

# WORK-RELATED TRAUMATIC INJURY FATALITIES AUSTRALIA 2010–11



DECEMBER 2012





**Safe Work Australia**

**WORK-RELATED  
TRAUMATIC INJURY FATALITIES,  
AUSTRALIA 2010–11**

**December 2012**



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# Foreword

The aim of this report is to determine the number of people who die each year from injuries that arose through work-related activity. This includes fatalities resulting from an injury sustained in the course of a 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 Australian territories or territorial waters.

Included are all persons killed:

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

The collection specifically excludes those who died:

- 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
- due to injuries sustained while working overseas (defence personnel and civilians), or
- by self-inflicted injuries (suicide).

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

The identified work-related fatalities are compiled into the Traumatic Injury Fatalities database. This database contains work-related fatalities that occurred from 1 July 2003. This publication provides analysis of the fatalities that occurred in the period from 1 July 2003 to 30 June 2011. Changes may be evident from previous years' reports due to the availability of additional information as coroners finalise their reports or workers' compensation claims are accepted.



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# Summary of findings

In 2010–11, 374 people died in Australia from a work-related traumatic injury. Of these, 220 (59%) were injured at work (Worker fatalities); 110 (29%) while travelling to or from work (Commuter fatalities) and 44 (12%) as a bystander to someone else's work activity (Bystander fatalities).

By their nature Commuter fatalities tend involve vehicles. All of the identified Commuter fatalities involved incidents on public roads including five pedestrians struck by vehicles. Of the Bystander fatalities 64% were the result of incidents on public roads. It is not always possible to determine the purpose of travel in a vehicle-related death and hence Commuter and Bystander fatalities are considered an undercount.

## Worker fatalities

The 220 Worker fatalities in 2010–11 equates to a fatality rate of 1.93 deaths per 100 000 workers. This is the lowest number of fatalities and the lowest fatality rate since the series began eight years ago. In the last eight years one-third of Worker fatalities were due to a vehicle incident on a public road, one-third were due to a vehicle incident at a workplace and the remaining one-third did not involve a vehicle. Trucks were the vehicle most often involved.

## Age

Workers aged 65 years and over experienced a fatality rate of 10.54 deaths per 100 000 workers in 2010–11, nearly six times the rate for all workers. However, this is the second lowest fatality rate recorded by this age group since the series began. With 0.88 deaths per 100 000 workers, the Less than 25 years age group experienced the lowest fatality rate with this rate being the lowest in the series.

## Industry

Agriculture, forestry and fishing industry workers accounted for the highest number of fatalities (60) in 2010–11. This was followed by the Transport, postal and warehousing (42) and Construction (39) industries. The Road freight transport sector recorded 20.50 deaths per 100 000 workers, eleven times the all industries rate. The Agriculture sector recorded 15.33 deaths per 100 000 workers, eight times the all industries rate.

## Working with trucks

Just over one-quarter (27%) of the workers who died in 2010–11 were working in or around a truck. Two-thirds of these involved a crash on a public road. Over the eight years of the series, 645 workers died in truck-related incidents. Of these, 493 (76%) were truck drivers, 18 were passengers in trucks, 67 were workers in cars or utilities and 55 workers were walking around the workplace when they came into contact with the truck or its cargo.

## Working on farms

In 2010–11, 52 workers died (24% of all worker fatalities) while working on an agricultural property with 39 of these fatalities related to working with a vehicle. Over the eight years of the series, 356 workers have died on agricultural properties. Of these: 93 died in an incident involving a tractor, 48 died in an aircraft incident and 27 in an incident involving a quad bike.

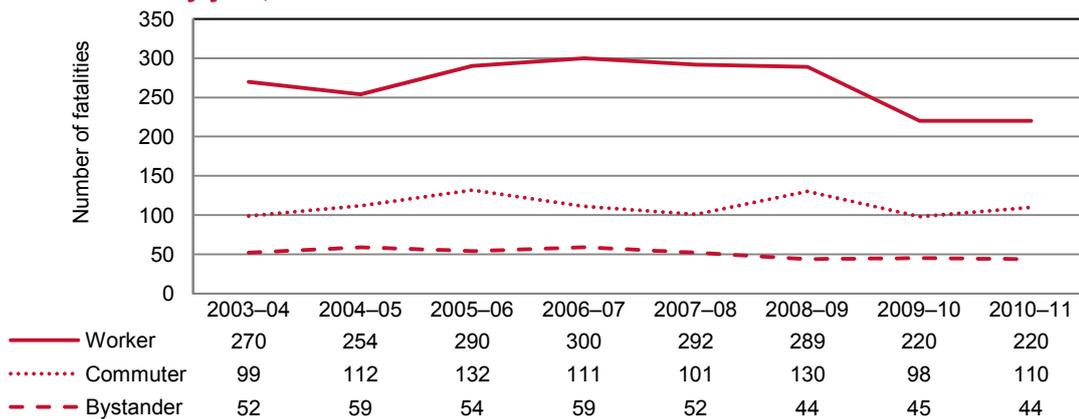


# 1 Total fatalities

There were 374 work-related traumatic injury fatalities in Australia during 2010–11. Workers accounted for 220 (59%) of the fatalities. Workers killed while travelling to or from work (Commuter fatalities) accounted for a further 110 (29%) fatalities. The remaining 44 (12%) work-related traumatic injury fatalities were people who were killed as a bystander to someone else’s work activity (Bystander fatalities). Half (183 fatalities) of all work-related injury fatalities in 2010–11 were the result of a *Traffic incident* — an incident occurring on a public road.

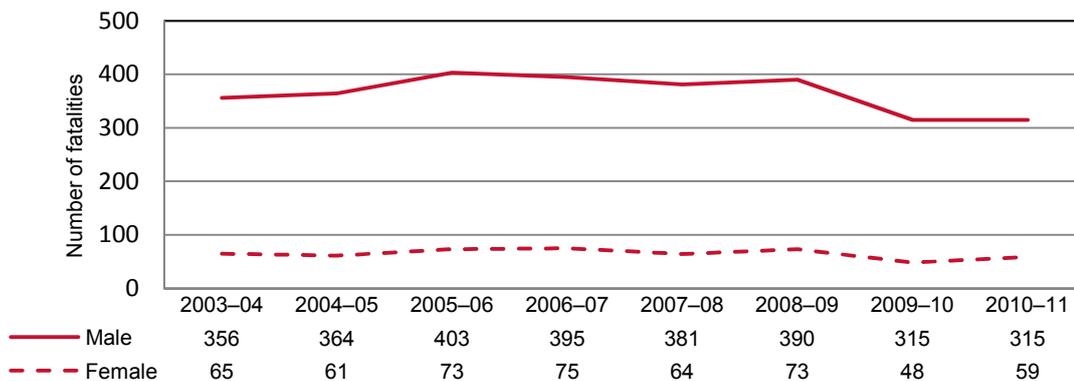
Figure 1 shows that the number of Worker fatalities in 2010–11 was the same as the previous year which was considerably lower than the high of 300 recorded in 2006–07. The number of Commuter fatalities has risen on the previous year but still remains relatively low. Commuter numbers are considered to be an undercount of the true number of workers killed while on a journey to or from work due to the difficulty in identifying these fatalities from non-commuting fatalities. The 44 Bystander fatalities identified in 2010–11 is similar to the previous two years. Bystander numbers are also considered an undercount due to the difficulty in capturing information on bystanders in all workplaces.

**Figure 1 Work-related injury fatalities: number of fatalities by type of worker type by year, 2003–04 to 2010–11**



In 2010–11, five times as many males were killed as females. This ratio is similar to previous years. In 2010–11, 315 males and 59 females died due to work activity.

**Figure 2 Work-related injury fatalities: number of fatalities by sex by year, 2003–04 to 2010–11**



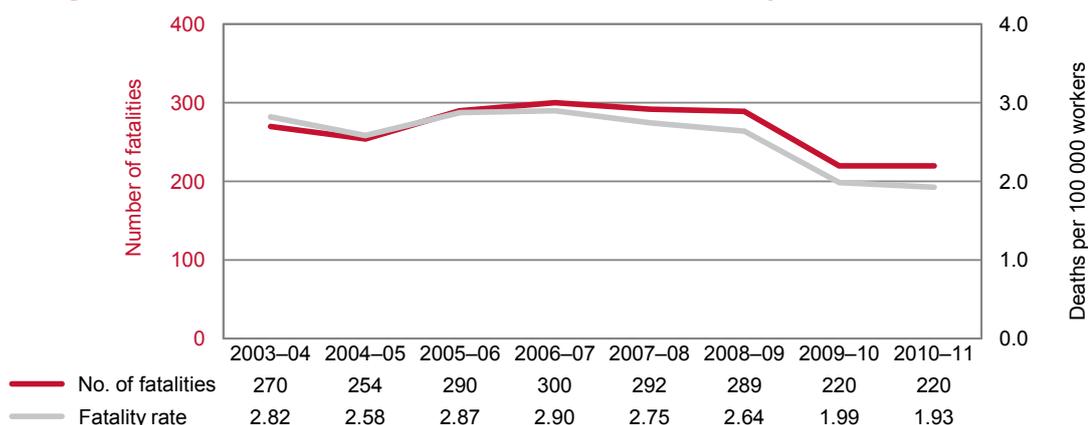


## 2 Worker fatalities

In 2010–11, 220 workers lost their lives due to injuries sustained while working, the same number recorded in 2009–10. Figure 3 shows that this is the lowest number since the series began in 2003–04. The greatest number of work-related injury fatalities (300) was recorded in 2006–07.

The relatively low number of fatalities combined with increasing employment saw the fatality rate fall to 1.93 deaths per 100 000 workers in 2010–11. This is the lowest rate since the series began.

**Figure 3 Worker fatalities: number of fatalities and fatality rate, 2003–04 to 2010–11**

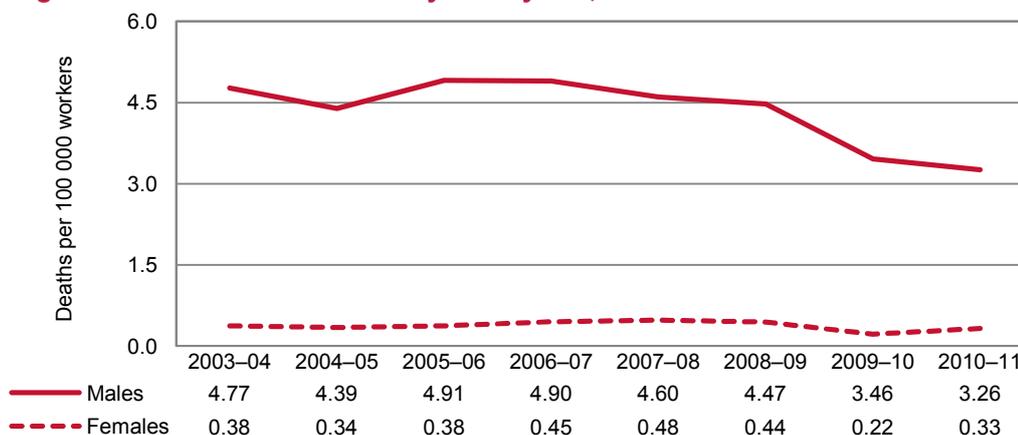


### 2.1 Characteristics by sex

In 2010–11, 203 of the 220 (92% ) workers killed were men. This is the lowest number since the series began. Of the 17 female workers who were killed in 2010–11, 14 died in incidents involving vehicles. Vehicle incidents accounted for 70% of the fatalities among female workers compared with 66% for male workers.

Figure 4 shows that the fatality rate for male workers declined overall with the rate for 2010–11 of 3.26 deaths per 100 000 workers the lowest in the series. While the fatality rate for female workers increased from the previous year, the rate of 0.33 deaths per 100 000 workers is lower than the first six years of the series. Over the series, males have consistently recorded ten times the fatality rate of females.

**Figure 4 Worker fatalities: fatality rate by sex, 2003–04 to 2010–11**



## 2.2 Characteristics by age group

Table 1 shows the distribution of Worker fatalities by age group and sex. These data show that for 2010–11 all age groups of males, except for the 65 years & over age group, recorded their lowest or second lowest number of fatalities. The 32 fatalities in the 65 years & over age group is the second highest number of fatalities in the series and follows from 19 in the previous year which was the lowest number in the series. The most notable fall in the number of fatalities for males was recorded by the 25–34 years age group with the 23 fatalities recorded in 2010–11, 11 fewer than the previous year (34) and half the figure recorded in most of the other years.

In 2010–11, 71% of the female workers who died were over the age of 45 years, whereas over the full time series older workers usually accounted for 50% of the female workers who died. Due to the relatively small number of fatalities, changes over time in the number of fatalities incurred by female workers should be viewed with caution.

**Table 1 Worker fatalities: number by age group and sex, 2003–04 to 2010–11**

Age group (years)	Age group (years)						Total
	Less than 25	25-34	35-44	45-54	55-64	65 & over	
<b>Male workers</b>							
2003–04	22	48	56	50	45	33	254
2004–05	27	46	47	52	45	22	239
2005–06	27	64	55	50	53	24	273
2006–07	25	43	75	55	50	31	279
2007–08	29	33	61	65	51	30	269
2008–09	28	48	48	60	50	33	267
2009–10	20	34	36	50	50	19	209
2010–11	16	25	40	49	41	32	203
<b>Total Male</b>	<b>194</b>	<b>341</b>	<b>418</b>	<b>431</b>	<b>385</b>	<b>224</b>	<b>1993</b>
<b>Female workers</b>							
2003–04	2	5	2	5	2		16
2004–05		6	2	4	2	1	15
2005–06	1	3	6	5	1	1	17
2006–07	4	5	1	5	5	1	21
2007–08	3	3	4	5	4	4	23
2008–09	6	6	3	4	2	1	22
2009–10	1	2	1	3	4		11
2010–11	1	2	2	4	5	3	17
<b>Total Female</b>	<b>18</b>	<b>32</b>	<b>21</b>	<b>35</b>	<b>25</b>	<b>11</b>	<b>142</b>

Figure 5 shows that while the distribution of Worker fatalities by age group was broadly similar, females displayed a younger profile. For both males and females there were lower numbers of fatalities in the youngest and oldest age groups.

