THE WORK OUTCOME RESEARCH
COST-BENEFIT (WORC) PROJECT

THE UNIVERSITY OF QUEENSLAND

Report:

Health Survey of the NSW Transport Industry

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Contents

Table of Tables

Table of Figures

Summary

The one-month prevalence of depression (13.3%), anxiety (7.9%) and stress (7.5%) as measured by the Depression, Anxiety, Stress Scale (DASS) are slightly lower in NSW truck as compared to published normative values. Using the Kessler 6 (K6), a non-specific scale of psychological distress, truck drivers have a slightly lower prevalence of moderate (4.5%) and high psychological distress (3.5%) than the Australian workforce does (9.2% & 4.3% respectively). Irrespective of the Australian normative values, there are 13% of truck drivers with some degree of depression. In addition, 91% of the drivers that were symptomatic were not in treatment.

In regards to DASS symptoms consistent with anxiety, being aged between 18 and 44 years old was the only independent significant factor increasing the odds of having anxiety symptoms. Marital status had a large and significant impact on increasing the odds ratios (OR) for depression and stress (DASS). Being divorced increased the OR of depression to 3.1 and for stress to 8.2. These OR increases are substantial suggesting that divorce is a major risk factor for poor mental health in NSW truck drivers.

Using the AUDIT, 27% of NSW truck drivers scored positive for potential hazardous and / or harmful alcohol use. 24% fell into the mild category where there is a recommendation for simple advice and information, 1% were in the highest risk level for alcohol consumption where there would be a recommendation for treatment. Level of alcohol misuse was significantly associated with anxiety (DASS) levels with having extremely severe anxiety symptoms increased the OR for potential hazardous and / or harmful alcohol use to 4.7. Additionally, being aged 34 to 45 years old was associated with a significant increase in the OR for potential hazardous and / or harmful alcohol use (OR = 6.1). Therefore, age is a potent predictor of alcohol use when accounting for covariate effects of other variables.

One of the most important aspects of driving for an occupation is the propensity for an accident especially when the vehicle is a heavy goods vehicle (HGV). Multivariate analysis results indicate there are several factors predicting accidents or near misses. Being a casual HGV driver, as opposed to full or part-time driver, significantly increases the OR for an accident to 2.4. Having mild to severe alcohol misuse (AUDIT > 8) increases the OR for an accident to 1.7. Notably, the largest effect on odds for an accident or near miss is from depression symptoms. Mild depression is associated with an increase in the OR to 2.4 very severe depression increases the OR to 5.7. Therefore, as mentioned above the prevalence of depression in NSW truck drivers is 13% and these drivers are at least twice as likely to have an accident with the severely depressed drivers (2%) nearly six times more likely to have an accident or near miss.

On average NSW truck drivers work 62-hours per week which is much greater than the Australian full-time employee average of 43-hours per week. Alarmingly 65% state they work more than 60-hours per week and 6.5% work more than 100-hours. Long-haul HGV drivers on average work longer than short-haul HGV drivers. The number of hours worked was directly related to increased stress (DASS) levels of the drivers. Anxiety and depression symptoms (DASS), high psychological distress (K6) and serious alcohol misuse (AUDIT) all significantly increased driver absenteeism rates.

Twelve percent of the drivers indicated they used a drug either daily or weekly. Marijuana usage in the past 30-days was similar in drivers (11%) as compared to population normative values (11%)[1]. However, drivers usage of all other drug types was at least double that of population norms. Age was a significant factor in drug use with 25-34 year olds and 65-years and over reporting the greatest drug use in the last 30-days (29% and 24% respectively). Additional risk factors for taking a drug in the past 30-days were (1) being single, (2) being Owner / operator long haul, (3) working more than 80-hours per week or less than 40-hours per week. There was also a degree of substance use co-morbidity with mental health problems in that 28% of workers with anxiety and 27% with depression have taken a drug in the last 30-days.

Of the drivers that were screened as having either high or very high mental health symptoms 32 gave consent on their questionnaire for further contact. On subsequent contact only 11 consented to participate in the psychologist administered treatment program. This demonstrates that HGV drivers have substantial barriers to treatment. All of the 11 drivers in the care manager program found it helpful.

In conclusion, depression significantly elevates the risk for an accident in HGV drivers. The vast majority of depression symptomatic drivers are not in treatment. As the impact of HGV accidents is so large, including loss of life, it would be commonsensical to extend the research findings here into an action plan.

Introduction

Background to Commissioning the Project

The Work Outcomes Research Cost-benefit Project (WORC), funded by the Department of Health & Ageing (Commonwealth Government) has been running since 2004. During the initial survey period, which lasted 13-months, over 360,000 employees were invited to participate and just over 90,000 people completed the Health Appraisal Survey.

The NSW Transport Industry project, an extension of the WORC Project, was commissioned by The Australian Rotary Health Research Fund and supported by, the National Transport Commission, the NSW Road Transport Association, the NSW Transport Workers Union, and the Transport and Logistics Centre. The aim of this study was to identify the prevalence of mental health disorders in NSW Transport Workers; to learn about health conditions that concern drivers the most, and help unions and employers plan health initiatives to benefit the industry.

Literature Review

Transport is a fundamental element of developed economies and has considerable economic, social and environmental impacts. In 2003-04 the transport and storage industry's share of the total production of goods and services in the Australian economy (gross domestic product) was 5.1%. In terms of gross value added (GVA; the contribution of an industry to the overall production of goods and services in an economy) the transport and storage industry was close to $40 billion, with the road transport sector having the greatest increase in GVA (29%) between the periods 1999-2000 and 2003-2004. Average annual employment in the transport and storage industry in 2004-05 was 454,400 persons of whom 214,800 were in road transport. In 2002-03 road transport generated $21,486 million in goods and services sales and had a net worthy of $4349 million and of the transport industries had the highest number of employing operating businesses. Road transport is the largest component of the transport and storage industry income (35%), wages and salaries (35%), and 50% of operating profit before tax. In summary, the transport and storage industry is a substantial contributor to the Australian economy across all measures of economic activity. Within that industry group, road transport operations are a majority contributor. Illness, injury and death within this group could be expected to have a substantial economic impact given the size of the contribution of this industry to Australia's overall economic welfare.

Risk factors that are identified by industry bodies such as the ATSB and articulated in the Australian Transport Council National heavy Vehicle Safety Strategy 2003-2010 and objectives for improving safety are:

- increased seatbelt usage by heavy vehicle drivers;
- safer roads;
- more effective speed management;
- reduced driver impairment; and
- safer heavy vehicles.

Within this risk management framework understanding how mental health difficulties impact on driver impairment is entirely reasonable. Searches of literature databases of psychINFO and pubMED yielded no studies examining the effect of mental health of truck driver's performance.

It has been identified that long-distance truck drivers are a vulnerable population (to health problems) due to the mobile nature of the job, a greater exposure to health risks and medical indigence[2]. Numerous studies have examined occupational correlates (eg. working hours) that lead to drivers stress or fatigue[3,4] or the mental health sequelae of road accidents. None has examined the impact of mental health *per se* on driver's performance and the contribution to road accidents. However, to our knowledge there has not been any published scientific material examining the effect of mental health problems on job performance in heavy goods vehicle drivers. Yet it is known that mental health difficulties impair attention, concentration, memory, motivation, decision making, relations with peers, supervisors, time management and self-efficacy[5-8]. Reductions in these domains result in a reduction in on-the-job performance[7,9-28]. Attention, concentration and decision-making are key components that influence a driver's performance and therefore it is reasonable to examine the effect of mental health problems on the performance of heavy goods vehicle drivers. It has been proposed in the literature from the suicide arena that a proportion of single vehicle accidents could be attributable to suicide and there is no reason to think that truck drivers would be immune from this possibility. However, it is impossible to establish or test this hypothesis with any reliability.

A cornucopia of epidemiological evidence indicates a 12-month prevalence of diagnosable mental health disorders of between 19% to 30%[29-34]. Mental disorders are four of the leading ten causes of disability worldwide[35-37]. Of all health conditions, mental health is also in the top 10 regarding health related costs to employers[21,38-40]. It is commonly reported that one in five Australians will have a mental health problem at some time in their lives [41,42]. Burgeoning eruditions juxtaposing mental health conditions with employees performance are nemine contradicente in concluding that mental health is responsible of a large reduction in employee productivity[7,9-28], reviewed in [43-46]. Two components of employee productivity are the focus of most of the research, namely absenteeism (not attending work) and presenteeism (attending work while ill but not functioning to usual capabilities[47,48]). The majority of the more recent literature indicates that presenteeism, due to a mental health disorder, is the major component of employee productivity decrements[9-11,14,17-20,24,25,28].

Compounding the effect of mental health problems is that in the general population, treatment-seeking behaviour for mental health symptoms is low[29,30,33,49-51]. The same is true of employees[52,53]. Andrews et al. (2001)[49], report that only 37% of Australians with mental illness seek treatment, and less than one quarter (22%) of this group seek help from an efficacious source (evidence-based medicine such as medication or CBT). The 1997 SMHWB[42] finds that for males, with any mental health condition, 28.3% accessed some form of medical services in the past 12-months while 43% of females accessed medical services. Henderson et al. [50], show that of all mental health cases, 64.6% had had no contact with health services in the previous year; 29.4% had seen GPs and 7.5% had seen psychiatrists. This highlights that males are much less likely to access professional advice for mental health than females. Stigma, age of onset, lack of perceived need for treatment and lack of access to available resources are common barriers to seeking treatment for mental illness[54,55]. Australian researchers found that 44% of people with moderate or severe disability do not seek treatment because they do not recognise a need[30]. Many individuals do not seek help until they are experiencing high levels of distress, hence this may explain why consultations with a mental health professional (MHP) are found to be associated with increasing co-morbidity and disability[55].

Mental health problems are thought to increase workplace accident rates[8,21,56]. Different accidents have different implications and are very specific to tasks. Therefore, it is difficult to monetize this finding across all employees. However, increased workplace accidents are a component factoring into the cost of psychological distress to the employer. In specific regards to transport workers, the impact of workplace accidents has the potential for enormous impact including the loss of life.

Despite contemporary evidence that that treatments for mental health are clinically effective and economically desirable [12,53,57-61] many employers have been reluctant to engage in proactive employee mental health programs. For physical health conditions, progressive employers have adopted prevention, screening and early intervention models. In the case of mental health, most occupational health and safety (OH&S) programs remain entrenched in the arcane reactive model (eg. take action once the disorder presents). Employer reticence is due to numerous factors one of which is a lack of applicable, relevant and ecologically valid data. Managers are skeptical regarding mental health prevalence perceiving that, their particular employees, are conferred with an immunity[62]. Although mental health problems are pervasive and undiscriminating, nearly half of senior managers are of the opinion that none of their workers will suffer a mental health problem in their working lives[62].

Most of the salient research on the mental health – productivity relationship was derived from large epidemiological surveys employing complex diagnostic interviewing procedures in the home. The lengthy, cumbersome and costly mental health interview process, employed by population-based surveys, precludes its use in OH&S programs and therefore this data cannot be readily extrapolated to OH&S mental health program implementation. A second limitation is the dichotomous nature of the diagnostic criteria for mental health problems in population-based studies. Although this is necessary to quantify the population prevalence of mental disorders, the reality in the workplace milieu is that mental health symptoms, even when insufficient to meet the threshold for diagnosis, are likely produce a reduced employee performance. Therefore, a mental health measure that is scale based, rather than dichotomous, is more appropriate. Thirdly, estimates of employee performance from epidemiologic studies are typically surrogate measures such as 'days out of role', 'work cut-back days', 'extra effort days' or generalized assumptions about reductions in productivity. A well-validated, easy to apply mental health–productivity instrument specific to employees, that can quantify outcomes of mental health related interventions through OH&S programs is required. The World Health Organisation (WHO) Health and Performance at Work Questionnaire (HPQ)[63] meets these criteria. Embedded in the HPQ is the Kessler 6 (K6), a scale based measure of non-specific psychological distress[64-67]. The scales' brevity and diagnostic accuracy make it an ideal tool for inclusion as a mental health component in employer health risk appraisal surveys.

To date, the affect of poor mental health on transport workers productivity has not been sampled in situ. For research findings to be translated into corporate policy and purchasing of health services, corporate programs must be able to replicate the measurement instrument. Alternatively, in the very least, comprehend how the research findings apply to their specific employees rather than employees in general. This project is specific to transport workers.

Utilizing a survey method and survey contents readily accessible to employers, and consistent with routine occupational health and safety (OH&S) practice of distributing a health risk assessment survey in the workplace, the impact that psychological distress (K6) imposes on transport workers productivity including workplace accidents is examined. Assembled data consist of a large sample of transport workers. Identifying at risk populations and economically expensive populations allows appropriate targeting of health resources.

The K6 is a psychological symptom measure and this paper hinges on the assumption that symptoms drive employee productivity changes rather than nosology. This is a reasonable hypothesis as it has been shown that mental health symptom severity is related to the functional disability, absenteeism, presenteeism and economic cost[7,23,28,68]. Prior economic computations, assumed that treated depression is associated with less absenteeism and productivity than untreated depression and factored this into economic estimates[24,27,69]. Though evidence suggests that on average this may be true[60] it is certainly not true for all employees with depression as it is recognised that 75% of people receive ineffective or substandard treatment[70-72]. Using the symptomatic K6 negates the requirement for any treatment assumptions. If a person is in treatment, yet is still highly symptomatic (high K6), the authors posit work performance would be equivalent to a symptomatic employee not in treatment.

Method

The Questionnaire

The initial screening questionnaire, called the Health & Wellbeing Survey, was based on the Health Appraisal Survey (HAS) that was used in the WORC Project, however the scope of the questionnaire was broadened to include screening for anxiety, depression, stress and alcohol misuse (the DASS and A.U.D.I.T) in addition to non-specific psychological distress (Kessler 6). The survey was further customised to meet the needs of the TWU and Beyondblue with the inclusion of two additional components:

1. questions relating to drug use, and
2. attitudes to mental health

HAS

The HAS was a slightly modified, renamed version of the World Health Organisation's *Health and Work Performance Questionnaire* (HPQ). Minor modifications made the survey more applicable to Australian employees. Changes included spelling modifications from US to Australian spellings and the addition of 3 employee questions namely; (1) Please choose the category that best describes your occupation; (2) Are you an external contractor? and (3) Are you full-time, part-time or casual employee?

The HPQ was designed to evaluate employee productivity for chronic and acute physical and mental health conditions[21,63,73-75]. Further information on the HPQ can be located at http://www.hcp.med.harvard.edu/hpq/. The survey was originally developed to estimate the impact of health problems on the workplace. It is an expanded health risk appraisal that has been commonly used since the late 1960's to evaluate risk factors for illness, to target primary outreach interventions, and to estimate future health care expenses for corporations.

The HAS consisted of 28 questions about general physical and mental health (Questions a3a to a4s), 11 questions on physical health symptoms, the Kessler 6 (K6) to quantify psychological distress, eight questions about medical consultations in the last 12 months, 27 questions about performance at work and nine questions about demographic variables.

Employee productivity

To quantify absenteeism the HPQ asks a number of questions about hours missed from work. The first question probes employees about the hours they actually worked in the past seven-days. The second question asks employees to report how many hours their employer expects them to work in a typical seven-day period.

Several researchers have employed the method of adjusting employee's performance by their self-report perceptions of their own productivity in relation to that of others in similar jobs[14,21,47,60,63]. A detailed explanation of the rationale and calibration studies around presenteeism is located in [63]. In the HPQ the respondent is asked to rate the performance of an average person ($P_{average}$), working in a similar job to their own on a self-anchoring scale of performance of 0-10 (worst to best). Respondents also rank their own performance (0–10 scale), over the past 28-days during the time they were at work (P_{own}). The formula used to calculate presenteeism is:

$$Presenteeism = \left[\frac{P_{average} - P_{own}}{10} \right] \times 100 .$$

Where division by 10 is the scope of the scale and multiplication by 100 converts to a percentage. Thus, positive percentages indicate an employee's performance is less than co-workers (positive presenteeism), and negative percentages reflect that an employee is performing better than co-workers (negative presenteeism). This method bounds the data from -100% to 100%. Where 0% is an employee who is working at the same level as co-workers, -100% is an employee who rates their performance at the maximum level

(10/10) and others performance at the minimum level (0/10). Similarly, 100% is a complete absence of productivity.

The total productivity (*Tp*) was calculated by the product of absenteeism with presenteeism for each individual using the formula:

$$Tp = \left[\left(\left[\frac{100 - Absenteeism}{100} \right] \times \left[\frac{100 - \Pr esenteeism}{100} \right] \right) - 1 \right] \times 100$$

Positive productivity percentages indicate an increase in productivity (greater output than employer expects) negative percentages represent decreased productivity (lower output than employer expects). A prevalence-based human capital approach is used to convert percent decrements in performance to monetised values.

Employment, industry and demographic variables.

Employee's were asked to select their employee category from eight options in the HPQ. Categories were (1) Executive, administrator or senior manager (eg. CEO, sales VP, plant manager). (2) Professional (e.g. engineer, accountant, systems analyst, doctor, nurse, teacher). (3) Technical support (e.g. lab technician, legal assistant, computer programmer). (4) Sales (e.g. sales representative, stockbroker, retail sales). (5) Clerical and administrative support (e.g. secretary, billing clerk, office supervisor). (6) Service occupation (e.g. security officer, food office worker, janitor). (7) Precision production and crafts worker (e.g. mechanic, carpenter, machinist) (8) Operator and labourer (e.g. assembly line worker, truck driver, construction worker).

Each employer and their employees were classified to a certain industry according to the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 (cat. no. 1292.0). Industry was a covariate in subsequent analyses. A variable "sector" was created to reflect if the employee was a Federal Government, State Government, Local Government or private sector employee. Sector was a covariate in subsequent analyses.

Demographic variables recorded by the HPQ included as covariates for ANOVA comparisons are gender, age (18-24, 25-34, 35-44, 45-54, 66-64, 65 and over), marital status (married or cohabiting, separated, divorced, widowed and never married), number of children (0, 1, 2, 3, 4 or more), education level (less than year 10, year 10, year 12, some tertiary education, degree graduate, postgraduate degree). To control for physical co-morbidity effects in the models, the total number of physical health conditions were coded into categories of 0, 1, 2, 3, 4, 5, 6 or more, out of a possible 24 chronic physical conditions listed in the HPQ[21,63]. Normalising for physical co-morbidity by counting the number of conditions is a parsimonious approach previously applied [7,17,75].

Screening Components

The following screening tools were included in the questionnaire:

1. **Kessler 6** (k6) The K6 is a self-administered psychological distress scale which can be used to assess mental health symptom severity.

2. **DASS** The DASS is a set of three self-report scales designed to measure the negative emotional states of depression, anxiety and stress.

3. **AUDIT** The AUDIT (the Alcohol Use Disorders Identification Test) was developed by the World Health Organisation to identify persons with hazardous and harmful patterns of alcohol consumption. It was developed to screen for excessive drinking and assist in brief assessments by health practitioners.

Kessler 6

Embedded in the HPQ is the K6, a six-item scale of psychological distress with excellent internal consistency, reliability and strongly discriminates between community mental health cases and non-cases[64-67]. Detailed information on the K6 including scoring can be found in[65,66]. In this study we employ published methods and a K6 score of 0 to 7 reflects low psychological distress (a mental disorder unlikely), a score of 8-12 indicates moderate psychological distress and a score of 13 to 24 represents high psychological distress (high likelihood of a mental health disorder).

