained from my work.	2	.87	.86	.92
Emotional wellbeing	Wellbeing is a state of happiness and experience of positive emotions. It can be measured through: (1) emotional wellbeing: affective component; (2) psychological wellbeing: including self-acceptance, growth, purpose, relations with others, autonomy and mastery; (3) social wellbeing: including social integration, contribution, coherence, actualisation and acceptance.	During the past month, how often did you feel happy?	3	.91	.91	.93
Psychological wellbeing		... that people are basically good?	3	.81	.80	.86
Social wellbeing		... that you liked most parts of your personality?	3	.87	.89	.79
Interpersonal needs—burdensomeness	Burdensomeness is an adverse mental state characterised by the perception that others would be better off if you did not exist.	I think I make things worse for the people in my life.	6	.89	.92	.89
Interpersonal needs—thwarted belonging	Thwarted belongingness is an adverse mental state that arises when the need for connection with others is not met. These factors were extracted from a measure of interpersonal needs related to suicidal ideation.		9	.88	.91	.89
Suicidal intention	Thoughts and plans about suiciding.	I have no intention of killing myself in the near future.	3	.73	.65 ¹⁵	.62
Alcohol						
AUDIT	Alcohol Use Disorders Identification Test; assesses alcohol use.	In the last 12 months, how often have you found that you were not able to stop drinking once you had started?	10	.83	.76	.83
Person factors						
Recovery strategies	Actions that workers take to recuperate from the demands of FIFO work.	I forgot about work.	4	.87	N/A	.91

¹⁵ .91 if “If I wanted to kill myself, I feel ready to do so” was removed, benchmark group: .94 if “If I wanted to kill myself, I feel ready to do so” was removed

Masculinity norms	The behaviours perceived to be normal of the traditional male gender role.	A guy should always seem as manly as other guys that he knows.	3	.81	N/A	.88
Resilience	The ability to recover from and achieve success even in the face of adversity.	I usually take stressful things in my stride.	3	.66	.69	.70
Active coping	Active coping strategies describe the proactive steps that workers take to manage their stressors.	I concentrate my efforts on doing something about the situation I am in.	2	.87	.87	.86
Emotional support	Emotional support coping strategies involve turning to others for comfort and help.	I get emotional support from others.	2	.88	.92	.89
Coping—distraction	Distraction coping strategies involve turning to other activities to take the mind off the stressor.	I do something to think about it less such as watching TV, reading, daydreaming or sleeping.	2	.58	.42	.70
Coping—disengagement	Disengagement coping strategies involve giving up on attempts to cope with the stressor.	I give up trying to deal with it.	2	.73	.82	.81
Affective FIFO commitment	Affective commitment is based on emotional attachment to the organisation.	I regret having taken up FIFO work.	3	.78	.69	N/A
Continuance FIFO commitment	Continuance commitment to an organisation is based on the benefits (economic and social) accrued; commonly described as “golden handcuffs”.	Changing to a non-FIFO job would now require considerable personal sacrifice.	4	.84	.87	N/A
Job factors						
Autonomy time off while on site	The degree of freedom that workers have in their activities during their time off while on site or at home.	I decide what I do in my leisure time.	4	.76	N/A	N/A
Autonomy time off at home		I am free to do things in my own way.	3	.92	N/A	.91
Family separation	The mental effects of separation from family.	I frequently struggle with being so far away from my friends and family.	3	.46	N/A	NA
Transitioning site/home	The psychological challenges FIFO workers face while transitioning between site and home.	Settling back into home life can be hard after coming back from site.	2	.66	N/A	NA
Error consequences	The psychological strain that workers experience from the prospect of committing errors at work.	Could an error on your part have a major negative consequence?	2	.67	N/A	.66
Autonomy	Job autonomy is the degree of freedom a worker has in work scheduling and methods, and in decision making.	The job gives me a chance to use my personal initiative or judgement in carrying out the work.	3	.91	N/A	.89
Task variety	The degree to which a worker is required to perform a range of tasks as part of the job role.	The job involves a great deal of task variety.	3	.92	N/A	.90
Feedback from job	The degree to which the job task provides information about task performance.	The job itself provides me with information about my performance.	2	.81	N/A	.83
Team factors/organisation and workplace factors						
Perceived support line manager	The emotional and technical support that workers receive from their line manager.	I can rely on my line manager to help me out with a work problem.	4	.92	N/A	.91
Leadership line manager—transformational	Transformational leaders inspire their workers to perform beyond expectations by transforming a worker’s beliefs, values and	My line manager says things that make employees proud to be a part of this organisation.	2	.87	N/A	.90

	attitudes. The items measure the degree to which line managers display transformational leadership behaviours.					
Perceived health and safety commitment line manager	The degree of commitment towards worker safety displayed by line managers	My line manager is passionate about health and safety.	3	.94	N/A	NA
Perceived co-worker support	The emotional and technical support that workers receive from their colleagues.	If work gets difficult, my colleagues will help me.	4	.91	N/A	.92
Perceived FIFO work flexibility	The degree of flexibility that FIFO workers have, such as the option of job sharing, time off for important events or requests for different rosters.	Introduction of flexible work arrangements, such as job sharing, for some positions.	3	.76	.73	NA
Perceived stigma	Mental health related stigma; when a person gets labelled by their illness and becomes part of a stereotyped group. Negative attitudes towards this group can lead to discrimination.	It would harm my career.	6	.89	N/A	.89
Family and social factors						
Work–family conflict	The degree to which job responsibilities interfere with the worker’s family time and hinder fulfilling family responsibilities.	The demands of my work interfere with my home and family life.	5	.93	.91	.96
Relationship happiness	Satisfaction with social relationships.	Please choose the degree of happiness, all things considered, of your relationships with others.	3	.76	.66	.70
Dyadic satisfaction	Marital functioning.	Please indicate the approximate extent of agreement or disagreement between you and your partner for each item on the following list. Amount of time spent together.	7		.85	N/A
Family functioning	Evaluation of general family functioning.	In times of crisis we can turn to each other for support.	10	N/A	.92	N/A
Safety at home	Safety behaviours of FIFO workers at home.	They use all the necessary safety equipment to do the work.	3	N/A	.96	N/A
Satisfaction with FIFO (partner)	The degree to which partners of FIFO workers are satisfied with the FIFO work arrangement.	The communication options available to my partner on site are good.	3	N/A	.63 ¹⁶	N/A
Outcomes						
Safety behaviour—compliance	Safety compliance is the degree to which workers follow safety procedures in the workplace.	I use all the necessary safety equipment to do my job.	2	.91	N/A	.94
Safety behaviour—participation	Safety participation refers to the initiative by workers in participating in and promoting safe work place behaviours.	I promote the safety program within the organisation.	2	.83	N/A	.83
Proactive work behaviour	Speaking up; the frequency with which a worker airs his views about issues in the workplace.	How frequently do you speak up with new ideas or changes in procedures?	4	.90	N/A	.89
Physical pain	The experience of physical pain in areas of the body.	How often, over the past four weeks, have you had an ache, pain, or discomfort in your ... Neck?	4	.86	N/A	.86
Sleep quality	How well the workers slept; the quality of their sleep.	Did you have trouble falling asleep?	2	.64	N/A	.61

Note. Scales listed only includes those for which reliability analysis was appropriate. See Appendix B.1.1 for a full list of measures.

¹⁶ Removed item “If my partner didn’t work in a FIFO job, our relationship would be better”

To ensure a manageable survey length, all participants responded to core questions (e.g. demographics and alcohol use questions), but were then randomly presented with two out of the following four sections: work team factors, individual worker attributes, organisational and worksite factors, and family and social life aspects. The order of all sections was randomised in the surveys.

The survey for **partners of FIFO workers** focussed on the partners' mental health and wellbeing, alcohol and other drugs, person factors, and family and social factors, with the latter category extended (e.g. the Dyadic adjustment scale and the Family functioning scale were added).

The survey compiled for the **benchmark group** was almost identical to the one that was created for the FIFO workers, except that items applicable to a FIFO work environment were removed and all groups of factors were displayed as only 300 participants were required to complete the survey. The order of all sections was randomised.

4.2.2 Survey distribution and data collection strategies—FIFO workers and partners

Web links and 1200 paper surveys were provided to distribute the different types of surveys via various channels. The surveys and information about the project were distributed by the University of Western Australia and by other organisations representing industry, unions and mental health organisations. They used briefing packs provided by the researchers, providing information for the distribution of the survey. Each party used a wide range of distribution strategies, where many communication channels were used, such as internal email invitations, meetings, briefing packs informing about the survey, (FIFO work) websites, newsletters, Twitter accounts and (FIFO) Facebook posts. For information about a comparison between the three survey links that were distributed (public, employers and unions link) see Appendix B.1.5.

Most current FIFO workers indicated that they completed the survey while they were on site (during or after work hours ($n = 2,430$ on-site completions; $n = 607$ during time off at home)). FIFO worker participants took 37 minutes to complete the survey (median score), with most participants spending around 21 minutes completing the survey (mode). The median for partners of FIFO workers was 27 minutes; the mode was 22 minutes. The median time for the benchmark group was 22 minutes, with a mode of 21 minutes.

As is common in online survey research, not all responses were useable. We screened the data (based on Ward & Meade, 2017) to ensure its quality (see Appendix B.1.3 for details). Table 4.3 shows the initial sample size and the percentage of responses that passed the screening.

Table 4.3

Number of excluded participants and remaining samples at each data screening step

Survey	Initial sample size	Final sample size	% retained (of original sample)
FIFO	5,468	3,108	56.84%
Partner	729	373	51.17%

Note. The response rate for the paper surveys was 10.77%, and is included in the FIFO sample.

4.2.3 Representativeness of the samples

The **sample of FIFO workers** collected was highly representative of the WA FIFO population as it sampled individuals of different ages, gender, tenure within FIFO, roster types, role, industry type, etc. The large number of participants also ensured that maximum representativeness was achieved.

As industry and unions were actively involved throughout the survey distribution process, it was possible to target participants not only in mining, but also in oil and gas and construction. Following data from the Australian Bureau for Statistics (2018), Table 4.4 shows that the industry and gender distribution between the WA mining population and the FIFO sample are well matched.

Table 4.4
Workers by gender in mining in WA based on ABS data February 2018

Group	Mining	Oil and gas	Gender
WA	94,400 = 81%	17,900 = 19%	Male: 81.6% / Female: 18.4%
FIFO sample	2577 = 82.9%	531 = 17.1%	Male: 82.8% / Female: 17.1%

Table 4.5 shows that the age distribution looks very similar to the mining population, with around 80% being part of the three age groups from 25 to 54 years old.

Table 4.5
Age in mining in Australia

Age	Percentages Mining	FIFO sample
< 24	7.6%	3.3%
25–34	28.5%	29.7%
35–44	24.9%	29.4%
45–54	24.6%	25.2%
55+	14.3%	12.4%

The above shows that logically not all groups are exactly equally represented, however, they are a representation of the population. It must be noted that the construction sample in this research is small, which is most likely a reflection of the industry at this stage, considering the broad distribution strategy. According to the Education and Health Standing Committee (2015) there is no breakdown available to determine the number of construction workers doing FIFO.

The broad distribution of the survey ensured FIFO workers were well reached and captured a representative sample of the population of FIFO workers in Western Australia.

Benchmark group

The benchmark group, comprising of 326 participants, provided a contrast against the FIFO sample to identify any differences with regards to the mental health and wellbeing of both groups. A difficulty of utilising a comparison sample within a study is attaining an identical sample to the target sample—in this case, the FIFO sample. To combat this limitation a data collection company (the ORU) received specific sample requirements to ensure the recruitment of a mirrored sample for comparison. Even though the main demographics for FIFO workers were matched (gender, of a working age between 18 and 70 years old, and from Western Australia, with people working in a FIFO role excluded), within the timeframe and looking at the specificity of FIFO jobs, it was not possible to gather an exact match on job roles.

Recognising the constraints that exist when generating a matched benchmark group, we assess the benchmark group sample to be sufficiently similar to the FIFO worker sample to allow a meaningful comparison. Moreover, the analysis conducted considered the demographic attributes on which the two samples differed most notably via ANCOVA analysis. Doing so allowed us to assess to what extent differences occurred independent of these variations in the two samples.

Where FIFO workers had a chance of winning one in five vouchers and sometimes received an invite to participate through unions or their employers, participants in the benchmark group got some remuneration for their time and were recruited via The ORU. This gives the two groups slightly different motivators to be involved in the study. To ensure good quality of data, the benchmark group data was screened the same way as the FIFO sample.

Normative data

Where possible, normative data was used for comparison purposes. Norm data is data that already exists. These norm values have been measured in a representative group, and can be used as a baseline against which to compare the FIFO workers sample. The goal is to see if the group of FIFO workers differ in respect to the normative data, which could, for example, be the Australian population.

The same measure (set of questions) needs to be used in order to be able to compare the scores, which means that, depending on the measure that was used, a different norm group is applicable as well. The norm group can consist of a national Australian sample or a more specific group. Where possible, a (mainly) male norm group was picked to approach the FIFO sample as much as possible.

Summary: sample representativeness

- The FIFO sample is highly representative of the WA FIFO workers' population, considering gender, age and the variety in industry participation and rosters that are included.
- The benchmark group is assessed to be sufficiently similar to the FIFO worker sample to allow a meaningful comparison. The sample is matched on gender, is of working age and the majority is from WA.
- Analysis conducted considered the demographic attributes on which the FIFO and benchmark group differed most notably via ANCOVA analysis (age, education, professional role) so it could be assessed to what extent differences occurred independent of these variations in the two samples.

4.2.4 Sample demographics

Following the data screening process, the following demographics of each sample were obtained.

4.2.4.1 FIFO workers and the benchmark group

The **current FIFO worker sample** ($n = 3108$) consisted mainly of men (82.8%) of an average age of 41 years (see Table 4.6 for overview of the sample demographics). Almost three quarters (74.6%) of our participants were married or in a domestic relationship, with an average age of almost 41 years. Out of all the participants, 60.9% had (dependent) children. Within the sample, 2.9% were of Aboriginal or Torres Strait Islander origin. The highest level of education for the sample was TAFE/college (27.8%), completion of secondary school (22.3%) and a university undergraduate degree (18.6%).

For the **benchmark group** ($n = 326$) the demographics are also summarised in Table 4.6. By setting up quotas we ensured that the majority of the benchmark group consisted of males (77.3%) from Western Australia (78.0%), similar to the FIFO sample. Their average age was 50 years and 71.9% were married or in a domestic relationship. Of the sample, 61.3% had children. In this sample there were no respondents of Aboriginal or Torres Strait Islander origin. Over 50% of the sample had

completed a university undergraduate or postgraduate degree. Finally, 88% of the sample lived in an urban region, akin to the residential homes of the FIFO worker samples.

Table 4.6

Overview of FIFO workers and benchmark sample demographics (personal characteristics)

Characteristic	Sample Group	
	FIFO worker	Benchmark sample
Gender		
Male	82.8%	77.3%
Female	17.1%	22.7%
Other	0.1%	0%
Age		
< 24	3.3%	0.6%
25–34	29.7%	9.4%
35–44	29.4%	20.8%
45–54	25.2%	28.9%
55+	12.4%	40.3%
<i>M(SD)</i>	<i>40.85 (10.59)</i>	<i>50.17 (11.31)</i>
Aboriginal/Torres Strait Islander		
Yes	2.9%	0%
No	94.2%	98.4%
Prefer not to say	2.9%	1.6%
Marital status		
Single, never married	15.6%	13.9%
Married/domestic partnership	74.6%	71.9%
Widowed, divorced, separated	9.8%	14.2%
Highest level of education		
Primary school	0.2%	0.0%
Secondary school	22.3%	16.5%
Apprentice	13.5%	4.5%
Tafe, College	27.8%	20.0%
University undergraduate degree	18.6%	30.0%
Postgraduate degree	9.2%	21.9%
Other training courses	8.4%	7.1%
Children		
0	39.1%	38.7%
1	13.0%	12.3%
2	27.3%	30.6%
3	13.4%	12.3%
4	4.2%	3.9%
5	1.4%	1.9%
6 or more	1.4%	0.3%
Age youngest child		
0–12 months	8.3%	3.2%
1 up to 3 years	15.7%	7.9%
3 up to 5 years	13.1%	4.7%
6 up to 8 years	8.8%	7.9%
8 up to 12 years	13.7%	12.1%
12 up to 18 years	16.0%	17.9%
Over 18	24.3%	46.3%
State		
Australian Capital Territory	-	0.6%
New South Wales	-	8.4%
Queensland	-	5.3%
South Australia	-	1.9%
Tasmania	-	0.9%
Victoria	-	5.0%
Western Australia	-	78.0%
Urban or rural		
Urban	-	88.0%
Rural	-	12.0%

When considering the workplace and employment characteristics of the participants in the **current FIFO sample** (see Table 4.7), 71.4% were employed by an operator (i.e. the organisation operating the mine site), the rest by a contractor. The majority (93.1%) were FIFO commuters in a professional/technical (25.1%), technician or trade/maintainers (21.8%) or managerial (20.1%) role. Most worked full time (89.2%) in the mining industry (74.7%) in the operational phase (88.7%; in contrast to working in the construction phase of the site).

Most participants worked on a shift pattern consisting of dayshifts followed by time off (57.2%) or day shifts followed by time off and then night shifts followed by time off (21.4%). The most common rosters were eight days on/six days off (30.4%) and two weeks on/one week off (16.6%). On average, workers have been working in a FIFO role for 9.19 years, with an average shift length (including overtime but excluding travel time) of 12.88 hours.

The vast majority of the **benchmark group** (81.3%) commuted to work by car (see Table 4.7). Most worked in mining (7.7%), health care and social assistance (6.8%), and construction (6.1%) and in a managerial (32.6%) or professional/technical (28.1%) job. Almost three quarters work full time and on day shifts (86.1%). Respondents have been in their job on average for 10.84 years with a shift length of 9.31 hours.

Table 4.7
Overview of FIFO workers and benchmark group demographics (workplace characteristics)

Characteristic	Sample Group	
	FIFO worker	Benchmark sample
Profession		
Administrative	2.8%	14.8%
Managerial	20.1%	32.6%
Professional/Technical	25.1%	28.1%
Operator	18.8%	2.9%
Technician or Trade/Maintainers	21.8%	3.9%
Camps and catering	1.3%	1.3%
Logistics and supply chain	2.4%	1.6%
Other	7.6%	14.8%
Industry		
Agriculture, Forestry and fishing	-	1.0%
Arts, Entertainment and Recreation	-	1.6%
Broadcasting	-	1.0%
College, University and Adult Education	-	3.5%
Construction	4.9%	6.1%
Finance and Insurance	-	4.8%
Government and Public	-	4.8%
Health Care and Social Assistance	-	6.8%
Homemaker	-	0.3%
Hotel and Food Services	-	1.0%
Information Services and Data	-	1.0%
Processing	-	-
Legal Services	-	1.6%
Military	-	0.6%
Mining	74.7%	7.7%
Oil and gas	17.1%	4.2%
Other Education Industry	-	2.3%
Other Information Industry	-	0.6%
Other Manufacturing	-	4.2%
Primary/Secondary (K-12) Education	-	4.8%
Public Services (e.g. police)	0.2%	2.3%
Publishing	-	1.0%
Real Estate, Rental and Leasing	-	1.9%
Retail	-	5.2%

Scientific or Technical Services	-	5.2%
Software	-	2.6%
Telecommunications	-	1.6%
Transportation and Warehousing	1.2%	3.5%
Utilities	-	2.3%
Wholesale	-	1.6%
Other ¹	1.8%	14.8%
<hr/>		
Employment		
Operator	74.1%	-
Contractor	25.9%	-
<hr/>		
Employment situation		
Full time	89.2%	74.5%
Part time	0.5%	16.8%
Casual	7.7%	4.8%
Other	2.7%	3.9%
<hr/>		
Shift pattern		
Days-Nights-Off-Days-Nights-Off	21.4%	-
Days-Off-Nights-Off	12.2%	-
Days-Off-Days-Off	57.2%	-
Nights-Off-Nights-Off	2.2%	-
Other	7.0%	-
Day shifts	-	86.1%
Night shifts	-	1.0%
Both	-	12.9%
<hr/>		
Roster		
4 weeks on/1 off	5.9%	-
3 weeks on/1 off	1.7%	-
2 weeks on/1 off	16.6%	-
2 weeks on/2 off	9.6%	-
8 days on/6 off	30.4%	-
5 days on/2 off	3.6%	-
Other	32.2%	-
<hr/>		
Commute		
FIFO	93.1%	-
DIDO	3.6%	-
BIBO	2.4%	-
Other	0.9%	-
Car	-	81.3%
Train	-	12.6%
Bus	-	8.3%
Bicycle	-	4.6%
Walk	-	4.9%
Other	-	4.3%
<hr/>		
Phase of site		
Construction	10.9%	-
Operational	88.7%	-
Decommissioning	0.5%	-
<hr/>		
Tenure and shift length		
Years in FIFO	$M = 9.19, SD = 6.56$	-
Years in current job	-	$M = 10.84, SD = 10.50$
Shift length	$M = 12.88, SD = 6.39$	$M = 9.31, SD = 6.91$

Note. ¹ “other” for the FIFO workers sample represents the proportion of respondents in industries other than construction, mining, O&G, public services and transportation only, whereas “other” for the comparison sample group represents the proportion of respondents in industries other than the full 30 industries listed.

The FIFO workers worked in 277 different mine sites or projects. The projects they were working on were obtained via open-ended questions, which were then grouped and recoded. The number of respondents per site/project ranged from 1 to 377, with one person per site being the most frequent occurrence (i.e. modal score) and the median score. It should be noted that 249 participants did not

indicate a site, 69 reported that they work on various sites and four were working on sites overseas. It should also be noted that, where indicated, workers operating on the same site, but different aspects of a project (i.e. rail, FPSO, general project name), were coded separately to gain a more accurate overview of the origins of the sample.

4.2.4.2 Partners of FIFO workers

Within the **partner sample** ($n = 373$) we were able to link the data of the FIFO workers to their partners for 237 couples. Table 4.8 shows that the majority of the sample was female (96.5%) with an average age of 38.43 years old; 2.4% had an Aboriginal or Torres Strait Islander origin. That the majority of this sample was either married or in a domestic partnership is realistic, as they would only be able to complete the survey if they have a partner who works in a FIFO role. The few exceptions could be due to a recent break up. Of the sample, 72% had children (38.2% had two children), with most of the children falling into the age category of one to three years. Looking at education, 26.8% of the partners had completed a university undergraduate degree.

Almost three quarters of the partners had a job. They mostly worked full time (44%) or part time (30.0%). Most completed this survey while their partner was working on site (69.4%).

Table 4.8
Overview of partner demographics (personal and workplace characteristics)

Gender		Marital status	
Male	3.5%	Single, never married	1.1%
Female	96.5%	Married/domestic partnership	96.2%
Other	0.0%	Widowed, divorced, separated	2.7%
Age ($M = 38.43$; $SD = 9.40$)		Children	
<24	3.2%	0	28.0%
25–34	37.0%	1	14.5%
35–44	33.5%	2	38.2%
45–54	19.0%	3	13.4%
55+	7.2%	4	4.0%
Aboriginal/Torres Strait Islander		5	1.1%
Yes	2.4%	6 or more	0.8%
No	96.0%	Age youngest child	
Prefer not to say	1.6%	0–12 months	9.7%
Highest level of education		1–3 years	21.6%
Primary school	0.0%	3–5 years	18.7%
Secondary school	16.9%	6–8 years	9.7%
Apprentice	1.9%	8–12 years	13.8%
TAFE, College	24.9%	12–18 years	13.1%
Other training course	10.7%	Over 18	13.4%
University undergraduate degree	26.8%	Employment situation	
Postgraduate degree	18.8%	Full time	44.0%
Job		Part time	30.0%
Yes	73.5%	Casual	15.8%
No	26.5%	Other	10.3%
Partner on or off site			
On site	69.4%		
Off site	30.6%		

Summary: sample demographics

- 82.8% of FIFO workers ($n = 3,108$) are male and 41 years old on average, and 74.6% are married or in a domestic relationship. 60.9% have one or more children.
- 77.3% of the benchmark group ($n = 326$) are male and 50 years old on average, and 71.9% are married or in a domestic relationship. 61.3% have one or more children.
- 96.5% of FIFO partners ($n = 373$) are female and 38 years old on average, and 72% have one or more children.
- The benchmark group matched the FIFO workers' sample on gender, being of working age and the majority living in WA. Analysis controlled for age, education and professional role.

4.3 Results

4.3.1 KEQ 1a: Mental health impacts/benefits and FIFO work

4.3.1.1 Comparisons of mental health and wellbeing in FIFO workers and the benchmark group

Where the same measures were used, the mean scores of FIFO workers on mental health and wellbeing were compared to the benchmark group ($n = 326$). Table 4.9 shows the mean scores and standard deviations for both groups. Scores on anxiety and depression (K10¹⁷) can range from 10 to 50, with FIFO workers ($M = 19.36$) having higher mean scores than the benchmark group ($M = 16.30$). The same pattern exists for burnout. FIFO workers score lower on social (e.g. having trust in society; $M_{\text{FIFO workers}} = 3.38$ versus $M_{\text{Benchmark group}} = 3.74$), psychological wellbeing (e.g. self-acceptance and personal growth; $M_{\text{FIFO workers}} = 4.17$ versus $M_{\text{Benchmark group}} = 4.35$) and emotional wellbeing (e.g. feelings of satisfaction and happiness; $M_{\text{FIFO workers}} = 4.47$ versus $M_{\text{Benchmark group}} = 4.65$).

Importantly, the above mean differences could reflect random variations, so it was crucial to assess whether there were statistically significant differences¹⁸ between the groups. Based on the following characteristics of the two data sets that were compared, we employed a non-parametric method of comparison (Welch's t-test). The sample sizes were unequal, the data was not normally distributed and the variances were not equally distributed. While much effort has been put into matching the sample to the FIFO worker sample, some differences exist with regards to age, education and professional role. As Welch's t-test does not control for these factors, we conducted ANCOVA's to identify the potential role of these differences and to control for them. Consequently, the age variable was taken into account, and two dummy variables were created for education: one for higher education (university undergraduate and postgraduate) and one for college (apprentice, TAFE, college, other training courses). Another dummy variable was created for professional role (administrative, managerial and professional). Table 4.9 shows the results of Welch's t-test and indicates in which cases the ANCOVA results differed from Welch's test.

¹⁷ The K10 (Kessler-10) measures non-specific psychological distress, including feelings of depression, restlessness, fatigue, worthlessness and anxiety. When describing "anxiety and depression", it is in reference to non-clinically diagnosed anxiety and depression. There are data on the probability that a person will have a diagnosis of anxiety or depression (ABS, 2012, tables F and G). As high K10 scores mean a greater probability for such a diagnosis, the phrase "anxiety and depression" is used interchangeably with the term "psychological distress".

¹⁸ All references to "significant differences" refer to differences that are statistically significant. This means that the result is not found by chance, and that a difference this large would have been unlikely if random groups had been used, indicating that the groups tested do actually differ from each other.

Table 4.9
Comparison: mental health and wellbeing

Construct	Group	<i>M</i>	<i>SD</i>	Welch's <i>t</i> -test			
					<i>df</i>	<i>F</i>	<i>p</i> -value
K10	FIFO	19.36	7.14	Between	1	68.25	.000
	Benchmark	16.30	6.07	Within	398.18		
Burnout	FIFO	3.88	1.33	Between	1	73.58	.000
	Benchmark	3.00	1.72	Within	372.49		
Emotional wellbeing (satisfaction/happiness)	FIFO	4.47	1.12	Between	1	8.48	.004 ¹
	Benchmark	4.65	1.09	Within	375.98		
Social wellbeing (trust in a good society)	FIFO	3.38	1.33	Between	1	24.24	.000
	Benchmark	3.74	1.24	Within	381.78		
Psychological wellbeing (self-acceptance)	FIFO	4.17	1.19	Between	1	8.77	.003 ¹
	Benchmark	4.35	1.03	Within	395.27		

Note. ¹After controlling for age, education and professional role in an ANCOVA, these results are no longer statistically significant at the $p < .05$ level.

For the mental ill-health constructs, Welch's *t*-test for the K10-scores (depression and anxiety) showed significantly higher levels of depression and anxiety in the FIFO workers than in the benchmark group ($F(1,398.179) = 68.254, p = .000$). Further, the results show that FIFO workers scored significantly higher than the benchmark group on burnout, suggesting that they experience being drained from work more often than the benchmark group ($F(1,372.493) = 73.580, p = .000$). These findings hold even after controlling for age, education and professional role.

FIFO workers experienced poorer emotional, social and psychological wellbeing than the benchmark group. However, after controlling for age, education and professional role the results for emotional and psychological wellbeing are no longer statistically significant at the $p < .05$ level ($F_{\text{emot WB}}(1,2.548) = 2.064, p = .151$; $F_{\text{psy WB}}(1,1.718) = 1.252, p = .263$). This means that the small differences in the emotional and psychological wellbeing of FIFO workers are partly attributable to their age, education and professional role, indicating that the scores are similar for FIFO workers and the benchmark group. The result for social wellbeing ($F_{\text{soc WB}}(1,10.356) = 6.099, p = .014$) holds after controlling for age, education and professional role.

Table 4.10 shows further analysis of the K10-scores. As is common practice (Slade, Grove & Burgess, 2011), the K10-scores were divided to represent different levels of psychological distress:

- Low psychological distress: 10–15
- Moderate psychological distress: 16–21
- High psychological distress: 22–30
- Very high psychological distress: 31–50

Looking at the percentages of participants with high and very high psychological distress, a total of 32.61% of the FIFO workers fell into those categories, whereas only 17.21% of the benchmark group were classed as such. Further, a higher percentage of the benchmark group could be classed as experiencing low psychological distress (55.84%) compared to the FIFO worker group (37.11%).

Table 4.10
K10 low to very high psychological distress distribution

Psychological distress	Percentage FIFO (<i>n</i> FIFO)	Percentage Benchmark group (<i>n</i> Benchmark group)
Low	37.11% (1129)	55.84% (172)
Moderate	30.28% (921)	26.95% (83)
High	21.83% (664)	12.66% (39)
Very high	10.78% (328)	4.55% (14)

Table 4.11 displays a division based on different age groups. As the benchmark group was smaller than the FIFO sample, three of the age categories had very few participants and were excluded ($n \leq 29$). For the remaining age groups, in general, older individuals experienced less psychological distress, which also seems consistent with data from the Australian Bureau of Statistics (2015). In all age categories, FIFO workers had higher psychological distress when compared to the benchmark group.

Table 4.11
K10 by age (percentages)

Age	Psychological distress									
	Low		Moderate		High		Very high		High/very high combined	
	FIFO	Bench- mark	FIFO	Bench- mark	FIFO	Bench- mark	FIFO	Bench- mark	FIFO	Bench- mark
35–44	33.5	38.7	32.2	32.3	24.6	21.0	9.7	8.1	34.3	29.1
45–54	42.9	51.7	27.8	31.5	21.1	15.7	8.1	1.1	29.2	16.8
55–64	51.3	67.4	25.1	23.2	17.3	7.4	6.3	2.1	23.6	9.5

Summary: comparison of mental ill-health and wellbeing

- FIFO workers show significantly higher levels of depression and anxiety than the benchmark group.
- Burnout levels are significantly higher for FIFO workers.
- FIFO workers (32.61%) experience high and very high levels of psychological distress almost twice as often as the benchmark group (17.21%).
- Emotional (e.g. satisfaction/happiness) and psychological (e.g. self-acceptance and personal growth) wellbeing is similar in FIFO workers and the benchmark group (after controlling for age, education and professional role); FIFO workers have slightly worse social wellbeing than the benchmark group.

Comparison: suicidal risk

The potential suicidal risk was assessed in both samples, captured via FIFO workers' thwarted belonging and perceived burdensomeness, as well as their suicidal intent. Higher scores on these scales represented higher levels of suicidal risk. The mean scores showed that the FIFO group on average scored slightly higher on these scales, with the differences on thwarted belonging and suicidal intent being statistically significant at $p = .05$ (see Table 4.12). However, after controlling for age, education and professional role in an ANCOVA analysis these results were no longer statistically

significant ($F_{\text{Thwarted belonging}}(1,1.009) = .601, p = .438$; $F_{\text{Suicidal intent}}(1,1.403) = .763, p = .382$). This means that the differences in thwarted belonging and suicidal intent for FIFO workers are partly attributable to their age, education and professional role. The ANCOVA analysis showed that mainly education, and to some extent their job role, played a part.

Table 4.12
Comparison: suicide

Construct	Group	<i>M</i>	<i>SD</i>	Welch's <i>t</i> -test			
					<i>Df</i>	<i>F</i>	<i>p</i> -value
Thwarted belonging	FIFO	1.96	1.31	Between	1	4.36	.038 ¹
	Benchmark	1.80	1.26	Within	375.25		
Perceived burdensomeness	FIFO	0.62	0.98	Between	1	3.37	.067
	Benchmark	0.52	1.26	Within	391.26		
Suicidal intent	FIFO	1.77	1.37	Between	1	6.22	.013 ¹
	Benchmark	1.57	1.23	Within	325.81		

Note. ¹After controlling for age, education and professional role in an ANCOVA, these results are no longer statistically significant at the $p < .05$ level.

For suicidal intent (scores range from one: strongly disagree to eight: strongly agree) 67% of FIFO workers had a mean score of one; for the benchmark group this was 76.6%. Of FIFO workers, 5.9% had a mean of five or higher; for the benchmark group this was 4.4%, indicating more FIFO workers have worse scores on suicidal intent.

Information on suicidality (suicidal ideation, plans and attempts) for the general population can be found in the report on the 2007 National Survey on Mental Health and Wellbeing (Slade et al., 2011). Males have slightly lower prevalence of any suicidality, however, more males in Australia die to suicides than females. The age groups with highest suicidality for males were 25–34 and 35–44 years old, with a prevalence of suicidality around 2.5%. Suicidality is also higher in people with a mental disorder; 8.6% of this group reported suicidality in contrast to 0.8% without a mental disorder. People with affective disorders reported highest suicidality (17.4%), followed by people with substance use disorders (10.9%) and anxiety disorders (9.1%). Further, the Australian Bureau for Statistics (ABS) provides the following information:

“Excluding males aged 85 years and over, the age-specific deaths rates were the highest in males 30-34 and 40-44 years of age. Suicide accounted for 33.2% of all male deaths among those 30-34 years of age and 17.0% of all male deaths among those 40-44 years of age. Deaths from intentional self-harm occur among males at a rate three times greater than that for females.” (ABS, 2016)

Comparison: bullying, sleep, pain

Table 4.13 shows the results of the comparison on workplace bullying, workers' sleep quality and experiences of pain. For both scales used, a higher score means that the participants experienced worse sleep quality or physical pain more often. The FIFO workers sample reported significantly worse sleep quality than the benchmark group ($F(1,370.80) = 59.87, p = .000$). However, the difference for physical pain was no longer significant at the $p = .05$ level after controlling for age, education and professional role ($F(1,1.252) = .644, p = .422$).

Bullying was assessed via the extent to which workers had witnessed bullying or experienced it personally (higher scores representing experiencing more exposure to bullying)¹⁹. FIFO workers were found to be significantly more likely to have witnessed bullying ($F(1,382.07) = 109.34, p = .000$). Also, personally being the victim of bullying is something that is significantly more likely for FIFO workers ($F(1,402.75) = 78.68, p = .000$) than the benchmark group. The scores show that the level of experience with exposure to bullying is vastly higher for FIFO workers than it is for the benchmark group.

Table 4.13
Comparison: bullying, sleep, pain

Construct	Group	M	SD	Welch's t-test			
				df	F	p-value	
Sleep quality	FIFO	2.91	1.15	Between	1	59.87	.000
	Benchmark	2.40	1.09	Within	370.80		
Physical pain	FIFO	3.09	1.41	Between	1	9.41	.002 ¹
	Benchmark	2.84	1.35	Within	369.14		
Victim bullying	FIFO	2.76	1.92	Between	1	78.68	.000
	Benchmark	1.91	1.57	Within	402.75		
Witness bullying	FIFO	4.47	1.12	Between	1	109.34	.000
	Benchmark	3.74	1.09	Within	382.07		

Note. ¹ After controlling for age, education and professional role in an ANCOVA, these results are no longer statistically significant at the $p < .05$ level.

Participants who reported having been a victim or a witness of bullying also indicated who the sources of the bullying were. Table 4.14 shows that mainly supervisors and team members are considered to be sources of bullying and that this pattern is consistent across the FIFO and benchmark group.

Table 4.14
Sources of bullying

	Percentage FIFO (n FIFO)	Percentage Benchmark group (n benchmark group)
Supervisor/management	40.54% (1071)	35.53% (54)
My team members	34.03% (899)	31.58% (48)
Staff not part of my team	23.24% (614)	23.03% (35)
Other	2.20% (58)	9.87% (15)
Total	100% (2642)	100% (152)

¹⁹ The survey used the following definition: "Bullying means that somebody sees themselves to be the target of negative actions from one or several persons. The negative actions happen repeatedly and over a period of time. The person being bullied may find it hard to defend him or herself against these actions" (Agervold & Mikkelsen, 2004)

Summary: suicidal risk and bullying, pain and sleep

- There is a small, but significant effect with regards to FIFO workers having worse scores on feelings of thwarted belonging and suicidal intent. However, these differences were partly attributable to their education and to some extent their job role.
- FIFO workers had significantly worse sleep quality than the benchmark group.
- FIFO workers both witnessed and experienced bullying at work significantly more often when compared to the benchmark group.
- The main sources of bullying are supervisors (40.5%) and team members (34.0%).

4.3.1.2 Comparisons of mental health and wellbeing in FIFO workers and the norm group

For mental ill-health, wellbeing and physical pain, appropriate norm data were found where the samples mainly consisted of individuals of working age. However, it should be noted that no suitable norm data was available with regards to burnout, sleep and suicidal risk.

To identify how the levels of depression and anxiety of the FIFO sample differed from national Australian scores, a wider Australian sample from the 2007 Australian National Survey of Mental Health and Wellbeing (NSMHWB) was considered. This sample is a nationally representative epidemiological survey of the Australian adult population and the total sample contained 8841 individuals aged 16 and above. Based on the mean sum scores of psychological distress (K10, anxiety and depression) reported in the article by Slade, Grove and Burgess (2011), we conducted a one sample t-test (see Table 4.15). This test showed that the scores for the FIFO sample on anxiety and depression were significantly higher than for the norm group ($t(3041) = 40.96, p = .000$). For men ($t(2521) = 37.02, p = .000$) and women in the FIFO sample ($t(515) = 15.35, p = .000$) the differences with the norm sample, divided by gender were also statistically significant.

Table 4.15

Comparison: mental health and wellbeing

	Group	M	SD/SE	One sample t-test			
				df	T	p-value	
K10	FIFO	19.36	SD=7.14	Between	1		
	Norm	14.50	SE ¹ =0.10	Within	3042	37.49	.000
K10 Men	FIFO	19.25	SD=7.12	Between	1		
	Norm	14.00	SE=0.10	Within	2522	37.02	.000
K10 Women	FIFO	19.91	SD=7.27	Between	1		
	Norm	15.00	SE=0.10	Within	516	15.35	.000
Emotional wellbeing (satisfaction/happiness)	FIFO	4.47	SD=1.12	Between	1		
	Norm	4.67	SD=0.94	Within	3039	-10.11	.000
Social wellbeing (trust in society)	FIFO	3.38	SD=1.33	Between	1		
	Norm	3.33	SD=1.01	Within	3038	1.90	.058
Psychological wellbeing (self-acceptance)	FIFO	4.17	SD=1.19	Between	1		
	Norm	4.18	SD=0.99	Within	3036	-0.61	.540

Note. ¹SE = Standard error

For comparing the different levels of psychological distress (K10) between the FIFO sample and the Australian national norm sample, we looked at the results reported by the Australian Bureau of Statistics for 2014–2015, as these give an overview of the percentages of respondents experiencing psychological stress. Table 4.16 shows that in the FIFO sample a total of 32.61% of the participants experienced high or very high levels of stress, whereas in the Australian norm sample this was only 11.70% of the respondents, or 9.8% for males. A total of 68.0% of the Australian norm group reported low psychological distress (71.1% for males), whereas only 37.11% of the FIFO workers included in this study reported low levels of anxiety and depression.

Table 4.16
K10 low to very high psychological distress distribution

Psychological distress	Percentage FIFO (<i>n</i> FIFO)	Percentage Australian norm data (<i>males</i>)
Low (score 10–15)	37.11%	68.0% (71.1%)
Moderate (score 16–21)	30.28%	19.5% (18.2%)
High (score 22–30)	21.83%	8.0% (6.7%)
Very high (score 31–50)	10.78%	3.7% (3.1%)

In Table 4.17 further information on the K10 is displayed, with a division based on males within different age groups. When considering psychological distress based on age, the percentages mainly show that younger FIFO workers more often experience higher psychological distress than older workers. The FIFO worker age groups 18–24, 25–34 and 35–44 all have well over 30% of their participants with high or very high psychological distress. The same general pattern can be seen in the norm group, where the percentage of people with low psychological distress rises as people in the norm group are of a higher age.

Table 4.17
K10 by age (percentages)

Age group	Psychological distress									
	Low		Moderate		High		Very high		High/very high	
	FIFO	Norm	FIFO	Norm	FIFO	Norm	FIFO	Norm	FIFO	Norm
18–24	26.5	65.1	35.7	22.4	23.5	7.8	14.3	3.5	37.8	11.1
25–34	30.1	67.7	32.6	22.0	26.4	6.2	10.9	3.2	37.3	9.8
35–44	33.5	70.8	32.2	19.7	24.6	6.5	9.7	3.5	34.3	10.0
45–54	42.9	74.4	27.8	16.1	21.1	5.6	8.1	3.8	29.2	9.2
55–64	51.3	72.3	25.1	16.8	17.3	6.8	6.3	2.9	23.6	9.8
65–74	62.5	75.9	16.7	12.9	20.8	6.7	0.0	3.4	20.8	9.7
75+	N/A	73.3	N/A	15.1	N/A	7.2	N/A	1.1	N/A	9.0

Note. The FIFO age group 65–74 only consisted of 24 participants.

Comparison wellbeing

FIFO worker wellbeing was compared to a sample of 1662 Dutch respondents between the ages of 18 and 87 years (data reported by Lamers et al., 2011). The scale used in the FIFO survey consisted of nine items instead of the 14 items that had been used by Lamers et al. (2011). The number of items measuring social (e.g. having trust in a good society) and psychological (e.g. self-acceptance and personal growth) wellbeing had been reduced from five and six items respectively to minimise the survey length of the FIFO worker survey (excluding those items with the lowest factor loadings).

Given that all other items were identical, and the FIFO worker survey had retained the key items of the scale (i.e. the highest loading items), the mean scores on wellbeing were compared. Table 4.15 above shows that for social ($t(3037) = 1.90, p = .058$) and psychological wellbeing ($t(3034) = -0.61, p = .540$) the difference did not meet the threshold for statistical significance. However, the norm group's emotional wellbeing differed significantly from the FIFO sample ($t(3038) = -10.11, p = .000$), with the norm group having better emotional wellbeing.

Summary: FIFO workers' mental health and wellbeing in comparison with norm data

- FIFO workers have significantly higher levels of anxiety and depression compared to an Australian sample.
- Almost one third of the FIFO workers (32.61%) experienced high or very high levels of stress, whereas in the Australian norm data this was only slightly more than one tenth of the respondents (11.7% in the sample, 9.8% for males).
- The age groups 18–24, 25–34 and 35–44 are more likely to experience high or very high psychological distress (for FIFO workers this is respectively 37.8%, 37.3% and 34.3%).
- FIFO workers have significantly lower levels of emotional wellbeing (e.g. feelings of satisfaction and happiness) than the norm group, but FIFO workers did not differ significantly from the norm group on social (e.g. having trust in a good society) and psychological (e.g. self-acceptance and personal growth) wellbeing.

Norm data physical pain and bullying

The People at Work project provided a comparison sample for the questions on physical pain included in the survey. The comparison sample stems from different organisations in Australia, with the majority located in Queensland. In total, the survey was completed by 11,890 people. Table 4.18 provides an overview of the mean scores, standard deviations and the results of the one sample t-test on the questions around the physical pain experience of FIFO workers and the norm group. The one sample t-tests showed significant differences in the frequency of physical pain in the neck ($t(2966) = -8.324, p = .000$), shoulders ($t(2958) = -6.321, p = .000$), wrists/hands ($t(2942) = 2.777, p = .006$) and upper back ($t(2958) = -6.324, p = .000$) between FIFO workers and norm data. For all these musculoskeletal symptoms, except for wrist/hands, the norm group experienced pain more often than the FIFO sample.

Table 4.18

Comparison: FIFO workers and norm data pain

Physical Pain	Group	M	SD	One sample t-test			
				Df	t	p-value	
Neck	FIFO	3.22	1.80	Between	1		
	Norm	3.50	1.90	Within	2967	-8.324	.000
Shoulders	FIFO	3.29	1.83	Between	1		
	Norm	3.50	1.90	Within	2959	-6.321	.000
Wrists/hands	FIFO	2.69	1.67	Between	1		
	Norm	2.60	1.70	Within	2943	2.777	.006
Upper back	FIFO	2.70	1.69	Between	1		
	Norm	2.90	1.80	Within	2959	-6.324	.000
Lower back	FIFO	3.46	1.78	Between	1		
	Norm	3.40	1.90	Within	2982	1.814	.070

For the bullying comparison data from the People at Work Project was also used, consisting of 11,890 working people. It should be noted that the People at Work survey had seven response options to the bullying questions, whereas our FIFO survey had five to align the response options to the remainder of the survey. The two options that were eliminated from the FIFO survey were “once in a while” and “some of the time”, which were deemed vague compared to the other options. Response options were matched between the two scales based on their content so that a comparison was possible. Finally, the People at Work report only provides percentages for each of the response options, so that a direct comparison via a t-test or another statistic was not possible, however, we provide a descriptive comparison.

Table 4.19 displays the comparison of the FIFO and the Australian sample. The questions about bullying referred to the frequency with which participants had experienced bullying or witnessed others being bullied in the previous six months. The percentages for never or rarely being personally bullied are slightly lower for the FIFO sample (81.5%) than for the norm group (86%). Further, higher proportions of FIFO workers reported to have experienced bullying more frequently, i.e. at least monthly compared to the norm data (18.5% of FIFO workers compared to 14% in the norm data). FIFO workers have witnessed bullying at their workplace more often, i.e. at least monthly when comparing this to the norm group (31.4% for the FIFO workers and 17% for the norm group).

Table 4.19

Comparison: norm data bullying

	Group	Subjected to workplace bullying	Group	Witness workplace bullying
Never	FIFO	51.3%	FIFO	34.1%
	Norm	61.0%	Norm	49.0%
Rarely	FIFO	30.2%	FIFO	34.6%
	Norm	25.0%	Norm	34.0%
2–3 times a month	FIFO	10.0%	FIFO	17.0%
	Norm	9.0%	Norm	11.0%
2–3 times a week	FIFO	5.1%	FIFO	8.3%
	Norm	3.0%	Norm	4.0%
Almost daily	FIFO	3.4%	FIFO	6.1%
	Norm	2.0%	Norm	2.0%

The People at Work project asked participants about the main sources for bullying at the workplace and this question was also used in comparison with the FIFO survey. These results show that supervisors were the primary source of bullying in the FIFO sample, compared to team members in the norm data (see Table 4.20). Further, FIFO workers reported higher levels of exposure to bullying from staff that are not part of their team (23.24%), compared to the norm group (7.00%).

Table 4.20

Sources of bullying

	Percentage FIFO	Percentage Norm
Supervisor/management	40.54%	31.30%
My team members	34.03%	35.10%
Staff not part of my team	23.24%	7.00%
Other	2.20%	26.40%

Note. “Other” includes external clients for the norm group; this was unspecified for FIFO workers.

Summary: comparison of FIFO bullying and pain experiences with norm data

- FIFO workers experienced physical pain in the neck, shoulders and upper back significantly less often than the norm group.
- FIFO workers experienced being bullied personally more frequently (i.e. at least monthly) compared to the norm data.
- FIFO workers witnessed bullying at their workplace more often (i.e. at least monthly) when comparing this to the norm group.
- FIFO workers were more likely to experience bullying from supervisors than the norm group. The amount of bullying from their own team members was similar.

4.3.1.3 Summary prevalence mental health and wellbeing FIFO workers

FIFO workers in this sample have significantly worse scores on depression and anxiety (as measured by the K10) than both the benchmark group and the norm group. Compared to the benchmark group, FIFO workers had high/very high stress levels almost twice as often. Almost one third of FIFO workers in this sample had high/very high stress levels, which is a significant proportion of the sample (and much higher than Australian norms, with 11.7% of the population reporting high/very high stress). Further, FIFO workers experienced bullying significantly more often than others.

With regard to suicide, when looking at thwarted belonging and suicidal intent, the scores are significantly worse for FIFO workers. However, after controlling for differences between the groups, they were no longer significant. In other words, differences in suicide risk appear to be attributable to the fact that the FIFO worker sample is less educated and more likely to have operators/technician/trade workers.

4.3.1.4 FIFO work arrangements link to FIFO workers' mental health and wellbeing

Next, the aspects of FIFO work and other aspects of the participants' life that may be linked to their mental health and wellbeing are considered. Doing so provides insights into which aspects will be best targeted in activities designed to address the mental health and wellbeing in FIFO workers. The analysis included hierarchical regressions and dominance analysis.

Regression analysis indicates how much variance in each outcome (mental health, wellbeing and suicidal risk) each group of factors explained by itself, and to what extent each concept considered under each group of factors contributes to the amount of variance explained. In the first step of the regression, demographics (gender, age, level of education and years in FIFO work) were entered, so that in the subsequent step the role of the specific factors can be identified while controlling for these demographic attributes of FIFO workers. Because of the large sample sizes involved, only effects that are significant with an alpha of .001 and .005 are interpreted as significant. This does not mean that other factors (e.g. that are significant with an alpha of .05) are unimportant; rather, that they tend to be less important on average than the factors we highlight.

Dominance analysis complements the findings from the regressions by providing an overview across all the factors together and illustrates their relevance at a higher level. For more information about these analyses and the results, see Appendix B.2.1.

Person factors

A range of person factors were found to be associated with mental ill-health. Person factors (or aspects of the individual that might shape how they respond to situations, such as recovery and coping styles) explained 44% of variance in the K10-scores and 27% of the variance in burnout.

Three of the four coping styles were linked with depression and anxiety (K10, see Table 4.21); namely, seeking support was associated with lower depression and anxiety scores ($\beta = -.08$; $p < .001$), whereas distraction ($\beta = .10$; $p < .001$) and disengagement ($\beta = .32$; $p < .001$) were linked with higher depression and anxiety scores. Further, higher resilience was linked with lower K10-scores ($\beta = -.10$; $p < .001$) and was the ability of the worker to detach (i.e. mentally switch off) from their work ($\beta = -.16$; $p < .001$).

Finally, the extent to which workers feel a sense of positive emotional attachment to FIFO work (affective FIFO commitment) was linked with lower K10-scores ($\beta = -.23$; $p < .001$), whereas the perceived cost or necessity to stay in FIFO employment (continuance FIFO commitment) was associated with higher depression and anxiety scores ($\beta = .11$; $p < .001$).

Similar results were found regarding the links of person factors with burnout. Out of the four coping styles, distraction ($\beta = .09$; $p < .001$) as well as disengagement ($\beta = .18$; $p < .001$) were indicated to be dysfunctional coping styles in relation to burnout. The workers' ability to mentally detach from work was found to be linked with lower burnout scores ($\beta = -.18$; $p < .001$). Finally, affective FIFO commitment (emotional attachment to the organisation) was associated with lower burnout scores ($\beta = -.26$; $p < .001$), whereas continuance commitment (the benefits from commitment to the organisation, "golden handcuffs") was linked with higher scores ($\beta = .13$; $p < .001$).

Table 4.21
Regression of self-reported mental ill-health on person factors

Variables	K10 (depression & anxiety)				Burnout			
	B	SE B	β	R ²	B	SE B	β	R ²
Step 1								
Age	-0.11	.02	-.16**		-0.02	.01	-.11**	
Number of dependants	0.07	.15	.01		-0.02	.04	-.02	
Level of education	-0.44	.12	-.10**		-0.04	.03	-.03	
Years in FIFO	0.00	.03	.00	.031	0.00	.01	.00	.014
Step 2								
Age	-0.07	.02	-.11**		-0.01	.01	-.06	
Number of dependants	-0.03	.12	-.01		-0.05	.03	-.04	
Level of education	-0.11	.10	-.02		0.02	.03	.02	
Years in FIFO	-0.01	.03	-.01		0.00	.01	.00	
Coping—active	-0.49	.23	-.05		-0.09	.06	-.04	
Coping—seeking support	-0.62	.17	-.08**		-0.11	.05	-.06	
Coping—distraction	0.83	.19	.10**		0.20	.05	.09**	
Coping—disengagement	3.09	.25	.32**		0.43	.07	.18**	
Resilience	-0.85	.21	-.10**		-0.05	.06	-.02	
Perceived masculinity norms	0.10	.27	.01		-0.06	.08	-.02	
Ability to detach from work	-1.12	.15	-.16**		-0.28	.04	-.16**	
Affective FIFO commitment	-1.29	.13	-.23**		-0.34	.04	-.26**	
Continuance FIFO commitment	0.49	.10	.11**	.437	0.14	.03	.13**	.270

Note. * $p < .005$. ** $p \leq .001$; Note: gender was constant in these regression as perceived masculinity norms were only reported by men

Person factors explained 41% of variance in emotional wellbeing (e.g. feelings of satisfaction and happiness), 27% of variance in social wellbeing (e.g. having trust in a good society) and 41% in psychological wellbeing ((e.g. self-acceptance and personal growth; see Table 4.22). Across all

person factors, five were found to be associated with all three types of mental health and wellbeing (i.e. emotional, social and psychological). Active coping ($\beta_{\text{emot WB}} = .13; p < .001; \beta_{\text{soc WB}} = .13; p < .001; \beta_{\text{psych WB}} = .19; p < .001$), seeking support as a coping strategy, ($\beta_{\text{emot WB}} = .18; p < .001; \beta_{\text{soc WB}} = .23; p < .001; \beta_{\text{psych WB}} = .18; p < .001$) and the ability to detach from work ($\beta_{\text{emot WB}} = .14; p < .001; \beta_{\text{soc WB}} = .09; p < .001; \beta_{\text{psych WB}} = .10; p < .001$), as well as affective commitment to FIFO work ($\beta_{\text{emot WB}} = .21; p < .001; \beta_{\text{soc WB}} = .17; p < .001; \beta_{\text{psych WB}} = .17; p < .001$), were all linked to better wellbeing. On the contrary, coping styles of distraction ($\beta_{\text{emot WB}} = -.09; p < .001$) and disengagement ($\beta_{\text{emot WB}} = -.24; p < .001; \beta_{\text{soc WB}} = -.14; p < .001; \beta_{\text{psych WB}} = -.24; p < .001$), as well as a continued commitment towards FIFO work ($\beta_{\text{emot WB}} = -.11; p < .001; \beta_{\text{soc WB}} = -.10; p < .001; \beta_{\text{psych WB}} = -.10; p < .001$), were negatively linked with wellbeing.

Table 4.22

Regression of self-reported wellbeing on person factors

Variables	Emotional wellbeing				Social wellbeing				Psychological wellbeing			
	B	SE B	β	R ²	B	SE B	β	R ²	B	SE B	β	R ²
Step 1												
Age	0.00	.00	.01		0.01	.00	.06		0.00	.00	.00	
Number of dependants	0.00	.02	.00		0.01	.03	.01		0.02	.03	.02	
Level of education	0.05	.02	.08		0.11	.02	.14**		0.08	.02	.10**	
Years in FIFO	0.01	.01	.04	.006	0.00	.01	-.02	.020	0.01	.01	.03	.011
Step 2												
Age	0.00	.00	-.03		0.00	.00	.03		0.00	.00	-.04	
Number of dependants	0.01	.02	.02		0.03	.02	.03		0.03	.02	.03	
Level of education	0.00	.02	-.01		0.06	.02	.07		0.01	.02	.01	
Years in FIFO	0.01	.00	.05		0.00	.01	-.01		0.01	.01	.04	
Coping—active	0.19	.04	.13**		0.21	.05	.13**		0.29	.04	.19**	
Coping—seeking support	0.20	.03	.18**		0.32	.04	.23**		0.23	.03	.18**	
Coping—distraction	-0.11	.03	-.09**		-0.10	.04	-.06		-0.08	.03	-.05	
Coping—disengagement	-0.37	.04	-.24**		-0.26	.05	-.14**		-0.38	.04	-.24**	
Resilience	0.12	.03	.09**		0.00	.04	.00		0.16	.04	.11**	
Perceived masculinity norms	-0.04	.04	-.02		-0.01	.06	-.00		-0.02	.05	-.01	
Ability to detach from work	0.16	.03	.14**		0.11	.03	.09**		0.12	.03	.10**	
Affective FIFO commitment	0.18	.02	.21**		0.17	.03	.17**		0.16	.02	.17**	
Continuance FIFO commitment	-0.08	.02	-.11**	.414	-0.09	.02	-.10**	.267	-0.08	.02	-.10**	.410

Note. * $p < .005$. ** $p \leq .001$; Note: gender was constant in these regression as perceived masculinity norms were only reported by men

In relation to the concepts relevant to suicidal risk, person factors explained 43% of variance in thwarted belonging, 43% of variance in burdensomeness and 10% of variance in suicidal intent (see Table 4.23). Four person factors were significantly linked with thwarted belonging and burdensomeness respectively, namely a coping style of disengagement ($\beta_{\text{thwarted belonging}} = .29; p < .001; \beta_{\text{burdensomeness}} = .35; p < .001$), ability to mentally detach from work ($\beta_{\text{thwarted belonging}} = -.11; p < .001; \beta_{\text{burdensomeness}} = -.11; p < .001$), affective commitment to FIFO work ($\beta_{\text{thwarted belonging}} = -.18; p < .001; \beta_{\text{burdensomeness}} = -.09; p < .001$) and continuance of FIFO commitment ($\beta_{\text{thwarted belonging}} = .09; p < .001; \beta_{\text{burdensomeness}} = .08; p < .005$). Notably, a coping style of disengagement was the only person factor that was also associated with suicidal intent ($\beta = .20; p < .001$).

Table 4.23
Regression of suicidal risk on person factors

Variables	Thwarted belonging			R ²	Burdensomeness			R ²	Suicidal intent			R ²
	B	SE B	β		B	SE B	β		B	SE B	β	
Step 1												
Age	0.00	.00	.01		0.00	.00	-.02		-0.01	.01	-.04	
Number of dependants	0.00	.03	.00		0.02	.02	.03		0.00	.03	.00	
Level of education	-0.07	.02	-.09*		-0.06	.02	-.09**		-0.08	.03	-.09*	
Years in FIFO	0.00	.01	.01	.008	0.00	.01	.02	.011	0.00	.01	.00	.009
Step 2												
Age	0.01	.00	.04		0.00	.00	.02		0.00	.01	-.02	
Number of dependants	-0.01	.02	-.02		0.02	.02	.03		0.00	.03	.00	
Level of education	0.00	.02	.00		-0.01	.02	-.01		-0.04	.03	-.05	
Years in FIFO	0.00	.01	-.02		0.00	.00	.00		0.00	.01	-.01	
Coping—active	-0.12	.04	-.07*		-0.04	.03	-.03		-0.05	.06	-.03	
Coping—seeking support	-0.40	.03	-.29**		-0.11	.03	-.11**		-0.11	.05	-.07	
Coping—distraction	0.13	.04	.09**		0.07	.03	.06		0.04	.05	.03	
Coping—disengagement	0.52	.05	.29**		0.47	.04	.35**		0.38	.07	.20**	
Resilience	-0.04	.04	-.03		-0.08	.03	-.07		-0.09	.06	-.06	
Perceived masculinity norms	0.13	.05	.06		0.20	.04	.12**		0.13	.07	.06	
Ability to detach from work	-0.14	.03	-.11**		-0.10	.02	-.11**		-0.10	.04	-.07	
Affective FIFO commitment	-0.18	.02	-.18**		-0.07	.02	-.09**		0.01	.03	.01	
Continuance FIFO commitment	0.08	.02	.09**	.434	0.05	.02	.08*	.335	0.04	.03	.05	.112

Note. * $p < .005$. ** $p \leq .001$; Note: gender was constant in these regression as perceived masculinity norms were only reported by men

Summary: person factors

- A coping style of “disengagement” had a strong significant negative link with the two outcomes assessing mental ill health (K10 and burnout), while there was a significant positive link for affective FIFO commitment.
- The strongest significant associations with emotional (e.g. feelings of satisfaction and happiness), social and psychological (e.g. self-acceptance and personal growth) wellbeing were found for seeking support (positively) and disengagement (negatively) as coping styles, as well as positive link for affective commitment to FIFO work (i.e. a positive emotional attachment to FIFO work).
- A coping style of “disengagement” was the key factor significantly linked to higher levels of feelings of thwarted belonging, perceived burdensomeness and, most critically, suicidal risk and intent. Seeking support and active coping on the other hand have a significant positive influence mainly on the three aspects of wellbeing.

Job factors

Job factors collectively explained 44% of variance in depression and anxiety (K10-scores) and 40% of variance in burnout (see Table 4.24). Notably, two of the job factors that had the strongest links with both outcomes were FIFO specific job attributes, separation from family ($\beta_{K10} = .15$; $p < .001$; $\beta_{burnout} = .11$; $p < .001$) and the psychological transitioning between time on and off site (e.g. settling back into life at home or site; $\beta_{K10} = .25$; $p < .001$; $\beta_{burnout} = .24$; $p < .001$). It should be noted that the reliability check on family separation was a bit lower, so this finding should be interpreted with caution. It was also interesting to find that the perception of autonomy during time off and on site was more strongly linked with both outcomes $\beta_{K10} = -.10$; $p < .001$; $\beta_{burnout} = -.07$; $p < .001$, compared to the autonomy that is experienced while at home ($\beta_{K10} = -.07$; $p < .001$; $\beta_{burnout} = .00$; $p > .005$). Out of the job factors that are universal to jobs (error costs, workload, autonomy, task variety, job insecurity

and feedback from job), workload was linked with both outcomes ($\beta_{K10} = .16; p < .001; \beta_{burnout} = .30; p < .001$).

Table 4.24
Regression of mental ill-health on job factors

Variables	K10 (depression & anxiety)				Burnout			
	B	SE B	β	R ²	B	SE B	β	R ²
Step 1								
Gender	0.57	.39	.03		0.25	.10	.05	
Age	-0.11	.02	-.16**		-0.02	.00	-.11**	
Number of dependants	0.10	.11	.02		-0.01	.03	-.01	
Level of education	-0.45	.09	-.10**		-0.04	.02	-.04	
Years in FIFO	0.00	.03	.00	.032	0.00	.01	.01	.016
Step 2								
Gender	1.21	.31	.06**		0.40	.08	.09**	
Age	-0.07	.01	-.10**		-0.01	.00	-.04	
Number of dependants	-0.09	.09	-.02		-0.04	.02	-.03	
Level of education	-0.19	.07	-.04		-0.01	.02	-.01	
Years in FIFO	0.03	.02	.02		0.00	.01	.01	
Autonomy time off on-site	-0.73	.13	-.10**		-0.13	.03	-.07**	
Autonomy time off at home	-0.53	.13	-.07**		0.01	.03	.00	
Separation from family	1.27	.16	.15**		0.23	.04	.11**	
Psychological transitioning between on and off time	1.57	.12	.25**		0.36	.03	.24**	
Error costs	-0.11	.11	-.02		0.02	.03	.01	
Workload	1.11	.12	.16**		0.51	.03	.30**	
Autonomy	-0.52	.14	-.07**		-0.06	.04	-.03	
Task variety	-0.23	.13	-.03		-0.06	.03	-.03	
Job insecurity	0.74	.10	.14**		0.09	.03	.07**	
Feedback from job	-0.55	.13	-.08**		-0.16	.03	-.09**	
Roster ratio	-0.12	.17	-.01		-0.05	.04	-.03	
Roster satisfaction	0.34	.11	.06**		0.12	.03	.09**	
Work hours on site	0.05	.02	.05*		0.00	.00	.00	
Travel duration to site	-0.02	.02	-.02		-0.01	.00	-.03	
Operator vs contractor	-0.31	.27	-.02		-0.10	.07	-.02	
Construction vs production	-1.30	.45	-.06*	.444	-0.17	.11	-.03	.398

Note. * $p < .005$. ** $p \leq .001$; roster ratio = days on site/ days off site; construction = 1, production = 0, operator = 1, contractor = 2

Job factors were found to explain 32% of variance in emotional wellbeing (e.g. feelings of satisfaction and happiness), 24% of variance in social wellbeing (e.g. having trust in a good society) and 30% in psychological wellbeing (e.g. self-acceptance; see Table 4.25). The results show that separation from family ($\beta_{emot\ WB} = -.11; p < .001; \beta_{soc\ WB} = -.09; p < .001; \beta_{psych\ WB} = -.11; p < .001$), as well as the psychological transitioning between time on and off site (e.g. settling back into life at home or site $\beta_{emot\ WB} = -.20; p < .001; \beta_{soc\ WB} = -.12; p < .001; \beta_{psych\ WB} = -.16; p < .001$) are key job factors that are associated with FIFO worker wellbeing. It should also be noted that travel times to site ($\beta_{emot\ WB} = .04; p > .005; \beta_{soc\ WB} = .01; p > .005; \beta_{psych\ WB} = .03; p > .005$) and work hours on site did not meet the threshold for statistical significance with wellbeing ($\beta_{emot\ WB} = -.05; p > .005; \beta_{soc\ WB} = -.03; p > .005; \beta_{psych\ WB} = -.03; p > .005$). Further, out of the universal job factors, perceived job security ($\beta_{emot\ WB} = -.11; p < .001; \beta_{soc\ WB} = -.13; p < .001; \beta_{psych\ WB} = -.11; p < .001$) and feedback that is inherently received by the work tasks ($\beta_{emot\ WB} = .09; p < .001; \beta_{soc\ WB} = .12; p < .001; \beta_{psych\ WB} = .14; p < .001$) were also some of the most relevant job factors.

Table 4.25
Regression of wellbeing on job factors

Variables	Emotional wellbeing				Social wellbeing				Psychological wellbeing			
	B	SE B	β	R ²	B	SE B	β	R ²	B	SE B	β	R ²
Step 1												
Gender	0.16	.06	.05		0.22	.07	.06*		0.10	.07	.03	
Age	0.00	.00	.01		0.01	.00	.06		0.00	.00	.00	
Number of dependants	0.01	.02	.01		0.03	.02	.03		0.02	.02	.03	
Level of education	0.05	.01	.07**		0.11	.02	.13**		0.07	.02	.10**	
Years in FIFO	0.01	.00	.04	.009	0.00	.01	-.02	.023	0.01	.00	.04	.012
Step 2												
Gender	0.07	.05	.02		0.09	.07	.03		0.04	.06	.01	
Age	0.00	.00	-.03		0.00	.00	.03		0.00	.00	-.04	
Number of dependants	0.04	.02	.05		0.04	.02	.05		0.05	.02	.06*	
Level of education	0.01	.01	.01		0.05	.02	.07**		0.04	.01	.05	
Years in FIFO	0.00	.00	.01		-0.01	.00	-.04		0.00	.00	.00	
Autonomy time off on-site	0.08	.02	.07**		0.07	.03	.05		0.07	.03	.06*	
Autonomy time off at home	0.13	.02	.10**		0.06	.03	.04		0.10	.02	.08**	
Separation from family	-0.14	.03	-.11**		-0.13	.04	-.09**		-0.15	.03	-.11**	
Psychological transitioning between on and off time	-0.20	.02	-.20**		-0.14	.03	-.12**		-0.17	.02	-.16**	
Error costs	0.01	.02	.01		-0.07	.02	-.06*		0.02	.02	.02	
Workload	-0.10	.02	-.09**		-0.07	.03	-.05		-0.09	.02	-.08**	
Autonomy	0.09	.03	.08**		0.11	.03	.08**		0.11	.03	.09**	
Task variety	0.10	.02	.09**		0.07	.03	.06		0.12	.02	.11**	
Job insecurity	-0.09	.02	-.11**		-0.13	.02	-.13**		-0.10	.02	-.11**	
Feedback from job	0.10	.02	.09**		0.16	.03	.12**		0.17	.03	.14**	
Roster ratio	0.02	.03	.01		-0.01	.04	-.01		0.02	.03	.02	
Roster satisfaction	-0.06	.02	-.07**		-0.04	.02	-.04		-0.03	.02	-.03	
Work hours on site	-0.01	.00	-.05		-0.01	.00	-.03		-0.01	.00	-.03	
Travel duration to site	0.01	.00	.04		0.00	.00	.01		0.01	.00	.03	
Operator vs contractor	0.13	.05	.05		-0.01	.06	.00		0.18	.05	.07**	
Construction vs production	0.19	.08	.05	.318	0.11	.10	.03	.239	0.17	.08	.05	.302

Note. * $p < .005$. ** $p \leq .001$; roster ratio = days on site/days off site; construction = 1, production = 0, operator = 1, contractor = 2

Finally, job factors explained 3% of variance in thwarted belonging, 23% of variance in perceived burdensomeness and 10% in suicidal intent (see Table 4.26). Out of the job factors, higher levels of perceived autonomy during time off at home was linked with reduced experience of thwarted belonging and burdensomeness ($\beta_{\text{thwarted belonging}} = -.11$; $p < .001$; $\beta_{\text{burdensomeness}} = -.12$; $p < .001$), whereas the perceived psychological burden from transitioning between site and home life was associated with increased levels in these feelings ($\beta_{\text{thwarted belonging}} = .19$; $p < .001$; $\beta_{\text{burdensomeness}} = .15$; $p < .001$). Further, perceived job security was linked with thwarted belonging and burdensomeness ($\beta_{\text{thwarted belonging}} = .14$; $p < .001$; $\beta_{\text{burdensomeness}} = .14$; $p < .001$). Notably, four job factors were linked with suicidal intent, namely autonomy during time off at home ($\beta = -.07$; $p < .001$), workload ($\beta = .08$; $p < .001$), perceived job security ($\beta = .12$; $p < .001$) and roster ratio ($\beta = .10$; $p < .001$). Roster ratio was linked in a way so that more days spent on site relative to days spent off site (i.e. a more uneven-time roster) was associated with higher levels of suicidal intent. Also, those working on projects in production phases reported higher levels of suicidal intent ($\beta = -.11$; $p < .001$).

Table 4.26
Regression of suicidal thoughts on job factors

Variables	Thwarted belonging			R ²	Burdensomeness			R ²	Suicidal intent			R ²
	B	SE B	β		B	SE B	β		B	SE B	β	
Step 1												
Gender	-0.26	.07	-.08**		-0.07	.05	-.03		-0.02	.08	-.01	
Age	0.00	.00	.00		0.00	.00	-.02		-0.01	.00	-.04	
Number of dependants	-0.02	.02	-.02		0.02	.02	.03		0.00	.02	.00	
Level of education	-0.07	.02	-.08**		-0.05	.01	-.09**		-0.08	.02	-.09**	
Years in FIFO	0.00	.01	-.00	.013	0.00	.00	.02	.012	0.00	.01	.00	.009
Step 2												
Gender	-0.12	.06	-.04		0.02	.05	.01		0.04	.08	.01	
Age	0.01	.00	.05		0.00	.00	.02		0.00	.00	-.03	
Number of dependants	-0.05	.02	-.06*		-0.01	.01	-.01		-0.02	.02	-.02	
Level of education	-0.02	.01	-.02		-0.02	.01	-.04		-0.05	.02	-.07*	
Years in FIFO	0.01	.00	.02		0.01	.00	.040		0.00	.01	.02	
Autonomy time off on-site	-0.09	.03	-.07**		-0.07	.02	-.07**		-0.08	.04	-.06	
Autonomy time off at home	-0.16	.03	-.11**		-0.13	.02	-.12**		-0.11	.03	-.07**	
Separation from family	0.15	.03	.10**		0.10	.03	.09**		0.02	.04	.01	
Psychological transitioning between on and off time	0.22	.02	.19**		0.13	.02	.15**		0.03	.03	.03	
Error costs	0.03	.02	.02		0.00	.02	.00		0.00	.03	.00	
Workload	0.12	.02	.09**		0.05	.02	.05		0.12	.03	.08**	
Autonomy	-0.07	.03	-.06		-0.08	.02	-.08**		-0.10	.04	-.07	
Task variety	-0.12	.03	-.09**		-0.05	.02	-.06		-0.07	.04	-.05	
Job insecurity	0.14	.02	.14**		0.10	.02	.14**		0.12	.03	.12**	
Feedback from job	-0.15	.03	-.11**		-0.07	.02	-.07*		0.01	.04	.01	
Roster ratio	0.02	.03	.01		0.02	.03	.02		0.16	.05	.10**	
Roster satisfaction	0.04	.02	.04		-0.01	.02	-.01		0.02	.03	.02	
Work hours on site	0.01	.00	.03		0.01	.00	.05*		0.01	.01	.03	
Travel duration to site	-0.01	.00	-.03		0.00	.00	.00		0.00	.00	.00	
Operator vs contractor	-0.13	.05	-.04		-0.03	.04	-.01		-0.06	.07	-.02	
Construction vs production	-0.27	.09	-.07*	.333	-0.16	.07	-.05	.234	-0.48	.12	-.11**	.095

Note. * $p < .005$. ** $p \leq .001$; roster ratio = days on-site/days off-site; construction = 1, production = 0, operator = 1, contractor = 2

Summary: job factors

- Separation from family and the psychological burden of having to transition between site life and home life showed strong significant negative links with mental ill-health related outcomes. A higher workload was significantly linked to worse scores on mental ill-health outcomes. Only for social wellbeing and burdensomeness no link was found.
- Separation from family, the psychological burden of transitioning between going home and going back to site, and job security were all significantly negatively linked to wellbeing; feedback that is inherent in job tasks had a positive link with wellbeing.
- Perceived autonomy during time off at home was significantly linked to lower feelings of thwarted belonging and burdensomeness, while the perceived psychological burden of transitioning between site and home life, and perceived job insecurity were significantly associated with worse feelings of thwarted belonging and burdensomeness.
- Notably, five job factors were significantly linked with suicidal intent. Perceived autonomy at home is significantly linked to lower suicidal intent. Perceived workload, perceived job insecurity, production-site phase (construction vs production) and roster ratio all significantly link to higher suicidal intent. Roster ratio and production-site phase were not linked to K10, burnout and wellbeing.

Team factors

Team factors were another group of factors considered and represent FIFO worker perceptions of their immediate social environment at work. These factors explained 24% of variance in depression and anxiety (K10-scores), and 18% in variance in burnout (see Table 4.27). Out of the team factors considered, perceived support from line managers ($\beta_{K10} = -.22$; $p < .001$; $\beta_{burnout} = -.17$; $p < .001$) as well as co-workers ($\beta_{K10} = -.28$; $p < .001$; $\beta_{burnout} = -.26$; $p < .001$) were linked with mental ill-health.

Table 4.27
Regression of mental ill-health on team factors

Variables	K10 (depression & anxiety)				Burnout			
	B	SE B	β	R ²	B	SE B	β	R ²
Step 1								
Gender	0.57	.50	.03		0.25	.12	.05	
Age	-0.11	.02	-.16**		-0.02	.01	-.11**	
Number of dependants	0.10	.14	.02		-0.01	.03	-.01	
Level of education	-0.45	.11	-.10**		-0.04	.03	-.04	
Years in FIFO	0.00	.03	.00	.032	0.00	.01	.01	.016
Step 2								
Gender	0.72	.44	.04		0.27	.11	.06	
Age	-0.12	.02	-.18**		-0.02	.01	-.13**	
Number of dependants	0.06	.12	.01		-0.02	.03	-.01	
Level of education	-0.21	.10	-.05		0.01	.03	.01	
Years in FIFO	0.00	.03	.00		0.00	.01	.01	
Perceived line manager support	-1.61	.30	-.22**		-0.30	.08	-.17**	
Perceived co-worker support	-2.56	.23	-.28**		-0.57	.06	-.26**	
Inspirational leadership line manager	-0.29	.29	-.04		-0.17	.07	-.10	
Perceived line manager health and safety commitment	-0.09	.25	-.01	.244	0.12	.06	.06	.178

Note. * $p < .005$. ** $p \leq .001$

Team factors explained 24% of variance in emotional wellbeing (e.g. feelings of satisfaction and happiness), 20% in social wellbeing (e.g. having trust in a good society), as well as 23% in psychological wellbeing (e.g. self-acceptance and personal growth) (see Table 4.28). Perceived line manager support was linked with emotional ($\beta = .20$; $p < .001$) and psychological wellbeing ($\beta = .14$; $p < .001$). Perceived support from co-workers was linked with all three forms of wellbeing ($\beta_{emot\ WB} = .31$; $p < .001$; $\beta_{soc\ WB} = .20$; $p < .001$; $\beta_{psych\ WB} = .30$; $p < .001$). Further, inspirational leadership was associated with social wellbeing ($\beta = .19$; $p < .001$), as was the leader commitment to health and safety ($\beta = .10$; $p < .001$).

Table 4.28
Regression of wellbeing on team factors

Variables	Emotional wellbeing				Social wellbeing				Psychological wellbeing			
	B	SE B	β	R ²	B	SE B	β	R ²	B	SE B	β	R ²
Step 1												
Gender	0.16	.08	.05		0.22	.09	.06		0.10	.08	.03	
Age	0.00	.00	.01		0.01	.00	.06		0.00	.00	.00	
Number of dependants	0.01	.02	.01		0.03	.03	.03		0.02	.02	.03	
Level of education	0.05	.02	.07		0.11	.02	.13**		0.07	.02	.10**	
Years in FIFO	0.01	.01	.04	.009	0.00	.01	-.02	.023	0.01	.01	.04	.012
Step 2												
Gender	0.13	.07	.05		0.18	.08	.05		0.07	.07	.02	
Age	0.00	.00	.03		0.01	.00	.07		0.00	.00	.01	
Number of dependants	0.02	.02	.02		0.03	.02	.03		0.03	.02	.04	
Level of education	0.01	.02	.01		0.06	.02	.07*		0.03	.02	.04	
Years in FIFO	0.01	.00	.04		0.00	.01	-.02		0.01	.01	.03	
Perceived line manager support	0.23	.05	.20**		0.04	.06	.03		0.18	.05	.14**	
Perceived co-worker support	0.44	.04	.31**		0.35	.04	.21**		0.44	.04	.30**	

Inspirational leadership line manager	0.02	.05	.01		0.25	.06	.19**		0.11	.05	.10	
Perceived line manager health and safety commitment	0.08	.04	.06	.242	0.14	.05	.10*	.200	0.05	.04	.04	.233

Note. * $p < .005$. ** $p \leq .001$

Team factors explained 28% of variance in thwarted belonging, 12% in perceived burdensomeness and 5% in suicidal intent (see Table 4.29). Higher perceptions of co-worker support were linked with lower thwarted belonging ($\beta = -.38$; $p < .001$) and perceived burdensomeness ($\beta = -.19$; $p < .001$), as well as suicidal intent ($\beta = -.15$; $p < .001$). Perceived line manager support was associated with thwarted belonging ($\beta = -.20$; $p < .001$) as well as burdensomeness ($\beta = -.19$; $p < .001$).

Table 4.29

Regression of suicidal risk on team factors

Variables	Thwarted belonging			R^2	Burdensomeness			R^2	Suicidal intent			R^2
	B	SE B	β		B	SE B	β		B	SE B	β	
Step 1												
Gender	-0.26	.09	-.08		-0.07	.07	-.03		-0.02	.11	-.01	
Age	0.00	.00	.00		0.00	.00	-.02		-0.01	.00	-.04	
Number of dependants	-0.02	.03	-.02		0.02	.02	.03		0.00	.03	.00	
Level of education	-0.07	.02	-.08*		-0.05	.02	-.09**		-0.08	.02	-.09*	
Years in FIFO	0.00	.01	.00	.013	0.00	.00	.02	.012	0.00	.01	.00	.009
Step 2												
Gender	-0.23	.08	-.07*		-0.06	.07	-.02		-0.01	.11	.00	
Age	0.00	.00	-.01		0.00	.00	-.03		-0.01	.00	-.05	
Number of dependants	-0.03	.02	-.03		0.02	.02	.02		0.00	.03	.00	
Level of education	-0.02	.02	-.02		-0.03	.02	-.05		-0.06	.02	-.07	
Years in FIFO	0.00	.01	.00		0.00	.00	.02		0.00	.01	.01	
Perceived line manager support	-0.27	.05	-.20**		-0.19	.05	-.19**		-0.16	.07	-.11	
Perceived co-worker support	-0.63	.04	-.38**		-0.30	.03	-.24**		-0.26	.05	-.15**	
Inspirational leadership line manager	-0.03	.05	-.02		0.06	.04	.06		0.05	.07	.04	
Perceived line manager health and safety commitment	-0.01	.04	-.01	.281	-0.02	.04	-.02	.124	0.00	.06	.00	.049

Note. * $p < .005$. ** $p \leq .001$

Summary: team factors

- Support from line managers and co-workers had a significant negative link with mental ill-health. This suggests that, if line managers and co-workers score higher on support (e.g. by helping with problems at work or being encouraged), the mental health of workers tends to be better.
- Perceived co-worker support had a significant positive association with emotional (e.g. feelings of satisfaction and happiness), social (e.g. having trust in a good society) and psychological (e.g. self-acceptance and personal growth) wellbeing. Perceived line manager support was positively linked with emotional and psychological wellbeing. Inspirational leadership and a strong commitment to health and safety by line managers improved social wellbeing.
- Perceptions of support from line managers and team members was significantly linked with lower thwarted belonging and perceived burdensomeness. Notably, perceived co-worker support was associated with less suicidal intent.

Site and organisational factors

A range of factors that are inherent at the site and organisational level and may be linked with mental health and wellbeing were also included in the analysis. These are factors that are not specific to the immediate work context of the FIFO workers but reside within the wider context in which they work. Even though these are likely to be more distal influencing factors, they are likely to be associated with outcomes of mental health and wellbeing as they will affect the overall experience of workers on site.

Site and organisational factors explained 32% of variance in the K10-scores and 26% of variance in burnout (see Table 4.30). The strongest links with outcomes of mental ill-health were indicated for perceived stigma attached to mental health and wellbeing on site and by the organisation ($\beta_{K10} = .29$; $p < .001$; $\beta_{Burnout} = .18$; $p < .001$). Also, linked with these outcomes were the perceived priority of mental health and wellbeing (reflecting perceptions of a positive climate of mental health and wellbeing; $\beta_{K10} = -.13$; $p < .001$; $\beta_{Burnout} = -.10$; $p < .001$) and the personal experience of bullying on site ($\beta_{K10} = .19$; $p < .001$; $\beta_{Burnout} = .15$; $p < .001$). Notably, across the two outcomes, satisfaction with social activity options on site were significantly linked ($\beta_{K10} = -.08$; $p < .001$; $\beta_{Burnout} = -.12$; $p < .001$), whereas other measures related to recovery options (i.e. including wet mess, dry mess, pool) were not linked.

Table 4.30
Regression of mental ill-health on-site and organisational factors

Variables	K10 (depression & anxiety)			R^2	Burnout			R^2
	B	SE B	β		B	SE B	β	
Step 1								
Gender	0.57	.53	.03		0.25	.13	.05	
Age	-0.11	.02	-.16**		-0.02	.01	-.11**	
Number of dependants	0.10	.15	.02		-0.01	.04	-.01	
Level of education	-0.45	.12	-.10**		-0.04	.03	-.04	
Years in FIFO	0.00	.03	.00	.032	0.00	.01	.01	.016
Step 2								
Gender	0.71	.46	.04		0.28	.12	.06	
Age	-0.11	.02	-.16**		-0.02	.01	-.10**	
Number of dependants	0.09	.13	.02		-0.01	.03	-.01	
Level of education	-0.22	.10	-.05		0.02	.03	.02	
Years in FIFO	-0.01	.03	.00		0.00	.01	.00	
Perceived FIFO work arrangement flexibility	-0.31	.18	-.05		-0.16	.05	-.10**	
Number of recovery options on site	-0.01	.06	-.01		0.01	.01	.01	
Satisfaction with recovery options on site	-0.27	.17	-.04		-0.12	.04	-.07	
Number of social activity options on site	0.00	.10	.00		0.00	.03	.00	
Satisfaction with social activity options on site	-0.48	.14	-.08**		-0.17	.04	-.12**	
Satisfaction with on-site room arrangement	0.03	.14	.01		0.04	.03	.03	
Number of communication options with home	-0.20	.23	-.02		-0.01	.06	-.01	
Perceived relative priority of mental health and wellbeing	-6.93	1.4	-.13**		-1.34	.36	-.10**	
Bullying victim	0.70	.12	.19**		0.13	.03	.15**	
Bullying witness	0.03	.11	.01		0.06	.03	.07	
Perceived stigma at work	2.01	.19	.29**	.316	0.31	.05	.18**	.255

Note. * $p < .005$. ** $p \leq .001$

Next, organisational and site factors (see Table 4.31) were linked with wellbeing outcomes and were found to explain 22% of variance in emotional wellbeing (e.g. feelings of satisfaction and happiness), 19% in social wellbeing (e.g. having trust in a good society) and 21% in psychological wellbeing (e.g. self-acceptance and personal growth). As found for the mental ill-health outcomes, perceived mental health and wellbeing stigma at the workplace had the strongest link with the wellbeing outcomes ($\beta_{\text{emot WB}} = -.24; p < .001$; $\beta_{\text{soc WB}} = -.16; p < .001$; $\beta_{\text{psych WB}} = -.24; p < .001$). Other organisational and site factors that consistently affected all three types of wellbeing were satisfaction with social recovery options ($\beta_{\text{emot WB}} = .10; p < .001$; $\beta_{\text{soc WB}} = .13; p < .001$; $\beta_{\text{psych WB}} = .09; p < .001$), and perceived relative priority for mental health and wellbeing ($\beta_{\text{emot WB}} = .14; p < .001$; $\beta_{\text{soc WB}} = .10; p < .001$; $\beta_{\text{psych WB}} = .10; p < .001$). Having personally experienced bullying on site was also associated with emotional wellbeing and psychological wellbeing ($\beta_{\text{emot WB}} = -.12; p < .001$; $\beta_{\text{psych WB}} = -.24; p < .001$). It should also be noted that perception of flexibility of the FIFO arrangement (i.e. flexibility in roster choice, getting time off for family events) was associated with social wellbeing ($\beta_{\text{soc WB}} = .13; p < .001$).

Table 4.31
Regression of wellbeing on organisational and site factors

Variables	Emotional wellbeing			R^2	Social wellbeing			R^2	Psychological wellbeing			R^2
	B	SE B	β		B	SE B	β		B	SE B	β	
Step 1												
Gender	0.16	.08	.05		0.22	.10	.06		0.10	.09	.03	
Age	0.00	.00	.01		0.01	.00	.06		0.00	.00	.00	
Number of dependants	0.01	.02	.01		0.03	.03	.03		0.02	.03	.03	
Level of education	0.05	.02	.07		0.11	.02	.13**		0.07	.02	.10**	
Years in FIFO	0.01	.01	.04	.009	0.00	.01	-.02	.023	0.01	.01	.04	.012
Step 2												
Gender	0.10	.08	.04		0.15	.09	.04		0.05	.08	.02	
Age	0.00	.00	.01		0.01	.00	.05		0.00	.00	-.01	
Number of dependants	0.01	.02	.01		0.02	.03	.02		0.02	.02	.03	
Level of education	0.02	.02	.03		0.07	.02	.08*		0.04	.02	.06	
Years in FIFO	0.01	.01	.05		0.00	.01	-.01		0.01	.01	.04	
Perceived FIFO work arrangement flexibility	0.08	.03	.07		0.16	.04	.13**		0.10	.03	.09*	
Number of recovery options on site	-0.01	.01	-.05		-0.02	.01	-.05		-0.01	.01	-.04	
Satisfaction with recovery options on site	0.04	.03	.04		0.05	.04	.04		0.07	.03	.06	
Number of social activity options onsite	0.03	.02	.05		0.02	.02	.03		0.02	.02	.04	
Satisfaction with social activity options on site	0.09	.02	.10**		0.14	.03	.13**		0.09	.03	.09**	
Satisfaction with on-site room arrangement	0.00	.02	.00		0.00	.03	.00		-0.02	.02	-.02	
Number of communication options with home	0.02	.04	.02		0.01	.05	.00		0.00	.04	.00	
Perceived relative priority of mental health and wellbeing	1.22	.24	.14**		1.07	.29	.10**		0.94	.26	.10**	
Bullying victim	-0.07	.02	-.12**		-0.06	.02	-.08		-0.09	.02	-.15**	
Bullying witness	0.02	.02	.04		0.00	.02	.00		0.03	.02	.05	
Perceived stigma at work	-0.26	.03	-.24**	.218	-0.21	.04	-.16**	.191	-0.28	.03	-.24**	.211

When linked with suicidal risk, organisational and site factors explained 27% of variance in thwarted belonging, 20% in burdensomeness and 7% in suicidal intent (see Table 4.32). Out of the organisational and site factors, perceived stigma was associated with all three outcomes ($\beta_{\text{thwarted belonging}} = .28; p < .001$; $\beta_{\text{burdensomeness}} = .30; p < .001$; $\beta_{\text{suicidal intent}} = .16; p < .001$). Further, having

personally experienced bullying was linked with thwarted belonging and burdensomeness ($\beta_{\text{thwarted belonging}} = .16; p < .001$; $\beta_{\text{burdensomeness}} = .12; p < .001$). Thwarted belonging was also associated with satisfaction with social activities offered on site ($\beta = -.09; p < .001$), and perceived relative priority of mental health and wellbeing on site ($\beta = -.11; p < .001$).

Table 4.32
Regression of suicidal risk on organisational and site factors

Variables	Thwarted belonging				Burdensomeness				Suicidal intent			
	B	SE B	β	R ²	B	SE B	β	R ²	B	SE B	β	R ²
Step 1												
Gender	-0.26	.10	-.08		-0.07	.07	-.03		-0.02	.11	-.01	
Age	0.00	.00	.00		0.00	.00	-.02		-0.01	.01	-.04	
Number of dependants	-0.02	.03	-.02		0.02	.02	.03		0.00	.03	.00	
Level of education	-0.07	.02	-.08*		-0.05	.02	-.09**		-0.08	.03	-.09*	
Years in FIFO	0.00	.01	.00	.013	0.00	.01	.02	.012	0.00	.01	.00	.009
Step 2												
Gender	-0.20	.09	-.06		-0.04	.07	-.02		-0.01	.11	.00	
Age	0.00	.00	.01		0.00	.00	-.01		-0.01	.01	-.04	
Number of dependants	-0.01	.02	-.02		0.02	.02	.03		0.00	.03	.00	
Level of education	-0.03	.02	-.03		-0.03	.02	-.05		-0.05	.03	-.06	
Years in FIFO	0.00	.01	-.01		0.00	.00	.02		0.00	.01	.01	
Perceived FIFO work arrangement flexibility	-0.10	.03	-.08		-0.04	.03	-.04		-0.03	.05	-.02	
Number of recovery options on-site	0.00	.01	.00		0.00	.01	.01		0.01	.01	.02	
Satisfaction with recovery options on site	-0.06	.03	-.05		-0.03	.03	-.03		0.01	.04	.01	
Number of social activity options on site	-0.03	.02	-.05		-0.02	.02	-.04		-0.01	.03	-.01	
Satisfaction with social activity options on site	-0.09	.03	-.09**		-0.05	.02	-.07		-0.08	.04	-.07	
Satisfaction with on-site room arrangement	0.01	.03	.01		0.01	.02	.01		-0.02	.03	-.02	
Number of communication options with home	-0.02	.04	-.01		-0.02	.03	-.02		-0.05	.06	-.02	
Perceived relative priority of mental health and wellbeing	-1.13	.27	-.11**		-0.36	.21	-.05		-0.25	.35	-.02	
Bullying victim	0.11	.02	.16**		0.06	.02	.12**		0.06	.03	.09	
Bullying witness	-0.02	.02	-.03		-0.01	.02	-.03		-0.02	.03	-.02	
Perceived stigma at work	0.35	.04	.28**	.266	0.29	.03	.30**	.196	0.22	.05	.16**	.070

Note. * $p < .005$. ** $p \leq .001$

Summary: organisation and site factors

- Perceived organisational stigma attached to mental health and wellbeing and personal experience of bullying on site were significantly linked to worse depression, anxiety and burnout in FIFO workers. Perceived priority of mental health and wellbeing and satisfaction with social activity options were linked to better mental health.
- Perceived mental health and wellbeing stigma at the workplace was significantly linked to worse emotional (e.g. feelings of satisfaction and happiness), social (e.g. having trust in a good society) and psychological (e.g. self-acceptance and personal growth) wellbeing, while satisfaction with social recovery options and perceived relative priority for mental health and wellbeing were linked with better wellbeing outcomes.
- Being bullied was linked with worse psychological and emotional wellbeing, and employer flexibility in relation to FIFO work arrangements was linked with better social wellbeing.
- Perceived stigma attached to mental health and wellbeing at work was significantly linked with higher suicidal risk and was the only organisational and site attribute connected with higher suicidal intent.

- Being bullied was significantly linked to worse feelings of thwarted belonging and perceived burdensomeness. Thwarted belonging was significantly better with more satisfaction with social activities offered on site, and a higher perceived relative priority of mental health and wellbeing.
- Stigma attached to mental health and wellbeing plays an important role in mental health and wellbeing, and bullying needs to be addressed in order to be able to improve the mental health and wellbeing of FIFO workers.

Social and family factors

The final group of factors considered concern the wider social environment of the FIFO workers, including their family context (see Table 4.33). When linked with mental ill-health outcomes, loneliness on site and at home was connected with both the K10-scores and the experience of burnout ($\beta_{K10} = .47; p < .001; \beta_{Burnout} = .33; p < .001$). Further, perceived conflict between work and home life (i.e. the extent to which these two aspects are incompatible) was linked with higher levels of depression and anxiety as well as burnout ($\beta_{K10} = .19; p < .001; \beta_{Burnout} = .31; p < .001$). Finally, happiness with personal relationships was associated with lower levels of depression and anxiety ($\beta_{K10} = -.12; p < .001$).

Table 4.33

Regression of mental ill-health outcomes on social and family factors

Variables	K10 (depression & anxiety)			R^2	Burnout			R^2
	B	SE B	β		B	SE B	β	
Step 1								
Gender	0.57	.50	.03		0.25	.12	.05	
Age	-0.11	.02	-.16**		-0.02	.01	-.11**	
Number of dependants	0.10	.14	.02		-0.01	.03	-.01	
Level of education	-0.45	.11	-.10**		-0.04	.03	-.04	
Years in FIFO	0.00	.03	.00	.032	0.00	.01	.01	.016
Step 2								
Gender	1.21	.38	.06**		0.42	.10	.09**	
Age	-0.05	.02	-.07*		-0.01	.00	-.03	
Number of dependants	0.16	.11	.03		-0.01	.03	-.01	
Level of education	-0.22	.09	-.05		0.00	.02	.00	
Years in FIFO	-0.01	.02	-.01		0.00	.01	.01	
Perceived work–family conflict	0.82	.09	.19**		0.33	.03	.31**	
Loneliness on site and at home	3.51	.18	.47**		0.59	.05	.33**	
Happiness with personal relationships	-0.77	.15	-.12**		-0.05	.04	-.04	
Number of friends	-0.21	.12	-.04		-0.03	.03	-.02	
Number of family members	0.04	.11	.01	.456	0.01	.03	.01	.327

Note. * $p < .005$. ** $p \leq .001$

When linked with wellbeing outcomes, social and family life factors (see Table 4.34) explained 44% of variance in emotional wellbeing (e.g. feelings of satisfaction and happiness), 27% in social wellbeing (e.g. having trust in a good society) and 34% in psychological wellbeing (e.g. self-acceptance). Loneliness at home and on site had the strongest links with all wellbeing outcomes ($\beta_{emot\ WB} = -.39; p < .001; \beta_{soc\ WB} = -.23; p < .001; \beta_{psych\ WB} = -.31; p < .001$), followed by happiness with personal relationships ($\beta_{emot\ WB} = .25; p < .001; \beta_{soc\ WB} = .19; p < .001; \beta_{psych\ WB} = .22; p < .001$), number of friends ($\beta_{emot\ WB} = .11; p < .001; \beta_{soc\ WB} = .07; p < .001; \beta_{psych\ WB} = .15; p < .001$) and perceptions of work–family conflict ($\beta_{emot\ WB} = -.09; p < .001; \beta_{soc\ WB} = -.18; p < .001; \beta_{psych\ WB} = -.08; p < .001$).

Table 4.34
Regression of mental health and wellbeing on social and family life factors

Variables	Emotional wellbeing				Social wellbeing				Psychological wellbeing			
	B	SE B	β	R ²	B	SE B	β	R ²	B	SE B	β	R ²
Step 1												
Gender	0.16	.08	.05		0.22	.09	.06		0.10	.08	.03	
Age	0.00	.00	.01		0.01	.00	.06		0.00	.00	.00	
Number of dependants	0.01	.02	.01		0.03	.03	.03		0.02	.02	.03	
Level of education	0.05	.02	.07		0.11	.02	.13**		0.07	.02	.10**	
Years in FIFO	0.01	.01	.04	.009	0.00	.01	-.02	.023	0.01	.01	.04	.012
Step 2												
Gender	0.04	.06	.01		0.07	.08	.02		-0.02	.07	-.01	
Age	-0.01	.00	-.07*		0.00	.00	-.01		-0.01	.00	-.07	
Number of dependants	-0.01	.02	-.03		0.01	.02	.01		0.01	.02	.01	
Level of education	0.02	.01	.03		0.08	.02	.10**		0.05	.02	.06*	
Years in FIFO	0.01	.00	.06		0.00	.01	.00		0.01	.00	.05	
Perceived work–family conflict	-0.06	.02	-.09**		-0.15	.02	-.18**		-0.06	.02	-.08**	
Loneliness on site and at home	-0.46	.03	-.39**		-0.31	.04	-.23**		-0.39	.03	-.31**	
Happiness with personal relationships	0.25	.02	.25**		0.22	.03	.19**		0.23	.03	.22**	
Number of friends	0.09	.02	.11**		0.08	.03	.07*		0.14	.02	.15**	
Number of family members	0.03	.02	.04	.440	0.03	.02	.03	.271	0.01	.02	.01	.335

Next, the social and family factors were linked with outcomes related to suicidal risk (see Table 4.35). Notably, loneliness on site and at home ($\beta_{\text{thwarted belonging}} = .36; p < .001; \beta_{\text{burdensomeness}} = .37; p < .001; \beta_{\text{suicidal intent}} = .17; p < .001$), as well as happiness with personal relationships ($\beta_{\text{thwarted belonging}} = -.26; p < .001; \beta_{\text{burdensomeness}} = -.23; p < .001; \beta_{\text{suicidal intent}} = -.13; p < .001$) were linked with all constructs related to suicidal risk, including suicidal intent. Further, number of friends was linked with thwarted belonging as well as perceived burdensomeness ($\beta_{\text{thwarted belonging}} = -.23; p < .001; \beta_{\text{burdensomeness}} = -.08; p < .001$), and perceived work–family conflict was linked with thwarted belonging ($\beta = .11; p < .001$).

Table 4.35
Regression of suicidal risk on social and family life factors

Variables	Thwarted belonging				Burdensomeness				Suicidal intent			
	B	SE B	β	R ²	B	SE B	β	R ²	B	SE B	β	R ²
Step 1												
Gender	-0.26	.09	-.08		-0.07	.07	-.03		-.02	.11	-.01	
Age	0.00	.00	.00		0.00	.00	-.02		-.01	.00	-.04	
Number of dependants	-0.02	.03	-.02		0.02	.02	.03		.00	.03	.00	
Level of education	-0.07	.02	-.08*		-0.05	.02	-.09**		-.08	.02	-.09*	
Years in FIFO	0.00	.01	.00	.013	0.00	.00	.02	.012	.00	.01	.00	.009
Step 2												
Gender	-0.07	.07	-.02		0.01	.06	.00		.05	.10	.01	
Age	0.01	.00	.08**		0.01	.00	.05		.00	.00	-.01	
Number of dependants	0.01	.02	.01		0.04	.02	.05		.02	.03	.02	
Level of education	-0.03	.02	-.04		-0.03	.01	-.05		-.06	.02	-.07	
Years in FIFO	-0.01	.00	-.02		0.00	.00	.00		.00	.01	-.01	
Perceived work–family conflict	0.09	.02	.11**		0.01	.01	.02		.00	.03	.00	
Loneliness on site and at home	0.49	.03	.36**		0.38	.03	.37**		.24	.05	.17**	
Happiness with personal relationships	-0.30	.03	-.26**		-0.20	.02	-.23**		-.15	.04	-.13**	
Number of friends	-0.23	.02	-.23**		-0.06	.02	-.08**		-.06	.03	-.05	
Number of family members	-0.06	.02	-.06*	.523	-0.02	.02	-.02	.329	-.05	.03	-.04	.091

Note. * $p < .005$. ** $p \leq .001$

Summary: social and family factors

- Loneliness on site and at home and perceived conflict between work and home life were significantly linked with higher levels in depression, anxiety and burnout. Happiness with personal relationships was associated with lower levels of depression and anxiety.
- Happiness with personal relationships, number of friends and perceptions of work–family conflict were significantly linked with better emotional (e.g. feelings of satisfaction and happiness), social (e.g. having trust in a good society) and psychological (e.g. self-acceptance and personal growth) wellbeing. Loneliness at home and on site had a negative link.
- Loneliness on site and at home (negative), as well as happiness with personal relationships (positive), were significantly linked with all three concepts related to suicidal risk: thwarted belonging, burdensomeness and suicidal intent. Further, number of friends was linked with less thwarted belonging and burdensomeness, and work–family conflict was associated with more thwarted belonging.
- Feelings of loneliness, both on site and at home, were significantly associated with worse mental health and wellbeing. Addressing these, by organising social activities for example, could lead to improvements.

4.3.1.5 *The role of rosters, shift work, employer type, job roles, accommodation, recreational facilities and social activities for FIFO mental health and wellbeing*

Rosters and shift work

In this section further analysis is conducted to assess the link between rosters, and mental health and wellbeing. The regressions only found a link between roster ratio and suicidal intent, but not with any of the other outcomes, and roster satisfaction was linked to K10, burnout and emotional wellbeing. It is possible for roster ratio to not show up in the regressions as it has a high correlation with roster ratio ($r = .50$). Roster ratio is considered to be a crude measure, as it does not take the length of being away into account. For example, a three weeks on/one week off roster (roster ratio = 3) or a two weeks on/one week off roster (roster ratio = 2) would have a similar roster ratio compared to five days on/two days off (roster ratio = 2.5). Therefore, it is necessary to look more directly at the links between rosters and mental health and wellbeing. It must be noted that some of the rosters are only or mostly performed by certain job roles; the links between job roles and mental health and wellbeing are discussed after the analysis on rosters.

Participants reported their rosters via the six most common roster types as identified from previous studies and with the help of the reference group. From the “other” category ($n = 947$), 56 respondents referred to one of the predefined rosters and were coded as such. One additional roster type emerged as relatively frequently occurring (three-weeks-on-and-three-weeks-off roster; $n = 34$) and was subsequently added to the list of rosters considered in the comparison analysis.

First, the results shown in Table 4.36 illustrate that the eight days on/six days off roster was the most frequently occurring type of roster ($n = 899$; 43.1%), followed by the two weeks on/one week off roster ($n = 491$; 23.5%). Out of the even-time rosters included, the two weeks on/two weeks off roster was most frequently reported ($n = 319$; 15.3%).

Table 4.36
Frequency of roster types

Roster types	Frequency	%	Mean K10-score*
8 days on 6 days off	899	43.1	18.52
2 weeks on 1 week off	491	23.5	21.03
2 weeks on 2 weeks off	319	15.3	18.42
4 weeks on 1 week off	175	8.4	21.68
5 days on 2 days off	121	5.8	18.72
3 weeks on 1 week off	49	2.3	22.12
3 weeks on 3 weeks off	34	1.6	18.76

Note. *See page 112 for the interpretation of the mean K10-scores

Next, we tested whether differences in the mental health and wellbeing outcomes can be identified based on the roster on which a worker is employed. As the data did not meet criteria for parametric tests (given differences in group sizes and variance in the groups; note that this applies to all comparisons presented), the Kruskal-Wallis H test was used. This is a rank-based nonparametric test, so instead of mean K10-scores (see Table 4.36), mean rankings of the respondents are used based on their K10-scores. Please note that the mean ranks may display minor differences when compared to the order of the K10-scores. Significant differences in all mental health and wellbeing outcomes between the different rosters were found (see Table 4.37). The mean ranks show that as a general pattern, lower mental health and wellbeing occurs for rosters with a higher ratio of days on site compared to days off site (i.e. uneven-time rosters 4w on/1w off; 3w on/1w off; 2w on/1w off), compared to shorter (8d on/6d off; 5d on/2d off), or even-time rosters (3w on/ 3w off; 2w on/ 2w off). Figure 4.38 provides an overview of the different rosters for the mean rank scores on the K10 only.

Table 4.37
Results Kruskal-Wallis H test for different roster types and mental health, wellbeing and suicidal risk

Mental health and wellbeing outcome	χ^2	df	4w on/1w off	3w on/1w off	2w on/1w off	3w on/3w off	2w on/2w off	8d on/6d off	5d on/2d off
Mean ranks									
K10 (depression and anxiety)	74.79*	6	1250.28	1247.58	1173.42	1005.06	943.57	967.00	962.08
Emotional wellbeing (satisfaction/happiness)	48.11*	6	855.26	828.91	951.94	1130.80	1130.49	1092.77	1104.45
Social wellbeing (trust in a good society)	54.53*	6	828.26	835.08	963.22	1024.68	1069.36	1106.66	1187.65
Psychological wellbeing (self-acceptance)	28.91*	6	927.85	912.98	964.81	1186.45	1131.88	1061.95	1121.02
Burnout	43.31*	6	1213.54	1057.93	1144.93	1025.04	983.72	974.47	1033.53
Suicidal intent	16.49*	6	889.96	857.74	892.09	700.09	812.18	813.96	796.55
Thwarted belonging	53.54*	6	1187.32	1218.27	1159.19	805.40	972.09	983.78	953.98
Perceived burdensomeness	48.87*	6	1211.59	1159.65	1128.78	1049.59	971.29	987.34	967.90

Note. * $p \leq .05$; w = week, d = day; on = time on site, off = time off at home. Highest and lowest score for each category are in bold.

