

WORK-RELATED INJURIES IN AUSTRALIA, 2005–06

Manufacturing industry

OCTOBER 2009



safe work australia

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Foreword

Safe Work Australia principally uses workers' compensation claims data to measure occupational health and safety (OHS) performance in Australia. The claims data are collated in the *National Data Set for Compensation Based Statistics* (NDS) and are published annually in the *Compendium of Workers' Compensation Statistics, Australia*. This publication is a key reference documenting patterns of work-related injuries and diseases incurred by Australian workers and the cause of that injury or disease. For the purposes of this report, the expression 'work-related injury' will be used to represent all work-related conditions, including work-related diseases.

While the NDS is a valuable tool for monitoring OHS, it does not provide information on work-related injuries for groups not well covered by workers' compensation schemes, such as self-employed workers. It is estimated that workers' compensation schemes, and therefore the NDS, covered only 88%¹ of the workforce in 2005–06. In addition, the NDS does not contain information on some types of employment conditions, such as shiftwork or access to paid leave entitlements. Finally, the NDS is unable to provide any information on work-related injuries where workers' compensation was not sought. Therefore, although the NDS generally provides a good picture of the characteristics of work-related injuries, it underestimates the true number of work-related injuries occurring each year.

To address this situation, the National Occupational Health and Safety Commission (now known as Safe Work Australia) agreed to contribute funding towards a national survey of work-related injuries run by the Australian Bureau of Statistics (ABS) as part of the Multi-purpose Household Survey. The *Work-Related Injuries Survey* (WRIS) was conducted for the period 2005–06 with results released in December 2006. In this survey, participants aged 15 years and over, were asked to recollect and relate a range of details about their most recent work-related injury or illness, no matter how minor, that occurred within the last 12 months. The survey collected information on labour force characteristics (e.g. industry, occupation) and personal demographics (e.g. age, sex) which are useful when making comparisons to the NDS. The WRIS also collected information on employment arrangements, such as whether the worker worked under shift arrangements, worked part-time or had access to paid leave. This type of information is not collected in the NDS. Importantly, the WRIS also collected information about whether or not workers' compensation was sought, and if not, why not.

Unless otherwise stated, all data presented in this report have relative standard errors (RSEs) less than 25%. Data with RSEs greater than 50% have generally been suppressed. Unfortunately, this has, on occasions, limited the scope of the reports.

This report is one in a series of industry based reports that explore the types and causes of work-related injury and how these compare to those in the NDS.

¹ The percentage of employees is calculated from the Australian Bureau of Statistics, *Work-related Injuries Australia* (Cat. No. 6324.0)

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Summary of findings

The following key findings are contained in this report:

- Manufacturing industry workers experienced 87 injuries per 1000 workers in 2005-06 which was 26% higher than the rate for all Australian workers of 69 injuries per 1000 workers.
- Male workers accounted for three-quarters of all workers in the Manufacturing industry and experienced 98 injuries per 1000 workers.
- Part-time workers in the Manufacturing industry experienced a slightly higher rate of injury per hour worked than full-time workers. This is different to the Australian workforce as a whole where part-time workers recorded twice the rate of injury per hour worked than full-time workers.
- Workers aged 15-24 years recorded the highest incidence rate of work-related injury, 124 injuries per 1000 workers. This was substantially higher than the rate for all Australian workers of this age who recorded 86 injuries per 1000 workers.
- Four in ten injuries required no time off work.
- Nearly one in five workers in the Manufacturing industry worked under shift arrangements. These workers experienced 122 injuries per 1000 workers compared to 77 injuries per 1000 workers for those not working under shift arrangements.
- *Sprains and strains* accounted for nearly one in three injuries with an additional one in four being *Cuts and open wound* and one in five being Chronic joint or muscle conditions.
- *Hitting or being hit or cut by an object* and *Lifting, pushing or pulling object* were the main causes of injury with each accounting for around three in ten injuries.
- Compensation data provides a good picture of the way in which workers incurred serious injuries but this report was not able to conclude whether the types of injuries in the compensation data were similar to injuries incurred by all workers in the Manufacturing industry.

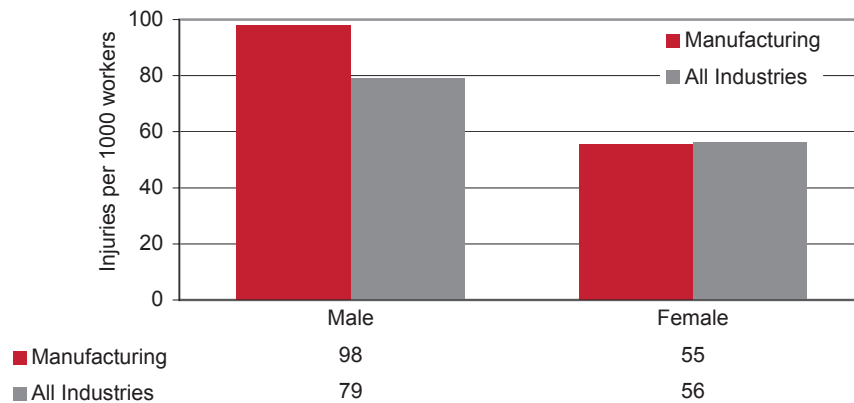
General Trends

There were 1 095 000 workers in the Manufacturing industry in 2005–06, and around 95 000 of these workers experienced a work-related injury. This equates to 87 injuries per 1000 workers: substantially higher than the incidence rate for all Australian workers of 69 injuries per 1000 workers.