DASS

The Depression, Anxiety and Stress Scale (DASS)[76] is a set of three self-report scales designed to measure the negative emotional states of depression, anxiety and stress. The DASS has excellent internal consistency and reliability and distinguishes well between features of depression, physical arousal, anhedonia, physiological hyperarousal, psychological tension and agitation [77-79]. The DASS was constructed not merely as another set of scales to measure conventionally defined emotional states, but to further the process of defining, understanding, and measuring the ubiquitous and clinically significant emotional states usually described as depression, anxiety and stress.

The Depression scale assesses dysphoria, hopelessness, devaluation of life, self-deprecation, lack of interest/ involvement, anhedonia, and inertia. The Anxiety scale assesses autonomic arousal, skeletal muscle effects, situational anxiety, and subjective experience of anxious affect. The Stress scale is sensitive to levels of chronic non-specific arousal. It assesses difficulty relaxing, nervous arousal, and being easily upset/agitated, irritable/over-reactive and impatient. Subjects are asked to use 4-point severity/frequency scales to rate the extent to which they have experienced each state over the past week. Scores for Depression, Anxiety and Stress are calculated by summing the scores for the relevant items.

AUDIT

The AUDIT has emerged as the pre-eminent screening measure, and combines the benefits of brevity, validity, and ease of administration. The Alcohol Use Disorders Identification Test (AUDIT) was developed to assist clinicians in identifying people who would benefit from reducing or ceasing their alcohol consumption[80,81]. The AUDIT is a ten-item screen that can be used in an interview situation or given as a pencil and paper test (Attachments 2.2, 2.3). It looks at alcohol consumption, drinking behavior and alcohol-related problems in an effort to identify possible risky and high-risk alcohol consumption. The focus of the AUDIT is problematic drinking and emphasises hazardous drinking rather than long-term dependence. The AUDIT utilises a quantity-frequency measure, e.g. "In the past week how often did you have an alcoholic drink (options: every day, 5-6 days per week, 3-4 days per week etc)" and "On a day that you have an alcoholic drink how many standard drinks do you usually have". The AUDIT takes around two minutes to complete and less than a minute to score. The AUDIT has been validated cross-nationally in several large-scale World Health Organization trials and its sensitivity and specificity (92% and 93%, respectively) are similar across disparate cultures.

The AUDIT is easy to score. Each of the questions has a set of responses to choose from, and each response has a score ranging from 0 to 4. All the response scores are then added. Total scores of 8 or more are

recommended as indicators of hazardous and harmful alcohol use, as well as possible alcohol dependence. In most cases, the total AUDIT score will reflect the patient's level of risk related to alcohol.

On the basis of experience gained from the use of the AUDIT in previous research, it was found that AUDIT scores in the range of 8-15 represented a medium level of alcohol problems whereas scores of 16 and above represented a high level of alcohol problems. It is suggested [81] that the following interpretation be given to AUDIT scores:

- Scores between 8 and 15 are most appropriate for simple advice focused on the reduction of hazardous drinking (Zone II).
- Scores between 16 and 19 suggest brief counseling and continued monitoring (Zone III).
- AUDIT scores of 20 or above clearly warrant further diagnostic evaluation for alcohol dependence (Zone IV).

Beyond Blue Attitudes to Mental Health

This section of the questionnaire contained questions to assess:

- Awareness, understanding and knowledge of depression
- Attitudes and perceptions towards people with depression
- Knowledge about appropriate behaviours and management practices around depression
- Willingness to assist a person with depressive symptoms

Survey Components

The questionnaire (Appendix 1) was delivered in a paper-based format, it took approximately 30 minutes to complete. The survey components were included in the following order:

- Demographics
- Work Classification
- Your Health – Physical Health Conditions
- DASS 21 – Mental Health Screening Tool
- Kessler 6 – Mental Health Screening Tool
- Audit – Alcohol Use
- Work Performance Questions
- Treatment
- Drug Use
- Attitudes to Mental Health

Survey Distribution

This group of employees posed unique challenges for the implementation of the Health & Wellbeing Survey. The response rate to the initial survey distribution and subsequently the number of respondents engaging in the Care Manager Program was particularly low. In response to this, a second round of data collection was completed using a different survey method.

In contrast to the majority of employees involved in the original WORC project, the NSW Transport Workers presented a group of predominantly male employees, without easy access to the internet, who were time poor and often away from their home base. As a result, accessing and recruiting this type of worker group presented a number of difficulties and there are few guidelines or effective strategies for engaging them in research, even when that research may result in both individual and group benefits

Phase 1

The initial survey period ran from September 15th to December 31st, 2006.

Survey packs that included an invitation letter, a copy of the survey and a reply paid envelope were sent out by the NSW Transport Workers Union (TWU) to their members. In total 3,000 self-completion questionnaires were distributed to members of the Transport Workers Union including:

Method	No.
Mailed out from TWU	1275
Handed out at TWU Conference	1000
Distributed via TWU Delegates	725
Total	**3000**

The response rate to this method of survey distribution was only 8% (243 completed), much lower than the expected response rate of 25%.

Phase 2

The second survey period ran from May 28th to July 20th 2007.

Self-completion questionnaires were handed out and collected at selected truck stops by trained interviewers. Upon collection of the completed questionnaire, the interviewer placed it in a sealed envelope in front of the recipient, to ensure privacy and confidentiality.

This method was thought to be most beneficial for increasing the response rate because it involved respondents directly interacting with a person who prompted them to complete the questionnaire at the time of receiving it and was available to assist in the completion of the questionnaire if required (e.g. literacy issues).

Based on volume of truck drivers, the TWU identified five sites and suggested hours to intercept eligible transport workers. The survey period ran until the target of 1000 completed questionnaires was reached.

A total of 3,827 potential transport workers were approached to complete the survey. 657 indicated they were no transport workers (3,170 remaining eligible participants). 859 transport workers said they would complete the survey later and mail it in of which only 75 surveys were received by mail (8.7% mail response). 883 transport workers refused the survey with the main reason given being that they did not have enough time. Fifty-six surveys were incomplete and not included in the analysis and 657 transport workers said they had already completed the survey. Thus, 926 surveys were completed at the truck stops yielding a total of 1,001 survey completed in total. Subtracting out those who were ineligible and those who had already completed the survey yields 2,789 transport workers approached to do the survey of which 1,001 completed the survey and thus a response rate of 35.9%.

Recruitment of Surveyed Respondents in to the Care Manager Program

Eligibility

A driver was eligible for recruitment into the care manager program if:

They have scored positive for a mental health disorder on either the DASS 21 and / or the K6. Questionnaire thresholds for scoring positive were:

1. Anxiety Score (DASS) ≥ 12
2. Depression Score (DASS) ≥ 17
3. K6 Score ≥ 12

If a HGV driver met one of the above criteria then they were assessed for treatment status. Only drivers **not** in current treatment were recruited into the care manager program. Not in current treatment is defined as:

1. Less than 8 visits to a mental health professional in the past 12 months
2. Less than 2 visits to a mental health profession in the past month
3. Not taking psychoactive medication

Referral for intervention

HGV drivers who were identified as being at high risk for depression or anxiety (as per criteria above) and who consented to further contact received:

1. An introductory letter that provided more information about the process and informs them about what to expect when contacted by the psychologist.
2. A phone call from an Administrative Officer to schedule an appointment for their initial psychological assessment.

Initial Psychological Assessment

On initially contacting a HGV driver, the psychologist explained the purpose of the contact. This explanation included an explanation of privacy and confidentiality issues, an estimation of the time it would take to conduct the initial assessment and a verbal consent from the individual. At the first telephone assessment the Project psychologist conducted a structured clinical interview to assess the employee's mental health status.

First Contact with a Psychologist

The first contact with a psychologist had several major components including:

1. A description of the purpose of the contact. (e.g. It was explained to the drivers that their questionnaire responses suggest the presence of some emotional or psychological concerns, which are sometimes seen in people who are experiencing depression. It was explained that their responses do not necessarily indicate that they have depression; however, a recommendation is made to arrange to see a GP or Psychologist for further assessment and discussion of possible treatment options if necessary.)
2. An explanation of their answers (specifically about the questions related to depressive symptoms).
3. A single session focussed on identifying barriers to help seeking behaviour and overcoming barriers to treatment.
4. A description of the program processes.
5. That all their information is held in the strictest of confidentiality.
6. That participation is completely voluntary and they can withdraw at any time.

No Intervention

There are three circumstances where no intervention was offered to HGV drivers:

1. If the HGV driver is identified in the initial structured clinical psychologist assessment as not having current mental health symptoms and therefore does not require further intervention or treatment; their responses to the questionnaire were explained and the psychologist disengaged with the HGV driver. The driver was supplied a toll free 1-800 number to call (Project psychologist) if they felt that they needed further assistance at a later date.
2. If the HGV driver declined any further contact, the psychologist disengaged with the person.
3. If the HGV driver had current mental health symptoms, but identified as currently being in adequate treatment for those symptoms, the psychologist will disengage with the participant and they will not be followed up as they are already in effective treatment.

Intervention Required

If the HGV driver was identified in the initial assessment as having current mental health symptoms, and was not currently in adequate treatment for those symptoms, the psychologist, with the respondents consent included the employee in the Care Manager program.

Care Manager Program

By agreeing to continue in the Care Manager Program, the HGV drivers entered the 'facilitation of help seeking behaviour' phase of the intervention. The operational definitions of this phase were:

1. To facilitate the driver to seek in-person treatment for their mental health symptoms.
2. To assist the driver in making informed decisions about treatment options.
3. To provide an opportunity for the driver to discuss barriers and problems they may have regarding any aspect of seeking help.

Facilitation of Help Seeking Behaviour

Facilitating help seeking behaviour in HGV drivers is achieved by a combination of:

1. Providing evidence based information about mental health issues and treatment options (Psycho-education); and
2. A Cognitive Behavioural Therapy Program combined with Motivational Interviewing Techniques.

Cognitive Behavioural Therapy Program

Each driver in this phase took part in a cognitive behavioural therapy (CBT) based intervention, in the form of a structured six session program. These sessions were designed to address psychological, emotional and practical barriers that might prevent the driver from seeking adequate evidence based assessment and intervention for their symptoms, but also provided basic CBT skills for coping with depression.

Individuals were assigned exercises to complete and their progress was reviewed and monitored by the Care Manager during each session and provided with written information that summarised comprehensive information about the program plus the exercises for completion. The information was designed in a series of information and tip sheets that built into a resource for the individual to assist in their recovery and maintenance of recovery. The information was written and designed by the WORC Plus clinical team specifically for this program. In addition, when required other services provided included referral letters to GPs and other mental health specialists, reports, and feedback.

Exceptions

Individual circumstances existed where seeking in person treatment for symptoms was not appropriate. If the driver was identified as having mental health problems consistent with severe mental illness such as psychosis, intervention was redirected to encouraging the person to seek specialist assistance.

Monitoring Phase

Following the initial intensive six session program, the WORC psychologists stayed in contact with the employee for a period of up to the end of the designated contract from the first initial assessment with the operational goals of:

1. Encouraging adherence to prescribed treatments
2. Offering any additional support and advice to the driver
3. Monitoring the progress of treatment
4. If required discussing treatment options with the primary treating clinician.

WORC Plus had an advice line for the treating clinicians. Participants could freely contact one of the project psychologists or the consultant psychiatrist for clinical advice if necessary.

If the driver was receiving in-person mental health professional services it was ensured that the WORC program did not conflict with the treatment being provided unless it was considered that:

1. The driver was at high risk of harm to themselves or others
2. It was considered that the treatment offered does not meet legal / ethical requirements.

The decision to intervene in the treatment of another mental health professional's was made only after consultation with the Senior Psychology Manager and the Consultant Psychiatrist.

Validity & Reliability

The purpose of any data analysis is to identify differences or relationships between different sample groups. It is important to know:

a. How reliable the actual measurement is (Standard Error), and

b. How certain it is, that a difference or relationship exists between two separate groups (Statistical Significance)

Sample Size & Standard Error

Sample size, that is the number of people in each category, is important. As the sample size increases, the standard error decreases.

Standard error is a calculation of the range (+ or -) of responses that could be expected, if the sampling were replicated and the questionnaire were administered in exactly the same way. If the standard error of the mean is small, you can have a great deal of confidence in your measurement.

As can be seen in the table below:

- If in a sample of 50 people, you found that 30% had migraine headaches; that percentage would range from +/- 13%, i.e. from 12 - 38%, if the survey were replicated repeatedly.
- However, if in a sample of 1000 people, you found that 30% had migraine headaches; that percentage would range from +/- 3%, i.e. from 22 - 28%, if the survey were replicated repeatedly. With a larger sample size you can be certain that the mean is true and not due to chance.

Sample Size:	**50**	**100**	**200**	**300**	**400**	**500**	**1000**
Proportion:	+ / -	+ / -	+ / -	+ / -	+ / -	+ / -	+ / -
5%/ 95 %	6	5	4	3	2	2	2
10%/90%	8	7	5	4	3	3	2
15%/85%	10	8	6	5	4	4	3
20%/80%	11	9	6	5	5	4	3
25%/75%	12	10	7	6	5	4	3
30%/70%	**13**	10	7	6	5	5	**3**
35%/65%	13	10	7	6	5	5	3
40%/60%	14	10	7	6	5	5	3
50%/50%	14	10	7	6	6	5	4

Prevalence Rates:

Whole Organisation

The prevalence of self-report health conditions is compared to the Australian average measured in the WORC Project. The Australian average has been calculated on c.90,000 questionnaire responses recorded to date. The prevalence of each health condition is compared to the Australian average using Chi Squared (X^2) statistics. For each health condition listed, you are presented with one of three possible text messages.

- No statistical Difference;
- Significantly higher prevalence;
- Significantly lower prevalence.

If the average prevalence rates in NSW transport are lower than the Australian norms and the statistical probability is >95%, this is a real effect and the message 'Significantly Lower Incidence' appears. If average prevalence rates in NSW transport are higher than the Australian norms and the statistical probability is >95%, this is a real effect and the message 'Significantly Higher Incidence' appears. In all other instances 'No Statistical Difference' message is displayed.

Employee Category

The prevalence of self-report health conditions for each employee category is compared to the Australian average measured in the WORC Project. The Australian average has been calculated on c.90,000 questionnaire responses recorded to date. The prevalence of each health condition is compared to the Australian average using Chi Squared (X^2) statistics. Results of the statistical computations are presented below the charts. A '#' symbol indicates average prevalence rates are lower than the Australian norms in that particular category, the statistical probability is >95% and that is a real effect. A '*' symbol indicates prevalence rates are higher than the Australian norms in that particular category, the statistical probability is >95% and that is a real effect. A '-' symbol indicates no statistical difference.

Participation Statistics

In total 1,324 NSW Transport Workers completed the Health & Wellbeing Survey.

Table 1: Participation Statistics

Division	No. of Respondents	% of Total
Owner Operator HGV - Long Haul	802	60.6%
Owner Operator HGV - Short Haul	192	14.5%
Driver HGV - Long Haul	149	11.3%
Driver HGV - Short Haul	62	4.7%
Other*	106	8.0%
Unknown	13	1.0%
Total	1,324	100%

The health report has been divided according to the categories above, as provided by the NSW Transport Worker's Union.

* The Other category includes:

16	Bus/Coach Drivers
13	Forklift Drivers
6	Furniture Removalists
5	HGV - Short & Long Distance
4	Pilot Vehicle Drivers
4	Garbage Truck Operators
4	Traffic Control/Emergency Patrollers
3	Owner - Light Goods Vehicles
2	Courier Drivers
38	Other
11	Not Specified

** It is important to pay particular attention to the number of respoondents in each category. If the numbers are low (eg <50) and the prevalence rate is low, then the power of the statistics is limited and may not be sufficiently accurate to make any informed decisions about the prevalence rates.

Demographic Profile

The demographics profile of the NSW Transport Workers sample differed on all aspects from those of Australian normative data as collected in the original WORC Project.

Table 2 Demographic Profile of Sample

			Owner /Operator		Driver		
Description	**Aust. Norm**	**Transport Ind.**	**Long Haul**	**Short Haul**	**Long Haul**	**Short Haul**	**Other**
No. of Respondents	88,303	1,324	802	192	149	62	106
Average Age:	41	45	44	47	46	47	47
Minimum		19	20	22	11	27	19
Maximum		78	78	71	74	64	74
Employee Category:							
Full Time	77%	91.5%	92.5%	86.5%	99.3%	95.2%	80.2%
Part Time	20%	2.1%	1.8%	2.6%	0.0%	4.8%	4.7%
Casual	3%	6.4%	5.8%	10.9%	0.7%	0.0%	15.1%
Gender:							
Male	35%	98.4%	98.6%	100.0%	98.7%	98.4%	93.5%
Female	65%	1.6%	1.4%	0.0%	1.3%	1.6%	6.5%
Education:							
Did not finish Year 10	2%	31.8%	33.5%	30.2%	29.3%	29.0%	27.8%
Finished Year 10	13%	44.4%	45.5%	37.6%	51.7%	41.9%	39.8%
Finished Year 12	10%	12.3%	12.7%	13.2%	10.2%	9.7%	12.0%
Some Tertiary	27%	9.2%	6.5%	18.0%	4.8%	17.7%	14.8%
Degree Graduate	29%	1.9%	1.5%	0.5%	4.1%	1.6%	4.6%
Post Grad. Degree	19%	0.3%	0.3%	0.5%	0.0%	0.0%	0.9%
Marital Status:							
Married/Cohabiting	71%	69.6%	66.9%	71.7%	75.2%	82.3%	70.6%
Separated	3%	8.6%	10.3%	5.2%	6.0%	6.5%	7.3%
Divorced	7%	9.3%	8.8%	10.5%	10.7%	4.8%	11.0%
Widowed	1%	1.0%	0.5%	2.0%	0.0%	2.8%	1.1%
Never Married	18%	11.4%	13.0%	12.0%	6.0%	6.5%	8.3%
No. of Children:							
None	25%	17.2%	18.3%	19.5%	12.1%	12.9%	14.8%
1	25%	11.6%	11.8%	13.7%	7.4%	8.1%	13.9%
2	29%	31.5%	28.2%	33.7%	39.6%	32.3%	39.8%
3	15%	22.1%	22.3%	22.6%	22.1%	29.0%	15.7%
4+	5%	17.7%	19.4%	10.5%	18.8%	17.7%	15.7%

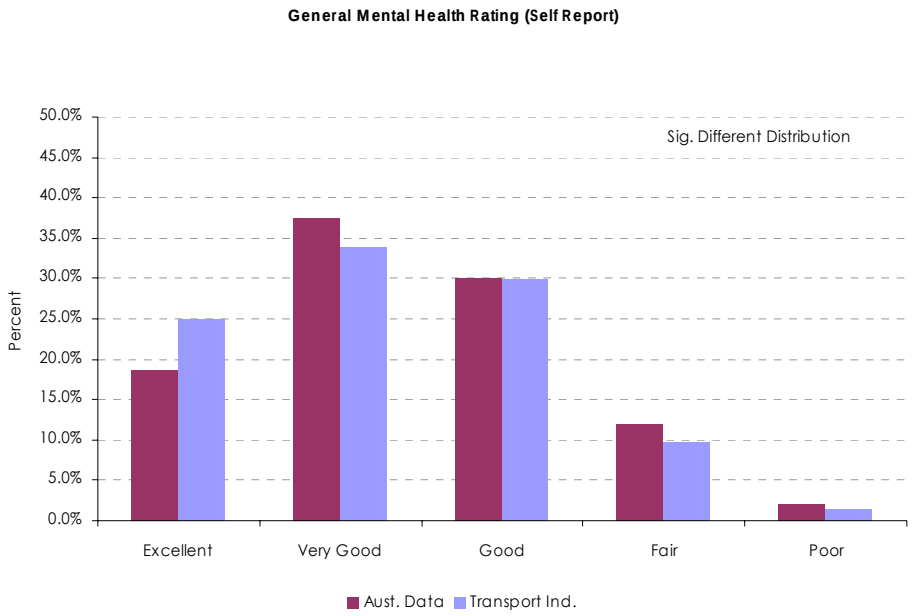
Mental Health Results

Self Reported

Overall Mental Health

This rating by employees indicates how they perceive their overall mental health. The General Mental Health Rating chart presents the results from the WORC Project to date (c.90,000 respondents), and the results of the NSW Transport Workers. This graph indicates the perceived mental health status of your employees as compared to the national average.