In 2010–11 the average age of workers killed was 49 years. This is slightly older than the average over the eight years of the series of 45 years. Over the full time series the average age of female workers who were killed was 43 while for males it was 46.

Of the fatalities that involved workers aged less than 35 years, 35% involved female workers compared with 27% of the deaths of male workers. Of the fatalities that involved workers aged 55 years and over, 31% involved a male worker compared with 25% for female workers.

**Figure 5 Worker fatalities: proportion by age group and sex, 2003–04 to 2010–11 combined**

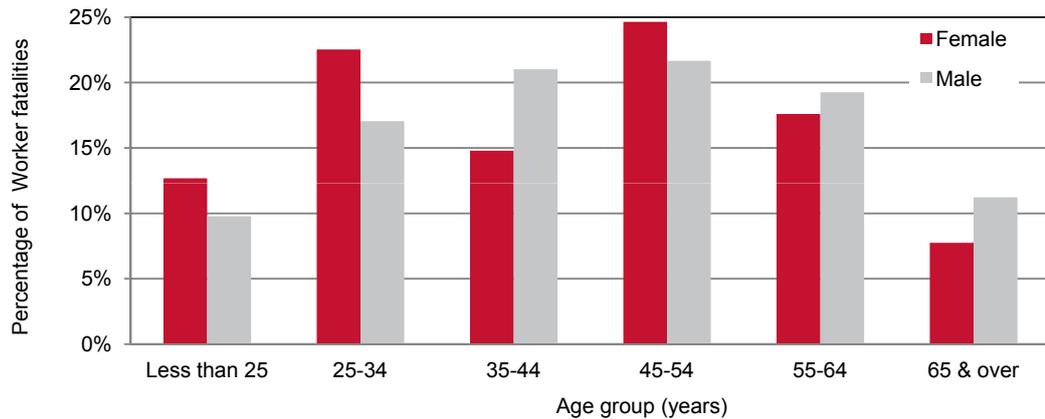
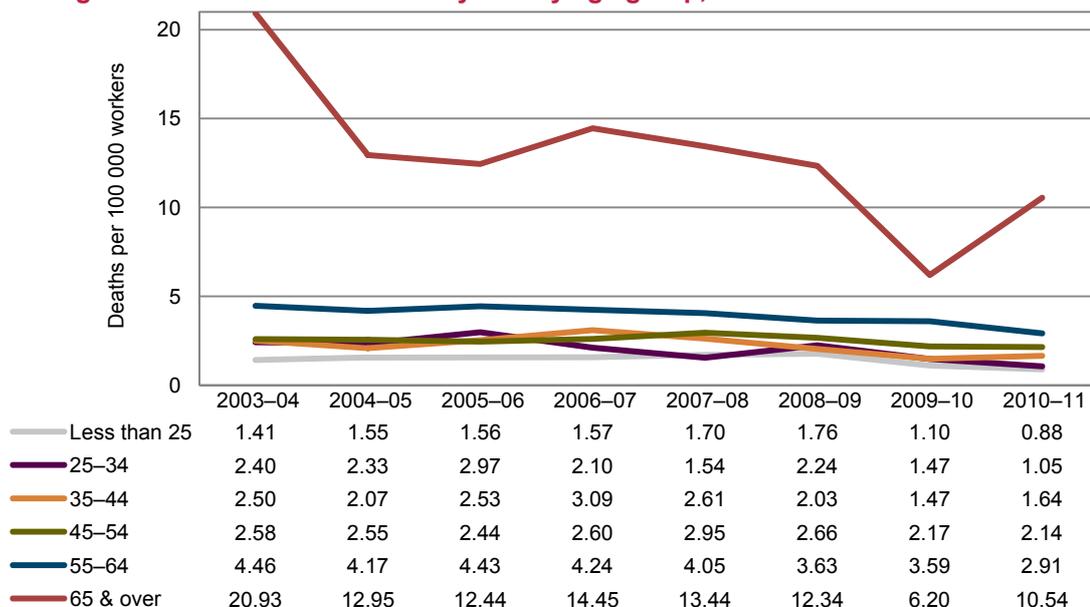


Figure 6 shows that Worker fatality rates by age have been fairly consistent over the past five years and that they tend to increase slightly with age up until age 65 when the rate jumps considerably. The high rates for the 65 years & over age group are due to the lower number of workers in this age group combined with relatively high numbers of fatalities. The 2010–11 year has seen a reversal of the low recorded in the previous year for this age group though the fatality rate still remains lower than in all other years. The fatality rate of 10.54 deaths per 100 000 workers in the 65 years & over age group in 2010–11 is nearly twelve times the fatality rate of the youngest age group (0.88).

While the fatality rate for the 65 years & over age group recorded a rise, the rate for the 55–64 years age group recorded a substantial fall continuing the downward trend of the past five years. Notable falls were also recorded by the 15–24 years and 24–34 years age groups, both of which recorded their lowest rates in 2010–11.

**Figure 6 Worker fatalities: fatality rate by age group, 2003–04 to 2010–11**



## 2.3 Characteristics by Occupation

In 2010–11, 28% of the Worker fatalities (61 fatalities) were workers employed as Machinery operators & drivers. Technicians & trades workers accounted for a further 20% of Worker fatalities (43 fatalities) followed by Labourers with 18% (39 fatalities) and Managers with 17% (38 fatalities).

Figure 7 shows that the pattern for 2010–11 is broadly similar to the combined pattern for all eight years except in 2010–11 where there were slightly lower proportions for Machinery operators & drivers and Labourers and slightly higher proportions for Technicians & trades workers and Managers.

**Figure 7 Worker fatalities: Proportion of fatalities by occupation, All years (2003–04 to 2010–11 combined) and 2010–11**

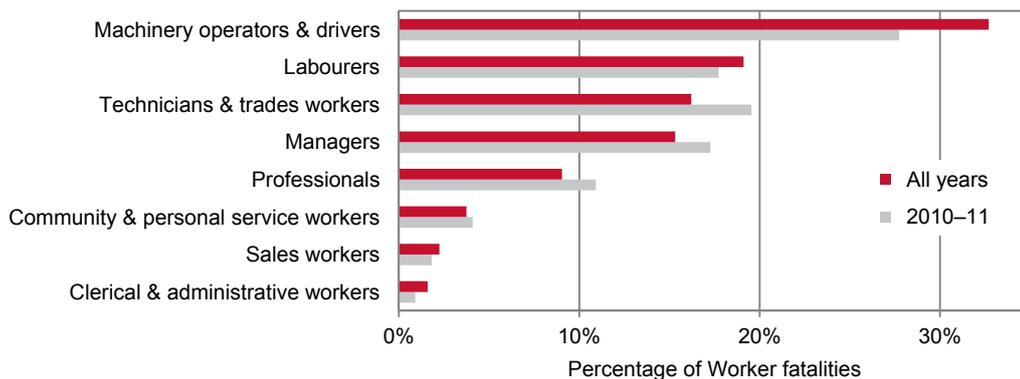


Table 2 provides a breakdown of the number of fatalities in each occupation group over time and the corresponding fatality rates. These data show that while Machinery operators & drivers recorded the highest number of Worker fatalities in 2010–11, the 61 fatalities is the lowest in the eight-year series and considerably lower than the 113 fatalities recorded by this group in 2007–08. While considerable improvements have been made in recent years, the fatality rate of 8.34 deaths per 100 000 Machinery operators & drivers in 2010–11 is still nearly five times the national rate.

Within the Machinery operators & drivers occupation group, Road & rail drivers recorded 44 fatalities in 2010–11, the lowest number since the series began and nearly half of the 84 fatalities recorded in 2007–08. This reduction in the number of fatalities flowed through to a reduction in the fatality rate, though the 14.76 deaths per 100 000 workers is eight times the overall rate.

While the Technicians & trades workers occupation group recorded the second highest number of fatalities, the greater employment in this group resulted in a fatality rate of 2.55, only slightly higher than the national rate of 1.93. Table 2 shows the number of fatalities within this occupation group varies considerably from year to year ranging from 35 fatalities to 59. Within this occupation group there were 11 fatalities of Automotive & engineering trades workers and a further 11 fatalities of Construction trades workers in 2010–11.

Within the Labourers occupation group, Farm, forestry & garden workers recorded 16 fatalities in 2010–11. There were also 36 Farmers & farm managers who died in 2010–11. This is the highest number since 2003–04 when there were also 36 fatalities. Farmers & farm managers accounted for nearly all of the fatalities in the Managers occupation group in 2010–11. This occupation sector recorded a fatality rate of 18.69 deaths per 100 000 workers, more than ten times the overall rate.

**Table 2 Worker fatalities: number and fatality rate by occupation, 2003–04 to 2010–11**

Occupation	2003–04	2004–05	2005–06	2006–07	2007–08	2008–09	2009–10	2010–11
<b>Number of worker fatalities</b>								
Machinery operators & drivers	87	78	87	107	113	95	70	61
<i>Road &amp; rail drivers</i>	73	62	62	84	81	70	52	44
Technicians & trades workers	35	39	45	59	39	51	35	43
<i>Construction trades workers</i>	10	7	8	26	8	15	10	11
<i>Automotive &amp; engineering trades workers</i>	10	12	12	9	11	20	9	11
Labourers	65	48	58	44	57	59	38	39
<i>Farm, forestry &amp; garden workers</i>	27	22	17	15	22	20	14	16
<i>Construction &amp; mining labourers</i>	13	10	20	6	21	9	12	6
Managers	45	47	52	43	34	34	34	38
<i>Farmers &amp; farm managers</i>	36	34	29	28	28	21	22	36
Professionals	22	19	27	24	28	21	28	24
<i>Design, engineering, science &amp; transport professionals</i>	17	16	15	10	16	17	11	16
Community & personal service workers	7	17	9	12	6	12	8	9
Sales workers	8	3	7	5	9	8	4	4
Clerical & administrative workers	1	3	5	5	6	9	3	2
<b>Total all occupations*</b>	<b>270</b>	<b>254</b>	<b>290</b>	<b>300</b>	<b>292</b>	<b>289</b>	<b>220</b>	<b>220</b>
<b>Fatality rate (deaths per 100 000 workers)</b>								
Machinery operators & drivers	13.72	11.99	13.39	15.29	15.55	13.10	9.95	8.34
<i>Road &amp; rail drivers</i>	27.24	22.39	23.03	29.78	27.97	23.41	17.78	14.76
Technicians & trades workers	2.43	2.64	2.95	3.72	2.38	3.06	2.17	2.55
<i>Construction trades workers</i>	3.22	2.14	2.33	7.48	2.19	3.99	2.84	2.87
<i>Automotive &amp; engineering trades workers</i>	2.87	3.51	3.41	2.54	3.04	5.36	2.54	2.96
Labourers	5.93	4.28	5.24	3.79	4.86	5.04	3.22	3.30
<i>Farm, forestry &amp; garden workers</i>	19.60	18.74	14.87	11.89	19.72	18.36	11.49	12.47
<i>Construction &amp; mining labourers</i>	8.93	6.92	13.83	3.71	12.58	5.33	7.46	3.59
Managers	3.90	3.78	4.07	3.25	2.46	2.44	2.32	2.61
<i>Farmers &amp; farm managers</i>	18.33	17.11	14.92	14.19	13.90	9.97	10.78	18.69
Professionals	1.16	0.99	1.32	1.15	1.27	0.93	1.18	0.98
<i>Design, engineering, science &amp; transport professionals</i>	6.63	5.80	4.93	3.27	4.85	4.92	3.19	4.15
Community & personal service workers	0.87	2.05	1.04	1.33	0.65	1.23	0.79	0.84
Sales workers	0.81	0.30	0.67	0.50	0.88	0.78	0.38	0.36
Clerical & administrative workers	0.07	0.20	0.32	0.31	0.37	0.54	0.18	0.12
<b>All occupations*</b>	<b>2.82</b>	<b>2.58</b>	<b>2.87</b>	<b>2.90</b>	<b>2.75</b>	<b>2.64</b>	<b>1.99</b>	<b>1.93</b>

\* Includes fatalities where occupation was not stated.

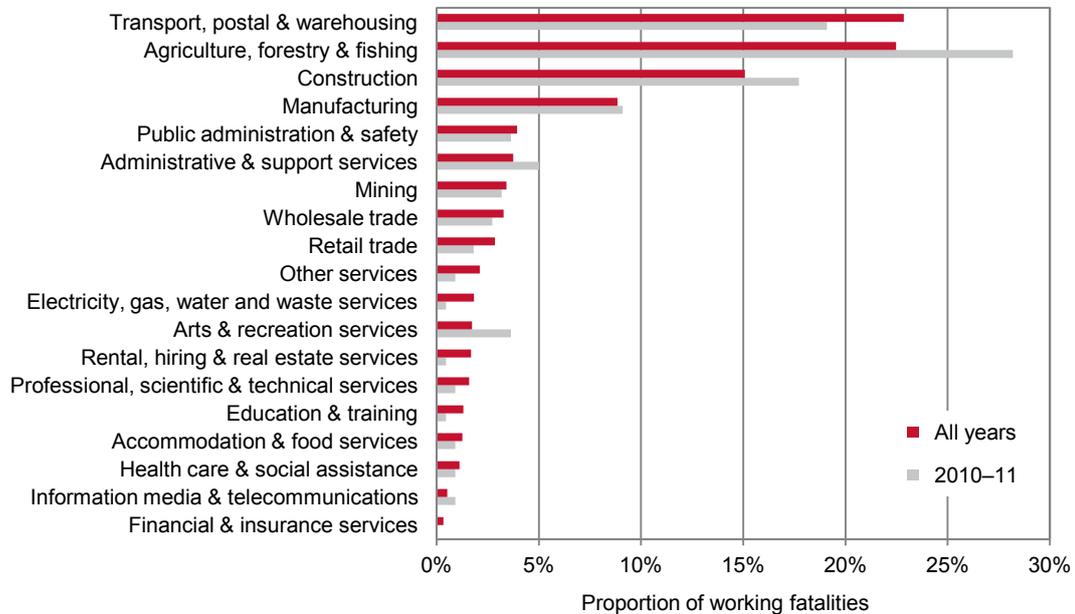
## 2.4 Characteristics by Industry

In 2010–11, 28% (62 fatalities) of the workers who died were employed in the Agriculture, forestry & fishing industry, 19% (42 fatalities) were employed in the Transport, postal & warehousing industry and 18% (39 fatalities) were employed in the Construction industry. Together these three industries accounted for 65% of all Worker fatalities in that year. Figure 8 shows that over the past eight years these three industries have together accounted for 60% of all Worker fatalities.

