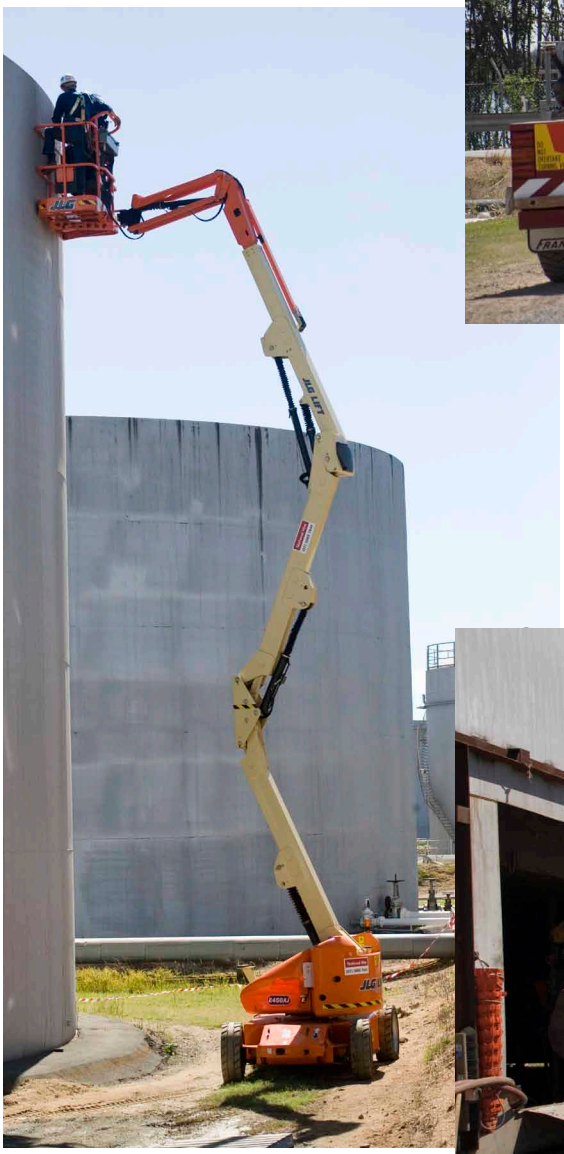
WORK-RELATED TRAUMATIC INJURY FATALITIES, AUSTRALIA 2009–10



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safe work australia

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Acknowledgement

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Disclaimer

Foreword

The aim of this report is to determine the number of people killed each year due to work-related activity. This includes fatalities resulting from an injury sustained in the course of work activity (worker fatality), commuting to and from work (commuter fatality), and as a result of someone else's work activity (bystander fatality).

Injury is defined as a condition coded to 'External Causes of morbidity and mortality' and 'Injury, poisoning and certain other consequences of external causes' in the International Statistical Classification of Diseases and Related Health Problems, Tenth Revision, Australian Modification (ICD-10-AM).

Within scope of this collection are all persons:

- who were fatally injured, and
- whose injuries resulted from work activity or exposures, and
- whose injuries occurred in an incident that took place in Australia, Australian territories or territorial waters.

They include all persons killed:

- while working (including unpaid volunteers and family workers, persons undertaking work experience and defence force personnel killed within Australia, Australian territories or territorial waters) or travelling for work (Worker fatalities)
- travelling to or from work (Commuting fatalities), or
- as a result of someone else's work activity (Bystander fatalities).

The collection specifically excludes those who die:

- of iatrogenic injuries — those where the worker died due to medical intervention
- due to natural causes such as heart attacks and strokes, except where a work-related injury was the direct cause of the heart attack or stroke
- as a result of diseases, such as cancers
- while working overseas (defence personnel and civilians), or
- by self-inflicted injuries (suicide).

Sources of information

Because there is no single national data collection system that identifies all work-related injury fatalities, the exact number of people who die in any year as a result of work-related injuries in Australia is difficult to establish. To achieve the best estimate, Safe Work Australia examines a number of datasets that contain information on work-related fatalities.

The National Data Set for Compensation-based Statistics (NDS) includes work-related deaths for which liability for compensation has been accepted. Compensation is generally only available to employees and hence this dataset does not include deaths of self-employed workers. The NDS includes compensated commuting-related fatalities, but these fatalities are not compensable in all jurisdictions and hence coverage is incomplete. In addition, workers' compensation is not available to people who die as a result of another person's work activity (bystanders), so these deaths are not included in the NDS.

The Notified Fatalities Collection (NFC) includes notifications of fatalities in accordance with the work health and safety legislation in each jurisdiction and generally excludes incidents occurring on public roads. Jurisdictions also do not generally notify commuter fatalities and notification of bystander deaths is not comprehensive.

The National Coroners Information System (NCIS) contains all deaths notified to any Australian coroner. Although all fatalities from work-related injuries are likely to be notifiable, they are not uniformly coded as work-related, particularly for commuting and bystander deaths or deaths of workers involved in vehicle incidents. Coding is not complete until the coroner closes the case. Open cases within the NCIS are included where sufficient information is available to determine a death as work-related.

Investigations of rail, marine and aviation incidents by the Australian Transport Safety Bureau are also used as a source to identify work-related fatalities.

In addition to these datasets, media reports sometimes alert the project to deaths not identified elsewhere. All such cases were matched with information in the NCIS to determine work-relatedness.

For further details on these data sources, please see the Explanatory notes.

Methodology

All cases within scope as described were extracted from each dataset and compared to identify and remove duplicate cases.

People who died of injuries as a result of someone else's work activity while themselves at work or commuting are classified as a worker or commuter, respectively, rather than as a bystander.

This publication covers fatalities that occurred over the period from 1 July 2003 to 30 June 2010. Changes may be evident from previous years' reports due to the availability of additional information as coroners finalise their reports.

Contents

Summary of findings

In 2009–10, 337 people died in Australia from a work-related traumatic injury. Of these, 216 (64%) were injured at work (Worker fatalities); 79 (23%) while travelling to or from work (Commuter fatalities) and 42 (12%) as a bystander to someone else's work activity (Bystander fatalities).

Worker fatalities

The 216 Worker fatalities in 2009–10 equates to a fatality rate of 1.9 deaths per 100 000 workers. This is the lowest number of deaths and the lowest fatality rate since the series began seven years ago with an average of 282 deaths being recorded each year over the previous six years. Unfortunately indications are that this lower rate will not continue with the number of deaths notified to work health and safety authorities in the 2010–11 showing a 7% increase on 2009–10.

Over the seven years of the series, one-third of workers who were killed while working were killed in a vehicle incident on a public road, another one-third were killed in a vehicle incident at a workplace and the remaining one-third did not involve a vehicle. Trucks were the vehicle most often involved with worker fatalities.

Sex and age

The majority (204 of the 216) of the workers killed in 2009–10 were male. Male workers experienced a fatality rate of 3.4 deaths per 100 000 male workers, compared with 0.2 deaths per 100 000 female workers.

Workers aged 65 years and over experienced a fatality rate of 6.2 deaths per 100 000 workers in 2009–10, more than three times the rate for all workers. This is the lowest fatality rate recorded by this age group since the series began and is due to a large increase in the number of workers in this age group combined with considerably fewer deaths than in previous years. All age groups except for the 54–64 years group recorded falls in the number of deaths compared with the previous year. Workers aged under 25 years experienced the lowest fatality rate of all age groups, 0.9 deaths per 100 000 workers, half the rate experienced in the previous year.

Working with trucks

One-third of the workers who died in 2009–10 were working in or around a truck. Two-thirds of these involved a crash, with single vehicle crashes accounting for 26 of the 70 truck-related deaths in 2009–10. A further 13 workers were killed when two trucks collided. Over the seven years of the series, 567 workers have been killed in truck-related incidents. Of these, 438 were truck drivers, 16 were passengers in trucks, while 57 workers were in cars or utilities and 48 workers were on foot when they came into contact with the truck or its cargo.

Working on farms

In 2009–10, 37 workers died (17% of all worker fatalities) while working on an agricultural property with 25 of these deaths related to working with a vehicle. Over the seven years of the series, 83 agricultural workers have died in incidents involving a tractor, 39 have died in an aircraft incident and 26 in an incident involving an all-terrain vehicle (ATV). No workers were killed in 2009–10 in an incident involving an ATV, the first time in the series.

Commuter fatalities

There were 79 Commuter fatalities identified in 2009–10: 16 women and 63 men died of injuries sustained on the journey to or from work. Limitations of the available data mean commuting deaths identified in this report are a known undercount. All deaths occurred in traffic incidents, including five pedestrians struck by vehicles.

Bystander fatalities

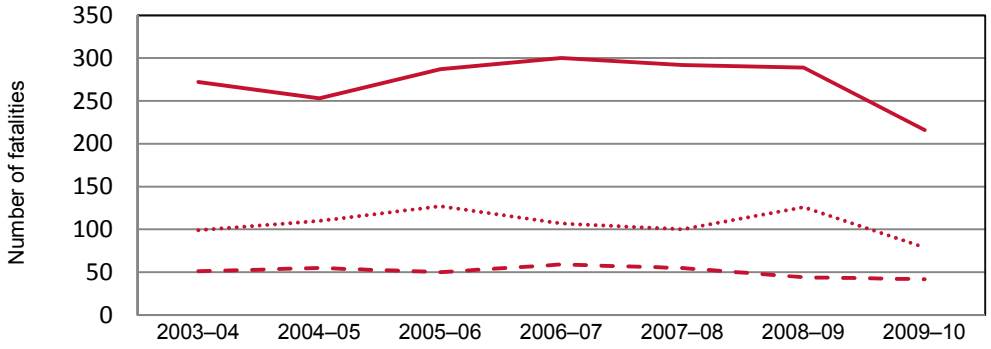
In 2009–10, 16 of the 42 identified Bystander deaths were of women and girls and 25 were of men and boys. Four in 10 of the Bystanders were fatally injured in incidents involving working vehicles or mobile plant and machinery.

1 Total fatalities

This study identified a total of 337 work-related traumatic injury fatalities in Australia during 2009–10. This comprised 216 (64%) workers who were killed while at work (Worker fatalities); 79 (23%) workers who were killed while travelling to or from work (Commuter fatalities) and 42 (12%) people who were killed as a bystander to someone else's work activity (Bystander fatalities). Just over one-third (36% – 77 deaths) of all work-related injury fatalities in 2009–10 were the result of a *Traffic incident* — an incident occurring on a public road.

As Figure 1 shows, the number of Worker fatalities recorded a substantial fall in 2009–10 from the 289 recorded in 2008–09 and the high of 300 in 2006–07. While the number of Commuter fatalities also recorded a large fall, these numbers are considered to be an undercount of the true number of workers killed while on a journey to or from work. The 42 Bystander fatalities identified in 2009–10 is the lowest number identified in the seven years of the series but should not be interpreted as indicating a fall in these incidences due to the difficulty in capturing information on bystanders.

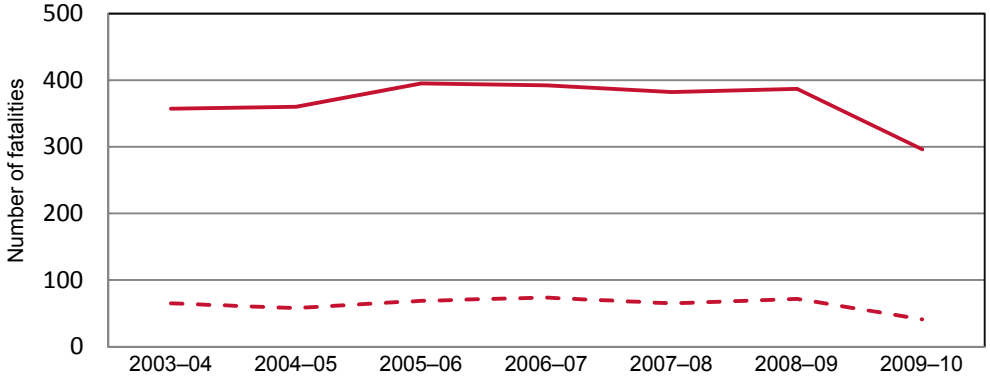
Figure 1 Work-related injury fatalities: number of deaths by type of worker type by year, Australia, 2003–04 to 2009–10



	2003–04	2004–05	2005–06	2006–07	2007–08	2008–09	2009–10
Worker	272	253	287	300	292	289	216
Commuter	99	110	127	107	100	126	79
Bystander	51	55	50	59	55	44	42

In 2009–10, seven times as many males were killed as females. This ratio is greater than the five times recorded in most of the previous years of the series. In 2009–10, 296 males and 41 females died due to work activity.

Figure 2 Work-related injury fatalities: number of deaths by sex by year, Australia, 2003–04 to 2009–10



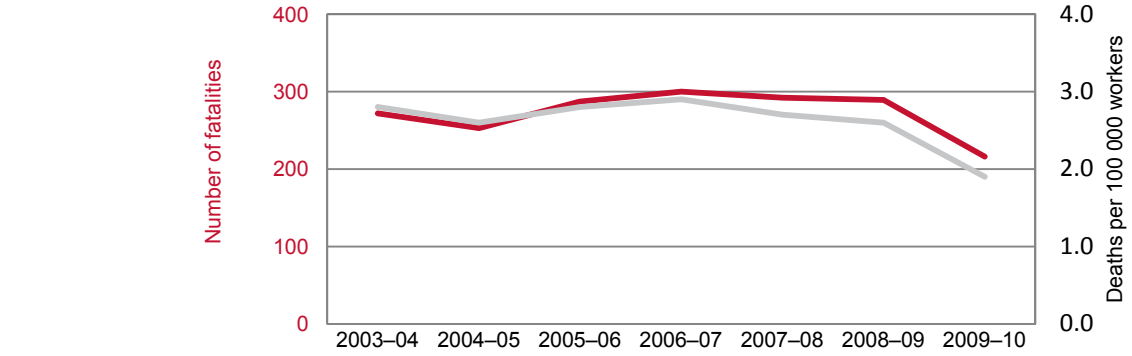
	2003–04	2004–05	2005–06	2006–07	2007–08	2008–09	2009–10
Male	357	360	395	392	382	387	296
Female	65	58	69	74	65	72	41

2 Worker fatalities

In 2009–10, 216 workers lost their lives due to injuries sustained while working which is a substantial fall from the 289 recorded in 2008–09. Figure 3 shows that this is the lowest number since the series began in 2003–04. The highest number of 300 was recorded in 2006–07.

