NSW GOVERNMENT

MENTALLY HEALTHY WORKPLACES IN NSW
A RETURN-ON-INVESTMENT STUDY

DATE OF ISSUE 19 OCTOBER 2017

This paper has been commissioned by SafeWork NSW and prepared by Serena Yu, Centre for Health Economics Research and Evaluation (CHERE), University of Technology Sydney and Nick Glozier, Brain and Mind Centre, The University of Sydney.

LET'S TALK SAFETY

Mentally healthy workplaces

A return-on-investment study

August 2017

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Acknowledgements

The project team would like to thank Jane Hall, Richard De Abreu Lourenco, Alison Pearce, and A/Prof Sam Harvey for their valuable assistance with this report.

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List of abbreviations

ANZSCO	Australia and New Zealand Standard Classification of Occupations
ANZSIC	Australia and New Zealand Standard Industrial Classification
CBT	Cognitive Behaviour Therapy
FTE	Full-time equivalent
HILDA	Household, Income, and Labour Dynamics of Australia
MHI	Mental Health Inventory
PSC	Psychosocial Safety Climate
ROI	Return on Investment
RTW	Return to Work
SME	Small or medium enterprise
WCC	Workers' compensation claims
WHP	Workplace Health Promotion

Executive summary

Background and aims

Mental ill-health is common in NSW employees. The accompanying reports: 1) 'Review of Evidence of Psychosocial Risks for Mental Ill-health in the Workplace'; and 2) 'Review of Evidence of Interventions to Reduce Mental Ill-health in the Workplace' provided an overview of the workplace risk and interventions in this area. This report combines the evidence of effects for workplace interventions, the costs of undertaking these and real world data on the prevalence and costs of mental ill-health in Australian employees to show the potential impact employers could have just on their own bottom line.

Methods

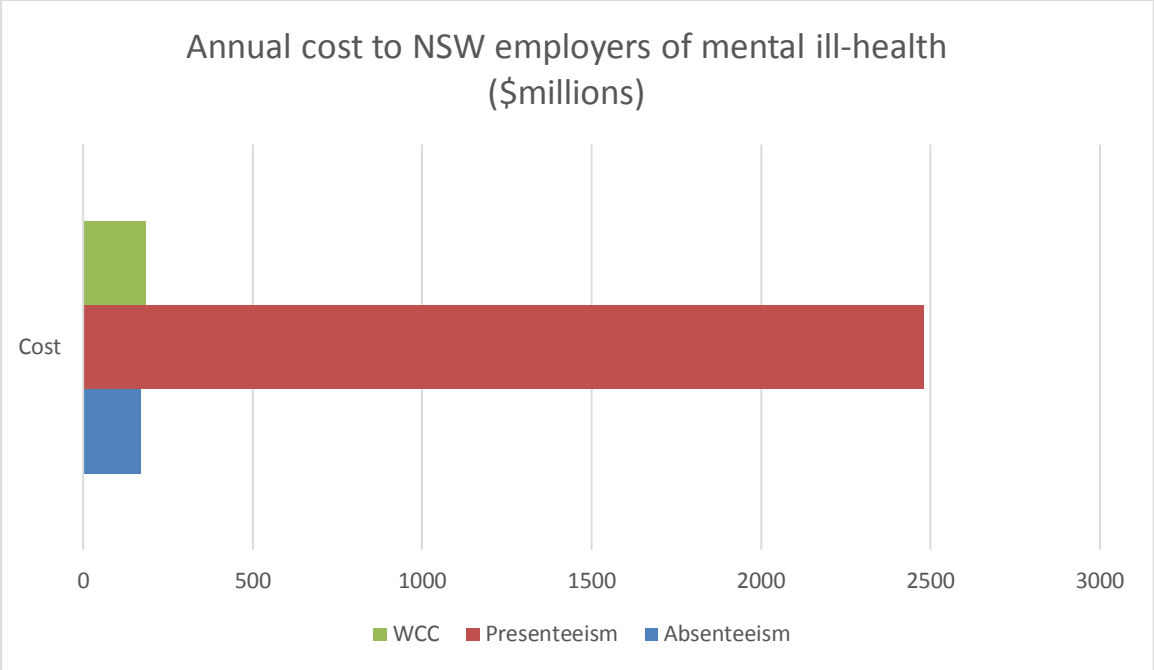
This report uses individual-level data from the Household, Income, and Labour Dynamics of Australia (HILDA) Survey to investigate the relationship between key psychosocial work stressors, mental ill-health and workplace productivity outcomes (measured as absenteeism, presenteeism, and workers' compensation claims) and how these differ by industry, occupation, sector, workplace size, and comorbidity. In addition, we model the return-on-investment (ROI) for four distinct evidence based workplace mental health interventions.

Mental ill-health and its cost to employers

Nearly one in six Australian employees, experience a significant level of mental ill-health in a four week period (males 13.2%, females 16.1%). Due to the relapsing and remitting nature of many of these conditions, the proportion of the workforce experiencing such levels of mental ill-health over a year will be even higher (18.7%). Over half a million (272,000 men and 290,000 women) NSW employees have poor mental health. Mental ill-health is most prevalent in industries with low job security and low job control, including accommodation/food services, manufacturing, retail and administrative services where nearly one in five workers have poor mental health.

The costs of mental ill-health is determined only from the extra sick days taken by people with mental ill-health (absenteeism), the reduced productivity people have when working whilst unwell (presenteeism) and Workers' Compensation Claims. Those experiencing moderate mental ill-health in a four week period take a modest 0.5 extra sick leave days annually, at an additional annual cost of $131 for each employee (compared to an employee in good mental health). The additional sick leave days and cost associated with severe mental ill-health is 0.9 days, and $454 per employee, respectively. By contrast, the cost of the higher presenteeism of employees experiencing mental ill-health is substantial - $3,401 annually for each employee in moderate ill-health, and $5,305 for employees with severe

mental ill-health. Although NSW Workers' Compensation Claims (WCC) are individually expensive (averaging $68,844 each), they are very uncommon (less than one in every thousand workers having a mental health WCC claim per year) and the costs to employers as a whole are dwarfed by those caused by presenteeism. The total annual cost to NSW employers of mental ill-health is estimated to be $2.8 billion.



Costs and prevalence from this study, workforce figures from ABS accessed 22/09/2017
http://www.abs.gov.au/ausstats/abs@.nsf/mf/6291.0.55.003

Do workplace interventions reduce these costs

Consistent with previous reports, evidence-based selective and indicated prevention (workplace health promotion and CBT based stress management) and psychological focussed return to work programs, produce a positive return on investment of between $1.5 and $4 for every dollar spent, even just using these basic costs. Other potential benefits to the organisation through greater engagement, reduced turnover or positive productivity effects could enhance this return on investment. From an economic societal perspective any reduced health and social costs associated with improved mental health would increase the return on investment yet further.

Job design interventions aimed at reducing psychosocial work stressors and can break even or produce small returns if focussed upon those with high levels of such risks. However due to the limited proportion of employees who will benefit and the productivity gains incurred, introducing organisation wide job design interventions would seem unlikely to lead to a

positive return on investment unless there were very high levels of such risks in an organisation and/or these risks were associated with much higher costs than we observed.

Whilst there may be other good arguments for reducing job insecurity through addressing the increasing casualization of the workforce, we did not identify any cost benefit for organisations in doing so through making these people permanent employees.

Table 1. Summary of ROI on workplace mental health interventions, by employer size

Intervention	Return on Investment	
	SME	**Large**
Job redesign (targeted)		
Reduce job demands (no extra staff)	**1.56**	**0.96**
Higher job security	**0.38**	**0.31**
Higher job control	**0.96**	**1.52**
Job design (universal)		
Reduce job demands (no extra staff)	**0.31**	**0.19**
Higher job control	**0.19**	**0.30**
Workplace Health Promotion (WHP)	**2.86**	**4.01**
Cognitive Behaviour therapy (CBT) based stress management	**1.56**	**2.39**
Psychological Return to Work (RTW) program	**3.90**	**3.74**

What might this mean?

As a hypothetical scenario, a business with 200 employees would expect to incur costs of over $270,000 in mental health related absenteeism and presenteeism each year, and face a workers' compensation claim every five years, on average. By spending $9,600 on workplace health promotion, the evidence would suggest this company could save just under $40,000 of these costs every year. By identifying those employees with low levels of autonomy and control, and using focussed bi-monthly meetings as part of their supervision to reduce this risk, the same employer could save $,4000 over and above the expense of conducting this intervention. In addition they could make their employees feel like they are part of a business that values them and creates a healthy Psychosocial Safety Climate.

Introduction

A large body of literature, summarised in recent meta-reviews (1) and updated in our recent report for SafeWork NSW has shown that certain characteristics of the workplace heighten an employee's risk of mental ill-health, which in turn can impact sickness absence and workplace productivity, and lead to worker's compensation claims. These are all significant costs for employers and the economy, in addition to the cost of mental ill-health to people and their families. We have also synthesised the levels of evidence and effectiveness of interventions in the workplace designed to reduce mental ill-health and/or the associated risk factors and categorised them as:

Universal prevention aims to prevent disease or injury by reducing exposures to hazards that cause disease or injury and altering unhealthy or unsafe behaviours that can lead to disease or injury. These are "delivered" to all employees in a work setting without regard to individual risk factors.

Selective prevention strategies target subgroups of employees that are determined to be at risk e.g. because of high levels of exposure to risk factors such as trauma or violence, and provide interventions specifically for those risks.