Table 3 shows that the Agriculture, forestry & fishing industry recorded the highest fatality rates in 2010–11 with 17.64 deaths per 100 000 workers. This

is nine times the overall fatality rate of 1.93. Within this industry, the Agriculture sector accounted for 48 of 62 Worker fatalities in 2010–11 and recorded a fatality rate of 15.65 deaths per 100 000 workers, slightly below the rate for the industry as a whole. This is due to the other sectors of the industry which include forestry, fishing and aquaculture recording much higher fatality rates.

**Figure 8 Worker fatalities: proportion by industry of employer, All years (2003–04 to 2010–11 combined) and 2010–11**



While the Transport, postal & warehousing industry fatality rate of 7.20 deaths per 100 000 workers is the lowest in the eight years of the series, it is still four times the national rate. Within this industry, the Road freight transport sector accounted for 33 Worker fatalities in 2010–11. This number of fatalities equates to a fatality rate of 20.5 deaths per 100 000 workers; eleven times the all industries rate and nearly three times the rate for the industry as a whole.

While the Construction industry recorded the third highest number of fatalities, the Arts & recreation services industry recorded the third highest fatality rate of 3.96 deaths per 100 000 workers. The 8 fatalities recorded in this industry in 2010–11 is the highest in the eight years of the series (equal to 2004–05). Of these: 4 incidents involved vehicles, 2 were hit by falling trees, 1 fell from a horse and 1 was electrocuted. Similar incidents have occurred in previous years.

The Construction industry recorded 3.77 deaths per 100 000 workers in 2010–11, the lowest rate in the eight years of the series for this industry. The number of fatalities in the Construction industry has remained relatively stable over the past few years.

The Mining industry has also recorded its lowest fatality rate in the time series with 3.41 deaths per 100 000 workers. While the 7 fatalities in 2010–11 is similar to some of the prior years, this industry has experienced over 100% growth in employment over the eight years of the series.

The Electricity, gas, water and waste services industry has also experienced a large growth in employment (65%) and has reduced its number of fatalities from 7 at the beginning of the time series to 1 in 2010–11.

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 fatalities are recorded.

Therefore, the actual number of fatalities should also be considered when interpreting fatality rates.

**Table 3 Worker fatalities: number and fatality rate by industry of employer, 2003–04 to 2010–11**

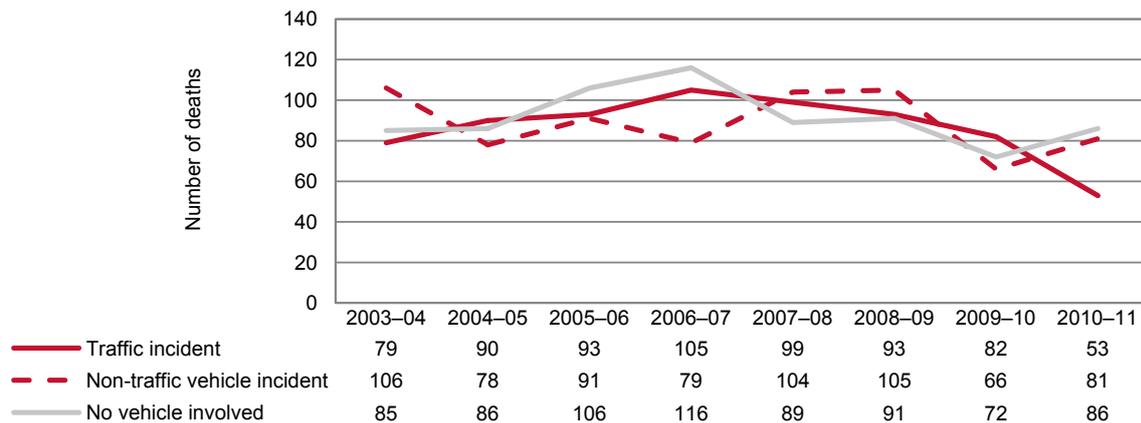
Industry of employer	2003–04	2004–05	2005–06	2006–07	2007–08	2008–09	2009–10	2010–11
<b>Number of fatalities while working</b>								
Agriculture, forestry & fishing	79	65	58	47	57	70	42	62
<i>Agriculture</i>	63	43	44	34	43	39	36	48
Transport, postal & warehousing	66	50	60	75	79	65	51	42
<i>Road freight transport</i>	47	39	47	61	62	49	39	33
Construction	38	28	43	50	39	44	41	39
Manufacturing	17	23	23	30	27	25	24	20
Administrative & support services	6	10	12	12	11	9	9	11
Arts & recreation services	3	8	3	5	6	2	2	8
Public administration & safety	7	16	12	17	6	14	4	8
Mining	5	8	15	11	9	12	6	7
Wholesale trade	14	10	7	8	11	8	6	6
Retail trade	5	6	9	13	10	5	9	4
Health care & social assistance	4	3	3	1	2	3	6	2
Other services	6	7	7	8	3	10	2	2
Professional, scientific & technical services	4	4	6	5	8	3	2	2
Accommodation & food services	3	4	6	6	3	1	2	2
Information media & telecommunications	1	0	1	1	3	0	3	2
Electricity, gas, water & waste services	7	7	9	4	4	4	3	1
Rental, hiring & real estate services	3	4	7	3	10	4	4	1
Education & training	2	1	8	4	4	5	3	1
Financial & insurance services	0	0	1	0	0	5	1	0
<b>All industries*</b>	<b>270</b>	<b>254</b>	<b>290</b>	<b>300</b>	<b>292</b>	<b>289</b>	<b>220</b>	<b>220</b>
<b>Fatality rate (deaths per 100 000 workers)</b>								
Agriculture, forestry & fishing	21.54	18.20	16.66	13.41	16.17	19.57	11.38	17.64
<i>Agriculture</i>	19.90	14.01	14.64	11.10	14.29	12.28	11.08	15.65
Transport, postal & warehousing	13.79	10.04	11.91	14.44	14.35	11.02	8.81	7.20
<i>Road freight transport</i>	29.69	28.71	32.92	40.20	38.11	27.83	23.38	20.50
Construction	4.91	3.36	4.90	5.31	4.04	4.45	4.08	3.77
Manufacturing	1.65	2.19	2.24	2.93	2.56	2.46	2.39	2.02
Administrative & support services	1.73	2.85	3.38	3.37	3.15	2.62	2.41	2.75
Arts & recreation services	1.95	4.91	1.69	2.76	3.10	1.00	1.01	3.96
Public administration & safety	1.10	2.44	1.80	2.46	0.88	1.94	0.59	1.13
Mining	5.22	7.60	11.64	8.13	6.21	7.18	3.47	3.41
Wholesale trade	3.70	2.63	1.86	1.97	2.81	2.00	1.42	1.45
Retail trade	0.45	0.52	0.77	1.10	0.81	0.41	0.75	0.32
Health care & social assistance*	0.42	0.31	0.29	0.09	0.18	0.26	0.49	0.15
Other services*	1.42	1.69	1.68	1.91	0.65	2.23	0.44	0.44
Professional, scientific & technical services*	0.64	0.61	0.84	0.67	1.02	0.39	0.24	0.23
Accommodation & food services*	0.46	0.59	0.89	0.87	0.43	0.14	0.27	0.26
Information media & telecommunications*	0.46	0.00	0.42	0.40	1.31	0.00	1.40	0.93
Electricity, gas, water & waste services*	7.65	7.35	8.49	3.79	3.54	2.97	2.27	0.66
Rental, hiring & real estate services*	1.69	2.30	3.70	1.50	5.03	2.07	2.16	0.48
Education & training*	0.28	0.14	1.06	0.53	0.50	0.62	0.36	0.12
Financial & insurance services*	0.00	0.00	0.26	0.00	0.00	1.26	0.25	0.00
<b>All industries</b>	<b>2.82</b>	<b>2.58</b>	<b>2.87</b>	<b>2.90</b>	<b>2.75</b>	<b>2.64</b>	<b>1.99</b>	<b>1.93</b>

\* Movements in fatality rates in industries where 5 or fewer fatalities occurred in most years should be viewed with caution.

## 2.5 Involvement of vehicles

Over the eight 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.

**Figure 9 Worker fatalities: number by traffic incident status, 2003–04 to 2010–11**



There was a major fall in the number of *Traffic incident* fatalities in 2010–11 compared with the previous year: 82 down to 53. Workers in vehicles accounted for 46 of the 53 fatalities with the remaining 7 being pedestrians who were hit by vehicles, 5 who were hit by a truck and 2 who were hit by a car.

Of the 46 fatalities where the worker was in a vehicle at the time of the incident, 25 were in a truck, 16 were in a car or other light vehicle and 5 were in other types of vehicles. The low 2010–11 result was due to 16 fewer truck driver fatalities and 16 fewer car driver fatalities compared with the previous year. In 2010–11, 52% of the crashes involved a single vehicle, this was slightly lower than the average over the eight years of 58%.

Of the 81 *Non-traffic vehicle incident* fatalities, 13 involved truck drivers and 8 were workers moving around a truck. These are similar numbers to the previous year. Most (39) of these workers were employed in the Agriculture, forestry & fishing industry with 10 of the incidents involving tractors, 10 involving aircraft and 7 involving quad bikes. The 39 fatalities is a considerable increase on the 23 in the previous year with most of the increase due to 7 fatalities involving quad bikes whereas in 2009–10 there were none.

There were also 15 workers employed in the Transport, postal & warehousing industry who were killed in a *Non-traffic vehicle incident* of which 7 involved workers in trucks and 4 in aircraft. This is a slight increase on the previous year in which the 13 fatalities involved 5 workers in trucks and 3 in aircraft.

Construction workplaces were the location of a further 11 *Non-traffic vehicle incident* fatalities of which 4 were trucks drivers and 4 were workers on foot who were hit by vehicles.

## 2.6 State/territory of death

The most populous states account for the highest number of Worker fatalities. In 2010–11, 56 workers were killed in Queensland, 54 in New South Wales and 40 in Victoria. In 2010–11 workers in these three states comprised 77% of Australia's working population and accounted for 68% of the Worker fatalities. Decreases from the previous year were recorded by New South Wales (down 7), Victoria (down 6) and the Northern Territory (down 2) with increases in the other five states and territories, the largest being Western Australia, South Australia and Tasmania all increasing by 4.

Table 4 shows the number of Worker fatalities for each state and territory split by whether the fatality occurred on a public road (Traffic incident) or not (Non-traffic incident). In 2010–11, 24% of fatalities were attributed to a Traffic incident. This is the lowest proportion in the series following a high of 37% in 2009–10. Substantial falls in the number of traffic incident fatalities were recorded in New South Wales (down 11) and Western Australia (down 8). Over the eight years of the series Victoria recorded the highest proportion of traffic incident fatalities (38%) followed by New South Wales (35%).

**Table 4 Worker fatalities: number by traffic incident status and state/territory of death, 2003–04 to 2010–11**

State/territory of death	2003–04	2004–05	2005–06	2006–07	2007–08	2008–09	2009–10	2010–11
<b>Non-traffic incident</b>								
New South Wales	55	44	67	65	53	48	37	41
Victoria	31	35	30	42	34	35	31	29
Queensland	45	43	51	43	47	47	38	43
Western Australia	29	19	15	25	34	31	14	26
South Australia	16	9	18	9	11	20	9	15
Tasmania	7	8	8	9	8	7	3	6
Northern Territory	7	4	6	1	6	6	6	6
Australian Capital Territory	1	2	2	1	0	2	0	1
<b>Australia</b>	<b>191</b>	<b>164</b>	<b>197</b>	<b>195</b>	<b>193</b>	<b>196</b>	<b>138</b>	<b>167</b>
<b>Traffic incident</b>								
New South Wales	31	32	35	29	28	32	24	13
Victoria	26	21	24	31	16	21	15	11
Queensland	8	18	23	26	31	25	16	13
Western Australia	7	10	3	13	9	6	15	7
South Australia	2	4	4	1	6	0	7	5
Tasmania	2	2	3	2	4	7	3	4
Northern Territory	3	3	1	2	4	2	2	0
Australian Capital Territory	0	0	0	1	1	0	0	0
<b>Australia</b>	<b>79</b>	<b>90</b>	<b>93</b>	<b>105</b>	<b>99</b>	<b>93</b>	<b>82</b>	<b>53</b>
<b>All Worker fatalities</b>								
New South Wales	86	76	102	94	81	80	61	54
Victoria	57	56	54	73	50	56	46	40
Queensland	53	61	74	69	78	72	54	56
Western Australia	36	29	18	38	43	37	29	33
South Australia	18	13	22	10	17	20	16	20
Tasmania	9	10	11	11	12	14	6	10
Northern Territory	10	7	7	3	10	8	8	6
Australian Capital Territory	1	2	2	2	1	2	0	1
<b>Australia</b>	<b>270</b>	<b>254</b>	<b>290</b>	<b>300</b>	<b>292</b>	<b>289</b>	<b>220</b>	<b>220</b>

Some jurisdictions showed substantial increases in non-traffic incident fatalities between 2009–10 and 2010–11. This was due to 2009–10 having the lowest number of these types of fatalities in the eight years of the series with the 138 fatalities recorded for Australia in 2009–10 being 29 fewer fatalities than the 167 in 2010–11 and 59 fewer than the high of 197 recorded in 2005–06. This low number of non-traffic fatalities in 2009–10 was particularly evident in Western Australia, Queensland and South Australia.

Figure 10 shows fatality rates among the states and territories for the period from 2006–07 to 2010–11. These data show that the Northern Territory had the highest fatality rate in all the years except 2006–07. Tasmania recorded the second highest rate in all years except 2009–10.