The large fall in the number of Worker fatalities is reflected in a large fall in the fatality rate from 2.6 deaths per 100 000 workers in 2008–09 to 1.9 in 2009–10. This is the lowest rate since the series began. Unfortunately indications are that this lower rate will not continue with the number of deaths notified to work health and safety authorities in 2010–11 showing a 7% increase on 2009–10.

Figure 3 Worker fatalities: number of deaths, Australia, 2003–04 to 2009–10



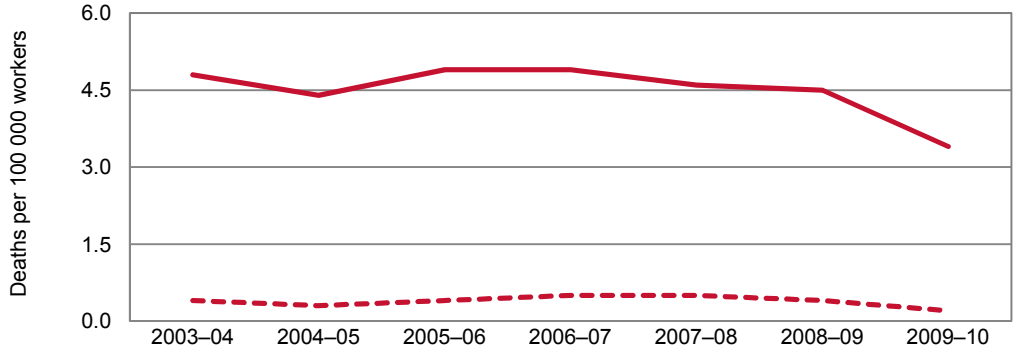
	2003–04	2004–05	2005–06	2006–07	2007–08	2008–09	2009–10
Number of worker fatalities	272	253	287	300	292	289	216
Fatality rate	2.8	2.6	2.8	2.9	2.7	2.6	1.9

2.1 Characteristics by sex

In 2009–10, 12 (6%) of the workers who died were women, the smallest number in the seven years of this series. Similarly, the 204 deaths recorded among male workers is the lowest in the series. Of the 12 female workers who died, 5 were killed in a *Traffic incident*. Since 2003–04, 125 female workers have died, 7% of all Worker fatalities. *Traffic incident* was responsible for 40% of the deaths among female workers compared with 33% for male workers.

Figure 4 shows that fatality rates by sex have fallen. In 2009–10, female workers recorded 0.2 deaths per 100 000 female workers while male workers recorded 3.4 deaths per 100 000 male workers, this is down from 0.4 and 4.5 respectively in 2008–09.

Figure 4 Worker fatalities: fatality rate by sex, Australia, 2003–04 to 2009–10



	2003–04	2004–05	2005–06	2006–07	2007–08	2008–09	2009–10
Males	4.8	4.4	4.9	4.9	4.6	4.5	3.4
Females	0.4	0.3	0.4	0.5	0.5	0.4	0.2

2.2 Characteristics by age group

Table 1 shows the distribution of Worker fatalities by age group and sex. Changes in the number of deaths incurred by female workers should be viewed with caution due to the small numbers involved. In 2009–10, 5 of the 12 (42%) female workers who were killed while working were in the 55–64 years age group. This is unusual as across the seven years of the series just 17% of female Worker fatalities were in this age group and points to the volatility inherent in such small numbers. While 5 deaths in this age group were also recorded in 2006–07, there were higher numbers in the younger age groups and hence the proportion for the 55–64 years age group was smaller (24%).

Table 1 Worker fatalities: number by age group and sex, Australia, 2003–04 to 2009–10

Age group (years)	2003–04	2004–05	2005–06	2006–07	2007–08	2008–09	2009–10
				Female workers			
15-24	2	0	1	4	3	6	1
25-34	5	6	3	5	3	6	2
35-44	2	2	6	1	4	3	1
45-54	5	4	5	5	4	4	3
55-64	2	2	1	5	4	2	5
65 & over	0	1	1	1	4	1	0
Total Female	**16**	**15**	**17**	**21**	**22**	**22**	**12**
				Male workers			
Less than 15	1	0	1	1	0	0	0
15-24	21	27	26	24	29	29	17
25-34	49	45	63	44	33	50	32
35-44	56	47	54	75	61	48	35
45-54	51	52	50	56	64	57	51
55-64	45	45	52	49	53	51	50
65 & over	33	22	24	30	30	32	19
Total Male	**256**	**238**	**270**	**279**	**270**	**267**	**204**

For male workers, the pattern by age in 2009–10 was similar to other years with the 45–54 years age group recording the highest number of deaths, 51. There was a slightly higher proportion of male workers in the 55–64 years age group who were killed at work compared with prior years (25% in 2009–10 compared with 19% across all seven years) though the actual number of deaths, 50, was similar. All age groups for male workers recorded falls from the previous year. The greatest percentage fall from the previous year, 41%, was recorded by both the youngest (15–24 years) and oldest (65 years and over) age groups.

Figure 5 shows that the proportion of Worker fatalities by age group followed a broadly similar pattern by sex with lower numbers of deaths in the youngest and oldest age groups for both male and female workers. Over the seven years, female workers had a greater proportion of deaths in the younger age groups with 38% of female workers who died aged less than 35 compared with 28% for male workers.

At the other end of the age range, male workers recorded a greater proportion of deaths in the 55 years and over age group than female workers: 30% compared with 23%.

Figure 5 Worker fatalities: proportion by age group and sex, Australia, 2003–04 to 2009–10 combined

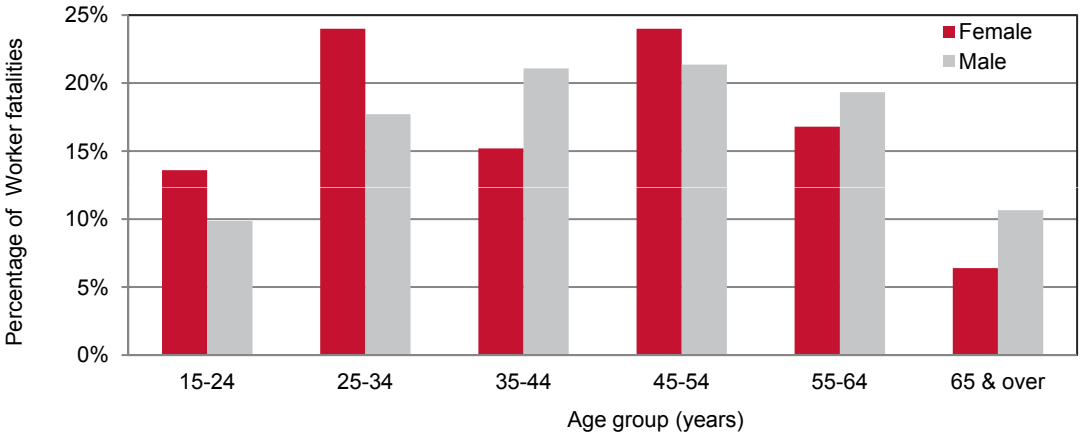
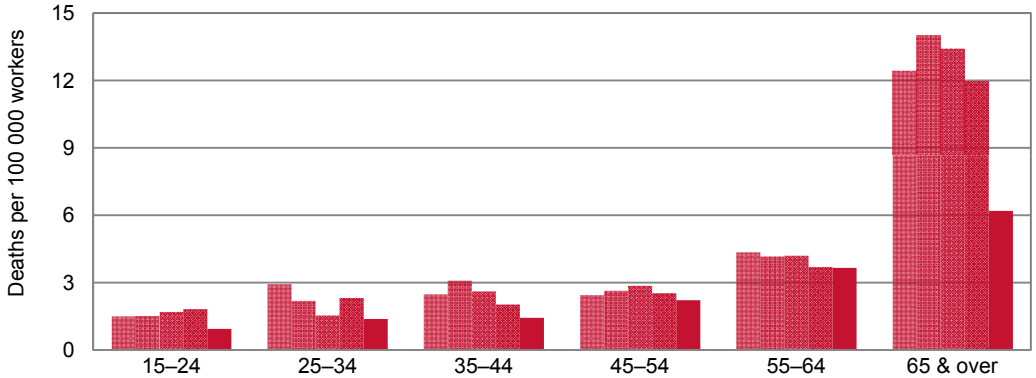


Figure 6 shows that Worker fatality rates by age have been fairly consistent over the past five years and that they tend to increase slightly with age up until age 65 when the rate jumps considerably. The high rates for the 65 years & over age group are due to the lower number of workers in this age group combined with relatively high numbers of Worker fatalities. However in 2009–10, this age group recorded half the rate of the previous year and the lowest rate for this age group in the seven years since the series began. The fatality rate of 6.2 deaths per 100 000 workers in the 65 years & over age group in 2009–10 is nearly seven times that of the youngest age group which recorded 0.9.

All age groups recorded falls from the previous year except the 55–64 years age group which remained on 3.7 deaths per 100 000 workers. The greatest percentage fall was recorded by the 15–24 years age group where the fatality rate dropped from 1.8 deaths per 100 000 workers in 2008–09 to 0.9 following a halving of the number of workers in this age group who were killed from 35 down to 18.

Figure 6 Worker fatalities: fatality rate by age group, Australia, 2005–06 to 2009–10



	15–24	25–34	35–44	45–54	55–64	65 & over
2005–06	1.5	2.9	2.5	2.4	4.4	12.4
2006–07	1.5	2.2	3.1	2.6	4.2	14.0
2007–08	1.7	1.5	2.6	2.9	4.2	13.4
2008–09	1.8	2.3	2.0	2.5	3.7	12.0
2009–10	0.9	1.4	1.4	2.2	3.7	6.2

2.3 Characteristics by Occupation

In 2009–10, 31% of the Worker fatalities (68 deaths) were workers employed as Machinery operators & drivers. Labourers accounted for a further 17% of Worker fatalities (37 deaths) followed by Technicians & trades workers with 16% (34 deaths). The lowest numbers were recorded by Sales workers and Clerical & administrative workers, with 2 and 4 worker deaths respectively.

This pattern is similar to the pattern for all seven years (Figure 7) with the only notable difference being that in 2009–10 Professionals accounted for 13% of Worker fatalities whereas over the full seven years this occupation group accounted for just 9%. There were 29 Professionals in 2009–10 who died due to injuries incurred at work. This is the highest number in the series with the previous highest, 27, recorded in 2007–08. The increase occurred mainly within the Business, human resources and marketing professionals sub-group with more accountants and financial workers killed in 2009–10 than in previous years. *Vehicle incident* claimed more lives in 2009–10.

Figure 7 Worker fatalities: Proportion of deaths by occupation, Australia, 2003–04 to 2009–10 combined

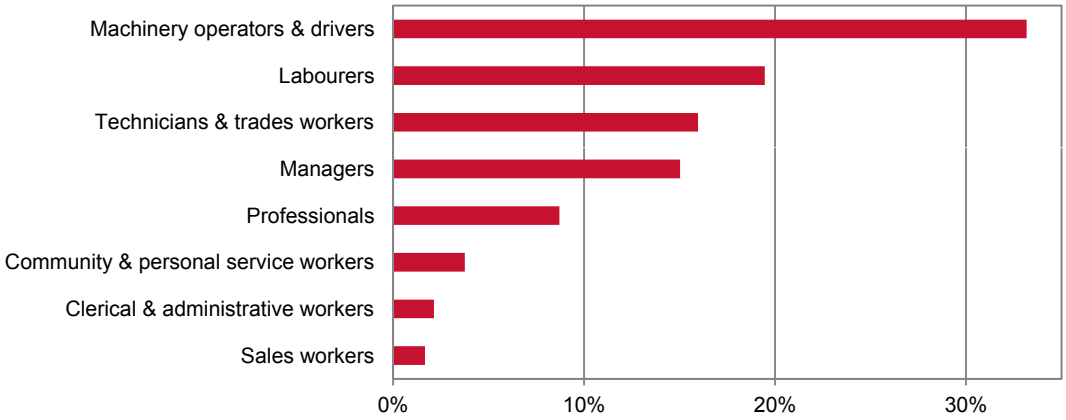


Table 2 provides a breakdown on the number of fatalities in each occupation group over time and the corresponding fatality rates. These data show that while Machinery operators & drivers recorded the highest number of Worker fatalities of all occupation groups in 2009–10, the 68 deaths is the smallest in the seven-year series and considerably lower than the 113 deaths recorded by this group in 2007–08. However, the fatality rate of 9.7 deaths per 100 000 Machinery operators & drivers in 2009–10 was still five times the overall rate.

Table 2 also shows that three occupation groups accounted for most of the fall in the number of deaths from 2008–09 to 2009–10: Machinery operators & drivers down 27, Labourers down 25 and Technicians & trades workers down 19.

Within the Machinery operators & drivers occupation group, Truck drivers recorded 19 fewer deaths in 2009–10 compared with the previous year and 32 less than the peak of 73 deaths in 2007–08.

Within the Labourers occupation group, Farm, forestry & garden workers accounted for the highest number of deaths. In 2009–10, deaths within this group claimed 14 lives, down from 21 in the previous year. Deaths on agricultural properties were also incurred by Farmers & farm managers with 23 deaths in 2009–10 just slightly above the series low of 20 recorded in the previous year. The lower number of deaths of Farmers & farm managers is due to no deaths in

the past two years from being hit or bitten by animals and no deaths from being trapped in machinery. For both Farm, forestry & garden workers and Farmers & farm managers there has been a substantial reduction in the number of deaths in vehicle accidents and in particular no deaths from incidents with all-terrain vehicles (ATVs) in 2009–10.

Within the Technicians & trades workers occupation group, the Automotive & engineering trades workers sector recorded 9 deaths in 2009–10. This is the equal lowest number of deaths in the series after recording its highest number of fatalities in 2008–09, 20 deaths.

These falls mean that the fatalities rates for Labourers and Technicians & trades workers are now closer to the overall rate than at any other time in the series with 3.1 and 2.1 deaths per 100 000 workers in 2009–10 compared with 1.9 overall.

The Managers occupation group has recorded small falls over the past few years with the 32 fatalities recorded in 2009–10 being the lowest in the seven-year time series. Despite these improvements this occupation group recorded the third highest fatality rate of 2.3 deaths per 100 000 workers in 2009–10.

