

WORK-RELATED TRAUMATIC INJURY FATALITIES AUSTRALIA 2013

JULY 2014



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Safe Work Australia

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AUSTRALIA 2013**

July 2014



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ISBN [PDF] 978-1-74361-598-0

[DOCX] 978-1-74361-599-7

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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) and as a result of someone else's work activity (bystander fatality). Previous reports have included fatalities that occurred while the worker was commuting to or from work (commuter fatality). However, these fatalities have always been difficult to distinguish from other road fatalities and this project relied heavily on workers' compensation data. As fewer jurisdictions are now providing compensation coverage for commuting, the integrity of the commuter fatality collection has diminished and has therefore been ceased.

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).

The scope of this collection includes 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.

The report includes 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), 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 are classified as a worker rather than as a bystander.

Changes from previous publications may also be evident due to the availability of additional information from finalised coroners reports and additional workers' compensation claims.

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Summary of findings

Worker fatalities

In 2013, 191 workers were fatally injured at work. This is 16% lower than the 228 deaths recorded in 2012 and 39% lower than the highest number of worker deaths recorded in the series (311) in 2007. Most of the decrease from 2012 to 2013 was due to a decrease in the number of workers killed in vehicle crashes on public roads (68 down to 43).

The 191 fatalities in 2013 equates to a fatality rate of 1.64 fatalities per 100 000 workers. This is the lowest fatality rate since the series began 11 years ago. The highest fatality rate was recorded in 2004 (2.94).

Notable characteristics of worker fatalities in 2013 include:

Sex

- In 2013, 176 of the 190 fatalities (92%) involved male workers. The fatality rate for male workers was 10 times the rate for female workers.

Employment status

- Self-employed workers have much higher fatality rates than employees. In 2013, self-employed workers had a fatality rate of 4.39 fatalities per 100 000 self-employed workers, which was over three times the rate for employees of 1.32.
- The fatality rate for employees has fallen consistently over the past six years but there has been no improvement in the rate for self-employed workers.

Age

- Fatality rates increased with age from 0.98 fatalities per 100 000 workers aged less than 25 years to 7.73 for workers aged 65 years and over. However if self-employed workers are removed then the fatality rate for older workers is substantially lower (4.56).

Vehicle involvement

- Across the 11 years of the series, two-thirds of fatalities involved vehicles. In 2013, 122 of the 191 fatalities (64%) involved a vehicle.
- Over the series 49% of the vehicle-related incidents occurred on a public road. In 2013 this proportion was 40%.

How the fatality occurred

- Over the past 11 years 40% of worker fatalities were due to a vehicle collision. In 2013 the proportion was slightly lower at 34%. The 65 fatalities due to this mechanism in 2013 is the lowest in the series and half the number recorded in 2007 when 130 workers died in a vehicle collision.
- In 2013, 24 workers (13%) were killed when hit by a falling object. This is similar to previous years.
- In 2013, 24 workers (13%) were killed when they fell from a height. This is the second lowest number in the series. The deaths included 3 workers who fell from horses, 3 who fell from ladders and 2 who fell from roofs.
- In 2013, 21 workers (11%) were killed when hit by a moving object. Vehicles were involved in 13 of these incidents. This is the lowest number in the series.

Industry

- In 2013, 49% of the fatalities occurred within the Transport, postal & warehousing or Agriculture, forestry & fishing industries.
- While 48 fatalities were recorded in the Agriculture, forestry & fishing industry in

2013, this was one of the lowest numbers in the series for this industry. However, its fatality rate of 15.11 fatalities per 100 000 workers was still nine times the all industries rate.

- The Transport, postal & warehousing industry (46 fatalities) had the second highest number of fatalities in 2013 and recorded a fatality rate of 7.76 fatalities per 100 000 workers, nearly five times the national rate. Within this industry, the Road freight transport sector accounted for 34 fatalities and recorded a fatality rate of 20.46 fatalities per 100 000 workers, 12 times the all industries rate.
- The Construction industry recorded 19 fatalities in 2013, the lowest number in the 11 years of the series and a substantial fall from the 46 recorded in 2007. The decrease was associated with fewer falls from height and fewer vehicle collisions than in previous years.

Occupation

- Truck drivers accounted for 20% of worker fatalities over the past 11 years with 51 truck drivers killed on average each year. In 2013, 39 truck drivers were killed.
- Farm workers accounted for 18% of worker fatalities in 2013. This includes 24 farm managers and 11 farm labourers killed while working.

State and territory of death

- New South Wales was the location of 53 of the fatalities (28%) in 2013, followed by Queensland with 50 (26%) and Victoria with 31 (16%).
- While Tasmania and the Northern Territory record relatively few fatalities each year, their lower employment bases mean that they record the highest fatality rates. In 2013, 8 workers were killed in Tasmania which equates to a fatality rate of 3.47 fatalities per 100 000 workers. This is the highest rate for all states and territories and more than twice the national rate.

Bystander fatalities

The actions of a worker or a fault in a workplace resulted in the deaths of 66 members of the public in 2013. This is the highest number since 2007 when 75 members of the public were killed.

Two-thirds of the fatalities in 2013 were the result of a vehicle collision, with trucks involved in most of the incidents (32 of the 43 vehicle collisions). In 20 of these incidents the bystander was in a car while 7 were on bicycles and 4 were on motorbikes when they had a collision with a truck. To be included as a bystander, the truck has to be considered at fault in the incident.

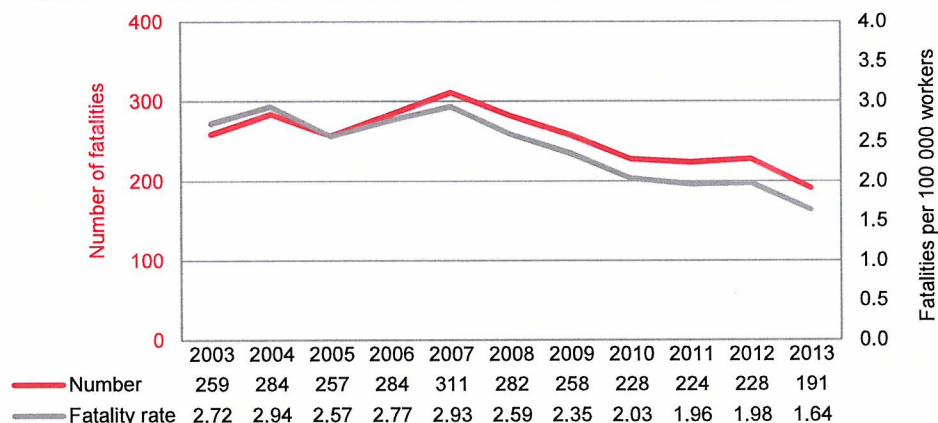
Worker fatalities

190 workers were killed in 2013, the lowest on record

Injuries at work resulted in the deaths of 191 workers in 2013, the lowest number since the series began in 2003. The highest number of work-related injury fatalities was recorded in 2007 when there were 311 deaths.

Figure 1 shows that the fatality rate of 1.64 fatalities per 100 000 workers in 2013 is the lowest rate since the series began.

Figure 1: Worker fatalities: number of fatalities and fatality rate, 2003 to 2013



Sex

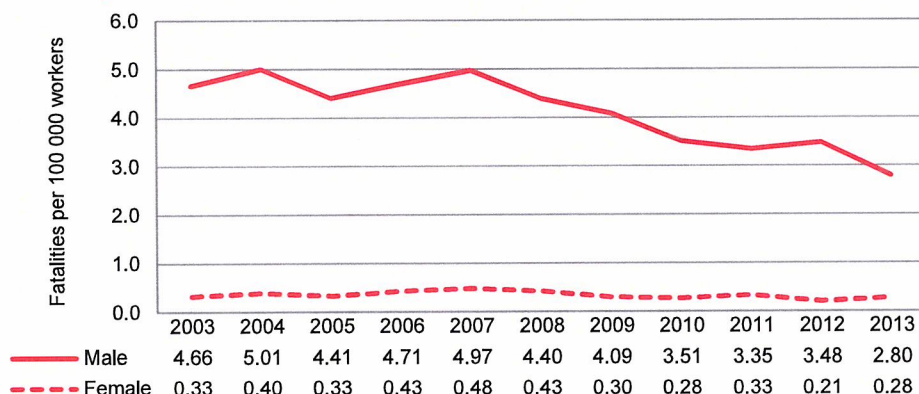
Male workers have a fatality rate 10 times higher than female workers

In 2013, 92% (176 of the 191 fatalities) of workers killed were men. This is a slightly lower proportion than across the whole series (94%).

Figure 2 shows that the fatality rate for male workers has declined over the 11 years from 4.66 fatalities per 100 000 workers in 2003 to 2.80 in 2013. The fatality rate for female workers in 2013 (0.28 fatalities per 100 000 workers) is the second lowest in the series.

Over the series, the fatality rate of male workers has been between 10 and 14 times the rate of female workers.

Figure 2: Worker fatalities: fatality rate by sex, 2003 to 2013



Employment status

Workers in the Australian labour force can be categorised by their status in employment. The largest group of workers is employees. Employees are workers who work for an employer and receive a wage, salary or payment in kind. Over the 2003–13 period, 88% of Australian workers were employees.

The next largest group is self-employed workers, those that work in their own business. Over the 2003–13 period 12% of Australian workers were self-employed. The percentage of the Australian workforce that is self-employed has fallen slightly over the past decade from 13% of workers in 2003 to 10% in 2013.

The third category of workers is contributing family workers. These workers are persons working without pay in a business operated by a relative. Just 0.3% of Australian workers fit into this category. In addition to these categories, the worker fatalities shown in this publication include volunteers who are people who provide services to a business without pay.

Three quarters of workers killed were working for someone else

There has been no improvement in the number of self-employed workers killed each year

Table 1 shows that over the 2003–13 period, 76% of worker fatalities involved employees and one-quarter involved self-employed workers. In 2013, 137 employees were killed at work, the lowest number in the series. This is a 17% decrease from the previous year and a 46% decrease from the series high of 254 employee deaths in 2007.

While the 52 self-employed worker deaths in 2013 is the second lowest in the series there has not been any noticeable improvement in the number of self-employed workers killed each year.

Table 1 also shows that over the 2003–13 period 24 volunteers were killed. When calculating fatality rates volunteers are included in the fatality count but not included in the total number of Australian workers. The inclusion of volunteers has negligible impact on overall fatality rates.

Table 1: Worker fatalities: number and percentage by employment status, 2003 to 2013

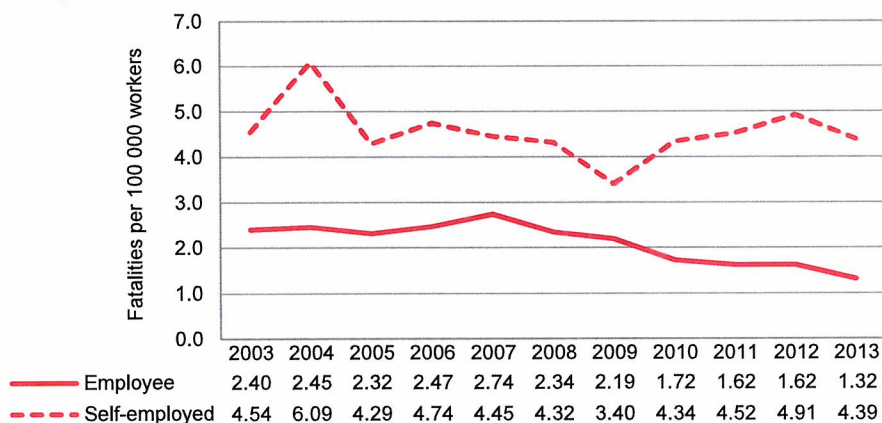
Year	Employee	Self-employed	Volunteer	Contributing family worker	Total
2003	192	61	5	1	259
2004	201	79	3	1	284
2005	198	57	1	1	257
2006	219	59	5	1	284
2007	254	55	2	0	311
2008	224	54	1	3	282
2009	211	43	1	3	258
2010	169	56	1	2	228
2011	163	57	3	1	224
2012	166	59	0	3	228
2013	137	52	2	0	191
Total	2 134	632	24	16	2 806
Percent-age	76%	23%	1%	1%	100%

Self-employed workers have much higher fatality rates than employees

While employees account for the majority of the fatalities, fatality rates shows that self-employed workers are at greater risk of being killed at work than employees. There are a few reasons for this. Firstly, self-employed workers tend to work in the more hazardous industries of Agriculture, forestry & fishing, Transport, postal & warehousing and Construction. Secondly, self-employed workers tend to stay working in their business well past the age that employees generally retire. This is particularly evident with farming businesses where people continue to work in some capacity until much older ages than is seen in the employee workforce.

