



Work-related traumatic fatalities in Australia
estimated by using the NCIS police text description
of the circumstance surrounding death

-

June 2000-July 2001

NATIONAL OCCUPATIONAL HEALTH AND SAFETY COMMISSION

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EXECUTIVE SUMMARY

Introduction

This study reports on work-related fatalities in Australia derived from police text descriptions of the circumstance surrounding death in the National Coroners Information System (NCIS) for data recorded between July 2000 and June 2001. These data excluded Queensland. This report complements an earlier draft report entitled “*NCIS - data quality and its ability to provide timely and accurate information on work-related traumatic fatalities in Australia*”. This study was undertaken to progress Objective 1 of the NOHSC Data Action Plan which is “to collect and maintain comprehensive data, from a wide range of relevant sources, on the risk factors, incidence, frequency and severity of workplace injuries and disease, to establish national OHS performance”.

Data Analysis

Cases of interest in the review of work-related fatalities were persons who died as a result of external causes. The definition of work was the same as that used for the second work-related fatalities study (WRF2, 1998), except that only working persons, commuters and bystanders were included. These are summarised in APPENDIX ONE.

In this study, work-relatedness was determined on the basis of police text description of the circumstance surrounding the fatality. About 1,213 cases recorded in the NCIS between July 2000 and June 2001 had such descriptions and about five percent of the cases (or 65 fatalities) were work-related. In order to gain an insight into the nature of the work-related fatalities, data were statistically analysed by classifying them by jurisdiction, gender, age, occupation, industry, incident location (or workplace), object and mechanism producing injury and external cause of injury.

Findings

The Northern Territory, Victoria, Tasmania and South Australia each accounted for 17%-29% of the work-related fatalities while Western Australia and New South Wales each recorded lower incidences of work-related fatalities (6-9%). Crosschecking the results against the In-Labour-Force population in the Australian jurisdictions suggested that the distribution patterns found in the NCIS were inaccurate. In particular, work-related fatalities in the NCIS data were disproportionately high in the Northern Territory, South Australia and Tasmania and disproportionately low in New South Wales and Victoria. There were apparently no work-related fatalities in the ACT.

The distribution of work-related fatalities among males and females was 92% and 8%, respectively. In general, the work-related fatalities had occurred in persons aged between 7 and 86 years.

The most hazardous workplaces were *Streets or highway* (35%), *Other specified area* (18%), *Home* (12%), *Farm* (12%) and *Industrial or Construction area* (9%). The object producing death and mechanism of injury was unspecified in one-third of the work-related fatalities identified. Nearly one-third of the fatalities were a result of an accident involving a motorised vehicle, especially *Land vehicles and means of transport*. The rest of the work-related fatalities were from accidents involving objects such as *Building components*, *Weapons* and *Animal, plant or persons*. About 55% of the work-related fatalities occurred following contact with a *Blunt force* sustained during accidents such as a car crash, being struck by an object or falling from a height. *Agriculture, Forestry and Fishing* and *Transport and Storage* were the most hazardous industries each accounting for about 20% of the work-related fatalities. The *Construction* and *Mining* industries collectively accounted for about 20% of the work-related fatalities. *Intermediate Production and Transport* workers had the highest proportion (40%) of work-related fatalities. *Tradespersons* and *Related* workers (12%) and *Labourers* and *Related* workers (9%) were the next worst affected groups.

On average, key NCIS data elements (incident location, object or substance and mechanism of injury, occupation and industry) had missing values in about one-third

of the cases. This means that it would be difficult to obtain a comprehensive pattern of work-related fatalities when critical information is missing.

Comparison With The Second Work-Related Fatalities (WRF2)

Work-related fatalities estimated by the NCIS based on police text descriptions of the circumstance surrounding death were benchmarked against the Second Work-Related Fatalities Study, WRF2 (1998). Overall, the NCIS estimate of 65 work-related fatalities per year was well below 440 work-related fatalities per year or 305 workplace deaths per year reported in the WRF2 study. The discrepancy was largely because:

- the NCIS data did not include Queensland which lacks a centralised coronial file repository;
- some jurisdiction coronial files had not been fully uploaded; and
- only 21% of the fatalities in the NCIS had a text description that allowed adequate classification of work-relatedness of death.

The proportion of NCIS work-related fatalities found in Australian jurisdictions differed significantly from those in the WRF2 study and to what was expected in view of the distribution of the In-Labour-Force population in the jurisdictions. The distribution of work-related fatalities by workplace differed between the NCIS and WRF2 data with the NCIS having proportionately more cases in *Other specified area*, *Home* and *Street or highway*. The converse was true for *Trade or service area*, *Farm* and *Industrial and construction area*. Compared to the WRF2 data, the NCIS data had proportionately more work-related fatalities of *Intermediate Production and Transport workers* and workers whose occupation was *Unknown*. However, the NCIS recorded proportionately fewer *Managers Administrators*, *Associate Professionals*, *Trades and Related workers* and *Labourers and Related workers*. This result is consistent with the trends in the workplace data, above. The NCIS had proportionately more work-related fatalities with *Unknown* industry and fewer work-related fatalities in the *Agriculture, Forestry and Fishing*, and *Government Administration and Defence, Manufacturing, Wholesale and retail trades* industries. The NCIS reported proportionately many more work-related fatalities due to *Other and unspecified* mechanisms than the WRF2 study. *Blunt force* was the dominant mechanism of injury resulting in work-related traumatic fatality in both the NCIS and WRF2 study. However, the WRF2 study had proportionately 1.5 times more fatalities due to this

mechanism. Work-related traumatic fatalities due to *Heat, cold, electricity radiation and sound* and *Threat to breathing* were proportionately 2-3 times higher in the WRF2 study compared to the NCIS.

Conclusion

The study concluded that it is currently not possible to accurately estimate the number and distribution of all work-related fatalities in Australian jurisdictions using the statistics derived from police text descriptions recorded in the NCIS. It is possible, however, to use the relative proportions of work-related fatalities grouped by data elements to draw some broad conclusions in relation to demographics, incident location, external cause of death, occupation and industry. Most fatalities affected persons aged between 15 and 44 years old and most work-related fatalities were males.

The study identified the most hazardous industries (*Mining, Agriculture, Forestry and Fishing* and *Construction*) and occupations (*Intermediate Production and Transport workers* (mainly truck drivers) and *Managers and Administrators* (mainly farmers)). The study found that the most hazardous objects of injury were *Land vehicles and means of transport* and *Special purpose vehicles, mobile machinery* and involved *Blunt force* as the principle mechanism of injury in most hazardous workplaces (*Streets and Highways*). Other hazardous mechanisms of injury were *Buildings and Material in Other specified area, Home, Farm and Industrial or construction area*.

The study emphasises that all conclusions reached are preliminary. A much clearer picture will emerge as the national coverage of coronial cases increases in the NCIS. Significant steps have already been taken by MUNCCI and the coronial jurisdictions to remedy many of the problems identified by the current study. For example, MUNCCI has uploaded significantly more coronial files to the NCIS from jurisdictions. By July 2002 the size of the NCIS database had increased markedly in comparison to February 2002. Further, MUNCCI is assessing a new National Standard Police form for reporting of coronial deaths which will make it easier to identify work-related fatalities. This is likely to increase the usefulness of police text description to characterise work-related fatalities in Australia.

INTRODUCTION

There is currently no ongoing occupational health and safety surveillance system for work-related fatalities in Australia (Moller, 1994; Harrison and Frommer, 1986; Harrison et al., 1989). The NOHSC draft report entitled “*Assessment of the NCIS data content and quality and its suitability for use as a surveillance tool for work-related traumatic fatalities in Australia*” concluded that once fully functional, the NCIS would be a useful sentinel for work-related fatalities.

The objective of the report is to statistically appraise work-related fatalities in Australia found using the police text description of the incident that were recorded in the NCIS between June 2000 and July 2001. This report summarises the demographic details of workers (age and gender) and the conditions surrounding the work-related fatalities (jurisdiction, occupation, industry, location of incident, mechanism and object of injury).