Table 2 Worker fatalities: number and fatality rate by occupation, Australia, 2003–04 to 2009–10

Occupation	2003–04	2004–05	2005–06	2006–07	2007–08	2008–09	2009–10
	Number of worker fatalities						
Machinery operators & drivers	87	78	86	108	113	95	68
Truck drivers	*59*	*49*	*49*	*72*	*73*	*60*	*41*
Labourers	65	48	57	46	58	61	36
Farm, forestry & garden workers	*27*	*22*	*17*	*17*	*23*	*21*	*14*
Technicians & trades workers	36	39	45	59	39	52	33
Construction trades workers	*10*	*7*	*8*	*26*	*9*	*15*	*10*
Automotive & engineering trades workers	*10*	*12*	*12*	*9*	*11*	*20*	*9*
Managers	46	47	52	41	34	32	34
Farmers & farm managers	*37*	*34*	*29*	*27*	*28*	*20*	*23*
Professionals	22	18	26	24	27	21	29
Community & personal service workers	*7*	*18*	*9*	*11*	*6*	12	*9*
Clerical & administrative workers	1	3	5	5	6	8	4
Sales workers	8	2	7	5	9	8	3
Total all occupations*	**272**	**253**	**287**	**300**	**292**	**289**	**216**
	Fatality rate (deaths per 100 000 workers)						
Machinery operators & drivers	13.7	12.0	13.2	15.5	15.6	13.2	9.7
Labourers	5.9	4.3	5.1	4.0	5.0	5.3	3.1
Technicians & trades workers	2.5	2.6	2.9	3.7	2.4	3.2	2.1
Managers	4.0	3.8	4.1	3.1	2.5	2.3	2.3
Professionals	1.2	0.9	1.3	1.2	1.2	0.9	1.2
Community & personal service workers	0.9	2.2	1.0	1.2	0.7	1.2	0.9
Clerical & administrative workers	0.1	0.2	0.3	0.3	0.4	0.5	0.2
Sales workers	0.8	0.2	0.7	0.5	0.9	0.8	0.3
All occupations*	**2.8**	**2.6**	**2.8**	**2.9**	**2.7**	**2.7**	**1.9**

* Includes fatalities where occupation was not stated.

2.4 Characteristics by Industry

In 2009–10, 24% (51 deaths) of the workers who died were employed in the Transport, postal & warehousing industry, 19% (42 deaths) were employed in the Agriculture, forestry & fishing industry and 18% (39 deaths) were employed in the Construction industry. Together these three industries accounted for 61% of all Worker fatalities in that year. Figure 8 shows that over the past seven years these three industries have together accounted for 60% of all Worker fatalities.

Figure 8 Worker fatalities: number by industry of employer, Australia, 2003–04 to 2009–10 combined

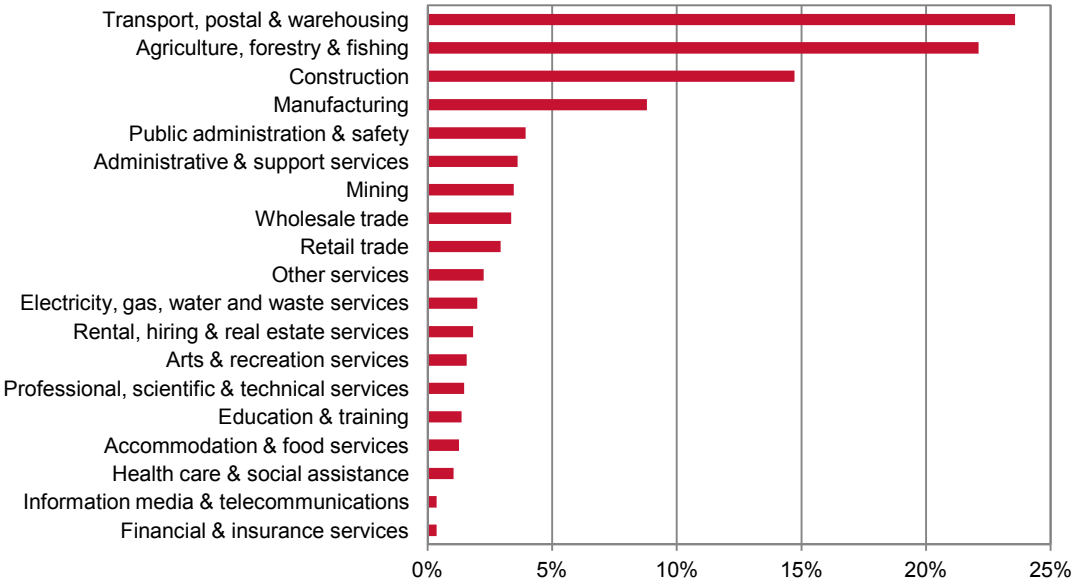


Table 3 shows that the highest fatality rates in 2009–10 were also in these three industries. While the fatality rate in the Agriculture, forestry & fishing industry of 11.4 deaths per 100 000 workers is six times the overall fatality rate of 1.9, it is the lowest recorded in the industry since the series began after the number of deaths fell from 72 in 2008–09 to 42 in 2009–10. Similarly while the fatality rate in the Transport, postal & warehousing industry of 8.8 is four times the overall rate, it is the lowest recorded for this industry.

Road freight transport sector workers accounted for 38 of the 51 Worker fatalities within the Transport, postal & warehousing industry in 2009–10. This number of deaths equates to a fatality rate of 22.8 deaths per 100 000 workers which is twelve times the all industries rate and more than twice the rate for the Transport, postal & warehousing industry as a whole.

The Agriculture sector accounted for 36 of 42 Worker fatalities within the Agriculture, forestry & fishing industry in 2009–10 and recorded a fatality rate of 11.1 deaths per 100 000 workers, slightly below the rate for the industry as a whole, 11.4. This is due to the other sectors of the industry which include forestry, fishing and aquaculture recording much higher fatality rates.

The Health care & social assistance industry recorded 6 deaths in 2009–10, the highest number recorded in the series and twice the previous year but due to the high number of workers in this industry it recorded a relatively low fatality rate of 0.5 deaths per 100 000 workers.

Because fatality rates are sensitive to the number employed in each industry, they are liable to show volatility in those industries that employ the fewest

workers even when small variations in the number of deaths are recorded. Therefore when viewing the fatality rates in Table 3 the actual number of deaths should also be considered.

Table 3 Worker fatalities: number and fatality rate by industry of employer, Australia, 2003–04 to 2009–10

Industry of employer	2003–04	2004–05	2005–06	2006–07	2007–08	2008–09	2009–10
	Number of deaths while working						
Transport, postal & warehousing	67	51	59	76	79	67	51
Road Freight Transport	*47*	*40*	*46*	*62*	*62*	*50*	*38*
Agriculture, forestry & fishing	80	65	58	48	58	72	42
Agriculture	64	43	44	33	44	40	36
Construction	38	28	42	50	40	44	39
Manufacturing	17	23	23	30	27	24	24
Administrative & support services	6	10	12	12	11	9	9
Retail trade	5	6	9	13	10	5	8
Mining	5	8	15	11	9	12	6
Wholesale trade	14	10	7	8	11	8	6
Health care & social assistance	4	2	3	1	1	3	6
Public administration & safety	7	16	12	16	6	13	5
Rental, hiring & real estate services	3	3	7	3	10	4	5
Electricity, gas, water & waste services	7	7	9	4	4	4	3
Education & training	2	1	8	4	4	4	3
Arts & recreation services	3	8	3	5	6	2	2
Other services	6	7	7	8	3	10	2
Accommodation & food services	3	4	6	5	3	1	2
Financial & insurance services	0	0	1	0	0	5	1
Information media & telecommunications	1	0	1	1	2	0	1
Professional, scientific & technical services	4	4	5	5	8	2	0
All industries**	**272**	**253**	**287**	**301**	**292**	**289**	**216**
	Fatality rate (deaths per 100 000 workers)						
Transport, postal & warehousing	14.0	10.2	11.7	14.6	14.3	11.4	8.8
Road Freight Transport	*29.7*	*29.4*	*32.2*	*40.9*	*38.1*	*28.4*	*22.8*
Agriculture, forestry & fishing	21.8	18.2	16.7	13.7	16.5	20.1	11.4
Agriculture	*20.2*	*14.0*	*14.6*	*10.8*	*14.6*	*12.6*	*11.1*
Construction	4.9	3.4	4.8	5.3	4.1	4.5	3.9
Manufacturing	1.6	2.2	2.2	2.9	2.6	2.4	2.4
Administrative & support services	1.7	2.9	3.4	3.4	3.2	2.6	2.4
Retail trade	0.5	0.5	0.8	1.1	0.8	0.4	0.7
Mining	5.2	7.6	11.6	8.1	6.2	7.2	3.5
Wholesale trade	3.7	2.6	1.9	2.0	2.8	2.0	1.4
Health care & social assistance	0.4	0.2	0.3	0.1	0.1	0.3	0.5
Public administration & safety*	1.0	2.3	1.7	2.2	0.8	1.7	0.7
Rental, hiring & real estate services*	1.7	1.7	3.7	1.5	5.0	2.1	2.7
Electricity, gas, water & waste services*	7.7	7.3	8.5	3.8	3.5	3.0	2.3
Education & training*	0.3	0.1	1.1	0.5	0.5	0.5	0.4
Arts & recreation services*	2.0	4.9	1.7	2.8	3.1	1.0	1.0
Other services*	1.4	1.7	1.7	1.9	0.6	2.2	0.4
Accommodation & food services*	0.5	0.6	0.9	0.7	0.4	0.1	0.3
Financial & insurance services*	0.0	0.0	0.3	0.0	0.0	1.3	0.2
Information media & telecommunications*	0.5	0.0	0.4	0.4	0.9	0.0	0.5
Professional, scientific & technical services*	0.6	0.6	0.7	0.7	1.0	0.3	0.0
All industries*	**2.8**	**2.6**	**2.8**	**2.9**	**2.7**	**2.7**	**1.9**

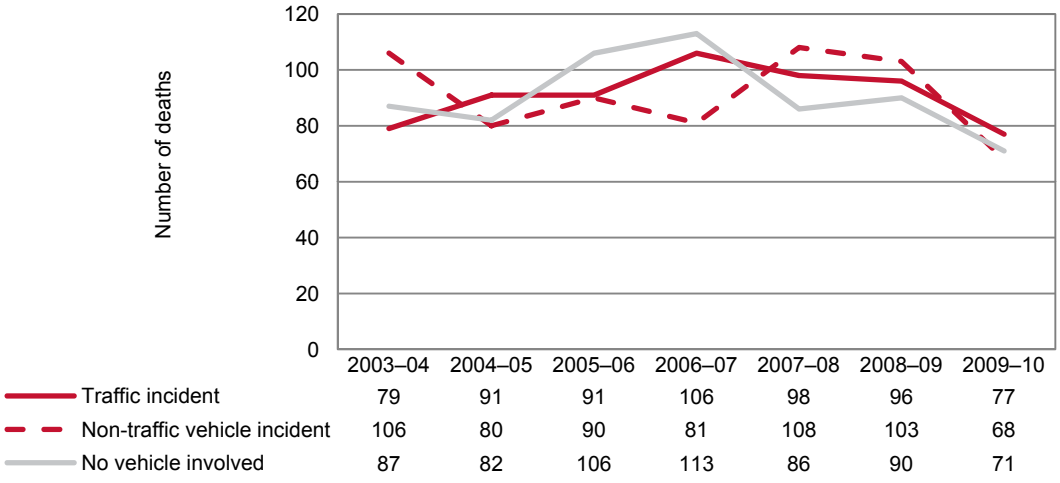
* Fatality rates in industries where 5 or fewer deaths occurred in most years should be viewed with caution.
** Includes deaths where industry was not stated

2.5 Involvement of vehicles

Over the seven years of this series, one-third of Worker fatalities arose from injuries sustained in a vehicle incident on a public road (*Traffic incident)*, one-third in other incidents involving a vehicle but not on a public road (*Non-traffic vehicle incident)* and the remaining one-third did not involve a vehicle. Figure 9 shows that at different points in time each of these categories have recorded the highest number of fatalities and the lowest.

All three categories recorded falls from the previous year with *Non-traffic vehicle incident* recording the greatest percentage fall (34%). All three categories also recorded their lowest number of deaths since the series began though the 77 deaths in 2009–10 due to *Traffic incident* was only slightly smaller than the 79 recorded in 2003–04.

Figure 9 Worker fatalities: number by traffic incident status, Australia, 2003–04 to 2009–10



	2003–04	2004–05	2005–06	2006–07	2007–08	2008–09	2009–10
Traffic incident	79	91	91	106	98	96	77
Non-traffic vehicle incident	106	80	90	81	108	103	68
No vehicle involved	87	82	106	113	86	90	71

In 2009–10, *Vehicle incident* deaths accounted for 73 of the 77 *Traffic incident* deaths with the remaining 4 deaths due to *Being hit by moving objects*, 3 of which involved a car and 1 a truck. Of the 73 deaths where the worker was in a vehicle at the time of the incident, 40 were in a truck, 28 were in a car or other light vehicle and 5 were in other types of vehicles. Just over half (56%) of the crashes involved a single vehicle.

Trucks were also involved in a high number of *Non-traffic vehicle incident* deaths. Of the 68 Worker fatalities in this group, 9 involved truck drivers and 9 were workers moving around a truck. Deaths involving aircraft claimed 15 lives, tractors 8, construction and related vehicles 8, forklifts 4 and water transport 3.

Of the 68 *Non-traffic vehicle incident* deaths, 25 occurred at Agriculture, forestry & fishing workplaces of which 8 involved aircraft crashes and 8 involved tractors. There were 12 *Non-traffic vehicle incident* deaths which occurred at Transport, postal & warehousing workplaces of which 4 involved workers in trucks, 2 were hit by trucks and 3 were in aircraft. Construction workplaces were the location of a further 11 deaths of which 3 were trucks drivers, 3 were driving other construction vehicles such as dozers and excavators and 4 were workers on foot who were hit by vehicles.

2.6 State/territory of death

The most populous states account for the largest number of Worker fatalities. In 2009–10, 61 workers were killed in New South Wales, 52 in Queensland and 46 in Victoria. Workers in these three states comprise 77% of Australia's working population and in 2009–10, accounted for 74% of the Worker fatalities. All six states recorded falls from the previous year while the Northern Territory recorded the same number as the previous year (8) and the Australian Capital Territory recorded no deaths for the first time in the seven years of the series.