Indicated preventions identify individuals who are experiencing early signs of mental ill-health and other related problem behaviours and target them with special programs.

Tertiary interventions aim to treat and reduce the impact of an ongoing illness or injury that has lasting effects.

Each type of effective intervention is associated with costs of design and implementation, but may lead to reduced overall cost through their effect on either the proximal target e.g. workplace risks or downstream effects on mental ill-health.

To these ends, the aims of this report are to triangulate the results of these evidence syntheses with real world data from Australian employees to address the following questions:

1. What is the prevalence of three well established psychosocial risk factors for mental ill-health and how does this vary across industry, occupation, sector, and workplace size?
2. What is the prevalence of mental ill-health and how does this vary across industry, occupation, sector, and workplace size?
3. How does workplace productivity – as measured by levels of absenteeism, presenteeism, and workers' compensation claims – vary across different sectors of the economy, and according to mental health status?

4. What are the costs and benefits of investing in a workplace mental health program? We consider four programs, aimed at each level of potential intervention, that have adequate data to enable estimation of the costs and benefits. These include:
    - Job redesign (Universal)
    - Workplace Health Promotion (Selective)
    - Cognitive Behaviour Therapy (Indicated)
    - Return to work (Tertiary)
5. What then is the potential Return-on-Investment (ROI) of each of these programs?

In this context, there are many complexities to defining and measuring concepts such as mental health, productivity, and return-on-investment. In the following section, we first set out the methodological basis for our models and the sources of the data used for these assumptions and models.

Data and methods

To assess the prevalence, distribution and productivity impact of key psychosocial risk factors and mental ill-health we, like many others (Milner et al 2016, Butterworth et al 2044, 2011a, 2011b, (2)) use data from the Household, Income, and Labour Dynamics of Australia (HILDA) Survey. HILDA is an Australian, nationally representative panel study which collects social and economic data from annual interviews and questionnaires of persons aged 15 and older. The study started out with 13,969 completed interviews from 7,682 households in 2001. This cohort study follows the same individuals over time, has high retention and response rates (over 95% since wave 6), and is representative of the general population in Australia, giving support to inferences and generalisability.

We use five years' data collected between 2011 and 2015 (in order to exclude the immediate effects of the financial crisis). Our sample consists of employees only with complete data on mental health status and employment variables, which gives 38,829 observations on 12,647 individuals. The survey is dominated by employees based in NSW, which represent 29% of the sample and we observed no systematic difference between NSW employees and those from other States and Territories. To maximise the data, we have used the whole HILDA sample and have compared our findings to other Australian nationally representative datasets where possible.

We present the prevalence of psychosocial risks, mental ill-health and productivity impact in employed Australians. We report these according to employee industry, occupation, sector of employment and by workplace size. Employee industry of employment is defined according to the ANZSIC classification scheme. Employee occupation is defined according to the ANZSCO classification scheme. In addition, we construct a separate category – 'frontline workers' which comprise police, firefighters, prison and security guards[1]. The derived category refers specifically to ANSZSCO 2-digit code 44 (protective service workers, including police, firefighters and prison guards). Paramedics are omitted because they are classified separately with other welfare workers. Sector of employment is defined as private for-profit, and public/government agency/not-for-profit organisation. We report outcomes for large enterprises (over 100 employees) separately from small/medium enterprises (less than 100 employees). We also report these according to whether the person has a long term health condition (*'Do you have any long-term health condition, impairment or disability (such*

[1] Frontline workers have been defined according to 2-digit level ANZSCO codes. The derived category refers specifically to ANSZSCO 2-digit code 44 (protective service workers, including police, firefighters and prison guards). Paramedics are omitted because they are classified separately with other welfare workers.

as these) that restricts you in your everyday activities, and has lasted or is likely to last, for 6 months or more?')

Psycho-social workplace risk factors for mental ill-health

Many studies have established the relationship between job quality and mental health outcomes (see accompanying report 'Review of Evidence of Psychosocial Risks for Mental Ill-health in the Workplace'). While there is no universal standard for job quality, there is substantial consensus that low quality jobs are characterised by *low job security*, a lack of *job control*, and high *job demands*,(3) amongst other factors.

Previous studies using the HILDA data have assessed job demands, job security, and job control as detailed below (Leach et al, 2010), using questions derived from Karasek's Job Content Questionnaire (4). These questions are surveyed in HILDA on a seven-point scale from 'Strongly disagree' to 'Strongly agree'. We follow previous studies by compiling risk factor scores based on the following survey questions (5, 6).

Job demands: describes the perceived stress and complexity a role entails, relative to an employee's time and other resources.

> *'My job is more stressful than I had ever imagined'*
> *'My job is complex and difficult'*
> *'My job often requires me to learn new skills'*
> *'I use many of my skills and abilities in my current job'*

Job control: is characterised by one's ability to act with autonomy and discretion in how and when work is done.

> *'I have freedom to decide how I do my own work'*
> *'I have a lot of say about what happens on my job'*
> *'I have freedom to decide when I do my work'*

Job security: describes one's perceived continuity of employment and the risk of losing one's job.

> *'I have a secure future in my job'*
> *'The company I work for will still be in business in five years'*
> *'I worry about the future of my job'*

Following standard practice in Australian studies (Butterworth et al (2011a), we calculated sample quartile scores to determine exposure for each risk factor. So overall this assumes that 25% of employees have high levels of each risk factor and this enables comparison between different groups. The high risk exposures at the industry, occupational, sector and workplace levels is subsequently defined as the proportion of employees above and below the quartile score in the population as a whole and is presented by the proportion with that level of risk in each sector and industry, stratified by gender (Table 2).

High level of job demands are more common amongst professionals and in the industries where they're commonly employed. These include financial services, professional services, education, healthcare and public administration and safety, and frontline workers.

Low job security is, by definition more likely to be reported by individuals employed on a casual or fixed-term basis. It should be noted that the data in Table 2 includes all employees. In every setting, low job security (i.e. high perceived risk of losing your job) is more common in women. However it is widespread and more common in male-dominated industries such as mining, manufacturing, and construction; as well as in lower-paid industries such as accommodation/food services, and administrative services, reflecting the casualisation of those workforces.

Low job control is more commonly reported by those in lower-skill roles where there is little discretion in setting one's schedule or deploying skills, including amongst sales workers, machinery operators, labourers, and community service workers. Commensurately, low job control is prevalent in low-paid industries including retail trade, accommodation/food services, and transport.

Overall, although there is significant variation in risk exposures by industry, occupation and sector of employment, there are some important themes across occupations for risk factors associated with mental ill-health. Occupations characterised by high demands generally have high job security. By contrast, trades workers, machinery operators and labourers generally perceive greater risk of job loss but report low levels of demands. These workers are less likely to be employed on a permanent basis, or in a unionised, and/or public sector-based role. Low job security and low job control is prevalent amongst low to middle skill occupations in low paid industries. In addition, low job security is prevalent in male-dominated industries. By contrast, high job demands is concentrated in high skill roles and professionalised industries, and particularly in public-sector, frontline roles. There appears a strong inverse correlation between high demands and both low security and low control indicating that there seems to be a trade-off of these aspects in different occupations. This has important implications for the return on investment of organisational interventions aimed at reducing the

prevalence of high levels of these risks. Such interventions, if effective, will have more impact in settings where these risks are more common but also might increase the proportion of employees having one type of risk (e.g. high demands) while decreasing the proportion of employees with another risk factor (e.g. low control) and need to be designed for that setting.

Table 2. The prevalence of high level of psychosocial risk factors for mental ill-health

	High demands		Low security		Low control	
	Male	Female	Male	Female	Male	Female
Industry						
Agriculture, Forestry and Fishing	19.8	7.7	24.8	32.2	12.9	23.7
Mining	24.6	20.6	29.1	37.7	24.3	17.8
Manufacturing	24.8	12.4	32.5	34.3	22.2	20.5
Electricity, Gas, Water and Waste Services	28.3	26.6	25.1	31.3	15.7	15.8
Construction	24.8	17.4	26.7	38.3	19.1	12.6
Wholesale Trade	19.8	17.5	21.2	25.8	13.8	11.3
Retail Trade	11.9	8.3	17.1	22.5	27.4	31.7
Accommodation and Food Services	12.8	8.8	20.6	33.6	28.8	31.2
Transport, Postal and Warehousing	16.9	14.1	22.5	27.4	30.6	28.4
Information Media / Telecommunications	37.3	22.5	24.4	28.3	14.5	11.7
Financial & Insurance Services	38.8	27.3	17.7	19.2	11.7	16.4
Rental, Hiring and Real Estate Services	26.7	19.4	18.2	22.9	11.5	9.1
Professional/ Scientific/ Technical Services	41.6	32.2	23.7	27.4	8.8	12.2
Administrative and Support Services	18.0	19.6	24.6	29.2	23.8	21.9
Public Administration and Safety	35.0	27.6	12.9	20.8	21.7	14.5
Education and Training	45.1	42.7	14.3	21.2	16.0	17.9
Health Care and Social Assistance	34.7	35.5	14.7	19.7	21.4	23.1
Arts and Recreation Services	19.4	17.8	17.8	27.0	16.7	21.1
Other Services	29.2	22.8	18.8	30.2	13.1	13.7
Occupation						
Managers	37.5	35.8	18.1	22.0	5.9	7.1
Professionals	43.6	47.8	19.1	20.9	11.1	15.8
Technicians and Trades Workers	28.4	23.0	25.2	26.6	18.6	21.6
Community and Personal Service Workers	25.8	20.1	17.6	26.7	29.7	27.8
Clerical and Administrative Workers	21.2	17.7	20.8	23.8	23.2	17.7
Sales Workers	8.6	7.4	18.1	24.4	26.5	33.1
Machinery Operators	11.7	8.1	26.4	33.7	33.5	30.3
Labourers	9.8	6.9	26.3	32.2	33.0	34.9
All frontline workers	37.5	19.0	13.4	17.9	37.9	44.2
Sector						
Private	24.0	17.8	24.2	26.2	20.5	23.2
Public/ Not-for-profit	35.3	37.8	14.8	21.3	19.3	18.8
Workplace size						
Large (>= 100 employees)	31.8	33.3	19.7	20.9	21.9	22.2
Medium/Small (< 100 employees)	24.2	22.7	22.9	25.8	19.3	20.8
Total	**26.9**	**26.3**	**21.8**	**24.1**	**20.2**	**21.3**