Sex

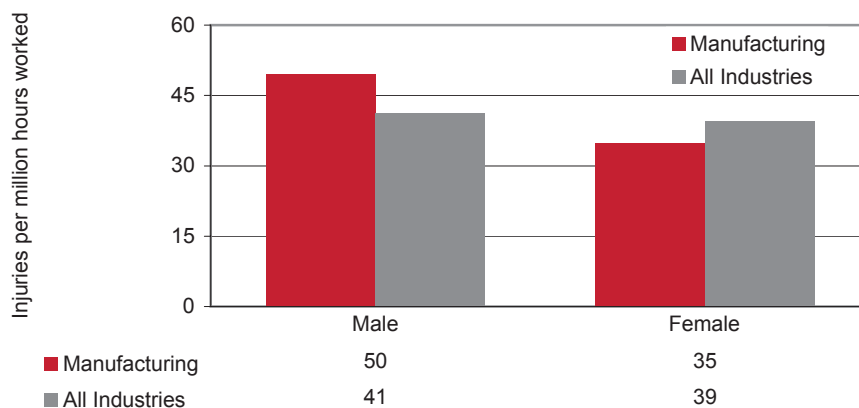
In 2005-06, 74% of workers in the Manufacturing industry were male. This is considerably higher than the percentage of men in the Australian workforce as a whole (55%). Figure 1 shows that male workers experienced 98 injuries per 1000 male workers, which was nearly double the incidence rate of female workers 55 injuries per 1000 female workers. The incidence rate for male workers in the Manufacturing industry was also substantially higher than the incidence rate for male workers in the Australian workforce as a whole.

Figure 1 Work-related injuries in the Manufacturing industry: Incidence rate by sex



Differences in the number of hours worked between men and women can be controlled by expressing work-related injuries as a frequency rate (injuries per million hours worked). Figure 2 shows that while male workers in the Manufacturing industry recorded a higher frequency rate of injury than female workers, the difference in rates between the sexes is much smaller than for incidence rates.

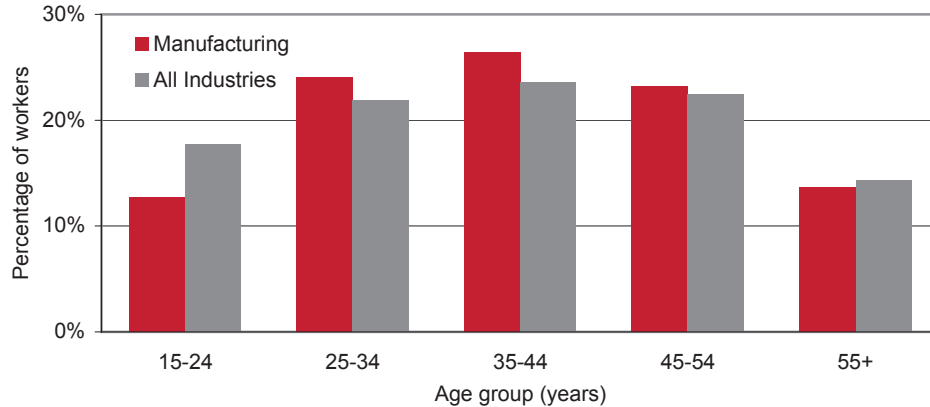
Figure 2 Work-related injuries in the Manufacturing industry: Frequency rate by sex



Age

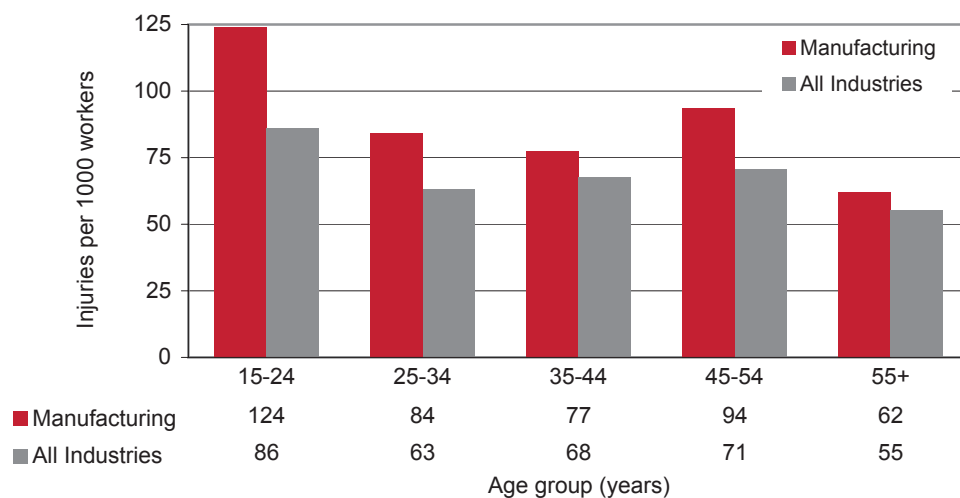
The age profile of workers in the Manufacturing industry followed the same general pattern as that for the Australian workforce as a whole but with a greater percentage of workers in the 25–34 years and 35–44 years age groups. Of note is the much smaller percentage of workers in the 15–24 years age group than that in the Australian workforce as a whole.

Figure 2 Workers in the Manufacturing industry: Percentage by age



The incidence of work-related injuries in the Manufacturing industry was highest for workers aged 15–24 years, with 124 injuries per 1000 workers. This was substantially higher than rate recorded by workers of this age in the Australian workforce as a whole. Figure 3 also shows that Manufacturing workers aged 25–34 years and 45–54 years recorded injury rates well above the Australian rates for workers in the same age groups.