Table 4 shows the number of Worker fatalities for each state and territory split into traffic and non-traffic incidents over the seven year period. Over the series the proportion of Worker fatalities attributed to a traffic incident has remained fairly constant at around 33%. South Australia has the lowest proportion of deaths due to traffic incidents (19% over the seven years) with Victoria the highest (39%).

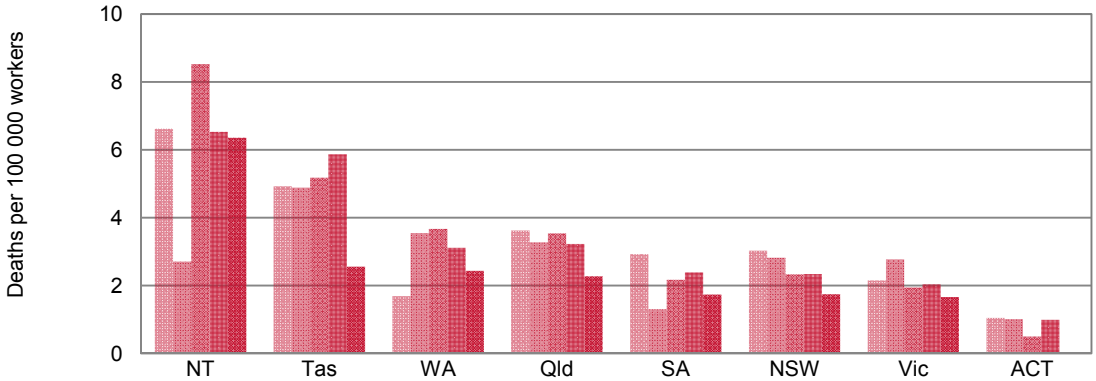
Queensland recorded 21 fewer Worker fatalities in 2009–10 compared with the previous year and New South Wales recorded 20 fewer.

Table 4 Worker fatalities: number by traffic incident status and state/territory of death, Australia, 2003–04 to 2009–10

State/territory of death	2003–04	2004–05	2005–06	2006–07	2007–08	2008–09	2009–10
				Non-traffic incident			
New South Wales	56	43	66	64	52	46	38
Victoria	32	34	30	41	36	34	31
Queensland	45	43	51	44	47	48	38
Western Australia	29	19	15	25	34	30	14
South Australia	16	9	18	9	11	19	9
Tasmania	7	8	8	9	8	7	3
Northern Territory	7	4	6	1	6	6	6
Australian Capital Territory	1	2	2	1	0	2	0
Australia	**193**	**162**	**196**	**194**	**194**	**192**	**139**
				Traffic incident			
New South Wales	31	33	33	30	28	35	23
Victoria	26	21	24	31	16	21	15
Queensland	8	18	23	26	31	25	14
Western Australia	7	10	3	13	8	7	15
South Australia	2	4	4	1	6	0	5
Tasmania	2	2	3	2	4	7	3
Northern Territory	3	3	1	2	4	2	2
Australian Capital Territory	0	0	0	1	1	0	0
Australia	**79**	**91**	**91**	**106**	**98**	**97**	**77**
				All Worker fatalities			
New South Wales	87	76	99	94	80	81	61
Victoria	58	55	54	72	52	55	46
Queensland	53	61	74	70	78	73	52
Western Australia	36	29	18	38	42	37	29
South Australia	18	13	22	10	17	19	14
Tasmania	9	10	11	11	12	14	6
Northern Territory	10	7	7	3	10	8	8
Australian Capital Territory	1	2	2	2	1	2	0
Australia	**272**	**253**	**287**	**300**	**292**	**289**	**216**

Figure 10 shows fatality rates among the states and territories for the period from 2005–06 to 2009–10. These data show that Victoria, New South Wales and South Australia all had 1.7 deaths per 100 000 workers. The other three states recorded similar rates with 2.3 deaths per 100 000 workers in Queensland, 2.4 in Western Australia and 2.6 in Tasmania. The Northern Territory recorded 6.4 deaths per 100 000 workers, the highest of all the states and territories. The Northern Territory has recorded the highest fatality rate of all states and territories in all the years of the series except 2006–07.

Figure 10 Worker fatalities: fatality rate by state/territory of death, Australia, 2005–06 to 2009–10



	NT	Tas	WA	Qld	SA	NSW	Vic	ACT
2005–06	6.6	4.9	1.7	3.6	2.9	3.0	2.2	1.0
2006–07	2.7	4.9	3.5	3.3	1.3	2.8	2.8	1.0
2007–08	8.5	5.2	3.7	3.5	2.2	2.3	1.9	0.5
2008–09	6.5	5.9	3.1	3.2	2.4	2.3	2.0	1.0
2009–10	6.4	2.6	2.4	2.3	1.7	1.7	1.7	0.0

Tasmania's fatality rate recorded the greatest percentage fall of all the states and territories with its fatality rate more than halving between 2008–09 and 2009–10. Table 5 shows that over the seven years of the series, 45% of Worker fatalities in Tasmania were of those employed in the Agriculture, forestry & fishing industry. In 2009–10, Tasmania recorded 1 death in this industry which is a major improvement from the 7 that occurred in 2008–09. Tasmania recorded a much lower proportion of Worker fatalities in the Construction industry than the other states and territories: 5% compared with 11% to 18%.

The Northern Territory has the second highest percentage of deaths (32%) incurred by workers in the Agriculture, forestry & fishing industry. Offsetting this is the lowest percentage in the Transport, postal & warehousing industry, 13% compared with 26% in New South Wales.

Tasmania and the Northern Territory also recorded high percentages of Worker fatalities in the Public administration & safety industry with 10% and 11% respectively compared with 3% and 4% in other states.

Western Australia recorded the highest percentage of deaths in the Mining industry with 11%, just ahead of South Australia with 10%. The other states and territories recorded between 1% and 4%. In 2009–10, 3 mining workers in Western Australia and 1 in South Australia lost their life in a work-related incident. This is down from 6 and 2 respectively in 2008–09.

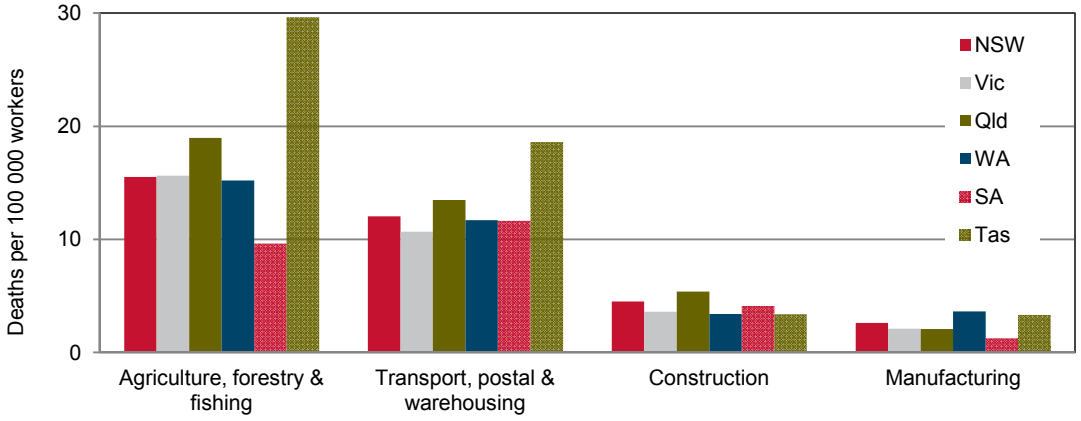
Fatalities by industry for the Australian Capital Territory are not shown in Table 5 as the 10 deaths in the seven year period do not show a reliable pattern for analysis.

Table 5 Worker fatalities: number by state/territory of death and the industries with the highest number of fatalities, Australia, 2003–04 to 2009–10 combined

Industry	New South Wales	Victoria	Queens-land	Western Australia	South Australia	Tasmania	Northern Territory
				Number of deaths while working			
Transport, postal & warehousing	151	94	113	43	28	13	7
Agriculture, forestry & fishing	102	88	106	48	27	33	17
Construction	89	54	81	26	16	4	8
Manufacturing	56	47	27	24	8	5	1
Retail trade	27	14	8	6	1	0	0
Wholesale trade	26	15	15	5	1	1	0
Public administration & safety	21	15	16	7	3	7	6
Administrative & support services	21	7	22	10	4	1	3
Mining	7	5	15	25	11	1	2
Other industries	78	53	58	35	14	8	9
Total	**578**	**392**	**461**	**229**	**113**	**73**	**53**
				Percentage			
Transport, postal & warehousing	26%	24%	25%	19%	25%	18%	13%
Agriculture, forestry & fishing	18%	22%	23%	21%	24%	45%	32%
Construction	15%	14%	18%	11%	14%	5%	15%
Manufacturing	10%	12%	6%	10%	7%	7%	2%
Retail trade	5%	4%	2%	3%	1%	0%	0%
Wholesale trade	4%	4%	3%	2%	1%	1%	0%
Public administration & safety	4%	4%	3%	3%	3%	10%	11%
Administrative & support services	4%	2%	5%	4%	4%	1%	6%
Mining	1%	1%	3%	11%	10%	1%	4%
Other industries	13%	14%	13%	15%	12%	11%	17%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Figure 11 shows fatality rates for the four industries with the highest number of deaths in the six states of Australia. These data show that of the four industries shown, the greatest variability in fatality rates was in the Agriculture, forestry & fishing industry with very high rates in Tasmania (29.7 deaths per 100 000 workers) and relatively low rates in South Australia (9.6). In the Transport, postal & warehousing industry similar fatality rates were recorded by most states with higher rates in Tasmania.

Figure 11 Worker fatalities: fatality rate by selected industries and state of death, Australia, 2003–04 to 2009–10 combined



2.7 Mechanism of incident

The mechanism of incident identifies the overall action that best describes the circumstances that resulted in the fatality. In 2009–10,100 workers (46%) died following a *Vehicle incident*. Of these 100 collisions, 73 occurred on a public road (*Traffic incident*) and 27 at a worksite. A further 24 workers (11%) were killed in 2009–10 due to *Falls from a height* and 23 (11%) from *Being hit by moving objects*. While still high, these numbers are lower than in previous years.

Figure 12 shows that across the seven years these three mechanisms accounted for 46%, 12% and 11% of Worker fatalities respectively.

Figure 12 Worker fatalities: Proportion by mechanism of incident, Australia, 2003–04 to 2009–10 combined

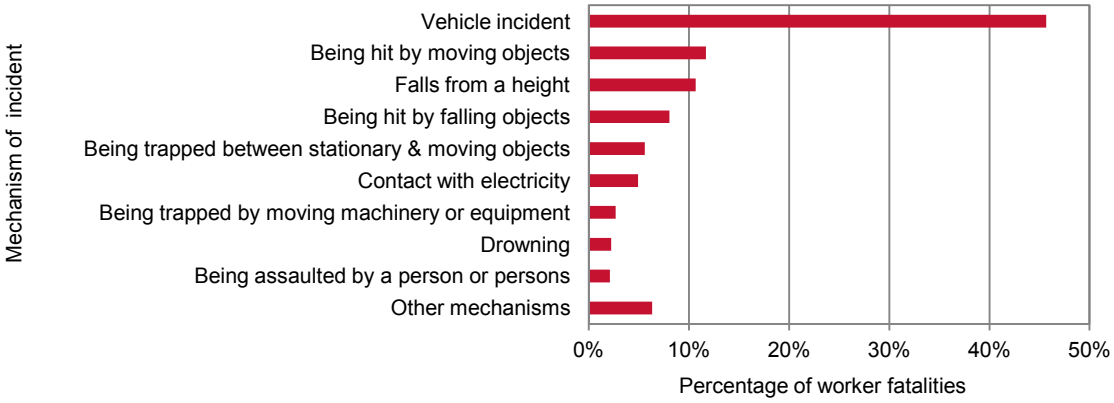


Table 5 shows that the 100 workers killed in a *Vehicle incident* in 2009–10 is the lowest in the series. Within this group the 73 deaths occurring on public roads (*Vehicle incident)* was the second lowest in the series and only slightly higher than the 72 recorded in 2003–04. These data also show that the 15 deaths in aircraft crashes in 2009–10 is similar to other years while the 7 deaths from a *Rollover* of a farm, mining or construction vehicle not on a public road is the lowest in the series and equal to the number recorded in 2005–06 and 2006–07. This is the first year that no deaths due to all-terrain vehicles (ATVs) have been recorded. The highest number of ATV deaths in any one year, 6, occurred in 2007–08.

Of the 24 deaths from *Falls from a height* in 2009–10, 5 were from falling off *Buildings & other structures,* 4 from *Ladders* and 3 from *Scaffolding*. Over the seven years, 23% of deceased workers fell from *Buildings & other structures,* 16% from *Ladders,* 8% from *Horses,* 7% from *Trucks, semi-trailers & lorries* and 6% from *Scaffolding.* The Construction industry employed 29% (7) of the workers who died from injuries sustained in falls in 2009–10 but across the seven years, this industry has accounted for 37% of Worker fatalities due to *Falls from a height*.

Of the 23 deaths in 2009–10 which resulted from *Being hit by moving objects,* 15 (65%) involved being hit by a vehicle. Over the seven years of the series 62% (139 out of 223 deaths) involved being hit by a vehicle. Trucks were involved in 40% of the incidents with cars or other light vehicles involved in 29% and tractors in 12%. Some of the incidents involved more than one vehicle.

Being hit by moving objects also includes 3 workers who were killed by bullets with 2 of the 3 deaths being farmers who accidently shot themselves while attending to animals on the their properties. Three deaths in 2009–10 is relatively high with 11 work-related shooting deaths over the seven years.