Figure 3 shows that in 2013, self-employed workers recorded a fatality rate of 4.39 fatalities per 100 000 workers compared with 1.32 for employees. These data show that the fatality rate for employees has recorded regular falls since 2007 when the fatality rate was 2.74 fatalities per 100 000 employees. There has been no improvement in the fatality rate for self-employed workers over this period. The data in Figure 3 do not include volunteers or contributing family workers.

Figure 3: Worker fatalities: fatality rate by employment status, 2003 to 2013



Age group

The low number of fatalities in 2013 was reflected in all age groups except 65+

Table 2 shows the distribution of fatalities by age group. This distribution shows there are fewer fatalities in the youngest and oldest age groups, which reflects the lower workforce participation of these age groups compared with other age groups.

While the number of fatalities in 2013 is the lowest in the series, the age profile was similar to previous years. The exception was the 65 years and over age group, which accounted for a slightly higher proportion of fatalities than other years. In 2013, 31 workers aged 65 years and over were killed while working. This is slightly higher than the series average of 29 fatalities per year for this age group but equates to 16% of fatalities in 2013, which is a much higher proportion than the 11% this age group accounts for in the full time series.

These data show that the 45–54 years age group has recorded the highest number of fatalities in the past three years but in other years the 35–44 and 55–64 age groups have recorded higher numbers than the 45–54 years age group. These three age groups combined have accounted for between 59% and 64% of fatalities each year.

Table 2: Worker fatalities: number by age group, 2003 to 2013

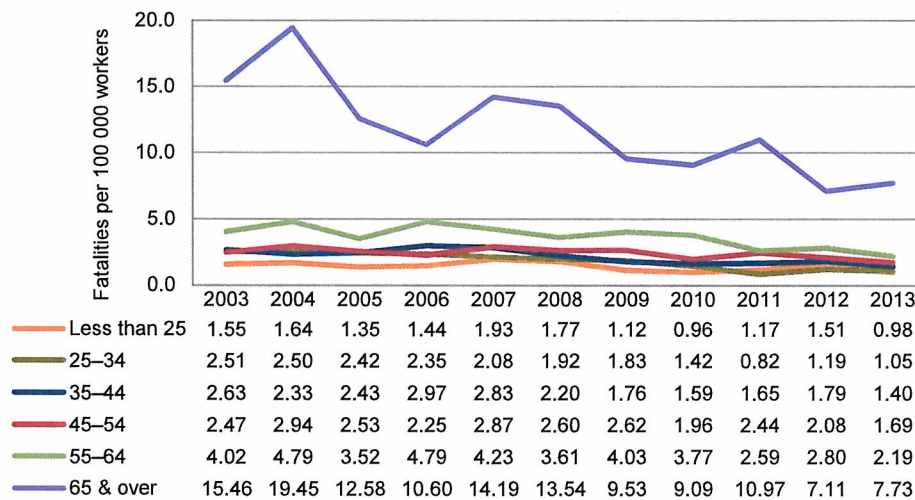
Years	Age group (years)						Total
	Less than 25	25–34	35–44	45–54	55–64	65 & over	
2003	26	55	61	52	41	24	259
2004	28	55	54	63	52	32	284
2005	24	54	58	56	41	24	257
2006	26	53	72	51	60	22	284
2007	36	48	70	67	56	34	311
2008	34	46	55	62	50	35	282
2009	21	44	44	63	59	27	258
2010	18	35	40	48	58	29	228
2011	23	21	42	60	41	37	224
2012	28	31	46	51	45	27	228
2013	18	28	36	42	36	31	191
Total	282	470	578	615	539	322	2806

The oldest workers continue to have the highest fatality rate

Figure 4 shows that the fatality rates have fallen from the previous year for all age groups except the 65 years and over age group, which rose slightly from the previous year but still remains considerably lower than all other years of the series. While the gap between the oldest age group and the younger age groups has narrowed, the fatality rate of the oldest age group still remains four to eight times higher than the younger age groups.

In 2013, fatality rates increased with age from 0.98 fatalities per 100 000 workers aged less than 25 years to 7.73 for workers aged 65 years and over. This pattern has not been evident in all years of the series though the younger age groups have consistently had lower fatality rates than the older age groups.

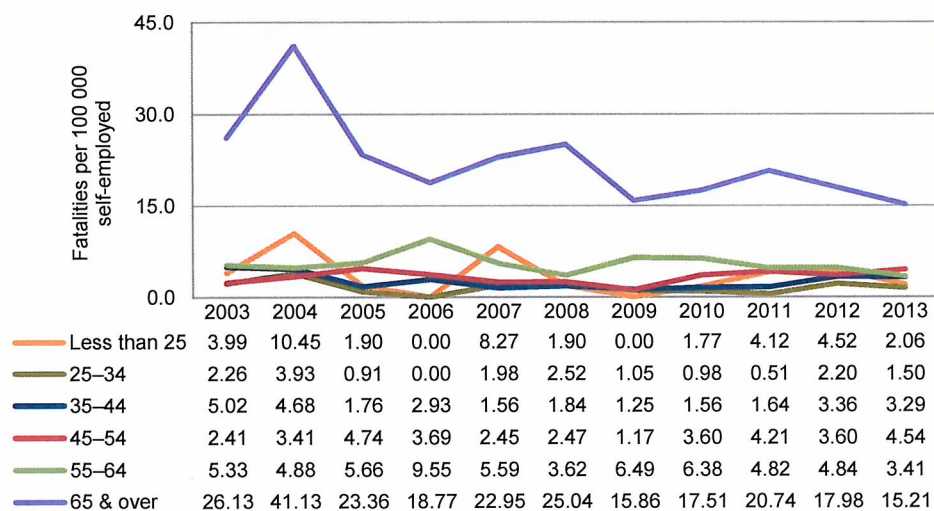
Figure 4: Worker fatalities: fatality rate by age group, 2003 to 2013



Age by employment status

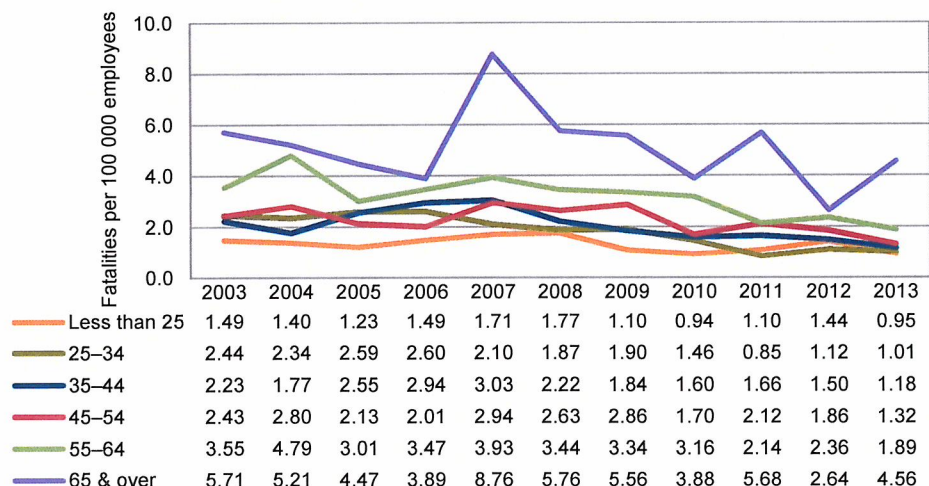
The high fatality rates for workers aged 65 years and over is heavily influenced by the higher proportion of self-employed workers in this age group. While self-employed workers accounted for 10% of the total workforce in 2013, self-employed workers accounted for 29% of workers in the 65 years and over age group. In 2013, 17 self-employed workers aged 65 years and over were killed. This was 32% of all self-employed fatalities in that year. Figure 5 shows that the fatality rate for this oldest age group in 2013 was 15.21 fatalities per 100 000 self-employed workers. This is more than three times the rate for the other age groups.

Figure 5: Self-employed worker fatalities: fatality rate by age group, 2003 to 2013



In contrast, the fatality rate for employees aged 65 years and over is much closer to the other age groups. In 2013, 13 employees aged 65 years and over were killed, 9% of all employee fatalities. Figure 6 shows that this equates to a fatality rate of 4.56 fatalities per 100 000 employees aged 65 years and over. This is less than one-third the rate for self-employed workers. The number of employees aged 65 years and over killed at work over the past 11 years has ranged from 5 to 13. This relatively low number of fatalities results in volatility in this measure and the numbers should be interpreted with caution.

Figure 6: Employee fatalities: fatality rate by age group, 2003 to 2013



Mechanism of incident

Two out of every five workers killed died in a vehicle crash

Table 3 (on the next page) shows that 34% of worker fatalities in 2013 were due to a *Vehicle collision*. This mechanism is used when an occupant of a vehicle is killed following a collision with another vehicle or a stationary object. The 65 worker fatalities due to this mechanism in 2013 is a major reduction from the previous year when 90 fatalities were recorded and is half the series high of 130 fatalities recorded in 2007. Over the 11 years of the series, 40% of worker fatalities have been the result of a *Vehicle collision*.

In addition, 14 workers were killed in 2013 when their non-road vehicle rolled on a property or at business premises (*Rollover of non-road vehicle*). This is the highest number in the series. The 14 fatalities represent 7% of worker fatalities in 2013, which is nearly twice the proportion this mechanism represents in the full time series (4%).

Being hit by falling objects and *Falls from a height* each accounted for 13% of fatalities in 2013. While the 24 fatalities resulting from *Being hit by falling objects* was a similar number to previous years it represents a higher percentage of fatalities in 2013 than the percentage for the full time series (9%). This is due to a drop in the overall number of fatalities with no corresponding drop in fatalities due to this mechanism. The proportion of fatalities due to *Falls from a height* in 2013 was similar to the proportion for the full time series (13% compared with 11%) though the 24 fatalities in 2013 was the second lowest in the series.

Being hit by moving objects resulted in 21 fatalities in 2013. This is the second lowest number in the time series.

The time series data show these four mechanisms accounted for the majority of work-related fatalities in all years of the series (between 65% and 77% in each year of the series).

Table 4 shows the profile of fatalities by mechanism is roughly similar across the age groups. The exception to this is the 65 years and over age group which had a lower proportion of fatalities due to *Vehicle collision* (24% compared with 37% to 48% for the other age groups) and slightly higher proportions due to *Being hit by moving objects* and *Falls from a height*. This oldest age group also had considerably more in the *Other mechanisms* category of which *Rollover of non-road vehicle* was a major contributor.