Mental ill-health in the workplace

We measure mental health status using the Mental Health Inventory (MHI-5), which is a component of the widely used SF-36 health questionnaire. The MHI-5 comprises the following five items which assess symptoms of anxiety and depression:

'*How much of the time during the past 4 weeks:*

1. *Have you been a nervous person?*
2. *Have you felt calm and peaceful?*
3. *Have you felt down?*
4. *Have you been a happy person?*
5. *Have you felt so down in the dumps that nothing could cheer you up?'*

The MHI-5 has been shown to be an effective instrument for screening for mental disorders, predominantly anxiety and depression, the most common in employed people (7-9). The MHI-5 produces a continuous score on a scale of 0 to 100. While a range of threshold values have been used to study mental ill-health, we follow Butterworth, Leach (3) and Bubonya, Cobb-Clark (10) in their definitions of mental ill-health in the general and employed populations, respectively. In the analysis which follows, we categorise three groups of individuals:

- **Good mental health** (MHI-5 scores above 60) – in the HILDA data, this comprised 86.8% of males, and 83.9% of females.
- **Moderate mental ill-health** (MHI-5 between 50 and 60) – Males 6.3%, females 7.2%
- **Severe mental ill-health** (MHI-5 below 50) – Males 6.9%, females 8.9%.

We triangulated this prevalence of mental health (males 13.2%, females 16.1%) with other studies. The prevalence of mental ill-health in the workforce is, as expected, slightly higher than the one year incidence rates (13%) for men and women obtained in the HILDA data by Fernandez et al 2017, who used the SF-36 mental component summary score of less than 46 to define those with mental disorder. The 12-month prevalence of mental disorders in employed people in the National Survey of Mental Health and Wellbeing 2007 was 18.7%, again similar. For both males and females, the proportion with mental ill-health is higher (at least double for severe mental ill-health) for those reporting a long-term health condition.

The industries with the highest prevalence of mental ill-health reflect those with the lowest job security and job control, including manufacturing, retail, accommodation/food services, and administrative services. Unsurprisingly, the roles commonly found in these industries (with the least autonomy and security) were found to

have higher rates of mental ill-health. Frontline workers seem to be an anomaly, reporting low levels of mental ill-health and yet the lowest level of perceived control.

Conversely in jobs and industries associated with high demands, there was a relatively low prevalence of mental ill-health. This was exemplified by high rates of good mental health amongst managers, professionals and in largely professionalised industries. It is possible that higher levels of job control and job security and greater levels of pay and job satisfaction in these high demands roles may contribute to the lower prevalence of mental ill-health. Alternatively, individuals attracted to these higher levels jobs of control may be less likely to report mental ill-health, or have lower levels of other risk factors (e.g. low education, early adversity).

Table 3. Prevalence of mental ill-health in employed Australians

	Good mental health		Moderate mental ill-health		Severe mental-ill health	
	Male	Female	Male	Female	Male	Female
Industry						
Agriculture, Forestry & Fishing	87.0	88.3	8.3	4.7	4.7	7.0*
Mining	91.1	93.2	5.4	4.1	3.5	2.7*
Manufacturing	84.9	82.0	7.6	6.7	7.5	11.3
Power, Water & Waste Services	91.6	81.6	4.5	6.1	3.9	12.2*
Construction	87.4	86.7	5.9	6.7	6.7	6.7
Wholesale Trade	89.3	83.6	4.8	7.1	6.0	9.3
Retail Trade	85.9	81.7	5.2	7.5	8.9	10.8
Accommodation & Food Services	83.2	77.0	7.5	10.3	9.3	12.7
Transport, Postal & Warehousing	86.4	84.7	6.0	8.1	7.6	7.1
Information Media / Telecommunications	85.3	84.5	10.1	7.0	4.6	8.5
Financial & Insurance Services	85.0	86.3	8.0	6.1	7.0	7.6
Rental, Hiring & Real Estate Services	90.2	86.3	6.2	5.2	3.6*	8.5
Professional/Scientific/Technical Services	86.0	84.1	6.3	7.2	7.7	8.8
Administrative & Support Services	80.5	81.2	10.5	7.4	9.0	11.4
Public Administration & Safety	87.9	87.3	6.0	6.7	6.2	6.1
Education & Training	91.3	87.4	4.3	6.0	4.4	6.6
Health Care & Social Assistance	85.3	83.8	6.7	7.3	8.0	8.9
Arts & Recreation Services	87.4	80.8	4.3	9.2	8.3	10.1
Other Services	86.4	82.8	6.8	8.0	6.8	9.3
Occupation						
Managers	90.0	84.8	5.1	7.4	5.0	7.8
Professionals	88.4	87.0	5.4	5.9	6.2	7.1
Technicians & Trades Workers	86.8	79.2	6.6	11.3	6.7	9.5
Community & Personal Service Workers	86.8	81.2	5.1	8.2	8.2	10.6
Clerical & Administrative Workers	85.3	85.5	7.8	6.3	6.9	8.3
Sales Workers	86.0	81.7	6.1	7.8	7.9	10.5
Machinery Operators	85.1	77.2	7.1	9.9	7.8	12.9
Labourers	82.6	78.8	8.5	8.8	9.0	12.4
All frontline workers	90.0	86.6	4.5	3.1*	5.5	10.3*
Sector						
Private	86.2	82.3	6.5	7.7	7.3	10.1
Public/ Not-for-profit	88.1	86.1	5.8	6.5	6.0	7.4
Workplace size						
Large (>= 100 employees)	87.7	84.9	6.0	6.8	6.3	8.2
Medium/Small (< 100 employees)	86.2	83.3	6.5	7.4	7.3	9.3
Health status						
Long term health condition	77.7	72.1	9.7	10.3	12.6	17.7
No long term health condition	88.4	86.3	5.7	6.6	5.9	7.2
Total	86.7	83.9	6.3	7.2	6.9	8.9

*Small cell size: fewer than 10 employees reported being in this category

Good mental health (MHI-5 scores above 60) Moderate mental ill-health (MHI-5 between 50 and 60) and Severe mental ill-health (MHI-5 below 50)

Employee productivity and associated cost

Our study focuses on two workplace productivity outcomes – absenteeism and presenteeism and their associated costs - which are derived directly from the HILDA data.

Absenteeism

Absenteeism is measured for all employees using a self-reported figure of sick leave days taken (for any reason) in the previous 12 months. The cost of absenteeism is estimated as follows:

Annual cost of absenteeism per employee=

Average annual sick leave days/5 x Average weekly wage.

Average weekly wages were obtained from the Australian Bureau of Statistics' Employee Earnings and Hours catalogue. The data, based on employer surveys on wages in 2016, provides wage estimates at the industry, occupational and sector level for all employees. Wages data for the agricultural industries were not available. Our estimates assume a five-day work week, and ignore variation in wages owing to gender, part-time/full-time status, or other factors influencing wage rates. For example (see Table 3), male mining employees each take 2.8 days sick leave annually. The cost of absenteeism is calculated as 2.8/5* $2,494 = $1,419, where $2,494 is the average weekly wage for all employees in mining in 2016.

On average, **Australian employees take 3.4 days annual sick leave** for any reason (Table 4). These figures do mask however significant variation between employee types, namely between permanent employees (with sick leave entitlements, averaging 4.4 annual sick days), and casual employees. Casual employees – with no sick leave entitlements – on average take only 0.3 sick leave days each year. Within the sample, about one in five employees were employed casually, similar to rates of casualisation in the Australian labour market.

Across all industries, **the average annual cost per employee due to absenteeism is $825**. Unsurprisingly, those with a long term health condition report taking a higher number of sick leave days (around 1.5 extra annual days), at significantly higher cost. Of all occupations, frontline workers observed the highest average number of sick days (4.1 days). Consequently, the average cost per frontline employee is around $1,230[2]. In addition, professionals and clerical workers reported similarly high levels of sick leave. The higher pay received by managers and professionals results in the highest absenteeism costs at the occupational level.

[2] The wage of frontline workers was calculated by taking the average wage of all 4-digit occupations within the category of protective service workers. The resulting average weekly wage was $1,510.

A number of industries have higher sick days than the overall average, including electricity and gas, financial services, public administration, education, and healthcare. The associated costs of absenteeism are particularly high in industries with higher wages, including mining, electricity and gas, financial services, and public administration.