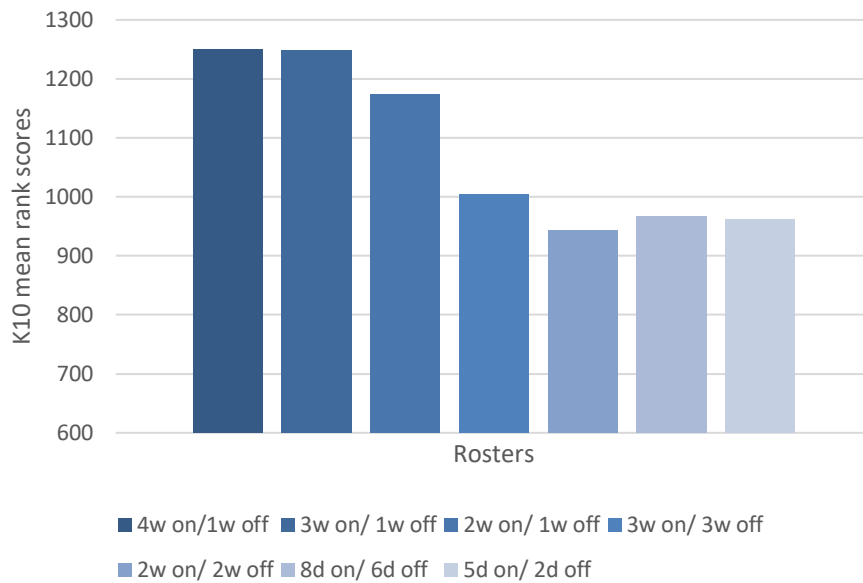


Figure 4.38. Visual presentation of results Kruskal-Wallis H test for different roster types and anxiety and depression.

FIFO workers were also asked to indicate what types of shifts they work. Table 4.39 shows that half the participants worked day shifts only. Another fifth of the participating FIFO workers worked both types of shifts each roster swing (i.e. day and night shift), representing a quick rotational roster, requiring a lot of adjustment during each phase of the roster.

Table 4.39

Shift frequencies reported by FIFO workers

Shift types	Frequency	%
Day shifts - time off - day shifts - time off	1739	57.2
Day shifts - night shifts - time off - day shifts - night shifts - time off	651	21.4
Day shifts - time off - night shifts - time off	369	12.2
Other	214	7.0
Night shifts - time off - night shifts - time off	66	2.2

Comparison of the different shift types indicated that significant differences occurred for six out of the eight mental health and wellbeing outcomes (see Table 4.40). Notably, those working day time only reported higher social ($X^2(4, 3029) = 24.63, p = .000$) and psychological ($X^2(4, 3028) = 12.95, p = .012$) wellbeing and less psychological distress ($X^2(4, 3033) = 11.56, p = .021$), thwarted belonging ($X^2(4, 3029) = 13.96, p = .007$), perceived burdensomeness ($X^2(4, 3029) = 14.56, p = .006$) and suicidal intent ($X^2(4, 2437) = 15.68, p = .003$), whereas those working only night shifts were amongst those reporting the worst outcomes. It should also be noted that the second most frequent shift type, the quick rotational shift of day and night shifts during each roster swing, did generate lower scores in wellbeing and poorer scores in mental health compared to some of the other rosters.

Table 4.40

Results Kruskal-Wallis H test for different shift types and mental health, wellbeing, and suicidal risk

Mental health and wellbeing outcome	χ^2	df	D-N-off-D-N-off	D-off-N-Off	D-off-D-off	N-Off-N-Off	Other
Mean ranks							
K10	11.56*	4	1535.24	1557.55	1481.06	1765.09	1606.50
Emotional wellbeing (satisfaction/happiness)	8.29	4	1455.22	1511.30	1551.41	1450.05	1435.44
Social wellbeing (trust in a good society)	24.63*	4	1438.94	1475.26	1578.28	1344.67	1354.07
Psychological wellbeing (self-acceptance)	12.95*	4	1450.55	1455.12	1561.27	1345.56	1484.42
Burnout	2.73	4	1537.31	1513.21	1500.11	1629.84	1563.77
Suicidal intent	15.68*	4	1237.54	1218.65	1184.20	1254.58	1323.68
Thwarted belonging	13.96*	4	1580.72	1558.07	1465.04	1640.95	1607.06
Perceived burdensomeness	14.56*	4	1589.31	1542.02	1466.95	1637.76	1594.02

Note * $p \leq .05$; D = day shift, n = night shift, off—time off at home; highest and lowest score for each category are in bold.

Summary: rosters and shift work

- Even time and shorter rosters were most positive for mental health and wellbeing (e.g. 3w on/3w off; 2w on/2w off and 8d on/ 6d off; 5d on/2d off).
- Longer periods on site in uneven-time rosters (4 weeks on/1 week off, 3 weeks on/1 week off, 2 weeks on/1 week off) were associated with worse mental health and wellbeing
- Day shifts were associated with better mental health and wellbeing, whereas night shifts were linked with worse mental health and wellbeing.

Job roles, type of employer, industry, commute type

The majority of participants reported to hold job roles that fitted with the seven response options given (see Table 4.41). A quarter reported to be professional staff ($n = 764$; 25.1%), which includes amongst other roles engineer, sampler, technician and emergency services. Other frequent job roles were technicians ($n = 662$; 21.8%), managerial or leadership roles ($n = 611$; 20.1%) and operators ($n = 573$; 18.85%).

Table 4.41

Frequency job roles

Job role	Frequency	Percentage
Administrative	86	2.8%
Managerial/leadership ¹	611	20.1%
Professional ²	764	25.1%
Operator ³	573	18.8%
Technician	662	21.8%
Camps/catering	41	1.3%
Logistics and supply chain	73	2.4%
Other	232	7.6%

Note. ¹ supervisor, superintendent, manager; ² geologists, hydrologist, metallurgist, surveyor, engineer, sampler, technician, emergency services and medical response, nurses; ³ heavy mobile equipment, process plant, locomotives, crane driver, driller, blast crew

Using the Kruskal-Wallis test, differences in mental health, wellbeing and suicidal risk between the different job roles were considered (see Table 4.42a). The results showed significant differences in all mental health and wellbeing outcomes: depression and anxiety ($K10$; $X^2(7, 3037) = 46.14, p = .000$), emotional wellbeing ($X^2(7, 3034) = 17.29, p = .016$), social wellbeing ($X^2(7, 3033) = 63.12, p = .000$), psychological wellbeing ($X^2(7, 3031) = 38.07, p = .000$) and burnout ($X^2(7, 3037) = 16.63, p = .020$). It also showed significant differences in the levels of thwarted belonging ($X^2(7, 3033) = 30.01, p = .000$), perceived burdensomeness ($X^2(7, 3033) = 36.79, p = .000$) and suicidal intent ($X^2(7, 2439) = 14.24, p = .047$) between the different job roles.

As a general theme in the data, managerial and leadership staff scored lowest on depression and anxiety, and burnout, and highest on emotional, social and psychological wellbeing. Administrative personnel scored lowest on thwarted belonging, perceived burdensomeness and suicidal intent. On the other hand, staff working in logistics and in catering within the camp scored highest on depression and anxiety, burnout, thwarted belonging, perceived burdensomeness and suicidal intent. These two job roles also scored lowest on emotional, social and psychological wellbeing.

Table 4.42a
Job roles and mental health, wellbeing and suicidal risk

Outcome	X^2	df	Roles							
			Admini- strative	Leader- ship	Profes- sional	Opera- tor	Tech- nician	Camps/ catering	Logistics	Other
			Mean ranks							
K10	46.14*	7	1577.05	1380.25	1456.84	1533.09	1597.44	1947.30	1608.92	1701.16
Emotional wellbeing	17.29*	7	1554.20	1596.08	1569.73	1468.49	1462.90	1433.09	1308.23	1481.51
Social wellbeing	63.12*	7	1471.60	1657.76	1642.44	1433.22	1414.70	1485.17	1242.75	1337.01
Psychological wellbeing	38.07*	7	1438.70	1655.98	1568.65	1412.60	1496.59	1345.72	1257.61	1424.24
Burnout	16.63*	7	1584.77	1493.36	1494.67	1481.00	1517.07	1893.17	1565.81	1662.50
Suicidal intent	14.24*	7	1088.01	1184.21	1196.58	1237.48	1248.11	1416.08	1276.85	1283.92
Thwarted belonging	30.01*	7	1278.49	1465.97	1430.61	1612.36	1560.04	1621.79	1712.69	1588.00
Perceived burdensomeness	36.80*	7	1328.93	1436.87	1425.46	1599.26	1617.46	1622.41	1503.87	1597.70

Note. * $p \leq .05$; Highest and lowest score for each category are in bold.

Figure 4.42b below provides a visual representation of the differences between the different job roles and their mean rank scores on the K10.

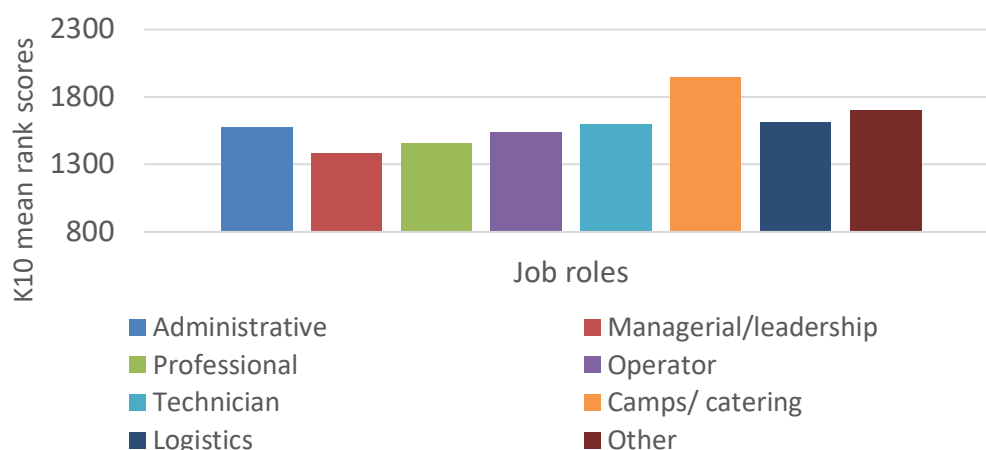


Figure 4.42b. Job roles and K10-scores.

Welch's t-test was used to compare FIFO workers employed by an operator, and those employed by a contractor (see Table 4.43). Out of the overall sample, 2246 (72.3%) FIFO workers indicated that they were employed by an operator and 786 (25.3%) by a contractor. The results indicated significantly higher levels of depression and anxiety in contractor employees ($K10; F(1, 1292.23) = -5.32, p = .000$) and higher levels of burnout ($F(1, 1382.82) = -3.09, p = .002$). All three wellbeing options were found to differ significantly between the two where operator employees reported higher levels of social (e.g. having trust in a good society) and emotional (e.g. feelings of satisfaction and happiness) wellbeing than contractor employees ($F_{\text{SocWB}}(1, 1347.81) = 6.28, p = .000$; $F_{\text{EmoWB}}(1, 1366.76) = 2.94, p = .003$; $F_{\text{PsyWB}}(1, 1315.51) = 1.96, p = .050$). Finally, contractor employees were also found to experience significantly higher levels of thwarted belonging ($F(1, 1327.85) = -3.82, p = .000$), and perceived burdensomeness ($F(1, 1205.94) = -4.64, p = .000$) than operator employees. Only on suicidal intent were no significant differences were found ($F(1, 1025.15) = -1.94, p = .052$).

Table 4.43
Comparison: mental health and wellbeing for employer type

Construct	Group	M	SD	Welch's t-test			
				df	F	p-value	
K-10	Operator	18.93	6.99	Between	1	-5.32	.000
	Contractor	20.56	7.47	Within	1292.23		
Burnout	Operator	3.82	1.73	Between	1	-3.09	.002
	Contractor	4.04	1.71	Within	1382.82		
Emotional wellbeing (satisfaction/happiness)	Operator	4.50	1.12	Between	1	2.94	.003
	Contractor	4.36	1.11	Within	1366.76		
Social wellbeing (trust in a good society)	Operator	3.46	1.31	Between	1	6.28	.000
	Contractor	3.12	1.34	Within	1347.81		
Psychological wellbeing (self-acceptance)	Operator	4.19	1.18	Between	1	1.96	.050
	Contractor	4.09	1.22	Within	1315.51		
Thwarted belonging	Operator	1.91	1.29	Between	1	-3.82	.000
	Contractor	2.12	1.33	Within	1327.85		
Burdensomeness	Operator	0.57	0.94	Between	1	-4.64	.000
	Contractor	0.77	0.77	Within	1205.94		
Suicidal intent	Operator	1.74	1.38	Between	1	-1.94	.052
	Contractor	1.87	1.43	Within	1025.15		

The different industries FIFO workers can work in are compared next. The focus was on construction ($n = 150$), mining ($n = 2275$) and oil and gas ($n = 522$) as the other industries had to be excluded because they did not have enough participants (public services $n = 6$; transportation $n = 36$; other $n = 56$). Table 4.44 shows the results for the three industries with significant differences for the K10 ($\chi^2(2, n = 2,945) = 23.22, p = .000$), burnout ($\chi^2(2, n = 2,945) = 6.38, p = .041$), emotional ($\chi^2(2, n = 2,942) = 10.06, p = .007$) and social wellbeing ($\chi^2(2, n = 2,942) = 30.45, p = .000$). Also, thwarted belonging ($\chi^2(2, n = 2,941) = 10.84, p = .004$) and perceived burdensomeness ($\chi^2(2, n = 2,941) = 38.07, p = .000$) showed significant differences when looking at the different industries.

Table 4.44 shows that FIFO workers in construction scored highest on depression and anxiety, and burnout when compared to the mining and oil and gas industries. Construction workers also scored lowest on emotional, social and psychological wellbeing, and again higher on thwarted belonging and perceived burdensomeness. On suicidal intent construction workers score similarly to workers in mining and oil and gas.

Table 4.44

Results Kruskal-Wallis H test for industry and mental health, wellbeing and suicidal risk

Mental health and wellbeing outcome	χ^2	df	Construction	Mining	Oil and gas
			Mean ranks		
K10	23.22*	2	1733.74	1436.79	1556.53
Burnout	6.38*	2	1618.66	1455.16	1509.23
Emotional wellbeing	10.06*	2	1259.18	1480.18	1494.40
Social wellbeing	30.45*	2	1106.30	1499.66	1453.04
Psychological wellbeing	2.99	2	1353.85	1477.34	1471.23
Thwarted belonging	10.84*	2	1694.49	1457.66	1465.71
Perceived burdensomeness	17.30*	2	1733.98	1449.85	1488.53
Suicidal intent	0.38	2	1167.06	1181.87	1198.08

Note. * $p \leq .05$

Finally, an analysis was completed for the effect of the type of commute on mental health and wellbeing. First, a Kruskal-Wallis test was used in order to compare all commute options (i.e. FIFO, DIDO, BIBO, local commute), but no significant differences were found (p ranging from .083 to .838). As there were not a lot of participants commuting BIBO ($n = 74$) or living close to the site to be able to commute on a daily basis ($n = 27$), the focus was placed on FIFO ($n = 2829$) and DIDO ($n = 110$). The result of Welch's t-test were not significant for any of the mental health, wellbeing and suicide measures (p ranging from .076 to .885).

Summary: job roles and type of employer, industry, commute type

- Managerial and leadership staff report significantly better mental health and wellbeing compared to all other job roles.
- Staff working in camp, catering and logistics roles have significantly less favourable mental health and wellbeing compared to all other job roles.
- Contractor employees report significantly higher levels of depression and anxiety, burnout, thwarted belonging and perceived burdensomeness, and lower levels of social (e.g. having trust in a good society), emotional (e.g. feelings of satisfaction and happiness) and psychological (e.g. self-acceptance and personal growth) wellbeing compared to operator staff. Only on suicidal intent were no differences were found.
- FIFO workers working in construction show significantly higher levels of depression and anxiety, burnout, thwarted belonging and perceived burdensomeness, with lower levels of emotional and social wellbeing. No differences were found for psychological wellbeing and suicidal intent.
- The commute type (FIFO, DIDO, BIBO, local commute) makes no difference for mental health and wellbeing scores.
- **Job roles and the industry and employer type are linked to mental health and wellbeing. Additional mental health support should particularly target roles and industries where employees have been found to have poorer mental health.**

Accommodation type

Two aspects of accommodation available to FIFO workers on site were considered, namely the degree of sharedness involved and the permanency with which workers would usually occupy the same rooms while on site. Regarding the extent to which accommodation is shared, the majority of FIFO workers reported that they occupy a single room as the sole occupant ($n = 2144$; 71.1%),

followed by hot bedding, which means two people on opposing shift share the same bed and room ($n = 324$; 10.7%). Responses in the other category often referred to shared housing motel-style accommodation or couples' rooms (see Table 4.45).

Table 4.45
Accommodation—degree of sharedness

Accommodation	Frequency	%
Shared accommodation (same room used by more occupants, separate beds on same shift)	106	3.5
Single room (sole occupant)	2144	71.1
Shared accommodation (same room used by more occupants, separate beds on opposing shifts)	263	8.7
Hot bedding (same room, same bed used by occupants on opposing shifts)	324	10.7
Other	180	6.0

Testing the role of the different levels of sharedness involved in accommodation types for mental health and wellbeing (using the Kruskal-Wallis test) indicated no significant differences between the different accommodation types on all of the mental health, wellbeing and suicidal risk constructs considered (see Table 4.46).

Table 4.46
Accommodation—degree of sharedness and mental health and wellbeing outcomes

Outcome	χ^2	df	Accommodation type				
			Shared (separate beds/same shift)	Single room	Shared (separate beds/opposing shifts)	Hot bedding (same bed used on opposing shifts)	Other
			Mean ranks				
K10	7.00	4	1504.25	1495.04	1607.68	1559.39	1417.80
Emotional wellbeing (satisfaction/happiness)	4.51	4	1592.92	1498.91	1531.84	1454.39	1594.91
Social wellbeing (trust in a good society)	2.38	4	1449.14	1495.50	1558.51	1544.79	1509.33
Psychological wellbeing (self-acceptance)	2.94	4	1536.74	1514.35	1459.13	1445.94	1540.24
Burnout	2.23	4	1448.88	1500.87	1547.22	1518.65	1503.33
Suicidal intent	3.85	4	1208.99	1215.30	1206.66	1253.18	1140.49
Thwarted belonging	3.57	4	1509.90	1505.42	1538.43	1518.87	1402.70
Perceived burdensomeness	2.91	4	1560.57	1502.63	1512.23	1545.30	1425.69

Note. $*p \leq .05$

Next, the degree of permanency that FIFO workers report in their accommodation was considered (see Table 4.47). The majority of workers indicated that they have permanent accommodation available to them on site, meaning that they usually return to the same room on each roster swing ($n = 2211$; 72.6%). A smaller number reported that they occupy rotational accommodation, often called motelling, which means they occupy a different room each swing ($n = 744$; 24.3%). The "other" responses mostly referred to a mix of permanent and rotational accommodation, recent changes from one type to another or hotel accommodation, however there were no clear themes within that group.

Table 4.47

Accommodation—degree of permanency

Accommodation	Frequency	%
Permanent (same accommodation room from one cycle to the next)	2211	72.7
Rotational (motelling, a different room each roster cycle)	744	24.5
Other	85	2.8

The role of the permanency of the accommodation for mental health and wellbeing and suicidal risk was tested using the Kruskal-Wallis test (see Table 4.48). The results showed differences on all outcomes: depression and anxiety ($K10$; $X^2(2, 3037) = 19.97, p = .000$); emotional ($X^2(2, 3034) = 10.41, p = .006$), social ($X^2(2, 3033) = 35.96, p = .000$) and psychological wellbeing ($X^2(2, 3031) = 8.07, p = .018$); suicidal intent ($X^2(2, 2439) = 9.61, p = .008$); thwarted belonging ($X^2(2, 3033) = 30.59, p = .000$); and perceived burdensomeness ($X^2(2, 3033) = 28.45, p = .000$). The mean ranks indicate a general trend of permanent room occupants having the lowest levels of depression and anxiety, burnout, thwarted belonging, perceived burdensomeness and suicidal intent, as well as the highest levels of emotional, social and psychological wellbeing compared to the two other accommodation options. Overall, respondents in the “other” category scored worst on these outcomes, however, given there was no clear theme in the types of accommodation reported within the “other” category it is unclear what aspect of these wide ranges of accommodation may be driving this effect. As a general pattern, those in non-permanent accommodation reported poorer mental health and wellbeing compared to FIFO workers in permanent accommodation. It should also be noted that a direct comparison between permanent and rotational accommodation alone (via Mann-Whitney U test) indicated significant differences between these two groups for the same concepts as were indicated by the Kruskal-Wallis test.

Table 4.48

Accommodation—degree of permanency and mental health and wellbeing outcomes

Mental health and wellbeing outcome	X^2	<i>df</i>	Permanen t room	Rotational room (motelling)	Other
Mean ranks					
K10	19.97*	2	1479.39	1605.70	1790.49
Emotional wellbeing (satisfaction/happiness)	10.41*	2	1546.33	1453.19	1330.44
Social wellbeing (trust in a good society)	35.96*	2	1574.06	1377.07	1257.63
Psychological wellbeing (self-acceptance)	8.07*	2	1541.91	1456.80	1360.91
Burnout	7.82*	2	1493.91	1575.02	1681.31
Suicidal intent	9.61*	2	1200.32	1263.82	1366.12
Thwarted belonging	30.59*	2	1465.42	1638.67	1795.62
Perceived burdensomeness	28.45*	2	1469.23	1630.30	1769.52

Note. * $p \leq .05$

The kind of accommodation FIFO workers occupied did not have a significant influence on their quality of sleep: both for the degree of sharedness ($X^2(4, n = 2968) = 6.25, p = .181$) and the degree of permanency ($X^2(2, n = 2991) = 6.64, p = .036$).

Summary: accommodation types

- The degree of sharedness of accommodation was not significantly associated with differences in mental health and wellbeing.
- Permanent accommodation was significantly connected with the best outcomes in terms of mental health, wellbeing and suicidal risk.
- The quality of sleep was not influenced significantly by either the sharedness or the permanency of the accommodation.

Recreational facilities, social activities and communication options on site

FIFO workers also indicated which recreational options were available to them on site (availability, not whether they actually used them) when they are at their camps. The most frequent recreational facilities reported were a gym, dry mess, wet mess, swimming pool and pool table (see Table 4.49). Least frequently mentioned recreational facilities were bocce, air hockey and a female-only gym.

Table 4.49

Frequencies—recreational facilities

Recreational facility	Frequency	%	Recreational facility	Frequency	%
Gym	1479	47.90%	Football oval	561	18.10%
Dry mess	1383	44.50%	Movie room	517	16.60%
Wet mess	1265	40.70%	Music room	381	12.30%
Swimming pool	1166	37.50%	Golf	377	12.10%
Pool table	1137	36.60%	Library	330	10.60%
Running tracks	969	31.20%	Bicycles	202	6.50%
Basketball	901	29.00%	Bocce	159	5.10%
Tennis/squash court	893	28.70%	Other	104	3.30%
Darts	859	27.60%	Air hockey	54	1.70%
Cricket pitch	815	26.20%	Female only gym	27	0.90%
Table tennis	787	25.30%			

We further tested to what extent the recreational facilities may be linked with mental health and wellbeing (see Table 4.50 a, b, c, d and e for Welch's t-test results). A comparison was conducted for the five most frequent recreational facilities. The results show that presence or absence of the five most frequently reported recreational facilities were not associated with any differences in mental health or wellbeing in the current FIFO worker sample. The only exception was noted for having access to a swimming pool, which was linked to lower levels of thwarted belonging.

Table 4.50a

Comparison of mental health and wellbeing for availability of gym facilities

Construct	Group	M	SD	Welch's t-test			
				df	F	p-value	
K10	Gym	19.27	7.21	Between	1	.384	.535
	No gym	19.43	7.08	Within	3022.25		
Burnout	Gym	3.88	1.71	Between	1	.030	.862
	No gym	3.87	1.75	Within	3036.00		
	Gym	4.48	1.15	Between	1	.248	.618

Emotional wellbeing (satisfaction/happiness)	No gym	4.46	1.09	Within	3001.24		
Social wellbeing (trust in a good society)	Gym	3.39	1.33	Between	1	.494	.482
Psychological wellbeing (self-acceptance)	No gym	3.36	1.32	Within	3023.62		
	Gym	4.15	1.21	Between	1	.312	.576
	No gym	4.18	1.17	Within	3013.36		
Thwarted belonging	Gym	1.95	1.32	Between	1	.278	.598
	No gym	1.97	1.29	Within	3018.13		
Perceived burdensomeness	Gym	0.63	1.02	Between	1	.596	.440
Suicidal intent	No gym	0.61	0.95	Within	2987.23		
	Gym	1.78	1.39	Between	1	.124	.724
	No gym	1.76	1.36	Within	2435.07		

Table 4.50b

Comparison of mental health and wellbeing for availability of dry mess

Construct	Group	M	SD	Welch's t-test			
				df	F	p-value	
K10	Dry mess	19.23	7.18	Between	1	.803	.370
	No dry mess	19.46	7.11	Within	2930.21		
Burnout	Dry mess	3.87	1.70	Between	1	.021	.884
	No dry mess	3.88	1.75	Within	2969.27		
Emotional wellbeing (satisfaction/happiness)	Dry mess	4.48	1.13	Between	1	.529	.467
	No dry mess	4.45	1.10	Within	2991.36		
Social wellbeing (trust in a good society)	Dry mess	3.41	1.33	Between	1	1.905	.168
	No dry mess	3.35	1.33	Within	2935.34		
Psychological wellbeing (self-acceptance)	Dry mess	4.15	1.21	Between	1	.313	.576
	No dry mess	4.18	1.17	Within	2898.78		
Thwarted belonging	Dry mess	1.93	1.31	Between	1	1.177	.278
	No dry mess	1.99	1.30	Within	2924.56		
Perceived burdensomeness	Dry mess	0.62	1.00	Between	1	.001	.975
	No dry mess	0.62	0.97	Within	2908.48		
Suicidal intent	Dry mess	1.77	1.39	Between	1	.032	.858
	No dry mess	1.76	1.36	Within	2373.49		

Table 4.50c

Comparison of mental health and wellbeing for availability of wet mess

Construct	Group	M	SD	Welch's t-test			
				df	F	p-value	
K10	Wet mess	19.20	7.27	Between	1	1.039	.308
	No wet mess	19.47	7.05	Within	2669.27		
Burnout	Wet mess	3.86	1.17	Between	1	.169	.681
	No wet mess	3.89	1.75	Within	2759.64		
Emotional wellbeing (satisfaction/happiness)	Wet mess	4.47	1.14	Between	1	.062	.804
	No wet mess	4.46	1.10	Within	2646.86		
Social wellbeing (trust in a good society)	Wet mess	3.39	1.33	Between	1	.225	.635
	No wet mess	3.37	1.32	Within	2711.85		

Psychological wellbeing (self-acceptance)	Wet mess	4.14	1.21	Between	1	.890	.345
	No wet mess	4.18	1.18	Within	2668.44		
Thwarted belonging	Wet mess	1.93	1.32	Between	1	.675	.411
	No wet mess	1.98	1.30	Within	2688.92		
Perceived burdensomeness	Wet mess	0.62	1.00	Between	1	.032	.859
	No wet mess	0.63	0.97	Within	2675.44		
Suicidal intent	Wet mess	1.80	1.42	Between	1	1.218	.270
	No wet mess	1.74	1.34	Within	2178.24		

Table 4.50d

Comparison of mental health and wellbeing for availability of swimming pool

Construct	Group	M	SD	Welch's t-test			
				df	F	p-value	
K10	Swimming pool	19.07	7.19	Between	1	3.058	.080
	No pool	19.53	7.11	Within	2446.67		
Burnout	Swimming pool	3.88	1.73	Between	1	.002	.969
	No pool	3.88	1.73	Within	2482.16		
Emotional wellbeing (satisfaction/happiness)	Swimming pool	4.49	1.14	Between	1	1.122	.290
	No pool	4.45	1.10	Within	2396.62		
Social wellbeing (trust in a good society)	Swimming pool	3.43	1.32	Between	1	2.619	.106
	No pool	3.35	1.33	Within	2473.30		
Psychological wellbeing (self-acceptance)	Swimming pool	4.17	1.20	Between	1	.071	.789
	No pool	4.16	1.18	Within	2439.77		
Thwarted belonging	Swimming pool	1.90	1.31	Between	1	4.706	.030
	No pool	2.00	1.30	Within	2454.08		
Perceived burdensomeness	Swimming pool	0.60	0.97	Between	1	1.004	.316
	No pool	0.63	1.0	Within	2486.50		
Suicidal intent	Swimming pool	1.79	1.40	Between	1	.423	.515
	No pool	1.75	1.36	Within	2004.10		

Table 4.50e

Comparison of mental health and wellbeing for availability of pool table

Construct	Group	M	SD	Welch's t-test			
				df	F	p-value	
K10	Pool table	19.33	7.28	Between	1	.028	.866
	No pool table	19.37	7.06	Within	2327.74		
Burnout	Pool table	3.88	1.71	Between	1	.007	.934
	No pool table	3.88	1.74	Within	2420.30		
Emotional wellbeing (satisfaction/happiness)	Pool table	4.45	1.15	Between	1	.242	.623
	No pool table	4.47	1.10	Within	2300.54		
Social wellbeing (trust in a good society)	Pool table	3.38	1.32	Between	1	.017	.895
	No pool table	3.38	1.33	Within	2398.97		
Psychological wellbeing (self-acceptance)	Pool table	4.14	1.22	Between	1	.760	.383
	No pool table	4.18	1.17	Within	2306.57		

Thwarted belonging	Pool table	1.94	1.32	Between	1	.578	.447
	No pool table	1.98	1.30	Within	2342.32		
Perceived burdensomeness	Pool table	0.62	1.00	Between	1	.006	.938
	No pool table	0.62	0.97	Within	2324.88		
Suicidal intent	Pool table	1.77	1.38	Between	1	.002	.964
	No pool table	1.77	1.37	Within	2001.10		

Current FIFO workers also reported the social activities that are on offer on site/at camp. Table 4.51 shows that BBQs and nights dedicated to foods from different nationalities, as well as social sports are the most common of such social activities, whereas movie nights and karaoke are rarer social activities on offer.

Table 4.51
Availability of social activities on site

Social activities	Frequency	%
BBQ	934	30.05%
Nights dedicated to food from different nationalities	728	23.42%
Social sports	718	23.10%
Quiz night	613	19.72%
Sports competition	594	19.11%
Concert	342	11.00%
Movie night	270	8.69%
Karaoke	234	7.53%
Other social activities	113	3.64%

A comparison of mental health of those FIFO workers who reported that the three most frequently occurring social activities take place at their sites/camps showed that all mental health and wellbeing outcomes, with the exception of suicidal intent with regards to BBQ sessions and food nights, benefitted from occurrences of BBQs, food nights dedicated to different nationalities on site and social sports (see Table 4.52a, b, and c).

Table 4.52a
Comparison of mental health and wellbeing for availability of BBQ sessions

Construct	Group	M	SD	Welch's t-test			
				df	F	p-value	
K10	BBQ	18.61	6.86	Between	1	15.332	.000
	No BBQ	19.69	7.24	Within	1876.27		
Burnout	BBQ	3.76	1.71	Between	1	5.995	.014
	No BBQ	3.93	1.74	Within	1813.28		
Emotional wellbeing (satisfaction/happiness)	BBQ	4.57	1.10	Between	1	12.502	.000
	No BBQ	4.42	1.12	Within	1825.98		
Social wellbeing (trust in a good society)	BBQ	3.50	1.31	Between	1	12.301	.000
	No BBQ	3.32	1.33	Within	1804.13		
Psychological wellbeing (self-acceptance)	BBQ	4.24	1.17	Between	1	5.004	.025
	No BBQ	4.13	1.20	Within	1817.73		

Thwarted belonging	BBQ	1.80	1.27	Between	1	21.678	.000
	No BBQ	2.03	1.31	Within	1836.93		
Perceived burdensomeness	BBQ	0.56	0.93	Between	1	4.483	.034
	No BBQ	0.64	1.00	Within	1914.10		
Suicidal intent	BBQ	1.70	1.30	Between	1	.000	.989
	No BBQ	1.79	1.54	Within	1420.16		

Table 4.52b

Comparison of mental health and wellbeing for availability of food nights

Construct	Group	M	SD	Welch's t-test			
				df	F	p-value	
K10	Food nights	18.48	6.98	Between	1	14.850	.000
	No food nights	19.63	7.18	Within	1245.20		
Burnout	Food nights	3.70	1.70	Between	1	10.784	.001
	No food nights	3.93	1.74	Within	1238.01		
Emotional wellbeing (satisfaction/happiness)	Food nights	4.61	1.10	Between	1	17.338	.000
	No food nights	4.42	1.12	Within	1234.10		
Social wellbeing (trust in a good society)	Food nights	3.51	1.30	Between	1	10.581	.001
	No food nights	3.33	1.33	Within	1246.90		
Psychological wellbeing (self-acceptance)	Food nights	4.28	1.14	Between	1	8.445	.004
	No food nights	4.13	1.20	Within	1281.29		
Thwarted belonging	Food nights	1.76	1.25	Between	1	24.954	.000
	No food nights	2.03	1.32	Within	1270.57		
Perceived burdensomeness	Food nights	0.47	0.83	Between	1	26.731	.000
	No food nights	0.67	1.02	Within	1475.21		
Suicidal intent	Food nights	1.67	1.29	Between	1	2.248	.134
	No food nights	1.80	1.40	Within	1161.48		

Table 4.52c

Comparison of mental health and wellbeing for social sports

Construct	Group	M	SD	Welch's t-test			
				df	F	p-value	
K10	Social sports	18.51	6.96	Between	1	13.728	.000
	No social sports	19.62	7.81	Within	1225.25		
Burnout	Social sports	3.73	1.67	Between	1	6.801	.009
	No social sports	3.92	1.75	Within	1240.44		
Emotional wellbeing (satisfaction/happiness)	Social sports	4.61	1.09	Between	1	16.660	.000
	No social sports	4.42	1.12	Within	1227.84		
Social wellbeing (trust in a good society)	Social sports	3.57	1.32	Between	1	19.816	.000
	No social sports	3.32	1.32	Within	1817.73		
Psychological wellbeing (self-acceptance)	Social sports	4.31	1.13	Between	1	14.745	.000
	No social sports	4.12	1.20	Within	1260.63		
Thwarted belonging	Social sports	1.75	1.24	Between	1	26.983	.000

Perceived burdensomeness	No social sports	2.03	1.32	Within	1252.77		
	Social sports	0.48	0.86	Between	1	21.741	.000
Suicidal intent	No social sports	0.66	1.04	Within	1385.78		
	Social sports	1.67	1.29	Between	1	4.164	.042
	No social sports	1.80	1.40	Within	1110.37		

Further, it is shown that while suicidal intent did not differ depending on the presence or absence of two out of the three social activities, a sense of thwarted belonging and perceived burdensomeness were both lower in FIFO workers who reported food nights and social sports occur on their sites/camps.

According to Table 4.53, most FIFO workers have access to a mobile phone (87.2%) and to internet (69.2%). If they reported that there were other communication options, mostly wi-fi was mentioned, as well as that the quality of the internet or wi-fi was not always good enough.

Table 4.53
Communication options on site

Communication options	Frequency	%
Mobile phone	2710	87.2%
Landline	999	32.1%
Internet	2150	69.2%
Other communication options	74	2.4%

In order to find out if communication options influenced the mental health and wellbeing of FIFO workers, comparisons were conducted (see Tables 4.54 a, b and c). Table 4.54a shows that having access to a mobile phone did not lead to differences in mental health and wellbeing scores, except for having better social wellbeing. Anxiety and depression ($F(1,2125.439) = 23.37, p = .001$), burnout ($F(1,1967.614) = 9.474, p = .002$), wellbeing ($F_{\text{Emotional WB}}(1,2030.345) = 12.97, p = .000$; $F_{\text{Social WB}}(1,2038.931) = 9.55, p = .002$; ; $F_{\text{Psychological WB}}(1,2072.477) = 9.46, p = .002$) and suicidal risk ($F_{\text{Burdensomeness}}(1,2220.780) = 11.40, p = .000$; $F_{\text{Thwartedbelonging}}(1,2074.938) = 15.36, p = .001$; $F_{\text{Suicidal intent}}(1,1814.577) = 5.04, p = .025$) of FIFO workers who don't have access to a landline were significantly worse compared to FIFO workers who do have access to these communication options. Similar findings occurred for having access to internet on site ($F_{\text{K10}}(1,1535.607) = 24.61, p = .000$; $F_{\text{Burnout}}(1,1650.662) = 17.834, p = .000$; $F_{\text{EmotionalWB}}(1,1621.298) = 26.30, p = .000$; $F_{\text{SocialWB}}(1,1639.031) = 13.53, p = .000$; $F_{\text{PsychologicalWB}}(1,1558.430) = 19.147, p = .000$; $F_{\text{Burdensomeness}}(1,1405.326) = 24.05, p = .000$; $F_{\text{Thwartedbelonging}}(1,1580.836) = 30.06, p = .000$; $F_{\text{Suicidalintent}}(1,1100.345) = 19.75, p = .000$).

Table 4.54a
Comparison of mental health and wellbeing for having a mobile phone on site

Construct	Group	M	SD	Welch's t-test			
				df	F	p-value	
K10	Mobile phone	19.23	7.11	Between	1	6.83	.009
	No mobile phone	20.35	7.34	Within	412.274		
Burnout	Mobile phone	3.86	1.72	Between	1	2.608	.107
	No mobile phone	4.03	1.79	Within	411.711		
	Mobile phone	4.47	1.11	Between	1	.71	.400

Emotional wellbeing	No mobile phone	4.42	1.14	Within	412.757		
Social wellbeing	Mobile phone	3.40	1.33	Between	1	6.02	.015
	No mobile phone	3.21	1.30	Within	420.040		
Psychological wellbeing	Mobile phone	4.17	1.19	Between	1	1.13	.288
	No mobile phone	4.10	1.19	Within	417.029		
Thwarted belonging	Mobile phone	1.95	1.31	Between	1	2.12	.146
	No mobile phone	2.06	1.30	Within	416.917		
Perceived burdensomeness	Mobile phone	0.61	0.97	Between	1	2.783	.096
	No mobile phone	0.71	1.08	Within	398.694		
Suicidal intent	Mobile phone	1.73	1.30	Between	1	.21	.651
	No mobile phone	1.77	1.38	Within	355.393		

Table 4.54b

Comparison of mental health and wellbeing for availability of landlines

Construct	Group	M	SD	Welch's t-test			
				df	F	p-value	
K10	Landline	18.49	6.74	Between	1	23.37**	.000
	No landline	19.78	7.30	Within	2125.439		
Burnout	Landline	3.74	1.74	Between	1	9.474*	.002
	No landline	3.95	1.73	Within	1967.614		
Emotional wellbeing	Landline	4.57	1.09	Between	1	12.97**	.000
	No landline	4.41	1.13	Within	2030.345		
Social wellbeing	Landline	3.48	1.29	Between	1	9.55*	.002
	No landline	3.32	1.34	Within	2038.931		
Psychological wellbeing	Landline	4.26	1.15	Between	1	9.46*	.002
	No landline	4.12	1.21	Within	2072.477		
Thwarted belonging	Landline	1.83	1.26	Between	1	15.36**	.000
	No landline	2.03	1.33	Within	2074.938		
Perceived burdensomeness	Landline	0.54	0.90	Between	1	11.40**	.001
	No landline	0.66	1.02	Within	2220.780		
Suicidal intent	Landline	1.68	1.30	Between	1	5.04	.025
	No landline	1.81	1.41	Within	1814.577		

 Note. ** $p \leq .001$, * $p < .005$

Table 4.54c

Comparison of mental health and wellbeing for availability of internet

Construct	Group	M	SD	Welch's t-test			
				df	F	p-value	
K10	Internet	18.93	6.90	Between	1	24.61**	.000
	No internet	20.39	7.60	Within	1535.607		
Burnout	Internet	3.79	1.72	Between	1	17.834**	.000
	No internet	4.08	1.74	Within	1650.662		
Emotional wellbeing	Internet	4.53	1.10	Between	1	26.30**	.000
	No internet	4.30	1.14	Within	1621.298		
Social wellbeing	Internet	3.43	1.32	Between	1	13.53**	.000
	No internet	3.24	1.34	Within	1639.031		

Psychological wellbeing	Internet	4.23	1.16	Between	1	19.147**	.000
	No internet	4.02	1.25	Within	1558.430		
Thwarted belonging	Internet	1.88	1.28	Between	1	30.06**	.000
	No internet	2.17	1.35	Within	1580.836		
Perceived burdensomeness	Internet	0.56	0.91	Between	1	24.05**	.000
	No internet	0.77	1.11	Within	1405.326		
Suicidal intent	Internet	1.69	1.31	Between	1	19.75**	.000
	No internet	1.98	1.52	Within	1100.345		

Note. ** $p \leq .001$, * $p < .005$

An extra analysis was conducted into the impact of FIFO mental health on safety; the results can be found in Appendix B.2.2.

Summary: recreational, social activities and communication options on site

- Recreational options such as wet mess, dry mess, swimming pool, pool table and gym were not significantly associated with any differences in mental health, wellbeing or suicidal risk.
- Availability of social activities on site was significantly linked with lower levels of depression and anxiety, and thwarted belonging and perceived burdensomeness, as well as higher levels emotional (e.g. feelings of satisfaction and happiness), social (e.g. having trust in a good society) and psychological (e.g. self-acceptance and personal growth) wellbeing.
- Not having access to a landline or internet was associated with significantly worse mental health, wellbeing and suicidal risk; there was no difference for having access to a mobile phone.
- **Having access to social activities was significantly linked to better mental health and wellbeing in FIFO workers, making it important to organise social events on site in order to create a sense of a community.**

4.3.2 KEQ 1b: FIFO work and FIFO families

4.3.2.1 Descriptives of FIFO partner mental health and wellbeing

As 96.5% of the FIFO partner sample was female, female norm data was used from the 2007 Australian National Survey of Mental Health and Wellbeing (NSMHWB). The t-test (see Table 4.55) showed that the partner's anxiety and depression levels were significantly higher than the norm group ($t(372) = 11.05, p = .000$). A paired-samples t-test showed that the difference between the FIFO workers' K10 score and their FIFO partners' K10 score (of those who could be linked as being a couple) did not meet the threshold for statistical significance ($t(248) = 1.585, p = .114$). It is interesting to note that the partner K10 scores that could be linked to the scores of the FIFO worker they were in a relationship with had slightly lower K10 scores than the ones where the FIFO worker did not complete the survey.

Table 4.55

Comparison of mental health and wellbeing partners

	Group	M	SD	T-test			
				df	t	p-value	
K10	Partner	19.19	7.32	Between	1	11.05	.000
	Norm	15.00	0.10	Within	373		
K10	Partner*	17.82	6.39	Between	1	1.585	.114
	FIFO	18.64	6.49	Within	249		

Note. * These means are from the FIFO workers and their partners of who the data could be linked together ($n = 249$ pairs).

Almost a third (32.7%) of the partners of FIFO workers experienced high or very high levels of stress (see Table 4.56), whereas in the Australian norm data this was only 11.7% of the respondents, or 13.6% for females. The percentage of partners reporting low psychological distress is 38.1%, while the percentage is almost double that (65.0%) for females in the Australian norm group.

Table 4.56

K10 low to very high psychological distress distribution

Psychological distress	Percentage partners	Percentage norm females (total population)
Low (score 10–15)	38.1%	65.0% (68.0%)
Moderate (score 16–21)	29.2%	20.8% (19.5%)
High (score 22–30)	22.8%	9.3% (8.0%)
Very high (score 31–50)	9.9%	4.3% (3.7%)

Table 4.57 looks at psychological distress for different age groups. The percentages for the norm group represent the female population. Considering some of the age categories only have a few respondents ($n \leq 24$), the focus will be on the three age groups with a minimum of 70 participants. Following the data for the FIFO workers, younger FIFO partners seem to experience more psychological distress; this stress is reduced for the older generation of FIFO partners. The norm data for the three age groups shows the opposite pattern, where depression and anxiety are low at a younger age and become slightly higher up to participants reaching the age category of 45–54 years. The age groups that are 25–34 years old and 35–44 years old especially have high percentages (41.3% and 32.0%) of partners experiencing high levels of psychological distress.

Table 4.57
K10 by age (percentages)

Age	Psychological distress									
	Low		Moderate		High		Very high		High/very high	
	Partner	Norm	Partner	Norm	Partner	Norm	Partner	Norm	Partner	Norm
25–34	27.5	63.1	31.2	24.5	30.4	8.9	10.9	2.9	41.3	11.7
35–44	36.0	64.7	32.0	21.2	19.2	8.9	12.8	4.8	32.0	13.7
45–54	56.3	64.0	25.4	20.4	12.7	9.7	5.6	5.6	18.3	15.4

Comparison wellbeing

For emotional ($t(371) = -1.80, p = .073$) and psychological wellbeing ($t(371) = -0.05, p = .964$), the differences between the FIFO sample and the norm data did not meet the threshold for statistical significance (see Table 4.58). However, the social wellbeing of the partners differed significantly from the norm group ($t(371) = -3.44, p = .001$), with the partners having better social wellbeing.

Table 4.58
Comparison of mental health and wellbeing partners

	Group	M	SD	One sample t-test			
				df	t	p-value	
Emotional wellbeing (satisfaction/happiness)	Partner	4.57	1.06	Between	1	-1.80	.073
	Norm	4.67	0.94	Within	372		
Social wellbeing (trust in a good society)	Partner	3.57	1.32	Between	1	3.44	.001
	Norm	3.33	1.01	Within	372		
Psychological wellbeing (self-acceptance)	Partner	4.18	1.21	Between	1	.05	.964
	Norm	4.18	0.99	Within	372		

Descriptives suicidal risk

As there is no norm data available for suicidal risk, the descriptives on burdensomeness, thwarted belongingness and suicidal intent are reported in Table 4.59. Compared to the FIFO workers, the partners score similarly on burdensomeness ($M_{\text{FIFO}}=0.62, M_{\text{Partner}}=0.63$), and have lower scores on thwarted belonging ($M_{\text{FIFO}}=1.96, M_{\text{Partner}}=1.75$) and suicidal intent ($M_{\text{FIFO}}=1.77, M_{\text{Partner}}=1.46$).

Table 4.59
Suicidal risk partners

	M	SD
Burdensomeness	0.63	1.12
Thwarted belongingness	1.75	1.35
Suicidal intent	1.46	1.14

Summary: FIFO partners' mental health and wellbeing comparison with norm data

- 32.7% of the partners (who are predominantly female) experienced high or very high levels of psychological stress; this is 13.6% for females in the norm data coming from the 2007 Australian National Survey of Mental Health and Wellbeing.
- Partners in the age category 25–34 years old often experience especially high or very high levels of psychological distress (41.3%).
- Partners have better social wellbeing (e.g. having trust in a good society) than the norm group consisting of a sample of 1662 Dutch people between the ages of 18 and 87 years; no differences were found for emotional (e.g. feelings of satisfaction and happiness) and psychological (e.g. self-acceptance and personal growth) wellbeing.
- Compared to the FIFO workers, partners have similar scores on perceived burdensomeness, but lower scores on thwarted belonging and suicidal intent.
- **FIFO partners have significantly worse mental health when compared to the norm data, with a third having high or very high levels of psychological distress; it is similar to the FIFO workers mental health score. Their burnout score is also high.**

4.3.2.2 FIFO work arrangements link with partners' mental health and wellbeing

How workers feel about and perceive their work may affect their general mood and demeanour, even when at home. This could in turn affect their attitudes while at home, therefore influencing their partners' wellbeing. The regressions in this section look at the potential influence of FIFO workers' perception of FIFO work arrangements on their partners' mental health and wellbeing.

Some of the findings are not easily explained, potentially due to self-ratings from the FIFO workers about themselves and their work being linked to the mental health and wellbeing of their partners rated by their partners. For analysis of the partner sample, p-values of .05 or higher are considered to be significant (instead of .001 or .005 for the current FIFO sample) as this sample is considerably smaller than the current FIFO sample.

Person factors

For the depression and anxiety (K10) scores of the partner, 11.8% of the variance is explained by the person factors of the FIFO worker, for burnout this is 8.9%. As Table 4.60 shows, if FIFO workers have the ability to detach from work, this is linked to their partners having higher scores on depression and anxiety ($\beta = .26$; $p < .05$). Recovery might be linked to a coping style of disengagement, where the workers do not deal with their problems, which then leads to worse anxiety and depression in their partners. The extent to which FIFO workers have a sense of positive emotional attachment to FIFO work (affective FIFO commitment) was linked with less anxiety and depression in partners ($\beta = -.28$; $p < .05$).

For burnout, only one of the variables in FIFO person factors was found to individually explain part of the variance: affective FIFO commitment ($\beta = -.29$; $p < .05$). Workers having less positive attachment to FIFO work is linked to higher scores on burnout in their partners. This finding suggests that partners of those FIFO workers that enjoy and feel appreciated by their work are less likely to experience burnout.

Table 4.60
Regression of self-reported mental ill-health on person factors

Variables	K10 (depression & anxiety)				Burnout			
	B	SE B	β	R ²	B	SE B	β	R ²
Step 1								
Gender	1.22	3.74	.03		.96	.85	.11	
Age	-.16	.08	-.20		-.05	.02	-.25*	
Number of dependants	.16	.55	.03		.11	.13	.08	
Level of education	-.54	.39	-.12		.08	.09	.08	
Years in FIFO	-.04	.11	-.04	.059	-.00	.03	-.01	.079
Step 2								
Gender	3.19	3.73	.08		1.41	.86	.15	
Age	-.12	.08	-.15		-.04	.02	-.20	
Number of dependants	.20	.55	.03		.12	.13	.09	
Level of education	-.46	.39	-.11		.09	.09	.09	
Years in FIFO	.00	.11	.00		.01	.03	.02	
Coping—active	.35	1.03	.04		.03	.24	.01	
Coping—seeking support	-.25	.76	-.03		.02	.18	.01	
Coping—distraction	.20	.89	.02		.08	.21	.03	
Coping—disengagement	.45	1.14	.04		.02	.26	.01	
Resilience	1.22	1.11	.12		.23	.26	.10	
Ability to detach from work	1.93	.70	.26*		.30	.16	.17	
Affective FIFO commitment	-1.64	.61	-.28*		-.39	.14	-.29*	
Continuance FIFO commitment	.17	.43	.04	.177	.06	.10	.06	.168

Note. * $p < .05$. ** $p < .005$. *** $p \leq .001$; $n = 112$

Table 4.61 shows that for wellbeing the FIFO workers' person factors explained 11% of emotional wellbeing (e.g. feelings of satisfaction and happiness), 7.2% of social wellbeing (e.g. having trust in a good society) and 8.6% of psychological wellbeing (e.g. self-acceptance and personal growth) of FIFO partners. Only the affective FIFO commitment of FIFO workers was found to have a link with some of the wellbeing aspects of their partner; having a positive emotional attachment to FIFO work was linked to better emotional and psychological wellbeing ($\beta_{\text{emot WB}} = .26$; $p < .05$; $\beta_{\text{psych WB}} = .25$; $p < .05$).

Table 4.61
Regression of self-reported wellbeing on person factors

Variables	Emotional wellbeing				Social wellbeing				Psychological wellbeing			
	B	SE B	β	R ²	B	SE B	β	R ²	B	SE B	β	R ²
Step 1												
Gender	-.25	.55	-.04		-.33	.69	-.05		-.52	.63	-.08	
Age	.00	.01	.02		.01	.02	.08		.01	.01	.04	
Number of dependants	.10	.08	.11		.11	.10	.10		.04	.09	.04	
Level of education	.06	.06	.10		.08	.07	.10		.11	.07	.15	
Years in FIFO	.01	.02	.05	.026	.00	.02	.01	.029	.01	.02	.03	.032
Step 2												
Gender	-.46	.55	-.08		-.67	.70	-.09		-.74	.64	-.11	
Age	-.00	.01	-.02		.00	.02	.03		-.00	.01	-.00	
Number of dependants	.08	.08	.09		.09	.10	.09		.03	.09	.03	
Level of education	.07	.06	.10		.07	.07	.09		.10	.07	.14	
Years in FIFO	.00	.02	.00		.00	.02	-.00		.00	.02	-.00	
Coping—active	-.06	.15	-.04		.02	.20	.01		-.06	.18	-.04	
Coping—seeking support	-.00	.11	-.00		-.08	.14	-.05		.02	.13	.01	
Coping—distraction	.05	.13	.04		-.03	.17	-.02		.03	.15	.02	
Coping—disengagement	-.19	.17	-.12		-.16	.21	-.08		-.16	.19	-.09	
Resilience	-.35	.17	-.23		-.26	.21	-.14		-.32	.19	-.19	
Ability to detach from work	-.17	.10	-.15		-.22	.13	-.16		-.15	.12	-.12	
Affective FIFO commitment	.23	.09	.26*		.21	.12	.20		.25	.10	.25*	
Continuance FIFO commitment	.00	.06	.00	.136	-.03	.08	-.04	.101	-.04	.07	-.05	.118

Note. * $p < .05$. ** $p < .005$. *** $p \leq .001$; $n = 112$

When connecting FIFO person factors to partner suicidal risk, Table 4.62 shows that 6.9% of the variance in thwarted belonging is explained by person factors, 4.1% by burdensomeness and 6.3% by suicidal intent. Only for thwarted belonging of the partner were significant links with FIFO person factors found where the ability to detach from work has a positive connection to thwarted belonging ($\beta = .20$; $p < .05$), meaning they would have worse scores on thwarted belonging. The same explanation provided under person factors could apply here. On the other hand, affective FIFO commitment had a negative connection with thwarted belonging ($\beta = -.22$; $p < .05$); with the FIFO workers having more sense of commitment, the score on thwarted belonging for the partner will be lower.

Table 4.62
Regression of suicidal risk on person factors

Variables	Thwarted belonging				Burdensomeness				Suicidal intent			
	B	SE B	β	R^2	B	SE B	β	R^2	B	SE B	β	R^2
Step 1												
Gender	.03	.71	.01		.02	.58	.00		-.53	.65	-.09	
Age	-.01	.02	-.06		-.01	.01	-.12		.01	.01	.12	
Number of dependants	-.02	.10	-.02		.02	.09	.02		-.04	.10	-.05	
Level of education	-.07	.07	-.09		-.11	.06	-.16		-.06	.07	-.09	
Years in FIFO	.00	.02	.00	.011	.01	.02	.07	.036	.00	.02	.03	.031
Step 2												
Gender	.30	.73	.04		.16	.60	.03		-.45	.67	-.07	
Age	-.00	.02	-.02		-.01	.01	-.09		.02	.01	.13	
Number of dependants	-.01	.11	-.01		.02	.09	.02		-.00	.10	-.00	
Level of education	-.07	.08	-.08		-.10	.06	-.15		-.06	.07	-.08	
Years in FIFO	.01	.02	.05		.01	.02	.09		.01	.02	.05	
Coping—active	.05	.20	.03		-.01	.17	-.01		-.30	.19	-.20	
Coping—seeking support	-.06	.15	-.04		-.04	.12	-.03		.04	.14	.03	
Coping—distraction	.05	.17	.03		.05	.14	.03		-.12	.16	-.08	
Coping—disengagement	.01	.22	.00		-.08	.18	-.05		-.02	.21	-.01	
Resilience	.14	.22	.07		.08	.18	.05		.35	.20	.21	
Ability to detach from work	.28	.14	.20*		.22	.11	.19		.14	.13	.12	
Affective FIFO commitment	-.24	.12	-.22*		-.09	.10	-.10		-.07	.11	-.08	
Continuance FIFO commitment	-.01	.08	-.01	.080	.02	.07	.02	.077	.01	.08	.01	.094

Note. * $p < .05$. ** $p < .005$. *** $p \leq .001$; $n = 112$

Summary: person factors on partner mental health and wellbeing

- FIFO workers having a positive emotional attachment to FIFO work is significantly linked to less anxiety and depression or burnout for the partner.
- Being able to detach from work for the FIFO worker actually leads to significantly worse anxiety and depression and is also linked to worse thwarted belonging for the partner. This could be because the detaching from work might measure a disengaged coping style, which means FIFO workers would not be dealing with potential issues.
- Affective commitment to FIFO work from the FIFO workers (i.e. a positive emotional attachment to FIFO work) is also associated with significantly better emotional (e.g. feelings of satisfaction and happiness) and psychological (e.g. self-acceptance and personal growth) wellbeing of the partner.
- If FIFO workers have a positive attachment to FIFO work (i.e. they like working in a FIFO role), this shows in their partner having significantly better mental health and wellbeing.

Job factors

After looking at person factors, the job factors are considered next (see Table 4.63). All together 7.9% of the variance in the scores on depression and anxiety in partners of FIFO workers are explained by the job factors of the FIFO workers, and 9.9% of the variance in burnout. However, only the autonomy of workers during their time off at home ($\beta = -.15$; $p < .05$) is significantly linked to the scores on the K10. This is a negative relationship, meaning that the more autonomy the FIFO workers feel during their time at home, the lower the depression and anxiety of their partner.

Table 4.63
Regression of mental ill-health on job factors

Variables	<i>K10 (depression & anxiety)</i>				<i>Burnout</i>			
	<i>B</i>	<i>SE B</i>	β	<i>R</i> ²	<i>B</i>	<i>SE B</i>	β	<i>R</i> ²
Step 1								
Gender	1.22	2.78	.03		.96	.63	.11	
Age	-.16	.06	-.20*		-.05	.01	-.25**	
Number of dependants	.16	.41	.03		.11	.09	.08	
Level of education	-.54	.29	-.12		.08	.07	.08	
Years in FIFO	-.04	.08	-.04	.059	-.00	.02	-.01	.079
Step 2								
Gender	-.32	2.95	-.01		.44	.66	.05	
Age	-.17	.06	-.22*		-.05	.01	-.25**	
Number of dependants	-.11	.43	-.02		.09	.10	.07	
Level of education	-.52	.31	-.12		.08	.07	.08	
Years in FIFO	.02	.09	.02		.01	.02	.03	
Autonomy time off on-site	.17	.61	.02		.13	.14	.07	
Autonomy time off at home	-1.12	.55	-.15*		-.23	.12	-.13	
Separation from family	.82	.78	.09		.30	.18	.15	
Psychological transitioning between on and off time	.57	.58	.09		.05	.13	.03	
Error costs	-.11	.51	-.02		-.05	.11	-.03	
Workload	-.65	.59	-.09		-.02	.13	-.01	
Autonomy	.06	.58	.01		-.14	.13	-.08	
Task variety	-.14	.63	-.02		.08	.14	.04	
Job insecurity	-.3	.46	-.06		-.04	.10	-.03	
Feedback from job	-.28	.61	-.04		.03	.14	.02	
Roster ratio	1.41	1.12	.14		.11	.25	.05	
Roster satisfaction	.07	.59	.01		.07	.13	.05	
Work hours on site	-.06	.11	-.04		-.03	.02	-.07	
Travel duration to site	0.7	.08	.07		.03	.02	.10	
Operator vs contractor	.62	1.35	.04		.24	.30	.06	
Construction vs production	-2.25	2.42	-.09	.138	.25	.54	.04	.178

Note. * $p < .05$. ** $p < .005$. *** $p \leq .001$; roster ratio = days on-site/ days off-site; construction = 1, production = 0, operator = 1, contractor = 2; $n = 217$

Within partner emotional (e.g. feelings of satisfaction and happiness), social (e.g. having trust in a good society) and psychological (e.g. self-acceptance and personal growth) wellbeing respectively, 11.5%, 9.7% and 6.7% of variance was explained (see Table 4.64). For emotional wellbeing of the partner, there was a link with FIFO workers working for either an operator or a contractor, and when working in construction or production, indicating that the emotional wellbeing of the partner was worse when the FIFO worker worked for a contractor ($\beta = -.18$; $p < .05$) or when the work was done in construction ($\beta = -.19$; $p < .05$).

FIFO workers working during the construction phase of a project also had a negative effect on the social wellbeing of the partners ($\beta = .24$; $p < .05$), but in addition to that, the experienced autonomy of the FIFO worker was linked with better social wellbeing of partners ($\beta = .21$; $p < .05$). Finally, for the psychological wellbeing of partners there was a negative relation with task variety ($\beta = -.18$; $p <$

.05), which means that if the FIFO workers had a bigger variety of tasks in their job, the psychological wellbeing of the partner would be worse. The bigger task variety could be a proxy for the FIFO worker being overburdened and the partners noticing that the FIFO worker has too many tasks to deal with.

Table 4.64
Regression of wellbeing on job factors

Variables	<i>Emotional wellbeing</i>				<i>Social wellbeing</i>				<i>Psychological wellbeing</i>			
	<i>B</i>	<i>SE B</i>	β	<i>R</i> ²	<i>B</i>	<i>SE B</i>	β	<i>R</i> ²	<i>B</i>	<i>SE B</i>	β	<i>R</i> ²
Step 1												
Gender	-.25	.41	-.04		-.33	.51	-.05		-.52	.47	-.08	
Age	.00	.01	.02		.01	.01	.08		.01	.01	.04	
Number of dependants	.10	.06	.11		.11	.08	.10		.04	.07	.04	
Level of education	.06	.04	.10		.08	.05	.10		.12	.05	.15*	
Years in FIFO	.01	.01	.05	.026	.00	.02	.01	.029	.01	.01	.03	.032
Step 2												
Gender	-.06	.43	-.01		-.28	.54	-.04		-.33	.50	-.05	
Age	.00	.01	.02		.02	.01	.15		.01	.01	.06	
Number of dependants	.13	.06	.15*		.09	.08	.09		.05	.07	.05	
Level of education	.08	.05	.12		.06	.06	.08		.13	.05	.17*	
Years in FIFO	.00	.01	.02		-.01	.02	-.07		-.00	.02	-.02	
Autonomy time off on-site	.10	.09	.09		-.01	.11	-.01		-.01	.10	-.01	
Autonomy time off at home	.12	.08	.11		.00	.10	.00		.06	.09	.05	
Separation from family	-.06	.11	-.05		.11	.14	.07		-.10	.13	-.07	
Psychological transitioning between on and off time	-.01	.08	-.01		-.03	.11	-.03		.03	.10	.02	
Error costs	.00	.07	.00		-.01	.09	-.00		.08	.09	.06	
Workload	.09	.09	.08		.15	.11	.11		.10	.10	.08	
Autonomy	-.05	.09	-.05		.28	.11	.21*		.05	.10	.04	
Task variety	-.12	.09	-.10		-.08	.12	-.05		-.24	.11	-.18*	
Job insecurity	.01	.07	.01		-.02	.08	-.02		.02	.08	.02	
Feedback from job	.07	.09	.06		.13	.11	.09		.15	.10	.12	
Roster ratio	-.23	.16	-.16		-.29	.20	-.16		-.06	.19	-.03	
Roster satisfaction	-.07	.09	-.08		-.08	.11	-.07		-.09	.10	-.09	
Work hours on site	.01	.02	.02		-.00	.02	-.00		.01	.02	.02	
Travel duration to site	-.01	.01	-.09		-.01	.02	-.03		-.02	.01	-.10	
Operator vs contractor	-.46	.20	-.18*		-.23	.25	-.07		-.19	.23	-.06	
Construction vs production	.73	.35	.19*	.141	1.16	.44	.24*	.126	.50	.41	.11	.099

Note. * $p < .05$. ** $p < .005$. *** $p \leq .001$; roster ratio = days on site/days off site; construction = 1, production = 0, operator = 1, contractor = 2; $n = 217$

The different aspects of suicidal risk of partners did not have much variance explained by the job factors of FIFO workers (see Table 4.65). For partner thwarted belonging this was 5.1%, for burdensomeness 8.0%, and for suicidal intent 3.6%. The only individual FIFO job factor that explained variance in burdensomeness of the partner was workload ($\beta = -.20$; $p < .05$), where a higher workload leads to lower feelings of burdensomeness, perhaps because this ensures the worker is contributing a lot to society, so there is no need for the partners to feel like a burden on society.

Table 4.65
Regression of suicidal risk on job factors

Variables	<i>Thwarted belonging</i>				<i>Burdensomeness</i>				<i>Suicidal intent</i>			
	<i>B</i>	<i>SE B</i>	β	<i>R</i> ²	<i>B</i>	<i>SE B</i>	β	<i>R</i> ²	<i>B</i>	<i>SE B</i>	β	<i>R</i> ²
Step 1												
Gender	.03	.52	.01		.02	.43	.00		-.53	.47	-.09	
Age	-.01	.01	-.06		-.01	.01	-.12		.01	.01	.12	
Number of dependants	-.02	.08	-.02		.02	.06	.02		-.04	.07	-.05	

Level of education	-.07	.06	-.09		-.11	.05	-.16*		-.06	.05	-.09	
Years in FIFO	.00	.02	.00	.011	.01	.01	.07	.036	.00	.01	.03	.031
Step 2												
Gender	-.27	.57	-.04		-.15	.46	-.02		-.63	.52	-.10	
Age	-.01	.01	-.09		-.02	.01	-.16*		.01	.01	.10	
Number of dependants	-.03	.08	-.02		-.02	.07	-.02*		-.05	.08	-.05	
Level of education	-.07	.06	-.09		-.12	.05	-.17		-.04	.05	-.06	
Years in FIFO	.01	.02	.05		.02	.01	.11		.01	.02	.05	
Autonomy time off on-site	.09	.12	.06		.01	.10	.01		-.06	.11	-.05	
Autonomy time off at home	-.09	.11	-.06		-.08	.09	-.07		-.01	.10	-.01	
Separation from family	.06	.15	.03		-.06	.12	-.04		.07	.14	.05	
Psychological transitioning between on and off time	.07	.11	.06		.09	.09	.09		-.06	.10	-.06	
Error costs	-.04	.10	-.03		.04	.08	.04		.08	.09	.08	
Workload	-.13	.11	-.10		-.23	.09	-.20*		-.06	.10	-.05	
Autonomy	-.13	.11	.10		.02	.09	.01		-.06	.10	-.05	
Task variety	.14	.12	.10		.08	.10	.06		-.08	.11	-.06	
Job insecurity	.03	.09	.03		-.06	.07	-.07		.03	.08	.03	
Feedback from job	-.05	.12	-.03		-.18	.09	-.15		.14	.11	.11	
Roster ratio	.04	.22	.02		.03	.17	.02		.15	.20	.09	
Roster satisfaction	.02	.11	.02		.05	.09	.05		.01	.10	.01	
Work hours on site	-.01	.02	-.04		.00	.02	.02		.00	.02	-.00	
Travel duration to site	.02	.02	.08		.02	.01	.11		.01	.01	.06	
Operator vs contractor	.31	.26	.09		.01	.21	.01		-.06	.24	-.02	
Construction vs production	-.30	.47	-.06	.062	-.57	.38	-.14	.116	-.38	.42	-.09	.067

Note. * $p < .05$. ** $p < .005$. *** $p \leq .001$; roster ratio = days on site/ days off site; construction = 1, production = 0, operator = 1, contractor = 2; $n = 217$

Summary: job factors on partner mental health and wellbeing

- FIFO workers feeling more autonomous during their time at home was significantly associated with a lower score on depression and anxiety for the partner.
- Emotional wellbeing (e.g. feelings of satisfaction and happiness) of the partner was significantly worse when the work was done for a contractor or in construction. Social wellbeing (e.g. having trust in a good society) was also worse when working in construction.
- Autonomy for the FIFO worker was linked with significantly better social wellbeing in partners.
- A bigger variety of tasks for the FIFO worker is linked to significantly worse psychological wellbeing (e.g. self-acceptance and personal growth) of the partner.
- A higher workload for the FIFO worker is associated with significantly lower feelings of perceived burdensomeness for their partner.
- Autonomy at work and at home for the FIFO worker is significantly linked with better mental health and wellbeing for the partner, while FIFO workers working in construction or as a contractor are associated with worse emotional (and social) wellbeing. Increasing autonomy for the FIFO worker could improve the mental health and wellbeing for both the FIFO worker and the partner.

Team factors

FIFO team factors explain 2.4% of variance in partner depression and anxiety (K10-scores) and 2.3% in variance in burnout (see Table 4.66). None of the individual FIFO team factors contributed significantly into explaining the variance in partner K10-scores or burnout.

Table 4.66
Regression of mental ill-health on team factors

Variables	K10 (depression & anxiety)				Burnout			
	B	SE B	β	R ²	B	SE B	β	R ²
Step 1								
Gender	1.22	3.76	.03		.96	.86	.11	
Age	-.16	.08	-.20		-.05	.02	-.25*	
Number of dependants	.16	.56	.03		.11	.13	.08	
Level of education	-.54	.40	-.12		.08	.09	.08	
Years in FIFO	-.04	.11	-.04	.059	-.00	.03	-.01	.079
Step 2								
Gender	2.04	3.92	.05		1.09	.89	.12	
Age	-.16	.08	-.20		-.04	.02	-.25*	
Number of dependants	.09	.57	.02		.10	.13	.08	
Level of education	-.53	.41	-.12		.08	.10	.08	
Years in FIFO	-.04	.11	-.31		-.00	.03	-.01	
Perceived line manager support	.64	1.36	-.08		.22	.31	.11	
Perceived co-worker support	-1.25	.97	-.14		-.22	.22	-.10	
Inspirational leadership line manager	-.21	1.31	-.03		-.07	.30	-.04	
Perceived line manager health and safety commitment	-.49	1.14	-.06	.083	-.20	.26	-.11	.102

Note. * $p < .05$. ** $p < .005$. *** $p \leq .001$; $n = 121$

FIFO team factors explained 4.1% of variance in partners' emotional wellbeing (e.g. feelings of satisfaction and happiness), 3.1% in social wellbeing (e.g. having trust in a good society) and 8% in psychological (e.g. self-acceptance) wellbeing. FIFO workers' perceived line manager health and safety commitment was linked with partner psychological wellbeing ($\beta = .32$; $p < .05$).

Table 4.67
Regression of wellbeing on team factors

Variable	Emotional wellbeing				Social wellbeing				Psychological wellbeing			
	B	SE B	β	R ²	B	SE B	β	R ²	B	SE B	β	R ²
Step 1												
Gender	-.25	.56	-.04		-.33	.69	-.05		-.52	.63	-.08	
Age	.00	.01	.02		.01	.02	.08		.01	.01	.04	
Number of dependants	.10	.08	.11		.11	.10	.10		.04	.09	.04	
Level of education	.06	.06	.10		.08	.07	.10		.11	.07	.1	
Years in FIFO	.01	.02	.05	.026	.00	.02	.01	.029	.01	.02	.03	.032
Step 2												
Gender	-.29	.57	-.05		-.33	.72	-.05		-.53	.64	-.08	
Age	.00	.01	.02		.01	.02	.07		.01	.01	.04	
Number of dependants	.10	.08	.12		.11	.10	.10		.04	.09	.04	
Level of education	.06	.06	.09		.06	.08	.08		.09	.07	.12	
Years in FIFO	.01	.02	.05		.00	.02	.01		.00	.02	.03	
Perceived line manager support	-.14	.20	-.11		-.05	.25	-.03		-.11	.22	-.08	
Perceived co-worker support	.17	.14	.13		.15	.18	.09		.22	.16	.14	
Inspirational leadership line manager	-.06	.19	-.05		-.16	.24	-.11		-.20	.21	-.15	
Perceived line manager health and safety commitment	.23	.17	.20	.067	.27	.21	.19	.060	.41	.19	.32*	.112

Note. * $p < .05$. ** $p < .005$. *** $p \leq .001$; $n = 121$

FIFO team factors explained 1.4% of variance in thwarted belonging, 1.5% in perceived burdensomeness and 3.5% in suicidal intent (see Table 4.68). None of the team factors made an individual significant contribution to suicidal risk of the partners.

Table 4.68
Regression of suicidal risk on team factors

Variables	<i>Thwarted belonging</i>				<i>Burdensomeness</i>				<i>Suicidal intent</i>			
	<i>B</i>	<i>SE B</i>	β	<i>R</i> ²	<i>B</i>	<i>SE B</i>	β	<i>R</i> ²	<i>B</i>	<i>SE B</i>	β	<i>R</i> ²
Step 1												
Gender	.03	.71	.01		.02	.58	.00		-.53	.66	-.09	
Age	-.01	.02	-.06		-.01	.01	-.12		.01	.01	.12	
Number of dependants	-.02	.11	-.02		.02	.09	.02		-.04	.10	-.05	
Level of education	-.07	.08	-.09		-.11	.06	-.16		-.06	.07	-.09	
Years in FIFO	.00	.02	.00	.011	.01	.02	.07	.036	.00	.02	.03	.031
Step 2												
Gender	.01	.74	.00		.01	.61	.00		-.53	.68	-.09	
Age	-.01	.02	-.06		-.01	.01	-.12		.01	.01	.11	
Number of dependants	-.02	.11	-.02		.01	.09	.01		-.04	.10	-.05	
Level of education	-.07	.08	-.09		-.11	.06	-.16		-.05	.07	-.07	
Years in FIFO	.00	.02	.01		.01	.02	.08		.01	.02	.03	
Perceived line manager support	.21	.26	.13		.18	.21	.14		.18	.24	.14	
Perceived co-worker support	-.06	.18	-.04		-.11	.15	-.08		-.12	.17	-.08	
Inspirational leadership line manager	-.02	.25	-.01		.00	.20	.00		.05	.23	.04	
Perceived line manager health and safety commitment	-.20	.22	-.14	.025	-.13	.18	-.11	.051	-.27	.20	-.22	.066

Note. * $p < .05$. ** $p < .005$. *** $p \leq .001$; $n = 121$

Summary: team factors on partner mental health and wellbeing

- FIFO workers' perceived line manager health and safety commitment had a significant positive link with partner psychological wellbeing (e.g. self-acceptance and personal growth).

Site and organisational factors

FIFO workers' site and organisational factors explained 6.1% of variance in the K10-scores and 2.3% of variance in burnout of the partners (see Table 4.69). However, there were no links with individual factors for the K10 and burnout scores.

Table 4.69
Regression of mental ill-health on-site and organisational factors

Variables	<i>K10 (depression & anxiety)</i>				<i>Burnout</i>			
	<i>B</i>	<i>SE B</i>	β	<i>R</i> ²	<i>B</i>	<i>SE B</i>	β	<i>R</i> ²
Step 1								
Gender	1.22	3.82	.03		.96	.87	.11	
Age	-.16	.08	-.20		-.05	.02	-.25*	
Number of dependants	.16	.57	.03		.11	.13	.08	
Level of education	-.54	.40	-.12		.08	.09	.08	
Years in FIFO	-.04	.11	-.04	.059	-.00	.03	-.01	.079
Step 2								
Gender	1.99	4.02	.05		.88	.94	.10	
Age	-.15	.09	-.18		-.04	.02	-.23*	
Number of dependants	.10	.62	.02		.11	.14	.08	
Level of education	-.69	.44	-.16		.06	.10	.06	
Years in FIFO	-.08	.12	-.07		-.01	.03	-.03	
Perceived FIFO work arrangement flexibility	-.18	.91	-.02		.02	.21	.01	
Number of recovery options on site	-.18	.27	-.09		-.06	.06	-.14	
Satisfaction with recovery options on site	-1.39	.88	-.19		-.03	.20	-.02	
Number of social activity options on site	.16	.44	.05		.05	.10	.07	

Satisfaction with social activity options on site	.56	.63	.10	-.04	.15	-.03			
Satisfaction with on-site room arrangement	.34	.61	.06	.02	.14	.01			
Number of communication options with home	-.46	1.06	-.05	-.03	.25	-.01			
Perceived relative priority of mental health and wellbeing	9.10	8.93	.12	1.09	2.08	.06			
Bullying victim	-.12	.50	-.03	-.03	.12	-.03			
Bullying witness	-.06	.48	-.02	.10	.11	.11			
Perceived stigma at work	.53	.93	.07	.120	.01	.22	.00	.102	

Note. * $p < .05$. ** $p < .005$. *** $p \leq .001$; $n = 117$

FIFO workers' organisational and site factors were found to explain 8.5% of variance in emotional wellbeing (e.g. feelings of satisfaction and happiness), 7.3% in social wellbeing (e.g. having trust in a good society) and 6.8% in psychological (e.g. self-acceptance and personal growth) wellbeing (see Table 4.70). Here, the number of recovery options the FIFO worker has played a role for both emotional ($\beta = .18$; $p < .05$) and social wellbeing ($\beta = -.15$; $p < .05$) of the partner. Interestingly, the emotional wellbeing of partners got better when the FIFO worker had more recovery options on site, while their social wellbeing got worse. Having more recovery options could mean that the FIFO worker has less time to connect to their partner, hence there is a lowering of partner social wellbeing. The perceived relative priority for mental health and wellbeing was negatively associated with psychological wellbeing ($\beta = -.24$; $p < .05$). Having more attention for mental health might worry the partners because it there might be less attention for physical health, which could have big consequences.

Table 4.70
Regression of wellbeing on organisational and site factors

Variables	<i>Emotional wellbeing</i>				<i>Social wellbeing</i>				<i>Psychological wellbeing</i>			
	<i>B</i>	<i>SE B</i>	β	<i>R</i> ²	<i>B</i>	<i>SE B</i>	β	<i>R</i> ²	<i>B</i>	<i>SE B</i>	β	<i>R</i> ²
Step 1												
Gender	-.25	.56	-.04		-.33	.70	-.05		-.52	.64	-.08	
Age	.00	.01	.02		.01	.02	.08		.01	.01	.04	
Number of dependants	.10	.08	.11		.11	.10	.10		.04	.10	.04	
Level of education	.06	.06	.10		.08	.07	.10		.11	.07	.15	
Years in FIFO	.01	.02	.05	.026	.00	.02	.01	.029	.01	.02	.03	.032
Step 2												
Gender	-.38	.59	-.07		-.45	.73	-.06		-.68	.67	-.10	
Age	.00	.01	.01		.01	.02	.05		.00	.01	.01	
Number of dependants	.14	.09	.16		.10	.11	.10		.02	.10	.02	
Level of education	.11	.06	.18		.10	.08	.13		.14	.07	.19	
Years in FIFO	.02	.02	.10		.01	.02	.03		.02	.02	-.12	
Perceived FIFO work arrangement flexibility	.02	.13	.02		.08	.17	.06		.26	.15	.20	
Number of recovery options on-site	.05	.04	.18*		-.05	.05	-.15*		.01	.05	.04	
Satisfaction with recovery options on site	.18	.13	.17		.40	.16	.31		.22	.15	.19	
Number of social activity options on site	-.13	.06	-.27		-.05	.08	-.09		-.07	.07	-.12	
Satisfaction with social activity options on site	-.04	.09	-.05		.00	.12	.00		-.02	.11	-.02	
Satisfaction with on-site room arrangement	-.01	.09	-.01		-.06	.11	-.06		-.01	.10	-.01	
Number of communication options with home	.08	.15	.05		.04	.19	.02		.07	.18	.04	
Perceived relative priority of mental health and wellbeing	-2.19	1.30	-.20		-.22	1.63	-.02		-2.98	1.49	-.24*	
Bullying victim	.01	.07	.02		.01	.09	.01		-.05	.08	-.08	
Bullying witness	-.04	.07	-.06		-.02	.09	-.02		.01	.08	.02	
Perceived stigma at work	-.19	.14	-.15	.111	.10	.17	.07	.102	.02	.16	.01	.100

Note. * $p < .05$. ** $p < .005$. *** $p \leq .001$; $n = 117$

Individual FIFO workers' organisational and on-site factors were not found to be associated with partners' suicidal risk; they did explain 8.3% of the variance in thwarted belonging, 4.6% in burdensomeness and 5.1% in suicidal intent (see Table 4.71).

Table 4.71
Regression of suicidal risk on organisational and site factors

Variables	<i>Thwarted belonging</i>				<i>Burdensomeness</i>				<i>Suicidal intent</i>			
	<i>B</i>	<i>SE B</i>	β	<i>R</i> ²	<i>B</i>	<i>SE B</i>	β	<i>R</i> ²	<i>B</i>	<i>SE B</i>	β	<i>R</i> ²
Step 1												
Gender	.03	.72	.01		.01	.59	.00		-.53	.65	-.09	
Age	-.01	.02	-.06		-.01	.01	-.12		.01	.01	.12	
Number of dependants	-.02	.11	-.02		.02	.09	.02		-.04	.10	-.05	
Level of education	-.07	.08	-.09		-.11	.06	-.16		-.06	.07	-.09	
Years in FIFO	.00	.02	.00	.011	.01	.02	.07	.036	.00	.02	.03	.031
Step 2												
Gender	.19	.75	.03		.12	.63	.02		-.58	.69	-.09	
Age	-.01	.02	-.03		-.01	.01	-.11		.01	.02	.09	
Number of dependants	-.07	.12	-.06		.01	.10	.01		-.05	.11	-.06	
Level of education	-.14	.08	-.17		-.12	.07	-.18		-.05	.08	-.07	
Years in FIFO	-.01	.02	-.07		.01	.02	.04		.01	.02	.06	
Perceived FIFO work arrangement flexibility	-.10	.17	-.07		-.01	.14	-.01		.18	.16	.15	
Number of recovery options on-site	-.06	.05	-.17		-.00	.04	-.01		-.02	.05	-.06	
Satisfaction with recovery options on site	-.25	.16	-.19		-.09	.14	-.08		.11	.15	.09	
Number of social activity options on site	.17	.08	.27*		-.03	.07	-.07		-.08	.08	-.16	
Satisfaction with social activity options on site	.10	.12	.10		.04	.10	.05		.04	.11	.04	
Satisfaction with on-site room arrangement	-.01	.11	-.01		.02	.10	.03		-.04	.10	-.04	
Number of communication options with home	.02	.20	.01		.06	.17	.04		.08	.18	.05	
Perceived relative priority of mental health and wellbeing	2.07	1.67	.15		2.02	1.40	.18		.49	1.53	.04	
Bullying victim	-.04	.09	-.06		-.01	.08	-.02		.04	.09	.06	
Bullying witness	.01	.09	.02		-.02	.08	-.03		-.00	.08	-.01	
Perceived stigma at work	.20	.17	.13	.094	.08	.15	.06	.082	-.01	.16	-.01	.082

Note. * $p < .05$. ** $p < .005$. *** $p \leq .001$; $n = 117$

Summary: organisation and site factors on partner mental health and wellbeing

- With more recovery options on site, the emotional wellbeing (e.g. feelings of satisfaction and happiness) of partners got significantly better, while their social wellbeing (e.g. having trust in a good society) got significantly worse. Having more recovery options could mean that the FIFO worker has less time to connect to their partner, hence there is a lowering of partner social wellbeing.
- The perceived relative priority for mental health and wellbeing was significantly negatively associated with psychological wellbeing (e.g. self-acceptance and personal growth), which to partners might mean there is less attention for other important aspects, such as physical wellbeing.

Family and social factors

FIFO workers' family and social life factors explained 15.4% of variance in the partner scores on anxiety and depression and 11.7% on burnout (see Table 4.72). For both the partner K10 and burnout scores a positive association with FIFO workers' perceived work–family conflict was established ($\beta_{K10} = .27; p < .05$; $\beta_{Burnout} = .28; p < .05$). This means that a higher score for FIFO workers on work–family conflict is linked to higher scores on the K10 and burnout of partners.

Table 4.72

Regression of mental ill-health outcomes on social and family factors

Variables	K10 (depression & anxiety)				Burnout			
	B	SE B	β	R ²	B	SE B	β	R ²
Step 1								
Gender	1.22	3.86	.03		.96	.88	.11	
Age	-.16	.08	-.20		-.05	.02	-.25*	
Number of dependants	.16	.57	.03		.11	.13	.08	
Level of education	-.54	.41	-.12		.08	.09	.08	
Years in FIFO	-.04	.11	-.04	.059	-.00	.03	-.01	.079
Step 2								
Gender	.95	3.65	.02		.87	.85	.10	
Age	-.17	.08	-.21*		-.05	.02	-.26*	
Number of dependants	.26	.54	.04		.13	.13	.09	
Level of education	-.89	.40	-.20*		.01	.09	.01	
Years in FIFO	-.07	.11	-.07		-.01	.03	-.04	
Perceived work–family conflict	1.31	.51	.27*		.32	.12	.28*	
Loneliness on site and at home	.28	.91	.04		.02	.21	.01	
Happiness with personal relationships	-1.02	.79	-.15		-.16	.18	-.10	
Number of friends	-.30	.66	-.05		-.07	.15	.05	
Number of family members	-.23	.58	-.04	.213	.03	.14	.02	.196

Note. * $p < .05$. ** $p < .005$. *** $p \leq .001$; $n = 115$

Table 4.73 shows that FIFO workers' family and social life factors explained 13.9% of variance in partners' emotional wellbeing (e.g. feelings of satisfaction and happiness), 9.9% in social wellbeing (e.g. having trust in a good society) and 4.8% in psychological (e.g. self-acceptance and personal growth) wellbeing. Only the FIFO workers' happiness with personal relationships was associated with a better emotional wellbeing ($\beta = -.29; p < .05$) for their partners.

Table 4.73

Regression of mental health and wellbeing on social and family life factors

Variables	Emotional wellbeing				Social wellbeing				Psychological wellbeing			
	B	SE B	β	R ²	B	SE B	β	R ²	B	SE B	β	R ²
Step 1												
Gender	-.25	.57	-.04		-.33	.71	-.05		-.52	.65	-.08	
Age	.00	.01	.02		.01	.02	.08		.01	.01	.04	
Number of dependants	.10	.08	.11		.11	.11	.10		.04	.10	.04	
Level of education	.06	.06	.10		.08	.08	.10		.11	.07	.15	
Years in FIFO	.01	.02	.05	.026	.00	.02	.01	.029	.01	.02	.03	.032
Step 2												
Gender	-.24	.55	-.04		-.30	.69	-.04		-.49	.65	-.07	
Age	.00	.01	.02		.01	.02	.08		.01	.01	.05	
Number of dependants	.08	.08	.09		.10	.10	.09		.03	.10	.04	
Level of education	.12	.06	.19*		.11	.08	.14		.15	.07	.21*	
Years in FIFO	.02	.02	.10		.01	.02	.03		.01	.02	.04	
Perceived work–family conflict	-.06	.08	-.09		-.05	.10	-.06		-.10	.09	-.12	
Loneliness on site and at home	-.07	.14	-.06		.21	.17	-.15		.05	.16	.04	

Happiness with personal relationships	.30	.12	.29*	.05	.15	.04	.15	.14	.13		
Number of friends	.01	.10	.01	.12	.13	.10	.06	.12	.06		
Number of family members	.04	.09	.05	.165	.12	.11	.128	.05	.10	.05	.080

Note. * $p < .05$. ** $p < .005$. *** $p \leq .001$; $n = 115$

When linking FIFO workers' family and social life factors to partner suicidal risk, 12.3% of the variance was explained for thwarted belonging, 12.3% for burdensomeness and 1.7% for suicidal intent (see Table 4.74). Notably, the FIFO workers' happiness with personal relationships was negatively associated with both thwarted belonging ($\beta = -.32$; $p < .05$) and burdensomeness ($\beta = -.37$; $p < .05$) of the partners.

Table 4.74
 Regression of suicidal risk on social and family life factors

Variables	Thwarted belonging				Burdensomeness				Suicidal intent			
	B	SE B	β	R ²	B	SE B	β	R ²	B	SE B	β	R ²
Step 1												
Gender	.03	.73	.01		.01	.60	.00		-.53	.65	-.09	
Age	-.01	.02	-.06		-.01	.01	-.12		.01	.01	.12	
Number of dependants	-.02	.11	-.02		.02	.09	.02		-.04	.10	-.05	
Level of education	-.07	.08	-.09*		-.11	.06	-.16		-.06	.07	-.09	
Years in FIFO	.00	.02	.00	.011	.01	.02	.07	.036	.00	.02	.03	.031
Step 2												
Gender	-.04	.70	-.01		-.01	.58	-.00		-.59	.66	-.10	
Age	-.01	.02	-.07		-.02	.01	-.12		.01	.01	.11	
Number of dependants	-.01	.10	-.00		.03	.09	.03		-.05	.10	-.05	
Level of education	-.16	.08	-.20		-.18	.06	-.27*		-.06	.07	-.09	
Years in FIFO	-.01	.02	-.04		.01	.02	.04		.00	.02	.02	
Perceived work–family conflict	.13	.10	.15		-.02	.08	-.02		.08	.09	.11	
Loneliness on site and at home	-.12	.18	-.08		-.13	.14	-.11		.01	.17	.01	
Happiness with personal relationships	.41	.15	-.32*		-.39	.13	-.37*		.04	.14	.04	
Number of friends	-.05	.13	-.05		-.05	.10	-.05		-.03	.12	-.03	
Number of family members	.02	.11	.01	.134	-.09	.09	-.09	.159	.10	.11	.11	.048

Note. * $p < .05$. ** $p < .005$. *** $p \leq .001$; $n = 115$

Summary: family and social factors on partner mental health and wellbeing

- A higher score on work–family conflict is significantly linked to higher scores on depression, anxiety and burnout.
- The happiness with personal relationships was significantly positively linked with a better emotional wellbeing (e.g. feelings of satisfaction and happiness) and negatively with thwarted belonging and burdensomeness.
- Family factors explain some variance in partner mental health and wellbeing; FIFO workers feeling happy with their personal relationships was significantly linked to better mental health and wellbeing of the partner.

4.3.2.3 FIFO impact on partner and family

After analysing how the work arrangement of the FIFO worker influences their partners' mental health and wellbeing, a focus will now be on factors that influence the partner and the family more directly.

Influence FIFO work on family functioning

The following analysis will focus on the impact FIFO work arrangements potentially have on family functioning (a higher score would indicate worse family functioning). As can be seen in Table 4.75, 17.9% of the variance in family functioning (as identified by the partners) can be explained by person factors of the FIFO workers. FIFO workers with a coping style of disengagement had worse family functioning as rated by the partner ($\beta = .30$; $p < .001$). The higher their affective FIFO commitment (the sense of positive emotional attachment workers have to FIFO work), the better the family functioning was ($\beta = -.17$; $p < .05$).

Table 4.75
Regression of family functioning on person factors

Variables	Family functioning			R^2
	B	SE B	β	
Step 1				
Gender	.46	.20	.16*	
Age	-.00	.00	-.03	
Number of dependants	.00	.03	.01	
Level of education	-.01	.02	-.02	
Years in FIFO	.01	.01	.14	.052
Step 2				
Gender	.45	.18	.15*	
Age	.00	.00	.04	
Number of dependants	.02	.03	.03	
Level of education	.01	.02	.03	
Years in FIFO	.01	.01	.12	
Coping—active	-.05	.04	-.09	
Coping—seeking support	-.02	.04	-.03	
Coping—distraction	-.02	.05	-.03	
Coping—disengagement	.22	.05	.30***	
Resilience	.01	.04	.01	
Affective FIFO commitment	-.08	.03	-.17*	
Continuance FIFO commitment	.03	.02	.10	.231

Note. * $p \leq .05$. ** $p \leq .005$. *** $p \leq .001$

Table 4.76 shows that FIFO job factors explained 7.3% of the variance in family functioning. Only one contributing variable was statistically significant and that was the psychological transitioning between on and off site ($\beta = -.19$; $p < .05$). This indicated that higher family dysfunctioning is related to more issues with the psychological part of the transition.

Table 4.76
Regression of family functioning on job factors

Variables	Family functioning			R^2
	B	SE B	β	
Step 1				
Gender	.46	.21	.16*	
Age	-.00	.00	-.03	
Number of dependants	.00	.03	.01	
Level of education	-.01	.02	-.02	
Years in FIFO	.01	.01	.14	.052
Step 2				
Gender	.43	.22	.15	
Age	-.00	.01	-.02	
Number of dependants	-.01	.03	-.03	
Level of education	-.01	.02	-.02	
Years in FIFO	.01	.01	.15	
Autonomy time off on site	-.04	.05	-.06	
Autonomy time off at home	-.05	.04	-.09	
Separation from family	-.01	.06	-.01	

Psychological transitioning between on and off time	.10	.04	.19*	
Error costs	.03	.04	.06	
Workload	-.08	.04	-.15	
Autonomy	-.03	.04	-.06	
Task variety	.02	.05	.04	
Job insecurity	-.01	.03	-.02	
Feedback from job	.01	.05	.01	
Roster ratio	-.01	.08	-.02	
Roster satisfaction	-.04	.04	-.08	
Work hours on site	-.01	.01	-.06	
Travel duration to site	-.00	.01	-.01	
Operator vs contractor	.01	.10	.00	
Construction vs production	-.07	.18	-.03	.125

Note. * $p \leq .05$. ** $p \leq .005$. *** $p \leq .001$; roster ratio = days on site/days off site; construction = 1, production = 0, operator = 1, contractor = 2

FIFO team factors only explained 2.7% of the variance in family functioning (see Table 4.77); none of the team factors contributed significantly to the score on family functioning. Organisational and on-site factors explained 9.3% of the variance, but only one of these factors was found to have a significant contribution in explaining family functioning: the satisfaction with recovery options on site ($\beta = -.25$; $p < .05$). If FIFO workers were more satisfied with these recovery options, the partners would rate their family functioning as being better.

Table 4.77

Regression of family functioning on team factors and organisational and on-site factors

Variables	Family functioning (team factors)				Family functioning (organisational and on-site factors)			
	B	SE B	β	R ²	B	SE B	β	R ²
Step 1					Step 1			
Gender	.46	.28	.16		Gender	.46	.29	.16
Age	-.00	.01	-.03		Age	-.00	.01	-.03
Number of dependants	.00	.04	.01		Number of dependants	.00	.04	.01
Level of education	-.01	.03	-.02		Level of education	-.01	.03	-.02
Years in FIFO	.01	.01	.14	.052	Years in FIFO	.01	.01	.14
Step 2					Step 2			
Gender	.50	.29	.17		Gender	.55	.30	.19
Age	-.00	.01	-.03		Age	.00	.01	.01
Number of dependants	-.00	.04	-.00		Number of dependants	.01	.05	.02
Level of education	-.01	.03	-.02		Level of education	-.00	.03	-.01
Years in FIFO	.01	.01	.14		Years in FIFO	.01	.01	.12
Perceived line manager support	.10	.10	.15		Perceived FIFO work arrangement flexibility	-.01	.07	-.02
Perceived co-worker support	-.08	.07	-.11		Number of recovery options on site	.01	.02	.06
Inspirational leadership line manager	-.03	.10	-.05		Satisfaction with recovery options on site	-.14	.06	-.25*
Perceived line manager health and safety commitment	-.07	.09	-.12	.078	Number of social activity options on site	-.04	.03	-.18
					Satisfaction with social activity options on site	-.00	.05	-.00
					Satisfaction with on-site room arrangement	.03	.05	.07
					Number of communication options with home	.10	.08	.14

Perceived relative priority of mental health and wellbeing	.19	.66	.03	
Bullying victim	-.00	.04	-.02	
Bullying witness	.02	.04	.07	
Perceived stigma at work	.02	.07	.03	.145

Note. * $p \leq .05$. ** $p \leq .005$. *** $p \leq .001$

Finally, FIFO family and social life factors explained 19.2% of the variance in the scores on family functioning (see Table 4.78). Again, there was one factor that contributed significantly: the happiness of the FIFO workers with their personal relations led to lower scores on family functioning, indicating better family functioning ($\beta = -.44$; $p < .001$).

Table 4.78
Regression of family functioning on social and family factors

Variables	Family functioning			R^2
	B	$SE B$	β	
Step 1				
Gender	.46	.29	.16	
Age	-.00	.01	-.03	
Number of dependants	.00	.04	.01	
Level of education	-.01	.03	-.02	
Years in FIFO	.01	.01	.14	.052
Step 2				
Gender	.47	.27	.16	
Age	-.00	.01	-.02	
Number of dependants	.01	.04	.03	
Level of education	-.04	.03	-.13	
Years in FIFO	.01	.01	.07	
Perceived work–family conflict	.00	.04	.00	
Loneliness on site and at home	.02	.07	.03	
Happiness with personal relationships	-.23	.06	-.44***	
Number of friends	.02	.05	.05	
Number of family members	.00	.04	.01	.224

Note. * $p \leq .05$. ** $p \leq .005$. *** $p \leq .001$

Summary: FIFO work arrangements and family functioning

- Within FIFO person factors, using disengagement as a coping style indicated significantly worse family functioning (as identified by the partners) and significantly higher affective FIFO commitment improved family functioning.
- Issues for FIFO workers with psychological transitioning between on and off time (job factor) was linked with significantly higher family dysfunction.
- The satisfaction FIFO workers had with recovery options on site within organisational and on-site factors led to significantly better scores on family functioning.
- If FIFO workers were happier with their personal relationships, their scores on family functioning were significantly better.
- FIFO work arrangements do influence family functioning; a disengaging coping style, and issues with the psychological transitioning between on and off time were linked to significantly worse family functioning, while higher affective FIFO commitment, satisfaction with recovery options on site and the happiness with personal relationships were linked to significantly better family functioning. Improving some of these aspects could lead to better FIFO family functioning.

Influence FIFO work on the dyadic relationship

The following regressions analyse the amount of variation that is explained by FIFO work arrangements (according to FIFO workers) when looking at the dyadic relationship (according to partners of FIFO workers). For the dyadic relationship a higher score indicates a better relationship. Following Table 4.79, person factors explain 12.8% of the variance in the dyadic relationship. There are three factors that display significant links. First, a disengaging coping style ($\beta = -.20$; $p < .05$) and the necessity to stay in FIFO (continuance FIFO commitment; $\beta = -.14$; $p < .05$) led to a worse relationship between partners. Affective FIFO commitment, on the other hand, showed a positive relationship with the relationship ($\beta = .14$; $p < .05$).

Table 4.79
Regression of dyadic relationship on person factors

Variables	Dyadic relationship			R^2
	B	$SE B$	β	
Step 1				
Gender	-4.21	2.08	-.14*	.029
Age	-.01	.04	-.02	
Number of dependants	.16	.31	.04	
Level of education	.05	.22	.02	
Years in FIFO	-.06	.06	-.07	
Step 2				
Gender	-4.18	2.00	-.14*	.157
Age	-.04	.04	-.07	
Number of dependants	.11	.30	.03	
Level of education	-.11	.22	-.03	
Years in FIFO	-.05	.06	-.06	
Coping—active	.55	.44	.09	
Coping—seeking support	.40	.39	.07	
Coping—distraction	.23	.49	.03	
Coping—disengagement	-1.51	.53	-.20**	
Resilience	-.05	.47	-.01	
Affective FIFO commitment	.69	.30	.14*	
Continuance FIFO commitment	-.46	.22	-.14*	

Note. * $p \leq .05$. ** $p \leq .005$. *** $p \leq .001$

When looking at FIFO job factors, 4.4% of the variance in the dyadic relationship was explained (see Table 4.80). For none of the individual factors was a significant contribution established.

Table 4.80
Regression of dyadic relationship on job factors

Variables	Dyadic relationship			R^2
	B	$SE B$	β	
Step 1				
Gender	-4.21	2.20	-.14	.029
Age	-.01	.05	-.02	
Number of dependants	.16	.33	.04	
Level of education	.05	.23	.02	
Years in FIFO	-.06	.06	-.07	
Step 2				
Gender	-3.37	2.39	-.10	.044
Age	-.01	.05	-.02	
Number of dependants	.25	.35	.06	
Level of education	.02	.25	.01	
Years in FIFO	-.10	.07	-.12	
Autonomy time off on-site	.02	.50	.00	
Autonomy time off at home	.53	.45	.09	
Separation from family	-.28	.63	-.04	
Psychological transitioning between on and off time	-.40	.47	-.08	

Error costs	.01	.41	.00
Workload	.53	.48	.09
Autonomy	.35	.47	.06
Task variety	-.31	.51	-.05
Job insecurity	.22	.37	.05
Feedback from job	-.08	.49	-.01
Roster ratio	-.13	.91	-.02
Roster satisfaction	-.16	.48	-.03
Work hours on site	.14	.09	.12
Travel duration to site	.01	.07	.01
Operator vs contractor	.06	1.10	.00
Construction vs production	-.53	1.96	-.03
			.073

Note. * $p \leq .05$. ** $p \leq .005$. *** $p \leq .001$; roster ratio = days on site/days off site; construction = 1, production = 0, operator = 1, contractor = 2

Team factors and organisational and on-site factors explained 4.0% and 8.7% of the variance in the dyadic relationship respectively (see Table 4.81). Neither of these regressions reported significant individual contributors.

Table 4.81

Regression of dyadic relationship on team factors and organisational and on-site factors

Variables	Dyadic relationship (team factors)				Dyadic relationship (organisational and on-site factors)				
	B	SE B	β	R ²	B	SE B	β	R ²	
Step 1					Step 1				
Gender	-4.21	2.98	-.14	.029	Gender	-4.21	3.03	-.14	.029
Age	-.01	.06	-.02		Age	-.01	.06	-.02	
Number of dependants	.16	.44	.04		Number of dependants	.16	.45	.04	
Level of education	.05	.31	.02		Level of education	.05	.32	.02	
Years in FIFO	-.06	.09	-.07		Years in FIFO	-.06	.09	-.07	
Step 2					Step 2				
Gender	-4.64	3.08	-.15	.069	Gender	-4.01	3.15	-.13	.116
Age	-.01	.06	-.02		Age	-.04	.07	-.06	
Number of dependants	.21	.45	.05		Number of dependants	-.09	.48	-.02	
Level of education	.04	.32	.01		Level of education	.06	.34	.02	
Years in FIFO	-.06	.09	-.08		Years in FIFO	-.05	.10	-.05	
Perceived line manager support	-1.23	1.07	-.19		Perceived FIFO work arrangement flexibility	.47	.72	.08	
Perceived co-worker support	.93	.76	.13		Number of recovery options on site	-.02	.21	-.01	
Inspirational leadership line manager	.30	1.03	.05		Satisfaction with recovery options on site	.94	.68	.17	
Perceived line manager health and safety commitment	1.01	.90	.17		Number of social activity options on site	.27	.35	.11	
					Satisfaction with social activity options on site	-.04	.49	-.01	
				Satisfaction with on-site room arrangement	-.06	.47	-.01		
				Number of communication options with home	-.17	.83	-.02		
				Perceived relative priority of mental health and wellbeing	3.93	6.99	.07		
				Bullying victim	.53	.39	.18		
				Bullying witness	-.48	.37	-.15		
				Perceived stigma at work	.71	.72	.11		

Note. * $p \leq .05$. ** $p \leq .005$. *** $p \leq .001$

The final set of factors were the social and family factors, which together explained 17.4% of the variance in the relationship between the partners. Only the happiness FIFO workers felt for their personal relationships had a positive connection with the dyadic relationship ($\beta = .39$; $p < .001$).

Table 4.82
Regression of dyadic relationship on social and family factors

Variables	Dyadic relationship			R^2
	B	$SE B$	β	
Step 1				
Gender	-4.21	3.06	-.14	
Age	-.01	.07	-.02	
Number of dependants	.16	.45	.04	
Level of education	.05	.32	.02	
Years in FIFO	-.06	.09	-.07	.029
Step 2				
Gender	-4.26	2.86	-.14	
Age	-.02	.06	-.03	
Number of dependants	.04	.42	.01	
Level of education	.40	.32	.12	
Years in FIFO	-.01	.08	-.01	
Perceived work–family conflict	-.13	.40	-.04	
Loneliness on site and at home	-.50	.71	-.08	
Happiness with personal relationships	2.08	.62	.39***	
Number of friends	-.19	.52	-.04	
Number of family members	.02	.46	.00	.203

Note. * $p \leq .05$. ** $p \leq .005$. *** $p \leq .001$

Summary: FIFO work arrangements and the dyadic relationship

- Within FIFO workers' person factors a disengaging coping style and the necessity to stay in FIFO led to a significantly worse relationship between partners. Affective FIFO commitment was positively connected with the dyadic relationship.
- If FIFO workers were happier with their personal relationships, their dyadic relationship scores were significantly higher.

Influence of induction to FIFO work on mental health and wellbeing

Preparing the family before starting FIFO work through an induction explaining different aspects of FIFO work might improve mental health and wellbeing. Therefore, the mental health and wellbeing of partners who did and did not receive an induction was compared. It should be noted that only 11.3% of the partners of FIFO workers had received an induction.

Table 4.83 shows that only for psychological wellbeing a significant difference was found at $p = .05$ ($F(1,53.242) = 4.48$, $p = .039$), which implies that when looking at mental health and wellbeing, the induction could have a small effect on the psychological wellbeing of the partner. The induction could still be of influence on other aspects, such as how to deal with the financial situation. Moreover, we did not assess the quality of nature of the induction, which may also have contributed to no effect being detected.

Table 4.83
Comparison of mental health and wellbeing

Construct	Group	<i>M</i>	<i>SD</i>	<i>Welch's t-test</i>			
				<i>df</i>	<i>F</i>	<i>p-value</i>	
K10	No	19.35	7.45	Between	1	2.36	.131
	Induction	17.68	6.43	Within	54.432		
Burnout	No	4.15	1.67	Between	1	1.00	.323
	Induction	3.84	1.86	Within	48.461		
Emotional wellbeing (satisfaction and happiness)	No	4.54	1.05	Between	1	2.26	.139
	Induction	4.82	1.14	Within	48.978		
Social wellbeing (trust in society)	No	3.51	1.32	Between	1	3.92	.053
	Induction	3.95	1.33	Within	50.482		
Psychological wellbeing (self-acceptance)	No	4.14	1.22	Between	1	4.48	.039
	Induction	4.53	1.10	Within	53.242		
Thwarted belonging	No	.66	1.14	Between	1	0.56	.252
	Induction	.46	1.01	Within	48.992		
Burdensomeness	No	1.77	1.34	Between	1	1.34	.456
	Induction	1.59	1.45	Within	53.540		
Suicidal intent	No	1.46	1.13	Between	1	0.01	.926
	Induction	1.48	1.30	Within	39.289		

Summary: comparison of influence of induction

- The induction significantly and positively influenced partner's psychological wellbeing (e.g. self-acceptance and personal growth), but no other mental health and wellbeing outcomes.

4.3.3 KEQ 2: Use of alcohol and other drugs

4.3.3.1 Comparison of FIFO workers' use of alcohol and other drugs with the benchmark group

Questions on substance use were derived from the National Drug Strategy Household Survey (2013). Table 4.84 shows that FIFO workers (94.2%) were only slightly more likely to have consumed alcohol in the past 12 months compared to the benchmark group (91.1%), with 10.9% of FIFO workers drinking alcohol daily (12.9% for the benchmark group). However, FIFO workers more often drink on a weekly basis (57.6%) than the benchmark group (50.5%).

Table 4.84

Alcohol use—frequency of alcohol intake by FIFO workers and the benchmark group

	Percentage FIFO	Percentage benchmark group
Daily alcohol intake	10.9%	12.9%
Drinks at least weekly	57.6%	50.5%
Drinks less often than weekly*	25.7%	27.7%
No alcohol (last 12 months)/never drinks	5.7%	8.9%

Note. *2 to 3 days a month, once a month, or less often than once a month

On a day that the FIFO workers drink, 41.7% will have five or more standard drinks, for the benchmark group this is only 18.2% (see Table 4.85).