Table 4: Worker fatalities: percentage by mechanism of incident and age group, 2003 to 2013 combined

Mechanism of incident	Age group (years)						Total
	Less than 25	25–34	35–44	45–54	55–64	65 & over	
Vehicle collision	40%	45%	48%	40%	37%	24%	40%
Being hit by moving objects	12%	8%	9%	13%	14%	15%	12%
Falls from a height	9%	8%	8%	12%	14%	16%	11%
Being hit by falling objects	7%	9%	12%	7%	10%	7%	9%
Being trapped between stationary & moving objects	5%	6%	3%	6%	6%	7%	5%
Contact with electricity	9%	7%	4%	5%	1%	2%	5%
Other mechanisms	18%	17%	16%	17%	17%	29%	18%
Total	100%	100%	100%	100%	100%	100%	100%

Table 3: Worker fatalities: number by mechanism of incident, 2003 to 2013 (sorted by total fatalities)

Mechanism of incident	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total	% of 2013 fatalities	% of Total fatalities
Vehicle collision	108	121	102	122	130	121	112	78	78	90	65	1127	34%	40%
Being hit by moving objects	38	36	27	31	37	31	31	26	19	28	21	325	11%	12%
Falls from a height	27	25	26	39	32	30	29	27	22	30	24	311	13%	11%
Being hit by falling objects	13	21	25	23	24	23	15	30	26	28	24	252	13%	9%
Being trapped between stationary & moving objects	13	16	19	18	13	13	9	13	16	7	13	150	7%	5%
Contact with electricity	13	16	13	18	13	9	13	10	10	6	8	129	4%	5%
Rollover of non-road vehicle	9	13	11	6	12	11	12	11	11	6	14	116	7%	4%
Being trapped by moving machinery	6	7	7	6	10	9	9	8	11	6	5	84	3%	3%
Being assaulted by a person/s	12	9	7	5	8	3	4	4	3	6	6	67	3%	2%
Drowning	4	3	2	2	5	9	8	2	3	3	2	43	1%	2%
Being hit by an animal	1	3	1	1	2	3	2	3	6	4	2	28	1%	1%
Explosion	3	1	2	1	1	6	1	3	5	2	1	26	1%	1%
Falls on the same level	3	5	1	1	4	4	2	2	0	3	0	25	0%	1%
Contact with hot objects	1	0	2	1	7	3	0	1	3	1	1	20	1%	1%
Slide or cave-in	1	2	4	3	1	0	1	1	2	1	0	16	0%	1%
Single contact with chemical or substance	3	0	0	1	3	1	1	2	2	2	0	15	0%	1%
Exposure to environmental heat	1	1	0	1	3	0	2	1	2	1	2	14	1%	0%
Being bitten by an animal	1	1	3	2	0	0	0	1	2	2	0	12	0%	0%
Hitting moving objects	0	1	3	0	3	3	1	0	0	0	0	11	0%	0%
Hitting stationary objects	0	1	1	0	1	0	1	2	1	2	2	11	1%	0%
Insect & spider bites & stings	0	1	0	0	2	3	1	1	0	0	1	9	1%	0%
Other mechanisms of injury	2	1	1	3	0	0	4	2	2	0	0	15	0%	1%
Grand Total	259	284	257	284	311	282	258	228	224	228	191	2806	100%	100%

Breakdown agency

Nearly one-quarter of fatalities were due to the actions of a truck

The Breakdown agency identifies the object, substance or circumstance principally involved at the point at which things started to go wrong.

Table 5 shows that the Breakdown agency of *Mobile plant & transport* accounted for 62% of fatalities over the 2003–13 period and 60% of fatalities in 2013. Within this group *Trucks, semi-trailers, lorries* was the biggest contributor accounting for 23% of all worker fatalities. This was followed by *Cars, station wagons, vans, utilities* with 14% and *Tractors* with 5%.

The time series data show that the number of workers killed in an incident where *Cars, station wagons, vans, utilities* was identified as the breakdown agency has fallen dramatically from the previous year: 35 in 2012 down to 18 in 2013, the lowest on record and substantially below the 55 recorded in 2007. There was a smaller decrease in incidents with *Trucks, semi-trailers, lorries* as the breakdown agency: 53 down to 42.

The second biggest breakdown agency group was *Machinery & fixed plant*, which accounted for 11% of worker fatalities over the 11 years and 13% of fatalities in 2013. This group includes *Forklift trucks* and *Cranes* with each accounting for 2% of fatalities. In 2013, 6 workers died in incidents with *Forklift trucks* which is the highest number in three years. There were also 6 fatalities in 2013 involving *Cranes*.

Environmental agencies accounted for 10% of fatalities over the full time series and 8% of fatalities in 2013. This group includes the built environment and the natural environment in which the worker is employed. The 16 fatalities coded to this agency in 2013 is the lowest number in the series and half the number from the previous year when 32 workers died in incidents involving *Environmental agencies*. Incidents involving *Buildings & other structures* resulted in 4 fatalities in 2013 compared with 12 in 2012 and an average of 9 over the full time series. Incidents involving *Vegetation* resulted in 7 fatalities in 2013. This was the second highest number of fatalities behind 2005 when 11 workers were killed in incidents involving *Vegetation*.

The number of incidents involving *Non-powered handtools, appliances & equipment* was slightly higher than the previous two years. Of the 14 fatalities in 2013 involving this breakdown agency, 3 involved *Ladders* and 1 involved *Scaffolding*. These are similar numbers to previous years. There is no particular reason for the increase with each of the fatalities in 2013 similar to other years.

Table 5: Worker fatalities: number and proportion by breakdown agency*, 2003 to 2013 combined

Breakdown agency	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total	% of 2013	% of Total
Mobile plant & transport	161	180	151	172	193	184	167	133	132	141	115	1729	60%	62%
Road transport	99	114	100	112	140	115	110	84	72	90	68	1104	36%	39%
Trucks, semi-trailers, lorries	58	72	50	66	76	67	65	47	47	54	42	644	22%	23%
Cars, station wagons, vans, utilities	38	36	42	43	55	36	41	35	22	35	18	401	9%	14%
Air transport	24	12	15	21	11	19	11	14	21	13	10	171	5%	6%
Industrial aircraft	9	7	4	11	7	13	11	13	10	12	9	106	5%	4%
Passenger aircraft	15	4	11	10	4	6	11	8	9	13	6	63	1%	2%
Self-propelled plant	8	12	10	10	11	14	11	8	9	13	6	112	3%	4%
Front-end loaders, log handling plant	0	5	5	4	5	4	1	1	2	6	2	35	1%	1%
Excavators, backhoes, other digging plant	3	3	1	2	2	1	3	3	4	3	1	26	1%	1%
Graders, dozers, snowploughs, other scraping plant	3	1	2	2	1	5	1	2	1	0	1	19	1%	1%
Other mobile plant	20	23	16	15	14	15	15	16	13	12	13	172	7%	6%
Tractors, agricultural or otherwise	13	22	13	13	7	11	13	13	9	6	10	130	5%	5%
Water transport	4	9	6	4	4	11	9	4	4	4	4	63	2%	2%
Other transport	3	4	3	3	4	8	7	1	10	4	12	59	6%	2%
Quad bikes	2	3	3	2	4	7	6	1	8	4	10	50	5%	2%
Machinery & (mainly) fixed plant	23	27	32	30	29	28	31	25	32	22	24	303	13%	11%
Conveyors & lifting plant	13	10	20	18	18	16	16	14	22	12	17	176	9%	6%
Forklift trucks	4	4	6	9	5	8	3	8	4	2	6	59	3%	2%
Power hoists	2	3	3	1	9	5	6	4	8	3	4	48	2%	2%
Cranes	5	1	7	4	3	2	5	0	7	4	6	44	3%	2%
Electrical installations	6	6	6	5	4	5	11	5	4	3	6	61	3%	2%
Environmental agencies	29	27	27	29	28	20	25	20	21	32	16	274	8%	10%
Buildings & other structures	16	11	10	15	7	8	9	5	4	12	4	101	2%	4%
Roof	9	2	6	5	5	5	3	1	3	8	3	50	2%	2%
Buildings under construction or demolition	3	5	1	6	0	2	1	0	1	2	1	22	1%	1%
Vegetation	3	6	11	5	6	3	3	6	6	6	7	62	4%	2%
Non-powered handtools, appliances & equipment	13	17	11	20	24	23	13	23	8	8	14	174	7%	6%
Ladders, mobile ramp & stairways & scaffolding	4	3	5	7	13	10	7	11	7	2	4	73	2%	3%
Ladders	3	3	3	5	10	4	4	9	6	1	3	51	2%	2%
Scaffolding	1	0	2	0	3	5	3	2	1	1	1	19	1%	1%
Animal, human & biological agencies	15	15	13	14	14	12	9	11	13	10	11	137	6%	5%
Human agencies	10	7	6	5	6	4	4	2	4	3	4	55	2%	2%
Horses, donkeys, mules	3	3	4	5	4	3	3	3	3	1	3	35	2%	1%
Cows, steers, cattle, bulls, buffalo	1	2	1	1	1	2	1	3	3	3	2	19	1%	1%
Powered equipment, tools & appliances	8	8	6	12	10	8	8	10	7	6	4	87	2%	3%
Materials & substances	7	10	13	4	8	6	5	2	8	7	6	76	3%	3%
Chemicals & chemical products	2	0	4	3	3	1	0	4	3	2	1	23	1%	1%
Total (including where agency is unknown)	259	284	257	284	311	282	258	2298	224	228	191	2806	100%	100%

* numbers shown in italics are major subsets of the larger category and do not sum to the larger category.

Involvement of vehicles

Vehicles were involved in two-thirds of worker fatalities

Over the 2003 to 2013 period, 66% of worker fatalities involved incidents with vehicles. Of the vehicle-related incidents, half occurred on a public road. This means that one-third of worker fatalities arose from injuries sustained in a vehicle collision on a public road, one-third in vehicle incidents not on a public road and the remaining one-third did not involve a vehicle.

Table 6 shows that 90% of vehicle-related incidents on public roads involved a *Vehicle collision*. This was followed by *Being hit by moving objects* which accounted for 8%.

Decrease in worker fatalities due to drop in public road crashes

These data also show that the majority of the fall in the total number of worker fatalities from 2012 to 2013 was due to a fall in the number of fatalities attributed to a *Vehicle collision* on a public road. In 2013 there were 25 fewer fatalities in this category, which is 67% of the difference between the two years (37 fatalities). Public road incidents also include 5 pedestrian workers who were hit by a vehicle on a public road. This number is similar to previous years.

The 36% fall in the number of public road worker fatalities between 2012 and 2013 is over four times the fall in the Australian road toll¹ which decreased 8% over the same period. In 2012, 5.7% of the deaths on Australian roads were work-related. In 2013 this proportion dropped to 3.9%. The work-related figures do not include fatalities as a result of commuting to or from work.

Incidents involving vehicles not on public roads involved a greater variety of mechanisms than those on public roads. While *Vehicle collision* accounted for the highest proportion of non-public road incidents (33%) this was much smaller than the proportion *Vehicle collision* accounted for on public roads (90%).

Being hit by moving objects accounted for 17% of non-public road incidents, which is more than twice the proportion this mechanism accounted for of the public road incidents (8%).

Being trapped by vehicle accounted for 15% of non-public road incidents. This includes being trapped between the vehicle and a stationary object as well as being trapped between components of the vehicle. *Rollover of non-road vehicle* accounted for 12% of non-public road incidents. These incidents generally involve tractors or quad bikes on agricultural properties. Together these two mechanisms accounted for just 1% of the public road incidents.

For non-public road fatalities there have been falls from the previous year in the number of workers killed in a *Vehicle collision* and from *Being hit by moving objects*. However, for most of the other mechanisms there has been an increase in the number killed from the previous year. This is particularly evident for *Rollover of non-road vehicle* with the 14 workers killed in 2013 due to this mechanism being the highest in the series.

¹ Australian Road Deaths Database number of fatalities extracted as at March 2014 were 1299 for 2012 and 1197 for 2013

Table 6: Worker fatalities involving a vehicle: number by public road status and mechanism of incident, 2003 to 2013

Year of death	Mechanism of incident							Total
	Vehicle collision	Being hit by moving objects	Being trapped by vehicle	Rollover of non-road vehicle	Being hit by falling objects	Fall from vehicle	Other mechanism	
Public road incident								
2003	75	7	0	1	0	0	1	84
2004	90	3	0	0	0	0	0	93
2005	75	7	2	1	1	0	0	86
2006	83	8	0	0	0	0	0	91
2007	106	12	0	0	0	0	0	118
2008	76	4	1	1	0	0	0	82
2009	89	10	1	2	1	1	0	104
2010	56	7	0	1	0	0	0	64
2011	56	4	0	0	1	0	0	61
2012	68	7	0	1	0	1	0	77
2013	43	5	1	0	0	0	0	49
Total public road	817	74	5	7	3	2	1	909
Non-public road incident								
2003	33	17	14	8	3	3	7	85
2004	31	21	16	13	7	7	6	101
2005	27	11	17	10	7	4	5	81
2006	39	13	13	6	6	11	5	93
2007	24	14	13	12	7	2	8	80
2008	45	19	12	10	8	9	12	115
2009	23	11	8	10	7	4	7	70
2010	22	14	12	10	14	6	7	85
2011	22	11	17	11	10	5	5	81
2012	22	14	8	5	10	5	3	67
2013	22	11	11	14	7	7	1	73
Total non-public road	310	156	141	109	86	63	66	931
Total vehicle incidents	1127	230	146	116	89	65	67	1840
Percentages								
Public road	90%	8%	1%	1%	0%	0%	0%	100%
Non-public road	33%	17%	15%	12%	9%	7%	7%	100%
Total vehicle	61%	12%	8%	6%	5%	4%	4%	100%

Fatalities due to vehicle collisions

Single vehicle crashes accounted for one-quarter of fatalities

Table 7 shows that in the five years from 2009 to 2013, 424 workers died in a *Vehicle collision*. This is an average of 85 workers each year. Of these, two-thirds involved a single vehicle. This means that 24% of all worker fatalities involved a worker crashing their vehicle due to their own actions. Table 5 shows that the number of workers killed in single vehicle collisions has fallen reasonably consistently from a high of 70 in 2009 to 41 in 2013. In contrast, the number of workers killed in multi-vehicle incidents has not shown consistent improvement, though the 24 fatalities in 2013 is the second lowest in the series.