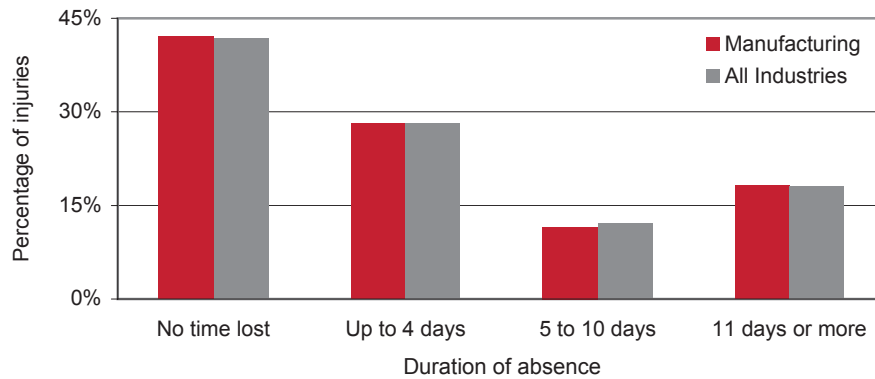
Figure 3 Work-related injuries in the Manufacturing industry: Incidence rate by age



Duration of absence from work

Figure 4 shows that the profile of time required to be absent from work due to injuries incurred by Manufacturing workers followed the same pattern as the Australian data. These data show that around four in ten injuries required no time off work but that nearly two in ten required more than two weeks off work.

Figure 4 Work-related injuries in the Manufacturing industry: Percentage by duration of absence from work



Entitlement to paid leave

In 2005-06, 92% of workers in the Manufacturing industry were employees with the remainder self-employed workers. Of the employees, 85% were entitled to paid leave compared to only 77% of all Australian workers. Figure 5 shows that employees with access to paid leave recorded a higher incidence rate (98 injuries per 1000 workers) than employees without access to paid leave (70 injuries per 1000 workers).

Figure 5 also shows that employees without access to paid leave recorded an incidence rate only slightly higher than the rate for all Australian workers without access to paid leave but that the rate for Manufacturing workers entitled to paid leave was considerably higher than the Australia rate for the same group of workers.

Figure 5 Work-related injuries in the Manufacturing industry: Incidence rate by leave entitlement and industry

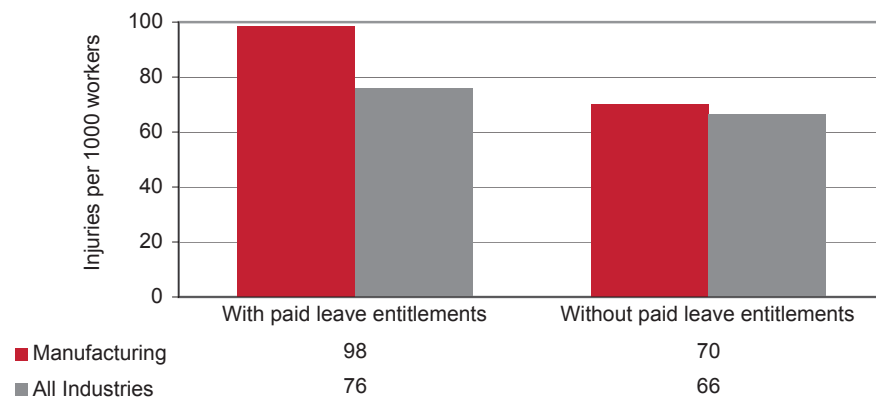
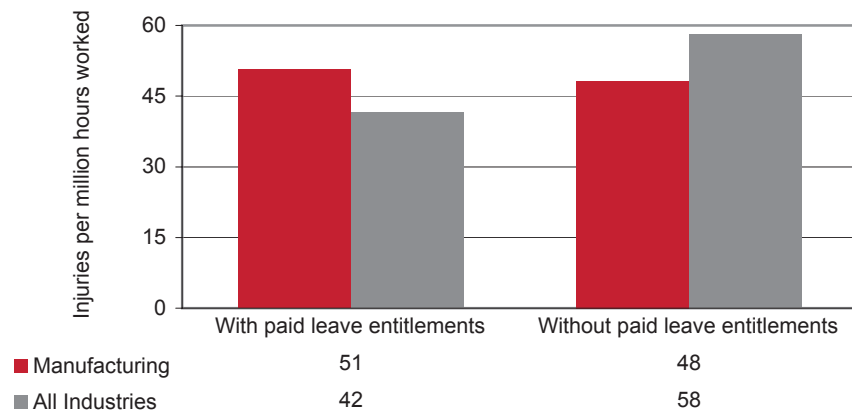


Figure 6 shows that when hours worked were considered that employees recorded similar rates of injury regardless of whether they had access to paid leave or not. This is quite a different situation to the Australian workforce as a whole where employees without access to paid leave recorded an injury rate per hour worked 38% higher than employees with access to paid leave.