Table 4.85

Alcohol use—quantity of alcohol intake by FIFO workers and the benchmark group

	Percentage FIFO	Percentage benchmark group
11+ standard drinks	6.3%	2.3%
5–10 standard drinks	35.4%	15.9%
0.5–4 standard drinks	52.5%	72.8%
No drinking in the past 12 months	5.7%	8.9%

The National Health and Medical Research Council (NHMRC) released *The Australian guidelines to reduce health risks from drinking alcohol* in 2009. Their first guideline focusses on reducing the risk of the harm alcohol can do over a lifetime and the long-term risk of drinking alcohol on an alcohol-related disease or injury. To reduce this risk, the NHRMC advises to drink no more than two standard drinks on any day (10 grams of pure alcohol). The percentages displayed in Table 4.86 indicate that many FIFO workers (70.7%) will drink more than the recommended maximum of two standard drinks on any day; the same applies to almost half of benchmark group participants.

Table 4.86

Lifetime risky drinking by FIFO workers and the benchmark group

	Percentage FIFO	Percentage benchmark group
Risky—Consumed more than two standard drinks per day on average	70.7%	43.3%
Low risk—Had no more than two standard drinks per day on average	22.7%	46.0%
No risk—Abstainer/no drinking in the past 12 months	5.7%	8.9%

The second guideline of the NHRMC focusses on risk of injury on a single drinking occasion. To achieve this, it is recommended to drink no more than four standard drinks on a single drinking

occasion. The percentages in Table 4.87 show that 38.7% of the benchmark group exceeds this guideline, compared to 61.6% of the FIFO workers group. The same pattern can be seen for very high alcohol consumption, where almost half of the FIFO workers would have had more than 11 standard drinks on a single drinking occasion in the past 12 months; for the benchmark group this is 21.9%.

Table 4.87
Single occasion risk by FIFO workers and the benchmark group

	Percentage FIFO	Percentage benchmark group
Single occasion risk—five or more standard drinks at least once a month	61.6%	38.7%
Very high alcohol consumption—11 or more SD on a single drinking occasion in the past 12 months	45.7%	21.9%

Drinking behaviour was also measured using the AUDIT (Alcohol Use Disorders Identification Test). The results of the ten questions that make up the AUDIT are displayed in Table 4.88. Mean scores for FIFO workers are significantly higher when compared to the benchmark group on the AUDIT ($F(1,401.301) = 86.007, p = .000$), as well as the division into the sub-categories: alcohol consumption ($F(1,379.662) = 70.779, p = .000$), alcohol dependence ($F(1,427.341) = 57.934, p = .000$) and alcohol related problems ($F(1,400.913) = 51.541, p = .000$). A total maximum score of seven indicates low-risk drinking, eight up to 15 is risky or hazardous level and above 16 indicates high-risk or harmful level.

As there was some variation on age, education and professional role between both groups, an ANCOVA was conducted to control for these factors when looking at the alcohol use. The differences on the AUDIT ($F(1,577.594) = 12.857, p = .000$), alcohol consumption ($F(1,212.801) = 20.781, p = .000$) and alcohol-related problems ($F(1,51.554) = 5.884, p = .015$) still differed significantly using this type of analysis. It should, however, be noted that the difference in alcohol dependence ($F(1,7.719) = 2.400, p = .121$) no longer met the threshold for statistical significance after controlling for age, education and professional role.

In summary, FIFO workers don't seem to drink more frequently than the benchmark group, however, they do drink more when they drink, which is deemed riskier per *The Australian guidelines to reduce health risks from drinking alcohol*.

Table 4.88
Comparison Alcohol use between FIFO workers and the benchmark group

Alcohol	Group	M	SD	Welch's t-test			
				df	F	p-value	
AUDIT	FIFO	9.05	6.98	Between	1		
	Benchmark	5.83	5.63	Within	401.301	86.007	.000
Alcohol consumption	FIFO	5.38	3.27	Between	1		
	Benchmark	3.86	2.97	Within	379.662	70.779	.000
Alcohol dependence	FIFO	1.20	1.89	Between	1		
	Benchmark	0.56	1.35	Within	427.341	57.934	.000 ¹
	FIFO	2.51	3.06	Between	1		

Alcohol-related problems	Benchmark	1.43	2.43	Within	400.913	51.541	.000
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Note. ¹After controlling for age, education and professional role in an ANCOVA, these results are no longer statistically significant at the $p < .05$ level. Controlling for professional role may have resulted in over-adjustment.

Where 8% of the benchmark group injured themselves or someone else because of their drinking (see Table 4.89), this amount was doubled for the FIFO workers (16.8%). Almost 23% of FIFO workers have had a relative, friend, doctor or health care worker expressing their concern about the drinking behaviour of the FIFO workers; for the benchmark group this percentage added up to 15.3%.

Table 4.89

Alcohol-related injuries for FIFO workers and the benchmark group

	Percentage FIFO	Percentage benchmark group
Injured themselves or someone else because of drinking—in the last 12 months	4.7%	1.7%
Injured themselves or someone else because of drinking—yes, but not in last 12 months	12.1%	6.3%
Relative, friend doctor or health care worker concerned about their drinking—in the last 12 months	13.4%	9.3%
Relative, friend doctor or health care worker concerned about their drinking—yes, but not in last 12 months	9.4%	6.0%

Finally, 3.2% of the FIFO workers had missed one or more days (maximum of 28 days) of work because of their own use of alcohol, this was 1.7% for the benchmark group (maximum of five days).

Summary: FIFO workers' alcohol use comparison with benchmark group

- The frequency of alcohol intake is similar for FIFO workers and the benchmark group, but the quantity of alcohol consumption is higher for FIFO workers.
- FIFO workers have significantly worse scores on the AUDIT compared to the benchmark group.
- More FIFO workers (16.8%) reported having injured either themselves or somebody else because of their drinking (benchmark group: 8.0%).
- FIFO workers drink more when compared to the benchmark group and participate in lifetime (70.7% for FIFO workers versus 43.3% for the benchmark group) and single occasion (61.6% versus 38.7%) risky drinking (as described by the *The Australian guidelines to reduce health risks from drinking alcohol*) more often than the benchmark group

Smoking, pharmaceutical and illicit drug use

With regards to respondents reporting about their drug use, it should be noted that there might be stigma or issues with accurately reporting drug use. The concealment of illicit drug use can result from embarrassment, fear of punishment or social disapproval (Swadi, 1990). In the criminal justice environment the fear of punishment may be heightened if respondents perceive that supplying

accurate information could lead to further repercussions (Harrison, 1997; Harrell, 1997). Therefore, in all samples the drug use might be underreported.

Table 4.90 shows that 65.3% of the FIFO workers don't smoke at all or haven't done so in the last 12 months, compared to 80.5% of the benchmark group. The proportion of daily smokers is 16.0% for the FIFO workers and 9.9% for the benchmark group.

Table 4.90

Smoking frequency for FIFO workers and the benchmark group

	Percentage FIFO	Percentage benchmark group
Daily	16.0%	9.9%
Weekly	2.8%	1.3%
Less than weekly	2.8%	0.7%
Not at all, but I have smoked in the last 12 months	13.0%	7.6%
Not at all and I have not smoked in the last 12 months	65.3%	80.5%

Table 4.91 shows which drugs have been used most frequently among FIFO workers and the benchmark group in the past 12 months. For both groups, within pharmaceuticals, the proportion of those who use painkillers/analgesics is quite high (36.0% for FIFO workers and 34.1% for the benchmark group) compared to the use of other drugs. The second most used drugs are tranquilisers/sleeping pills for the FIFO workers (17.3%). FIFO workers have used these drugs four times more often than the benchmark group.

Looking at illicit drugs, cannabis is most used and 13.0% of the FIFO workers indicate they have used this drug in the past 12 months, compared to 5.4% of the benchmark group. The amount of FIFO workers using cocaine, ecstasy and meth/amphetamine ranges between 5.1% and 6.9%, where these are quite a bit lower for the benchmark group, ranging from 0.3% to 1.4%. Only inhalants have been used more often by the benchmark group (2.0%) than the FIFO group (1.4%). Emerging drugs are rarely used by both the FIFO workers and never by the benchmark group.

The percentage FIFO workers using any of the drugs in the past 12 months is 28.7% and for the benchmark group this comes down to 12.3%. Because there was a chance for the question on painkillers/analgesics to be misinterpreted (that respondents might have used these for medical reasons, even though the question asked whether they used these drugs for non-medical reasons), a conservative decision was made to take these out of this calculation.

Table 4.91

Most common drugs for FIFO workers and the benchmark group

	Percentage FIFO	Percentage benchmark group
Pharmaceuticals		
Painkillers/analgesics	36.0%	34.1%
Tranquilisers/sleeping pills	17.3%	4.4%
Steroids	1.4%	1.4%
Methadone or Buprenorphine	0.4%	0.0%
Other opiates/opioids	2.1%	0.3%
Illicit drugs		
Marijuana/cannabis	13.0%	5.4%
Cocaine	6.9%	0.3%
Ecstasy	6.5%	1.4%

Meth/amphetamine	5.1%	1.0%
Hallucinogens	2.8%	0.3%
Inhalants	1.4%	2.0%
Heroin	0.4%	0.0%
Ketamine	0.7%	0.7%
GHB	0.3%	0.3%
Emerging drugs		
Emerging drugs	0.5%	0.0%
Synthetic cannabis	0.9%	0.0%

Note. The question was: Have you used one or more of the following drugs (For non-medical purposes) in the last 12 months?

Finally, 1.4% of the FIFO workers had missed one or more days (maximum of 30 days) of work because of their own use of drugs and this percentage was 0.7% for the benchmark group (maximum of four days).

Summary: FIFO workers' smoking and drug use comparison with benchmark group

- FIFO workers (16.6%) smoke more often on a daily basis than the benchmark group (9.9%).
- FIFO workers (28.7%) have used drugs more often in the last 12 months than the benchmark group (12.3%).
- Tranquilisers/sleeping pills (17.3%) are the most often used pharmaceutical, after painkillers/analgesics (36.0% for FIFO workers and 34.1% for the benchmark group), and were used more often by FIFO workers when compared to the benchmark group (4.4%).
- Marijuana/cannabis is the most used illicit drug and more often used by FIFO workers (13.0%) compared to the benchmark group (5.4%).

4.3.3.2 Comparison of FIFO workers' use of alcohol and other drugs with norm data

The National Drug Strategy Household Survey (NDSHS) detailed report (2016) provides norm data from 23,855 people across Australia. The NDSHS key findings tables 2016 were consulted to narrow down the norm group to only consist of males with an age of 18 or older (whenever possible), as this comes closest to the FIFO group. According to the NDSHS report 2016, in general, males drink more than females, and as a group, people aged under 18 years would be less likely to drink alcohol than adults. Table 4.92 shows that weekly (57.6%) and daily (10.9%) alcohol intake of FIFO workers were higher than that of the norm group (43.2% and 8.1% respectively). The lower frequency intakes were more common for the norm group (less often than weekly and abstainers).

Table 4.92

Alcohol use—frequency of alcohol intake by FIFO workers and the norm group

	Percentage FIFO	Percentage 18+ years old males (total population 14+)
Daily alcohol intake	10.9%	8.1% (5.9%)
Drinks at least weekly	57.6%	43.2% (35.8%)
Drinks less often than weekly*	25.7%	32.0% (35.8%)
No alcohol (last 12 months)/never drinks	5.7%	16.7% (22.5%)

Note. *2 to 3 days a month, once a month, or less often than once a month. **People aged 14 years or older, no gender specification

Table 4.93 shows that 70.7% of the FIFO workers exceeded the guideline to drink no more than two standard drinks on any day; for the norm group this is 25.9%.

Table 4.93
Lifetime risky drinking by FIFO workers and the norm group

	Percentage FIFO	Percentage 18+ years old males (total population 14+)
Risky—Consumed more than two standard drinks per day on average	70.7%	25.9% (17.1%)
Low risk—Had no more than two standard drinks per day on average	22.7%	57.1% (62.2%)
No risk—Abstainer/no drinking in the past 12 months	5.7%	16.9% (19.8%)

Of FIFO workers, 61.6% were single occasion risky drinkers; within the norm group, 36.1% drink five or more standard drinks at least once a month (see Table 4.94). In the past year, there were also more FIFO workers with a very high alcohol consumption (11 standard drinks or more on one drinking occasion)—almost three times as many as the norm group (45.7% versus 16.1% for the total population of 18+ years).

Table 4.94
Single occasion risk by FIFO workers and the norm group

	Percentage FIFO	Percentage 18+ males (total population 18+)
Single occasion risk—five or more standard drinks at least once a month	61.6%	36.1% (26.6%)
Very high alcohol consumption—11 or more SD on a single drinking occasion in the past 12 months	45.7%	N/A* (16.1%)

Note. *Data split by gender not available

In total, 16.8% of the FIFO workers had injured themselves or someone else because of their drinking, whereas this was 9.0% for the norm group (see Table 4.95). A relative, friend, doctor or health care worker expressed their concern about drinking more often to FIFO workers (22.8%) than to the norm group (10.2%).

Table 4.95
Alcohol-related injuries for FIFO workers and the norm group

	Percentage FIFO	Percentage norm group*
Injured themselves or someone else because of drinking—in the last 12 months	4.7%	2.3%
Injured themselves or someone else because of drinking—yes, but not in last 12 months	12.1%	6.7%
Relative, friend doctor or health care worker concerned about their drinking—in the last 12 months	13.4%	5.7%
Relative, friend doctor or health care worker concerned about their drinking—yes, but not in last 12 months	9.4%	4.5%

Note. *No age or gender specification

Summary: FIFO workers' alcohol use comparison with the norm group

- The frequency of alcohol intake is higher for FIFO workers than the norm group.
- Higher lifetime (70.7% vs 25.9%) and single occasion risky drinking (61.6% vs 36.1%) was established among FIFO workers compared to the norm group.
- More FIFO workers (16.8%) reported having injured either themselves or somebody else because of their drinking when compared to the norm group (9.0%).
- The environment of FIFO workers had more often expressed their concern about the drinking behaviour of the FIFO worker (22.8%) compared to the norm group (10.2%).

Smoking and drugs

Table 4.96 shows the percentages for daily smoking frequency for FIFO workers (16.0%) and norm data (14.6%) from the NDSHS 2016 are not far apart. With 21.6% overall, FIFO workers have slightly more smokers than the Australian 18+ male norm group (18%).

Table 4.96

Smoking frequency for FIFO workers and the norm group

	Percentage FIFO	Percentage 18+ years old males (total population 14+)
Daily	16.0%	14.6% (12.2%)
Occasional (weekly and less than weekly)	5.6%	3.4% (2.7%)
Ex-smokers/never smoked	78.3%	82.0% (85.1%)

Table 4.97 displays what variety of drugs is being used by FIFO workers and the norm group. Firstly, within pharmaceuticals the difference between the use of painkillers/analgesics between the groups stands out (38.1% for FIFO workers versus 3.6% for the norm group). However, it must be noted that this question might have been misinterpreted by respondents. Secondly, 17.3% of the FIFO group has used tranquilisers or sleeping pills, while this is only true for 1.6% of the norm group.

In the illicit drugs category, the use of cannabis is more even with 13.0% for FIFO workers and 10.4% for the norm group. Finally, in general, FIFO workers have used more different drugs in the past year when compared to the norm group.

The illicit use of any drug in the past 12 months was 28.7% for FIFO workers and 18.6% for the norm group (males of 18+ years old). For the FIFO workers a decision was made to leave out the painkillers/analgesics, because there was a chance that the answers on this question were invalid because of misinterpretation.

Table 4.97

Most common drugs used by FIFO workers and the norm group

	Percentage FIFO	Percentage norm group (14+ years old)
Pharmaceuticals		
Painkillers/analgesics and opioids	38.1%	3.6%
Tranquilisers/sleeping pills	17.3%	1.6%
Steroids	1.4%	0.1%

Methadone or Buprenorphine	0.4%	0.1%
Illicit drugs		
Marijuana/cannabis	13.0%	10.4%
Cocaine	6.9%	2.5%
Ecstasy	6.5%	2.2%
Meth/amphetamine	5.1%	1.4%
Hallucinogens	2.8%	1.0%
Inhalants	1.4%	1.0%
Heroin	0.4%	0.2%
Ketamine	0.7%	0.4%
GHB	0.3%	0.1%
Emerging drugs		
Emerging drugs	0.5%	0.3%
Synthetic cannabis	0.9%	0.3%

Finally, 1.4% of the FIFO workers had missed one or more days (maximum of 30 days) of work because of their own use of drugs and this percentage was 0.7% for the norm group (maximum of four days).

Industry and trade

Pidd et al. (2015) conducted a separate analysis on the NDSHS data of 2013. They examined alcohol intake differences between industries and found that while employees from the hospitality industry had the largest proportions of workers drinking at least monthly or weekly at short-term risky/high risk levels, the administration and mining industries had the most employees drinking at short-term risky/high risk levels at least yearly. Employees in the construction industry had the largest proportion of people drinking at long-term high risk levels.

When looking at different occupations, tradespersons were the employees drinking at least weekly or at least monthly at short-term risky/high risk levels. This group accounts for almost 20% of the FIFO group. Tradespersons also drank most often at long-term risky/high risk levels.

Summary: FIFO workers' smoking and drug use comparison with norm group

- Smoking frequencies between FIFO workers and the norm group are similar.
- FIFO workers use pharmaceuticals and illicit drugs more often than the norm group.
- Mainly painkillers/analgesics (38.1% versus 3.6%, caution because of the question might have been misinterpreted) and tranquilisers/sleeping pills (17.3% versus 1.6%) were used more often by FIFO workers, but—with smaller differences—cannabis, cocaine, ecstasy and meth are also noticeable.

4.3.3.3 Comparison of FIFO partners' use of alcohol and other drugs with the norm group

To match the FIFO partner group more precisely, tables with percentages for females 18 years and older were used to provide the norm data (wherever this breakdown was available).

Table 4.98 summarises the alcohol use of the partners. Only 2.4% of the partners drink alcohol on a daily basis, compared to 4.5% of the norm group. However, a higher percentage of partners (53.6%) drinks at least weekly (32.7% for the norm group). The number of partners drinking at least monthly

is similar, but only 4.6% were an ex-drinker or never drink; this percentage is 22.2% for the norm group.

Table 4.98

Alcohol use—frequency of alcohol intake by FIFO partners and the norm group

	Percentage Partners	Percentage 18+ years old females (total population 14+)
Daily alcohol intake	2.4%	4.5% (5.9%)
Drinks at least weekly	53.6%	32.7% (35.8%)
Drinks less often than weekly*	39.4%	40.6% (35.8%)
No alcohol (last 12 months)/never drinks	4.6%	22.2% (22.5%)

Note. *2 to 3 days a month, once a month, or less often than once a month

According to Table 4.99, 37.8% of the partners are lifetime risky drinkers, for the norm group this is only 10.3%.

Table 4.99

Lifetime risky drinking by FIFO partners and the norm group

	Percentage Partners	Percentage 18+ years old females (total population 14+)
Risky—Consumed more than two standard drinks per day on average	37.8%	10.3% (17.1%)
Low risk—Had no more than two standard drinks per day on average	50.9%	67.0% (62.2%)
No risk—Abstainer/no drinking in the past 12 months	4.6%	22.7% (19.8%)

Note. Partner percentages do not add up to 100% as abstainers/ex-drinkers could skip this question or tick the lowest quantity (which was half a drink)

Of the female norm group, 17.5% were single occasion risky drinkers, while almost double of the partners (32.9%) fell into this category. Of the partners of FIFO workers, 20.8% would on a single drinking occasion in the past year have had 11 or more standard drinks; in the norm data this is 16.1% for the total population of 18+ years (see Table 4.100).

Table 4.100

Single occasion risk for FIFO partners and the norm group

	Percentage Partners	Percentage 18+ years old females (total population 18+)
Single occasion risk—Five or more standard drinks at least once a month	32.9%	17.5% (26.6%)
Very high alcohol consumption—11 or more SD on a single drinking occasion in the past 12 months	20.8%	N/A* (16.1%)

Note. *Data split by gender not available

Partners of FIFO workers in general had fewer injuries or concerns about their drinking expressed by somebody else than the norm group (see Table 4.101). The percentage injuring themselves or somebody else because of drinking is similar (2.9% of the partners, 2.3% of the norm group). Injuries that did not happen in the past 12 months were slightly lower for the partners (3.2%) than for the norm group (6.7%).

Table 4.101

Alcohol-related injuries for FIFO partners and the norm group

	Percentage Partners	Percentage norm group*
Injured themselves or someone else because of drinking—in the last 12 months	2.9%	2.3%
Injured themselves or someone else because of drinking—yes, but not in last 12 months	3.2%	6.7%
Relative, friend doctor or health care worker concerned about their drinking: in the last 12 months	4.8%	5.7%
Relative, friend doctor or health care worker concerned about their drinking: yes, but not in last 12 months	2.9%	4.5%

Note. *No age or gender specification

Summary: FIFO partners alcohol use comparison with norm group

- The frequency of alcohol intake is higher for FIFO partners compared to the norm group when looking at drinking at least weekly (53.6% versus 32.7%), however, partners drink less often on a daily basis (2.4% versus 4.5%).
- Partners had higher lifetime (37.8% versus 10.3%) and single occasion (32.9% versus 17.5%) risky drinking; single occasion risky drinking of 11 or more standard drinks was more similar to the norm group (20.8% versus 16.1%, however, no data split-up by gender was available for the norm group).
- Partners (7.7%) less often had somebody expressing concerns about their drinking than the norm group (10.2%).
- In the last 12 months the amount of injuries on themselves or someone else for partners (2.9%) because of drinking was similar to the norm group (2.3%). Injuries not in the last 12 months were lower for partners than the norm group (3.2% versus 6.7%).

Smoking and drugs

Table 4.102 displays the smoking frequency of the FIFO partners and the norm data from the NDSHS 2016. Comparing these numbers, FIFO partners seem to smoke slightly less often (11.5%) than the norm group (13.4%).

Table 4.102

Smoking frequency for FIFO partners and the norm group

	Percentage Partners	Percentage for 18+ years old females (total population 14+)
Daily	8.2%	11.2% (12.2%)
Occasional (weekly and less than weekly)	3.3%	2.2% (2.7%)
Ex-smokers/never smoked	88.6%	86.5% (85.1%)

The comparison of FIFO partners to the norm group on the variety of drugs used is displayed in Table 4.103. When looking at the pharmaceuticals, the percentages of the use of painkillers/analgesics differ greatly between the groups (32.6% versus 3.6% for the norm group). Another stand-out difference is found for the use of sleeping pills: partners (similar to FIFO workers) use them more often (13.8%) than the norm group (1.6%). Only 0.8% have used cannabis in the last 12 months; this percentage is higher in the norm group (10.4%). However, partners did use relatively more synthetic

cannabis (partners: 4.0%, norm group: 0.3%). A difference can also be seen for the use of ecstasy where 7% of the partners of FIFO workers have used ecstasy compared to 2.2% of the norm group. Out of the illicit drugs category, this is the most used drug.

The use of any drug in the past 12 months was 18.8% for FIFO partners and 13.2% for the norm group (females of 18+ years old). Just as for the FIFO workers, a decision was made to leave out painkillers/analgesics in this calculation because this question might have been wrongly interpreted.

Table 4.103

Most common drugs by FIFO partners and the norm group

	Percentage Partners	Percentage norm group (14+ years old)
Pharmaceuticals		
Painkillers/analgesics and opioids	32.6%	3.6%
Tranquilisers/sleeping pills	13.8%	1.6%
Steroids	1.9%	0.1%
Methadone or Buprenorphine	0.0%	0.1%
Illicit drugs		
Marijuana/cannabis	0.8%	10.4%
Cocaine	2.2%	2.5%
Ecstasy	7.0%	2.2%
Meth/amphetamine	0.0%	1.4%
Hallucinogens	0.0%	1.0%
Inhalants	0.8%	1.0%
Heroin	0.0%	0.2%
Ketamine	0.0%	0.4%
GHB	0.5%	0.1%
Emerging drugs		
Emerging drugs	0.0%	0.3%
Synthetic cannabis	4.0%	0.3%

Finally, the days missed from work or school because of alcohol and other drugs in the last three months are listed in Table 4.104. For this analysis we only looked at the partners who indicated they currently had a job. The results show that on average partners miss days at work about as often as the FIFO worker when the reason for this is their own use of alcohol. For their own use of drugs partners miss fewer days of work. The maximum amount of days missed is higher for the FIFO workers.

Table 4.104

Days work missed by FIFO workers and FIFO partners

Missed days at work/school	FIFO workers	Partners
Because of own alcohol use	3.2%	3.4%
Maximum days missed	28	10
Because of own drug use	1.4%	0.4%
Maximum days missed	30	5

Summary: partners' smoking and drug use comparison with norm group

- Partners smoke slightly less often than the norm group.
- Pharmaceuticals were the drugs most used by the partners (mainly painkillers/analgesics—32.6% versus 3.6%; and tranquilisers/sleeping pills—13.8% versus 1.6%).
- Out of the illicit drugs, 7% of the partners had used ecstasy in the past 12 months (2.2% norm group); cannabis was used less often by the partner (0.8% versus 10.4%), however, synthetic cannabis was used more (4.0% versus 0.3%).

4.3.3.4 The impact of FIFO work arrangements on substance use

To identify possible links between harmful drinking habits, alcohol consumption and use of illicit drugs on the mental health and wellbeing of the FIFO workers, correlations and hierarchical regressions were conducted.

As none of the variables were normally distributed according to the Kolmogorov-Smirnov and Shapiro-Wilk tests ($p = .000$), Spearman's ρ was chosen for the correlations over Pearson's r . Based on Cohen (1988), the sizes in Table 4.105 will give guidance when interpreting the strength of the relations found: correlations between .10 and .30 are interesting finds within field research. It is important to note that it is not possible to establish causality based on correlations as it is not possible to determine whether having harmful drinking habits influence the mental health or if it is the other way around.

Table 4.105

Approximate Interpretation of a correlation coefficient

<i>Size of Correlation</i>	<i>Interpretation</i>
.50	Large
.30	Medium
.10	Small but potentially still important

Correlations: impact of alcohol, drugs and smoking on mental health

In Table 4.106 (for full table see Appendix B.2.3) the correlations for the FIFO workers' mental health and alcohol, tobacco and other drugs use are displayed. First, all correlations are significant at $p \leq .001$, except the association between suicidal risk and smoking ($p = .003$). This shows there is a link between all of the other mental health measures, including the K10, burnout, wellbeing and suicidal risk measures, and the substance use measures. While higher anxiety and depression is linked with higher alcohol usage, better wellbeing is linked to a lower alcohol intake. It is important to note that all of the effect sizes are considered to be small according to Cohen's interpretation (ranging from $r_s = .083$ to $r_s = .291$), however, they are still considered quite reasonable in field research. The main correlation that stands out is the link between anxiety and depression and the alcohol measures as three out of the four are very close to reaching a medium effect (AUDIT total $r_s = .272$, consumption $r_s = .192$, dependence $r_s = .279$ and alcohol-related problems $r_s = .291$).

Table 4.106

Correlations for FIFO workers mental health and alcohol consumption, drugs and smoking

	K10	Burnout	Emotional wellbeing	Social wellbeing	Psychological wellbeing	Burden-someness	Thwarted belongingness	Suicidal intent
AUDIT	.272**	.170**	-.201**	-.187**	-.202**	.212**	.172**	.149**
Alcohol Consumption	.192**	.103**	-.156**	-.147**	-.155**	.153**	.116**	.125**
Alcohol dependence	.279**	.194**	-.209**	-.181**	-.207**	.239**	.207**	.169**
Alcohol-related Problems	.291**	.197**	-.206**	-.194**	-.209**	.224**	.189**	.141**
Alcohol quantity	.182**	.085**	-.151**	-.154**	-.139**	.144**	.120**	.123**
Drugs	.208**	.166**	-.142**	-.141**	-.116**	.140**	.114**	.091**
Smoking	.130**	.092**	-.126**	-.143**	-.083**	.126**	.095**	.061*

Note. * $p < .005$. ** $p \leq .001$

Table 4.107 (for full table see Appendix B.2.3) shows that for the benchmark group none of these correlations were significant at $p \leq .001$. The correlations of both samples show that the connections between mental ill-health and wellbeing on the one hand, and alcohol, other drugs and smoking on the other hand do exist for the FIFO workers, but this relation is not established for the benchmark group. This could imply that as the correlations are more present for FIFO workers; this group might use alcohol, other drugs and (less so) smoking more often as a strategy for coping with their mental health. However, to establish the exact connection longitudinal research is needed.

Table 4.107

Correlations for the benchmark group mental health and alcohol consumption, drugs and smoking

	K10	Burnout	Emotional wellbeing	Social wellbeing	Psychological wellbeing	Burden-someness	Thwarted belongingness	Suicidal intent
AUDIT	.096	.034	-.019	-.014	-.023	.066	.020	.029
Alcohol consumption	.080	.039	-.030	-.037	-.043	.047	.033	.036
Alcohol dependence	.167*	.100	-.099	-.039	-.156	.129	.080	.035
Alcohol-related Problems	.140	.075	-.075	-.010	-.056	.142	.069	.059
Alcohol quantity	.084	.047	-.092	-.083	-.121	.062	.122	.041
Drugs	.138	.121	-.022	.008	-.007	.003	-.047	-.004
Smoking	.028	-.028	-.041	-.053	-.026	.042	.055	.075

Note. * $p < .005$. ** $p \leq .001$

Summary: correlations regarding mental health and alcohol, other drugs and smoking

- For FIFO workers, correlations show that there is a link between anxiety and depression (K10), burn-out, wellbeing and suicidal risk and alcohol, other drug use and smoking.
- For the benchmark group there were no links between anxiety and depression (K10), burnout, wellbeing and suicidal risk and alcohol, other drug use and smoking.
- This pattern of findings suggests that FIFO workers might use alcohol, other drugs and smoking as a way to cope with mental health challenges more so than others

Regressions impact of FIFO work arrangements on alcohol

Table 4.108 shows that two of the person factors had an association with potential excessive drinking and alcohol disorders (measured by the AUDIT) of FIFO workers. Person factors explained 8.4% of the variance in the AUDIT scores. One of the coping styles, seeking support, was linked to lower alcohol usage ($\beta = -.12$; $p < .001$) and higher perceived masculinity scores were associated with higher AUDIT scores ($\beta = .10$; $p < .001$).

Table 4.108

Regression of self-reported alcohol consumption on person factors

Variables	AUDITsum			R ²
	B	SE B	β	
Step 1				
Age	-0.14	.02	-.21**	.047
Number of dependants	0.12	.14	.03	
Level of education	-0.62	.12	-.15**	
Years in FIFO	0.06	.03	.06	
Step 2				
Age	-0.13	.02	-.20**	.131
Number of dependants	0.08	.14	.02	
Level of education	-0.42	.12	-.10**	
Years in FIFO	0.04	.03	.04	
Coping—active	-0.47	.27	-.05	
Coping—seeking support	-0.91	.20	-.12**	
Coping—distraction	0.10	.23	.01	
Coping—disengagement	0.67	.30	.07	
Resilience	-0.23	.25	-.03	
Perceived masculinity norms	1.19	.33	.10**	
Ability to detach from work	-0.37	.19	-.05	
Affective FIFO commitment	-0.25	.16	-.05	
Continuance FIFO commitment	0.32	.12	.07	

Note. * $p < .005$. ** $p \leq .001$; Note: gender was constant in these regression as perceived masculinity norms were only reported by men

Job factors explained 6.8% of the variance in the AUDIT scores (see Table 4.109). A main contributor was autonomy during time off on-site ($\beta = -.11$; $p < .001$), where workers with low autonomy during time off on-site had a higher AUDIT score. The other link was psychological transitioning between on and off time ($\beta = .11$; $p < .001$), which indicated that more issues with psychological transitioning are connected to a higher AUDIT score.

Table 4.109

Regression of self-reported alcohol consumption on job factors

Variables	AUDITsum			R ²
	B	SE B	β	
Step 1				
Gender	-2.34	.38	-.13**	.062
Age	-0.14	.02	-.21**	
Number of dependants	-0.01	.11	-.00	
Level of education	-0.56	.09	-.13**	
Years in FIFO	0.05	.02	.04	
Step 2				
Gender	-1.95	.38	-.11**	.185
Age	-0.11	.02	-.17**	
Number of dependants	-0.09	.10	-.02	
Level of education	-0.44	.09	-.10**	
Years in FIFO	0.05	.02	.05	
Autonomy time off on-site	-0.84	.16	-.11**	
Autonomy time off at home	-0.12	.16	-.02	
Separation from family	0.35	.20	.04	
Psychological transitioning between on and off time	0.67	.15	.11**	
Error costs	0.03	.14	.00	
Workload	0.30	.15	.04	
Autonomy	0.30	.17	.04	
Task variety	-0.43	.16	-.06	
Job insecurity	0.28	.12	.05	
Feedback from job	-0.02	.16	-.00	
Roster ratio	0.10	.21	.01	
Roster satisfaction	-0.11	.13	-.02	

Work hours on site	0.01	.02	.01	
Travel duration to site	0.00	.02	.00	
Operator vs contractor	0.09	.33	.00	
Construction vs production	0.54	.55	.02	.130

Note. * $p < .005$. ** $p \leq .001$; roster ratio = days on site/days off site; construction = 1, production = 0, operator = 1, contractor = 2

For team factors the explained variance on the AUDIT score was only 1.4% (see Table 4.110). None of the team factors were significant, which indicates that the support of the team or manager did not influence the overall score on the AUDIT. When analysing organisational and on-site factors, 3.4% of the variance is explained by these factors. Only one of the organisational and on-site factors was significant in contributing to the influence of these factors on the alcohol scores: perceived stigma at work ($\beta = .10$; $p < .001$). When the perceived stigma at work is higher, the score on the AUDIT will also be higher.

Table 4.110

Regression of self-reported alcohol consumption on team and organisational and on-site factors

Variables	AUDITsum (team factors)				R^2	AUDITsum (organisational and on-site factors)				R^2
	B	SE B	β			B	SE B	β		
Step 1						Step 1				
Gender	-2.34	.48	-.13**			Gender	-2.34	.51	-.13**	
Age	-0.14	.02	-.21**			Age	-0.14	.02	-.21**	
Number of dependants	-0.12	.13	-.00			Number of dependants	-0.01	.14	-.00	
Level of education	-0.56	.11	-.13**			Level of education	-0.56	.12	-.13**	
Years in FIFO	0.05	.03	.04	.062		Years in FIFO	0.05	.03	.04	.059
Step 2						Step 2				
Gender	-2.28	.48	-.12**			Gender	-2.23	.51	-.12**	
Age	-0.14	.02	-.21**			Age	-0.13	.02	-.20**	
Number of dependants	-0.02	.13	-.00			Number of dependants	-0.00	.14	.00	
Level of education	-0.50	.11	-.12**			Level of education	-0.51	.12	-.12**	
Years in FIFO	0.05	.03	.04			Years in FIFO	0.38	.03	.04	
Perceived line manager support	0.15	.33	-.02			Perceived FIFO work arrangement flexibility	-0.22	.20	-.03	
Perceived co-worker support	-0.47	.24	-.05			Number of recovery options on site	0.01	.06	.00	
Inspirational leadership line manager	-0.62	.32	-.09			Satisfaction with recovery options on site	-0.25	.19	-.04	
Perceived line manager health and safety commitment	-0.13	.27	-.02	.076		Number of social activity options on site	-0.08	.12	-.02	
						Satisfaction with social activity options on site	0.05	.16	.01	
						Satisfaction with on-site room arrangement	0.30	.15	.06	
						Number of communication options with home	0.20	.26	.02	
						Perceived relative priority of mental health and wellbeing	-2.49	1.60	-.05	
						Bullying victim	0.00	.13	.00	
						Bullying witness	0.31	.13	.09	
						Perceived stigma at work	0.67	.21	.10**	.093

Note. * $p < .005$. ** $p \leq .001$

Finally, the social and family factors are examined (see Table 4.111). They explained 10.4% of the variance in the scores on excessive drinking and alcohol disorders. Across the social and family

factors, three out of the six factors were positively associated with the AUDIT scores: perceived work–family conflict ($\beta = .10$; $p < .001$), loneliness on site and at home ($\beta = .17$; $p < .001$) and the amount of friends ($\beta = .12$; $p < .001$). A fourth factor, happiness with personal relationships ($\beta = -.17$; $p < .001$), had a significant negative link with AUDIT outcomes.

Table 4.111

Regression of self-reported alcohol consumption on social and family factors

Variables	AUDITsum			R ²
	B	SE B	β	
Step 1				
Gender	-2.34	.48	-.13**	
Age	-0.14	.02	-.21**	
Number of dependants	-0.01	.13	-.00	
Level of education	-0.56	.11	-.13**	
Years in FIFO	0.05	.03	.04	.062
Step 2				
Gender	-1.98	.46	-.11**	
Age	-0.10	.02	-.16**	
Number of dependants	0.08	.13	.02	
Level of education	-0.46	.10	-.11**	
Years in FIFO	0.04	.03	.04	
Perceived work–family conflict	0.43	.11	.10**	
Loneliness on site and at home	1.26	.21	.17**	
Happiness with personal relationships	-1.03	.18	-.17**	
Number of friends	0.63	.14	.12**	
Number of family members	-0.09	.14	-.02	
Relationship status	-0.16	.20	-.02	.166

Note. * $p < .005$. ** $p \leq .001$

Regressions were also conducted for the FIFO partners' alcohol use. However, as these do not play a part in answering the key evaluation questions, the results can be found in Appendix B.2.4.

Summary: hierarchical regressions mental health and alcohol

- It is not possible to infer causal relationships based on this data for mental health and the alcohol, other drugs or smoking habits of FIFO workers; instead, additional potential influences have been considered.
- Seeking support appears to be a strategy that can help to significantly reduce the chance of potential excessive drinking and alcohol disorders.
- If perceived masculinity norms are high, the score on the AUDIT is likely to be significantly higher as well.
- Low autonomy during time off on-site was associated with a significantly higher AUDIT score.
- More issues with psychological transitioning between time on and off site are associated with significantly worse alcohol usage.
- Team factors did not influence the overall score on the AUDIT.
- Out of the organisational and on-site factors only perceived stigma at work led to a significantly higher score on the AUDIT.
- Social and family factors explained the most variance in the scores on excessive drinking and alcohol disorders. Perceived work–family conflict, loneliness on site and at home lead to significantly higher scores on general alcohol use, while the amount of friends reduced general alcohol usage.
- When FIFO workers were happier with their personal relationships, their alcohol scores were significantly lower.

4.3.4 KEQ 3: Strategies used by FIFO workers and families

This section will discuss potential positive and negative coping strategies, the use of support options that are available, and the importance of social relations and autonomy on site and at home (being able to decide themselves how they can spend this time).

4.3.4.1 FIFO workers' coping strategies

Out of the four different coping strategies, seeking support was associated with lower depression and anxiety scores ($\beta = -.08; p < .001$), and distraction ($\beta = .10; p < .001$) and disengagement ($\beta = .32; p < .001$) were linked with higher depression and anxiety scores. Distraction ($\beta = .09; p < .001$) as well as disengagement ($\beta = .18; p < .001$) were indicated to be dysfunctional coping styles in relation to burnout.

Active coping ($\beta_{\text{emot WB}} = .13; p < .001; \beta_{\text{soc WB}} = .13; p < .001; \beta_{\text{psych WB}} = .19; p < .001$) and seeking support ($\beta_{\text{emot WB}} = .18; p < .001; \beta_{\text{soc WB}} = .23; p < .001; \beta_{\text{psych WB}} = .18; p < .001$) were linked with better wellbeing. On the contrary, the coping styles of distraction ($\beta_{\text{emot WB}} = -.09; p < .001$) and disengagement ($\beta_{\text{emot WB}} = -.24; p < .001; \beta_{\text{soc WB}} = -.14; p < .001; \beta_{\text{psych WB}} = -.24; p < .001$) were negatively linked with the wellbeing outcomes.

A coping style of disengagement was significantly linked with thwarted belonging ($\beta = .29; p < .001$), perceived burdensomeness ($\beta = .35; p < .001$) and suicidal intent ($\beta = .20; p < .001$).

Summary: coping strategies

- The strategies of active coping and using emotional support are linked to better scores on most aspects of mental health and wellbeing.
- Mental health and wellbeing are worse when self-distraction and disengagement are used as a coping strategy.

4.3.4.2 FIFO workers' awareness and use of the mental health and wellbeing support options

Responses on the mental health and wellbeing options that are provided on site reflect the awareness of the help that is made available to FIFO workers by the employers. Of the respondents, 74.4% provided an answer to this open-ended question. As seen in Table 4.112 below, 40.7% of the FIFO workers managed to name one of the mental health and wellbeing support options available on site, 20.3% could think of two support options and 13.5% named three or more.

Table 4.112

Amount of mental health and wellbeing support options identified

Amount of support options	0	1	2	3	4	5	6	7
Percentage respondents	25.6	40.7	20.3	8.7	3.5	0.7	0.5	0.1

Of the support options on site that were mentioned, two stood out: the employee assistance program (EAP) and mental health helplines (such as beyondblue). Out of the people who provided an answer, 60.8% of the FIFO workers recalled the EAP and 27.9% identified mental health helplines. Also, colleagues (11.4%), counselling (11.1%) and supervisors (9.8%) were mentioned as support options available on site.

As shown in Table 4.113, 39.8% of the respondents had not personally used any help or counselling option. Over half of the participants had used one or more support options for mental health issues.

Table 4.113

Amount of support options personally used

Amount of support options	0	1	2	3	4	5	6	7 or more
Percentage respondents	39.8	21.8	12.6	8.4	6.1	3.9	2.9	2.5

When looking at the specific options for help that respondents have used, Table 4.114 shows that 39.8% did not use any of the support options. If they did look for support, most of the FIFO workers have turned to family and friends for support on mental health and wellbeing issues most often (34.2%), followed by using the EAP (21.9%), a general practitioner (18.1%), self-help (17.0%) and/or a psychologist (16.4%).

Table 4.114

Support options personally used

Support options	Percentage out of total respondents <i>n</i> = 3,108
None	39.8 (1237)
Family/friends	34.2 (1062)
EAP	21.9 (680)
General practitioner	18.1 (564)
Self-help (books, online blogs)	17.0 (528)
Psychologist	16.4 (509)
Online resources (e.g. Fifofamilies, Mining Family Matters, Ngala)	7.3 (226)
Psychiatrist	6.3 (195)
Mental health helplines	5.6 (173)
On-site medic	5.6 (173)
Chaplain	3.9 (122)
Active lifestyle coordinator	3.5 (110)
Drug and alcohol counselling/support service	3.5 (109)
Chemist	2.9 (90)
Other	2.9 (89)
Mental health nurse	2.2 (69)
Social worker	2.0 (63)
Specialist doctor or surgeon	1.3 (40)
Emergency services	0.8 (26)

FIFO workers who had not used any help options had a lower score ($M=17.73$, $SD=6.67$) on the K10 when compared to FIFO workers who had used one or more help options ($M=20.47$, $SD=7.25$; $F(1,2791.678)=114.754$, $p = .000$). Table 4.115 below shows that every time FIFO workers had used one of the most used help options they would have higher K10-scores in comparison to the people who had not used any of the options ($F_{\text{family}}(1,2236.589)=16.449$, $p = .000$; $F_{\text{EAP}}(1,1083.307)=23.877$, $p = .000$; $F_{\text{GP}}(1,785.106)=79.283$, $p = .000$).

These findings show that people who have used one of the help options have higher scores on the K10, which makes sense as people who have mental health issues might be more inclined to look for help, so we would suggest assuming this direction of causality when interpreting this finding. From these results it is not possible to infer anything about the success of these help options.

Table 4.115

Comparison of depression and anxiety depending on help options used

	Used this option	M	SD	Welch's t-test		
				df	F	p-value
Family/friends	Yes	20.06	6.96	Between	1	
	No	18.98	7.21	Within	2236.589	16.449
EAP	Yes	20.54	7.22	Between	1	
	No	19.01	7.09	Within	1083.307	23.887
General practitioner	Yes	21.90	7.64	Between	1	
	No	18.78	6.90	Within	785.106	79.283

Summary: FIFO worker use of mental health and wellbeing support options

- Three quarters of the FIFO workers were aware of one or more help or support options being available on site.
- 60.8% of the FIFO workers recalled the Employee Assistance Program.
- 60.2% had personally used one or more support options.
- FIFO workers mainly turned to family and friends (34.2%), used the EAP (21.9%), a general practitioner (18.1%), self-help (17.0%) and/or a psychologist (16.4%).

4.3.4.3 FIFO partners' use of mental health and wellbeing support options

Table 4.116 shows that 28.4% of the FIFO partners did not personally use any support options for mental health issues, with the vast majority having used at least one of the support options. FIFO workers themselves made less use of support or counselling options.

Table 4.116

Amount of support options personally used

Amount of support options	Percentage FIFO workers (n = 3,108)	Percentage partners (n = 405)
0	39.8	28.4
1	21.8	19.3
2	12.6	16.5
3	8.4	13.8
4	6.1	10.9
5	3.9	5.2
6	2.9	3.2
7 or more	2.5	2.7

Over half (53.1%) of the FIFO partners turned to family or friends when dealing with mental health and wellbeing issues. They made considerably less use of the EAP (14.3%), which makes sense as it is aimed more towards FIFO workers themselves. On all other support possibilities, the percentages for the partners were higher. Out of those, the general practitioner (31.6%), self-help (31.4%) and the psychologist (27.9%) stood out (see Table 4.117).

Table 4.117

Support options personally used

Support options	Percentage FIFO workers n = 3,108	Percentage FIFO partners n = 405
None	39.8	21.5

Family/friends	34.2	53.1
EAP	21.9	14.3
General practitioner	18.1	31.6
Self-help (books, online blogs)	17.0	31.4
Psychologist	16.4	27.9
Online resources (e.g. Fifofamilies, Mining Family Matters, Ngala)	7.3	10.6
Psychiatrist	6.3	7.2
Mental health helplines	5.6	3.0
On-site medic	5.6	0.2
Chaplain	3.9	4.7
Active lifestyle coordinator	3.5	0.5
Drug and alcohol counselling/support service	3.5	1.7
Chemist	2.9	5.7
Other	2.9	4.9
Mental health nurse	2.2	2.7
Social worker	2.0	2.5
Specialist doctor or surgeon	1.3	0.5
Emergency services	0.8	0.5

When the partners did not use counselling or help options their K10-scores were lower on average ($M = 17.10$, $SD = 7.05$) when compared to partners who had used help ($M = 19.82$, $SD = 7.30$). This difference turned out to be significant at $p = .002$ ($F(1,146.357)=9.742$, $p = .002$). According to Table 4.118 the K10-scores only reached the threshold for statistical significance for the general practitioner ($F(1,241.861)=12.385$, $p = .000$). Interestingly, for FIFO workers there were significant differences for all of the help options. This might show that FIFO partners feel like they need to look for help at an earlier stage than FIFO workers; this could potentially be linked to the vast majority of FIFO partners being female.

Table 4.118

Comparison of depression and anxiety for help options used by FIFO partners

	Used this option	<i>M</i>	<i>SD</i>	Welch's <i>t</i> -test		
				<i>df</i>	<i>F</i>	<i>p</i> -value
Family/friends	Yes	19.17	6.88	Between	1	
	No	19.21	7.91	Within	309.734	.002
General practitioner	Yes	21.05	7.55	Between	1	
	No	18.22	7.02	Within	241.861	12.385
Self-help	Yes	19.46	7.52	Between	1	
	No	19.04	7.23	Within	246.290	.268

Summary: partner use of mental health and wellbeing support options

- 71.6% had personally used one or more support options.
- FIFO partners mainly went to family and friends (53.1%), the general practitioner (31.6%), used self-help (31.4%) and went to a psychologist (27.9%).

- FIFO partners use a general practitioner (31.6% versus 18.1%), self-help (31.4% versus 17.0%) and the psychologist (27.9% versus 16.4%) more often than FIFO workers. 14.3% of the partners had used the EAP versus 21.9% of FIFO workers.

4.3.4.4 *Personal relationships, recovery and autonomy on site and at home as coping strategies*

Turning to family and friends is the most common support option used. This could be identified as one of the strategies FIFO workers and their families use in dealing with the FIFO lifestyle: seeking support within family and friends, which also links to the coping strategies discussed above.

Through correlational analysis (Spearman's *rho*) it showed that the happiness FIFO workers felt about their relations with their family, friends and partners was negatively linked with the K10-scores ($r = -.43, p = .000$), burn-out ($r = -.29, p = .000$), burdensomeness ($r = -.47, p = .000$), thwarted belonging ($r = -.56, p = .000$) and suicidal intent ($r = -.28, p = .000$). For emotional (e.g. feelings of satisfaction and happiness; $r = -.52, p = .000$), social ($r = -.39, p = .000$) and psychological wellbeing (e.g. self-acceptance and personal growth; $r = -.45, p = .000$) there was a positive link, indicating that higher scores on happiness with friends, family and the partner were associated with higher scores on all three forms of wellbeing.

Autonomy during time off on-site (if workers can spend their off-time on site the way they want) was also found to have quite strong correlations with the mental health and wellbeing scores (ranging from $r = -.20$ to $-.38, p = .000$). Autonomy at home (ranging from $r = -.12$ to $-.24, p = .000$) and the recovery experience of FIFO workers (ranging from $r = -.12$ to $-.26, p = .000$) were also all significantly linked to mental health and wellbeing outcomes, however, these links were slightly weaker.

Summary: coping strategies through personal relationships, recovery and autonomy

- The happiness of FIFO workers with their personal relations is significantly linked with better mental health and wellbeing
- Autonomy during off time on-site also had strong significant associations with mental health and wellbeing; autonomy at home and the recovery experience of FIFO workers had slightly weaker links.

4.3.4.5 *FIFO partners' advice on strategies for coping with FIFO work*

Partners of current FIFO workers provided one piece of advice to others considering a role in a FIFO work setting. Through analysis, six overarching themes were identified in the responses (see Figure 4.119). Participants provided advice that fell into the following areas: communication, social support, relationship maintenance, balancing of needs and routine, having a plan and missing out on important events/occasions.



Figure 4.119. Visual representation of the six overarching themes drawn from the data.

A total of $n = 333$ partners responded to this question (out of 373 participants). Partners of FIFO workers spoke to the dynamics of being alone whilst their partner is on site and being together again when their partner returns home for R&R. As a technique to cope with the transition to a FIFO lifestyle and the lifestyle itself, one participant suggested to “change the things you can and accept the things you can’t,” speaking to the adaptability that must be adopted whilst in FIFO. When partners were describing their advice/tips/coping strategies, they conveyed the advice on an interpersonal level as opposed to an intrapersonal level.

The most common tip or advice provided (which was reinforced throughout most responses) was the need for **communication**. Partners articulated that the absence of open and honest communication will lead to difficulties when trying to manage the time apart and the time together. Communication was described to be a strategy to maintain relationships and connection between partners, maintaining a sense of normality.

The second strategy that was endorsed by partners was the need for a **social network as a form of support** whilst the partner is away on site. Partners described that feelings of isolation may eventuate when a social support system is not established. When partners are away on site, a social network is there in the case of needing respite or to cope with emergencies at home. Participants also referred to the reciprocal support required between partners to cope with the challenges within the FIFO lifestyle. One partner explained that “being apart can be difficult for both parties, but the more you can support each other and share happiness/joy/good times over the phone, the better you’ll both feel”. This statement reinforced that both parties require a level of support from each other whilst within this lifestyle.

As the FIFO lifestyle involves one partner being away on site for an extended period time, for a successful partnership, partners of FIFO workers advised **that additional effort is required to**

maintain one’s relationship. Strategies adopted by couples included: keeping each other up to date on general life activities, and when the partner returns home for R&R to try to spend as much time together as possible to “re-reconnect”. Partners also spoke to the mutual respect for each other and the trust that is required to manage the FIFO lifestyle. Without mutual respect and trust, relationships were explained to be difficult to maintain.

Balancing the needs of both the partner and the FIFO worker was recognised to be occasionally difficult for couples within the FIFO lifestyle—trying to find an equilibrium between the needs of the worker when they return home (i.e. as a partner being patient and provide them with the space to recover), as well as the partner (i.e. as a FIFO worker helping around the home), and as a couple (i.e. spending the time together during R&R). To support the transition between the times spent together and apart; establishing a **routine** (especially with children) allows the FIFO worker to fit back in when they return to enable continuity between their time spent on site and at home.

The FIFO lifestyle was explained to be “not for everyone”. **Having a plan** in place, such as a financial goal or to be in a position whereby one can leave FIFO work if it is not the right fit, was suggested to be a must for couples to consider beforehand. Although respondents did not elaborate in great detail as to what circumstances would influence exit from the FIFO lifestyle, statements from partners were adamant on the importance of having an exit strategy to enable the ability to leave FIFO work in the event of it not being conducive to family life or personal preferences. In addition, partners advise families who will pick up FIFO work to understand when one needs to leave FIFO and to be prepared for when the job may end.

Spending extended periods of time working away lends itself to particular challenges, even more so when FIFO workers have a family. Partners explained that it is the nature of the FIFO lifestyle for workers “**overcoming missing out**” on important family and social occasions, such as: weddings, birthdays, funerals, first days at school, etc. In order to deal with missing out, partners suggested strategies such as: keeping the worker informed of family day-to-day activities, capturing photos to send or to show when they return, and as a partner, acknowledging the difficulty the worker must be experiencing whilst working away. Some partners also noted that although the FIFO worker is essentially missing out, it should not stop one from living life at home whilst the worker is away. The responses indicated that a balance must be struck between living one’s life whilst the FIFO worker is away, but keeping the worker part of one’s life to ensure they feel connected to life back home.

Quotes supporting each theme can be found within the following table (see Table 4.120).

Table 4.120

Advice from FIFO partners to individuals considering the FIFO lifestyle.

If you could give one piece of advice to a family in which one partner is about to start a FIFO job, what would that be?

Communication

“Make sure you communicate frequently and honestly. Be realistic in your demands on your partner and your partner needs to be present when at home, it takes two to make it work”

“Make sure you have good communication. Having a relationship with my partner in which we are completely open with each other about feelings and our daily lives is important and if you don't communicate well regularly it becomes very difficult to maintain”

"Be strong and communicate with each other daily. Take the time to listen to each other while apart"

"Always communicate with each other and share the good and the bad"

Social Support

"Say yes and accept help. This goes for friends, family and work. My husband's work even had courses for FIFO families with newborns"

"Find a support system that works for you"

"Make sure you have support from a close friend or family member, as we don't have any family nearby and it's so hard to cope with emergencies if something goes wrong when your partner is on-site"

"Support the fact/reason why they work away and don't put them under any more pressure than they already feel because they are working away"

"If children are young and you don't have support—don't do it"

"Find your village! Whether family or friends or online, find that group to give you emotional support"

Relationship

"An extra effort is required to 're-connect' each time the FIFO partner comes home. Be sure to put this effort in so as not to drift apart or become discontent with each other"

"Don't if you don't have to. It's a relationship killer if you're not committed to each other"

"Spend as much time doing things together as you can when you are together"

"Make certain your relationship has a solid foundation with agreed understanding on boundaries, expectations, responsibilities and respect"

"It will ruin your relationship"

"Try and sort out your differences before leaving home"

"Trusting each other is the most important thing. Without full trust it will not work"

Balancing of Needs & Routine/Compromise/Patience

"Make sure you always have time to be alone together when they are home, even if it's just for ten minutes"

"Be realistic in your demands on your partner and your partner needs to be present when at home, it takes two to make it work"

"They work long hours and they will come home very tired. They need some space when they first get home to get rest and readjust. Try not to get in their face in that first few days"

"Get yourself into a routine (esp. if you have kids) and ensure your partner knows that they have to fit into the routine, not upset it, when they come home"

"Always have the first night home as family first. Don't plan anything for their first night home"

"Don't treat the time at home like a 'holiday' period. Try to keep a normal family life and routine during those periods. Make time for family outings while your partner is away, and during the time when your partner is at home"

"Have a routine for your own time, keep busy and value your time alone rather than being scared by it."

Overcoming Missing Out

"Be prepared to miss birthdays, anniversaries, funerals, family events etc. ... it is a hard thing to accept"

"Maybe don't do FIFO work if you have or are planning to have kids"

"I find they can feel left out when you're out being social or busy at work and can't answer their texts or calls. Life goes on for us. It doesn't stop while they're away."

"Take lots of photos, when my partner gets home we sit down together and go through each other's photos on our phones together to share with each other what we have missed together"

"Tell them when you miss them!"

"Don't let missing out stop the people back home having a life"

"Make sure the person away feels needed, even if you cope with them being away ok, tell them they are missed daily"

Have a Plan

"It's not for everyone—try it if it doesn't suit leave before it becomes a problem. Always have an exit plan. When your partner says it's time they left FIFO, let them"

"Put a time limit and a monetary limit on it of less than two years- once you reach those goals get out. Talk daily, or more often, and make a plan for returning to normal work"

"Plan and talk to others that have done it before you."

"Plan what to do with extra cash don't spend it"

"Try it out for a few months. FIFO doesn't suit everyone and that's ok"

"Be prepared if FIFO job ends, always have a back-up plan"

The word cloud (see Figure 4.120) developed highlights similar ideas as the inductive exploratory analysis stage. Frequently referenced words in relation to tips to potential individuals and families considering the FIFO lifestyle included communication-related words (e.g. communicate/communication, talk) and family- and relationship-related words (e.g. family, both, each, other, together, home).



Figure 4.120. Partners of FIFO workers responses: If you could give one piece of advice to a family in which one partner is about to start a FIFO job, what would that be?

Summary: advice from partners

- Communicate honestly and openly.
- Provide each other with support and find support from others.
- Put extra effort into maintain one's relationship.
- Find a balance between yourself and what your partner needs, establishing a routine to help this balance.
- Plan to ensure one has an exit strategy in the event the FIFO lifestyle isn't for you.
- Manage the feeling of "missing out" by maintaining connection and sense of normalcy.

4.4 Summary survey study

Answering KEQ 1a

Results of this study suggest that mental health concerns exist for a sizeable number of FIFO workers and that some of these concerns are due to the challenges of FIFO work. Results also suggest there are many steps that could be taken to improve the FIFO experience.

Psychological distress

FIFO workers in this sample have significantly poorer psychological distress (as measured by the K10, which measures the risk on e.g. anxiety and depression) than both the benchmark group and the norm group. These differences remained after controlling for differences between the FIFO sample and the benchmark group (age, education and job role). FIFO workers had high/very high psychological distress almost twice as often as the benchmark group. Almost one third of FIFO workers in this sample have high or very high stress levels, which is a significant proportion (and much higher than Australian norms, where 11.7% reported high or very high stress). Although causality cannot be definitively established due to its cross-sectional design, these results have shown that the mental health in FIFO workers is worse. Burnout levels were also found to be significantly higher in FIFO workers when compared to the benchmark group (there was no relevant norm group available).

Suicidal risk

FIFO workers scored slightly higher on suicidal risk, with significant differences on thwarted belonging and suicidal intent. However, these differences were no longer significant when differences in the samples are controlled for. In other words, differences in suicide risk appear to be attributable to the fact that the FIFO worker sample is less educated and more likely to have operators/technician/trade workers; two key attributes that tend to be associated with suicidal risk.

Wellbeing

For wellbeing, (after controlling for age education and job role) FIFO workers did not differ significantly from the benchmark and the norm group on psychological wellbeing (e.g. self-acceptance and personal growth). However, on social wellbeing (e.g. having trust/believing in a good society) FIFO workers have significantly lower scores than the benchmark group, but do not differ significantly from the norm group. For emotional wellbeing (e.g. feelings of happiness and satisfaction) FIFO workers score significantly worse than the norm group, but do not differ significantly from the benchmark group.

Loneliness

Loneliness (and happiness with relationships) was related to all mental health and wellbeing outcomes in this study, including suicidal intent. Thwarted belonging is shown to also be related to a lack of social support and feelings of loneliness (Van Orden et al., 2012). Satisfaction with social activities offered on site was linked to most outcomes, whereas recreation options on site did not influence mental health and wellbeing, suggesting that opportunities for social contact are important. Permanent accommodation improved the outcomes, but it did not matter if this was shared or not. All of these findings speak to the option to connect and build communities: connecting with the environment and building a social connection with other people on site.

Answering KEQ 1a – continued

Within person factors, a “disengaged” coping style negatively influenced the mental health and wellbeing of FIFO workers, whereas a coping style of seeking support and an “active” coping style appear to foster mental health. Being unable to detach from work and feeling the necessity to stay in FIFO work (sometimes described as “golden handcuffs”) were important factors in the mental health and wellbeing of FIFO workers. With respect to FIFO work factors, psychological issues with transitioning between home and site was linked to poorer mental health and wellbeing. The feeling of being separated from family (interpret with caution because of the lower reliability for the scale), lack of perceived job security and having a high workload also had a negative influence. Job insecurity often exists for contractors, who suffer from higher levels of mental ill-health and have a lower social wellbeing.

Rosters

The regressions only found a link between roster ratio and suicidal intent, but not with any of the other outcomes. As roster ratio is considered to be a crude measure (it does not take the length of being away into account), analysis was carried out in order to more directly assess any links between mental health and wellbeing and rosters. Results showed that even-time and shorter rosters were better for all mental health and wellbeing outcomes. Crucially, longer periods on site with an uneven-time roster led to worse mental health and wellbeing. With regards to these findings, it should be noted that some of the rosters are sometimes linked to certain jobs.

Support

The support from line managers and co-workers is essential, as this is important for all mental health and wellbeing aspects, including suicidal risk. Stigma attached to mental health was linked to all mental health and wellbeing outcomes (including suicidal intent), similar to perceived priority assigned by the organisation to mental health and wellbeing. Finally, bullying was shown to be an issue within the FIFO work environment and being a victim of bullying at work was associated with most mental health outcomes.

Answering KEQ 1b

Almost one third of the partners of FIFO workers (similar to FIFO workers themselves) experienced high or very high levels of depression and anxiety (K10), whereas this is only the case for 13.6% of females in the norm data. On the positive side, the social wellbeing of partners was better than that of the norm group.

FIFO work and partner mental health

There were some associations when linking the FIFO workers' personal and work factors with their partners' mental health and wellbeing. Partners' scores were better when FIFO workers had:

- a positive emotional attachment to FIFO work
- more autonomy while at home
- higher perceived line manager commitment to mental health and safety
- more recovery options on site, and
- more happiness with personal relationships.

Negative influences on partners' mental health and wellbeing were:

- FIFO worker working for a contractor, or in construction, and
- Work-family conflict.

The worse scores for partners on mental health and wellbeing could not clearly be explained by the personal, job, team, organisational and site, as well as family and social life factors reported by the FIFO workers. There were not many strong links, and some of the findings were inconclusive. This suggests that in order to address the partners' mental health and wellbeing, they need to be viewed separately, as their mental health and wellbeing cannot be explained by the FIFO work attributes directly.

Therefore, it would be important to look into the factors of FIFO work that spill over into the partners' life separately.

Family functioning

For family functioning, negative influences included: the FIFO worker having a disengaged coping style and having issues with psychological transitioning between home and site. The disengaging coping style and feeling the necessity to stay in FIFO work also affected the dyadic relationship negatively. However, if the FIFO worker had a higher emotional attachment to FIFO work, and was happier with personal relations, both family functioning and the dyadic relationship were better. Family functioning also improved if the FIFO worker was more satisfied with recovery options on site.

Finally, only one tenth of the FIFO partners received an induction before their partner started FIFO work, however, this only influenced partners' psychological wellbeing. An induction could still be useful if it prepared FIFO families with managing the FIFO life style, planning and financial aspects.

Answering KEQ 2

FIFO workers had a higher alcohol intake in comparison to the benchmark group and the norm group. FIFO workers also had a worse score on the Alcohol Use Disorders Identification Test (AUDIT, see Table 4.120). However, their frequency of drinking did not differ much from the benchmark group, which could be related to the fact that work sites have alcohol restrictions in place. As the alcohol quantity for FIFO workers is higher, this implies that more alcohol is being used during the time off, which means that FIFO workers drink more alcohol in a shorter period of time.

Drinking can lead to injuries, and FIFO workers reported having injured themselves or somebody else because of their drinking more often in comparison to the benchmark group and the norm group.

Table 4.120

Overview of drinking patterns for all samples

	Lifetime risky drinking > 2 standard drinks per day on average	Single occasion risk ≥ 5 standard drinks at least once a month	Very high alcohol consumption ≥ 11 standard drinks	AUDIT (Alcohol Use Disorders Identification Test)
FIFO workers	70.7%	61.6%	45.7%	$M = 9.05, SD = 6.98$
Partners	37.8%	32.9%	20.8%	$M = 5.46, SD = 4.76$
Benchmark group	43.3%	38.7%	21.9%	$M = 5.83, SD = 3.27$
Norm group	Male: 25.9% Female: 10.3%	Male: 36.1% Female: 17.5%	16.1% (Total population 18+ years old)	

FIFO workers smoked more often than the benchmark group, but similar to the norm group. Drugs were used more often by FIFO workers than in both comparison groups. A quarter of FIFO workers had used drugs in the past 12 months, while this was just over one tenth for the benchmark group. Mainly painkillers, sleeping pills and cannabis were used more by FIFO workers. However, they also used cocaine, ecstasy and meth/amphetamine considerably more often. Sleeping pills (and potentially some of the other drugs) might be used more often because of the shift work nature of FIFO work, and the potential disruptions to sleep patterns.

There was an interesting difference between FIFO workers and non-FIFO workers on the links between their substance use (alcohol, other drug use and smoking) and mental health and wellbeing; for FIFO workers there were significant correlations between substance use and mental health and wellbeing, but for the benchmark group these were not found, indicating that substance use might be used as way of coping for FIFO workers.

Perceived masculinity norms, low autonomy during time off on-site, issues with psychological transitioning between home and site and perceived stigma were linked to worse alcohol scores. Social aspects had an important influence on alcohol use, where seeking support and more happiness with personal relationships meant lower alcohol use. Work-family conflict, more loneliness on site and at home, and a higher number of friends influenced alcohol use negatively. Finally, the alcohol and other drugs intake for partners was a bit worse when compared to the norm group.

Answering KEQ 3

FIFO workers and their partners use many different strategies to cope with FIFO work arrangements (note: the strategies listed here are not exhaustive, the interview study identified additional strategies). Within the general coping strategies that can be used, active coping and using social support are linked to better scores on all aspects of mental health and wellbeing in both workers and partners. The opposite was true for coping through self-distraction and disengagement; these were linked to worse mental health and wellbeing.

Support

Work sites generally offer support options for mental health issues to workers and expanding and improving these options could be a helpful strategy in order to reduce any mental health impact due to FIFO work. The findings showed that three quarters of the FIFO workers were aware of one or more of such help options on site; 60.8% of the FIFO workers recalled the Employee Assistance Program (EAP). However, it is important to maintain complete confidentiality when offering these kind of support options, or people will not feel secure when reaching out.

When looking at the support options FIFO workers had personally used (made available through the organisation and available to the general population), just over half of the participants indicated that they had personally used one or more support options to combat mental health issues. FIFO workers mainly turned to family and friends, the EAP or a general practitioner. Almost three quarters of the partners of FIFO workers had personally used one or more support options, mainly being family and friends, the general practitioner and self-help.

Communication

For FIFO workers, their happiness with their personal relationships and autonomy on site were strongly linked to their mental health and wellbeing; this could be used as a coping strategy. Other strategies were provided through advice of the partners of FIFO workers. These included: to keep communicating, finding support, maintaining the relationship, finding a balance between each other's needs, having a plan for when to quit FIFO work and managing the feeling of missing out on things.

Longitudinal Study

Impact of fly-in, fly-out work arrangements on the mental health and wellbeing of FIFO workers

5.1 Longitudinal study background and scope

A longitudinal study with repeated measurement over time was designed to track how the mental health and wellbeing of FIFO workers changes over the course of being on site, going home, being at home on R&R and heading back to site (roster phases).

The main goal of the longitudinal study was to establish whether and how FIFO shapes mental health using a stronger research design (more able to demonstrate causality) than the cross-sectional survey.

A further goal of this study was to compare two common rosters that the survey study showed were distinct in their mental health effects: the two weeks on/one week off roster (14/7), and the eight days on/six days off (8/6) roster. These rosters were selected as analysis showed a difference in the anxiety and depression scores (K10) between both rosters. The 14/7 roster ($M = 21.01$, $SD = 7.60$) and the 8/6 roster ($M = 18.52$, $SD = 6.61$) differed significantly (Welch's t-test: $F(1,894.657) = 37.232$, $p = .000$), with workers in the 14/7 roster having worse scores on anxiety and depression. An in-depth comparison of these rosters longitudinally enables a deeper understanding of the possible effects of different roster structures.

5.2 Research methods

5.2.1 Longitudinal survey content

The longitudinal survey covered topics relating to mental health and wellbeing that were identified within the literature review, including:

- sleep quality
- life satisfaction
- work satisfaction
- work and/or family demands
- alcohol consumption
- anxiety
- depression
- level of enthusiasm
- level of relaxation, and
- perception of time progress (i.e. how fast/slow time seems to pass).

5.2.2 Procedure

An invitation to participate in the study was distributed to all FIFO workers who had completed the main FIFO mental health and wellbeing survey and who were working on either the two weeks on/one week off rosters (14/7) or the eight days on/six days off (8/6) rosters.

If a FIFO worker was interested in participating, they informed the researchers of the starting date of their next swing so that the five short surveys could be sent throughout the roster phases. These surveys could be completed within two minutes. The five time points corresponded roughly with the workers just starting work on site, mid-way through their roster on site, as the workers prepared to transition home from site, the beginning of their R&R, and as the workers prepared to transition back to site, respectively. Specifically:

- FIFO workers performing the 14/7 roster were sent surveys on the 2nd, 8th, 13th, 16th and 20th day of their swing.
- FIFO workers working on the 8/6 roster were sent surveys on the 2nd, 4th, 7th, 10th and 13th day of their swing.

To encourage their participation, FIFO workers were informed that they would be included in a pool for a raffle where one participant who completed all five surveys would have a chance at winning \$1000.

A total of 863 participants were approached to participate in the longitudinal study, of which 353 indicated their interest by informing the researchers about the start date of their next swing. Out of this group, 277 FIFO workers completed between one and five of the surveys (see Table 5.1). This is a remarkably high response rate (32%) for an intensive series of surveys, suggesting a high level of interest in the topic and the research.

Table 5.1
Overview of participants who completed between one and five surveys

	14/7 Roster	8/6 Roster	Total
Completed at least 5 surveys	63	162	225
Completed at least 4 surveys	75	175	250
Completed at least 3 surveys	78	185	263
Completed at least 2 surveys	82	191	273
Completed at least 1 surveys	84	193	277

Participants who completed more than half (i.e. three) of the required number of surveys were retained for analysis. A further check was performed to ensure that participants completed the surveys within three days of receipt of the surveys. This criteria was set to ensure that participants would be able to provide accurate responses to the questions pertaining to the period in which they received the survey.

The **final sample** pool consisted of 205 participants (23.75%), of which 54 were working on the 14/7 roster while 151 were on the 8/6 roster.

5.2.3 Sample demographics

5.2.3.1 14/7 Roster

The majority of the FIFO workers working on the 14/7 roster were males (70.37%) with an average age of 43 years old. Most of the FIFO workers had completed TAFE or college (35.19%). The majority (90.57%) of the FIFO workers did not identify as Aboriginal or Torres Straits Islander and were married or in a domestic partnership (74.07%). There were 37.04% FIFO workers who did not have children or dependants, and the other 62.96% of workers had between one and five children. The age of the youngest child was between one and three years old for most of the FIFO workers with children.

The average length of time that workers on the 14/7 roster had worked in the FIFO industry was 7.30 years and the majority of workers (96.30%) commuted to site through flight. The average length of a shift was 13.61 hours daily and most workers (46.30%) worked on day shift followed by night shifts and then had their time off, followed by day shifts, night shifts and time off again. Most workers (87.04%) were employed full time and worked in the mining industry (85.19%). Of workers, 57.41% were employed by operators and held operator (25.93%), or technician or trade/maintainer (24.07%) roles. The majority of workers worked on sites in the operational phase (96.30%).

Demographic data pertaining to personal and work constructs for workers on the 14/7 roster are summarised in Table 5.2 and 5.3.

Table 5.2
 Overview of 14/7 FIFO worker demographics (Personal characteristics), $n = 54$

Gender		Marital status	
Male	70.37%	Single, never married	12.96%
Female	29.63%	Married or domestic partnership	74.07%
Other	0.00%	Widowed, divorced or separated	12.96%
Age ($M = 42.91$; $SD = 11.82$)		Number of children or other dependants	
< 24	1.85%	0	37.04%
25–34	29.63%	1	12.96%
35–44	20.37%	2	18.52%
45–54	25.93%	3	20.37%
55+	22.22%	4	7.41%
		5	3.70%
		6 or more	0.00%
Highest level of education		Age of youngest child	
Primary school	0.00%	0–12 months	2.94%
Secondary school	22.22%	1 up to 3 years	11.76%
Apprentice	14.81%	3 up to 5 years	17.65%
Tafe, College	35.19%	6 up to 8 years	2.94%
University undergraduate degree	9.26%	8 up to 12 years	5.88%
Postgraduate degree	1.85%	12 up to 18 years	23.53%
Other training courses	16.67%	Over 18	35.29%
Aboriginal/Torres Strait Islander			
Yes	7.55%		
No	90.57%		
Prefer not to say	1.89%		

Table 5.3
 Overview of 14/7 FIFO workers demographics (Workplace characteristics), $n = 54$

Nature of employment		Years in FIFO	$M = 7.30, SD = 4.82$
Operator	57.41%	Shift length	$M = 13.61, SD = 10.55$
Contractor	42.59%		
Role on site		Commute	
Administrative	7.41%	FIFO	96.30%
Managerial	14.81%	DIDO	3.70%
Professional/technical	5.56%	BIBO	0.00%
Operator	25.93%	Other	0.00%
Technician or trade/maintainers	24.07%	Industry	
Camps and catering	7.41%	Construction	0.00%
Logistics and supply chain	5.56%	Mining	85.19%
Other	9.26%	Oil and gas	5.56%
Phase of site		Public services	0.00%
Construction	3.70%	Transportation	0.00%
Operational	96.30%	Other	9.26%
Decommissioning	0.00%	Employment situation	
Shift pattern		Full time	87.04%
Days-Nights-Off-Days-Nights-Off	46.30%	Part time	0.00%
Days-Off-Nights-Off	5.56%	Casual	7.41%
Days-Off-Days-Off	35.19%	Other	5.56%
Nights-Off-Nights-Off	0.00%		
Other	12.96%		

5.2.3.2 8/6 Roster

Demographic data pertaining to personal and work characteristics for workers on the 8/6 roster are summarised in Table 5.4 and 5.5. Most (78.81%) of the FIFO workers performing the 8/6 roster were males with an average age of 39 years old. Of the workers surveyed, 29.80% held undergraduate university degrees. Most workers did not identify as Aboriginal or Torres Strait Islander (96.03%), and most (73.51%) were married or in a domestic partnership. A majority (45.70%) of the workers did not have children or dependants, and of the FIFO workers who had children, most (35.29%) of the children were over the age of 18.

The average period that workers on the 8/6 roster had worked in the FIFO industry was 8.95 years and a majority (95.36%) of workers commuted to their sites through plane travel. The average length of shift was 12.49 hours daily, and most (78.81%) workers worked a Day-Off-Day-Off shift pattern. Most workers (96.03%) were employed full-time and worked in the mining industry (98.68%). A majority (88%) of the workers were employed by an operator and more than half (50.99%) of the FIFO workers who were interviewed held professional or technical roles on site. A majority (98.68%) of workers worked on sites in the operational phase.

Demographical differences between both rosters pertained mainly to the workers' education level, role on site and shift patterns. There were 20% more workers who had obtained a university undergraduate degree on the 8/6 roster, and about 45% more FIFO workers on the 8/6 roster performing a professional or technical role. Workers on the 14/7 rosters mainly worked the Days-

Nights-Off-Days-Nights-Off shift pattern while this was mainly a Days-Off-Days-Off shift pattern for FIFO workers on the 8/6 roster.

Table 5.4
 Overview of 8/6 FIFO worker demographics (Personal characteristics), $n = 151$

Gender		Marital status	
Male	78.81%	Single, never married	17.22%
Female	21.19%	Married or domestic partnership	73.51%
Other	0.00%	Widowed, divorced or separated	9.27%
Age (M= 39.08; SD = 10.38)		Number of children or other dependents	
< 24	1.33%	0	45.70%
25–34	42.67%	1	14.57%
35–44	27.33%	2	21.85%
45–54	18.67%	3	8.61%
55+	10.00%	4	3.97%
		5	2.65%
		6 or more	2.65%
Highest level of education		Age of youngest child	
Primary school	0.00%	0–12 months	12.35%
Secondary school	17.88%	1 up to 3 years	19.75%
Apprentice	9.93%	3 up to 5 years	14.81%
Tafe, College	22.51%	6 up to 8 years	8.64%
University undergraduate degree	29.80%	8 up to 12 years	14.81%
Postgraduate degree	12.58%	12 up to 18 years	14.81%
Other training courses	7.28%	Over 18	14.81%
Aboriginal/Torres Strait Islander			
Yes	2.65%		
No	96.03%		
Prefer not to say	1.32%		

Table 5.5
Overview of 8/6 FIFO workers demographics (Workplace characteristics), n = 151

Nature of employment		Years in FIFO	M=8.95, SD=6.05
Operator	88.00%	Shift length	M=12.49, SD=0.59
Contractor	12.00%		
		Commute	
Role on site		FIFO	95.36%
Administrative	4.64%	DIDO	1.32%
Managerial	21.85%	BIBO	3.31%
Professional/technical	50.99%	Other	0.00%
Operator	6.62%		
Technician or trade/maintainers	8.61%	Industry	
Camps and catering	0.00%	Construction	0.00%
Logistics and supply chain	2.65%	Mining	98.68%
Other	4.64%	Oil and gas	0.00%
		Public services	0.00%
Phase of site		Transportation	1.32%
Construction	0.66%	Other	0.00%
Operational	98.68%		
Decommissioning	0.66%	Employment situation	
		Full time	96.03%
Shift pattern		Part time	0.00%
Days-Nights-Off-Days-Nights-Off	0.00%	Casual	2.65%
Days-Off-Nights-Off	17.22%	Other	1.32%
Days-Off-Days-Off	78.81%		
Nights-Off-Nights-Off	1.99%		
Other	1.99%		

5.3 Results

Participant responses at each time point were averaged to identify any changes in construct ratings of mental health and wellbeing over the course of a swing. The below tables (see Table 5.6 and 5.7) provide these averages and standard deviations of FIFO workers on the 14/7 and 8/6 rosters.

Table 5.6
14/7 FIFO worker constructs over the roster period

	T1 (Start of swing on site)		T2 (Mid-way through swing)		T3 (Transition home)		T4 (Start of R&R)		T5 (Transition to site)	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Anxiety	5.87	2.42	6	2.6	5.8	2.7	4.85	2.27	5.38	3.06
Depression	2.23	1.27	2.31	1.26	2.31	1.28	1.99	1.25	2.33	1.42
Sleep quality	2.48	0.7	2.37	0.82	2.44	0.76	2.72	0.88	2.9	0.77
Life satisfaction	3.92	1.64	4.23	1.62	4.26	1.44	4.87	1.56	4.8	1.67
Job satisfaction	3.83	1.67	3.79	1.67	3.76	1.64	3.94	1.61	3.55	1.49
Demands placed on worker	2.81	1.07	2.87	1.21	2.74	1.21	2.37	1.16	2.51	1.21
Perception of time progress	3.9	1.61	3.5	1.7	3.38	1.73	4.4	1.6	4.86	1.56
Alcohol consumption	1.5	2.43	2.55	3.33	1.76	2.79	2.51	3.64	3.53	3.72
Enthusiasm	2.76	1.33	2.6	1.06	2.82	1.19	3.89	1.45	3.48	1.46
Relaxation	3.11	1.35	2.97	1.2	3.09	1.19	3.97	1.5	3.69	1.45

Table 5.7
 8/6 FIFO worker constructs over the roster period

	T1 (Start of swing on site)		T2 (Mid-way through swing)		T3 (Transition home)		T4 (Start of R&R)		T5 (Transition to site)	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Anxiety	4.76	2.15	4.46	2.07	4.5	2.21	3.84	1.89	3.97	1.96
Depression	1.72	0.89	1.73	1.02	1.79	1.1	1.6	1.02	1.56	0.88
Sleep quality	2.61	0.72	2.68	0.74	2.68	0.72	3.06	0.72	3.09	0.77
Life satisfaction	4.95	1.56	4.8	1.42	4.76	1.58	5.31	1.37	5.33	1.41
Job satisfaction	4.43	1.66	4.45	1.54	4.32	1.64	4.57	1.55	4.56	1.54
Demands placed on worker	2.38	1.15	2.53	1.29	2.76	1.28	1.87	1.03	2.02	1.09
Perception of time progress	4.04	1.69	4.01	1.78	4.29	1.88	4.71	1.28	5.01	1.35
Alcohol consumption	0.99	1.81	0.9	1.98	1.47	2.65	3.69	4.47	3.28	4.03
Enthusiasm	3.04	1.3	2.95	1.35	3.07	1.5	3.69	1.34	3.6	1.35
Relaxation	3.75	1.34	3.69	1.45	3.71	1.42	4.18	1.34	4.2	1.37

To visually compare the changes that occur across the roster phases (i.e. measured time points) in both the 14/7 and 8/6 rosters, each mental health and wellbeing characteristic has been displayed within Figures 5.8 to 5.15 below. It should be noted that these trajectories show average effects in which individuals will vary. Keeping within the scope of work, this variation has therefore not been depicted or modelled at this stage.

Feelings of anxiety and depression

Workers in both rosters felt anxious at least half the time during their swing, with anxiety decreasing when workers commenced R&R, and increasing during transition to site (see Figure 5.8). Those in a 14/7 roster exhibited higher anxiety than 8/6 workers. The roster trend lines suggest feelings of depression remained stable and low across the swing.

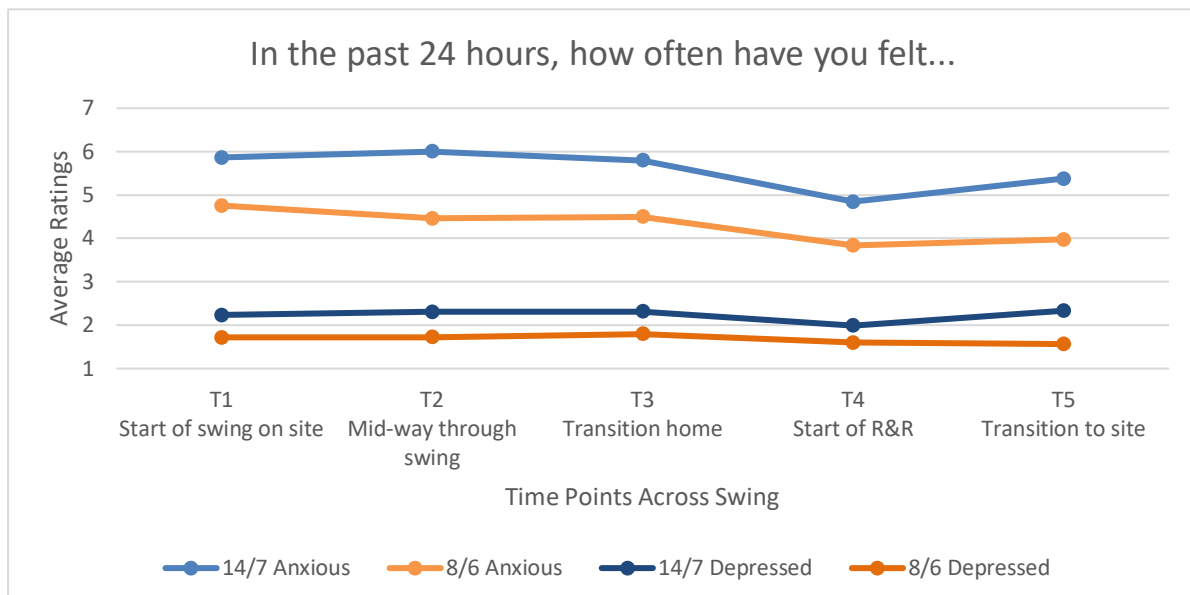


Figure 5.8. FIFO workers' feelings of anxiety and depression over the swing (1 = never, 2 = a little of the time, 3 = some of the time, 4 = about half the time, 5 = much of the time, 6 = a lot of the time & 7 = always).

Sleep quality

FIFO workers in both rosters rated their sleep quality as rather stable across the swing. They indicated having between fairly bad to fairly good quality of sleep during their swing, with higher quality sleep during R&R (see Figure 5.9). The sleep quality is slightly better for participants on the 8/6 roster.



Figure 5.9. FIFO worker's sleep quality over the swing (1 = very bad, 2 = fairly bad, 3 = fairly good and 4 = very good).

Life satisfaction

FIFO workers in both rosters experienced neutral to slight life satisfaction throughout the swing (see Figure 5.10). Life satisfaction improved when workers were on R&R, and workers on the 8/6 rosters experienced slightly higher life satisfaction than workers on the 14/7 rosters.

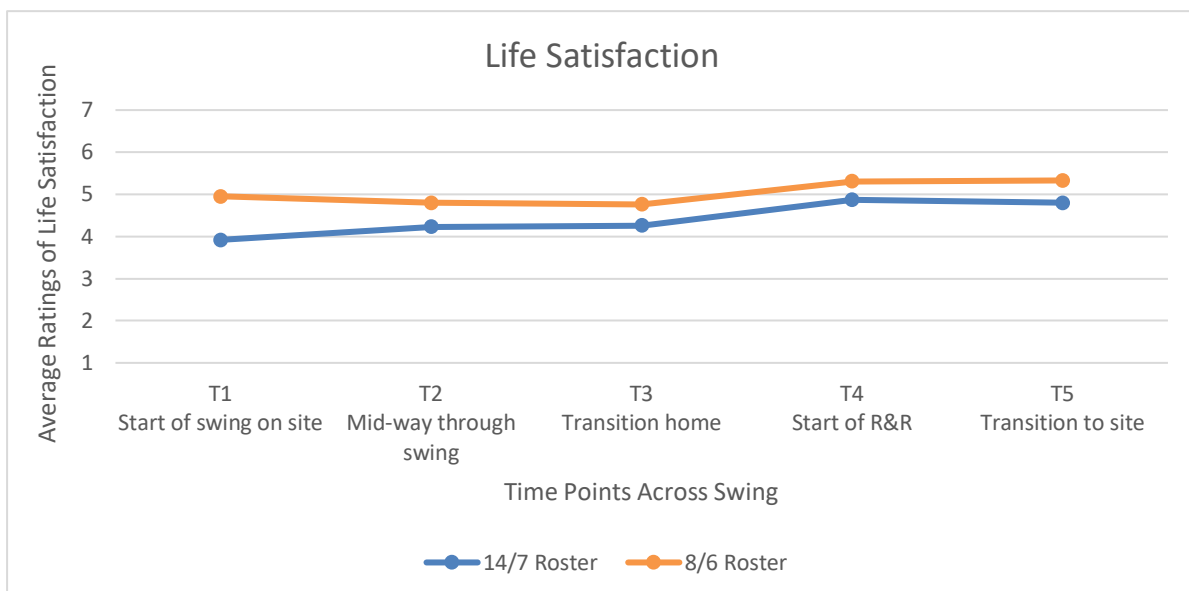


Figure 5.10. FIFO worker's job life satisfaction over the swing (1 = extremely dissatisfied, 2 = moderately dissatisfied, 3 = slightly dissatisfied, 4 = neither satisfied nor dissatisfied, 5 = slightly satisfied, 6 = moderately satisfied & 7 = extremely satisfied).

Job satisfaction

Job satisfaction was slightly higher for workers when on R&R, however, there was a small drop for 14/7 workers as they prepared to transition to site (see Figure 5.11). Workers on the 14/7 rosters experienced neutral to slight job dissatisfaction, whilst 8/6 workers had neutral to slight job satisfaction throughout the swing.

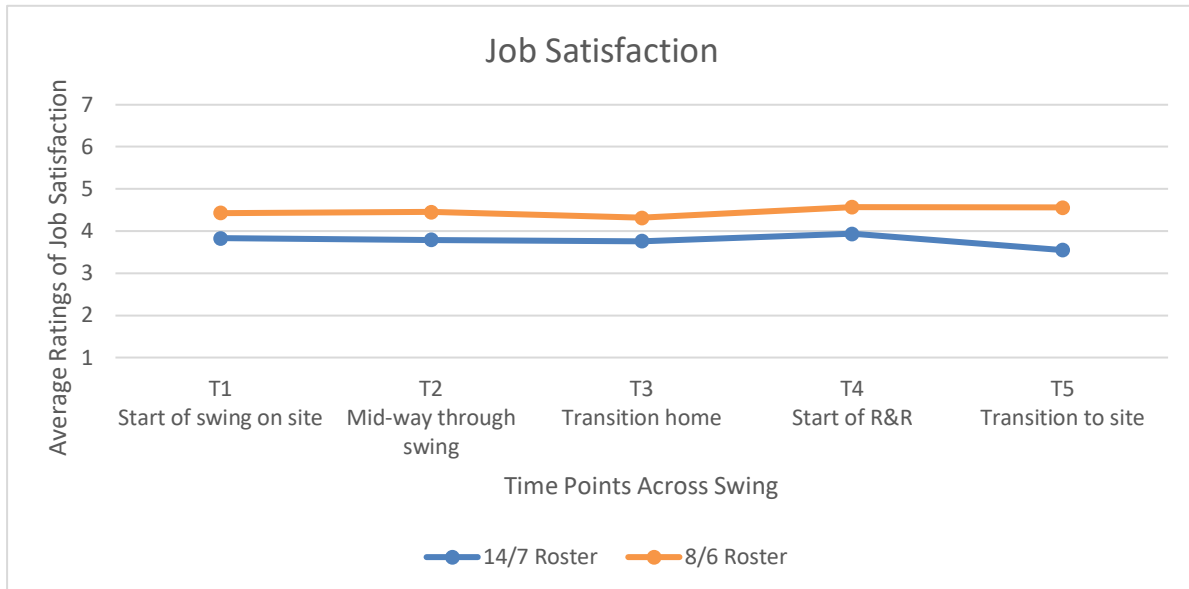


Figure 5.11. FIFO worker's job satisfaction over the swing (1 = extremely dissatisfied, 2 = moderately dissatisfied, 3 = slightly dissatisfied, 4 = neither satisfied nor dissatisfied, 5 = slightly satisfied, 6 = moderately satisfied & 7 = extremely satisfied).

Demands

Workers reported experiencing low work and family demands throughout their swing, and there was a decrease in the demands placed on them during their R&R period, but this increased slightly as they transitioned to site (see Figure 5.12). Workers on the 14/7 rosters felt they had to deal with more demands compared to workers on the 8/6 rosters.

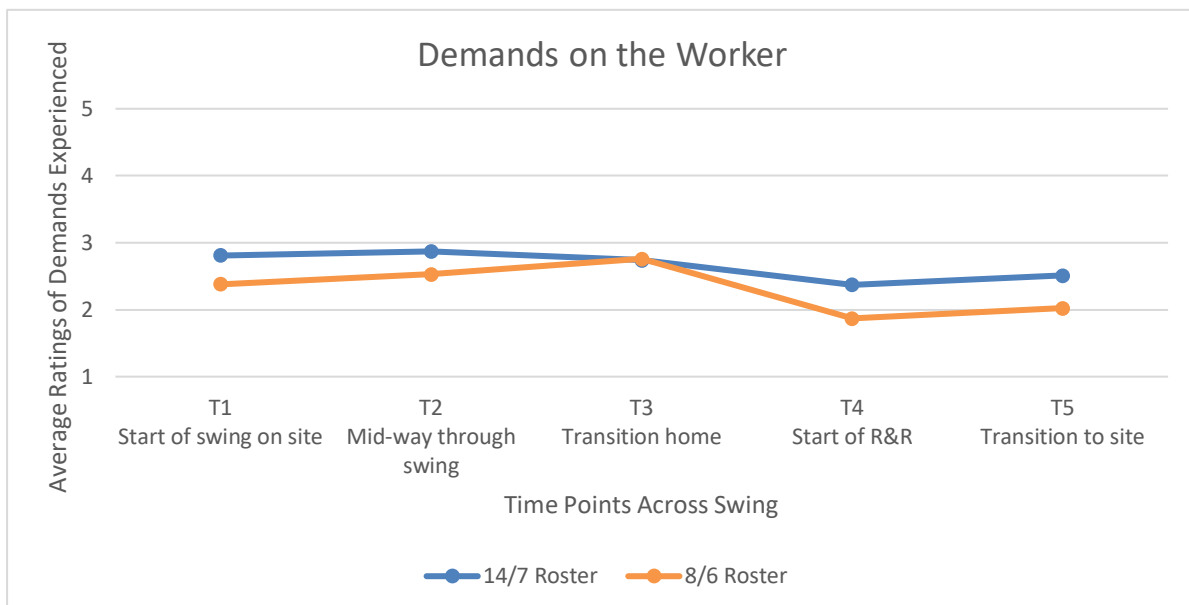


Figure 5.12. Demands placed on FIFO worker over the swing (1 = strongly disagree, 2 = somewhat disagree, 3 = neither agree nor disagree, 4 = somewhat agree & 5 = strongly agree).

Perception of time progress

The perceived progress of time was perceived to be relatively normal while workers in both rosters were on site. Time appeared to pass quicker as they progressed during the R&R period (see Figure 5.13). Time was perceived to pass faster throughout the swing for workers on the 8/6 roster as compared to the 14/7 roster.

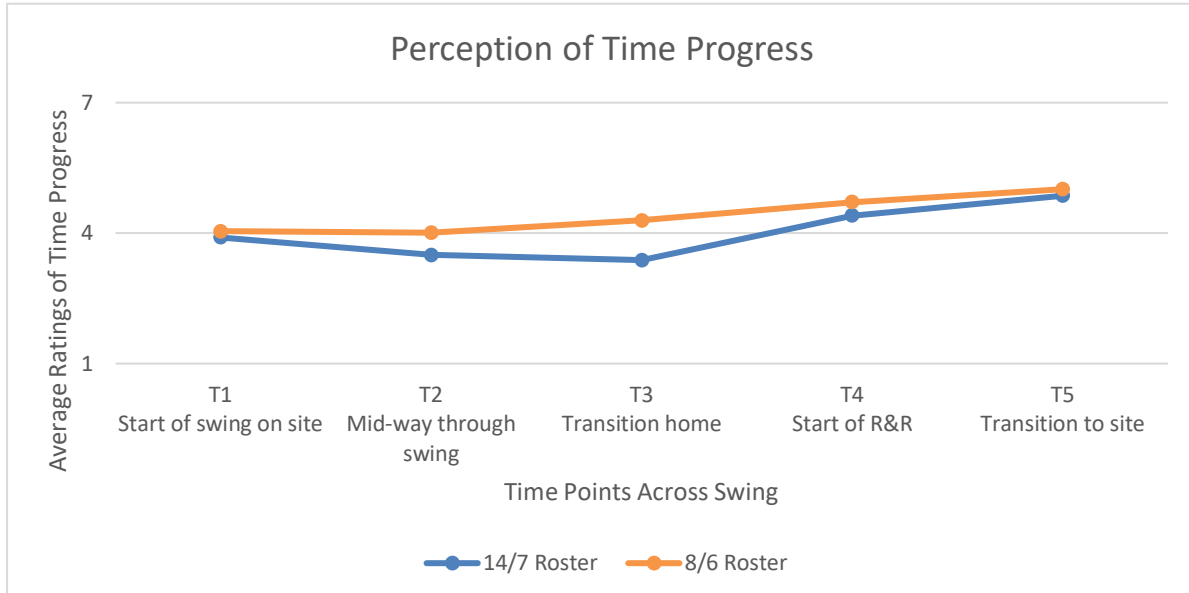


Figure 5.13. Perception of time progress over the swing (1 = time dragged, 4 = pretty normal & 7 = time flew).

Feelings of enthusiasm and relaxation

Workers on both rosters reported feelings of enthusiasm and relaxation some of the time when on site, half of the time when on R&R and decreasing again when transitioning to site (see Figure 5.14). Workers on the 8/6 rosters were noted to feel relaxed and enthusiastic slightly more often than workers on the 14/7 rosters.

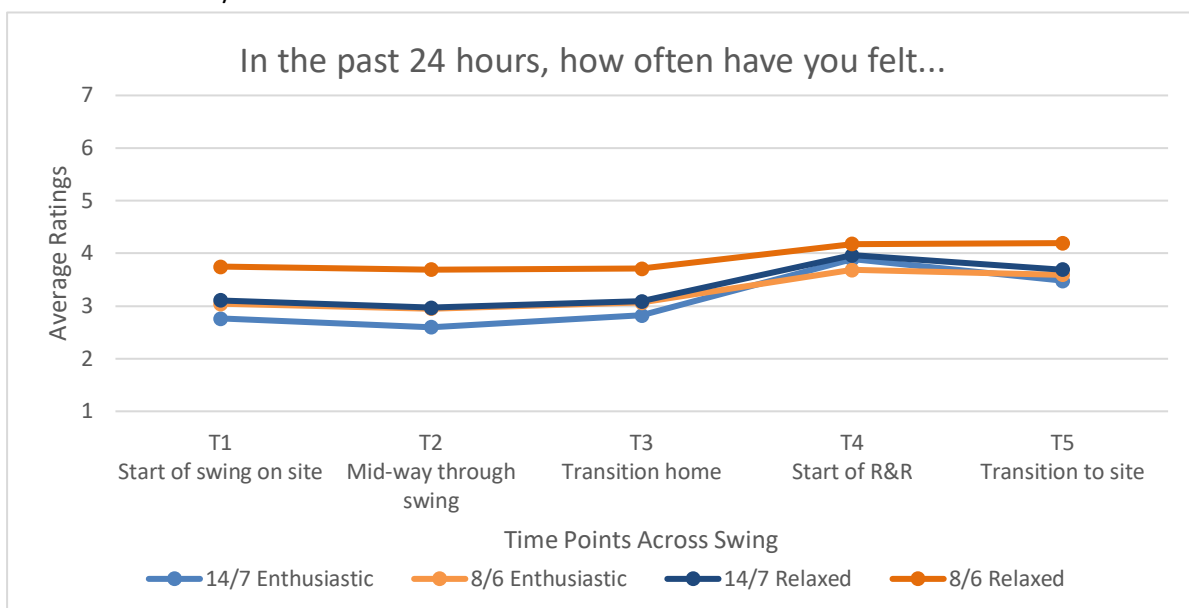


Figure 5.14. FIFO worker's enthusiasm and relaxation across swing (1 = never, 2 = a little of the time, 3 = some of the time, 4 = about half the time, 5 = much of the time, 6 = a lot of the time & 7 = always).

Alcohol consumption

There was a noticeable increase in alcohol consumption during mid-way through time on site with 14/7 workers consuming between two and three beverages (see Figure 5.15). Alcohol consumption increased throughout the R&R period, peaking at about three to four alcoholic drinks as workers prepared to return to site. While workers on the 8/6 rosters consumed fewer alcoholic drinks mid-way through their rosters as compared to workers on the 14/7 rosters, they consumed more drinks at the start of R&R.

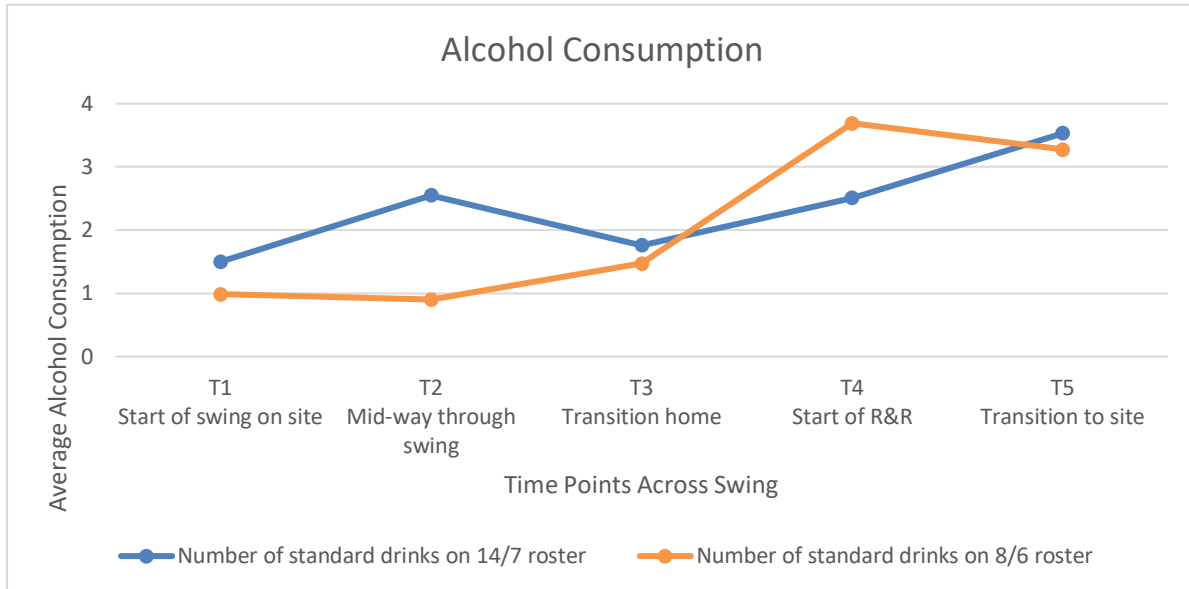


Figure 5.15. FIFO worker's alcohol consumption over the swing.

5.4 Summary longitudinal study

The longitudinal study was designed to capture the potential mental health and wellbeing changes across different stages within a roster, which in turn provides stronger longitudinal support for FIFO impact on mental health. Findings from this study suggest that, on average, for all workers included in the study:

- Mental health and wellbeing for workers on the 14/7 and 8/6 rosters was worse during the transition to site and beginning of their time on site. This generally improved slightly during their R&R.
- FIFO workers experienced feelings of anxiety over half the time while they were on site, with a slight drop during their R&R. They did not feel depressed very often.
- Considering wellbeing, most of the time FIFO workers did not feel relaxed or enthusiastic, with enthusiasm being especially low. However, workers' relaxation and enthusiasm was higher during R&R.
- The fluctuation of mental health and wellbeing throughout the roster phases (time points) suggests that different types of unique support is required based on the different FIFO lifestyle elements impacting workers. As this is not within the scope of this study, additional research would be required to compare the FIFO worker mental health and wellbeing fluctuations against the normal work week in other professions.
- Additional research would be required to gain a deeper understanding of the fluctuations in mental health and wellbeing across different roster phases, also looking at longer rosters, or looking at multiple swings.

Within the scope this research project only preliminary non-statistical analysis were completed; further complex analysis should be undertaken to control for variables such as age and education, and to be able to calculate the exact changes across the roster stages. More complex analysis will also be able to determine the size of the differences between the two rosters examined.



Interview Study

Impact of fly-in, fly-out work arrangements on the mental health and wellbeing of FIFO workers



6.1 Interview study background and scope

The interview study aims to provide an in-depth understanding of workers' and their partners' experiences of fly-in, fly-out work. The interview method complements insights gathered via survey measures to gauge qualitative aspects of FIFO workers' experience not captured in other methodologies. It provides a more detailed view of FIFO workers' and their partners' experiences. The interview study also adopts an explorative approach to understand the strategies that FIFO workers and their partners use to manage the FIFO lifestyle, which are specific to FIFO work.

The interview method was designed to address the three Key Evaluation Questions (KEQ) as described by the Mental Health Commission WA (MHC508). Its aim was to explore the demands on individuals over the four phases of one roster and how they adapted to these demands.

The interview study focuses on more detailed descriptions of the workplace and home environments that may affect FIFO workers' mental health and wellbeing. While all key evaluation questions are addressed in this study, it should be noted that a key focus of the interview study is on KEQ 3, concerned with the strategies that FIFO workers and their partners employ.

The interview study was designed to capture current FIFO workers' experiences as well as the mental health and wellbeing of former FIFO workers. It concentrated on both the positive and negative aspects of FIFO work, the transition between a FIFO and non-FIFO role, changes in one's relationship, and the adjustment to a non-FIFO lifestyle by the FIFO workers themselves and within their families. The interview study focused on detailed descriptions of both workplace and home environments that may affect FIFO workers' mental health and wellbeing. While all evaluation questions are addressed in this study, it should be noted that a key focus of the interview study is on KEQ 3, concerning the strategies employed by workers and their partners. The reason for this focus is the limited research available and the lack of standardised and validated measures to adequately capture such strategies via a survey.

6.2 Research methods

The following section provides an overview of the research methods applied within the interview study. A more detailed description of the interview study can be found in Appendix D.1.

6.2.1 Interview study sample

Members of the research reference group nominated a pool of 49 workers representing various types of FIFO work (current, $n = 40$) and non-FIFO work (former, $n = 9$), and selected from different industries (oil and gas, or mining), rosters, genders and contractors or operators (based on Tynan et al., 2016, 2017). In this way a balanced sample was generated representing a cross section of FIFO workers aligned with the broader make-up of the FIFO workforce.

The demographics of the groups that participated in the interview study (FIFO workers, partners and former FIFO workers and their partners²⁰) are described below.

- **FIFO workers** ($n = 24$) and **either a partner, family member or friend** ($n = 16$) were interviewed. The final FIFO worker sample contained 83.3% men, and their partners were

²⁰ Note. Reference to 'partner/spouse' within this document is inclusive of family and friends that were also interviewed

mostly women (81.3%). The majority of FIFO workers interviewed were married or in a domestic partnership (79.2%) and were most commonly aged between 45 and 54 (37.5%). The workers had on average worked in FIFO arrangements for 9.2 years, ranging from 1.5 to 23 years. Workers were either employed by an operator (54.2%) or a contractor (45.8%), and most commonly commuted to site via FIFO (87.5%). The majority of participants worked within the mining industry (62.5%) or oil and gas sector (16.7%). The most common roster undertaken was the “two week on, one week off” roster (25.0%).

- Additional interviews with **former FIFO workers** ($n = 3$) and **their partners** ($n = 3$) were conducted. The former FIFO workers were all male, between the ages of 37 and 60, with two currently in a domestic partnership (66.7%). During their time within the FIFO lifestyle, workers were predominately employed by a contractor (66.7%), or both operator and contractor (33.3%). FIFO workers commuting via FIFO and DIDO (66.7%) were on a variety of shifts, including: four weeks on/one week off (33.3%), three weeks on/one week off (33.3%), and two weeks on/two weeks off (33.3%). Former FIFO worker tenure ranged from 7 to 40 years ($M = 22.3$, $SD = 16.6$).