Nearly half (45%) of the single vehicle collisions involved a heavy vehicle such as a semi-trailer or rigid truck. This was followed by aircraft (24%) and light vehicles (cars, utes and 4WDs) (19%).

Trucks are also prominent in multi-vehicle incidents. In the five years 2009 to 2013, 42 workers died when two trucks collided, and 17 workers in trucks died in incidents with light vehicles (such as cars, vans and utilities). There were also 46 workers in light vehicles who died following a crash with a truck.

In total 183 occupants of trucks were killed in a *Vehicle collision* in the five years from 2009 to 2013, which amounts to 16% of all worker fatalities. Over this same period 133 occupants of cars were killed in a *Vehicle collision*, which amounts to 12% of all worker fatalities.

Vehicle collision also includes aircraft. In 2013, 10 workers died in separate aircraft incidents. Of these, 9 were pilots and 1 was a passenger. This is the lowest number of fatalities since 2009 when 9 workers died in plane crashes and is almost half the number killed in 2011 when 19 workers died in 12 aircraft incidents.

Table 7: Worker fatalities due to Vehicle collision: number by breakdown agency, 2009 to 2013

Type of incident	2009	2010	2011	2012	2013	Total	% of Total	% of all worker fatalities
Single Vehicle collision	70	54	55	54	41	274	65%	24%
Truck	32	20	24	27	19	122	29%	11%
Aircraft	9	14	19	13	10	65	15%	6%
Light vehicle	16	16	8	8	4	52	12%	5%
Quad bike	3	0	1	2	4	10	2%	1%
Agriculture vehicle	2	2	0	0	1	5	1%	0%
Motorbike	2	1	1	1	1	6	1%	1%
Watercraft	3	0	1	2	0	6	1%	1%
Other single vehicle incident	3	1	1	1	2	8	2%	1%
Multi-vehicle incident	42	24	23	36	24	149	35%	13%
Occupant in light vehicle killed in incident with truck	10	8	11	10	7	46	11%	4%
Two trucks	13	7	6	10	6	42	10%	4%
Two light vehicles	8	4	2	8	4	26	6%	2%
Truck occupant killed in incident with light vehicle	6	3	3	2	3	17	4%	2%
Other multi-vehicle incident	5	2	1	6	4	18	4%	2%
Total	112	78	78	90	65	423	100%	38%

Fatalities due to being hit by moving objects

Around 11 workers each year are hit and killed by a truck or a car

Over the five years from 2009 to 2013, 125 workers died as a result of *Being hit by moving objects*, which amounted to 11% of all worker fatalities over this period. Table 8 shows that three-quarters (96 fatalities) of these incidents involved *Mobile plant & transport*. Over the five years 54 workers have died after being hit by a truck or a car.

The 21 fatalities recorded in 2013 that were a result of *Being hit by moving objects* is the second lowest in the series. As the numbers are small and showing great variability between the years, there is no clear explanation for this decrease.

In 2013, 13 (62%) of the 21 fatalities involved being hit by *Mobile plant & transport*. This is substantially lower than the five-year average (74%). In 2013, 3 fatalities involved the worker being hit by their own vehicle and 2 were hit by passing vehicles after having temporarily alighted to unload their cargo or open a gate. There were also 3 traffic controllers and 1 road worker hit by construction vehicles at road works sites. These types of incidents are common in all years of the series.

There was a jump in the number of workers killed when hit by *Conveyors and lifting plant* with 5 workers killed in 2013 compared with 1 or 2 in other years. *Cranes* accounted for 3 of the 5 deaths.

Over the five year period 5 workers died from a gunshot wound while working. All of these were farmers who accidentally shot themselves while eradicating vermin from their properties or destroying an animal. Many of these incidents involved riding in a vehicle or attempting to climb a fence with a loaded firearm. No workers died in this type of circumstance in 2013.

Table 8: Worker fatalities due to Being hit by moving objects: number by breakdown agency, 2009 to 2013

Breakdown agency	2009	2010	2011	2012	2013	Total	% of Total	% of all worker fatalities
Mobile plant and transport	23	19	16	25	13	96	77%	8%
Trucks, semi-trailers, lorries	9	10	6	7	5	37	30%	3%
Cars, station wagons, vans, utilities	4	3	4	2	4	17	14%	2%
Tractors, agricultural or otherwise	3	2	2	5	3	15	12%	1%
Self-propelled plant	3	2	2	5	3	15	12%	1%
Other plant or transport	4	2	2	6	-2	12	10%	1%
Machinery and (mainly) fixed plant	2	2	0	2	5	11	9%	1%
Conveyors and lifting plant	1	2	0	1	5	9	7%	1%
Powered equipment, tools and appliances	3	2	0	1	0	6	5%	1%
Weapons	2	2	0	1	0	5	4%	0%
Non-powered handtools, appliances and equipment	1	1	1	0	2	5	4%	0%
Other agencies	2	2	2	0	1	7	6%	1%
Total	31	26	19	28	21	125	100%	11%

Fatalities due to falls from a height

Over the five years from 2009 to 2013, 132 workers died following *Falls from a height*, which amounted to 12% of all worker fatalities. In 2013, 24 workers died due to this mechanism, which is the second lowest number in the series. This follows from a relatively high 30 fatalities in 2012 when there were high numbers of falls from *Roof* (8 fatalities in 2012 compared with between 1 and 3 in other years) and falls from *Internal building structures* (7 fatalities in 2012 compared with 2 or fewer in other years).

Falls commonly involved roofs and ladders

Table 9 shows that over the past five years *Falls from a height* most commonly involved falls from *Ladders* (22 fatalities), *Roof* (17 fatalities) and *Trucks, semi-trailers & lorries* (13 fatalities).

The common breakdown agencies in 2013 were *Ladders*, *Trucks, semi-trailers & lorries* and *Horse, donkeys, mules* with 3 fatalities each. There were also 2 fatalities due to each of the following breakdown agencies: *Roof*, *External building structures excluding roof*, *Shaft* and *Water transport*.

Table 9: Worker fatalities due to Falls from a height: number by breakdown agency, 2009 to 2013

Breakdown agency	2009	2010	2011	2012	2013	Total	% of Total	% of all worker fatalities
Environmental agencies	13	5	6	18	6	48	36%	4%
Roof	3	1	3	8	2	17	13%	2%
Internal building structures	2	0	1	0	1	0	0%	0%
External building structures excluding roof	7	3	1	3	2	16	12%	1%
Shaft	1	1	0	0	2	4	3%	0%
Non-powered handtools, appliances and equipment	6	11	7	3	4	31	23%	3%
Ladders	4	8	6	1	3	22	17%	2%
Scaffolding	2	2	1	1	0	6	5%	1%
Mobile plant and transport	3	5	5	5	7	25	19%	2%
Trucks, semi-trailers & lorries	3	3	2	2	3	13	10%	1%
Water transport	0	1	1	0	2	4	3%	0%
Machinery and (mainly) fixed plant	5	3	2	4	3	17	13%	2%
Elevating work platforms	2	2	2	1	1	8	6%	1%
Animal, human and biological agencies	2	3	2	0	4	11	8%	1%
Horses, donkeys, mules	2	3	2	0	3	10	8%	1%
Total	29	27	22	30	24	132	100%	12%

A more detailed study of falls from a height can be found in the report *Work-related injuries and fatalities involving a fall from height, Australia* released by Safe Work Australia in October 2013. This report showed that half of the fatalities due to falls from a height involved heights of three metres or less.

Fatalities due to being hit by falling objects

Over the five years from 2009 to 2013, 123 workers died due to *Being hit by falling objects*, which amounted to 11% of all worker fatalities. This mechanism claimed the lives of 24 workers in 2013, which is similar to previous years.

On average 7 workers die each year from being hit by falling trees

Table 10 provides more detail on the object (agency) that hit the worker. Over the five years, 33 workers were killed by falling *Vegetation*, mainly trees. This is 18% of all workers who died as a result of *Being hit by falling objects* and 3% of all worker fatalities. Similar to most other years, falling *Vegetation* killed 6 workers in 2013. Four of these workers were felling trees at the time.

Being hit by *Ferrous & non-ferrous metal* products claimed the lives of 15 workers over the five years. Of the 4 workers killed in 2013, 3 were hit by falling metal beams while 1 worker was hit by falling fence palings.

Being hit by falling *Trucks, semi-trailers, lorries* claimed the lives of 3 workers in 2013 and 9 workers over the five years. These deaths were the result of trucks lowering onto the worker while they were undertaking repairs or the result of a component of the truck, most commonly the tray, falling on to the worker while unloading or loading cargo.

Conveyors & lifting plant claimed the lives of 7 workers over the five years.

Table 10: Worker fatalities due to Being hit by falling objects: number by agency, 2009 to 2013

Agency	2009	2010	2011	2012	2013	Total	% of Total	% of all worker fatalities
Environmental agencies	2	10	15	8	8	43	35%	4%
Vegetation	2	8	12	5	6	33	27%	3%
Buildings & other structures	0	2	2	2	2	8	7%	1%
Materials and substances	7	9	4	6	7	33	27%	3%
Ferrous & non-ferrous metal	2	3	2	4	4	15	12%	1%
Mobile plant and transport	3	5	1	7	6	22	18%	2%
Trucks, semi-trailers, lorries	1	2	0	3	3	9	7%	1%
Self-propelled plant	2	0	0	3	0	5	4%	0%
Non-powered handtools, appliances & equipment	2	3	2	3	3	13	11%	1%
Storage equipment	1	2	1	1	1	6	5%	1%
Machinery & (mainly) fixed plant	1	3	4	4	0	12	9%	1%
Conveyors & lifting plant	1	0	3	3	0	7	6%	1%
Total	15	30	26	28	24	123	100%	11%

Industry

Half of the fatalities occurred in the transport and agriculture sectors

Figure 7 shows that in 2013, 49% of the workers who died were employed either in the Agriculture, forestry & fishing industry (48 fatalities) or the Transport, postal & warehousing industry (46 fatalities). This proportion was slightly higher than the series average (47%) though the actual number of fatalities in these industries were lower than most other years of the series. Within the Agriculture, forestry & fishing industry, 24% of fatalities over the 2003–2013 period involved self-employed workers aged 65 years and over.

Table 11 shows that the Construction industry recorded the third highest proportion of fatalities in 2013. However, while the 19 fatalities in 2013 represents 10% of the total 2013 fatalities it is around half the series average for the Construction industry (37 fatalities). Over the 2003–2013 period the Construction industry accounted for 14% of all worker fatalities.

The Manufacturing industry also recorded a much lower proportion of deaths in 2013 compared with the series average (5% and 9% respectively). However, the proportions for Public administration & safety and Retail trade were higher in 2013 compared with the series average.

The Public administration & safety industry recorded 11 fatalities in 2013, which is similar to other years in the series. *Vehicle collisions* accounted for 7 of the fatalities, which is considerably higher than most other years in the series.

The Retail trade industry recorded 10 fatalities in 2013, double the previous year and the highest number since 2007 when 17 workers were killed, of which 10 died in *Vehicle collisions*. There was nothing unusual in the pattern of fatalities within this industry in 2013.