**Figure 10 Worker fatalities: fatality rate by state/territory of death, 2006–07 to 2010–11**

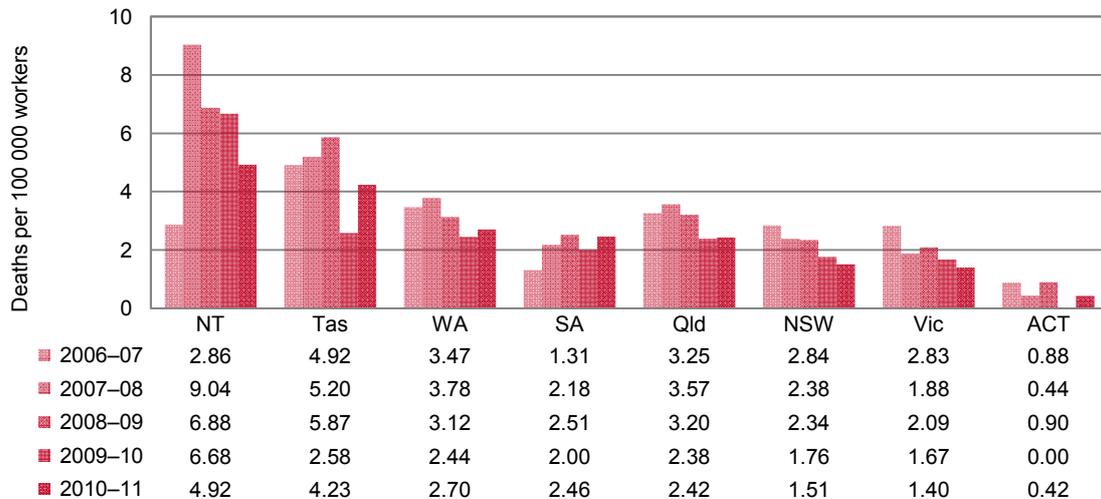


Table 5 shows that the high rates in the Northern Territory and Tasmania are due to relatively high numbers of fatalities in the Agriculture, forestry & fishing industry. Over the eight years of the series, 45% of Worker fatalities in Tasmania and 36% in the Northern Territory were of those employed in the Agriculture, forestry & fishing industry compared with 22% nationally. In 2010–11, Tasmania recorded 4 fatalities in this industry up from 1 in the previous year but similar to prior years while the Northern Territory recorded the same number this year as the previous year with 3 fatalities.

Over the eight years Tasmania and the Northern Territory also recorded high percentages of fatalities in the Public administration & safety industry with 8% compared with 2–4% in the other states. In contrast, Tasmania recorded a much lower proportion of Worker fatalities in the Construction industry than the other states and territories: 7% compared with 12–15% in the other states. The Northern Territory recorded the lowest percentage of Worker fatalities in the Transport, postal & warehousing industry (15%). The other states ranged from 17% in Tasmania to 26% in New South Wales.

Within the Mining industry high proportions of Worker fatalities occurred in Western Australia (10%) and South Australia (8%). In contrast only 1%–3% occurred in the other states and territories. In 2010–11, 2 mining workers in Western Australia lost their lives in a work-related incident and none in South Australia. This is down from 3 and 1 respectively in 2009–10. There were also 3 Mining fatalities in Queensland in 2010–11.

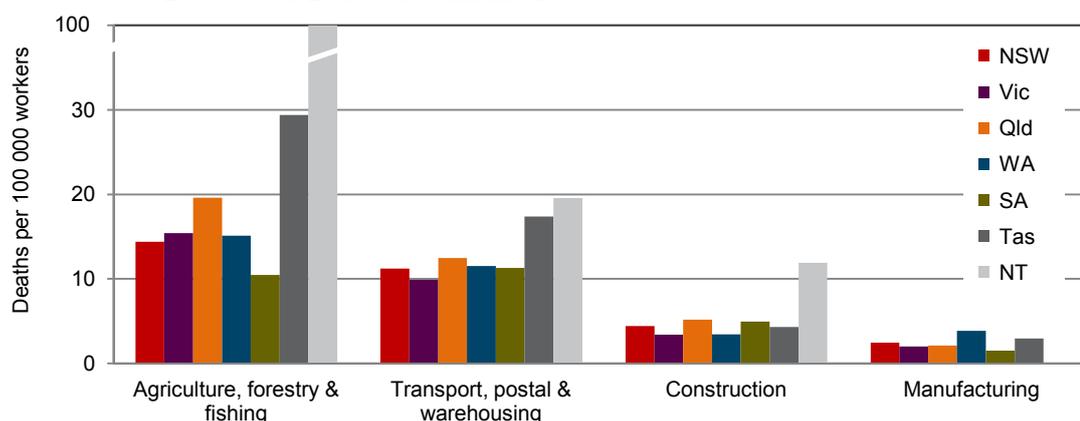
Fatalities by industry for the Australian Capital Territory are not shown in Table 5 or Figure 11 due to the small numbers involved.

**Table 5 Worker fatalities: number by state/territory of death and the industries with the highest number of fatalities, 2003–04 to 2010–11 combined**

Industry	New South Wales	Victoria	Queensland	Western Australia	South Australia	Tasmania	Northern Territory
<b>Number of fatalities while working</b>							
Transport, postal & warehousing	163	101	121	49	31	14	9
Agriculture, forestry & fishing	109	99	125	54	33	37	21
Construction	100	60	90	31	23	6	9
Manufacturing	60	51	32	29	11	5	1
Retail trade	29	13	10	8	1	0	0
Wholesale trade	27	17	17	6	1	1	0
Public administration & safety	25	17	20	7	3	7	5
Administrative & support services	25	11	22	12	5	1	3
Mining	8	6	18	27	11	1	2
Other industries	88	57	62	40	17	11	9
<b>Total</b>	<b>634</b>	<b>432</b>	<b>517</b>	<b>263</b>	<b>136</b>	<b>83</b>	<b>59</b>
<b>Percentage</b>							
Transport, postal & warehousing	26%	23%	23%	19%	23%	17%	15%
Agriculture, forestry & fishing	17%	23%	24%	21%	24%	45%	36%
Construction	16%	14%	17%	12%	17%	7%	15%
Manufacturing	9%	12%	6%	11%	8%	6%	2%
Retail trade	5%	3%	2%	3%	1%	0%	0%
Wholesale trade	4%	4%	3%	2%	1%	1%	0%
Public administration & safety	4%	4%	4%	3%	2%	8%	8%
Administrative & support services	4%	3%	4%	5%	4%	1%	5%
Mining	1%	1%	3%	10%	8%	1%	3%
Other industries	14%	13%	12%	15%	13%	13%	15%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

Figure 11 shows fatality rates for the four industries with the highest number of fatalities. 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 the Northern Territory (98.33 fatalities per 100 000 workers) and Tasmania (29.39) and relatively low rates in South Australia (10.49). In the Transport, postal & warehousing industry similar fatality rates were recorded by most states with higher rates in the Northern Territory and Tasmania. The Agriculture, forestry & fishing industry also recorded a very high rate in the Northern Territory.

**Figure 11 Worker fatalities: fatality rate by selected industries and state of death, 2003–04 to 2010–11 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 2010–11, 79 workers (36%) died following a *Vehicle incident*, the lowest number since the series began. A further 29 workers (13%) were killed due to *Falls from a height* and 26 (12%) each from *Being hit by moving objects* and *Being hit by falling objects*.

Figure 12 shows the proportions for the eight years combined. These data show that *Vehicle incident* accounted for 45% of all fatalities in the eight years, considerably higher than the proportion for 2010–11 of 36%.

**Figure 12 Worker fatalities: Proportion by mechanism of incident, All years (2003–04 to 2010–11 combined) and 2010–11**

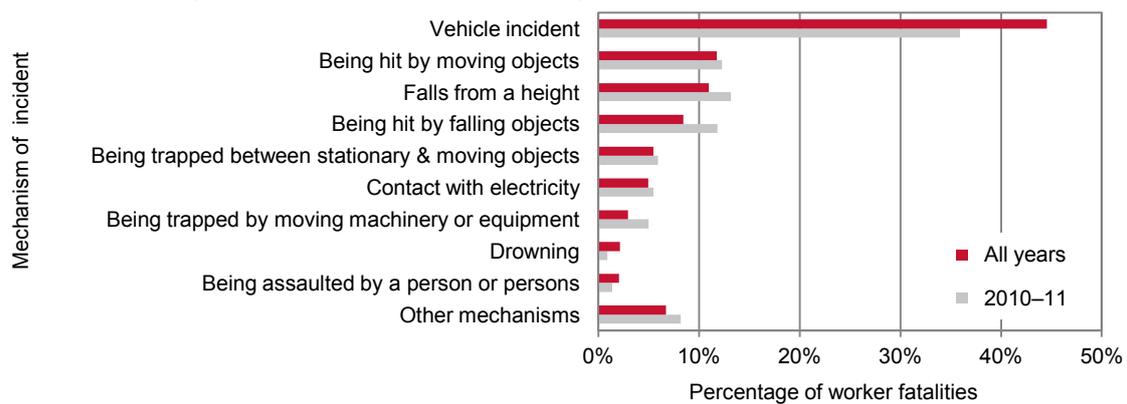


Table 6 shows that of the 79 workers killed in a *Vehicle incident* in 2010–11, 47 occurred on a public road (*Vehicle incident*). This is half the number recorded in 2006–07 and 2007–08. These data also show that the 16 fatalities in aircraft crashes in 2010–11 is similar to other years while the 11 fatalities from a *Rollover* of a farm, mining or construction vehicle not on a public road is up on the 7 recorded in the previous year but similar to other years.

Of the 29 fatalities from *Falls from a height* in 2010–11, 28% (8 fatalities) were from falling off *Ladders*, 14% (4) from *Buildings & other structures* and 10% (3) from *Horses*. Over the eight years, 20% of deceased workers fell from *Buildings & other structures*, 17% from *Ladders*, 9% from *Horses*, 8% from *Trucks, semi-trailers & lorries* and 7% from *Scaffolding*. The Construction industry employed 45% of the workers who died from injuries sustained in falls in 2010–11 but across the eight years, this industry accounts for 37% of Worker fatalities due to *Falls from a height*. The 13 fatalities in 2010–11 for the Construction industry due to *Falls from a height* is the highest number since 2005–06 when 15 fatalities occurred.

Of the 27 fatalities in 2010–11 that resulted from *Being hit by moving objects*, 20 (74%) involved being hit by a vehicle, 3 of which were the worker's own vehicle. Over the eight years of the series 70% of fatalities from *Being hit by moving objects* involved being hit by a vehicle, one-third of them being hit by their own vehicle. In 69 of the incidents the worker was hit by a truck, in 46 a car or other light vehicle and in 20 a tractor.

The fatalities from *Being hit by moving objects* also includes 3 farmers who were accidentally shot while eradicating vermin from their properties. A similar number were killed in 2009–10. There have been 14 work-related shooting deaths in total over the eight years.

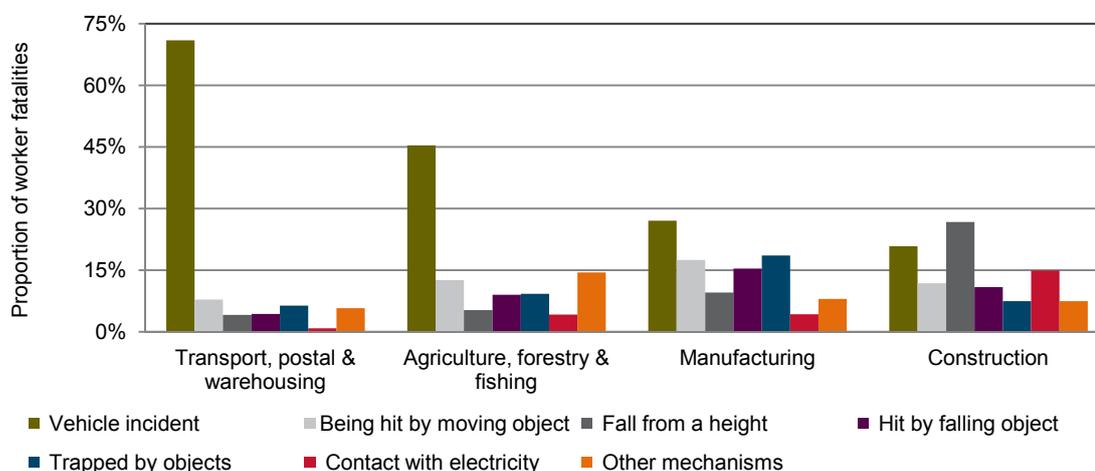
*Being hit by falling objects* claimed the lives of 26 workers in 2010–11, the highest number since 2004–05. In 12 of the cases the worker was hit by a falling vehicle such as a forklift, tractor or truck. Some of these incidents occurred while undertaking repairs. In addition 5 workers were struck by falling trees.

**Table 6 Worker fatalities: number by mechanism of incident, 2003–04 to 2010–11**

Mechanism of incident	2003–04	2004–05	2005–06	2006–07	2007–08	2008–09	2009–10	2010–11
Vehicle incident	118	123	127	121	147	133	103	79
<i>Traffic incident</i>	72	85	83	97	94	84	78	46
<i>Aircraft crash</i>	20	15	22	5	15	20	14	16
<i>Rollover</i>	11	12	7	6	17	11	7	11
Falls from a height	24	25	32	38	28	34	24	29
<i>Buildings &amp; other structures</i>	12	3	9	5	2	8	5	4
<i>Ladders</i>	2	3	5	6	8	5	4	8
<i>Horses</i>	2	4	2	5	2	1	1	3
<i>Trucks, semi-trailers &amp; lorries</i>	1	4	2	3	1	4	2	1
<i>Scaffolding</i>	1	1	1	3	3	3	3	1
Being hit by moving objects	45	20	36	32	32	36	23	27
<i>Hit by vehicle</i>	28	13	24	20	28	23	17	20
Being hit by falling objects	17	26	22	25	24	22	18	26
Being trapped between stationary & moving objects	11	18	19	15	9	9	13	12
Contact with electricity	20	12	18	25	8	12	9	13
Being trapped by moving machinery or equipment	5	6	5	10	11	8	7	11
Drowning/ immersion	8	3	3	7	6	13	4	2
Being assaulted by a person or persons	9	7	8	9	2	4	2	3
All other mechanisms	13	14	20	18	25	18	17	18
<b>Total</b>	<b>270</b>	<b>254</b>	<b>290</b>	<b>300</b>	<b>292</b>	<b>289</b>	<b>220</b>	<b>220</b>

Figure 13 shows that 71% of fatalities in the Transport, postal & warehousing industry involved a *Vehicle incident* while in the Agriculture, forestry & fishing industry this mechanism accounted for 45% of fatalities. The Construction industry displays a different profile with the greatest proportion of fatalities (27%) due to *Falls from a height* followed by *Vehicle incident* with 21% and *Contact with electricity* 15%.