6.2.2 Interview methods

Interview questions were developed as a **semi-structured interview** framework (Scheele & Groeben, 1988). Semi-structured interviews generate rich data that offer an open approach which is ideal for the exploration of complex issues (Flick, 1998). A strength of the interviews was the exploration of mental health and wellbeing through different roster phases (current FIFO workers) and work phases (former FIFO workers). These four roster phases and three work phases covered in the interviews are summarised below:

Current FIFO Worker	Former FIFO Worker
– Time on site	– During FIFO work
– Transition home	– Transition from FIFO
– Time at home (R&R)	– Post-FIFO work
– Transition to site	

Participants were not explicitly prompted towards specific mental health and wellbeing aspects, demands, resources or strategies in relation to FIFO work, to avoid priming towards characteristics in their responses. All questions were open, non-leading questions (i.e. no positive or negative terminology) that would engage participants in open reflection.

A key element of the current FIFO worker interview schedule was the use of a **Wellbeing Graph** that also allowed participants to reflect on their experiences across four roster phases. The graphs were designed to capture the variation and trajectory of mental health and wellbeing of FIFO workers and their partners across the current swing. Participants were given two pre-prepared graphs and were asked to draw how they feel on a scale over the course of their current swing, and the other how they thought their partner feels²¹ across the course of their current swing (see Figure 6.1 for example complete graph).

²¹ The use of “how you feel” is equated with self-evaluation of worker and partner mental health and wellbeing.

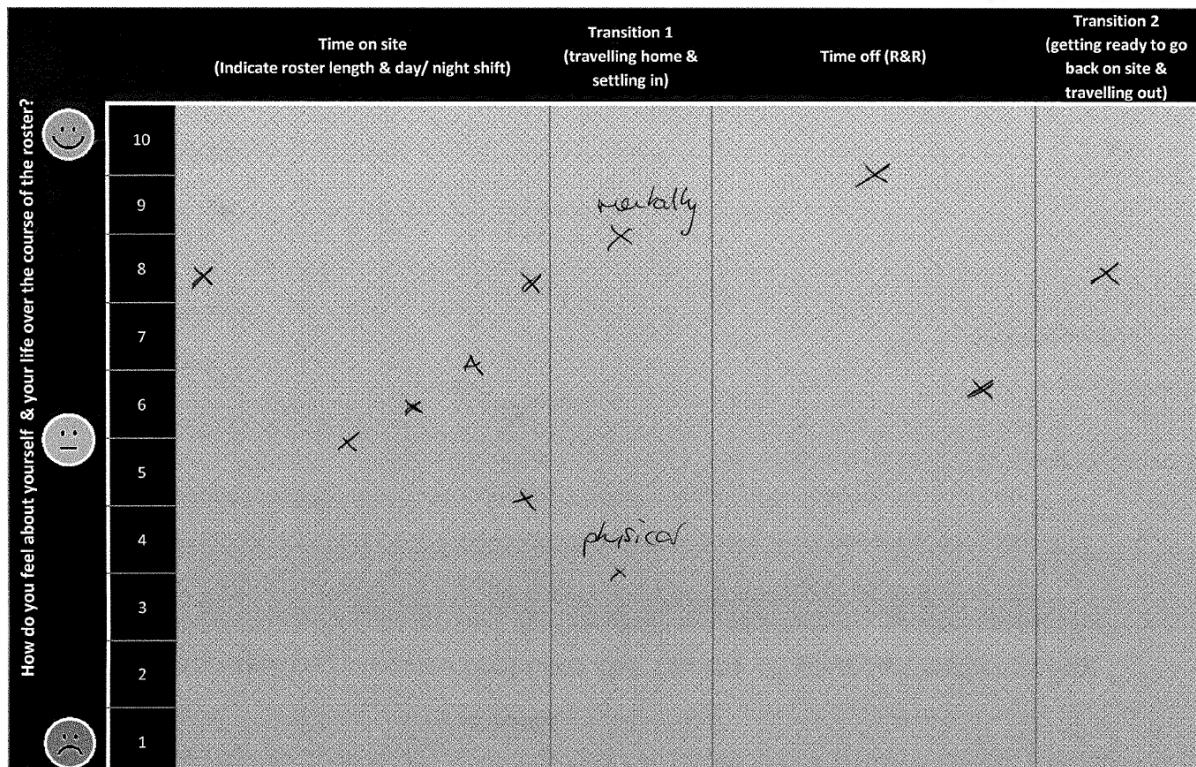


Figure 6.1. Example response to wellbeing graph from a FIFO worker.

An interview pilot was conducted with FIFO workers ($n = 2$) and partners ($n = 2$) to establish whether the interview questions would illicit responses relevant to the KEQs. Each interview was conducted by one of two interviewers (part of the research group) for initial evaluation.

Participants in the final sample were contacted via e-mail or phone to set up an interview time. Depending on the participants' availability, interviews were set up in a face-to-face setting, the telephone or through FaceTime or Skype. To ensure the participants' anonymity from the work setting, the interviews were held during the FIFO workers R&R (rest and relaxation) and separately from partner interviews.

- **Current FIFO worker & partner** interviews were carried out by two trained interviewers with substantial experience in conducting interviews and with experience in the mining and resources sector generally and FIFO work specifically. The average interview duration was 56 minutes ($SD = 1$, range = 21min–93min; average = 65min for FIFO workers and 52min for partners).
- **Former FIFO worker & partner** interviews were carried out by one trained interviewer and an Industrial and Organisational Psychologist Masters student (provisional psychologist). The average interview duration was 34 minutes ($SD = 1$, range = 17min–54min; average = 45min for FIFO workers and 23min for partners).

Note. FIFO workers and partners were interviewed separately, and as far as possible, at the same time in order to ensure the responses of one were not influenced by the other.

6.2.3 Interview analysis

Interviews were transcribed verbatim by a confidential third party organisation, *Transcription Australia*. A quality check of 20% of the interviews indicated the transcripts were of sufficient quality and they were subsequently de-identified. Data was analysed using a qualitative method content analysis based on Gioia, Corley and Hamilton (2013, Gioia Method). This established method of analysis allows the systematic classification of themes and patterns in interviewee responses that can be replicated, and identifies the frequencies and nature of coded content.

Interviews were analysed by two raters using *NVivo Plus*, a qualitative data analysis software program. Coding schemes (see Appendix D.3 and D.4 for coding schemes) were established in line with the Gioia Method (2013) as applied by Gerpott, Lehmann-Willenbrock and Voelpel (2017), with first and second order codes developed through findings from the thematic analysis presented as part of the literature review (see Chapter 3). An overview of the current FIFO worker coding scheme can be found below (see Figure 6.2). In line with guidelines by Mayring (2000), these pre-defined themes (codes) were reviewed and refined during the coding process to allow additional themes to emerge, and were inductively added as codes to the interview coding framework (see Appendix D.1.4).

Raters were provided with explicit instructions for coding to ensure consistency and highest quality of coding in line with Mayring (2000, see Appendix D.3.1 for coding instructions).

Reliability of the coding was assured via a co-coding procedure, establishing a sufficient Cohens Kappa value (Cohen, 1960). Final Cohen's Kappa values for both current and former FIFO workers revealed consistent coding between raters.

The below summarises the steps taken and outcomes of the Kappa Analysis for both the current and former FIFO co-coding.

Current FIFO Worker	Former FIFO Worker
<ol style="list-style-type: none"> 1. 10% co-coded ($n = 1$ partner and $n = 3$ FIFO worker interviews) = sufficient but not very high agreement @ $\alpha = 0.641$ 	<ol style="list-style-type: none"> 1. 10% co-coded ($n = 1$ FIFO worker).
<ol style="list-style-type: none"> 2. Raters met to discuss coding difficulties and issues, to refine coding scheme. 	<ol style="list-style-type: none"> 2. Raters met to discuss coding difficulties and issues, to refine coding scheme.
<ol style="list-style-type: none"> 3. Co-Coded same 10% of interview = reliability improved @ $\alpha = 0.736$. 	
<ol style="list-style-type: none"> 4. After 50% of all interviews had been coded, an additional 10% of interview were co-coded (10%; $n = 2$ partner and $n = 2$ FIFO worker) = consistent reliability maintained @ $\alpha = 0.750$. 	<ol style="list-style-type: none"> 3. Kappa level was found to be sufficient @ $\alpha = 0.738$ indicating coding scheme adequate detail for similar interpretation by raters.

Current FIFO Coding Scheme

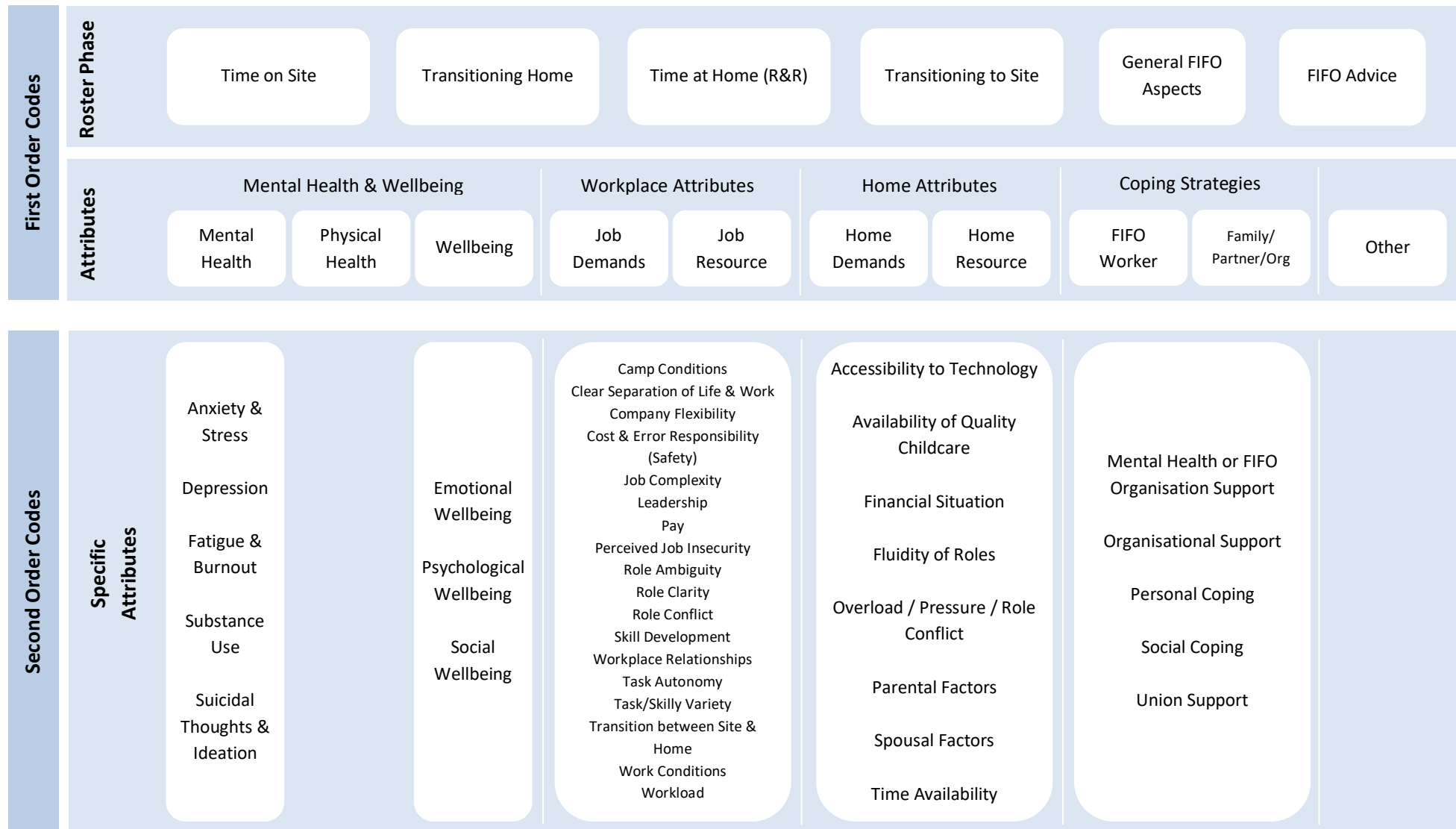


Figure 6.2. Overview of final current FIFO coding scheme.

6.3 Findings

In the following sections, the findings from the interviews with current FIFO workers and their partners²² are presented along with the wellbeing graph results.

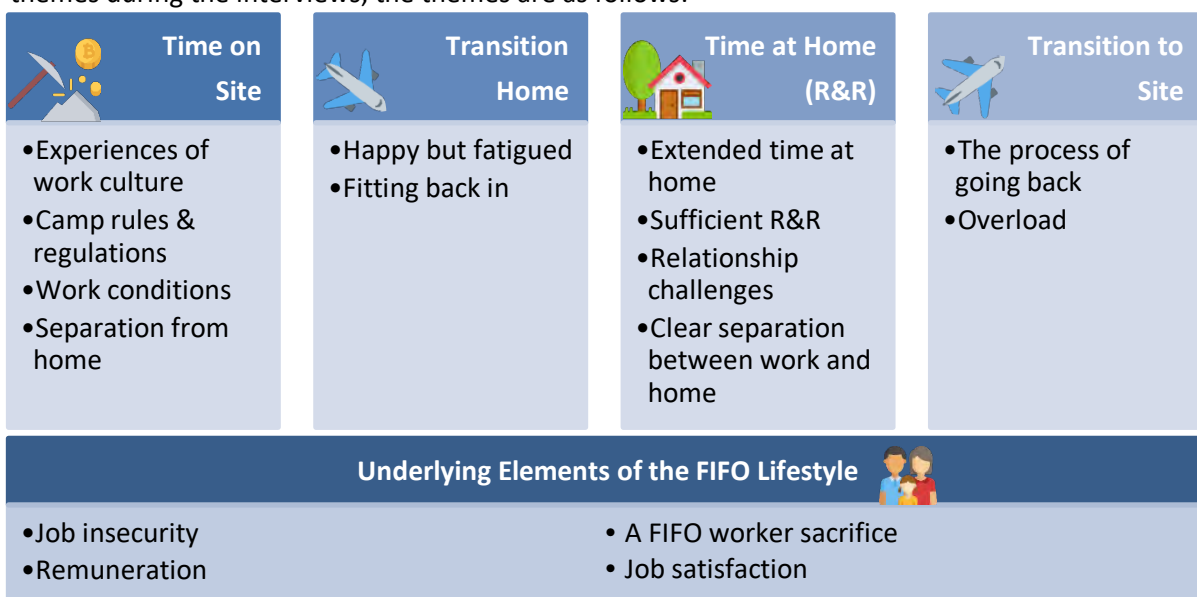
For each Key Evaluation Question (KEQ), the findings are reported in this section separately by the four swing phases. A key source of information related to mental health and wellbeing was the wellbeing graphs that were used with the participants. This assisted with answers to KEQ1a and KEQ1b. The themes that emerged from the interviews identified some of the contributing factors that impact mental health and wellbeing, and the use of alcohol and other drugs both on site and at home. The strategies that participants employ to support their mental health and wellbeing and manage the FIFO lifestyle and work practices also surfaced. The content generated via the interview questions provided answers to KEQ 1a, KEQ 1b, KEQ 2 and KEQ 3.

Frequencies of code use have been provided in Appendix D.3.2 for reference. However, the key value of this interview study is the richness of data that brings detailed understanding to FIFO mental health and wellbeing in a way that other methodologies cannot.

Please note that only key themes drawn from the interviews are presented and other underlying themes related to the FIFO lifestyle can be found within the 'Additional Findings' section of each KEQ. The size of each theme reflects not only commonality between interviewee experiences but also the complexity of each theme. Less common findings have been described (using language such as few, couple, etc.) as they were deemed still valuable in contributing to the understanding of the FIFO work and partner experience.

6.3.1 KEQ 1a: Mental health impacts/benefits and FIFO work

A number of issues that impact FIFO worker mental health and wellbeing emerged as common themes during the interviews; the themes are as follows:



²² Note. Reference to 'partner/spouse' within this document is inclusive of family and friends that were also interviewed

6.3.1.1 *Experiences of mental health and wellbeing*

The reported feelings as an indicator of mental health and wellbeing over the course of the current swing were averaged to visually compare the differences between the FIFO worker experience and partner perceptions of the FIFO worker (see Figure 6.3).

The comparison

The comparison shows agreement between the two parties regarding the FIFO workers' feelings during both transition periods and the time-off stage. However, within the on-site phase there was a noticeable variation between the two perceptions. This variance may be due to a number of reasons, for example, the FIFO worker and partner positively over-representing how they really experience time apart (putting on a "brave face" for each other). It could also demonstrate a lack of understanding of the FIFO work experience by the partners, or may reflect communication issues between FIFO workers and their partners.

How workers feel

The trend line suggests that during the time FIFO workers transition from home to site, and the first day/s of return to site are two of the low points in terms of mental health and wellbeing. This suggests that support is particularly needed for FIFO workers during this stage. The wellbeing graph below (see Figure 6.3) uses direct quotes from interviewees to describe typical feelings across the roster phases.

FIFO Worker Experience and Partner Perceptions During Roster Phases

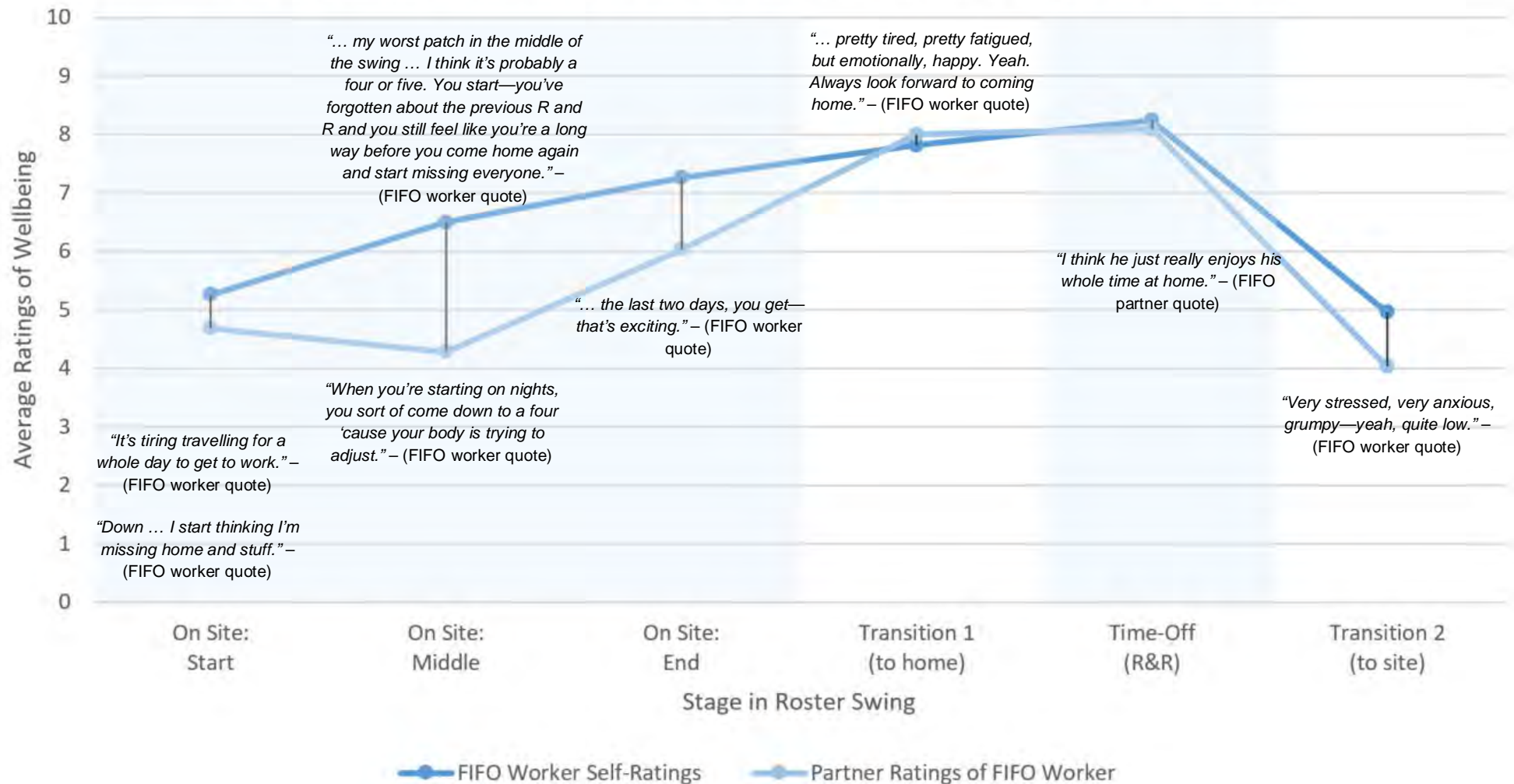


Figure 6.3. FIFO Worker Self Ratings and Partner Ratings of FIFO Worker. $n = 39$ (Worker $n = 24$, Partner $n = 15$)

6.3.1.2 Time on site

FIFO workers spoke of many social and physical aspects of living and working away from home that impacted mental health and wellbeing. These factors include: the workplace culture (e.g. the opportunity to develop social connections, the quality of leadership, the safety culture, the extent of the stigma associated with mental health), the camp living experience (e.g. the rules and regime, and sense of institutionalisation), the organisational care (e.g. quality of food, work conditions, accommodation, day-to-night shift transition, fatigue management, support) and separation from home (e.g. experience of missing out, isolation, company flexibility).

Experiences of work culture

The impact of the organisational (workplace and camp) culture was one of the biggest themes to emerge from the interviews. The concept of culture on site included the demands discussed by participants, such as: social avenues, safety culture, leadership, stigma associated with mental health, organisational care (camp and work conditions, support) and the camp institutionalisation (rules and regime). Culture was found to be an element in FIFO experience that had the potential to detrimentally affect workers' mental health and wellbeing.

Workers described the sense of isolation they experienced and the **LACK OF SOCIAL CONNECTION** on site. There was limited opportunity to socialise with others apart from the wet-mess (on non-dry sites) and there was little physical space or facilities to come together to interact or engage in other social activities.

“You’re living on site with these guys for six weeks and then you don’t see anyone else. So social skills just plummet.” (FIFO worker quote)

“I think what’s now happening is that this fly-in, fly-out means you don’t create partnerships or you don’t create friends in that sort of environment. It’s actually very isolationist. So, it’s not only isolation from the partner that stays at home ... it’s more isolated for the people that go up. They move you around the camp. You don’t get the same room twice. It’s sort of like a hotbed situation, crammed quarters, long work hours, which means that by the time—the end of that day, you just don’t—you don’t really make any friends. So you’re there to work and that’s all there is. So there’s no social life. There’s no interactions. It’s just so isolating for the person individually as well as being in an isolated part of the world.” (FIFO worker quote)

Some FIFO workers spoke of either experiencing or observing incidents of **BULLYING** on site.

“In the mining game, there’s a lot of bullies. There’s—a lot of people don’t speak up for fear of not getting future work or being blacklisted.” (FIFO worker quote)

Those that had friendships on site with outlets to socialise spoke of the **CONNECTEDNESS and CAMARADERIE** they experienced and the benefits of feeling part of a team. This was found to be a key benefit to the FIFO arrangement.

“Some of them have got pool tables and computer games and stuff like that. So you can go down—or you just go down and watch the footy together. They try and accommodate you pretty well out there like there’s a lot of TV screens and that where you can sit around with the

other guys and watch footy or, you know, the footy season has started anyway.” (FIFO worker quote)

“I met a lot of excellent people. I’m not the oldest person on site but I’m close to it and the young blokes keep me fit and it actually showed me a different section of the young people” (FIFO worker quote)

“We’re also like one big family which is great.” (FIFO worker quote)

“There’s nothing motivating except for the friendship and the camaraderie that he has made for himself ... I am thankful for the friendships that he has made and thankful for the people that have taken him in and been a friend to him—I’m really thankful for that” (FIFO partner quote)

FIFO workers’ experience with **LEADERS** was both negative and positive. However, those that did not feel supported by their frontline managers considered their leadership was poor, felt pressured to meet unrealistic expectations or were bullied. It was clear that negative experiences with supervisors detrimentally affected FIFO workers’ mental wellbeing, which invoked a sense of frustration impacting their view of individuals in leadership roles as a whole.

“So we came on and it was like you’re an outcast at the start, but don’t worry you’d get on with most of the blokes on site, but supervision will have their favourite workers to go on with. So he’ll give the cream to just his favourite little pets, like teacher’s pet sort of thing.” (FIFO worker quote)

“Some supervisors are just [REDACTED]. Just for use of a better word, they’re just a puppet used by the management to try and achieve unrealistic lead times or unrealistic things on site and don’t want to hear any input from the people that are actually doing the job, they just want it done. And other supervisors will actually work with you and understand that the management are ridiculous in what they’re asking, but this is—there’s good supervisors and bad with every job. And fortunately, I’ve had a few good ones.” (FIFO worker quote)

“Anybody that’s in any position in a FIFO, it’s very much a boys club. So if your supervisor or any up the ladder at all, they treat people totally different than they would in the real world because, obviously again, people are trying to hold on to their jobs and if there’s this kind of a thing about people not wanting to lose their job and, especially now when the downturn happens as well ... it’s getting hard to get into these jobs. So it gave these supervisors a lot more power and they abuse that and they put guys in there.” (FIFO worker quote)

Leadership capability and management practices have a significant impact on FIFO worker mental health wellbeing and, in particular, frontline supervisors have an influential role.

Workers whom had good experiences with leadership spoke of the style of leadership, general support that was provided and how their needs were accommodated during times when their mental health and wellbeing was impacted.

“Yeah, it’s good. He’s one of the best actually; so, it helps having a good role model in that sense.” (FIFO worker quote)

“A job I’m on at the moment is great, also because the supervisors don’t breathe down your neck. They leave you to your own devices compared to the four years I had on [site name]. For example, I’ll be lucky to see my supervisor once a day, whereas, [site name], they’d be there all day and in my opinion that added to dramas with safety, stress, pressure, stuff like that has been a lot less on this job and I’ve enjoyed working and I’ve seen less incidents because of that breathe down your neck mentality that was implied at [site name] so it’s good in that regard.”
(FIFO worker quote)

The following quote is from a FIFO worker whose young child died unexpectedly.

“It was just last year, well the year before that ... we had a kid and then he was fine, went to work, and then he turned one and I come home from work and went up did a swing, come home and I went up, did another swing, come home and he was still fine, and then on my first day back, I didn’t realise that he has passed away, so I give him CPR on this table ... Work was great around it. We recently went through a supervision change and our superintendent changed and that side of it was just unbelievable, take what you need, give me a call, whether it’s second or third day and I wasn’t expecting any of that so——” (FIFO worker quote)

SAFETY CULTURE is important within the mining industry and interviewees discussed the strong emphasis on safe work practices. However, workers discussed that the prioritisation of safety was not always seen as sincere. Others stated they experienced an “over emphasis” on safety, resulting in stress and anxiety. The impact on mental (and physical) health was also associated with a fear of repercussions when reporting safety incidents and the prioritisation of production over safety.

“... people got electrocuted out of that second lightning flash cause they were out in the open and then that sort of, two to three of them went to hospital to be monitored. So those sort of things start playing with your psyche because you go, you fellas are supposed to be providing a safe workplace and you say doing things safely, but you’re doing everything in your power to keep us out on site just to satisfy the client ... So they’re putting safety over production or other way around.” (FIFO worker quote)

“... they are covering up the safety, they’re covering up the physical and mental and emotional abuse, and the point that I would make is that you cannot rely on the people receiving this report to be fair, to be honest, to act on it, unless it’s in their self-interest.” (FIFO worker quote)

“This is all rubbish. You tell us to report everything. You don’t really want us to report anything because you don’t want it to look bad in [company name] eyes.” (FIFO worker quote)

“A lot of staring at the sun and the one thing that I’ve messed up with on this job is I should’ve bought myself a pair of decent glasses. Over the years I’ve gotten flat arches from work so I wear orthotics and they’ve saved my life. They’re just brilliant. I’m comfortable now walking around and stuff like that, possibly a bit of exercise after work hours.” (FIFO worker quote)

Workers questioned the true intentions of organisations and the value they placed on worker safety. In some cases the workers described an absence of support when there had been a safety incident and that the company had not taken a “no-blame” approach.

Participants overwhelmingly considered that within the resources sector the awareness and understanding of mental health and wellbeing had increased significantly, which was seen as a positive.

“There is more awareness about, because it was around six-seven years ago, I think a few guys topped themselves, so that sort of started this.” (FIFO worker quote)

However, interviewees stated that **MENTAL HEALTH STIGMA** is still very evident on sites within many organisations and individuals having a poor understanding. A theme from the interviews was the superficial support provided by employers in the event of mental health issues and poorly handled critical incidents.

“Call this number. There’s a sticker on your fridge. ‘Call this number if you need to,’ because we have to say it. But—and that’s I suppose, the managerial side of things.” (FIFO worker quote)

“When I was going through that really depressive state, I didn’t feel confident in EAP ... because there were times when I was having suicidal thoughts and for me I thought, well I need to go and see my doctor, so that’s what I did. I went to see my doctor rather than speaking to EAP.” (FIFO worker quote)

“But if you were to ring up, say, before your swing is due and say, ‘Mentally, I’m not ready to go. I need another week off.’ Then you probably wouldn’t go back.” (i.e. you would lose your job) (FIFO worker quote)

“No one is there to talk to because they’re too embarrassed to talk to people. They rather go and top themselves in a room ...” (FIFO worker quote)

“So, even if you go over to get a Panadol, everyone on site knows you’ve been over there and then they have a responsibility report it. So you don’t even go over there, even if you’re nearly dead. You tend to take all your medicine with you, but if you—but if there was—if you’re going for a mental health reason or something like that, it’s just—guys would just not do it.” (FIFO worker quote)

“If someone came to me and said, ‘Oh look, I’m just really not feeling right. I’m having really bad thoughts,’ it’s a really hard one because of course really your duty of care is to notify people of that and the most likely response is that they would be flown off that facility and that most likely actually lose their job, which is then contributing to the original problem.” (FIFO worker quote)

“Now—well, this is the thing, they don’t talk about it. It’s just swept under the carpet. It’s swept under the carpet. And the day that—there was a suicide or I think it was a day after there was a suicide ... they had a safety standout or something in the morning for half an hour. They talk about it. And that afternoon, they made 22 people redundant.” (FIFO worker quote)

“My daughter was on site when the guy blew his head off at [site name] and she heard all the communications over the radio and she was there when they sent everyone basically back to their room which was basically like a communications lockdown ... so you don’t know if it’s a

friend ... and she was bar manager at the time, so they shut the bar down. But rather than have the information provided straight up and let people come together in like a bar environment, they make that decision to like—okay—no, send everyone back to your room basically—nothing happens. So then you're onsite with—knowing something terrible has happened, not knowing who it is, with not even the option—you just sort of like go and talk to people. You basically go back to your room and you sit there by yourself with no work and nothing to do, which for me, from a mental health perspective, I was ringing her going like, 'What are you doing?' She goes, 'Nothing. I'm just sitting here in my room. We don't know what's going on.'" (FIFO worker quote)

FIFO workers reported that despite the increased attention paid to mental health and wellbeing, organisations are seemingly only scratching the surface of supporting the mental health and wellbeing of FIFO workers, therefore perpetrating the myths and stigma associated with mental illness. For example, some workers are feeling unable (or refuse) to seek assistance from site health practitioners for fear of the employment repercussions of doing so.

"People who'd come into the clinic with, 'Oh, I've got a cough,' or, 'I've got a bit of a sore ear,' and then I've nursed for a long time, so I'm a fairly good communicator with my patients and I'd get chatting to them and start asking a few leading questions and that was a smokescreen. They weren't there for the cough or the ear ache or whatever. They were there because they were in a meltdown. Things weren't going well. And then you'd get the whole mental health issues would come out, how they were managing it, partner break-up, substance abuse, alcohol abuse, money worries, infidelity with partner worries, the whole can of worms with various people would be presented." (FIFO worker quote)

Some interviewees reported an **UNSPOKEN ORGANISATIONAL EXPECTATION** for FIFO workers to remain positive by disregarding the workplace physical and social conditions.

"And we're of the same mindset where we're just happy to be employed, we have income, that we have a job in mining, so yeah." (FIFO worker quote)

Camp rules and regulations

The feeling of monotony of activities on site was exemplified by the organisational regime (rules and restrictions) imposed on workers, creating a sense of camp institutionalisation. FIFO workers felt their free time before and after work whilst on camp was constrained by factors such as: regulating the strength and amount of beers allowed to be consumed, clothes worn around camp, time most appropriate to get up to ensure one gets to the mess prior to its closing, cameras within the camp and restriction on social activities.

"You're all wearing ... overalls and you're all fixed in a small little—like a floating esky. And they tell you when to eat; they tell you when to work; they tell you when to watch TV. That's—we attribute to maybe a bit of a prison environment." (FIFO worker quote)

"The reason I don't go to the pub is first of all, I resent them having cameras there because it's outside of your work hours, so it should be your own time ... They also monitor the mess with cameras, they're monitoring the gym with cameras, the whole lot." (FIFO worker quote)

“At [site name], it was a fenced compound and you could only walk around within that fence like a prison and there was a beautiful thunderstorm one night with this lightning display and I didn’t want the mesh fence and they have gates. So I opened the gate to take the photos. Well, there are cameras everywhere. Within minutes, security were there ‘cause somebody had opened a gate. So, you were a prisoner. And I know if I tried to walk out that front gate, I would’ve been stopped. So, we were virtual prisoners.” (FIFO worker quote)

“The rules on sites are quite strict that they’re—the chaps are only allowed four mid-strength beers. And again, this became the double-standard nit-picky ridiculousness of companies, because on [site name], they wouldn’t allow any wines. You could have beer and that was it. So, theoretically, on your last night, you could have had something to drink. But there was never any wine. And we discussed this and they said, apparently, they tried to get wine, little bottles of wine, and were told by [company name] that you’re lucky you’ve got beer at all. Shut up. Otherwise we’ll take the whole lot away from you.” (FIFO worker quote)

“Some sites are laid out really bad and she was right at the end and she’d finished and you’re not allowed to go—housekeeping, you’re not allowed to go and get your meals if you’re in your work clothes, so you’ve gotta go and get change and have a shower before you get something to eat.” (FIFO partner quote)

“They won’t let us go into the town to get a meal unless it’s a Friday, Saturday or Sunday and you have to put in for written permission. So I’ve been on sites before, you can’t go anywhere at all. So it’d be nice to get out of the camp for a counter meal, or something healthy, but you just can’t.” (FIFO worker quote)

“We are maybe about an hour and a half drive from [national park] and we can’t even go to it.” (FIFO worker quote)

The constraints placed on workers left a feeling of lack of autonomy and control, making the similar comparison to “prison”—what was meant to be their own time and space was monitored heavily, in turn impacting their mental health and wellbeing.

Work conditions

Work conditions was a theme that arose from participant responses. It encompasses both the conditions of work and camp, and whether there was a work culture supportive in helping workers manage these conditions. The work conditions— for example, the challenge of working in extreme heat all day, quality and variety of food in the mess, accommodation, shift work and fatigue management—were raised by FIFO workers interviewed and described as a contributing risk to physical and mental health.

Quality of Food

“But in recent years, I literally have to pack him food to take up North every fortnight. Simple things like even muesli bars, a couple punnets of blueberries, whatever, cakes that I make myself because the quality has actually obviously gone downhill.” (FIFO partner quote)

“I’d probably say the food that they offer probably doesn’t offer enough nutrition to support a healthy diet ... they come to work with lollies and chocolate and they drink five coffees a day and they struggle so much more than I do. But just instead of a healthy snack, they’ve got five different desserts to choose from on a regular basis.” (FIFO worker quote)

Physical Work Conditions

“We had a couple of guys that had heat exhaustion and bizarrely actually not paid by the company. The company saw it as being that if you’re sick, you actually don’t get paid, so even though the heat exhaustion was certainly, because of the work, that wasn’t seen as being their responsibility or problem so that’s another little bizarre thing which makes people pretty push themselves more because they think, well hang on and that they had problems because, of course, if you’re not getting paid, whereas normally that would just be natural and it used to be absorbed by the industry and the companies would just, ‘Oh, the guy is sick because of this particular—’ so obviously because of work.” (FIFO worker quote)

“It got to the point that when I would come home, when you come home on nine days’ off, you’re absolutely zapped. You’re doing 26, 12-hour days constant, you got one half day in the middle of it all, that’s all you get. Even though you’re not working hard but you could be just standing around for the day, doing little bit of stuff but you’re in 50-degrees heat, you’re exhausted every day you got home and then you go to the gym just to feel somewhat sociable and that you’ve done something for yourself in the day. You wouldn’t even do a lot in the gym but it’s just something to do, and then it’s something to reset your brain that you’ve finished that part of the day, like you’re literally looking at the clock for 12 hours.” (FIFO worker quote)

Accommodation

“But a lot of their other camps, they’re like the old style dongers and the walls are thin, so you can hear the person next you, and especially when you’re trying to sleep and if he’s a noisy bugger, it’s going to wake you up.” (FIFO worker quote)

“You often have to share a room with people so in other people’s space and of course you can’t just go home or if something was to happen, you can’t get there straight away. I guess you feel like a little bit of helplessness as far as being trapped sort of. You feel a little bit trapped somewhere, which you are.” (FIFO worker quote)

Day-to-Night Shift

“But the first couple of nights are really tough, like changing your body clock ... lack of sleep because basically what you really need to do on shift change is sleep that night and the next day, but that rarely happens on shift change ... all week of lack of sleep and then increase your lack of sleep and change your body clock. So, fatigue hugely impacts, I guess, your mental health.” (FIFO worker quote)

Fatigue Management

“I find after work there’s quite a rush because right after work you want to—or you have to get dinner. And probably sleep is the biggest factor I find, like it can really be affected depending on what you do after work. Because after work, the choices you have is you can go to the wet mess and have a drink, catch up with friends, watch a movie, call home or hit the gym. So, it’s pretty limited in the few hours on what you can do because you want to make sure that you get your eight hours’ sleep, seven to eight hours’ sleep. That’s probably the biggest drawback, just managing fatigue, managing time.” (FIFO worker quote)

“So, how do I feel? I feel quite tired and fatigued during my roster, getting up at four o’clock in the morning for 14 days in a row, and I also work very hard to turn around and make sure I feel my best because I exercise most nights. I go to the gym. I try to eat reasonably well when I can...majority of time I’m in bed by eight o’clock to try to get the eight-hour sleep, but getting into that second week, I’m still quite tired.” (FIFO worker quote)

“She’s a chef, a cook in the kitchen and sometimes she’ll do a 12-hour day without actually taking a break or anything like that. It isn’t good and you can say it mentally affects her a lot, at the same time, if she doesn’t get her job done and, yeah, she gets in trouble for it.” (FIFO partner quote)

“No breaks. No nothing.” (FIFO worker quote)

Workers that felt supported by the organisation whilst on site spoke of the ability to go to the gym, accommodation being clean, having laundry completed to remove the strain and time associated with doing it individually (a unique amenity), and the food provided to support a healthy diet.

“When you get to camp, you can go and have dinner, you can eat as much as you want, not that I’m a big eater, but it’s—the food is there, the accommodation is normally pretty good.” (FIFO worker quote)

“You just put your laundry in a bag in your room, and they come and get it and so do your laundry, and you come back, and it’s sat there on bed, ironed and folded for you.” (FIFO worker quote)

Separation from home

A range of dominant themes in the interviews related to issues associated with being separated from home and limited options to overcome the separation. These issues include missing out, difficulty to connect with family, the strain of not knowing what is going on at home in difficult

times, as well as the benefits of company flexibility in allowing workers to go home in cases of emergency.

FIFO workers being disconnected from significant people at important times (i.e. missing out) was a dominant issue in the responses related to the impact of FIFO work on workers. Workers reported that due to their time spent on site they missed out on many social events, such as Christmas, birthdays, weddings, funerals, and their children's school functions and sporting events.

"I've missed marriages, I've missed other special occasions where I've been away and can't come down. This Christmas just passed is the first Christmas I've had in Perth in five years because our swing never lined up with Christmas or New Year. So this is actually the first. I made it in by the day, the day before." (FIFO worker quote)

This was felt to be something that greatly affected FIFO workers' mental health and wellbeing and arose as the biggest downside of the FIFO experience. Interviewees described that they had missed out on their kids essentially growing up, and their major developmental milestones. The sense of missing out was felt to be quite debilitating for FIFO workers, being disconnected from those they love.

This **DISCONNECTION** was considered a particular strain on mental health and wellbeing, which was seen to be more prevalent in those within high-compression rosters, and associated with the job insecurity of short-notice contract work.

"I'd say the worst part of it is certainly when you're doing long swings, like four and ones and 26 and nines. You get back on your first day, and you think, 'God, I'm here for another four weeks.' It can be pretty lonely sometimes. You miss out. I got a ten-year-old and a 14-year-old. I've missed nearly every birthday for the last six or seven years. When I found out I've got this job starting Wednesday, the first thing my daughter said to me is, 'Are you gonna be home for my birthday?' And I said, 'No'. And just a look on her face—'cause her birthday is early March, and I'm gonna be away, and just—she just slumped. She was just so disappointed 'cause I'm not gonna be here." (FIFO worker quote)

The separation between FIFO workers and families was found to fuel a sense of **ISOLATION** in some. During time on site, one increasingly misses one's partner and family: "you've forgotten about the previous R&R and you still feel like you're a long way before you come home again and start missing everyone" (FIFO worker quote). Feelings of isolation were aggregating more when communication challenges arose, resulting in an inability to contact and connect with family members or partners.

Communication challenges included: no reception, Wi-Fi cutting out and organisations not allowing phones at the workplace. Another issue was working on night shift as it coincided with the suitable time for workers to contact their family: "You'd just be—you'd be lonesome for company and stuff like that in the evenings and things. I only have—I can only contact my partner on certain times of the day. So, I don't have immediate support" (FIFO worker quote). The feeling of not being able to be connected to those at home (even if not feeling like they need contact) instigated feelings of **STRESS and ANXIETY** in some workers.

“You’ve got a limited time to do it yourself, especially when you can’t take a phone on site or you’re not supposed to take a phone on site, it makes life difficult.” (FIFO worker quote)

“When he was on nightshift, he can’t take his phone out with him, and then I work full time. So when he’s on nightshift, of course, he can’t take his phone with him, he can’t speak to me.” (FIFO partner quote)

“You can’t bring your phone to the site, so from halfway in the morning, whatever time you get up, till half six at night, you don’t know what’s happened, you don’t know if there’s been an accident, how did you get on that school, you don’t know anything, and you can bring your tablets in and I think you can get some message but it’s very hard to actually get messages in and out and you will be sacked if you are caught with a phone on site, so nobody is allowed to bring their phone on the site. So you’re very isolated, that then itself does form anxiety in anybody, how is anything going on in the real world. So if you have someone that’s not well or you’re waiting news about something or whatever, it does play in your mind a lot.” (FIFO worker quote)

“For me, one of the worst parts of my job is the fact that you’re always on your own, and then you’re watching the clock. On your own, you’re watching the clock. You can’t even have a conversation but I did have the phone, so I could call home if I needed it. A lot of the time when you call home ... ‘Look, I can’t talk right now. I’m busy,’ and then I’ll say, ‘Okay, fine,’ and then another hour goes by and then ring and, ‘I’m doing this and this,’ and I’m like, ‘Alright, okay,’ and often she would absolutely just be ... And I’m getting annoyed, to have a chat or whatever and I’m thinking, ‘I don’t want to chat either. There’s nothing to talk about.’ I have nothing to talk about. I just want to know what’s going on.” (FIFO worker quote)

If workers knew of a conflict or issue at home (e.g. spouse is struggling, relationship conflicts etc.) they understood there was only so much they could do over the phone, however, needed the option for contact to moderate feelings of stress and anxiety. The **FLEXIBILITY and UNDERSTANDING** of the **ORGANISATION** and leadership to support workers during time of stress associated with home was seen to be critical for dealing with those stressors.

“We have recently had a death in my family, my father-in-law. Fortunately, [company name] are very good with coordinating trips home or delaying your time to come on shore or offshore. So, they’re fairly family friendly. So, that’s been really good.” (FIFO worker quote)

“I can delay my—I delayed my return by two weeks on the Christmas swing. So, I went out there for Christmas. I went there for the last week which is Christmas but they were very understanding. And I’ve come home early previously, we had a problem with one of our daughters saying things on social internet that she shouldn’t have—social media that she shouldn’t have so we had to nip that in the bud and get that looked at with a professional. So, they were very accommodating once again ... you can just go and say, ‘Look, Boss, I’ve got to get home,’ ‘Yep, no worries. Go ahead. We’ll sort it later.’” (FIFO worker quote)

Summary of findings for KEQ 1a—Time on site

- Several elements of culture on site (physical and social conditions) impacted FIFO workers' mental health and wellbeing, such as:
 - isolation due to limited avenues for social interaction
 - friendship on site contributed to feelings of connectedness and camaraderie
 - lack of leadership support and unrealistic expectations, as opposed to those that experienced flexible and supportive leadership
 - lack of no-blame safety culture leading to anxiety and stress in fear of potential repercussions, and
 - although there is great awareness of mental health, there was an observed superficial support provided by organisations which included, for example, an environment in which was un-accepting of mental health, and “support” such as providing a number in which workers can call for mental health assistance.
- The restrictive practices of organisations within the camp was seen to be similar to institutionalisation, for example, the control of when food is meant to be consumed, surveillance on site, how much alcohol is to be consumed, the restriction of activities undertaken after work and when switching from day to night shift, and attire to be worn around camp.
- Conditions on site (work and camp) was linked to FIFO worker mental health and wellbeing; this included: the quality of food provided, work conditions, accommodation, and the time allocated to switch between day and night shift impacting management of fatigue.
- Being away from family and missing out of important family events induced feelings of isolation which was heightened when physical communication challenges occurred. Not having the ability to remain connected to home led to anxiety and stress, especially if there were challenges at home.
- The disconnection from family was worse for those in high compression rosters, and in short notice contract work that comes with high job insecurity.

6.3.1.3 Transition home

The transition from site to home was conceptualised differently by each worker, mainly, the transition home included time (day[s]) before returning home, physically travelling home (flying, driving, bussing), and the beginning of R&R. The mental health and wellbeing experiences included: feeling happy but still fatigued, and the process of fitting back into one's relationship and family.

Happy but fatigued

The transition home for workers was viewed to be a happy and exciting time as workers were returning to partners and families. The **EMOTIONAL WELLBEING** of workers was heightened during this stage of the roster.

“Well, you can see the light at the end of the tunnel, leaving site and going home.” (FIFO worker quote)

“Fourth week, of course, I’m happy to be coming home, and she’s happy ‘cause it’s not long ‘til I’ll be home. And I think the kids, they start to cheer up ‘cause they know I’m going to be home in a week. And so, the fourth week tends to be pretty good.” (FIFO worker quote)

Although workers look forward to returning home, the **FATIGUE** associated with the demands of the work schedule takes its toll along with time taken to return home, in some cases taking a whole day to get home on several flights. Managing fatigue when at home by resting to adjust back to the pattern of sleeping during the evening.

“So, pretty much 15 hours of travelling after working for a whole shift. So, it really takes it out of me. So, when I get home, I’m usually ridiculously overtired, but super excited to be home.” (FIFO worker quote)

“I’m always exhausted when I get home, because when you finished at midnight and then we get on the bus at one o’clock in the morning, and I get back here at about 6:30 in the morning, so then I come home.” (FIFO worker quote)

“So, I struggle to sleep the first night and then I really need sleep during the day, but—yeah, trying to get your body clock back again after doing all of that is really hard. It usually takes me three or four days to feel normal again.” (FIFO worker quote)

The fatigue experienced by workers after their time on site was a significant factor raised by interviewees. Although there was great emotional excitement associated with returning home, the heightened positive feelings was seen to be dampened by exhaustion, which was worse for those on high compression rosters.

Fitting back in

Returning home for workers meant that they needed to fit back into the usual running of relationship and/or family life. Successful fitting back in was aided if the roles of the worker and partner adapted through the ability to identify and express differing needs (i.e. communication).

“You just try and help out with a bit of tea and that sort of thing, or what have you. Try and help pick up the slack so to speak. Drop your kids off to school, pick them up from school, that sort of thing, and take them to sport.” (FIFO worker quote)

Most workers interviewed transitioned home quite successfully, however, select workers felt that although they were home they still felt a sense of **DISCONNECT** from home life as life for families continues whilst the worker is away on site.

“So, sometimes you would come home and you would be a stranger in your own home. You go to the kids to play footy and whatever else like that, but no one knew you and no one really talked, so that was kind of difficult.” (FIFO worker quote)

Summary of findings for KEQ 1a—Transition Home

- The transition home for FIFO workers was always an exciting and happy time.
- Workers reported often being fatigued when returning home.
- Most FIFO workers reported the transition and adjustment home back into family life was successful.

6.3.1.4 Time at home (R&R)

When discussing the time at home for rest and relaxation, workers discussed several themes which contributed to their mental health and wellbeing, such as: having more time at home, sufficient R&R, lack of social life, and a clear separation between work and home.

Extended time at home

The extended period of time spent at home (“time-off”/“R&R”) was expressed to be one of the greatest advantages of the FIFO lifestyle. FIFO workers discussed that having the time off allowed them more flexibility in terms of the activities they participated in and gave them more time with their family, which was important for the balance mental health regaining a sense of **CONNECTION**.

“The best I guess is probably the time off in big chunks. I really find that beneficial to have that kind of time off, just to be able to do the things that I want do and if it’s—if I only had a weekend, I’d probably just be recovering from work and that would be it, whereas getting the ten days off at a time, I recover from work and able to go do things that might take a couple of days, go travelling or things like that.” (FIFO worker quote)

“But I definitely found we have more time as a family on the two-and-two roster to do things. Even if I don’t get any work on the two weeks’ off, it’s not the end of the world. It does give you a lot of time. I’ve had some rosters where some weeks, I’ve done nothing and just enjoyed the time off and just did nothing, just lounged around and picked the kids up from school, just did nothing. That was lovely.” (FIFO worker quote)

“I’ve certainly found the three and one and the four and ones—that’s a lot worse, whereas when he’s done two and ones, it’s great ... two and twos—it’s great ‘cause I’ve got him there for two weeks, so it gives him a little bit of time to unwind, spend time with the kids, ‘cause that’s what he does. When he’s home, he makes a conscious effort to go out with the kids and do stuff with the kids and he also helps me out obviously a lot more when he’s home.” (FIFO worker quote)

Spending longer periods of time at home was explained to be more advantageous. Those that had experience with both styles of work arrangements felt that they had more time with their family on R&R than only weekends when working 9am to 5pm. When at home, for example, being able to collect kids from school, taking the opportunity to undertake studies preparing for life after FIFO, and work on family businesses, gave participants a sense of purpose and **BALANCE**.

Sufficient R&R

FIFO workers that were on more even-time rosters (e.g. two week on/two week off) gave them adequate opportunity to recover and re-charge from time on site.

“And then I went to the three-and-one which is back up there again. It was, sort of, a bit harder. I suppose it’s just hard with those long rosters and only getting such a short time off ... the first few days, you’re, sort of, just knackered from your time away. So, the first few days are a write-off, and then you’ve only got a couple of days in the middle there where you’re, sort of ... enjoying yourself and then you start getting that feeling of going back and I’ve only got two days to go and it’s, sort of, a vicious cycle and you’re back into it for such a long period. So, I’m very lucky at the moment with the two weeks off. It’s, sort of—it saves you time and then I’m only away for two weeks.” (FIFO worker quote)

Those that had a shorter R&R did not feel like they had sufficient time to recover, especially those on uneven-time rosters (e.g. two weeks on/one week off and three weeks on/one week off) in which there is sometimes a switch mid-way from day shift to night shift.

“Night shift is hard because you only got that seven-day window that’s basically six days in your home. You try to adjust from night shift to a daytime role, it is hard. One swing I had I was all [REDACTED]. It was just sleeping at the wrong times of the day, and you’re awake at the wrong times at the night and it made it the hard swing to be home because you’re lethargic and you couldn’t enter a room. It was bad.” (FIFO worker quote)

The ability to recuperate during a shorter R&R was found to be impeded by the necessary adjustment of having to bring sleep back from day to evening. Workers articulated that they spent the first few days of R&R trying to re-gain a “normal” sleeping pattern, leaving not much time for other activities due to **FATIGUE**, then having to return to site soon after.

Relationship challenges

Although workers acknowledged that they had more time whilst on R&R, it was still reported that their “social life” and in turn **SOCIAL WELLBEING** suffered, when at home prioritising spending time with family as opposed to spending time with friends. When the opportunity arose to catch up with friends whilst on R&R, some reported feeling disconnected with friends due to missing out on conversations, catch-ups and group activities.

“... when you do catch up, you’re not aware—they’ve been talking to other friends about an occasion they’ve been to or out fishing on a boat and you’re thinking, ‘Hmm,’ I missed all that. So that’s a biggie.” (FIFO worker quote)

“We tend to—I think we tend to retreat a little bit from your circle of friends as well. Because when you’re home on R and R, you’re sort of devoting your time to your family unit and you sort of discount your friendships so to speak. You sort of discount the friendships, it probably should be mattering more than you’re discounting them.” (FIFO worker quote)

Those with friends also doing FIFO work reported they are unable to “catch up” due to their R&R time not aligning to their friends’ rostered R&R.

“So I run into more friends at the airport than what I do in [rural town name] itself.” (FIFO worker quote)

Not only is maintaining a social life a challenge, some FIFO workers also discussed the difficulty of maintaining personal relationships.

“I mean as you start to get a family or even if you had a girlfriend, it would be hard. Any type of relationship or anything like that, it would be difficult.” (FIFO worker quote)

“I do believe that was part of the reason why we divorced because she couldn’t handle me doing the FIFO life and stuff like that. She was always suspicious of things that while she was at work, I’m at home playing around, I’m on site playing around and it just ended up breaking us and her.”; “the trust wasn’t there.” (FIFO worker quote)

Clear separation between work and home

The inability to have a clear separation between work and home life was discussed by some during the interviews. This was due to the nature of some roles (e.g. leadership position) to be “on-call” for the duration of one’s R&R, or be connected to the happenings on site via email or phone. Although not necessarily described as an unwanted demand by FIFO workers, the workers still faced the **PSYCHOLOGICAL CHALLENGE** of not being able to switch off from work when returning home, therefore becoming unable to take advantage of the full R&R purposeful experience.

“I get phone calls all the time. So—which [FIFO partner’s name] got to come to terms with. Over the years, she used to get annoyed about it because you’re not at work. See, I don’t have a back to back. So, people have to call me if stuff—I get lots of calls there.” (FIFO worker quote)

Some justified work encroaching on R&R as “okay” as they had put strategies in place to manage it.

“Again, I don’t go and check emails. I will check it pretty much once a morning and once a night on my day off just to see what’s there, nothing major, let it go till Monday. If there’s something there, again, I’ll respond.” (FIFO worker quote)

Summary of Findings for KEQ 1a—Time at home (R&R)

- An extended period of time at home was expressed to be the greatest advantage of the FIFO lifestyle, as FIFO workers felt they had greater time to spend with family and friends.
- Shorter R&Rs and higher compression rosters limit the ability to rest and recuperate.
- Although having longer periods of time at home, most still reported their social life suffered as they try and spend more time with their family than friends when home.
- Certain roles that require workers to still be connected to work on site blurred the lines of a clear separation between work and home life.

6.3.1.5 Transition to site

Workers experienced an impact on their emotional wellbeing when transitioning back to site; feelings such as sadness and anxiety immerse. The period of transition included the time of

preparation prior to leaving home (R&R), physically travelling to the site and the start of their time on site.

The process of going back

Emotional wellbeing was found to be quite heavily affected during the period of transitioning to site. FIFO workers experience feelings of **SADNESS** due to a couple of reasons, such as not wanting to leave their family and going to a work environment or job that they do not particularly enjoy.

“It’s pretty tough knowing that I’m going to be away for another 16 days again, especially as my partner hates that I work away, so it’s really tough for him and it’s tough for me seeing how tough it is for him.” (FIFO worker quote)

“But I remember my kids grabbing on to my leg and I’m trying to walk through the airport and they’re hanging on to us, and I think one of them said, ‘You don’t have to go. We don’t need the money.’ And as I’m walking through the airport and you’re trying to deal with that and you’re getting pulled away from your own kids. So, I think definitely as a young family, it’s difficult. There’s no—it’s difficult on the wife, it’s difficult on the kids, and it’s difficult on the husband.” (FIFO worker quote)

“I guess you get a bit grumpy that evening, I guess, because you’re going back. I can sort of relate to where some of these people taking their lives, I guess as your mood does change. I haven’t had any suicidal thoughts, put it that way, but your demeanour does change, because you’re now going back.” (FIFO worker quote)

Overload

ANXIETY AND STRESS was also experienced in the majority of interviewees. When heading back to site, some workers felt a sense of overload when they felt like they had not accomplished everything desired whilst on R&R, for example, fixing things around the house. Feelings of stress were exacerbated by the pressure to therefore get everything done before leaving home for site.

“Just everything stresses him ‘cause he hasn’t gotten enough stuff done that he needs to get done in his time-off and ‘cause he’s always putting a lot of things that he needs to do on his time-off.” (FIFO worker quote)

Anxiety and stress for some also brought fear of flying and potentially missing their flight; for some, that would result in loss of pay due to working on behalf of a contractor. Those that spoke more positively when preparing to head back to site described that one of the best parts of returning was being able to see those with which they have formed friendships.

“You’re actually quite charged because you get to meet up with all the guys again. You’re working in a small team environment, you get to meet up with all the guys, you get to hear about all their stories, they hear your story; so, for the first day or two days, it’s—yeah, you’re feeling fairly good. I’d be right up there.” (FIFO worker quote)

Summary of findings for KEQ 1a—Transition to site

- Returning back to site for most FIFO workers was an emotionally challenging time, due to:
 - workers being sad to leave their family and, on occasions, heading back to a work environment they do not particularly enjoy, and
 - anxiety and stress associated with overload of tasks not completed in time, flying and missing flights.

6.3.1.6 Additional findings independent of roster phases KEQ1a

The following section of the FIFO worker experience captures some of the overarching themes that underpin this lifestyle independent of roster phases. Themes such as job insecurity, financial factors, a sacrifice and job satisfaction are included.

Job insecurity

For some workers there is a high job insecurity due to the nature of the industry (e.g. economic downturn) and sub-contractor roles, in combination with organisational practices. This sense of job insecurity creates feelings of **STRAIN and STRESS** on workers, who do not know when they will be asked to leave the organisation or get offered the next job/role.

“We had a big flux of mass sackings three years ago where there was, forced redundancies and that impacted quite a few people and a lot of the guys ... at that time in [site name] on the gas plant, we lost three guys of our shift and to be perfectly honest, it was like they physically died ... Because you’re working with them, they’re your family. You worked with these guys for half a year and two days before they fly out, you get this ... that have gone around, and then you fly out and you don’t see them again ever.” (FIFO worker quote)

“The companies tell you very much on that last minute if you’ve got the job or if you don’t have the job, or they say you do but then they’d change their mind ... So, that’s another thing, when [FIFO worker’s name] would get told that he will be leaving on a certain day and then they wouldn’t—they would tell him that he now—‘Oh, sorry, they’ve cut numbers. They don’t need you now.’ And we would’ve said no to other work because of that and it’s really disheartening. So, it’s like, ‘Ugh’.” (FIFO worker quote)

“You’re on a four-hour notice. They’ll let you go in four hours, pretty much. If something happens in the morning, you can only charge ‘til lunch time, and because you’re on the plane, or if it happens in the afternoon, just charged at the end of the day, and you’re on the plane tonight or tomorrow morning.” (FIFO worker quote)

One worker described a situation whereby a group on site were facing a situation of being “let go”; the stress of not having a job due to individual reasons is great.

“You could actually see the pressure in their faces where they were saying like, ‘No, no, no,’ when their supervisor used to come in to give in the resignations, he says, ‘Look lads, there’re 12 lads we have to get cut today,’ and you would see the panic in everybody’s faces ... I actually remember ... I remember one of the guys tried to hang himself on [the way home].” (FIFO worker quote)

Remuneration

Interviews described remuneration as both a **POSITIVE and NEGATIVE** side of FIFO. The stress associated with job insecurity is exacerbated when the worker and/or family are facing financial difficulties or are not in a good financial situation. All FIFO workers and partners within the sample had the same motivation for joining FIFO—*money*—due to the significant increase in pay, resulting in the ability to provide a better lifestyle for their family as opposed to the pay working locally in WA.

“It was more of a financial decision basically. I mean personally I would’ve rather have stayed in Perth but the money wasn’t as good anywhere in Perth.” (FIFO worker quote)

“FIFO to me means money, nothing else, and it means pretty much nine out of ten guys you ask out there, ‘Why are you here?’ ‘For the money.’ So that’s the bottom line for FIFO. Why are you working away from home? The only reason you work away from home is you’re getting more hours, more money, and you don’t go there because you like the drive up there, and you don’t go there because you like the guys up there.” (FIFO worker quote)

“Without a doubt, the opportunity to earn more money was the largest element as to why I chose to go FIFO.” (FIFO worker quote)

“Well in other words, you’d get in, you make the big bucks, you get out but they have a thing in the FIFO industry called the golden handcuffs where you get addicted to the money and the life and the next thing you know, you’re in a divorce court trying to figure out who’s got the kids for when you’re back or when you’re—or whatever. You see that time and time again too.” (FIFO worker quote)

FIFO workers found great success financially with the greater salary explaining that they were able to provide a different lifestyle for the family, not otherwise achieved working in Perth locally.

“To try and pay the mortgage off, try and get a head start ...” (FIFO worker quote)

“I’m more financially stable since starting this job.” (FIFO worker quote)

“We’ve got kids in private schools that cost a fortune.” (FIFO worker quote)

“Probably the benefits—well, obviously, the remuneration and being able to provide a bit better for my family and even myself depending upon what your priorities are. Those are the benefits.” (FIFO worker quote)

“There are plenty of people out there who want to do those rosters because they want to set themselves up. The cost of living, the cost of houses, the opportunity to put extra money to the superannuation—many people would like to spend two years in earning the construction money just to set themselves up.” (FIFO worker quote)

Those that were successful financially established a financial goal or managed their spending to ensure security: “... we’ve sort of set down a budget” (FIFO worker quote). In comparison, some workers spoke of others who did not establish a financial plan (i.e. lack of financial literacy) and were often worse off in the long term.

“The only thing is it would also teach a lot of bad habits in the world, that you’re going to make ridiculous amounts of money for doing little amounts of work and it doesn’t breathe a good culture going forward ... one guy in particular as I remember, he bought a car and I think he spent something like 60,000 overall on his car and then he sold it for 30 and I’m like, ‘What are you doing?’ and he was like, ‘I know but I don’t want it anymore. I want something else.’ So he didn’t realise how much money was worth even because, as far as he’s concerned, he’s going to make this sort of money for the rest of his life and he’s not, and that’s where these guys get into the trap and they end up buying the mortgages and buying two mortgages, three mortgages, or whatever and then that’s it, you’re stuck.” (FIFO worker quote)

“A lot of them spending a lot of money on maybe partying or insignificant things, whereas they may look back and go, ‘Wow, I wish I had bought that house or paid off that house instead of just blowing it or having—’ they’re still struggling, young families and of course let’s say they’re ten years younger than me, they’ve got ten years they have to make and just really not the opportunity that people have had.” (FIFO worker quote)

A FIFO worker sacrifice

Although the motivation for workers was mainly financial, it was seen to also be a justification to remain within the FIFO lifestyle, as it was understood that leaving FIFO work would not have the same financial advantages as staying.

“To me, in mining, there’s too many—just, ‘Yeah, everything is alright,’ and you always see on FIFO things, if people can’t handle it, pissed off and don’t do that, but to me those people say that because they don’t have – I say to people at work, my bosses and staff, they’re like—I don’t know where I’m going, but it’s like, ‘I hate coming to work, to leave my family, to miss everything, I would rather be at home with them,’ so it’s a sacrifice that I do.” (FIFO worker quote)

This expectation meant workers were more inclined to inherently sacrifice their mental health and wellbeing in the interests of remuneration and a sense of duty for those with families.

Job satisfaction

Although not a common theme discussed by workers, it was concluded from overall descriptions of work within the interviews that FIFO workers’ jobs were more complex and that workers had autonomy of tasks, a good team environment, enjoyed their job and seemingly had greater job satisfaction, which contributed to positive psychological wellbeing.

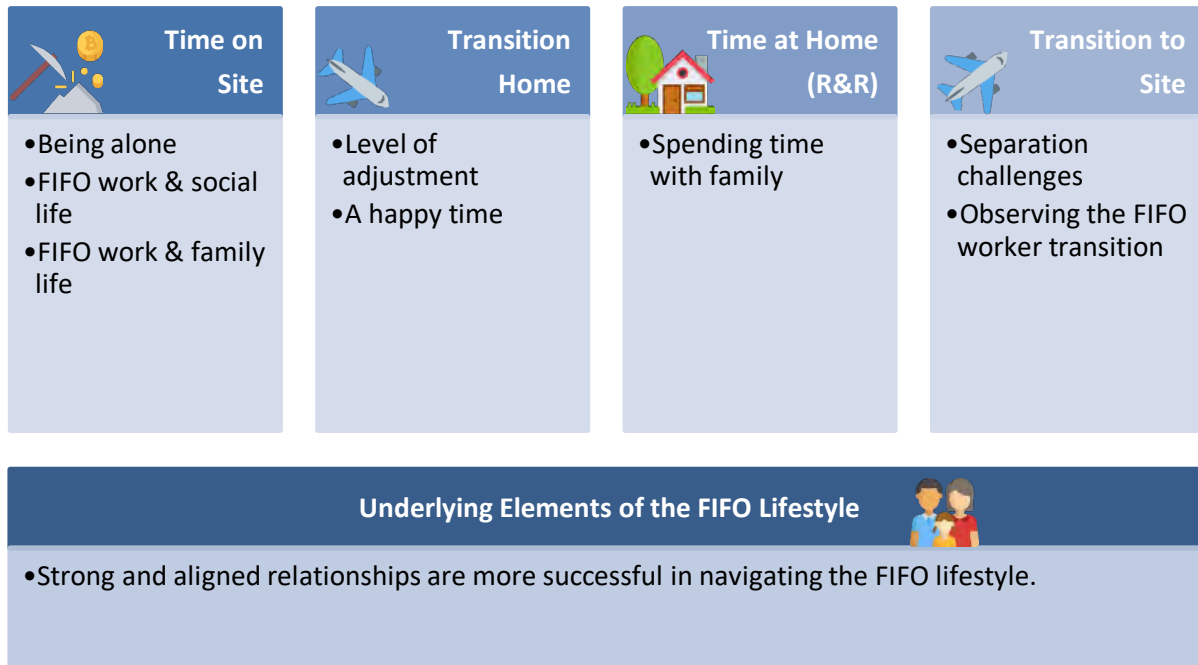
“... he loves his job. He loves the rapport with the young ones.” (FIFO partner quote)

“I do really enjoy my job and I do really enjoy the people that I work with is a really good feeling ‘cause it doesn’t mean I absolutely dread going back. I find it—our job really is interesting. I really enjoy the work.” (FIFO worker quote)

“I said there’s no real job satisfaction, whatsoever. We just drills holes, get filled with explosives and blown up and dug out, and then we go back and just do it all again.” (FIFO partner quote)

6.3.2 KEQ 1b: FIFO work and FIFO families

The themes extrapolated within this section highlight the resources and demands identified through interviews of partners that contribute to mental health and wellbeing. See below for themes overview:



6.3.2.1 Experiences of mental health and wellbeing

Similar to the FIFO worker wellbeing graph, the reported FIFO partner feelings over the course of the current swing were averaged to compare the difference between partner experience and FIFO worker perceptions of partner wellbeing.

The comparison

The below graph (see Figure 6.4) displays how the partners feel during the various roster phases, and how the workers perceive the partners' mental health and wellbeing. The partner experience and FIFO worker perceptions of partner experience were highly consistent across each phase with only minor differences throughout. Within transition phases FIFO workers thought that their partners had a higher level of wellbeing than partners actually experience, however these differences were small.

How partners feel

Similarly, the partner trend line suggests that the more challenging times in terms of mental health and wellbeing are when the worker transitions to site, and the beginning of workers' time on site. The particularly lower points for partners are identified on the wellbeing graph below, which suggests the need for support during these times. Quotes have been included within the graph to highlight how partners feel across each of the roster phases.

FIFO Partner Experience and FIFO Worker Perceptions During Roster Phases

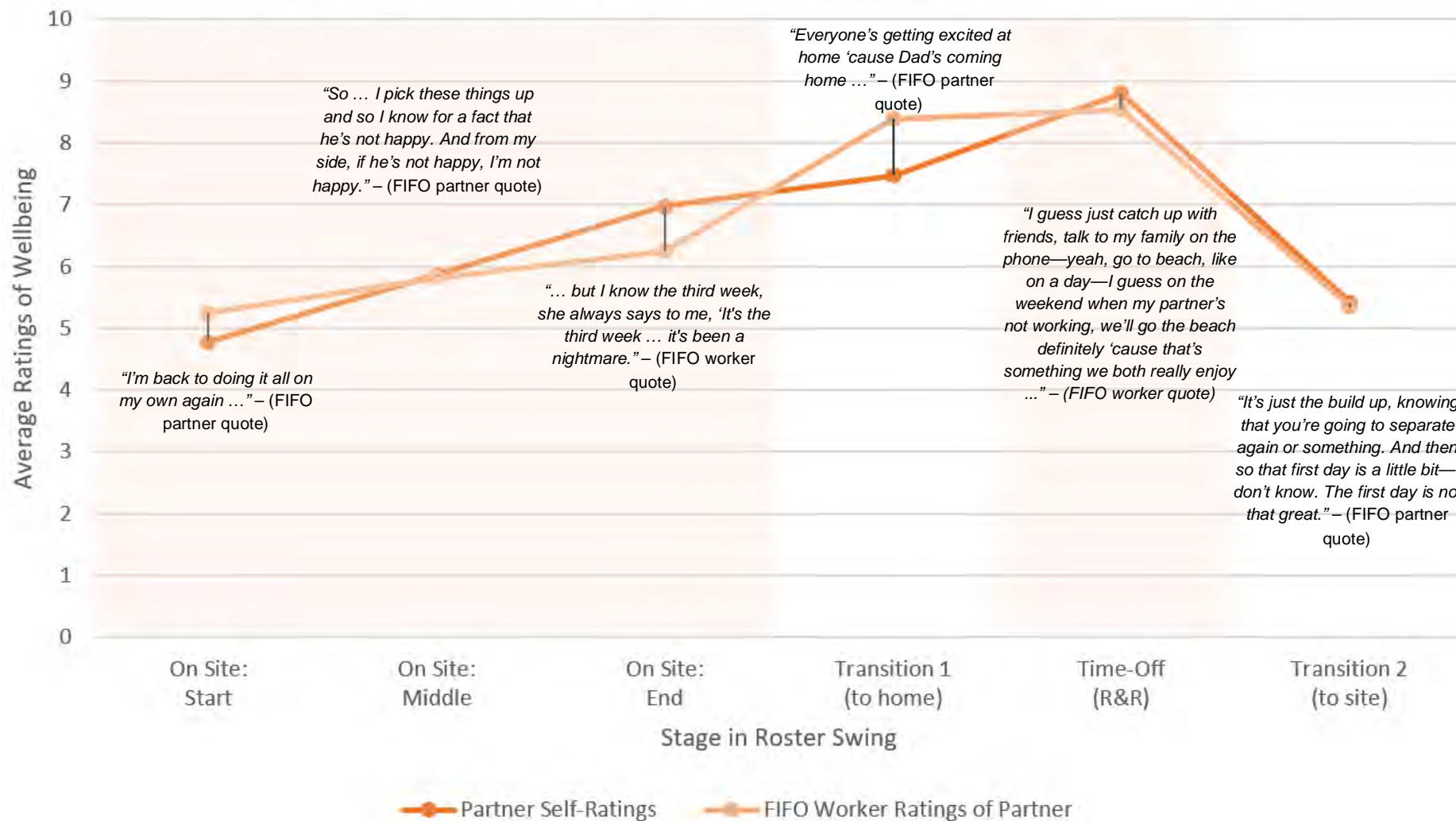


Figure 6.4. Partner Ratings of Self and FIFO Worker Ratings of Partner. $n = 39$ (Worker $n = 24$, Partner $n = 15$)

6.3.2.2 Time on site

The time in which FIFO workers are on site presented a number of demands on partners and families. Themes that arose included: being alone (i.e. finding solutions, being a de-facto single parent, more independent, enjoying the time apart) , FIFO work and social life (i.e. decreased social wellbeing), and FIFO work and family life (i.e. strain on children).

Being alone

A range of issues raised by FIFO partners concerned the realities they face when the partner is away and having to do things on their own. These issues included the need to find solutions to problems by themselves and having to be a de-facto single parent. Some recognised the personal growth that has resulted from the required independence and enjoyment in being on their own as positive aspects of their role in the FIFO work arrangement.

Due to the worker spending extended periods of time on site, the partner must deal with the challenges associated with **BEING ON YOUR OWN**, dealing with problems as they arise by oneself. With being especially restricted if the issue cannot be solved over the phone. For example, if the “pool pump dies” the day before the worker flies out.

“You just have to deal with things by yourself because it is that I can’t pick up the phone and contact him perhaps when I needed or whatever, so I have to be able to deal with all sorts of situations on the spot and figured it out myself sort of thing, so whether it was a burst pipe or whatever, you just have to problem-solve it yourself.” (FIFO partner quote)

“It’s more so, what can’t be done around the yard, she, so instead of like waiting four weeks for myself to get back, she’s gone and start doing it herself. Just, you know, everyday—day to day running things, it’s basically she’s gonna man the fort, so to speak.” (FIFO worker quote)

Partners expressed the experience of being a **“DE-FACTO SINGLE PARENT”**. They are having to juggle multiple responsibilities associated with being a single parent—responsibilities such as school runs, kids sports, cooking, house maintenance, cleaning and working. These multiple accountabilities divide the attention of the partner, imposing a lot of strain that impacts mental health in some.

“I would say I am basically a single parent for the two weeks [FIFO worker’s name] is away.” (FIFO partner quote)

“I’m the pool boy and the handyman and the cook and everything, taxi driver—” (FIFO partner quote)

“And so I’ll be talking to [FIFO worker’s name] on the phone and trying to do it and our internet would be crap—just stressed with stuff and then the kids would be hungry and just that sort of stuff and you’re, ‘Ugh!’ you feel like you’re just being pulled in so many different directions.” (FIFO partner quote)

“I feel extra pressure. I feel pressure when we’ve got school responsibilities or I’ve got parental responsibilities such as going to school interviews or if the kids get in trouble at school, I have to go alone and I feel it’s a lot of pressure and my mental health has definitely taken a toll over the last three years.” (FIFO partner quote)

Due to the sometimes limited accessibility to the FIFO worker when on site, partners that were interviewed expressed that they had to become more **INDEPENDENT**, not just by dealing with challenges by oneself, but also adjusting to living alone and becoming more emotionally independent.

“I’ve gotten used to being on my own. Initially, I used to get—I never slept because I wasn’t used to sleeping on my own and I was anxious about being on my own at night, so I didn’t sleep, and then I would run around the house the night before and madly clean, and then I’d be stressed out when he got home, and he wouldn’t notice the house anyway, so that’s changed.” (FIFO partner quote)

“So I think because I had to get used to not having him around, you do. You do. You have to sort of—you’d be a bit sort of stronger and less needy.” (FIFO partner quote)

A few interviewed partners expressed they **ENJOY THE TIME APART**, explaining that they felt it was positive for their relationship.

“Actually, it was a good thing in retrospect because I think we needed the space from each other.” (FIFO partner quote)

“But I mean I think it actually helped our relationship a lot because with the whole absence makes the heart grow fonder.” (FIFO partner quote)

FIFO work and social life

One might expect that as the partner remains at home, the partner’s **SOCIAL LIFE** remains the same; for some this was the case, however, others felt a definite change in social wellbeing after moving into the FIFO lifestyle.

“Well, I would say it’s changed in the fact we probably have lost a lot of contact with friends because I have to work as well.” (FIFO partner quote)

“I grew up in the UK, I’ve only got a circle of friends that we do meet up occasionally. But if I was to go out, I always get an earful from my daughter and I have gone out and left them for a couple of hours and gone out with the girlies, but to me probably as a mum, I probably shouldn’t be doing that.” (FIFO partner quote)

“She finds it difficult to go out to functions where—she gets invited but she finds that on her own. We’ve been invited as a couple and then all of a sudden [partner’s name] turns up on her own. It does create a problem for her.” (FIFO partner quote)

FIFO work and family life

Although not all participants within the study had children, those with **CHILDREN** still in school especially seemed to have greater challenges whilst the worker was on site. Issues such as bullies, conflicts between the children or puberty put a strain not only on the partner but also the children.

“Two weeks is easy. By the third week, I’m not struggling, but it’s—the kids again to the point when I’m not constantly shouting at them, but it’s almost like that third week, we start rubbing each other up the wrong way. I’ll snap over something, they don’t listen, or obviously I irritate them as well with ... nag all the time, and—yeah.” (FIFO partner quote)

“I remember [son’s name] had some issues with the kids in the school and there was a dance going on, there was a bit of trouble, like he was getting a bit bullied, that was a hard time for [partner’s name] to go through on her own as well, so things like that, and they’re not good things and there’s nothing you can do about that.” (FIFO worker quote)

“I mean, we’ve got two teenage daughters now and they’re both in upper school and it’s—that can be a little hard to deal with sometimes.” (FIFO partner quote)

Some FIFO workers and partners indicated that they have identified a **MENTAL HEALTH IMPACT** of the FIFO lifestyle on their children, from little children missing their dad/mum and not being able to see them, to a teenager needing the support.

“So [FIFO worker] started FIFO probably when I was about—I’d say 13 or 14 and I would stay at home and look after myself ... So, after a while of being—living at home by myself, I started feeling the effects of FIFO work.” (FIFO daughter quote)

“I would say that FIFO has not suited my children. Yeah. No, I don’t think there’s anything ... I have seen a decline in my son’s mental health. I have seen a decline in his behaviour. My daughter—I just see that she misses her dad.” (FIFO partner quote)

“My son actually said to me when [FIFO worker’s name] was away last time that he actually missed his dad. Now, he’s not one for showing his feelings or anything, but I generally know.” (FIFO partner quote)

“I think sometimes they get a little upset even though they won’t admit it. They do get a little upset that I’m not there. I know my youngest daughter, she always tells me ‘I miss Dad ... When will he come home? I want you to come home.’ And during the last week away, she was quite upset and wants me home. She would tell [partner’s name]. Every night she says ... ‘I miss dad. I want him home.’ And that’s—and she’d write little notes and then [partner’s name] will send it to us.” (FIFO worker quote)

“Well, he’s 13. So, there’s a lot going on for him with—aside from his daddy being away, but he really needs him now. Now is the time.” (FIFO partner quote)

Some partners also reported that due to the distance associated with the FIFO worker being away on site, they weren't able to completely support the FIFO worker when issues arose, which in turn emotionally impacted the partner: "When he gets low, it affects me a bit 'cause there's nothing I can do for him being here, but he's always known that he's got my support ..." (FIFO partner quote).

Summary of findings for KEQ 1b—Time on site

- Partners feel like they are a "de-facto single parent", adopting responsibility for all tasks: house maintenance, cleaning, cooking, working, kids school drop-offs etc.
- For some partners their social life depreciates due to limited time available.
- Partners often have to find solutions to problems by themselves as help from the FIFO worker is limited when they are on site.
- Some partners have become more independent due to the FIFO work arrangement.
- Some partners enjoy the time apart from the FIFO worker.
- Those with children still in school seem to have greater challenges, especially in the face of school bullies, conflicts between kids, puberty etc.
- Partners and workers identified the strain of the FIFO lifestyle on their children.

6.3.2.3 Transition home

The transition between site and home was found to not only impact the FIFO worker, but also their partner and family. Partners and family have to balance the needs of each other, allowing space for the worker to recover (fatigue) and the adjustment of family dynamics (e.g. routine), whilst being excited for their loved one to return home.

Level of adjustment

Partners of FIFO workers discussed the adjustment that occurs when the FIFO worker returns home from site. This adjustment is the counterpart to the FIFO workers' descriptions of struggling to fit back in. The level of underlying adjustment was found to occur on a spectrum due to a number of familial factors. This adjustment meant a change of routine, making the home as per the worker's ideals, or the sense of having to accommodate another individual within the family, which leads to occasional feelings of stress or a sense of limbo.

"Downside I suppose is the stress when she gets back. After a separation, always takes a couple of days to settle back into—oh, damn it, I've got someone else here that I've got to accommodate rather just myself. So from that point of view, it's—the first couple of days before or when she gets back the first few days or two days before she goes are stressful times." (FIFO partner quote)

"Before he came home, I used to stress out because I'd run around the house, and I'd be cleaning up, and thinking I've got to get everything perfect for when he comes home but now I don't worry about it." (FIFO partner quote)

"She would be happy for me to be coming back but then she's also say that I'd be very messy and just thinking, 'Oh, god, we're going to ruin the routine again'." (FIFO worker quote)

“The biggest things that I try and do to make sure my partner’s less—is least disrupted as possible is just trying to—I guess just keep up with his routine, like keep the house clean how he likes to keep it clean—yeah, make sure he’s not coming home to a messy house.” (FIFO worker quote)

“Hardest thing for them is that when I get home, their routine changes.” (FIFO worker quote)

“There’s adjustments you’ve got to make because you’re not used to having someone there all the time ... And a long adjustment means you get settled into your own space, you get settled into your own routine, and all of a sudden you get someone back and you have to readjust yourself.” (FIFO partner quote)

“All of a sudden, they see this strange dad turn up for two weeks and then they disappear for two weeks, and they turn up for two weeks. It’s like having a part-time dad floating around and that—for us, it’s okay. I mean, we’re adults. We’ve been through that. Kids are grown up. We’re not hanging out of each other’s pockets, but when you’ve got kids involved and you’ve got the emotions of the kids involved to see the—it must be anguishing for the children to see their dad go.” (FIFO worker quote)

The adjustment period also meant a **BALANCE OF NEEDS** between one another, having an awareness of needs aided the worker’s and family’s transition period.

“‘What about me?’ He would walk in the door and expect all the attention, because he’s been away for two weeks and he would say, ‘Well, what about me?’ He would expect 100% of my attention. I couldn’t give him enough attention, physically, emotionally, he wanted 100%, I couldn’t do anything right.” (FIFO partner quote)

“When he gets home, I see if he is tired and wanting to rest, I’ll say, ‘Well, okay, don’t nag at him to do things around the house.’ If I’ve got a list of jobs that need doing, maybe just leave it to when he’s ready to do it, or if there’s people that want to see us, just don’t, ‘Oh, we have to go here, we have to go there.’ So I try not to make the list too long. I try to spread it out. This swing, we might see this couple, and the next swing we might catch up with that couple.” (FIFO partner quote)

“So, that’s the first lesson I learned was holding on, give him space to try and get his sleeping patterns back, and when he’s ready. Because you just don’t know what’s happening out there that he’s had a hard time or whatever. The last thing he needs to hear, more challenges when he come back, so that’s one of the things.” (FIFO partner quote)]

“The first day, your wife sort of wants a piece of you, the kids wants a piece of you.” (FIFO partner quote)

“I guess the kids and I keep going in our little zone I guess for a couple of days because he’s not quite perhaps ready to be running around before different activities. [FIFO worker’s name] and I have a joke that he’s not ready to go out in society yet so he just needs to stay home before there’s a disaster. We just keep him away for everyone.” (FIFO partner quote)

A happy time

Although there were clear challenges during the adjustment period found within responses, all **PARTNERS** expressed that they and their **FAMILIES GET EXCITED** for the FIFO worker to return home.

“The kids get excited. We go and—if I can, I’ll always try and pick him up at the airport and my daughter comes with me ... being a 14-year-old boy doesn’t really like to show his emotions too much, but—yeah, he always comes ... gives his dad a hug and a male slap as they do.” (FIFO partner quote)

“I think the kids, they start to cheer up ‘cause they know I’m gonna be home in a week. And so, the fourth week tends to be pretty good.” (FIFO worker quote)

“So, one break, I come home last week, she had a concert on. I came home on the Wednesday, and the concert was on the Saturday, and she was just so excited ‘cause I was home for her concert. And so, we had to two or three days of buzzing where she was excited about dad being home for her concert and—yeah. So, yeah, it is those two or three days are great. Kids are so pleased to see you and—yeah.” (FIFO worker quote)

Summary of findings for KEQ 1b—Transition home

- Amongst all interviewees there was a level of adjustment that occurs when the FIFO worker returns home from site. This adjustment sometimes was found to be a change in routine, adapting the home to the worker’s ideals and accommodation of another person in the family.
- Partners, families and workers needed to balance the needs between each other.
- The transition of the FIFO work between site and home was a happy and exciting time.

6.3.2.4 Time at home (R&R)

As mentioned previously, family, partners, friends, projects and home maintenance occupy the workers’ time whilst on R&R. Notably, for the partners and families, no negative issues were raised related to the R&R. For partners and kids, there are several benefits (acknowledging this is dependent on length of time off), such as:

- **Ability to go on holidays:** “last school holidays, he took them up to Aussie World and we had a ball” (FIFO partner quote); “But that week off, you can—we’re going on a holiday soon to Bali, so that just works perfect—a week—so you can do things like that. I go back to Melbourne a couple of times a year, which works quite easy.” (FIFO worker quote)
- **Kids enjoy the FIFO worker being involved in school:** “Drop your kids off to school, pick them up from school, that sort of thing, and take them to sport.” (FIFO worker quote)
- **Partner is able to spend one-on-one time with the FIFO worker:** “Obviously we go out shopping if the kids are at school like Thursdays, we can go out shopping or [have a] cup of tea or a bit of cake or even lunch out if we’re out.” (FIFO partner quote); “Obviously having some social time with [partner's name], so we’ll just go off to a restaurant in the middle of the week or something, so she can talk about things.” (FIFO worker quote)

Summary of findings for KEQ 1b—Time at home (R&R)

- Time off during the R&R was universally perceived positively by partners.
- The families and partners benefit from the workers' time at home spending time with each other to reconnect.

6.3.2.5 Transition to site

The transition to site was also reported to be an emotional time for not just the FIFO worker but partners and families too, with partners and children facing challenges associated with separation and the observed change in character of the FIFO worker.

Separation challenges

The issue of separation during the transition phase back to site was described as affecting both children and the partners. Feelings of anxiety, stress and sadness are some of the emotions experienced with the anticipation of the FIFO worker's transition to site. Kids are not wanting their FIFO parent to leave as they dislike the feeling and experience of **SEPARATION**.

"It's hard to explain to a child that daddy's got to go away to earn money or daddy's got to go away to provide for the family, like, a two-and-a-half-year-old is not gonna <laughs> get his head around that, but he's starting to get it, understand a little bit better." (FIFO worker quote)

"So, I'm always very, very busy. So, I think the worst time definitely is when I actually do have to leave him at the airport and [FIFO worker child's name] going 'Dad, don't go!' that's the hardest." (FIFO partner quote)

Partners reported a sense of **WORRY** regarding being by oneself and/or being the sole caretaker of the household and children again, as they do not wish to feel the sense of loneliness and strain.

"Slightly anxious because I'm worried about what's next. I'm worried about being on my own again. I'm worried about the kids' reaction, but we're a tight unit." (FIFO partner quote)

"It's tough 'cause you know what's coming. You know you're not gonna see her for two weeks ..." (FIFO partner quote)

One partner reported looking forward to having **SPACE AGAIN** after the FIFO worker returns to site.

"... I'm not ecstatic that I'm about to do it all on my own but at the same time I'm kind of 'Go now. Yeah, it's time.' Two weeks of being together all those hours and, you know, it's too much." (FIFO partner quote)

Observing the FIFO worker transition

Partners recognise a **CHANGE IN CHARACTER** in the FIFO worker prior to heading to site, as mentioned previously, due to the FIFO worker not enjoying their time at work, an overload of tasks still to be completed at home and the foreseeable missing of loved ones.

“But he gets really low about two days before he leaves and so he flies out on Tuesday, so about Sunday, he starts to—you can tell he’s going back to work, and he ... like it’s prison, ‘I’m going back to jail’ kind of, you know, carry on.” (FIFO partner quote)

“Yeah, he can get very irritable, you can feel like it coming on and then he goes through a phase where he just run around doing jobs which is five weeks to do.” (FIFO partner quote)

Summary of findings for KEQ 1b—Transition to site

- Similarly to the FIFO worker, partners and children also feel this sense of sadness when the FIFO worker returns to site, as there is an understanding they will not see each other for a while.
- Partners face the worry of being the “de-facto single-parent” again.
- Partners recognise a change in the FIFO workers’ characters when preparing to go back to site, with each putting on a brave face for the other.

6.3.2.6 Additional findings independent of roster phases KEQ1b

The following section of the FIFO partner experience captures an additional overarching theme that seemed to underpin the FIFO lifestyle.

It was observed from the interviews that FIFO workers and partners with strong and aligned relationships were able to navigate the FIFO lifestyle more successfully than others. This meant being aware of the challenges facing each other when the FIFO worker is away, being aware of each other’s needs and good communication.

“It has helped that we’ve had such a good relationship to start with.” (FIFO partner quote)

One partner noted that due to being in a longer relationship they felt as a couple that they had the capacity and strategies in place to overcome obstacles compared to those in younger relationships.

“Because we are an older couple, we’re probably able to overcome it far better than I think in a lot of young families.” (FIFO partner quote)

6.3.3.1 Time on site

FIFO workers spoke quite candidly about their alcohol consumption when on site. Again, responses varied greatly depending on a number of factors, such as: whether they drank at all, whether the site was a dry site, night shift, and whether the wet mess was generally seen as the only available space to come together and socialise (i.e. there is nothing else to do).

Some workers explain that they tend to **AVOID DRINKING ON SITE** due to not being orientated towards drinking or deciding to keep drinking to a minimum. Most workers, when discussing alcohol on site, also explained that they had to always be mindful of drinking as they must “blow zero” always whilst working.

“I will hardly drink at work. It’s gotta be like someone’s leaving or there’s a celebration. I’m not one where you finish work and go straight to the bar, won’t do that. I’m not the one that will go—have a shower, have one before tea. I don’t do that. It’s usually if there’s something on that someone’s come say from the office here (Perth) after site for a visit, we might have one, but—yeah, I hardly drink at work.” (FIFO worker quote)

“See, I’m not a drinker. I don’t—I do drink alcohol.” (FIFO worker quote)

“Yeah. And I started putting a bit of weight on. And I said to—my wife said I’ve got to get out of this job because—one, I’m drinking too much and it’s just—mentally, it’s not for me to be here. So, yeah, I realised there was a problem and got myself out of there before it got too bad.” (FIFO worker quote)

Depending on the type of site FIFO workers were on, they did not have the ability to consume alcohol as they were **“DRY” SITES**.

“We don’t. It’s a dry facility.” (FIFO worker quote)

All these attributes of FIFO work suggest that being on site may have positive effects on reduced consumption of alcohol for the workers. However, reduced consumption while on site may not translate to overall reduced consumption across the roster.

Few workers reported that their drinking habits change depending on the **TYPE OF ROSTER** they were on or the **LEVEL OF ENJOYMENT IN WORK**. Those that were on night shift explained that it was more difficult to consume alcohol due to the wet mess not being open straight away when returning from work to the camp.

“I generally don’t drink during the day on site. After day shift, during day shift we will come back, and we will go over to the wet mess, but the only beer I drink now is a light beer, you know the 3.5. And we’ll have a couple of beers and just shoot the breeze on the day. So I do that, especially in the hot weather. You might grab a six-pack and all that. And then night shift, well we don’t really drink because when we go out, the bus is—we have to wait for the bar to open, whereas you get off the bus on day shift, the bars are already open. So, of course, I’m way down at there at the campus about a five-minute walk and the bar is up this end. That’s a bloody long walk. Now, I got the bike. That makes it a bit easy. But in general, no, we don’t drink to get—because we have to blow zero every morning so you got to keep that in the back of your mind.” (FIFO worker quote)

Other workers explained that drinking with colleagues (friends) was an **OPPORTUNITY FOR SOCIAL INTERACTION**, indicating that this was the only opportunity some have to come together socially with others, in the form of drinking at the wet mess.

“I think that’s something which should be raised in the survey because with alcohol—I acknowledge [the] problems, but there are benefits to having alcohol on site. It creates a social atmosphere. It gets people together, people talk and are more likely to get things off their chest, which is missing. It’s great for conflict resolution because if people have an issue, we’ll have a beer over it. It’s great for thanking people—to buy them a drink or buy them a carton.” (FIFO worker quote)

“I don’t drink, really. I mean, the last job I was on, when I was on [site name], it was only a small crew. There’s only six of us. And two of the fellows, I’m really good friends with and I’ve worked with before a few times. And we used to go out—not every evening, but some evenings, we go to the wet mess and I have one beer. That’s all I’d have. They’d have two or three, maybe four. I’d have one beer.” (FIFO worker quote)

The consumption of **ALCOHOL AS A FORM OF COPING** was only referenced by a few participants as a way to deal with the stressors of the FIFO lifestyle and environment.

“Usually by the end of day shift, I’m ready, I’m tired but then—I hardly drink at work but I always have a drink when we go from day shift to night shift, so I have something that I look forward to and I only drink then, so I’ll probably have a few too many beers but a lot of the boys drink every day and then every morning after night shift. So that’s something I think that I have that helped me get through it.” (FIFO worker quote)

“And my job, like I said before, not stressful at work—I don’t take the stress on board, so I don’t need to find an outlet like alcohol or drinking. So, we hear a lot of stories, people go back—we’ve seen leave the bar or the wet mess with a six-pack, and that’s every night, and you’re going, ‘There’s – must be a lot of problems,’ or ‘that’s how they’re dealing with it.’” (FIFO worker quote)

“See it regularly with—with some people I work with that you get off the bus at the end of the day and you walk back to your room, and I open the door to my room, and as I’m opening the door to my room, I’m hearing the tins open ... people are opening a beer. They’re that desperate to have a drink that they—it’s the first thing they do as soon as they get to the room is crack a beer. And they do—and they realise that they’re gonna get breath-tested the next day. So, it’s the old ten before ten rule. They try and get ten beers in before ten o’clock at night, and they know that ... in the morning.” (FIFO worker quote)

“I like a beer, but I don’t feel the need to have a beer every day and there’s—but I was on a job at [site name]—when was that—last—that had been Christmas 2016, and I hated it there, absolutely. I really struggled with that one. And that was a three and one roster. And I was starting to drink quite heavily. I was—to the point I was drinking six or eight beers a night, which is very unusual for me.” (FIFO worker quote)

Although not a common theme that arose amongst FIFO workers, it was implied by one worker that the restriction of alcohol consumption imposed by the organisation on one particular site was to encourage behaviours such as bribery to influence members of leadership.

“The supervisors also up there, use their position to get more beers off people, because it’s all to the supervisors whose going to keep who. So all of a sudden, if you’re a supervisor, you’re the richest man on camp because you got 50 beers coming to you because all of these lads are going to be giving you their beers to try and stay on your side. It’s like prison mentality, really, it is.” (FIFO worker quote)

This behaviour was reported to be common practice on this particular site, which can be related to the capability of supervisors (leadership/frontline management) creating a “boys club” through favouritism.

6.3.3.2 Transition home

Within responses, there was little reference to alcohol consumption during the transition home. However, for some the time when heading home is an opportunity to **KICK BACK AND RELAX** and enjoy a drink prior to heading home.

“We’ll finish at six in the morning and our bus will leave at 7:15, so you might go to the bar and just knocked back that taste of freedom and then go home. And that’s just still like, ‘Oh my god! We made it through this one’.” (FIFO worker quote)

A few, however, use **ALCOHOL AS A FORM OF COPING** when returning home.

“And he wants a beer when he first gets home. Yeah. And then we sort of smooth out. Yeah. Yeah, it’s definitely transitions ‘cause that’s how he juggles—manages stress or—yeah.” (FIFO partner quote)

“Our latest actually, which is quite funny, is we did it when he was back last time. I said to him, ‘You should just wait for me to offer you a drink and then if the girls ... you’d have one.’ So, he’s—okay—so, now, he has to wait ‘til his offered a drink from us. So we’ll see how long that lasts for ...” (FIFO partner quote)

6.3.3.3 Time at home (R&R)

Whilst on R&R workers **VARIED** in their **CONSUMPTION OF ALCOHOL**: some chose not to drink at all, others drank in moderation with their partners over dinner and others drank socially.

“At home as well—yeah, I just—I don’t want to waste my days being drunk or hung over ‘cause there’s too many things I want to get done and—yeah, I just don’t—it just makes the recovery from work so much longer and you kind of value those days off so much that I don’t want to waste them.” (FIFO worker quote)

“So, on R&R, I enjoy a red wine. So I’ll have a glass of that with dinner. That’s it.” (FIFO worker quote)

“When I’m on R&R, we might have a bottle a wine each night with meal.” (FIFO worker quote)

“I might catch up with a couple of my mates and we’ll have half-a-dozen beers and talk about what’s happened and since I’ve seen them last.” (FIFO worker quote)

“So tomorrow night, I’m going to watch the football with one of my mates, so we’ll probably go just to the pub over the road, have few beers and we’ll probably come back here and have a few more, and that’s all probably it.” (FIFO worker quote)

Within responses, very few workers identified their drinking to be **EXCESSIVE**.

“When I’m at home, I probably what a medical profession termed as a binge drinker, I do drink a lot when I do drink and that’s mainly when I’m with my friends.” (FIFO worker quote)

“And then—so then, the other big thing that’s become an issue is [FIFO worker’s name] would start drinking and he will drink too much, not every—not daily and not so he’s really ... but he’ll have half a dozen beers, and I’ll just—‘cause ... it’s Monday night, you don’t need to drink on Monday night. So, that’s been the way that he’s—and I’m like, ‘We got to ...’ So, because we’ve been such a—kind of quite a healthy—in a healthy community, we sort of still go out and have walks and get down the beach and go riding and stuff like that, but—so, I’ve been challenged to try and keep him positive and have functional ways to deal with his stress and ‘cause the way—‘cause I deal with it through doing some—just getting it out by going for a run or swim or something like that, so just trying to—” (FIFO partner quote)

6.3.3.4 Transition to site

When transitioning to site, FIFO workers would tend to **NOT DRINK EXCESSIVELY** prior to work or mostly avoid consuming alcohol, to assure they do not “blow numbers” in mind of the potential ramifications.

“And even the night before he goes up North, he doesn’t even have that glass of wine.” (FIFO partner quote)

Summary of findings for KEQ 2

- Alcohol consumption varied across individuals and across the roster phases, with binge drinking occurring during the time off.
- Some choose not to drink or keep drinking to a minimum (e.g. only special social occasions).
- All workers had to keep in mind that they are required to “blow zero” whilst on site,
- Some did not consume alcohol at all due to the site being “dry”.
- Some used alcohol as a form of coping across the roster phases.
- Some workers used alcohol as an avenue for social interaction.
- One worker saw the restriction of alcohol had resulted in something similar to a drug cartel.

6.3.4 KEQ 3: Strategies used by FIFO workers and families

Throughout the interviews FIFO workers and partners shared many strategies which they applied to navigate the FIFO lifestyle. It should be noted that due to variability amongst individuals, couples and families, the strategies adopted did vary in response to worker habits, the nature of rosters and shifts, and partner/family relationships. FIFO workers and partners mainly discussed strategies undertaken personally, social support and organisational support.

Note. Positive (✓) and negative strategies (✗) are identified as such.

6.3.4.1 Personal strategies

Due to the volume of positive personal strategies adopted by workers and partners, the following strategies have been organised into the four roster phases reflective of the mental health and wellbeing fluctuations across each phase.

Time on site

FIFO workers' time on site was experienced differently with great variability as to how they were impacted (i.e. length of time on site, shift changes, camp restrictions, leadership influences, work conditions and family strain). The following details the positive and negative coping strategies applied throughout time on site:

- ✓ **Seeking support from colleagues (social support):** *"So on my fourth week because of mate, [colleague's name], [colleagues name] will pick me up after day one or two, he'll pick me."* (FIFO worker quote)

"I've got my FIFO buddy with me, I mean we go for walk, we go to the gym, we've got that." (FIFO worker quote)

- ✓ **Socialise with colleagues:** *"So, I just go to the gym and try to socialise with the guys that I'm working with a little bit. But, I suppose, you just have to keep your mind active."* (FIFO worker quote)

"For me, we have a poker night, and on the second week, I used to bring down my counsel, we used to play ... six or seven of us, we have a few beers, we're all going back home to bed by half eight-nine anyway, but it's a nice—if you can get any—I always try and bring in new lads to that wherever in our crew because we got a lot of lads at the start." (FIFO worker quote)

- ✓ **Communication with family (access to technology):** *"And also time away from your family for the younger blokes where they've got small kids, two and three, whereas they're really—but now we've got mobile phones where you've got that—you can show them on Facetime."* (FIFO worker quote)

"I try and talk with the wife every night, get her thoughts for the day or whatever, and then you just say, 'You have a good day tomorrow,' and that. That goes a long way, so—and then sometimes during the day—night shift, I get to talk with kids in the morning, and that—just talking to a relative or a kid that—it sort of gives you good energy for the day." (FIFO worker quote)

"I still keep in regular contact with my mum on most nights. And I've noticed that people who work away who speak with their families every night are the happiest people." (FIFO worker quote)

- ✓ **Connecting with mates:** *"Keep my skills up and it also keeps in touch with the lads because most of my mates are plumbers and tradies, so having a connection to the outside world is definitely something that keeps you grounded. There're a lot of Facebook chats with my mate and things like that. You can still do all of that when you're up there. So that's one thing that used to keep me current to what's going on." (FIFO worker quote)*
- ✓ **Taking breaks when needed:** *"So, obviously, breaks when required, go and have lunch, don't take your lunch—sorry, your phone with you to lunch or it may be the computers, have a bit of a break from it, go and talk to someone else during the course of the day and don't sit in my desk all the time, get up and move around, so you're active and just not sitting in front of a screen all day." (FIFO worker quote)*
- ✓ **Adopt healthy habits:** *"Yeah, healthier food, yeah. So I might take up a little bit of chocolate or something, but it's just something—a lot of healthier food, because even to try and eat healthy up there, you can't, even though they try to promote it but it's just got oil all over, but I take avocados and fruits that I really like, so it makes lunch a little bit better." (FIFO worker quote)*
- ✓ **Wind down activities:** *"Depending on, once again, what shift you do, you do a bit of exercise, maybe talk to a couple of the guys, tell stories or something. Usually, everyone just retreats to their room and crashes early, and gets up early, and hits the gym, or watches a bit of TV or something." (FIFO worker quote)*

"I try and go—yeah, I just try and do some exercise, whether that's yoga or go for a walk. I make sure I get—'cause I—in the lab, I am inside quite a bit ... really get much sun, so I try and—whether it's after work or before work or night shift, I try and get outside and just get some sunlight, which definitely ... sleeping as well. I do some meditation sometimes. I read a lot of books. Listen to music. Chat to the people I work with." (FIFO worker quote)

- ✓ **Being organised:** *"I suppose just have a system set up. So, every day—so, it's simple stuff like in your room when you're—in desk, have all your stuff laid out, so—yeah, I need this, I need this, I need that. And you sort of—it sort of starts your day. And then—yeah—getting out of bed on the first alarm, that helps, 'cause when you start to rush, you get out of the door and you've forgotten your—key for your lock or just simple stuff and that can screw the whole day up. So, I suppose, having a system in place in the morning, routine—you go to breakfast, you do that, you do that. I suppose that helps it flow through the day." (FIFO worker quote)*
- ✓ **Sleep hygiene & fatigue management:** *"I basically go to my room and lay there and maybe watch TV and fall asleep, and basically try and get at least minimum of seven hours in, on nightshift. From a dayshift, as long as I get six and a half hours sleep, then you can manage it. You need to get that six and a half, seven hours sleep 'cause if you don't get that sleep, it's gonna catch up with you and it will catch up with you." (FIFO worker quote)*

- ✓ **Practicing mindfulness, gratitude and using imagery:** *"It's just—I close my eyes and I picture that thing in my mind and let it disappear to the back of my mind and it goes grey and it goes greyer and greyer until it goes black. So, it's something I picked up a long time ago and it works quite well. But I can recall it back when I feel like I'm in the mood to deal with it. So, I don't let it take my concentration away in what I'm doing. I could be in a job where I'm working on the machines at ah—you've probably seen the machines, they're two storeys high, and they kick it if you do the wrong thing. So I've got to be totally aware of that. So hence why I do that, so I can put a hundred percent concentration into what's around me, what I'm doing, and—because I've seen guys up there hurt themselves bad through that little bit of lack of concentration, so—yeah. So that's why I try and—if I am in a situation where I've got a bit of a hiccup in my life or whatever, I put it to the back of my mind."* (FIFO worker quote)
- ✓ **Routine to breakdown time during the day:** *"I have these key points in the day that I go, nine o'clock, smoko get that done, then drag that out for as long as I can and then get back into doing whatever I have to do until about say one o'clock, maybe half 12, lunch, then you're going to have another half-three where you have certain things that you have to do and that's really into the end of your day. So it's like, 'Right, Let's get to nine o'clock,' so you get the nine o'clock and you're like, 'Here's nine o'clock done,' and then you might see your mate come back in and he's getting his lunch, and you have a little bit of a chat and whatever, and then on for another fives or whatever on your own and just getting—so really, that's how you do it, you just get through it."* (FIFO worker quote)
- ✗ **Keeping events to oneself:** *"Well, I've got to be positive for [FIFO partner], too. She—I've got to keep her feeling that everything is going to be okay. Otherwise—over the years, I have had a—I mean, a lot of depression from the young lady, from [FIFO partner]. So, that is now sorted, but it was just in our early years. So I've got to be positive of what I put across, but it's second nature now. I don't think about it."* (FIFO worker quote)
- ✗ **Desensitisation to feelings:** *"Instead of trying to be emotional about it all, you just sort of brush a fair bit away, just push it to the side, or push it to the back of the cupboard so to speak in certain situations and that sort of stuff. And you do desensitise when you're doing FIFO, and then, I think the reality is it becomes a habit if you do it too much."* (FIFO worker quote)

The following lists the positive coping strategies applied by partners whilst the FIFO worker is on site:

- ✓ **Building resourcefulness and resilience:** *"I have probably become a lot more independent. I used to be quite nervous on my own at night times around the house."* (FIFO partner quote)
"She's a lot more independent now." (FIFO partner quote)
- ✓ **Fostering kids' awareness of FIFO lifestyle:** *"But I guess as she gets older—and we actually have a book and it's really good, it's called 'I'm a FIFO Dad' so we usually try and read that the night—not every night but when he does go back, I try and put that one in there just to—yeah."* (FIFO worker quote)
- ✓ **Developing social networks:** *"With regards to day-to-day being affected, you would be affected with regards to—I suppose, support and help. He can't go and collect the kids for me"*

if I'm stuck somewhere or I have to rely on other people, like I've had to create my own circle of people I trust and—yeah, basically that's it. Just support, to be honest.” (FIFO partner quote)

Transition home

The following lists the positive and negative coping strategies applied by workers during their transition home:

✓ **Gauging partner mood and communication ahead of arrival home:** *“Within the first day. Yeah. Yeah. Pretty back on track—if I haven't wrapped her up before coming back—sometimes I'll pull over in [town name] somewhere and have a yarn with her on the phone she's already—knows what mood I'm in and I know what mood she's in. So, I don't come home and get surprised with a grumpy face when I walk in the door.” (FIFO worker quote)*

✓ **Open communication and accommodating differing needs:** *“Well, I notice that his patience on the time that he's off, we will have to give him at least a day to actually come out of this grumpiness that he's got. He needs a day and he would never ask for it, but it's certainly something that I know that—not to kind of bombard him with questions or even to be in his company. I feel like he needs time alone when he gets back down and in that respect, he's definitely [FIFO worker's name] is a very sociable character, but it's definitely had a tinge of an effect on him.” (FIFO worker quote)*

“So, that's the first lesson I learned was holding on, give him space to try and get his sleeping patterns back, and when he's ready. Because you just don't know what's happening out there that he's had a hard time or whatever. The last thing he needs to hear, more challenges when he come back, so that's one of the things—” (FIFO worker quote)

✓ **Managing fatigue when returning home:** *“So, I make sure that I make the most of it and I forget that I've just done that two weeks and I just am tired for the first day, but I'm not gonna sleep through my first day.” (FIFO worker quote)*

“Some people try and—like the morning that you come back, they don't go back to sleep, so they'll do 36 hours and crash that night and then they're pretty good. They're not done, but they're well and truly on the way, whereas I'll have two or three hours midday and force myself up, and then at night, I'll go back to bed again at night and then—but then you wake up and then you—yeah. So you just keep trying to build up your night time sleep and lessen your day time sleep.” (FIFO worker quote)

✓ **Counting days till returning home:** *“Eventually, you do because, again day one, day two is you're pretty, 'Oh, god, here we go,' and you're counting the days, you're counting the hours, and then by day three, you're starting to come round.” (FIFO worker quote)*

✓ **Plan something special for family:** *“I think she's probably a lot more positive because we live an hour from the airport so—because I get in so late, we generally book a hotel room for her and [son's name], so they, sort of, make a day out of it, where they'll drive up to Cairns and do something in Cairns for the afternoon and it's a really happy day for them, 'cause [son's name] knows that I'm coming home that night. I suppose it's a niner—yeah, probably a nine for them that day because they don't have to travel <laughs>.” (FIFO worker quote)*

Time at home (R&R)

As described within the findings, workers' time at home is seen to be very positive. Workers use this time to rest and recuperate from their time on site, reconnect with family and friends, and partake in activities that are unable to be undertaken whilst on site. Below are the strategies FIFO workers use when at home.