Presenteeism

"Presenteeism", showing up to work when one is unwell and potentially not being able to complete the requirements of the job, is calculated for all employees based on whether an individual answered 'Yes' to any of the following three HILDA survey questions used in previous studies to assess reduced work performance as a result of presenteeism (11, 12).
During the last four weeks, have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious)?

1. *Cut down the amount of time you spent on work?*
2. *Accomplished less than you would like?*
3. *Didn't do work or other activities as carefully as usual?*

Studies measuring the impact of presenteeism have been mostly limited to studies from the United States. Kessler and Frank (1997) use similar survey questions to this study to estimate that presenteeism due to affective or anxiety disorders results in reduced work performance on an average of 2.4 out of the last 30 days (a percentage productivity loss of 8.1 percent). Collins, Baase (13) however, found that depression, anxiety or emotional disorders reduced work performance by 36.4%. A meta-analysis from Goetzel, Long (14) found an average 15.3% productivity loss per employee due to mental illness. In addition, this metastudy found that on average, presenteeism comprised 71% of the total cost burden when considering presenteeism, absenteeism, and treatment costs. In this study, we estimate the annual cost of presenteeism as:

Annual cost of presenteeism per employee=
Rate of presenteeism (%) x Productivity loss (% per employee) x Average weekly wage x 48

The prevalence rates are derived from the survey questions, and reported at the industry, occupational, sector and workplace size level. The average productivity loss per employee is assumed to be 15.3%, taken from the metastudy by Goetzel et al (2004). This is chosen as a conservative figure between high and low scores of 36.4% (Collins et al, 2005) and 8.1% (Kessler and Frank, 1997), respectively. The average weekly wage is taken from the Australian Bureau of Statistics Employee Earnings and Hours catalogue, and is available by

industry, occupation, sector, and workplace size. These categories are important for modelling the likely costs and benefits of implementing a workplace mental health program. We assume there are 48 working weeks per year.

Across all industries, **the proportion of employees affected by presenteeism was 18.6%**. Generally, presenteeism affected the low-paid sectors - including accommodation/food services, retail, and administrative services – relative to other industries. Correspondingly, sales workers, clerical workers, labourers, and community service workers were more likely to report presenteeism behaviour. However, these higher prevalence rates did not translate to higher associated costs, due to the lower rates of pay in these roles. On the contrary, due to higher rates of pay, presenteeism costs were highest in the mining, information media, professional services, and electricity/gas/water industries, and amongst managers, professionals and frontline workers.

The average costs of presenteeism far exceed those attributable to absenteeism. Overall, the **average annual cost per employee associated with presenteeism was $1,680. More than double the estimated cost of absenteeism**.

Table 4. The costs of absenteeism and presenteeism in Australian employees

	Absenteeism		Presenteeism	
	Average annual days leave	Average annual cost per employee	% Affected	Average annual cost per employee
Industry				
Agriculture, Forestry & Fishing	1.6		16.1	
Mining	3.1	$1,537	12.1	$2,218
Manufacturing	3.4	$904	16.7	$1,646
Electricity, Gas, Water & Waste Services	4.5	$1,656	16.6	$2,251
Construction	2.7	$828	14.3	$1,587
Wholesale Trade	2.9	$772	16.9	$1,644
Retail Trade	2.4	$356	20.3	$1,096
Accommodation / Food Services	0.9	$95	23.1	$929
Transport, Postal & Warehousing	3.5	$1,006	15.7	$1,681
Information Media / Telecommunications	3.4	$1,111	21.5	$2,564
Financial / Insurance Services	4.0	$1,385	15.5	$1,968
Rental, Hiring & Real Estate Services	2.8	$633	18.2	$1,532
Professional/ Scientific/ Technical Services	3.3	$1,054	20.7	$2,414
Administrative / Support Services	3.2	$694	22.2	$1,771
Public Administration and Safety	5.0	$1,472	16.4	$1,775
Education & Training	4.2	$1,022	18.0	$1,624
Health Care & Social Assistance	4.3	$1,021	20.8	$1,810
Arts & Recreation Services	2.1	$342	20.1	$1,174
Other Services	2.5	$495	18.4	$1,314
Occupation				
Managers	3.2	$1,485	16.2	$2,732
Professionals	4.1	$1,341	18.6	$2,230
Technicians & Trades Workers	3.4	$922	15.7	$1,544
Community & Personal Service Workers	3.1	$475	22.0	$1,252
Clerical & Administrative Workers	4.1	$841	18.6	$1,417
Sales Workers	1.9	$247	21.6	$1,032
Machinery Operators	3.5	$928	15.0	$1,463
Labourers	2.0	$323	19.8	$1,186
Frontline workers	4.1	$1,230	12.7	$1,411
Sector				
Private	2.7	$621	18.4	$1,584
Public/ Not-for-profit	4.7	$1,394	18.9	$2,064
Workplace size				
Large (>= 100 employees)	4.2	$1,160	18.0	$1,825
Medium/Small (< 100 employees)	2.9	$595	18.9	$1,419
Health status				
Long term health condition	5.0	$1,226	31.2	$2,818
No long term health condition	3.0	$748	16.2	$1,460
TOTAL	**3.4**	**$825**	**18.6**	**$1,680**

The workplace costs of mental ill-health

In Table 4, we saw that on average, absentee costs are higher in occupations such as frontline workers, and that presenteeism-related costs dwarf those associated with absenteeism. Here we consider the impact of mental ill-health on workplace productivity. Table 5 reports the additional (marginal) impact of mental ill-health on absenteeism. It is important to note that the absentee figures do not report sick leave taken due to mental ill-health, but rather the association between mental-ill health and sick leave taken for any reason. The table reports the average absentee days taken by employees in moderate (and severe) mental ill-health, minus the average absentee days taken by employees in good mental health ("excess absenteeism").

Absenteeism

Overall, compared to employees in good mental health, those with moderate or severe mental ill-health take 0.5 and 0.9 additional absentee days respectively. There are more days associated with mental ill-health in transport, professional services, education, and in the public sector. Generally however, the average increase in absenteeism associated with mental ill-health was not large. The marginal impact of mental ill-health on sickness absence used in this report is higher than that reported by Bubonya et al 2017 who noted that "absence rates….are approximately five percent higher among workers who report being in poor mental health" from the same representative Australian data set. The associated additional cost per employee annually was around $131 for moderate mental ill-health, and $454 for severe mental ill-health.

Presenteeism

Table 6 shows the additional impact of moderate and severe mental ill-health on presenteeism. This study corroborates others which find that the estimated costs of presenteeism far exceed those associated with absenteeism. On average, compared to those in good mental health, the marginal prevalence of reduced work productivity is 37.6% higher for employees with moderate mental ill-health, and rises to 58.7% higher for those who experience severe mental ill-health. Higher presenteeism is associated with substantially higher economic costs of $3,401 per employee per annum in moderate ill-health and $5,305 for employees with severe mental ill-health.

The industries where higher rates of presenteeism were reported include mining, media, financial services, professional services and particularly amongst those employed as managers and professionals. There is a striking correlation between the higher rates of

presenteeism within these industries and roles, and the higher rates of job demands identified earlier. It is possible that the stress of these more demanding jobs may not facilitate time off work, or other strategies, to cope with the effects of mental ill-health.

To triangulate these results for the mental health related absenteeism and presenteeism impact we also analysed another nationally representative dataset. The National Survey of Mental Health and Wellbeing in 2007 reported that amongst employed people, 60% of those with a 12 month mental illness report no disability days, compared to 76% of those without a mental illness. The mean number of disability days (approximating absenteeism) being 1.4 in the past month for those with a mental health disorder and 0.7 days for those without, which is equal to 8.4 days per year for the latter (or 6 working days). The National Survey of Mental Health and Wellbeing reports the mean number of cutback days (approximating to presenteeism in workers) being 2.7 in the past month for those with a mental health disorder and 1.3 days for those without, equal to 12 extra cutback work days per year (or a maximum of a 5% marginal increase in presenteeism). This different data source would provide higher absence costs and lower presenteeism costs attributable to mental illness.

Workers' compensation claims

Workers' compensation claim data was provided to the research team by the NSW State Insurance Regulatory Authority, and included figures on the number and value of mental disease claims at the industry and occupational level. The data relate to claims from June 2013 to June 2016 from NSW employees only, and is not directly comparable to data from the HILDA survey. These data are aggregated at the detailed occupation and industry level.
The data in Table 7 shows that there were 8,084 workers' compensation claims in NSW for mental health issues between 2013 and 2016, totalling $556.5 million. Of these, 40.6% were related to anxiety or stress disorders, and a further 20.6% to other stressors. Workplace harassment or bullying precipitated 29.1% of all mental health claims, while other workplace pressure accounted for a further 22.3%. The average cost of workers compensation claims due to mental ill-health was $68,844. This figure includes the value of lost wages and treatment.

Around 15.4% of all claims were attributed to frontline workers, who only make up 1.6% of workers. The average claim cost for frontline workers was $129,759. Outside of the industries dominated by these frontline workers, there were significant numbers of claims in the retail, accommodation/food services, and transport industries. In addition, high average claims costs prevailed in the mining, electricity/gas, and financial services industries. The

workers compensation claims data was not available according to severity of mental ill-health.

A key point here is that the pattern of workers' compensation claims across industry or occupation does not match the pattern of standard workplace psychosocial risks, mental ill-health prevalence or presenteeism and is not just a representation of the extreme end of these, or the "tip of the iceberg". The large contribution of 'workplace/occupational violence' and 'exposure to a traumatic event' supports the common view that there are certain groups who are far more exposed to work related factors that are likely to precipitate an "injury" leading to a workers' compensation claim.