**Figure 13 Worker fatalities: Number by mechanism of incident and selected industries, 2003–04 to 2010–11 combined**



The Manufacturing industry has more similar proportions for the various mechanisms with *Vehicle incident* accounting for 27%, *Trapped by objects* (which includes *Being trapped between stationary & moving objects* and *Being trapped by moving machinery or equipment*) 19%, *Being hit by moving objects* 17% and *Being hit by falling objects* 15%.

## 2.8 Working with trucks

In 2010–11, 59 workers died while working in or around a truck. These fatalities amounted to 27% of all Worker fatalities. Incidents on public roads accounted for two-thirds of the fatalities with 27 truck drivers and 1 truck passenger killed. In addition there were 9 workers in other vehicles and 1 worker on foot who were killed when they came in contact with a truck.

The 20 incidents not on public roads involved 13 truck drivers and 7 pedestrian workers.

Of the 40 truck drivers who died in 2010–11, 21 died in single vehicle crashes, 10 died in collisions with another truck and 6 in collisions with other vehicles.

From 2003–04 to 2010–11, 645 workers have been killed in truck-related incidents. These fatalities include 493 truck drivers, 18 passengers in trucks, 67 workers in light vehicles such as a car or utility and 55 workers on foot.

Table 7 shows that the number of truck-related fatalities has fallen over the past four years from a high of 96 fatalities in 2007–08 to 59 in 2010–11. The decrease is mainly associated with a decrease in the number of fatalities involving truck drivers which decreased from a high of 76 in 2007–08 to a low of 40 in 2010–11.

**Table 7 Fatalities due to working with trucks: number by type of vehicle the victim was in, 2003–04 to 2010–11**

	Truck driver	Truck passenger	Car/light vehicle occupant	Worker on foot	Other vehicle occupant	Total
2003–04	71	2	9	9	0	91
2004–05	63	2	6	3	0	74
2005–06	54	5	7	11	1	78
2006–07	73	1	5	2	4	85
2007–08	76	0	11	8	1	96
2008–09	64	5	9	7	3	88
2009–10	52	2	13	7	0	74
2010–11	40	1	7	8	3	59
<b>Total</b>	<b>493</b>	<b>18</b>	<b>67</b>	<b>55</b>	<b>12</b>	<b>645</b>

Table 8 shows that of the 493 truck drivers, 368 (75%) were killed while driving the truck, 86 (17%) while unloading/loading, 23 while undertaking repair and maintenance activities and 16 while undertaking other activities such as having a rest break or being temporarily out of the vehicle while opening a gate.

Over the eight years of the series, 13 passengers in trucks and 71 other workers killed in a *Vehicle incident* involving a truck.

Loading or unloading the truck posed the greatest risk for workers other than the truck driver. In addition to the 86 truck drivers who died while the truck was being loaded or unloaded, 27 other workers were killed due to assisting with this activity or simply being in the vicinity at the time.

**Table 8 Fatalities due to working with trucks: number by mechanism of incident and activity at time of incident, 2003–04 to 2010–11 combined**

Mechanism	Driving	Loading/ unloading	Repair/ main- tenance	Other activity	Total
<b>Truck drivers</b>	<b>368</b>	<b>86</b>	<b>23</b>	<b>16</b>	<b>493</b>
<i>Vehicle incident</i>	361	3	0	0	364
<i>Being trapped between stationary &amp; moving objects</i>	0	28	8	4	40
<i>Hit by moving objects</i>	0	21	8	9	38
<i>Hit by falling objects</i>	1	16	2	0	19
<i>Fall from a height</i>	0	15	3	1	19
<i>Other and unknown</i>	6	3	2	2	13
<b>Truck passengers</b>	<b>13</b>	<b>1</b>	<b>0</b>	<b>4</b>	<b>18</b>
<i>Vehicle incident</i>	13	0	0	0	13
<i>Other and unknown</i>	0	1	0	4	5
<b>Other workers</b>	<b>73</b>	<b>26</b>	<b>18</b>	<b>17</b>	<b>134</b>
<i>Vehicle incident</i>	71	0	0	0	71
<i>Hit by moving objects</i>	0	8	10	16	34
<i>Hit by falling objects</i>	2	7	3	0	12
<i>Being trapped between stationary &amp; moving objects</i>	0	7	4	0	11
<i>Other and unknown</i>	0	4	1	1	6
<b>Total</b>	<b>454</b>	<b>113</b>	<b>41</b>	<b>37</b>	<b>645</b>

Of the 18 non-truck drivers who were killed while undertaking repair or maintenance activities all but 4 were repairing the truck at the time of the incident. The 4 non-truck repairers were hit on the side of the road by a truck while changing a tyre or doing other repairs on their own vehicle. There were also 16 workers who were *Hit by moving objects* while undertaking activities not related to the truck. In all of these cases the moving object was a truck. In 6 of the incidents the fatality involved a road traffic controller.

Single vehicle crashes resulted in the death of 338 truck drivers. This is 69% of all truck driver fatalities and 52% of all truck-related fatalities. A further 98 truck drivers (20% of truck drivers) were killed in a collision with another truck. In half of the incidents, responsibility for the crash lay with the deceased driver. There were also 28 truck drivers (6%) 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.

While trucks are used in a variety of industries, 343 of the 645 fatalities (53%) were sustained by workers in the Transport, postal & warehousing industry. Figure 14 shows the industries with the highest number of Worker fatalities that involved a truck and the type of vehicle the victim was in at the time of the incident. While there were 323 fatalities in the Transport, postal & warehousing industry where the victim was in the truck, 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 fatalities (10) where the victim was in another type of vehicle: 9 were in a car or other light vehicle 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 (10) who were hit by a truck.

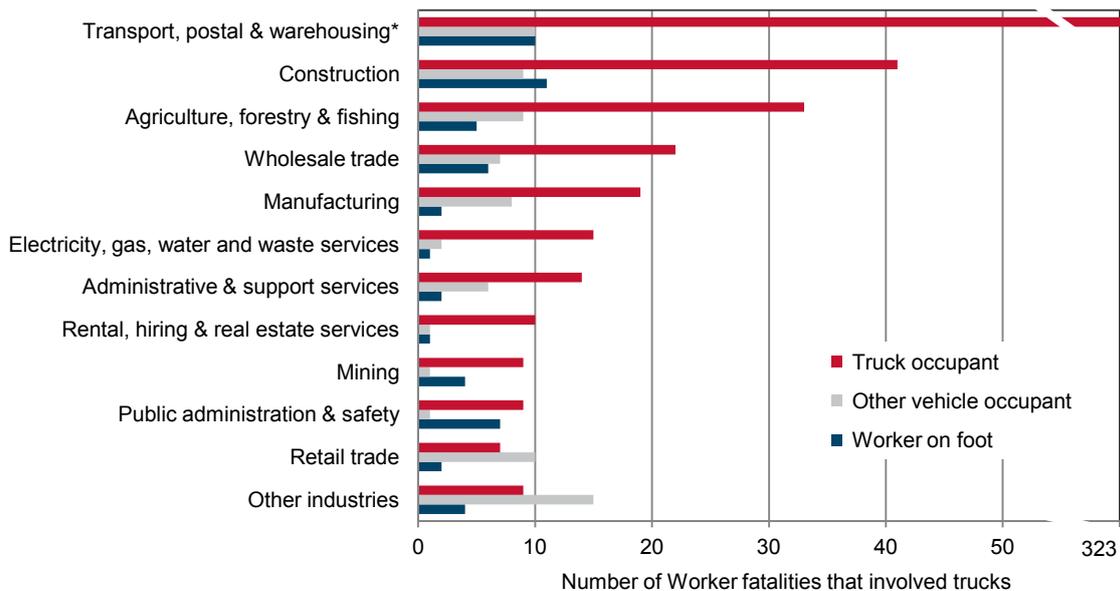
With 61 fatalities, the Construction industry recorded the second highest number of truck-related fatalities. Of these, were 41 workers killed while driving a truck. The Agriculture, forestry & fishing industry recorded the second highest number of truck-related fatalities (47). Of these, 33 workers died while driving a truck.

The Construction industry also had the highest number of workers walking around a worksite who were killed when they came into contact with a truck or the truck's cargo (11). Seven of the 11 workers on foot were working at road construction sites with 5 performing traffic control activities.

The Public administration & safety industry had 9 truck drivers who were killed and 7 workers on foot. Five of the workers on foot were involved in road construction activities at the time of the incident.

There were also 67 workers in cars who were killed when their car and a truck collided. The truck driver was responsible for 25 (37%) of these incidents with the car driver responsible for the remainder. Seven of these incidents involved a car driving into a stationary truck. There were 10 workers in cars in each of the Retail trade and Transport, postal & warehousing industries who were killed due to collisions with trucks.

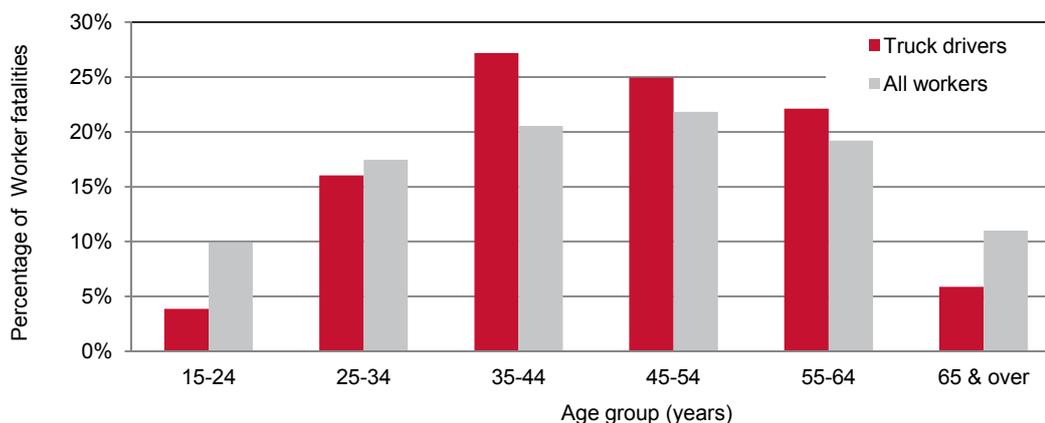
**Figure 14 Fatalities due to working with trucks: Number by victim vehicle type and industry, 2003–04 to 2010–11 combined**



\* the scale for truck occupant deaths for this industry has been altered.

Figure 15 shows the age profile of truck drivers who died while working was similar to the age profile of all workers. There were fewer fatalities in the youngest and oldest age groups and more in the middle age groups. The average age of a truck driver who died from injuries was 46 years compared with 45 for all workers.

**Figure 15 Worker fatalities: Proportion of truck drivers and all workers by age group, 2003–04 to 2010–11 combined**



## 2.9 Working on farms

In 2010–11, 24% (52) of all Worker fatalities involved the death of a worker on a farming property. Of these, 49 workers usually worked on the property while 3 workers had been hired temporarily to undertake some work on the property. The majority (32) of these workers were employed as managers, while 9 were employed as labourers and 6 as pilots.

Vehicles were involved in 73% (38) of the incidents: aircraft accounted for 12 fatalities, tractors 9 fatalities, cars 5 fatalities and quad bikes 5 fatalities.

Seven of the fatalities involved female workers. In all other years of the series females have accounted for 2 to 4 worker fatalities each year. Vehicle incidents were the cause of 4 of the fatalities involving female workers on farms in 2010–11.

Over the eight years of the series, 357 workers have died on farms, which amounted to 17% of all Worker fatalities. Of these 251 (70%) involved a vehicle. Figure 16 shows that over the eight years, 93 workers have died in incidents involving a tractor, 48 in aircraft incidents and 27 in quad bike incidents. Some incidents involved more than one vehicle.

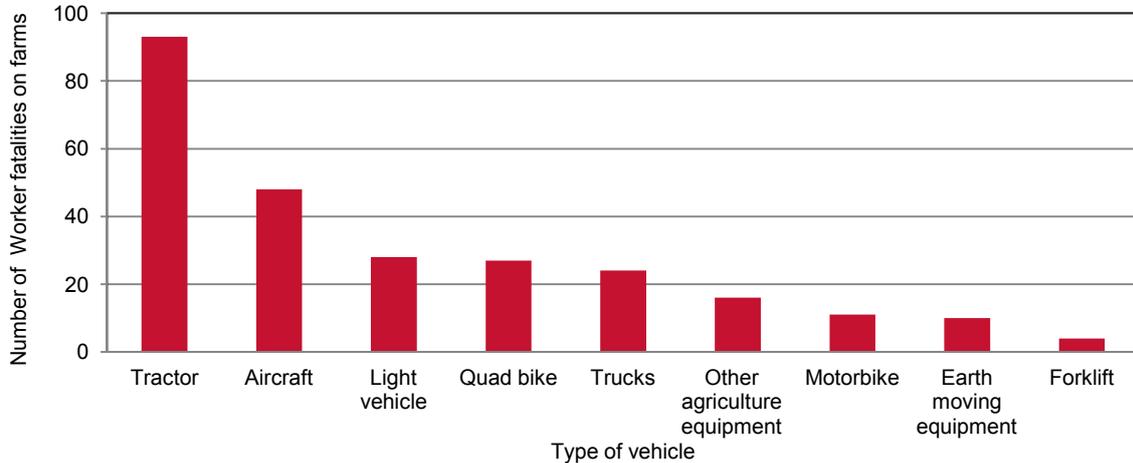
Of the 93 workers who died while working with or around a tractor, 34 were killed when the tractor rolled over after travelling on uneven ground or along embankments. A further 23 were hit by their own tractor after they temporarily alighted the vehicle. In many instances the tractor was not braked properly while the worker jumped off to open a gate or move a hay bale. Being trapped or crushed by a tractor claimed the lives of 14 workers. These incidents generally occurred while undertaking loading activities or repairs to the vehicle.