Figure 1: General Mental Health Rating



The distribution of responses for this question is significantly different to the Australian norm. Respondents were more likely to rate their mental health 'Excellent' than 'Very Good'. 1 in 4 NSW Transport Workers (25.0%) rated their mental health as 'Excellent', compared to just less than 1 in 4 from the Australian sample (18.6%).

Lifetime Prevalence of Mental Health Conditions (Self-Report)

The positive ratings for general mental health were reflected in the low prevalence rates of self-reported mental health conditions.

The prevalence rate of the following conditions was significantly different than the Australian norm:

- Anxiety: Transport workers 6.8% vs. 12.6% for Australian norms
- Depression: Transport workers 24.0% vs. 17.5% for Australian norms
- Other emotional problems: Transport workers 7.8% vs. 12.7% for Australian norms.
- Self-reported substance abuse: Transport workers 6.3% vs. 3.7% Australian norms.

NSW truck drivers have a slightly lower self-reported lifetime prevalence of anxiety and other emotional problems however, a higher lifetime prevalence of depression and substance difficulties.

Depression, Anxiety, Stress Scale

Introduction

The DASS is a set of three self-report scales designed to measure the negative emotional states of depression, anxiety and stress.

Results

NSW Transport Workers versus Normative Values

There are more (92.5%) NSW transport industry drivers in the normal range for stress (table 4) than published normative prevalence figures (80.2%, Table 3). The prevalence of mild to extremely severe depression and anxiety is lower in NSW transport industry drivers than published normative prevalence figures. Table 5 and Table 6 confirm that the mean anxiety, depression and stress scores are lower in drivers than those indicated by published normative values.

Table 3: Normative values for the percent of population falling into DASS categories [82].

	Normal	Mild	Moderate	Severe	Ext. Severe
	%	%	%	%	%
Anxiety	89.0	2.0	3.8	2.0	3.2
Depression	81.7	6.2	6.3	2.9	2.9
Stress	80.2	8.4	5.9	3.5	2.0

Table 4: Percent of truck drivers with depression, anxiety or stress by severity

	Normal	Mild	Moderate	Severe	Ext. Severe
	%	%	%	%	%
Anxiety	92.1	2.3	3.7	1.1	0.8
Depression	86.7	5.6	4.4	1.5	1.8
Stress	92.5	2.7	2.5	1.7	0.6

Table 5: Normative mean and standard deviation values for DASS in males

	UK[82]		Australian[83]	
	Mean	SD	Mean	SD
Anxiety	3.0	4.2	4.6	4.8
Depression	4.9	6.6	6.5	7.1
Stress	9.8	8.6	9.3	7.7

Table 6: Truck drivers mean and standard deviation scores for depression, anxiety and stress

	Truck Drivers	
	Mean	SD
Anxiety	1.2	0.61
Depression	1.3	0.77
Stress	1.2	0.59

Employment Characteristics by DASS Scores

Type of driver, owner/ operator short or long haul or driver short or long haul, being an external contractor being a full-time, part-time or casual driver did not significantly alter the prevalence of depression, anxiety or stress as measured by the DASS.

Demographic Characteristics by DASS Scores

Age

Age of drivers did not significantly influence anxiety, depression or stress scores on the DASS.

Marital Status

The prevalence of anxiety did not significantly ($p = 0.29$) vary by marital status. However, prevalence rates of depression and stress did vary significantly by marital status ($p = 0.028$ and $p = 0.025$ respectively). Table 7 is a cross-tabulation of marital status by depression severity. As depression severity increases, the percent of individuals being married or co-habiting decreases. The decreases in married or cohabiting are due to increases in the percent separated and divorced. The same trend can be seen in table 8 for stress. Thus, being separated or divorced appears to increase the risk for depression and / or stress but not anxiety in truck drivers.

Table 7: Marital status by depression severity

	Depression Severity					
	Normal	Mild	Moderate	Severe	Ext. Severe	Total
Marital Status:						
Married or cohabiting	70.8%	68.9%	60.3%	50.0%	50.0%	69.5%
Separated	7.9%	6.8%	13.8%	20.0%	25.0%	8.6%
Divorced	8.5%	12.2%	15.5%	10.0%	20.8%	9.3%
Widowed	1.2%	0.0%	1.7%	0.0%	0.0%	1.1%
Never married	11.6%	12.2%	8.6%	20.0%	4.2%	11.5%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table 8: Marital status by stress severity

	Stress severity					
	Normal	Mild	Moderate	Severe	Ext. Severe	Total
Marital Status:						
Married or cohabiting	70.0%	77.8%	60.6%	50.0%	50.0%	69.5%
Separated	8.1%	0.0%	21.2%	27.3%	12.5%	8.6%
Divorced	9.0%	11.1%	9.1%	13.6%	25.0%	9.3%
Widowed	1.1%	2.8%	0.0%	4.5%	0.0%	1.1%
Never married	11.8%	8.3%	9.1%	4.5%	12.5%	11.5%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Children

The number of children did not significantly relate to depression or stress domains of the DASS (p = 0.82 for both). Anxiety prevalence did vary significantly (p = 0.024) by number of children (table 9). Having four or more children increases the likelihood of extremely severe anxiety.

Table 9: Anxiety by number of children

	Anxiety severity					
	Normal	Mild	Moderate	Severe	Ext. Severe	Total
Number of Children:						
None	17.2%	13.3%	22.4%	0.0%	27.3%	17.2%
One	11.3%	6.7%	22.4%	21.4%	0.0%	11.6%
Two	32.0%	36.7%	20.4%	35.7%	0.0%	31.4%
Three	22.5%	13.3%	14.3%	28.6%	27.3%	22.1%
Four or more	17.0%	30.0%	20.4%	14.3%	45.5%	17.6%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Education Level Obtained

Level of education did not significantly relate to depression or stress domains of the DASS (p = 0.61 and p = 0.24 respectively). Anxiety prevalence's did vary significantly (p = 0.012) by level of education. Those with education less than year 10 had the highest rates of anxiety closely followed by those with a year 10 education.

Table 10: Anxiety severity by level of education

	Anxiety severity					
	Normal	Mild	Moderate	Severe	Ext. Severe	Total
Education Level:						
Did not finish year 10	30.7%	50.0%	47.9%	21.4%	45.5%	31.8%
Finished year 10	45.1%	33.3%	41.7%	42.9%	18.2%	44.4%
Finished year 12	12.8%	10.0%	2.1%	14.3%	18.2%	12.4%
Some tertiary education (University or TAFE)	9.2%	6.7%	8.3%	21.4%	0.0%	9.2%
Degree graduate	1.9%	0.0%	0.0%	0.0%	18.2%	1.9%
Post graduate degree	0.3%	0.0%	0.0%	0.0%	0.0%	0.3%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Demographic and Employment Impacts Combined

A binomial logistic regression was employed to examine the effects of employment variables and demographic variables accounting for multiple covariate effects. The anxiety, depression and stress scores were dichotomized into (1) none to mild severity and (2) moderate to extremely severe. These dichotomized values were used as the dependent variable. Covariates included in the model were age, marital status, number of children, education level obtained, type of driver, external contractor and employee category (full-time, part-time or casual). With anxiety as the dependent variable, the only significant effect was that, age groups 45 to 54-years, 55 to 64 years, 65 and older had reduced odds ratios (OR) of anxiety (OR = 0.28, 0.27 and 0.23). Age of 18-25-years was the reference category (OR = 1).

The binomial regression for DASS symptoms of depression show that the major factors associated with increased odds of depression were being separated (OR = 3.7, p = 0.009) or divorced (OR = 3.1, p = 0.029). Thus, being separated or divorced increases the odds of having depressive symptoms by at least a factor of three times even when accounting for all other variables. For depression, none of the other covariates significantly added to the model.

The binomial regression for DASS symptoms of stress indicate that the major factor associated with increased odds of stress was being divorced (OR = 8.2, p = 0.002). An increase in odds of 8.2 is not only significant but also extremely substantial. Thus, being divorced is a major factor predicting stress in truck drivers. Being widowed also significantly (p = 0.046) increased the OR of stress (OR = 4.2). For stress, none of the other covariates significantly added to the model.

The Kessler 6 Scale of Psychological Distress

Introduction

The K6, a self-administered psychological distress scale which can be used to assess mental health symptom severity [64-67]. The K6 scale originates from Item Response Theory (IRT) and was initially developed from pilot survey results [84-87]. The K6 probes "During the past 4 weeks how much of the time did you feel…(1) so sad nothing could cheer you up, (2) nervous, (3) restless or fidgety, (4) hopeless, (5) that everything was an effort and, (6) worthless. Each of the six items on the K6 is rated on a five-point range (0 to 4) from none of the time, a little of the time, some of the time, most of the time, all of the time.[65]

The K6 has demonstrated excellent internal consistency and reliability (Cronbach's α = 0.89) [64]. It also has consistent psychometric properties across major socio-demographic sub-samples and strongly discriminates between community cases and non-cases of Diagnostic and Statistical Manual of Mental Disorders 4th edition (DSM-IV) disorders as determined by the areas under the Receiver Operating Characteristic (ROC) curve [64].

Scoring the K6

Each of the six items on the K6 is rated on a five-point range from none of the time (value = 0) to all of the time (value = 4).[65] Summation of responses yields a range of 0 to 24. Calibration studies of the K6 indicate that a range of 13 to 24 represents high psychological distress (with respondents highly likely to have a mental disorder), 8-12 moderate psychological distress (with a mental disorder possible), 0 to 7 low psychological distress (and a mental disorder unlikely) [64-66].

Results

Overall Prevalence

Truck drivers surveyed has significantly ($p < 0.001$) less prevalence of psychological distress than the general Australian population (table 11). Eight percent of drivers had either moderate or high levels of psychological distress while 13.5% of employed Australians indicate a moderate of high level of distress.

Table 11: Psychological distress for truck drivers as compared to normative data

	K6 Risk of Emotional Problems			
	Low	Moderate	High	Total
Source:				
Australian	86.5%	9.2%	4.3%	100%
Truck Drivers	92.1%	4.5%	3.5%	100%

Employment characteristics by K6 scores

Type of driver, owner/ operator short or long haul or driver short or long haul, being an external contractor being a full-time, part-time or casual driver did not significantly alter the prevalence of psychological distress as measured by the K6.

Demographic characteristics by K6 scores

Age

The trend (p = 0.06) for the interaction between age and psychological distress was for drivers aged 65-years and older to be at greater risk of high psychological distress (12).

Table 12: Psychological distress by age

	K6 Risk of Emotional Problems			
	Low	Moderate	High	Total
Age:				
18-24	92.9%	3.6%	3.6%	100%
25-34	96.0%	1.7%	2.3%	100%
35-44	91.9%	6.5%	1.7%	100%
45-54	90.3%	4.6%	5.1%	100%
55-64	93.1%	3.0%	3.9%	100%
65+	88.5%	3.8%	7.7%	100%
Total	92.1%	4.5%	3.4%	100%

Marital Status

Unlike the depression and stress scales in the DASS, marital status did not significantly (p = 0.4) effect psychological distress prevalence as measured by the K6.

Children

Similar to the depression and stress scales in the DASS, marital status did not significantly (p = 0.2) effect psychological distress prevalence as measured by the K6.

Education level obtained

Similar to the depression and stress scales in the DASS, education status did not significantly (p = 0.1) effect psychological distress prevalence as measured by the K6.

Demographic and Employment Impacts Combined

A multinomial logistic regression was employed to examine the effects of employment variables and demographic variables on psychological distress (low, moderate and high). The K6 variables were used as the dependent variable. Covariates included in the model were age, marital status, number of children, education level obtained, type of driver, external contractor and employee category (full-time, part-time or casual).

Having three children significantly (p=0.025) increased the odds ratio (OR) to 4.2 for having moderate levels of psychological distress. None of the other predictor variables were significant in the multinomial model.

Alcohol risk behaviours (AUDIT)

Introduction

The AUDIT has emerged as the pre-eminent screening measure, and combines the benefits of brevity, validity, and ease of administration. The Alcohol Use Disorders Identification Test (AUDIT) was developed to assist clinicians in identifying people who would benefit from reducing or ceasing their alcohol consumption[80,81]. The AUDIT is a ten-item screen that can be used in an interview situation or given as a pencil and paper test (Attachments 2.2, 2.3). It looks at alcohol consumption, drinking behaviour and alcohol-related problems in an effort to identify possible risky and high-risk alcohol consumption. The focus of the AUDIT is problematic drinking and emphasises hazardous drinking rather than long-term dependence. The AUDIT utilises a quantity-frequency measure, e.g. "In the past week how often did you have an alcoholic drink (options: every day, 5-6 days per week, 3-4 days per week etc)" and "On a day that you have an alcoholic drink how many standard drinks do you usually have". The AUDIT takes around two minutes to complete and less than a minute to score. The AUDIT has been validated cross-nationally in several large-scale World Health Organization trials and its sensitivity and specificity (92% and 93%, respectively) are similar across disparate cultures.

Scoring

The AUDIT is easy to score. Each of the questions has a set of responses to choose from, and each response has a score ranging from 0 to 4. All the response scores are then added. Total scores of 8 or more are recommended as indicators of hazardous and harmful alcohol use, as well as possible alcohol dependence. In most cases, the total AUDIT score will reflect the patient's level of risk related to alcohol.

On the basis of experience gained from the use of the AUDIT in previous research, it was found that AUDIT scores in the range of 8-15 represented a medium level of alcohol problems whereas scores of 16 and above represented a high level of alcohol problems. It is suggested [81] that the following interpretation be given to AUDIT scores:

- Scores between 8 and 15 are most appropriate for simple advice focused on the reduction of hazardous drinking (Zone II).
- Scores between 16 and 19 suggest brief counselling and continued monitoring (Zone III).
- AUDIT scores of 20 or above clearly warrant further diagnostic evaluation for alcohol dependence (Zone IV).

Results

Overall prevalence

One hundred and eighty six respondents did not answer the AUDIT portion of the survey yielding 1,138 valid records. Of this 26.8% of drivers scored eight or more on the survey indicating hazardous and / or harmful alcohol use. Table 13 divides the AUDIT up into risk levels. Only 1% of the drivers occupy the highest risk level for alcohol consumption. The majority (24%) of drivers have drinking behaviours that would benefit from simple advice to reduce hazardous drinking.

Table 13: Alcohol Risk Prevalence

Score	Number	Percent (%)
Zone I	833	73.2
Zone II	271	23.8
Zone III	24	2.1
Zone IV	10	0.9
Total	1138	100.0

Employment characteristics by AUDIT scores

Type of driver, owner/ operator short or long haul or driver short or long haul, being an external contractor being a full-time, part-time or casual driver did not significantly alter the prevalence of Alcohol risk as measured by the AUDIT.

Demographic characteristics by AUDIT scores

Age

Table 14 demonstrates that using the AUDIT threshold of eight the prevalence of hazardous and harmful alcohol use varies significantly ($p < 0.001$) by age category. Drivers in the age group 25 to 34-years old have the highest percentage (40%) of potentially harmful alcohol use whereas, the older drivers, aged 55 and over, have the lowest proportion on alcohol abuse (<20%) under half that of the younger drivers.

Table 14: Alcohol risk prevalence by age using AUDIT cut-off of eight

	Audit score > 8		
	No	Yes	Total
Age (years):			
18-24	66.7%	33.3%	100%
25-34	60.1%	39.9%	100%
35-44	72.6%	27.4%	100%
45-54	74.0%	26.0%	100%
55-64	81.5%	18.5%	100%
65+	88.9%	11.1%	100%
Total	73.0%	27.0%	100%

Marital Status

Marital status did not significantly ($p = 0.06$) relate to the prevalence of drivers scoring above a threshold score of eight (table 15). Although the cross tabulation Chi square did not reach statistical significance at the 95% level the trend was for separated, divorced and never married drivers to have higher rates of hazardous alcohol consumption.

Table 15: Alcohol risk prevalence by marital status using AUDIT cut-off of eight

	Audit score > 8		
	No	Yes	Total
Marital Status:			
Married or Cohabiting	75.6%	24.4%	100%
Separated	66.7%	33.3%	100%
Divorced	70.2%	29.8%	100%
Widowed	77.8%	22.2%	100%
Never married	65.4%	34.6%	100%
Total	73.2%	26.8%	100%

Children

Number of children do not significantly (p = 0.1) relate to the number of drivers scoring positive for hazardous drinking on the AUDIT.

Education level obtained

The level of education does not significantly (p = 0.4) relate to the number of drivers scoring positive for hazardous drinking on the AUDIT.

Psychological distress and alcohol consumption interaction

The AUDIT results did not vary significantly (p = 0.6) by the K6 psychological distress categories. Using the DASS anxiety scale cross-tabulated with AUDIT scores (table 16) it is apparent that as severity of anxiety increases so do the number of people drinking at hazardous levels. The significant (p = 0.006) increase is quite marked with 63% of drivers in the extremely severe anxiety range scoring as potential hazardous drinkers.

Table 16: Alcohol consumption by anxiety severity in the DASS

	Anxiety severity					
	Normal	Mild	Moderate	Severe	Ext. Severe	Total
Audit score >8:						
No	74.3%	73.1%	60.5%	46.2%	37.5%	73.2%
Yes	25.7%	26.9%	39.5%	53.8%	62.5%	26.8%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Using the DASS depression scale, cross-tabulated with AUDIT scores there was no significant association between depression severity and hazardous alcohol use.

Using the DASS stress scale cross-tabulated with AUDIT scores (table 17) it is apparent that as severity of stress increases so do the number of people drinking at hazardous levels. The pattern is very similar to that noted for the anxiety levels. The significant (p < 0.001) increase is quite marked with 70% of drivers in the severe stress range scoring as potential hazardous drinkers.

Table 17: Alcohol consumption by stress severity in the DASS

	Stress severity					
	Normal	Mild	Moderate	Severe	Ext. Severe	Total
Audit score >8:						
No	74.9%	68.8%	50.0%	30.0%	50.0%	73.2%
Yes	25.1%	31.3%	50.0%	70.0%	50.0%	26.8%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Demographic and employment impacts combined

A binomial logistic regression was employed to examine the effects of employment variables, demographic variables and the K6 on the odds ratios for alcohol consumption. The AUDIT cut-off of eight was used to dichotomize the data and these values were used as the dependent variable. Covariates included in the model were age, marital status, number of children, education level obtained, type of driver, external contractor, employee category (full-time, part-time or casual) and psychological distress as measured by the K6.