To manage some of the challenges workers discussed the following effective strategies to manage work demands when at home (e.g. limiting times of email checks, screening calls, enjoying the send of importance and satisfaction:

- ✓ **Checking emails only twice a day (if required):** *"Again, I don't go and check emails. I will check it pretty much once a morning and once a night on my day off just to see what's there, nothing major, let it go till Monday."* (FIFO worker quote)
- ✓ **Screening calls (if required):** *"So, if it's important, no problem. But I'll screen my calls. If it's one of my guys, I'll take the call. If it's someone that I—anyway, he'll ring back if it's important."* (FIFO worker quote)
- ✓ **Viewing connection as positive aspect (if required):** *"Definitely, yeah, it's happened a lot less in the last couple of years, but the first three years, on this plant, [used to] get rung up a lot while I was at home or see an email while I was at home. So, yeah, I don't see it as a negative thing, 'cause it's—in my—it gives me some satisfaction that I'm still wanted and it also gives them, I suppose, some satisfaction in knowing that they can move the job forward. So, it's—yeah, it's good on both sides."* (FIFO worker quote)
- ✗ **Putting up with it:** *"I get phone calls all the time. So—which [FIFO partner's name] got to come to terms with."* (FIFO worker quote)
- ✗ **Feeling annoyed:** *"Depends what it is 'cause it can really annoy you when you're supposed to be relaxing and then you have to deal with something."* (FIFO worker quote)

To compensate for the time spent apart, R&R is used by most to re-connect with family, friends and partners; to maintain relationships and support their partners, workers use a variety of strategies:

- ✓ **Planning and going on outings and holidays:** *"So, yeah, he'd go out with the kids, like school holidays. Dad's more fun than mum 'cause ... rides I can't do, whereas dad does. So, dad would take them to the ... they actually did that and last school holidays, he took them up to Aussie World and we had a ball."* (FIFO partner quote)

"But that week off, you can—we're going on a holiday soon to Bali, so that just works perfect—a week—so you can do things like that." (FIFO worker quote)
- ✓ **Spending quality time with partner (incl. dates and special events):** *"Usually when the kids go to bed, we just hang out the back and just talk and just relax. We have done in the past, gone out for a few hours, gone out for a meal, but to tell you the truth, our kids are at an age that—and they're well-behaved that when we go out, we like to join them."* (FIFO worker quote)

"I think FIFO for me, the best thing about it, is just that when [FIFO worker's name] does get back, we do have that nice quality time together and we sort of really look forward to seeing each other again and then we go out for lunch and do some really nice family things." (FIFO partner quote)

"Obviously I go out with the missus to lunch, that sort of thing, or taking the kids out for breakfast, or somewhere in there. I'm taking one of the kids to the movies, or something." (FIFO worker quote)

✓ **House maintenance:** *"Obviously, a lot of things around the house, maintenance, and that kind of thing." (FIFO worker quote)*

✓ **Flexibility and sharing responsibility of tasks:** *"I almost take a step back. Fortunately, I am blessed with [FIFO worker's name] that he will do—like ... some work and tea will be on the table or he'll be cooking [tea], he'd do washing, and he does the ironing. So I'm—he almost takes over what we call the household duties when he's home and I don't do anything and then obviously when he goes back, then I start doing it all again, but—yeah, I almost take a step back and allow him." (FIFO partner quote)*

"So, he'll sort the washing out, he'll do the ironing. So when I get in from work, he's got tea ready. Not every day. Obviously I don't work every day. So when I'm home, I'll cook him [tea] or we get takeaway and what have you." (FIFO partner quote)

"I think a lot of it—when I get home, she's relieved I'm home because it takes the pressure off her. 'Cause obviously when I'm at work, she has to get up in the morning, do the kids' sandwiches, and lunch, and breakfast, and do all that. And then, go to work herself, whereas when I'm home, I get up—I'm always up first because I'm just—I'm an early bird, always have been an early starter. I get up. By the time she gets up, the kitchen is sorted out, there's a cup of tea waiting for her, the kids' sandwiches are made. She can just get up, have a shower, and ... traffic—takes a lot of pressure off. Yeah. So, I think a lot of it is relief that I'm home to do stuff for her." (FIFO worker quote)

Transition to site

Leaving home and heading to site for a majority of workers and partners was experienced to be a negative process. As noted, emotionally it was a sad and stressful time due to a number of factors, including kids not wanting the dad/mum to leave, pre-emptive missing of one's significant other and overload due to outstanding tasks (e.g. house maintenance) still to be completed. To manage this emotional time, workers and partners put in place several strategies:

✓ **Heading to site earlier:** *"So that's his adjustment to settle in, rather than go up there late in the day and just get up there and go to bed. I think he enjoys the drive up there, get his washing done, settle in, and have a bit of a beer with the boys. That's his routine. That's his little bit of relaxation time as well to have a bit of beer with the boys before he starts his shift the next day; which is fine, that's fine with me. They're his workmates, they're his friends." (FIFO partner quote)*

"That's why I prefer to drive because that gives me a lot of time to think, any hiccups that I did leave behind me, kid-wise, credit-wise, [FIFO partner]-wise. I just spend a lot of time thinking

which, on one hand is not bad but other hand you can make a mountain out of a molehill.”
(FIFO partner quote)

- ✓ **Helping workers with packing:** *“The only thing I need to do is just make sure he’s got everything he needs to go back for the—as in shopping, that’s the only thing I really need to do, just make sure that he’s got his shopping and stuff like that, so he doesn’t have to buy anything up there.”* (FIFO partner quote)

- ✓ **Being organised:** *“I mean, like today, I went shopping this morning, and I’ve been through my stuff to see what I need. And I bought some razor blades. And so, I’ve got my—getting my stuff ready to go again for another three weeks, so—yeah. So, I just—or I try to get things organised before I leave.”* (FIFO worker quote)

“Also, I’m a terribly systematic person. I have a very detailed checklist. So, 24 hours before I leave, I pull out the checklist and start literally packing the stuff.” (FIFO worker quote)

- ✓ **Getting enough sleep:** *“I fly—I’ve made a personal choice to fly in on the Monday night before the Tuesday morning and that way I got a reasonable night sleep the night before I start.”*

“I try to get to sleep early the night before and have a good night’s sleep, try and plan myself and set myself for the week ahead, so—yep.” (FIFO worker quote)

- ✓ **Not planning too many activities:** *“So, don’t really do anything on a Sunday night if there is anything on I’ll do it mid-afternoon to early evening. I won’t be out all Sunday night and then it’s pack up my house, clean up.”* (FIFO worker quote)

- ✓ **Prepare the kids:** *“I start to explain to [son’s name] that dad is going to go back to the island even though I’m not on [site name] anymore, we just call it island because it makes sense for him. So I’m hoping that he’s asleep when I leave or I could just slip off, a little bit less emotionally attached in the last time. It’s tough. It is tough. It’s really tough.”* (FIFO worker quote)

- ✗ **Putting on a “brave face”:** *“I can feel with [FIFO worker’s name], he gets a little bit stressed about making sure everything is done before he goes, making sure he’s got everything before he flies out. So, I’d like to think I’m quite sort of laidback, so just trying to think. Yeah. So, I try not to think about it until he actually [flies out]. So, I try and keep—I suppose I keep positive for him.”* (FIFO partner quote)

“Make it a positive thing rather than—obviously, if I’m depressed and just like, ‘Oh, I don’t want you to go,’ that makes it harder for him. So, that’s—I think that’s what you gotta do is try and be positive for them ‘cause I know he doesn’t wanna go. It’s work and it obviously pays the bills, but I don’t wanna make it harder for him by being all low and depressed.” (FIFO partner quote)

General

The following strategies were found to run across the FIFO worker and partner experience:

- ✓ **Job sharing:** *“I’ve just gone on to job share ... So, it now means that you still do the same shift, but you’re there for two weeks and you have four weeks off, so you’re missing one swing.”* (FIFO worker quote)
- ✓ **Stronger relationship:** Although there are no direct quotes, overall couples that were more successful in navigating the FIFO lifestyle seemed to cope better with the associated challenges than those that were in partnerships that were not as aligned to each other’s needs.
- ✗ **Sacrificing mental health in the interests of remuneration and benefits for family:** *“Again, I’d have to say, the financial side of it. When you see that money going in every week, it does help with your cope. You get the payday, and you think, ‘Oh, God, that’s why I’m there.’ That’s the reason I’m putting myself and my family through this is—and you see that pay back. It—that’s—yeah, that helps you get through.”* (FIFO worker quote)

6.3.4.2 Organisational strategies

- ✓ **Peer support / Mentor / Buddy System:** *“All the rest of them that I can give people numbers too or if they just want to just shoot the breeze with me, I’ll sit up all night if I have to with them. And this strive connector thing, I said to the young lads, I said, ‘Well, okay, it’s two weeks on, one week off.’ Now, this guys is feeling shitty, shitty, shitty, I’ll be back in a week just hold that thought, nah it doesn’t work like that. So we give our numbers out and that blew them away. They didn’t know. They didn’t think ahead like that where someone’s in a drama or having a hiccup. It’s not going to stop because the R&R is there, so I have had a few occasions. I had twice where I’ve had people ring me at home.”* (FIFO worker quote)

“The people do have problems but they’re too scared to talk to the supervisor or leading hand because—but they’ve been informed about our program and what we do, and they stuck on site, and they feel like they have to talk to someone.” (FIFO worker quote)
- ✓ **Provision of mental health course on site:** *“Once a month they get everybody in and they said ‘Oh, we’ve—’ a lady came down, [name], her name was, I think, and she said, ‘Oh, we’re going to run this healthy minds—’ they just wanted a healthier—people eating healthier, people thinking healthier, which will make people work better and everything. They just see a small real quick sort of thing on mental health just touched on it and they just said that if we want some people in the workforce because a lot of people aren’t confident talking to their bosses and stuff, so people on the same level.”* (FIFO worker quote)
- ✓ **Leadership reward and recognition:** *“So, the best thing about that job was the fact that I had a lot of respect from management and my supervisor, because they knew that if they needed something done, or they—I knew—I was the person to come to and—yeah, my supervisor said to me a few times, ‘I’m so glad that you came back, mate. We couldn’t have this without you.’ And so, those sorts of things help me get through the days. They’re—being appreciated, not just financially.”* (FIFO worker quote)

- ✓ **Leadership support:** *“Yeah, then when he said, ‘Do you want to catch up for a drink?’ ‘Yeah, sure, no worries,’ and said, ‘Well whenever you’re ready, come back,’ and I said, ‘I’ll be ready. Give me about five, six weeks.’ So that was from when I was meant to fly back up so after the funeral went and all that kind of stuff. I think I went back up at mid-September. So I had about a good month off when he passed.”* (FIFO worker quote)
- ✗ **Lack of organisational support:** Some FIFO workers discussed that there is a lack of support from FIFO organisations. Most FIFO companies did endorse support organisations such as EAP and mental health hotlines, however, these were perceived by workers as being linked directly to the organisation, and they were therefore concerned that confidentiality would not be maintained.

6.3.4.3 Other strategies

Two workers adopted an approach whereby they sought the support of external parties such as a health professionals:

- ✓ **Seeing health psychiatrist:** *“So, he has been seeing a psychologist—psychiatrist, sorry, for quite a long time, so he’s not going to him now but only because he’s got some pretty good strategies in place. So, the guy that he was seeing gave him lots of coping mechanisms and I think things like exercising, diet, less alcohol, beach walks, swimming, clearing your head that kind of thing, and I think he’s reading a few books and things. So I think that he can—he does get better but then things would trigger him and he doesn’t even know what and he just becomes really low. And he had an episode, or whatever it was, a few weeks ago where he—I was actually away, I think I was in Sydney or something, and yeah, he just was really low and he couldn’t get himself out of it and I said to him, ‘That’s when you need to go and see him again and just recalibrate where you’re at because obviously something is not going right,’ and I even mentioned, you know, ‘Maybe you should look at going on some pills,’ and he’s like, ‘No, that’s not the answer. I’m going to be back so that’s fine.’”* (FIFO worker quote)
- ✓ **Mental health courses:** *“There’s sort of courses where you go and sort out your problems and learn to deal with them and in different way—your frustrations and stuff. I did a couple of those. It’s called Simple Living—years ago. So, I did a couple of those courses and that was really awesome ‘cause my mum and dad got a divorce and that was pretty hard when I was young. So, these courses sort of helps you deal with all that life stuff. So, that was a big help and I just draw back on that.”* (FIFO worker quote)

Summary of findings for KEQ 3

To cope with the challenges of FIFO a variety of strategies were adopted; the main findings that supported mental health and wellbeing include:

- Manage fatigue when transitioning home and whilst on R&R to ensure adequate reoperation.
- Take the time to re-connect with family and friends, putting in effort to maintain one's relationship with partner.
- Take the time to prepare oneself prior to heading to site to manage stress and anxiety.
- Seek support from friends, family and leadership when on site, adopting healthy habits.
- As a partner, establish a support network.
- In a partnership, take the time to understand each other's needs.

6.3.4.4 Key advice from FIFO workers and FIFO partners

The last interview question of the schedule asked FIFO workers and partners to reflect upon the advice they would give to others considering a role within FIFO. Responses to this particular question reinforced the most important elements of FIFO work that influence the mental health and wellbeing of workers and families. The below WordCloud (see Figure 6.6) highlights the most common considerations to make before entering the FIFO lifestyle, such as: money, work, away, roster, end, life, need and long.

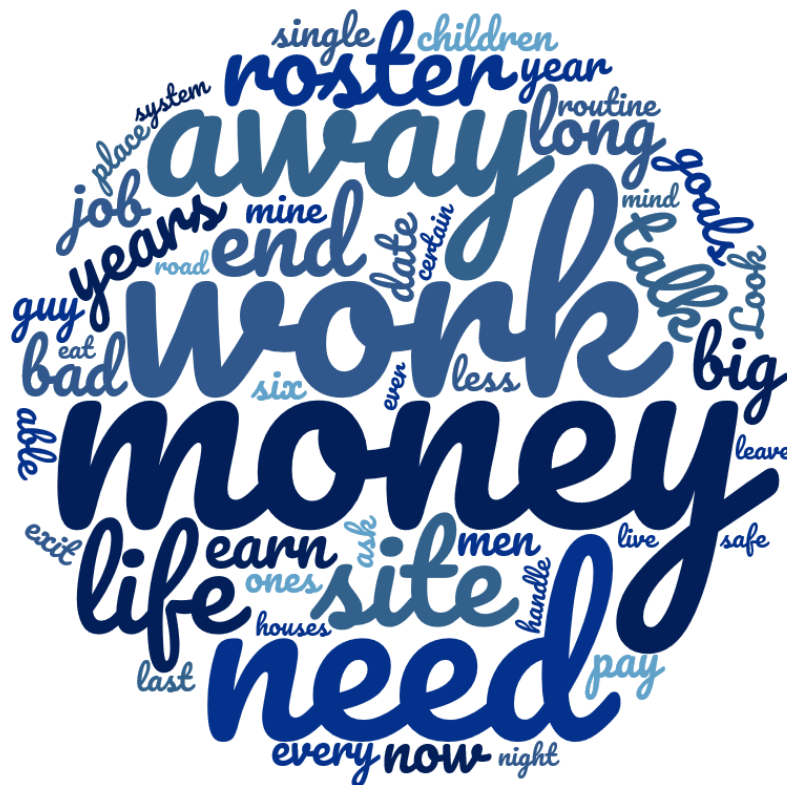


Figure 6.6. WordCloud of advice provided by current FIFO worker's to others considering a role in FIFO.

The advice provided by current FIFO workers and partners was categorised into two areas: 1) considerations before entering into FIFO work, and 2) advice for navigating the FIFO lifestyle.

Before FIFO work

1. **Be aware of the nature of FIFO work before starting:** *“If they’ve never ever done it before, I would definitely—I would suggest that they are really made aware for all those things we talk about—the conditions, what to expect, the possible impact on their family, children, lives.”* (FIFO worker quote)
2. **Choose rosters that work for your family and social circumstances:** *“Well, if someone’s was thinking about FIFO, really work out whether why they’re wanting to do it. Have a bit of a plan, do some research depends of what rosters are available to them and what roster suits their family.”* (FIFO worker quote)
3. **Acknowledge that FIFO work arrangements may not be suitable for everyone, depending on your family circumstances:** *“So basically, yeah go in open-minded but if you’re not cut out to being away from your family and stuff like that, FIFO is definitely not for you if you can’t handle being told what to do, not for you.”* (FIFO worker quote)

During FIFO work

1. **Set yourself a routine on site:** *“So you got to be regimental. You got to wake up at that time. You have your routine. You don’t vary off it too much, you might alter it to suit a little bit ... It was just a little mentality thing. It was a good thing. It was nice, that regimentation.”* (FIFO worker quote)
2. **Maintain your health through a sensible diet, sufficient rest and physical activity:** *“I guess my biggest bit of advice is to really understand ... your own limits in terms of how much you’re putting your body through. I see a lot of people that I work with, they’ll start working FIFO and they’re healthy and they’re really excited about it at the beginning, they’re getting all right sleep, but then—yeah, there’s five different desserts they can choose from, and so they start having dessert every day and they don’t realise that that’s impacting on their ability to sleep and impacting on their ability to make judgements emotionally and they don’t realise how much their diet and exercise to contribute to their ability to sleep and to focus and to make judgements ...I guess so many people that I work with, they get sick all the time and they don’t sleep properly and things like that, and I know exactly why—it’s because they eat lollies every day and they have five coffees and ... they don’t sleep as much as they—they don’t put an emphasis on improving their sleep environment and things like that.”* (FIFO worker quote)
3. **Ask for help if you are struggling to cope:** *“If something is not right, you need to put your hand up. There’s no point working through but if there’s someone—I’ll try to and there’s someone out there that can help you ... There’s no point hiding it. People just need to speak up.”* (FIFO worker quote)
4. **Make financial plans and save the money that you earn from FIFO:** *“Set a (financial) goal and how long it’s gonna take you to get to that goal, and when you get to that goal, draw the line, and leave.”* (FIFO worker quote)
5. **Make exit plans:** *“So, I think FIFO work is something that’s good for a short term but I think you have to set your goals and try and stick to them because a lot of these people that stick with it long term, sort of, end up with broken homes and—so I think you’ve got to set your goals from the start and try and stick with them and don’t get in too deep ‘cause there is a life outside of FIFO.”* (FIFO worker quote)

6. **Keep in regular contact with friends and family while on site:** *“I suppose to remain on the same page, to chat to one another, to support one another, and to look out for signs that somebody’s struggling ... So I think it’s really important that there is support there and I think for the space at home with a male or female to really listen to when they actually need support. You can hear a cry for help. They don’t need to say it. You can hear in their voice. You can hear if somebody’s lethargic and it’s really important that you just maintain that support.”* (FIFO worker quote)
7. **Be open in your communications and discussions with your partners:** *“You need to have a very in-depth conversation with your partner, family, whoever it is that’s gonna be at home. You know, very big conversation with them to make sure that what you’re doing is going to be okay both for yourself and them. But once again, it’s easy to talk about then you’ve got to actually physically do it.”* (FIFO worker quote)
8. **Engage with colleagues on site as a source of social support:** *“You can become very disconnected very quickly in FIFO. I mean if you weren’t a very sociable person, you’d find it very hard. And because of that as well—I’ve see lads that aren’t very sociable, still nice people but they come across like standoffish and then people don’t tend to make an effort with them either and segregate themselves and as well and it’s very hard, you try but there’s only so much—again, these are grown men, you’re not dealing with kids, so you’re not going to keep doing it, and eventually, they’re the ones that suffer.”* (FIFO worker quote)

6.3.5 Former FIFO worker and partner

The findings derived from the former FIFO worker and partner experience exploration yielded similar patterns to the current FIFO interviews. As such, the findings can be found within Appendix D.5, where additional themes regarding life post-FIFO are described.

6.4 Summary interview study

Answering KEQ 1a

To answer KEQ1a: “What are the mental health impacts/benefits of FIFO work arrangements (if any) on workers?” the interview study explored the mental health and wellbeing as well as resources and demands of FIFO workers across the four roster phases (i.e. time on site, transition home, time at home (R&R) and transition to site).

Key findings in response to this questions are:

- Engaging in the FIFO lifestyle often meant a trade-off between high remuneration and social wellbeing due to the extended periods of time away from friends and family. Workers often miss out on important family events such as: birthdays, Christmas, school functions, weddings and social events with friends. The disconnect to family and friends whilst on site led to feelings of isolation, exemplified when communication challenges arose.
- Workers were also impacted by cultural elements on site such as: limited avenues for social interaction, lack of leadership support, fear of repercussions associated with safety, superficial mental health and wellbeing support from organisations, organisational care, and camp institutionalisation driven by company rules and regimes.
- When it was time to head home, all workers described feeling happy and excited although fatigued. When at home, managing their fatigue was important to ensure they could adequately recuperate, which is made challenging on shorter R&R periods. Spending the time at home reconnecting with one’s partner and family members.
- When it was time to head back to site, most workers expressed feelings of stress and anxiety due to overload, and sadness as they did not want to leave their family. Generally, this transition time was reported to be the most challenging.
- A general theme that underpinned the FIFO lifestyle was the periods of high and low job security due to changes in the industry; when not financially stable, the feeling of job insecurity led to heightened feelings of stress and anxiety.

Answering KEQ 1b

To answer KEQ1b: “What are the mental health impacts/benefits of FIFO work arrangements (if any) on FIFO families?” the interview study explored the mental health and wellbeing of partners and families across the four roster phases (i.e. time on site, transition home, time at home (R&R) and transition to site). FIFO families within the sample ranged from those with no kids, young children, kids still in school and young adults. Therefore, the resources and demands for each family impacting mental health and wellbeing were different.

Key findings in response to this question are:

- Whilst the workers are on site, partners feel the strain associated with being a “de-facto single parent”, carrying all the responsibilities that come with maintaining a home and looking after children by oneself.
- As there is only so much support that can be provided by the FIFO worker whilst away, the partners at times feel a sense of overload in dealing with challenges by oneself.
- The nature of the FIFO lifestyle as communicated by the interviewees had an eventual negative impact on children.
- The transition period when the FIFO worker was returning was filled with excitement and happiness for families, but also a period of adjustment for all (positive and negative).
- For the family, during R&R, time was spent reconnecting with the FIFO worker and partaking in a myriad of activities (depending on preference) throughout the duration of time at home.
- The day(s) leading up to the FIFO worker transitioning to site was seen to be a sad time for families in anticipation of missing their loved one, impacting them emotionally. Partners felt anxious and sometimes experienced dread as they knew they would have to return to being alone.

Answering KEQ 2

To answer KEQ2: “What are the possible harmful drinking habits, alcohol consumption and use of illicit drugs (particularly use of short-acting illicit and new synthetic substances) by FIFO workers and how does this use impact their mental health?” the interview study explored substance use of FIFO workers across the four roster phases (i.e. time on site, transition home, time at home (R&R) and transition to site). FIFO workers’ responses in regards to alcohol consumption varied depending on their preferences regarding drinking.

Key findings in response to this question are:

- Alcohol consumption whilst on site was determined by several factors, including:
 1. Workers required to “blow-zero”
 2. Sites being a dry facility
 3. Night shift limiting opportunity for alcohol consumption within the wet mess
 4. Level of enjoyment in work
 5. The perception and reality of the wet mess being the only avenue for social connectedness
 6. Tendency to use alcohol as a way of coping with the challenges of FIFO site life, including: fatigue, work stress and a long roster, finding a sense of release through alcohol.
- Limited reference to alcohol consumption and illicit drug use during the transition home, few using it as an opportunity to relax and de-stress.
- When on R&R alcohol consumption was mixed with some not drinking at all, and others drinking socially with their partners or friends.
- When transitioning back to site, many workers reported not drinking at all or limiting the consumption of alcohol.

Answering KEQ 3









To answer KEQ3: “What positive/negative strategies do FIFO workers and their families use to reduce the mental health impact associated with FIFO work arrangements?” the interview study explored the types of strategies undertaken by workers and families across the four roster phases (i.e. time on site, transition home, time at home (R&R) and transition to site). FIFO worker and partner responses in regards to the types of strategies varied depending on the stage of the roster, familiar responsibilities and length of the roster.

Key findings in response to this question are:

- FIFO workers, partners and families adopt many strategies that help them navigate the FIFO lifestyle (see Table 6.7 for strategy summary).
- Most strategies undertaken were positive, with few negative.
- There was an evident lack of strategies implemented by the organisation to support FIFO workers and families.
- When FIFO workers were asked to give advice to others considering a role in FIFO, three overarching themes arose:
 1. Have a plan (e.g. tenure in FIFO, financial plan, FIFO lifestyle suitable for family etc.)
 2. Seek and find support
 3. Be aware of the nature of the FIFO lifestyle prior to entering.

Table 6.7

Summary of strategies undertaken by FIFO workers and partners to navigate the FIFO lifestyle

	Positive Strategies		Negative Strategies
Planning 	<ul style="list-style-type: none"> – Make a plan (with partner/family) to include tenure for FIFO employment, financial goals and exit strategy – Consider (if possible) a roster and role that suits worker and family requirements – Plan ahead for R&R time to ensure worker and family needs are accommodated 		<ul style="list-style-type: none"> – No financial, contingency or exit plan and assumed job security – Persisting with FIFO work arrangement when there is a significant impact on worker and/or family mental health and wellbeing – No plan for R&R time and negative affect on family, loss of friendships and disengaging from social activities and hobbies
Relationships 	<ul style="list-style-type: none"> – Whilst on site, maintain regular communication with family and friends that accommodates everyone's routines – Engage in active, open and positive communication with loved ones – Recognise differing family needs and be flexible, especially with children 		<ul style="list-style-type: none"> – Poor understanding of each other's (FIFO worker and partner) needs and stressors when together and apart – Not recognising the importance of regular and good communication for nurturing relationships with loved ones (i.e. family conflict and competing demands)
Support 	<ul style="list-style-type: none"> – Foster relationships on site and talk to supportive colleagues and supervisors – For both FIFO worker and partner, foster and maintain friendships and identify support networks in home community – Support each other with family and household responsibilities during R&R period – Build resilience and resourcefulness to manage time apart – Seek help if needed and see this as a strength not a weakness 		<ul style="list-style-type: none"> – Not seeking help due to organisation not being committed to mental health; stigma evident and leaders not supportive – Not raising concerns due to fear of losing job and leaders with a poor management style
Health 	<ul style="list-style-type: none"> – When at work take regular breaks – Adopt healthy habits physical (exercise and nutrition) and mentally (wind-down activities) – Ensure sufficient rest and manage fatigue during all stages of a swing 		<ul style="list-style-type: none"> – Disengaging from feelings and withdrawing from social networks and activities – Not talking about concerns and "putting on a brave face" – Using alcohol as a form of coping – Accepting or "putting up" with work encroaching on R&R time

7 Conclusion and recommendations

As FIFO work is common in WA and will continue to be required into the future, it is important to direct attention towards mitigating or preventing the mental health risks associated with the FIFO work arrangements. The current research indicates there are ways in which the mental health risks associated with FIFO work arrangements can be mitigated or prevented.

Consistent with the idea that mental health is a shared responsibility between the organisation and the individual, research suggests there are steps that organisations and individual FIFO workers (and their families) can take to improve mental health.

Based on findings from this project, a large body of research across multiple industries and the expertise of the research team, it is recommended that employers and other stakeholders take active steps to mitigate against, and as far as possible prevent, mental health risks associated with FIFO work for workers and their families.

The Centre for Transformative Work Design's "Wellbeing at Work" model is used to identify three categories that employers and other stakeholders can engage in. These include the following:

- (1) **Mitigate illness.** Strategies that provide help to those employees already suffering from mental health issues.
- (2) **Prevent harm.** Strategies that build workforce capabilities and work systems that protect employees from risks to their mental health.
- (3) **Promote thriving.** Strategies that go beyond reducing mental ill health to those that promote positive wellbeing and employees who fulfil their full potential.

Within these categories, recommendations are made based on the findings of this research, including those from the literature review, surveys, interviews and longitudinal study.

Recommendations to mitigate illness

Mitigate illness: work culture and mental health framework. The FIFO workers and their partners in this research experienced poorer mental health compared to the benchmark group and norms. It is therefore important to ensure that poor mental health is identified and effectively supported. Benefits of mitigating mental ill-health problems include: reducing instances of illness, injury or disease amongst FIFO workers, as well as reducing organisational costs such as those associated with absenteeism, turnover and workers' compensation claims.

This research highlighted the importance of having an overall supportive climate in which employees are respected and their mental health and wellbeing is taken seriously. The survey showed that, when the organisation was considered to place a high priority on employee health and safety, this is associated with better mental health.

Workplace mental health is a relatively new focus for organisations and requires specialist training, knowledge and skills. It is cross-disciplinary and the expertise could be drawn from organisational or health and safety specialists, human resources, nurses, social work or psychology.

Recommendation 1: Develop a culture that prioritises mental health

Organisations and leaders should demonstrate genuine commitment to improving the mental health of their workforce:

- Develop an overarching and integrated mental health framework linked to all aspects of the organisation's values, policies and procedures. This needs to be embedded in the workplace culture.
- Engage/employ/train skilled specialists in workplace mental health and wellbeing who are equipped to design and implement a mental health framework.
- Mental health should be given the same status and resources as other aspects of occupational health and safety.
- Engage employees at all levels to contribute and share in the responsibility for mental health and wellbeing within the workplace and camp accommodation.

Mitigate illness: legal responsibilities and psychosocial risks. Efforts to reduce mental health risks and to improve worker mental health are also consistent with OSH laws; the principal OSH law being the Occupational Safety and Health Act 1984 (WA), supported by the Occupational Safety and Health Regulations 1996 (WA). According to these regulations, *"duty-holders must ensure, as far as is practicable, that they are not exposing people to health and safety risks arising from the work"* (with health including **mental** and physical health). Part of the model work health and safety act includes: *"that the health of workers and the conditions of the workplace are monitored to prevent injury or illness arising out of the conduct of the business or undertaking"*.

In recent times, cases of litigation, for example by emergency services workers, highlight the legal responsibilities of employers to address psychosocial risk factors. Compensation claims due to mental health issues are also rising.

It must be acknowledged that, regardless of causality, the FIFO workforce experiences higher levels of psychological distress and is vulnerable to suicide. Failure to address this leaves the sector open to litigation, as has been the case in other industries and professions. The lens of mental health and wellbeing should be applied across all areas of the business to establish the work-related risks in line with the findings from this research.

All types of work have the potential for positive and negative impacts on mental health, and FIFO work is no exception. The known psychosocial risk factors²⁴ applicable to all work include:

- Excessive work demands (emotional, mental, physical)
- Low control
- Poor support
- Lack of role clarity

²⁴ Safe Work Australia (2014). Preventing psychological injury under work health and safety laws Fact Sheet. Retrieved from <https://www.safeworkaustralia.gov.au/system/files/documents/1702/preventing-psychological-injury-under-whs-laws.pdf>

- Poorly managed change
- Poorly managed relationships
- Low levels of recognition and reward
- Organisational injustice

There are also specific psychosocial risks within particular occupations and jobs that should be measured and monitored.

Recommendation 2: Assess psychosocial risks and monitor the mental health of FIFO workers and the factors that affect their mental health

- Use psychometrically valid tools to assess the mental health of FIFO workers as well as the psychosocial risks (including FIFO-specific risks) that affect mental health.
- Benchmark and track FIFO worker mental health and psychosocial risks over time.
- Ensure the implementation and the process of any assessments are well designed such that workers feel safe to be honest and report risks without repercussions.
- Design interventions based on the assessed risks, and evaluate the interventions to assess their effectiveness.

Mitigate illness: management and supervision. A key finding was that leaders play a pivotal role in relation to worker mental health. The interviews suggested that supportive direct-line supervisors were positive for FIFO worker mental health, whereas poor management skills had a negative impact. It is therefore vital that direct line managers have the skills and capabilities to create a positive work culture, in which bullying is not accepted, it is possible to discuss mental health openly, and emotional and job support is provided. A positive work culture created by supervisors and managers has a flow-on effect in terms of the recruitment, engagement and retention of staff (employer of choice) and business costs (turnover, sickness, compensation claims and production outcomes).

Recommendation 3: Provide mental health training for direct line managers

- Managers and front-line supervisors should be trained to understand mental health, be able to identify the factors that affect worker mental health, and provide appropriate support.
- Managers and front-line supervisors should be recruited and promoted for their abilities to create a positive work culture and demonstrated people management skills such as respect, trust building, problem solving, conflict resolution and empathy.
- Prioritise the training, coaching and supervision of managers and front-line supervisors to build their knowledge and skills.
- There should be recognition of the time managers require to prevent and manage mental health issues.

Mitigate illness: stigma. Stigma and masculine norms were found to be a significant factor that prevented FIFO workers from seeking help. Prejudice, discrimination and ignorance underpin stigma; therefore, education and initiatives that promote a culture of psychological safety are important to address these behaviours and attitudes. Sharing stories and experiences from a diverse range of people who have experienced and overcome mental health challenges is also a useful way to address stigma and break down masculine norms.

Recommendation 4: Address the stigma associated with mental health

- Organisations should strive to reduce the stigma related to mental health and monitor the effectiveness of anti-stigma interventions.
- Educate workers to recognise and understand mental health issues.
- Ensure regular opportunities to reinforce and challenge misconceptions and myths regarding mental health, such as during toolbox talks and return-to-work meetings.
- Establish a supportive environment in which people feel safe to share their experiences and ask for help.
- Encourage leaders and a diverse range of others to talk about their own mental health as this has been found to be particularly positive in addressing stigma in the workplace.

Mitigate illness: support services. FIFO workers and partners were aware of only a few support options, mainly the organisation's Employee Assistance Provider (EAP). Helplines were mentioned by less than a third, which is low given how broadly Lifeline, Beyond Blue and Suicide Call Back are communicated. Helplines have been shown to be effective in engaging individuals at serious risk of suicide and in reducing suicide risk among callers. Helplines are anonymous and address the concern that some people don't trust the confidentiality of EAP.

Industry, government and other relevant stakeholders should go beyond a one-size-fits-all approach and ensure that support options suit the constraints of FIFO work and the demographics of FIFO workers.

Recommendation 5: Educate and promote a broad range of support services

- Call numbers for EAP and helplines should be visible and readily available to all employees in the workplace and in the camp accommodation.
- Emergency 24/7 site contact number/persons should be available for workers and family.
- Ensure workers and family members have information about the organisation's EAP service, including that sessions are no-cost and confidential.
- Organisations should raise awareness of a broad range of support options that are relevant and accessible for FIFO workers and their families, including: EAP, helplines, GP/Medicare mental health plans, private health fund provisions and other wellbeing programs, government and community services, e-mental health support, online resources and credible, evidence-based mobile phone apps.
- Information about available support should be promoted via different mediums and across the employment life cycle.

Mitigate illness: mental health emergencies. FIFO workers scored slightly worse on thwarted belonging (but not burdensomeness) and suicidal intent when compared to the benchmark group. These differences were mainly attributable to their education and job role.

Suicide-related outcomes in the study might be amplified when multiple factors are considered together. For example, the combination of riskier alcohol use and poor mental health is a concern because these factors influence suicidal thoughts and behaviours²⁵. Further, thwarted belonging is shown to be related to a lack of social support and feelings of loneliness²⁶, as loneliness (and happiness with relationships) was related to all mental health and wellbeing outcomes in this study, including suicidal intent.

The research suggests that FIFO workers have riskier alcohol and other drug use compared to the benchmark and norm group. The research shows a significant relationship between substance use (alcohol and other drugs) and poor mental health and wellbeing in FIFO workers (this link was not found in the benchmark group). This suggests that alcohol and other drug use might be a coping strategy for mental health issues.

The high levels of other work-related risk factors such as bullying and fatigue, as well as individual factors such as poor coping style, relationship and financial stress, show a complex picture in which many factors impact mental health. Therefore, organisations need to plan for, and respond to, critical incidents and mental ill-health in a safe and supportive way.

Recommendation 6: Ensure strategies, policies and procedures are in place to manage mental health emergencies and injury

- Develop a suicide prevention plan and site (workplace and camp) evacuation policy for mental health emergencies.
- Ensure return- to- work and injury management policies include employees experiencing mental ill- health and support strategies to return to work at the earliest opportunity.
- Ensure there are anti-bullying, alcohol and other drug, and fatigue management policies that recognise the interrelationship of these factors and their relationship with mental health.
- Implement workplace support programs with a proven track record and that are evidence based (e.g. employees trained in mental health first aid for on-site peer support).
- Ensure key personnel are trained appropriately to respond to mental health emergencies.
- Evaluate the effectiveness of the above strategies.

²⁵ Wilcox, H. C., Conner, K. R., & Caine, E. D. (2004). Association of alcohol and drug use disorders and completed suicide: an empirical review of cohort studies. *Drug and alcohol dependence*, 76, S11–S19. doi: 10.1016/j.drugalcdep.2004.08.003. Slade, T., Johnston, A., Teesson, M., Whiteford, H., Burgess, P., Pirkis, J., Saw, S. (2009). The Mental Health of Australians 2. Report on the 2007 National Survey of Mental Health and Wellbeing. Department of Health and Ageing, Canberra.

²⁶ Van Orden, K. A., Cukrowicz, K. C., Witte, T. K., & Joiner, T. E. (2012). Thwarted belongingness and perceived burdensomeness: Construct validity and psychometric properties of the Interpersonal Needs Questionnaire. *Psychological Assessment*, 24, 197–215. doi: <http://dx.doi.org/10.1037/a0025358>

Recommendations to prevent harm (poor mental health)

Prevent harm: mental health awareness. As well as ensuring that signs of mental ill-health are identified and that support is given, it is crucial to take steps to prevent the emergence of mental ill-health. This recommendation is consistent with Work Health and Safety regulations to take reasonably practicable steps to “prevent exposure to hazards”.

Improving the mental health literacy of all FIFO workers and their understanding of the range of factors that can impact mental health (e.g. alcohol, bullying, fatigue) and strategies to support wellbeing ensures the individual is better equipped to take responsibility for their own mental health. The findings demonstrated that active coping styles (e.g. seeking support) are better for mental health.

Recommendation 7: Increase mental health literacy through information and training for all workers

Educate and provide training to FIFO workers to enhance their understanding of mental health and associated factors and strategies to support wellbeing, including:

- Mental health awareness across the spectrum of wellbeing.
- Alcohol and other drugs education to encourage alternatives to and the effective management of alcohol use, tranquilisers and sleeping pills.
- Anti-bullying and supportive workplace practices that address masculine norms.
- Fatigue management training that promotes good sleep hygiene practices and reduces workers’ reliance on alcohol and pharmaceutical interventions.
- Positive and active coping styles and self-care to support mental health and “fitness for work”.

Prevent harm: preparation and education for FIFO workers and families. FIFO workers in the interviews identified that it was important for new workers to do their due-diligence regarding the lifestyle prior to entering into the role and for them to be provided with information, strategies and tips to make FIFO work well.

The findings from the research showed that the psychological transitioning between work and home is associated with the mental health and wellbeing of FIFO workers. Returning back to site was found to be the most challenging transition phase and settling back into life at home also required a level of adjustment for both the FIFO worker and family.

The interview study showed that during their time on site, the perceptions of FIFO workers and their partners differed in respect to the mental health and wellbeing of the FIFO worker. This could be due to a lack of understanding or communication difficulties or the adoption of a “brave face” to avoid worrying or burdening their partner.

Interviewees were, in general, making the FIFO lifestyle work well. FIFO workers and partners described many positive strategies to mitigate poor mental health (e.g. goal setting, reframing negative thinking, focusing on the present, reminding oneself of the reasons for doing FIFO, and

individual and family rituals to help prepare for transitions). Findings also demonstrated that an active coping style and/or seeking support are better for mental health.

Recommendation 8: Prepare and educate FIFO workers and their families for FIFO work

- FIFO workers and partners should receive information about the benefits and challenges of a FIFO role and lifestyle prior to employment so they can make informed choices.
- Comprehensive inductions, education and ongoing training which support FIFO workers and partners to navigate the FIFO lifestyle could include:
 - Strategies to plan and manage FIFO for all family members, including children, for example, when missing important family events.
 - Educating workers and their families on common issues they might face, potential coping strategies, and guidance as to how to best to support each other.
 - Educating and assisting FIFO workers and partners to better understand and manage the transitions between FIFO and home life, as this is when many experience poor levels of mental health (return to site), and fatigue and competing needs (return home).
 - Building skills for effective communication and strong relationships.
 - Tips and ideas from other FIFO families who make the lifestyle work well.
 - Financial literacy, budgeting and planning.
 - Planning for economic and life events across the employment lifecycle, including redundancy, retirement and career changes.

Prevent harm: communication. Communication with family is an important protective factor for mental health and wellbeing. Both the survey and interview studies revealed there was anxiety associated with the inability or limitations to connect with family and friends when on site. FIFO workers need to have a reliable means to contact home when in camp, as well as the flexibility when at work during times of critical need. Good communication and technology infrastructure is essential.

Recommendation 9: Provide reliable communication options and foster connections with home

- Telephone and internet infrastructure should be adequate to ensure workers can stay connected to their family and social networks, especially at times of high demand.
- Organisations should foster an environment which recognises the importance of family and the challenges of separation and missing out on important events.
- Organisations should provide some flexibility for workers to be in contact with family members during work hours when there are extenuating circumstances.
- Provide a dedicated contact point or individual on site for family to contact in time-critical and highly important situations.
- Ensure FIFO workers are able to call 24/7 emergency helplines from their accommodation.

Prevent harm: support for family. The research found that partners of FIFO workers also experience higher levels of psychological distress than relevant norm groups and that this is partly associated with FIFO work arrangements. If the worker experienced job satisfaction and good social connections, then the partner had better mental health. Aspects of family stress could be alleviated by implementing many of the recommendations, as well as targeted initiatives that enhance family wellbeing.

Recommendation 10: Implement initiatives that support FIFO partners and families

- Organise family days, site visits and initiatives for partners and families to learn more about the FIFO worker's experience.
- Establish or link families, especially those new to FIFO, with support groups, mentors or buddy systems.
- Provide an on-site contact or "family liaison" person that partners can contact in an emergency or for advice.
- Develop resources to capture stories of how families make FIFO work well, useful services, tips and common problem-solving ideas.

Prevent harm: rosters. The research found that workers on different rosters and shifts had different levels of mental health. FIFO workers on rosters of 4 weeks on/1 week off, 3 weeks on/1 week off and 2 weeks on/1 week off had higher levels of psychological distress than those on other rosters.

The interview study suggested that having enough time off is important for recovery and quality time with family and friends (particularly after being away for weeks at a time). Travel in own time, long travel distances encroaching on R&R and returning home very fatigued were all raised by interviewees as issues that impacted wellbeing. The shift type was also found to impact mental health. Working night shifts is associated with worse mental health and wellbeing.

The data from this research lends itself to better determine optimal roster and shift structures, which was beyond the scope of this study. Implications for increased business costs should be weighed against a healthier and happier workforce, reducing other costs and improving productivity.

Recommendation 11: Implement rosters and shift structures that optimise mental health and wellbeing

- Organisations should strive for even-time and shorter roster schedules.
- Risk assessments of transitions; travel to and from site and day-to-night shift changes should be undertaken to ascertain the impact on mental health and fatigue and potential for improvement.
- Options to move or be housed in the regional, local township should be considered and offered where possible.
- Organisations should investigate the wellbeing and health consequences of various work arrangements (e.g. days for a swing, nights for a swing vs dividing one swing into days and nights).
- Prepare and educate workers to manage these arrangements and optimise health (e.g. lighting and sleep hygiene) and provide adequate recovery time between day and night shift transitions.

Prevent harm: job factors. Factors that influenced the mental health and wellbeing of FIFO workers included different job and employment contracts, job insecurity, high work load and low levels of autonomy. Staff working in catering, camps and logistics and those in construction or employed by contractors were found to have the poorest mental health.

Recommendation 12: Identify and monitor the impact of job roles, work design, workloads and employment contracts on mental health

- Identify and address the work design, cultural and other work factors that increase the vulnerability of certain job roles to poor wellbeing (i.e. employees in camps and catering, construction and workers employed by contractors).
- Proactively monitor workloads and other psychosocial risks in order to identify and address any individuals or roles that are overloaded.
- Make adjustments such as additional staff, job rotation, training or increased autonomy, with the specific adjustments depending on the specific psychosocial risks identified in a job.
- Organisations should ensure contracted companies and labour hire meet the same standards and protections (e.g. rosters, EAP) as those in place for their own employees.

Prevent harm: camp and community. Survey results showed social events on site were found to positively influence mental health and wellbeing, whereas the gym and pool did not have significant links. Social isolation and loneliness both on site and at home were related to poorer mental health.

Some interviewees stated that good friends and team mates eased the transition back to site. Others said the wet mess was the only option for socialising while on site, which likely encouraged drinking and riskier habits. The research findings suggest value in creating a strong sense of community at accommodation villages and providing opportunities for building relationships and social interaction. This promotes health and wellbeing, recovery from work, social connection and an increased sense of choice and control.

Recommendation 13: Build community and social connections

- Organisations should offer and promote a range of different activities on camps and accommodation sites that are social in nature and which cater to different interests (e.g. sporting activities, BBQs, games and quizzes, special interest clubs, music and entertainment events).
- Workers should be engaged in identifying, or take responsibility for organising, activities and events.
- Community engagement or activity officers could be employed or the role of lifestyle coordinators extended to enhance community and social aspects of accommodation villages.
- Villages should be designed to ensure there are a range of physical spaces for social activities and opportunities for interaction besides the wet mess.
- Contact and integration with local communities should be facilitated where possible, ensuring positive benefits for all.

Prevent harm: camp regulations. Greater autonomy whilst on camp was found to be associated with better mental health and less consumption of alcohol. Many interviewees referred to unnecessary rules and regulations in accommodation villages, restrictions to leaving camp or accessing the townships, being “fenced in” and under surveillance, dictating of meal times, sleep times, inflexible mess opening hours and dress codes during time off on camp. Whilst it is recognised that some of these practices may have arisen as an effort to protect workers, they can have the effect of making the FIFO camp experience like that of an “institution”, as described by many interviewees.

Recommendation 14: Review FIFO camp rules and regulations and assess the impact on mental health

- Where possible, provide a greater level of autonomy for FIFO workers during time off on-site.
- Test the necessity of “rules” against the impact they have on FIFO worker mental health and wellbeing.
- Encourage trust, respect and responsibility, and give workers an opportunity to relax and experience their time off in a positive way.

Prevent harm: camp accommodation. The research found a correlation between better mental health and having permanent rooms. It is likely this is associated with a greater sense of belonging and community. It also enables workers to individualise their room and leave personal items, and is more akin to private accommodation.

Recommendation 15: Provide a permanent room at accommodation sites

- Organisations should enable workers to remain in the same permanent accommodation space where possible.
- Take steps to encourage a sense of security, place and belonging.

Prevent harm: finance. Job insecurity was associated with poorer mental health outcomes. This contributes to workers (and partners) feeling stressed about their future and income. For many interviewed, the motivation and benefits of FIFO work were financial, and were embedded in the desire to provide a better lifestyle and opportunities for their family. Sometimes, the prolonged uncertainty about potential job loss and the disruption to the workplace caused by ongoing redundancies during an economic downturn was a major stressor. This was particularly the case if the worker had substantial debt, no savings and limited alternative employment options.

Recommendation 16: Recognise the mental health risks of financial stress and job insecurity

- As far as possible, organisations should put strategies in place to maximise permanent employment and minimise or ease job insecurity if experienced by workers.
- Educate and prepare workers for the economic cycle prior to employment and at inductions.
- Improve financial literacy through education.
- Promote discussion of career pathways as part of the supervision and performance management process.
- Keep workers informed of organisational change, job losses, contract renewal and future work opportunities within the organisation.
- Support workers to obtain alternative employment following end-of-contract through outplacement and recruitment agents, and provide avenues for upskilling.
- Manage redundancy processes, recognising the mental health impacts on the employee who is losing their job, and those involved with the decisions and implementation of redundancies, as well as the disruption to teams through the loss of colleagues and increased workloads.

Recommendations to promote thriving and positive mental health

Promote thriving: positive mental health. The concept of thriving involves initiatives to enhance **positive** mental health and wellbeing. Just as physical health is more than the absence of illness and disease (for example, physical health includes good cardiovascular functioning and fitness), mental health is more than just the absence of anxiety, depression and stress. Positive mental health includes, for example: wellbeing, feelings of competence and worth, and engagement.

Strategies for promoting thriving include, for example, high performance work designs, transformational leadership styles, and strengths-based development. The benefits of promoting thriving include increases to employee engagement and proactivity and, thereby, increases to organisational innovation and productivity. Although the focus of the current research was not on thriving, we note the potential for interventions which promote FIFO workers' wellbeing and capacity to flourish.

Recommendation 17: Identify and implement strategies and interventions to enable FIFO workers to thrive

This could include promotion of, for example:

- High performance work designs.
- Initiatives to build high quality connections.
- Strength-based development.
- Transformational leadership (e.g. visionary and inspirational leaders).

Recommendations for additional research

Additional data analysis of the existing research could address some issues that were beyond the scope of this project. Further research could also be undertaken. One useful research strategy could be to follow up and track FIFO workers in the current sample over time to ask the question “how are things changing, for whom, and why?”. If there are improvements in some workers’ mental health relative to now, then the causes could be identified (e.g. changes to roster, permanent accommodation, mental health awareness training, place making and social activities on camp). This research could be done across the broad participant cohort or could also be undertaken for individual companies or sites.

The data presented in the current research could be used to carry out utility analyses to assess the economic and social value of mental-health-orientated interventions relative to the investment cost. Such analyses can be helpful for motivating employers and other relevant stakeholders to prioritise such interventions.

Recommendation 18: Identify and prioritise further research

Options could include:

- Expanded analyses of the data collected in this research.
- Conduct a follow-up study, including as many as possible of the existing study participants, as a cost-effective way of reviewing progress for FIFO workers as a whole, and as a powerful way to establish the impact of interventions.
- Conduct utility analyses to demonstrate the economic and social value of interventions to improve FIFO worker/family mental health.

8 Glossary of terms

Term	Description
Anecdotal	Information based on casual, personal observations. There is a lack of a systematic, rigorous scientific analysis.
Comparison group	Groups between which a comparison is made. A limitation of comparison groups is that it is impossible to create a perfect match with the target group.
Control group	In an experimental design the control group receives no treatment (or a different treatment) and is compared to the experimental group who does receive treatment.
Correlation	The degree to which two variables are associated with each other. This is a common statistical analysis, which uses a number between -1.00 and +1.00. If the number is negative, the relationship between the two variables is negative; a positive number gives a positive relationship. The correlation is usually abbreviated as <i>r</i> . Correlations do not identify causality.
Cross-sectional design	Analysis of data that has been collected from individuals in a population at one specific point in time. Normally it is not possible to describe the cause and effect between the variables. It is possible to look at a lot of information at once and determine if there are correlations.
DAS-scale	Dyadic Adjustment Scale. This scale is a self-report measure (for both partners) of relationship adjustment. It has 32 items.
DASS-21	Depression Anxiety Stress Scales. The DASS-21 is a short version (with 21 items) of the DASS scale, which normally has 42 items. It measures negative emotional states—depression, anxiety and stress—over the previous 10 days.
Descriptive	Studies only describe the characteristics of the sample and give summary data. They might show the percentages of a single variable and do not give causal relationships or links. Descriptive data can't answer questions about why the characteristics are there and to what extent they are related.
Ethnography	This is a method to study people and cultures. An ethnographic study aims to understand the group of people from their own point of view. Such a field study will give insights into the everyday life of the cultural group.
Exploratory	Exploratory research will be conducted in an area where none or not a lot of previous research has been done. It helps to determine priorities in the research field in terms of key concepts and issues and establish the best research design for future investigation.
FACES	Family Adaptability and Cohesion Scale. It evaluates the adaptability and cohesion dimensions in family interactions. It has 42 items.
Focus groups	A small number of people—usually around 4–12—who will have a roundtable discussion group looking at specific topics or problems on which they will give

their opinions, attitudes or possible solutions. Often the focus groups are guided by moderators to keep the discussion flowing and to collect and report the results.

Hypothesis	A proposed explanation based on theory to predict a causal relationship between variables.
Kessler 10 (K10)	Kessler Psychological Distress Scale (K10). Measures anxiety and depression. It has 10 items and assesses the constructs for the past 30 days.
Longitudinal design	A research design in which the researcher collects data on individuals over a longer period of time at several points in time. It makes it possible to observe changes and test causality between constructs.
Measurement	The way in which the researchers obtain a numerical description of the extent to which persons, organisations or things possess a certain characteristic.
Meta-analysis	An analysis of the results of multiple studies. These studies look at similar hypotheses and a meta-analysis combines their findings. Meta-analysis gives an overview of the evidence that exists on a certain topic and gives direction to future investigations.
Null hypothesis	A research hypothesis says that there is no significant difference between two populations or no link between two variables.
Peer-reviewed journal	Peer review is a process through which rigour and quality in academic publications is ensured. When a researcher submits their work to a peer-reviewed journal it is evaluated by experts in the field for critical evaluation. The peer review also determines if the paper is suitable for publication in the journal.
Qualitative research	Uses non-numerical data. Used to explore processes, underlying reasons and motivations on a topic. The most commonly used research methods are: interviews, case studies and open-ended survey questions.
Quantitative research	Uses numerical data and statistics to gain an understanding of causal and correlational relationships between variables.
Rigour	A way to determine the quality and trustworthiness of the research. To establish the rigour, researchers will, for example, look at the theoretical foundation, sample size, measures used, method of analysis and if the article has been peer reviewed.
Semi-structured interview	The interviewer has a framework and a set of questions or themes to ask about. However, there is room for follow-up questions to explore topics that are raised in more detail, depending on what the interviewee brings up. In a structured interview there is no room to deviate from the set of questions that are used.
Scale	A range of response options that is used for measurement in research. Scales that can be used are nominal (placing data into categories), ordinal (ranking of characteristics), interval (survey rating scale on a 5 or 7-point scale) and

ratio scales (similar to interval but with a true zero point, such as measuring length).

Significance (statistical)	A term which indicates how likely it is that a difference or relationship exists. The probability that a hypothesis (where there is no difference or relationship) can be rejected at a predetermined significance level (usually at 0.05, 0.01, or 0.001). The significance level itself does not indicate if the difference is large or important, as it is affected by, for example, sample size.
Site	Refers to any mining/oil and gas location.
Study design	The set of methods and procedures researchers use to measure and analyse the variables in the study.
Theory	Thought process, logic and reasoning behind exploring a research topic. This is based on known principles and helps in building a coherent body of knowledge. A theory is not as specific as a hypothesis. However, in good practice hypotheses are derived from theory.
T-value	Outcome of a statistical test, called the T-test. It measures the difference between averages. If T is close to 0, it is more likely that there isn't a significant difference. Is T further away from 0, it counts as evidence against the null hypothesis (saying there is no significant difference).
Validity	The survey questions actually measure what they are designed to measure (construct validity). A method can be reliable, consistently measuring the same thing, but not valid.
Variable	The entity that is being measured and can take on different values. A dependent variable is affected by an independent variable (a variable that the researcher can manipulate) to establish cause-effect relationships.

9 References

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*Impact of FIFO work arrangements on the mental health
and wellbeing of FIFO workers*

Appendices



Appendix A Literature review

A.1 Overview tables of studies in systematic literature review

A.1.1 KEQ 1a: Studies on mental health impacts/benefits and FIFO work

Paper	Aspects of mental health and wellbeing considered	FIFO work attributes	Main findings	Type of study	
Results from electronic search					
1	Albrecht, S. L., Anglim, J. (2017, in press). Employee engagement and emotional exhaustion of fly-in-fly-out workers: A diary study. <i>Australian Journal of Psychology</i> , 1–10. doi: 10.1111/ajpy.12155	Job resources: <ul style="list-style-type: none"> - autonomy - supervisor support - co-worker support - organisational support Demands: <ul style="list-style-type: none"> - workload - emotional demands 	<ul style="list-style-type: none"> - Engagement and supervisor support decline over time - Emotional demand increased over time - Day-level autonomy predicted day-level engagement - Day-level workload and emotional demands predicted emotional exhaustion 	Survey study Longitudinal FIFO workers ($n = 52$) During one roster swing on one mine site Testing of links between variables	
2	Barclay, M. A., Harris, J., Everingham, J., Kirsch, P., Arend, S., Shi, S. & Kim, J. (2013). Factors linked to the well-being of fly-in-fly-out (FIFO) workers. Research Report, CSRM and MISHC, Sustainable Minerals Institute, University of Queensland, Brisbane, Australia.	Physical health: <ul style="list-style-type: none"> - weight Mental health: <ul style="list-style-type: none"> - sleep - stress - work-life balance Emotional wellbeing: <ul style="list-style-type: none"> - social isolation Satisfaction with: <ul style="list-style-type: none"> - salaries - commute model - job in general - life 	Work characteristics: <ul style="list-style-type: none"> - job role - wages - work location - commodity - industry - shift length and roster cycle - commute type and distance Commute arrangements Accommodation and amenities <ul style="list-style-type: none"> - room conditions - recreation areas 	Physical and mental health <ul style="list-style-type: none"> - A majority of participants (75%) reported overall good or very good levels of physical and mental health - 83% reported above midpoint life satisfaction levels - 75% experienced good or very good health Sleep disturbance <ul style="list-style-type: none"> - 70% reported some level of sleep disturbance - 20% reported moderate to severe sleep disturbance Mental wellbeing <ul style="list-style-type: none"> - 54% reported feeling lonely or socially isolated - 5% reported moderate to severe stress levels 	Survey study FIFO workers ($n = 286$) Reporting frequencies and prevalence only Correlations described without effect sizes

				<ul style="list-style-type: none"> - Rates of depression, anxiety and stress among the sample were lower than data for the general population <p>Accommodation</p> <ul style="list-style-type: none"> - Amenities like pool etc. are preferred, but privacy is more important <p>Correlation between work-life balance and workplace attributes:</p> <ul style="list-style-type: none"> - 10 out of 13 were significant <p>The five strongest relationships were:</p> <ul style="list-style-type: none"> - roster schedule - supportive management - quality of accommodation - shift length - team relationships 	
3	Devine, S. G., Muller, R., Carter, A. (2008). Using the framework for health promotion action to address staff perceptions of occupational health and safety at a fly-in/fly-out mine in north-west Queensland. <i>Health Promotion Journal of Australia, 19</i> , 196–202. doi: 10.1071/HE08196	Physical health <ul style="list-style-type: none"> - health and safety issues Fatigue General wellbeing	<ul style="list-style-type: none"> - Management support - Roster 	<ul style="list-style-type: none"> - Roster patterns, combined with sleeping difficulties on site were seen to cause fatigue in the workplace - 10-day shift/5 days R&R/8-night shift/5 days R&R roster were perceived to have improved fatigue issues - Management changed the roster to an 8-day shift/6 days R&R/8-night shift/6 days R&R - Staff felt that roster changes had made a significant improvement to the issue of fatigue and generally had a positive influence on overall health and wellbeing 	Focus groups FIFO workers ($n = 123$ across 22 focus groups) Single mine site, conducted between 2011–2015 Monitors staff perception changes as part of a larger intervention
4	Gillies, A. D. S., Wu, H. W., & Jones, S. J. (1997). The increasing acceptance of fly-in/fly-out within the Australian mining industry. 1997 AusIMM Annual Conference—Resourcing the 21 st Century, Ballarat, Australia, 12–15 March 1997. Ballarat: AusIMM	<ul style="list-style-type: none"> - Job/professional satisfaction - Impact of FIFO on social life 	<ul style="list-style-type: none"> - FIFO arrangements per se 	<ul style="list-style-type: none"> - FIFO workers generally favour the FIFO approach compared to a mining town approach - Results show that responses have a tri-modal shape in that some FIFO workers either very much dislike FIFO, are neutral or like it very much 	Survey study FIFO workers ($n = 227$) Information from FIFO/non-FIFO operators and employees Description of frequencies

5	<p>Haslam McKenzie F. M., & Hoath A. (2016). Aboriginal Mine Workers: Opportunities and Challenges of Long-Distance Commuting. In F.M. Haslam McKenzie (Ed.) <i>Labour Force Mobility in the Australian Resources Industry</i> (pp. 157–170). Singapore: Springer. doi: 10.1007/978-981-10-2018-6_9</p>	<p>Social wellbeing</p> <ul style="list-style-type: none"> - isolation from loved ones - cultural integrity of mining activities - general cultural differences 	<ul style="list-style-type: none"> - Rosters of employment - Housing - Family engagement - Mentors on site - Infrastructure that allows contact with home - Quality of supervision 	<ul style="list-style-type: none"> - Job sharing is discussed as a way to provide more flexibility - Housing emerged as an issue - Engaging family in the work orientation program - Education around the realities of working FIFO in full-time employment - Ability to contact home promotes wellbeing and reduces distress - Supervision was recognised as affecting all FIFO workers 	<p>Interview study ($n =$ unclear) Book chapter reviewing evidence In-depth interviews with representatives of Aboriginal organisations, local government and organisations Focus groups and small scale survey study with FIFO workers Interviews with FIFO spouses No sample sizes or analysis methods indicated</p>
6	<p>Joyce, S. J., Tomlin, S. M., Somerford, P. J., & Weeramanthri, T. S. (2013). Health behaviours and outcomes associated with fly-in fly-out and shift workers in Western Australia. <i>Internal Medicine Journal</i>, 43, 440–444. doi: 10.1111/j.1445-5994.2012.02885.x</p>	<p>Current mental health problems</p> <p>Physical health behaviour information:</p> <ul style="list-style-type: none"> - levels of physical activity during - leisure time and work - fruit and vegetable serves usually eaten per day - body mass index (BMI) 	<ul style="list-style-type: none"> - FIFO work or other shift work - Work hours - Work activities 	<ul style="list-style-type: none"> - FIFO workers had a lower self-reported prevalence of current mental health problems compared with shift workers and other employment types - FIFO work tends to involve more physically demanding tasks than other work arrangements - FIFO workers work the longest mean hours per day out of all employment types considered - FIFO workers are more likely to be overweight. 	<p>Survey study WA residents ($n =$ 11906) FIFO workers: 4.4% Comparison with shift workers and other employment types WA Health and Wellbeing Surveillance System (HWSS)</p>

7	Lester, L., Waters, S., Spears, B., Epstein, M., Watson, J., & Wenden, E. (2015). Parenting adolescents: Developing strategies for FIFO parents. <i>Journal of Child and Family Studies</i> , 24, 3757–3766. doi: 10.1007/s10826-015-0183-	<ul style="list-style-type: none"> - Levels of stress - Distress, anxiety, depression (K10) - Personal strengths and difficulties 	<ul style="list-style-type: none"> - FIFO work per se - Roster types 	<ul style="list-style-type: none"> - FIFO workers and their partners score higher on distress level than national comparison sample (2007 Australian National Survey of Mental Health and Wellbeing) - No link between roster type and FIFO level of distress - FIFO workers on equal time rosters report higher levels of distress than unequal time rostered FIFO workers 	Interview study FIFO workers ($n = 23$) and their partners ($n = 21$) Primary focus on parenting K10 via interview and survey of SDQ Small sample size for comparison with national data
8	McTernan, W. P., Dollard, M. F., Tuckey, M. R., & Vandenberg, R. J. (2016). Beneath the surface: An exploration of remoteness and work stress in the mines. In A. Shimazu., R. Bin Nordin., M. Dollard & J. Oakman (Eds.), <i>Psychosocial Factors at Work in the Asia Pacific: From Theory to Practice</i> , (pp. 341–358). Switzerland: Springer International Publishing. doi:10.1007/978-3-319-44400-0_19	<ul style="list-style-type: none"> - Stress - Experience of remoteness (social isolation) 	<ul style="list-style-type: none"> - Job demands and resources - (Psychosocial) safety climate 	Resources that emerged <ul style="list-style-type: none"> - co-worker support Demands that emerged <ul style="list-style-type: none"> - work pressure (long hours, consequences of mistakes) - work-family conflict - physical environmental exposure Safety (psychosocial and physical) culture was found to be an additional factor related to stress and wellbeing Health outcomes that emerge <ul style="list-style-type: none"> - sleep - wellbeing (mood, anxiety, social withdrawal, agitation, depressed feeling) 	Interview study Miners ($n = 19$) including FIFO workers and remote miners 11 interviews and 8 via e-mail and network forums Semi-structured interviews Ethnographic study
9	Perring, A., Pham, K., Snow, S., & Buys, L. (2014). Investigation into the effect of infrastructure on fly-in fly-out mining workers. <i>Australian Journal of Rural Health</i> , 22, 323–327. doi: 10.1111/ajr.12117	<ul style="list-style-type: none"> - Sense of community 	<ul style="list-style-type: none"> - Recreational facilities at camps 	<ul style="list-style-type: none"> - Workers were satisfied with the facilities - Use of recreation facilities was limited by travel time to and from camps - Facilities have helped generate a sense of community 	Interview study FIFO mining employees ($n = 7$) Themes identified
10	Sibbel, A. M., Kaczmarek, E., Drake, D. (2016). Fly-in/fly-out accommodation:	<ul style="list-style-type: none"> - Stress - Sense of community 	Perceptions of on-site accommodation (importance and satisfaction with):	Built environment: <ul style="list-style-type: none"> - Quietness of village was rated most important 	Survey study FIFO workers ($n = 536$)

<p>Workers' perspectives. In F. M. Haslam McKenzie (Ed.) <i>Labour Force Mobility in the Australian Resources Industry: Socio-Economic and Regional Impacts</i> (pp. 137–156). Crawley, Western Australia: Springer. doi: 10.1007/978-981-10-2018-6</p>	<ul style="list-style-type: none"> - built environment - personal environment - food services - village lifestyle factors <p>Rosters</p>	<ul style="list-style-type: none"> - Workers were most satisfied with proximity of their room to facilities and quietness of the village - Least satisfied with outdoor recreational activities <p>Personal environment:</p> <ul style="list-style-type: none"> - Communication facilities were rated most important - Satisfaction was high for personal safety and security - Satisfaction was low for communication facilities and entertainment <p>Food services:</p> <ul style="list-style-type: none"> - All aspects of food services were rated as very important; satisfaction was at an average level <p>Village lifestyle factors:</p> <ul style="list-style-type: none"> - Access to medical and counselling on site rated most important, satisfaction levels were average <p>Rosters:</p> <ul style="list-style-type: none"> - Most common rosters were 2/1 weeks and 4/1 weeks; most preferred rosters were 8/6 days and 2/2 weeks - No differences between roster type and stress level identified - Highest level of sense of community identified for rosters of 14 days on-site 	<p>Mostly descriptive results, limited comparisons</p>
<p>11 Sutherland, R. C., Chur-Hansen, A., & Winefield, H. (2017). Experiences of fly-in, fly-out and drive-in, drive-out rural and remote psychologists. <i>Australian Psychologist</i>, 52, 219–229. doi: 10.1111/ap.12194</p>	<p>- Burnout</p> <p>- Separation of work and life</p>	<p>Avoiding burnout:</p> <ul style="list-style-type: none"> - Working in a rural community and then removing oneself supports the psychologists to distance themselves from the issues they are dealing with 	<p>Interview study FIFO psychologists ($n = 6$) and focus group ($n = 4$) Semi-structured interviews Exploratory study, deductive content analysis</p>

12	Torkington, A. M., Larkins, S., & Gupta, T. S. (2011). The psychosocial impacts of fly-in fly-out and drive-in drive-out mining on mining employees: A qualitative study. <i>Australian Journal of Rural Health, 19</i> , 135–141. doi: 10.1111/j.1440-1584.2011.01205.x	<ul style="list-style-type: none"> - Job satisfaction - Mood 	Social life at site: <ul style="list-style-type: none"> - Drinking culture 	Satisfaction with FIFO lifestyle: <ul style="list-style-type: none"> - Workers report to enjoy the lifestyle and interactions with colleagues - FIFO limits ability to participate in team sports Fatigue: <ul style="list-style-type: none"> - Tiredness and sleep disturbances reported by some Mood: <ul style="list-style-type: none"> - Minimal effects identified 	Interview study FIFO or DIDO workers ($n = 11$) (current or former) Semi-structured interviews
13	Vojnovic, P., Bahn, S. (2015) Depression, anxiety and stress symptoms among Fly-In Fly-Out Australian resource industry workers. <i>Journal of Health, Safety and Environment, 31</i> , 207–223. Retrieved from https://www.researchgate.net/publication/285538092_Depression_anxiety_and_stress_symptoms_among_Fly-In_Fly-Out_Australian_resource_industry_workers	<ul style="list-style-type: none"> - Depression - Anxiety - Stress (measured via the DASS-21)	None	<ul style="list-style-type: none"> - 36.31% of participants fell in the moderate/Severe/Extremely Severe categories (one or more conditions) - Differences in all conditions based on gender, family status, education level and length of FIFO service were not identified - Younger age was associated with higher depression, anxiety and stress scores 	Survey study FIFO workers ($n = 629$) Comparison based on gender, age, family status, educational level and level of experience Data dichotomised into two groups: Normal/Mild and Moderate/Severe/Extremely Severe

Results from hand search

14	Bailey-Kruger, A. (2012). <i>The psychological wellbeing of women operating mining machinery in a fly-in fly-out capacity</i> (Master's thesis, Murdoch University, Western Australia, Australia). Retrieved from	<ul style="list-style-type: none"> - Impact on psychosocial wellbeing - Discrimination 	<ul style="list-style-type: none"> - Workplace barriers - Suspension of short-term living - Adaptation to lifestyle 	Three themes from interviews: <ul style="list-style-type: none"> - Workplace barriers to job progression (monotony, discrimination from male supervisors) - Suspension of short-term living for long-term gain (long-term gain, putting home responsibilities and relationships on hold) - Adaptation to the lifestyle (“one of the boys”, getting along, time out; adaptation and coping mechanisms to manage discrimination and get a sense of belonging) 	Interview study Female machine operators ($n = 19$) at one mine site in Queensland Exploratory (research questions, no hypotheses)
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<p>http://ro.ecu.edu.au/theses/1682</p>	<ul style="list-style-type: none"> - Monotony: women tried to get more experience with more complex machinery <p>Suspension of life: impacts on their psychosocial wellbeing Such as: home responsibilities, maintaining relationships, important events, starting a family, and balancing work and family responsibilities</p>	<p>58% had partners working with them at the mine</p> <p>Interpretative Phenomenological Approach</p>	
<p>15 Blackman, A., Welters, R., Murphy, L., Eagle, L., Pearce, M., Pryce, J., Lynch, P., & Low, D. (2014). Workers' perceptions of FIFO work in North Queensland, Australia. <i>Australian Bulletin of Labour</i>, 40, 180–200. Retrieved from http://hdl.handle.net/2328/35154</p>	<ul style="list-style-type: none"> - Social contact with family and friends - Participation in hobbies - Job security - Being on site vs on leave 	<ul style="list-style-type: none"> - 23% of FIFO workers expect to lose their jobs, compared to 9.5% of the general population (Household data, 2011) - FIFO workers are more likely to be on casual (39.4%) or fixed-term contracts (33.3%) than general population (27.8% and 28.2% respectively) - More contact with family and friends, and involvement in sports and social clubs while off site than on site - Very few FIFO workers engage often in sports and social clubs <p>Positives about FIFO work (top three):</p> <ul style="list-style-type: none"> - pay package - sustained periods off - no daily commute <p>Negatives (top three):</p> <ul style="list-style-type: none"> - being away from home - not around for special events/emergencies - long hours 	<p>Survey study FIFO workers ($n = 485$)</p> <p>Descriptive analysis and frequencies</p>
<p>16 Bowers, J. (2015) Submission to the Education and Health Standing Committee: Inquiry into mental health impacts of FIFO work arrangements. West Perth, Western Australia: Australasian Centre for Rural and Remote Mental Health. Retrieved from http://www.parliament.wa.gov.au/Parliament/commit.nsf/(EvidenceOnly)/D421339FD</p>	<ul style="list-style-type: none"> - Mental distress (depression, anxiety, stress) - Management - Rosters - FIFO per se - Missing family events - Finances 	<p>The estimated prevalence of mental distress ranges from 26% to 33% across four of the six sites undertaking underground and open cut mining and construction, which is significantly higher than the national average of 20% (ABS, 2007)</p> <p>Most significant stressors for respondents who reported being stressed to extremely stressed in relation to work factors are:</p> <ul style="list-style-type: none"> - senior management - length of swing - length of shift - stigma relating to mental health in the workplace <p>Most significant lifestyle stressors for respondents who reported being stressed to extremely stressed are:</p> <ul style="list-style-type: none"> - the remoteness of their living circumstances 	<p>Survey study FIFO workers ($n = 994$)</p> <p>Large sample</p> <p>Not a lot of mining sites (6)</p> <p>use of K10</p>

0A9DCB848257D3B0021E569 ?opendocument		<ul style="list-style-type: none"> - social isolation and lack of social participation <p>Family-based stressors for respondents who reported being stressed to extremely stressed are:</p> <ul style="list-style-type: none"> - missing special events such as birthdays and anniversaries - relationship with partners, children and parents - financial situation 	
<p>17 Bowers, J., Lo, J., Miller, P., Mawren, D., & Jones, B. (2018). Psychological distress in remote mining and construction workers in Australia. <i>The Medical Journal of Australia</i>, 208, 391–397.</p>	<p>Mental health:</p> <ul style="list-style-type: none"> - depression and anxiety (K10) - work - lifestyle <p>Social isolation</p> <ul style="list-style-type: none"> - Family factors 	<ul style="list-style-type: none"> - roster - resource sector - location of rest and relaxation <p>Most frequently reported stressors were:</p> <ul style="list-style-type: none"> - missing special events (86%) - relationship problems with partners (68%) - financial stress (62%) - shift rosters (62%) - social isolation (60%) <p>More high psychological distress in workers:</p> <ul style="list-style-type: none"> - age 25–34 years (vs > 55 years) - on a 2 weeks on/1 week off roster (vs 4 weeks on/1 week off) - who were very or extremely stressed by their assigned tasks or job, their current relationship or their financial situation <p>who reported stress related to stigmatisation of mental health problems</p>	<p>Survey study FIFO workers ($n = 1124$) At ten sites in South Australia and Western Australia 2013–2015</p>
<p>18 Bradbury, G. S. (2011). <i>Children and the fly-in/fly-out lifestyle: Employment-related paternal absence and the implications for children</i> (PhD thesis, Curtin University, Western Australia, Australia). Retrieved from https://espace.curtin.edu.au/</p>	<ul style="list-style-type: none"> - Depression - Anxiety - Stress (measured via the DASS-21) - Relationship satisfaction (DAS) 	<ul style="list-style-type: none"> - FIFO per se <ul style="list-style-type: none"> - FIFO depression and stress scores did not differ significantly from norm sample data - Anxiety was significantly lower in FIFO workers compared to norm sample - Relationship satisfaction not significantly different to norm sample - 70.2% report to be mostly or definitely satisfied with FIFO arrangements <p>Interview Study</p> <p>FIFO perceived advantages of FIFO work (top three):</p> <ul style="list-style-type: none"> - financial security - quality time with family - time off <p>FIFO perceived disadvantages of FIFO work (top three):</p> <ul style="list-style-type: none"> - missed special events - missing family <p>adjustment to work/family</p>	<p>Survey study FIFO workers ($n = 47$), partners ($n = 48$) and children ($n = 48$) Interview sample is the same PhD Thesis</p>

19	Carter, T. (2008). <i>An exploration of Generation Y's experiences of offshore Fly-in/Fly-out (FIFO) employment</i> (Honours thesis, Edith Cowan University, Western Australia, Australia). Retrieved from http://ro.ecu.edu.au/theses_hons/1166/	<ul style="list-style-type: none"> - Adjustment during transition periods - Depression - General wellbeing 	<ul style="list-style-type: none"> - FIFO per se - Workplace culture - Time off 	<ul style="list-style-type: none"> - Participants reported depressive feelings in the time leading up to their return to work and during the first few days of their trip - Time off allows activities that increase sense of wellbeing - Workplace culture entails sense of camaraderie and mateship among employees - Culture also entails others attempting to establish a sense of dominance among the work group 	Interview study FIFO workers ($n = 10$) Aged 18–28 (all male) Semi-structured interviews with social constructionist perspective Thematic content analysis
20	Clifford, S. (2009). <i>The effects of fly-in/fly-out commute arrangements and extended working hours on the stress, lifestyle, relationship and health characteristics of Western Australian mining employees and their partners</i> (PhD thesis, The University of Western Australia, Western Australia, Australia). Retrieved from http://research-repository.uwa.edu.au/en/	<ul style="list-style-type: none"> - Stress - Depression, anxiety and stress - Physical health - Sleep 	<ul style="list-style-type: none"> - Rosters - FIFO per se - Support 	<p>Long-term results:</p> <ul style="list-style-type: none"> - Mental workload perceived as most stressful <p>Roster satisfaction:</p> <ul style="list-style-type: none"> - 4.5% of employees and 21% of partners were highly dissatisfied with the roster - Roster dissatisfaction of FIFO workers was only partially associated with objective measure of roster with even time rosters having lower roster satisfaction compared to compressed rosters (work leave ratio ≥ 2) - Aspects of rosters FIFO workers were dissatisfied with: hard to participate in community, being tired during early leave period, missing important events with loved ones and wanting to be more involved with loved ones during work periods - Objective roster and partner dissatisfaction were not associated - FIFO partners were most dissatisfied with the employee missing important events, followed by the FIFO being tired on the first couple of leave days <p>FIFO dissatisfaction:</p> <ul style="list-style-type: none"> - Only 2.9% of employees and 8.5% of partners reported high levels of FIFO dissatisfaction. <p>Stress (past six months):</p> <ul style="list-style-type: none"> - FIFO partners were significantly more stressed than FIFO workers themselves 	Survey study FIFO workers ($n = 158$) Partners ($n = 64$) Total $n = 222$ for Study 1 (long-term perspective—6 months prior) FIFO workers ($n = 18$) Partners ($n = 14$) Total $n = 32$ for Study 2 DASS measure Comparison sample is very small

- Variance in FIFO roster dissatisfaction was explained by job dissatisfaction, roster dissatisfaction and social support both for FIFO workers and partners

Stress, depression and anxiety:

- FIFO workers not more stressed than daily commuters
- All FIFO workers had normal range scores on the DASS
- FIFO workers completing the DASS mid-leave period had sig. lower scores compared to those filling it in during the leave to work transition phase

Social support:

- Partners and FIFO workers reported receiving high levels of social support (relatives, friends, co-workers and supervisors)
- All forms of social support and long-term stress were negatively correlated
- Supervisor and co-worker support were negatively correlated with job dissatisfaction
- All forms of support were negatively correlated with roster and FIFO dissatisfaction

Physical health:

- FIFO workers report better levels of physical health than daily commuters

Sleep:

- Rotating shift workers reported shorter sleep duration while working night shifts vs day shifts
- FIFO and daily commuters had similar sleep duration and quality

Short term impact:

- No significant fluctuations in participants' perceived stress levels across the roster
- Overall low levels of stress reported and also identified via cortisol measure in saliva
- No differences between different types of rosters in perceived stress
- Rotating shift employees reported significantly higher perceived stress levels than day shift employees throughout the roster

Physical indicators of stress:

- FIFO waking cortisol concentrations were significantly elevated during the leave-to-work transition period compared to the stable periods of the roster
- No significant differences in employees' mean waking cortisol concentrations by roster length, roster compression, occupation group, parenthood status or age of youngest child
- Employees were no more stressed by their day at work in general, shift time, shift length or separation from loved ones than partners

Rosters:

- Contrary to expectations, employees working long rosters, compressed rosters and/or night shifts were no more fatigued than their co-workers
- Employees working compressed rosters were significantly more depressed

21	Colquhoun, S., Biggs, H. C., Dovan, N., Wang, X., & Mohamed, S. (2016). An occupational study of the mental health of FIFO/DIDO construction workers. International Conference on Innovative Production and Construction, 3–5 October 2016. Perth: Curtin University	<ul style="list-style-type: none"> - Workplace health - Personal and physical health - Psychosocial isolation 	<ul style="list-style-type: none"> - Personal relationships - Social relationships - Work-life balance - Management support - Family pressure - Job satisfaction - Roster - Work demands - Sleep 	<p>Communication and trust levels (on information from management) was perceived to impact on worker mental health</p> <p>Comparison of different types of construction workers:</p> <ul style="list-style-type: none"> - Lower psychosocial isolation seen to be related to better worker mental health - Higher psychosocial isolation seen to be associated with greater problems with worker mental health - Stress for workers and their families in being unable to help in an emergency - Feeling of isolation is a real problem because of the long shifts, poor reception, roster cycle and location - Workers complain about lack of support from supervisors in times of need; being casual makes them feel vulnerable and creates stress - (DIDO) workers on a permanent site were generally happier than workers on temporary/camp sites - Physical health: issue due to poor quality food in some circumstances. Quality and volume of food → potential harmful weight gain 	<p>Focus group study</p> <p>Focus groups ($n = 15$, 5–6 participants per group)</p> <p>Semi-structured</p> <p>Four road/rail construction-sites around Australia</p>
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Mainly isolation in remote sites in construction industry						
22	<p>Considine, R., Tynan, R., James, C., Wiggers, J., Lewin, T., Inder, K., Perkins, D., Handley, T., & Kelly, B. (2017). The contribution of individual, social and work characteristics to employee mental health in a coal mining industry population. <i>PLoS ONE</i>, 12, e0168445. doi:10.1371/journal.pone.0168445</p>	<ul style="list-style-type: none"> - Psychological distress - Satisfaction with work - Perceived mine commitment to mental health 	<ul style="list-style-type: none"> - Social network - Mine type - Distance of commute - Occupational role - Full- vs part-time - Principal employee vs contractor - Shift type (rotating vs fixed) - Roster - Job strain = job demands - Perceived control over work 	<ul style="list-style-type: none"> - After controlling for age and gender, the mining sample reported significantly higher rates of psychological distress than the comparable national data set - Workplace attributes explained more variance in mental health outcomes compared to socio demographic variables, health history and current health behaviours 	<p>Survey study Mining employees ($n = 1457$) FIFO/DIDO: 28.4% Across eight coal mines Measures: K10, Job content questionnaire, regression analysis</p>	
23	<p>Gardner, B., Alfrey, K. L., Vandelanotte, C., & Rebar, A. L. (2018). Mental health and well-being concerns of fly-in fly-out workers and their partners in Australia: a qualitative study. <i>BMJ open</i>, 8, e019516. doi:10.1136/bmjopen-2017-019516</p>	<ul style="list-style-type: none"> - FIFO lifestyle - Social support 	<ul style="list-style-type: none"> - Managing two different roles: being on site and off site 	<p>Three main themes were distinguished:</p> <ul style="list-style-type: none"> - Managing multiple roles - Impact on mental health and wellbeing - Social support needs <p>Further, it was found to be important to maintain quality communication and support from family members Support from the organisation was seen by many as tokenistic, stigmatised or lacking</p>	<p>Interview study FIFO workers ($n = 34$), FIFO partners ($n = 26$), six couples Questions were emailed to participants Thematic content analysis</p>	
24	<p>Gent, V. M. (2004). <i>The impact of fly-in/fly-out work on well-being and work-life satisfaction</i> (Honours thesis, Murdoch University, Western Australia, Australia). Retrieved from https://www.ifap.asn.au/Documents/News%20and%20Media/FIFO_Report_2004.pdf</p>	<ul style="list-style-type: none"> - Job satisfaction - Life satisfaction - Dyadic adjustment (i.e. marital satisfaction) 	<ul style="list-style-type: none"> - Perceptions of FIFO work 	<p>Job satisfaction:</p> <ul style="list-style-type: none"> - No significant differences in job satisfaction compared to norm sample - Job satisfaction differed between those working 5 on/2 off (days) rosters compared to those working uneven rosters of more than three weeks away - Those only working day shifts were significantly more satisfied with their jobs than those who worked night shifts (exclusively or in combination with day shifts) <p>Life satisfaction:</p> <ul style="list-style-type: none"> - No link between life satisfaction and age, marital status, income or rostered hours 	<p>Survey study FIFO workers ($n = 132$) Offshore oil and gas and mining</p>	

Relationship status:

- FIFO workers reported lower relationship satisfaction compared to the norm data
- 57% of FIFO workers found being away from family and friends stressful
- 65% found missing out on important family events stressful
- FIFO perceptions were negatively related with job satisfaction, life satisfaction and relationship consensus
- FIFO perceptions were positively linked with relationship satisfaction

<p>25</p>	<p>Henry, P., Hamilton, K., Watson, S., & Macdonald, N. (2013). <i>FIFO/DIDO mental health research report</i>. Perth, Western Australia: Lifeline WA. Retrieved from http://www.workplacehealth.org.au/_literature_175869/FIFO_DIDO_Mental_Health_Research_Report.</p>	<ul style="list-style-type: none"> - Help seeking - Coping with stress - Job satisfaction - Psychological distress - Self-efficacy 	<ul style="list-style-type: none"> - FIFO coping mechanisms - Types of support services 	<p>Survey study results Support available to workers:</p> <ul style="list-style-type: none"> - 25.4% of FIFO workers reported union support was not available at their work, followed by on-site mental health (17.5%) and on-site counselling (17.2%) - Workers reported they were not very likely to use any of the modes by which mental health services and information could be delivered - Face-to-face and online options were most likely to be used - Workers indicated that they get along well with immediate and general colleagues <p>Job satisfaction:</p> <ul style="list-style-type: none"> - Workers reported average job satisfaction - Labourers reported lower job satisfaction than professionals - Those working fewer days for each day home reported higher job satisfaction than those in even or higher time rosters <p>Coping:</p> <ul style="list-style-type: none"> - Workers reported more frequent engagement in effective coping behaviour vs non-effective coping behaviours - Most frequent effective coping behaviours: seeking friends, exercising, relaxing acceptance and joking - Most frequent ineffective coping behaviours: ignore needs, withdraw, eat <p>Psychological distress (K10 scores):</p>	<p>Survey study FIFO workers/DIDOs ($n = 924$) Validated measures Semi-structured interviews Interview study FIFO workers ($n = 18$) K10 Recruitment at airport Not indicated whether comparison differences were significant Reports longitudinal data but only collected at one timepoint</p>
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- The mean level of distress was higher than reported for the general population (not indicated whether significant difference)
- Higher prevalence of psychological distress
- Greater likelihood of psychological disorder amongst FIFO than National health survey sample (ABS, 2012)

Stress:

- Overall moderate levels of stress reported
- Lower compression roster workers reported lower levels of stress
- Stress was highest on the days prior to leaving for work and reduced steadily while at work and is then lowest in initial days at home

Issues brought up in open-ended questions:

- Participants reported missing out on friends and family occasion as an issue
- Challenges with communication (i.e. technology issues)
- Issues with rosters
- Adjustment to work and home life
- Workplace conditions and organisational management were brought up but not part of main survey

Interview study result (themes identified):

- Naivety at FIFO work onset
- Most common stressor identified was separation from home, followed by on-site exertion and fatigue, extreme heat
- Coping mechanisms often concerned switching the mind off and just getting the work done followed by those focussed on dealing with the separation from home, managing stresses on site (i.e. reading, art work, TV, engaging socially with others); many spoke of drug use (legal and illegal)
- Most were aware of employee assistance programs, nightly meditation, on-site safety officers
- Majority were reluctant or refused to engage in formal support service
- Main positives of FIFO work reported by participants: quality time during time off, easier to schedule appointments, travel to new locations for work

26	Pirotta, J. (2009). An exploration of the experiences of women who FIFO. <i>The Australian Community Psychologist</i> , 21, 37–51. Retrieved from https://groups.psychology.org.au/Assets/Files/ACP-21(2)-2009.pdf#page=37	- General wellbeing	- FIFO per se	- Attractions of FIFO: nature of work, the lifestyle, community aspects, financial rewards - Challenges of FIFO: relationships and friends, community living, returning to Perth-based life and trying to fit in full life during breaks - Participants identified sense of isolation and loneliness as a regret of choosing FIFO lifestyle - Gendered stressors: constantly being scrutinised, keeping appropriate boundaries with male colleagues and the lack of female colleagues - General stressors: restrictions of communal living and the difficulties associated with creating or maintaining a satisfying lifestyle in Perth - Women did not consider the wet mess as a safe place for them to relax	Interview study FIFO workers ($n = 20$) Women working as FIFO workers Phenomenological approach Thematic analysis
27	Sellenger, M., Oosthuizen, J. (2017). Quantitative Analysis of Mental Wellbeing of fly-in fly-out Construction Project Support Service Workers. <i>Journal of Preventive Medicine and Healthcare</i> , 1(1), 1–6. Retrieved from https://www.jscimedcentral.com/PreventiveMedicine/Articles/preventivemedicine-1-1001.pdf	- Psychological distress - Bullying/harassment - Social isolation	- Social isolation	- FIFOs: high or very high K10 scores (25.7%) compared to the general WA population (8.2%) - 52.4% reported being subjected to workplace bullying and harassment - Feeling socially isolated while on site was strongly correlated with high K10 scores ($r_2 = 0.61$) - Kendall tau ($r_2 = 0.39$) for “keeping to themselves” indicates a medium positive relationship with higher K10 scores - K10 scores and the extent to which participants feel socially isolated on site have a strong positive relationship with social isolation (Pearson Correlation ($r_2 = 0.61$)) - Prevalence of workplace bullying: more than half the participants (52.4%) have been bullied or harassed in their workplace	Survey study FIFO support service workers ($n = 105$) (recent suicide in the cohort, may have sensitised the population) Remote construction project Female workers (55.2%), male workers (44.8%) Kessler 10 Correlations Comparison to general population
28	Sibbel, A. M. (2010). <i>Living FIFO: The experiences and psychosocial wellbeing of Western Australian fly-in/fly-out employees and partners</i> (PhD thesis, Edith Cowan	- Satisfaction with FIFO life generally - Psychological wellbeing	- Roster - FIFO per se	Survey findings: - Majority of workers were neutral or satisfied with roster - Most preferred rosters: 8/6 days, 2/1 weeks and 9/5 days - FIFO workers scored within the health functioning range in psychological wellbeing	Survey study FIFO workers ($n = 90$) Partner ($n = 32$) (principal and contractor,

	University, Western Australia, Australia). Retrieved from http://ro.ecu.edu.au/theses/132/			<ul style="list-style-type: none"> - No difference between roster types identified for psychological wellbeing <p>Interview findings:</p> <ul style="list-style-type: none"> - Workers tended to gradually withdraw from their family, accompanied with a growing sense of sadness as they prepared to leave for work - Workers experience loneliness and social isolation - This was described as modified by ability to communicate - Interviewees described factors that affect their experience of FIFO, such as size, profitability, expected life of mine, roster options, job type or working hours and shift arrangements 	<p>underground and surface mines)</p> <p>Measures</p> <p>Psychological wellbeing—GHQ</p> <p>Interview study</p> <p>FIFO workers ($n = 16$)</p> <p>Partner ($n = 12$)</p> <p>Grounded theory approach</p>
29	Tuck, J., Temple, E. C., & Sipek, M. (2013). Wellbeing of fly-in/fly-out and drive-in/drive-out employees: Evidence from Australia. 6th International Conference on Sustainable Development in the Minerals Industry, Milos Island, Greece, 30 June–3 July 2013. Ballarat: University of Ballarat	<p>Physical wellbeing</p> <p>Psychological wellbeing:</p> <ul style="list-style-type: none"> - loneliness - psychological needs satisfaction - psychological distress - coping style - attachment orientation <p>Satisfaction with FIFO</p>	- FIFO per se	<ul style="list-style-type: none"> - On average, participants experienced moderate levels of loneliness ($M=40.0$, $SD=10.9$), depression ($M=9.1$, $SD=9.9$) and stress ($M=11.6$, $SD=10.8$), and mild anxiety ($M=5.7$, $SD=8.2$). - Approximately 1 in 5 participants reported extremely severe levels of depression, anxiety and stress - 18.8% found FIFO lifestyle very rewarding and 19.8% found it slightly rewarding (majority reported neutral feelings) <p>Workplace actors associated with psychological distress:</p> <ul style="list-style-type: none"> - accommodation satisfaction - recreation satisfaction - contact with home satisfaction - on-site support satisfaction - on-site sleep quality 	<p>Survey study</p> <p>FIFO workers and DIDOs ($n = 157$)</p> <p>DASS scale used</p>
30	Velander, F., Schineanu, A., WenBin, L., & Richard, M. (2010). Digging for gold and coming up blue: a health survey in the mining industry. <i>Australian and New Zealand Journal of Health, Safety and Environment</i> 26, 389–401. Retrieved from	<ul style="list-style-type: none"> - Depression - Anxiety - Stress 	- FIFO per se	<p>FIFO was associated with stress</p> <ul style="list-style-type: none"> - less likely to indicate they are stressed compared to residential workers <p>DASS score (depression, anxiety & stress):</p> <ul style="list-style-type: none"> - Lower scores than residential workers 	<p>Survey study</p> <p>Miners ($n = 591$) FIFO workers: 32.5%</p> <p>Working life and stress measure</p> <p>DASS-21</p> <p>Alcohol Use Disorders Identification Test</p>

<https://www.researchgate.net/publication/265786886>

31	<p>Watts, J. (2004). <i>Best of both worlds? Fly In–Fly Out research project final report</i>. Karratha, Western Australia: Pilbara Regional Council. Retrieved from http://inform.regionalaustralia.org.au/process/community-engagement/item/best-of-both-worlds</p>	<ul style="list-style-type: none"> - Disassociation from social life 	<ul style="list-style-type: none"> - FIFO per se 	<ul style="list-style-type: none"> - Loneliness and depression were mentioned by almost all FIFO interviewees; missing milestones in their children’s lives led to extreme sadness (authors argue that this is akin to grief) - Participants mentioned feeling like they were losing their concepts of self-identity (exacerbated by loneliness and isolation) - Participants also reported personal growth and independence due to FIFO 	<p>Focus group and interview study FIFO workers Pilbara (<i>n</i> = 33) Family members (not in region) (<i>n</i> = 28) Non-FIFO stakeholders (<i>n</i> = 115) Retired FIFO workers (<i>n</i> = 15) Thematic analysis</p>
32	<p>Education and Health Standing Committee. (2015). <i>The impact of FIFO work practices on mental health</i>. Perth, Western Australia: Legislative Assembly, Parliament of Western Australia. Retrieved from http://resources.news.com.au/files/2015/06/19/1227405/202450-fiforeport2.pdf</p>	<ul style="list-style-type: none"> - Suicide 	<ul style="list-style-type: none"> - FIFO per se - Lack of control 	<ul style="list-style-type: none"> - Suicides: 2008–2014: 24 occupations associated with FIFO; six with FIFO contained in record <p>People most at risk in WA:</p> <ul style="list-style-type: none"> - men aged 20 to 34 years (40% of all male suicide deaths), and 75 years and over - Aboriginal - living in rural and remote areas - in custody <p>Occupation type greater risk for: workers in construction industry, labourers, cleaners, machine operators and skilled trades, such as electricians and builders</p> <ul style="list-style-type: none"> - Bullying: prevalent on resource sites - Lack of control workers experience; workers exposed to intense level of control for a longer time can begin to lose their sense of self and purpose 	<p>Based on submissions to Inquiry into the Use ‘Fly-In, Fly-Out’ (FIFO) and ‘Drive-In, Drive-Out’ (DIDO) Workforce Practices in Regional Australia Data from State Coroner on suicide</p>
33	<p>Rio Tinto (2016). <i>Sustainable development report 2016</i>. London: Rio Tinto. Retrieved from http://www.riotinto.com/our-commitment-107.aspx</p>	<ul style="list-style-type: none"> - Injury rate - Stress 	<ul style="list-style-type: none"> - Climate for health and safety 	<ul style="list-style-type: none"> - Contractors have a higher injury rate than employees - 0.44 all injury frequency rate per 200,000 hours worked - One fatality in 2016 (lowest so far) - New cases of occupational illness in 2016: 44 per 10,000 employees—higher than previous years because of increased reporting of noise-induced hearing loss (NIHL) and unreported historic NIHLs reported in 2016 - Noise-induced hearing loss: 60% 	<p>Numbers from Rio Tinto 51,000 employees in 2016</p>

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- Stress: 23%
 - Musculoskeletal disorders: 11%
-

A.1.2 KEQ 1b: Studies on FIFO work and FIFO families

	Paper	Aspects of family mental health considered	FIFO work attributes	Main findings	Type of study
Electronic Search					
1	Barclay, M. A., Harris, J., Everingham, J., Kirsch, P., Arend, S., Shi, S. & Kim, J. (2013). Factors linked to the well-being of fly-in-fly-out (FIFO) workers. Research Report, CSRM and MISHC, Sustainable Minerals Institute, University of Queensland, Brisbane, Australia.	<ul style="list-style-type: none"> - Work-family balance - Flexibility in managing work and family 	<ul style="list-style-type: none"> - Private room - Job demands 	<ul style="list-style-type: none"> - 66% of respondents were satisfied with work-family balance - One of the most common reasons for wanting to quit FIFO work was better flexibility in managing family and work (> 80%) - 59% agreed that job demands interfered with family life - 20% agreed that stress from home interfered with job performance - FIFO workers prefer a private room so that they can call their families 	Survey study FIFO ($n = 286$) Reporting frequencies and prevalence only Correlations described without effect sizes
2	Costa, S. D., Silva, A. C., & Hui, V. (2006, August). Opportunities and challenges of fly-in-fly-out camps for women in the Canadian mining industry. <i>CIM Magazine</i> , 1(5), 38–46. Retrieved from http://www.cim.org/en/Publications-and-Technical-Resources/Publications/2010/August-2006	<ul style="list-style-type: none"> - Quality time with family - Family planning 	<ul style="list-style-type: none"> - Roster schedules 	<ul style="list-style-type: none"> - Long time away affects family and personal life negatively and makes having children problematic - Rigid work schedules result in important family and community events been missed - Long periods off work contribute to a more fulfilling family life when at home - Women see conflict between FIFO and having children 	Interviews HR superintendents ($n = 3$) and women ($n = 16$) Current and former FIFO employees Explorative identification of themes in responses
3	Dittman, C. K., Henriquez, A., & Roxburgh, N. (2016). When a non-resident worker is a non-resident parent: Investigating the family impact of fly-in, fly-out work practices in Australia. <i>Journal of Child and Family Studies</i> , 25, 2778–2796. doi: 10.1007/s10826-016-0437-2	<ul style="list-style-type: none"> - FIFO strain on family life - Child behaviour and emotional adjustment - Family functioning - Parenting 	<ul style="list-style-type: none"> - Commute arrangements - Roster schedule 	<ul style="list-style-type: none"> - FIFO partners report greater levels of depression, anxiety and stress than community mothers - FIFO partners were more concerned about their partner's personal adjustment - FIFO parents report greater work-family conflict - FIFO work circumstances were not linked with child and family outcomes 	Survey study FIFO workers ($n = 52$) FIFO partners ($n = 233$) Community workers ($n = 402$) All with children aged 2–12

		<ul style="list-style-type: none"> - Work–family conflict - Couple relationship quality 		<ul style="list-style-type: none"> - Perceived impact of FIFO on family life was associated with child and family functioning - Child behavioural problems had a significant link with FIFO work hours and shift length - Child behavioural problems were affected by perceived FIFO impact on family functioning - Family relationship quality was affected by perceived FIFO impact 	<p>Hierarchical regression analyses</p> <p>Child Adjustment and Parent Efficacy Scale</p> <p>Parenting and Family Adjustment Scale</p> <p>Parenting scale</p> <p>DASS-21</p> <p>Relationship Quality Index</p>
4	Gillies, A. D. S., Wu, H. W., & Jones, S. J. (1997). The increasing acceptance of fly-in/fly-out within the Australian mining industry. 1997 AusIMM Annual Conference—Resourcing the 21st Century, Ballarat, Australia, 12–15 March 1997. Ballarat: AusIMM	<ul style="list-style-type: none"> - Interference with family life and community activities - Impact on family relationships 	- FIFO per se	<ul style="list-style-type: none"> - 30% report that their families do not like the FIFO arrangement - 43% report their immediate family relationships have been seriously disadvantaged - 66% indicate that they like the FIFO work as it gives time for hobbies and recreational activities - Trimodal response patterns show that FIFO workers are split onto those that are content, others neutral and another group that dislikes it 	<p>Survey study</p> <p>FIFO employees ($n = 227$)</p> <p>Information from FIFO/non-FIFO operators and employees</p> <p>Description of frequencies</p>
5	Haslam McKenzie F. M., & Hoath, A. (2016). Aboriginal Mine Workers: Opportunities and Challenges of Long-Distance Commuting. In F.M. Haslam McKenzie (Ed.), <i>Labour Force Mobility in the Australian Resources Industry</i> (pp. 157–170). Singapore: Springer. doi: 10.1007/978-981-10-2018-6_9	<ul style="list-style-type: none"> - Partner faithfulness - Work-family balance/conflict 	<ul style="list-style-type: none"> - FIFO rosters - FIFO shifts - Facilities to stay in contact with home 	<ul style="list-style-type: none"> - Families (in general, not just Aboriginals) vary in their ability to adapt to FIFO work, but they generally report a positive self-assessment - Aboriginals report concerns that partners on site or alone at home “stray” while separated - Infrastructure that makes contact with home possible supports continuity, promotes wellbeing and minimises distress 	<p>Interview study ($n = \text{unclear}$)</p> <p>Book chapter reviewing evidence</p> <p>In-depth interviews with representatives of Aboriginal organisations, local government and organisations</p> <p>Focus groups and small-scale survey study with FIFO workers</p> <p>Interviews with FIFO spouses</p>

					No sample sizes or analyses methods indicated
6	Kaczmarek, E. A., & Sibbel, A .M. (2008). The psychosocial well-being of children from Australian military and fly-in/fly-out (FIFO) mining families. <i>Community, Work and Family, 11</i> , 297–312. doi: 10.1080/13668800801890129	<ul style="list-style-type: none"> - Child depression - Anxiety - Family functioning 	<ul style="list-style-type: none"> - FIFO roster (i.e. overall absence) - FIFO vs military vs community 	<ul style="list-style-type: none"> - No differences between groups regarding child self-reported depression, anxiety or functioning - General functioning differed between FIFO and community mothers: <ul style="list-style-type: none"> - communication more dysfunctional in FIFO mothers - affective involvement more dysfunctional in FIFO mothers - behavioural control more dysfunctional in FIFO mothers - Greater levels of father absence (cumulative annual) were associated with family dysfunction perceptions by mothers regarding (note all in health range overall): <ul style="list-style-type: none"> - affective involvement - behavioural control 	<p>Survey study</p> <p>Three subsamples of mothers and children: FIFO (<i>n</i> = 30) Military (<i>n</i> = 30) Community sample (<i>n</i> = 30)</p>
7	Lester, L., Waters, S., Spears, B., Epstein, M., Watson, J., & Wenden, E. (2015). Parenting adolescents: Developing strategies for FIFO parents. <i>Journal of Child and Family Studies, 24</i> , 3757–3766. doi: 10.1007/s10826-015-0183-x	<p>Mental health of:</p> <ul style="list-style-type: none"> - Adolescent children (emotional symptoms, conduct problems, hyperactivity, peer problems, pro-social behaviour, total difficulties score) - FIFO workers (anxiety and depression) - At-home partners (anxiety and depression) 	<ul style="list-style-type: none"> - FIFO work per se - Work roster 	<ul style="list-style-type: none"> - At home partners had similar levels of psychological distress as FIFO workers - Comparison with data from the Australian National Survey of Mental Health and Wellbeing (2011): <ul style="list-style-type: none"> - General Australian population: 2.6% report very high levels of psychological distress - FIFO workers: 26% report very high levels of psychological distress - At home partners: 32% report high levels of psychological distress - No link between FIFO roster and partner levels of psychological distress - Equal time rosters were comparative best for partner levels of psychological distress - Equal time rosters were comparative worse for FIFO levels of psychological distress (both for more and less time at work than at home) 	<p>Interview study</p> <p>FIFO workers (<i>n</i> = 23) and their partners (<i>n</i> = 21)</p> <p>Primary focus on parenting</p> <p>Measurement of K10 via interview and survey of SDQ</p> <p>Small sample size for comparison with national data</p>