Figure 7: Worker fatalities: proportion by industry of employer, all years (2003 to 2013 combined) and 2013

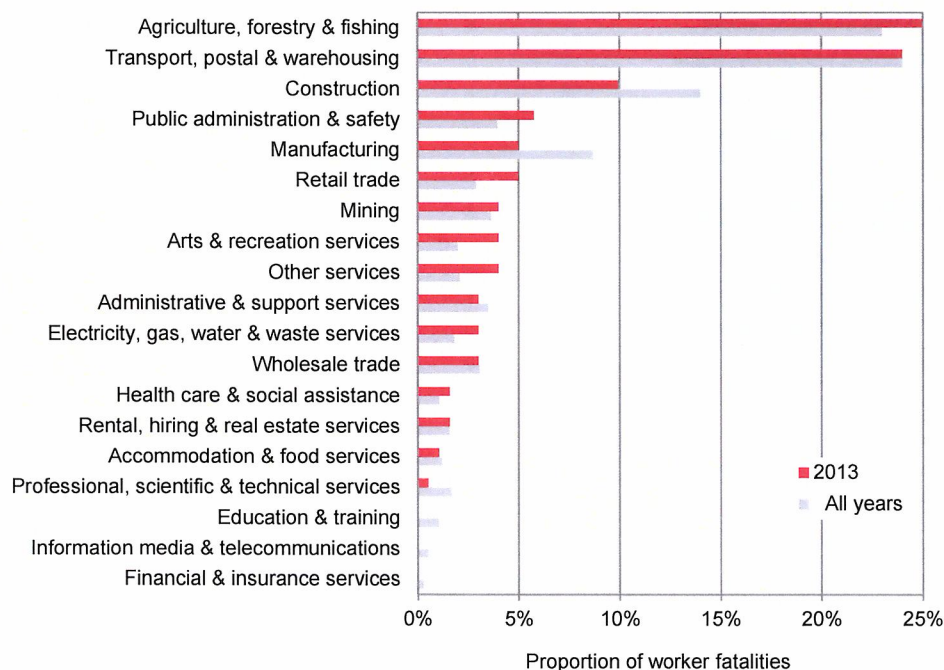


Table 11: Worker fatalities: number by industry of employer, 2003 to 2013 (sorted by 2013)

Industry of employer	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	% of 2013	Total	% of Total
Agriculture, forestry & fishing	60	77	62	46	52	68	62	55	59	53	48	25%	642	23%
<i>Agriculture</i>	46	54	44	35	40	44	45	46	45	35	37	19%	471	17%
Transport, postal & warehousing	68	66	55	62	83	71	64	44	48	60	46	24%	667	24%
<i>Road Transport</i>	45	50	41	52	62	52	56	32	29	51	39	20%	509	18%
<i>Road Freight Transport</i>	40	47	37	47	58	50	51	31	25	44	34	18%	464	17%
Construction	43	35	30	43	46	38	36	41	41	30	19	10%	402	14%
Public administration & safety	9	11	14	13	13	4	11	6	11	8	11	6%	111	4%
Manufacturing	20	23	23	29	25	30	23	21	22	18	10	5%	244	9%
Retail trade	7	5	7	10	17	6	5	7	2	5	10	5%	81	3%
Mining ^a	11	11	9	15	7	12	10	5	6	8	8	4%	102	4%
Other services	4	7	10	7	4	7	4	2	4	3	7	4%	59	2%
Arts & recreation services	3	5	6	5	10	3	1	5	6	5	7	4%	56	2%
Wholesale trade	7	10	10	8	8	11	4	10	3	9	6	3%	86	3%
Administrative & support services	4	9	12	8	12	10	12	12	8	6	5	3%	98	3%
Electricity, gas, water & waste services	5	8	6	8	4	4	5	1	2	3	5	3%	51	2%
Health care & social assistance	3	3	3	2	0	2	6	4	2	2	3	2%	30	1%
Rental, hiring & real estate services	4	2	6	4	10	4	2	4	2	3	3	2%	44	2%
Accommodation & food services	5	4	0	8	6	2	3	2	1	1	2	1%	34	1%
Professional, scientific & technical services	2	6	2	6	7	5	4	4	2	8	1	1%	47	2%
Education & training	2	1	2	8	4	2	2	2	2	4	0	0%	29	1%
Information media & telecommunications	1	1	0	1	3	0	1	3	3	2	0	0%	15	1%
Financial & insurance services	1	0	0	1	0	3	3	0	0	0	0	0%	8	0%
All industries	259	284	257	284	311	282	258	228	224	228	191	100%	2806	100%

^a Mining fatalities include those that occur in coal and metal ore mining, oil and gas extraction, sand and gravel quarrying, exploration and support services.

The Agriculture
forestry & fishing
industry had a fatality
rate nine times
the national rate

Fatality rates, expressed as fatalities per 100 000 workers, are best used when comparing risk across industries. Table 12 shows that in 2013 the Agriculture, forestry & fishing industry recorded the highest fatality rate with 15.11 fatalities per 100 000 workers. While this is one of the lowest fatality rates for this industry in the series it is still nine times the national fatality rate of 1.64. Within this industry, the Agriculture sector accounted for 37 of the 48 worker fatalities in 2013 and recorded a fatality rate of 13.27 fatalities per 100 000 workers, slightly below the rate for the industry as a whole. This is due to other sectors of the industry such as forestry, fishing and aquaculture recording much higher fatality rates.

The Transport, postal & warehousing industry recorded the second highest fatality rate in 2013 with 7.76 fatalities per 100 000 workers. While this is one of the lowest rates for this industry in the series, it is nearly five times the national rate. The Road transport sector within this industry accounted for three-quarters of the fatalities in the 11 years of the series and in 2013 recorded a fatality rate of 15.99, more than double the rate for the industry as a whole.

The Road freight
transport sector had a
fatality rate 12 times
the national rate

Within the Road transport sector is the Road freight transport sub-sector. This sub-sector accounted for 28% of the workers in the Transport, postal & warehousing industry in 2013 but accounted for 74% of the fatalities. The 34 fatalities in this sub-sector equates to a fatality rate of 20.46 fatalities per 100 000 workers, which is 12 times the national rate and two and a half times the rate for the whole of the Transport, postal & warehousing industry.

While the Construction industry recorded the third highest number of fatalities in 2013, the Electricity, gas, water & waste services industry recorded the third highest fatality rate with 4.02 fatalities per 100 000 workers. There were 5 fatalities recorded in this industry in 2013, which is the highest number since 2009 when 5 deaths were also recorded. The Construction industry recorded the sixth highest fatality rate with 1.85 fatalities per 100 000 workers.

The Mining industry recorded 8 fatalities in 2013 which is equal to the previous year. The 8 fatalities corresponds to a fatality rate of 2.98 fatalities per 100 000 workers, the fifth highest of all the industries. This still represents a good result for the Mining industry, which recorded rates as high as 12.35 fatalities per 100 000 workers in 2003 when 11 workers were killed. The highest number of fatalities in this industry occurred in 2006 when 15 workers died. Employment in the Mining industry has nearly tripled over this 10 year period.

Because fatality rates are sensitive to the number of workers employed in each industry, fatality rates 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 be considered when interpreting the fatality rates in Table 12.

Table 12: Worker fatalities: fatality rate (fatalities per 100 000 workers) by industry of employer, 2003 to 2013 (sorted by 2013)

Industry of employer	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
Agriculture, forestry & fishing	16.39	21.56	17.45	13.11	14.74	18.97	17.01	14.82	18.05	15.91	15.11	16.66
Agriculture	14.51	17.34	14.38	11.42	13.00	14.19	13.89	14.04	15.76	11.99	13.27	13.99
Transport, postal & warehousing	14.43	13.56	10.99	12.21	15.32	12.41	10.85	7.63	8.23	10.65	7.76	11.14
Road Transport	19.89	21.54	18.61	22.35	25.34	21.35	22.30	14.08	12.15	21.58	15.99	19.60
Road Freight Transport	25.89	31.52	26.98	31.52	37.56	28.84	29.44	19.15	15.29	27.80	20.46	26.66
Electricity, gas, water & waste services*	5.43	8.72	5.96	7.48	3.77	3.22	3.71	0.70	1.32	1.97	3.35	3.77
Arts & recreation services	2.05	3.20	3.46	2.82	5.13	1.58	0.49	2.60	2.84	2.36	3.34	2.71
Mining ^a	12.35	10.82	7.51	11.32	5.07	7.25	6.10	2.66	2.70	3.01	2.98	5.50
Construction	5.71	4.38	3.51	4.70	4.84	3.81	3.61	4.03	3.97	3.00	1.85	3.89
Rental, hiring & real estate services*	2.36	1.13	3.34	2.04	4.97	1.95	1.08	2.06	1.01	1.42	1.52	2.08
Other services*	0.94	1.67	2.45	1.67	0.89	1.52	0.90	0.43	0.89	0.65	1.50	1.21
Wholesale trade	1.85	2.61	2.67	2.02	2.04	2.70	0.97	2.40	0.72	2.19	1.40	1.95
Public administration & safety	1.42	1.70	2.11	1.92	1.87	0.57	1.51	0.80	1.41	1.05	1.36	1.53
Administrative & support services	1.14	2.63	3.37	2.26	3.35	2.90	3.35	3.09	1.99	1.50	1.27	2.42
Manufacturing	1.92	2.19	2.23	2.84	2.40	2.83	2.27	2.11	2.28	1.87	1.07	2.19
Retail trade	0.62	0.45	0.59	0.85	1.40	0.49	0.41	0.58	0.16	0.41	0.81	0.62
Accommodation & food services*	0.77	0.60	0.00	1.20	0.85	0.28	0.41	0.27	0.13	0.13	0.25	0.43
Health care & social assistance*	0.33	0.31	0.30	0.19	0.00	0.18	0.50	0.32	0.15	0.15	0.21	0.24
Professional, scientific & technical services*	0.32	0.95	0.29	0.81	0.93	0.63	0.50	0.47	0.23	0.88	0.11	0.55
Information media & telecommunications*	0.45	0.45	0.00	0.41	1.23	0.00	0.45	1.40	1.43	0.88	0.00	0.61
Education & training*	0.28	0.14	0.28	1.07	0.52	0.25	0.24	0.23	0.23	0.45	0.00	0.33
Financial & insurance services*	0.29	0.00	0.00	0.26	0.00	0.74	0.75	0.00	0.00	0.00	0.00	0.18
All industries	2.72	2.94	2.57	2.77	2.93	2.59	2.35	2.03	1.96	1.98	1.64	2.39

^a Mining fatalities include those that occur in coal and metal ore mining, oil and gas extraction, sand and gravel quarrying, exploration and support services.

* Movements in fatality rates in industries with 5 or fewer fatalities each year should be viewed with caution.

Industry by mechanism

Table 13 shows the most common ways fatalities occurred (mechanism of incident) for the four industries with the highest numbers of fatalities over the 2003–13 period. These data show quite different patterns for each industry compared with the all industries average.

Vehicle collision accounted for most (72%) of the fatalities in the Transport, postal & warehousing industry. This is nearly twice the proportion that this mechanism represents of all worker fatalities (40%) but is not unexpected as this industry includes long and short distance freight and passenger transport.

Within the Agriculture, forestry & fishing industry one-third (32%) of fatalities were due to *Vehicle collision*. An additional 12% of fatalities were attributed to *Rollover of non-road vehicle* and these typically involved tractors and quad bikes. This industry had higher proportions of fatalities due to being *Hit or bitten by animal* and *Drowning* (4% each) than the other industries.

Falls from a height dominated fatalities in the Construction industry. This mechanism accounted for 28% of fatalities, which is nearly three times the proportion this mechanism represents of all worker fatalities. *Contact with electricity* accounted for 15% of fatalities, which is five times the proportion this mechanism represents of all worker fatalities. The proportion of fatalities due to *Vehicle collision* (16%) in the Construction industry was relatively low.

Of the four industries shown in Table 12, the mechanism profile of the Manufacturing industry most closely resembles the all industries profile. However, one key difference is that the proportion of fatalities due to a *Vehicle collision* in the Manufacturing industry was relatively low (23% compared with 41% nationally). The Manufacturing industry had higher proportions of *Hit by falling object* (16%), *Trapped by objects* (which includes *Being trapped between stationary & moving objects* and *Being trapped by moving machinery or equipment*) (19%) and *Being hit by moving objects* (16%) than in the other industries profiled. These mechanisms accounted for between 8% and 12% of worker fatalities nationally.