Table 5. Excess absenteeism associated with mental ill-health

	Moderate mental ill-health		Severe mental ill-health	
	Excess days leave /annum	Cost ($) / annum	Excess days leave /annum	Cost ($) / annum
Industry				
Agriculture, Forestry & Fishing	1.1		-0.7	
Mining	-0.3	-$133	1.0	$477
Manufacturing	0.2	$49	2.0	$532
Electricity, Gas, Water & Waste Services	0.5	$198	1.3	$474
Construction	0.8	$243	0.5	$163
Wholesale Trade	-0.1	-$14	0.1	$39
Retail Trade	-0.1	-$8	0.5	$71
Accommodation / Food Services	-0.1	-$11	0.1	$9
Transport, Postal & Warehousing	1.9	$551	0.9	$273
Information Media / Telecommunications	1.3	$413	-0.2	-$55
Financial / Insurance Services	0.6	$223	1.1	$384
Rental, Hiring & Real Estate Services	-0.3	-$69	1.3	$309
Professional/ Scientific/ Technical Services	1.7	$533	1.7	$547
Administrative / Support Services	0.1	$25	0.6	$126
Public Administration and Safety	1.2	$346	2.9	$847
Education & Training	1.7	$427	1.2	$289
Health Care & Social Assistance	0.4	$103	1.6	$372
Arts & Recreation Services	0.8	$130	-0.8	-$122
Other Services	-0.5	-$104	-0.6	-$119
Occupation				
Managers	0.5	$226	1.3	$617
Professionals	0.8	$277	1.2	$399
Technicians & Trades Workers	1.3	$353	1.3	$349
Community & Personal Service Workers	0.1	$22	0.2	$35
Clerical & Administrative Workers	1.2	$249	1.6	$335
Sales Workers	0.0	$64	0.0	$175
Machinery Operators	0.4	$119	2.6	$678
Labourers	0.0	$1	0.3	$54
Frontline workers	0.0	$0	1.4	$428
Sector				
Private	0.3	$68	0.7	$157
Public/ Not-for-profit	1.2	$369	1.7	$507
Workplace size				
Large (>= 100 employees)	0.5	$149	1.8	$509
Medium/Small (< 100 employees)	0.6	$157	0.5	$137
Health status				
Long term health condition	0.6	$152	0.4	$97
No long term health condition	0.3	$66	0.6	$158
TOTAL	0.5	$131	0.9	$454

Moderate mental ill-health (MHI-5 between 50 and 60) and severe mental ill-health (MHI-5 below 50)

Table 6. Excess presenteeism associated with mental ill-health

	Moderate mental ill-health		Severe mental ill-health	
	% reporting presenteeism	Cost ($) / annum	% reporting presenteeism	Cost ($) / annum
Industry				
Agriculture, Forestry & Fishing	37.3		66.2	
Mining	50.0	$9,161	41.9	$7,670
Manufacturing	33.9	$3,334	51.9	$5,109
Electricity, Gas, Water & Waste Services	24.8	$3,366	65.3	$8,880
Construction	24.5	$2,723	51.7	$5,751
Wholesale Trade	35.1	$3,414	62.5	$6,068
Retail Trade	36.0	$1,939	57.8	$3,113
Accommodation & Food Services	29.6	$1,191	55.0	$2,215
Transport, Postal & Warehousing	34.1	$3,652	53.5	$5,726
Information Media & Telecommunications	39.5	$4,703	66.2	$7,880
Financial & Insurance Services	38.8	$4,921	56.1	$7,106
Rental, Hiring & Real Estate Services	50.3	$4,242	54.0	$4,549
Professional/Scientific/Technical Services	42.5	$4,964	66.4	$7,749
Administrative & Support Services	42.3	$3,375	52.0	$4,149
Public Administration & Safety	44.1	$4,769	64.9	$7,022
Education & Training	42.5	$3,839	65.1	$5,881
Health Care & Social Assistance	40.9	$3,560	60.4	$5,258
Arts & Recreation Services	35.2	$2,061	55.6	$3,256
Other Services	31.8	$2,272	54.5	$3,894
Occupation				
Managers	43.2	$7,292	61.5	$10,376
Professionals	42.3	$5,067	64.1	$7,678
Technicians & Trades Workers	32.4	$3,190	50.5	$4,971
Community & Personal Service Workers	39.5	$2,250	61.9	$3,527
Clerical & Administrative Workers	36.8	$2,802	59.1	$4,507
Sales Workers	35.3	$2,070	59.1	$2,828
Machinery Operators	34.7	$3,383	50.1	$4,888
Labourers	32.7	$1,966	52.2	$3,132
Frontline workers	37.5	$4,158	58.6	$6,503
Sector				
Private	35.8	$3,074	56.2	$4,826
Public/ Not-for-profit	41.7	$4,555	64.6	$7,067
Workplace size				
Large (>= 100 employees)	40.8	$4,128	59.3	$5,997
Medium/Small (< 100 employees)	36.1	$2,714	58.4	$4,388
Health status				
Long term health condition	39.2	$3,547	63.5	$5,743
No long term health condition	36.2	$3,272	54.7	$4,948
TOTAL	37.6	$3,401	58.7	$5,305

Moderate mental ill-health (MHI-5 between 50 and 60) and severe mental ill-health (MHI-5 below 50)

Table 7. NSW Workers' compensation claims for mental ill-health, 2013-2015

	Workers compensation claims	
	Number of claims	Average cost per claim
Industry		
Agriculture, Forestry & Fishing		
Mining	58	$131,058
Manufacturing	201	$68,586
Electricity, Gas, Water & Waste Services	36	$112,245
Construction	151	$76,832
Wholesale Trade	138	$83,326
Retail Trade	392	$36,891
Accommodation / Food Services	352	$41,457
Transport, Postal & Warehousing	580	$31,039
Information Media / Telecommunications	26	$106,830
Financial / Insurance Services	161	$139,380
Rental, Hiring & Real Estate Services	61	$62,443
Professional/ Scientific/ Technical Services	182	$87,048
Administrative / Support Services	143	$48,147
Public Administration and Safety	1907	$109,044
Education & Training	1528	$44,807
Health Care & Social Assistance	1658	$56,740
Arts & Recreation Services	39	$28,590
Other Services	191	$63,712
Occupation		
Managers	738	$80,989
Professionals	1880	$54,224
Technicians & Trades Workers	260	$49,138
Community & Personal Service Workers	2651	$90,187
Clerical & Administrative Workers	881	$74,999
Sales Workers	369	$45,379
Machinery Operators	604	$43,099
Labourers	518	$42,937
Frontline workers	3722	$75,771
TOTAL	8,084	$68,844

Return on Investment (ROI) of workplace mental-health interventions

In our accompanying report 'Review of Evidence of Interventions to Reduce Mental Ill-health in the Workplace', we identify the levels of evidence for the effectiveness of reviews of twenty one different types of workplace interventions and an integrated framework for these. Ideally we would present the potential ROI for the full range of these interventions (where there is evidence of effectiveness). However as can be seen from the review, systematic knowledge (rather than selected evidence from individual studies, or naturalistic observations of changes over time) of the effects of these interventions on employee mental health and/or occupational outcomes is limited. We could not identify any organisational-level interventions with a two or three star rating for moderate or strong effects on employee mental health/occupational outcomes, e.g. job redesign, employee participation etc. Suitable evidence was found for interventions at each of the other levels.

We could not find systematic data on employee outcomes to support using two of the interventions suggested in the previous report. Coaching/mentoring had no reviews and variable results from a few small randomized control trials (RCTs). Mental Health First Aid, although highly effective in improving knowledge and supportive behavior and decreasing negative attitudes, has not been shown to have subsequent effects on the mental health or occupational outcomes of employees.

As each of these interventions target individual or groups of individuals rather than the organization its culture and environment we have modelled the potential impact of interventions aimed at reducing high levels of job demands and low levels of employee control on downstream effect on absenteeism and presenteeism using specific Australian based studies, particularly those based around improving the Psychosocial Safety Climate (PSC; Dollard & Gordon, 2014, Rickard et al, 2012, Bailey et al (2014).

Subsequently, we investigate the effect of four interventions, which cover the spectrum of primary, secondary, and tertiary interventions:

1. **Job redesign**, which involves interventions targeting adverse job demands, job insecurity, and job control. We assess the potential ROI from the implementation of such redesign interventions provided (i) across the organisation (primary) and (ii) focused on those with such risks (selected secondary prevention).
2. **Workplace Health Promotion**
3. **Cognitive Behaviour Therapy**

4. **Return to Work programs.**

We provide the estimates for small/medium, and large organisations separately, and assume these comprise 50 and 1,000 employees, respectively. The distinction is needed as we make different cost assumptions for large versus smaller organisations. Further, wage differentials between large and small organisations have a direct impact on estimates of both costs and benefits. The average weekly wage is assumed to be $1,024 in a small/medium firm, and $1,378 in a large organization (ABS, 2017).

We report changes in absenteeism and presenteeism behaviour, their associated monetary benefit to the employer, and the costs associated with investing in the interventions. It must be observed that while absentee and presentee level and cost assumptions were derived from HILDA data and ABS wages data, there were limited sources for the costs associated with implementing the interventions of interest. Accordingly, a number of assumptions were required, as detailed later in the section on ROI.