		Parenting strategies		<ul style="list-style-type: none"> - Borderline significant relationship between no significant relationship between SDQ and a FIFO parents work roster - FIFO children were rated by parents as within the usual norms for Australian children for mental health 	
8	Lester, L., Watson, J., Waters, S., & Cross, D. (2016). The association of fly-in fly-out employment, family connectedness, parental presence and adolescent wellbeing. <i>Journal of Child and Family Studies</i> , 25, 3619–3626. doi: 10.1007/s10826-016-0512-8	<ul style="list-style-type: none"> - Child depression - Child anxiety - Emotional and behavioural difficulty - Parental presence and connectedness 	FIFO per se	<ul style="list-style-type: none"> - Significantly smaller proportion of adolescents of FIFO parents were categorised within the normal range of depression (75% compared to 81%) - A significantly greater proportion of adolescents of FIFO parents were categorised within borderline and abnormal categories of total difficulties (25% compared to 19%) <p>Adolescents of FIFO parents reported:</p> <ul style="list-style-type: none"> - Significantly greater depressive symptoms and emotional and behavioural difficulties (excluding hyperactivity) - Significantly less parental presence and family connectedness - Parental presence partially mediated the link of status as FIFO with depressive symptoms and peer problems - Parental presence fully mediated the link of FIFO status and emotional symptoms, conduct problems, hyperactivity and total difficulties - Family connectedness partially mediated the association of FIFO and depressive symptoms, conduct problems and peer problems - Family connectedness completely mediated the relationship between FIFO status and emotional symptoms, hyperactivity and total difficulties 	<p>Survey study</p> <p>Children who lived with a FIFO parent ($n = 618$)</p> <p>Children who lived with a parent who is not a FIFO worker ($n = 2479$)</p> <p>Involving primary and secondary school children</p> <p>Forty schools participated</p> <p>Comparison of groups and mediation model tested (presence and connectedness as mediators)</p>
9	McTernan, W. P., Dollard, M. F., Tuckey, M. R., & Vandenberg, R. J. (2016). Beneath the surface: An exploration of remoteness and work stress in the mines. In A. Shimazu., R.	<ul style="list-style-type: none"> - Work family and work-life conflict 	<ul style="list-style-type: none"> - FIFO per se - Job demands - Job resources (ie. support) 	<ul style="list-style-type: none"> - Peer support helps when issues with family and home life occur 	<p>Interview study</p> <p>Miners ($n = 19$) including FIFO workers and remote miners (11 interviews and</p>

<p>Bin Nordin., M. Dollard & J. Oakman (Eds.), <i>Psychosocial Factors at Work in the Asia Pacific: From Theory to Practice</i>, (pp. 341–358). Switzerland: Springer International Publishing. doi:10.1007/978-3-319-44400-0_19</p>	<ul style="list-style-type: none"> - Not being able to contribute to family duties or be present in case of emergency was seen as a stressor by FIFO workers - FIFO workers with and without families both reported a difficulty in finding time to maintain personal relationships - Being away from their social circles most of the time meant friends assumed FIFO workers were unavailable even when they were home - FIFO workers also report could not commit to sport because they are not able to consistently make it to games or training sessions - Non-FIFO workers did not experience the same impact on their family and social life - Wellbeing status may be preceded by work-family conflict issues due to FIFO rosters: <ul style="list-style-type: none"> - The negative impact could be mitigated by co-worker support 	<p>eight via e-mail and network forums) Semi-structured interviews Ethnographic study</p>	
<p>10 Misan, G. M., & Rudnik, E. (2015). The pros and cons of long distance commuting: Comments from south Australian mining and resource workers. <i>Journal of Economic and Social Policy</i>, 17, 1–37. Retrieved from http://hdl.handle.net/2440/96565</p>	<p>- Perceptions of FIFO compatibility with family</p> <p>- FIFO per se</p>	<p>FIFO and young families were seen as not a good mix:</p> <ul style="list-style-type: none"> - Particularly for the stay-at-home partner - FIFO workers with older or no children did not perceive a conflict with family life - High income is perceived as compensation for time away from family - High income was also seen as offsetting income foregone because partner can't work - No need for family relocation was seen as a positive of FIFO work - Participants on shorter swings reported that they can now spend more time with family compared to previous "regular" employment - Clear separation of work and home leads to fewer interruptions of time off - Time away from home can be stressful, particularly when problems at home arise - FIFO can lead to family events being missed 	<p>Interview study FIFO workers and partners ($n = 104$) Semi-structured (face-to-face, telephone or small focus group semi-structured interviews) Mining and oil and gas Both individual and group setting Scientific phenomenology research approach</p>

				<ul style="list-style-type: none"> - FIFO partners report feeling like single parents - Routines at home are disrupted by FIFO return 	
11	Pini, B., & Mayes, R. (2012). Gender, emotions and fly-in fly-out work. <i>Australian Journal of Social Issues</i> , 47, 71–86. doi:10.1002/j.1839-4655.2012.tb00235.x	<ul style="list-style-type: none"> - FIFO partner emotions 	<ul style="list-style-type: none"> - FIFO per se - Rosters - Travel arrangements - Communication facilities 	<p>Factors shaping women’s emotional experience as a FIFO partner:</p> <ul style="list-style-type: none"> - Longer times away from home are discussed as more emotionally difficult than shorter ones - Distance between the workplace and the home residence and the extent to which valuable leave time is used to travel between home and work shaped women’s emotional experience of FIFO - Availability and efficacy of communication technologies, along with space and time for communication - Women create an emotional profile of the FIFO mining man as emotionally lacking, immature or inappropriate 	<p>Analysis of postings made on an online chat forum for mining Families ($n = 513$ postings) “Netnography” or “virtual ethnography”, Recursive inductive analysis</p>
12	Sutherland, R. C., Chur-Hansen, A., & Winefield, H. (2017). Experiences of fly-in, fly-out and drive-in, drive-out rural and remote psychologists. <i>Australian Psychologist</i> , 52, 219–229. doi: 10.1111/ap.12194	<ul style="list-style-type: none"> - Compatibility with family and social life 	<ul style="list-style-type: none"> - FIFO per se 	<ul style="list-style-type: none"> - FIFO was seen as difficult with young children - Issues caring for dependants in general - Missing family events 	<p>Interview study FIFO psychologists ($n = 6$) and focus group ($n = 4$) Semi-structured Exploratory study, deductive content analysis</p>
13	Torkington, A. M., Larkins, S., & Gupta, T. S. (2011). The psychosocial impacts of fly-in fly-out and drive-in drive-out mining on mining employees: A qualitative study. <i>Australian Journal of Rural Health</i> , 19, 135–141. doi: 10.1111/j.1440-1584.2011.01205.x	<ul style="list-style-type: none"> - Impact on family life generally - Impact on participation in sports and hobbies - Partner mental health and wellbeing 	<ul style="list-style-type: none"> - FIFO per se 	<ul style="list-style-type: none"> - Impact of FIFO on family life was seen to be pronounced with younger children - Missing out on children’s milestones - Sporting participation was restricted - Fatigue during time off interferes with social life - Making and maintaining friendships is hard <p>Negative impact on partners:</p> <ul style="list-style-type: none"> - Feeling lonely - Being busier due to single responsibility - Distress during transition periods - Some reported reduced stress in partners 	<p>Interview study FIFO workers or DIDOs ($n = 11$) Semi-structured</p>

Challenges in sexual relationship

Hand Search

14	Bailey-Kruger, A. (2012). <i>The psychological wellbeing of women operating mining machinery in a fly-in fly-out capacity</i> (Master's thesis, Murdoch University, Western Australia, Australia). Retrieved from http://ro.ecu.edu.au/theses/1682	Psychosocial wellbeing	- FIFO per se	Theme out of interview: Suspension of life: impacts on female FIFO's psychosocial wellbeing, such as: home responsibilities, maintaining relationships, important events, starting a family, and balancing work and family responsibilities	Interview study Female machine operators ($n = 19$) at one mine site in Queensland Exploratory (research questions, no hypotheses) 58% had partners working with them at the mine Interpretative Phenomenological approach
15	Bradbury, G. S. (2011). <i>Children and the fly-in/fly-out lifestyle: Employment-related paternal absence and the implications for children</i> (PhD thesis, Curtin University, Western Australia, Australia). Retrieved from https://espace.curtin.edu.au/	Children's emotional-behavioural functioning - Emotional problems - Conduct problems - Hyperactivity - Peer problems - Prosocial issues Parental attachment Family functioning Children's satisfaction with FIFO Parental wellbeing: - Depression - Anxiety - Stress Relationship satisfaction	- FIFO per se - Rosters - Length of FIFO service	FIFO children - Children's emotional problems, conduct problems, peer problems and prosocial issues were healthy and did not differ compared to norm sample - Hyperactivity scores deviated significantly from the norm - Consistent with the Australian Community sample, boys reported more emotional behavioural difficulties than girls - Paternal FIFO work characteristics were not significantly related to the children's self-reported emotional-behavioural functioning (explain 9% in variance) Family functioning: - Parent-rated family functioning is consistent with community sample Perceived parental attachment: - Maternal care score was significantly higher than the community sample PBI-R care score	Survey study FIFO workers ($n = 47$), partners ($n = 48$) and children ($n = 48$) Interview sample is the same PhD Thesis

- Maternal overprotection, and paternal care and overprotection did not differ from the community sample
- Children’s satisfaction with FIFO employment:
- Majority of children were satisfied with the FIFO employment (62.5%)
 - Satisfaction with paternal FIFO employment was not linked with the children’s self-reported emotional-behavioural functioning
- Parental wellbeing:
- Maternal stress scores and overall DASS-21 scores were significantly higher than those of the norm sample
 - Paternal DASS-21 scale scores remained within expected normative ranges, except for the paternal anxiety scores, which were significantly below norms
- Relationship satisfaction:
- Parental relationship satisfaction scores were consistent with norms for married couples
- Parenting problems:
- Both parental scores of disagreement (rule disagreement, open conflict and parenting consistency) were significantly higher than expected norms
 - 56.8% reported interparental conflict in the clinical range
- Parental satisfaction with FIFO:
- More than 2/3 of mothers and fathers reported that they were satisfied with the FIFO arrangement

16	Clifford, S. (2009). <i>The effects of fly-in/fly-out commute arrangements and extended working hours on the stress, lifestyle, relationship and health characteristics of Western Australian mining employees and their partners</i> (PhD thesis, The University of	<ul style="list-style-type: none"> - Stress - FIFO dissatisfaction - Relationship quality 	<ul style="list-style-type: none"> - Roster - Perceived support 	<p>Results over six months:</p> <ul style="list-style-type: none"> - FIFO workers’ roster and general FIFO dissatisfaction were significantly linked with partner stress 	<p>Survey study FIFO workers (<i>n</i> = 158) Partners (<i>n</i> = 64) Total <i>n</i> = 222 for Study 1 (long term perspective— six months prior)</p>
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<p>Western Australia, Western Australia, Australia). Retrieved from http://research-repository.uwa.edu.au/en/</p>	<ul style="list-style-type: none"> - Partner FIFO dissatisfaction was explained by perceived social support and roster dissatisfaction - FIFO workers reporting to work compressed rosters were more likely to report negative impacts on their partners - Employees' and partners' lifestyle and relationship dissatisfaction total scores were moderately to strongly (positively) correlated with roster dissatisfaction and FIFO dissatisfaction in both 	<p>FIFO workers ($n = 18$) Partners ($n = 14$) Total $n = 32$ for Study 2 DASS measure Comparison sample is very small</p>	
<p>Short-term impact:</p>	<ul style="list-style-type: none"> - Partners reported low levels of stress throughout roster - Partners' domestic and childcare stress levels throughout roster cycle did not fluctuate - Employees had significantly lower mean waking cortisol concentrations than partners throughout the roster - Employees' mean waking cortisol concentrations were significantly lower than partners' during the early leave and late leave phases (may be due to general gender differences) - Partner waking cortisol concentrations were significantly elevated during the leave-to-work transition period compared to the stable periods of the roster - Partner mean waking cortisol concentrations did not differ by roster length, roster compression, occupation group, parenthood status or age of youngest child 	<p>Focus group study Focus groups ($n = 15$, 5–6 participants per group) Semi-structured</p>	
<p>17 Colquhoun, S., Biggs, H.C., Dovan, N., Wang, X., & Mohamed, S. (2016). An occupational study of the mental health of FIFO/DIDO construction workers. International</p>	<ul style="list-style-type: none"> - Workplace health - Personal and physical health - Psychosocial isolation 	<ul style="list-style-type: none"> - Personal relationships - Social relationships 	<ul style="list-style-type: none"> - Stress for workers and their families in being unable to help in an emergency - Workers are missing important family events - Long rosters make communication with the partner more difficult, both on site and off

<p>Conference on Innovative Production and Construction, 3–5 October 2016. Perth: Curtin University</p>	<ul style="list-style-type: none"> - Work-life balance - Family pressure - Roster - Work demands - Rooms 	<ul style="list-style-type: none"> - site; intensified because of reception difficulties; a number of marriages broke down - It works with understanding from the partner of the reason for the work and efforts of both sides to work at communication - Struggling with “motelling” (different rooms each time during roster cycle)—they are unable to create a home environment (e.g. family pictures) 	<p>Four road/rail construction sites around Australia</p>	
<p>18 Fresle, N. (2010). <i>The role of social support systems in reducing loneliness and social isolation for parents whose partner work fly-in/fly-out</i> (Honours thesis, Murdoch University, Western Australia, Australia. Retrieved from http://ro.ecu.edu.au/theses_hons/1243</p>	<ul style="list-style-type: none"> - Loneliness - Social isolation 	<ul style="list-style-type: none"> - Social support systems - Emotional support - Instrumental support - Social interactions - Family resilience through positive reappraisal 	<ul style="list-style-type: none"> - Loneliness and social isolation issue for FIFO partners - Only online sample reported more enduring experiences of loneliness and social isolation; they were more likely to have younger children, less experience with the FIFO lifestyle and less time in their current partner relationship - Four themes: emotional support, instrument support, social interactions and family resilience through positive reappraisal - Support needs were found to be dependent upon context (loneliness and social isolation during first week of separation, night time, weekends and special occasions), suggesting social support acts as a buffer under high stress levels - Emotional support came primarily from partners, instrumental support from participants’ parents (and childcare assistance, friends, other FIFO families); many participants reported strong, supportive social networks - Participants with strong, supportive social support networks were more likely to experience positive outcomes, such as emerging stronger and more resourceful 	<p>Interview study FIFO partner/mother ($n = 12$ online $n = 12$ face-to-face mothers of primary school aged children or younger with FIFO partner in mining or construction) Hermeneutic phenomenological approach Thematic content analysis Member check: two participants verified the accurate reflection of their views</p>

				<p>through choosing to focus on the benefits of the FIFO lifestyle</p> <ul style="list-style-type: none"> - Open, honest communication styles and unrestricted access to telecommunication increased emotional bonding and women's ability to cope - Overall, women reported a stronger need for instrumental support over emotional support (might mean the stressors are seen as controllable; uncontrollable stressors call more for emotional support) - Women had well-developed social networks (child-centred activities) 	
19	<p>Gent, V. M. (2004). <i>The impact of fly-in/fly-out work on well-being and work-life satisfaction</i> (Honours thesis, Murdoch University, Western Australia, Australia). Retrieved from https://www.ifap.asn.au/Documents/News%20and%20Media/FIFO_Report_2004.pdf</p>	<ul style="list-style-type: none"> - Dyadic adjustment - Dyadic consensus - Relationship satisfaction - Affectional expression 	- FIFO per se	<ul style="list-style-type: none"> - FIFO workers reported significantly lower dyadic adjustment, dyadic consensus, relationship satisfaction than norm data - No difference in relationship cohesion compared to norm - FIFO workers scored higher on affectional expression - No relationship between current roster and the relationship scales 	<p>Survey study FIFO workers ($n = 132$) Offshore oil and gas and mining</p>
20	<p>Greer, L., & Stokes, K. (2011) 'Divorce and separation in the Australian mining sector: is it what we expect?' in S. Threadgold, E. Kirby, & J. Germov (Eds.), <i>The annual conference of The Australian Sociological Association (TASA): Local Lives/Global Networks</i>, 28th Nov–1st Dec. Newcastle, NSW, University of Newcastle, Australia. Retrieved from http://hdl.cqu.edu.au/10018/#####</p>	- Divorce	- FIFO per se	<ul style="list-style-type: none"> - Overall divorce rates have been increasing and this also applies to FIFO workers - FIFO divorce rates are fractionally higher (10% compared to 9.38% in total workforce) - The increase in divorce is less in FIFO compared to total workforce - Support for the assertion that mining employees have relatively stable familial relationships and have low divorce/separation rates 	<p>ABS data supplied the number of employed persons who indicated that they were divorced or separated at the time of the 1996, 2001, 2006 census collections</p> <p>Employment populations by industry sectors was similarly sourced from ABS 2006 Census community profiles to</p>

					examine the ten-year trend from 1996 to 2006
21	MacBeth, M. M., Kaczmarek, E., & Sibbel, A. M. (2012). Fathers, adolescent sons and the fly-in/fly-out lifestyle. <i>The Australian Community Psychologist</i> , 24, 98–114. Retrieved from https://groups.psychology.org.au/Assets/Files/ACP-24-2-MacBeth.pdf	<ul style="list-style-type: none"> - Relationship between FIFO dad and child 	<ul style="list-style-type: none"> - FIFO per se 	<ul style="list-style-type: none"> - Participants described their dads as less stressed and as a result perceive their relationships with them to be better compared to their friends with stay-at-home dad - Participants reported lifestyle benefits associated with their father working FIFO (financial benefits, more outings and holidays, extended interaction during times at home) - Participants were aware of the benefits afforded by the lifestyle; they were also mindful of the challenges FIFO presented for themselves and their families - Participants had concern for safety as well as for their father's physical and mental health - Informants reported that they observed changes in their fathers' moods during the time when they were at home 	<p>Interview study</p> <p>N = 8 adolescents (13-21 years)</p> <p>Father of all worked as FIFO</p> <p>Phenomenological approach</p>
22	Sibbel, A. M. (2010). <i>Living FIFO: The experiences and psychosocial wellbeing of Western Australian fly-in/fly-out employees and partners</i> (PhD thesis, Edith Cowan University, Western Australia, Australia). Retrieved from http://ro.ecu.edu.au/theses/132/	<ul style="list-style-type: none"> Roster satisfaction Partner psychological wellbeing Relationship attributes <ul style="list-style-type: none"> - Dyadic consensus - Dyadic cohesion - Dyadic satisfaction - Affectional expression Family functioning <ul style="list-style-type: none"> - Problem solving - Communication - Roles - Affective responsiveness - Affective involvement 	<ul style="list-style-type: none"> - FIFO per se - Rosters 	<p>Survey study:</p> <ul style="list-style-type: none"> - 59.4% of FIFO partners were either satisfied or very satisfied with their partner's FIFO roster - Partner psychological wellbeing is in the health range - All relationship attributes were in the healthy range - Family functioning scores were within the healthy range - Partner wellbeing and relationship satisfaction did not differ across different rosters <p>FIFO perceptions:</p> <ul style="list-style-type: none"> - FIFO families with a roster of away time between 7–13 days scored above cut-off for healthy functioning in affective involvement and behaviour control 	<p>Survey study</p> <p>FIFO workers (n = 90)</p> <p>Partner (n = 32) (principal and contractor, underground and surface mines)</p> <p>Measures</p> <p>Psychological wellbeing—GHQ</p> <p>Interview study</p> <p>FIFO workers (n = 16)</p> <p>Partner (n = 12)</p> <p>Grounded theory approach</p>

		<ul style="list-style-type: none"> - Behavioural control - General functioning 		<ul style="list-style-type: none"> - FIFO families with a roster of away time above 13 days were above the cut-off point for behavioural control - Family functioning scores did not differ between the different roster types <p>Partner perceptions:</p> <ul style="list-style-type: none"> - FIFO families with a roster of less than six days away scored above cut-off for healthy functioning for affective involvement - FIFO families with a roster 7–13 days away scored above cut-off for healthy functioning in behavioural control - No differences across the various roster types <p>Interview study:</p> <ul style="list-style-type: none"> - FIFO workers describe that they have more direct quality contact with their kids on their time off - Continued access to “city standard” educational, social and sporting activities rather than the more limited facilities provided in the remote towns 	
23	Taylor, J. C., & Simmonds, J. G. (2009). Family stress and coping in the fly-in fly-out workforce. <i>The Australian Community Psychologist</i> , 21, 23–36. Retrieved from https://groups.psychology.org.au/Assets/Files/Taylor-21(2)-2009.pdf	Family functioning <ul style="list-style-type: none"> - Adaptability/flexibility - Cohesion - Communication - Family satisfaction 	- FIFO per se	<ul style="list-style-type: none"> - Overall functioning, cohesion and flexibility scores were at a high level - Satisfaction was high and communication very good - Compared to norm data the scores of the sample were a lot higher (note: they mention mean scores, but only report one t value) - Partner and FIFO views did not differ - Partner employment, family stage, roster type or previous experience did not influence family stress and coping 	Survey study FIFO workers ($n = 33$) and partners ($n = 27$) Total ($n = 63$) Actual statistical analysis is not reported for most of the results, also small sample
24	Voysey, W. (2012). <i>Satisfaction with a fly-in/fly-out (FIFO) lifestyle: Is it related to rosters, children and support resources utilised by Australian employees and partners and does it impact on relationship</i>	<ul style="list-style-type: none"> - Roster satisfaction - Relationship quality - Perceived stress 	<ul style="list-style-type: none"> - Rosters - Social support 	<ul style="list-style-type: none"> - Partners reported significantly lower rates of roster satisfaction than workers across all roster types - FIFO workers and partner roster satisfaction is most disparate for rosters of 21-workday length 	Survey study $N = 559$ $N = 245$ FIFO workers and 313 FIFO partners

	<p><i>quality and stress?</i> (Honours thesis, Murdoch University, Western Australia, Australia). Retrieved from http://researchrepository.murdoch.edu.au/id/eprint/11449/</p>			<p>(partners less satisfied than workers, who were most satisfied with that roster compared to all others)</p> <ul style="list-style-type: none"> - Time off: partners preferred rosters with fewer days off, FIFO workers preferred those with longer times off - Partners reported lower levels of roster satisfaction and relationship quality than FIFO workers - Partner reported relationship quality was not associated with number of work days or days off in roster - FIFO workers with children aged 6–12 years were more satisfied with their roster than those without children (same effect does not apply to partners) <ul style="list-style-type: none"> - No effect of roster length on this effect - Partners with two children had lower stress than those with none <ul style="list-style-type: none"> - No difference for those with more or fewer children and age of children - No link between perceived support and stress 	
25	<p>Watts, J. (2004). <i>Best of both worlds? Fly In–Fly Out research project final report</i>. Karratha, Western Australia: Pilbara Regional Council. Retrieved from http://inform.regionalaustralia.org.au/process/community-engagement/item/best-of-both-worlds</p>	<ul style="list-style-type: none"> - Loneliness - Depression - Empowerment 	- FIFO per se	<ul style="list-style-type: none"> - Partners are empowered by being left at home - Loneliness, isolation, sadness and depression are experienced by partners - Rosters >3 weeks on site caused more family stress 	<p>Focus group and interview study FIFO workers Pilbara ($n = 33$) Family members (not in region) ($n = 28$) Non-FIFO stakeholders ($n = 115$) Retired FIFO workers ($n = 15$) Thematic analysis</p>
26	<p>Anglicare WA (2013). <i>The Parenting Perceptions Report</i>. Perth, Western Australia: Anglicare WA. Retrieved from https://www.anglicarewa.org.au/reso</p>	<ul style="list-style-type: none"> - Mental health (bullying) - Pressure for success 	- Parenting	<ul style="list-style-type: none"> - Single parent and fly-in, fly-out families: more likely to experience demands (money, technology and clothes) from their children; their children were also more likely to have 	<p>Survey study Single or couple parent families with children</p>

urces/parenting-perceptions-report.aspx	<p>experienced bullying, both directly and via social media, and to express concern about their body image</p> <ul style="list-style-type: none"> - Seems 59% of FIFO respondents report “family conflict” and only 14% of FIFO family, unclear what the difference between these groups is; intact family: 56% report family conflict - Children in fly-in, fly-out families were more likely to experience pressure to succeed in academic, sporting and other pursuits; these expectations came both externally and from the children themselves - Fly-in, fly-out families were more likely to offer rewards and treats 	<p>from pre-primary to year 12 in WA (<i>n</i> = 810) FIFO families (11%)</p>
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A.1.3 KEQ 2: Studies on the use of alcohol and other drugs

	Paper	Drugs considered	FIFO work attributes	Main findings	Type of study
Electronic search					
1	Barclay, M. A., Harris, J., Everingham, J., Kirsch, P., Arend, S., Shi, S. & Kim, J. (2013). Factors linked to the well-being of fly-In-Fly-Out (FIFO) workers. Research Report, CSRM and MISHC, Sustainable Minerals Institute, University of Queensland, Brisbane, Australia.	<ul style="list-style-type: none"> - Alcohol - Smoking - Prescription drugs 	<ul style="list-style-type: none"> - Wet mess 	<p>Wet mess:</p> <ul style="list-style-type: none"> - 35% of the sample rated provision of wet mess as important, but 77% of the sample reported it as provided <p>Alcohol consumption:</p> <ul style="list-style-type: none"> - 5% of the sample reported drinking alcohol every day - 34% drink alcohol on multiple days a week - 28% drink at least once a week - 18% consume alcohol only once a month or less (i.e. rarely or never) - 34% of respondents felt they ought to cut down on their drinking - 47% of respondents didn't feel they ought to cut down on their drinking - 8% reported that people had annoyed them by criticising their drinking 	<p>Survey study FIFO (<i>n</i> = 286) Reporting frequencies and prevalence only Correlations described without effect sizes</p>

				<ul style="list-style-type: none"> - 16% of respondents reported feeling guilty about their levels of drinking Smoking: <ul style="list-style-type: none"> - 9% reported that they smoke - 75% were non-smokers Prescription medicine in the last three months: <ul style="list-style-type: none"> - 50% reported not using any - 20% of the sample used it once - 10% used it two to three times - 3% used it four times or more 	
2	Dittman, C.K., Henriquez, A., & Roxburgh, N. (2016). When a non-resident worker is a non-resident parent: Investigating the family impact of fly-in, fly-out work practices in Australia. <i>Journal of Child and Family Studies</i> , 25, 2778–2796. doi: 10.1007/s10826-016-0437-2	- Alcohol	- FIFO vs non-FIFO	FIFO workers reported greater levels of problematic alcohol use	Survey study FIFO workers ($n = 52$) FIFO partners ($n = 233$) Community workers ($n = 402$) All with children aged 2–12 Hierarchical regression analyses
3	Gilmore, W., Liang, W., & Chikritzhs, T. (2015). The wild west: Associations between mining and violence in Western Australia. <i>Australian Journal of Rural Health</i> , 24, 136–143. doi: 10.1111/ajr.12228	- Alcohol sales (per local government area)	- On and off-site alcohol outlets	Across all 135 local government area's (LGA's) LGAs included in the models, counts of on-site alcohol outlets predicted: <ul style="list-style-type: none"> - Total assault for males and females - Non-domestic assault for males and females - Sexual assault for males and females - Domestic assault for females 	Census data based on local government areas ($n = 135$ local government area's) Regression analysis Cross-sectional
4	Joyce, S. J., Tomlin, S. M., Somerford, P. J., & Weeramanthri, T. S. (2013). Health behaviours and	- Alcohol consumption	- FIFO work or other shift work	Smoking <ul style="list-style-type: none"> - 6.7% of FIFO workers were smokers, compared to 25.0% of other shift workers and 17.4% of other employment types 	Survey study FIFO workers ($n = 380$)

	outcomes associated with fly-in fly-out and shift workers in Western Australia. <i>Internal Medicine Journal</i> , 43, 440–444. doi: 10.1111/j.1445-5994.2012.02885.x			Alcohol consumption <ul style="list-style-type: none"> - Consuming more than two alcoholic drinks per day: FIFO 64.7%, shift workers 59.0%, other employment 50.9% - Consuming more than four alcoholic drinks per day: FIFO 29.8%, shift workers 30.2%, other employment 21.5% 	Comparison with shift workers and other employment types
5	Muller, R., Carter, A., & Williamson, A. (2008). Epidemiological diagnosis of occupational fatigue in a fly-in-fly-out operation of the mineral industry. <i>The Annals of Occupational Hygiene</i> , 52, 63–72. doi: doi:10.1093/annhyg/mem058	- Smoking - Alcohol	- N/A	Smoking: <ul style="list-style-type: none"> - 27.5% of the sample smoked (median pack year history of 18) - 27.5% reported being former smokers (median pack year history of 12.3) Alcohol: <ul style="list-style-type: none"> - 15% report no alcohol consumption at all while on site - 13.7% report no alcohol consumption while off site - Those who drink: median of two drinking days per week was reported while on site and two (1–4) while off site - Median of four (2–6) standard drinks while on site per session - Median of six (3–10) drinks off site per session - No association found between alcohol consumption and fatigue 	Survey study FIFO workers (<i>n</i> = 55) Exploratory study using validated measures of sleep (diary), vigilance and fatigue, as well as diary data on alcohol consumption
6	Paech, G. M., Ferguson, S. A., Banks, S., Dorrian, J., & Roach, G. D. (2014). The influence of break timing on the sleep quantity and quality of fly-in, fly-out shiftworkers. <i>Industrial Health</i> , 52, 521–530. doi: 10.2486/indhealth.2014-0102	- Alcohol - Smoking - Caffeine	- Roster and shift work	<ul style="list-style-type: none"> - Six participants reported that they regularly smoked cigarettes - 21 participants regularly consumed caffeinated beverages (average <3 drinks/day) - 14 reported consuming alcoholic beverages on days off with an average of 8.6 ± 5.7 drinks per week (range: 2–21) 	Biological monitoring Train drivers (<i>n</i> = 24) completed the study on fatigue via wrist monitoring
7	Perring, A., Pham, K., Snow, S., & Buys, L. (2014). Investigation into the effect of infrastructure on fly-in fly-out mining workers. <i>Australian Journal of Rural Health</i> , 22, 323–327. doi: 10.1111/ajr.12117	- Alcohol	- Drinking culture	Drinking culture was described by all participants: <ul style="list-style-type: none"> - Most accepted it - Not always described as a positive aspect of mining camps 	Interview study FIFO workers (<i>n</i> = 7) Themes identified

8	Sibbel, A. M., Kaczmarek, E., Drake, D. (2016) Fly-in/fly-out accommodation: Workers' perspectives. In F. M. Haslam McKenzie (Ed.) <i>Labour Force Mobility in the Australian Resources Industry: Socio-Economic and Regional Impacts</i> (pp. 137–156). Crawley, Western Australia: Springer. doi: 10.1007/978-981-10-2018-6	- Alcohol	- Alcohol availability on camps	<ul style="list-style-type: none"> - 51% of the workers were satisfied with the range of alcohol - The range of alcohol available on site was rated as least important out of all aspects related to food services (33.2%) 	Survey study FIFO workers (<i>n</i> = 536) Mostly descriptive results, limited comparisons
9	Torkington, A. M., Larkins, S., & Gupta, T. S. (2011). The psychosocial impacts of fly-in fly-out and drive-in drive-out mining on mining employees: A qualitative study. <i>Australian Journal of Rural Health, 19</i> , 135–141. doi: 10.1111/j.1440-1584.2011.01205.x	- Alcohol	- Drinking culture/social life on site	<ul style="list-style-type: none"> - Non-drinkers described as not fitting in - The bar is the only place to socialise 	Interview study FIFO workers or DIDOs (<i>n</i> = 11) Current or former workers Semi-structured
Hand search					
10	Carter, T. (2008). <i>An exploration of Generation Y's experiences of offshore Fly-in/Fly-out (FIFO) employment</i> (Honours thesis, Edith Cowan University, Western Australia, Australia). Retrieved from http://ro.ecu.edu.au/theses_hons/1166/	<ul style="list-style-type: none"> - Illicit drugs - Alcohol 	- FIFO per se	<ul style="list-style-type: none"> - Many participants reported using illicit drugs recreationally while they were at home - Social activities reported often revolved around the consumption of alcohol and occasional other drug use - Drug and alcohol use during time off were seen as normative behaviour - Participants indicated boredom during time off may be a factor for their alcohol use 	Interview study FIFO workers (<i>n</i> = 10) Aged 18–28 (all male) Semi-structured interviews with social constructionist perspective Thematic content analysis
11	Clifford, S. (2009). <i>The effects of fly-in/fly-out commute arrangements</i>	<ul style="list-style-type: none"> - Alcohol - Smoking 	<ul style="list-style-type: none"> - FIFO per se - Roster 	Alcohol: <ul style="list-style-type: none"> - 93.7% of FIFO workers drank alcohol in the previous six months 	Survey study

	<p><i>and extended working hours on the stress, lifestyle, relationship and health characteristics of Western Australian mining employees and their partners</i> (PhD thesis, The University of Western Australia, Western Australia, Australia). Retrieved from http://research-repository.uwa.edu.au/en/</p>	-	Recreational drug use	-	Occupation group	<ul style="list-style-type: none"> - FIFO workers were no more likely to engage in moderately or highly risky drinking patterns during the work period compared to a sex-matched national community sample - Approximately one quarter of male employees drank at moderate or high short-term and long-term risk levels during the leave period - Male employees were significantly more likely to drink at long-term risk levels than Australian men (compared to Drug and Alcohol Office statistics 2007) - Mean weekly alcohol consumption was not significantly related to age, roster, occupation group or work experience - No significant differences in the mean weekly alcohol consumption of FIFO and DC employees during work or leave periods <p>Smoking</p> <ul style="list-style-type: none"> - 25.5% reported to be smokers, which is comparable to Australian population (men: 27.3%; women: 20.1%) <p>Recreational Drugs</p> <ul style="list-style-type: none"> - 99.4% of employees reported never using recreational drugs during work periods - 14.9% of employees reported some recreational drug use during leave periods 	<p>FIFO workers ($n = 158$) Partners ($n = 64$) Total $n = 222$ for Study 1 (long-term perspective—six months prior) FIFO workers ($n = 18$) Partners ($n = 14$) Total $n = 32$ for Study 2 DASS measure Comparison sample is very small</p>
12	<p>Gallegos, D. (2005) <i>Fly-in fly-out employment: managing the parenting transitions</i>. Perth, Western Australia: Centre for Social and Community Research, Murdoch University. Retrieved from http://researchrepository.murdoch.edu.au/id/eprint/10916</p>	-	Alcohol	-	FIFO per se	<ul style="list-style-type: none"> - The research suggests a shift away from drinking culture at the mines for FIFO parents (compared to 70s/80s) - Hard drinking culture was acknowledged as persisting among singles and residential workers 	<p>Interview study FIFO couples ($n = 32$) FIFO couples with at least one child of six years old or younger 69% worked in on-shore mining operations 21% worked in off-shore oil and gas operations 64 interviews</p>

						Also interviews with four HR staff
13	Gent, V. M. (2004). <i>The impact of fly-in/fly-out work on well-being and work-life satisfaction</i> (Honours thesis, Murdoch University, Western Australia, Australia). Retrieved from https://www.ifap.asn.au/Documents/News%20and%20Media/FIFO_Report_2004.pdf	<ul style="list-style-type: none"> - Alcohol - Recreational drugs 	- FIFO per se	<ul style="list-style-type: none"> - 29% reported that they drink more than three stubbies of beer/glasses of wine during their time off - 14% agreed or strongly agreed that they used recreational drugs in their time off 		Survey study FIFO workers (<i>n</i> = 132) Off-shore oil and gas and mining
14	Henry, P., Hamilton, K., Watson, S., & Macdonald, N. (2013). <i>FIFO/DIDO mental health research report</i> . Perth, Western Australia: Lifeline WA. Retrieved from http://www.workplacehealth.org.au/_literature_175869/FIFO_DIDO_Mental_Health_Research_Report .	<ul style="list-style-type: none"> - Alcohol - Caffeine - Smoking 	- FIFO per se	<p>Survey results</p> <ul style="list-style-type: none"> - Drinking culture emerged as a workplace challenge in open-ended survey questions - 20% of workers report to smoke or drink coffee as coping strategies - 20% report using alcohol as a coping strategy <p>Interview results</p> <p>A number of participants reported using substances to aid with sleep, increase energy, reduce stress or to alleviate boredom These included:</p> <ul style="list-style-type: none"> - Red Bull - caffeine - sleeping tablets - alcohol - anti-depressants 		Survey study FIFO workers/DIDOs (<i>n</i> = 924) Validated measures Semi-structured interviews Interview study FIFO workers (<i>n</i> = 18) K10 Recruitment at airport Not indicated whether comparison differences were significant Reports longitudinal data but only collected at one timepoint

15	Tuck, J., Temple, E. C., & Sipek, M. (2013). Wellbeing of fly-in/fly-out and drive-in/drive-out employees: Evidence from Australia. 6th International Conference on Sustainable Development in the Minerals Industry, Milos Island, Greece, 30 June–3 July 2013. Ballarat: University of Ballarat.	<ul style="list-style-type: none"> - Alcohol - Smoking - Caffeine 	- FIFO per se	<ul style="list-style-type: none"> - Participants consumed more alcohol at home than on site (t(93)=-.391, p<.05) - Participants smoked fewer cigarettes at home than on site (t(94)=2.61, p<.05) - Participants' consumption of caffeinated drinks did not differ significantly between on site (M = 2.57, SD = 2.05, range: 0–10 drinks) and home (M = 2.29, SD = 1.82, range: 0–10 drinks). 	Survey study FIFO/DIDO (n = 157) Validated measures
16	Tynan, R. J., Considine, R., Wiggers, J., Lewin, T. J., James, C., Inder, K., Kay-Lambkin, F., Baker, A. L., Skehan, J., Perkins, D., & Kelly, B. J. (2017). Alcohol consumption in the Australian coal mining industry. <i>Occupational and Environmental Medicine</i> , 74, 259–267. doi: 10.1136/oemed-2016-103602	<ul style="list-style-type: none"> - Alcohol - Cannabis 	- FIFO per se	<ul style="list-style-type: none"> - More than one in three reported having used cannabis, but only 2.3% reported having used it in the past month - 45.7%M and 17.0%F reported risky/hazardous alcohol use (M more likely to report risky alcohol use, $\chi^2(3) = 52.09$, p<.05) 	Survey study FIFO/DIDO and local commute (n = 1457) Validated measures
17	Velander, F., Schineanu, A., WenBin, L., & Richard, M. (2010). Digging for gold and coming up blue: A health survey in the mining industry. <i>Australian and New Zealand Journal of Health, Safety and Environment</i> 26, 389–401. Retrieved from https://www.researchgate.net/publication/265786886	<ul style="list-style-type: none"> - Alcohol - Smoking 	- FIFO per se	<ul style="list-style-type: none"> - 31.5% of respondents smoked, with 51.5% of smokers smoking >20 cigarettes per day - During work period, one in four employees drank alcohol at “binge drinking” levels—this proportion increased during leave periods - Younger workers more likely to smoke and drink 	Survey study Mining employees (n = 591) 32.5% FIFO workers
18	Education and Health Standing Committee. (2015). <i>The impact of FIFO work practices on mental health</i> . Perth, Western Australia: Legislative Assembly, Parliament of Western Australia. Retrieved from http://resources.news.com.au/files	- Alcohol	<ul style="list-style-type: none"> - Alcohol policies - Breath testing - Suicide 	<ul style="list-style-type: none"> - Varied alcohol policies: four-can restriction, six-can restriction or no restriction on alcohol bought if located within a town - All sites required breath testing at shift beginning - Info from mental health professionals: drinking as self-medication, taking sick days on site to prevent failing alcohol test, mentality that workers deserve a drink at the end of the day because of tough work conditions, drinking on rostered days off 	Based on submissions to Inquiry into the Use ‘Fly-In, Fly-Out’ (FIFO) and ‘Drive-In, Drive-Out’ (DIDO) Workforce

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fiforeport2.pdf

because nothing else to do on site; it can place people at risk of
suicide or make them take an impulsive decision to end their life

Practices in
Regional
Australia
Data from State
Coroner on
suicide
Observations of
the Education
and Health
Standing
Committee

A.1.4 KEQ 3: Studies on the strategies used by FIFO workers and families

Paper	FIFO Families Strategies considered	Main findings	Type of study
Electronic search			
1 Barclay, M. A., Harris, J., Everingham, J., Kirsch, P., Arend, S., Shi, S. & Kim, J. (2013). Factors linked to the well-being of fly-in-fly-out (FIFO) workers. Research Report, CSRM and MISHC, Sustainable Minerals Institute, University of Queensland, Brisbane, Australia.	<ul style="list-style-type: none"> - Contact via internet and phone 	FIFO workers value their privacy and the opportunity to contact their families at the end of their work day	Survey study FIFO ($n = 286$) Reporting frequencies and prevalence only Correlations described without effect sizes
2 Dittman, C.K., Henriquez, A., & Roxburgh, N. (2016). When a non-resident worker is a non-resident parent: Investigating the family impact of fly-in, fly-out work practices in Australia. <i>Journal of Child and Family Studies</i> , 25, 2778–2796. doi: 10.1007/s10826-016-0437-2	<ul style="list-style-type: none"> - Parenting style - Parenting programs for FIFO families - Importance of parenting programs/topics - Barriers to access of FIFO family programs 	FIFO partners reported greater use of coercive discipline practices compared to community mothers Access to parenting program: <ul style="list-style-type: none"> - 17.2% of FIFO partners and 12.5% of FIFO workers had accessed parenting programs - 56.2% of FIFO partners and 27.8% of FIFO workers indicated they would participate in such a program if made available Preferred topics FIFO parents' program: <ul style="list-style-type: none"> - How to help the FIFO worker stay connected to their children - How to make sure there is consistency in rules and discipline when the FIFO worker is away and when they are at home - How to stay connected with the FIFO worker Main barriers to participating in parenting program: <ul style="list-style-type: none"> - Inconvenient location or time - Not being able to regularly attend due to FIFO work - Lack of time 	Survey study FIFO workers ($n = 52$) FIFO partners ($n = 233$) Community workers ($n = 402$) All with children aged 2–12 Hierarchical regression analyses

3	<p>Haslam McKenzie F. M., & Hoath A. (2016). Aboriginal Mine Workers: Opportunities and Challenges of Long-Distance Commuting. In F.M. Haslam McKenzie (Ed.), <i>Labour Force Mobility in the Australian Resources Industry</i> (pp. 157–170). Singapore: Springer. doi: 10.1007/978-981-10-2018-6_9</p>	<ul style="list-style-type: none"> - Support from family and social network - Aboriginal mentors - Family days on site 	<ul style="list-style-type: none"> - Aboriginals retain strong emotional support from their families and social networks - Aboriginal mentors work with families at home to help mediate any conflicts that may arise through FIFO work - Some family members may also apply for employment at the same organisation for a supportive, family environment on site - Maintaining proximity with family was important for many Aboriginal respondents - “Family days” on site - Family members are brought to the mine site to see where the employee lives and works when not at home: <ul style="list-style-type: none"> - Employees and spouses who had participated were positive in their evaluation; others expressed keen interest in such an opportunity 	<p>Interview study Book chapter reviewing evidence In-depth interviews with representatives of Aboriginal organisations, local government and organisations Focus groups and small-scale survey study with FIFO workers Interviews with FIFO spouses No sample sizes or analysis methods indicated</p>
4	<p>Ebert, A., & Strehlow, K. (2017). Does on-site chaplaincy enhance the health and well-being of fly-in, fly-out (FIFO) personnel? <i>Health Promotion Journal of Australia</i>, 28, 118. doi:10.1071/he16019</p>	<ul style="list-style-type: none"> - Chaplaincy services 	<ul style="list-style-type: none"> - Chaplaincy services support/offer relief from psychological discomfort - Trust and confidentiality are key factors 	<p>Interview study FIFO workers ($n = 29$) Including management, supervisors, workers and support staff Semi-structured Thematic analysis</p>
5	<p>Gardner, B., Alfrey, K. L., Vandelanotte, C., & Rebar, A. L. (2018). Mental health and well-being concerns of fly-in fly-out workers and their partners in Australia: a qualitative study. <i>BMJ open</i>, 8, e019516. doi:10.1136/bmjopen-2017-019516</p>	<ul style="list-style-type: none"> - FIFO lifestyle - Social support - Communication 	<p>Three main themes were distinguished:</p> <ul style="list-style-type: none"> - Managing multiple roles - Impact on mental health and wellbeing - Social support needs <p>Further, it was found to be important to maintain quality communication and support from family members; support from the organisation was seen by many as tokenistic, stigmatised or lacking</p>	<p>Interview study FIFO workers ($n = 34$), FIFO partners ($n = 26$), six couples Questions were emailed to participants Thematic content analysis</p>

6	Lester, L., Waters, S., Spears, B., Epstein, M., Watson, J., & Wenden, E. (2015). Parenting adolescents: Developing strategies for FIFO parents. <i>Journal of Child and Family Studies, 24</i> , 3757–3766. doi: 10.1007/s10826-015-0183-x	<ul style="list-style-type: none"> - Communication strategies with family - Advice for families entering FIFO lifestyle 	<ul style="list-style-type: none"> - Open and meaningful communication with partner and children while on site: <ul style="list-style-type: none"> - Preparing questions or topics they can cover with children - Via phone, e-mail or shared blog - Quality family time spent together - Routines - Social support networks - Setting clear boundaries for children 	Interview study FIFO workers ($n = 23$), partners ($n = 21$) Primary focus on parenting Measurement of K10 via interview and survey of SDQ Small sample size for comparison with national data
7	Misan, G. M., & Rudnik, E. (2015). The pros and cons of long distance commuting: Comments from south Australian mining and resource workers. <i>Journal of Economic and Social Policy, 17</i> , 1–37. Retrieved from http://hdl.handle.net/2440/96565	<ul style="list-style-type: none"> - Working for a family-friendly company 	<ul style="list-style-type: none"> - Workers were appreciative of company or management practices that acknowledged their distance to home and the difficulties involved with being far away from home - Companies providing support in case of family issues and allowing them to go home with short notice if necessary were valued - Company policy allowing workers to keep mobile phones were seen as a positive 	Interview study FIFO workers and partners ($n = 104$) Semi-structured (face-to-face, telephone or small focus group semi-structured interviews) Mining and oil and gas Both individual and group setting Scientific phenomenology research approach
8	Pini, B., & Mayes, R. (2012). Gender, emotions and fly-in fly-out work. <i>Australian Journal of Social Issues, 47</i> , 71–86. doi:10.1002/j.1839-4655.2012.tb00235.x	<ul style="list-style-type: none"> - Online discussion forums 	<ul style="list-style-type: none"> - FIFO partners communicate and reflect on their identities as FIFO partners in online forum - Counselling via online forum by other FIFO women - FIFO wives take pride in being strong, supportive and resilient, and undertake a substantial burden of emotional work in the maintenance of FIFO work - FIFO wives strive to avoid becoming “too independent” in the partner’s absence - Construction of the “mining woman” as an independent, stoic and self-reliant character 	Analysis of postings made on an online chat forum for mining families ($n = 513$ postings) “Netnography” or “virtual ethnography” Recursive inductive analysis
9	Torkington, A. M., Larkins, S., & Gupta, T. S. (2011). The psychosocial impacts of fly-in fly-out and drive-in drive-out	<ul style="list-style-type: none"> - Communication - Type of partner 	<ul style="list-style-type: none"> - Regular communication helps overcoming challenges of maintaining a relationship 	Interview study FIFO workers or DIDOs ($n = 11$) Current or former

	mining on mining employees: A qualitative study. <i>Australian Journal of Rural Health</i> , 19, 135–141. doi: 10.1111/j.1440-1584.2011.01205.x		- Independent or resilient partner was considered to help in coping with FIFO lifestyle	Semi-structured
Hand search				
10	Bailey-Kruger, A. (2012). <i>The psychological wellbeing of women operating mining machinery in a fly-in fly-out capacity</i> (Master's thesis, Murdoch University, Western Australia, Australia). Retrieved from http://ro.ecu.edu.au/theses/1682	- Psychosocial wellbeing - Social support - Time away	Three psychosocial adaptation strategies: - Embracing an identity that would allow them to fit in more readily with the status quo (also needed for career progression) - Importance of getting along; the need to maintain positive relations with colleagues to progress in the workplace and gain social support and acceptance (also needed for career progression) - A need for solitude for themselves to cope with the close community living intrinsic in the FIFO lifestyle (time away from colleagues and work topics)	Interview study Female machine operators ($n = 19$) at one mine site in Queensland Exploratory (research questions, no hypotheses) 58% had partners working with them at the mine Interpretative Phenomenological Approach
11	Bradbury, G. S. (2011). <i>Children and the fly-in/fly-out lifestyle: Employment-related paternal absence and the implications for children</i> (PhD thesis, Curtin University, Western Australia, Australia). Retrieved from https://espace.curtin.edu.au/	- Parental attachment - Telecommunication - Spending quality time together	Survey results - Children's perceived maternal care score was significantly higher than the community sample care score (not paternal care and overprotection, maternal overprotection) - 93.8% of children reported using telephone communication (i.e. landline and mobile) to contact fathers who were away at work - 80.5% of the mothers and 85.1% of the fathers in the study reported daily or more than daily communication - Children emphasised making the most of the time together with fathers, and ensuring that consistent and meaningful communication was maintained when fathers were away at work	Survey study FIFO workers ($n = 47$), partners ($n = 48$) and children ($n = 48$) Interview sample is the same PhD Thesis
12	Carter, T. (2008). <i>An exploration of generation Y's experiences of offshore fly-in/fly-out (FIFO) employment</i>	- Regular contact	- Focus on routine helps FIFO workers cope while at work	Interview study FIFO workers ($n = 10$) Aged 18–28 (all male)

	(Honours thesis, Edith Cowan University, Western Australia, Australia). Retrieved from http://ro.ecu.edu.au/theses_hons/1166/		<ul style="list-style-type: none"> - Not thinking about what is going on at home can help to prevent being upset about missing social or family occasions - Regular contact with partner 	Semi-structured interviews with social constructionist perspective Thematic content analysis
13	Clifford, S. (2009). <i>The effects of fly-in/fly-out commute arrangements and extended working hours on the stress, lifestyle, relationship and health characteristics of Western Australian mining employees and their partners</i> (PhD thesis, The University of Western Australia, Western Australia, Australia). Retrieved from http://research-repository.uwa.edu.au/en/	<ul style="list-style-type: none"> - Coping strategies 	<p>Adaptive coping behaviours frequently used by FIFO workers and partners were:</p> <ul style="list-style-type: none"> - active coping (e.g. take action to deal with stress) - planning (e.g. create a strategy to deal with stress) - acceptance (e.g. learn to live with the stress) 	<p>Survey study</p> <p>FIFO workers ($n = 158$) Partners ($n = 64$) Total $n = 222$ for Study 1 (long term perspective—six months prior) FIFO workers ($n = 18$) Partners ($n = 14$) Total $n = 32$ for Study 2 DASS measure Comparison sample is very small</p>
14	Colquhoun, S., Biggs, H.C., Dovan, N., Wang, X., & Mohamed, S. (2016). An occupational study of the mental health of FIFO/DIDO construction workers. International Conference on Innovative Production and Construction, 3–5 October 2016. Perth: Curtin University	<ul style="list-style-type: none"> - Communication - Support from families 	<ul style="list-style-type: none"> - On-site communication with family and friends is problematic, particularly for four-and-one rosters; often no adequate reception and problems at peak times --> impacts the relationship with families back home; having privacy is made more difficult for workers as mobile phone reception is not available in rooms - Stress for workers and their families in being unable to help in an emergency - Long rosters make communication with the partner more difficult, both on site and off site; intensified because of reception difficulties; a number of marriages broke down - It works with understanding from the partner of the reason for the work and efforts of both sides to work at communication 	<p>Focus group study</p> <p>Focus groups ($n = 15$, 5–6 participants per group) Semi-structured Four road/rail construction sites around Australia</p>
15	Fresle, N. (2010). <i>The role of social support systems in reducing loneliness and social isolation for parents whose partner work fly-in/</i>	<ul style="list-style-type: none"> - Family resilience - Stress - Loneliness - Social isolation 	<ul style="list-style-type: none"> - Loneliness and social isolation issue for FIFO partners 	<p>Interview study</p> <p>FIFO partner/mother ($n = 12$ online $n = 12$ face-to-face mothers of primary school aged</p>

	<p><i>fly-out</i> (Honours thesis, Murdoch University, Western Australia, Australia. Retrieved from http://ro.ecu.edu.au/theses_hons/1243)</p>	<p>- Support</p>	<ul style="list-style-type: none"> - Four themes: emotional support, instrument support, social interactions and family resilience through positive reappraisal - Support needs: dependent upon context (loneliness and social isolation during first week of separation, night time, weekends and special occasions), suggesting social support acts as a buffer under high stress levels - Support needs were found to be related to both the issues of critical timing as found by Gallegos (2006), and to the high levels of parental responsibility, demands and time restraints experienced during their partner's absence - Emotional support -> primarily by partners, instrumental support: participants' parents (and childcare assistance, friends, other FIFO families); many participants reported strong, supportive social networks. - Strong, supportive social support networks -> more likely to experience positive outcomes, such as emerging stronger and more resourceful through choosing to focus on the benefits of the FIFO lifestyle - Open, honest communication styles and unrestricted access to telecommunication increased emotional bonding and women's abilities to cope - Overall, women reported a stronger need for instrumental support over emotional support (might mean the stressors are seen as controllable; uncontrollable stressors call more for emotional support) - Women had well-developed social networks (child-centred activities) 	<p>children or younger with FIFO partner in mining or construction) Hermeneutic phenomenological approach Thematic content analysis Member check: two participants verified the accurate reflection of their views</p>
<p>16</p>	<p>Gallegos, D. (2005) <i>Fly-in fly-out employment: managing the parenting transitions</i>. Perth, Western Australia:</p>	<p>- Decision-making around FIFO</p>	<ul style="list-style-type: none"> - Couples considered it vital that the decision to commence or continue FIFO work is a joint decision 	<p>Interview study FIFO couples (n = 32)</p>

<p>Centre for Social and Community Research, Murdoch University. Retrieved from http://researchrepository.murdoch.edu.au/id/eprint/10916</p>	<ul style="list-style-type: none"> - Strategies for managing FIFO <ul style="list-style-type: none"> - For partners - For children - FIFO transitioning and parenting - Open communication 	<p>Couples used a range of strategies to deal with FIFO:</p> <ul style="list-style-type: none"> - Recognition by FIFO workers that the “job” at home was a difficult one and was of significant value - Maintaining open communication lines regarding the continuation of fly-in, fly-out - Parting on good terms - Maintaining a positive attitude <p>Strategies adopted by parents to help children cope with FIFO:</p> <ul style="list-style-type: none"> - Explaining fly-in, fly-out and the reasons for doing it in terms children understood - Giving the children space to express their feelings - Facilitating ongoing telephone contact - Talking about the worker on a daily basis while they were away - Having photographs of the worker in the house and beside the child’s bed - Putting the worker’s voice on the answering machine and playing it on the loud speaker - Giving children and the worker space to reconnect <p>Managing parenting transition:</p> <ul style="list-style-type: none"> - Established particular tasks for the worker to “pick up” when he returns - Developed a consistent routine - Attempted to be consistent and present a “united front” regarding children’s behaviour <p>Open communication was one of the most important strategies (including communication plan and regular routine of contact)</p>	<p>FIFO couples with at least one child of six years old or younger 69% worked in on-shore mining operations 21% worked in off-shore oil and gas operations 64 interviews Also interviews with four HR staff</p>
<p>17 Henry, P., Hamilton, K., Watson, S., & Macdonald, N. (2013). <i>FIFO/DIDO mental health research report</i>. Perth, Western Australia: Lifeline WA. Retrieved from http://www.workplacehealth.org.au/_l</p>	<ul style="list-style-type: none"> - Coping strategies - Communication - On-site support 	<ul style="list-style-type: none"> - Range of different coping mechanisms, including: accepting, avoiding, adapting, distracting and compromising - Some participants mentioned that they don’t cope and expressed a sense of powerlessness in being able to change their situation 	<p>Survey study FIFO workers/DIDOs (<i>n</i> = 924) Validated measures Semi-structured interviews Interview study FIFO workers (<i>n</i> = 18) K10</p>

	<p>iterature_175869/FIFO_DIDO_Mental_Health_Research_Report</p>		<p>Communication involved:</p> <ul style="list-style-type: none"> - Using social networking sites (e.g. Facebook) - Having photos of children emailed to workers - Skype - The smartphone application “Facetime” - Daily phone contact <p>Most participants were aware of an Employee Assistance Program:</p> <ul style="list-style-type: none"> - A minority had used EAP <p>Other supports participants reported as available to them included:</p> <ul style="list-style-type: none"> - Nightly meditation - On-site safety officer and supervisors - Managing lifestyle and fatigue courses - Peer-support programs - Personal trainers - On-site chaplains - Union - Men’s group - Online group (i.e. Mining Family Matters and FIFO Families) 	<p>Recruitment at airport Not indicated whether comparison differences were significant Reports longitudinal data but only collected at one time point</p>
18	<p>MacBeth, M. M., Kaczmarek, E., & Sibbel, A. M. (2012). Fathers, adolescent sons and the fly-in/fly-out lifestyle. <i>The Australian Community Psychologist</i>, 24, 98–114. Retrieved from https://groups.psychology.org.au/Assets/Files/ACP-24-2-MacBeth.pdf</p>	<p>- Communication</p>	<p>A common factor in maintaining the connection between father and son was the ability to communicate while the father was away (telephone, Skype or email)</p>	<p>Interview study N = 8 adolescents (13–21 years) Father of all worked as FIFO Phenomenological approach</p>
19	<p>Sellenger, M., Oosthuizen, J. (2017). Quantitative analysis of mental wellbeing of fly-in fly-out construction project support service workers. <i>Journal of Preventive Medicine and Healthcare</i>, 1(1), 1–6. Retrieved from https://www.jsmedcentral.com/Prev</p>	<p>- Contact family members - Distress - Employee Assistance Program</p>	<p>- The least popular coping methods during difficult times were: “contact the Employee Assistance Program” (2.8%), “speak to a medical professional” (1.9%) and “contact a mental health support group” (1.0%) - “Contact family members” (57.1%), “keep to self” (not engage with anybody) (50.5%) and “Engage in positive thinking” (43.8%)</p>	<p>Survey study FIFO support service workers (n = 105) (recent suicide in the cohort, may have sensitised the population) Remote construction project Female workers (55.2%), male workers (44.8%) Kessler 10</p>

	entiveMedicine/Articles/preventivemedicine-1-1001.pdf		- Kendall tau ($r^2 = 0.39$) for keeping to themselves indicates a medium positive relationship with higher K10 scores	Correlations Comparison to general population
20	Sibbel, A. M. (2010). <i>Living FIFO: The experiences and psychosocial wellbeing of Western Australian fly-in/fly-out employees and partners</i> (PhD thesis, Edith Cowan University, Western Australia, Australia). Retrieved from http://ro.ecu.edu.au/theses/132/	<ul style="list-style-type: none"> - Communication - Practical support from social network - Attending community groups (i.e. mothers group, play groups, sport clubs) - Family routines 	<ul style="list-style-type: none"> - Availability and quality of communication with home impacted on their degree of loneliness - Nearby family and close friends were used by many partners for practical help - Attending community groups such as mothers group, play groups, sport clubs - Establishing two separate routines, one when FIFO partner is home one when they are away 	<p>Survey study FIFO workers ($n = 90$) Partner ($n = 32$) (principal and contractor, underground and surface mines) Measures Psychological wellbeing—GHQ</p> <p>Interview study FIFO workers ($n = 16$), partner ($n = 12$) Grounded theory approach</p>
21	Taylor, J. C., & Simmonds, J. G. (2009). Family stress and coping in the fly-in fly-out workforce. <i>The Australian Community Psychologist</i> , 21, 23–36. Retrieved from https://groups.psychology.org.au/Assets/Files/Taylor-21(2)-2009.pdf	<ul style="list-style-type: none"> - Communication - Social support 	Family satisfaction was strongly associated with effective communication (correlation .73) strategies and families providing balanced cohesion (emotional and social support to each other) (.58)	<p>Survey study FIFO workers ($n = 33$), partners ($n = 27$) Total ($n = 63$) Actual statistical analysis is not reported for most of the results, also small sample</p>
22	Tynan, R. J., Considine, R., Rich, J. L., Skehan, J., Wiggers, J., Lewin, T. J., James, C., Inder, K., Baker, A. L., Kay-Lambkin, F., Perkins, D., & Kelly, B. J. (2016). Help-seeking for mental health problems by employees in the Australian Mining Industry. <i>BMC Health Services Research</i> , 16, 498.	<p>Professional contacts:</p> <ul style="list-style-type: none"> - Drug and alcohol counsellor - Psychologist - Mental health nurse - Psychiatrist - Social worker - General practitioner - Specialist doctor or surgeon - Chemist <p>Non-professional contacts:</p> <ul style="list-style-type: none"> - Clergy - Complementary therapist - Friend or family 	<ul style="list-style-type: none"> - 46.6% of participants reported that they made contact with at least one professional or non-professional source of support to discuss their own mental health within the preceding 12 months - Non-professional contacts were most common (41.0%) and of these, friends and/or family members were most commonly identified as the source of support (40.3%) - In terms of professional support, 23.2% reported contact within the preceding 12 months, with the general practitioner (GP) the most common professional service contacted (18.8%) - 50.3% of people in the high PSNI category for professional services had not contacted a professional support service in the preceding 12 months 	<p>Survey study Mining employees ($n = 1457$) Employees of eight coal mines (28.4% FIFO or DIFO)</p>

23	<p>Voysey, W. (2012). <i>Satisfaction with a fly-in/fly-out (FIFO) lifestyle: Is it related to rosters, children and support resources utilised by Australian employees and partners and does it impact on relationship quality and stress?</i> (Honours thesis, Murdoch University, Western Australia, Australia). Retrieved from http://researchrepository.murdoch.edu.au/id/eprint/11449/</p>	<ul style="list-style-type: none"> - Employee assistance programs (EAPs) - FIFO-specific publications - FIFO-specific online support groups - FIFO-specific workshops - Personal resources and supports such as family, friends and co-workers - Health professionals and religious clergy/organisations 	<ul style="list-style-type: none"> - FIFO workers were most aware of EAPs, followed by friends and co-workers for support <ul style="list-style-type: none"> - Partners were not that aware of EAPs, but more aware of FIFO online groups - Partners and FIFO workers had mostly relied on friends for support and only 5% had used EAPs - Personal support was rated to be more useful than online support 	<p>Survey study FIFO workers ($n = 245$), partners ($n = 314$) Total ($n = 559$) Descriptive analysis only</p>
24	<p>Watts, J. (2004). <i>Best of both worlds? Fly In–Fly Out research project final report</i>. Karratha, Western Australia: Pilbara Regional Council. Retrieved from http://inform.regionalaustralia.org.au/process/community-engagement/item/best-of-both-worlds</p>	<ul style="list-style-type: none"> - Communication - Coping strategy 	<ul style="list-style-type: none"> - Negotiation on the period of time FIFO would be undertaken - Being prepared for a commitment to quality communication, e.g. daily emails and texts - Partners might prefer not to have to work because they want to be around when the FIFO partner is back 	<p>Focus group and interview study FIFO workers Pilbara ($n = 33$) Family members (not in region) ($n = 28$) Non-FIFO stakeholders ($n = 115$) Retired FIFO workers ($n = 15$) Thematic analysis</p>
25	<p>Anglicare WA (2013). <i>The Parenting Perceptions Report</i>. Perth, Western Australia: Anglicare WA. Retrieved from https://www.anglicarewa.org.au/resources/parenting-perceptions-report.aspx</p>	<ul style="list-style-type: none"> - Parenting - Pressure for success 	<ul style="list-style-type: none"> - Seems 59% of FIFO respondents report “family conflict” and only 14% of FIFO family, unclear what the difference between these groups is; intact family: 56% report family conflict. - Children in fly-in, fly-out families were more likely to experience pressure to succeed in academic, sporting and other pursuits; these expectations came both externally and from the children themselves - Fly-in, fly-out families were more likely to offer rewards and treats 	<p>Survey study Single or couple parent families with children from pre-primary to year 12 in WA ($n = 810$) FIFO families (11%)</p>

Appendix B Survey study

B.1 Research methods survey study

B.1.1 Measures

B.1.1.1 Survey development

Three surveys were developed—one for the FIFO workers, one for their partners and one for former FIFO workers. Each survey was developed through a multi-stage process (see Figure 4.1).

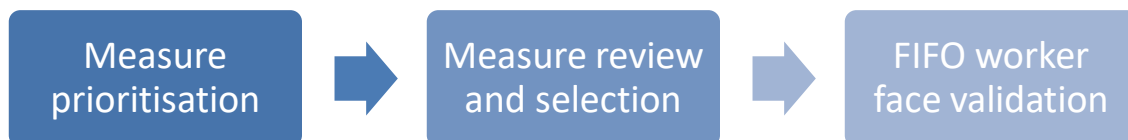


Figure 4.1. Survey development steps.

Scales for each of the key factors were identified. All scales considered were published in peer-reviewed journals and were those that have been independently developed and validated by researchers. Of the many measures available, key measures were chosen according to the following criteria:

- validity and reliability
- the extent to which the measures are established scales in their respective fields (i.e. citation rates)
- number of items (not too many, as that would impact survey length too much), and
- availability of norms or comparison data.

Where measures had too many items, researchers decided to focus on those items with the highest factor loadings, or to focus on the most central dimensions relevant to this research project. Where no measure of a concept was available (for example, some of the FIFO specific concepts), the researchers developed scales using established procedures.

To check the face validity of the FIFO survey, a group of current and former FIFO workers completed the survey with the researchers present. Participants in the survey validation phase were informed that their responses would not be recorded as part of the main study. They were instructed to verbalise feedback around the wording of questions, the response options, and survey length and structure. The group contained two former and two current FIFO workers, and included two men and two women. Their experience ranged from one to twenty years of FIFO work. Based on the feedback provided, the survey was further refined.

Consultation with the research reference group led to further changes, including the addition of a survey targeted at former FIFO workers. All results on former FIFO workers have been made available through Appendix B.4.

B.1.1.2 Survey measures FIFO workers

The FIFO worker survey measured:

- mental health and wellbeing
- use of alcohol and other drugs
- each of the five categories of factors that might shape the above outcomes (person, job, team, organisation and worksite, and family and social life factors; see Appendix B.1.1)
- coping/support strategies, and
- demographics.

Table 4.2 shows the names, descriptions and reliabilities of the key scales used for all samples (FIFO workers, FIFO partners and the benchmark group) where this was applicable. Cronbach's Alpha reflects the internal consistency of the measures, indicating that all scales had good reliabilities. Only the reliabilities for coping distraction and family separation were lower, so the findings related to these scales need to be interpreted with caution. A full copy of the surveys is included in a separate document made available to the WA MHC.

In statistical analysis, inferences about a population are made from sample data, as in practice it is not possible to obtain data from each person that is part of the targeted population. Statistically significant results are found if the results are not attributed to chance. In statistics it is about probability, as it is not possible to find one hundred per cent certainty. Therefore, the risk to find an outcome that is random must be reduced. Most researchers use a cut-off of 5%, which means there is a 5% chance that the results found were actually random. Sometimes a stricter cut-off (of 0.5% or 0.1%) is chosen, if it seems necessary to reduce this risk even more. Research will indicate the probability values (p-values) of their findings for declaring a statistically significant finding. Conventionally this is a p-value smaller than .05.

For the comparison sections the conventional p-value of .05 is chosen. Where appropriate, we note that the effect might be quite small even though statistically significant. We adopt this approach because for some factors even small effects can be important (Lance & Vandenberg, 2009) and it is important to consider the implications of these effects (for example, on suicidal risk).

Because of the large sample size of the study, even very small effects can be statistically significant at the .05 probability level. Regressions have high statistical power for identifying small effects. This power gives us confidence in assessing the differences between groups. However, to ensure that statistically significant effects are also large enough to be meaningful we adopt a conservative approach and set a threshold at the .005 and .001 probability levels for the regression analyses.

Table 4.2
 Overview of scale descriptions, and reliabilities for FIFO workers, partners and benchmark group

Scale	Description	Example item	Number of items	Cronbach's Alpha		
				FIFO workers	Partners (view on themselves)	Benchmark
Mental health and wellbeing						
K10	The K10 (Kessler-10) measures non-specific psychological distress, including feelings of depression, restlessness, fatigue, worthlessness and anxiety. There are data on the probability that a person will have a diagnosis of anxiety or depression (ABS, 2012, tables F and G). As high K10 scores mean a greater probability for such a diagnosis, the phrase "anxiety and depression" is used interchangeably with the term "psychological distress".	During the last 30 days about how often did you feel tired out for no good reason?	10	.92	.93	.91
Burnout	Burnout is a state of mental exhaustion due to prolonged periods of stressors experienced on the job. Burnout is typically measured through the dimensions of exhaustion, cynicism and inefficacy.	Please indicate how often you feel as described in the statements below. I feel ... emotionally drained from my work.	2	.87	.86	.92
Emotional wellbeing	Wellbeing is a state of happiness and experience of positive emotions. It can be measured through: (1) emotional wellbeing: affective component; (2) psychological wellbeing: including self-acceptance, growth, purpose, relations with others, autonomy and mastery; (3) social wellbeing: including social integration, contribution, coherence, actualisation and acceptance.	During the past month, how often did you feel happy?	3	.91	.91	.93
Psychological wellbeing		... that people are basically good?	3	.81	.80	.86
Social wellbeing		... that you liked most parts of your personality?	3	.87	.89	.79
Interpersonal needs—burdensomeness	Burdensomeness is an adverse mental state characterised by the perception that others would be better off if you did not exist.	I think I make things worse for the people in my life.	6	.89	.92	.89
Interpersonal needs—thwarted belonging	Thwarted belongingness is an adverse mental state that arises when the need for connection with others is not met. These factors were extracted from a measure of interpersonal needs related to suicidal ideation.		9	.88	.91	.89
Suicidal intention	Thoughts and plans about suiciding.	I have no intention of killing myself in the near future.	3	.73	.65 ²⁷	.62
Alcohol						
AUDIT	Alcohol Use Disorders Identification Test; assesses alcohol use.	In the last 12 months, how often have you found that you were not able to stop drinking once you had started?	10	.83	.76	.83
Person factors						
Recovery strategies	Actions that workers take to recuperate from the demands of FIFO work.	I forgot about work.	4	.87	N/A	.91

²⁷ .91 if "If I wanted to kill myself, I feel ready to do so" was removed, benchmark group: .94 if "If I wanted to kill myself, I feel ready to do so" was removed

Masculinity norms	The behaviours perceived to be normal of the traditional male gender role.	A guy should always seem as manly as other guys that he knows.	3	.81	N/A	.88
Resilience	The ability to recover from and achieve success even in the face of adversity.	I usually take stressful things in my stride.	3	.66	.69	.70
Active coping	Active coping strategies describe the proactive steps that workers take to manage their stressors.	I concentrate my efforts on doing something about the situation I am in.	2	.87	.87	.86
Emotional support	Emotional support coping strategies involve turning to others for comfort and help.	I get emotional support from others.	2	.88	.92	.89
Coping—distraction	Distraction coping strategies involve turning to other activities to take the mind off the stressor.	I do something to think about it less such as watching TV, reading, daydreaming or sleeping.	2	.58	.42	.70
Coping—disengagement	Disengagement coping strategies involve giving up on attempts to cope with the stressor.	I give up trying to deal with it.	2	.73	.82	.81
Affective FIFO commitment	Affective commitment is based on emotional attachment to the organisation.	I regret having taken up FIFO work.	3	.78	.69	N/A
Continuance FIFO commitment	Continuance commitment to an organisation is based on the benefits (economic and social) accrued; commonly described as “golden handcuffs”.	Changing to a non-FIFO job would now require considerable personal sacrifice.	4	.84	.87	N/A
Job factors						
Autonomy time off while on site	The degree of freedom that workers have in their activities during their time off while on site or at home.	I decide what I do in my leisure time.	4	.76	N/A	N/A
Autonomy time off at home		I am free to do things in my own way.	3	.92	N/A	.91
Family separation	The mental effects of separation from family.	I frequently struggle with being so far away from my friends and family.	3	.46	N/A	NA
Transitioning site/home	The psychological challenges FIFO workers face while transitioning between site and home.	Settling back into home life can be hard after coming back from site.	2	.66	N/A	NA
Error consequences	The psychological strain that workers experience from the prospect of committing errors at work.	Could an error on your part have a major negative consequence?	2	.67	N/A	.66
Autonomy	Job autonomy is the degree of freedom a worker has in work scheduling and methods, and in decision making.	The job gives me a chance to use my personal initiative or judgement in carrying out the work.	3	.91	N/A	.89
Task variety	The degree to which a worker is required to perform a range of tasks as part of the job role.	The job involves a great deal of task variety.	3	.92	N/A	.90
Feedback from job	The degree to which the job task provides information about task performance.	The job itself provides me with information about my performance.	2	.81	N/A	.83
Team factors/organisation and workplace factors						
Perceived support line manager	The emotional and technical support that workers receive from their line manager.	I can rely on my line manager to help me out with a work problem.	4	.92	N/A	.91
Leadership line manager—transformational	Transformational leaders inspire their workers to perform beyond expectations by transforming a worker’s beliefs, values and	My line manager says things that make employees proud to be a part of this organisation.	2	.87	N/A	.90

	attitudes. The items measure the degree to which line managers display transformational leadership behaviours.					
Perceived health and safety commitment line manager	The degree of commitment towards worker safety displayed by line managers	My line manager is passionate about health and safety.	3	.94	N/A	NA
Perceived co-worker support	The emotional and technical support that workers receive from their colleagues.	If work gets difficult, my colleagues will help me.	4	.91	N/A	.92
Perceived FIFO work flexibility	The degree of flexibility that FIFO workers have, such as the option of job sharing, time off for important events or requests for different rosters.	Introduction of flexible work arrangements, such as job sharing, for some positions.	3	.76	.73	NA
Perceived stigma	Mental health related stigma; when a person gets labelled by their illness and becomes part of a stereotyped group. Negative attitudes towards this group can lead to discrimination.	It would harm my career.	6	.89	N/A	.89
Family and social factors						
Work–family conflict	The degree to which job responsibilities interfere with the worker’s family time and hinder fulfilling family responsibilities.	The demands of my work interfere with my home and family life.	5	.93	.91	.96
Relationship happiness	Satisfaction with social relationships.	Please choose the degree of happiness, all things considered, of your relationships with others.	3	.76	.66	.70
Dyadic satisfaction	Marital functioning.	Please indicate the approximate extent of agreement or disagreement between you and your partner for each item on the following list. Amount of time spent together.	7		.85	N/A
Family functioning	Evaluation of general family functioning.	In times of crisis we can turn to each other for support.	10	N/A	.92	N/A
Safety at home	Safety behaviours of FIFO workers at home.	They use all the necessary safety equipment to do the work.	3	N/A	.96	N/A
Satisfaction with FIFO (partner)	The degree to which partners of FIFO workers are satisfied with the FIFO work arrangement.	The communication options available to my partner on site are good.	3	N/A	.63 ²⁸	N/A
Outcomes						
Safety behaviour—compliance	Safety compliance is the degree to which workers follow safety procedures in the workplace.	I use all the necessary safety equipment to do my job.	2	.91	N/A	.94
Safety behaviour—participation	Safety participation refers to the initiative by workers in participating in and promoting safe work place behaviours.	I promote the safety program within the organisation.	2	.83	N/A	.83
Proactive work behaviour	Speaking up; the frequency with which a worker airs his views about issues in the workplace.	How frequently do you speak up with new ideas or changes in procedures?	4	.90	N/A	.89
Physical pain	The experience of physical pain in areas of the body.	How often, over the past four weeks, have you had an ache, pain, or discomfort in your ... Neck?	4	.86	N/A	.86
Sleep quality	How well the workers slept; the quality of their sleep.	Did you have trouble falling asleep?	2	.64	N/A	.61

Note. Scales listed only includes those for which reliability analysis was appropriate. See Appendix B.1.1 for a full list of measures.

²⁸ Removed item “If my partner didn’t work in a FIFO job, our relationship would be better”

To ensure a manageable survey length, a randomised distribution strategy was used to reduce the survey length for participants (online only). All participants responded to core questions (demographics, FIFO specific workplace and organisation details, use of alcohol and other drugs, job factors, and the outcomes of mental health and wellbeing) but were randomly presented with two out of the following four sections: work team factors, individual worker attributes, organisational and worksite factors, and family and social life aspects. The order of all sections was randomised in the surveys.

The survey for **partners of FIFO workers** was similar to that for current FIFO workers, with some adjustments. For example, as it would be hard for the partners of FIFO workers to have an accurate impression of the work situation on site, those questions were mostly left out. The partner survey focused on the partners' mental health and wellbeing, alcohol and other drugs, person factors, and family and social factors, with the latter category extended (e.g. the Dyadic adjustment scale and the Family functioning scale were added). The survey for the partners was not randomised or shortened.

The survey compiled for the **benchmark group** was almost identical to the one that was created for the FIFO workers, except that items applicable to a FIFO work environment were removed. In contrast to the current FIFO worker survey, all groups of factors were displayed as only 300 participants were required to complete the survey. The order of all sections was randomised.

B.1.2 Survey distribution and data collection strategies—FIFO workers and partners

B.1.2.1 Electronic survey

Web links were set up to distribute the different types of surveys via various channels.

- For the current FIFO survey, three web links were set up: one public link that UWA and mental health organisations distributed, and one link each for unions and industry.
- The partner survey was distributed via two methods. First, the current FIFO worker survey, invited participants to provide their partners' details so that the partners could complete the FIFO partner survey in a way so that both sets of responses could be linked. A second partner survey (with identical content) was set up so that partners could access the survey independently of being put forward by their FIFO working spouse.
- Former FIFOs, self-identified as such at the beginning of the current FIFO survey, were redirected to the former FIFO survey.

The surveys and information about the project were distributed by the University of Western Australia and by seven other organisations representing industry, union and mental health organisations. A snowballing technique was used to distribute the survey link as widely as possible. The main platform for the distribution of the public survey link targeted at current FIFO workers was a website set up on the UWA's crowdresearch.com.au. UWA used social media platforms to distribute the website to potential participants. Statistics indicate this page was shared over 1000 times on Facebook, and it reached 3312 user accounts via UWA's official twitter channel. A Facebook account representing the project was also created to contact FIFO groups. Seven Facebook groups that targeted FIFO (and partners') work and life containing a total of approximately 71,000 members also shared the survey link to members.

Unions, industry contacts and mental health organisations supported the distribution of the survey via their many communication channels, such as internal email invitations, meetings, briefing packs informing about the survey, (FIFO work) websites, newsletters, Twitter accounts and Facebook posts. Mental health organisations also released press releases and distributed information about the study via their professional networks. Surveys were promoted on FIFO work sites; participating organisations were provided with briefing packs about how to distribute the survey, including posters and PowerPoint slides.

Most current FIFO workers indicated that they completed the survey while they were on site (during or after work hours ($n = 2430$ on-site completions; $n = 607$ during time off at home)).

FIFO worker participants took 37 minutes to complete the survey (median score), with most participants spending around 21 minutes completing the survey (mode). The median for partners of FIFO workers was 27 minutes; the mode was 22 minutes. The median time for the benchmark group was 22 minutes, with a mode of 21 minutes.

B.1.2.2 Paper survey

In addition to the online survey, 1200 paper surveys were distributed to industry, unions and mental health organisations (1100 current FIFO worker surveys, 100 former FIFO surveys). This pathway was included to ensure that workers who do not have internet access or are not competent using computers would not be excluded from the study (following suggestion by the reference group). The surveys were sent out together with anonymous and sealed return boxes, as well as pre-paid return envelopes, giving participants two options to return their surveys. Each set of surveys that was sent out included instructions to those who would be distributing the surveys to ensure ethical and professional standards would be adhered to. Posters were sent out with the surveys to facilitate survey promotion. A total of 165 paper surveys were returned, out of which 129 were useable responses (i.e. had not been damaged or tampered with and went through the careless responder checks). This represents a response rate of 10.77%.

B.1.3 Data screening

As is common in online survey research, not all responses were useable. We screened the data (based on Ward & Meade, 2017) to ensure its quality.

- As shown in Table 4.3, for each sample, we excluded surveys that were less than 70% complete (based on steps outlined by Dittman et al, 2016).
- We included two “careless responder” check items to filter out participants who did not read or attend to the specific item content, and as a consequence provided inaccurate responses. Careless responder items were placed in between other items of a scale and each required participants to respond in a prescribed manner (e.g. “please select 7 for this item”).
- The survey concluded with an item explaining the importance of including responses from people that carefully completed this survey. Participants were asked whether or not their responses should be used. If they indicated “no” they were also excluded from the analysis.
- A check for response time was implemented. A cut-off of two seconds per item was used, which has been described as reasonable to exclude participants who were rushing (Ward & Meade, 2017).

Table 4.3

Number of excluded participants and remaining samples at each data screening step

Survey	Number of removed participants at each screening step						% retained (of original sample)
	Initial sample size	Completion rate >70%	Careless responder checks	Do not use participant's data	Rushing	Final sample size	
FIFO	5,468	1,599	23	48	690	3,108	56.84%
Partner	729	129	151	4	42	373	51.17%
Former	676	137	n/a	7	45	487	72.04%

Note. The Former FIFO survey didn't contain careless responder items as it was shorter than the other surveys; only participants that responded incorrectly to both careless responder checks were removed; current FIFO worker sample includes paper survey responses (note: rushing could not be assessed for paper surveys); partner survey includes partner first and linked partner surveys.

B.1.4 Representativeness of the samples

The **sample of FIFO workers** collected was highly representative of the WA FIFO population as it sampled individuals of different ages, gender, tenure within FIFO, roster types, role, industry type, etc. The large number of participants also ensured that maximum representativeness was achieved.

As industry and unions were actively involved throughout the survey distribution process, it was possible to target participants not only in mining, but also in oil and gas and construction. Following data from the Australian Bureau for Statistics (2018), Table 4.4 shows that the industry and gender distribution between the WA mining population and the FIFO sample are well matched.

Table 4.4

Workers by gender in mining in WA based on ABS data February 2018

Group	Mining	Oil and gas	Gender
WA	94,400 = 81%	17,900 = 19%	Male: 81.6% / Female: 18.4%
FIFO sample	2577 = 82.9%	531 = 17.1%	Male: 82.8% / Female: 17.1%

Table 4.5 shows that the age distribution looks very similar to the mining population, with around 80% being part of the three age groups from 25 to 54 years old.

Table 4.5

Age in mining in Australia

Age	Percentages Mining	FIFO sample
< 24	7.6%	3.3%
25–34	28.5%	29.7%
35–44	24.9%	29.4%
45–54	24.6%	25.2%
55+	14.3%	12.4%

The above shows that logically not all groups are exactly equally represented, however, they are a representation of the population. It must be noted that the construction sample in this research is small, which is most likely a reflection of the industry at this stage, considering the broad distribution strategy. According to the Education and Health Standing Committee (2015) there is no breakdown available to determine the number of construction workers doing FIFO.

The broad distribution of the survey ensured FIFO workers were well reached and captured a representative sample of the population of FIFO workers in Western Australia.

Benchmark group

The benchmark group (326 participants), provided a contrast against the FIFO sample to identify any differences with regards to mental health and wellbeing. A difficulty of utilising a comparison sample within a study is attaining an identical sample to the target sample—in this case, the FIFO sample. To combat this limitation a data collection company (the ORU) received specific sample requirements to ensure the recruitment of a mirrored sample for comparison. Even though the main demographics for FIFO workers were matched (gender, of a working age between 18 and 70 years old, and from Western Australia, with people working in a FIFO role excluded), within the timeframe and looking at the specificity of FIFO jobs, it was not possible to gather an exact match on job roles.

Recognising the constraints that exist when generating a matched benchmark group, we assess the benchmark group sample to be sufficiently similar to the FIFO worker sample to allow a meaningful comparison. Moreover, the analysis conducted considered the demographic attributes on which the two samples differed most notably via ANCOVA analysis. Doing so allowed us to assess to what extent differences occurred independent of these variations in the two samples.

Where FIFO workers had a chance of winning one in five vouchers and sometimes received an invite to participate through unions or their employers, participants in the benchmark group got some remuneration for their time and were recruited via The ORU. This gives the two groups slightly different motivators to be involved in the study. To ensure good quality of data, the benchmark group data was screened the same way as the FIFO sample.

Normative data

Where possible, normative data (data that already exists) was used for comparison purposes. These norm values have been measured in a representative group, and can be used as a baseline against which to compare the FIFO workers sample. The goal is to see if the group of FIFO workers differ in respect to the normative data, which could, for example, be the Australian population.

The same measure (set of questions) needs to be used in order to be able to compare the scores, which means that, depending on the measure that was used, a different norm group is applicable as well. The norm group can consist of a national Australian sample or a more specific group. Where possible, a (mainly) male norm group was picked to approach the FIFO sample as much as possible.

Summary sample representativeness

- The FIFO sample is highly representative of the WA FIFO workers' population, considering gender, age and the variety in industry participation and rosters that are included.
- The benchmark group is assessed to be sufficiently similar to the FIFO worker sample to allow a meaningful comparison. The sample is matched on gender, is of working age and the majority is from WA.
- Analysis conducted considered the demographic attributes on which the FIFO and benchmark group differed most notably via ANCOVA analysis (age, education, professional role) so it could be assessed to what extent differences occurred independent of these variations in the two samples.

B.1.5 Comparison distribution survey links (public, employers, unions)

Table B.38 displays a comparison between the three different survey links through which participants could fill in the survey online: one link was publicly available, one link was distributed by the employers and one link was distributed by the unions.

- Respondents in the unions' link generally had lower education, but other demographics were quite similar across the three links.
- The unions' and public link had more respondents working for contractors instead of operators (public: 37.4%, employers: 11.9%, unions: 47.4%) and more people in the constructional phase of the site (public: 18.2%, employers: 1.0%, unions: 29.8%). Working for a contractor is linked to the higher amount of people working on a casual basis in the public and unions link.
- Respondents from the unions' and public link have more people working in construction (public: 8.5%, employers: 0.2%, unions: 12.4%). The unions' link had more respondents in oil and gas as well (public: 16.8%, employers: 17.2%, unions: 29.7%). These differences also explain differences in rosters (and occupations), as these are often tied to the industry FIFO workers work in and the phase that the site is in.
- Respondents' average length of work in a FIFO role, the commute type and the shift pattern across the groups are quite similar. On average, people in the unions' link do seem to have longer shifts, but the standard deviation ($SD = 11.44$) suggests that some people might have misinterpreted the question and entered their weekly working hours instead.

In summary, the respondents from the three links differ on some of their work characteristics, as indeed would be expected since employers and unions address different groups of FIFO workers. This point highlights the value of having a broad distribution method as it means we have likely captured all types of workers.

Table B.38

Comparison demographics public, employer and unions link (in percentages)

	Public	Employer	Unions
Personal characteristics			
Gender			
Male	84.0	80.9	85.8
Female	16.0	19.0	13.7
Other	0.0	0.1	0.5
Age	M=41.14 SD=10.64	M=40.46 SD=10.54	M=41.81 SD=10.41
Highest level of education			
Primary school	0.4	0.0	0.0
Secondary school	23.6	17.6	30.2
Apprentice	12.9	14.0	17.5
Tafe, College	29.7	25.7	29.2
University undergraduate degree	17.0	22.3	9.4
Postgraduate degree	7.1	13.2	3.3
Other training courses	9.4	7.1	10.4
Aboriginal/Torres Strait Islander			
Yes	2.8	3.0	1.9
No	94.1	94.1	96.2
Prefer not to say	3.0	2.9	1.9
Marital status			
Single, never married	14.3	17.1	14.3
Married/domestic partnership	75.0	74.8	73.3
Widowed, divorced, separated	10.6	8.2	12.4
Children			
0	37.7	41.8	35.5
1	13.3	12.3	14.7
2	27.9	27.3	27.0
3	14.2	11.8	16.1
4	4.3	4.4	3.8
5	1.6	1.2	0.9
6 or more	1.1	1.2	1.9
Age youngest child			
0–12 months	8.6	8.5	5.8
1 up to 3 years	14.7	17.4	13.9
3 up to 5 years	14.1	12.4	9.5
6 up to 8 years	8.9	8.8	9.5
8 up to 12 years	13.4	14.1	16.1
12 up to 18 years	16.4	15.2	20.4
Over 18	23.9	23.6	24.8
Work characteristics			
Employment			
Operator	62.6	88.1	52.6
Contractor	37.4	11.9	47.4
Profession			
Administrative	3.0	2.8	2.9
Managerial	19.5	24.3	7.2
Professional/technical	21.2	33.6	8.7

Operator	19.4	13.0	26.9
Technician or trade/maintainers	21.5	19.4	38.5
Camps and catering	2.2	0.2	4.3
Logistics and supply chain	3.0	2.0	2.4
Other	10.3	4.7	9.1
Phase of site			
Construction	18.2	1.0	29.8
Operational	81.1	98.7	70.2
Decommissioning	0.7	0.3	0.0
Shift pattern			
Days-Nights-Off-Days-Nights-Off	19.1	21.9	18.6
Days-Off-Nights-Off	8.8	12.5	14.3
Days-Off-Days-Off	58.3	61.4	52.4
Nights-Off-Nights-Off	3.2	0.5	6.2
Other	10.6	3.7	8.6
Years in FIFO			
	M=9.28	M=9.04	M=9.69
	SD=6.62	SD=6.58	SD=6.56
Shift length			
	M=12.97	M=12.67	M=13.89
	SD=6.87	SD=4.88	SD=11.44
Commute			
FIFO	94.4	91.2	93.8
DIDO	3.6	3.8	3.3
BIBO	1.0	4.1	1.9
Other	0.9	0.9	1.0
Industry			
Construction	8.5	0.2	12.4
Mining	70.2	80.8	53.1
Oil and gas	16.8	17.2	29.7
Public services	0.4	0.0	0.5
Transportation	1.7	0.6	1.9
Other	2.5	1.1	2.4
Employment situation			
Full time	84.6	95.3	76.6
Part time	0.7	0.3	0.5
Casual	11.7	2.4	18.2
Other	3.1	2.1	4.8
Roster			
4/1	10.0	0.0	18.9
3/1	2.8	0.2	4.4
2/1	22.1	11.2	22.8
2/2	11.6	8.9	6.8
8 days on/6 off	25.3	37.2	18.9
5 days on/2 off	2.8	5.5	0.5
Other	25.4	36.9	27.7

B.2 Extra analysis

The aspects of FIFO work and other aspects of the participant's life that may be linked to their mental health and wellbeing are considered. Doing so provides insights into which aspects will be best targeted in activities designed to address the mental health and wellbeing in FIFO workers.

The variables considered in this analysis were grouped into person, job, team, organisation and site, and family and social life factors. First, these groups were analysed separately to identify the most relevant factors within each group via hierarchical regression analysis. In the first step of the regression, demographics (gender, age, level of education and years in FIFO work) were entered, so that in the subsequent step, the role of the specific factors can be identified while controlling for these demographic attributes of FIFO workers. Because of the large sample sizes involved, only effects that are significant at $\alpha < .001$ $\alpha < .005$ are considered to be significant. Further, due to the large sample size, the actual size of the effects that are significant needs to be taken into account.

The initial regression analysis was followed up by dominance analysis. This method (Azen and Budescu, 2003) complements the regression analysis, as it provides a higher level overview of the relative importance that each group of factors can be assigned based on the amount of variance that they explain in the outcomes of mental health and wellbeing. For this study, dominance analysis was carried out via pairwise comparisons of the groups of factors considered, based on each group of factors' relative contribution to the total variance explained (R^2). This is an extension of traditional dominance analysis, which would focus on individual predictors, rather than groups of factors. Dominance analysis is carried out via a subset of regression models that test each group of factors' direct effect (when considered on its own), total effect (when considered conditionally alongside all other groups of factors) and partial effect (when considered conditionally alongside all possible subsets of predictors). For ease of interpretation we only applied the third criterion of general dominance defined by Azen and Budescu (2003) in our analysis, which "summarizes the additional contributions of each predictor to all subset models by averaging all the conditional values" (Azen & Budescu, 2003, p. 137). Accordingly, in our analysis a group of factors was identified as generally dominating another group of factors if its overall averaged additional contribution to the explained variance was greater than that of the other groups of factors.

B.2.1 Dominance analysis

Relative role of the groups of factors

To provide a higher-level overview of the relative importance of the groups of factors, the results of the dominance analysis conducted are presented in this section.

Dominance analysis for mental ill-health outcomes

The results shown in Table B.1 report the dominance analysis for all groups of factors with regards to their importance in explaining levels of depression and anxiety. The table shows the contribution of each factor, as well as all the contribution of possible combinations of factors, including the additional variance that is explained by adding each group of factors to another group of factors. It further shows the different combination of the groups of factors and each additional factor's contribution in terms of additional variance explained by adding it. For example, job factors alone explained 44.4% of the variance in depression and anxiety and that adding person factors to the job factors explained an additional 7.8% of variance. With regards to the general dominance criterion applied to the analysis (see row Overall Average), the dominance analysis indicates that family and

social factors overall had a higher importance than any of the other groups of factors, as it on average explained an additional 19.6% in variance when added to all possible combinations of groups of factors. Person factors ranked next highest (on average explaining an additional 17.4% of variance), almost on par with job factors (on average explaining an additional 17.1% of variance). Accordingly, these three groups of factors can be identified as key in explaining depression and anxiety in FIFO workers. Our analysis suggests all should be considered, and to neglect any one aspect would be to lose a valuable chance to improve mental health.

Table B.1
Dominance analysis for K10 (depression and anxiety)

Subset model	R ²	Additional contribution of:				
		Person factors	Job factors	Team factors	Organisation & site factors	Family & social factors
		X ₁	X ₂	X ₃	X ₄	X ₅
X ₁	.437		.085	.028	.058	.109
X ₂	.444	.078		.021	.034	.099
X ₃	.244	.221	.221		.102	.257
X ₄	.316	.179	.162	.03		.194
X ₅	.456	.09	.087	.045	.054	
<i>k = 1 average</i>		.142	.139	.031	.062	.165
X ₁ , X ₂	.522			.008	.021	.059
X ₁ , X ₃	.465		.065		.035	.097
X ₁ , X ₄	.495		.048	.005		.077
X ₁ , X ₅	.546		.035	.016	.026	
X ₂ , X ₃	.465	.065			.022	.091
X ₂ , X ₄	.478	.065		.009		.084
X ₂ , X ₅	.543	.038		.013	.019	
X ₃ , X ₄	.346	.154	.141			.178
X ₃ , X ₅	.501	.061	.055		.023	
X ₄ , X ₅	.510	.062	.052	.014		
<i>k = 2 average</i>		.074	.066	.011	.024	.098
X ₁ , X ₂ , X ₃	.530				.016	.058
X ₁ , X ₂ , X ₄	.543			.003		.053
X ₁ , X ₂ , X ₅	.581			.007	.015	
X ₂ , X ₃ , X ₄	.487	.059				.081
X ₂ , X ₃ , X ₅	.556	.032			.012	
X ₁ , X ₃ , X ₄	.500		.046			.077
X ₃ , X ₄ , X ₅	.524	.053	.044			
X ₁ , X ₃ , X ₅	.562		.026		.015	
X ₁ , X ₄ , X ₅	.572		.024	.005		
X ₂ , X ₄ , X ₅	.562	.034		.006		
<i>k = 3 average</i>		.045	.035	.005	.015	.067
X ₁ , X ₂ , X ₃ , X ₄	.546					.052
X ₁ , X ₂ , X ₃ , X ₅	.588				.010	
X ₁ , X ₂ , X ₄ , X ₅	.596			.002		
X ₁ , X ₃ , X ₄ , X ₅	.577		.021			
X ₂ , X ₃ , X ₄ , X ₅	.568	.030				
<i>k = 4 average</i>		.030	.021	.002	.010	.052
X ₁ , X ₂ , X ₃ , X ₄ , X ₅	.598					
Overall average		.174	.171	.073	.104	.196

Next, the relative importance of all groups of factors for burnout (see Table B.2) were analysed. The dominance analysis indicates that 11% job factors explained most of the variance in burnout. Adding family and social factors after that explained an additional 6.5% of variance. Organisation and site

factors and person factors both explain around the same amount of variance after that (3.7% and 3.1% respectively).

Table B.2
Dominance analysis for Burnout

Subset model	R ²	Person factors	Job factors	Team factors	Organisation & site factors	Family & social factors
		X ₁	X ₂	X ₃	X ₄	X ₅
X ₁	.27		.145	.038	.078	.093
X ₂	.398	.017		.02	.027	.045
X ₃	.178	.13	.24		.103	.188
X ₄	.255	.093	.17	.026		.128
X ₅	.327	.036	.116	.039	.056	
<i>k = 1 average</i>		.069	.168	.031	.066	.114
X ₁ , X ₂	.415			.015	.023	.03
X ₁ , X ₃	.308		.122		.054	.079
X ₁ , X ₄	.348		.09	.014		.055
X ₁ , X ₅	.363		.082	.024	.04	
X ₂ , X ₃	.418	.012			.022	.039
X ₂ , X ₄	.425	.013		.015		.036
X ₂ , X ₅	.443	.002		.014	.018	
X ₃ , X ₄	.281	.081	.159			.117
X ₃ , X ₅	.366	.021	.091		.032	
X ₄ , X ₅	.383	.02	.078	.015		
<i>k = 2 average</i>		.025	.104	.016	.032	.059
X ₁ , X ₂ , X ₃	.43				.02	.028
X ₁ , X ₂ , X ₄	.438			.012		.03
X ₁ , X ₂ , X ₅	.445			.013	.023	
X ₂ , X ₃ , X ₄	.44	.01				.031
X ₂ , X ₃ , X ₅	.457	.001			.014	
X ₁ , X ₃ , X ₄	.362		.088			.053
X ₃ , X ₄ , X ₅	.398	.017	.073			
X ₁ , X ₃ , X ₅	.387		.071		.028	
X ₁ , X ₄ , X ₅	.403		.065	.012		
X ₂ , X ₄ , X ₅	.461	.007		.01		
<i>k = 3 average</i>		.009	.074	.012	.021	.036
X ₁ , X ₂ , X ₃ , X ₄	.45					.023
X ₁ , X ₂ , X ₃ , X ₅	.458				.015	
X ₁ , X ₂ , X ₄ , X ₅	.468			.005		
X ₁ , X ₃ , X ₄ , X ₅	.415		.058			
X ₂ , X ₃ , X ₄ , X ₅	.471	.002				
<i>k = 4 average</i>						
X ₁ , X ₂ , X ₃ , X ₄ , X ₅	.473					
Overall average		.031	.110	.018	.037	.065

Summary dominance analysis: mental ill-health

- Out of the five groups of factors examined in the dominance analysis, the family and social life group of factors have a key overall link with depression and anxiety.
- Person and job factors were found to also be highly relevant in explaining depression and anxiety in FIFO workers.
- Job factors mainly, followed by family and social life factors, explain most variation in burnout.
- Family and social life, person and job factors were shown to explain the most variance in mental health. However, team factors and organisation and site factors should still be

taken into account as well as they also explain variance in mental ill-health. Improvements in all areas could contribute to better mental health for FIFO workers.

Dominance analysis for wellbeing outcomes

Dominance analysis was also applied to the five groups of factors in relation wellbeing outcomes. First, for emotional wellbeing (see Table B.3), the results of the analysis show that family and social factors generally dominated the other four factors considered and on average explained 13.9% of additional variance across all combinations of factors. This was closely followed by person factors, which on average explained 10.3% of additional variance.

Table B.3

Dominance analysis for emotional wellbeing

Subset model	R ²	Person factors	Job factors	Team factors	Organisation & site factors	Family & social factors
		X ₁	X ₂	X ₃	X ₄	X ₅
X ₁	.414		.034	.033	.022	.116
X ₂	.318	.13		.046	.027	.172
X ₃	.242	.205	.122		.042	.25
X ₄	.218	.218	.127	.066		.219
X ₅	.44	.09	.05	.052	-.003	
<i>k = 1 average</i>		.161	.083	.049	.022	.189
X ₁ , X ₂	.448			.018	.01	.096
X ₁ , X ₃	.447		.019		.01	.101
X ₁ , X ₄	.436		.022	.021		.1
X ₁ , X ₅	.53		.014	.018	.006	
X ₂ , X ₃	.364	.102			.012	.149
X ₂ , X ₄	.345	.113		.031		.152
X ₂ , X ₅	.49	.054		.023	.007	
X ₃ , X ₄	.284	.173	.092			.212
X ₃ , X ₅	.492	.056	.021		.004	
X ₄ , X ₅	.437	.099	.06	.059		
<i>k = 2 average</i>		0.1	.038	.028	.008	.135
X ₁ , X ₂ , X ₃	.466				.008	.091
X ₁ , X ₂ , X ₄	.458			.016		.091
X ₁ , X ₂ , X ₅	.544			.013	.005	
X ₂ , X ₃ , X ₄	.376	.098				.143
X ₂ , X ₃ , X ₅	.513	.044			.006	
X ₁ , X ₃ , X ₄	.457		.017			.098
X ₃ , X ₄ , X ₅	.496	.059	.023			
X ₁ , X ₃ , X ₅	.548		.009		.007	
X ₁ , X ₄ , X ₅	.536		.013	.019		
X ₂ , X ₄ , X ₅	.497	.052		.022		
<i>k = 3 average</i>		.063	.016	.018	.007	.106
X ₁ , X ₂ , X ₃ , X ₄	.474					.09
X ₁ , X ₂ , X ₃ , X ₅	.557				.007	
X ₁ , X ₂ , X ₄ , X ₅	.549			.015		
X ₁ , X ₃ , X ₄ , X ₅	.555		.009			
X ₂ , X ₃ , X ₄ , X ₅	.519	.045				
<i>k = 4 average</i>						
X ₁ , X ₂ , X ₃ , X ₄ , X ₅	.564					
Overall average		.103	.042	.030	.011	.139

When conducted for psychological wellbeing, dominance analysis indicates that person factors generally dominate the other groups of factors. However, person factors can also be shaped by job

and family situations. Person factors were found to generally explain an additional 12.2% of variance across all possible combinations of the groups of factors.

Table B.4
Dominance analysis for psychological wellbeing

Subset model	R ²	Person factors	Job factors	Team factors	Organisation & site factors	Family & social factors
		X ₁	X ₂	X ₃	X ₄	X ₅
X ₁	.41		.034	.029	.02	.061
X ₂	.302	.142		.039	.025	.108
X ₃	.233	.206	.108		.039	.15
X ₄	.211	.219	.116	.061		.156
X ₅	.335	.136	.075	.048	.032	
<i>k = 1 average</i>		.176	.083	.044	.029	.119
X ₁ , X ₂	.444			.013	.009	.047
X ₁ , X ₃	.439		.018		.006	.049
X ₁ , X ₄	.43		.023	.015		.049
X ₁ , X ₅	.471		.02	.017	.008	
X ₂ , X ₃	.341	.116			.009	.089
X ₂ , X ₄	.327	.126		.023		.092
X ₂ , X ₅	.41	.081		.02	.009	
X ₃ , X ₄	.272	.173	.078			.13
X ₃ , X ₅	.383	.105	.047		.019	
X ₄ , X ₅	.367	.112	.052	.035		
<i>k = 2 average</i>		.119	.04	.021	.01	.076
X ₁ , X ₂ , X ₃	.457				.004	.042
X ₁ , X ₂ , X ₄	.453			.008		.042
X ₁ , X ₂ , X ₅	.491			.008	.004	
X ₂ , X ₃ , X ₄	.35	.111				.083
X ₂ , X ₃ , X ₅	.43	.069			.003	
X ₁ , X ₃ , X ₄	.445		.016			.046
X ₃ , X ₄ , X ₅	.402	.089	.031			
X ₁ , X ₃ , X ₅	.488		.011		.003	
X ₁ , X ₄ , X ₅	.479		.016	.012		
X ₂ , X ₄ , X ₅	.419	.076		.014		
<i>k = 3 average</i>		.086	.019	.011	.004	.053
X ₁ , X ₂ , X ₃ , X ₄	.461					.041
X ₁ , X ₂ , X ₃ , X ₅	.499				.003	
X ₁ , X ₂ , X ₄ , X ₅	.495			.007		
X ₁ , X ₃ , X ₄ , X ₅	.491		.011			
X ₂ , X ₃ , X ₄ , X ₅	.433	.069				
<i>k = 4 average</i>						
X ₁ , X ₂ , X ₃ , X ₄ , X ₅	.502					
Overall average		.122	.044	.023	.013	.079

For the final wellbeing outcome, social wellbeing, the dominance analysis indicated family and social factors to generally dominate the other factors, explaining an additional 6.3% of variance. However, this was almost on par with person factors, which explained an additional 6.1% of variance when added across all combinations of factors.

Table B.5
Dominance analysis for social wellbeing

Subset model	R ²	Person factors	Job factors	Team factors	Organisation & site factors	Family & social factors
		X ₁	X ₂	X ₃	X ₄	X ₅
X ₁	.267		.047	.048	.035	.064
X ₂	.239	.075		.037	.026	.078
X ₃	.2	.115	.076		.036	.124
X ₄	.191	.111	.074	.045		.11
X ₅	.271	.06	.046	.053	.03	
<i>k</i> = 1 average		.09	.061	.046	.032	.094
X ₁ , X ₂	.314			.025	.014	.041
X ₁ , X ₃	.315		.024		.012	.049
X ₁ , X ₄	.302		.026	.025		.045
X ₁ , X ₅	.331		.024	.033	.016	
X ₂ , X ₃	.276	.063			.011	.065
X ₂ , X ₄	.265	.063		.022		.063
X ₂ , X ₅	.317	.038		.024	.011	
X ₃ , X ₄	.236	.091	.051			.095
X ₃ , X ₅	.324	.04	.017		.007	
X ₄ , X ₅	.301	.046	.027	.03		
<i>k</i> = 2 average		.057	.028	.027	.012	.06
X ₁ , X ₂ , X ₃	.339				.008	.037
X ₁ , X ₂ , X ₄	.328			.019		.036
X ₁ , X ₂ , X ₅	.355			.021	.009	
X ₂ , X ₃ , X ₄	.287	.06				.06
X ₂ , X ₃ , X ₅	.341	.035			.006	
X ₁ , X ₃ , X ₄	.327		.02			.044
X ₃ , X ₄ , X ₅	.331	.04	.016			
X ₁ , X ₃ , X ₅	.364		.012			
X ₁ , X ₄ , X ₅	.347		.017	.024		
X ₂ , X ₄ , X ₅	.328	.036		.019		
<i>k</i> = 3 average		.043	.016	.021	.008	.044
X ₁ , X ₂ , X ₃ , X ₄	.347					.036
X ₁ , X ₂ , X ₃ , X ₅	.376				.007	
X ₁ , X ₂ , X ₄ , X ₅	.364			.019		
X ₁ , X ₃ , X ₄ , X ₅	.371		.012			
X ₂ , X ₃ , X ₄ , X ₅	.347	.036				
<i>k</i> = 4 average						
X ₁ , X ₂ , X ₃ , X ₄ , X ₅	.383					
Overall average		.061	.033	.03	.016	.063

Summary dominance analysis: wellbeing

- Person and family and social factors overall explain most portions of social wellbeing and emotional wellbeing.
- Person factors were also key in explaining variation in psychological wellbeing.
- Job, team and organisation, and site factors play a smaller part in explaining variance in wellbeing.