Table 13: Worker fatalities: percentage by mechanism of incident and selected industries, 2003 to 2013 combined

Mechanism	Selected industry				All industries
	Agriculture, forestry & fishing	Construction	Manufacturing	Transport, postal & warehousing	
Vehicle collision	32%	16%	23%	72%	40%
Rollover of non-road vehicle	12%	2%	2%	0%	4%
Being hit by moving object	12%	12%	16%	8%	12%
Falls from a height	7%	28%	10%	4%	11%
Hit by falling object	10%	11%	16%	4%	9%
Trapped by objects	10%	8%	19%	6%	8%
Contact with electricity	3%	15%	3%	1%	5%
Drowning	4%	1%	0%	0%	2%
Hit or bitten by animal	4%	0%	0%	0%	1%
Other mechanisms	5%	6%	10%	4%	8%
Total	100%	100%	100%	100%	100%

Industry by employment status

Table 14 shows the profile of fatalities by industry and employment status. These data show that half of the self-employed workers who died over the 2003–13 period were working in the Agriculture, forestry & fishing industry. The Transport, postal & warehousing and Construction industries also had high proportions of self-employed worker fatalities with 18% and 14% respectively. In total these three industries accounted for 84% of self-employed worker fatalities and 40% of self-employed workers.

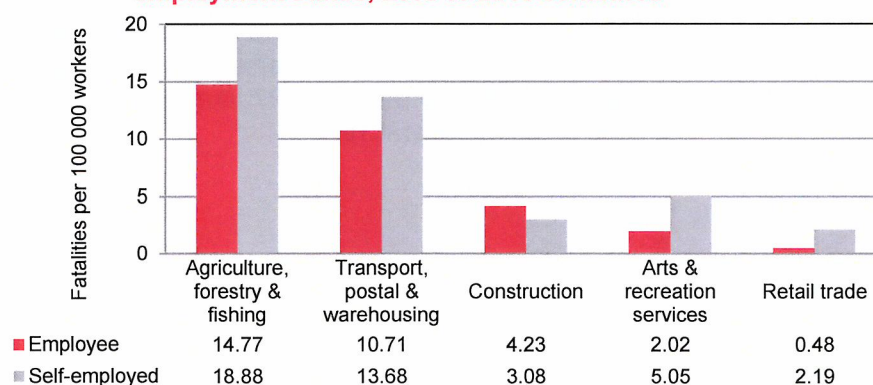
These three industries also accounted for the highest proportion of employee fatalities. Over the 2003–13 period, these industries accounted for 55% of employee deaths and 14% of employee workers.

Table 14: Worker fatalities: number and percentage by industry and employment status, 2003 to 2013 combined

Industry	Number of fatalities		Percentage	
	Employee	Self-employed	Employee	Self-employed
Transport, postal & warehousing	552	112	26%	18%
Agriculture, forestry & fishing	298	331	14%	52%
Construction	311	91	15%	14%
Manufacturing	239	5	11%	1%
Public administration & safety	101	2	5%	0%
Mining	96	6	4%	1%
Administrative & support services	89	9	4%	1%
Wholesale trade	81	4	4%	1%
Retail trade	58	22	3%	3%
Other services	40	13	2%	2%
Arts & recreation services	34	19	2%	3%
Other industries	235	18	11%	3%
Total	2 134	632	100%	100%

Figure 8 shows the fatality rates for the five industries with the highest numbers of self-employed worker fatalities over the 2003–13 period. These data show that self-employed workers have higher fatality rates in all of the industries except Construction. While the Agriculture, forestry & fishing and Transport, postal & warehousing industries had the highest fatality rates for both employees and self-employed workers, the fatality rates for self-employed workers were 28% higher than the corresponding rates for employees.

Figure 8: Worker fatalities: fatality rates by selected industries and employment status, 2003 to 2013 combined



Occupation

One third of all workers killed were machinery operators or drivers

In 2013, 32% (62 fatalities) of the workers killed were employed as Machinery operators & drivers. Labourers accounted for a further 20% (39 fatalities) of fatalities followed by Managers and Technicians & trades workers (both with 15% – 29 and 28 fatalities respectively). Table 15 shows that despite the major fall in the total number of fatalities the proportions by occupation division for 2013 were similar to the combined pattern for all 11 years.

On average 51 truck drivers are killed each year while working

Table 15 also shows which detailed occupation groups had the highest numbers of worker fatalities. These data show that over the 11 years of the series 568 Truck drivers have been killed. This is 20% of all worker fatalities. In 2013, 39 Truck drivers were killed, which also represents 20% of fatalities.

Farmers and farm managers accounted for 320 fatalities over the 11 years, which represents 11% of all worker fatalities. This group accounted for a slightly higher proportion of the 2013 fatalities (13% - 24 fatalities). Within this group Livestock farmers accounted for 156 fatalities in the 11 years followed by Mixed crop & livestock farmers with 107 fatalities and Crop farmers with 54 fatalities. The detailed occupation data should be viewed with caution due to the limited information available from the data sources to assist with coding.

Another detailed occupation group with high numbers of fatalities was Air transport professionals. The 111 fatalities within this occupation group represents 4% of all worker fatalities over the 11 years. Over one-third of these fatalities (42) occurred on farms and involved activities such as aerial spraying and mustering.

Workers who operate machinery or equipment have a fatality rate nearly five times the national rate

The highest fatality rate at the occupation major level in 2013 was recorded by Machinery operators & drivers (Table 16). The rate of 7.91 fatalities per 100 000 workers was nearly five times the national rate. Within this occupation group, Mobile plant operators recorded 27.63 fatalities per 100 000 workers and Road & rail drivers recorded 14.75 fatalities per 100 000 workers. While these fatality rates were some of the lowest in their respective series they are 17 and nine times the national rate respectively.

The Labourers occupation group recorded the second highest fatality rate with 3.40 fatalities per 100 000 workers (twice the national rate). Within this occupation, Farm, forestry & garden workers recorded 10.61 fatalities per 100 000 workers, which is more than 6 times the national rate.

While Managers recorded a fatality rate only slightly higher than the national rate (1.95), the Farmers & farm managers occupation group recorded a fatality rate of 14.27 fatalities per 100 000 workers, nearly nine times the overall rate.

Table 15: Worker fatalities: number by occupation, 2003 to 2013 (sorted by 2013)

Occupation	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	% of 2013	Total	% of Total
Machinery operators & drivers	86	91	76	90	112	94	95	64	61	77	62	32%	910	32%
Road & rail drivers	65	71	55	69	82	67	72	47	46	61	48	25%	684	24%
Truck drivers	47	60	48	53	72	60	63	38	39	49	39	21%	566	20%
Delivery drivers	11	7	3	11	6	4	4	8	4	3	4	2%	68	2%
Mobile plant operators	11	8	8	10	17	9	12	8	7	8	6	3%	105	4%
Earth moving plant operators	2	9	5	5	4	8	6	2	4	3	6	3%	54	2%
Machine & stationary plant operators	7	8	11	10	7	15	9	7	8	5	7	3%	94	3%
Labourers	61	60	42	52	57	66	40	51	41	48	39	20%	561	20%
Farm, forestry & garden workers	22	26	15	13	17	33	12	22	16	16	11	6%	205	7%
Crop farm workers	13	13	3	4	6	10	5	5	4	3	1	1%	68	2%
Livestock farmer workers	3	5	4	4	4	12	6	9	6	5	4	2%	63	2%
Construction & mining labourers	22	10	12	13	13	16	11	11	12	14	8	4%	144	5%
Managers	40	48	50	42	39	33	43	34	40	37	29	15%	431	15%
Farmers & farm managers	31	35	35	27	27	23	32	27	34	25	24	13%	320	11%
Livestock farmers	15	16	13	12	10	10	21	8	21	15	15	8%	155	6%
Mixed crop & livestock farmers	8	14	16	11	10	9	8	13	9	6	3	2%	107	4%
Crop farmers	8	3	6	4	7	4	3	6	3	4	6	3%	55	2%
Technicians & trades workers	31	49	42	52	54	45	37	40	43	28	28	15%	453	16%
Construction trades workers	10	13	6	15	17	11	13	12	8	11	3	2%	124	4%
Building & plumbing labourers	14	3	7	3	2	8	2	3	6	2	1	1%	53	2%
Automotive & engineering trades workers	10	15	13	12	13	16	10	10	11	4	11	6%	124	4%
Electrotechnology & telecommunications trades workers	9	11	13	11	13	8	6	8	14	6	9	5%	109	4%
Electricians	6	7	9	6	9	4	4	4	9	5	7	4%	71	3%
Community & personal service workers	11	16	12	14	10	8	14	8	10	9	14	7%	126	4%
Protective service workers	7	6	8	7	5	3	8	4	3	7	4	2%	62	2%
Professionals	19	15	24	25	24	21	20	24	25	21	11	6%	226	8%
Design, engineering, science & transport professionals	17	12	19	17	12	16	13	13	19	14	9	5%	159	6%
Air transport professionals	13	7	9	9	10	13	7	11	13	11	8	4%	111	4%
Sales workers	7	4	5	7	10	7	4	5	1	3	6	3%	59	2%
Clerical & administrative workers	4	1	6	2	5	8	5	2	3	5	1	1%	41	1%
Total all occupations	259	284	257	284	311	282	258	228	224	228	191	100%	2808	100%

Table 16: Worker fatalities: fatality rate by occupation, 2003 to 2013 (sorted by 2013)

Occupation	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Machinery operators & drivers	13.59	14.07	11.74	13.44	15.46	12.88	13.55	8.93	8.03	10.21	7.91
Road & rail drivers	24.69	25.87	20.44	24.88	28.23	22.97	24.60	16.02	14.50	20.22	14.75
Mobile plant operators	39.61	48.46	38.37	41.85	50.72	43.28	47.13	26.04	27.33	32.40	27.63
Machine & stationary plant operators	6.25	4.12	1.84	6.68	3.48	2.24	2.49	4.89	2.30	1.69	2.14
Labourers	5.57	5.43	3.77	4.59	4.90	5.59	3.41	4.36	3.50	4.12	3.40
Farm, forestry & garden workers	15.72	20.45	13.14	10.59	14.39	30.03	10.60	17.47	13.10	14.20	10.61
Construction & mining labourers	16.20	6.89	8.30	8.72	7.69	9.39	6.71	6.87	6.96	8.60	5.06
Professionals	6.78	4.60	6.43	5.54	3.86	4.69	3.77	3.62	4.91	3.59	2.29
Design, engineering, science & transport professionals	0.70	0.41	0.48	0.69	1.00	0.68	0.39	0.46	0.09	0.28	0.55
Managers	3.51	4.03	3.96	3.22	2.88	2.38	3.02	2.31	2.75	2.52	1.95
Farmers & farm managers	15.89	18.10	17.48	13.80	13.48	11.35	15.27	12.99	19.67	14.05	14.27
Technicians & trades workers	2.18	3.38	2.78	3.34	3.35	2.71	2.28	2.43	2.58	1.66	1.65
Construction trades workers	3.27	4.08	1.78	4.32	4.88	2.89	3.61	3.29	2.10	3.13	0.80
Automotive & engineering trades workers	2.98	4.35	3.76	3.35	3.64	4.33	2.80	2.75	3.00	1.09	2.92
Electrotechnology & telecommunications trades workers	4.58	6.11	6.93	5.55	6.04	3.70	2.73	3.37	6.21	2.55	3.91
Community & personal service workers	1.38	1.94	1.41	1.61	1.09	0.85	1.39	0.78	0.93	0.82	1.21
Protective service workers	5.84	5.15	6.47	5.62	4.04	2.33	6.00	3.11	2.20	5.08	2.67
Sales workers	1.03	0.79	1.22	1.21	1.12	0.93	0.87	1.00	1.02	0.83	0.43
Clerical & administrative workers	0.26	0.07	0.38	0.13	0.31	0.48	0.30	0.12	0.18	0.30	0.06
All occupations	2.72	2.94	2.57	2.77	2.93	2.59	2.35	2.03	1.96	1.98	1.64

Occupation by mechanism

Table 17 shows the most common mechanisms of incident for the five occupations with the highest total numbers of fatalities over the 2003–13 period. There were some notable differences.

Machinery operators & drivers and Professionals recorded much higher proportions of *Vehicle collision* fatalities than the other occupation groups with 61% and 74% of fatalities respectively due to this mechanism compared with 40% nationally. For Machinery operators & drivers, half of the *Vehicle collision* deaths involved the death of a truck driver (422 fatalities) or passenger (16 fatalities). For Professionals half of the *Vehicle collision* deaths involved plane crashes with 99 pilots and 16 working passengers killed over the 11 year period.