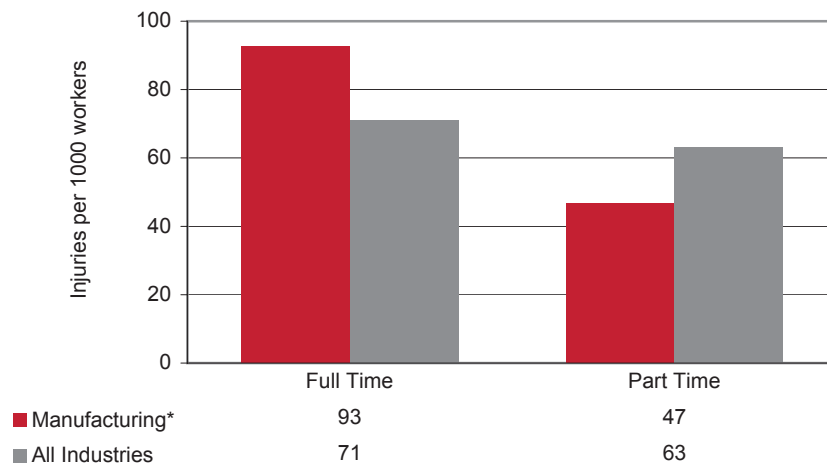
Figure 6 Work-related injuries in the Manufacturing industry: Frequency rate by leave entitlement and industry



Full-time/part-time status

The Manufacturing industry is dominated by full-time workers, with only 13% working part-time compared to 29% of workers in the Australian workforce as a whole. Figure 7 shows that full-time workers in the Manufacturing industry recorded 93 injuries per 1000 workers, considerably higher than the rate recorded by full-time workers in the Australian workforce as a whole. While the opposite pattern can be observed for part-time workers, the data for the Manufacturing industry has a high relative standard error and should be used with caution. These data, do however, indicate that part-time workers in the Manufacturing industry had a lower incidence rate of injury than those in the Australian workforce as a whole.

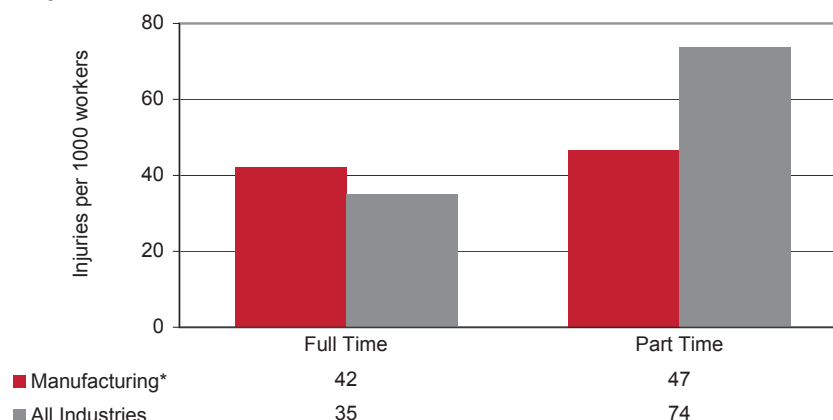
Figure 7 Work-related injuries in the Manufacturing industry: Incidence rate by full-time/part-time status



* The incidence rate for part-time workers in the Manufacturing industry has a relative standard error between 25% and 50% and should be used with caution.

Figure 8 shows that when hours worked were considered, part-time workers recorded only a slightly higher rate of injury compared to full-time workers. This is quite a different situation to the Australian workforce as a whole where part-time workers recorded an injury rate per hour worked nearly double that of full-time workers.

Figure 8 Work-related injuries in the Manufacturing industry: Frequency rate by full-time/part-time status



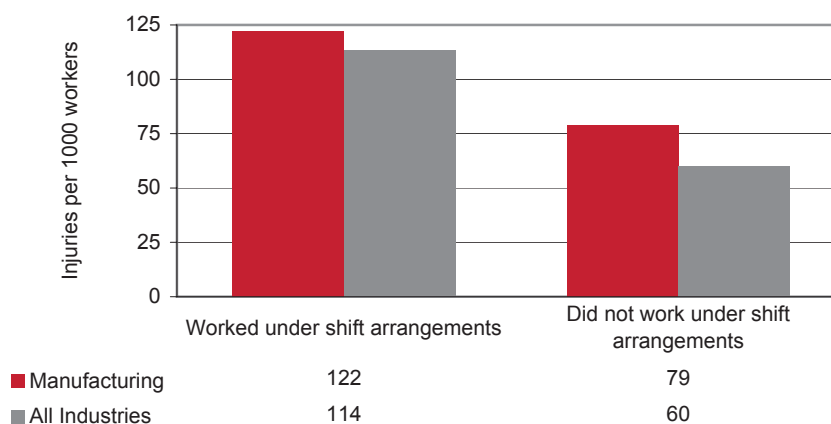
Shiftwork

Shift workers made up 18% of the Manufacturing workforce. This is similar to the percentage in the Australian workforce as a whole (16%).

Figure 9 shows that shift workers in the Manufacturing industry recorded an incidence rate considerably higher than non-shift workers (122 injuries per 1000 shiftworkers compared to 79 injuries per 1000 non-shiftworkers). Figure 7 shows that this was a similar pattern to that recorded by the Australian data, though the Manufacturing rates for both groups of workers were higher than for the Australian workforce as a whole.

The Manufacturing industry was the third-highest contributor to the number of injured shift workers, behind Health and community services and Retail trade². In 2005–06, 184 000 shift workers experienced a work-related injury in Australia and 13% of them worked in the Manufacturing industry. The Food, beverage and tobacco manufacturing sub-division by itself was responsible for 9500 injured shift workers, and was the second-largest contributing sub-division. Shift workers in this sub-division had an incidence rate of 177 injuries per 1000 workers.