The 48 fatalities in aircraft incidents on farms represents 38% of all fatalities that were the result of aircraft crashes. These incidents involved 38 pilots and 9 passengers. There was also 1 worker who was hit by a plane while undertaking maintenance on it. In 18 of the incidents the worker was involved in mustering operations, in 17 the worker was crop dusting and in a further 9 incidents workers were undertaking general checking of the property.

The majority of the 27 quad bike incidents involved older workers. Workers aged 65 years and over accounted for 12 of the fatalities and workers aged 55–64 years accounted for 7 of the fatalities. In 20 of the incidents the worker died due to the quad bike rolling over and pinning them underneath. In the remaining 7, the

worker was thrown from the bike while travelling over uneven ground. It is clear in 13 of the incidents that the worker was mustering or moving animals between paddocks while in a further 4 incidents the worker was spraying for weeds. The remaining 9 incidents involved general travel around the property.

**Figure 16 Worker fatalities involving vehicles on farms: Number by type of vehicle involved, 2003–04 to 2010–11 combined**

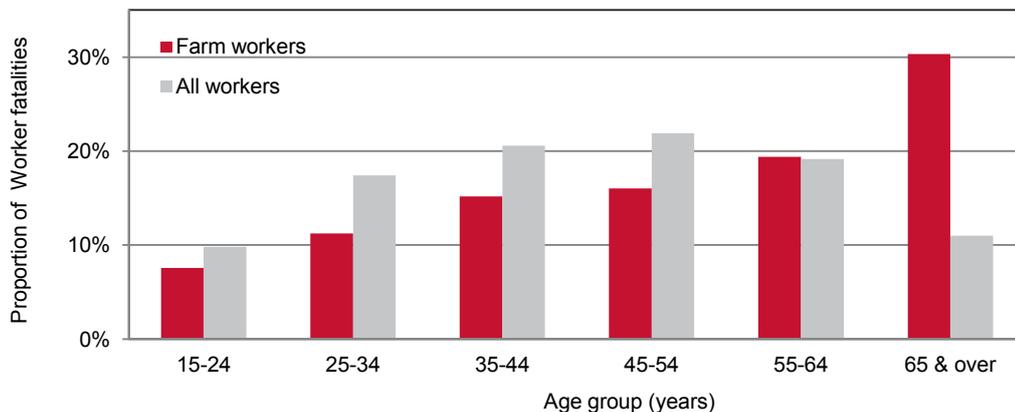


Of the 106 fatalities that did not involve a vehicle, 19 were due to *Falls from a height* of which 11 were from a horse. An additional 18 fatalities involved *Being hit by moving object* of which 9 involved accidental shootings. *Being hit by falling objects* accounted for 13 fatalities, of which 5 involved trees or branches and 4 involved buildings. There were also 18 workers who died after being hit or bitten by an animal and 11 workers who died from electrocution.

Workers aged 65 years and over account for 30% of all fatalities on farms. Figure 17 shows that this is nearly three times the proportion this age group represents in all Worker fatalities. Workers aged 65 years and over were killed in 39 of the 93 incidents involving tractors, 12 of the 27 incidents involving quad bikes and 11 of the 18 incidents involving being hit or bitten by an animal.

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 fatalities occurring on farms was lower than for all workers. The average age of a worker killed on a farm is 53 compared with 45 for all workers. These data show the greater risk of death for older workers on farms.

**Figure 17 Worker fatalities on farms: Number by age group, 2003–04 to 2010–11 combined**

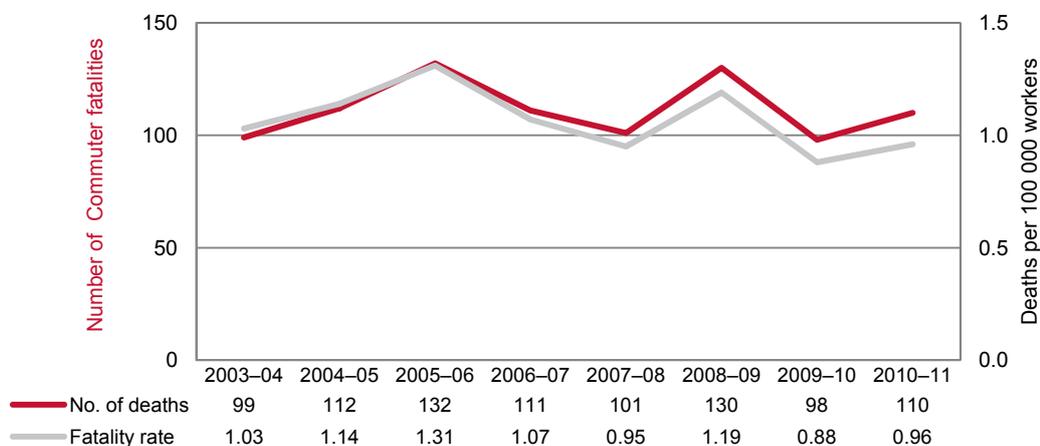


### 3 Commuter fatalities

In 2010–11, 110 workers died while travelling to or from work. While higher than the previous year, this number is still lower than most other years in the series. This number is likely to undercount the true number of workers killed while travelling to and from work 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 18 shows that the highest number of commuter fatalities (132) was recorded in 2005–06 followed by 130 in 2008–09.

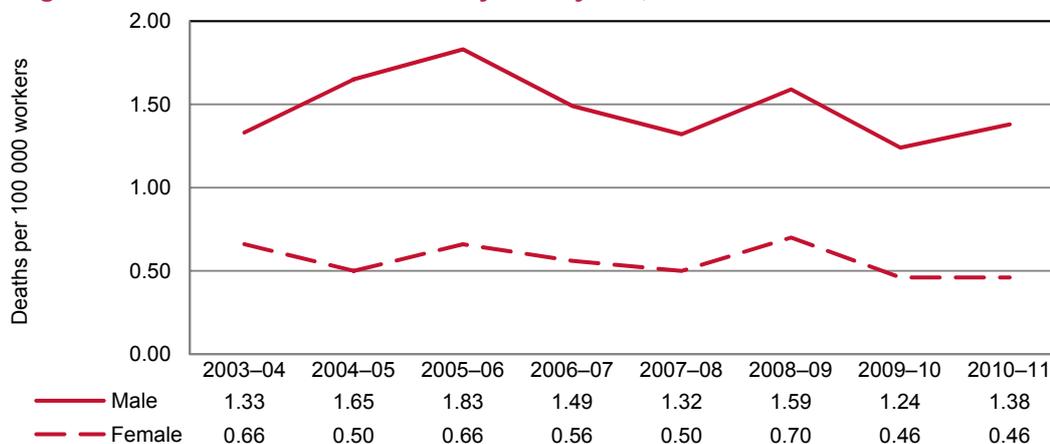
The 110 fatalities recorded in 2010–11 represents 0.96 commuter deaths per 100 000 workers which is the third lowest rate in the eight years of the series.

**Figure 18 Commuter fatalities: Number of fatalities and fatality rate, 2003–04 to 2010–11**



In 2010–11, 24 female workers and 86 male workers died while commuting. Over the eight years, 76% of the commuter fatalities involved male workers. Figure 19 shows that over the eight years of the series the commuting fatality rate for male workers was nearly three times the rate for female workers. In 2010–11, the male rate of 1.38 commuter deaths per 100 000 workers was more than three times the female rate of 0.46.

**Figure 19 Commuter fatalities: fatality rate by sex, 2003–04 to 2010–11**



### 3.1 Characteristics by age group

Figure 20 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 eight years of the series, 181 male workers and 61 female workers aged less than 25 years died while commuting compared with 20 male workers and 2 female workers aged 65 years & over.

**Figure 20 Commuter fatalities: number by age group and sex, 2003–04 to 2010–11 combined**

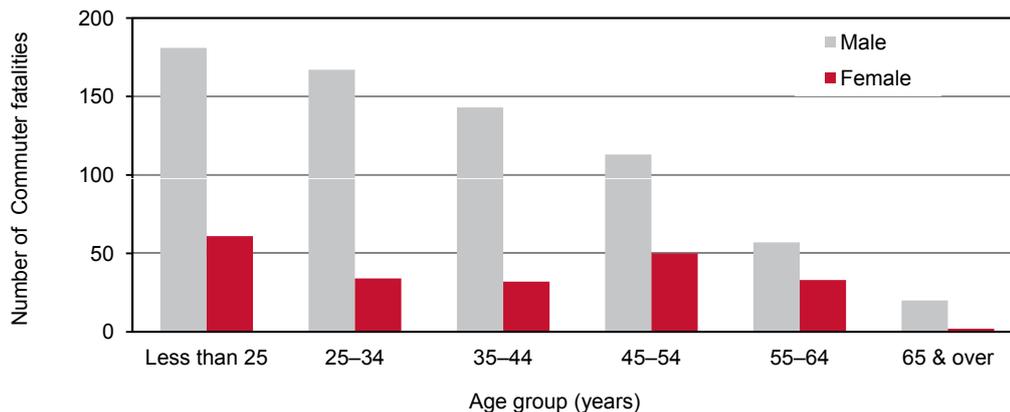
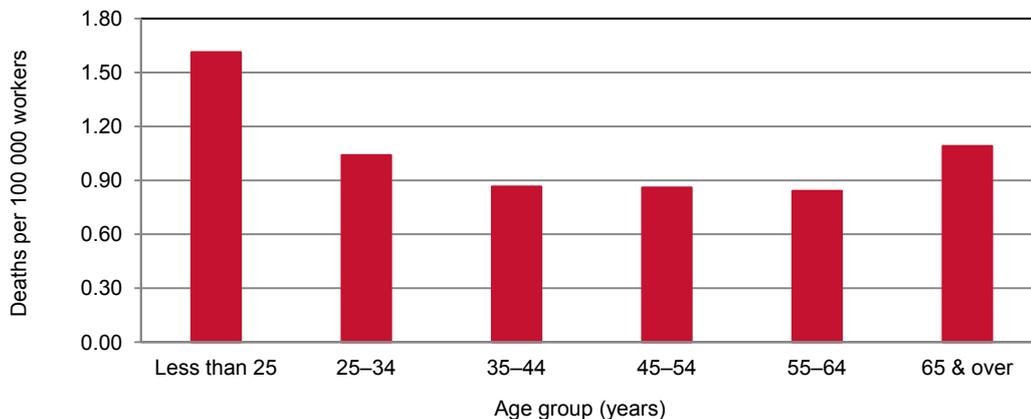


Figure 21 shows that commuters aged less than 25 years recorded 1.64 commuter deaths per 100 000 workers which is nearly double the rate for workers in the 35–44, 45–54 and 55–64 years age groups. The 65 years & over age group recorded the second highest fatality rate (1.06), however this age group only accounted for 2% of commuting fatalities.

**Figure 21 Commuter fatalities: fatality rate by age group, 2003–04 to 2010–11 combined**



### 3.2 Characteristics by Occupation

Table 9 shows that the largest number of commuter fatalities in 2010–11 occurred among Technicians & trades workers with 24 fatalities. This was followed by Labourers and Professionals both with 21. The highest commuter fatality rate in 2010–11 was recorded by Machinery operators & drivers closely followed by Labourers. The rates of 1.78 and 1.77 commuter deaths per 100 000 workers respectively were nearly twice the overall rate of 0.96. These two occupation groups have recorded the highest rates in all eight years of the series.

**Table 9 Commuter fatalities: number and fatality rates by occupation, 2003–04 to 2010–11**

Occupation	2003–04	2004–05	2005–06	2006–07	2007–08	2008–09	2009–10	2010–11
<b>Number of commuter fatalities</b>								
Technicians & trades workers	18	24	29	26	24	29	21	24
Labourers	22	21	36	21	23	31	18	21
Professionals	15	13	12	7	15	16	12	21
Machinery operators & drivers	13	15	19	20	15	24	12	13
Sales workers	2	7	8	10	4	7	6	9
Managers	8	12	9	9	3	6	6	9
Clerical & administrative workers	13	3	11	9	6	9	5	5
Community & personal service workers	7	16	7	8	10	8	14	5
<b>Total*</b>	<b>99</b>	<b>112</b>	<b>132</b>	<b>111</b>	<b>101</b>	<b>130</b>	<b>98</b>	<b>110</b>
<b>Fatality rate (deaths per 100 000 workers)</b>								
Technicians & trades workers	1.25	1.62	1.90	1.64	1.46	1.74	1.30	1.42
Labourers	2.01	1.87	3.25	1.81	1.96	2.65	1.53	1.77
Professionals	0.79	0.68	0.59	0.34	0.68	0.71	0.51	0.85
Machinery operators & drivers	2.05	2.31	2.92	2.86	2.06	3.31	1.71	1.78
Sales workers	0.20	0.69	0.77	1.00	0.39	0.68	0.58	0.81
Managers	0.69	0.96	0.70	0.68	0.22	0.43	0.41	0.62
Clerical & administrative workers	0.85	0.20	0.70	0.55	0.37	0.54	0.30	0.30
Community & personal service workers	0.87	1.93	0.81	0.88	1.09	0.82	1.38	0.47
<b>Total</b>	<b>1.03</b>	<b>1.14</b>	<b>1.30</b>	<b>1.06</b>	<b>0.94</b>	<b>1.18</b>	<b>0.88</b>	<b>0.96</b>

\* includes where occupation was not stated

At the lower level of the occupation classification, the largest number of commuting fatalities over the eight year period occurred among Sales assistants (30). In addition, there were 24 Crop farm workers, 23 Welfare, recreation & community arts workers, 23 Truck drivers and 21 Commercial cleaners who were killed on a journey to or from work.

### 3.3 Characteristics by Industry

In 2010–11, the highest number of fatalities while commuting (18) occurred among workers employed in the Construction industry. This is the second highest number in the eight years of the series for this industry. Table 10 shows that the Manufacturing industry recorded the next highest number (13) of Commuter fatalities. In contrast to the Construction industry, the Manufacturing industry recorded the second lowest number in the eight years of the series. The Retail trade industry recorded the third highest number of fatalities (10) and this was similar to other years.

Over the eight years of the series 153 of the 894 workers (17%) who died while commuting were employed in the Manufacturing industry. Within this industry 39 workers were employed in the Food product manufacturing sector. In addition, 27 commuters worked in the Fabricated metal product manufacturing sector.