The ROI is calculated as follows:

$$Return\ on\ Investment\ (ROI) = \frac{Total\ benefit}{Total\ investment\ (\$)}$$

The total benefit includes estimated reduced costs associated with absenteeism and presenteeism. Total investment costs include direct costs such as external facilitator costs, extra staff costs, as well as the value of employee time spent participating in the intervention.

Job or role redesign

These interventions are aimed specifically at reducing the key psychosocial risk factors of job demands and job control (which together combine to produce job strain). Unlike the interventions targeting individuals, there were no meta-analyses available which rated the quality of the evidence supporting these interventions and so we used data from individual Australian studies. In the analysis which follows, we provide sensitivity estimates to account for the lack of certainty.

Cost Assumptions

Job Demands

Dollard and Gordon (15) evaluated a participatory psychosocial risk management interventions consisting of ‘capacity building workshops and developed and implemented

action plans to reduce work and organizational stress risk factors (e.g. job design, performance management, work quality, and organizational change) and stress outcomes'. This quasi-experimental study showed a positive effect on job design, training development and morale. This required employees to attend 4 x 4 hour workshop sessions facilitated by an external expert in organizational psychology. There were difficult-to-specify extra costs such as action plans and further external facilitation which we have not included. The study by Rickard, Lenthall (16) of reducing job demands, increasing support resources and job control in a hospital setting showed that there was an increase in FTE staffing by over 30% over the course of the study. Given this extra employee cost seems unlikely to be taken up by any employer we tested the impact of varying the FTE increases by zero and 2.5%.

Job control

We assume that each employee participates in a meeting with their supervisor which facilitates communication of, and feedback on, on job tasks. The increase in job control arises as employees are able to participate in the assignment, scope and timing of job requirements. Bond and Bunce (17) show that, in a quasi-experimental setting, that such interventions have measurable effects on mental health outcomes. The cost of each meeting is estimated to be an hours' wages per employee plus the supervisor's wage every month. We test the cost sensitivities associated with a fortnightly and bi-monthly meeting.

For interventions targeting these job design risks we model the costs associated with two scenarios (i) providing the intervention to all employees (with a 50% uptake rate) and (ii) only providing the intervention to those employees with the high levels of risk that would enable them to benefit.

Job insecurity

We estimate the cost of converting casual employees to permanent employees. The cost of employing a permanent employee is assumed to be a 35% increase on the casual wage. We calculate this as the difference between the base hourly rate of a casual and permanent employee. For a casual employee, the hourly rate is assumed to include a 25% loading. For a permanent employee, the annualised salary is assumed to include 4 weeks' annual leave. We test the effect of reducing the proportion affected by job insecurity by 10 percentage points. As around one in five Australian employees are now employed on a casual basis, this is commensurate with a significant reduction of one of the most insecure forms of employment.

Benefit assumptions

Job demands and control

Both of the above Australian studies would have led to an improved Psychosocial Safety Climate. Bailey, Dollard (18) used a benchmarking approach to conclude that an organisation with a PSC score of 37 or below would be considered at high risk of job strain (high demands and low control). An improvement in an organisation's Psychosocial Safety Climate – measuring aspects of managerial commitment, organisational communication and participation on issues of psychological health – to the suggested national standard benchmark of 37 is associated with a reduction in job demands of 14 percentage points. We used this as a guideline in our analysis to test the effect of reducing the prevalence of job demands and low job control) by 10 or 20%. In both scenarios, attaining the benchmark only leads to a cost offset in relation to people who move from a high risk of job strain to a normal level. The estimated changes in absenteeism and presenteeism are derived from the mean values estimated from the HILDA data, as illustrated in Table 8. For example, in a medium sized business with 100 employees, if the prevalence of high job demands is reduced by 10 or 20% then 5 or 10 employees would benefit. Each of these employees is assumed to lower their absentee days from 4.1 to 2.6 annually. This benefit to the employer is valued at the average small business wage.

Job insecurity

We assume that reducing the proportion of casual employees by 5 and 10 percentage points (and converting them to permanent contracts) completely eliminates all costs associated with insecurity for affected employees, which would overestimate the benefit as there would still be residual job insecurity due to turnover, organisational change and redundancies. Table 8 shows that the main costs relate to presenteeism, with those experiencing high job insecurity reporting a presenteeism rate of around 26 percent, compared to around 15% for those with secure jobs.

Table 8. Job redesign: impact of reducing job risks

	Absentee days		Presenteeism (%)	
	SME	Large	SME	Large
Low job demands	2.6	4.0	17.4	16.4
High job demands	4.1	4.5	23.0	21.0
Difference	**1.5**	**0.5**	**5.6%**	**4.6%**
Low job insecurity	4.0	4.8	15.1	15.4
High job insecurity	4.1	5.3	26.8	26.5
Difference	**0.1**	**0.5**	**11.7%**	**11.1%**
Low job control	2.9	4.1	17.8	16.7
High job control	2.9	4.7	22.6	22.2
Difference	**0**	**0.6**	**4.8%**	**5.5%**

Return on investment

Using these Australian intervention data the costs of reducing work demands, or increasing job security or job control, generally dominate the benefits generated by lower absentee and presentee behaviour.

Job demands

We report the impact of reducing the proportion affected by adverse job demands by 10 percentage points in Table 9. For secondary interventions targeting those with high levels of such risks the impact of hiring any extra staff to reduce these demands (as seen dramatically in Rickard et al 2012) exceeds any benefits associated with improved mental health outcomes amongst existing staff. The ROI for reducing job demands remains below break-even for a 5 or 2.5% increase in extra full-time staffing, and becomes positive only if no additional staff are added. It is doubtful to what extent this latter scenario is realistic, given that a lack of staffing resources is a primary source of high job demands. Additional sensitivity analysis showed that the results are similar for a higher reduction of reducing job demands and improving job control by 20%, as the costs and benefits accrue proportionally.

If the intervention is provided to a much larger proportion of staff (in this case 50%) the benchmarking suggests that the same proportion of staff would benefit. As such the ROI is much lower. In order for an intervention aimed at reducing job demands that was delivered to 50% of employees to break even those with high job demands would need be taking 10 extra days absence per individual per year more than those with low job strain, or the

proportion of staff who could be moved from the risk group to the non-risk group would have to far exceed the numbers observed in any industry (in fact the majority of staff).

Table 9. ROI analysis for organisational interventions – reducing job demands

	Reduced work demands + 5% extra FTE		Reduced work demands + 2.5% extra FTE		Reduced work demands & no extra FTE		Organisation-wide intervention to reduce demands	
	SME	Large employer	SME	Large employer	SME	Large employer	SME	large
Employees benefitting	5	100	5	100	5	100	5	100
Absenteeism								
Days reduced	-1.5	-0.5	-1.5	-0.5	-1.5	-0.5	-1.5	-0.5
Benefit per employee	$308	$145	$308	$145	$308	$145	$308	$145
Presenteeism								
Rate (%)	-5.6	-4.6	-5.6	-4.6	-5.6	-4.6	-5.6	-4.6
Benefit per employee	$423	$463	$423	$463	$423	$463	$423	$463
Total benefit	$3,657	$60,801	$3,657	$60,801	$3,657	$60,801	$3,657	$60,801
Total investment	$15,645	$421,366	$8,992	$242,187	$2,339	$63,008	$11,697	$315,040
ROI	**0.23**	**0.14**	**0.41**	**0.25**	**1.56**	**0.96**	**0.31**	**0.19**

Job Security

Similarly the cost of providing permanent employment exceeds the benefits of reduced presenteeism, and actually incurs higher absenteeism as permanent employees use their leave entitlements. Table 10 shows the impact of reducing job insecurity by 5 and 10 percentage points (i.e. if 5% of the staff were casual and were moved to permanent contracts). As costs accrue proportionally in line with benefits, the ROI remains negative and unchanged across both scenarios.

Table 10. ROI analysis for organisational interventions – increasing job security

	Increased job security - 5% improvement		Increased job security - 10% improvement	
	SME	Large employer	SME	Large employer
Number of employees affected	3	50	5	100
Change in absenteeism				
Days	0.6	1.4	0.6	1.4
Benefit per employee	-$132	-$390	-$132	-$390
Change in presenteeism				
Rate (%)	-8.7	-9.6	-8.7	-9.6
Benefit per employee	$656	$970	$656	$970
Total benefit	$1,309	$28,999	$2,618	$57,997
Total investment	$3,454	$93,035	$6,909	$186,070
ROI	**0.38**	**0.31**	**0.38**	**0.31**

Job Control

We report the impact of increasing job control in three different scenarios: (i) by implementing a bi-monthly (6 times per year) meeting to address autonomy and control over work load and skill use between each employee and their supervisor, but only for those reporting low levels of job control, (ii) the same intervention conducted with 50% of employees, and (iii) if the intervention is more frequent, twice per month as in the intervention studied in Bond and Bunce (2001). The model shows that holding fortnightly meetings results in significantly higher costs than the benefits which accrue from (mostly) reduced presenteeism. By contrast, the ROI is around break-even if meetings are held only bi-monthly. Again, as only a proportion of employees will benefit if the bi-monthly intervention

aimed at improving job control is undertaken by 50% of employees, those employees with low job control would have to take an 7 extra sick days per year per individual in order for the intervention to break even.