Technicians & trades workers recorded twice the all occupations proportion for *Falls from a height* (25% of fatalities compared with 11%). More than half of the workers in this occupation group who died from a fall were Construction trades workers. This occupation group also recorded more than three times the national proportion for *Contact with electricity* (17% of fatalities compared with 5%). Not surprisingly 39 of the 76 (51%) Technicians & trades workers group who died from *Contact with electricity* were electricians.

Labourers had half the national proportion of *Vehicle collision* fatalities (20% compared with 40%) but had higher proportions due to most other mechanisms.

Managers recorded more than three times the national proportion of fatalities for *Rollover of non-road vehicle* (13% compared with 4%). These fatalities mostly involve farm managers killed by rolling tractors and quad bikes.

Table 17: Worker fatalities: percentage by mechanism of incident and selected occupations, 2003 to 2013 combined

Mechanism	Selected occupation					All Occupations
	Machinery operators & drivers	Labourers	Technicians & trades workers	Managers	Professionals	
Vehicle collision	61%	20%	13%	29%	74%	40%
Being hit by moving object	11%	15%	9%	16%	6%	12%
Falls from a height	5%	15%	25%	8%	5%	11%
Hit by falling object	7%	16%	12%	7%	2%	9%
Trapped by objects	8%	12%	10%	9%	1%	8%
Contact with electricity	1%	4%	17%	4%	1%	5%
Rollover of non-road vehicle	3%	5%	1%	13%	0%	4%
Being assaulted by a person or persons	1%	1%	1%	3%	2%	2%
Drowning	0%	4%	1%	2%	2%	2%
Hit or bitten by animal	0%	1%	2%	5%	1%	1%
Explosion	1%	0%	3%	1%	0%	1%
Other mechanisms	4%	6%	6%	3%	4%	5%
Total	100%	100%	100%	100%	100%	100%
No. of fatalities	910	561	453	431	226	2806

State/territory of incident

The most populous states accounted for the majority of fatalities over the 11 years of the series. New South Wales accounted for 30% of the worker fatalities followed by Queensland with 24% and Victoria with 20%.

In 2013, 53 workers were killed in New South Wales, 50 were killed in Queensland, and 31 were killed in Victoria. Workers in these three states comprised 77% of Australia's working population in 2013 and accounted for 70% of the fatalities. These numbers represent falls from the previous year.

Table 18 shows that the 53 fatalities in 2013 in New South Wales is the lowest in the series and is a major reduction on the series high of 95 fatalities recorded in 2006. There is however considerable volatility in the numbers with 82 fatalities recorded in 2012 and 58 in 2011. The relatively high number of fatalities in 2012 was mainly due to a large increase in the number of fatalities on a public road (30 in 2012 compared with 17 in 2011). The 14 worker fatalities on public roads in New South Wales is the lowest in the series. The 39 worker fatalities not on a public road was the second lowest in the series for New South Wales after 34 in 2009.

The number of fatalities in Victoria has shown consistent improvement over recent years to record the lowest number of fatalities in the series (31 fatalities) in 2013. While there was a slight increase in the number of fatalities that occurred at worksites not on a public road (24 up from 21 the previous year), the number of public road incidents dropped from 14 to 7. This is a considerable improvement from the series high of 30 in 2007.

Queensland's total of 50 worker fatalities is the second lowest in the series behind the 49 recorded in 2010. While there was a slight increase in the number of workers killed on public roads (15 up from 12 in the previous year), the number killed away from public roads recorded a substantial fall from 45 in 2012 to 35 in 2013. This is the lowest number of non-public road fatalities in the Queensland series.

While the largest states recorded decreases, there were increases in the smaller states. After five years of decreases, Western Australia recorded 5 more fatalities in 2013 than it did in the previous two years. These additional deaths occurred at worksites not on a public road. Both South Australia and Tasmania recorded 2 more fatalities than they did the previous year with increases in the number of fatalities not on public roads.

Table 18: Worker fatalities: number by public road status and state/territory of incident, 2003 to 2013 (sorted by 2013 total)

State/territory of incident	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	% of 2013	Total	% of Total
Incident not on a public road														
New South Wales	51	47	57	65	56	53	34	46	41	52	39	20%	541	19%
Queensland	42	41	51	43	44	51	41	39	43	45	35	18%	475	17%
Victoria	31	39	22	39	39	34	32	31	32	21	24	13%	344	12%
Western Australia	21	27	18	15	34	35	21	23	19	16	20	10%	249	9%
South Australia	11	14	14	18	6	14	15	14	16	7	12	6%	141	5%
Tasmania	16	10	7	6	9	7	5	5	6	4	7	4%	82	3%
Northern Territory	2	10	1	5	5	6	5	5	5	4	4	2%	52	2%
Australian Capital Territory	1	3	1	2	0	0	1	1	1	2	1	1%	13	0%
Australia	175	191	171	193	193	200	154	164	163	151	142	74%	1897	68%
Incident on a public road														
New South Wales	34	28	34	30	30	30	29	21	17	30	14	7%	297	11%
Queensland	15	17	19	18	34	25	28	10	18	12	15	8%	211	8%
Victoria	23	28	20	28	30	13	19	16	14	14	7	4%	212	8%
Western Australia	7	9	5	8	12	8	12	8	5	8	9	5%	91	3%
South Australia	2	5	4	2	4	1	4	6	2	6	3	2%	39	1%
Tasmania	1	3	1	4	2	2	10	2	3	2	1	1%	31	1%
Northern Territory	2	3	3	1	5	3	1	1	2	4	0	0%	25	1%
Australian Capital Territory	0	0	0	0	1	0	1	0	0	1	0	0%	3	0%
Australia	84	93	86	91	118	82	104	64	61	77	49	26%	909	32%
All worker fatalities														
New South Wales	85	75	91	95	86	83	63	67	58	82	53	28%	838	30%
Queensland	57	58	70	61	78	76	69	49	61	57	50	26%	686	24%
Victoria	54	67	42	67	69	47	51	47	46	35	31	16%	556	20%
Western Australia	28	36	23	23	46	43	33	31	24	24	29	15%	340	12%
South Australia	13	19	18	20	10	15	19	20	18	13	15	8%	180	6%
Tasmania	17	13	8	10	11	9	15	7	9	6	8	4%	113	4%
Northern Territory	4	13	4	6	10	9	6	6	7	8	4	2%	77	3%
Australian Capital Territory	1	3	1	2	1	0	2	1	1	3	1	1%	16	1%
Australia	259	284	257	284	311	282	258	228	224	228	191	100%	2806	100%

Comparison of state and territory performance is best done using fatality rates. Table 19 shows that Tasmania and the Northern Territory have consistently recorded the highest fatality rates in all years of the series. While these regions record relatively few fatalities, the smaller working populations result in higher fatality rates than the bigger regions. In 2013, Tasmania accounted for 4% of fatalities and the Northern Territory 2% whereas they accounted for 2% and 1% of the working population respectively. This resulted in Tasmania recording 3.47 fatalities per 100 000 workers in 2013, which is more than twice the national rate. The Northern Territory recorded 3.18 fatalities per 100 000 workers, which is slightly less than twice the national rate.

The Australian Capital Territory consistently records the lowest fatality rate. This is partially due to the fact that it does not have many workers in the most hazardous industries of Agriculture, forestry & fishing and Transport, postal & warehousing.

Victoria recorded the second lowest fatality rate of all the states and territories in 2013 and recorded its lowest rate for the series with 1.07 fatalities per 100 000 workers, which is considerably lower than the national rate of 1.64.

While New South Wales recorded the highest number of fatalities in 2013, its fatality rate of 1.45 fatalities per 100 000 workers is 11% below the national rate. In contrast, Queensland recorded the second highest number of fatalities and had a fatality rate of 2.12 fatalities per 100 000 workers, which is 30% above the national rate.

Table 19: Worker fatalities: incidence rate by state/territory of incident, 2003 to 2013

State/territory of incident	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Tasmania	8.25	6.12	3.65	4.48	4.85	3.80	6.42	2.97	3.82	2.58	3.47
Northern Territory	3.92	12.66	3.89	5.60	8.77	7.65	4.77	4.78	5.56	6.14	3.18
Western Australia	2.90	3.65	2.20	2.13	4.10	3.68	2.79	2.57	1.94	1.85	2.20
Queensland	3.11	3.05	3.49	2.93	3.59	3.39	3.05	2.13	2.62	2.42	2.12
South Australia	1.81	2.63	2.42	2.63	1.29	1.89	2.38	2.46	2.20	1.59	1.85
New South Wales	2.70	2.37	2.82	2.89	2.56	2.41	1.82	1.90	1.61	2.27	1.45
Victoria	2.29	2.79	1.69	2.64	2.62	1.75	1.88	1.68	1.61	1.22	1.07
Australian Capital Territory	0.55	1.63	0.53	1.03	0.50	0.00	0.99	0.48	0.48	1.41	0.48
Australia	2.72	2.94	2.57	2.77	2.93	2.59	2.35	2.03	1.96	1.98	1.64

State/territory by industry

The last five years (2009 to 2013) of fatalities data were analysed to identify the industries that had the highest numbers of fatalities in each state or territory. The analysis excludes the Australian Capital Territory due to the small numbers of fatalities involved.

Table 20 shows that the high fatality rates in the Northern Territory and Tasmania are due to the relatively high numbers of fatalities in the Agriculture, forestry & fishing industry. While nationally 25% of fatalities in the 2009–13 period occurred in the Agriculture, forestry & fishing industry, in Tasmania the proportion was 33% while in the Northern Territory the proportion was 39%.

Tasmania also recorded a higher proportion of fatalities in the Public administration & safety industry (9% compared with 1% to 5% in the other states). Offsetting this, Tasmania recorded a much lower proportion of fatalities in the Transport, postal & warehousing industry than the other states and territories: 11% compared with 19% to 26% in the other states.

While the Northern Territory recorded similar proportions of fatalities to the national pattern for the Transport, postal and warehousing and Construction industries, it recorded no fatalities in the Manufacturing, Mining or Retail trade industries.

These data also show that one-third of the Mining industry fatalities in the 2009–13 period occurred in Western Australia. However, Western Australia accounted for 41% of workers in the Mining industry in this period.

Table 20: Worker fatalities: number by state/territory of incident and the industries with the highest number of fatalities, 2009 to 2013 combined

Industry	New South Wales	Victoria	Queensland	Western Australia	South Australia	Tasmania	Northern Territory	Australia*
Number of fatalities								
Agriculture, forestry & fishing	68	51	77	32	22	15	12	277
Transport, postal & warehousing	85	51	64	32	18	5	6	262
Construction	47	32	45	15	14	8	4	167
Manufacturing	28	16	25	14	7	4	0	94
Public administration & safety	14	8	14	2	3	4	1	47
Administrative & support services	12	10	7	8	4	1	1	43
Mining	7	4	10	12	2	2	0	37
Wholesale trade	12	6	6	2	5	0	1	32
Retail trade	9	6	3	6	3	1	1	29
Other industries	41	26	35	18	7	5	5	141
Total	323	210	286	141	85	45	31	1129
Percentage								
Agriculture, forestry & fishing	21%	24%	27%	23%	26%	33%	39%	25%
Transport, postal & warehousing	26%	24%	22%	23%	21%	11%	19%	23%
Construction	15%	15%	16%	11%	16%	18%	13%	15%
Manufacturing	9%	8%	9%	10%	8%	9%	0%	8%
Public administration & safety	4%	4%	5%	1%	4%	9%	3%	4%
Administrative & support services	4%	5%	2%	6%	5%	2%	3%	4%
Mining	2%	2%	3%	9%	2%	4%	0%	3%
Wholesale trade	4%	3%	2%	1%	6%	0%	3%	3%
Retail trade	3%	3%	1%	4%	4%	2%	3%	3%
Other industries	13%	12%	12%	13%	8%	11%	16%	12%
Total	100%	100%	100%	100%	100%	100%	100%	100%

* includes Australian Capital Territory

The Northern Territory has the highest fatality rate in the agriculture, transport and construction sectors

Table 21 shows fatality rates for the four industries with the highest number of fatalities by state/territory of death. These data show that the Northern Territory recorded fatality rates substantially above the national rate for three of the four industries shown. There were no deaths in the Manufacturing industry over the five year period in the Northern Territory. The Manufacturing industry accounted for just 3% of workers in the Northern Territory in the 2009–13 period.