Being aged 34 to 45 had a significantly ($p = 0.036$) increased risk (OR = 5.5) at having hazardous and harmful alcohol consumption. None of the other predictor variables were significantly associated with the AUDIT outcomes.

The binomial regression was repeated substituting the anxiety scale from the DASS for the K6 scale. This model had very similar results in that being aged 34 to 45 had a significantly ($p = 0.026$) increased risk (OR = 6.1) at having hazardous and harmful alcohol consumption. Also significant was that drivers with the lowest anxiety scores were significantly ($p = 0.02$) less likely (OR = 1) than all other drivers to have hazardous alcohol use. As anxiety levels increased so did the OR for hazardous drinking to a maximum value of OR = 4.7.

Accidents & Near Misses

Introduction

As part of the survey, respondents were asked: In the past 4-weeks did you have any accident that caused either damage, work delay, a near miss or safety risk? Responses were limited to "yes" or "no". This same question was asked as part of the Australia wide WORC Project.

Results

Overall Prevalence

Drivers surveyed has more than double the number of occupational accidents or near misses than those reported for the general working population of Australia (table 18, $p < 0.0001$)

Table 18: Prevalence of accidents / near misses

	Australian	Drivers
Accident / near miss:		
Yes	3.2%	7.1%
No	96.8%	92.9%
Total	100.0%	100.0%

Employment Characteristics

Type of driver, owner/ operator short or long haul or driver short or long haul, being an external contractor did not significantly alter the prevalence of accidents or near misses in the past four weeks. Casual drivers had by far the greatest prevalence of accidents and near misses (Table 19) as compared with full-time drivers ($p = 0.017$).

Table 19: Accidents and near misses by full-time, part-time and casual driver status

	Employee type			
	Full-time	Part-Time	Casual	Total
Accident / near miss:				
Yes	6.6%	3.8%	14.8%	7.1%
No	93.4%	96.2%	85.2%	92.9%
Total	100.0%	100.0%	100.0%	100.0%

Demographic Characteristics

Age

Age did not significantly (p = 0.6) affect the rate of accidents.

Marital status

Marital status did not significantly (p = 0.07) affect the rate of accidents.

Children

Interestingly the number of children a driver has significantly (p =0.038) affects the rate of accidents / near misses (table 20). Having three or more children effectively halves the accident rate.

Table 20: Number of accidents by number of children

	How many children do you have?					
	None	1	2	3	4 +	Total
Accident / near miss:						
Yes	9.1%	8.2%	9.0%	4.7%	3.7%	7.0%
No	90.9%	91.8%	91.0%	95.3%	96.3%	93.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Education level obtained

Education level did not significantly (p = 0.1) affect the rate of accidents.

Mental Health and Alcohol Influences

Anxiety

There were no significant (p = 0.2) cross-tabulation differences in rate of accidents by anxiety levels measured in the DASS.

Depression

Unlike anxiety depression severity (DASS) significantly (p = 0.002) affects the prevalence of accidents in the past four weeks (table 21). Those with extremely severe symptoms of depression are more than three times more likely to have an accident than those without depression symptoms.

Table 21: Accidents and near misses by depression severity

	Depression Severity					
	Normal	Mild	Moderate	Severe	Ext. Severe	Total
Accident / near miss:						
Yes	6.1%	11.0%	10.3%	21.1%	21.7%	7.1%
No	93.9%	89.0%	89.7%	78.9%	78.3%	92.9%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Stress

Stress levels as measured in the DASS also significantly (p = 0.02) affected the rate of accidents and near misses (table 22). Moderate stress and above seems to increase the rate of accidents and near misses to > 18%. (no data available for extremely sever stress and accidents)

Table 22: Accidents and near misses by stress severity

	Stress Severity					
	Normal	Mild	Moderate	Severe	Ext. Severe	Total
Accident / near miss:						
Yes	6.6%	8.3%	18.8%	18.2%	0.0%	7.1%
No	93.4%	91.7%	81.3%	81.8%	100.0%	92.9%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Psychological Distress

The K6 is the measure of non-specific psychological distress. The K6 significantly (p = 0.004) affects accident rate. Scoring at moderate or high psychological distress on the K6 nearly triples the likelihood of an accident or a near miss (Table 23).

Table 23: Accidents and near misses by psychological distress

	K6 Risk of Emotional Problems			
	Low	Moderate	High	Total
Accident / near miss:				
Yes	6.5%	17.2%	11.1%	7.1%
No	93.5%	82.8%	88.9%	92.9%
Total	100.0%	100.0%	100.0%	100.0%

Alcohol

Alcohol use measured using the AUDIT applying the threshold of eight for hazardous consumption significantly (p = 0.03) affects accident / near miss rate (table 24). Those drivers with potentially hazardous drinking are nearly twice as likely to have an accident or near miss.

Table 24: Accidents and near misses by alcohol use

	Audit Score >8		
	No	Yes	Total
Accident / near miss:			
Yes	5.7%	9.5%	6.7%
No	94.3%	90.5%	93.3%
Total	100.0%	100.0%	100.0%

Demographic, Employment and Mental Health Impacts Combined

To determine the relative influence of predictor variables on the rate of accidents a binomial logistic regression was employed to examine the effects of employment variables, demographic variables, alcohol use (AUDIT) and the K6 on the odds ratios for accidents / near misses. The dependent variable was an accident or near miss in the last four weeks. Covariates included in the model were age, marital status, number of children, education level obtained, type of driver, external contractor, employee category (full-time, part-time or casual), psychological distress as measured by the K6 and alcohol use as measured by the AUDIT. Covariates, not significantly adding to the model were stepwise removed yielding remaining co-variates of number of children, level of education, employee category (full-time, part-time or casual), the AUDIT and the K6 psychological distress scale. Table 25 contains the results from the logistic regression.

Results from the logistic regression are consistent with the cross-tabulations of the data. Having three or four children decreases the odds ratio for an accident or near miss. Being a casual driver is associated with an increased OR of 2.4 for having an accident. Having an AUDIT score of greater than eight, (hazardous alcohol consumption) increases the OR for having an accident or near miss to 1.7. However, by far the strongest effect was psychological distress (K6). Having moderate psychological distress increased the OR for having an accident or near miss to 3.5.

Table 25: Odds ratios for accidents from logistic regression including psychological distress (K6) and alcohol (AUDIT)

Covariates	Odds ratio	S.E.	Wald	df	Sig.
Number children					
0	1.00		7.42	4	0.115
1	0.83	0.43	0.19	1	0.667
2	0.93	0.33	0.05	1	0.831
3	0.46	0.42	3.39	1	0.066
4 or more	0.37	0.50	3.97	1	0.046
Education level					
< year 10	1.00		7.98	5	0.157
year 10	1.30	0.31	0.69	1	0.406
year 12	0.66	0.53	0.63	1	0.428
Some tertiary	2.02	0.41	2.92	1	0.087
Degree graduate	1.00	1.07	0.00	1	0.998
Post graduate	10.38	1.27	3.39	1	0.066
Employee category					
Full-time	1.00		5.42	2	0.067
Part-time	1.08	1.05	0.01	1	0.938
Casual	2.43	0.38	5.42	1	0.020
AUDIT hazardous drinking	1.70	0.26	4.08	1	0.044
Psychological distress					
Low	1.00		9.62	2	0.008
Moderate	3.51	0.41	9.18	1	0.002
High	1.64	0.55	0.80	1	0.371

The same logistic regression (as reported in table 25 above) was run except the depression score from the DASS was substituted in place of psychological distress (K6). Results are in table 24. Very similar results are obtained for the number of children, employee category and hazardous drinking. As the DASS level of depression increases so does the OR for an accident or near miss. Very severe symptoms of depression are associated with an OR of 5.7 which is an extremely large effect.

Table 26: Odds ratios for accidents from logistic regression including depression (DASS) and alcohol (AUDIT)

Co-variates	Odds ratio	S.E.	Wald	df	Sig.
Number children					
0	1		7.21	4	0.125
1	0.90	0.44	0.06	1	0.803
2	1.02	0.34	0.00	1	0.944
3	0.53	0.43	2.16	1	0.142
4 or more	0.36	0.50	4.11	1	0.043
Education level					
< year 10	1.00		7.69	5	0.174
year 10	1.36	0.32	0.92	1	0.336
year 12	0.68	0.53	0.53	1	0.466
Some tertiary	2.09	0.42	3.13	1	0.077
Degree graduate	0.96	1.07	0.00	1	0.967
Post graduate	9.36	1.32	2.88	1	0.090
Employee category					
Full-time	1.00		5.99	2	0.050
Part-time	1.10	1.05	0.01	1	0.925
Casual	2.55	0.38	5.99	1	0.014
AUDIT hazardous drinking	1.69	0.26	3.93	1	0.047
Depression (DASS)					
Normal	1.00		17.52	4	0.002
Mild	2.37	0.41	4.34	1	0.037
Moderate	2.34	0.48	3.18	1	0.074
Severe	4.30	0.67	4.75	1	0.029
Very severe	5.66	0.58	9.05	1	0.003

Hours Worked

Introduction

As part of the survey, respondents were asked: "About how many hours did you work in the past 7-days?" This same question was asked as part of the Australia wide WORC Project. To normalize the data to those employees that are full time or those that are casual but working full-time hours the data was filtered to only include those employees that are full-time and those that are part-time or casual but working more than 35-hours per week. A maximum of 140-hours was set as the upper limit for the possible number of hours to work in a 7-day week (20-hours per day). Thirteen records with more than 140-hours as an answer were filtered out from the analysis.

Results

Overall Hours Worked

On average the Australian workforce works 43.3 (± 0.05) hours per week whilst the truck drivers are on average working 61.7 (± 0.7) hours per week. This difference is both significant ($p < 0.001$) and substantial (difference of 20.3-hours). 27 shows the distribution of hours worked in the past 7-days for the Australian population and NSW truck drivers. The hours worked categories are based on those used by the Australian Bureau of Statistics. Here it can be noted that 66% of drivers have worked more than 60-hours in the past 7-days.

Table 27: Hours worked in the past 7-days a comparison of Australian normative values and NSW truck drivers

	Australian Norm	Truck Drivers
Hours worked past 7 Days:		
0-15	2.8%	5.2%
16-29	3.1%	1.2%
30-34	3.7%	0.7%
35-39	18.3%	2.1%
40-44	31.9%	6.1%
45-49	14.8%	4.7%
50-59	16.1%	14.4%
60+	9.2%	65.5%
Total	100.0%	100.0%

Due to the large number of truck drivers working more than 60-hours. The data was re-categorized into bins of 10-hour durations. Results show that on average drivers work much longer than the average Australian employee.

Table 28: Hours worked in the past 7-days for NSW truck drivers

	Frequency	Valid Percent
Hours worked past 7 Days:		
0-15	63	5.3
16-29	14	1.2
30-39	34	2.8
40-49	131	11.0
50-59	174	14.6
60-69	320	26.8
70-79	225	18.9
80-89	107	9.0
90-99	48	4.0
100+	77	6.5

Employment characteristics

Due to the data filtering it is not applicable to compare full-time with part-time or casual drivers. Being an external contractor did not significantly ($p = 0.4$) affect hours worked in the past 7-days. The average mount of hours worked by driver type is in table 29. One-way ANOVA shows that short haul drivers work significantly ($p = 0.008$) less hours than long haul drivers.

Table 29: Hours worked in the past 7-days by type of driver

Driver type:	N	Mean	Std. Error
Owner/Operator-HGV Long Haul	725	66.0	1.0
Owner/Operator-HGV Short Haul	178	61.1	4.5
Driver-HGV Long Haul	138	66.7	2.1
Driver-HGV Short Haul	59	57.9	3.2
Other	69	52.2	2.4
Total	1170	64.1	1.0

Demographic Characteristics

Age

Age did not significantly (p = 0.9) predict the number of hours worked.

Marital status

Marital status did not significantly (p = 0.5) predict the number of hours worked.

Children

Number of children did not significantly (p = 0.9) predict the number of hours worked.

Education level

Education level did not significantly (p = 0.2) predict the number of hours worked.

Mental Health and Alcohol Influences

Anxiety

Anxiety level as measured by the DASS did not significantly (p = 0.5) predict the number of hours worked.

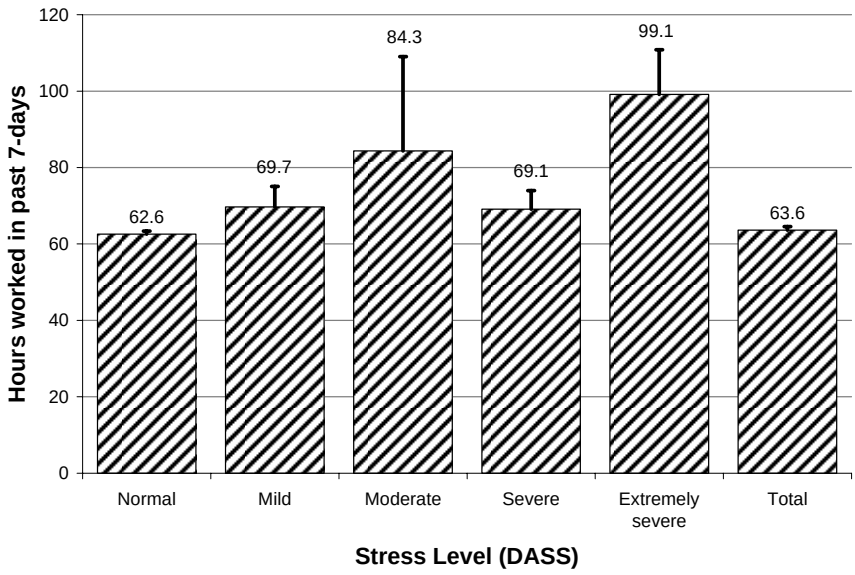
Depression

One-way ANOVA between depression severity category on the DASS and the number of hours worked in the past 7-days showed a significant main effect (p = 0.01). However, post hoc least squared difference tests show that the only statistically significant difference were that drivers with mild depression scores worked 13-hours (p = 0.001) more per week than those with no symptoms. All other comparisons were non-significant.

Stress

There is a near linear relationship between the number of hours worked and stress levels as measured by the DASS. Figure 2 illustrates the level of stress by the mean number of hours worked in the past 7-days. One-way ANOVA indicates a significant main effect (p < 0.001) for stress levels as the predictor variable.

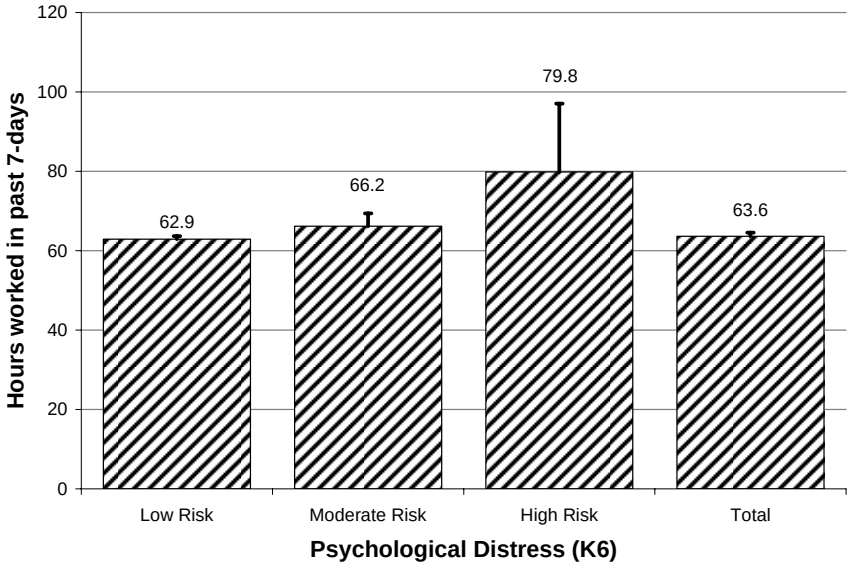
Figure 2: Relationship between hours worked in the past 7-days and stress levels



Psychological distress

There was a significant (p = 0.004) main effect for the interaction of psychological distress and the average number of hours worked (figure 3) using a one-way ANOVA. The results show that as the number of hours worked increase so does the level of psychological distress similar to the DASS stress scale.

Figure 3: Relationship between hours worked in the past 7-days and psychological distress



Alcohol

The level of alcohol consumption as scored by the AUDIT did not significantly (p = 0.6) interact with the number of hours worked.

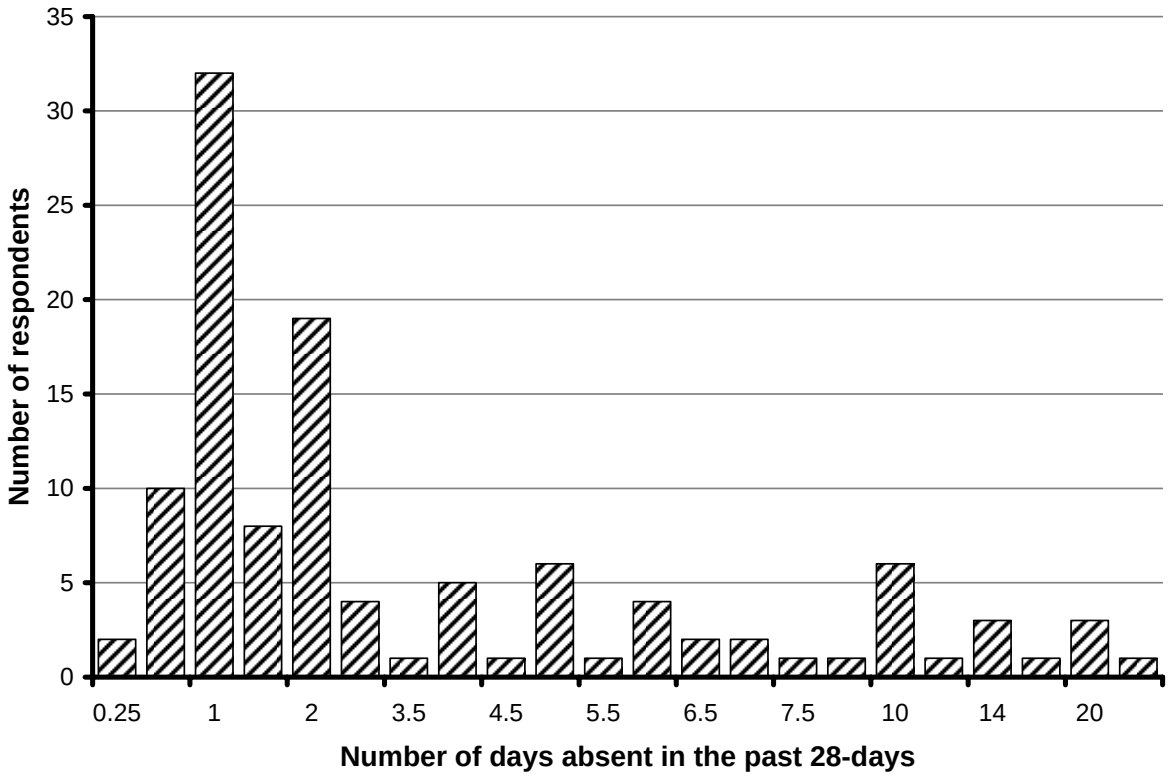
Absenteeism

There are several methods for computing absenteeism data. Due to the nature of the work truck drivers do the method chosen is to sum all the days and part-days that drivers have taken off work, in the last 28-days, due to a physical or mental health problem. Part days are assumed to be half days.