Table 11. ROI analysis for organisational interventions – increasing job control

	Increased job control - bimonthly meeting		Organisation wide intervention Bi-monthly		Increased job control - fortnightly meeting	
	SME	Large employer	SME	Large employer	SME	Large employer
Number of employees receiving intervention	5	100	25	500	5	100
Number of employees with benefit	5	100	5	100	5	100
Change in absenteeism						
Days	0.1	-0.6	0.1	-0.6	0.1	-0.6
Benefit per employee	-$16	$166	-$16	$166	-$16	$166
Change in presenteeism						
Rate (%)	-4.7	-5.4	-4.7	-5.4	-4.7	-5.4
Benefit per employee	$354	$552	$354	$552	$354	$552
Total benefit	$1,691	$71,792	$1,691	$71,792	$1,691	$71,792
Total investment	$1,755	$47,256	$8773	$236,280	$7,018	$189,024
ROI	**0.96**	**1.52**	**0.19**	**0.30**	**0.24**	**0.38**

Workplace Health Promotion

Cost assumptions

We assume that the intervention comprises of workplace fitness classes provided to 20% of the organisation's workforce, and test for sensitivity to a higher assumption of 50 percent. We use similar cost estimates as in PriceWaterhouseCoopers (20) report for *beyondblue* which assume a cost of $120 per class per week, offered for a term of 20 weeks. Each class has up to 10 employees.

Benefit Assumptions

Kuoppala, Lamminpää (19) reviewed 46 studies (including 14 randomised control trials) featuring health promotion interventions (which combine the physical activity and wellbeing check programs in the previous ROI report). They found an average 20% reduction in absenteeism, and a 40% increase in "work ability." We assume the latter to be an equivalent drop in presenteeism. For employees in large firms, this equates to 0.84 decrease in absentee days, and a 7.2% improvement in the proportion of staff reporting presenteeism behaviour (0.58 reduced absentee days, and 7.2% lower presentee rate, in small/medium organisations).

Return on Investment

For both small/medium and large employers, **there is a positive ROI for providing a health promotion program (table 12)**. For SMEs, the return is $2.86 benefit for every dollar invested, while for large employers, the ROI is 4.01. These figures remain positive even if there are much smaller effect sizes (10% reduction in both absenteeism and presenteeism), or higher investment costs ($200 per class). The ROI is insensitive to a higher uptake assumption of 50 percent.

Table 12. Return on investment for workplace health promotion

	SME	Large employer
Number of employees affected	10	200
Change in absenteeism		
Days	-0.6	-0.8
Benefit per employee	$119	$232
Change in presenteeism		
% affected	-7.6	-7.2
Benefit per employee	$568	$730
Total benefit	$6,866	$192,396
Total investment	$2,400	$48,000
ROI	**2.86**	**4.01**

ROI analysis by industry, sector, and for frontline workers, is provided in Appendix Table 1.

Group Cognitive Behavioural Therapy based stress management (CBT)

Cost assumptions

We assume that each employee participates in a course comprising two, half-day sessions, and that an external facilitator, often a clinical or organisational psychologist, costs $2,000 per course, with up to 20 employees attending.

Benefit Assumptions

Richardson and Rothstein (21), in a review of 36 experimental and randomised studies of stress management programs, found that these interventions improved mental health outcomes (stress, anxiety and depression) by 0.53 standard deviations, on average. The authors found a substantially higher effect (1.16 standard deviations) for CBT clinical interventions. However, Tan, Wang (22) find that, in a review of 9 randomised controlled trials, find that CBT interventions yielded a significant 0.12 standard deviation improvement in the prevention of depression symptoms. To account for these disparate findings, we use the central figure of 0.53 standard deviations. We assume that all of those with mental ill-health may potentially benefit from the CBT program, as well as the 30% of employees in good mental health but deemed to be at-risk (Fernandez et al 2017 (23). Of these potential employees, we assume that there is 50% uptake of the program.

From the HILDA data, we estimate the unconditional relationship between absentee days and the continuous MHI score using ordinary least squares regression. The results suggest that a 1-unit increase in the MHI score is associated with a -0.038 decrease in absentee days for employees in large employers and -0.013 decrease for employees in small/medium organisations. This resulted in small decreases of around 0.2 absentee days given the assumed effect size. Similarly, a probit regression model of presenteeism estimates that a 1-unit increase in the MHI score is associated with a -0.009 decrease in the probability of reporting presentee behaviour for all employees. For all organisations, this resulted in an 8% decrease in the rate of presenteeism given the assumed effect size. While simplified, these measures of the relationship between mental health and productivity outcomes are nonetheless based on the data of over 38,000 employee observations.

Return on investment

There is a **small, positive ROI for the CBT intervention** – a return of $1.56 for every dollar invested in a small/medium firm, and $2.39 in a large employer. The benefit arises virtually exclusively through a reduction in presenteeism behaviour. The ROI figures remain positive for a higher facilitation cost assumption of $5,000; but become close to break-even for a

longer course which requires two days per employee i.e. the costs of employees missing work for the training has a greater impact than the cost of the facilitator.

Table 13. ROI analysis for CBT intervention

Size of organisation	Small/medium employer	Large employer
Number of employees affected	10.2	198.0
Change in absenteeism		
Days leave	-0.1	-0.3
Cost per employee	$23	$88
Change in presenteeism		
% affected	-8.0	-8.0
Cost per employee	$604	$808
Total benefit	$6,379	$177,515
Total investment	$4,083	$74,385
ROI	**1.56**	**2.39**

ROI analysis by industry, sector, and for frontline workers, for the CBT intervention is provided in Appendix Table 2.

Psychological return to work (RTW) program

Cost Assumptions

van Oostrom, Heymans (25) provide full costings of a RTW intervention in a Dutch study. The study found that the RTW intervention cost around $36,000 in a large firm. These costs were largely attributable to the training costs of an occupational therapist. We assume that in a large firm, the costs of providing a RTW program requires hiring a 0.5FTE occupational therapist. For a small/medium employer, we assume that the occupational therapist is required for a total of one day per affected employee. Data from the ABS reports that the annual salary of an occupational therapist is around $45,500 (ABS, 2017); we use this figure to calculate the costs of providing the RTW per employer.

Benefit assumptions

The effect of Work-Focused Psychological Therapy intervention is drawn from a review of three randomised trials (24). The review found that a workplace-plus-clinical intervention reduced sick leave days by 0.4 standard deviations. This was equivalent to a reduction of 3.3 absentee days in a large organisation (and 3.3 days in a small/medium organisation). We assume that the intervention targets all employees experiencing severe mental ill-health, who are more likely to take sick leaves of absence.

Return on investment

The ROI for RTW interventions is positive (table 14), returning $3.90 per dollar invested in a small/medium employer, and $3.74 in a large organisation. These ROI figures remain positive for significantly smaller effect sizes (0.2 standard deviation which is the lower limit for a small effect), and for higher costs of hiring an occupational therapist ($100,000p.a.).

Table 14. ROI analysis for RTW intervention

	SME	Large employer
Number of employees	4.2	72.9
Change in absentee days per employee	-3.3	-4.2
Benefit per employee	$684	$1,169
Total benefit	$2,843	$85,204
Total investment	$728	$22,766
ROI	**3.90**	**3.74**

ROI analysis for the RTW intervention by industry, sector and for frontline workers is provided in Appendix Table 3

Overall, we find that investing in a RTW or workplace health program intervention likely generates strong, positive returns to the employer by way of reducing absenteeism and presenteeism costs (in the latter case). Investment in a CBT intervention also generates positive, but lower, returns, particularly for small or medium organisations. Finally, we find that interventions targeting the redesign of jobs is unlikely to break-even for the employer.

Emerging trends

Manager training

Managers' knowledge of workplace issues and their ability to implement adjustments to working conditions place them in an influential position to manage work-based mental health risk factors and improve the mental health of their workers. A small body of research has evaluated specialised training for managers to promote understanding of mental health problems among workers, with evidence suggesting that managers value such initiatives and feel. However these studies show neither a strong nor consistent effect on the mental health of the employees being managed. This may relate to the specificity (or "strength") of the training, or ability to accurately evaluate employees health over time. A very recent RCT with a specific focus on training managers of a front line organisation in NSW had a strong effect on managers and led to an ROI of nearly $10 for every dollar invested due to the employees of trained managers taking 6.45 hours less work related sick leave in the six months after the intervention (Milligan-Saville et al in press).

Job design

The evidence base for the costs and outcomes of job design (both universal / organisational and selected) interventions is limited currently. This contrasts with a strongly held view in the practitioner community that this approach is vital and complementary to the secondary and tertiary prevention. There is also the possibility that the initial costs may not be replicated with longer term benefits from such redesign. There is a need for better designed, specified and (economically) evaluated job design intervention. The evidence we have suggests that on their own they may not lead to a direct positive ROI in many cases (Dollard and Gordon 2014).

Implementation

However such organisational level approaches in redesigning jobs or manager training may be a prerequisite to the implementation of those interventions at other levels of the organisation that have consistently positive return on investment. These six factors have been well outlined in the *beyondblue* report and tested in Australian implementation research (Dollard and Gordon 2014). We reiterate them as they appear in that report:-

- ***Commitment from senior organisational leaders and business owners*** **-** Organisational leaders and business owners must make visible, long-term commitments to improving and maintaining good mental health in their workplaces if they want to create lasting positive change.
- ***Employee participation*** - Employee participation is essential to improving mental health in the workplace. Employee input must be sought in every step, from planning through to implementation and review.
- ***Develop and implement policies*** - Policy lays the groundwork for action. It needs to be clearly articulated and flexible enough to meet the needs of the organisation or business.
- ***Resources necessary for success*** **-** Initiatives aimed at improving mental health in the workplace require adequate resourcing if they are to succeed.
- ***A sustainable approach -*** Initial success requires ongoing effort to be sustained permanently.
- ***Planning –*** Successful implementation will be well thought out, identifying the intended goals and objectives, including the inputs required – such as financial resources, time or additional staffing.