RESOURCES AND METHODS

Identification of Work-Related Cases

Cases of interest in the review of work-related fatalities were persons who died as a result of external causes some time in the 12-month period 1 July 2000 to June 30 2001, and whose fatality was related to work exposures. The definition of work was the same as that used for the second work-related fatalities study, except that only working persons, commuters and bystanders were included. The relevant definitions are available in the main report on pages 143-152 of the WRF2 (1998). These are summarised in APPENDIX ONE.

Work-related fatalities were identified using police text description of the incident. Data were analysed to reveal pertinent trends. Specifically, data were classified by age, gender, jurisdiction, incident location (workplace), mechanism and object producing death. The last three data items were coded according to the ICD-10 AM system. NOHSC coded all work-related cases by industry and occupation using the Australian and New Zealand Standard Industrial Classification (ANZSIC) (ABS 1993) and the Australian Standard Classification of Occupations (ASCO) (ABS 1997)

coding systems, respectively. Where appropriate, a fatality rate was calculated by dividing the fatalities by In-Labour-Force denominators for 2000-2001 that were obtained from the ABS.

An object-oriented programming language called S-plus was used to analyse the data (S-plus 6, 2001). Results were presented in the form of both tables and graphs.

RESULTS AND DISCUSSION

Jurisdiction

Based on the police text description of the circumstance surrounding death, a total of 65 work-related fatalities which, occurred in Australia between July 2000 and June 2001, had been recorded in the NCIS at the time this study was carried out (**Table 1**). One-third of the fatalities had occurred in South Australia. Tasmania, Victoria and the Northern Territory each accounted for between 17% and 20% of the fatalities. Western Australia and New South Wales apparently recorded the lowest number of work-related fatalities. Further, there was apparently no work-related fatality in the Australian Capital Territory. The NCIS did not contain data for Queensland.

Judging by the distributions of the In-Labour-Force and Resident populations, the observed distribution of work-related fatalities for Australia (based on police text description) is unlikely to be correct (**Table 1**). It appears that work-related fatalities in South Australia, Tasmania and the Northern Territory were proportionately more than was expected given the relative size of the In-Labour-Force and Resident Populations. In contrast, the number of work-related fatalities appears underestimated in Victoria and New South Wales and certainly in the Australian Capital Territory where no fatality was recorded. The proportion of work-related fatalities in Western Australia was about right based on the relative sizes of the In-Labour-Force and Resident Populations. In the companion report entitled “*NCIS - data quality and its ability to provide timely and accurate information on work-related traumatic fatalities in Australia*” it was found that the NCIS data coverage of cases with police text description at the time of this study was extremely poor for New South Wales and

Victoria. This explains why the number of work-related fatalities, based on the police text description, were low in these States, and therefore, in Australia as a whole.

Table 1: Number and percentage of work-related fatalities in Australia, excluding Queensland, derived from the police text description of the circumstance surrounding death - jurisdiction. *Percentages of the In-Labour-Force and Resident Populations are indicated.*

Jurisdiction	NCIS		In-Labour-Force Population	Resident Population
	Number	Percentage (%)	Percentage (%)	Percentage (%)
South Australia	19	29	8	8
Tasmania	13	20	2	3
Victoria	12	18	25	25
Northern Territory	11	17	1	1
Western Australia	6	9	10	10
New South Wales	4	6	33	34
Queensland	NA	NA	19	19
Australian Capital Territory	0	0	2	2
Australia	65	100	100	100

Gender

There were sixty males (92%) among the sixty-five work-related fatalities in Australia that were recorded in the NCIS at the time of the study (**Table 2**). Work-related fatalities of five females (8%) occurred in that time. Overall, work-related fatalities in females were one twelfth those of males, which implies that males worked in more hazardous workplaces.

Table 2: Number and percentage of work-related fatalities in Australia derived from the police text description of the circumstance surrounding death - gender.

Jurisdiction	Number	Percentage (%)
Male	60	92
Female	5	8
Australia	65	100

Age

Workers were aged between 7 and 86 years at the time of death. Work-related fatalities of persons <20 and >65 years occurred typically in the *Street or highways, Homes, Farms, Mine or quarry* and *Other specified areas* (such as plantation forests)

and were due to accidents involving *Land vehicles and means of transport, Building, building components, Miscellaneous object or substance* or had an *Unknown* mechanism of injury. Most of these workers had worked in the *Agriculture, Forestry and Fishing, Construction, Transport and Storage, and Cultural and Recreational Services* industries.

Table 3 shows that 62% of work-related fatalities were equally distributed among the 15-24, 25-34 and 35-44 year old age groups. About 14%-15% of the fatalities occurred in the 45-54 and 55-64 age groups. The rest of the work-related fatalities (9%) were among the +65 age group. This age distribution pattern did not reflect that of the In-Labour-Force population. Results suggest that proportions of work-related deaths in the 25-34, 35-44 and 45-54 age groups were slightly lower than was expected from the In-Labour-Force data. In contrast, the 55-64 age group was slightly over-represented and the +65 age group was proportionately twice that expected from the In-Labour-Force data.

Table 3: Number and percentage of work-related fatalities in Australia derived from the police text description of the circumstance surrounding death - age. *Percentage of the In-Labour-Force Population is indicated.*

Age group (yrs)	Work-related fatalities		In-Labour-Force Population
	Number	Percentage (%)	Percentage (%)
15-24	13	20	19
25-34	14	22	24
35-44	13	20	24
45-54	10	15	21
55-64	9	14	8
65+	6	9	4
Total	65	100	100

Location

Street or highway accounted for over a third (35%) of the work-related fatalities (including commuters) in Australia during the study period (**Table 4** and **Figure 1**). *Other specified areas* (18%) (i.e., the bush, railway, camping ground, wharf and bridge), *Homes and Farms* (12% each), *Industrial or construction area* (9%) and *Mine or quarry* (6%) were the other most hazardous workplaces. The rest of the

workplaces were less hazardous, each accounting for about 2% of the work-related fatalities. In about 2% of the fatalities recorded in the workplace was unknown.

Table 4: Number and percentage of work-related fatalities in Australia derived from the police text description of the circumstance surrounding death - workplace.

Workplace	Number	Percentage (%)
Street or highway	23	35
Other specified area	12	18
Home	8	12
Farm	8	12
Industrial or construction area	6	9
Mine or quarry	4	6
School, other institution or public administrative area	1	2
Sports area	1	2
Trade or service area	1	2
Unspecified	1	2
Total	65	100

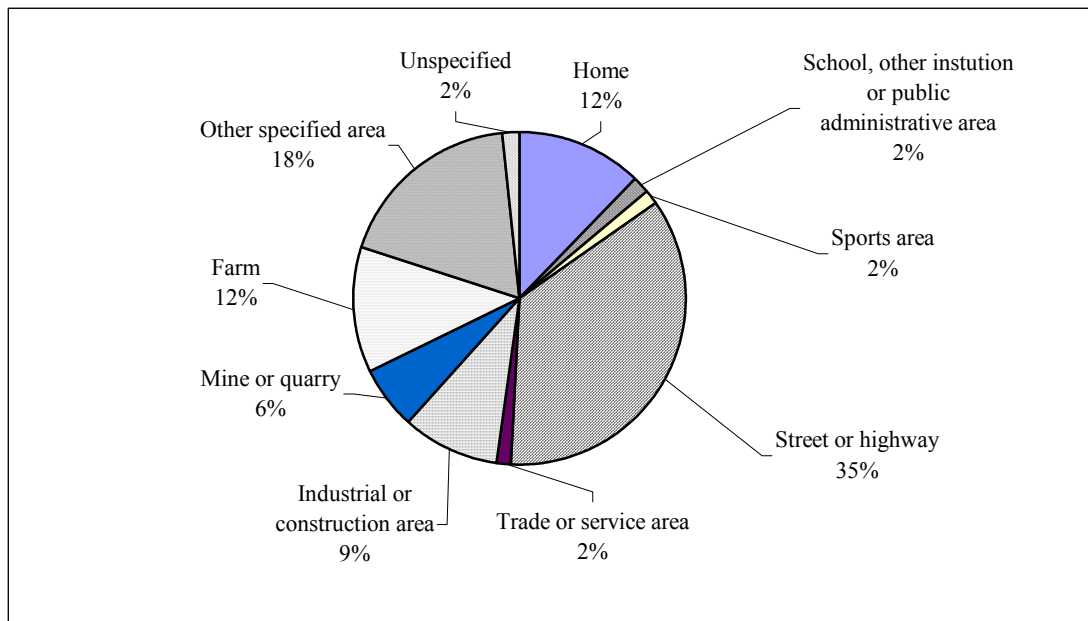


Figure 1: Percentage of work-related fatalities in Australia derived from the police text description of the circumstance surrounding death - workplace.