Of the 98 commuters in the Construction industry who died during the eight years, 73 worked in the Construction services sector. This is the sector where electricians, plumbers, painters and carpenters are employed.

At the lower level of the industry classification, the largest numbers of commuting fatalities over the eight years were among those working in Cafes & restaurants, Coal mining and Road freight, each accounting for 20 commuter

fatalities. This was followed by 19 fatalities among workers commuting to or from Hospitals and those commuting to or from work in the Building and other industrial cleaning services sector, 18 fatalities in the Meat processing sector and 17 in the Supermarket & grocery stores sector. Most of these industry sectors have workers working under shift arrangements that can involve early mornings or late nights.

In 2010–11, the highest commuter fatality rate was recorded by the Mining industry, with the rate of 2.44 commuter deaths per 100 000 workers two and a half times the national rate. The 5 commuter fatalities in this industry during 2010–11 was similar to previous years. 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.

**Table 10 Commuter fatalities: number and fatality rate by selected industry of employer, 2003–04 to 2010–11**

Industry of employer	2003–04	2004–05	2005–06	2006–07	2007–08	2008–09	2009–10	2010–11
<b>Number of commuter fatalities</b>								
Construction	9	9	19	8	12	15	11	18
Manufacturing	15	13	29	22	17	33	11	13
Retail trade	6	11	10	7	8	10	10	10
Transport, postal & warehousing	7	5	9	14	5	5	4	9
Administrative & support services	7	6	9	8	8	6	3	8
Professional, scientific & technical services	9	2	5	1	5	6	3	8
Agriculture, forestry & fishing	7	6	8	7	4	12	6	5
Accommodation & food services	6	10	7	9	7	6	6	6
Health care & social assistance	12	6	1	7	3	7	7	5
Mining	2	4	4	5	3	6	4	5
Education & training	5	3	5	2	7	4	2	5
Public administration & safety	3	13	7	5	4	8	8	2
Wholesale trade	0	2	1	3	1	3	9	5
Other and unknown industries <sup>(a)</sup>	11	22	18	13	17	9	14	11
<b>Total</b>	<b>99</b>	<b>112</b>	<b>132</b>	<b>111</b>	<b>101</b>	<b>130</b>	<b>98</b>	<b>110</b>
<b>Fatality rate (deaths per 100 000 workers)</b>								
Construction	1.16	1.08	2.17	0.85	1.24	1.52	1.10	1.74
Manufacturing	1.45	1.24	2.83	2.15	1.61	3.25	1.09	1.31
Retail trade	0.54	0.95	0.85	0.59	0.65	0.83	0.84	0.81
Transport, postal & warehousing	1.46	1.00	1.79	2.70	0.91	0.85	0.69	1.54
Administrative & support services	2.02	1.71	2.54	2.24	2.29	1.75	0.80	2.00
Professional, scientific & technical services*	1.43	0.31	0.70	0.13	0.64	0.77	0.36	0.93
Agriculture, forestry & fishing	1.91	1.68	2.30	2.00	1.13	3.36	1.63	1.42
Accommodation & food services	0.91	1.47	1.04	1.30	0.99	0.84	0.80	0.77
Health care & social assistance	1.27	0.61	0.10	0.65	0.27	0.61	0.58	0.39
Mining*	2.09	3.80	3.10	3.69	2.07	3.59	2.31	2.44
Education & training*	0.69	0.43	0.67	0.27	0.88	0.50	0.24	0.58
Public administration & safety*	0.44	1.84	0.98	0.67	0.54	1.03	1.09	0.16
Wholesale trade*	0.00	0.53	0.27	0.74	0.26	0.75	2.12	1.21
Other and unknown industries <sup>(a)</sup>	1.11	2.15	1.65	1.14	1.49	0.79	1.24	0.93
<b>All industries<sup>(a)</sup></b>	<b>1.03</b>	<b>1.14</b>	<b>1.30</b>	<b>1.06</b>	<b>0.94</b>	<b>1.18</b>	<b>0.88</b>	<b>0.96</b>

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

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

### 3.4 Type of vehicle involved

Over the eight years of the series all but 7 of the commuter fatalities involved a vehicle. For the majority of the commuter fatalities (593 workers - 66%) the worker was a driver or a passenger in a car. Of these car incidents 59% were single vehicle crashes, 23% involved another car and 14% involved a truck. In addition, 20% (176 workers) of commuters were riding motorcycles when the incident occurred. Of these motorcycle incidents, 49% involved a car, 21% involved a truck and a further 26% were single vehicle crashes.

Over the eight years there were 64 commuters killed while walking to or from work: 35 were hit by a car, 10 were hit by a truck, 7 by a bus and 4 by a train.

**Table 11 Commuter fatalities: number by type of incident and mode of travel, 2003–04 to 2010–11 combined**

Mode of travel	Type of incident				Total
	Single vehicle incident	Incident involved a car	Incident involved a truck	Other	
Car occupant	352	138	82	21	593
Motorbike rider	45	87	37	7	176
Commuter on foot	0	35	10	19	64
Bicycle rider	9	10	10	2	31
Other vehicle occupant	20	3	5	1	29
<b>Total</b>	<b>426</b>	<b>273</b>	<b>144</b>	<b>50</b>	<b>893</b>



## 4 Bystander fatalities

In 2010–11, 44 people died from injuries received due to another person’s work activity. This is the second lowest number of fatalities identified since the series began. The highest number identified (59) occurred in 2004–05 and 2006–07.

Over the eight years of the series, 60% of the Bystanders killed were male. In 2010–11, 26 (59%) of the bystanders were male.

The number of Bystander fatalities identified in any one year is almost certainly an undercount. While the NCIS is likely to capture information on these fatalities, coronial records seldom provide sufficient information to determine the connection between the fatal incident and someone else’s work activity particularly in vehicle incidents involving cars. Bystanders are not compensated through the workers’ compensation system and few are captured through the notification system. Therefore year on year fluctuations do not necessarily mean a change in the risk to Bystanders.

It should be noted that fatalities involving vehicles only count as Bystander fatalities where available documentation (usually police reports) shows the driver of the work vehicle to be at fault. Fatalities are not included in the count where a non-working person is considered ‘at fault’.

### 4.1 Characteristics by age group

Table 12 shows that the highest number of Bystander fatalities in 2010–11 was among those in the 65 years & over age group with the 13 fatalities accounting for 30% of all Bystander fatalities in that year. Seven of the 13 fatalities involved a vehicle. Over the eight years, 19% of the bystanders were people in this age group while the Under 15 years age group accounted for 27% and the other age groups 10% or 11%. The age profile this year is different to previous years with considerably more in the 65 years & over age group and considerably fewer in the Under 15 years age group.

**Table 12 Bystander fatalities: number by age group, 2003–04 to 2010–11**

Age group	2003–04	2004–05	2005–06	2006–07	2007–08	2008–09	2009–10	2010–11
Under 15 years	15	12	13	25	17	10	15	4
15–24 years	4	4	7	1	6	14	5	6
25–34 years	6	8	5	4	4	6	5	5
35–44 years	7	10	2	5	4	4	4	6
45–54 years	4	5	2	12	7	3	3	4
55–64 years	8	7	10	3	4	3	6	6
65 years & over	8	13	15	9	10	4	7	13
<b>Total</b>	<b>52</b>	<b>59</b>	<b>54</b>	<b>59</b>	<b>52</b>	<b>44</b>	<b>45</b>	<b>44</b>

### 4.2 Location of incident

In 2010–11, nearly two-thirds (64% - 28 fatalities) of Bystander fatalities involved a *Traffic incident* (an incident on a public road). Over the eight years, *Traffic incident* accounted for 57% of all Bystander fatalities. In addition, 10% of Bystander fatalities occurred on agricultural properties with 14 of the 43 fatalities on agricultural properties involving non-working people drowning in dams and other waterways.

### 4.3 Mechanism of incident

Table 13 shows that over the eight years 52% of the Bystander fatalities were due to a *Vehicle incident*. Of the 213 *Vehicle incident* fatalities, 126 involved a collision with a truck and 16 involved a worker in a car colliding with another car. There were also 25 passengers in aircraft and 9 bus passengers that were killed.

*Being hit by moving objects* resulted in 20% of the Bystander fatalities with vehicles responsible for all the fatalities. Being hit by a truck resulted in the fatalities of 34 bystanders and being hit by a car or other light vehicle killed a further 27.

*Drowning* incidents in a work environment resulted in the fatalities of 35 people over the eight years, 9% of all Bystander fatalities. Drowning in farm dams was the largest group with 12 fatalities, 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 13 Bystander fatalities: number by mechanism of incident and breakdown agency, 2003–04 to 2010–11 combined**

Mechanism of incident/ Type of incident	Number of fatalities	Percentage
Vehicle incident	213	52%
Truck-related vehicle incidents	126	31%
Car occupant in incident with truck	75	18%
Non-working passengers in trucks	16	4%
Motorbike rider in incident with truck	14	3%
Train occupant in incident with truck	11	3%
Bicycle rider in incident with truck	8	2%
Aircraft occupants	25	6%
Car occupant in incident with working car	16	4%
Bus passengers	9	2%
Other vehicle incidents	37	9%
Being hit by moving objects	82	20%
Hit by truck	34	9%
Hit by car or other light vehicle	27	7%
Drowning/immersion	35	9%
Drowned in farm dams	12	3%
Fell from working watercraft	9	2%
Drowned in swimming pools	7	2%
Falls	31	8%
Being hit by falling objects	17	4%
All other mechanisms	31	8%
<b>Total Bystander fatalities</b>	<b>409</b>	<b>100%</b>

## 5 National road toll comparison

Over the three years from 1 July 2008 to 30 June 2011, there were 615 work-related fatalities that involved a *Traffic incident*, which is a death arising from a collision involving a vehicle on a public road. These fatalities represent 53% of all work-related fatalities. Table 14 shows that Bystander fatalities made up 12% of the *Traffic incident* fatalities while around half were commuters and just over one third were workers.

**Table 14 Work-related traffic fatalities: number by worker type, 2008–09, 2009–10 and 2010–11**

Type of worker	Number of Traffic incidents			Total	
	2008–09	2009–10	2010–11	Number	Percentage
Bystander	19	30	28	77	12%
Commuter	128	97	106	331	52%
Worker	93	82	53	228	36%
<b>Total</b>	<b>240</b>	<b>209</b>	<b>187</b>	<b>636</b>	<b>100%</b>

These numbers can be compared with data from the Australian Road Deaths Database<sup>1</sup> to provide an estimate of the proportion of road deaths that are work-related. The Australian Road Deaths Database contains details of road transport crash fatalities in Australia (commonly called the national road toll) as reported by the police each month to the State and Territory road safety authorities. In this database a death is classified as resulting from a road crash if the crash occurred on a public road, is unintentional and the death occurred within 30 days from injuries sustained in the crash. This database shows that in the two years 2009–10 to 2010–11 a total of 2688 people died on Australian roads.

Deaths from a *Traffic incident*, as shown in this publication, follow a similar definition but without the restriction on the time of death. Over the same two year period 396 *Traffic incident* fatalities were recorded.

This means that at least 15% of all road crash deaths involved some kind of work activity. Due to the difficulty in accurately identifying whether a road death is work-related this proportion should be viewed as a lower bound on the true proportion.

### 5.1 Type of road user

The national road toll figures show that 48% of the people who died in a public road crash in the two years 2009–10 to 2010–11 were vehicle drivers with passengers comprising a further 21% and motorcyclists 16%. The work-related road fatalities profile is quite different: 63% of the road fatalities were drivers and 7% were passengers. Work-related motorcyclist fatalities comprised the same proportion of traffic incidents as all motorcycle fatalities of all road deaths (16%).

Table 15 shows that the group with the road user that had the highest proportion (19%) of work-related fatalities relative to the national road toll was Drivers. Car drivers accounted for 70% of the work-related driver fatalities and truck drivers 28%. Of the car drivers 61% were commuting and 26% were working at the time of the incident, while for the truck drivers all but 2 were working at the time of the incident.

1 [www.bitre.gov.au/statistics/safety/fatal\\_road\\_crash\\_database.aspx](http://www.bitre.gov.au/statistics/safety/fatal_road_crash_database.aspx) accessed 24 July 2012

**Table 15 Road fatalities: number by Road user type and data source, 2009–10 and 2010–11 combined**

Road user type	Australian road fatalities		Work-related traffic fatalities		% of road toll fatalities that are work-related
	Number	Proportion	Number	Proportion	
Driver	1 278	48%	249	63%	19%
Bicyclist	71	3%	11	3%	15%
Motorcyclist	427	16%	67	17%	16%
Pedestrian	351	13%	28	7%	8%
Passenger	558	21%	38	10%	7%
<b>Total*</b>	<b>2 688</b>	<b>100%</b>	<b>396</b>	<b>100%</b>	<b>15%</b>

\* includes deaths that do not fit in the displayed categories

Motorcyclists recorded the next highest proportion of the road toll fatalities that were work-related (16%) followed by Bicyclists (15%). Just about all of the Motorcyclists who died in work-related incidents were commuting at the time of the incident, 3 were bystanders and 2 were working at the time of the incident. Of the 11 Bicyclists who died in a work-related incident in the two years, 8 were commuting to work while the other 3 were bystanders (2 were hit by a truck and 1 was hit by a bus).

## 5.2 Involvement of trucks

The Australian Road Deaths Database shows that in the two years 2009–10 to 2010–11, 447 people were killed in incidents involving a rigid or articulated truck. The work-related Traumatic Injury Fatalities database records 167 fatalities on public roads where a truck was involved. This means that 37% of all road fatalities involving a truck were work-related. Conversely it means that in 63% of the truck-related incidents the death was not due to the actions of the truck, with the other party considered 'at fault'. Many of these incidents involved a car travelling across the centre lines on the road and into the path of a truck. This determination was made from police reports contained within NCIS.

Table 16 shows that for Australian road fatalities there were a similar number of road deaths due to single vehicle incidents as there were multiple vehicle incidents. This is not the same pattern for work-related fatalities where 54% involved multiple vehicles and 39% single vehicles. This results in 18% of multi-vehicle road death incidents being work-related compared with 13% of single vehicle road death incidents.