Table 5 Worker fatalities: number by mechanism of incident, Australia, 2003–04 to 2009–10

Mechanism of incident	2003–04	2004–05	2005–06	2006–07	2007–08	2008–09	2009–10
Vehicle incident	120	123	124	122	146	135	100
Traffic incident	*72*	*86*	*80*	*98*	*94*	*87*	*73*
Aircraft crash	*20*	*15*	*22*	*5*	*15*	*20*	*15*
Rollover	*11*	*12*	*7*	*7*	*16*	*10*	*7*
Falls from a height	24	25	32	38	28	33	24
Buildings & other structures	*12*	*3*	*9*	*5*	*4*	*8*	*5*
Ladders	*1*	*3*	*5*	*6*	*8*	*6*	*4*
Horses	*2*	*4*	*2*	*5*	*2*	*1*	*1*
Trucks, semi-trailers & lorries	*1*	*3*	*2*	*3*	*1*	*3*	*1*
Scaffolding	*1*	*1*	*1*	*3*	*1*	*3*	*3*
Being hit by moving objects	45	21	35	31	32	36	23
Hit by vehicle	*22*	*12*	*23*	*19*	*25*	*23*	*15*
Being hit by falling objects	16	26	22	26	24	22	18
Contact with electricity (electrocution)	11	18	19	15	9	9	13
Being trapped between stationary & moving objects	20	12	18	26	9	13	9
Being trapped by moving machinery or equipment	4	6	5	10	11	8	7
Drowning/ immersion	8	3	3	7	6	13	3
Being assaulted by a person or persons	10	6	8	8	2	4	2
All other mechanisms	14	13	21	17	25	16	17
Total	**272**	**253**	**287**	**300**	**292**	**289**	**216**

Being hit by falling objects claimed the lives of 18 workers in 2009–10. In 4 of the cases workers were struck by falling trees and in 3 cases the falling objects were glass and metal. Across the seven years, just over one-quarter (26%) of the workers were employed in the Agriculture, forestry & fishing industry and around one-fifth each were employed in the Construction (19%) and Manufacturing (17%) industries.

After two years of relatively few deaths due to *Contact with electricity* there were 13 deaths in 2009–10. Across the seven years of the series, the Construction industry accounted for 45% of the 94 deaths from electrocution. In 2009–10, 5 (38%) of the 13 deaths due to *Contact with electricity* occurred in the Construction industry, 3 of which occurred while installing insulation in residential properties. There were also 4 deaths in the Agriculture, forestry & fishing industry, 3 of which were due to moving equipment around the farm and contacting overhead power lines.

Over the seven years, 107 workers were killed due to *Being trapped between stationary and moving objects*. Over half of these incidents (56% - 60 deaths) involved a vehicle including 25 that involved a truck and 8 that involved a tractor. A further 26 workers (24%) were trapped by lifting equipment of which 7 involved *Forklift trucks*, 7 *Cranes* while *Power hoists* and *Conveyor belts and escalators* each caused the deaths of 5 workers. One in four of the deaths due to this mechanism involved workers in the Transport, postal & warehousing industry and one in five were employed in the Agriculture, forestry & fishing industry.

Vehicles were involved in 22 of the 51 deaths due to *Being trapped by moving machinery or equipment* and lifting equipment was involved in the deaths of 11 workers. One-third of the workers were employed in the Manufacturing industry with a further one-third in the Agriculture, forestry & fishing industry.

2.8 Working with trucks

In 2009–10, 70 workers died while working in or around a truck, 32% of all Worker fatalities. Table 6 shows that a *Traffic incident* was the cause of 53 of the deaths with 38 truck drivers and 2 passengers killed in crashes on a public road. In addition, 10 car drivers were killed following a collision with a truck and 1 worker on foot was killed when hit by a truck.

There were also 17 workers killed in incidents that did not occur on a public road of which 10 involved a truck driver and 7 pedestrian workers. Of the 7 pedestrian workers, 3 were hit by a passing truck at a worksite and 3 were killed when hit by items falling off a truck during unloading.

Of the 49 truck drivers who died in 2009–10, 23 died when their truck collided with a tree or other stationary object, A further 13 died in collisions with another truck and 3 in collisions with a car. There were also 2 truck drivers killed when hit by objects falling off their truck during unloading and 2 who died after falling from their truck.

Table 6 Fatalities due to working with trucks: number by traffic incident status and mechanism of incident by relationship to vehicle, Australia, 2009–10

Traffic incident status and Mechanism	Truck driver	Truck passenger	Car driver	Worker on foot	Total
Traffic incident	**39**	**2**	**11**	**1**	**53**
Hit by moving vehicles	*1*	*0*	1	*1*	*3*
Vehicle incident	*38*	*2*	10	*0*	*50*
Not a traffic incident	**10**	**0**	**0**	**7**	**17**
Fall from a height	*2*	*0*	0	*0*	*2*
Hit by falling objects	*2*	*0*	0	*3*	*5*
Hit by moving objects	*1*	*0*	0	*3*	*4*
Vehicle incident	*2*	*0*	0	*0*	*2*
Other mechanism	*3*	*0*	0	*1*	*4*
Total	**49**	**2**	**11**	**8**	**70**

From 2003–04 to 2009–10, 567 workers have been killed in truck-related incidents. These deaths include 438 truck drivers, 16 passengers in trucks, 57 workers in light vehicles such as a car or utility and 48 workers on foot.

Table 7 shows that of the 438 truck drivers, 339 were killed while driving the truck, 66 while unloading/loading, 18 while undertaking repair and maintenance activities and 15 while undertaking other activities including having a rest break or being temporarily out of the vehicle while opening a gate.

Of the 438 truck drivers who were killed, 300 (68%) died in single vehicle crashes. Incidents involving two trucks resulted in 87 deaths (20%) of which half (45) were due to the actions of the other truck. There were also 23 truck drivers killed when their truck was involved in a collision with a car or other light vehicle and 7 where the truck collided with a train.

Apart from truck drivers, over the seven years of the series there were 13 truck passengers and 61 other workers killed in a *Vehicle incident* which involved a truck.

For workers other than truck drivers or passengers, loading or unloading the truck posed the greatest risk. In addition to the 66 truck drivers who died while the truck was being loaded or unloaded, 21 other workers were killed due to assisting with this activity or simply being in the vicinity at the time.

Of the 13 workers who were killed while undertaking repair or maintenance activities all but 2 were repairing the truck at the time the incident occurred. The 2 non-truck repairers were hit on the side of the road by a truck while changing a tyre on their vehicle. There were also 15 workers who were hit by a truck while undertaking activities not specifically related to the truck, 6 of these involved road traffic controllers.

Table 7 Fatalities due to working with trucks: number by mechanism of incident and activity at time of incident, Australia, 2003–04 to 2009–10 combined

Mechanism	Driving	Loading/ unloading	Repair/ main-tenance	Other activity	Total
Truck drivers	**339**	**66**	**18**	**15**	**438**
Vehicle incident	*331*	*2*	*0*	*0*	*333*
Hit by moving objects	*2*	*16*	*5*	*9*	*32*
Being trapped between stationary & moving objects	0	19	8	4	31
Hit by falling objects	*0*	*14*	*1*	*0*	*15*
Fall from a height	*0*	*13*	*2*	*0*	*15*
Other and unknown	*6*	*2*	*2*	*2*	*12*
Truck passengers	**13**	**0**	**0**	**3**	**16**
Vehicle incident	13	0	0	0	13
Other and unknown	0	0	0	3	3
Other workers	**64**	**21**	**13**	**15**	**113**
Vehicle incident	*61*	*0*	*0*	*0*	*61*
Hit by moving objects	*1*	*6*	*6*	*15*	*28*
Being trapped between stationary & moving objects	*0*	*6*	*3*	*0*	*9*
Hit by falling objects	*2*	*5*	*3*	*0*	*10*
Other and unknown	*0*	*4*	*1*	*0*	*5*
Total	**416**	**87**	**31**	**33**	**567**

While trucks are used in a variety of industries, 316 of the 567 deaths (56%) were sustained by workers in the Transport, postal & warehousing industry. Figure 13 shows the industries with the highest number of Worker fatalities which involved a truck and the type of vehicle the victim was in at the time of the incident. While there were 299 fatalities in the Transport, postal & warehousing industry where the victim was the truck driver, the scale on the graph has been restricted so that greater detail can be seen in the other industries. These data show that the Transport, postal & warehousing industry also had the highest number of deaths (10) where the victim was in another type of vehicle: 7 were in a car, 2 were in a ute and 1 was riding a motorbike when they came into contact with a truck. This industry also recorded the second highest number of workers on foot (7) who were hit by a truck.

Within the Transport, postal & warehousing industry the Road freight transport sector accounted for 33 of the 70 deaths (47%) in 2009–10 and 51% of the truck-related fatalities over the seven years of the series.

The Construction industry recorded the second highest number of truck-related deaths, 45, with 29 killed while driving a truck. This was followed by the Agriculture, forestry & fishing industry with 41 workers killed in the seven years, 32 of them while driving a truck. The Construction industry also had the highest number of workers on foot (9) who were killed when they came into contact with a truck. Five of the 9 workers on foot were on road construction sites.

The Public administration & safety industry had as many truck drivers who were killed as workers on foot, 7 each. Four of the workers on foot were involved in road construction activities at the time of the incident.

There are three industries with 8 worker deaths where the workers were in vehicles other than a truck when that vehicle was involved in a collision with a truck: Construction, Manufacturing and Retail trade. In the Construction industry 5 of the victims were in cars, 1 on a motorbike and another on a ride-on lawn mower. Within the Retail trade industry, 5 of the 8 workers killed were in the same van which drove into the path of the truck. The other 3 victims were killed in separate incidents when their cars collided with trucks. The 8 workers killed in the Manufacturing industry included 5 separate incidents of car drivers driving into the path of trucks.

Figure 13 Fatalities due to working with trucks: Number by victim vehicle type and industry, Australia, 2003–04 to 2009–10 combined

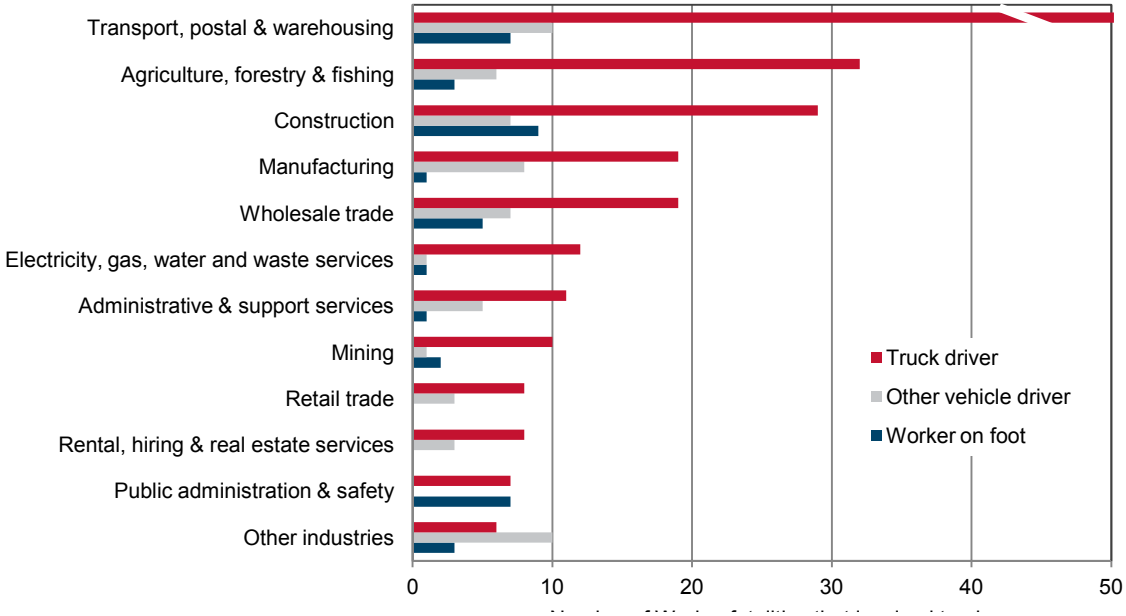
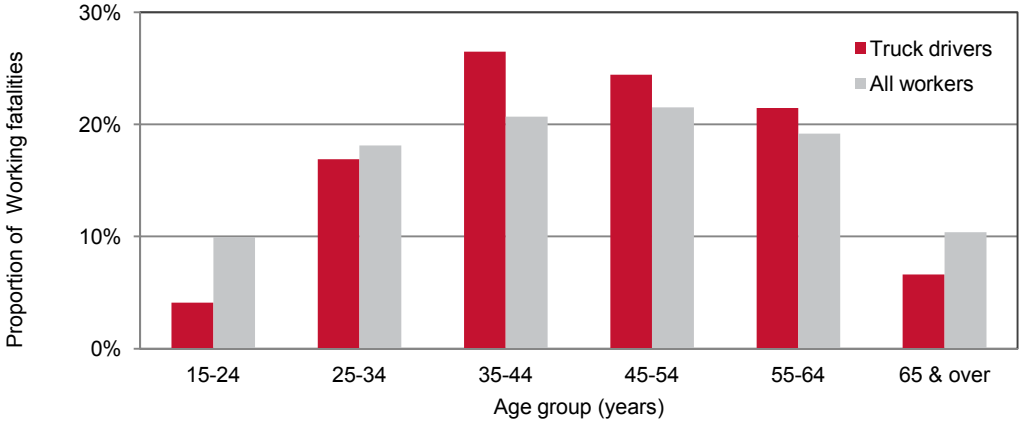


Figure 14 shows that 26% of the truck drivers who were killed over the seven year period were in the 35–44 years age group. This is higher than the 21% of all Worker fatalities in this age group. The 45–54 years age group accounted for 24% of the truck driver fatalities which was also higher than the 22% for all Worker fatalities. The proportions for truck drivers were lower for the youngest and oldest age groups.

Figure 14 Fatalities due to working with trucks: Proportion by age group, Australia, 2003–04 to 2009–10 combined



2.9 Working on farms

In 2009–10, 37 workers died on farming properties, 17% of all Worker fatalities. In addition, 4 agricultural workers were killed on public roads. Of the 37 farming deaths, 31 usually worked on the property while 6 were hired temporarily to undertake some work.

Of the 37 workers, 20 were Farmers & farm managers and 11 were Labourers. Vehicles were involved in 25 of the incidents with tractors accounting for 8 deaths and aircraft another 8.

Over the seven years of the series, worker deaths on farms accounted for 16% of all Worker fatalities. Figure 15 shows that of the 310 workers who died on farms, 29% (90 deaths) were in the 65 years and over age group. This is nearly three times higher than the proportion of all Worker fatalities of which 10% were in the 65 years and over age group. For the 55–64 years age group similar proportions were recorded for those working on farms and for all workers while for all younger age groups the proportion of deaths occurring on farms was lower than for all workers. These data show the greater risk of death in older workers on farms.