Future work

There are several key factors that emerge from this report that are important in ensuring we are better able to assess the return on investment of workplace interventions to improve mental health in future. These include:

- The engagement by all stakeholders in the design, delivery and evaluation of an intervention and whether that engagement is to lead, collaborate, consultation or merely be informed about an intervention needs to be systematically evaluated;
- We need to evaluate workplace health interventions in small- and medium-sized businesses;
- We need a broader view on success means in workplace health interventions to understand what factors influence participation and changes in health outcomes and what business outcomes and costs are important and measures;
- Finally, the very limited data on economic evaluation needs addressing. Cost evaluations need to be incorporated into workplace health intervention studies, in order to establish whether they are cost-effective.

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Appendix 1

Tables 1 to 3 present the ROI analysis detailed in this report, by industry, sector and for frontline workers for a large organisation of 1,000 employees. The analysis has been excluded from the body of the report because the variation in ROI figures across industries in particular is driven by factors substantively unrelated to the underlying concerns about mental health and productivity. The ROI figures result largely from 1) the extent to which an organisation is able to leverage a fixed cost intervention (e.g. the hiring of an occupational therapist), and 2) inter-industry wage differentials.

Table 1 presents the ROI calculations for the workplace health program intervention by industry. We have assumed in this large organisation that 20% of the workforce participate in the WHP program. As with the earlier analysis, the WHP intervention is assumed to reduce absenteeism by 20% and presenteeism by 40%. The large variation in the ROI figures reported in Table 2 largely reflect wage differentials across industries together with the fixed cost of investment. Table 2 presents the ROI analysis for the CBT intervention by industry. The figures in Table 2 show a relatively stable ROI of between 1.7 and 2.7.

Tables 1 and 2 make additional assumptions about the effect of workplace mental-health interventions on workers' compensation claims (WCC). The data from the NSW State Insurance Regulatory Authority indicates that the incidence rate of mental health claims in NSW is around 1 claim for every 1,000 employees. To our knowledge, there is very limited evidence on the effects of any workplace mental health interventions on workers' compensation claims. For this reason, we report the ROI figures based on reduced absenteeism plus presenteeism costs only, and separately inclusive of reduced workers compensation claims. We assume that the CBT intervention reduces the value of one claim by 15%. As the data shows, the impact of this assumption is small, even in industries with larger average claim sizes.

Table 3 shows ROI figures for a RTW intervention by industry. We have assumed a large organisation size of 1,000 employees, and the RTW is offered to employees reporting severe mental ill-health. The net benefit is assumed to be a 0.4 standard deviations reduction in the average absentee days across all those severely ill. The investment cost is assumed to be a 0.5 FTE occupational therapist. The ROI figures in Table 4 show that ROI on RTW ranges from 2.3 in accommodation/food services to 4.9 in professional services. The figures reflect fixed-cost leverage, as well as wage differentials, across industries.

Table 1. ROI Analysis of workplace health promotion (WHP) by industry

Industry	Total benefits			Investment ($)	ROI (excluding WCC)	ROI (including WCC)
	Absenteeism ($)	Presenteeism ($)	Worker's compensation claims (WCC)			
Agriculture, Forestry & Fishing	-	-		-	-	-
Mining	61,481	177,478	19,659	48,000	5.0	5.4
Manufacturing	36,156	131,672	10,288	48,000	3.5	3.7
Electricity, Gas, Water & Waste Services	66,239	180,059	16,837	48,000	5.1	5.5
Construction	33,134	126,958	11,525	48,000	3.3	3.6
Wholesale Trade	30,867	131,504	12,499	48,000	3.4	3.6
Retail Trade	14,226	87,691	5,534	48,000	2.1	2.2
Accommodation & Food Services	3,784	74,307	6,219	48,000	1.6	1.8
Transport, Postal & Warehousing	40,254	134,509	4,656	48,000	3.6	3.7
Information Media & Telecommunications	44,439	205,084	16,025	48,000	5.2	5.5
Financial & Insurance Services	55,412	157,466	20,907	48,000	4.4	4.9
Rental, Hiring & Real Estate Services	25,306	122,525	9,366	48,000	3.1	3.3
Professional, Scientific & Technical Services	42,158	193,114	13,057	48,000	4.9	5.2
Administrative & Support Services	27,766	141,693	7,222	48,000	3.5	3.7
Public Administration & Safety	58,871	141,987	16,357	48,000	4.2	4.5
Education & Training	40,875	129,916	6,721	48,000	3.6	3.7
Health Care & Social Assistance	40,823	144,816	8,511	48,000	3.9	4.0
Arts & Recreation Services	13,686	93,911	4,289	48,000	2.2	2.3
Other Services	19,789	105,091	9,557	48,000	2.6	2.8
Sector						
Private	24,830	126,706	-	48,000	3.2	-
Public/ Not-for-profit organisation	55,764	165,155	-	48,000	4.6	-
Frontline workers	49,187	112,907	19,464	48,000	3.4	3.8

Table 2. ROI analysis of cognitive behaviour therapy (CBT) by industry

Industry	Total benefits			Investment ($)	ROI (ex WCC)	ROI (incl. WCC)
	Absenteeism ($)	Presenteeism ($)	Worker's compensation claims			
Agriculture, Forestry & Fishing	-	-		-	-	-
Mining	28,795	262,977	19,659	107,700	2.7	2.9
Manufacturing	17,675	161,416	10,288	75,605	2.4	2.5
Electricity, Gas, Water & Waste Services	22,232	203,040	16,837	87,978	2.6	2.8
Construction	18,913	172,725	11,525	78,371	2.4	2.6
Wholesale Trade	16,477	150,474	12,499	70,734	2.4	2.5
Retail Trade	9,807	89,560	5,534	51,381	1.9	2.0
Accommodation & Food Services	7,812	71,348	6,219	46,533	1.7	1.8
Transport, Postal & Warehousing	18,616	170,011	4,656	77,893	2.4	2.5
Information Media & Telecommunications	21,111	192,802	16,025	86,051	2.5	2.7
Financial & Insurance Services	22,137	202,171	20,907	88,954	2.5	2.8
Rental, Hiring & Real Estate Services	14,208	129,760	9,366	63,547	2.3	2.4
Professional, Scientific and Technical Services	20,627	188,379	13,057	84,485	2.5	2.6
Administrative & Support Services	15,114	138,031	7,222	68,765	2.2	2.3
Public Administration & Safety	18,282	166,966	16,357	76,298	2.4	2.6
Education & Training	15,032	137,284	6,721	65,885	2.3	2.4
Health Care & Social Assistance	15,656	142,984	8,511	69,357	2.3	2.4
Arts & Recreation Services	10,512	96,000	4,289	53,300	2.0	2.1
Other Services	12,667	115,681	9,557	59,764	2.1	2.3
Sector						
Private	15,355	140,230	-	68,285	2.3	-
Public/ Not-for-profit organisation	18,747	171,205	-	78,021	2.4	-
Frontline workers	18,128	165,558	19,464	75,184	2.4	2.7

Table 3. ROI analysis of return to work (RTW) intervention by industry

Industry	Total benefit (Absenteeism $)	Investment	ROI
Agriculture, Forestry & Fishing	-	-	-
Mining	71,068	22,766	3.1
Manufacturing	96,290	22,766	4.2
Electricity, Gas, Water & Waste Services	90,097	22,766	4.0
Construction	86,210	22,766	3.8
Wholesale Trade	78,983	22,766	3.5
Retail Trade	62,632	22,766	2.8
Accommodation & Food Services	52,918	22,766	2.3
Transport, Postal & Warehousing	92,586	22,766	4.1
Information Media & Telecommunications	88,848	22,766	3.9
Financial & Insurance Services	106,680	22,766	4.7
Rental, Hiring & Real Estate Services	65,129	22,766	2.9
Professional, Scientific & Technical Services	110,641	22,766	4.9
Administrative & Support Services	95,244	22,766	4.2
Public Administration & Safety	76,310	22,766	3.4
Education & Training	62,959	22,766	2.8
Health Care & Social Assistance	88,144	22,766	3.9
Arts & Recreation Services	61,896	22,766	2.7
Other Services	64,624	22,766	2.8
Sector			
Private	84,526	22,766	3.7
Public/ Not-for-profit organisation	87,245	22,766	3.8
Frontline workers	80,406	22,766	3.5

Appendix 2 –Methodological Issues

There are a number of caveats in interpreting each of these ROI analyses, including:

- We have only calculated the benefits arising from reduced absence and presenteeism. The minimal extra benefits to individual businesses from reduced Worker's Compensation Claims that do not alter any of the ROI estimates substantially have been illustrated for one of the interventions;
- We have not modelled the potential additional cost benefits through lower usage of health and other services, benefit transfer payments or other subsidies. These are likely to lead to improved ROIs;
- We have triangulated the data used to explicitly derive our benefits and costs with other Australian data where possible. There are some differences;
- In several cases we have used the lower range of the potential cost of undertaking such interventions, e.g. not including the cost of manager's time, other staff's involvement, development and other sunk costs.

Catalogue No. SW08735 1017