Overall

The average number of days absent due to health problems in the Australian workforce is 0.73 (±0.01)-days per 28-days. The average number of days absent due to health problems in the NSW truck drivers is slightly but not significantly (p = 0.4) less at 0.68 (±0.11)-days per 28-days. Of the respondents, 77.5% took no days off in the past 28-days. Of the 114 drivers who did take time off for health most took one day (figure 4)

Figure 4: Frequency distribution for the number of drivers taking time off for health



Anxiety (DASS)

Using the DASS to quantify anxiety severity table 30 shows that all levels of anxiety greater than normal cause a significant (main effect, p = 0.008) increase in absenteeism. The largest amount of absenteeism is understandably in the extremely severe range. However, mild levels of anxiety also produce substantial absenteeism.

Table 30: Mean number of absenteeism days by anxiety (DASS) severity

Anxiety:	N	Mean Days absent	Std. Error
Normal	1024	0.35	0.06
Mild	27	1.29	0.77
Moderate	41	0.72	0.28
Severe	13	0.54	0.21
Extremely severe	9	2.00	0.97
Total	1114	0.40	0.06

Depression (DASS)

With the exception of severe depression, all depression categories produce an increased mean number of days absent (Table 31, main effect p = 0.002). Post hoc analyses show that all categories were significantly lower than the extremely severe depressed category.

Table 31: Mean number of absenteeism days by depression (DASS) severity

Depression:	N	Mean	Std. Error
Normal	956	0.33	0.06
Mild	70	0.69	0.27
Moderate	49	0.79	0.43
Severe	17	0.06	0.06
Extremely severe	22	1.77	0.64
Total	1114	0.40	0.06

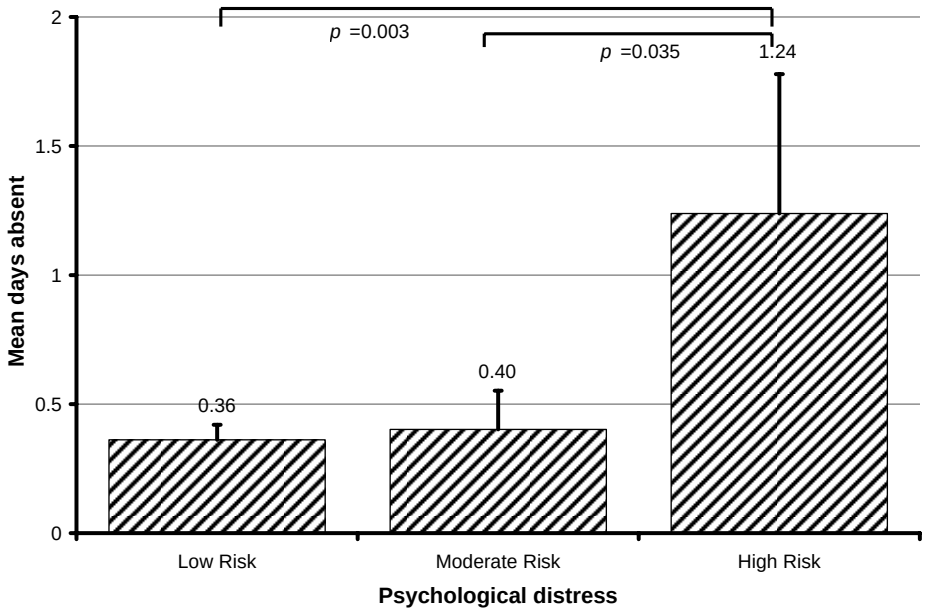
Stress (DASS)

Stress did not significantly affect absenteeism rate (ANOVA main effect p = 0.2).

Psychological distress (K6)

Absenteeism rates increase for drivers that score at high psychological distress on the K6 (Figure 5). Drivers in the high range have on average 0.88 more days absent per 28-day period than drivers scoring at low risk.

Figure 5: Absenteeism rates by psychological distress. Statistical significance (p) is from ANOVA post hoc comparisons.



Using a one-way ANOVA with the dependent variable being days absent and

Alcohol

Tabulating mean number of days off against AUDIT alcohol categories shows that employees in Zone IV (would benefit from treatment) take on average 2.2 more days off work than those in Zone I (post hoc p = 0.002).

Figure 6: Absenteeism by alcohol consumption

AUDIT:	N	Mean	Std. Error
Zone I	716	0.38	0.08
Zone II	239	0.33	0.08
Zone III	20	0.33	0.13
Zone IV	8	2.56	2.49
Total	983	0.39	0.06

Presenteeism

Several researchers have employed the method of adjusting employee's performance by their self-report perceptions of their own productivity in relation to that of others in similar jobs.[14,21,47,60,63] A detailed explanation of the rationale and calibration studies around presenteeism is located in [63]. In the HPQ the respondent is asked to rate the performance of an average person (Paverage), working in a similar job to their own on a self-anchoring scale of performance of 0-10 (worst to best). Respondents also rank their own performance (0–10 scale), over the past 28-days during the time they were at work (Pown). The formula used to calculate presenteeism is:

$$Presenteeism = \left[\frac{P_{own} - P_{average}}{10} \right] \times 100$$

Where division by 10 is the scope of the scale and multiplication by 100 converts to a percentage. Thus, positive percentages indicate an employee's performance is worse than co-workers (positive presenteeism), and negative percentages reflect that an employee is performing worse than co-workers (negative presenteeism). This method bounds the data from -100% to 100%. Where 0% is an employee who is working at the same level as co-workers, 100% is an employee who rates their performance at the maximum level (10/10) and others performance at the minimum level (0/10). Similarly, -100% is a complete absence of productivity.

Overall

On average the normal reported presenteeism value for an Australian employee is 6% (± 0.05), that is they estimate that they are working 6% more effectively than co-workers. For transport workers the average presenteeism value is 10% (± 0.49) which is significantly ($p < 0.001$) higher than the average Australian value.

Mental Health and Alcohol Influences

To estimate the impact of mental health difficulties on presenteeism a general linear model (GLM) univariate analysis of variance (ANOVA) procedure was applied with the dependent variable of presenteeism and separate models computed for fixed factors of Anxiety (DASS), depression (DASS), stress (DASS), psychological distress (K6) and alcohol (AUDIT). Additional fixed factors in all models were driver category (eg. Owner operator, driver), external contractor and type of employment (eg. Part-time etc.) Co-variates for all models computed included age sex, marital status, number of children. A type III sum of squares was used to evaluate the null hypothesis. Post hoc range tests and multiple comparisons were by least significant difference (LSD).

Anxiety (DASS)

Anxiety did not significantly ($p = 0.2$) predict drivers performance once all other variables had been accounted for.

Depression (DASS)

Depression did not significantly ($p = 0.2$) predict drivers performance once all other variables had been accounted for.

Stress (DASS)

Driver stress levels as measured in the DASS significantly (p = 0.04) influence their self-rating of performance (Table 32). However, actual mean differences are relatively small in relation to the standard error. Post hoc analysis indicates that moderate, severe and extremely severe stress are significantly (p < 0.02) different from each other but not different to normal or mild stress. One explanation may be that mild or moderate stress results in drivers performing better but that severe or extremely severe stress results in impairment.

Table 32: Average performance at work by DASS stress levels. Mean values are model adjusted accounting for demographic variables (p = 0.04).

Stress:	Mean	Std. Error
Normal	6.9	3.7
Mild	9.0	4.8
Moderate	12.6	3.0
Severe	-0.6	5.3
Extremely severe	-2.9	6.9
Total	0.40	0.06

Psychological distress (K6)

Psychological distress did not significantly (p = 0.2) predict drivers performance once all other variables had been accounted for.

Alcohol

Alcohol consumption did not significantly (p = 0.2) predict drivers performance once all other variables had been accounted for.

Drug Usage

The survey asked respondents to report their drug use over the past 30-days. Drugs queried were:

- Cannabis (e.g. marijuana, hashish, weed, cones, THC)
- Stimulants (e.g. speed, amphetamines, ice, ritalin, dexadrine, crystal meth
- Party Drugs (e.g. ecstasy, MDMA)
- Ovoid (eg. Heroine, morphine, opium, methadone, darvone, codeine, percodan)
- Sedatives (eg. Benzos, valium, xanax, barbituates, secanol)
- Hallucinogens (eg. LSD, magic mushrooms, PCP, Mescaline
- Cocaine
- Chroming or Huffing
- Other

If respondents used a drug they were asked whether their usage was daily, weekly or once in the past 30-days.

30-day usage

A total of 16.4% of transport workers indicated that they had used at least one of the listed drugs at least once in the past 30-day period. Five percent of transport workers indicate that they use at least one of the listed drugs on a daily basis. A further 7% report they use the substance weekly, yielding 12% of transport workers using a substance at least weekly.

Response options by individual drugs are listed in table 33. Table 34 compares transport workers to Australian normative values for drug use[†]. Although the transport workers use is for the last 30-days and the Australian norms are for the past 12-months the transport workers use is consistently higher for all drug categories except marijuana which is the same as the 12-month figures for the Australian general population.

[†] Australian normative values are based on usage of the past 12-months while transport workers prevalence figures are for the last 30-days.

Table 33: Frequency of drug use for transport workers

		Frequency					
		Daily	Weekly	Once	Never	Missing	Total
Cannabis	N	38	37	44	1174	31	1324
(e.g. marijuana, hashish weed, cones, THC)	%	2.9	2.8	3.3	88.7	2.3	100.0
Stimulants	N	38	41	39	1139	37	1324
(e.g. speed, amphetamines, ice, ritalin)	%	2.9	3.1	2.9	88.3	2.8	100.0
Party drugs	N	21	7	22	1230	44	1324
(e.g. ecstasy, MDMA)	%	1.6	0.5	1.7	92.9	3.3	100.0
Opoids	N	29	6	16	1233	40	1324
(e.g. heroin, morphine, opium, codeine)	%	2.2	0.5	1.2	93.1	3.0	100.0
Sedatives	N	26	5	6	1248	39	1324
(e.g. benzos, valium, xanax, barbiturates)	%	2.0	0.4	.5	94.3	2.9	100.0
Hallucinogens	N	19	2	10	1250	43	1324
(e.g. LSD, PCP, magic mushrooms)	%	1.4	0.2	0.8	96.8	3.2	100.0
Cocaine	N	21	1	17	1249	36	1324
	%	1.6	0.1	1.3	94.3	2.7	100.0
Chroming or huffing	N	21	0	1	1254	48	1324
	%	1.6	0.0	0.1	94.7	3.6	100.0
Other	N	16	6	7	930	365	1324
	%	1.2	0.5	0.5	70.2	27.6	100.0
Total		0.06	0.40	0.06	0.40	0.06	0.06

Table 34: Comparison of transport workers drug use in the last 30-days to published Australian normative values for drug use in the previous 12-months

Substance / behaviour	Australian norms [1]	Transport Workers
Marijuana/cannabis	11.3	11.3
Tranquillisers/sleeping pills	1.2	5.7
Inhalants	0.4	5.3
Heroin	0.5	6.9
Meth/amphetamine (speed)	3.2	11.7
Cocaine	1	5.7
Hallucinogens	0.7	3.2
Ecstasy	3.4	7.1

Age

In published Australian data [1] recent illicit drug use (previous 12-months) was most prevalent (31%) among persons aged between 18 and 29 years. In transport workers, drug use varied significantly (Pearson $\chi 2 = 42$, d.f. = 5, $p < 0.001$) by age (Table 35). In contrast to Australian data, the age group of 25-34 had the highest recent (last 30-days) use of any drug (29%). However, there was some degree of overlap in the age categorization. Of interest is the steep increase in drug usage for 65+ year's bracket. However, there were only 25 persons in the 65+ age group that completed the drug portion of the survey so the result may be due to a sampling error. Although there were small numbers in the 65+ years age group results are likely indicative but a larger sample would be required to confirm / refute this finding.

Table 35: Drug use in the last 30-days by age

Any drug last 30-days	No	Yes	% Yes	Total
18-24	23	4	14.8%	27
25-34	118	49	29.3%	167
35-44	313	78	19.9%	391
45-54	352	46	11.6%	398
55-64	199	18	8.3%	217
65+	19	6	24.0%	25
Total	1024	201	16.4%	1225

As frequency of drug use is an important factor table 36 lists the proportion of individuals who report daily use of a drug by age category. The daily use of drugs does vary significantly (Pearson $\chi 2 = 11$, d.f. = 5, $p = 0.043$) by age category. This indicates that although the cell numbers are small results have some meaning. Transport workers that are less than 25-years old and greater than 65-years are more likely to use drugs on a daily basis. As cell numbers in both groups are again small, this finding would have to be confirmed in a larger study.

Table 36: Daily use of drugs by age

Daily use of drugs	No	Yes	% Yes	Total
18-24	25	3	10.7%	28
25-34	154	13	7.8%	167
35-44	365	27	6.9%	392
45-54	385	16	4.0%	401
55-64	208	9	4.1%	217
65+	21	4	16.0%	25

Marital Status

Whether or not a transport worker took a drug in the last 30 days varied significantly (Pearson $\chi 2 = 16$, d.f. = 4, p = 0.003) by marital status (Table 37). Being married or cohabitating was associated with the lowest prevalence (14%) of taking a drug in the last 30-days.

Table 37: Taken any drug in the last 30-days by marital status

Any drug last 30-days	No	Yes	% Yes	Total
Married or Cohabiting	733	116	13.7%	849
Separated	81	25	23.6%	106
Divorced	93	22	19.1%	115
Widowed	11	3	21.4%	14
Never Married	110	35	24.1%	145
Total	1028	201	16.4%	1229

Children

Number of children did not significantly (Pearson $\chi 2 = 5$, d.f. = 4, p = 0.3) influence the prevalence of drug consumption in the past 30-days.

Education Level

Education level did not significantly (Pearson $\chi 2 = 10$, d.f. = 5, p = 0.06) influence the prevalence of drug consumption in the past 30-days.

Driver Type

Owner operator – HGV long haul had a significantly (Pearson $\chi 2 = 19$, d.f. = 5, p = 0.002) elevated prevalence (19.4%) of drug use in the last 30-days (Table 38).

Table 38: Drug use in the last 30-days by type of driver

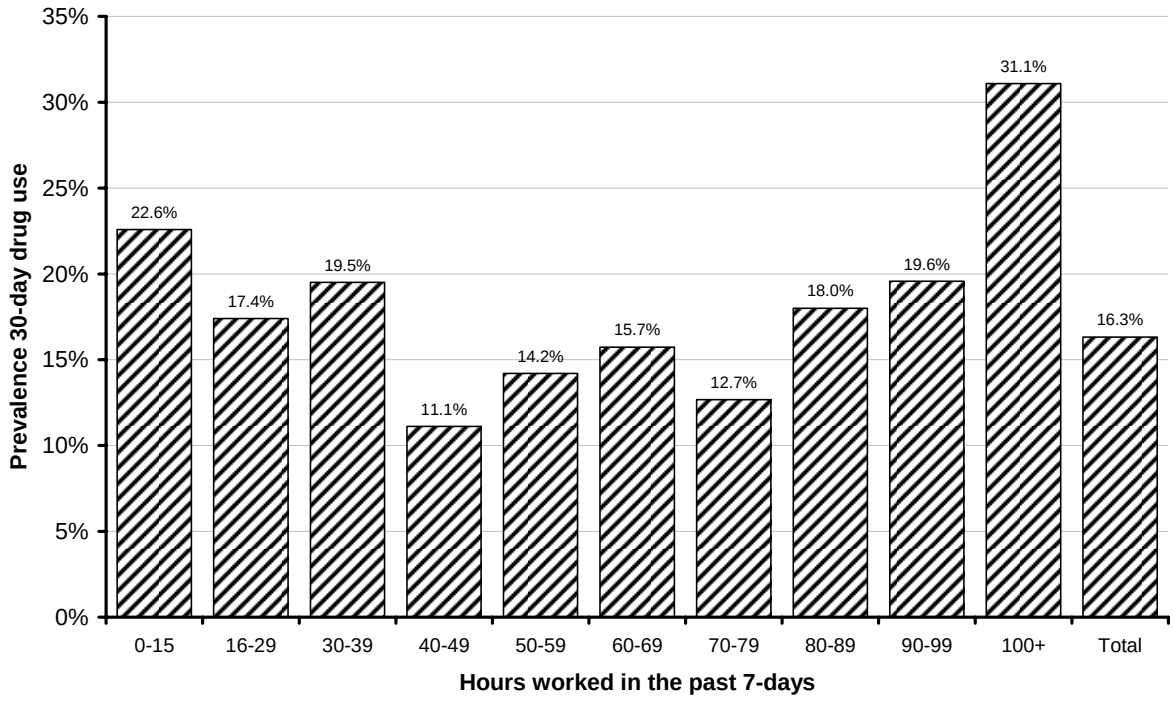
	Any drug last 30-days			
	No	Yes	% Yes	Total
Owner/operator-HGV long haul	599	144	19.4%	743
Owner/operator - HGV short haul	161	22	12.0%	183
Driver-HGV long haul	130	13	9.1%	143
Driver-HGV short haul	50	6	10.7%	56
Other	59	14	19.2%	73
Total	999	200	16.7%	1199

Driving Hours

Being a full-time, part-time or casual driver does not significantly (Pearson $\chi 2 = 1.4$, d.f. = 2, p = 0.15) relate to drug use in the past 30-days.

The prevalence of drug use in the past 30-days varies significantly (Pearson $\chi 2 = 19.7$, d.f. = 9, p = 0.02) by the number of hours the drivers worked in the past 7-days (Figure 6). As can be seen in Figure 7 low hours (< 39-hours) is associated with increased drug use as is high amounts of working hours (> 80-hours). As the data is cross-sectional causality is difficult to infer. It may be that employees are working low hours due to drug use (absenteeism). It may be that employees who are working longer hours are taking more drugs because of long hours.

Figure 7: Prevalence of Drug use in the past 30-days by hours worked in the past 7-days



Accidents / Near Misses

Cross-tabulation of an accident or near miss in the past month against any use of drugs in the past day showed no significant (Pearson $\chi 2 = 0.007$, d.f. = 1, p = 0.9) effects of drug use on accident rate. Similarly daily use of drugs did not significantly (Pearson $\chi 2 = 0.95$, d.f. = 1, p = 0.3) cross-tabulate with accident frequency. Binary logistic regression with accident / near miss as the dependent variable and age, children, education, marital status, driver type and drug use in the past 30-days as predictor variables indicated that drug use in the past 30-days did not significantly predict accident rate ($\beta = -0.2$, SE = 0.33, Wald = 0.298, d.f. = 1, p = 0.8).

Mental health status

Anxiety (DASS)

Table 39 cross-tabulates anxiety symptoms recorded in the DASS by any drug use in the past 30-days. Prevalence of Anxiety symptoms vary significantly (Pearson $\chi 2 = 12$, d.f. = 4, $p = 0.02$) by drug use with a doubling of anxiety prevalence in the mild to extremely severe range. Another way to view this data is that 28% of transport workers with anxiety have used drugs in the past 30-days whereas 15% of transport workers with no symptoms of anxiety have used a drug in the last 30-days.