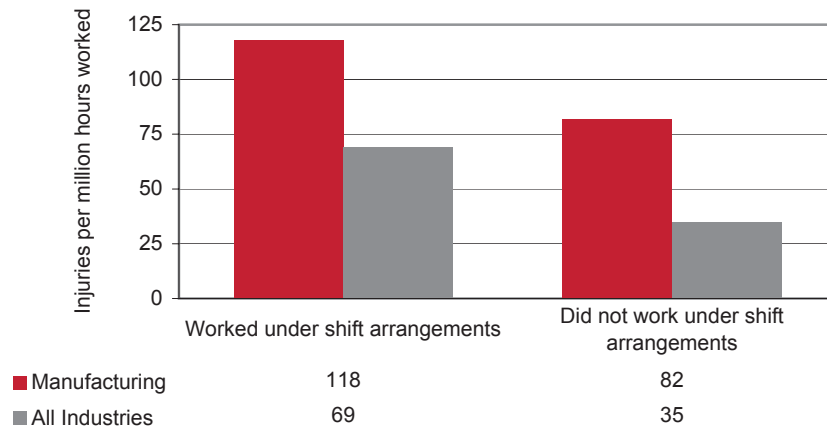
Figure 9 Work-related injuries in the Manufacturing industry: Incidence rate by shiftwork and industry



² Safe Work Australia, *The impact of shiftwork on work-related injuries in Australia*, August 2009

Figure 10 shows that when hours worked were considered the difference in injury rates between those that worked under shift arrangements and those that didn't was only slightly reduced. This is a similar situation to the Australian workforce as a whole where shiftworkers recorded an injury rate per hour worked nearly double that of non-shiftworkers.

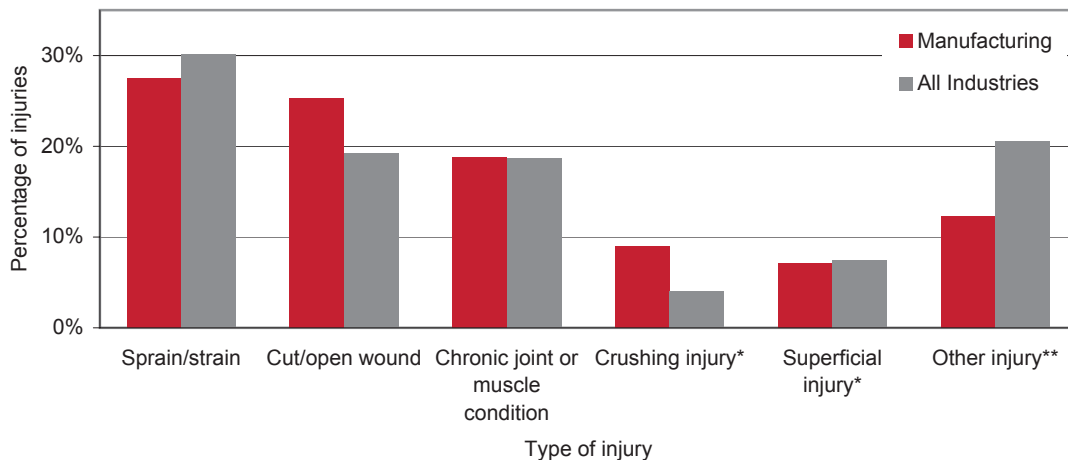
Figure 10 Work-related injuries in the Manufacturing industry: Frequency rate by shiftwork and industry



Type of injury

The most common type of work-related injury experienced by Manufacturing workers was *Sprains/strains* (27% of all injuries). This was followed by *Cuts/open wounds* (25%) and *Chronic joint or muscle conditions* (19%). This is a similar profile to that shown by the data for the Australian workforce as a whole except that the Manufacturing industry shows a greater tendency to incur a greater percentage of injuries due to *Cuts/open wounds* than the whole workforce. Figure 11 also suggests that workers in the Manufacturing industry also incur more *Crushing injuries* though these data should be used with caution due to the high relative standard errors associated with the estimate.

Figure 11 Work-related injuries in the Manufacturing industry: Percentage of injuries by type of injury



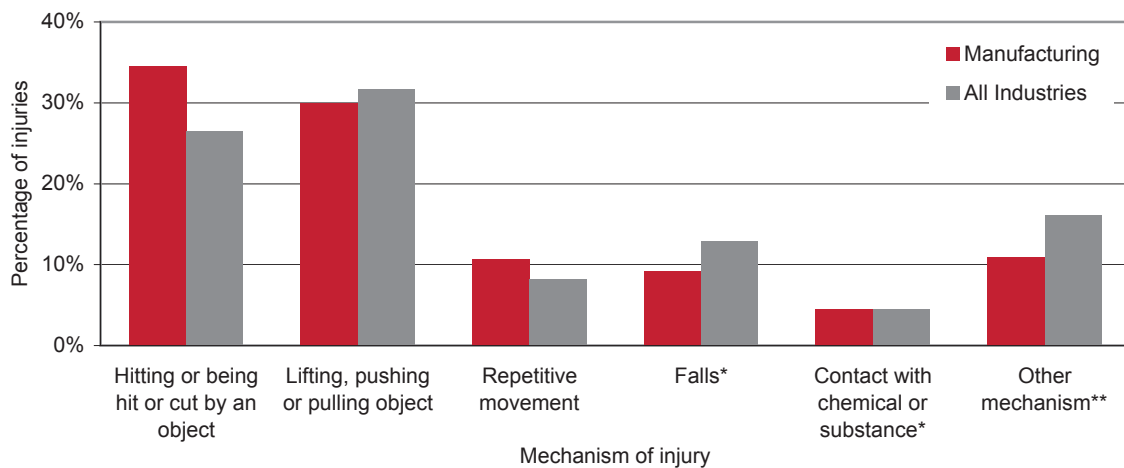
* WRIS data for *Crushing injury* and *Superficial injury* have RSEs of greater than 25%. These results should be used with caution.