Figure 15 Worker fatalities on farms: Number by age group, Australia, 2003–04 to 2009–10 combined

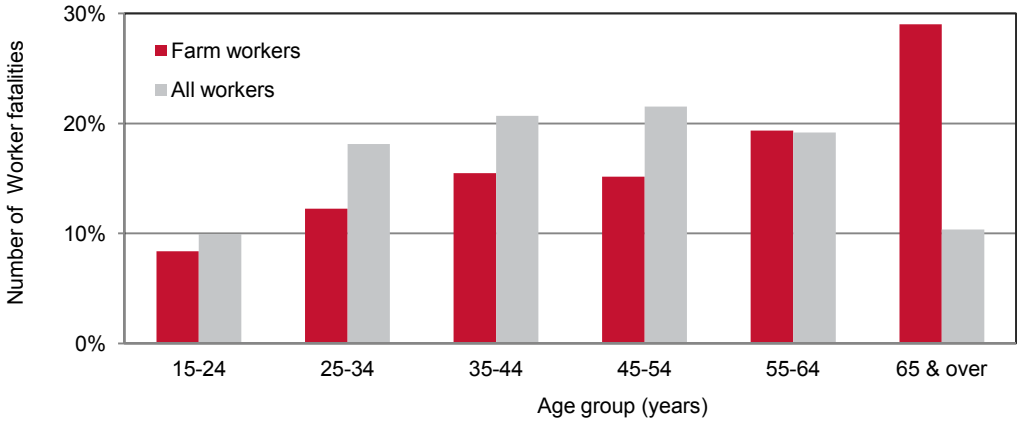
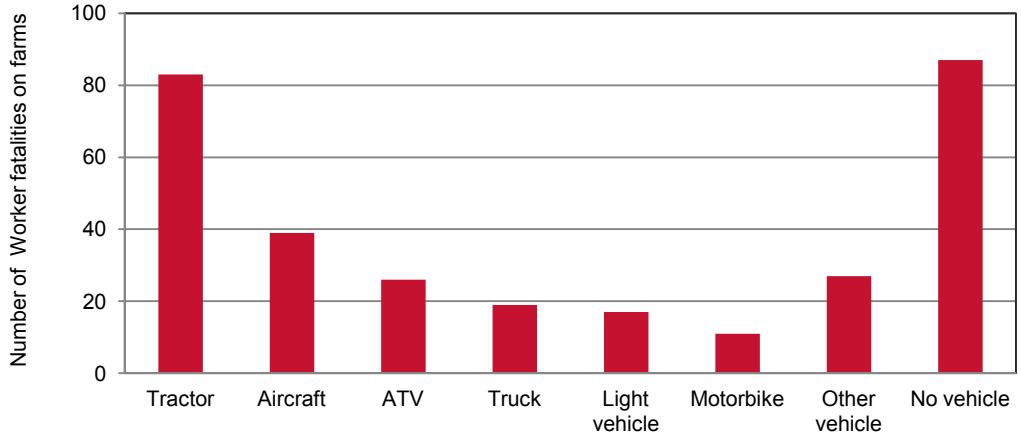


Figure 16 shows that two-thirds of incidents on farms that resulted in a death involved a vehicle. Over the seven years, 83 workers have died in incidents involving a tractor, 39 in aircraft incidents and 26 in incidents with ATVs.

Figure 16 Worker fatalities on farms: Number by type of vehicle involved, Australia, 2003–04 to 2009–10 combined



Of the 83 workers who died while working with or around a tractor, 29 were killed when the tractor rolled over after travelling on uneven ground or along embankments. A further 20 were hit by their own tractor after they temporarily alighted the vehicle. In many instances the tractor was not braked properly while the worked jumped off to open a gate or move a hay bale. Other vehicle crash incidents claimed 13 lives and being trapped or crushed by their tractor claimed the lives of 11 additional workers. These incidents generally occurred while undertaking loading activities or repairs to the vehicle.

The 39 deaths in aircraft crashes on farms represents one-third of all deaths which were the result of aircraft crashes. Of the 39 workers killed while working on farms, 18 were in helicopters and 21 were in planes. There were 9 Passengers killed in these incidents and 30 pilots. In 15 of the incidents crop dusting activities were being undertaken and in a further 12 it was mustering.

Across all workplaces 30 workers have died in incidents involving quad bikes or ATVs, of these 26 occurred on farms. Workers aged 55 years and over comprised 17 of the deaths with 5 workers aged 15–24 years being killed while using an ATV. In 17 of the incidents the worker died due to the ATV rolling over and pinning them underneath, the remaining 9 workers died when they were thrown from the ATV while travelling over uneven ground. It is encouraging that no workers were killed in 2009–10 while using an ATV.

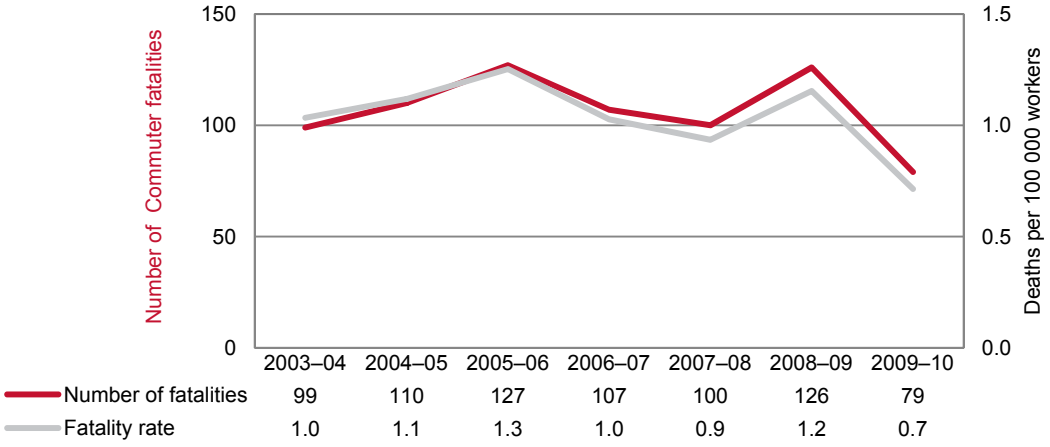
Of the 87 deaths that did not involve a vehicle, 18 were due to *Fall from height* of which 9 were from a horse. An additional 14 deaths involved *Being hit by moving object* of which 6 involved accidental shootings and 13 involved *Being hit by a falling objects* of which 5 involved trees or branches and 4 involved buildings. There were also 11 workers who died after being hit or bitten by an animal and 8 workers who died from electrocution.

3 Commuter fatalities

In 2009–10, 79 workers died while travelling to or from work. This is the lowest number recorded in the seven years of the series and may be partially due to the difficulty in identifying workers who are commuting from other road fatalities, as the purpose of the journey is generally not ascertained by investigating officers. While the magnitude of the problem is unknown, the data are collected on a consistent basis each year and hence the trend is considered reliable. Figure 17 shows that the highest number of commuter fatalities, 127, was recorded in 2005–06 followed by 126 in 2008–09.

The 79 deaths recorded in 2009–10 represents 0.7 commuter deaths per 100 000 workers, which is the lowest rate in the seven years of the series and nearly half the rate recorded in 2005–06 of 1.3.

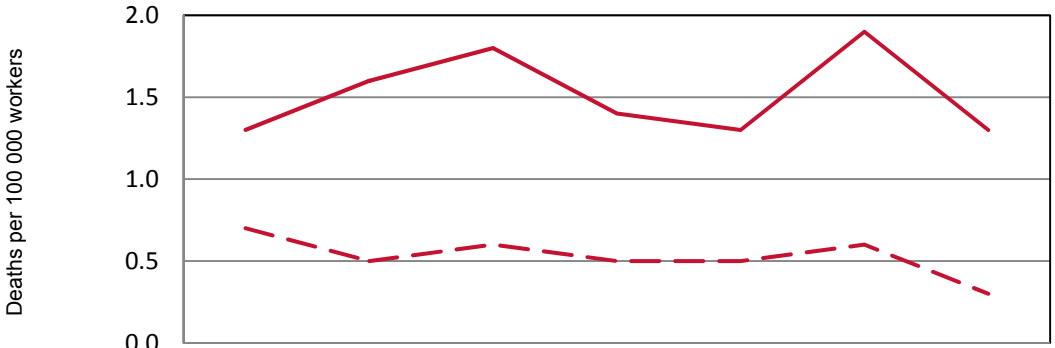
Figure 17 Commuter fatalities: Number of fatalities and fatality rate, Australia, 2003–04 to 2009–10



	2003–04	2004–05	2005–06	2006–07	2007–08	2008–09	2009–10
Number of fatalities	99	110	127	107	100	126	79
Fatality rate	1.0	1.1	1.3	1.0	0.9	1.2	0.7

In 2009–10, 16 female workers and 63 male workers died while commuting. Over the seven years 24% of the commuter fatalities involved female workers. Figure 18 shows that while the fatality rate for male workers in 2009–10 is the same as when the series began, 1.3 commuter deaths per 100 000 workers, it has been as high as 1.9 in 2008–09. The fatality rate for female workers in 2009–10 of 0.3 commuter deaths per 100 000 workers is the lowest in the seven years and half the rate of 2008–09.

Figure 18 Commuter fatalities: fatality rate by sex, Australia, 2003–04 to 2009–10

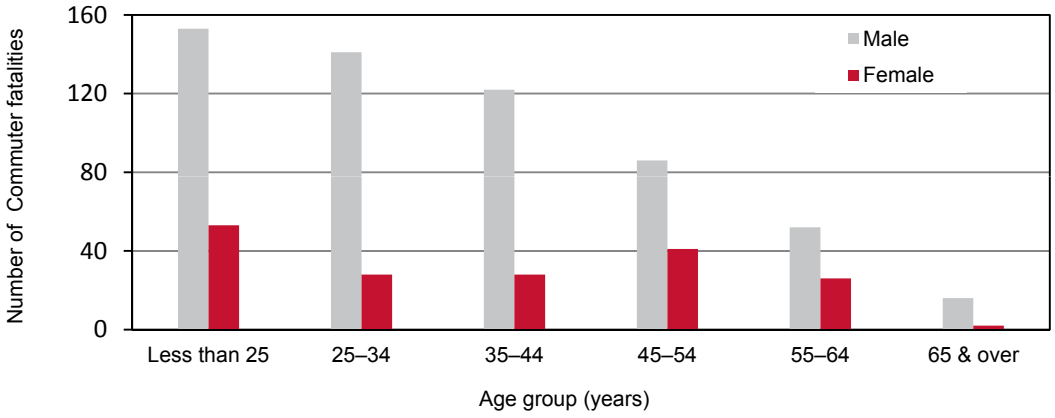


	2003–04	2004–05	2005–06	2006–07	2007–08	2008–09	2009–10
Male	1.3	1.6	1.8	1.4	1.3	1.9	1.3
Female	0.7	0.5	0.6	0.5	0.5	0.6	0.3

3.1 Characteristics by age group

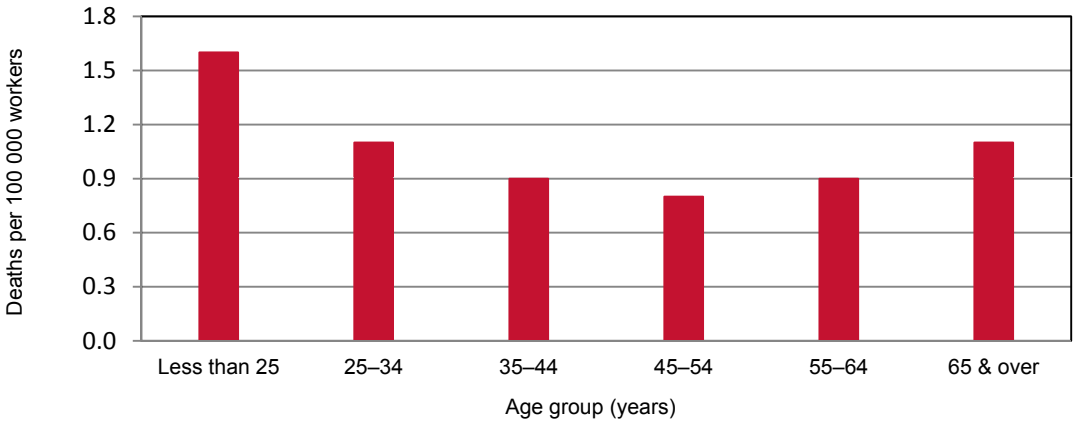
Figure 19 shows that the number of workers killed while commuting decreased with age for male workers but the pattern is not so clear for female workers. Over the seven years of the series, 153 male workers and 53 female workers aged less than 25 years died while commuting compared with 16 male workers and 2 female workers aged 65 years and over.

Figure 19 Commuter fatalities: number by age group and sex, Australia, 2003–04 to 2009–10 combined



However when the number of workers in each age group is used to calculate a fatality rate then it can be seen in Figure 20 that the 65 years and over age group recorded the second highest fatality rate, 1.1 commuter deaths per 100 000 workers, equal to the 25–34 years age group. Commuters less than 25 years old experienced the highest fatality rate — 1.6 commuter deaths per 100 000 workers.

Figure 20 Commuter fatalities: fatality rate by age group, Australia, 2003–04 to 2009–10 combined



3.2 Occupation

Table 6 shows that the largest number of commuter fatalities in 2009–10 occurred among Technicians & trades workers with 18 deaths. This was followed by Labourers with 16 deaths. The highest commuter fatality rate in 2009–10 was recorded by Machinery operators & drivers, 1.6 commuter deaths per 100 000 workers, more than twice the overall rate of 0.7. Labourers recorded a commuter fatality rate of 1.4. These two occupation groups have recorded the highest rates in all seven years of the series.