Dominance analysis for suicidal risk

Dominance analysis applied to perceived burdensomeness indicated that family and social factors (11.4%), as well as person factors (10.8%), explained the highest and similar amounts of additional variance across the possible combinations of factors.

Table B.6
Dominance analysis for perceived burdensomeness

Subset model	R ²	Person factors	Job factors	Team factors	Organisation & site factors	Family & social factors
		X ₁	X ₂	X ₃	X ₄	X ₅
X ₁	.335		.028	.008	.022	.098
X ₂	.234	.129		.014	.037	.134
X ₃	.124	.219	.124		.086	.221
X ₄	.196	.161	.075	.014		.169
X ₅	.329	.104	.039	.016	.036	
<i>k</i> = 1 average		.153	.067	.013	.045	.156
X ₁ , X ₂	.363			.006	.011	.082
X ₁ , X ₃	.343		.026		.019	.094
X ₁ , X ₄	.357		.017	.005		.086
X ₁ , X ₅	.433		.012	.004	.01	
X ₂ , X ₃	.248	.121			.033	.126
X ₂ , X ₄	.271	.103		.01		.116
X ₂ , X ₅	.368	.077		.006	.019	
X ₃ , X ₄	.21	.152	.071			.16
X ₃ , X ₅	.345	.092	.029		.025	
X ₄ , X ₅	.365	.078	.022	.005		
<i>k</i> = 2 average		.104	.03	.006	.02	.111
X ₁ , X ₂ , X ₃	.369				.012	.08
X ₁ , X ₂ , X ₄	.374			.007		.078
X ₁ , X ₂ , X ₅	.445			.004	.007	
X ₂ , X ₃ , X ₄	.281	.1				.111
X ₂ , X ₃ , X ₅	.374	.075			.018	
X ₁ , X ₃ , X ₄	.362		.019			.084
X ₃ , X ₄ , X ₅	.37	.076	.022			
X ₁ , X ₃ , X ₅	.437		.012		.009	
X ₁ , X ₄ , X ₅	.443		.009	.003		
X ₂ , X ₄ , X ₅	.387	.065		.005		
<i>k</i> = 3 average		.079	.016	.005	.012	.088
X ₁ , X ₂ , X ₃ , X ₄	.381					.076
X ₁ , X ₂ , X ₃ , X ₅	.449				.008	
X ₁ , X ₂ , X ₄ , X ₅	.452			.005		
X ₁ , X ₃ , X ₄ , X ₅	.446		.011			
X ₂ , X ₃ , X ₄ , X ₅	.392	.065				
<i>k</i> = 4 average						
X ₁ , X ₂ , X ₃ , X ₄ , X ₅	.457					
Overall average		.108	.034	.007	.023	.114

When applied to thwarted belonging, dominance analysis indicated that family and social factors generally dominated the other factors. They explained an additional 18.1% of variance in thwarted belonging across all combinations of groups.

Table B.7
Dominance analysis for thwarted belonging

Subset model	R ²	Person factors	Job factors	Team factors	Organisation & site factors	Family & social factors
		X ₁	X ₂	X ₃	X ₄	X ₅
X ₁	.434		.046	.049	.033	.171
X ₂	.333	.147		.067	.042	.23
X ₃	.281	.202	.119		.061	.295
X ₄	.266	.201	.109	.076		.264
X ₅	.523	.082	.04	.053	.007	
<i>k</i> = 1 average		.158	.079	.061	.036	.24
X ₁ , X ₂	.48			.029	.014	.139
X ₁ , X ₃	.483		.026		.012	.144
X ₁ , X ₄	.467		.027	.028		.146
X ₁ , X ₅	.605		.014	.022	.008	
X ₂ , X ₃	.4	.109			.018	.191
X ₂ , X ₄	.375	.119		.043		.199
X ₂ , X ₅	.563	.056		.028	.011	
X ₃ , X ₄	.342	.153	.076			.239
X ₃ , X ₅	.576	.051	.015		.005	
X ₄ , X ₅	.53	.083	.044	.051		
<i>k</i> = 2 average		.095	.034	.034	.011	.176
X ₁ , X ₂ , X ₃	.509				.006	.125
X ₁ , X ₂ , X ₄	.494			.021		.131
X ₁ , X ₂ , X ₅	.619			.015	.006	
X ₂ , X ₃ , X ₄	.418	.097				.177
X ₂ , X ₃ , X ₅	.591	.043			.004	
X ₁ , X ₃ , X ₄	.495		.02			.136
X ₃ , X ₄ , X ₅	.581	.05	.14			
X ₁ , X ₃ , X ₅	.627		.007		.004	
X ₁ , X ₄ , X ₅	.613		.012	.018		
X ₂ , X ₄ , X ₅	.574	.051		.021		
<i>k</i> = 3 average		.06	.013	.019	.005	.142
X ₁ , X ₂ , X ₃ , X ₄	.515					.124
X ₁ , X ₂ , X ₃ , X ₅	.634				.005	
X ₁ , X ₂ , X ₄ , X ₅	.625			.014		
X ₁ , X ₃ , X ₄ , X ₅	.631		.008			
X ₂ , X ₃ , X ₄ , X ₅	.595	.044				
<i>k</i> = 4 average						
X ₁ , X ₂ , X ₃ , X ₄ , X ₅	.639					
Overall average		.099	.038	.036	.016	.181

Finally, for suicidal risk, dominance analysis indicated that person factors generally dominated all other factors and that it on average explained an additional 3.6% of variance across all combinations of groups of factors. It should, however, also be noted that it was closely followed by job factors (2.8%), and family and social factors (2.7%).

Table B.8
Dominance analysis for suicidal intent

Subset model	R ²	Person factors	Job factors	Team factors	Organisation & site factors	Family & social factors
		X ₁	X ₂	X ₃	X ₄	X ₅
X ₁	.112		.025	.004	.011	.021
X ₂	.095	.042		.006	.013	.035
X ₃	.049	.067	.052		.028	.051
X ₄	.07	.053	.038	.007		.04
X ₅	.091	.042	.039	.009	.019	
<i>k</i> = 1 average		.051	.039	.007	.018	.037
X ₁ , X ₂	.137			.001	.005	.019
X ₁ , X ₃	.116		.022		.009	.019
X ₁ , X ₄	.123		.019	.002		.018
X ₁ , X ₅	.133		.023	.002	.008	
X ₂ , X ₃	.101	.037			.01	.032
X ₂ , X ₄	.108	.034		.003		.03
X ₂ , X ₅	.13	.026		.003	.008	
X ₃ , X ₄	.077	.048	.034			.036
X ₃ , X ₅	.1	.035	.033		.013	
X ₄ , X ₅	.11	.031	.028	.003		
<i>k</i> = 2 average		.035	.027	.002	.009	.026
X ₁ , X ₂ , X ₃	.138				.006	.019
X ₁ , X ₂ , X ₄	.142			.002		.018
X ₁ , X ₂ , X ₅	.156			.001	.004	
X ₂ , X ₃ , X ₄	.111	.033				.03
X ₂ , X ₃ , X ₅	.133	.024			.008	
X ₁ , X ₃ , X ₄	.125		.019			.017
X ₃ , X ₄ , X ₅	.113	.029	.028			
X ₁ , X ₃ , X ₅	.135		.022		.007	
X ₁ , X ₄ , X ₅	.141		.019	.001		
X ₂ , X ₄ , X ₅	.138	.022		.003		
<i>k</i> = 3 average		.027	.022	.002	.006	.021
X ₁ , X ₂ , X ₃ , X ₄	.144					.018
X ₁ , X ₂ , X ₃ , X ₅	.157				.005	
X ₁ , X ₂ , X ₄ , X ₅	.16			.002		
X ₁ , X ₃ , X ₄ , X ₅	.142		.02			
X ₂ , X ₃ , X ₄ , X ₅	.141	.021				
<i>k</i> = 4 average						
X ₁ , X ₂ , X ₃ , X ₄ , X ₅	.162					
Overall average		.036	.028	.003	.010	.027

Summary dominance analysis: suicidal risk

- Family and social factors were key in explaining perceived burdensomeness and thwarted belonging.
- Person factors explained most additional variation in suicidal risk.
- In addition, job and social factors also explained notable variation in suicidal intent.
- It makes sense that person and social factors are the main predictors for the mental health and wellbeing outcomes, however, job, team, and organisation and site factors still explain additional variance and can therefore still be considered as important in order to try and improve mental health and wellbeing of FIFO workers.

B.2.2 The impact of FIFO mental health on safety

To establish the link between mental health and wellbeing and the safety behaviour of the FIFO workers, safety behaviour was taken into account. Safety behaviours have been measured by looking at safety compliance (e.g. compliance with regulation) and safety promotion (e.g. actively taking part in promoting safety).

When looking at the variance that is explained by mental health and wellbeing factors, as can be seen in Table B.39, only 6.6% of the variance in safety compliance is explained. Only thwarted belonging is shown to be negatively linked to safety compliance ($\beta = -.21$; $p < .05$), which indicates that a worse score on thwarted belonging is linked to lower safety compliance. These findings generally suggest no strong link between mental health and wellbeing and safety compliance.

Table B.39
Regression of mental health and wellbeing factors on safety compliance

Variables	Safety compliance			R^2
	B	$SE B$	β	
Step 1				
Gender	.10	.17	.04	
Age	.01	.00	.20*	
Number of dependants	.05	.03	.10	
Level of education	.06	.03	.17*	
Years in FIFO	.00	.01	-.04	.073
Step 2				
Gender	.12	.17	.05	
Age	.01	.01	.20*	
Number of dependants	.05	.03	.11	
Level of education	.05	.03	.13	
Years in FIFO	-.01	.01	-.06	
K10	-.01	.01	-.15	
Burnout	.05	.03	.14	
Emotional wellbeing	-.01	.07	-.02	
Social wellbeing	.00	.04	.00	
Psychological wellbeing	-.03	.06	-.06	
Burdensomeness	.04	.06	.06	
Thwarted belonging	-.10	.05	-.21*	
Suicide	-.06	.03	-.12	.139

Note. * $p \leq .05$. ** $p \leq .005$. *** $p \leq .001$

The mental health and wellbeing factors explained 13.6% of the variance in safety promotion. A positive association was found for burdensomeness and safety promotion ($\beta = .19$; $p < .05$), showing that more safety promotion leads to more feelings of burdensomeness, which could mean that people could feel burdened for trying to promote the safety program. If the safety promotion on site was higher, the thwarted belonging score was lower ($\beta = -.36$; $p < .001$), which means they had less feelings of thwarted belonging.

Table B.40
 Regression of mental health and wellbeing factors on safety promotion

Variables	Safety promotion			R^2
	B	$SE B$	β	
Step 1				
Gender	.28	.22	.09	.090
Age	.01	.01	.14	
Number of dependants	.08	.04	.14*	
Level of education	.08	.03	.16*	
Years in FIFO	.02	.01	.14	
Step 2				
Gender	.24	.21	.07	.226
Age	.01	.01	.11	
Number of dependants	.09	.04	.15*	
Level of education	.05	.03	.11	
Years in FIFO	.01	.01	.11	
K10	.01	.01	.10	
Burnout	.06	.04	.13	
Emotional wellbeing	.08	.09	.11	
Social wellbeing	.08	.05	.12	
Psychological wellbeing	.01	.07	.01	
Burdensomeness	.16	.07	.19*	
Thwarted belonging	-.22	.06	-.36***	
Suicide	-.03	.04	-.05	

Note. * $p \leq .05$. ** $p \leq .005$. *** $p \leq .001$

Summary: impact of safety factors on mental health and wellbeing

- A worse score on thwarted belonging is linked to lower safety compliance.
- More safety promotion leads to more feelings of burdensomeness, which could mean that people could feel burdened for trying to promote the safety program.
- More safety promotion led to a lower score on thwarted belonging (less feelings of thwarted belonging).

B.2.3 Correlation tables FIFO workers and benchmark group mental health and substance use

Table B.41

Correlations for FIFO workers mental health and alcohol consumption, other drug use and smoking

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. K10	—														
2. Burnout	.660**	—													
3. Emotional wellbeing	-.655**	-.484**	—												
4. Social wellbeing	-.482**	-.396**	.616**	—											
5. Psychological wellbeing	-.561**	-.400**	.716**	.603**	—										
6. Burdensomeness	.598**	.408**	-.586**	-.424**	-.530**	—									
7. Thwarted belongingness	.612**	.461**	-.690**	-.539**	-.641**	.642**	—								
8. Suicide	.363**	.232**	-.349**	-.235**	-.304**	.388**	.374**	—							
9. AUDIT	.272**	.170**	-.201**	-.187**	-.202**	.212**	.172**	.149**	—						
10. Alcohol consumption	.192**	.103**	-.156**	-.147**	-.155**	.153**	.116**	.125**	.889**	—					
11. Alcohol dependence	.279**	.194**	-.209**	-.181**	-.207**	.239**	.207**	.169**	.752**	.540**	—				
12. Alcohol-related problems	.291**	.197**	-.206**	-.194**	-.209**	.224**	.189**	.141**	.838**	.553**	.651**	—			
13. Alcohol quantity	.182**	.085**	-.151**	-.154**	-.139**	.144**	.120**	.123**	.795**	.890**	.494**	.490**	—		
14. Drugs	.208**	.166**	-.142**	-.141**	-.116**	.140**	.114**	.091**	.259**	.191**	.236**	.259**	.177**	—	
15. Smoking	.130**	.092**	-.126**	-.143**	-.083**	.126**	.095**	.061*	.225**	.212**	.205**	.180**	.164**	.196**	—

*Note. * $p < .005$. ** $p \leq .001$*

Table B.42
Correlations for the benchmark group mental health and alcohol consumption, other drug use and smoking

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. K10	—														
2. Burnout	.592**	—													
3. Emotional wellbeing	-.625**	-.358**	—												
4. Social wellbeing	-.376**	-.283**	.595**	—											
5. Psychological wellbeing	-.476**	-.325**	.722**	.585**	—										
6. Burdensomeness	.516**	.346**	-.503**	-.349**	-.514**	—									
7. Thwarted belongingness	.504**	.320**	-.684**	-.450**	-.650**	.592**	—								
8. Suicide	.244**	.150	-.319**	-.205**	-.258**	.429**	.331**	—							
9. AUDITsum	.096	.034	-.019	-.014	-.023	.066	.020	.029	—						
10. AUDITConsumption	.080	.039	-.030	-.037	-.043	.047	.033	.036	.908**	—					
11. AUDITDependence	.167*	.100	-.099	-.039	-.156	.129	.080	.035	.642**	.458**	—				
12. AUDITAlrelatedprob	.140	.075	-.075	-.010	-.056	.142	.069	.059	.776**	.499**	.644**	—			
13. Q61r Alcohol quantity	.084	.047	-.092	-.083	-.121	.062	.122	.041	.781**	.848**	.458**	.453**	—		
14. sumdrugs01	.138	.121	-.022	.008	-.007	.003	-.047	-.004	.120	.084	.172*	.109	.082	—	
15. Q59r Smoking reversed	.028	-.028	-.041	-.053	-.026	.042	.055	.075	.156	.198**	.068	.063	.234**	.139	—

Note. * $p < .005$. ** $p \leq .001$

B.2.4 The impact of FIFO work arrangements on partners' alcohol use

Regressions have been carried out in order to analyse the influence of FIFO work arrangements on the alcohol use of the partners of FIFO workers. The total score on the AUDIT alcohol measure was used as an outcome and the person, job, team, site and organisational, and family and social factors were entered to determine the influence of each of these factors.

Table B.43 explores person factors and job factors. Looking at the person factors first, they explained 3.2% of the variance in the alcohol use of the partners, however, no significant individual contributors were determined.

Table B.43
 Regression of person factors and job factors on AUDIT score

Variables	Partner AUDIT (person factors)				Partner AUDIT (job factors)			
	B	SE B	β	R ²	B	SE B	β	R ²
Step 1					Step 1			
Gender	1.05	1.72	.04		Gender	1.05	1.82	.04
Age	-.03	.04	-.06		Age	-.03	.04	-.06
Number of dependants	-.22	.25	-.06		Number of dependants	-.22	.27	-.06
Level of education	-.26	.18	-.09		Level of education	-.26	.19	-.09
Years in FIFO	-.07	.05	-.1	.030	Years in FIFO	-.07	.05	-.10
Step 2					Step 2			
Gender	.77	1.75	.03		Gender	1.33	1.96	.05
Age	-.01	.04	-.03		Age	-.04	.04	-.08
Number of dependants	-.34	.26	-.09		Number of dependants	-.22	.29	-.06
Level of education	-.26	.19	-.09		Level of education	-.22	.21	-.08
Years in FIFO	-.09	.05	-.13		Years in FIFO	-.05	.06	-.07
Coping—active	.50	.39	.10		Autonomy time off on-site	-.28	.41	-.05
Coping—seeking support	-.28	.34	-.06		Autonomy time off at home	.04	.37	.01
Coping—distraction	.08	.43	.01		Separation from family	.12	.52	.02
Coping—disengagement	.54	.46	.08		Psychological transitioning between on and off time	-.14	.39	-.03
Resilience	.12	.41	.02		Error costs	-.15	.34	-.03
Affective FIFO commitment	-.23	.27	-.06		Workload	-.15	.39	-.03
Continuance FIFO commitment	.35	.19	.12	.062	Autonomy	-.83	.39	-.17*
					Task variety	.13	.42	.03
					Job insecurity	-.06	.3	-.02
					Feedback from job	.67	.41	.13
					Roster ratio	.53	.75	.08
					Roster satisfaction	-.02	.39	-.01
					Work hours on site	.05	.07	.05
					Travel duration to site	-.02	.06	-.03
					Operator vs contractor	-.45	.90	-.04
					Construction vs production	-2.50	1.61	-.15

Note. * $p \leq .05$. ** $p \leq .005$. *** $p \leq .001$; roster ratio = days on site/days off site; construction = 1, production = 0, operator = 1, contractor = 2

The same occurred for team factors (2.1% of variance explained) and family and social factors (3.5% of variance explained). Job factors explained 5.6% of the variance in the AUDIT score, and autonomy was found to have a negative relationship with alcohol use ($\beta = -.17$; $p < .05$), indicating that if FIFO workers have more autonomy on their job, their partners will have lower scores on the AUDIT (see Table B.44).

Table B.44

Regression of team factors and organisational and on-site factors on AUDIT score

Variables	Partner AUDIT (team factors)				Partner AUDIT (organisational and on-site factors)			
	B	SE B	β	R ²	B	SE B	β	R ²
Step 1					Step 1			
Gender	1.05	2.57	.04		Gender	1.05	2.51	.04
Age	-.03	.05	-.06		Age	-.03	.05	-.06
Number of dependants	-.22	.37	-.06		Number of dependants	-.22	.37	-.06
Level of education	-.26	.26	-.09		Level of education	-.26	.37	-.06
Years in FIFO	-.07	.07	-.10	.030	Years in FIFO	-.07	.07	-.10
Step 2					Step 2			
Gender	.79	2.57	.03		Gender	.79	2.57	.03
Age	-.03	.05	-.06		Age	-.02	.05	-.04
Number of dependants	-.13	.37	-.04		Number of dependants	.06	.39	.02
Level of education	-.16	.27	-.06		Level of education	-.14	.28	-.05
Years in FIFO	-.07	.07	-.12		Years in FIFO	-.12	.08	-.18
Perceived line manager support	-.63	.89	-.11		Perceived FIFO work arrangement flexibility	-1.17	.58	-.24*
Perceived co-worker support	.66	.64	.11		Number of recovery options on site	.05	.17	.04
Inspirational leadership line manager	.48	.86	.09		Satisfaction with recovery options on site	.58	.56	.13
Perceived line manager health and safety commitment	-.70	.75	-.14	.051	Number of social activity options on site	-.28	.28	-.13
					Satisfaction with social activity options on site	-.41	.4	-.12
					Satisfaction with on-site room arrangement	.09	.39	.02
					Number of communication options with home	.58	.68	.09
					Perceived relative priority of mental health and wellbeing	9.03	5.7	.19
					Bullying victim	.40	.32	.16
					Bullying witness	-.35	.31	-.14
					Perceived stigma at work	-.88	.59	-.17

Note. * $p \leq .05$. ** $p \leq .005$. *** $p \leq .001$

Site and organisational factors explained 11% of the variance in the AUDIT scores of the partners, and FIFO workers perceiving the FIFO work arrangement as more flexible was associated with lower alcohol consumption of the partners ($\beta = -.24$; $p < .05$).

Table B.45

Regression of social and family factors on AUDIT score

Variables	Partner AUDIT			
	B	SE B	β	R ²
Step 1				
Gender	1.05	2.53	.04	
Age	-.03	.05	-.06	
Number of dependants	-.22	.38	-.06	
Level of education	-.26	.27	-.09	
Years in FIFO	-.07	.07	-.10	.030
Step 2				
Gender	1.28	2.57	.05	

Age	-.02	.05	-.04	
Number of dependants	-.18	.38	-.05	
Level of education	-.22	.28	-.08	
Years in FIFO	-.09	.08	-.13	
Perceived work family conflict	-.51	.36	-.16	
Loneliness on site and at home	.97	.64	.19	
Happiness with personal relationships	-.25	.55	-.06	
Number of friends	.28	.47	.07	
Number of family members	.07	.41	.02	.065

*Note. * $p \leq .05$. ** $p \leq .005$. *** $p \leq .001$*

Summary: hierarchical regressions influence FIFO work arrangements on substance use partners

- FIFO workers having more autonomy in their job was linked to a significant lower AUDIT score for their partner.
- If FIFO workers felt more flexibility in the FIFO work, there was significantly lower alcohol consumption by their partners.

B.3 Measures

B.3.1 Current FIFO survey

Mental health and wellbeing

The survey section assessed aspects of mental ill-health and wellbeing and related issues (nine in total). An overview of the constructs included in this section of the survey as well as the scales used to measure them is given in Table B.27. The section also included three items inquiring about suicidal intent. It should be noted that the suicide items were not immediately presented to participants. They would first see a message informing them that the next section is about suicide and that they are not obliged to answer these questions if they are not comfortable doing so. They were also given information about seeking help if they are concerned about their suicidal risk, both before and after they accessed this section of the survey.

Table B.27

Overview of mental health and wellbeing survey section

Construct	Scale source	Item No	Example item
K10 (Anxiety & depression)	Furukawa, T. A., Kessler, R. C., Slade, T., & Andrews, G. (2003). The performance of the K6 and K10 screening scales for psychological distress in the Australian National Survey of Mental Health and Well-Being. <i>Psychological medicine</i> , 33(2), 357–362.	10	During the last 30 days about how often did you feel tired out for no good reason?
Burnout	Two item version of MBI, as in Dollard, M.F., & Bakker, A.B. (2010). Psychosocial safety climate as a precursor to conducive work environments, psychological health problems, and employee engagement. <i>Journal of Occupational and Organizational Psychology</i> , 83, 579–599.	2	Please indicate how often you feel as described in the statements below. I feel emotionally drained from my work.
Interpersonal needs	Van Orden, K. A., Cukrowicz, K. C., Witte, T. K., & Joiner, T. E. (2012). Thwarted belongingness and perceived burdensomeness: Construct validity and psychometric properties of the Interpersonal Needs Questionnaire. <i>Psychological Assessment</i> , 24, 197–215. http://dx.doi.org/10.1037/a0025358	15	I think I make things worse for the people in my life.
Mental Health Continuum	Lamers, S., Westerhof, G. J., Bohlmeijer, E. T., ten Klooster, P. M., & Keyes, C. L. (2011). Evaluating the psychometric properties of the mental health continuum-short form (MHC-SF). <i>Journal of clinical psychology</i> , 67(1), 99–110.	9	During the past month, how often did you feel ... Happy?
Changes through FIFO	Self-developed	3	Since starting FIFO work, how have the following aspects of your life changed? Mental health and wellbeing.
Suicide	Nock, M. K., Holmberg, E. B., Photos, V. I., & Michel, B. D. (2007). Self-injurious thoughts and behaviors interview: Development, reliability, and validity in an adolescent sample. <i>Psychological</i>	3	I have no intention of killing myself in the near future.

Use of alcohol and other drugs

The use of alcohol and other drugs section asked participants about their tendency to smoke and, in particular, asked a number of questions concerning their alcohol drinking habits. Further, two questions also inquired about the types of drugs taken for non-medical reasons and their impact on participants' lives. An overview of the constructs included in this section of the survey, as well as the scales used to measure them, is given in Table B.28.

Table B.28
Overview of use of alcohol and other drugs survey section

Construct	Scale source	Item No	Example item
Smoking		1	How often do you now smoke cigarettes, pipes or other tobacco products?
Alcohol use	National Drug Strategy Household Survey	17	In the last 12 months, how often did you have an alcoholic drink of any kind?
Drug use		2	Have you used one or more of the following drugs (for non-medical purposes) in the last 12 months? Pain-killers/Analgesics

Job factors

The job factors included constructs that are specific to the FIFO work context, as well as general job demands and resources that are likely to contribute to mental health and wellbeing (see Table B.29). This section in particular focussed on demands and resources that are central to the job itself. It contained general and FIFO-specific constructs.

Table B.29
Overview of job factors survey section

Construct	Scale source	Item No	Example item
Autonomy time off on-site	Demerouti, E., Bakker, A. B., & Voydanoff, P. (2010). Does home life interfere with or facilitate job performance?. <i>European Journal of Work and Organizational Psychology</i> , 19(2), 128–149.	4	I decide what I do in my leisure time.
Autonomy time off at home	Adapted from Demerouti, E., Bakker, A. B., & Voydanoff, P. (2010). Does home life interfere with or facilitate job performance?. <i>European Journal of Work and Organizational Psychology</i> , 19(2), 128–149. (Adapted instruction)	3	I am free to do things in my own way.
Family separation	Self-developed	3	I frequently struggle with being so far away from my friends and family.

Transitioning	Self-developed	2	Settling back into home life can be hard after coming back from site.
Perceived employment volatility	Cuyper, N. D., Bernhard-Oettel, C., Berntson, E., Witte, H. D., & Alarco, B. (2008). Employability and employees' well-being: Mediation by job insecurity. <i>Applied Psychology, 57</i> (3), 488–509.	1	I think I might lose my job in the near future.
Cost responsibility	Adapted from: Martin, R., & Wall, T. D. (1989). Attentional demand and cost responsibility as stressors in shopfloor jobs. <i>Academy of Management Journal, 32</i> (1), 69–86. (Raine study)	2	Could an error on your part have a major negative consequence?
Workload	Self-developed	3	How often do you find work piles up faster than you can complete it?
Decision making/ Autonomy		3	The job gives me a chance to use my personal initiative or judgement in carrying out the work.
Task variance	Morgeson, F. P., & Humphrey, S. E. (2006). The Work Design Questionnaire (WDQ): developing and validating a comprehensive measure for assessing job design and the nature of work. <i>Journal of applied psychology, 91</i> (6), 1321.	3	The job involves a great deal of task variety. The work activities themselves provide direct and clear information about the effectiveness (e.g. quality and quantity) of my job performance.
Feedback		2	
Overall job satisfaction	Warr, P. B., Cook, J. D., & Wall, T. D. (1979). Scales for the measurement of some work attitudes and aspects of psychological well-being. <i>Journal of Occupational Psychology, 52</i> , 129–148. See also Shalley, C. E., Gilson, L. L., & Blum, T. C. (2000). Matching creativity requirements and the work environment: Effects on satisfaction and intentions to leave. <i>Academy of management journal, 43</i> (2), 215–223.	1	Taking everything into consideration, how do you feel about your job as a whole?
Rosters	Self-developed	8	What roster did you work on?
Shift patterns	Self-developed based on Parkes, 2010	1	How many hours do you work on a typical day on site (including overtime)?

Team factors

The team or work unit section of the survey asked participants about their experience in relation to their line manager as well as the team that they work with directly. A total of four constructs were assessed. An overview of the constructs included in this section of the survey; as well as the scale used to measure them, is given in Table B.30.

Table B.30

Overview of team factors survey section

Construct	Scale source	Item No	Example item
Managerial support	Cousins*, R., Mackay, C. J., Clarke, S. D., Kelly, C., Kelly, P. J., & McCaig, R. H. (2004). 'Management standards' work-related stress in the UK: Practical development. <i>Work & Stress, 18(2)</i> , 113–136.	4	I am given supportive feedback on the work I do.
Leader inspirational communication	Rafferty, A. E., & Griffin, M. A. (2004). Dimensions of transformational leadership: Conceptual and empirical extensions. <i>The leadership quarterly, 15(3)</i> , 329–354. Items slightly adjusted: added 'my line manager'.	2	My line manager says things that make employees proud to be a part of this organisation*.
Leader health & safety commitment	Fruhen, L.S., Griffin, M.A., & Andrei, D. (under review). Leader safety commitment—A multi-dimensional approach. Safety Science.	9	My line manager is passionate about health and safety
Co-worker support	Cousins*, R., Mackay, C. J., Clarke, S. D., Kelly, C., Kelly, P. J., & McCaig, R. H. (2004). 'Management standards' work-related stress in the UK: Practical development. <i>Work & Stress, 18(2)</i> , 113–136.	4	If work gets difficult, my colleagues will help me*.

Organisation and worksite factors

The organisation and worksite factors section covered seven constructs, which covered issues both relating to the psychosocial aspects of the work and campsites, as well as the physical aspects. Table B.31 gives an overview of the constructs included in this section of the survey.

Table B.31
 Overview of organisation and worksite survey section

Construct	Scale source	Item No	Example item
Flexibility company	Self-developed	4	Introduction of flexible work arrangements, such as job sharing, for some positions.
Recreational facilities (including social activities)	Self-developed	4	Please select the recreational facilities that are available to you at camp/the mine site (please select all that apply).
Perceived stigma/ Perceived barriers to care	Gould, M., Adler, A., Zamorski, M., Castro, C., Hanily, N., Steele, N., ... & Greenberg, N. (2010). Do stigma and other perceived barriers to mental health care differ across Armed Forces?. <i>Journal of the Royal Society of Medicine</i> , 103(4), 148–156.	6	It would harm my career.
Climate for health & safety	Self-developed	6	Minimising operational costs.
Commute type	Self-developed	4	How do you commute from home to work?
Accommodation	Self-developed—inspired by Inquiry	3	What kind of on-site accommodation do you have?
Communication options	Self-developed	1	What options for staying in touch with home do you have while on site (please select all that apply)?
Availability of counselling (awareness and actual use)	Based on Tynan, R. J., Considine, R., Rich, J. L., Skehan, J., Wiggers, J., Lewin, T. J., ... & Perkins, D. (2016). Help-seeking for mental health problems by employees in the Australian Mining Industry. <i>BMC health services research</i> , 16(1), 498. Plus self-developed from mental health WA.	2	What types of mental health and wellbeing support or help are provided on your site? Please fill in all the support or help options that you are aware of.
Bullying	Agervold, M., & Mikkelsen, E. G. (2004). Relationships between bullying, psychosocial work environment and individual stress reactions. <i>Work & Stress</i> , 18(4), 336–351.	3	During the previous six months, have you been subjected to bullying at your workplace?

Family and social factors

The family and social factors section contained scales related to the participant's life outside of work, as well as the extent to which work and personal life may be in conflict. A total of five constructs were assessed as part of this section; these are shown in Table B.32.

Table B.32
 Overview of family and social survey section

Construct	Scale source	Item No	Example item
Work-family conflict	Netemeyer, R. G., Boles, J. S., & McMurrin, R. (1996). Development and validation of work–family conflict and family–work conflict scales. <i>Journal of applied psychology</i> , 81(4), 400.	5	The demands of my work interfere with my home and family life.
Adequacy of social support	Falk, A., Hanson, B. S., Isacson, S. O., & Ostergren, P. O. (1992). Job strain and mortality in elderly men: social network, support, and influence as buffers. <i>American journal of Public Health</i> , 82(8), 1136–1139.	2	How often do you feel lonely while on site or at the accommodation camp?
Social network	Spanier, P. A., & Allison, K. R. (2001). General social support and physical activity: an analysis of the Ontario Health Survey. <i>Canadian journal of public health</i> , 92(3), 210. Structural and quantity—self-developed based on the scale. Combined with Lubben Social network scale https://www.brandeis.edu/roybal/docs/LSNS_web site_PDF.pdf (Extra questions taken out.)	2	How many close friends do you have?
FIFO worker social network	Self-developed	2	How many of your close friends are also FIFO workers?
Satisfaction with relationships	One question out of DAS-7 (modified)	3	Relationship with friends.

Individual worker factors

Individual worker factors were assessed via four scales. The constructs included represented stable personal attributes as well as strategies and coping styles that individuals may employ. An overview of the constructs included in this section of the survey; as well as the scales used to measure them, are given in Table B.33.

Table B.33
 Overview of individual worker factors survey section

Construct	Scale source	Item No	Example item
Resilience	Luthans, F. Avolio, B. J., & Avey, J. B. (2007). Psychological Capital (PsyCap) Questionnaire, Mind Garden. Luthans, F., Avolio, B. J., Avey, J. B., & Norman, S. M. (2007). Positive psychological capital: Measurement and relationship with performance and satisfaction. <i>Personnel psychology</i> , 60(3), 541–572.	3	I can be “on my own”, so to speak, at work if I have to.

Recovery strategies	Sonnentag, S., & Fritz, C. (2007). The Recovery Experience Questionnaire: development and validation of a measure for assessing recuperation and unwinding from work. <i>Journal of occupational health psychology, 12</i> (3), 204.	4	I forgot about work.
Coping styles	Carver, C. S. (1997). You want to measure coping but your protocol's too long: Consider the brief cope. <i>International journal of behavioral medicine, 4</i> (1), 92–100.	8	I concentrate my efforts on doing something about the situation I am in.
Perception of masculinity	Oransky, M., & Fisher, C. (2009). The development and validation of the meanings of adolescent masculinity scale. <i>Psychology of Men & Masculinity, 10</i> (1), 57.	3	A guy should always seem as manly as other guys that he knows.

Demographics

The demographics section covered a range of personal attributes that will allow the research team to gain a good overview of the background and experience of the sample related to their work. Table B.34 shows the constructs that were included in this section.

Table B.34
 Overview of demographics survey section

Construct	Scale source	Item No	Example item
Gender	Adapted from the Raine study, University of Western Australia Age range of children: https://www.healthychildren.org/English/ages-stages/Pages/default.aspx	7	What is your age?
Age			
Marital status			
Children/dependants			
Age range of children			
Ethnicity			
Education			
Employment type	Considine, R., Tynan, R., James, C., Wiggers, J., Lewin, T., Inder, K., ... & Kelly, B. (2017). The Contribution of Individual, Social and Work Characteristics to Employee Mental Health in a Coal Mining Industry Population. <i>PLoS one, 12</i> (1), e0168445.	9	Are you employed by an operator (principal employee) or a contractor?
Professional role			
Years working as FIFO			
Tenure			
Industry			
Phase that the project is in			
Name site			
Years working on that site			
Part time or full time			
Current location	Self-developed	1	While completing this survey, are you ... On site working or off site on leave?

Outcomes of Mental health and wellbeing

Finally, in line with the preliminary research model developed based on the thematic literature review, possible outcomes of mental health and wellbeing were also included. These constructs covered aspects of core and related job performance, as well as aspects related to physical health. An overview of the countries is given in Table B.35.

Table B.35
Overview of mental health and wellbeing outcomes survey section

Construct	Scale source	Item No	Example item
Safety Behaviours	Griffin & Neal (2006)/Neal, A., & Griffin, M. A. (2006). A study of the lagged relationships among safety climate, safety motivation, safety behavior, and accidents at the individual and group levels. <i>Journal of Applied Psychology</i> , 91, 946–953.	4	I use all the necessary safety equipment to do my job.
Voice	Parker, S. K., & Collins, C. G. (2010). Taking stock: Integrating and differentiating multiple proactive behaviors. <i>Journal of Management</i> , 36(3), 633–662.	4	Communicate your views about work issues to others in the workplace, even if your views differ and others disagree with you*?
Job performance	Raine study, University of Western Australia	1	My own job performance.
Physical health/general wellbeing	People at work survey Kuorinka et al., 1987	5	How often, over the past four weeks, have you had an ache, pain, or discomfort in your ... Neck?
Sleep and fatigue	People at work survey	2	Did you have trouble falling asleep?
Turnover	Shalley, C. E., Gilson, L. L., & Blum, T. C. (2000). Matching creativity requirements and the work environment: Effects on satisfaction and intentions to leave. <i>Academy of management journal</i> , 43(2), 215–223.	1	How likely is it that you will make a genuine effort to find a new job with another employer within the next year?
Engagement	Schaufeli, W. B., Bakker, A. B., & Salanova, M. (2006). The measurement of work engagement with a short questionnaire: A cross-national study. <i>Educational and psychological measurement</i> , 66(4), 701–716.	6	I am enthusiastic about my job.
FIFO commitment	Items modified based on Meyer, Allen, Smith (1993).	7	I regret having taken up FIFO work.

B.3.2 Partner FIFO survey

Table B.36 below displays the questions that were part of the survey aimed at the partners of FIFO workers.

Table B.36
 Overview of partner FIFO survey

Construct	Topic/scale	Reference	No of items	Example item
Demographics + FIFO questions				
Current FIFO	Current FIFO		1	Are you currently working in a FIFO job or did you work in a FIFO job in the past?
Demographics	Gender Age Marital status Children/ dependants Age range of children Ethnicity Education Partner job Partner part-time or full-time Partner on/off site	Adapted from the Raine study, University of Western Australia Age range of children: https://www.healthychildren.org/English/ages-stages/Pages/default.aspx	11	What is your age?
Rosters		Self-developed	1	Overall, how satisfied are you with your partner's roster?
Induction		Self-developed	2	Did you receive any information or induction in relation to FIFO work?
Flexibility company		Self-developed	4	How likely is your employer to be flexible with regards to the following issues? Introduction of flexible work arrangements, such as job sharing, for some positions.
Mental Health				
Mental ill-health	K10 (Anxiety and depression) Mental ill-health + Mental ill-health perception of partner on FIFO	Furukawa, T. A., Kessler, R. C., Slade, T., & Andrews, G. (2003). The performance of the K6 and K10 screening scales for psychological distress in the Australian National Survey of Mental Health and Well-Being. <i>Psychological medicine</i> , 33(2), 357–362.	10 + 10	During the last 30 days about how often did you feel tired out for no good reason?

	Burnout partner + Burnout FIFO	2 item version of MBI as in Dollard, M.F., & Bakker, A.B. (2010). Psychosocial safety climate as a precursor to conducive work environments, psychological health problems, and employee engagement. <i>Journal of Occupational and Organizational Psychology</i> , 83, 579–599.	2 + 2	Please indicate how often you feel as described in the statements below. I feel emotionally drained from my work.
	Interpersonal needs questionnaire	Van Orden, K. A., Cukrowicz, K. C., Witte, T. K., & Joiner, T. E. (2012). Thwarted belongingness and perceived burdensomeness: Construct validity and psychometric properties of the Interpersonal Needs Questionnaire. <i>Psychological Assessment</i> , 24, 197–215. http://dx.doi.org/10.1037/a0025358	15	I think I make things worse for the people in my life.
Mental Health	Mental Health Continuum-Short Form (MHC-SF) Mental health partner + Mental health FIFO	Lamers, S., Westerhof, G. J., Bohlmeijer, E. T., ten Klooster, P. M., & Keyes, C. L. (2011). Evaluating the psychometric properties of the mental health continuum-short form (MHC-SF). <i>Journal of clinical psychology</i> , 67(1), 99–110.	9 + 9	During the past month, how often did you feel ... Happy?
Counselling		Based on Tynan, R. J., Considine, R., Rich, J. L., Skehan, J., Wiggers, J., Lewin, T. J., ... & Perkins, D. (2016). Help-seeking for mental health problems by employees in the Australian Mining Industry. <i>BMC health services research</i> , 16(1), 498. Plus self-developed from mental health WA.	1	What options for help or counselling for mental health issues have you personally used?
Changes through FIFO	Partner + FIFO	Self-developed	5	Since your partner started working in a FIFO arrangement, how have the following aspects of your life changed? Mental health and wellbeing.
Suicide	Suicide Scale	George, S. E., Page, A. C., Hooke, G. R., & Stritzke,	3	I have no intention of killing myself in the near future.

		W. G. (2016). Multifacet assessment of capability for suicide: Development and prospective validation of the Acquired Capability With Rehearsal for Suicide Scale. <i>Psychological assessment</i> , 28(11), 1452.		
Alcohol, drugs				
Smoking, alcohol, drugs	Smoking Partner + FIFO	National Drug Strategy Household Survey	2	D.10 How often do you now smoke cigarettes, pipes or other tobacco products?
	Alcohol		25	E.7 In the last 12 months, how often did you have an alcoholic drink of any kind?
	Drugs		34	Have you used one or more of the following drugs (for non-medical purposes) in the last 12 months? Pain-killers/Analgesics
FIFO worker and organisation and workplace factors—partner factors				
Coping styles	Active coping	Carver, C. S. (1997). You want to measure coping but your protocol's too long: Consider the brief cope. <i>International journal of behavioral medicine</i> , 4(1), 92–100.	2	I concentrate my efforts on doing something about the situation I am in.
	Using emotional support		2	I get emotional support from others.
	Self-distraction		2	I give up the attempt to cope.
	Disengagement		2	I do something to think about it less such as watching TV, reading, daydreaming or sleeping.
Resilience		Luthans, F. Avolio, B. J., & Avey, J. B. (2007). Psychological Capital (PsyCap) Questionnaire, Mind Garden. Luthans, F., Avolio, B. J., Avey, J. B., & Norman, S. M. (2007). Positive psychological capital: Measurement and relationship with performance and satisfaction. <i>Personnel psychology</i> , 60(3), 541–572.	3	I can be “on my own”, so to speak, at work if I have to.

Family and social life				
Work-family conflict	WFC is a form of interrole conflict in which the general demands of time devoted to, and strain created by, the job interfere with performing family-related responsibilities.	Netemeyer, R. G., Boles, J. S., & McMurrian, R. (1996). Development and validation of work–family conflict and family–work conflict scales. <i>Journal of applied psychology, 81</i> (4), 400.	5	The demands of my partner’s work interfere with my home and family life.
Social support/ network	Adequacy of social support (2 items out)	Falk, A., Hanson, B. S., Isacson, S. O., & Ostergren, P. O. (1992). Job strain and mortality in elderly men: social network, support, and influence as buffers. <i>American journal of Public health, 82</i> (8), 1136–1139.	2	How often do you feel lonely when your partner is away on site?
	Social network	Spanier, P. A., & Allison, K. R. (2001). General social support and physical activity: an analysis of the Ontario Health Survey. <i>Canadian journal of public health, 92</i> (3), 210. Structural and quantity—self-developed based on the scale. Combined with Lubben Social network scale https://www.brandeis.edu/roybal/docs/LSNS_website_PDF.pdf (Extra questions taken out.)	2	How many close friends do you have?
	Satisfaction with social relationships	One question out of DAS-7 (modified).	3	Relationship with friends.
Family questions				
Communication options		Self-developed	1	What options for staying in touch with home do you have while on site (please select all that apply)?
Partner FIFO dissatisfaction		Self-developed	4	I’m happy with the communication frequency between my partner and I while he/she is staying at the work accommodation.
Dyadic adjustment	Dyadic adjustment Scale	Spanier, G. B. (1976). Measuring dyadic adjustment: New scales for assessing the quality	6	Most persons have disagreements in their relationships. Please indicate below the approximate extent of agreement or

		of marriage and similar dyads. <i>Journal of Marriage and the Family</i> , 38, 15–28. Retrieved from http://www.tandfonline.com/doi/abs/10.1080/01926180126501 http://web.b.ebscohost.com.ezproxy.library.uwa.edu.au/ehost/pdfviewer/pdfviewer?vid=1&sid=fd0b838f-a1e4-46d7-bfdd-c825839c6a02%40sessionmgr104		disagreement between you and your partner for each item on the following list. How often would you say the following events occur between you and your mate? 1. Philosophy of life ____.
Family functioning	Family functioning	Epstein, N. B., Baldwin, L. M. and Bishop, D. S. (1983), THE McMASTER FAMILY ASSESSMENT DEVICE*. <i>Journal of Marital and Family Therapy</i> , 9, 171–180. doi:10.1111/j.1752-0606.1983.tb01497.x	12	Planning family activities is difficult because we misunderstand each other.
Safety at home			4	Does your partner sometimes carry out work around the house?
Advice FIFO		Self-developed	1	If you could give one piece of advice to a family in which one partner is about to start a FIFO job, what would that be?
Outcomes mental health and wellbeing				
Overall job satisfaction		Warr, P. B., Cook, J. D., & Wall, T. D. (1979). Scales for the measurement of some work attitudes and aspects of psychological well-being. <i>Journal of Occupational Psychology</i> , 52, 129–148. See also Shalley, C. E., Gilson, L. L., & Blum, T. C. (2000). Matching creativity requirements and the work environment: Effects on satisfaction and intentions to leave. <i>Academy of management journal</i> , 43(2), 215–223.	2	Taking everything into consideration, how do you feel about your partner's job and how does he/she feel about his/her job as a whole?
Commitment	Affective FIFO commitment	Items modified based on Meyer, Allen, Smith (1993).	3	I regret that my partner has taken up FIFO work.
	Continuance FIFO commitment		4	Changing to a non-FIFO job now would be difficult for me to do.

B.3.3 Former FIFO survey

Table B.37 below displays the questions that were part of the survey aimed at former FIFO workers.

Table B.37
Overview of former FIFO survey

Construct	Reference	No. of items	Example item
Demographics + FIFO questions			
Current FIFO		1	Are you working in a FIFO job at this point in time or did you work in a FIFO job in the past?
Gender	Adapted from the Raine study, University of Western Australia Age range of children: https://www.healthychildren.org/English/ages-stages/Pages/default.aspx	7	What is your age?
Age			
Marital status			
Children/dependants			
Age range of children			
Ethnicity			
Education			
Quit	Based on Tynan et al., 2017	14	When did you stop working a FIFO arrangement?
Reason quit			
Positive FIFO			
Negative FIFO			
Professional role most recent			
Professional role current			
Years working in last FIFO role			
FIFO total years			
Contractor/operator			
Industry			
Phase that the project is in			
Name site			
Years working on that site			
Part time or full time			
Shift patterns	Self-developed based on Parkes, 2010	1	Please select the shift pattern that most accurately describes your shift pattern during you last FIFO job.
Rosters	Self-developed	8	What roster did you work on?
Commute type		4	How did you commute from home to work?
Accommodation	Self-developed—inspired by Inquiry	3	What kind of on-site accommodation did you have?

Communication options	Self-developed	1	What options for staying in touch with home did you have while on site (please select all that apply)?
Mental Health			
K10 (Anxiety and depression)	Furukawa, T. A., Kessler, R. C., Slade, T., & Andrews, G. (2003). The performance of the K6 and K10 screening scales for psychological distress in the Australian National Survey of Mental Health and Well-Being. <i>Psychological medicine</i> , 33(2), 357–362.	10	During the last 30 days about how often did you feel tired out for no good reason?
Changes through FIFO	Self-developed	3	Since you stopped FIFO work, how have the following aspects of your life changed? Mental health and wellbeing.
Alcohol and other drugs			
Smoking	National Drug Strategy Household Survey	1	D.10 How often do you now smoke cigarettes, pipes or other tobacco products?
Alcohol		2	E.7 In the last 12 months, how often did you have an alcoholic drink of any kind?
Drugs		16	Have you used one or more of the following drugs (for non-medical purposes) in the last 12 months? Pain-killers/Analgesics
Job Factors			
Family separation	Self-developed	5	I frequently struggled with being so far away from my friends and family.
Organisation and workplace factors			
Recreational facilities	Self-developed—inspired by Inquiry	2	Please select the recreational facilities that were available to you at camp/the mine site (please select all that apply).
Family and social life			
Work-family conflict	Netemeyer, R. G., Boles, J. S., & McMurrian, R. (1996). Development and validation of work–family conflict and family–work conflict scales. <i>Journal of applied psychology</i> , 81(4), 400.	5	The demands of my work interfered with my home and family life.

B.4 Former FIFO workers

B.4.1 Measures former FIFO workers

The survey for former FIFO workers included some of the same questions as for the main FIFO survey, and it also captured the reasons former FIFO workers had for leaving their FIFO jobs. Table B.9 shows that the main scales in this survey and their reliabilities.

Table B.9
Overview of scale reliabilities former FIFO workers

Scale	N items	Cronbach's Alpha
Mental health and wellbeing		
K10	10	.94
Job factors		
Family separation	3	.52
Transitioning site/home	2	.56
Family and social factors		
Work family conflict	5	.93

For former FIFO workers, the median duration was 14 minutes and the mode was 11 minutes.

It should be noted that from a research perspective, the information collected from former FIFO workers via their retrospection is of little value as it may be affected by memory bias. In order to gain any firm understanding of how those who quit FIFO work are affected by their experiences while working in these roles, how they cope following their exit from FIFO work, and how both these factors affect their mental health and wellbeing, a longitudinal study design will be required.

B.4.2 Sample demographics of former FIFO workers

The final sample of Former FIFO workers consisted of 487 participants, with 2.1% of Aboriginal or Torres Strait Islander origin. Table B.10 and B.11 provides an overview of sample demographics. Most participants were males (69.8%), with an average age of 43 years ($M = 43.07$; $SD = 11.40$). Most were married or in a domestic partnership (70.1%), 12% were single and 17.9% were widowed, divorced or separated. More than half of the sample had children (62%), with 71.9% under the age of 18. The most common education between participants varied between TAFE and college (24.2%), secondary school (20.9%) and university undergraduate degree (20.9%).

Table B.10
Overview of the former FIFO worker sample demographics (personal characteristics)

Gender		Marital status	
Male	69.8%	Single, never married	12.0%
Female	30.0%	Married/domestic partnership	70.1%
Other	0.2%	Widowed, divorced, separated	17.9%
Age ($M = 43.07$; $SD = 11.40$)		Children	
<24	0.2%	0	38.0%
25–34	30.3%	1	20.3%
35–44	26.0%	2	25.9%

45–54	23.3%	3	9.7%
55+	20.2%	4	5.5%
<u>Highest Level of Education</u>		5	0.2%
Primary school	0.2%	6 or more	0.4%
Secondary School	20.9%	<u>Age youngest child</u>	
Apprentice	8.8%	0–12 months	8.3%
TAFE, College	24.2%	1–3 years	14.9%
Other training course	10.5%	3–5 years	13.9%
University undergraduate	20.9%	6–8 years	10.3%
degree		8–12 years	9.9%
Postgraduate degree	14.4%	12–18 years	14.6%
<u>Aboriginal/Torres Strait Islander</u>		Over 18	28.1%
Yes	2.1%		
No	95.7%		
Prefer not to say	2.3%		

Table B.11 shows that approximately half of the participants worked on behalf of an operator (52.5%) and the other half for a contractor (47.5%) within the mining (51.5%), construction (21.4%), and oil and gas (20%) industries. The majority of sampled former FIFO workers used to commute to work via a FIFO arrangement (91.7%), and the majority worked in a professional/technical (23.6%) or managerial role (22.7%). Currently, most of the participants are working in these same roles (24.7% in a professional/technical and 19.1% in a managerial role). Most worked full-time (87.2%) and worked days during their shift (69.4%). Participants also worked within different project stages, but mainly in the construction (40%) and operational (59.4%) phases. The most common rosters undertaken included: four weeks on/one week off (22.9%), two weeks on/one week off (16.8%), and *other* (27.0%), which includes rosters such as nine days on/five days off.

Table B.11

Overview of the former FIFO worker sample demographics (Workplace characteristics)

<u>Employment</u>		<u>Commute</u>	
Operator	52.5%	FIFO	91.7%
Contractor	47.5%	DIDO	5.8%
<u>Profession</u>		BIBO	1.2%
Administrative	4.5%	Local commute (live close to the site)	1.2%
Managerial	22.7%	<u>Current Profession</u>	
Professional/Technical	23.6%	Administrative	5.8%
Operator	12%	Managerial	19.1%
Technician or	17.6%	Professional/Technical	24.7%
<u>Trade/Maintainers</u>		Operator	6.2%
Camps and catering	2.3%	Technician or Trade/	10.2%
Logistics and supply chain	1.9%	<u>Maintainers</u>	
Other	15.5%	Camps and catering	0.4%
<u>Industry</u>		Logistics and supply chain	1.2%
Construction	21.4%	Other	18.9%
Mining	51.5%	<u>Employment situation</u>	
Oil and gas	20%	Full time	87.2%
Public services	0.4%	Part time	1.2%

Transportation	0.2%	Casual	7.6%
Other	6.4%	Other	3.9%
Shift pattern		Phase of site	
Days-Nights-Off-Days-Nights-Off	11.8%	Construction	40.0%
Days-Off-Nights-Off	4.8%	Operational	59.4%
Days-Off-Days-Off	69.4%	Decommissioning	0.6%
Other	10.3%	Roster	
Time in FIFO work	<i>M (SD)</i>	4 weeks on/1 week off	22.9%
Years in last FIFO job	3.5 (3.86)	3 weeks on/1 week off	6.8%
Years in FIFO total	8.02 (6.91)	2 weeks on/1 week off	16.8%
Shift length	12.54 (6.91)	2 weeks on/2 weeks off	6.4%
		8 days on/6 days off	15.3%
		5 days on/2 days off	4.9%
		Other	27.0%

B.4.3 Mental health and wellbeing in former FIFO workers

Former FIFO workers had $M = 20.99$ ($SD = 8.35$) on the K10, for the benchmark group this was $M = 16.30$ ($SD = 6.07$), showing former FIFO workers had worse scores on psychological distress.

Following previous reasoning about the characteristics of the data (unequal sample sizes, not normally distributed and the variances not equally distributed) it was decided to employ a non-parametric method of comparison: Welch's t-test.

Table B.12 displays the percentages for the four psychological distress categories, showing that 42.9% of the former FIFO workers' anxiety and depression scores are either high or very high. For the benchmark group this is 17.21%.

Table B.12

K10 low to very high psychological distress distribution

Psychological distress	Percentage (n) Benchmark group	Percentage (n) Former
Low psychological distress (score 10–15)	55.84% (172)	32.20% (154)
Moderate psychological distress (score 16–21)	26.95% (83)	24.90% (119)
High psychological distress (score 22–30)	12.66% (39)	29.10% (139)
Very high psychological distress (score 31–50)	4.55% (14)	13.80% (66)

In Table B.13 the K10-scores are split up by the psychological distress levels and different age groups. As the benchmark group and the former FIFO sample are a bit smaller, three of the age categories had very few participants and were excluded ($n \leq 29$). The patterns are a bit mixed, but former FIFO workers in the age group 55-64 have the lowest psychological distress levels. When looking at the high and very high psychological distress levels combined, the age groups 35-44 and 45-54 years old have similar percentages. These percentages come close to consisting of almost half of the participants (48.8% and 45.5% respectively). Compared to the benchmark group former FIFO workers more often have higher scores on high or very high psychological distress.

Table B.13

K10 by age former FIFO workers and the benchmark group (percentages)

		<i>Psychological distress</i>									
		Low		Moderate		High		Very high		High/very high combined	
Age	Former	Bench- mark	Former	Bench- mark	Former	Bench- mark	Former	Bench- mark	Former	Bench- mark	
35-44	34.4	38.7	16.8	32.3	32.8	21.0	16.0	8.1	48.8	29.1	
45-54	29.1	51.7	25.5	31.5	27.3	15.7	18.2	1.1	45.5	16.8	
55-64	45.7	67.4	27.2	23.2	19.8	7.4	7.4	2.1	27.2	9.5	

Summary: mental ill-health and wellbeing in former FIFO workers

- Former FIFO workers have higher levels of depression and anxiety when compared to the benchmark group.
- Within the age groups from 35–54 years old, almost half of the former FIFO workers experience high and very high levels of psychological distress.

B.4.4 Former FIFO worker alcohol and other drug use

The drinking frequencies and quantities of former FIFO workers are reported in Tables B.14 and B.15. Of former FIFO workers, 14.8% drink alcohol on a daily basis, which is a bit higher than the benchmark group (12.9%).

Table B.14

Alcohol use—frequency (benchmark group)

	Benchmark group	Former FIFO
Daily alcohol intake	12.9%	14.8%
Drinks at least weekly	50.5%	51.7%
Drinks less often than weekly	27.7%	26.2%
No alcohol (last 12 months)/Never drinks	8.9%	7.2%

Looking at the quantity of alcohol consumption in Table B.15, 36.6% of the former FIFO workers are in the higher quantity categories (5–10 and 11+ standard drinks) compared to 18.2% of the benchmark group.

Table B.15

Alcohol use—quantity (benchmark group)

	Benchmark group	Former FIFO
11+ standard drinks	2.3%	5.7%
5–10 standard drinks	15.9%	30.9%
0.5-4 standard drinks	72.8%	58.8%
Abstainer/no drinking in the past 12 months	8.9%	7.2%

One of the guidelines of The National Health and Medical Research Council (NHMRC) is to drink no more than two standard drinks on any day. The aim of this guideline is to reduce the risk of the harm alcohol can do over a lifetime; the long-term risk of drinking alcohol is an alcohol-related disease or injury. According to the results in Table B.16, 63.0% of the former FIFO workers don't keep to this guideline.

Table B.16
Lifetime risky drinking (benchmark group)

	Benchmark group	Former FIFO
Risky—Consumed more than two standard drinks per day on average	43.3%	63.0%
Low risk—Had no more than two standard drinks per day on average	46.0%	32.4%
No risk—Abstainer/no drinking in the past 12 months	8.9%	7.2%

Summary: former FIFO workers alcohol use comparison with benchmark group

- Former FIFO workers drink only slightly more often on a daily basis than the benchmark group.
- The alcohol intake on a day that they drink is higher for former FIFO workers in comparison to the benchmark group.
- Former FIFO workers break the guideline for not drinking more than two standard drinks on any day more often than the benchmark group.

Smoking and drugs

Table B.17 provides an overview of the smoking frequencies. More former FIFO workers smoke on a daily basis (18.7%) compared to the benchmark group (9.9%).

Table B.17
Smoking frequency

	Benchmark group	Former FIFO
Daily	9.9%	18.7%
Weekly	1.3%	1.9%
Less than weekly	0.7%	1.0%
Not at all, but I have smoked in the last 12 months	7.6%	13.7%
Not at all and I have not smoked in the last 12 months	80.5%	64.7%

The drugs that are used most often in the past 12 months are pharmaceuticals (see Table B.18). Similar to the benchmark group, painkillers and analgesics are used most often by the former FIFO workers (39.3%). The question asked if these drugs were used for non-medical purposes, but it seems likely that some respondents answered with “yes” even though they only used painkillers/analgesics for medical reasons. Tranquilisers and sleeping pills are used by 20.1% of the former FIFO workers, compared to 4.4% of the benchmark group.

Within the illicit drugs, marijuana is the most commonly used drug: 16.8% of former FIFO workers have used marijuana in the past 12 months, where this is 5.4% for the benchmark group.

Table B.18
Most common drugs

	Benchmark group	Former FIFO
Pharmaceuticals		
Painkillers/analgesics	34.1%	39.3%
Tranquilisers/sleeping pills	4.4%	20.1%
Steroids	1.4%	1.6%
Methadone or Buprenorphine	0.0%	0.2%
Other opiates/opioids	0.3%	2.8%
Illicit drugs		
Marijuana/cannabis	5.4%	16.8%
Cocaine	0.3%	6.0%
Ecstasy	1.4%	5.1%
Meth/amphetamine	1.0%	5.3%
Hallucinogens	0.3%	2.8%
Inhalants	2.0%	0.0%
Heroin	0.0%	0.0%
Ketamine	0.7%	0.9%
GHB	0.3%	0.2%
Emerging drugs		
Emerging drugs	0.0%	0.0%
Synthetic cannabis	0.0%	1.4%

Summary: former FIFO workers smoking and drug use comparison with benchmark group

- Former FIFO workers smoke more often than the benchmark group.
- Former FIFO workers have used drugs in the last 12 months more often than the benchmark group.

B.4.5 Changes in mental health and wellbeing, family, and alcohol and other drugs

Both current and former FIFO workers got to indicate how certain aspects of their life changed since starting FIFO work for current FIFO workers and since stopping FIFO work for former FIFO workers. They were asked about any changes to their mental health and wellbeing, their family situation and their use of alcohol and other drugs. A score of one meant their situation was a lot worse, a four meant it stayed the same, and a seven meant the situation is a lot better. Table B.19 shows that former FIFO workers thought their mental health and wellbeing, their family situation, and their use of alcohol and other drugs all improved after quitting FIFO work (no big change for alcohol and other drugs, however). They are all significantly better scores in comparison to the current FIFO workers ($F_{mh\&wb}(1,584.413) = 363.227, p = .000$; $F_{fam}(1,588.870) = 287.299, p = .000$; $F_{drugs}(1,619.723) = 17.608, p = .000$). Furthermore, looking at all the changes together, there is a significant difference between both groups ($F(1,584.568) = 289.448, p = .000$). Current FIFO workers felt their mental health and wellbeing and their family situation had become slightly worse since starting FIFO, and their use of alcohol and other drugs stayed almost the same.

Table B.19
Changes during and after FIFO work

	FIFO Group	M	SD	Welch's t-test			
				df	F	p-value	
Mental health and wellbeing	Current	3.40	1.38	Between	1	363.227	.000
	Former	4.96	1.71	Within	584.413		
Family situation	Current	3.70	1.48	Between	1	287.299	.000
	Former	5.14	1.76	Within	588.870		
Alcohol and other drugs	Current	4.15	1.44	Between	1	17.608	.000
	Former	4.45	1.48	Within	619.723		

Note. A score lower than four means worse and higher than four means better

In Figure B.20 below the differences between current and former FIFO workers are displayed graphically with a score of four meaning there were no changes on the respective category.

Note: Former FIFO (changes since stopping FIFO), Current FIFO (changes since starting FIFO).

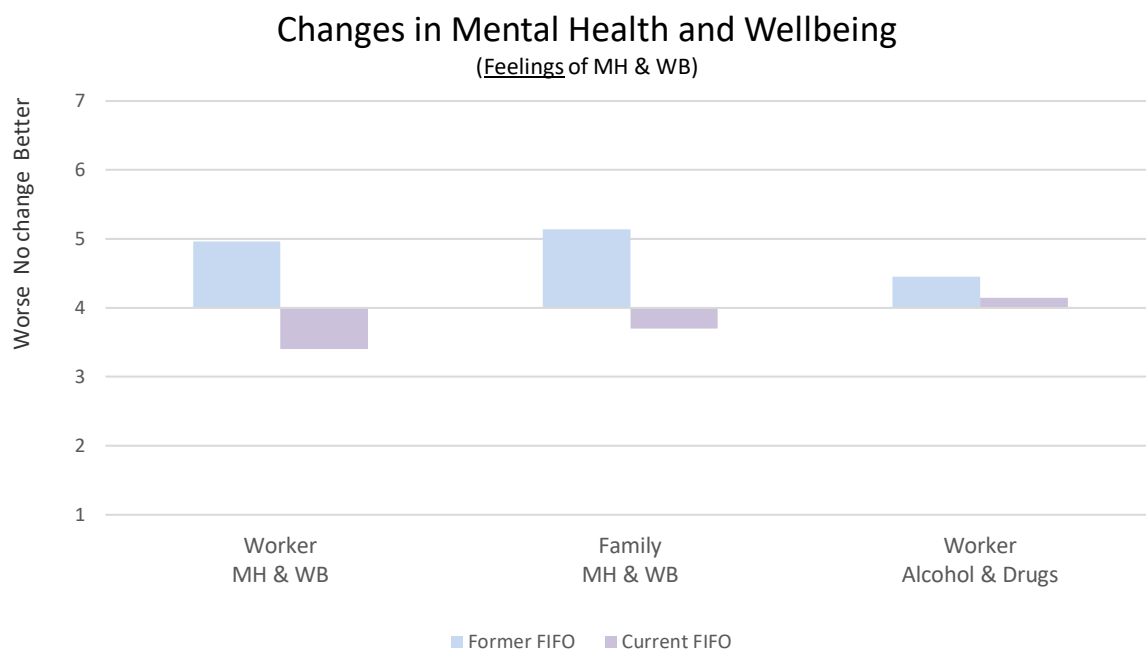


Figure B.20. Situation during and after FIFO work. Note. Former FIFO (changes since stopping FIFO), Current FIFO (changes since starting FIFO).

It is not easy to determine why former FIFO workers in general feel better about their mental health and wellbeing, their family, and their alcohol and other drug use. It could be linked to the amount of years that they quit FIFO work or their age. Correlations show that age ($r = -.11, p = .017$), the amount of years since they quit FIFO work ($r = -.045, p = .322$) and whether they currently have a job or not ($r = -.13, p = .004$) are not statistically significant. However, for marital status, a negative relation with the K10 score ($r = -.207, p = .000$) was found, suggesting that being in a relationship and better mental health are connected.

Summary: changes during and after FIFO work

- Former FIFO workers feel significantly better about their mental health and wellbeing, their family situation and their alcohol and other drug use after quitting FIFO work.
- Current FIFO workers felt their mental health and wellbeing, and family situation had become slightly worse after starting FIFO work; their alcohol and other drug use stayed almost the same.

B.4.6 Former FIFO worker descriptions of FIFO work

The former FIFO workers were also asked questions about their FIFO work experiences. However, given the recall issues over time and issues related to linking past experiences recalled in the present with present mental health and wellbeing, the questions included were more explorative.

Accordingly, we report results based on three open-ended questions that were posed to the former FIFO workers. Based on the responses, we identified themes via an inductive explorative coding. We further generated word clouds that group words and determine their size based on how frequently a word occurs. Using these two approaches gives an overview of frequent themes in the responses and illustrates dominant topics. We provide example quotes for each question that illustrate typical or frequent responses to each question.

First, former FIFO workers were asked why they had stopped working in a FIFO role. General themes that were identified were personal reasons, often concerned with missing family and family occasions (see Table B.21). In particular, children and milestones were often mentioned in response to this question. Another theme was related to employment-related reasons, often related to contracts or alternative offers of employment.

Table B.21

Reasons for quitting FIFO work reported by former FIFO workers

Why did you stop working in a FIFO arrangement?

Personal reasons

"I missed my family"

"Too stressful being away"

"I was tired of constantly being away from my home and family, I was flying all over Australia and could be gone for up to 3 weeks at a time."

"Too hard to be away from my son"

"Family commitments"

"Had enough of the FIFO life and wanted a better work/life balance"

"I met my financial goals. And it just got too hard."

Employment-related reasons

"Got an employment in the city"

"Other full-time employment"

"End of project contract"

"Made redundant"

"Corporate opportunity came up"

Table B.25

Negative aspects of FIFO work identified by former FIFO workers

What aspects did you find difficult about working in a FIFO arrangement?

Separation from family and home life

"Being so far away from family and friends. Missing out on birthdays and life events"

"Feeling 'distant' from family"

"Not being home with my family during difficult times"

"Not 'belonging' anywhere"

"My relationships became a bit distant in feelings"

"Living two different lives at home and work"

Rosters and work hours

"Some rosters were not as favourable and having a social life was difficult"

"Long hours, long roster and continuous push for high performance year after year"

"Long hours"

"4 and 1 roster"

Work conditions and living on site

"Humidity and flies. Oh, and snakes, lizards, frog and geckos"

"Quite isolated after work"

"Poor living accommodations and conditions"

"Being a female in a male dominated environment when they are isolated from other females"

"Food wasn't the best"

"Lonely in camp"

"Constant traveling is tiring"

"The uncertainty of work"

Notably, in the word cloud, the separation from family and friends was a very dominant feature in the aspects that former FIFO workers found difficult about FIFO work (see Figure B.26; e.g. being away, friends, family). The sense of missing out was also evident in the word cloud (e.g. missing), as was the notion of time (e.g. time), reflecting awareness of how the ways in which FIFO workers spend their time and allocate it between time on and off is a critical feature.

Appendix C Longitudinal study

C.1 Longitudinal survey measures

The longitudinal section of this report assessed the mental health and wellbeing fluctuations across FIFO workers' current swing. An overview of the constructs included within the measurement can be found below (see Table C.1).

Table C.1

Overview of mental health and wellbeing longitudinal constructs measured

Constructs	Scale source	Item No	Item
Anxiety Depression Enthusiasm Relaxation	Warr, P., Bindl, U. K., Parker, S. K., & Inceoglu, I. (2014). Four-quadrant investigation of job-related affects and behaviours. <i>European Journal of Work and Organizational Psychology</i> , 23(3), 342–363.	8	For the past 24 hours, please indicate below approximately how often you have felt the following. Everyone has a lot of overlapping feelings, so you'll have a total for all the items that is much greater than 100% of the time: <ul style="list-style-type: none"> – worried – excited – hopeless – relaxed – anxious – enthusiastic – depressed – calm
Sleep quality	Global Pittsburgh Sleep Quality Index in Pow et al. (2017).	1	For the past 24 hours, how would you rate ... your sleep quality overall?
Life satisfaction	Warr, P. B., Cook, J. D., & Wall, T. D. (1979). Scales for the measurement of some work attitudes and aspects of psychological well-being. <i>Journal of Occupational Psychology</i> , 52, 129–148. See also Shalley, C. E., Gilson, L. L., & Blum, T. C. (2000). Matching creativity requirements and the work environment: Effects on satisfaction and intentions to leave. <i>Academy of management journal</i> , 43(2), 215–223.	1	Taking everything into consideration, for the past 24 hours ... how do you feel about your life as a whole?
Job satisfaction	Warr, P. B., Cook, J. D., & Wall, T. D. (1979). Scales for the measurement of some work attitudes and aspects of psychological well-being. <i>Journal of Occupational Psychology</i> , 52, 129–148. See also Shalley, C. E., Gilson, L. L., & Blum, T. C. (2000). Matching creativity requirements and the work environment: Effects on satisfaction and intentions to leave. <i>Academy of management journal</i> , 43(2), 215–223.	1	Taking everything into consideration, for the past 24 hours ... how do you feel about your job as a whole?

Demands placed on worker	Butler, A., Grzywacz, J., Bass, B., & Linney, K. (2005). Extending the demands-control model: A daily diary study of job characteristics, work-family conflict and work-family facilitation. <i>Journal of occupational and organizational psychology</i> , 78(2), 155–169.	1	I had too many demands on me in the past 24 hours.
Perception of time progress	Self-developed	1	Over the past 24 hours how did time seem to progress?
Alcohol consumption	NHSDS See also Weiss, N. H., Bold, K. W., Contractor, A. A., Sullivan, T. P., Armeli, S., & Tennen, H. (2018). Trauma exposure and heavy drinking and drug use among college students: identifying the roles of negative and positive affect lability in a daily diary study. <i>Addictive behaviors</i> , 79, 131–137.	1	How many standard drinks did you have today?

Appendix D Interview study

D.1 Research methods

This section provides detailed descriptions of the samples that were included in the interview study, the selection process, the demographics and interview methods, and main analysis approaches.

D.1.1 Interview study sample

Participant nomination and selection

To source participants for this study, members of the research reference group were asked to nominate potential interviewees. In addition, members of the researchers' network were contacted, as well as other employers and social workers. Interviewees were selected from a pool of 49 interview nominees, representing various types of FIFO work (current, $n = 40$) and non-FIFO work (former; $n = 9$), and under consideration of industry (oil and gas or mining), roster, gender and whether they were contractors or operators. Participants were selected based on the general demographics for FIFO workers and non-FIFO workers (based on Tynan et al., 2016, 2017) and this project's survey sample (see Section 4.2.4). In doing so, a balanced sample that represents various types of FIFO workers and is as best as possible aligned with the make-up of the FIFO workforce was generated.

Participants were contacted via e-mail or phone calls. Some of the selected participants did not reply or expressed no interest in participating in the study. Those who chose not to participate were replaced with another participant off the nominee list by determining which demographics would fit best into the selection.

Sample demographics

Below the demographics of the groups that participated in the interview study (FIFO workers, partners and former FIFO workers and their partners²⁹) are described.

Current FIFO workers and partners

FIFO workers ($n = 24$) and either a partner, family member or friend ($n = 16$) were interviewed (see Table D.1). The final FIFO worker sample contained 83.3% men, and their partners were mostly women (81.3%). The majority of FIFO workers interviewed were married or in a domestic partnership (79.2%), and were most commonly aged between 45 and 54 (37.5%).

Table D.1

Overview of FIFO worker interviewee demographics (personal characteristics)

FIFO Worker Gender		Partner/Friend/Family Member Gender	
Male	83.3%	Male	20.0%
Female	16.7%	Female	80.0%
Other	0%	Other	0%
FIFO Worker Age (M= 44.0; SD = 10.3)		Marital status	
< 24	0%	Single	21.8%
25–34	25.0%	Married/domestic partnership	79.2%
35–44	20.8%		
45–54	37.5%		

²⁹ Note. Reference to "partner/spouse" within this document is inclusive of family and friends that were also interviewed

55+

16.7%

Note. $n = 40$ (24 workers, 16 partners/friends/family members)

The workers had, on average, worked in FIFO arrangements for 9.2 years, ranging from 1.5 to 23 years (see Table D.2). Workers were either employed by an operator (54.2%) or a contractor (45.8%), and most commonly commuted to site via FIFO (87.5%). The majority of participants worked within the mining industry (62.5%) or oil and gas sector (16.7%). The most common roster undertaken was “other” rosters (41.7%; e.g. 28 days on, 42 days off; five days on, four off; three days on, two off), and the “two weeks on, one week off” roster (25.0%).

Table D.2

Overview of FIFO worker interviewee demographics (workplace characteristics)

Role		Commute	
Operator	54.2%	FIFO	87.5%
Contractor	45.8%	DIDO	8.3%
Industry		BIBO	4.2%
Construction	8.3%	Roster	
Mining	62.5%	4 weeks on/1 off	8.3%
Oil and gas	16.7%	3 weeks on/1 off	4.2%
Both construction & mining	8.3%	2 weeks on/1 off	25.0%
Other	4.2%	2 weeks on/2 off	12.5%
Years in FIFO		8 days on/6 off	4.2%
M=9.2, SD=6.4		5 days on/2 off	4.2%
		Other	41.7%

Note. $n = 40$ (24 workers, 16 partners/friends/family members)

Former FIFO workers and partners

Besides FIFO workers currently working within the industry, the study’s scope was extended to also include the experiences of former FIFO workers (see Table D.3). Additional interviews with former FIFO workers ($n = 3$) and their partners ($n = 3$) were conducted. The former FIFO workers were all male, and between the ages of 37 and 60, with two currently within a domestic partnership (66.7%).

Table D.3

Overview of former FIFO worker interviewee demographics (personal characteristics)

FIFO Worker Gender		Partner/Friend/Family Member Gender	
Male	100%	Male	33.3%
Female	0%	Female	66.7%
Other	0%	Other	0%
FIFO Worker Age (M= 50.0; SD = 11.8)		Marital status	
< 24	0%	Single	33.3%
25–34	0%	Married/domestic partnership	66.7%
35–44	33.3%		
45–54	33.3%		
55+	33.3%		

Note. $n = 6$ (three workers, three partners/friends/family members)

During their time within the FIFO lifestyle, workers were predominantly employed by a contractor (66.7%), or both operator and contractor (33.3%). FIFO workers commuting via FIFO and DIDO (66.7%) were on a variety of shifts, including: four weeks on/one week off (33.3%), three weeks

on/one week off (33.3%) and two weeks on/two weeks off (33.3%). Former FIFO worker tenure ranged from 7 to 40 years ($M = 22.3$, $SD = 16.6$).

Table D.4

Overview of former FIFO worker interviewee demographics (workplace characteristics)

Role		Commute	
Operator	0%	FIFO	33.3%
Contractor	66.7%	DIDO	0%
Both operator & contractor	33.3%	FIFO & DIDO	66.7%
Industry		BIBO	0%
Construction	0%	Roster	
Mining	0%	4/1	33.3%
Oil and gas	33.3%	3/1	33.3%
Mining/oil & gas	66.7%	2/1	0%
Other	0%	2/2	33.3%
		8 days on/6 off	0%
		5 days on/2 off	0%
Years in FIFO	$M = 22.3$, $SD = 16.6$	Other	0%

Note. $n = 6$ (three workers, three partners/friends/family members)

D.1.2 Interview method

D.1.2.1 Semi-structured interview schedule

Interview questions were developed in a semi-structured interview framework (Scheele & Groeben, 1988). Semi-structured interviews generate rich data that offer an open approach to data collection ideal for exploration of complex issues (Flick, 1998). In line with guidelines for semi-structured interviewing (Scheele & Groeben, 1988), interviewers adhered to the schedules but did not limit themselves from following up on issues mentioned by participants that seemed relevant for further investigation. Each section of the interview schedule started with a broad opening question, which could easily be answered by participants (e.g. “Thinking back to the time before you started working in a FIFO role, how has your life changed since?”). This was followed by a question, aimed at making implicit knowledge more explicit (e.g. “Have you changed? How? Have you changed what you do? How you live?”). Where required, the interviewers would also ask “direct” questions to re-examine answers and to stimulate reflection (e.g. “Can you tell me more about _____?”).

A major strength of the interview schedule was that it was constructed to allow for exploration into the potential changes in mental health and wellbeing of workers and partners across the four main roster phases, namely: 1) time on site, 2) transition home, 3) time off (R&R), and 4) transition to site.

The current FIFO worker interviews (see Appendix D.2 for interview schedule) focussed on the FIFO worker and partner experience with FIFO work and lifestyle, including: the demands they experience, resources and coping strategies they employ during each phase of a roster.

Whilst the former FIFO worker interview (see Appendix D.4 for interview schedule) questions were developed through the adaptation of the current FIFO interview questions, they focussed on the mental health and wellbeing effects of FIFO work both retrospectively and in the longer term after finishing with FIFO work employment; the remaining questions were developed in consistency with the project goals and objectives—more specifically, the mental health and wellbeing changes since finishing FIFO work, the positive and negative aspects of FIFO worker, how workers and partners

experience the transition between the FIFO and non-FIFO lifestyle, changes in relationships, and how the worker and partner (incl. family) adapted to the change, with partner (of former FIFO) interviews containing questions on relationships, social life, and the mental health and wellbeing of the partner.

During the interviews, participants were not explicitly prompted towards specific mental health and wellbeing aspects, specific demands, or resources or strategies in relation to FIFO work to avoid priming towards characteristics in their responses. All questions were open, non-leading questions that would engage participants in open reflection.

D.1.2.2 Wellbeing graphs

A key element of the current FIFO worker interview schedule was the use of a Wellbeing Graph that also allowed participants to reflect on their experiences across four roster phases. The graphs were designed to capture the variation and trajectory of mental health and wellbeing of works and their partners across their current swing.

Participants were given two pre-prepared graphs; on one they were asked to draw how they feel over the course of their current swing, and on the other how they thought their partner feels³⁰ across the course of their current swing (see Figure D.5 for example). This approach was taken to first engage participants in a more general reflection about their experiences across the swing in a non-threatening manner, and to prepare them for more detailed reflection later on during the interviews. In many interviews the graph proved to be a good opening and reference point for interviewees. Questions during the interview then referred back to each of the roster phases to explore experiences, demands and resources, and strategies in more detail (see Figure D.6 for completed graph).

³⁰ The use of “how your feel” is equated with self-evaluation of worker and partner mental health and wellbeing.

Please sketch how you feel over the course of the current swing



Figure D.5. Example pre-prepared graph to enable participants to reflect upon how they feel over a course of the roster.

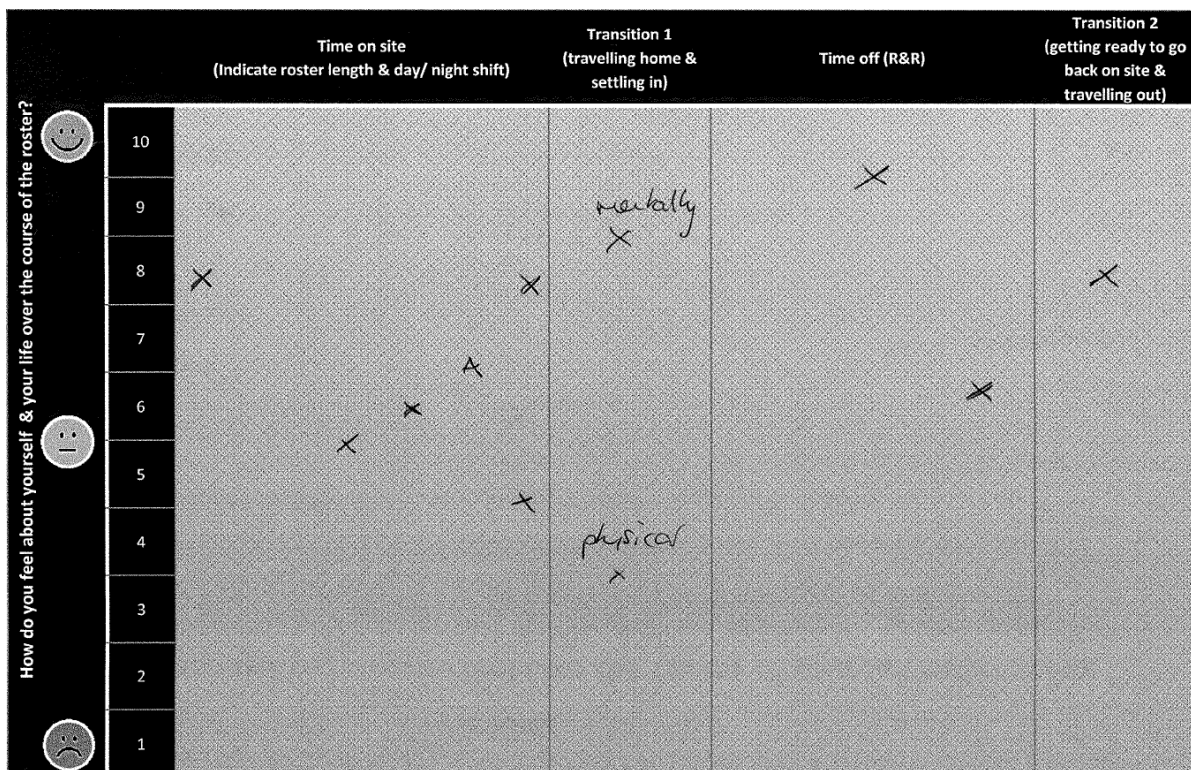


Figure D.6. Example response from a FIFO worker.

D.1.2.3 Interview pilot

An interview pilot was conducted with FIFO workers ($n = 2$) and partners ($n = 2$) to establish whether the interview questions would illicit responses relevant to the KEQs. Each interview was conducted by one of two interviewers, who did not conduct the interviews in the main study, for initial evaluation. During these pilot interviews, participants were asked questions that were included in the interview outline and they were asked to respond as they would within the main interview study. They were also invited to provide feedback on the questions, and were given information regarding the content of the intended questions. The interviewers noted down participants' responses to the questions. Following each pilot interview, the two interviewers exchanged notes about the interview flow and content generation, and interview questions were then refined as required. Following the fourth interview, both interviewers assessed and established that the interview questions had adequately tapped into content as intended.

D.1.3 Interview procedure

Participants were contacted via e-mail or phone to set up an interview time. Depending on the participants' availability, interviews were set up in a face-to-face setting, the telephone or through FaceTime or Skype. To ensure the participants' anonymity from the work setting, the interviews were held during the FIFO workers' R&R (rest and relaxation).

Current FIFO worker and partner

Interviews were carried out by two trained interviewers with substantial experience in conducting interviews, and whom had experience with and understanding of the FIFO lifestyle. The interviews were conducted either at the interviewee's home, over the phone, or in a public space, such as a library/coffee shop/park etc. FIFO workers and partners were interviewed separately. The average interview duration was 56 minutes ($SD = 1$, range = 21min–93min; average = 65min for FIFO workers and 52min for partners).

Former FIFO worker and partner

Interviews were carried out by one trained interviewer and an Industrial and Organisational Psychologist Masters student (provisional psychologist). The average interview duration was 34 minutes ($SD = 1$, range = 17min–54min; average = 45min for FIFO workers and 23min for partners).

D.1.4 Interview content analysis

Interviews were transcribed verbatim by a confidential third party organisation, *Transcription Australia*. A quality check of 20% of the interviews indicated the transcripts were of sufficient quality. Interview content was then de-identified by removing all individual names, site and company names. Next, data was analysed using a qualitative method: content analysis based on Gioia, Corley and Hamilton (2013; Gioia Method). This established method of analysis allows the systematic classification of themes and patterns in interviewee responses that can be replicated, and identifies the frequencies and nature of coded content.

D.1.4.1 Coding scheme

Interviews were analysed by two raters using NVivo Plus, a qualitative data analysis software program.

To analyse the current FIFO worker and partner interviews a coding scheme was developed (see Appendix D.3 for final current FIFO coding scheme). In line with the Gioia Method (2013), as applied by Gerpott, Lehmann-Willenbrock and Voelpel (2017), first-order codes (“Roster Phases” and “Attributes”) were developed through review of existing literature. Second-order codes (“Specific Attributes”) (second order also deductive), were more detailed and used to capture the specific content of each first-order code (see Figure D.7 for current FIFO coding scheme overview). These codes were derived from the findings of the thematic analysis presented as part of the literature review (see Section 3). They covered work design (Hackman and Oldham; JCM, 1976; see also Morgeson & Humphrey, 2006), home attributes (home demands and home resources; Beutell, 1985; Frone et al., 1992; Voydanoff, 2004), mental health and wellbeing (Lamers, Westerhof, Bohlmeijer et al, 2010; Liang, Gilmore & Chikritzhs, 2016; Naimi, Stockwell, Saitz, & Chikritzhs, 2017; Witte, Fitzpatrick, Warren, Schatschneider & Schmidt, 2006) and coping strategies (Carver, 1997).

To analyse the former FIFO worker and partner interview the current FIFO coding scheme was adapted (see Appendix D.4 for final former FIFO coding scheme). First-order codes were adapted to distinguish the stages of work (time during FIFO, transitioning from FIFO, and post FIFO), namely, “Work Phase”. With the “Attributes” codes remaining the same. The first-order codes were further refined into sub-concepts (second order also deductive), extrapolating terms to capture specific interview content unique to former FIFO workers and partners (see Figure D.8 for former FIFO coding scheme overview).

Current FIFO Coding Scheme

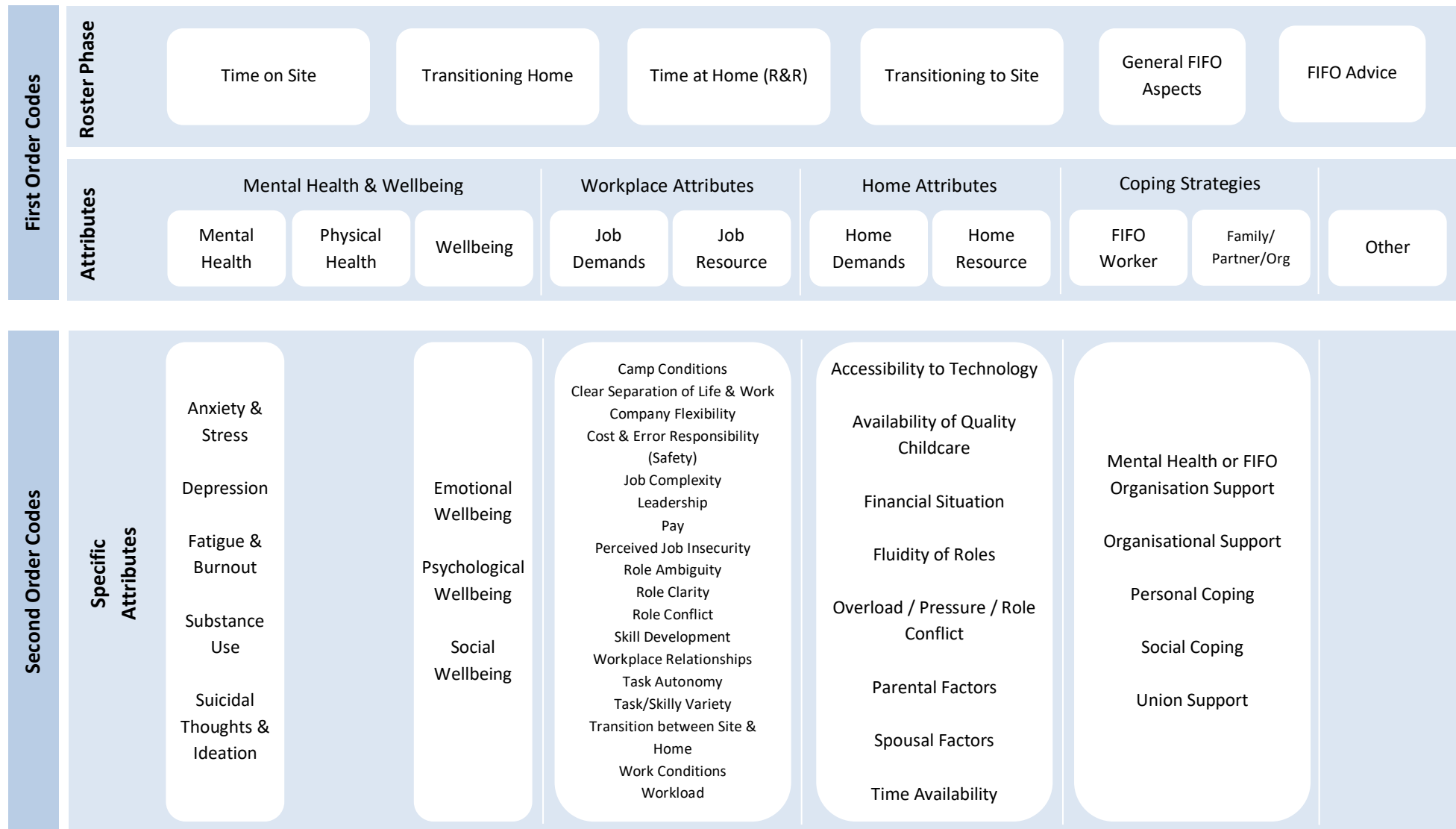


Figure D.7. Overview of final current FIFO coding scheme

Former FIFO Coding Scheme

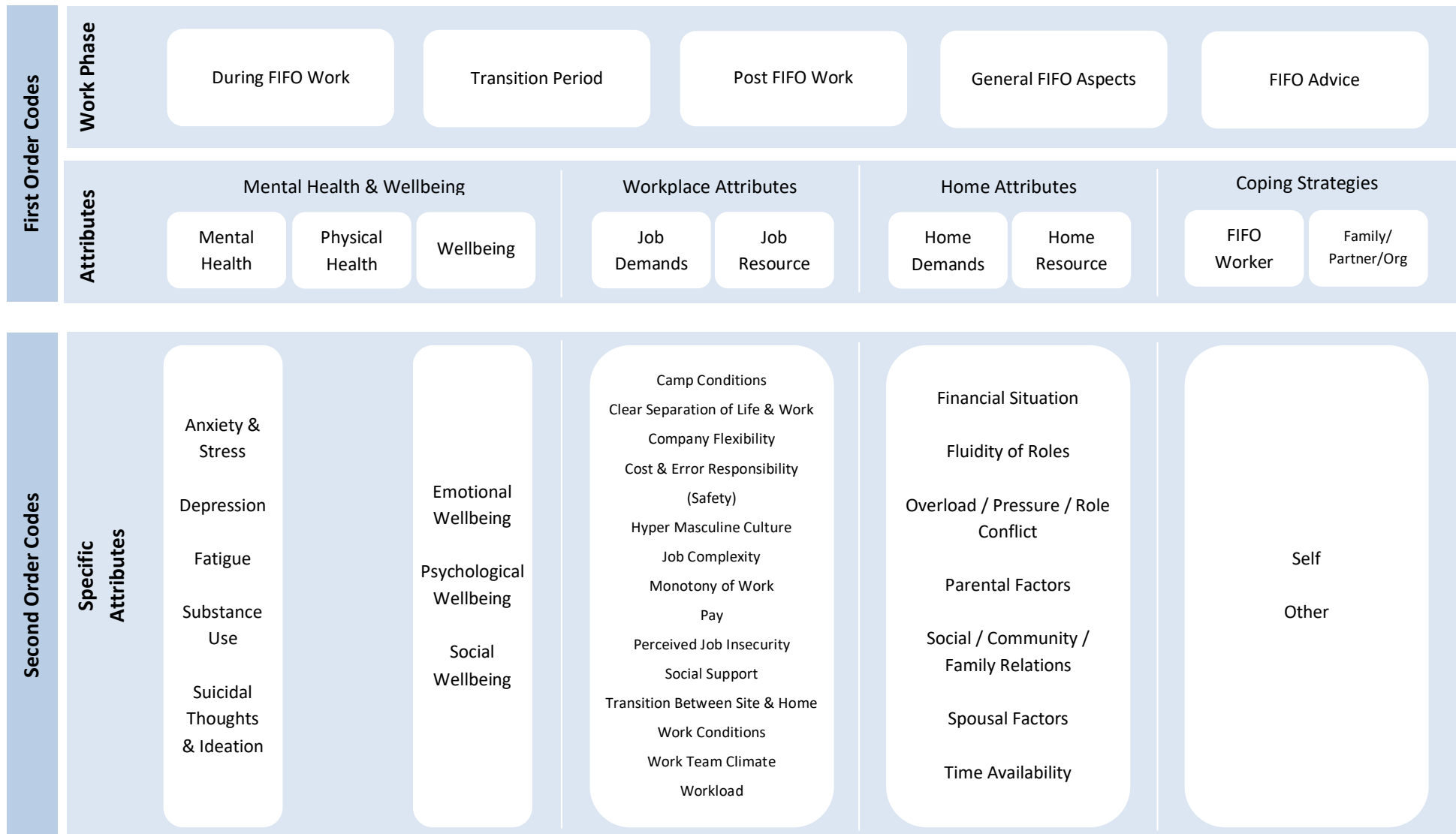


Figure D.8. Overview of final former FIFO coding scheme

In line with guidelines by Mayring (2000), these pre-defined themes (codes) were reviewed and refined during the coding process to allow additional themes to emerge, and were inductively added as codes to the interview coding framework. The codes added through this process and the changes to the current FIFO coding scheme are detailed below in Table D.9.

Table D.9
 Summary of changes made to the current FIFO coding scheme

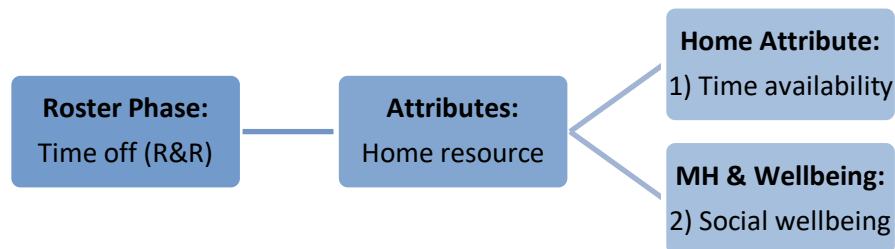
Code	Change to Coding Scheme
<i>Workplace Attributes</i>	
Skill development	Code emerged from the interview content.
Workplace relationships	Expanded “social support” to be inclusive of all interpersonal interactions on site (e.g. social support, friendships, bullying etc.)
Social climate	Expanded to include aspects of social culture on site (e.g. bullying, support, friendships etc.).
Camp conditions	Expanded to also include room conditions, wifi-availability and phone connectivity.
Leadership	Code emerged from the interview content.
Monotony of work activities	Code emerged from the interview content.
<i>Home Attributes</i>	
Fluidity of roles	Code emerged from the interview content.
Financial situation	Code emerged from the interview content.
Enabling resources	Removed code, content subsumed under “spousal factors”.
Psychological rewards	Removed code, content applied to “spousal factors” and “parental factors”.
Spousal factors	Code was expanded inductively based on interview content.
Parental factors	Code was expanded inductively through the interview content.
<i>Mental Health & Wellbeing</i>	
Anxiety & stress	Code emerged from the interview content.
Fatigue & burnout	Code emerged from the interview content.

Note. Changes resulted from the co-coding process and discussions between raters throughout the coding process.

D.1.4.2 Coding Instructions

As previously mentioned, two independent raters were provided with explicit instructions for coding to ensure consistency and highest quality of coding in line with Mayring (2000; see Appendix D.3.1 for coding instructions). Raters were provided with background information about the interview study and an overview of the analysis to be undertaken. They familiarised themselves with the coding scheme and reviewed the interview. Raters then analysed the interview content by identifying meaning units within responses, defined as “words, sentences or paragraphs containing aspects related to each other through their content and context” (Graneheim & Lundman, 2004, p. 106). Raters coded as many meaning units as possible into the pre-defined codes while also allowing for the development of new codes for meaning units that did not fit into the pre-defined categories. The coding followed a stepped process so that each meaning unit was mutually exclusively coded into a first-order code: “Roster Phase” and “Attributes” for current FIFO workers and “Work Phase” and “Attributes” for former FIFO workers. In the final step, each meaning unit was then allocated into one or more “Specific Attributes”, as required (however, only one per “Attributes” area). For clarity, the below figure illustrates this process.

Meaning unit (example): “I enjoy my R&R as I have lots of time to catch up with my friends.”



D.1.4.3 Interrater Reliability

Current FIFO Workers & Partners

Reliability of the coding was assured via a co-coding procedure. In the first step, 10% of the interviews ($n = 1$ partner and $n = 3$ FIFO worker interviews) were co-coded by two raters to ensure the coding scheme was reliable. Cohens Kappa (Cohen, 1960) indicated sufficient but not very high agreement between the two raters at $\alpha = 0.641$ (ranging from $= 0.602$ to 0.733). In line with suggested guidelines (Mayring, 2000), after the 10% of interviews were coded, both raters met to discuss difficulties and issues in relation to the coding so that the coding scheme could be refined. In the second step, the raters re-coded the same four interviews using the refined coding scheme, which indicated the reliability of the coding had improved ($\alpha = 0.736$, ranging from $= 0.634$ to 0.813). Finally, after 50% of interviews had been coded, a final round of co-coding of a different set of interviews (10%; $n = 2$ partner and $n = 2$ FIFO worker) was undertaken and re-affirmed consistency in coding between raters, showing that the kappa alpha level had remained stable at a high level throughout the analysis ($\alpha = 0.750$, range $= 0.716$ to 0.789).

Former FIFO Workers & Partners

To establish interrater reliability and correct interpretation of the former FIFO data to codes, 10% of the interviews ($n = 1$ FIFO worker) were co-coded by two-raters. As per Mayring (2000), after the co-coding process, both raters met to discuss difficulties and any issues in relation to the coding. The kappa alpha level was found to be sufficient ($\alpha = 0.738$), which affirmed that the coding scheme was constructed with adequate detail for the similar interpretation of data by raters. The remaining interviews were subsequently coded one rater.

D.2 Interview schedules

Current FIFO worker interview schedule

First of all: thank you very much for agreeing to take part in this interview; I appreciate the time this is taking out of your day. The interview is part of a study conducted by the University of Western Australia and is funded by the WA Mental Health Commission.

The project explores how fly-in, fly-out work affects workers and their partners. We are in particular interested in the specific aspects of FIFO workplaces, how you experience them, and in what ways they may affect how you feel. The interview is an opportunity for us as researchers to learn from your experiences and to capture them. As a FIFO worker, you will have the best insights into FIFO work itself as well as how it makes you feel. There are no right or wrong answers and you can skip any questions you do not want to answer.

The interview will take 45–60 min. Will that fit with your schedule?

During the interview, I will ask you questions around the different phases of your roster. As a researcher I am bound to confidentiality and I can assure you that your individual data will be de-identified and kept confidential at the UWA. However, de-identified quotes that cannot be traced back to you might be used in reports.

Nevertheless, if you don't want to answer some of the questions, please feel free to say so!

I would like to tape this interview, however, only with your permission. All data will be kept confidential and the tape will be wiped once we have typed up the data.

→ Do I have your permission to tape the interview?

Also, with your permission, I would like to use a transcription service to type up the interviews. The transcription service will also be bound to confidentiality.

→ Would you permit me to do so?

Do you have any questions before we start?

I have now started the recorder. Can you please confirm that you are happy to have this interview recorded?

Interview Questions

General Questions	Purpose/Concept targeted
<p>G1. What were the main reasons for you to start working in a FIFO role? How did you make that decision?</p> <ul style="list-style-type: none"> • What is the main reason why you continue to work in a FIFO role? 	Reason to FIFO (motivational)
<p>G2. What is the best and what is the worst thing about working in a FIFO role?</p>	Demands and resources generally
<p>G3. Thinking back to the time before you started working in a FIFO role, how has your life changed since?</p> <ul style="list-style-type: none"> • Have you changed? How? Have you changed what you do? How you live? • Has your partner changed? How? • Has your social circle changed? How? 	FIFO impact on life

For the next part of the interview, we will talk about your experiences across the whole roster—while you are on site/getting back home/at home/leaving again. For each phase, I will have a couple of questions for you.

Mental Health & Wellbeing Graph

To start off, please think about a full roster swing. Please think about how you generally feel as you go along your roster, starting with when you are on site. I would like you to draw a line that shows how you feel about yourself and your life, ranging from extremely bad to extremely good. Feel free to use the full range of space if you want to.

Note: → Let them draw first, then talk through it using the questions in the graph as a guide. See graph for participants (encourage them to use the full scale). This is supposed to be a brief run through—take no more than 10–15 minutes if possible. Emphasise this is about **how they feel**.

Time on site	Transition 1 (travelling home and settling in)	Time off (R&R)	Transition 2 (getting ready to go back on site and travelling out)
<p>MH 1 In your own words, tell me briefly how you feel/about your experience while you are away on site?</p> <p>Tell me about your feelings.</p>	<p>MH 2 How do you feel/what is your experience while you are preparing to come home again (while you are still on site) and travelling?</p> <p>Tell me about your feelings.</p>	<p>MH 4 How do you feel/what is your experience during your time off?</p> <p>Tell me about your feelings.</p>	<p>MH 5 How do you feel/what is your experience when you get ready to go back to site and leave home?</p> <p>Tell me about your feelings.</p>

MH 3 How do you feel/what is your experience when you come home?

On Site	Purpose/Concept targeted
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Next, I would like to talk about the things that you encounter and experience during your roster, starting with your time away on site. I will ask you about specific examples in the next couple of questions.

1. Thinking about the last time you were away: Can you tell me very briefly what a typical day looks like for you when you are on site, starting with you getting up? What do you usually do?

1.1 How does your work (what you are doing in your job and living on site) affect you when you are on site?

- What are specific attributes of **your work/being on site** that make you feel good about yourself and your life (what you do on the job and living on site)? What aspects help you to cope with being away? Things that make it easier.
- What are specific attributes of **your work/being on site** that make you feel bad about yourself and your life (what you do on the job and living on site)? Things that make it harder.

Demands, resources and strategies on site

1.2 How do you think your partner or family is affected by you being on site?

2. What do you do to make sure you are feeling/ things are ok while you are on site? What do you do when things get difficult while you are on site? What do you do to look after yourself while you are working? Which strategies help and which don't?

Examples: things that you enjoy doing, supervisor/colleague support, company support, seeking help from another organisation, a community or friends/family.

Demands, resources and strategies on site

Transition Home	Purpose/Concept targeted
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Next, I want to talk about what the first few days are like when you come home from site.

3. Tell me very briefly: What is it like for you when you first come home? What are the first days like?

- How long does it take you and your partner to settle in?
- What do you like most about coming home? What do you usually do?

Intro question to R&R
 Demands and resources, strategies

-
- 3.1 What are some of the strategies or ways that you yourself use to adjust (getting used) to being home again?
- 3.2 What aspects of your job make it easier for you to adjust? What aspects make it hard?
- 3.3 How do you try and support your partner in adjusting?
-

Time at Home (R&R)	Purpose/Concept targeted
After the settling-in period, when you are on your R&R ...	
<p>4. During your R&R, how does your typical day change compared to when you are away? What do you like to do? What do you not like?</p> <p>4.1 How are your days structured when you are at home?</p> <ul style="list-style-type: none"> • Do you deliberately follow a particular structure? • How does the structure affect you? <p>4.2 How do you think your partner or family is affected by you being home again?</p> <p>4.3 How does your work (what you are doing in your job and living on site) affect you when you are at home?</p> <ul style="list-style-type: none"> • What are specific attributes of your work that make you feel good about yourself and your life while you are at home? What aspects help you to cope with being at home? Things that make it easier. • What are specific attributes of your work that make you feel bad about yourself and your life while you are at home? Things that make it harder. 	<p>Impact of presence of partner, structure</p>
<p>5. What do you do to make sure you are feeling/ things are ok while you are away? What do you do when things get difficult while you are at home? What do you do to look after yourself while you are at home? What do you do to make it work well? Which strategies help and which don't?</p> <p>Examples: things that you enjoy doing, supervisor/colleague support, company support, seeking help from another organisation, a community or friends/family.</p>	<p>Impact of presence of partner, structure</p>

Transition to Site	Purpose/Concept targeted
At the end of your R&R when you go back to site again ...	
<p>6. When you get ready to leave for site again ... How do you prepare to leave again?</p>	<p>Transitioning strategies</p>

7. Tell me very briefly: What is it like for you when you leave for site again? What are the first days like back on site?

- How long does it take you and your partner to settle back into you being away?

7.1 What are some of the strategies or ways that you yourself use to adjust (getting used) to being away again?

7.2 What aspects of your job make it easier for you to adjust? What aspects make it hard?

7.3 How do you try and support your partner in adjusting?

Transitioning resources demands and strategies

Alcohol ³¹ Use	Purpose/Concept targeted
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8. Now that we have covered all the phases of the roster, looking across it all, at what point would you say do you drink the most alcohol/more than usual?

Alcohol use

Family	Purpose/Concept targeted
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Finally, I would like to talk to you a little bit more about your family/partner.

9. How do you think your FIFO work affects your partner?

- What about FIFO work works well for your partner? What do they enjoy?
- What do they find hard about FIFO?
- Would he/she want you to quit?

Partner effects of FIFO work

10. Have you thought about/ discussed with your partner to quit FIFO work?

- What was going on at the time?
- What lead you to continue with the FIFO work?

Tap into specific issues/ demands

11. If given the option to move your family closer to the location where your work is, how would you feel about that? Why/ why not?