Object Or Substance Producing Injury

The object or substance producing injury was unspecified in about one-third (35%) of the work-related fatalities recorded in the NCIS at the time of the study (**Table 5** and **Figure 2**). Another one-third (34%) of the work-related fatalities resulted from accidents involving motorised vehicles namely, *Land vehicles and means of transport* (28%) and *Special purpose vehicles, mobile machinery* (6%). *Building, building component or fitting, Material, Animal, plant, person* and *Ground surface and conformations* each caused the same percentage of work-related fatalities (5%-6%). The rest of the objects or substances individually produced 1%-2% of the work-related fatalities.

Table 5: Number and percentage of work-related fatalities in Australia derived from the police text description of the circumstance surrounding death - object or substance producing injury.

Object	Number	Percentage (%)
Missing values	23	35
Land vehicles and means of transport	18	28
Special purpose vehicles, mobile machinery	4	6
Building, building component or fitting	4	6
Material	4	6
Animal, plant, person	3	5
Ground surface and conformations	3	5
Weapon	2	3
Miscellaneous object, substance	2	3
Water craft and means of transport	1	2
Drugs	1	2
Total	65	100

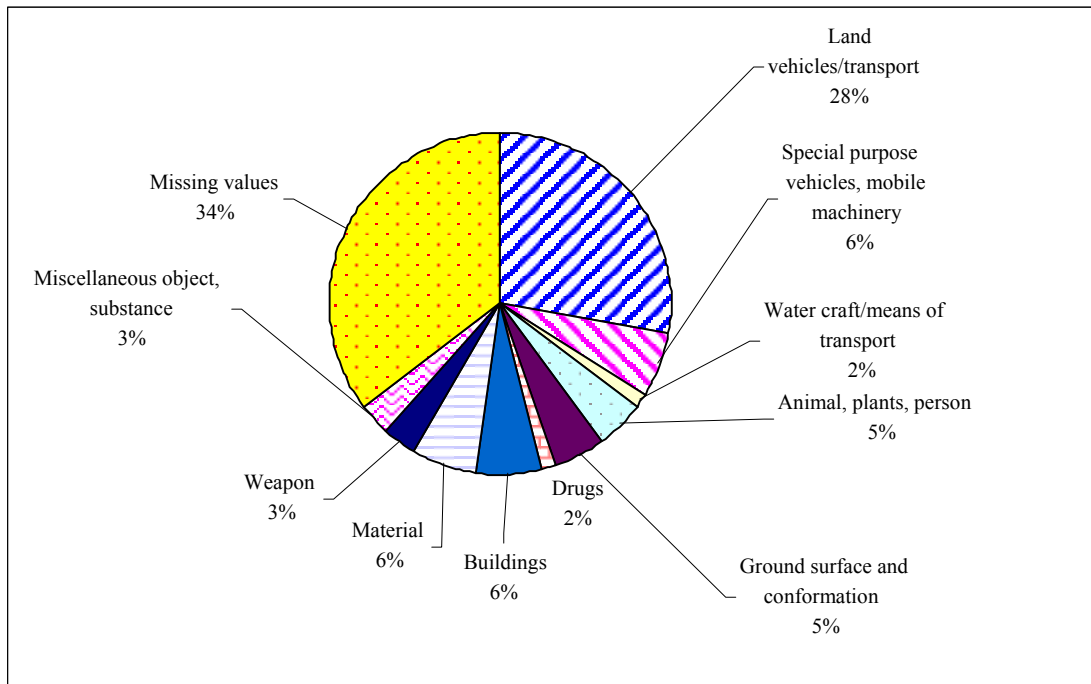


Figure 2: Percentage of work-related fatalities in Australia derived from the police text description of the circumstance surrounding death - object or substance producing injury.

Mechanism of Injury

Similar to object and substance of injury above, over one-third (35%) of the work-related fatalities recorded in the NCIS at the time of the study had no known mechanism of injury (**Table 6** and **Figure 3**). *Blunt force* from vehicle crashes, contacting moving object, struck by an object, crushing, falling, and stumbling caused over half (55%) of the fatalities. Approximately 10% of the fatalities were caused equally by the following mechanisms of injury: *Heat, cold, electricity, radiation and sound* and *Piercing, penetrating force, Threats to breathing, Poisoning and Other and unspecified mechanisms*.

Table 6: Number and percentage of work-related fatalities in Australia derived from the police text description of the circumstance surrounding death - mechanism of injury.

Mechanism	Number	Percentage (%)
Missing values	23	35
Blunt force	36	55
Heat, cold, electricity, radiation and sound	2	3
Piercing, penetrating force	1	2
Threats to breathing	1	2
Poisoning	1	2
Other and unspecified mechanisms	1	2
Total	65	100

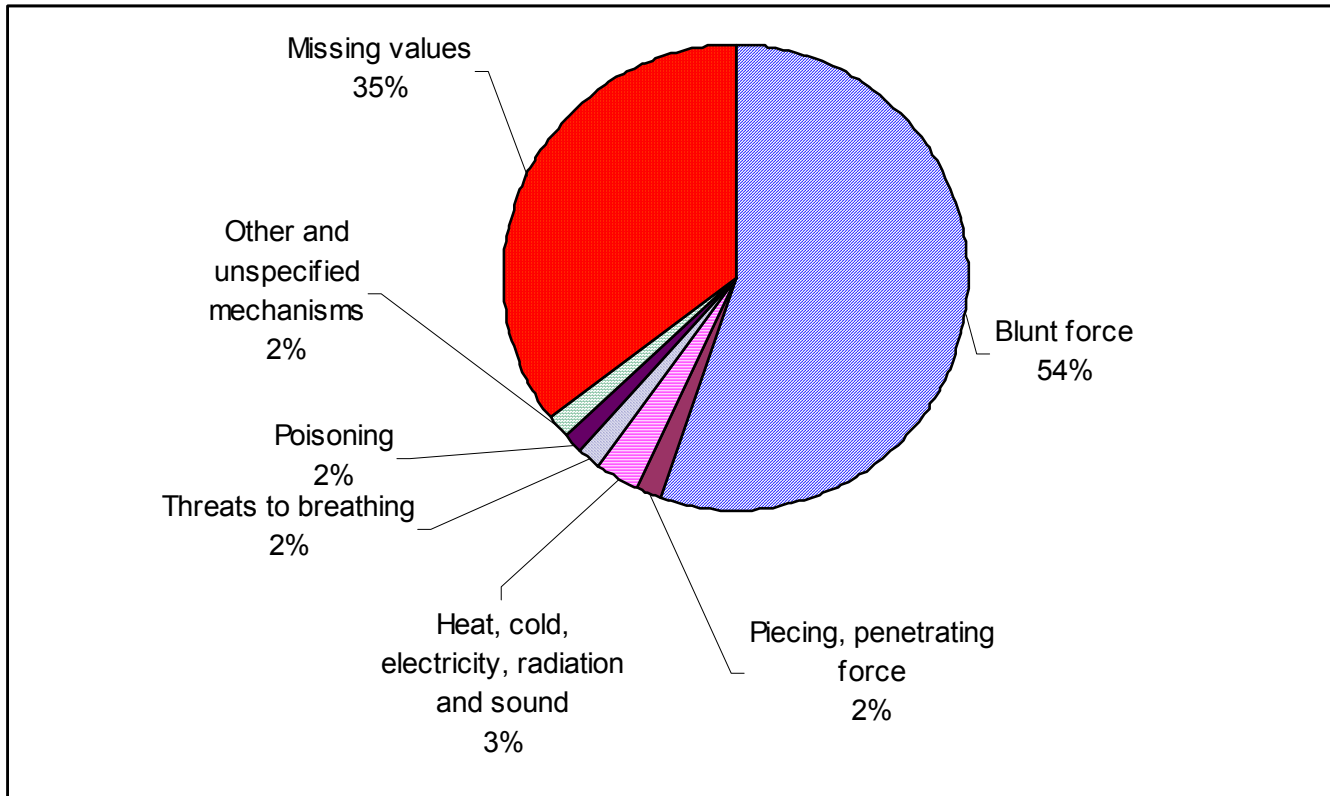


Figure 3: Percentage of work-related fatalities in Australia derived from the police text description of the circumstance surrounding death - mechanism of injury.