Table 39: Prevalence of anxiety symptoms by any drug use in the past 30-days

	Any drug last 30-days				
Anxiety severity	No	% No	Yes	% Yes	Total
Normal	960	93.0%	174	86.1%	1134
Mild	22	2.1%	7	3.5%	29
Moderate	34	3.3%	13	6.4%	47
Severe	10	1.0%	4	2.0%	14
Extremely severe	6	0.6%	4	2.0%	10
Total	1032	100.0%	202	100.0%	1234

Depression (DASS)

Similar to anxiety, significantly (Pearson $\chi 2 = 22$, d.f. = 4, $p < 0.001$) more transport workers who have taken a drug in the past 30-days have symptoms of depression as compared to those who have not taken drugs (Table 40). 27% of transport workers with anxiety have used drugs in the past 30-days whereas 17% of transport workers with no symptoms of depression have used a drug in the last 30-days.

Table 40: Prevalence of depression symptoms by any drug use in the past 30-days

	Any drug last 30-days				
Depression severity	No	% No	Yes	% Yes	Total
Normal	910	88.2%	156	77.2%	1066
Mild	51	4.9%	22	10.9%	73
Moderate	44	4.3%	10	5.0%	54
Severe	12	1.2%	7	3.5%	19
Extremely severe	15	1.5%	7	3.5%	22
Total	1032	100.0%	202	100.0%	1234

Stress (DASS)

Similar to anxiety and depression, significantly (Pearson $\chi 2 = 21$, d.f. = 4, $p < 0.001$) more transport workers who have taken a drug in the past 30-days have symptoms of stress as compared to those who have not taken drugs (Table 41). 27% of transport workers with stress have used drugs in the past 30-days whereas 15% of transport workers with no symptoms of stress have used a drug in the last 30-days.

Table 41: Prevalence of stress symptoms by any drug use in the past 30-days

	Any drug last 30-days				
Stress severity	No	% No	Yes	% Yes	Total
Normal	962	93.2%	176	87.1%	1138
Mild	31	3.0%	5	2.5%	36
Moderate	21	2.0%	10	5.0%	31
Severe	15	1.5%	6	3.0%	21
Extremely severe	3	0.3%	5	2.5%	8
Total	1032	100.0%	202	100.0%	1234

Psychological distress (K6)

Psychological distress significantly (Pearson $\chi 2 = 8.4$, d.f. = 2, $p < 0.014$) interacts with whether a transport worker has taken a drug in the last 30-days. The most notable difference is in the moderate psychological distress category where of those that have used drugs 8.4% report moderate psychological distress. Combining moderate and high distress into a single distress category 23% of transport workers with psychological distress have used drugs in the past 30-days whereas 16% of transport workers with no psychological distress have used a drug in the last 30-days.

Table 42: Prevalence of psychological distress by any drug use in the past 30-days

	Any drug last 30-days				
K6 Risk of Emotional Problems	No	% No	Yes	% Yes	No
Low Risk	956	92.6%	179	88.6%	1135
Moderate Risk	39	3.8%	17	8.4%	56
High Risk	37	3.6%	6	3.0%	43
Total	1032	100.0%	202	100.0%	1234

12-month usage

Subsequent drug questions were regarding use in the past 12-months. Next question probed drug usage rate in the past 12-months "How often in the last year have you used the substances mentioned above?" Response options were (1) never, (2) less than monthly, (3) monthly, (4) weekly and (5) daily or almost daily. 43 lists the responses. Thus 17% of transport workers admit to taking drugs at least once in the previous 12-months. This does not differ from the 30-day figure of 16%. Cross-tabulation of workers who responded that they took at least one drug at least once in the past 30-days with those reporting drug usage in the past 12-months indicates that 32 respondents answered yes to taking a drug in the past 30-days but responded that they did not take the drug in the past 12-months. This may be a group who thought they didn't have to respond to the 12-month as it had been covered in the past 30-days. The 30-day question is quite clear so we make the assumption that there was not an incorrect answer in this group. Thirty-three respondents who answered no to taking a drug in the last thirty days admitted to taking one in the last 12 months. Adjusting the prevalence figures for the spurious 32 respondents above, 19% of transport workers have taken a drug in the past year. Of the Australian population aged 14 years and over 15% has used any illicit drug at least once in the previous 12 months[1]. Thus, the reported 12-month usage by transport workers is only marginally more than Australian normative values.

Table 43: Drug use in the past 12-months by frequency

	Frequency	Percent	Valid Percent
Never	1035	78.2	83.1
Less than monthly	69	5.2	5.5
Monthly	32	2.4	2.6
Weekly	57	4.3	4.6
Daily or almost daily	53	4.0	4.3
Total responded	1246	94.1	100.0
Missing data	78	5.9	
Total	1324	100.0	

Substance dependency

The following four questions examine possible substance dependency issues. Consistent with DSM IV diagnostic criteria for substance dependency[88], substance dependency is scored positive if respondents (1) take a substance frequently (monthly or more) and (2) they have at least two of the following four symptoms often or very often (i) indicate that the substance use affects their mood emotions or thinking, (ii) if they had a strong urge such that they could not resist taking the substance, (iii) if they spend more time using drugs than they intended to or (iv) if they need more drugs to achieve the same effect. Using these relatively strict criteria 1.7% of transport workers had substance dependency problems.

Prescription medication

The questionnaire probed "In the last 30-days have you used any prescription medication. Forty-two percent responded in the affirmative. Of the 42% taking prescription medication, 21% indicated that the label of the medication had a warning not to drive if drowsy. While 5.6% said, they did not know if the label had a driving warning.

Treatment-seeking for mental health problems

Section H of the survey posed questions about past and current treatments sought for mental health problems. There were some difficulties in analyzing this data as drivers had obviously not read the instructions and therefore did not skip questions when necessary. The information presented below is from the available trustworthy data. There were 217 (16.4%) of transport workers that indicated they had sought treatment for feelings of upset or distress in the past (lifetime treatment history) and 7.8% (N = 103) of drivers that had sought treatment in the past 12-months. Sixty-four transport workers received a prescription for a medication for feelings of upset or distress in the past year.

There were 46 drivers at high risk of a psychological problem (K6) that would benefit from treatment. Fifteen of these (33%) had sought professional advice at some time in the past. Only four (8.7%) has visited a mental health professional in the past year. Thus, due to current elevated symptoms this means that 42 of 46 (91%) of HGV drivers with high levels of psychological distress are not in treatment and treatment is likely warranted. In addition, there were 99 HGV drivers who indicated they had visited a mental health professional in the past 12-months and these drivers had either low or moderate psychological distress symptoms indicating they are in effective treatment (where effective treatment is defined as normalization of symptoms).

In summary, 149 transport workers likely require treatment for a mental health condition, 99 (67%) have sought treatment in the past year and are currently at low or moderate symptoms, four (3%) of transport workers are in treatment but still symptomatic. Thus, 70% have sought treatment in the past 12-months. The remaining 44 (30%) would benefit from treatment but are not currently seeking treatment.

Care Manager Program Results

The inclusion criteria for participation in the clinical intervention were principally elevated levels of symptoms of depression and anxiety and did not exclude people with elevated alcohol and/or drug abuse/dependence symptoms. Thirty-two drivers had high or very high symptoms of anxiety or depression and indicated that they gave consent for further contact. However on 11 drivers consented to participate in the care manager program (XX include acceptance rate for the WORC Project XX). As this sample (N = 11) is so small detailed statistical analyses are meaningless. However, below is a discussion of more qualitative results as found by the treating psychologists.

The majority of drivers contacted attributed their symptoms to external causes. Work conditions were the most frequently nominated cause of symptoms of depression and anxiety and causal in drug use. More specific problems identified were shift work and disrupted sleep / wake cycles and a cascade of problems that participants regarded as being caused by the work hours and unpredictable shifts such as disruption to the establishment and maintenance of relationships, physical health problems, and loneliness. How a person understands their illness and its causes has been identified as a barrier to treatment (Goldstein and Rosselli, 2003; Han et al., 2006). Goldstein and Rosselli (2003) investigated the effect of aetiological beliefs about depression on help-seeking and stigma. Participants recognised three different aetiologies: biological, psychological/personality and environmental. Endorsement of a biological model generally led to greater sense of help-seeking and decreased self-stigma. In contrast, endorsement of a psychological model and environmental models led to greater stigmatising of people with depression. Hence, if a person attributes the cause of their depression to external factors they may be less likely to seek help than those who have a more biological understanding of their illness. Engagement rates with this intervention reflected strong endorsement of a strong environmental causal model of symptoms; less than 50% (N = 11) of those invited to participate (N = 32) continued in the intervention.

A substantial difference between the drivers and the Australian normative data as collected in the original WORC Project was in the area of education. From the total sample, 76% of transport workers had Year 10 or less in education in comparison to 15% of the Australian normative sample. Among the participants who engaged in the programme this emerged as a significant issue. The majority reported early school leaving and regret over their lack of education and the ramifications this had produced in their lives. From descriptions given, it appeared that many had suffered undiagnosed learning difficulties and continued to experience issues with literacy. Additional features of people with learning difficulties include increased problems in social interactions and skills involving verbalising ideas, thoughts and emotions. As one participant noted he did not know how to negotiate verbally and so usually ended up responding physically when angry or frustrated leading to a multitude of problems in both the work and social arena, including legal problems. Of particular poignancy was that it was also clear that many of these men had areas of cognitive strengths in the visual spatial and mechanical problem solving areas that had been undeveloped and unrecognized, leaving them believing themselves to be "stupid". From the point of view of delivering a telephone CBT intervention which used supplemental reading materials such as tip sheets and asked participants to complete monitoring and recording of thoughts and events, completion of written material was challenging and required modification of delivery. In addition, to depression and anxiety, relationship and parenting issues were notable for this group; again this could be related to difficulties experienced by many participants in negotiating and social / emotional problem solving.

Of the completing participants one was identified as most likely having symptoms consistent with schizophrenia and attempts were made to link this participant into mental health services and psychiatric assessment. Three participants reported symptoms consistent with (Post Traumatic Stress Disorder) PTSD as a result of past events (road accident resulting in death of son; death of daughter; being first on scene of road accidents). Four participants reported using 'speed' of some kind (amphetamines, speed, crystal meth) at least monthly. One of these participants reported using speed on a daily basis. Two of these also reported hazardous level of alcohol use and use of sedatives and tranquilizers to offset effects of speed. An additional two participants reported using alcohol at hazardous levels. Use of marijuana and alcohol at less hazardous, occasional levels was also frequently reported. Despite the co-morbid drug and alcohol problems completing participants reported feeling that they had acquired alternative strategies and coping skills that had allowed them to reduce their use of drugs and alcohol and in one instance to become drug and alcohol abstinent.

Of those that completed the intervention the overall feedback indicated a high level of satisfaction with the service received. The most frequent comments referred to "someone who cared enough to listen to me".

Discussion

The self-reported lifetime prevalence of anxiety in transport workers was 7%, almost half of that reported by other Australian employees (13%). Similarly, the prevalence of anxiety symptoms in the past month in transport workers (8% with mild to extremely severe symptoms), as measured by the DASS, is lower than that of published norms (11%)[82]. In contrast, the lifetime prevalence of depression (24%) is higher in transport workers than other Australian employees (17.5%). The one-month prevalence of depressive symptoms (DASS) is slightly lower in transport workers (13%) than published normative values 18%[82]. It is important to note here that the Australian normative values for lifetime prevalence were collected from a sample of 60,556 full-time employed workers who were presented with the same questions as the transport workers and therefore the results are directly comparable. The population norms for the DASS were collected in the United Kingdom from a random sample of the population and may therefore not be directly comparable to Australian normative values. From the Australian data, it appears that transport workers have less anxiety than other workers but increased depression rates.

The K6 scale of non-specific psychological distress does not divide mental health symptoms into diagnostic categories as the DASS but represents any mental health condition and in reality primarily either depression or stress. The K6 indicates that 3.5% of transport workers have symptoms of a mental health problem that would likely meet diagnostic criteria. In other Australian employees, the one-month prevalence of non-specific psychological distress is 4.3%. Although the prevalence of distress is significantly ($p < 0.001$) lower in transport workers the actual difference is quite small (0.8%). Of the transport workers with high psychological distress, 91% are not currently in treatment. The data shows that treatment of mental health problems is effective in transport workers as, of the 103 people that identify themselves as seeking treatment in the past year for an emotional problem, 99 (96%) have had a remission in symptoms.

According to the Australian Transport Safety Bureau (ATSB)[89] during the 12-months to the end of September 2007, there were: 225 deaths from crashes involving trucks (excluding data from Victoria due to unavailability). For all fatalities on Australian roads, one in five involves a truck. Approximately one in five fatalities involving articulated trucks occur in single vehicle accidents. Clearly, there is a large cost associated with loss of life and equipment. Understanding and identifying factors contributing to reduced truck driver performance are imperative.

Table 24 clearly shows that as depression symptoms worsen the odds ratio for an accident or near miss increases. Even mild depression symptoms were associated in an increase in the odds ratio to 2.4. Very severe depression was associated with a marked odds ratio increase to 5.7. Clearly, depression is a substantial contributor to HGV accidents. Interestingly, anxiety symptoms did no correlate with accident rate. As is depression, generalized anxiety is associated with symptoms of being easily fatigued, difficulty concentrating, disturbed sleep which may impair driving ability. However, unlike depression, individuals with generalized anxiety can feel keyed up or on edge[88]. It may be that a hyper-arousal element in anxiety balances other symptoms such that the group average for accidents does not change.

Although depression and anxiety symptoms both increased absenteeism, the self-rated on-the-job performance measure result indicated that mental health symptoms did not affect a driver's self-rated performance. This is an interesting conundrum as the accident data clearly shows that depression is related to increased accident frequency. It may be that as truck driving does not involve complex mental processing and is rather monotonous that drivers do not perceive an actual reduction in performance. If this supposition is true, (i.e. HGV drivers do not have insight into a reduction in their capabilities) this compounds the mental health problem in a couple of ways. Firstly, one stimulant for treatment-seeking behaviour in employees is a reduced performance at work. If drivers do not perceive a performance reduction, they are less likely to seek medical treatment. The second compounding difficulty is that HGV drives are unaware of their impairment and therefore do not take themselves off the road when they are unwell.

Somewhat surprisingly, self-reported drug use did not correlate with an increase in the odds ratio for an accident or near miss.

Increased working hours and high work demands negatively impact work-life balance[90] and may in themselves worsen mental health[91-93]. The survey results show that the HGV drivers are on average working 62-hours per week. It has previously been demonstrated that job strain increases voluntary employee turnover of truck drivers out of the industry[94]. One of the additional costs to the transport industry employers is staff turnover. Truck drivers on average work long hours (average in this study 62-hours per week). In addition, 5.8% of drivers scored positive for stress on the DASS and truck driver stress has been associated with occupational demands[4]. Stress was tightly correlated the number of hours worked per week. It may be that long hours contribute to stress then lead to employee attrition and therefore employers are left with the cost of rehiring and training. Additional evidence shows that depression predicts a later risk of unemployment[95-98] and can result in early retirement[99].

Treatment for depression is effective in reducing clinical symptoms with response rates of up to 75%[57,100] and this finding is supported in the survey. Studies performed in the primary care setting or in samples of depressed workers, indicate that treatment of depression results in fewer missed workdays[57,58,101,102]. Dewa et al.[103] have illustrated that pharmacotherapy for depression, using recommended first-line agents and recommended dosages, is associated with (1) an increased return to work and (2) that early intervention significantly shortened depression related disability episodes. US data on over 1500 consecutive insurance claims has shown that the three conditions resulting in the greatest long-term percentage improvement in employee productivity, following treatment, were depression, anxiety and migraine[104]. These results indicate that successful depression treatment reduces absenteeism and increase productivity. Emerging data shows that effective treatment ameliorates mental health symptoms increasing employee productivity[12,53,59,60].

Of the drivers that were screened as having either high or very high mental health symptoms 32 gave consent on their questionnaire for further contact. On subsequent contact only 11 consented to participate in the psychologist administered care manager treatment program. This demonstrates that HGV drivers have substantial barriers to treatment. It was found that most (of the 32) HGV drivers attributed their symptoms to an external cause (e.g. work). It has been previously discussed that endorsement of a external factors causing depression leads to greater stigmatization. Mental health problems of the 11 recruited drivers included schizophrenia, depression, anxiety, PTSD and co-morbid substance problems. All of the 11 drivers in the care manager program found it helpful.

Conclusion

As very severe depression is associated with a large increase in the odds ratio for an accident or near miss one may be tempted to consider that severe depression would be criteria for taking drivers off the road. However, such an imposition would likely be counter productive. This would send drivers with mental health problems further underground and many drivers would not seek help just in case they met criteria to be suspended from driving due to depression. A better approach would be to detect drivers in distress and facilitate treatment. The difficulty however is how to detect them. As shown by our participation rates drivers will not respond to surveys by post. In-person presentation and collection of a survey only resulted in a response rate of 36%. If a screening program was to be developed, the likely next best method of surveying drivers is on the telephone.

Limitations

There are two obvious criticisms of this work (1) non-random sampling and (2) low survey response rate. The first point to consider is that the project was purposely designed to be a naturalistic study to promote ease of implementation by employers. In reality, workplaces self-select as to whether they engage in a mental health program and employees self-select as to whether the answer a health survey in the workplace. Therefore, the current study methodology has ecological validity. When workplaces administer a survey they do not select a random stratified sample to administer the questionnaire, they send it to all employees. The non-random sample of employees reported, may not be entirely representative of the population of employees as a whole. The response rate of 36% to the HPQ survey is low in epidemiological terms (usually >60% is required). However, this is the typical response rate obtained when health questionnaires are sent to employees[60,105-107]. Previous validation studies indicate that a comparison responders to non-responders, to a questionnaire containing mental health questions, showed no statistical difference in the prevalence of anxiety or depression[28,106]. Our own analysis also indicates that response rates are not predictive of prevalence. Although the sample is non-random, and has a response rate of 36%, it is one of the largest samples of transport workers collected and the sheer volume of data infers a certain amount of validity. In the very least, the results are strongly indicative and will stimulate further research.

The HPQ measure of presenteeism is self-reported and thus has the inherent limitations of any self-reported measure. Calibration studies show good concordance of the HPQ presenteeism metric with supervisor ratings and objective records[21,63,75]. One concern may be that, similar to depression[108,109], psychological distress may distort cognition resulting in pessimistic or distorted ratings of performance. However, a comparison of externally reported work performance measures to self-reported performance measure in people with mental health noted a good concordance[110].

Costs did not include employee overheads (real-estate, fringe benefits etc.), replacement costs (employing temporary staff or payment of overtime), reduced customer satisfaction leading to loss of business, overrun of time dependent projects, costs of suicide[24,27], employee attrition[6,25,111], early retirement[99,112], workplace accidents / incidents[8,21,56,113], effects on other employees (spill over effects)[10,46] and workplace insurance claims and litigation. Mental health problems that are not detected by the K6 or the DASS (eg. psychosis) may not have been identified. Mental health can result in long-term sickness absence[22] these absences would not have been captured to their full extent due to the employees not being present at work to answer the survey. Mental health problems are also a risk factor for the development of physical health problems (eg. heart disease) which will reduce employee attendance and performance.

Recommendations for Future Mental Health Steps

As, after normalising for other factors, depression was associated with an increased OR of 5.2 for an accident or near miss. Thus it is imperative, from a road safety perspective, that steps are taken to address depression in HGV drivers. We recommend a national project aimed at screening HGV drivers for depressive symptoms and facilitating them into treatment. In order to maximise benefit there are several key points that we can take away from the project presented in this document.