Table 6 Commuter fatalities: number and fatality rates by occupation, Australia, 2003–04 to 2009–10

Occupation	2003–04	2004–05	2005–06	2006–07	2007–08	2008–09	2009–10
	Number of commuter deaths						
Technicians & trades workers	18	24	28	26	24	29	18
Labourers	22	22	35	22	23	31	16
Community & personal service workers	7	15	7	8	10	8	12
Machinery operators & drivers	14	14	19	17	15	21	11
Professionals	15	12	12	6	14	16	9
Sales workers	2	7	8	10	4	7	4
Managers	8	12	9	9	3	5	4
Clerical & administrative workers	12	3	8	9	6	9	3
Unstated	1	1	1	0	1	0	2
Total	**99**	**110**	**127**	**107**	**100**	**126**	**79**
	Fatality rate (deaths per 100 000 workers)						
Technicians & trades workers	1.3	1.6	1.8	1.6	1.5	1.8	1.1
Labourers	2.0	2.0	3.2	1.9	2.0	2.7	1.4
Community & personal service workers	0.9	1.8	0.8	0.9	1.1	0.8	1.2
Machinery operators & drivers	2.2	2.2	2.9	2.4	2.1	2.9	1.6
Professionals	0.8	0.6	0.6	0.3	0.6	0.7	0.4
Sales workers	0.2	0.7	0.8	1.0	0.4	0.7	0.4
Managers	0.7	1.0	0.7	0.7	0.2	0.4	0.3
Clerical & administrative workers	0.8	0.2	0.5	0.6	0.4	0.5	0.2
Total	**1.0**	**1.1**	**1.3**	**1.0**	**0.9**	**1.2**	**0.7**

At the lower level of the occupation classification, the largest number of commuting deaths over the seven year period was among Crop farm workers (24). In addition, there were 23 Sales assistants, 19 Welfare, recreation & community arts workers, 18 Commercial cleaners and 18 Truck drivers who were killed on a journey to or from work.

3.3 Industry of employer

The highest number of deaths while commuting in 2009–10 occurred among workers employed in the Manufacturing industry (11) followed by workers in the Retail trade (9), Construction (8), and Public administration & safety (7) industries. While the Manufacturing industry recorded the highest number of Commuter fatalities in all seven years, the pattern in the other industries has varied from year to year as seen in Table 7.

In 2009–10, the highest commuter fatality rate, 2.3 commuter deaths per 100 000 workers, was recorded by the Mining industry. The Mining industry has recorded the highest fatality rate in all years except 2007–08 when it recorded the second highest rate. Considerable variation in rates are shown for some industries due to the small number of fatalities identified.

At the lower level of the industry classification, the largest number of Commuter fatalities over the seven year period was among those working in Cafes & restaurants of which 18 workers died while travelling to or from work. This was followed by those working in Meat processing and Supermarket & grocery stores both with 17 commuter deaths, and Hospitals and Coal mining both with 16. Most of these industry sectors have workers working under shift arrangements that can involve early mornings or late nights.

Table 7 Commuter fatalities: number and fatality rate by selected industry of employer, Australia, 2003–04 to 2009–10

Industry of employer	2003–04	2004–05	2005–06	2006–07	2007–08	2008–09	2009–10
	Number of commuter deaths						
Manufacturing	15	13	27	22	17	31	11
Retail trade	6	11	10	7	8	10	9
Construction	9	9	19	8	12	15	8
Public administration & safety	3	13	7	5	4	8	7
Accommodation & food services	6	10	7	9	7	6	5
Agriculture, forestry & fishing	7	6	7	7	4	11	5
Health care & social assistance	12	6	1	6	3	7	5
Mining	2	3	4	4	3	6	4
Transport, postal & warehousing	7	5	8	13	5	4	4
Other services	1	3	2	5	4	4	3
Rental, hiring & real estate services	0	3	0	3	2	1	3
Administrative & support services	7	6	9	8	8	6	2
Wholesale trade	5	7	7	2	5	3	2
Education & training	5	3	5	2	7	4	1
Professional, scientific & technical services	9	2	5	1	4	6	0
Other and unknown industries[(a)]	5	10	9	5	7	4	10
Total	**99**	**110**	**127**	**107**	**100**	**126**	**79**
	Fatality rate (deaths per 100 000 workers)						
Manufacturing	1.5	1.2	2.6	2.1	1.6	3.0	1.1
Retail trade	0.5	1.0	0.9	0.6	0.7	0.8	0.8
Construction	1.2	1.1	2.2	0.8	1.2	1.5	0.8
Public administration & safety	0.5	2.0	1.0	0.7	0.6	1.1	1.0
Accommodation & food services	0.9	1.5	1.0	1.3	1.0	0.8	0.7
Agriculture, forestry & fishing	1.9	1.7	2.0	2.0	1.1	3.1	1.4
Health care & social assistance	1.3	0.6	0.1	0.6	0.3	0.6	0.4
Mining	2.1	2.9	3.1	3.0	2.1	3.6	2.3
Transport, postal & warehousing	1.5	1.0	1.6	2.5	0.9	0.7	0.7
Other services*	0.2	0.7	0.5	1.2	0.9	0.9	0.7
Rental, hiring & real estate services*	0.0	1.7	0.0	1.5	1.0	0.5	1.6
Administrative & support services	2.0	1.7	2.5	2.2	2.3	1.7	0.5
Wholesale trade	1.3	1.8	1.9	0.5	1.3	0.7	0.5
Education & training*	0.7	0.4	0.7	0.3	0.9	0.5	0.1
Professional, scientific & technical services*	1.4	0.3	0.7	0.1	0.5	0.8	0.0
All industries [(a)]	**1.0**	**1.1**	**1.3**	**1.0**	**0.9**	**1.2**	**0.7**

(a) includes Electricity, gas, water & waste services; Arts & recreation services; Rental, hiring & real estate services; Financial & insurance services; and Information media & telecommunications

* Fatality rates for industries with less than 5 deaths in any year should be used with caution.

3.4 Type of vehicles involved

Over the seven years of the series all but 20 of the commuter deaths involved a vehicle. The majority of the deaths (504 workers - 67%) were due to crashes where the commuter was a driver or a passenger in a car. Of these car incidents 61% were single vehicle crashes, 20% involved another car and 13% involved a truck.

In addition, 19% (139 workers) of commuters were riding motorcycles when the incident occurred. Of these motorcycle incidents, 45% involved a car, 24% involved a truck and a further 24% were single vehicle crashes.

Over the seven years there were 45 commuters killed while walking to or from work: 26 were hit by a car, 8 were hit by a truck, 6 by a bus and 3 by a train.

4 Bystander fatalities

In 2009–10, 42 people died from injuries received due to another person's work activity. This is the lowest number of deaths identified since the series began. The highest number (59) was identified in 2006–07 of which 10 were killed when a truck hit a train at Kerang.

Over the seven years of the series, 40% of the Bystanders killed were female. In 2009–10, 13 (31%) of the bystanders were female.

The number of Bystander deaths identified in any one year is almost certainly an undercount. While the NCIS is likely to capture information on these deaths, coronial records seldom provide sufficient information to determine the connection between the fatal incident and someone else's work activity particularly in vehicle incidents. These types of incidents are not compensated through the workers' compensation system and few are captured through the notification system.

It should be noted that deaths in vehicle collisions only count as Bystander fatalities where available documentation shows the driver of the work vehicle to be at fault. Year on year fluctuations in Bystander fatalities may be due to different identification procedures and should not be used to indicate a change in the risk of work activity to Bystanders.

4.1 Characteristics by age group

Table 8 shows that the highest number of bystanders in 2009–10 was among those aged less than 15 years with the 15 deaths accounting for 36% of all bystander deaths in that year. Nine of the 15 deaths were the result of a *Vehicle incident*. Over the seven years, 29% of the bystanders were people in this age group while the 65 years and over age group accounted for 17% and the other age groups 10% or 11%.

Table 8 Bystander fatalities: number by age group, Australia, 2003–04 to 2009–10

Age group	2003–04	2004–05	2005–06	2006–07	2007–08	2008–09	2009–10
Under 15 years	15	12	11	25	17	10	15
15–24 years	4	4	7	1	6	14	4
25–34 years	6	8	5	4	6	6	5
35–44 years	7	10	2	5	4	4	4
45–54 years	4	5	2	12	8	3	3
55–64 years	7	6	10	3	4	3	5
65 years and over	8	10	13	9	10	4	6
Total	**51**	**55**	**50**	**59**	**55**	**44**	**42**

4.2 Location of incident

In 2009–10, nearly two-thirds (66%) of Bystander fatalities involved a *Traffic incident*. This proportion is the highest of all the years in the series. Over the seven years, *Traffic incident* accounted for 56% of all Bystander fatalities.

In 2009–10 there were 6 Bystanders who died from drowning, 3 of these occurred on agricultural properties — 2 children drowned in a farm dam and 1 in a cattle dip. Over the seven year period, 11% of Bystander fatalities occurred on agricultural properties.

4.3 Mechanism of incident

Table 9 shows that over the seven years 53% of the Bystander fatalities were due to a *Vehicle incident.* Of the 190 *Vehicle incident* deaths, 95 were caused by a truck, 38 by a car and 10 by a bus. There were also 25 passengers in aircraft that were killed.

Being hit by moving objects resulted in 19% of the Bystander fatalities with vehicles responsible for all the deaths. Being hit by a truck resulted in the deaths of 30 bystanders and being hit by a car a further 21.

Drowning incidents in a work environment resulted in the deaths of 34 people over the seven years, 10% of all Bystander fatalities. Drowning in farm dams was the largest group with 13 deaths, all of which involved children 8 years and under. In addition, 9 people drowned after falling off watercraft and 7 drowned in public swimming pools while under supervision.

Table 9 Bystander fatalities: number by mechanism of incident and breakdown agency, Australia, 2003–04 to 2009–10 combined

Mechanism of incident/ Breakdown agency	Number of deaths	Percentage
Vehicle incident	190	53%
Truck	*95*	27%
Car or other light vehicle	*38*	11%
Aircraft	*25*	7%
Bus	*10*	3%
Other	*22*	6%
Being hit by moving objects	67	19%
Truck	*30*	8%
Car or other light vehicle	*21*	6%
Drowning/immersion	34	10%
Drowned in farm dams	*13*	4%
Fell from working watercraft	*9*	3%
Drowned in swimming pools	*7*	2%
Falls	24	7%
Being hit by falling objects	16	4%
All other mechanisms	25	7%
Total Bystander deaths	**356**	**100%**

Explanatory Notes

1 Inclusions

This report covers fatalities due to work-related injuries and explicitly excludes deaths attributable to disease and other natural causes. Among conditions specifically included as injuries are those arising from poisonous plants and animals, environmental conditions (e.g. frostbite), allergic reactions, and embolisms. Heart attacks and strokes are regarded as natural causes, but where available information shows that a work-related injury directly triggers a fatal heart attack or stroke, the fatality is included.

Worker fatalities

All cases identified of persons who die of injuries sustained while they are working are included in this report. For this purpose, 'working' includes travelling from one workplace to another. So a trades worker or professional killed driving from one job or client to the next counts as a Worker fatality rather than a Commuter fatality. Similarly, a worker killed in an air crash on their way to a conference would be a Worker fatality.

The number of Worker fatalities shown in this report is considered reliable, however, some deaths, particularly those related to traffic incidents, may be missed due to the way these deaths are identified in the various sources. The Notified Fatalities Collection (NFC) rarely records these deaths as they are generally investigated by the police and the information in the National Coronial Information System (NCIS) relies heavily on information collected by the police which may not include sufficient information to identify the deceased as working at the time of the incident.

Commuter fatalities

Fatal commuting incidents are only included in this publication where sufficient information is available to determine with confidence that the injuries were incurred while travelling to or from work or during a work break. Workers' compensation data provides the best means of identification of Commuter fatalities but not all jurisdictions offer workers' compensation while travelling to or from work. The jurisdictions that offer workers' compensation for commuting injuries are New South Wales (with some restrictions); Queensland (with some restrictions); the Northern Territory but only where the worker was on foot or using a pushbike; the Australian Capital Territory; Comcare (up to March 2007), and Seacare.

Jurisdictions that do not cover workers while commuting are Victoria, South Australia (unless there was a real and substantial connection between the employment and the incident), Western Australia and Tasmania.

While the NCIS would have records for all deaths involving vehicles, specific details of the reasons for travel are seldom available, making it difficult to identify a fatality decisively as a Commuter fatality from coronial records alone.

Commuter deaths are not generally notifiable under work health and safety legislation.

These factors contribute to an undercount of Commuter deaths in this publication and movements over time should be used with caution.

Bystander fatalities

There are many difficulties in identifying these deaths within the databases used in this study – Bystanders can not seek compensation through workers' compensation; notifications depend on the work health and safety legislation of the jurisdiction; and they are only identified in the coronial database when sufficiently detailed information on the circumstances of all parties to the death is available. Most of the Bystander deaths in this report were identified by examining NCIS records involving heavy or light commercial vehicles, so Bystander deaths resulting from collisions involving cars and other light vehicles engaged in work activity that NCIS does not code as work-related are unlikely to have been identified. Estimates of Bystander fatalities in this collection should therefore be regarded as being an undercount and movements over time used with caution.

Deaths resulting from criminal activity

Persons sustaining fatal injuries at work or while commuting as a result of someone else's criminal activity are included in this collection. Where the criminal activity is incidental to legitimate work activity, for example, where a worker dies of an injury sustained while under the influence of legal or illegal substances, the fatality is included. Non-working persons fatally injured in an incident involving criminals and law enforcement officers or security officers are included as Bystanders.

Classification of fatalities

Persons who die of injuries sustained at work are included among Worker fatalities even when the cause of the injury is another person's work activity. Similarly, deaths due to injuries sustained while commuting are classified as Commuter fatalities regardless of fault or cause.

2 Exclusions

Deaths due to natural causes

Natural causes include heart attacks, strokes and diseases.

Deaths due to complications of surgical and medical care

Although the death of patients who die as a result of medical negligence or malpractice are in principle Bystander fatalities, deaths arising from such iatrogenic injuries are specifically excluded from this collection.

Suicide

The scope of this project excludes deaths resulting from self-harm because it is difficult to assess the extent of the connection between work and a decision to take one's own life, even when detailed information is available.

Deaths of persons undertaking criminal activity

Work-related injury fatalities exclude deaths of persons fatally injured while undertaking criminal activities, such as gaining illegal entry into a building or work site.