Industry

The *Agriculture, Forestry and Fishing* and *Transport and Storage* industries each accounted for a fifth of the work-related fatalities, which means that these were the two most hazardous industries in Australia (**Table 7** and **Figure 4**). Working in the *Construction* and *Mining* industries was also hazardous, albeit to a lesser extent (9%-14%). The *Electricity, Gas and Water* and *Communication* industries were the least hazardous (0-1.5%). Industry was unspecified in about 8% of work-related fatalities.

Table 7: Number and percentage of work-related fatalities in Australia derived from the police text description of the circumstance surrounding death - industry.

Industry	Number	Percentage (%)
Agriculture, Forestry and Fishing	13	20.0
Mining	6	9.2
Manufacturing	4	6.2
Electricity, Gas and Water	0	0.0
Construction	9	13.8
Wholesale and retail trades	3	4.6
Transport and Storage	14	21.5
Communication	1	1.5
Property and Business Services	4	6.2
Government Administration and Defence	3	4.6
Cultural and Recreational Services	3	4.6
Unknown	5	7.7
Total	65	100

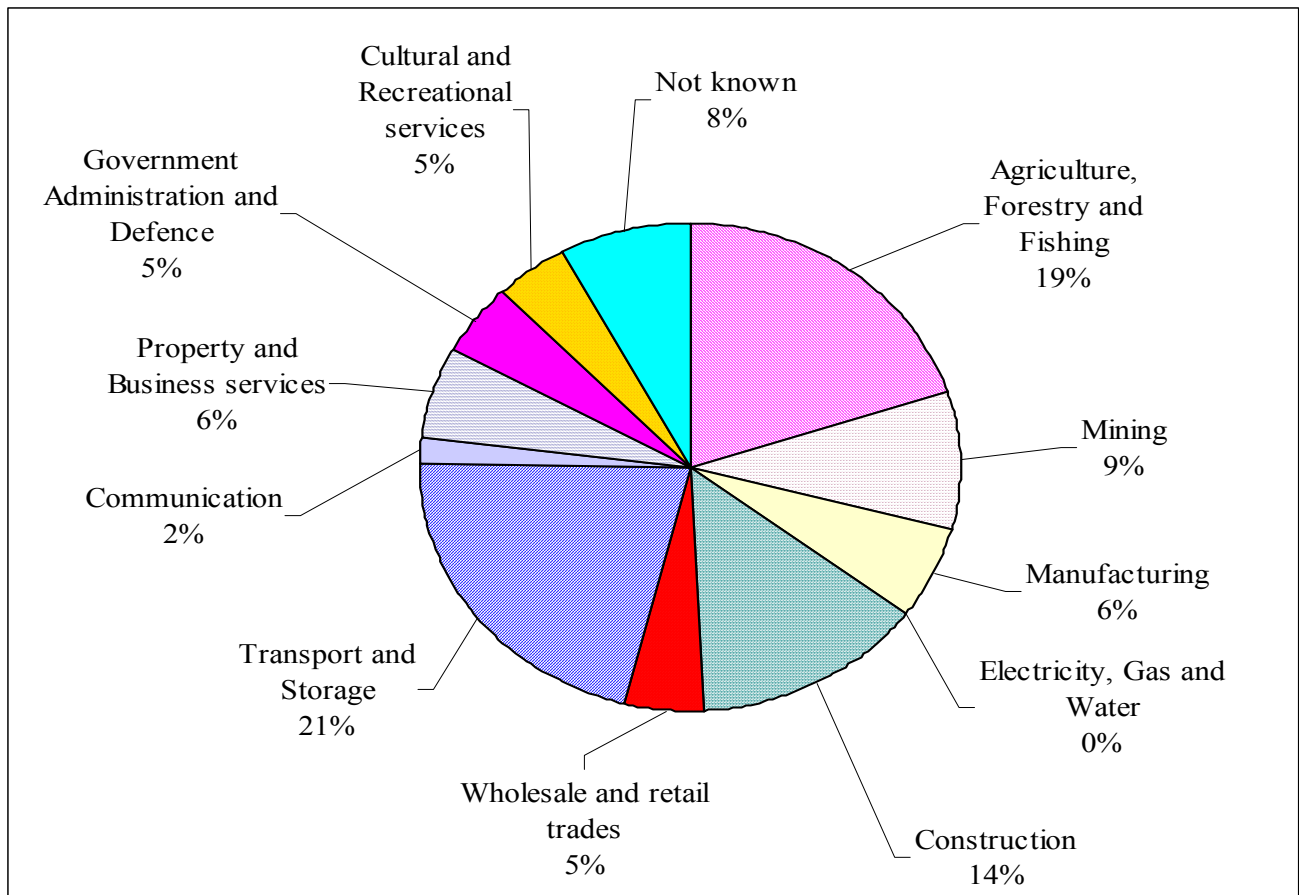


Figure 4: Percentage of work-related fatalities in Australia derived from the police text description of the circumstance surrounding death - industry.

Occupation

Intermediate *Production and Transport workers* were the largest single occupational group (40%) to be fatally injured at the workplace (**Table 8** and **Figure 5**). *Tradespersons and Related workers* (12%), *Managers Administrators* and *Labourers and Related workers* (8%) were the other significant occupational groups to die at work during the same period. About 14% of the occupations were unknown when the study was carried out.

Table 8: Number and percentage of work-related fatalities in Australia derived from the police text description of the circumstance surrounding death - occupation.

Occupation	Number	Percentage (%)
Managers Administrators	5	8
Professionals	2	3
Associate Professionals	3	5
Tradespersons and Related workers	8	12
Intermediate Clerical, Sales and Service workers	2	3
Intermediate Production and Transport workers	26	40
Elementary Clerical, Sales and Service workers	4	6
Labourers and Related workers	6	9
Unknown	9	14
Total	65	100