** Other injury includes *Fracture* and *Stress or other mental condition*.

Mechanism of injury

Figure 12 shows that the two most common means by which Manufacturing workers were injured was by *Hitting or being hit or cut by an object* and *Lifting, pushing or pulling object*. These were also the two most common mechanisms of injury for all Australian workers. The profile by mechanism of injury for the Manufacturing industry was similar to that for the Australian workforce as a whole though with a higher percentage of injuries due to Hitting or being hit or cut by an object.

Figure 12 Work-related injuries in the Manufacturing industry: Percentage of injuries by mechanism of injury



* WRIS data for *Falls* and *Contact with chemical or substance* have RSEs of between 25% and 50%. These results should be used with caution.

** Other mechanism includes *Prolonged standing, working in cramped or unchanging position, Vehicle accident, Exposure to mental stress, and Long term exposure to sound*.

Comparison with the NDS

There are some significant differences in the scope of information published in the WRIS compared to the NDS which need to be addressed prior to undertaking a comparison.

The published NDS data only includes information on claims lodged by employees with serious injuries: those requiring an absence from work of one week or more or where a permanent incapacity or death has occurred. The WRIS data includes all injuries from all workers.

The first adjustment to be made is to ensure both datasets are scoped to only include injuries with similar periods of time lost. For the NDS, the data have been restricted to only include claims where strictly one or more weeks of time lost was recorded. For the WRIS, the data have been restricted to only include injuries which required five or more days absence from work. The term 'serious injury' will be used to represent this restricted scope.

The second important issue is that the NDS only includes injuries incurred by employees, whereas the WRIS includes injuries incurred by all workers. For the Manufacturing industry this is not as big an issue as in some industries, with 92% of workers being employees. Restricting the WRIS to include only serious injuries incurred by employees, identified 28 000 employees with serious injuries of which 18 400 said they had applied for and received workers' compensation.

For the same period, the NDS recorded 27 600 claims for serious injury. Some of the difference between the two datasets may be explained by the NDS including claims for diseases that may have been diagnosed many years prior (such as deafness) whereas the WRIS only includes cases where the initial diagnosis occurred within the twelve months prior to the survey. This however, is not likely to explain all the difference in the results and it is likely that sample design issues have resulted in the WRIS recording 70% of the number of injuries reported by the NDS.

When the data were scoped to the same period of time lost and including employees only, the WRIS produced an incidence rate of 28 serious injuries per 1000 employees which was very similar to the 29 serious injuries per 1000 employees in the NDS. The WRIS incidence rate for all workers was 26 serious injuries per 1000 workers which was due to there being very few injuries recorded by the non-employee group.

Since the proportion of non-employees in the Manufacturing industry was small, the following analysis uses serious injuries to all workers when comparing to the NDS. This will allow conclusions to be drawn on whether the NDS represents the pattern of injuries incurred by all workers in the Manufacturing industry. However, due to the small sample size in the WRIS, the WRIS data should only be used as indicative of trends.

Age

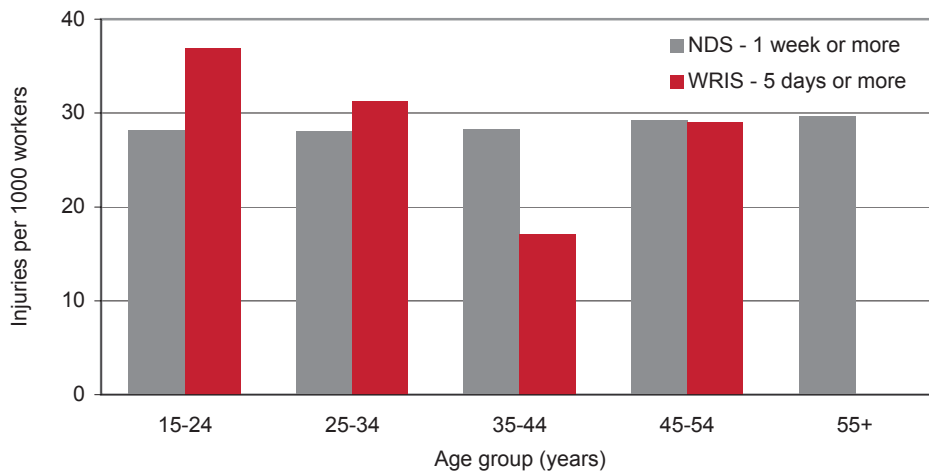
Figure 13 shows the incidence rates by age for the two datasets. While similar incidence rates were recorded by the two datasets for two of the age groups, dissimilar rates were recorded by the other age groups. We have seen in other reports in this series that workers aged 15-24 years recorded higher rates in the WRIS compared to the NDS due to a greater reluctance to apply

for workers' compensation. This pattern is also shown for the Manufacturing industry with the incidence rate for workers aged 15-24 years in the WRIS being about 30% higher than the NDS.

The big difference in the rates for workers aged 35-44 years is not so easy to explain and likely to be linked to sample design issues. The high relative standard error in the WRIS data means the WRIS incidence rate could be a lot closer to the NDS rate at its upper bound, it could also be lower again. The WRIS rate for workers aged 55 years and over has not been shown due to these high relative standard errors.

These data, however, indicate that the NDS does reflect the age incidence rates of workers in the Manufacturing industry except for those aged 15-24 years.

Figure 13 Serious work-related injuries in the Manufacturing industry: Incidence rates by age* and dataset



* The WRIS data for the 55 years and over age group was not reported because it has an RSE of over 50%. The WRIS data for other age groups have RSEs of between 25% and 50%, and should be used with caution.