Questionnaire Response Rates

It is evident that drivers do not respond to paper based mailed questionnaires. It is also clear that presenting paper based questionnaires in person at truck stops is only moderately successful and costly. One finding from the care manager program was that the HGV drivers liked to talk on the phone, it was company for them. As part of the initial WORC project, lay interviewers administered a phone survey which had an 85% response rate. Administering the initial questionnaire by telephone may be a much more successful medium to encourage initial response rates to a survey. This would also address the issue of low literacy levels in HGV drivers. A caveat to the WORC project phone survey was that respondents received an incentive a $50 voucher for answering the survey. Due to financial limitations in HGV drivers this may not be possible. However, in a project we performed for another employer, the incentive was to enter the draw for a prize. Thus, one alternative is to offer each driver the chance to win, for example, $1,000 in a store voucher. If 1,000 drivers are screened this equates to $1 per survey. The difficultly in conducting a phone survey is where do you obtain phone numbers for the drivers? The Transport Workers Union may be able to assist in regards to this problem.

Consent to Participate in a Psychological Intervention

Another difficulty was that only one third of HGV drivers with mental health problems consented to participate in a therapeutic psychological program. It appears that this is a mental health literacy / stigmatisation issue. It is impossible to force an individual into treatment and therefore one approach may be to educate drivers about mental health problems. For example, it may be that *beyondblue: the national depression initiative* could be engaged to work with the transport industry to raise awareness of mental health issues in HGV drivers. Due to literacy issues one has to be mindful of any campaign using printed material.
Beyond that, it may be that the consent script our psychologists used for HGV drivers requires review to make it more appealing to this very specific population.

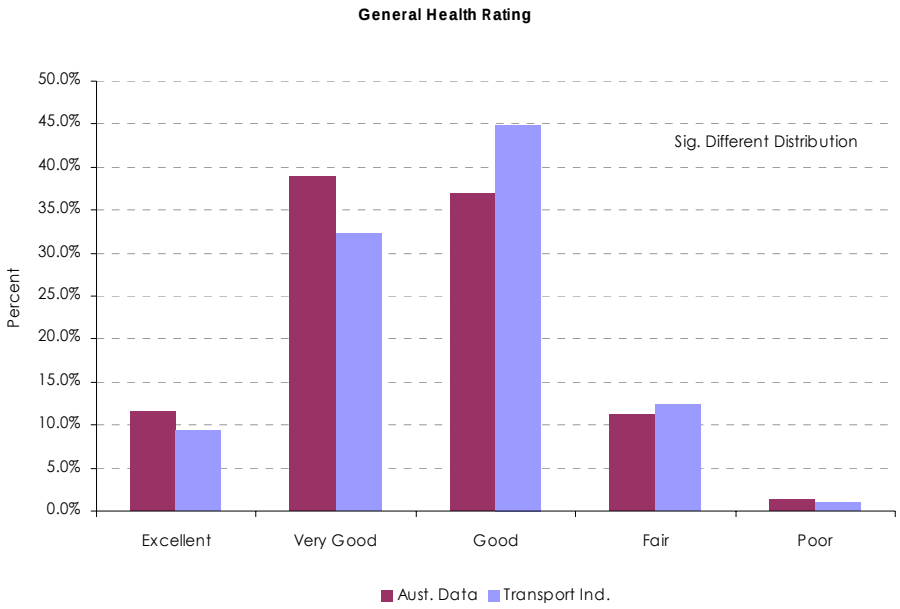
In addition this project only attempted to enrol HGV drivers with high psychological distress or severe to very severe symptoms on the DASS. In future work it would likely be advisable to include drivers with moderate symptoms on the DASS or K6. This would increase the numbers of drivers funnelled into an intervention program.

Physical Health Results

General Health

This rating by employees indicates how they perceive their general health. The General Health charts present the results from the WORC Project to date (c.90,000 respondents), and the results of the NSW Transport Workers. This graph indicates the perceived health status of the respondents as compared to the national average.

Figure 8: General Health Rating



Most respondents (44.8%) rated their overall general health as 'Good', with 1 in 3 reporting 'Very Good' health and 1 in 10, reporting 'Excellent' health. The distribution of responses is significantly different to the Australian norm, where 51% of respondents rated their health as 'Very Good' or 'Excellent', compared to only 41% of NSW Transport Workers.

Body Mass Index (BMI)

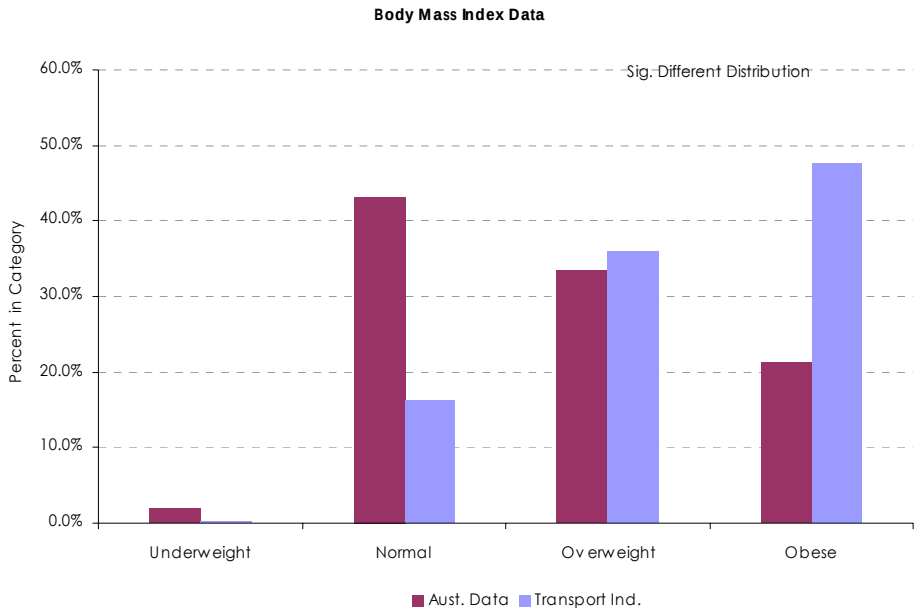
The average BMI index of the NSW Transport Workers was significantly higher than the Australian norm (30.8 kg/m^2 vs. 26.6 kg/m^2).

Body mass index (BMI) is calculated by dividing weight (kg) by height (m) squared; therefore the units are kg/m^2.

- Underweight (<18.5 kg/m^2),
- Normal (18.5 to 25 kg/m^2),
- Overweight (25 to 30 kg/m^2), and
- Obese (>30 kg/m^2).

These categories are presented in graphical form benchmarked against the national average.

Figure 9: Body Mass Index Data



Weight is a major area for improvement in the Transport Industry, with 8 out of 10 respondents (83.6%) classed as overweight or obese. With 1 in 2 respondents (47.7%) classed as obese, the obesity rate is double that of the Australian norm (21.3%).

** Self-Reported Obesity It is interesting to note that whilst 48% of respondents are classed as obese based on their BMI, when asked if they had obesity only 20%, that is 1 in 5 reported the condition.

Table 44: Body Mass Index Classifications

		Owner Operator		Driver			
BMI (kg/m2)	**Category**	**Long Haul**	**Short Haul**	**Long Haul**	**Short Haul**	**Other**	**Aust. Norm**
<18.5	Underweight	0%	0%	0%	0%	2.1%	2%
18.5-25	Healthy	15%	20%	10%	19%	20%	43%
25-30	Overweight	36%	40%	36%	39%	30%	34%
30-35	Obese	29%	30%	32%	29%	33%	14%
35+	Severe Obesity	21%	11%	21%	14%	15%	7%
	Average BMI (kg/m2)	31.2	29.6	31.7	31.1	29.9	26.6

With many health conditions, the greater the body weight the more severe the condition experienced. Obesity has been linked to a number of medical conditions, including:

- Heart disease and stroke
- High blood pressure
- Diabetes
- Cancer
- Gallbladder disease and gallstones
- Osteoarthritis
- Gout
- Breathing problems, such as sleep apnoea and asthma

Health Conditions

The initial section of the survey asked respondents to report their health problems and associated professional treatment. This information is used to determine the prevalence of health conditions and the rate/level of treatment being received. Respondents were asked about 24 different health conditions, which are grouped in to the following areas:

1. Body Mass Index (BMI)
2. Bone & Inflammatory Disorders
3. Chronic Pain Disorders
4. Cardiovascular Conditions
5. Digestive & Urinary System
6. Endocrine Disorders & Cancer
7. Sleep Problems & Fatigue

Summary

Findings from this section of the survey support the recommendation that weight is a key area for improvement across the NSW Transport Industry. The conditions that are significant are commonly associated with increased weight. Job demands (time) and lifestyle factors such as poor diet and lack of exercise would also contribute to these conditions.

The following conditions were significantly higher than the Australian norm:

- Body Mass Index (30.8 kg/m^2 vs. 26.6 kg/m^2),
- Arthritis/rheumatism (21.9% vs. 16.5%)
- Hypertension (17.3% vs. 13.1%)
- Congestive heart failure (0.8% vs. 0.4%)
- Coronary heart disease (2.3% vs. 1.1%)
- High cholesterol (15.5% vs. 13.5%)
- Stomach or intestinal ulcer (7.5% vs. 5.6%)
- Heartburn (17.1% vs. 13.9%)
- Chronic Obstructive Lung Disease (0.6% vs. 0. 3%)
- Diabetes (6.3% vs. 3.1%)
- Obesity (19.6% vs. 15.4%)

There are a number of conditions where the prevalence rate is significantly lower than the Australian norm:

- Migraine headaches (15.8% vs. 24.8%)
- Other headaches (15.5% vs. 26.8%)
- Irritable bowel (5.8% vs. 12.8%)
- Heartburn (7% vs. 14%)
- Urinary bladder problems (4.6% vs. 11.0%)
- Allergies/hayfever (20.1% vs. 39.0%)
- Asthma (10.2% vs. 17.3%), and
- Chronic fatigue (21.7% vs. 25.6%)

Bone & Inflammatory Disorders

Arthritis & Rheumatism:

1 in 5 respondents (21.9%) reported arthritis and rheumatism. This prevalence rate is significantly higher that the Australian norm (16.5%).

- 1 in 4 respondents classified as short haul reported this condition. Owner/Operator HGV Short Haul - 24.2% and Driver HGV Short Haul – 25.0%.

Chronic Back/Neck Pain:

The prevalence rate for this condition was not statistically significant when compared to the Australian norm (36.5% vs. 35.1%). Although lower than the Australian norm it is important to note that 1 in 3 people reported this condition.

- Almost 1 in 2 respondents (45.7%) from the 'Other' category reported chronic back or neck pain. This was significantly higher than the Australian norm.

Osteoporosis:

The prevalence rate for this condition was not statistically significant when compared to the Australian norm (1.5% vs. 1.7%).

Chronic Pain Disorders

Migraine Headaches:

The prevalence rate across NSW Transport Workers for migraine headaches was significantly lower than the Australian norm (15.8% vs. 24.6%).

Other Headaches:

The prevalence rate across the NSW Transport Workers for other headaches was significantly lower than the Australian norm (15.5% vs. 26.6%).

- Only 1 in 10 people (10.8%) from the Owner/Operator HGV Short Haul category reported this condition.

Any Other Chronic Pain:

The prevalence rate for this condition was not statistically significant when compared to the Australian norm (10.5% vs. 11.1%).

Cardiovascular Conditions

High Blood Pressure/Hypertension:

The prevalence rate for this condition was significantly higher when compared to the Australian norm (17.3% vs. 13.1%).

- Almost 1 in 4 respondents (23.3%) from the Driver HGV Short Haul Category reported this condition.

Congestive Heart Failure:

The prevalence rate for this condition across the NSW Transport Workers (0.8%) was significantly higher than the Australian norm 0.4%.

- The prevalence rate in the Owner Operator HGV Long Haul (1.0%) was significantly higher than the Australian norm.

Coronary Heart Disease

The prevalence rate for this condition was significantly higher than compared to the Australian norm (2.4% vs. 1.1%).

- The reported incidence of Coronary Heart Disease (5.3%) in the Driver HGV Short Haul category was five-times that of the Australian norm.

High Cholesterol:

The prevalence rate for this condition was significantly higher than the Australian norm (13.7% vs. 15.5%).

- 1 in 5 people reported this condition in the Owner Operator HGV Short Haul division (19.8%) and the Driver HGV Short Haul division (19.0%).

Digestive & Urinary System

The incidence of irritable bowel disorder and urinary or bladder problems reported by NSW Transport Workers was significantly lower than the Australian norm.

- Irritable bowel disorder (5.8% vs. 12.8%)
- Urinary or bladder problems (4.69% vs. 11.0%)

Stomach or Intestinal Ulcer:

The prevalence rate for this condition was significantly higher than the Australian norm (7.5% vs. 5.6%).

- The incidence of stomach or intestinal ulcer in the 'Other' category (11.5%) was double the Australian norm.

Chronic Heartburn/Oesophageal Reflux:

The prevalence rate for this condition was significantly higher than the Australian norm (17.1% vs. 13.9%).

- Although not statistically significant, it is interesting to note that the incidence rate for this condition was higher amongst respondents in the Short Haul categories than those in the Long Haul categories.
  - ⇨ 1 in 5 reported this condition in the Owner Operator HGV Short Haul division (20.3%)
  - ⇨ 1 in 5 reported this condition in the Driver HGV Short Haul division (22.4%).

Allergies & Lung Disorders

Seasonal Allergies or Hayfever:

With 1 in 5 respondents reporting this condition (20.1%), the incidence rate was half that of the Australian norm where 2 out of 5 people reported the condition (39.0%) and significantly lower.

- The Driver HGV Short Haul category had the lowest prevalence rate for this condition (15.5%)

Asthma:

The prevalence rate for this condition was significantly lower than the Australian norm (10.2% vs. 17.3%)

- The Driver HGV Short Haul category had the lowest prevalence rate for Asthma (5.1%), that is only 1 in 20 people reporting the condition compared to the Australian average of almost 1 in 5.

Chronic Bronchitis or Emphysema:

The prevalence rate for this condition was not statistically significant when compared to the Australian norm (2.9% vs. 3.6%).

Chronic Obstructive Long Disease (COLD):

The incidence of COLD in NSW Transport Workers (0.6%) was significantly higher than the Australian norm (0.3%).

Endocrine Disorders & Cancer

Diabetes:

At double the Australian average (6.3%) the prevalence rate for this condition was significantly higher than the Australian norm (3.1%). This condition is often associated with increased weight or obesity.

- It is interesting to note that the incidence rate for this condition was higher amongst respondents in the Long Haul categories than those in the Short Haul categories.
  - ⇨ Owner Operator HGV Long Haul division (7.0%)
  - ⇨ Driver HGV Long Haul division (7.0%)
  - ⇨ Owner Operator HGV Short Haul division (2.7%)
  - ⇨ Driver HGV Short Haul division (5.3%)

Obesity:

With 1 in 5 respondents (19.6%) reporting obesity, this result was significantly higher than the Australian norm (15.4%). However it is interesting to look at the self-reported figures of obesity compared to the numbers calculated and based on body mass index.

Table 45: Obesity – Self Reported vs. BMI Classification

	Obesity	
Category	**Self Report**	**Based on BMI**
Transport Industry	19.6%	47.7%
Owner Operator HGV Long Haul	18.6%	49.6%
Owner Operator HGV Short Haul	21.6%	40.4%
Driver HGV Long Haul	22.4%	53.5%
Driver HGV Short Haul	20.0%	42.3%
Other	21.7%	46.9%
Australian Norm	15.4%	21%

- The results for self-reported obesity suggest that individuals do not recognise the severity of their weight issues, or may not acknowledge their condition.

Skin Cancer:

The overall result for NSW Transport Workers was not statistically significant when compared to the Australian norm (11.5% vs. 11.6%). However, the prevalence rates in the following categories were significantly higher than the Australian average:

- Owner Operator HGV Short Haul - 16.8%
- Driver HGV Short Haul - 20.3%, almost double the Australian average.

Any Other Cancer:

The prevalence rate for this condition was not statistically significant when compared to the Australian norm (2.8% vs. 3.2%).

Sleep Problems & Fatigue

Chronic Sleeping Problems:

The prevalence rate for this condition was not statistically significant when compared to the Australian norm (17.9% vs. 17.5%).

Chronic Fatigue or Low Energy:

With 1 in 4 respondents (21.7%) reporting chronic sleeping problems, the prevalence rate for this condition was significantly lower than the Australian norm (25.6%). The prevalence rate for Owner Operator HGV Long Haul (20.8%) was also significantly lower than the norm.

Recent Physical Health

Following questions about their lifetime prevalence of different health conditions, respondents were asked about different symptoms they may have experienced over the 28 days prior to completing the survey. These symptoms are grouped in to the following areas:

1. Fatigue & poor sleep symptoms
2. Musculoskeletal symptoms
3. Immune symptoms
4. Digestive symptoms

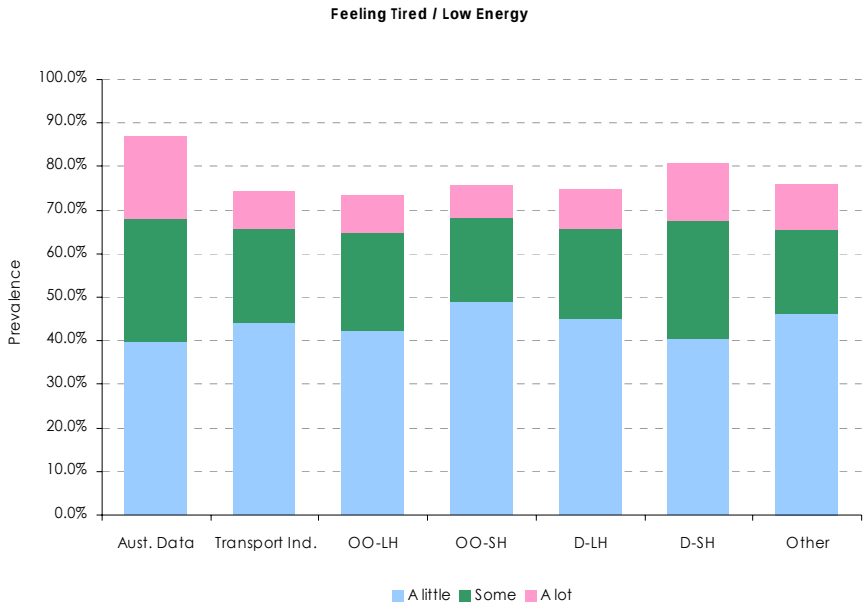
Fatigue & Poor Sleep Symptoms

Feeling Tired / Low Energy:

The overall percentage of NSW Transport Workers reporting feeling tired or having low energy was significantly lower than the Australian result (74.4% vs. 86.8%).