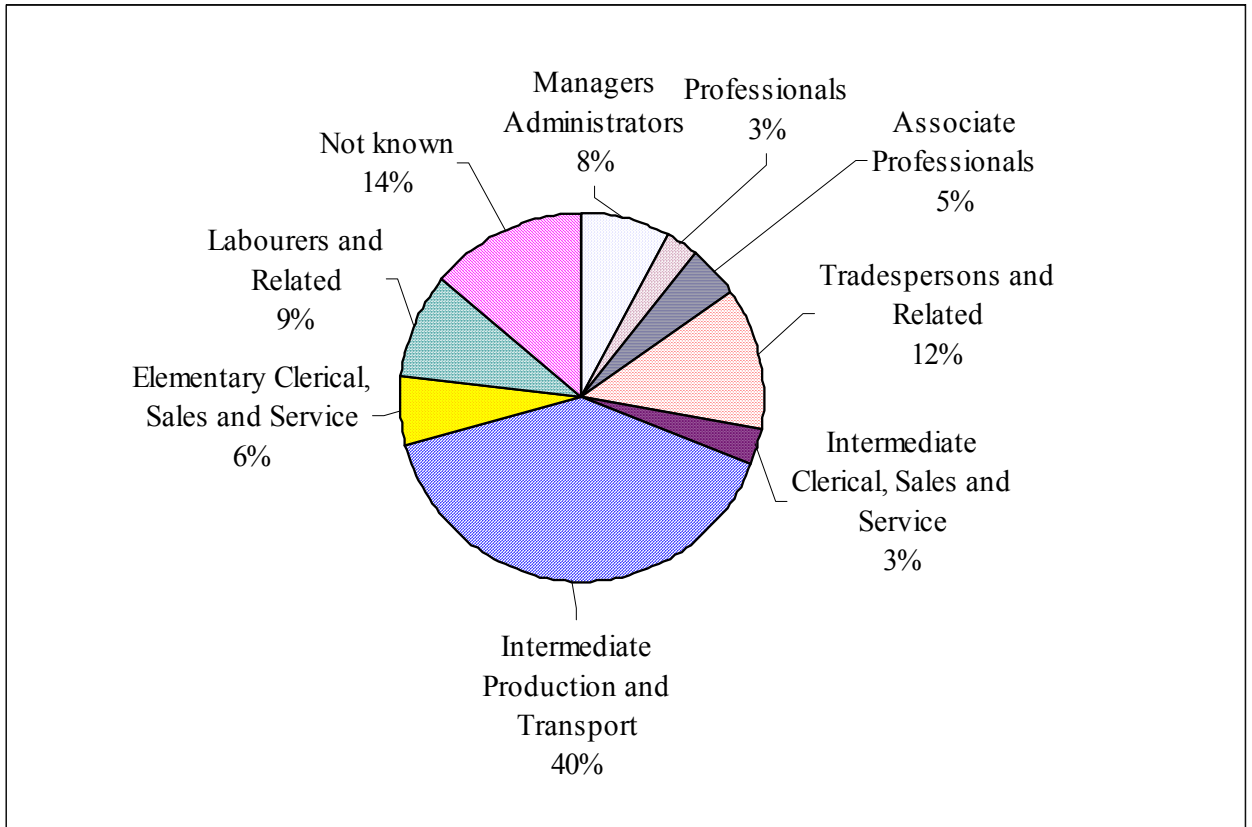


Figure 5: Percentage of work-related fatalities in Australia derived from the police text description of the circumstance surrounding death - occupation.

Occupation by Industry

Most of the fatally injured (38%) in the *Agriculture, Forestry and Fishing, Mining and Transport and Storage* industries were *Intermediate Production and Transport workers* or *Managers Administrators* (farmers) (**Tables 9 and 10**). The *Manufacturing and Retail Trade* industries experienced a significant proportion of fatalities (50%-67%) among *Tradespersons and Related workers*. Most fatalities (67%-100%) in the *Communication and Cultural and Recreational Services* industries were of *Elementary Clerical, Sales and Service workers*. The fatalities in the *Property and Business Services* industry were equally spread among *Professionals* and *Intermediate Production and Transport workers* and *Elementary Clerical, Sales and Service workers*. Results suggest that most *Unknown* industries had *Unknown* occupations. The very small number of cases in some occupation/industry cells also makes it difficult to draw meaningful conclusions among these categories.

Table 9: Number of work-related fatalities in Australia derived from the police text description of the circumstance surrounding fatalities - industry and occupation

Industry	Occupation									Total
	Managers Administrators	Professionals	Associate Professionals	Tradespersons and Related workers	Intermediate Clerical, Sales and Service workers	Intermediate Production and Transport workers	Elementary Clerical, Sales and Service workers	Labourers and Related workers	Unknown	
Agriculture, Forestry and Fishing	3	0	0	0	0	5	0	3	2	13
Mining	0	0	0	0	0	4	0	0	2	6
Manufacturing	0	0	1	2	0	0	0	1	0	4
Construction	1	0	1	2	0	3	0	1	1	9
Retail Trade	0	0	0	2	0	1	0	0	0	3
Transport and Storage	1	0	0	0	0	13	0	0	0	14
Communication	0	0	0	0	0	0	1	0	0	1
Property and Business Services	0	1	0	0	1	0	1	1	0	4
Government Administration and Defence	0	0	0	2	1	0	0	0	0	3
Cultural and Recreational Services	0	0	1	0	0	0	2	0	0	3
Unknown	0	1	0	0	0	0	0	0	4	5
Total	5	2	3	8	2	26	4	6	9	65

Table 10: Percentage of work-related fatalities in Australia derived from the police text description of the circumstance surrounding death - industry and occupation.

Industry	Occupation									Total
	Managers Administrators	Professionals	Associate Professionals	Tradespersons and Related workers	Intermediate Clerical, Sales and Service workers	Intermediate Production and Transport workers	Elementary Clerical, Sales and Service workers	Labourers and Related workers	Unknown	
Agriculture, Forestry and Fishing	23	0	0	0	0	38	0	23	15	100
Mining	0	0	0	0	0	67	0	0	33	100
Manufacturing	0	0	25	50	0	0	0	25	0	100
Construction	11	0	11	22	0	33	0	11	11	100
Retail Trade	0	0	0	67	0	33	0	0	0	100
Transport and Storage	7	0	0	0	0	93	0	0	0	100
Communication	0	0	0	0	0	0	100	0	0	100
Property and Business Services	0	25	0	0	25	0	25	25	0	100
Government Administration and Defence	0	0	0	67	33	0	0	0	0	100
Cultural and Recreational Services	0	0	33	0	0	0	67	0	0	100
Unknown	0	20	0	0	0	0	0	0	80	100
Total	8	3	5	12	3	40	6	9	14	100

COMPARISON WITH WRF2

It was important to assess how the cases classified as work-related based on the police description compared with the work-related cases found in the Work-Related Study 2 (WRF2, 1998) that provided comprehensive estimates of work-related fatalities in Australia. Therefore a comparison was made between the NCIS and WRF2 data knowing that the WRF2 data were verified using coronial files, unlike the NCIS data that were primarily based on police records and that these were not available for all the cases. The WRF2 data included all jurisdictions; unlike the NCIS data that did not include Queensland and had some jurisdiction coronial files that had not been fully uploaded to the NCIS. External causes of injury were coded by the ICD-9 system in the WRF2 data, unlike the NCIS where data are coded using the ICD-10 AM system. For this reason external cause classes do not match perfectly between the WRF2 and NCIS. Lastly, the WRF2 data are historical (1989-1992), unlike the NCIS data that are current (2000-2001).

Given the above constraints, the number of work-related fatalities in the NCIS was well short of what was expected when compared with the WRF2 study. It was decided to compare the relative percentages of fatalities in the WRF2 and NCIS data.

Jurisdiction

Figure 6 shows that the distribution of the In-Labour-Force Population and the work-related fatalities in Australia according to the WRF2 and NCIS data (derived from police text description). This figure shows that distributions of work-related fatalities were different between the NCIS and WRF2 data. It is unlikely that the NCIS data provide an accurate national picture for a number of reasons. The proportion of work-related fatalities in the NCIS was significantly lower in some jurisdictions than was expected with reference to the WRF2 data and the In-Labour-Force Population. For example, the proportion of work-related fatalities in New South Wales (NSW) was the lowest, which is most unlikely since NSW is the largest Australian jurisdiction and has the largest proportion of the In-Labour-Force Population in Australia. The NCIS data overestimated the proportion of work-related fatalities in the Northern Territory, Tasmania and South Australia. The NCIS data suggested that the proportions of work-related fatalities of the Northern Territory and Victoria were

identical and that the Northern Territory had proportionately more work-related fatalities than New South Wales. According to the NCIS data, there were no work-related fatalities in the Australian Capital Territory. It must be concluded that work-related fatalities based on the NCIS police text description were not correctly represented across Australian jurisdictions.