Type of injury

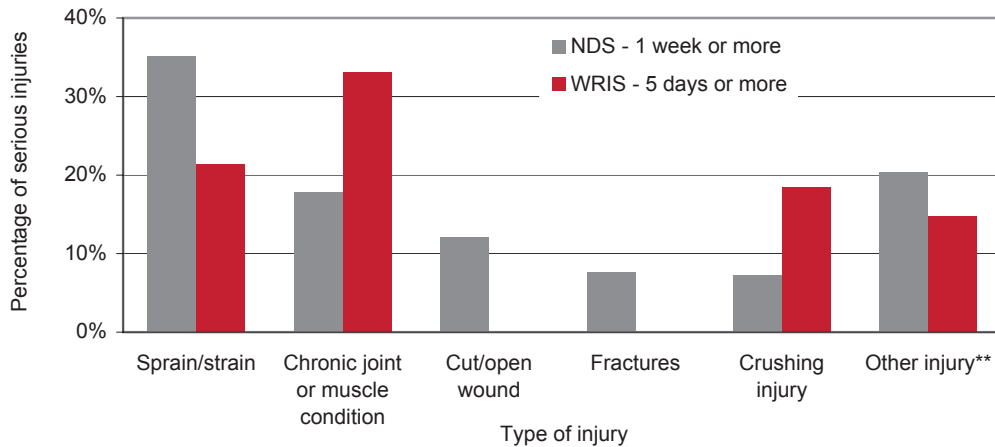
Figure 14 shows that when the NDS and WRIS data for serious injuries were compared by type of injury, they showed very different profiles. The NDS reported that the most common type of serious injury in the Manufacturing industry was *Sprains/strains*, which accounted for over one-third of serious injuries. However, the WRIS reported that this type of injury accounted for just one-fifth of serious injuries. According to the WRIS, the most common type of injury was *Chronic joint or muscle conditions*. These types of injuries both involve injuries to muscles. Interestingly, when the percentages of these two types of injuries were added together, the two datasets recorded the same percentage of injuries with just over half of all injuries due to these two types of injury.

The next most common injuries in the NDS were *Cuts and open wounds* and *Fractures*. Due to high relative standard errors, WRIS figures cannot be shown for these types of injuries.

Since Figure 11 showed that workers in the Manufacturing industry incurred injuries of the same type and in the same proportions as the other industries,

and other reports in this series have shown that the NDS produces reliable results by type of injury, this report concludes that the WRIS data has not reliably collected information on the types of serious injuries incurred by workers in the Manufacturing industry.

Figure 14 Serious work-related injuries in the Manufacturing industry: Percentage by type of injury* and dataset



* The WRIS data shown have RSEs of between 25% and 50%, and should be used with caution. WRIS data for *Fractures* and *Cut/open wound* have not been shown due to RSEs higher than 50%.

** Other injury includes *Fracture*; *Cut or open wound*; *Crushing injury, internal organ damage or amputation*; *Superficial injury*; and *Stress or other mental condition*.

Mechanism of injury

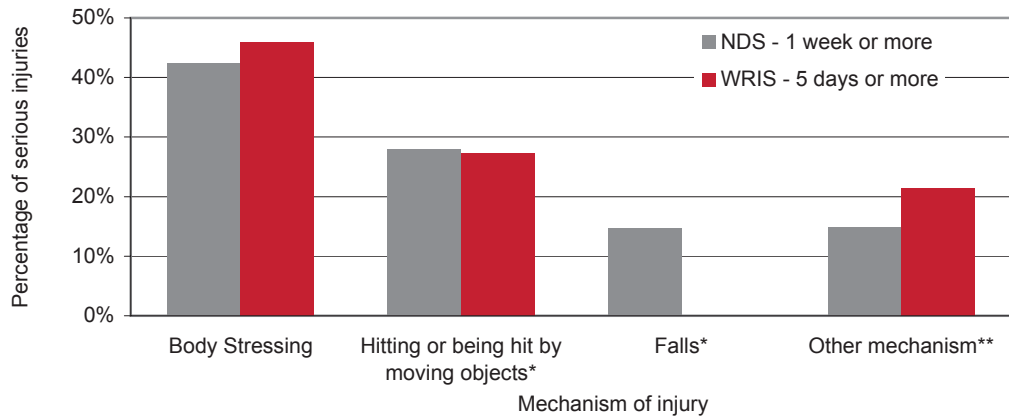
The NDS and WRIS use different classification systems for recording the mechanism of injury. For this analysis, the NDS mechanism of *Body stressing* has been compared to the combination of the WRIS mechanisms of *Lifting, pushing or pulling object*, *Repetitive movement* and *Prolonged standing, working in cramped or unchanging position*. More information on the difference in classification systems can be found in the report *Comparison of compensation data to all incurred work-related injuries*.

Figure 15 shows that the NDS and WRIS produced similar profiles when compared by Mechanism of injury. The most common mechanism of serious injury experienced by workers in the Manufacturing industry was *Body stressing*, which accounted for 46% of serious injuries in the WRIS and 42% in the NDS.

Hitting or being hit by moving objects was the second most common mechanism of serious injury which accounted for nearly three in ten serious injuries.

These analyses indicate that the NDS provides a good picture of the most common mechanisms of serious injuries incurred by workers in the Manufacturing industry.

**Figure 15 Serious work-related injuries in the Manufacturing industry:
Percentage by mechanism of injury and dataset**



* The WRIS data on *Hitting or being hit by moving objects* and *Other mechanism* have an RSEs of between 25% and 50%, and should be used with caution. The WRIS data on *Falls* was too small to report.