While 352 pedestrians died on a public road in Australia from 2009–10 to 2010–11, just 28 (8%) were considered to have occurred due to work activity. This is because for work-related fatalities an 'at fault' rule is applied. In many pedestrian incidents, the pedestrian was considered at fault by not crossing the road at a designated pedestrian crossing where work-related vehicles can see them. The work-related pedestrian fatalities included 13 bystanders, 11 commuters and 4 workers.

**Table 16 Road fatalities: number by crash type and data source, 2009–10 and 2010–11 combined**

Crash type	Australian road fatalities	Work-related traffic fatalities	% of road toll fatalities that are work-related
Single	1 190	156	13%
Multiple	1 146	212	18%
Pedestrian	352	28	8%
<b>Total</b>	<b>2 688</b>	<b>396</b>	<b>15%</b>

### 5.3 Influence of age

Table 17 shows that while young people (those aged 15 to 24 years) accounted for 23% of all road deaths in Australia from 2009–10 to 2010–11, just one in ten was work-related. This is in contrast with the 55–64 years age group which accounted for 11% of all road deaths but nearly one in four work-related traffic fatalities. Similar proportions of fatalities were also recorded for the 45–54 years age group: 13% of all road deaths and 23% of work-related fatalities.

These data also show that one in ten children killed on the roads died in a work-related incident. The 11 work-related road fatalities involving children included 8 who were hit by a truck and 3 who were hit by a car that was driven by a worker.

**Table 17 Road fatalities: number by age group and data source, 2009–10 and 2010–11 combined**

Road user type	Australian road fatalities		Work-related traffic fatalities		% of road toll fatalities that are work-related
	Number	Proportion	Number	Proportion	
0-14	108	4%	11	3%	10%
15-24	628	23%	70	18%	11%
25-34	459	17%	65	16%	14%
35-44	399	15%	84	21%	21%
45-54	358	13%	82	21%	23%
55-64	284	11%	66	17%	23%
65+	452	17%	18	5%	4%
<b>Total</b>	<b>2 688</b>	<b>100%</b>	<b>396</b>	<b>100%</b>	<b>15%</b>

### 5.3 Influence of sex

Nearly two-thirds (72%) of deaths on public roads in Australia involve males. Table 18 shows that males were also more likely to be killed in a work-related road incident than females with 16% of road deaths involving males being work-related compared with 9% for females.

**Table 18 Road fatalities: number by crash type and data source, 2009–10 and 2010–11 combined**

Crash type	Australian road fatalities	Work-related traffic fatalities	% of road toll fatalities that are work-related
Male	1954	321	16%
Female	730	75	10%
<b>Total</b>	<b>2688</b>	<b>396</b>	<b>15%</b>

### 5.4 State/ territory of death

Table 19 shows that Tasmania recorded the highest proportion of road fatalities that were work-related (37%). This finding results from a combination of the lowest number of road fatalities in Tasmania for many years combined with the highest number of work-related road fatalities in the time series.

Queensland and New South Wales recorded the next highest proportions of road fatalities that were work-related with 19% and 18% respectively. These high proportions are likely to be linked to the fact that commuting is covered under workers' compensation legislation in these states and workers' compensation data is one of the main sources of commuter fatality information. The data show

that 62% and 57% respectively of work-related road fatalities in these states were commuters.

It could therefore be concluded that the overall proportion of road deaths that are work-related may be closer to 18% than the 15% derived in this report if reliable data on commuting was available in all states and territories.

**Table 19 Road fatalities: number by state/territory and data source, 2009–10 and 2010–11 combined**

State/territory	Australian road fatalities		Work-related traffic fatalities		% of road toll fatalities that are work-related
	Number	Proportion	Number	Proportion	
Tasmania	62	2%	23	6%	37%
Queensland	513	19%	96	24%	19%
New South Wales	804	30%	141	36%	18%
Victoria	588	22%	69	17%	12%
Western Australia	378	14%	41	10%	11%
South Australia	231	9%	21	5%	9%
Australian Capital Territory	29	1%	2	1%	7%
Northern Territory	83	3%	3	1%	4%
<b>Total</b>	<b>2688</b>	<b>100%</b>	<b>396</b>	<b>100%</b>	<b>15%</b>

# 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 of death, 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 identified cases 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 fatalities, 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. The information in the National Coronial Information System (NCIS) relies heavily on information collected by the police and the police report 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 travelling away from the worksite during a work break. Workers' compensation data provides the best means of identification of Commuter fatalities but not all jurisdictions offer workers' compensation while commuting. 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 bicycle; 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 has records for all deaths involving vehicles, specific details of the reasons for travel are seldom available. This makes it difficult to identify a fatality decisively as a Commuter fatality from coronial records alone.

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

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

## **Bystander fatalities**

Deaths of people in the general public are included in this collection if the actions of a worker directly contributed to the death of the person. Under this definition an 'at fault' rule is applied. Information from a variety of sources including police reports is used to determine whether or not the bystander's action directly contributed to their death. If the bystanders' actions directly contributed to the death then the death is considered to be a 'Bystander fault' death and is not included in the database. The most common example of this is when a non-working person drives their car into the path of a truck and is killed.

There are many difficulties in identifying Bystander fatalities 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 fatalities in this report were identified by examining NCIS records involving heavy or light commercial vehicles as these are relatively few and can be manually checked. However due to the much higher number of deaths involving cars, it is unfeasible to perform individual checks and a bystander death is not likely to be identified unless the NCIS record is marked as work-related or media has alerted the project to a possible work-related bystander death. Estimates of Bystander fatalities in this collection should therefore be regarded as an undercount and movements over time considered with caution.

## **Deaths resulting from criminal activity**

Persons sustaining fatal injuries as a result of someone else's criminal activity are included in this collection if the decedent was at work or commuting at the time of the incident. 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 also included. Non-working persons fatally injured in an incident involving criminals and law enforcement officers or security officers are included as Bystanders. In the case of a bystander who is killed while the police are pursuing a vehicle for a traffic or other violation the death will be included regardless of whether they were hit by the police car or the offender's car.

## **Classification of fatalities**

Persons who die of injuries sustained while they are working are included among Worker fatalities even when the cause of the injury is another person's work activity. Similarly, fatalities 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 where death is a natural progression from a disease. In NCIS a death is classed as Natural causes when the person did not die from external causes. An external cause death is defined as any death that resulted directly or indirectly from environmental events or circumstances that caused injury, poisoning and other adverse effects (WHO, 1992).

### **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.

### **Deaths of persons undertaking criminal activity**

Persons fatally injured while undertaking criminal activities, such as gaining illegal entry into a building or work site or crashing a car while evading a police pursuit are 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.

## **3 Data sources**

This study uses information from three datasets:

- the National Data Set for Compensation-based Statistics (NDS)
- the Notified Fatalities Collection (NFC), and
- the National Coronial Information System (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 fatalities 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 fatalities in industries where a significant proportion of workers are 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 fatalities although jurisdictions are progressively introducing this data item
- only jurisdictions where commuting injuries are compensable provide data on Commuter fatalities
- Bystander fatalities 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 who die overseas are included in the NDS but are excluded from the Traumatic Injury Fatalities database
- 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 and Environmental Management Authority.

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 fatalities because these deaths are notified to and investigated by the police, road traffic authority or, in the case of plane crashes and marine fatalities, by Commonwealth agencies
- commuter fatalities are not within the scope of the collection, and
- it tends to capture work-related fatalities only when they occur shortly after the injury.

This project was reviewed following the introduction of model Work Health and Safety legislation. From 1 January 2012 more comprehensive reporting of fatalities has occurred.

## 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 the 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
- it is difficult to identify commuter and bystander fatalities.

### Identification of work-related fatalities in the NCIS

It is necessary to examine all NCIS records that have the potential to be work-related because the work-related flag may not be finalised until the case is closed. Prior to 2009–10 cases were extracted from NCIS if they met a set of criteria. From 2009–10, all records notified during the period are extracted. From this list, deaths are excluded that do not match the scope criteria such as self-intentional injuries and deaths from natural causes. The remaining cases are then examined more closely. In particular, all deaths that are coded as work-related or where the activity is coded as paid work are reviewed. In addition, all deaths that involve a heavy or light commercial vehicle, aircraft or occurred at a farm, industrial or commercial workplace are reviewed.

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

Reviewing all deaths provides greater confidence in the number of work-related fatalities identified from the NCIS. Full extracts for prior years have also been examined in this manner, with only a few additional fatalities 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 fatalities as it still relies on the coding in the NCIS.

### Other data sources

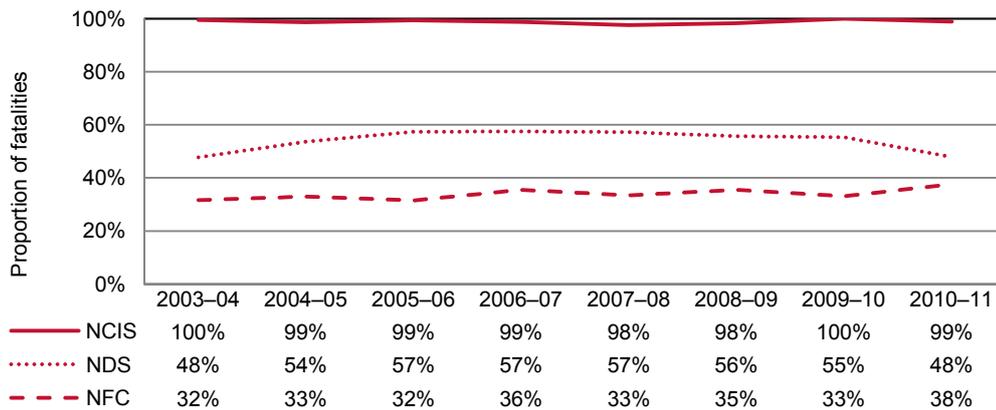
The media and accident investigation reports from the Australian Transport Safety Bureau relating to plane crashes, train crashes and maritime incidents are used to supplement information found in each of the datasets.

### Dataset contribution

Figure 22 shows that the proportion of cases each dataset contributed to the total number of work-related fatalities in each year has remained relatively stable over the time series. Nearly all fatalities have been found in the NCIS with over half identified in the NDS (except for 2010–11 with only 48%) and about one-third identified in the NFC.

Of the 374 work-related injury fatalities identified in 2010–11, just 68 (18%) were identified in all three datasets. Another 116 (31%) were found only in NCIS and 4 could only be found in the NDS. All of the NFC cases were identified in other datasets. When considering just Worker fatalities, 31% (68 of 220) were found in all three datasets.

**Figure 22 All work-related fatalities: Dataset contribution, 2003–04 to 2010–11**



## 4 Coverage of Worker fatalities

Table 20 shows the proportion of working fatalities in each industry captured by each dataset in 2010–11. The NCIS captured all fatalities in 16 of the 18 ANZSIC industry divisions where fatalities were identified. The NDS and NFC captured all fatalities in just three industries each.

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 21 shows that the Agriculture, forestry and fishing and Construction industries have the lowest percentages of workers who are employees, 54% and 73% respectively. The NDS captured just 27% and 59% of all work-related fatalities in these industries respectively.

**Table 20 Proportion of Worker fatalities by dataset by Industry of employer, 2010–11**

Industry of employer	NCIS	NDS	NFC	Number of fatalities
Agriculture, forestry & fishing	100%	27%	50%	62
Transport, postal & warehousing	98%	48%	38%	42
Construction	100%	59%	77%	39
Manufacturing	100%	70%	90%	20
Administrative & support services	100%	91%	55%	11
Arts & recreation services	100%	25%	38%	8
Public administration & safety	100%	88%	38%	8
Mining	100%	43%	100%	7
Wholesale trade	100%	100%	50%	6
Retail trade	100%	75%	25%	4
Accommodation & food services	50%	50%	50%	2
Health care & social assistance	100%	100%	50%	2
Information media & telecommunications	100%	50%	50%	2
Other services	100%	50%	100%	2
Professional, scientific & technical services	100%	0%	50%	2
Education & training	100%	100%	100%	1
Electricity, gas, water and waste services	100%	0%	0%	1
Rental, hiring & real estate services	100%	0%	0%	1
Financial & insurance services	..	..	..	..
<b>Total</b>	<b>99%</b>	<b>50%</b>	<b>57%</b>	<b>220</b>

**Table 21 Proportion of workers who were Employees by industry of employer, 2010–11**

Industry of employer	Percentage employees
Public administration and safety	99%
Mining	99%
Electricity, gas, water and waste services	98%
Financial and insurance services	96%
Information media and telecommunications	95%
Education and training	95%
Health care and social assistance	94%
Retail trade	93%
Wholesale trade	93%
Manufacturing	93%
Accommodation and food services	92%
Rental, hiring and real estate services	87%
Transport, postal and warehousing	87%
Professional, scientific and technical services	84%
Arts and recreation services	82%
Other services	77%
Administrative and support services	76%
Construction	73%
Agriculture, forestry and fishing	54%

## 5 Calculation of fatality rates

Fatality rates are calculated as the number of fatalities divided by the number of workers in the reference period. Employment figures from ABS quarterly Labour force data are used to calculate 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 for 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 17 workers in the eight years who were volunteering their labour when they were killed. Similarly the worker estimates do not include children under 15. Across the eight years, 3 workers under the age of 15 years have been killed. The inclusion of these fatalities 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 from injuries sustained as a result of another person's work activity and who was not engaged in a 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 are excluded.

## **Commuter fatality**

The death of a person who dies from 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 that 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.

<b>Location of incident</b>	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.
<b>Mechanism of incident</b>	The action, exposure or event that best describes the circumstances that resulted in the most serious injury.
<b>Occupation</b>	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.
<b>Traffic incident</b>	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. Cars that are caught in bushfires or hit by falling trees while on public roads are not classed as traffic incidents.
<b>Type of occurrence classification system (TOOCS)</b>	<p>A suite of four classifications to code the way an injury occurred, comprising:</p> <ul style="list-style-type: none"> <li>• the Nature of injury/disease classification</li> <li>• the Bodily location of injury/disease classification</li> <li>• the Mechanism of incident classification, and</li> <li>• the Agency of injury/disease classification.</li> </ul> <p>Version 3.1 is used for coding the data presented in this report. Fatalities are only coded by Mechanism and Agency.</p>
<b>Worker fatality</b>	The death of a person who dies from injuries sustained while at work, including those workers whose injury was caused by another's work activity.



Inquires

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