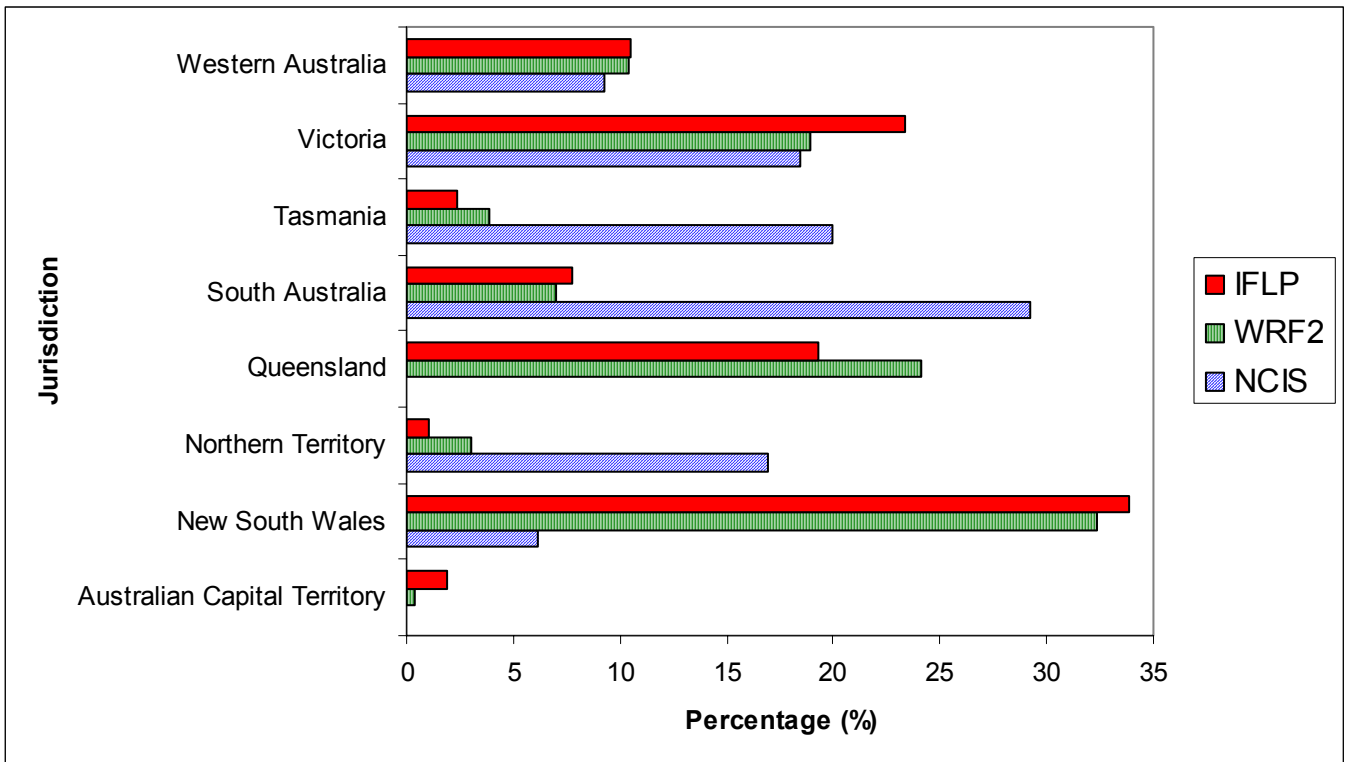


Figure 6: Percentage of the In-Labour-Force Population (ILFP) (2000), work-related fatalities in Australia derived from the WRF2 data (1989-1992) and the NCIS data based on the police text description of the circumstance surrounding death - jurisdiction.

Gender

About 91% and 9% of all work-related fatalities in the WRF2 were males and females, respectively. The corresponding NCIS figures (92% and 8%) derived from the police text description of the circumstance surrounding death were similar.

Location

Work-related fatalities in *Unspecified* workplaces were proportionately twice as many in the NCIS than the WRF2 data (**Figure 7**). A higher percentage of incidents occurred in *Home, Other specified area, Sports area* and *School, other institution or public administrative area* in the NCIS than WRF2 data. The converse was true for work-related fatalities occurring on the *Farm, Industrial or construction area, Mine or quarry* and *Trade or service area*. However, it is difficult to assess the practical significance of these differences because of the small numbers of fatalities in some of the workplaces recorded in the NCIS data (see **Table 4**).

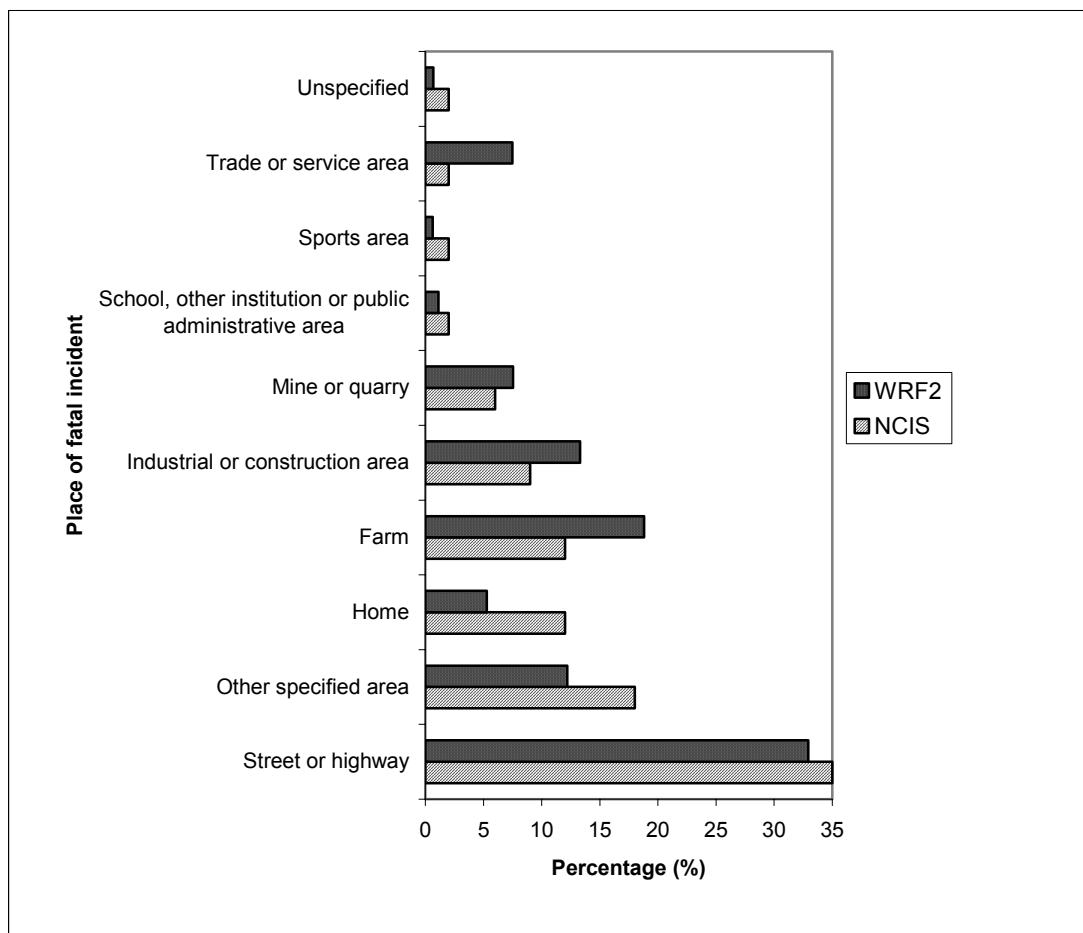


Figure 7: Percentage of work-related fatalities in Australia derived from the police text description of the circumstance surrounding death in the NCIS compared to the WRF2 data (1989-1992) - mechanism of injury.

Age

The WRF2 study found many more work-related fatalities than those seen in the NCIS data. In both cases the 25-34 year olds had the highest incidence of work-related fatalities and the incidence increases dramatically after 55 years. (Chapter 4 of the WRF2 (1998) study was the source of the WRF2 data used in these comparisons.)

Mechanism of Injury

Data on mechanism of injury are coded by the ICD-9 system in WRF2 study and by ICD-10 AM system in the NCIS. For this reason, it is not possible to get a perfect translation of external causes between the two coding systems. Nonetheless, results in **Figure 8** indicate that *Other and unspecified* mechanisms accounted for 35% of fatalities in the NCIS data compared to a very insignificant amount (0.4%) in the WRF2 study. Contact with a *Blunt force* accounted for 55% and 83% of work-related fatalities in the WRF2 and NCIS datasets, respectively. This means that preventative measures are required to reduce work-related fatalities due to this mechanism. *Threat to breathing* killed, proportionately, 3 times more workers in WRF2 study than the NCIS data. Further, work-related fatalities due to *Heat, cold, electricity radiation and sound* were proportionately 2.5 times higher in the WRF2 study compared to the NCIS.