3 Data sources

This study uses information from three datasets: the NDS, the NFC and the NCIS. The individual case records from each of the datasets are compared so that duplicates can be removed. Generally date of death and sex are used for initial matching as this date is available for most cases. Date of birth is also used to match records between the NDS and NCIS with age used from the NFC. Other data items used for matching are industry and occupation of the deceased and the coding of the incident in the NDS with narratives in the NFC and NCIS. Each of these datasets has limitations, so all three datasets are needed to estimate the total number of work-related deaths occurring each year.

The National Data Set for Compensation-based Statistics (NDS)

The scope of the NDS is all accepted workers' compensation claims made by or for an employee (other than an employee of the defence forces). The NDS is compiled annually by Safe Work Australia from data supplied by the state, territory and Australian Government workers' compensation authorities. The NDS has consistent data from 2000–01 onwards.

The strengths of the NDS are that it:

- usually codes the industry of employer accurately
- is supported by several classification systems, including the Australian and New Zealand Standard Industrial Classification (ANZSIC), the Australian and New Zealand Standard Classification of Occupations (ANZSCO) and the Safe Work Australia Type of Occurrence Classification System (TOOCS), and
- independently assesses work-relatedness.

The weaknesses of the NDS are that:

- workers' compensation is only available to employees, so the NDS does not provide good coverage of deaths in industries where a significant proportion is self-employed
- some work-related injury fatalities do not appear in the NDS because there are no dependants to lodge a claim
- date of death is not available for all deaths although jurisdictions are progressively introducing this data item
- only jurisdictions where commuting injuries are compensable provide data on Commuter fatalities
- Bystander deaths are not compensable within the workers' compensation system in any jurisdiction and are therefore not included in the NDS
- narratives are not provided
- coding of Mechanism, Agency, Breakdown agency and Occupation may not be complete or accurate
- data are not available until a year after the reference period
- workers dieing overseas will be included
- date of birth may not be accurate, and
- names are not provided.

Notified Fatalities Collection (NFC)

Since 1 July 2003, Safe Work Australia has maintained a database of work-related injury fatalities notified to work health and safety authorities in each jurisdiction under their work health and safety legislation. There are thirteen work health and safety jurisdictions in Australia that report to Safe Work Australia: each of the eight states and territories; the Commonwealth (Comcare); the mining sectors in New South Wales, Queensland and Western Australia; and the National Offshore Petroleum Safety Authority (NOPSA).

The strengths of the NFC are that:

- it captures fatalities not covered by the NDS such as deaths to self-employed, contract workers and bystanders
- information is available within a few months of the incident
- assessment of work-relatedness by work health and safety officers
- names are supplied by some jurisdictions, and
- it provides a brief narrative account of the circumstances of the fatality.

The weaknesses of the NFC are that:

- data are only available from 2003–04 onwards
- limited information is available at the time of notification
- information on age is often inaccurate
- there is limited coverage of transport-related deaths because these deaths are notified to and investigated by the police, road traffic authority or, in the case of plane crashes and marine deaths, by Commonwealth agencies
- commuting deaths are not within the scope of the collection, and
- it tends to capture work-related deaths only when they occur shortly after the injury.

National Coroners Information System (NCIS)

The NCIS was officially launched in July 2000 and is a national internet-based data storage and retrieval system of coronial cases in Australia. The NCIS holds information on all fatalities referred to a coroner in Australia. Each state and territory in Australia has a licence agreement with the Victorian Institute of Forensic Medicine (VIFM) permitting the transfer of coronial information for storage and dissemination via the NCIS.

The strengths of the NCIS are that:

- the scope of the collection includes all deaths reported to an Australian coroner regardless of compensation status or work arrangement
- when available, attachments to records, including police narratives and coronial findings, may shed light on the causes and circumstances surrounding a fatal incident
- some information is available within a few months of incident, and
- there is a work-relatedness assessment against standard criteria.

The weaknesses of the NCIS include:

- not all work-related fatalities are correctly coded
- industry information is more closely linked to the workplace than the employer

- it can be many years before the case is closed and all files loaded and coded
- access to records for open cases is restricted in Western Australia
- crucial data items, including name, date of birth and date of death, as well as documentation, may be missing in records for open cases and even some closed cases, and
- difficult to identify commuter and bystander deaths.

Identification of work-related deaths in the NCIS

As the work-related flag may not be finalised until the case is closed it is necessary to examine all NCIS records that have the potential to be work-related. In previous years, cases were extracted from NCIS if they met a set of criteria. From 2009–10, all records for the period were extracted. This included those where the date of death was in the 2009–10 period and also those where the death had a date of notification up to 30 July 2010 to capture those where date of death had yet to be entered. From this list, deaths were excluded that did not match the scope criteria such as self-intentional injuries and deaths from natural causes. The remaining cases were then more closely examined. In particular all deaths that were coded as work-related or where the activity was coded as paid work. Then all deaths that involved a heavy or light commercial vehicle, aircraft or occurred at a farm, industrial or commercial workplace were examined.

As this process is commenced earlier than the previous extractions were taken, updates on NCIS data are undertaken regularly to obtain additional coding information as it became available. At the end of this process there were still a number of fatalities where cause of death and other information was not yet coded. These records will be monitored in future years to ensure all work-related deaths are identified.

This perusal of all deaths provides greater confidence in the number of deaths identified from the NCIS. Full extracts for prior years have also been examined in this manner with only a few additional deaths identified. This new approach has allowed for quicker matching with records in the other datasets but has not increased the likelihood of identifying additional commuter or bystander deaths as it still relies on the coding in the NCIS.

Other data sources

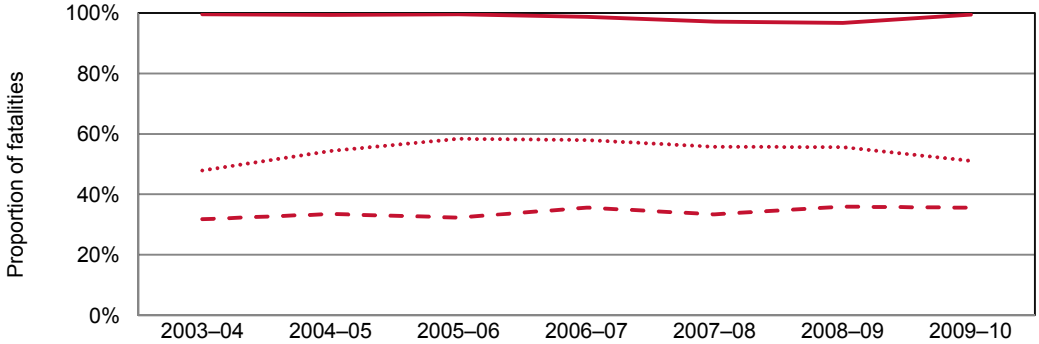
The media and accident investigation reports from the Australian Transport Safety Bureau relating to plane crashes, train crashes and maritime incidents are used to supplement information found in each of the datasets.

Dataset contribution

Figure 21 shows that the proportion of cases each dataset contributed to the total number of work-related deaths in each year has remained relatively stable over the time series. Nearly all deaths have been found in the NCIS with over half identified in the NDS and about one-third identified in the NFC.

Of the 337 work-related injury fatalities identified in 2009–10, just 70 (21%) were identified in all three datasets. Another 115 (34%) were found only in NCIS and 2 could only be found in the NDS. All of the NFC cases were identified in other datasets. When considering just Worker fatalities, 32% were found in all three datasets.

Figure 21 All work-related fatalities: Dataset contribution, 2003–04 to 2009–10



	2003–04	2004–05	2005–06	2006–07	2007–08	2008–09	2009–10
NCIS	100%	99%	100%	99%	97%	97%	99%
NDS	48%	54%	58%	58%	56%	56%	51%
NFC	32%	33%	32%	36%	33%	36%	36%

4 Coverage of Worker fatalities

Table 10 shows the proportion of working deaths in each industry captured by each dataset in 2009–10. The NCIS captured all deaths in 16 of the 18 ANZSIC industry divisions where deaths were identified. The NDS and NFC each only captured all deaths in two industries in 2009–10.

Table 10 Proportion of Worker fatalities by dataset by Industry of employer, Australia, 2009–10

Industry of employer	NCIS	NDS	NFC	Number of Deaths
Transport, postal & warehousing	98%	59%	25%	51
Agriculture, forestry & fishing	100%	19%	52%	42
Construction	100%	67%	74%	39
Manufacturing	100%	79%	79%	24
Administrative & support services	100%	56%	67%	9
Retail trade	100%	25%	13%	8
Health care & social assistance	100%	83%	0%	6
Mining	100%	83%	83%	6
Wholesale trade	83%	100%	50%	6
Public administration & safety	100%	20%	60%	5
Rental, hiring & real estate services	100%	60%	40%	5
Education & training	100%	33%	33%	3
Electricity, gas, water and waste services	100%	67%	33%	3
Accommodation & food services	100%	50%	100%	2
Other services	100%	50%	100%	2
Information media & telecommunications	100%	50%	0%	2
Arts & recreation services	100%	0%	0%	2
Financial & insurance services	100%	100%	0%	1
Total	**99%**	**54%**	**50%**	**216**

In the case of the NDS the poor coverage is in part due to workers' compensation only being available to employees with many industries having substantial numbers of self-employed workers. Table 11 shows that the Agriculture, forestry and fishing and Construction industries have the lowest percentages of workers who are employees, 51% and 71% respectively. The NDS captured just 19% and 67% of all work-related deaths in these industries respectively.

The NDS poorly captured deaths in the Retail trade industry with only 2 of the 8 deaths having workers' compensation claims associated with them. Many of the non-claimed deaths involved vehicle incidents and it is possible that compensation was sought through the Compulsory Third Party insurance system. Similarly only 1 of the 5 deaths in the Public administration & safety industry were captured in the NDS. One of these deaths involved a person in the defence force who are not included in the NDS.

Table 11 Proportion of workers who were Employees by industry of employer, Australia, 2009–10

Industry of employer	Percentage employees
Public Administration and Safety	99%
Mining	99%
Electricity, Gas, Water and Waste Services	97%
Financial and Insurance Services	96%
Education and Training	95%
Health Care and Social Assistance	94%
Information Media and Telecommunications	94%
Manufacturing	93%
Accommodation and Food Services	93%
Wholesale Trade	93%
Retail Trade	92%
Rental, Hiring and Real Estate Services	88%
Transport, Postal and Warehousing	86%
Professional, Scientific and Technical Services	84%
Arts and Recreation Services	82%
Other Services	80%
Administrative and Support Services	79%
Construction	71%
Agriculture, Forestry and Fishing	51%

5 Calculation of fatality rates

Fatality rates are calculated as the number of deaths divided by the number of workers in the reference period. Employment figures from ABS quarterly Labour force data are used in calculating fatality rates in this publication. The number of workers is derived from the average of all persons employed over the four quarters of the financial year for each sex, age group, industry, occupation, or state or territory.

Because work-related injury fatalities of Australian Defence Force (ADF) personnel within Australia are in scope of this report, worker estimates for the Public administration & safety industry division and the total of all industries, as well as each sex and state or territory are supplemented with the average of levels of ADF permanent members' reported in the Department of Defence Annual Report.

Worker fatalities include volunteers who cannot be accounted for in the worker estimates. This study has identified 15 workers in the seven years who were volunteering their labour when they were killed. Similarly the worker estimates do not include children under 15. Across the seven years, 3 workers under the age of 15 years have been killed. The inclusion of these deaths without increasing the worker estimates does not impact on the fatality rates in this publication.

Glossary

Bystander fatality

The death of a person who dies as a result of injuries sustained as a result of another person's work activity and who was not engaged in work activity of their own or travelling to or from their own workplace at the time of the injury.

A traffic incident death is only classified as a Bystander fatality when attributable to someone else's work activity. Typically, this means the driver of a work vehicle is at fault. Cases where fault could not be determined with sufficient confidence were excluded.

Commuter fatality

The death of a person who dies as a result of injuries sustained while travelling to or from work, including those whose injury results from another's work activity.

Employed

The denominators used in calculating fatality rates in this report are based on ABS estimates of Employed persons, as defined in Labour force, Australia (ABS cat no 6202.0). This population includes Employees, who work for an employer; self employed persons, whether they employ others or not; and those who work without pay for a family business or farm. It excludes persons whose only work is voluntary.

Employee

A person who works for a public or private employer and receives remuneration in wages, salary, a retainer fee from their employer while working on a commission basis, tips, piece-rates, or payment in kind; or a person who operates his or her own incorporated enterprise with or without hiring employees.

Fatality rate

The number killed as a result of work-related injury expressed as a per-capita rate against the population at risk of work-related injury. In this report the rate is expressed as the number of deaths per 100 000 Employed persons: for brevity this is usually expressed as 'deaths per 100 000 workers'. See Paragraph 5 of the Explanatory notes for further details.

Industry

A grouping of businesses which carry out similar economic activities. Fatalities data in this publication have been coded to the Australian and New Zealand Standard Industrial Classification (ANZSIC) 2006 (ABS cat. no. 1292.0) and unless specified are shown at the industry division level.

Injury

A condition coded to 'External Causes of morbidity and mortality' and 'Injury, poisoning and certain other consequences of external causes' in the International Statistical Classification of Diseases and Related Health Problems, Tenth Revision, Australian Modification (ICD-10-AM).

Job

A set of tasks designed to be performed by one person for an employer (including self-employment) in return for payment or profit.

Location of incident

The location at which the fatal injury occurred. Where this is an identifiable workplace, the location is coded to the appropriate category of ANZSIC 2006. In many cases injuries occur in public places and are coded as such.

Mechanism of incident

The action, exposure or event which best describes the circumstances that resulted in the most serious injury.

Occupation

A set of jobs with similar sets of tasks. Fatalities data in this publication have been coded to the Australian and New Zealand Standard Classification of Occupations (ANZSCO) (ABS cat. no. 1220.0) First edition and unless specified are shown at the major group level.

Traffic incident

A collision on a public road between any vehicle or self-propelled plant and anything else, including a pedestrian. Incidents involving vehicles at worksites or on private roads are excluded.

Type of occurrence classification system (TOOCS)

A suite of four classifications to code the way an injury occurred, comprising:

- the Nature of injury/disease classification
- the Bodily location of injury/disease classification
- the Mechanism of incident classification, and
- the Agency of injury/disease classification.

Version 3.1 is used for coding in this report.

Worker fatality

The death of a person who dies as a result of injuries sustained while at work, including those whose injury results from another's work activity.

Inquires

For further information regarding the contents of this publication contact:

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