Motivation to FIFO

12. Finally, what advice would you give someone who is starting to work in a FIFO role now?

Strategies, and support from company, job crafting

³¹ Substance use (incl. illicit drugs) amongst FIFO workers and partners was captured within the survey study. Illicit drug use was not explored via the interview study as it was deemed not the most appropriate method for capturing this information.

These are all the questions I have prepared for our conversation. Thank you very much for taking part. I really appreciate you taking the time to talk to me today. We will use the information you provided today to identify how FIFO work affects people over the course of the roster and what specific attributes of FIFO work contribute to more or less positive and negative effects. Do you have any questions about the interview? Any feedback? Is there anything you would like to add? Please feel free to contact me via e-mail, if you have any other questions or would like more information regarding the project.

Current FIFO partner interview schedule

First of all: thank you very much for taking part in this interview; I appreciate the time this is taking out of your day. The interview is part of a study conducted by the University of Western Australia and is funded by the WA Mental Health Commission.

The project explores how fly-in, fly-out work affects workers and their partners. We are in particular interested in the specific aspects of FIFO workplaces, how you experience them, and in what ways they may affect how you feel as a partner. The interview is an opportunity for us as researchers to learn from your experiences and to capture them. As a FIFO partner, you will have the best insights into FIFO life itself as well as how it makes you feel. Your experiences are the focus of this interview. There are no right or wrong answers and you can skip any questions you do not want to answer.

The interview will take 45–60 min. Will that fit with your schedule?

During the interview, I will ask you questions around the different phases of your partner's roster. As a researcher I am bound to confidentiality and I can assure you that your individual data will be de-identified and kept confidential at the UWA. However, de-identified quotes that cannot be traced back to you might be used in reports.

Nevertheless, if you don't want to answer some of the questions, please feel free to say so!

I would like to tape this interview, however, only with your permission. All data will be kept confidential and the tape will be wiped once we have typed up the data.

→ Do I have your permission to tape the interview?

Also, with your permission, I would like to use a transcription service to type up the interviews. The transcription service will also be bound to confidentiality.

→ Would you permit me to do so?

Do you have any questions before we start?

I have now started the recorder. Can you please confirm that you are happy to have this interview recorded?

Interview Questions

General Questions	Purpose/Concept targeted
G1. What were the main reasons for your partner to start working FIFO? How did you make that decision? <ul style="list-style-type: none"> What is the main reason why your partner continues to work in a FIFO role? 	Reason to FIFO (motivational)
G2. What is the best and what is the worst thing about having a partner that works in a FIFO role?	Demands and resources generally
G3 How do you see your role as a FIFO partner? How would you describe what you do in the role of a FIFO partner?	Role identity as coping mechanism
G5. Thinking back to the time before your partner started working in a FIFO role, how has your life changed since? <ul style="list-style-type: none"> Have you changed? How? Have you changed what you do? How you live? Has your partner changed? How? Has your social circle changed? How? 	FIFO impact on life

For the next part of the interview, we will talk about your experiences across the whole roster—while your partner is on site/getting back home/at home/leaving again. For each phase, I will have a couple of questions for you.

Mental Health & Wellbeing Graph

To start off, please think about a full roster swing. Please think about how you generally feel as you go along your partner's roster, starting with when they have left to go on site. I would like you to draw a line that shows how you feel about yourself and your life, ranging from extremely bad to extremely good. Feel free to use the full range of space if you want to.

Note: → Let them draw first, then talk through it using the questions in the graph as a guide. See graph for participants. This is supposed to be a brief run through—take no more than 10–15 minutes if possible. **Emphasise this is about how they feel, not their partner.**

Time on site	Transition 1 (travelling home and settling in)	Time off (R&R)	Transition 2 (getting ready to go back on site and travelling out)
MH 1 In your own words , tell me briefly how you feel/about your experience while your partner is away?	MH 2 How do you feel/what is your experience while you are preparing for your partner to come	MH 4 How do you feel/what is your experience during your partner's time off?	MH 5 How do you feel/what is your experience when your partner gets ready to go back to site and leave home?

Tell me about your feelings.

home again (while they are still on site)?
Tell me about your feelings.

Tell me about your feelings.

Tell me about your feelings.

MH 3 How do you feel/ what is your experience when they come home?

On Site	Purpose/Concept targeted
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Next, I want to talk a little bit to you about the things that you encounter and experience during your partner's roster, starting with their time away on site. I will ask you about specific examples in the next couple of questions.

1. Thinking about the last time your partner was away: Can you tell me very briefly what a typical day looks like for you when your partner is on site, starting with you getting up? What do you usually do?

1.1 How do you think you are affected by your partner being on site?

1.2 How does **your partner's work** (what he/she is doing on the job and living on site) affect you when they are away?

- What are specific attributes of **their work/ their life** on site that make you feel good about yourself and your life while they are away? What aspects help you to cope with them being away? Things that make it easier.
- What are specific attributes of **their life** on site that make you feel bad about yourself and your life while they are away? Things that make it harder.

Demands, resources and strategies on site

2. What do you do to make sure you are feeling/ things are ok while your partner is away? What do you do when things get difficult while they are away? What do you do to look after yourself while your partner is away? What do you do to make it work well? Which strategies help and which don't?

Examples: things that you enjoy doing, supervisor/colleague support, company support, seeking help from another organisation, a community or friends/family.

Demands, resources and strategies on site

Transition Home	Purpose/Concept targeted
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Next, I want to talk about what the first few days are like when your partner comes home from site.

3. Tell me very briefly: What is it like for you when your partner first comes home? What are the first days like?

- How long does it take them and you to settle in?
- What do you like most about them coming home? What do you usually do?

3.1 What are some of the strategies or ways that you yourself use to adjust to them being home again?

3.2 What aspects of your partner's job make it easier for you to adjust? What aspects make it hard?

3.3 How do you try and support them in adjusting?

Intro question to R&R
Demands and resources

Time at Home (R&R)	Purpose/Concept targeted
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After the settling-in period, when you are on your R&R ...

4. During your partner's R&R, how does your typical day change compared to when they are away? What do you like to do? What do you not like?

4.1 How are your days structured when your partner is at home?

- Do you deliberately follow a particular structure?
- How does the structure affect you?

4.2 How do you think you are affected by your partner being home again?

4.3 How does **your partner's work** (what he/she is doing on the job and living on site) affect you when they are at home?

- What are specific attributes of **their work/ their life on site** that make you feel good about yourself and your life while they are at home? Things that make it easier/help you cope.
- What are specific attributes of **their work/their life** on site that make you feel bad about yourself and your life while they are at home? Things that make it harder.

Impact of presence of
partner

5. What do you do to make sure you are feeling/ things are ok while your partner is at home? What do you do when things get difficult while they are at home? What do you do to make it work well?

Which strategies help and which don't?

Examples: things that you enjoy doing, supervisor/colleague support, company support, seeking help from another organisation, a community or friends/family.

Impact of presence of
partner

Transition to Site	Purpose/Concept targeted
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At the end of your partner's R&R when they go back to site again.

6. When you get ready for your partner to leave for site again ...
How do you prepare for them to leave again?

Transitioning strategies

7. Tell me very briefly: What is it like for you when your partner first leaves for site again? What are the first days like?

- How long does it take them and you to settle back in to them being away?

7.1 What are some of the strategies or ways that you yourself use to adjust to them being away again?

7.2 What aspects of your partner's job make it easier for you to adjust? What aspects make it hard?

7.3 How do you try and support them in adjusting?

Transitioning resources demands and strategies

Alcohol ³² Use	Purpose/Concept targeted
8. Now that we have covered all the phases of the roster, looking across it all, at what point would you say do you drink the most alcohol/more than usual?	Alcohol use

Family	Purpose/Concept targeted
Finally, I would like to talk to you a little bit more about your family/partner.	
9. How do you think your partner's FIFO work affects them? <ul style="list-style-type: none"> • What about FIFO work works well for them? What do they enjoy? • What do they find hard about FIFO? • Would he/she want to quit? 	Partner effects of FIFO work
10. Have you thought about/asked your partner to quit FIFO work? <ul style="list-style-type: none"> • What was going on at the time? • What lead him/her to continue with the FIFO work? 	Tap into specific issues/demands
11. If given the option to move closer to the location where your partner works, how would you feel about that? Why/ why not?	Motivation to FIFO
12. Finally, what advice would you give someone who is starting in a FIFO role now?	Strategies, and support from company, job crafting

³² Substance use (incl. illicit drugs) amongst FIFO workers and partners was captured within the survey study. Illicit drug use was not explored via the interview study as it was deemed not the most appropriate method for capturing this information.

These are all the questions I have prepared for our conversation. Thank you very much for taking part. I really appreciate you taking the time to talk to me today.

We will use the information you provided today to identify how FIFO work affects people over the course of the roster and what specific attributes of FIFO work contribute to more or less positive and negative effects.

Do you have any questions about the interview? Any feedback? Is there anything you would like to add? Please feel free to contact me via e-mail, if you have any other questions or would like more information regarding the project.

D.3 Current FIFO Coding Scheme

First Order

First-order Codes	Code Definition
Work Phases³³	
Time on site	The timeframe in which the FIFO workers are on site.
Transitioning (to home)	The period of transition from site to home.
Time at home (R&R)	The time spent at home on R&R.
Transitioning (to site)	The period of transition from home to site.
General FIFO aspects	<p>Aspect of FIFO work that do not fall within the roster phases, rather that underlie the FIFO lifestyle.</p> <ul style="list-style-type: none"> Family (home): can include how generally FIFO has affected one's family, and changes over time. Work: can include elements contributing to the nature of the industry, and FIFO partner's work life (if relevant).
FIFO advice	Advice workers and partners provided to others considering a role within the FIFO environment.
Attributes³⁴	
Home attributes—family demands	<p>Structural or psychological claims associated with role requirements, expectations, and norms to which individuals must respond or adapt by exerting physical or mental effort.</p> <ul style="list-style-type: none"> Attributes that are described as a negative aspect of family life & social life.
Home attributes—family resources	<p>Structural or psychological assets that may be used to facilitate performance, reduce demands or generate additional resources (Voydanoff, 2004).</p> <ul style="list-style-type: none"> Attributes that are described as a positive aspect of family life and social life.
Mental health and wellbeing—mental health	<p>Can include mental ill-health/disorder, mental health problems, substance use, anxiety, fatigue etc.</p> <ul style="list-style-type: none"> Mental ill-health/disorder: "A mental disorder is a syndrome characterized by clinically significant disturbance in an individual's cognition, emotion regulation, or behaviour that reflects a dysfunction in the psychological, biological, or developmental processes underlying mental functioning. Mental disorders are usually associated with significant distress or disability in social, occupational, or other important activities" (DSM 5, 2013, p. 20).

³³ The grouping concepts are mutually exclusive.

³⁴ The grouping concepts are mutually exclusive.

	<ul style="list-style-type: none"> • Mental health problem: A mental health problem also interferes with how a person thinks, feels and behaves, but to a lesser extent than a mental illness. Mental health problems are more common and include the mental ill-health that can be experienced temporarily as a reaction to the stresses of life (The Australian Government, Department of Health: http://www.health.gov.au/internet/publications/publishing.nsf/Content/mental-pubs-w-whatmen-toc~mental-pubs-w-whatmen-what; accessed 22/12/2017).
Mental health and wellbeing—wellbeing	State in which the individual realises their own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to their community (World Health Organization, 'Mental Health Action Plan: 2013–2020', Geneva, 2013, p. 6.)
Mental health and wellbeing—physical health	The state of physical health, more specifically, the ability to perform aspects of sports, job requirements and daily activities.
Coping strategies—carried out by others	<p>A careful plan or method for achieving a particular goal (note: in this case also short-term strategies are applicable; Merriam Webster learner's dictionary, accessed via http://www.learnersdictionary.com/definition/strategy 20/12/2017).</p> <ul style="list-style-type: none"> • Coping strategies undertaken by others such as: family members, partners, colleagues, organisations etc.
Coping strategies—carried out by the FIFO worker	<p>A careful plan or method for achieving a particular goal (note: in this case also short-term strategies are applicable; Merriam Webster learner's dictionary, accessed via http://www.learnersdictionary.com/definition/strategy 20/12/2017).</p> <ul style="list-style-type: none"> • Coping strategies undertaken by the FIFO worker.
Workplace attributes—job demands	<p>Aspects of jobs that require sustained and/or high levels of physical, mental, or emotional effort (e.g., time pressure, emotional demands).</p> <ul style="list-style-type: none"> • Attributes that are described as a negative aspect of the work.
Workplace attributes—job resources	<p>Aspects of a job that help employees achieve their work goals, to develop personally and to deal with job demands (Parker, 2014).</p> <ul style="list-style-type: none"> • Attributes that are described as positive aspects of the work.

Second Order

Second-order Codes	Code Definition
Home Attributes³⁵	
Accessibility to technology	Technology supporting communication with friends and family while on site (e.g. phone plan, FaceTime, Skype, compatible phone).
Availability of quality child care	The extent to which quality child care is available (preventative resource).
Financial situation	Worker (and partner) financial situation.

³⁵ The grouping concepts are mutually exclusive.

Fluidity of roles	The degree of fluidity in familial roles (FIFO worker and spouse) during stages of swing transitions.
Overload, pressure and role conflict (strain-based demand)	<p>Too much to do; a feeling of not doing justice to each role (spouse, household, parental).</p> <ul style="list-style-type: none"> • Unforeseen occurrences like accidents, emergencies (when partner at home isn't able to fix) • Refers to workload/level of commitment required • Workload/overload resulting from child care, cooking, laundry, cleaning, garden maintenance
Parental factors	<p>Factors associated with parenting and children can include:</p> <ul style="list-style-type: none"> • Family functioning • Impact of FIFO on children • Children's misbehaviour (Frone et al., 1992).
Spousal factors	<p>The quality of the relationship between spouses can include:</p> <ul style="list-style-type: none"> • Degree of conflict between couple (Frone et al., 1992) • Autonomy from spouse (e.g. spouse enjoys space) • Spouse independence—skills and abilities developed in one domain • Constructive/good communication • Dyadic relationship • Marital role quality
Time availability	<p>The degree to which the worker has time available (i.e. ample or restricted time) (Voydanoff, 2005; see also Beutell, 1985). Can include:</p> <ul style="list-style-type: none"> • Missing family occasions • Time-based conflicts • Time required/feeling short on time for cooking, laundry, cleaning, garden maintenance • Hobbies/travelling • Socialising with friends • Lack of family responsibility (i.e. more time whilst at home) • Ill relatives/dependants household
Mental Health & Wellbeing Attributes³⁶	
Emotional wellbeing	Positive feelings of satisfaction and happiness (Lamers, Westerhof, Bohlmeijer et al., 2010).
Psychological wellbeing	Effective functioning of the individual (including aspects such as: self-acceptance, personal growth, purpose in life, positive relations with others, autonomy, and mastery; Lamers, Westerhof, Bohlmeijer et al., 2010).
Social wellbeing	Effective functioning in community life (including aspects such as social integration, social contribution, social coherence, social actualisation and social acceptance; Lamers, Westerhof, Bohlmeijer et al., 2010).
Anxiety and stress	Anxiety is an emotion characterised by feelings of tension, worried thoughts and physical changes like increased blood pressure (from American Psychological Association, retrieved from http://www.apa.org/topics/anxiety/)

³⁶ The grouping concepts are mutually exclusive.

	index.aspx), and Stress http://www.apa.org/helpcenter/stress-kinds.aspx).
Depression	<p>Can include:</p> <ul style="list-style-type: none"> • Feeling sad or having a depressed mood • Loss of interest or pleasure in activities once enjoyed • Changes in appetite—weight loss or gain unrelated to dieting • Trouble sleeping or sleeping too much • Loss of energy or increased fatigue • Increase in purposeless physical activity (e.g. hand-wringing or pacing) or slowed movements and speech (actions observable by others) • Feeling worthless or guilty • Difficulty thinking, concentrating or making decisions
Fatigue and burnout	Physically and mentally tired/drained.
Substance use ³⁷	Smoking and alcohol consumption (Liang, Gilmore & Chikritzhs, 2016; Naimi, Stockwell, Saitz, & Chikritzhs, 2017).
Suicidal thoughts/ideation	<p>Can include (Witte, Fitzpatrick, Warren, Schatschneider & Schmidt, 2006):</p> <ul style="list-style-type: none"> • Fleeting and passive thoughts (I would be better off dead) • More active thoughts (I should kill myself) • Highly lethal thoughts, planning, and preparation (I have the ability and means to complete suicide)
Coping Strategies³⁸	
Personal coping strategies	Personal coping strategy (coping with respect to psychologically impactful and highly meaningful stresses; Carver, 1997).
Social support	Coping strategies that are used to support others.
Organisational support	Support received from employment organisation.
Union support	Support received from unions.
Mental Health/FIFO organisation support	<p>Support received from mental health organisations, such as:</p> <ul style="list-style-type: none"> • EAP • Psychologists
Work Attributes³⁹	
Camp conditions	The environment of the camp (both social and physical) (including but not limited to hazards, noise, temperature, cleanliness, wet mess, social activities; adapted from Morgeson & Humphrey, 2006), also

³⁷ Substance use (incl. illicit drugs) amongst FIFO workers and partners was captured within the survey study. Illicit drug use was not explored via the interview study as it was deemed not the most appropriate method for capturing this information.

³⁸ The grouping concepts are mutually exclusive.

³⁹ The grouping concepts are mutually exclusive.

	can include: room conditions, wi-fi availability and phone connectivity.
Clear separation of life and work	The ability to concentrate on the work at hand without allowing life aspects to interfere/disrupt, or work responsibilities encroaching on R&R time.
Company flexibility	Regarding choice of roster and shift preferences, taking time off for family events, ability to leave in cases of emergency, taking an extra day of R&R to recover, allowing phones on site whilst working.
Cost and error responsibility	Cost of errors in terms of production, machinery and other aspects (human life, injuries; Martin & Wall, 1989)—workplace health and safety.
Job complexity	The extent to which the tasks on a job are complex and difficult to perform (including information processing, problem solving; Morgeson & Humphrey, 2006).
Leadership	The quality of leaders and leadership team.
Monotony of work activities	Routine and repetition of tasks whilst on site (work and other).
Pay	Remuneration received, money that is due for work done, goods received or a debt incurred (Oxford Dictionary, accessed December 6th 2017, retrieved from https://en.oxforddictionaries.com/definition/pay).
Perceived job insecurity	Subjectively perceived and undesired possibility to lose the present job in the future, as well as the fear or worries related to this possibility of job loss (Van der Elst, De Witte, & De Cuyper, 2014).
Role ambiguity	When an individual is unclear or uncertain about their expectations within a certain role (Edmondson, SAGE Encyclopedia of Educational Leadership and Administration, accessed February 2018, retrieved from http://dx.doi.org/10.4135/9781412939584.n492).
Role clarity	The subjective feeling of having as much or not as much role relevant information as the person would like to have (Lyons, 1971).
Role conflict	Incompatible demands placed upon a person such that compliance with both would be difficult (over short and longer periods of time; Katz & Kahn, 1978).
Skill development	Development of additional skills sets, refining of current skills, availability of training and gaining additional experience.
Social climate	Can include: <ul style="list-style-type: none"> • The provision of recipient of emotional or instrumental help, typically from a peer or supervisor (Parker, 2014) • Level of socialisation on site • Bullying etc.
Task autonomy (autonomy at work)	The degree to which a job provides discretion over daily work decisions, such as when and how to do tasks (Hackman and Oldham; JCM, 1976).
Task/skill variety	The degree to which a job involves a variety of activities and uses a number of different skills (Hackman and Oldham; JCM, 1976; see also Morgeson & Humphrey, 2006).
Transitioning between site and home	The psychological and physical demands of shifting between work and home life, time taken to travel to and from site is undertaken during R&R time.

Work conditions	The physical environment within which a job is performed, including but not limited to hazards, noise, temperature, cleanliness (Morgeson & Humphrey, 2006), roster and shift type.
Workload	Perceived and actual workload, includes the quantitative (numbers of hours) and qualitative workload (difficulty of tasks; Jex, 1998).

D.3.1 Coding instructions

Context

You will code interviews that were carried out with current and former fly-in, fly-out/drive-in, drive-out (FIFO and DIDO) workers and their partners (or close family members/friends). The purpose of the interviews was to explore issues related to FIFO work in more detail, namely (1) the mental health and wellbeing of FIFO workers, (2) the specific workplace experiences of FIFO workers and their families, and (3) what strategies are employed by FIFO workers and their families to handle potential mental health impacts. These three issues were tapped into over the course of a full roster swing (time on site, transitioning to go home, time off at home, transitioning to go back on site).

The interviews complement and contribute to the wider FIFO mental health and wellbeing project as follows:

1. First, the interviews provide in-depth insights into concepts that are also being measured via a large-scale survey.
2. Second, the interviews allow insights into some topics that were not suitable for measurement via the surveys. This may be the case for constructs for which validated measures do not exist, or where the content or target is very specific to the case of FIFO work and families. This is in particular the case for the strategies, which are likely to vary and depend on the specific challenges FIFO workers and their families have to overcome. In the case of the strategies, a standardised measure is unlikely to allow nuanced insights.
3. A third aim of the interview component of this project is to generate insights from the interviews that can be readily communicated to FIFO workers and their families in order to help them in overcoming some of the potential issues related to FIFO work and can help the researchers illustrate their findings.

Content analysis

The first analysis is a content analysis based on Gioia, Corley and Hamilton (2012; Gioia method). As part of this analysis step, interview content will initially be grouped into wider themes (i.e. work characteristics, roster phase, mental health, wellbeing). These grouped themes will then be further categorised in reference to existing theory and models, as well as inductively to allow additional concepts to emerge. As part of this first analysis step, 10% of the interviews will be coded by two coders at each stage of the coding process. After the coders have both coded 10% of the interviews in each step, both coders will meet to discuss difficulties and issues in relation to the coding. This will ensure both coders are applying the same rules to the data and identify similar patterns. Any changes required to the coding scheme and rules can be recognised, so that it can be applied reliably.

Analysis prep

- Try to get an understanding of the predefined grouping categories. Are you sure you can distinguish them and can repeat their meaning in your own words?
- Review the interview outline to understand the questions asked during the interview.
 - Identify which questions tap into mental health and wellbeing (as definitions for mental ill health and wellbeing apply here).
 - Identify which questions tap into workplace aspects (as definitions for workplace attributes apply here).
 - Identify which questions tap into strategies.
- Before you start the coding, identify which phase of the roster the section of the interview pertains to (code these using the nodes in NVivo).

Coding instructions

- Start analysing by going through the responses and looking for meaning units.
 - A meaning unit is a part of the text where the participant answers a question and/or describes one phenomenon or aspect of his or her work. Within one answer, a new unit can be identified by the change of topic, people or focus in the participant's response. Units can be a number of words, sentence(s), or paragraphs.
- As many units as possible should be coded (i.e. as much of the interview as possible).
- When you identify a unit that appears to be meaningfully related to the inductive grouping categories, classify it as the category it falls into. Does the unit fit into any of the categories? What does it most likely reflect?
- You will find that participants sometimes answer a question, and then a brief phase of clarification follows. It is possible that no additional information is given during the clarification phase, but not necessarily so. Check whether the clarification phase provides additional information. If not, don't assign it to a meaning unit.
- It is possible that not all relevant nodes are included in the coding scheme. If you find a meaningful unit that you cannot fit into any of the predetermined nodes, please highlight it as "other". If you can, make suggestions regarding what construct this might reflect.
- Only code parts of interviews if deemed relevant to informing wellbeing of FIFO workers.
- Go through each meaning unit grouped into the inductive categories.
- Identify/classify each meaning unit into one of the pre-defined categories.
- Do not code the same meaning unit into aspects of job demands and resources or mental health and wellbeing. These categories need to be mutually exclusive. See below for examples:
 - E.g. you *cannot* code a meaning unit into both "working conditions" and "job complexity". You can however code a meaning unit into both "working conditions" and "emotional wellbeing".

- E.g. you *cannot* code a meaning unit into pre-defined categories within both “job demands” and “resources”.
- E.g. you *cannot* code a meaning unit into pre-defined categories within both “home demands” and “resources”.
- E.g. you *cannot* code a meaning unit into pre-defined categories within “mental health”, “physical health” *and* “wellbeing”.
- E.g. you cannot code a meaning unit into pre-defined categories within both “self-coping strategies” and “others—coping strategies”.
- It is possible that not all relevant nodes are included in the coding scheme. If you find a meaningful unit that you cannot fit into any of the predetermined nodes, please highlight it as “other”. If you can, make suggestions regarding what construct this might reflect.

D.3.2 Current FIFO coding frequencies

First order

Roster Phase	Definition	Sources (n = 40)	Number of References
FIFO Advice	Advice workers and partners provided to others considering a role within the FIFO environment.	36	82
General FIFO Aspects	Aspects of FIFO work that do not fall within the roster phases, rather that underlie the FIFO lifestyle.	40	593
Roster Phases—Time at Home (R&R)	The time that FIFO workers spent at away from site (at home)—R&R.	40	294
Roster Phases—Time on Site	The time FIFO workers are on site.	40	968
Roster Phases—Transitioning to Home	The period of transition from site to home.	38	181
Roster Phases—Transitioning to Site	The period of transition from home to site.	35	120

Attributes	Definition	Sources (n = 40)	Number of References
Home Attributes—Home Demands	Structural or psychological claims associated with role requirements, expectations and norms to which individuals must respond or adapt by exerting physical or mental effort; family attributes that are described as negative aspects of family life (Voydanoff, 2005).	40	347
Home Attributes—Home Resources	Structural or psychological assets that may be used to facilitate performance, reduce demands or generate additional resources; family attributes that are described as positive aspects of family life (Voydanoff, 2005).	39	221

Mental Health & Wellbeing—Mental Health	<p>Mental health disorder: A clinically significant disturbance in an individual’s cognition, emotion regulation or behaviour that reflects a dysfunction in the psychological, biological or developmental processes underlying mental functioning. Usually associated with significant distress or disability in social, occupational or other important activities.</p> <p>Mental health problem: A mental health problem also interferes with how a person thinks, feels and behaves, but to a lesser extent than a mental illness. Mental health problems are more common and include the mental ill-health that can be experienced temporarily as a reaction to the stresses of life.</p>	39	245
Mental Health & Wellbeing—Physical Health	A state of physical health; more specifically, the ability to perform aspects of sports, job requirements and daily activities.	22	37
Mental Health & Wellbeing—Wellbeing	State in which the individual realises their own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to their community (World Health Organization, Mental Health Action Plan: 2013–2020, Geneva, 2013, p. 6.).	40	210
Coping Strategies—Carried out by Partner, Friends & Family	Coping strategies undertaken by others, such as: family members, partners, colleagues, organisation etc.	26	131
Coping Strategies—Carried out by Worker	Coping strategies undertaken by the FIFO worker.	33	202
Workplace Attributes—Job Demands	Aspects of jobs that require sustained and/or high levels of physical, mental or emotional effort; job attributes that are described as negative aspects of the job.	39	435
Workplace Attributes—Job Resources	Aspects of a job that help employees to achieve their work goals, to develop personally and to deal with job demands; job attributes that are described as positive aspects of the job.	40	300

Second order

Specific Attributes	Code Definition	Example Response	Sources (n = 40)	Number of references
Home Attributes				
Home Attributes— Accessibility to Technology	Technology supporting communication with friends and family while on site (e.g. data).	<p>“... but now we’ve got mobile phones where you’ve got that—you can show them on FaceTime. That helps but in the early days, without that you couldn’t really have a lot of contact with your family.”</p> <p>““Why don’t you do FaceTime?’ to be able to FaceTime someone would be a huge—that would be such a big thing that his phone doesn’t have FaceTime. So to be able to FaceTime someone would be a massive thing and to be able to have that little bit more access to a telephone.”</p>	18	30
Home Attributes— Availability of Quality Child care	The extent to which quality child care is available.	<p>“There’s waitlists pretty much at all the ones that are half-decent, so that’s why [son’s name] was in day care all of last year ‘cause I thought I was going back to work since last May. Well, I thought I was going back—yeah, in May. So, he’s been in day care since January, February and just holding the position, so it’s—”</p>	1	1
Home Attributes— Financial Situation	Worker (and partner) financial situation.	<p>“... if we want something, we buy it. We don’t have to worry too much about—and as I say, I’m not talking extravagances here.”</p> <p>“To try and pay the mortgage off, try and get a head start ...”; “(to build up) a retirement nest egg”; “I’m more financially stable since starting this job”; “We’ve got kids in private schools that cost a fortune.”</p>	30	93

Home Attributes— Fluidity of Roles	The degree of fluidity in familial roles (FIFO worker and spouse) during stages of swing transitions.	<p>“... she’s relieved I’m home because it takes the pressure off her ... when I’m home, I get up—I’m always up first because I’m just—I’m an early bird, always have been an early starter. I get up. By the time she gets up, the kitchen is sorted out, there’s a cup of tea waiting for her, the kids’ sandwiches are made. She can just get up, have a shower, and ... traffic—takes a lot of pressure off.”</p> <p>“There’s adjustments you’ve got to make because you’re not used to having someone there all the time.”; “And a long adjustment means you get settled into your own space, you get settled into your own routine, and all of a sudden you get someone back and you have to readjust yourself.”</p>	13	20
Home Attributes— Overload, Pressure & Role Conflict	Overload in familial responsibilities. A feeling of not doing justice to parental and familial roles. Unforeseen occurrences and workload as a result of daily chores and responsibilities.	<p>“You tend to have the last day before you're going back to be the busiest day, because generally you're doing stuff that you haven't done.”; “The first two or three days are just manic because you've been away and you just got so many jobs to do and things to do when you get home.”</p> <p>“I suppose part of it is you’re blaming yourself because you probably could’ve done a bit more like I never got this done or I never got that done, that probably comes in a fair bit as well.”</p>	24	46
Home Attributes— Parental Factors	<p>Factors associated with parenting and children:</p> <ul style="list-style-type: none"> • Family functioning • Children’s misbehaviour (Frone et al., 1992). 	<p>“And I think it affected him, me being away at Darwin for four months last year, and for me being home for a couple months, he's really changed. She said he's been a lot happier with me being home.”; “... my son actually said to me when [FIFO worker’s name] was away last time that he actually missed his dad.”</p>	26	107

		<p>“When he’s home, he makes a conscious effort to go out with the kids and do stuff with the kids and he also helps me out obviously a lot more when he’s home.”</p>		
Home Attributes— Spousal Factors	<p>The quality of the relationship between FIFO workers and their spouses. Includes conflict that occurs between the couple and the quality of communication. Also encompasses the degree of independence and autonomy from spouse. (Frone et al., 1992)</p>	<p>“You just have to deal with things by yourself because it is that I can’t pick up the phone and contact him perhaps when I needed or whatever, so I have to be able to deal with all sorts of situations on the spot and figured it out myself sort of thing, so whether it was a burst pipe or whatever, you just have to problem-solve it yourself.”</p> <p>“I have probably become a lot more independent. I used to be quite nervous on my own at night times around the house.”</p> <p>“So I think because I had to get used to not having him around, you do. You do. You have to sort of—you’d be a bit sort of stronger and less needy.”</p>	34	164
Home Attributes— Time Availability	<p>The degree to which the worker has time available (i.e. ample time or restricted time) (Voydanoff, 2005).</p>	<p>“Missing out and because it’s a fixed roster, there’re commitments that you’re gonna miss out on family celebrations, Christmas, Easter. I’ve missed Christmas this year. I’ve missed Easter for about five in a row. It’s a bit unfortunate, especially when you got four children and they’re all getting on in age now.”</p>	39	149

Mental Health & Wellbeing

Mental Health and Wellbeing—Anxiety and Stress	<p>Anxiety is an emotion characterised by feelings of tension, worried thoughts and physical changes like increased blood pressure (from American Psychological Association via http://www.apa.org/topics/anxiety/index.aspx) and Stress (http://www.apa.org/helpcenter/stress-kinds.aspx).</p>	<p>“Before he came home, I used to stress out because I’d run around the house, and I’d be cleaning up, and thinking I’ve got to get everything perfect for when he comes home but now I don’t worry about it.”</p> <p>“I can feel with [FIFO worker’s name], he gets a little bit stressed about making sure everything is done before he goes, making sure he’s got everything before he flies out.”</p>	30	73
Mental Health and Wellbeing—Depression	<p>Feelings of sadness or depressive mood. A loss of interest and pleasure gained from activities that were once enjoyed. Changes in appetite, changes in sleep patterns and a loss of energy or increased fatigue. Increase in purposeless physical activity, feelings of worthlessness or guilt and difficulty in thinking, concentrating and making decisions.</p>	<p>“The hardest part for me is once he changed on to the two weeks on, one week off, I initially didn’t feel anything, but as the years go by, I actually could pick up that emotionally, I was getting quite depressed. The days were fine with me. Days, I have plenty to do. I do occupy myself, but in the evening after dinner, after the seven o’clock news when I’m sitting in front of the TV, my mind wanders and even though I’ve been trained to—in a lot of areas NLP and everything else, and I can handle it, and I work on myself a lot, I was still finding that one of the biggest challenge is the mind, like on my own in the evenings, and then I find that because of my retinal detachment, I cannot drive at night. People sort of not involve me in a lot of activities. And so, I don’t go out at night and that was my biggest challenge. It affected me to a stage a few years ago when I end up with anxiety attacks and things like that, signs that I didn’t even recognise that it has ... actually reached that stage.”</p>	15	34

		<p>“He does suffer from depression ... What helps him is to exercise; so, if he can fit in exercise everyday then he manages it really well. That issue with working away is he doesn’t have time to exercise because his days don’t allow it. I mean, yes, there’s a pool; yes, there’s the gym but you look at the hours that he’s got to exercise. He’s got maybe—he gets up at four AM and he hasn’t finished dinner and back to his range ‘til eight o’clock at night and then he’s gotta do his washing, you’re not gonna go and do the gym work at 8:30 at night when you gotta get up at four in the morning, and you wanna make a phone call to your family, it’s not gonna happen. So I say that those two weeks away really, without the exercise, he gets quite low.”</p>		
Mental Health and Wellbeing—Fatigue and Burnout	Physically and mentally tired/drained.	<p>“I start getting fatigued because we pretty much work 14 and a half hour days. It’s hot. Depends like we rotate on times each day, but if we’re—sometimes we are outside and extremely hot and really draining. So, yeah, I guess it depends like what happens during the day, if we have a lot of issues ... can get pretty stressful. I guess—yeah—so I’ll probably go down to six and a five within that first week. Yeah. Just I guess mainly from fatigue and just thinking like how much longer I still have to go to come home.”</p>	31	91
Mental Health and Wellbeing—Substance Use	Smoking and alcohol consumption (Liang, Gilmore, & Chikritzhs, 2016; Naimi, Stockwell, Saitz, & Chikritzhs, 2017).	<p>“When I was working night shift, I was drinking less during the week. Then, the best way to sleep, I got—I wouldn’t drink during the week, but the downside was you were binge drinking when you finish work. So instead of having four stubbies you’d be drinking in excess of maybe a dozen on Saturday night and that’s the truth. Now, when you go</p>	33	95

		for medical, you don't tell them how much you drink, you keep it all down to a minimum, do that on purpose, they don't need to know."		
Mental Health and Wellbeing—Suicidal thoughts and ideation	Includes fleeting and passive thoughts, active thoughts, and highly lethal thoughts. An indication of planning and preparation for suicide (Witte, Fitzpatrick, Warren, Schatschneider, & Schmidt, 2006).	"... ask questions where if you're feeling down, someone you can talk to because the old days where they did suicides and that sort of stuff, no one there to talk to because they're too embarrassed to talk to people. They rather go and top themselves in a room, it freaks people out as well let alone their families."	10	22
Mental Health and Wellbeing—Emotional Wellbeing	Positive feelings of satisfaction and happiness (Lamers, Westerhof, Bohlmeijer et al., 2010).	"Instead of trying to be emotional about it all, you just sort of brush a fair bit away, just push it to the side, or push it to the back of the cupboard so to speak in certain situations and that sort of stuff. And you do desensitise when you're doing FIFO, and then, I think the reality is it becomes a habit if you do it too much."	31	84
Mental Health and Wellbeing—Psychological Wellbeing	Effective functioning of the individual. Includes aspects such as self-acceptance, personal growth, purpose in life, positive relations with others, autonomy and mastery (Lamers, Westerhof, Bohlmeijer et al., 2010).	"Everyone's getting excited at home 'cause Dad's coming home. So, probably the last three or four days, you start feeling a bit better; you're tidying up for your outstanding jobs; you're getting the handover notes done." "When you got a good work, good work means gratification, gratification is good for the soul, otherwise you'll just. What I was doing in the last time on site was just welding brackets on the onto the sparkies in the cable trays. Shit easy work. Easy work, they didn't seem to have high expectation but it was easy."	30	88

	<p>“I got a passion for my type of job, for what I do, and if I fix it and work is good, I’ll get a buzz out of that. That’s sort of a big thing.”</p>		
<p>Mental Health and Wellbeing—Social Wellbeing</p> <p>Effective functioning in community life. Includes aspects such as social integration, social contribution, social coherence, social actualisation and social acceptance (Lamers, Westerhof, Bohlmeijer et al., 2010).</p>	<p>“We tend to—I think we tend to retreat a little bit from your circle of friends as well. Because when you’re home on R and R, you’re sort of devoting your time to your family unit and you sort of discount your friendships so to speak. You sort of discount the friendships, it probably should be mattering more than you’re discounting them.”</p> <p>“They will start losing friends, then you’ve become a stranger to your friends which I’ve become, not a stranger but I mean I’ve missed out where having contact with my friends once a week. You knew what was going on with the kids, you knew what was going on with their job, but when you turn up after all this time and that they would say, ‘Oh you know such, and such, and such,’ I didn’t know about that.”</p> <p>“... loneliness and solitude you sometimes feel, and the fact that you’re missing out on such important things in your family’s life.”</p>	<p>34</p>	<p>110</p>

Strategies				
Strategies—Mental Health or FIFO Organisation Support	Support received to aid mental health challenges (e.g. EAP, psychologists).		0	0
		“Even [Company name] had a couple of sites that are anonymous, so you can ring up, no feedback to [Company name], our professional companies. You say you’re a [Company name] employee and I want to talk, then you’ve got the other, Black Dogs.”		
Strategies—Organisation Support	Support received from employment organisation.	<p>“Call this number. There’s a sticker on your fridge. Call this number if you need to,’ because we have to say it. But—and that’s I suppose, the managerial side of things.”</p> <p>“It’s the lack of support from the companies that they work for and I think this study really needs to look into how people are treated, how the employees are treated by these big companies.”</p>	8	17
Strategies—Personal Coping	Coping strategies that are applied by oneself for oneself (Carver, 1997).	<p>“So drink lots of water and stay out of the sun, which is really not easy in my line of work. So lots of staring at the sun, lots of zinc, I got me myself and zinc and long sleeves shirts, wide-brimmed hat.”</p> <p>“It’s just—I close my eyes and I picture that thing in my mind and let it disappear to the back of my mind and it goes grey and it goes greyer and greyer until it goes black. So, it’s something I picked up a long time ago and it works quite well. But I can recall it back when I feel like I’m in the mood to deal</p>	38	209

		<p>with it. So, I don't let it take my concentration away in what I'm doing."</p> <p>"Think of a happy place."</p> <p>"I try to get to sleep early the night before and have a good night's sleep, try and plan myself and set myself for the week ahead"</p> <p>"So, don't really do anything on a Sunday night if there is anything on I'll do it mid-afternoon to early evening. I won't be out all Sunday night and then it's pack up my house, clean up, and try to be in bed by around eight, nine o'clock, or maybe by 9 o'clock more so, and just—yeah, try and get a good night's sleep, so you're ready fresh for the next morning."</p>		
		<p>"I've got to be positive for [FIFO partner], too. She—I've got to keep her feeling that everything is going to be okay."</p>		
Strategies—Social Support	Coping strategies that are used to support others.	<p>"The people do have problems but they're too scared to talk to the supervisor or leading hand because—but they've been informed about our program and what we do, and they stuck on site, and they feel like they have to talk to someone. So I have blokes up, the second crew that come in will come across and have a chat, just so absolutely in their minds, their crew won't know about what's going on."</p>	30	139
Strategies—Union Support	Support received from unions.	<p>"I've witnessed when I brought up about sexual harassment 'cause a staff member was being harassed and comments like that ... and the unions and business and politicians know</p>	2	3

about this and they do nothing. And I mean they are more interested in making their own money and treating it as their own business interest and self-interest than they are the mental health of people or the safety of people. And I've got numerous examples which I've written down from unions where I've got an example of a suicide at a union-run financial institution."

Workplace Attributes

Workplace Attributes—Camp Conditions	The environment of the camp (both social and physical), including but not limited to hazards, noise, temperature, cleanliness, wet mess and social activities (adapted from Morgeson & Humphrey, 2006); also can include: room conditions, Wi-Fi availability and phone connectivity.	<p>"I'd probably say the food that they offer probably doesn't offer enough nutrition to support a healthy diet ... they come to work with lollies and chocolate and they drink five coffees a day and they struggle so much more than I do. But just instead of a healthy snack, they've got five different desserts to choose from on a regular basis."</p> <p>"You often have to share a room with people so in other people's space and of course you can't just go home or if something was to happen, you can't get there straight away. I guess you feel like a little bit of helplessness as far as being trapped sort of. You feel a little bit trapped somewhere, which you are."</p>	17	36
Workplace Attributes—Clear Separation between Life and Work	The ability to concentrate on the FIFO work at hand without distraction from other aspects of life, or work responsibilities encroaching on R&R time.	"But right now I know my role is a leadership role, it manages people, there's always something going on, but it's not like I live on my phone 24/7 and got to have it side by side and always on it. I know when there's time to let it go, but I think every role is different. It depends on what role you do."	19	41

Workplace Attributes—Company Flexibility	Includes flexibility over roster and shift types, ability to take time off for family events and emergencies, ability to take an extra day of R&R to recover, allowing phones while working on site.	<p>“They won’t let us go into the town of Onslow to get a meal unless it’s a Friday, Saturday or Sunday and you have to put in for written permission. So I’ve been on sites before, you can’t go anywhere at all. So it’d be nice to get out of the camp for a counter meal, or something healthy, but you just can’t.”</p> <p>“I think it’s Bluetooth tracked or it’s chipped somehow so if it’s in your pocket, you get scanned so that way, if you try and get off site earlier, which you can’t anyway or get on an earlier bus, you get your pay docked.”</p>	24	74
Workplace Attributes—Cost and Error Responsibility	The consequences from errors in production, machinery and other aspects (human life, injuries; Martin & Wall, 1989), including injuries and life endangerment. Workplace health and safety.	<p>“15 plus people got electrocution out of that second lightning flash cause they were out in the open and then that sort of, two to three of them went to hospital to be monitored. So those sort of things start playing with your psyche because you go, you fellas are supposed to be providing a safe workplace and you say doing things safely, but you’re doing everything in your power to keep us out on site just to satisfy the client. So in essence and my view as well, a lot of people’s views are that they are jeopardising people’s safety for ‘bloody’, their company’s wellbeing. So they’re putting safety over production or other way around. The safety is taken to the back door.”</p>	14	29
Workplace Attributes—Job Complexity	The extent to which the tasks on a job are complex and difficult to perform (including information processing, problem solving; Morgeson & Humphrey, 2006).	<p>“You feel as though you’re not being used to your potential. What I was doing on site was rubbish. It’s to a boiler make who’s into heavy fabrication and that sort of stuff. It was a lot of rubbish work, I fixing up alterations and modifications. It wasn’t demeaning. It was just painful stuff.”</p>	12	27

		<p>“My work is fairly technical because when you’re scheduling for about nearly 80 to 90 people and around the multiple work centres and you have to make things flow.”</p>		
Workplace Attributes— Leadership	The quality of leadership and the management team.	<p>“The managers from the dayshift were pushing everyone— basically bullying and harassing the workforce to be outside of the crib and it was raining, and purely to save the client, but we’re doing our bit which we weren’t. We were just standing there under the cover. That’s very hard to take, especially when you started getting lightning alerts. They have a lightning alert procedure in place. Anyway, the lighting alert procedure is basically when it gets to a certain rate at the site, they get you to stand down from the job and go to your crib when it hits red alert which is the closest one but in reality, what the company is trying to do was make sure everyone stays on site.”</p> <p>“He’s one of the best actually; so, it helps having a good role model in that sense.”</p>	21	75
Workplace Attributes— Monotony of Work	Routine and repetitive tasks while on site (work and other).	<p>“He actually said—comment to me one day, he said ... It’s like a prison. Everything is clockwork. You get up at a certain time, you have breakfast, you go to work ... and then at the end of the day, you go back to your room, and then that’s it. He’s not much of a drinker, so he very rarely goes to wet mess, but that’s—it’s tedious on him and ‘cause it almost—it makes me upset ‘cause he’s doing that for us.”</p>	18	32
Workplace Attributes—Pay	Remuneration received, money that is due for work done,	<p>“FIFO to me means money, nothing else, and it means pretty much nine out of ten guys you ask out there, ‘Why are you</p>	29	68

	<p>goods received or a debt incurred (Oxford Dictionary, Retrieved from https://en.oxforddictionaries.com/definition/pay).</p>	<p>here?’ ‘For the money.’ So that’s the bottom line for FIFO. Why are you working away from home? The only reason you work away from home is you’re getting more hours, more money, and you don’t go there because you like the drive up there, and you don’t go there because you like the guys up there.”</p> <p>“Probably the benefits—well, obviously, the remuneration and being able to provide a bit better for my family and even myself depending upon what your priorities are. Those are the benefits.”</p>		
<p>Workplace Attributes— Perceived Job Insecurity</p>	<p>Subjectively perceived and undesired possibility to lose the present job in the future, as well as the fear or worries related to this possibility of job loss (Van der Elst, De Witte, & De Cuyper, 2014).</p>	<p>“So if the prices are down, obviously it turns to redundancy. At the moment, we’re talking about even in the papers [company name] thinking of selling [site name] and we’ve only found that out in the last week, so that has put a bit of a hiccup amongst the crowd.”</p> <p>“Like, at the moment, I’m thinking about it a little bit because of this news of [company name] wanting to sell and move. I’m sort of thinking ahead to—okay, if that happens, at my age, it’s going to be hard. So I’ve got either jump in on the ground floor and—I mean, I’ve got contact out there’s. I’ve got people out there, so—yeah. But it’s a bit of a worry.”</p>	16	44
<p>Workplace Attributes—Role Ambiguity</p>	<p>When an individual is unclear or uncertain about their expectations within a certain role (Edmondson, SAGE Encyclopedia of Educational</p>		0	0

	Leadership and Administration, retrieved from http://dx.doi.org/10.4135/9781412939584.n492 ; accessed February 2018).			
Workplace Attributes—Role Clarity	The subjective feeling of having as much or not as much role relevant information as the person would like to have (Lyons, 1971).	“I know what my roster is. I know what my job is. So, I prepare myself the best I can, pretty—even though some days it’s hard, I enjoy what I do. I’m passionate about what I do. I’m definitely driven and focused.”	5	5
Workplace Attributes—Role Conflict	Incompatible demands placed upon a person such that compliance with both would be difficult (over short and longer periods of time; Katz & Kahn, 1978).		0	0
Workplace Attributes—Skill Development	Development of additional skills sets, refining of current skills, availability of training and gaining additional experience.	“It was predominantly a monetary reason. Second time I went into it, it was monetary plus development of a skill set.” “That he’s actually done a three-day course in counselling to be a mentor and he loved it.” “I’ve definitely increased my skills and my career has advanced a fair bit. I guess just because you work in such a—I guess intense amount of days, you are able to learn a bit quicker and a bit more effectively.”	15	30
Workplace Attributes—Social Climate	Includes: <ul style="list-style-type: none"> The provision or recipient of emotional or 	“Like-minded people like myself with the same values, that sort of thing. Blokes who have the same values with what I’m doing is where I get my support.”	32	113

	<p>instrumental help, typically from a peer or supervisor (Parker, 2014).</p> <ul style="list-style-type: none"> • Level of socialisation on site. • Bullying etc. 	<p>“I met a lot of excellent people. I’m not the oldest person on site but I’m close to it and the young blokes keep me fit and it actually showed me a different section of the young people.”</p>		
Workplace Attributes—Task Autonomy (Autonomy @ Work)	<p>The degree to which a job provides discretion over daily work decisions, such as when and how to do tasks (Hackman and Oldham, 1976).</p>	<p>“Basically my ability to make the executive decisions, make it quick and then I can work unsupervised, not a problem.”</p>	3	3
Workplace Attributes – Task or Skill Variety	<p>The degree to which a job involves a variety of activities and uses a number of different skills (Hackman and Oldham, 1976; see also Morgeson & Humphrey, 2006).</p>	<p>“I actually like working and it’s—there is quite a large variety of jobs within the role that you do during the day. So—and you—when you work offshore, you’re like a little city, you’re self-sufficient. If you have a fire, you’ve got to fight it yourself. If you—someone has a medical case, you’ve got to look after it yourself to the point where it—or a chopper has to come in, you have to – initial first aid is done by the crew.”</p>	13	20
Workplace Attributes—Transition between Site and Home	<p>The psychological and physical demands of shifting between work and home life, time taken to travel to and from site is undertaken during R&R time.</p>	<p>“So, the first day, you’re just not comprehending anything—your wife can be saying things to you, what we’ve got organised for the week or whatever and you’re just not listening and she points that out. She says—it’s ... first day about anything ‘cause you don’t hear it, and you’ll go to bed for a couple of hours and you’ll get up and you’ll wander around feeling still pretty bad until bed time which is probably—you’re in bed by about 8:30, falling sleep in front of the TV. Then next day, you’ve had a good sleep, so probably by then, you’re up to about seven.”</p>	25	54

<p>Workplace Attributes —Work Conditions</p>	<p>The physical environment within which a job is performed, including but not limited to hazards, noise, temperature, cleanliness (Morgeson & Humphrey, 2006), roster and shift type.</p>	<p>“Some people do these two and ones and these longer rosters. I think I’d struggle to do that, if I ever had to do that. I definitely no rush to look for a roster like that ‘cause that obviously—yeah, would be a big toll on your body, your family life, all that.”</p> <p>“It depends on the weather. We have all seasons in one week up there. One minute it’s up around the 40’s, next minute it’s freezing cold, raining.”</p> <p>“At the moment we’re getting what they call a little Christmas beetles or stink bugs that are coming in, so that’s not turning the guys on too much at all. What gives you that little bit of depression is just the weather. Some days, the poor guys are just like drowned rats even though we have rain coats and stuff, it ... Summer time it is—when it gets hot here, it gets hot here.”</p>	<p>34</p>	<p>111</p>
<p>Workplace Attributes— Workload</p>	<p>Perceived and actual workload, includes the quantitative (numbers of hours) and qualitative workload (difficulty of tasks; Jex, 1998).</p>	<p>“Yeah, as I said, the work load sometimes when the workload is too much, he gets pretty down as well but I said that’s what they expect of there.”</p>	<p>13</p>	<p>23</p>

D.4 Former FIFO workers—Interview study methodology

Former FIFO worker interview schedule

First of all: thank you very much for agreeing to take part in this interview; I appreciate the time this is taking out of your day. The interview is part of a study conducted by the University of Western Australia and is funded by the WA Mental Health Commission.

The project explores how fly-in, fly-out work affects workers and their partners. We particularly interested in the specific aspects of FIFO workplaces, how you experienced them, and in what ways they affected how you felt while you were working FIFO. The interview is an opportunity for us as researchers to learn from your experiences and to capture them. As an ex-FIFO worker, you will have the best insights into FIFO work itself as well as how it made you feel. There are no right or wrong answers and you can skip any questions you do not want to answer.

The interview will take 45–60 min. Will that fit with your schedule?

As a researcher I am bound to confidentiality and I can assure you that your individual data will be de-identified and kept confidential at the UWA. However, de-identified quotes that cannot be traced back to you might be used in reports.

Nevertheless, if you don't want to answer some of the questions, please feel free to say so!

I would like to tape this interview, however, only with your permission. All data will be kept confidential and the tape will be wiped once we have typed up the data.

→ Do I have your permission to tape the interview?

Also, with your permission, I would like to use a transcription service to type up the interviews. The transcription service will also be bound to confidentiality.

→ Would you permit me to do so?

Do you have any questions before we start?

I have now started the recorder. Can you please confirm that you are happy to have this interview recorded?

Interview Questions

General Questions	Purpose/Concept Targeted
<p>G1. Why did you decide to start FIFO work?</p> <ul style="list-style-type: none"> • Why did you continued to work FIFO/ what kept you going? • How long did you work in FIFO roles? • How many different FIFO jobs have you had over your time spent working FIFO? 	<p>Reason to FIFO (motivational)</p>
<p>G2. What made you stop FIFO work?</p> <ul style="list-style-type: none"> • What was going on at the time? • Were there any particular circumstances or personal reasons that made you decide to change from a FIFO role? 	<p>Demands and resources generally</p>
Mental Health & Wellbeing	Purpose/Concept Targeted
<p>For the next part of the interview, we will talk about your wellbeing, life changes and strategies following your departure from FIFO work.</p>	
<p>MH/WB1. To start off with, I would like to ask about how your life has changed since you stopped working FIFO roles.</p> <ul style="list-style-type: none"> • Has the way you feel and think about life and yourself changed? • How did you feel/think about life and yourself while working FIFO? • Has stopping FIFO work affect your outlook on life? • How much was being a FIFO worker part of who you were and how you thought of yourself? • What has replaced this identity of being a FIFO worker? 	<p>FIFO impact on life; emotional wellbeing (positive feelings)</p>
<p>MH/WB2. I'd like you to think back to the time when you left FIFO work. How did you experience the departure from your role?</p> <ul style="list-style-type: none"> • How did you manage the transition out of FIFO life? • What did you find hard? What did you find easy? • Did you find any strategies to helpful during this transition period? 	<p>FIFO impact on life; emotional wellbeing (positive feelings), strategies</p>

MH/WB3. How has your relationship with your partner changed since you stopped working FIFO?

- How was it affected by FIFO work?
- Was any adjustment required to being at home full-time?
- Did you find any strategies to helpful that helped your relationship to move from FIFO to full-time?

FIFO impact on life; social (integration/acceptance); psychological (relations with others)

MH/WB4. How has your relationship with other family members, friends, and your broader social life changed since you stopped working FIFO?

- How was it affected by FIFO work?
- Was any adjustment required to being at home full-time?
- Did you find any strategies to helpful that helped your friendships to move from FIFO to full-time?

Social (integration/acceptance); psychological (relations with others)

Job Demands & Resources	Purpose/Concept Targeted
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The next questions ask about your experiences at work while you were still working in a FIFO role.

JDR1. Can you think of any aspects of FIFO work you found particularly challenging?

Job design (demands)

JDR2. What aspects of FIFO work do you remember as being particularly positive? What did you like about working FIFO? What made it easier?

Job design (resources)

- How did these aspects help you deal with the challenges you spoke of?

Strategies for Coping	Purpose/Concept Targeted
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These questions focus on strategies you used to help deal with challenges or negative feelings while you were on site. They also ask about those strategies your colleagues used, and your drug and alcohol consumption.

SC1. When you were working in FIFO roles, what did you do to make sure you were feeling ok while on site? What did you do when things got difficult while you were on site? What did you do to look after yourself while you are working? Which strategies helped and which didn't?

Strategies

Examples: things that you enjoy doing, supervisor/colleague support, company support, seeking help from another organisation, a community or friends/family

SC2. What strategies did you observe your colleagues use?

- Were there any you thought were useful?
- Did you notice any that didn't work so well?

Strategies

SC3. Has your drug⁴⁰ and alcohol consumption changed since stopping FIFO work?

- In what way?
- Why do you think they have changed/remained the same?
- While working FIFO jobs, what would have been your main drivers for drinking—off and on site?

Strategies

Final Questions	Purpose/Concept Targeted
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We're at the final part of the interview so I'll just ask you two more questions to wrap things up.

FC1. In hindsight, what would you do differently if you were starting FIFO work now?

FC2. Finally, what advice would you give to someone starting FIFO now?

Advice

These are all the questions I have prepared for our conversation. Thank you very much for taking part. I really appreciate you taking the time to talk to me today.

We will use the information you provided today to identify how FIFO work affects people over the course of the roster and what specific attributes of FIFO work contribute to more or less positive and negative effects.

Do you have any questions about the interview? Any feedback? Is there anything you would like to add?

Please feel free to contact me via e-mail if you have any other questions or would like more information regarding the project.

⁴⁰ Drug use was explored during former FIFO worker interviews. Discussing this sensitive topic retrospectively (out of FIFO role) may have more likely elicited honest responses.

Former FIFO partner interview schedule

First of all, thank you very much for taking part in this interview. I appreciate the time this is taking out of your day. The interview is part of a study conducted by the University of Western Australia and is funded by the WA Mental Health Commission.

The project explores how fly-in, fly-out work affects workers and their partners. We are particularly interested in the specific aspects of FIFO workplaces, how you experienced them, and in what ways they affected how you felt as a partner during and following your partner's employment as a FIFO worker. The interview is an opportunity for us as researchers to learn from your experiences and to capture them. As a partner of a former FIFO worker, you will have the best insights into FIFO life itself as well as how it makes you feel. Your experiences are the focus of this interview. There are no right or wrong answers and you can skip any questions you do not want to answer.

The interview will take 45–60 min. Will that fit with your schedule?

During the interview, I will ask you questions about you and your partner's well-being and relationship during and following their time as a FIFO worker. As a researcher I am bound to confidentiality and I can assure you that your individual data will be de-identified and kept confidential at the UWA. However, de-identified quotes that cannot be traced back to you might be used in reports.

Nevertheless, if you don't want to answer some of the questions, please feel free to say so!

I would like to tape this interview, however, only with your permission. All data will be kept confidential and the tape will be wiped once we have typed up the data.

→ Do I have your permission to tape the interview?

Also, with your permission, I would like to use a transcription service to type up the interviews. The transcription service will also be bound to confidentiality.

→ Would you permit me to do so?

Do you have any questions before we start?

I have now started the recorder. Can you please confirm that you are happy to have this interview recorded?

Interview Questions

General Questions	Purpose/Concept Targeted
<p>G1. Why did your partner start working FIFO?</p> <ul style="list-style-type: none"> • How did they make that decision? • What was the main reason your partner left FIFO work? • What were your feelings/ thoughts towards your partners' departure from FIFO work? 	Reason to FIFO (motivational)
<p>G2. How were you involved in the decision-making process ...?</p> <ul style="list-style-type: none"> • ... To start working FIFO? • ... To stop working FIFO (if left voluntarily)? 	Reason to FIFO
<p>G3. What was the best and what was the worst thing about your partner quitting FIFO work?</p>	Demands and resources
<p>G4. How do you think your partner's FIFO work affected them?</p> <ul style="list-style-type: none"> • Did you notice any change in their behaviour or wellbeing over the course of their roster? • Did you notice any change in their behaviour or wellbeing having departed from FIFO work? 	FIFO impact on life

Mental Health & Wellbeing	Purpose/Concept Targeted
<p>For the next part of the interview, we will talk about your wellbeing, life changes and relationship following your partner's departure from FIFO work.</p>	
<p>MH/WB1. How have your lives changed since you partner left FIFO work?</p> <ul style="list-style-type: none"> • How has your partners life changed? • How has your life changed? • What you do? • How you feel? 	Wellbeing, demands & resources
<p>MH/WB2. How has your relationship with your partner changed since he/she stopped working FIFO?</p> <ul style="list-style-type: none"> • How was it affected by the changes you mentioned? How did it affect your role as a partner? • Was any adjustment required to your partner being at home full-time? 	Role identity, demands & resources, FIFO impact on life

MH/WB3. In retrospect, do you feel as if FIFO work rosters had any lasting effects on your relationship? What effects still persist?

FIFO impact on life, wellbeing, demands

MH/WB4. Can you recall any aspects of your partner's FIFO work which were positive for you?

- Did your relationship benefit from these aspects? In what way?
- Did these aspects continue to bring benefits to your relationship after he/she left FIFO work? For example financial, emotional etc.

Resources

MH/WB5. Can you recall any aspects of your partner's FIFO work which were negative for you?

- Did these aspects put any strain on your relationship? In what way?
- Did these aspects continue to put strain on your relationship after he/ she had left FIFO work? For example financial, emotional etc.

Demands

MH/WB6. In retrospect, do you feel that on balance there were more positive or negative effects on you from your partner's FIFO work? Why do you say this?

FIFO impact on life, partner demands & resources

MH/WB7. How do you feel about the quality of your social and family relationships since your partner left FIFO work?

- Has your social life changed? How?

Social (integration/acceptance); psychological (relations with others)

Strategies for Coping	Purpose/Concept Targeted
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The next few questions will focus on actions you took when things got difficult, and how effective these actions were.

SC1. While your partner was away on site, what did you do when things got difficult in your relationship? How did you address relationship issues which may have occurred?

- What strategies did you find were most successful?

Strategies

SC2. What do you think could have made it easier for you to manage having your partner away on site for extended periods of time?

- What could you have done?
- What could your partner have done?
- What could companies have done to make it easier? E.g. phone reception, offers to relocate for partners

Resources

SC3. How did you adapt to having your partner home full time after they had left FIFO work?

- Did you find any strategies to be helpful during the move from FIFO to full time at home?

Strategies leaving FIFO work

SC3. Has your alcohol consumption changed since your partner departed a FIFO role? In what way? Why do you feel that is?

Alcohol use

Final Questions	Purpose/Concept Targeted
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We're at the final stage of the interview, so I'll just ask you a few more questions to wrap things up.

FQ1. If your partner was offered another job in a FIFO role today, how would you feel about that?

- Would you encourage/discourage them from taking the job?
- What would you tell them?
- What would your main concerns and perceived benefits be?

Impact of FIFO work & perception of FIFO work from partner

FQ2. What advice would you give to partners of FIFO workers? Recommended relationship strategies/advice: What worked for you? What didn't work for you?

Impact of FIFO work, strategies and resources

FQ3. What advice would you give to partners of FIFO workers whose partner is about to stop working FIFO? What would you recommend for the transition into being at home full time?

Impact of FIFO work, strategies and resources

These are all the questions I have prepared for our conversation. Thank you very much for taking part. I really appreciate you taking the time to talk to me today.

We will use the information you provided today to identify how FIFO work affects people over the course of the roster and what specific attributes of FIFO work contribute to more or less positive and negative effects.

Do you have any questions about the interview? Any feedback? Is there anything you would like to add?

Please feel free to contact me via e-mail if you have any other questions or would like more information regarding the project.

Former FIFO coding scheme - First order

First-order Codes	Code Definition
Work Phases⁴¹	
Work Phase—During FIFO Work	Time during FIFO employment.
Work Phase—Transition Period	Transitioning from FIFO employment to a non-FIFO role.
Work Phase—Post-FIFO Work	Time after the transition from FIFO employment.
General FIFO Aspects	<p>Aspect of FIFO work that do not fall within the roster phases, rather underlie the FIFO lifestyle.</p> <ul style="list-style-type: none"> • Family (home): can include how generally FIFO has affected one’s family, and changes over time. • Work: can include elements contributing to the nature of the industry, and FIFO partner’s work life (if relevant).
FIFO Advice	Advice workers and partners provided to others considering a role within the FIFO environment.
Attributes⁴²	
Home Attributes—Family Demands	<p>Structural or psychological claims associated with role requirements, expectations and norms to which individuals must respond or adapt by exerting physical or mental effort.</p> <ul style="list-style-type: none"> • Attributes that are described as a negative aspect of family life and social life.
Home Attributes—Family Resources	<p>Structural or psychological assets that may be used to facilitate performance, reduce demands or generate additional resources (Voydanoff, 2004).</p> <ul style="list-style-type: none"> • Attributes that are described as a positive aspect of family life and social life.
Mental Health & Wellbeing—Mental Health	<p>Can include mental ill-health/disorder, mental health problems, substance use, anxiety, fatigue etc.</p> <ul style="list-style-type: none"> • Mental ill-health/ disorder: “A mental disorder is a syndrome characterized by clinically significant disturbance in an individual’s cognition, emotion regulation, or behaviour that reflects a dysfunction in the psychological, biological, or developmental processes underlying mental functioning. Mental disorders are usually associated with significant distress or disability in social, occupational, or other important activities” (DSM 5, 2013, p. 20). • Mental health problem: A mental health problem also interferes with how a person thinks, feels, and behaves, but to a lesser extent than a mental illness. Mental health problems are more common and include the mental ill health that can be experienced temporarily as a reaction to the

⁴¹ The grouping concepts are mutually exclusive.

⁴² The grouping concepts are mutually exclusive.

	stresses of life (The Australian Government, Department of Health, retrieved from http://www.health.gov.au/internet/publications/publishing.nsf/Content/mental-pubs-w-whatmen-toc~mental-pubs-w-whatmen-what ; accessed 22/12/2017).
Mental Health & Wellbeing—Wellbeing	State in which the individual realises their own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to their community (World Health Organization, Mental Health Action Plan: 2013–2020, Geneva, 2013, p. 6.).
Mental Health & Wellbeing—Physical Health	The state of physical health; more specifically, the ability to perform aspects of sports, job requirements and daily activities.
Coping Strategies—Carried out by Others	A careful plan or method for achieving a particular goal (note: in this case also short-term strategies are applicable; Merriam Webster learner’s dictionary, retrieved from http://www.learnersdictionary.com/definition/strategy 20/12/2017). <ul style="list-style-type: none"> • Coping strategies undertaken by others, such as: family members, partners, colleagues, organisations etc.
Coping Strategies—Carried out by the FIFO Worker	A careful plan or method for achieving a particular goal (note: in this case also short-term strategies are applicable; Merriam Webster learner’s dictionary, accessed via http://www.learnersdictionary.com/definition/strategy 20/12/2017). <ul style="list-style-type: none"> • Coping strategies undertaken by the FIFO worker.
Workplace Attributes—Job Demands	Aspects of jobs that require sustained and/or high levels of physical, mental or emotional effort (e.g. time pressure, emotional demands). <ul style="list-style-type: none"> • Attributes that are described as a negative aspect of the work.
Workplace Attributes—Job Resources	Aspects of a job that help employees to achieve their work goals, develop personally and deal with job demands (Parker, 2014). <ul style="list-style-type: none"> • Attributes that are described as positive aspects of the work.

Former FIFO coding scheme - Second order

Second-order Codes	Code Definition
Home Attributes⁴³	
Availability of Quality Child care	The extent to which quality child care is available (preventative resource).
Financial Situation	Worker (and partner) financial situation.
Fluidity of Roles	The degree of fluidity in familial roles (FIFO worker and spouse) during stages of swing transitions.

⁴³ The grouping concepts are mutually exclusive.

Overload, Pressure and Role Conflict (strain-based demand)	<p>Too much to do; a feeling of not doing justice to each role (spouse, household, parental).</p> <ul style="list-style-type: none"> • Unforeseen occurrences like accidents, emergencies (when partner at home isn't able to fix) • Refers to workload/level of commitment required • Workload/overload resulting from child care, cooking, laundry, cleaning, garden maintenance
Parental Factors	<p>Factors associated with parenting and children, can include:</p> <ul style="list-style-type: none"> • Family functioning • Impact of FIFO on children • Children's misbehaviour (Frone et al., 1992)
Social, Community and Family Relations	<p>Factors concerning the social, community and family relationships of the FIFO worker.</p>
Spousal Factors	<p>The quality of the relationship between spouses, can include:</p> <ul style="list-style-type: none"> • Degree of conflict between couple (Frone et al., 1992) • Autonomy from spouse (e.g. spouse enjoys space) • Spouse independence—skills and abilities developed in one domain • Constructive/good communication • Dyadic relationship • Martial role quality
Time Availability:	<p>The degree to which the worker has time available (i.e. ample or restricted time) (Voydanoff, 2005; see also Beutell, 1985). Can include:</p> <ul style="list-style-type: none"> • Missing family occasions • Time-based conflicts • Time required/feeling short on time for cooking, laundry, cleaning, garden maintenance • Hobbies/travelling • Socialising with friends • Lack of family responsibility (i.e. more time whilst at home) • Ill relatives/dependants household
Mental Health & Wellbeing Attributes⁴⁴	
Emotional Wellbeing	<p>Positive feelings of satisfaction and happiness (Lamers, Westerhof, Bohlmeijer et al., 2010).</p>
Psychological Wellbeing	<p>Effective functioning of the individual (including aspects such as: self-acceptance, personal growth, purpose in life, positive relations with others, autonomy and mastery; Lamers, Westerhof, Bohlmeijer et al., 2010).</p>
Social Wellbeing	<p>Effective functioning in community life (including aspects such as social integration, social contribution, social coherence, social actualisation and social acceptance; (Lamers, Westerhof, Bohlmeijer et al., 2010).</p>
Anxiety & Stress	<p>Anxiety is an emotion characterised by feelings of tension, worried thoughts and physical changes like increased blood pressure (from American Psychological Association, retrieved from http://www.apa.org/topics/anxiety/)</p>

⁴⁴ The grouping concepts are mutually exclusive.

	index.aspx), and Stress http://www.apa.org/helpcenter/stress-kinds.aspx).
Depression	<p>Can include:</p> <ul style="list-style-type: none"> • Feeling sad or having a depressed mood • Loss of interest or pleasure in activities once enjoyed • Changes in appetite—weight loss or gain unrelated to dieting • Trouble sleeping or sleeping too much • Loss of energy or increased fatigue • Increase in purposeless physical activity (e.g. hand-wringing or pacing) or slowed movements and speech (actions observable by others) • Feeling worthless or guilty • Difficulty thinking, concentrating or making decisions
Fatigue & Burnout	Physically and mentally tired/drained.
Substance Use ⁴⁵	Smoking, alcohol consumption and use of illicit drugs (particularly use of short-acting illicit and new synthetic substances; Liang, Gilmore & Chikritzhs, 2016; Naimi, Stockwell, Saitz, & Chikritzhs, 2017).
Suicidal Thoughts/ Ideation	<p>Can include (Witte, Fitzpatrick, Warren, Schatschneider, & Schmidt, 2006):</p> <ul style="list-style-type: none"> • Fleeting and passive thoughts (I would be better off dead) • More active thoughts (I should kill myself) • Highly lethal thoughts, planning and preparation (I have the ability and means to complete suicide)
Coping Strategies⁴⁶	
Self	Coping strategies that are applied by oneself for oneself.
Others	Support provided by others (i.e. social, organisational, mental health services support).
Work Attributes⁴⁷	
Camp Conditions	The environment of the camp (both social and physical) (including but not limited to hazards, noise, temperature, cleanliness, wet mess, social activities; adapted from Morgeson & Humphrey, 2006); can also include: room conditions, Wi-Fi availability and phone connectivity.
Clear Separation of Life & Work	The ability to concentrate on the work at hand without allowing life aspects to interfere/disrupt or work responsibilities to encroach on R&R time.
Company Flexibility	Regarding choice of roster and shift preferences, taking time off for family events, ability to leave in cases of emergency, taking an extra day of R&R to recover, allowing phones on site whilst working.

⁴⁵ Drug use was explored during former FIFO worker interviews. Discussing this sensitive topic retrospectively (out of FIFO role) may have more likely elicited honest responses.

⁴⁶ The grouping concepts are mutually exclusive.

⁴⁷ The grouping concepts are mutually exclusive.

Cost & Error Responsibility	Cost of errors in terms of production, machinery and other aspects (human life, injuries; Martin & Wall, 1989). Workplace health and safety.
Hyper Masculine Culture	The extent to which exaggerated forms of masculinity, virility and physicality were embedded in the workplace to the detriment or benefit of the individual.
Job Complexity	The extent to which the tasks on a job are complex and difficult to perform (including information processing, problem solving; Morgeson & Humphrey, 2006).
Monotony of Work Activities	Routine and repetition of tasks whilst on site (work and other).
Pay	Remuneration received, money that is due for work done, goods received or a debt incurred (Oxford Dictionary, retrieved from https://en.oxforddictionaries.com/definition/pay).
Perceived Job Insecurity	Subjectively perceived and undesired possibility to lose the present job in the future, as well as the fear or worries related to this possibility of job loss (Van der Elst, De Witte, & De Cuyper, 2014).
Social Climate	Can include: <ul style="list-style-type: none"> • The provision of recipient of emotional or instrumental help, typically from a peer or supervisor (Parker, 2014) • Level of socialisation on site • Bullying etc.
Transitioning between Site & Home	The psychological and physical demands of shifting between work and home life, time taken to travel to and from site is undertaken during R&R time.
Team Climate	The successful/unsuccessful workings of a team (incl. interactions, perceptions and behaviours; Anderson & West, 1998).
Work Conditions	The physical environment within which a job is performed, including but not limited to hazards, noise, temperature, cleanliness (Morgeson & Humphrey, 2006), roster and shift type.
Workload	Perceived and actual workload, includes the quantitative (numbers of hours) and qualitative workload (difficulty of tasks; Jex, 1998).

Former FIFO coding frequencies - First order

Work Phase	Definition	Sources (n = 6)	Number of References
FIFO Advice	Advice workers and partners provided to others considering a role within the FIFO environment.	6	16
General FIFO Aspects	Aspects of FIFO work that do not fall within the roster phases, rather that underlie the FIFO lifestyle.	6	24
Work Phase—During FIFO Work	Time during FIFO employment.	6	148
Work Phase—Transition Period	Transitioning from FIFO employment to a non-FIFO role.	6	49
Work Phase—Post-FIFO Work	Time after the transition from FIFO employment.	6	70

Attributes	Definition	Sources (n = 6)	Number of References
Home Attributes—Home Demands	Structural or psychological claims associated with role requirements, expectations and norms to which individuals must respond or adapt by exerting physical or mental effort; family attributes that are described as negative aspects of family life (Voydanoff, 2005).	6	55
Home Attributes—Home Resources	Structural or psychological assets that may be used to facilitate performance, reduce demands or generate additional resources; family attributes that are described as positive aspects of family life (Voydanoff, 2005).	6	37
Mental Health and Wellbeing— Mental Health	Mental health disorder: A clinically significant disturbance in an individual's cognition, emotion regulation or behaviour that reflects a dysfunction in the psychological, biological or developmental processes underlying mental functioning. Usually associated with	6	54

	<p>significant distress or disability in social, occupational or other important activities.</p> <p>Mental health problem: A mental health problem also interferes with how a person thinks, feels and behaves, but to a lesser extent than a mental illness. Mental health problems are more common and include the mental ill health that can be experienced temporarily as a reaction to the stresses of life.</p>		
Mental Health and Wellbeing—Physical Health	A state of physical health; more specifically, the ability to perform aspects of sports, job requirements and daily activities.	0	0
Mental Health and Wellbeing—Wellbeing	State in which the individual realises their own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to their community (World Health Organization, Mental Health Action Plan: 2013–2020, Geneva, 2013, p. 6.).	5	17
Coping Strategies—Carried out by Others	Coping strategies undertaken by others, such as: family members, partners, colleagues, organisation etc.	4	5
Coping Strategies—Carried out by FIFO Worker	Coping strategies undertaken by the FIFO worker.	4	30
Workplace Attributes—Job Demands	Aspects of jobs that require sustained and/or high levels of physical, mental or emotional effort; job attributes that are described as negative aspects of the job.	5	56
Workplace Attributes—Job Resources	Aspects of a job that help employees to achieve their work goals, develop personally and deal with job demands; job attributes that are described as positive aspects of the job.	6	50

Former FIFO coding frequencies - Second order

Specific Attributes	Code Definition	Example Response	Sources (n = 6)	Number of references
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Home Attributes				
Home attributes— Availability of Quality Child care	The extent to which quality child care is available.	-	0	0
Home attributes— Financial Situation	Worker (and partner) financial situation.	“Unfortunately, I’m not financial enough to retire at the moment.”	1	1
Home attributes— Fluidity of Roles	The degree of fluidity in familial roles (FIFO worker and spouse) during stages of swing transitions.	<p>“Straightaway, we sort of slipped in on a good routine.”</p> <p>“I didn’t really see it as a problem. I like cooking and I just—yeah, it wasn’t really an issue for me.”</p> <p>“I am going to find it hard to adjust when he does go back to FIFO.”</p> <p>“If anything happened to any of the gear ... you either wait until he got back or you had to get someone in to fix it. That’s probably really the worst things.”</p>	3	7
Home attributes— Overload, Pressure and Role Conflict	Overload in familial responsibilities. A feeling of not doing justice to parental and familial roles. Unforeseen occurrences and workload as a result of daily chores and responsibilities.	<p>“I’ve got too much responsibilities here now, so I can’t.”</p> <p>“You’re kind of relying on phone conversations and there’s—never seem to be enough hours in a day.”</p> <p>“People with young families, I think they would find it very difficult.”</p>	3	10
Home Attributes— Parental Factors	<p>Factors associated with parenting and children:</p> <ul style="list-style-type: none"> • Family functioning • Children’s misbehaviour (Frone et al., 1992). 	<p>“He feels like he missed out a lot with [name removed] because he wasn’t around.”</p> <p>“My son had a [drug] addition, which he’s off now, and certainly dealing with that remotely was—yeah, very difficult.”</p> <p>“Probably not [so many negative effects] for us because our kids were older when he did FIFO work.”</p>	4	6

Home Attributes— Social, Community and Family Relations	Factors concerning the social, community and family relationships of the FIFO worker.	<p>“He’s definitely spending a lot more time with his family and friends.”</p> <p>“[My relationships] got a lot closer ... so definitely with family a lot closer.”</p> <p>“We’ve all been able to adjust and treat the situation—confront it with care and look after each other.”</p> <p>“I mean, your social life definitely suffers.”</p> <p>“When you’re single and you’re out meeting girls, you’re a bit hesitant to tell them [that you’re FIFO].”</p> <p>“We don’t socialise as much as we used to.”</p>	5	15
Home attributes— Spousal Factors	<p>The quality of the relationship between FIFO workers and their spouses.</p> <p>Includes conflict that occurs between the couple and the quality of communication; also encompasses the degree of independence and autonomy from spouse.</p>	<p>“We’ve had a pretty strong relationship for nearly [x] years.”</p> <p>“We probably got closer.”</p> <p>“We’ve welcomed the transition ... it’s certainly been positive for me and I think she’s the same.”</p> <p>“My ex-girlfriend said ‘If you go away one more time I won’t be here when you get home.’”</p> <p>“I think really the FIFO role contributed to my first marriage breakup.”</p> <p>“You get ratty with each other ... so you always know and put distance in.”</p>	6	29
Home attributes— Time Availability	The degree to which the worker has time available (i.e. ample time or restricted time).	<p>“You’ve missed out on pretty much any birthday party or anything that’s happened.”</p> <p>“I love having him here, but it’s really hard because some nights he comes home, leaves at six in the morning, gets home at 6:30 or 7:00 at night.”</p> <p>“If you get asked to play golf or you get asked to go to a pub or go to a BBQ or something, you might wanna make up a bit for the lost time.”</p>	6	43

“Definitely the whole period of working FIFO means that your existing relationships, friendships and so on take a back seat.”

“I’d have two weeks to mow the lawns and do my list of jobs.”

“Probably catch up a bit more now, weekends and that, with people, whereas when I was on the FIFO roster, it was always kind of difficult.”

“He likes the concept of working two weeks on, two weeks off—having that time to himself.”

“Particularly when I had even time rosters, it enabled me to do a good deal of personal stuff.”

Mental Health & Wellbeing

Mental Health and Wellbeing—Anxiety and Stress	<p>Anxiety is an emotion characterised by feelings of tension, worried thoughts and physical changes like increased blood pressure (from American Psychological Association, retrieved from http://www.apa.org/topics/anxiety/index.aspx) and Stress (http://www.apa.org/helpcenter/stress-kinds.aspx).</p>	<p>“I’m seeing him being very stressed.”</p> <p>“So I do get a little bit stressed out every now and then with the amount of work that’s pushed down.”</p> <p>“So he was carrying all three positions while he was up there and his mental health is worse in the office than what it was as a FIFO.”</p>	4	16
Mental Health and Wellbeing—Depression	<p>Feelings of sadness or depressive mood. A loss of interest and pleasure gained from activities that were once enjoyed. Changes in appetite, changes in sleep patterns and a loss of energy</p>	<p>“He’s very unhappy.”</p> <p>“I don’t think that he would be that happy if he was over here working four weeks on and one week off again.”</p> <p>“He’s pretty strong mentally but there were times where he had bad days.”</p>	5	6

	or increased fatigue. Increase in purposeless physical activity, feelings of worthlessness or guilt and difficulty in thinking, concentrating and making decisions.	“He wasn’t happy on that, the last one, so [leaving] was a good change for him.”		
Mental Health and Wellbeing—Fatigue and Burnout	Physically and mentally tired/drained.	“I’m still struggling to get a decent sleep routine.” “He still struggles to sleep though. It’s one of the down things.”	2	6
Mental Health and Wellbeing—Substance Use	Smoking, alcohol consumption and use of illicit drugs (particularly use of short-acting illicit and new synthetic substances; Liang, Gilmore, & Chikritzhs, 2016; Naimi, Stockwell, Saitz, & Chikritzhs, 2017).	“The more I drink, the more I wanna drink.” “Drinking seems to be a prevalent activity. Call it a strategy. I don’t think it is It’s just coping.” “By the end of the day, you’re just absolutely exhausted. So you get home and you’re just “Forget it. Shit! I need a drink.” “Yeah, there’d be days we’d be up ‘til one or two in the morning drinking, going to work at sort of five o’clock.” “We had [LSD] and then we drank all the way through and then went back to work. And that was probably the hairiest 18 hours of my life.” “[I] Probably drink a good deal less.” “Probably I’m a little more conservative obviously during the week.” “It’s probably lessened a bit [since leaving FIFO].” “It’s probably dropped ... I just don’t feel the need to.” “I might do [drugs] a couple times a year ... [but] that’s about it.”	5	30
Mental Health and Wellbeing—Suicidal	Includes fleeting and passive thoughts, active thoughts, and highly lethal	“We lost a good mate of ours over here.”	2	2

Thoughts and Ideation	thoughts. An indication of planning and preparation for suicide (Witte, Fitzpatrick, Warren, Schatschneider, & Schmidt, 2006).			
Mental Health and Wellbeing— Psychological Wellbeing	Effective functioning of the individual. Includes aspects such as self-acceptance, personal growth, purpose in life, positive relations with others, autonomy and mastery (Lamers, Westerhof, Bohlmeijer et al., 2010).	“I’ve got no complaints about my life. I’ve got good relationships both with my wife and my family. My son and his wife and kids live in a main house and—yeah, we get on really well ... got a good basic set of friends that I’ve had for years. They live here in Perth, so we still get together. It’s good.”	5	13
Mental Health and Wellbeing— Emotional Wellbeing	Positive feelings of satisfaction and happiness (Lamers, Westerhof, Bohlmeijer et al., 2010).	“Yeah, [I] generally [feel] more positive.” “Every now and then ... you might be dreading going back.”	2	2
Mental Health and Wellbeing— Social Wellbeing	Effective functioning of the individual. Includes aspects such as self-acceptance, personal growth, purpose in life, positive relations with others, autonomy and mastery (Lamers, Westerhof, Bohlmeijer et al., 2010).	“I think he’s been out of it enough now to probably spend more time with his friends and family over there.”	1	2
Strategies				
Strategies—Self	Coping strategies that are applied by oneself for oneself.	“Just take some time out and just push that into the background.” “So, I’ve adjusted myself mentally with it, accepted the decision.” “It’s just getting it out in the open and discussing it.”	5	29

		<p>“Just [get] away from the desk, away from the pressures of email or whatever and you just have a bit of a walk and unwinding.”</p> <p>“We took six weeks off and we jumped in the caravan.”</p> <p>“Just definitely keep in touch all the time.”</p> <p>“Yeah, I don’t know. I guess I just deal with it. I do deal with it, but again, if I wasn’t a strong person, I wouldn’t be able to deal with it.”</p> <p>“Guys don’t have that network of friends. They don’t talk about things at all.”</p>		
Strategies—Others	Support provided by others (i.e. social, organisational, mental health services support).	<p>“Connecting with their family and friends ... as regularly as they could.”</p> <p>“I had a couple of cases where the guys, they would be on the front food and they’d come and discuss it with you or give you a phone call ... it was more that peer support role.”</p>	4	9
Workplace Attributes				
Workplace Attributes—Camp Conditions	The environment of the camp (both social and physical), including but not limited to hazards, noise, temperature, cleanliness, wet mess, social activities (adapted from Morgeson & Humphrey, 2006); can also include room conditions, Wi-Fi availability and phone connectivity.	<p>“He’d always put on a massive spread for us.”</p> <p>“The Wi-Fi is usually pretty bad. It’s quite hard to make a phone call.”</p>	1	3
Workplace Attributes – Clear Separation	The ability to concentrate on the FIFO work at hand without distraction from other aspects of life or work	“A lot of the time, he’s coming home, he’s so stressed out and he’s doing emails all night as well.”	3	5

Between Life and FIFO Work	responsibilities encroaching on R&R time.	“I’d organize my time off, do whatever we had to do socially, and then go hard when I was at work.”		
Workplace Attributes—Company Flexibility	Includes flexibility over roster and shift types, ability to take time off for family events and emergencies, ability to take an extra day of R&R to recover, allowing phones while working on site.	<p>“I actually get a choice whether I go away or not.”</p> <p>“It wasn’t voluntary. I didn’t put my hand up for it. As I say, he asked me. I said my preference was to remain on roster”</p> <p>“I could have quite happily taken half the wages and been as happy as can be. I mean—but—no, they weren’t interested. This is the way it works. No flexibility.”</p> <p>“Having that lack of freedom ... lack of choice is—it’s like ‘Oh, shit, somebody else is running my life’.”</p>	5	16
Workplace Attributes—Cost and Error Responsibility	The consequences from errors in production, machinery and other aspects (human life, injuries; Martin & Wall, 1989), including injuries and life endangerment. Workplace health and safety.	<p>“The safety side of it drove me absolutely nuts.”</p> <p>“To a degree, it’s fair enough. You’ve got to have some sort of safety in place on massive sites at all times.”</p>	1	3
Workplace Attributes—Hyper Masculine Culture	The extent to which exaggerated forms of masculinity, virility and physicality were embedded in the workplace to the detriment or benefit of the individual.	<p>“Some [co-workers] might say something if they were struggling, but not very often.”</p> <p>“They’re all pretty level headed, to tell you the truth.”</p>	3	4
Workplace Attributes—Job Complexity	The extent to which the tasks on a job are complex and difficult to perform (including information processing, problem solving; Morgeson & Humphrey, 2006).	“There’s clashes with different people because they run on different contracts.”	3	4

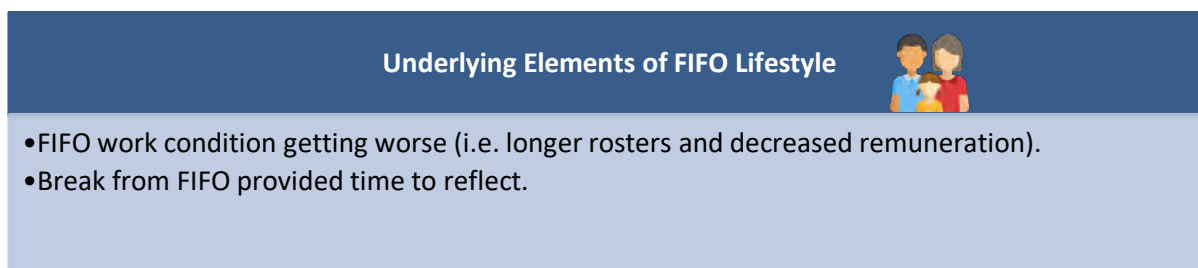
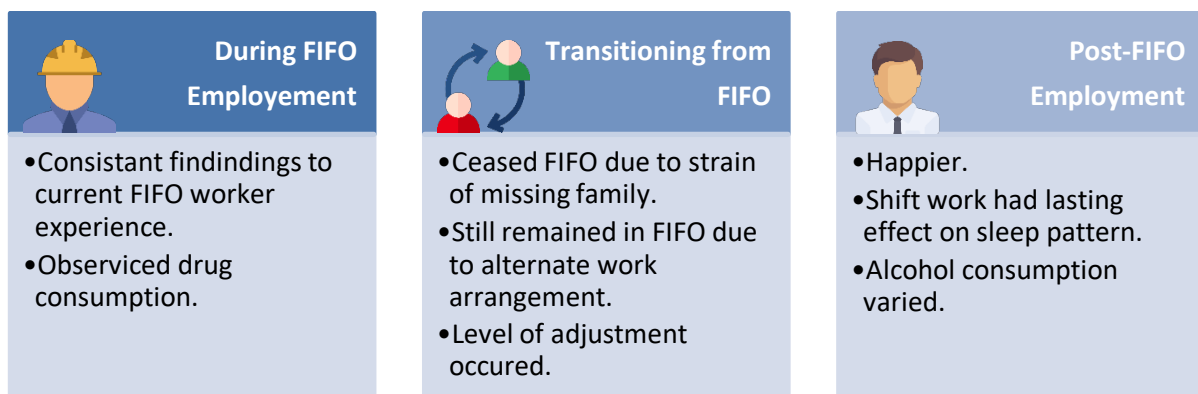
Workplace Attributes— Monotony of Work	Routine and repetitive tasks while on site (work and other).	“Keep doing the same thing day in and day out.”	0	0
Workplace Attributes—Pay	Remuneration received, money that is due for work done, goods received or a debt incurred (Oxford Dictionary, retrieved from https://en.oxforddictionaries.com/definition/pay).	<p>“Obviously, he was able to earn a lot of money and pay off any debts and buy a car.”</p> <p>“FIFO was a—it was really the only opportunity to get ahead.”</p> <p>“I mean the finance is obviously—is a positive gain.”</p> <p>“They’re now basically come down in their salaries but still expected to do above and beyond what they were doing before.”</p> <p>“I probably should’ve banked more money and I wouldn’t be doing it now.”</p> <p>“Yeah. I sort of—once you start, you get the golden handcuffs.”</p>	6	19
Workplace Attributes— Perceived Job Insecurity	Subjectively perceived and undesired possibility to lose the present job in the future, as well as the fear or worries related to this possibility of job loss (Van der Elst, De Witte, & De Cuyper, 2014).	“People don’t say too much because they may lose their jobs.”	2	2
Workplace Attributes—Social Climate	Includes: <ul style="list-style-type: none"> • The provision or recipient of emotional or instrumental help, typically from a peer or supervisor (Parker, 2014). • Level of socialisation on site. • Bullying etc. 	<p>“You just—be a bit of a sounding board for them and try to help them out whatever way you can.”</p> <p>“Certainly with a FIFO roster, you are a lot closer to the people that you work with.”</p> <p>“I like just the mateship and camaraderie that we had ‘cause our crews were pretty, pretty amazing. I made a heap of lifetime friends.”</p>	4	11

		"It might be flat out and so and so is having a bitch about someone else 'cause he wasn't pulling his weight."		
Workplace Attributes— Transition Between Site and Home	The psychological and physical demands of shifting between work and home life, time taken to travel to and from site is undertaken during R&R time.	"He needs at two days when he comes back just to wind down and then he needs at least two days at home before he can fly back."	3	3
Workplace Attributes – Work Conditions	The physical environment within which a job is performed, including but not limited to hazards, noise, temperature, cleanliness (Morgeson & Humphrey, 2006), roster and shift type.	"Certainly, I'm more used to ... 14 hours days, so doesn't seem too bad." "If they could get you to work three months on and one week off, they would."	4	6
Workplace Attributes—Team Climate	The successful/unsuccessful workings of a team (incl. interactions, perceptions, and behaviours; Anderson & West, 1998).	"He really enjoyed it—he enjoyed the crew that he was working with." "I think you seem to get a lot of whingers in FIFO work, I think." "There were a few little cultural issues with some of the guys that get a little bit kind of bitchy."	4	10
Workplace Attributes— Workload	Perceived and actual workload, includes the quantitative (numbers of hours) and qualitative workload (difficulty of tasks; Jex, 1998).	"Work was a challenge work-wise ... and I sort of enjoy that." "In the city, there's a lot of other things that happen and they have a lot more responsibility than what they do as a FIFO." "He's having to step in and make decisions on big calls, too. We're talking about billion-dollar facilities out there and he's gotta be in the right place every time he makes a decision."	3	14

D.5 Former FIFO worker and partner findings

The themes that arose through former FIFO worker and partner⁴⁸ interviews⁴⁹ occurred within the three specified work phases: experiences during FIFO employment, transitioning from FIFO employment and post-FIFO employment, with an additional section capturing the nuances of life after FIFO. Findings from each work phase via the interview in particular contribute to addressing KEQ1a, KEQ1b, KEQ2 and KEQ3. Frequencies of code use have been provided in Appendix D.3.2 for reference.

The themes presented below highlight the many resources and demands identified within the interviews that contribute to former FIFO worker and partner mental health and wellbeing. An overview of themes can be found below.



D.5.1 Experiences during FIFO employment

The themes highlighted in this phase were related to the workers' experiences while they were still engaged in FIFO work. Similar to the current FIFO workers, former workers mentioned that they started FIFO work due to the generous remuneration, and felt that FIFO work helped to develop their professional skills. They enjoyed the extended periods of time off, which afforded them time to perform home duties, and to engage in personal travels and development. Colleagues were identified as a source of social support on site, and some subsequently became close friends. The long FIFO rosters and shifts, missing out on family events and festivities, the lack of consistent quality time with partners and social interactions were some of the challenges of maintaining a FIFO lifestyle. Another challenge that former workers with children faced was being unable to support their partners with child care and disciplinary issues while they were on site. However, it was noted that FIFO companies were flexible for workers to take additional time off to handle familial issues.

⁴⁸ Note. Reference to "partner/spouse" within this document is inclusive of family and friends that were also interviewed.

⁴⁹ Note. The sample of former FIFO workers and partners was comparatively smaller ($N = 6$) than that of the current FIFO workers ($N = 40$).

Partners experienced strain when managing the household, and providing caregiving and discipline for children singlehandedly while the workers were on site. Workers also experienced job insecurity during periods of poor industry performance.

Drug consumption⁵⁰ was discussed by two former workers, although due to the limited sample size, no definitive conclusions should be drawn regarding the prevalence of drug usage in former FIFO workers. Workers revealed that either they or their colleagues had consumed drugs while on site, but took measures to conceal their consumption as drug usage was generally considered a dismissible behaviour. Concealment methods included consuming drugs that were not sensitive to the tests, as well as using others' urine samples when they were required to undergo a drug test.

“So there’s four of us and we come off the night shift ... And we’re all just having a beer together ... so we had them four and then we drank all the way through and then went back to work. And that was probably the hairiest 18 hours of my life trying to knock in nails and moving and just—yeah, it was nightshift, there wasn’t many people around, so we got away with it.” (FIFO worker quote)

“A few of the boys—not so much in our crew, but they were living near me, used to get me to piss in cups for them, so they could—they get to work. They were smoking ... all the time and they’d ... so when they’re watching you—it’s crazy, the lengths that they go to, to smoke dope, but I’ve never been—I don’t smoke. It does nothing for me, but—yeah, not much drug—a little bit. Like I said, a little bit, maybe ... couple of nights on the coke or whatever and not too much.” (FIFO worker quote)

D.5.1.1 Strategies

Former workers and their partners engaged in a variety of positive and negative coping strategies, including the following:

- ✓ **Engaging in physical activities such as walking and going to the gym.**
- ✓ **Confiding in colleagues regarding work and familial stressors.**
- ✓ **Partners finding emotional support from friends and family to cope with the stressors whilst the FIFO worker was on site.**
- ✗ **Consuming alcohol.**

D.5.2 Transitioning from FIFO employment

The transition period from FIFO work includes the weeks prior to departure and the departure itself, as well as the subsequent months when the worker was adjusting to a non-FIFO lifestyle. Out of the three former FIFO workers interviewed, two workers reported that they had stopped FIFO work completely while another shared that he still works in a part-time FIFO work arrangement.

Former workers stopped FIFO employment either due to personal or work-related reasons. One worker stopped FIFO work as he felt strained from missing family events and festivities due to his roster, and was no longer willing to miss out.

⁵⁰ Drug use was explored during former FIFO worker interviews. Discussing this sensitive topic retrospectively (out of FIFO role) may have more likely elicited honest responses.

“I was probably a little bit sick of it myself, just—you miss all the birthdays and Christmas—oh, not necessarily Christmas ‘cause I was usually home for them, but always seem to miss her birthdays, just after ... and have Christmas, New Year’s break—we’d work and I miss that. And I missed a couple of weddings and ... just get sick of missing everything.” (FIFO worker quote)

Another worker shared that while he preferred remaining on a FIFO work roster, his organisation initiated his transfer to the city office for a 12-month job rotation arrangement.

“Really, it wasn’t my own choice. I was a [FIFO role] and it was the field manager that had elected to have like a two [IC] in the office and support in the office, so—yeah, I got tapped on my shoulder and basically as of December, I’ve been in the office, so been in there for about two, three months at this stage ... No. You’re right. It wasn’t voluntary. I didn’t put my hand up for it. As I say, he asked me. I said my preference was to still remain on roster, but circumstances prevented that and here I am.” (FIFO worker quote)

D.5.2.1 Benefits of leaving FIFO employment

Former FIFO workers and their partners welcomed the transition out of the FIFO work arrangement due to the increased time availability for social and family interactions, and in turn the increased sense of social wellbeing.

“Yeah, same but different—probably catch up a bit more now, weekends and that, with people, whereas when I was on the FIFO roster, it was always kind of difficult. My wife would still catch up with friends, but you’re away for two weeks, so you always seem to make—there’d be one of us catching up, but now just having the weekends, it seems like we’re probably catching up socially more often and together, if you know what I mean. So I’d say—yeah, it’s actually been good.” (FIFO worker quote)

“I like it ‘cause I like him coming home every night. But I’ve never had it in our ten years. So I’ve never had a—it’s nice to be able to go to bed with him every night and have dinner with the kids at the table and have weekends together and that sort of thing.” (FIFO partner quote)

D.5.2.2 Challenges of leaving FIFO employment

One adjustment that workers had to make were the shorter periods of time off in a non-FIFO work arrangement. Time off work was now limited to the weekends and public holidays as opposed to the larger chunks of R&R time that they had previously enjoyed.

“Probably just adjusting to just having your weekends off and public holidays at this stage. No, that was probably the biggest kind of change, if you like, going from two on ... roster—two on, two off—two on, four off—to doing five days a week and having the two days—it’s just Saturday and Sunday now, so a bit of a shock, but—yeah, I’m still okay.” (FIFO worker quote)

“It’s just—I’d have two weeks to mow the lawns and do my list of jobs. Now it’s Saturday, Sunday. So you gotta go hard on Saturday morning, set yourself up, so you still can have a bit of fun Saturday night and Sunday, and then—yeah, you’re back into it.” (FIFO worker quote)

Other challenges that workers faced in their transition included adaptation to daily routines, such as taking public transportation and performing chores, and tasks that were normally arranged for them by the FIFO organisation, such as preparing their meals.

“Yeah, a bit of a culture shock. I’m 54 years of age, and as I say, I’ve been doing FIFO for 25 odd years now and—yeah, going back to office work, catching public transport, just having the weekends off and public holidays is a bit of a change.” (FIFO worker quote)

“I saw more with some of my mates, they sort of forget how to operate on a daily basis ‘cause they’re not used to looking after themselves after a while ... all your meals are done for you. You just get up and pack your lunch and eat what’s already there and don’t have to worry about any of that stuff.” (FIFO worker quote)

D.5.2.3 Strategies

The themes identified in this phase thus far have highlighted that regardless of the reasons that workers stopped their FIFO work arrangements, they encountered challenges during the period of transition. The following are some of the strategies used by former workers to ease themselves into their new lifestyles.

Former workers coped with their transition to a non-FIFO work arrangement by engaging in personal routines or setting up routines with their partners. One worker also took an extended break from work to rest and relax with his partner.

- ✓ **Following a personal routine:** *“I sort of ... routine to some respect from what I was doing when I was working away. So, I was working away ... gym before—go to the gym before or after work, try and keep my mind occupied when you’re not working and so, you’re not just sitting there dwelling on things in your little [dog] box. And when I came home, I just kept sort of healthy routine of going to the gym and doing some running and stuff like that. And so, I’ve always been like that though. I’ve always—like to have my set of routines ... go to the gym before work and ... stuff like that, so just—I don’t know—seems to help, but anyway—” (FIFO worker quote)*
- ✓ **Setting up a routine with your partner:** *“Straightaway, we sort of slipped in on a good routine of—‘cause I like cooking and she’d get home later than me because I’m a tradesman ... doing the exercise and that, and then I’d have—start getting dinner ready. So, I was sort of—she wasn’t worrying about that as soon as she got home. And so, we had a really good team thing going on and I think that helped a lot.” (FIFO worker quote)*
- ✓ **Taking a break from work:** *“We took six weeks off and we jumped in the caravan and we drove down from Darwin via the West Coast of Australia and just thoroughly enjoyed it—just relaxed and did nothing—went fishing and did whatever we liked, stayed for as long as we liked wherever we wanted, and we had that six—might be nearly seven weeks of just pleasing ourselves.” (FIFO worker quote)*

D.5.3 Post-FIFO employment

Themes identified in the post-FIFO work phase were related to the period approximately several months after the worker had stopped the FIFO work arrangement. In this phase, the worker had adjusted to life in a non-FIFO work setting.

Most workers reported to be happier post-FIFO and appreciated the increase in time available for social interactions. Some workers reported that their FIFO work experience had developed their professional skills and had been a good career development step as it had opened up opportunities for them.

“I learn a lot working ... all that good stuff from older guys. So, that sort of helped me, like natural progression of trade skills sort of stuff, stuff that I wouldn’t have done if I didn’t go to mines, like mining. So, I sort of take that as a positive.” (FIFO worker quote)

“Part of the fortune of the FIFO work has been that I’ve become a subject matter expert in my field.” (FIFO worker quote)

One worker experienced higher workloads and stress in his new management position in the city office and attributed it to an expectation from his organisation considering the level of the position and remuneration.

“Saying that though, the workload in the office is—we are really busy at the moment and we’re stretched resource-wise. So I do get a little bit stressed out every now and then with the amount of work that’s pushed down.” (FIFO worker quote)

Alcohol consumption during and post FIFO work appeared to vary amongst participants. Two FIFO workers reported that their alcohol consumption had decreased after they stopped their FIFO work arrangements, while one worker reported that he had increased his alcohol consumption.

“I drink more now ... So the difference for me being at home now, it’s not a drive site. So, I normally have a couple of beers each night ... certainly weekends if you’re catching up with friends or whatever, I tend to let my hair down a bit.” (FIFO worker quote)

“Probably drink a good deal less ... I’m a more frequent drinker than I probably was before I ever started FIFO work. It’s just become a bit more of a regular thing, but my—yeah, since I really stopped that sort of full-time FIFO, I’ve been a lot more relaxed.” (FIFO worker quote)

As highlighted from the quotes, former workers consumed alcohol for individual reasons and adopted different alcohol consumption habits. No definitive conclusion can be drawn from this theme.

Performing extended period of night shifts also appeared to have a lasting impact on workers’ sleep patterns.

“I’m still struggling to get a decent sleep routine, and that’s still an issue. I’m lucky if I get five hours a night, so regular waking up in the middle of the night, trying to go to sleep, that kind of stuff. Every now and again, I get enough full eight hours sleep and it feels amazing ... [on the previous FIFO work shift arrangement] and that’s nearly four years ago—that eight months of night shift where they changed a lot things ... and it was six to

seven days a week, 14 hours a day basically involved in going to and getting back from work and nothing else in your life. Night shift on that sort of roster was horrendous.” (FIFO worker quote)

Former workers continued to maintain friendships with their ex-colleagues, who were a source of social support; the interactions contributed to a sense of community.

“I like just the mateship and camaraderie that we had ‘cause our crews was pretty, pretty amazing. I made a heap of lifetime friends from work. Like I said, I’ve just been groomsmen at one of the boys’ weddings, so ... and that was the best part for me, just the people and met some incredible people.” (FIFO worker quote)

“I’ve still got guys that I met on that rig, on my very first one, still friends of mine and they’re all over the country and some are around the world. So, if I get the opportunity to go see them, we go and chat and things, just drop straight back into place. I’ve got a guy down in [site name] ... Kiwi guy and he lives down there with his family and his mum and dad live at the farm next door. We could go down there, any time we like, whether he’s home or not, and it’s like returning to family. It’s really a friendly environment and same thing with any of them, if they’re over here, they give me a ca like, ‘Come out for a beer,’ that kind of stuff. So, yeah, those friendships developed very quickly and became quite strong.” (FIFO worker quote)

Additional findings independent of work phases

The themes identified in this section are nuances related to FIFO work and the FIFO lifestyle. These themes included the former workers’ thoughts on FIFO work, as well as advice that they would give to individuals considering FIFO work.

There was a consensus that FIFO work conditions were getting worse due to longer rosters and poorer remuneration. Some FIFO workers shared that their break from FIFO work had given them time to reflect on their experiences, which gave them new insights and perspective, and would be helpful should they return to FIFO work in the future.

“Probably when and if I go back on roster, I will just go back with a different attitude, I think, like try not—to not let it get to me as much, just take a bit of a step back and you can only do what you can do in the 12 or 14 hours that you’re there and—yeah. Just if anything, this office role has given me a different perspective kind of thing and I’m thinking—yeah, I just approach it differently as well.” (FIFO worker quote)

D.5.4 Key advice

Former workers shared advice that they would give to prospective workers looking for work in the FIFO industry. The advice identified included what were mainly reflections of their own experiences and approaches to make the FIFO experience a more positive one.

- 1. Make financial and exit plans:** *“Have a plan. So, if you’re going into it for the money, make sure you don’t just live a lifestyle that money provides. If you’re in it for the money, have a plan to do something with that money. Whatever your plan is, it doesn’t matter, but have a plan and have an exit strategy. Have a time when you gotta say, that’s enough. We’ve achieved the goals we set out for that. Let’s go back to normal.” (FIFO worker quote)*

2. **Engage in FIFO work after your children have matured:** *“I was one of the lucky ones. I didn’t start until my family was already at or beyond uni. So, it was kind of—this is a good time. I can go and do this. And I’ve definitely shared that experience with as many as I can. Yeah. No, you don’t wanna be thinking about going FIFO. You’ve got young kids. It’s gonna be tough, not just on you, but on everybody and your family.”* (FIFO worker quote)
3. **Before starting, educate yourself on the nature of FIFO work:** *“Just think about what you’re doing. It is a great—it’s great for the time off and the extra cash that you get, but there’s some negatives as well. You are isolated from your friends and family a lot longer. You’ve got to be aware of that and you’ve gotta work on it. I’m married the second time around and I think really the FIFO role contributed to my first marriage break up—just because you tend to separate your family from your work, wife—I often kind of ponder that, whether—if I had my time again, whether I’d do it for as long—probably, yeah, you just need to go in—if you were starting it, you need to think about the implications and you need to keep it in perspective and you probably need to give yourself a plan of how long you intend doing it for. It’s easy to get—just sucked in and keep doing the same thing day in and day out.”* (FIFO worker quote)