- 1 in 5 respondents (21.5%) reported these symptoms 'Some' of the time, compared to the Australian average (28.1%)
- Just fewer than 1 in 10 respondents (8.8%) reported these symptoms 'A lot' of the time, almost half that of the Australian average (18.9%)

Figure 10: Feeling Tired/Low Energy



Trouble Sleeping:

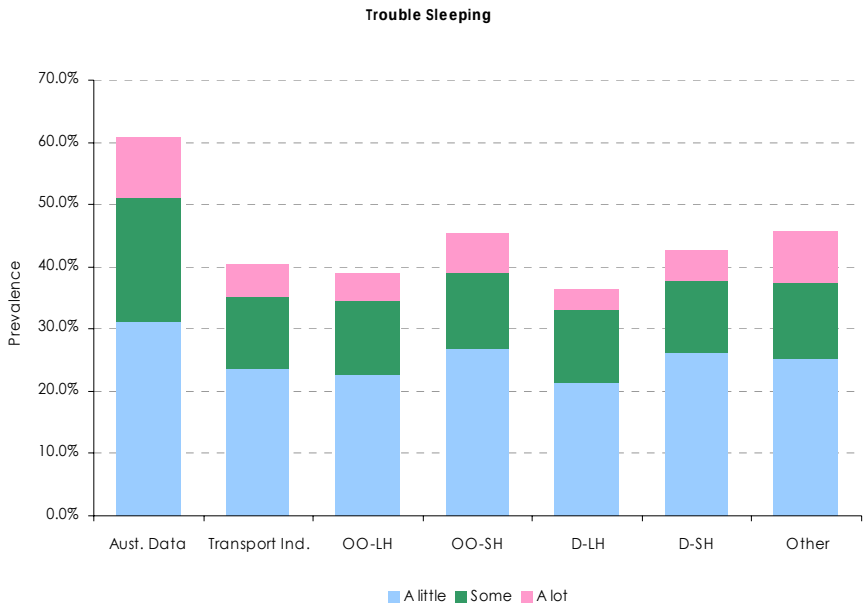
The incidence of having trouble sleeping in the NSW Transport Workers was significantly lower than the Australian result (40.3% vs. 60.9%). The distribution of results was also different.

- Only 1 in 4 respondents (23.5%) reported 'A little' trouble sleeping compared to the Australian result of 1 in 3 reporting this symptom (31.2%)
- 1 in 10 respondents (11.8%) reported 'Some' trouble sleeping compared to the Australian result of 1 in 5 reporting this symptom (20.0%).
- The reported incidence of having 'A lot' of trouble sleeping was only 5.0% which is half that of the Australian average of 9.6%.

** *Note: Given the high level of obesity for respondents, the results for both chronic sleeping problems and chronic fatigue/low energy seem unlikely. Breathing problems, in particular sleep apnoea, are highly correlated with weight issues and will impact on quality of sleep and as a result, energy levels of the individuals.*

It may be that as a long term issue, the respondents in this category have adapted to these chronic issues and now perceive how they feel as 'normal'.

Figure 11: Trouble Sleeping



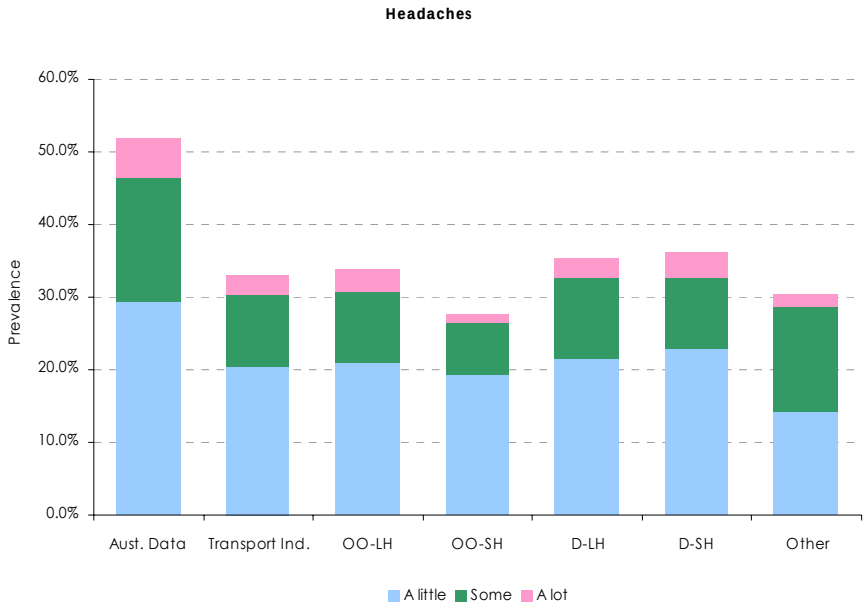
Musculoskeletal Symptoms

Headaches

Only 1 in 3 respondents (33.0%) reported headaches in the 28 days prior to completing the survey. This result is significantly lower than the Australian result for this symptom (51.9%). This result reflects the low lifetime prevalence for this condition as reported earlier.

- 1 in 5 respondents (20.4%) reported headaches 'A little' of the time
- Only 2.7% of respondents reported headaches 'A lot of the time'

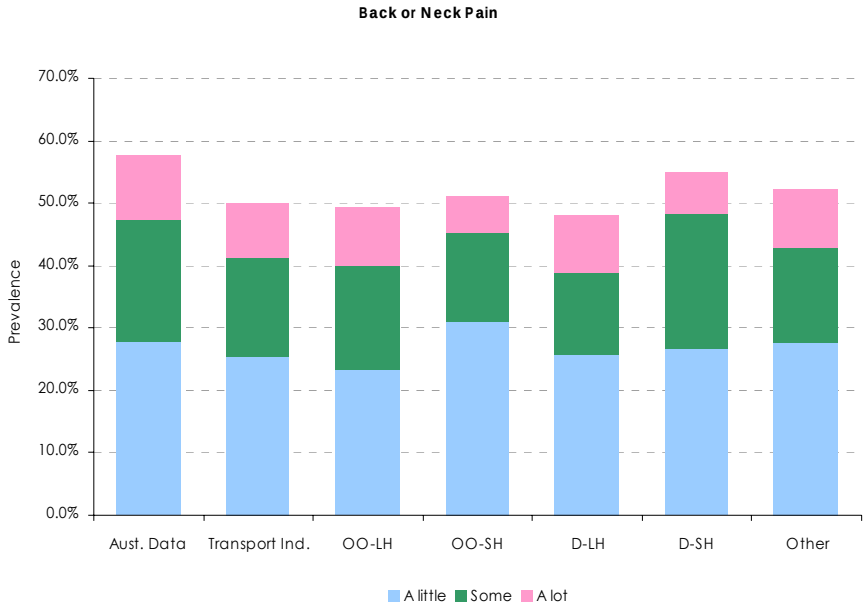
Figure 12: Headaches



Back or Neck Pain:

The overall result for the NSW Transport Industry (49.9%) was significantly lower than the Australian norm (57.7%) however the distribution was fairly similar.

Figure 13: Back or Neck Pain

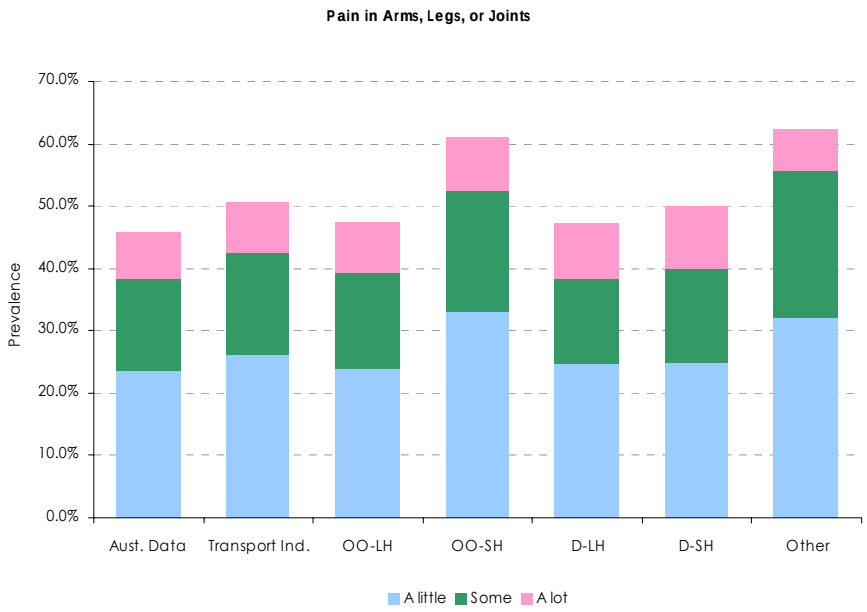


Pain in Arms, Legs or Joints:

The number of respondents reporting this symptom, 50.8%, was significantly higher than the Australian norm (45.7%).

- Almost two-thirds of respondents (61.1%) from the Owner Operator HGV Short Haul Category reported this symptom.
- Almost two-thirds of respondents (62.3%) from the 'Other' category reported this symptom, with 1 in 4 people saying they were bothered by the condition 'Some' of the time.

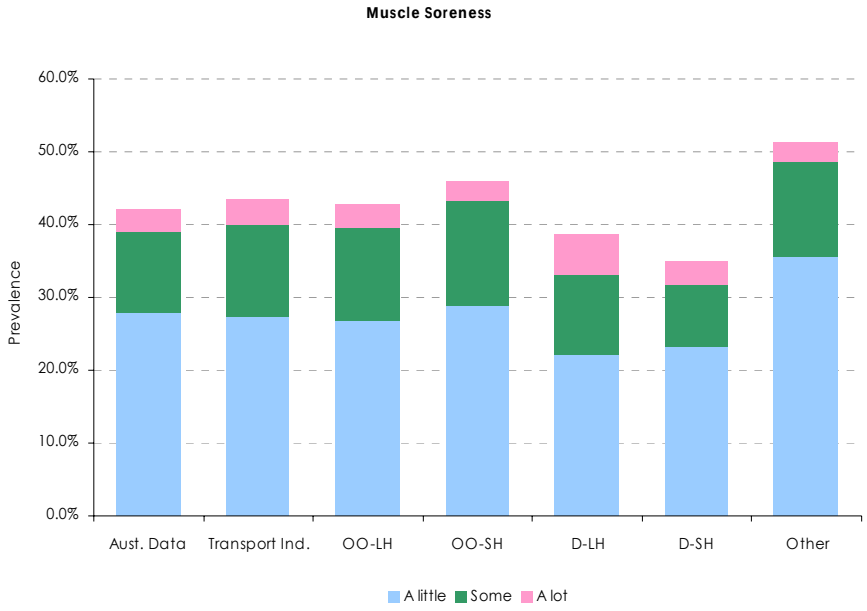
Figure 14: Pain in Arms, Legs orJoints



Muscle Soreness:

There were no significant differences between the NSW Transport Workers results and the Australian norm in relation to muscle soreness.

Figure 15: Muscle Soreness



Immune Symptoms

There were no major differences between the results for the NSW Transport Workers and the Australian results in relation to immune symptoms, except for Water eyes, runny nose, stuffy head which was significantly lower.

- Watery eyes, runny nose, stuffy head (36.4% vs. 42.5%)
- Cough or sore throat (29.8% vs. 32.0%)
- Cold / flu symptoms (21.8% vs. 21.5%)

Figure 16: Water Eyes, Runny Nose, Stuffy Head

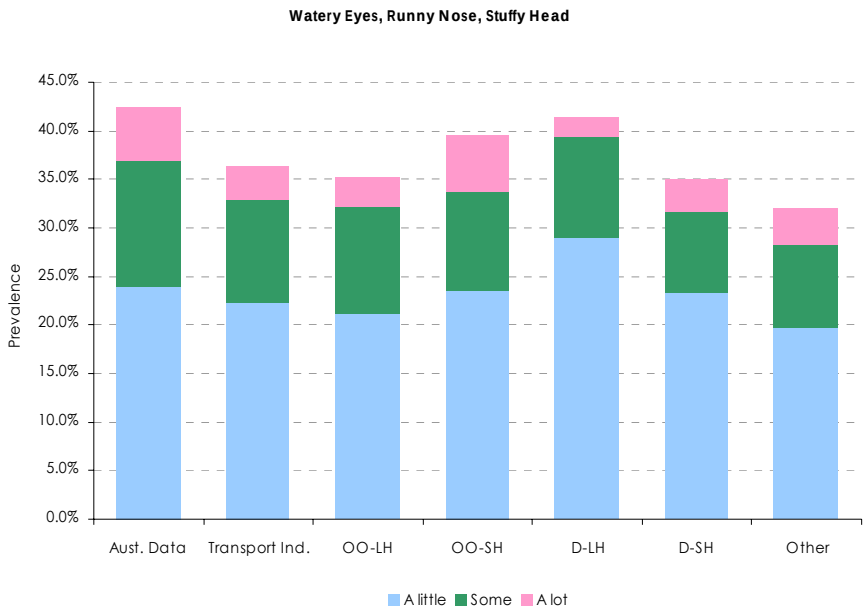


Figure 17: Cough or Sore Throat

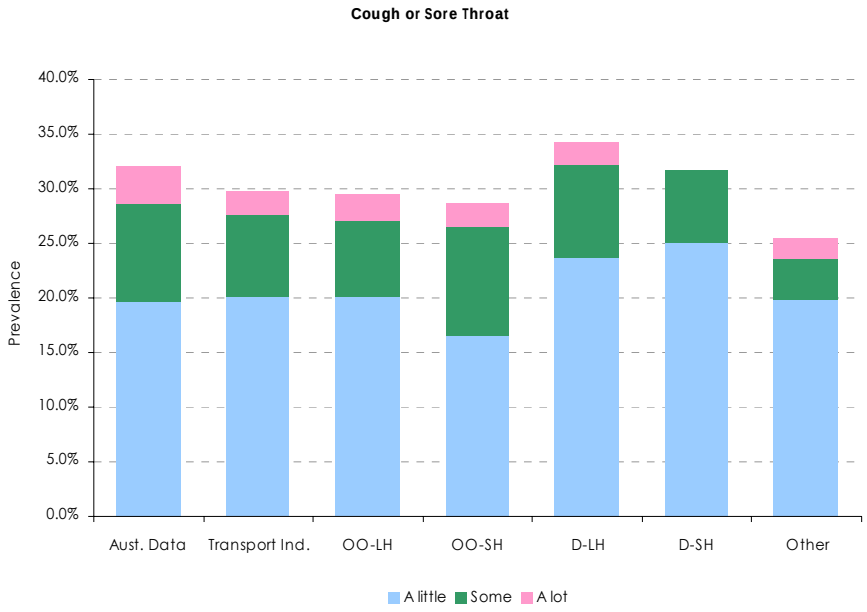
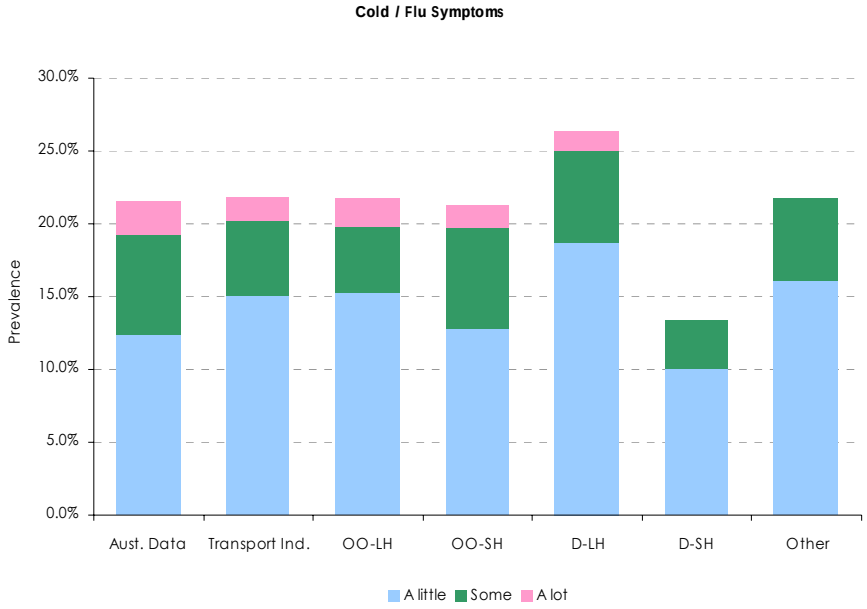


Figure 18: Cold/Flu Symptoms



Digestive Symptoms

The incidence of digestive symptoms in the past 28 days was significantly lower than the Australian results. These reflected the previously reported low prevalence rate of life-time prevalence for these conditions:

- Constipation, loose bowels or diarrhoea (13.6% vs. 29.9%)
- Nausea, gas or indigestion (16.5% vs. 31.6

Figure 19: Constipation, Loose Bowels, Diahorrea

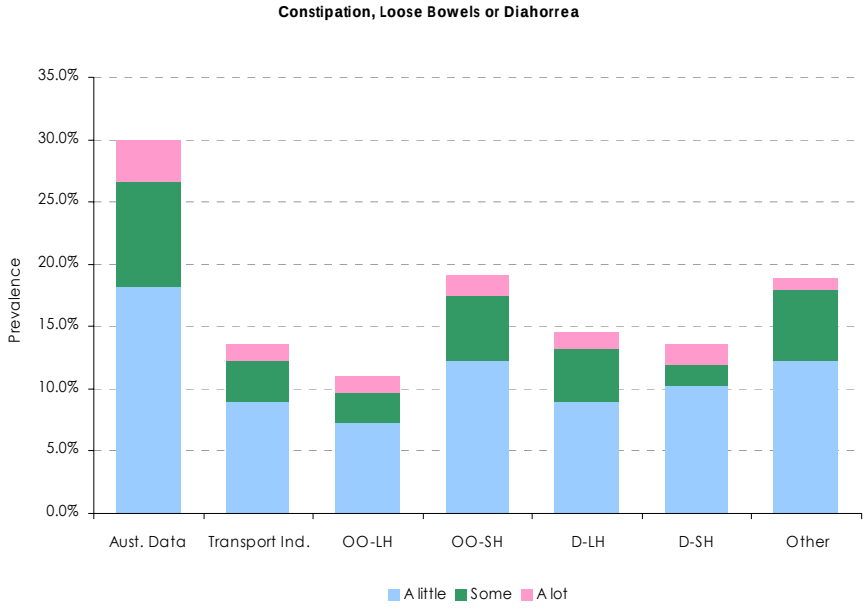
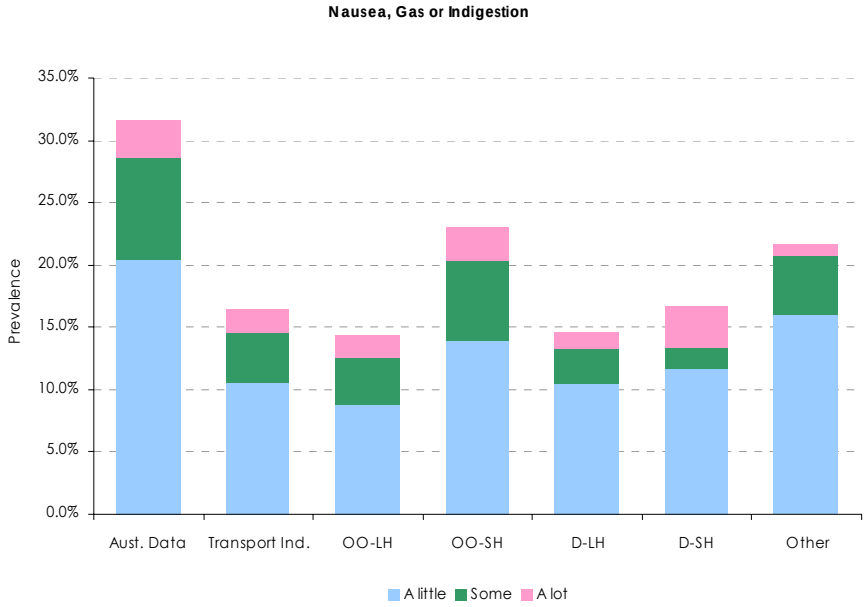


Figure 20: Nausea, Gas or Indigestion



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