** Other mechanism includes *Sound and pressure; Heat, radiation and electricity; Chemicals and other substances; and Mental stress.*

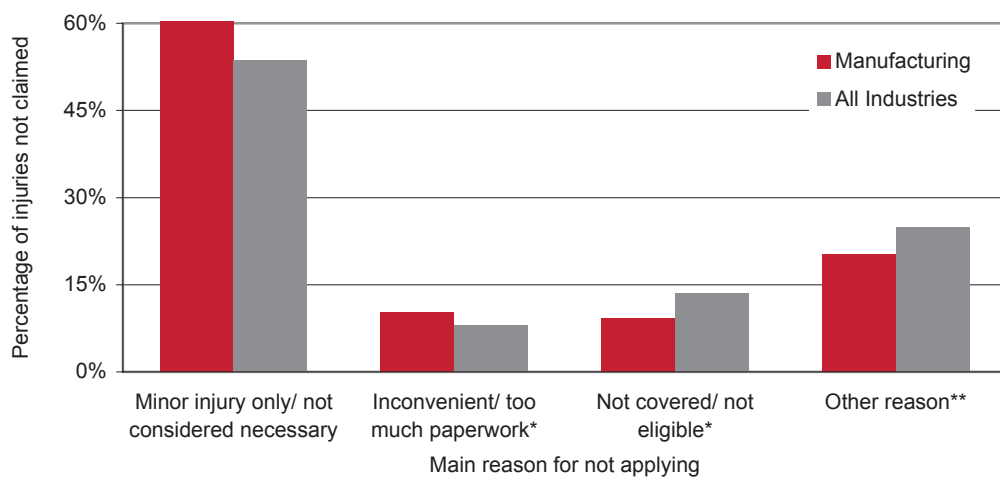
Reasons for not applying for workers' compensation

Of the 90 000 Manufacturing employees who experienced a work-related injury in 2005–06, 51 500 did not apply for workers' compensation. This means 57% of injured Manufacturing employees did not apply for compensation which is slightly lower than the 62% recorded by the Australian workforce as a whole. Figure 13 shows the main reasons why employees did not apply for compensation.

Of the injured employees in the Manufacturing industry who did not apply for workers' compensation, six in ten felt their injury was only minor or that it was not necessary to claim. This reason was cited slightly more often in the Manufacturing industry than in the Australian workforce as a whole.

Figure 16 also shows that the Manufacturing industry recorded a similar pattern of reasons to the Australian workforce as a whole.

Figure 16 Work-related injuries to employees: Percentage of injuries by main reason for not applying for workers' compensation



* The WRIS data for *Inconvenient/too much paperwork* and *Not covered/not eligible* had RSEs of between 25% and 50%. These results should be used with caution.

** *Other reason* includes *Negative impact on current or future employment* and *Did not know*.

Conclusion

This report has shown that the Manufacturing industry has a tendency towards traditional, conservative work arrangements with fewer workers employed as casuals, working part-time or being self-employed than the Australian workforce as a whole. Three-quarters of workers were male and they recorded an incidence rate of injury considerably higher than male workers in the full workforce. This is most likely linked to the more manual tasks undertaken by these workers with cuts and crushing injuries more likely in this industry. Female workers, however, recorded similar rates to the full Australian workforce.

Of particular concern is that young workers in this industry have a much greater risk of injury than those in the full Australian workforce and as has been shown in other reports in this series, the compensation data do not capture the full rate of injury for these workers.

This report has however shown that while the injury rate is considerably higher than the Australian rate, the severity of the injury, as measured by time lost from work, was similar to the Australian profile.

Conclusive results about how well the compensation data represents the types of injuries incurred can not be made, however, the compensation data does present an accurate picture of the way in which injuries occurred.

Explanatory Notes

Definitions

ABS	Australian Bureau of Statistics
Employees	People who work for a public or private employer and receive remuneration, or people who operate their own incorporated enterprise with or without hiring employees
Frequency rate	The number of injuries per million hours worked
Full time workers	People who worked 35 hours or more a week.
Incidence rate	The number of injuries per 1 000 workers
Mechanism of injury	The mechanism of injury is the action, exposure or event that was the direct cause of the injury, or how the injury was sustained
NDS	National Data Set for Compensation Based Statistics
Type of injury	Refers to the type of work-related injury sustained
Part time workers	People who worked less than 35 hours a week.
Serious injuries	Injuries that resulted in at least five days absence from work
Shiftwork	Where working hours are split into at least two set work periods
WRIS	ABS Work-related injury survey (ABS Cat. No. 6324.0)

Industry classification

The industry of the worker has been classified in accordance with the Australian and New Zealand Standard Industrial Classification (ANZSIC), 1993 edition (ABS Cat. No.1292.0).

Mechanism of injury classification

The mechanism of injury classification is based on the *Type of Occurrence Classifications System* (TOOCS) used by Safe Work Australia. Refer to Appendix 1 in ABS Cat. No.6324.0 for a detailed breakdown of each mechanism of work-related injury.

Type of injury classification

In the WRIS this variable is referred to as 'Work-related injury or illness'. This variable's classification is based on the Nature of injury classification in the *Type of Occurrence Classifications System* (TOOCS) used by Safe Work Australia. Refer to Appendix 1 in ABS Cat. No. 6324.0 for a detailed breakdown of each type of work-related injury.

Relative Standard Errors (RSEs)

All data presented in this report conform with the ABS guidelines regarding data quality. Unless otherwise noted, all data presented have RSEs below 25%. Data with RSEs above 50% have not been published. Comprehensive information about RSEs can be found in the ABS Work- related injuries publication (ABS Cat. 6324.0)

Inquires

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