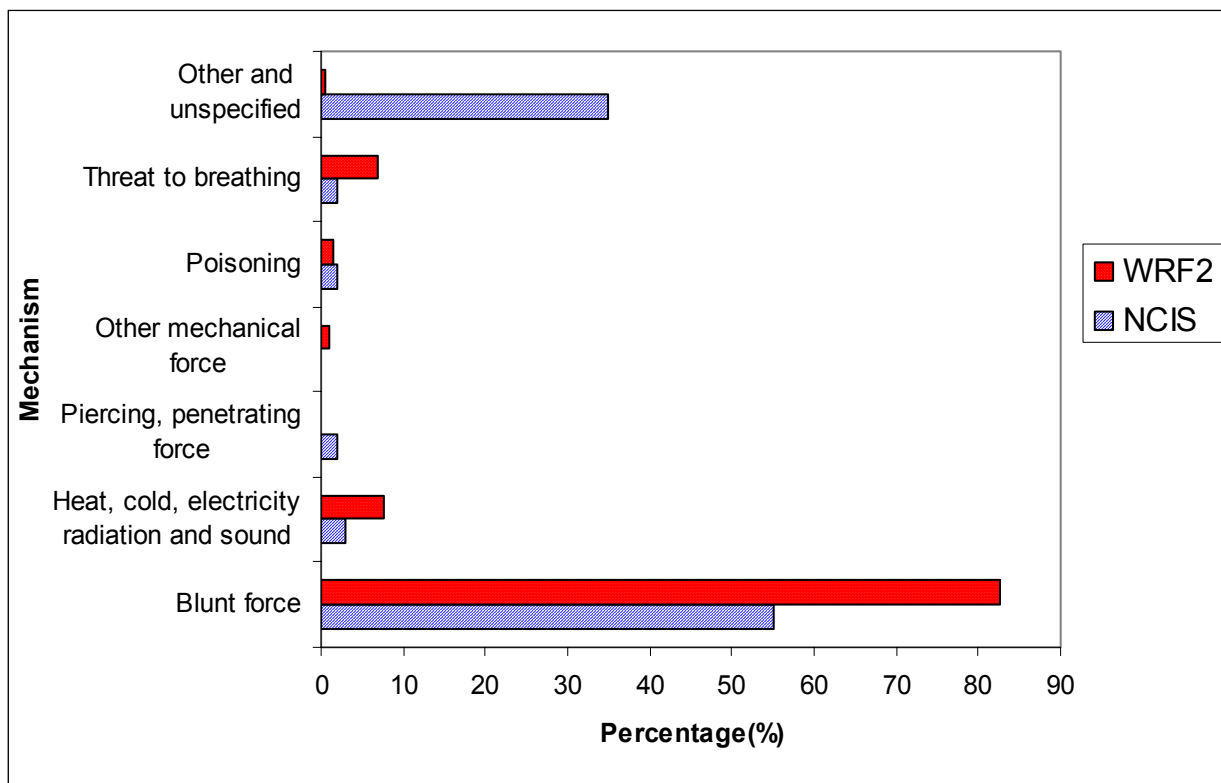


Figure 8: Percentage of work-related fatalities in Australia derived from the police text description of the circumstance surrounding death in the NCIS compared to the WRF2 data (1989-1992) - mechanism of injury.

Industry

The percentage of work-related fatalities where industry was *Not known* was 8 times higher in the NCIS data compared to the WRF2 data (**Figure 9**). The NCIS data contained proportionately fewer fatalities than the WRF2 data in the *Agriculture, Forestry and Fishing, Government Administration and Defence, Electricity, Gas and Water, Manufacturing and Wholesale and retail trades*. The NCIS data had proportionately more fatalities than the WRF2 data mostly in the *Finance, Property and Business services, Communication, Mining, Construction and Transport and Storage* industries. *Wholesale and retail trades, Government Administration and Defence, Finance, Property and Business services and Manufacturing* were the four safest industries since the relative incidences were far smaller than their In-Labour-Force populations. On the other hand, *Agriculture, Forestry and Fishing, Mining, Construction and Transport and Storage* were the four most hazardous industries relative to their In-Labour-Force Populations.

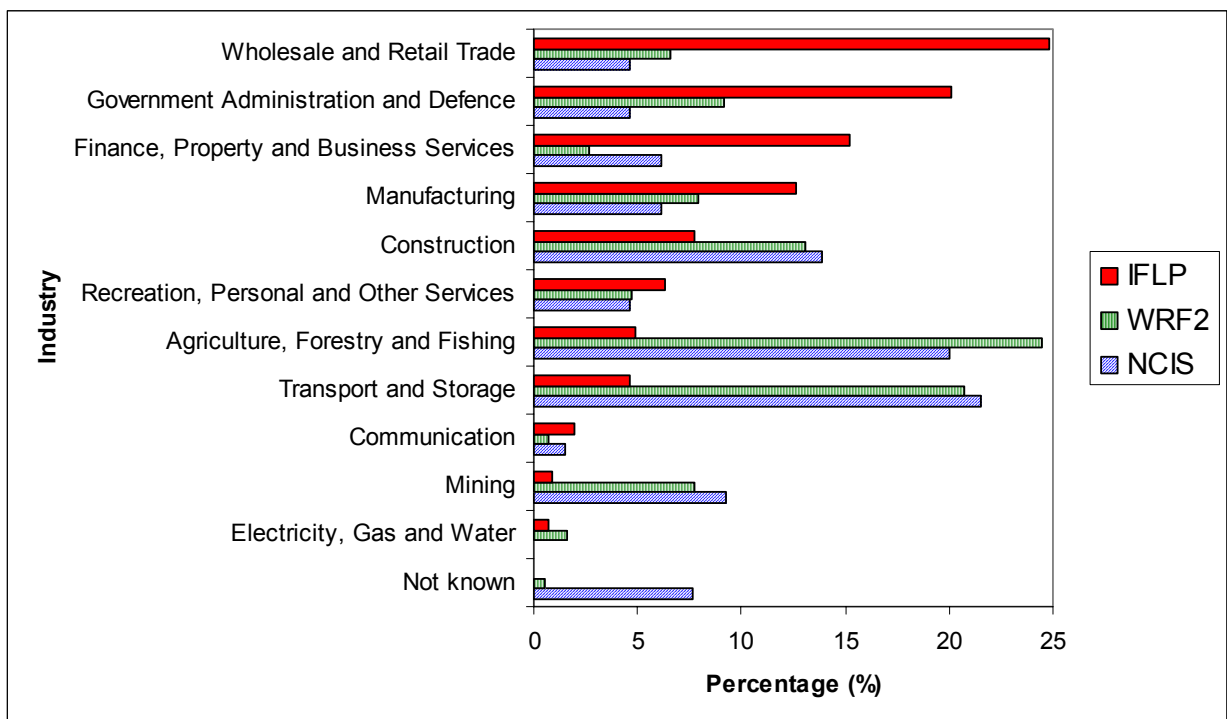


Figure 9: Percentage of the In-Labour-Force Population (ILFP) (2000), work-related fatalities in Australia derived from the WRF2 data (1989-1992) and the NCIS data based on the police text description of the circumstance surrounding death – industry.

Occupation

A review of **Figure 10** reveals that about 15% of the work-related fatalities had unspecified occupations in the NCIS data. This corresponds to proportionately 15 times more than the WRF2 data. Police text descriptions were not available for all NCIS cases nor did they always contain adequate detail to ascribe work-relatedness. Detailed coronial files were available for the majority of the cases investigated in the WRF2 study, which is why the percentage of cases with unknown occupations was small. Proportionately, the NCIS had fewer fatalities of *Labourers and Related workers, Managers and Administrators and Associate Professionals* than the WRF2 data. The converse was true for *Intermediate Production and Transport* and *Clerks, Sales and Service* workers. Both the NCIS and WRF2 data show that the *Intermediate Production and Transport* workers had very high work-related fatalities relative to the In-Labour-Force Population. According to the WRF2 data, *Managers Administrators* and *Labourers and Related* workers also had very high work-related fatalities relative to the In-Labour-Force Population. *Clerks, Sales and Service* workers and *Professionals* experienced the lowest work-related fatalities relative to their In-Labour-Force Population.

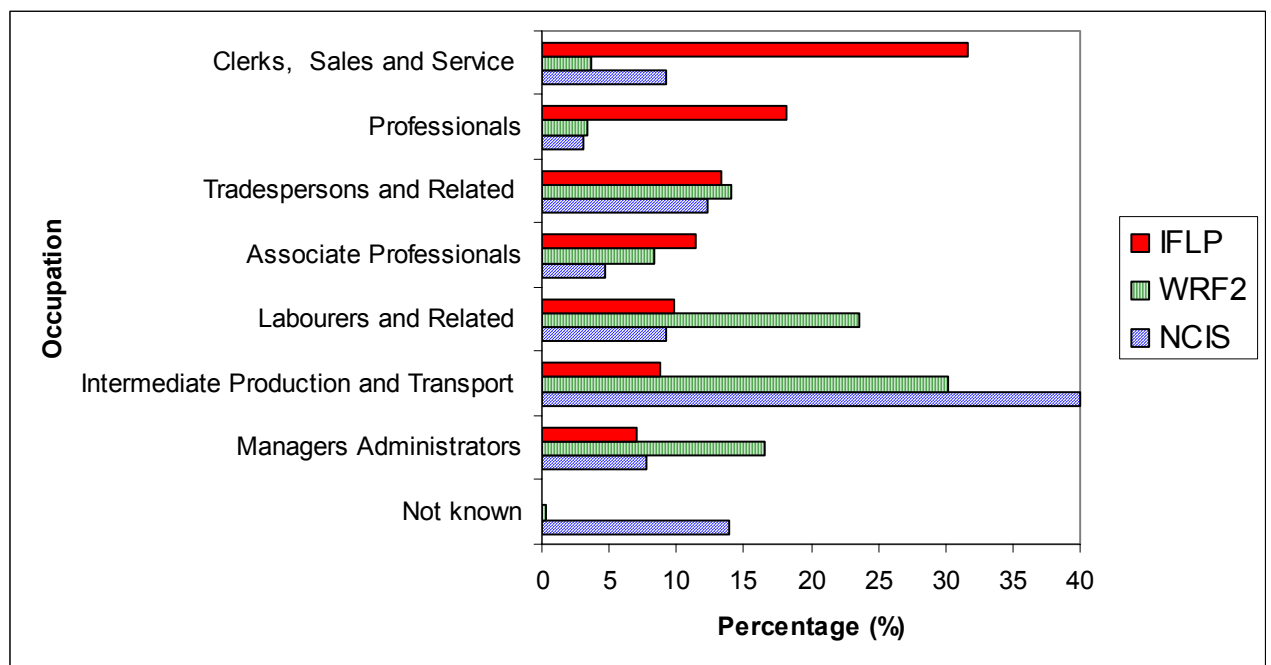


Figure 10: Percentage of the In-Labour-Force Population (ILFP) (2000), work-related fatalities in Australia derived from the WRF2 data (1989-1992) and the NCIS data based on the police text description of the circumstance surrounding death - occupation.

DISCUSSION

This study has provided an analysis of work-related fatalities from the NCIS data. It demonstrated how, once fully operational, the NCIS would provide highly informative data regarding personal details, external cause of death, location, occupation and industry. However, at present the NCIS does not provide a comprehensive source of work-related fatalities in Australia.

The work-related fatalities in the NCIS derived from police text description of circumstances surrounding death were benchmarked to those in the WRF2 (1998). It was revealed that the NCIS had a somewhat different profile of work-related fatalities to the WRF2. Current NCIS estimates of work-related fatalities are lower than would be expected, based on the WRF2 (1998). This is mainly because coronial data from most States and Territories was not fully loaded to the NCIS and because the coronial data for Queensland was not recorded in the NCIS at the time of study.

This study concludes that it is not currently possible to accurately estimate the number and distribution of all work-related fatalities in Australian jurisdictions using statistics derived from police text descriptions recorded in the NCIS. This is attributable to a number of factors. Firstly, not all NCIS cases have a police text description of the incident resulting in the traumatic death. Secondly, the NCIS cases that had police text description did not always contain comprehensive information to determine work-relatedness. Finally, coronial cases from Australian jurisdictions were not all available on the NCIS at the time this study was carried out.

It is possible, however, to use the relative proportions of work-related fatalities grouped by data elements to draw some broad conclusions in relation to demographics, incident location, external cause of death, occupation and industry.

The age and gender profiles of workers who died at work who were identified by the NCIS using police text description were compatible with both the age and gender profiles of the In-Labour-Force population in Australia. In short, most work-related fatalities were of males. Most fatalities affected persons aged between 15 and 44 years

old. Most fatalities (86%) had occurred on the *Street and highways, Other specified area, Home, Farms and Industrial or Construction areas*.

Work-related fatalities were unevenly distributed across industries and occupations in the NCIS and WRF2 data. *Mining and Agriculture, Forestry and Fishing* were among the most hazardous industries while the *Wholesale and Retail Trades and Government Administration and Defence* were the least hazardous industries relative to the In-Labour-Force Populations for those industries. *Intermediate Production and Transport and Trades and Related* workers were employed in the most hazardous occupations. On the other hand, *Professionals, Clerks Sales and Service* workers were the least affected relative to their In-Labour-Force Populations.

The majority of work-related fatalities involving an object or substance (in the NCIS data) were motorised vehicle accidents. Other common object or substance of injury were *Animal, plants, persons, Ground surfaces and conformation* (mining accidents). Consistent with the object or substance of injury, the most common mechanism of injury was coming into contact with a *Blunt force*. Examples of a *Blunt force* include vehicle crashes, contacting moving object, struck by an object, crushing, falling, and stumbling. The other most common mechanisms of injury were coming into contact with *Heat, cold, electricity, radiation and sound* and *Threats to breathing* (such as suffocation following a mine cave-in accident).

It must be stressed that the findings of this study are preliminary and a clearer picture will emerge as NCIS national coverage of coronial cases improves. MUNCCI and the jurisdictions are already addressing many of the problems identified in this report. MUNCCI has uploaded more coronial files to the NCIS from jurisdictions. By July 2002 the size of the NCIS database had increased significantly in comparison to February 2002. For example, in that period, the number of Queensland coronial files increased by as much as 109%. Furthermore, MUNCCI is checking and correcting coding errors in the data and improving data completeness to ensure that there are no “null” data fields. Most importantly, from an occupational health point of view, MUNCCI is assessing a new National Standard Police form for reporting coronial deaths. This will make it easier to identify work-related fatalities and provide more consistent information on the reporting of circumstances surrounding the fatalities. In

light of the significant improvements to the NCIS being undertaken by MUNCCI and the coronial jurisdictions, it is most likely that different conclusions would be reached if an analysis similar to the foregoing was carried out on a larger, more robust NCIS dataset than was available for this study.

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ABBREVIATIONS

ABS	Australian Bureau of Statistics
ICD-10-AM	International Classification of Diseases-10 th Revision, Australia Modified
ILFP	In-Labour Force Population
MUNCCI	Monash University National Centre for Coronial Information
NCIS	National Coroners Information System
NDS	National Data Set for Compensation-based Statistics
NOHSC	National Occupational Health and Safety Commission
NOSI	NOHSC Online Statistics Interactive
OHS	Occupational Health and Safety
WRF2	Work-place Related Fatality Study (1989-1992), 1998

APPENDIX ONE

The main definition for inclusion of a death study was:

'A person who suffered a non-suicide traumatic death, that occurred in Australia or to Australian-based workers, to which workplace exposures contributed as a necessary factor and which can be attributed, as an individual death, to those exposures.'

The study excluded all persons who:

- died as a primary result of diseases, such as cancers and heart attacks;
- committed suicide, even if there appeared to be some direct connection with work; and
- did not die as a result of their injuries.

Workers were defined as persons who were injured while performing some kind of activity for pay, profit or kind (including commuting to or from work). The “working” group (which excluded commuters) was divided into two subgroups - **workplace** and **work-road**. The work-road group comprised workers who were killed in motor vehicle incidents on public roads in the course of their work (note that this group did NOT include commuters). The workplace group comprised all other workers who were fatally injured as a result of work activity. These people were usually injured in some form of fixed workplace.

Commuters were persons killed whilst travelling to or from work.

Bystanders were persons who were not working but who were killed directly as a result of someone else’s work activity. **Workplace bystanders** were any persons not working and fatally injured as a result of workplace activities usually not associated with public roads or public transport. **Road bystanders** were persons not working and fatally injured in a motor vehicle incident on a public road (or on public transport) as a result of other people’s work, where the working vehicle was primarily ‘at fault’ in the incident. Examples included pedestrians or persons in vehicles hit by a semi-trailer whose driver had lost control of the vehicle, or pedestrians or persons in vehicles struck by an emergency vehicle involved in a high-speed chase.

The second work-related fatalities study also included a number of other groups whose death was related to work in a more indirect way. These groups were volunteers, students, persons performing home duties and persons fatally injured on farms but not due to obvious farm work. These groups did not form part of the current review.