The rates for the Agriculture, forestry & fishing industry ranged from 11.94 fatalities per 100 000 workers in South Australia to 21.84 in Tasmania but the Northern Territory recorded 81.55, five times the national rate for this industry.

Similarly, in the Transport, postal & warehousing industry the fatality rates ranged from 7.41 fatalities per 100 000 workers in Victoria to 10.18 in Western Australia but the Northern Territory recorded 18.65, twice the national rate for this industry.

For the Construction industry both the Northern Territory and Tasmania recorded fatality rates more than twice the national rate for the industry. Construction fatality rates ranged from 2.30 fatalities per 100 000 workers in Western Australia to 4.11 in South Australia but Tasmania recorded 8.31 and the Northern Territory recorded 6.30.

Tasmania recorded the highest fatality rate for the Manufacturing industry with 4.31 fatalities per 100 000 workers. The other states ranged from 1.07 in Victoria to 3.01 in Western Australia.

Table 21: Worker fatalities: incidence rate by selected industries and state/territory of incident, 2008 to 2013 combined

State/territory of incident	Agriculture, forestry & fishing	Transport, postal & warehousing	Construction	Manufacturing	Total all industries
New South Wales	14.80	8.94	3.24	1.90	1.82
Victoria	12.40	7.41	2.61	1.07	1.49
Queensland	20.29	9.61	3.82	2.76	2.48
Western Australia	16.63	10.18	2.30	3.01	2.26
South Australia	11.94	10.11	4.11	1.78	2.10
Tasmania	21.84	9.49	8.31	4.31	3.86
Northern Territory	81.55	18.65	6.30	0.00	5.06
Australia	16.16	9.01	3.29	1.93	2.00

Bystander fatalities

The actions of a worker or a fault in a workplace resulted in the deaths of 66 members of the public in 2013. This is the highest number since 2007 when 75 members of the public were killed. The 2007 figure includes 10 people who were killed in the Kerang train crash. The other year when a large number of people were killed in a single incident was in 2011 when 11 nursing home residents died following a fire deliberately lit by a worker. There was no one single incident to explain the large number of bystander fatalities in 2013.

Over the 11 years of the series, 59% of the bystander fatalities were male. In 2013 males accounted for a slightly higher proportion (62%).

In 2013, 68% of bystander fatalities involved an incident on a public road. This is slightly higher than the proportion of fatalities public road incidents accounted for across the 11 years of the series (63%).

Age group

Table 22 shows that over the 11 years of the time series there has been a slight decrease in the number of bystander fatalities in the youngest age group and a slight increase in the numbers in the oldest age groups with relatively similar numbers for the middle age groups. The pattern of bystander fatalities by age in 2013 was flatter than most other years.

Over the 11 years of the series, 21% of bystander fatalities were people aged 65 years & over while the Under 15 years age group accounted for 19%. In 2013 these proportions were 18% and 13% respectively.

Table 22: Bystander fatalities: number by age group, 2003 to 2013

Age group	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Under 15 years	8	18	10	19	22	14	14	9	2	6	9
15–24 years	8	5	9	3	8	8	15	7	5	4	8
25–34 years	9	8	10	3	11	7	5	5	9	8	12
35–44 years	5	12	7	5	6	8	6	12	4	7	7
45–54 years	10	3	5	10	12	7	4	5	7	8	7
55–64 years	9	8	11	5	3	6	6	6	11	7	11
65 years & over	8	9	13	13	13	11	3	14	24	22	12
Total	57	63	65	58	75	61	53	58	62	62	66

Mechanism of incident

Over the 2003–13 period 60% of the bystander fatalities were due to a *Vehicle collision* of which 80% occurred on a public road (Table 23). Of the 411 *Vehicle collision* fatalities, 280 involved a collision with a truck while 23 involved a worker in a car colliding with another car. There were also 42 passengers in aircraft and 12 bus passengers that were killed.

Being hit by moving objects accounted for 16% of the bystander fatalities with vehicles responsible for all the fatalities. Being hit by a truck resulted in 52 bystander fatalities and being hit by a car or other light vehicle killed a further 35.

Falls accounted for 6% of bystander fatalities with falls from vehicles accounting for 16 fatalities over the 11 years. Of the 49 fatalities from *Falls*, 12 occurred on farms.

Drowning incidents in a work environment resulted in the fatalities of 26 people over the 11 years, 4% 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, 6 drowned in public swimming pools while under supervision.

Table 23: Bystander fatalities: number by mechanism of incident and breakdown agency, 2003 to 2013 combined

Mechanism of incident/ Type of incident	2003–2013 combined		2013	
	Number of fatalities	Percentage	Number of fatalities	Percentage
Vehicle collision	407	60%	43	65%
Truck-related Vehicle collisions	276	41%	32	48%
Occupant in car hit by truck	175	26%	20	30%
Motorbike rider in incident with truck	33	5%	4	6%
Bicycle rider in incident with truck	25	4%	7	11%
Non-working passengers in trucks	25	4%	1	2%
Train occupant in incident with truck	13	2%	0	0%
Other truck related incidents	5	1%	0	0%
Aircraft occupants	42	6%	2	3%
Collisions involving 2 or more light vehicles	23	3%	1	2%
Single light vehicle collisions	14	2%	0	0%
Bus passengers	12	2%	0	0%
Other Vehicle collisions	40	6%	7	11%
Being hit by moving objects	110	16%	8	12%
Hit by truck	52	8%	5	8%
Hit by car or other light vehicle	35	5%	1	2%
Hit by other vehicle/object	23	3%	2	3%
Falls	49	7%	5	8%
Falls from vehicles	16	2%	1	2%
Falls involving patients in health care	13	2%	2	3%
Other falls	20	3%	2	3%
Being hit by falling objects	29	4%	6	9%
Drowning/immersion	26	4%	0	0%
Drowned in farm dams	12	2%	0	0%
Drowned in swimming pools	6	1%	0	0%
Other drownings	8	1%	0	0%
All other mechanisms	59	9%	4	6%
Total Bystander fatalities	680	100%	66	100%

Explanatory Notes

Inclusions

This report covers fatalities due to work-related injuries and explicitly excludes deaths attributed 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 triggered a fatal heart attack or stroke, the fatality is included.

Worker fatalities

All identified cases of persons who died from injuries sustained while they were 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. 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. 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 whether or not the deceased was working at the time of the incident.

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 own death. If the bystander's 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 cannot 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 higher number of deaths involving cars, it is not feasible 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 interpreted 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 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.

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 a patient who dies as a result of medical negligence or malpractice is in principle a bystander fatality, 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.

Data sources

This study uses information from three datasets:

- the National Data Set for Compensation-based Statistics (NDS)
- the Notifiable Fatalities Collection (NFC), and
- the National Coronial Information System (NCIS).

The individual records from each of the datasets are compared so that duplicates can be removed. Generally date of death, date of birth and sex are used for initial matching as these data are available for most cases. 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 determine the total number of work-related fatalities that occur 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 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 codes the industry of employer accurately
- medical professionals independently assess work-relatedness, and
- work-related travel is identified.

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
- a claim may not be lodged where there are no dependants
- date of death is not available for all fatalities although jurisdictions are progressively introducing this data item
- bystander fatalities are not included as they are not compensable within the workers' compensation system
- narratives are not provided
- coding of Mechanism, Agency, Breakdown agency and Occupation may not be complete or accurate
- workers who die overseas are not identifiable
- location of incident is not identified so workers who died in an incident in a state different to their employer can be difficult to match to an NCIS record. This is particularly relevant to Commonwealth compensation claims with workers employed in all states and territories
- date of birth may not be accurate, and
- names are not provided.

Notifiable Fatalities Collection (NFC)

Safe Work Australia maintains 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 13 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.

Following the introduction of model Work Health and Safety legislation this project was reviewed to align its scope to that of the new legislation. From 1 January 2013 improvements in the reporting of fatalities has occurred particularly in relation to work-related road fatalities.

The strengths of the NFC are that:

- it captures fatalities that may not be compensated such as deaths to self-employed, contract workers and bystanders
- information is available within a few months of the incident
- work-relatedness is assessed 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
- only limited information is available at the time of notification
- information on age is often inaccurate
- it tends to capture work-related fatalities only when they occur shortly after the injury, and
- prior to 1 January 2013 there was limited coverage of transport-related fatalities.

National Coronial Information System (NCIS)

The NCIS, officially launched in July 2000, is a national internet-based data storage and retrieval system of coronial cases in Australia. Each state and territory in Australia has a licence agreement with the Victorian Department of Justice permitting the transfer of coronial information for storage and dissemination via the NCIS.

For this project all records notified during the reference period are extracted. From this list, deaths are excluded that do not match the scope criteria such as 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.

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

are monitored to ensure all work-related fatalities are identified and added to the database. Therefore updates to historical numbers may be evident in future releases.

The strengths of the NCIS are that:

- it includes all deaths reported to an Australian coroner
- it includes police narratives and coronial findings on the causes and circumstances surrounding the fatal incident
- some information is available within a few months of the incident, and
- work-relatedness is assessed 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
- crucial data items, including name, date of birth and date of death, as well as documentation, may be missing for open cases and even some closed cases, and
- it is difficult to identify bystander fatalities.

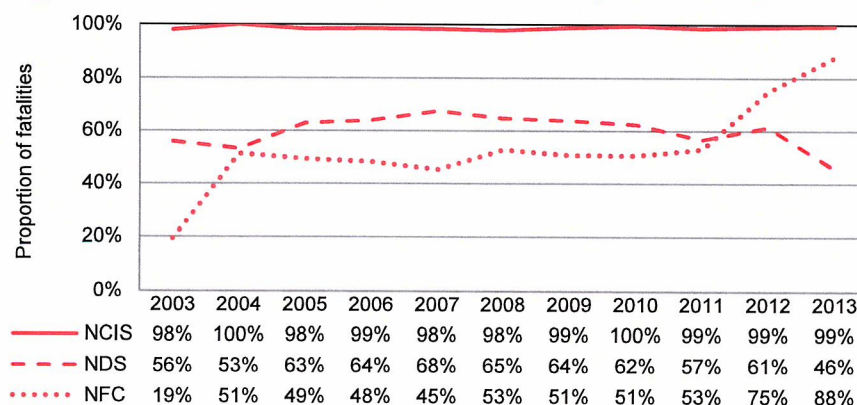
Other data sources

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 9 shows that the proportion of cases each dataset contributed to the total number of work-related fatalities in each year remained relatively stable from 2004 to 2011. The 2003 and 2013 years have been affected by the change from financial year to calendar year. The NFC has a low proportion (19%) for the 2003 year as the collection only began from 1 July 2003. The NFC has shown substantial improvement from 2012 (up from 53% to 88%) due to the increased coverage of this collection as mentioned earlier.

Figure 9: Worker fatalities: dataset contribution, 2003 to 2013



The NDS has a low proportion for 2013 (46%). While Safe Work Australia has obtained information on all workers' compensation fatality claims lodged up to 31 December 2013 dependents of deceased workers may not yet have lodged claims for fatalities that occurred in 2013.

Of the 228 worker fatalities identified in 2012, 109 (48%) were identified in all three datasets. There were 24 (11%) cases found only in the NCIS. For the 2013 collection these proportions are quite different due to the reasons explained in the previous paragraphs with the NDS proportion expected to rise when updated data are provided.

Calculation of fatality rates

Fatality rates are calculated as the number of fatalities divided by the number of workers in the reference period and expressed as a rate per 100 000 workers. Employment figures from quarterly ABS Labour Force Survey 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 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. As this study has only identified one or two volunteer workers each year, their inclusion does not impact on the fatality rates in this publication. Similarly the worker estimates do not include children under 15. Across the 10 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

Being hit by moving objects

Part of the Mechanism classification used to describe the action of an object hitting a person. This includes pedestrians hit by vehicles as well as being hit by other moving equipment or objects.

Breakdown agency

A part of the TOOCS classification which identified the object, substance or circumstance principally involved at the point at which things started to go wrong.

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 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.

Contributing family workers

A person who works without pay, in an economic enterprise operated by a relative.

Employed person

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 (regardless of 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 fatalities per 100 000 Employed persons: for brevity this is usually expressed as 'fatalities per 100 000 workers'. See Paragraph 4 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.
Mechanism of incident	The action, exposure or event that best describes the circumstances that resulted in the most serious injury.
Non-public road incident	An incident involving a vehicle that occurred at a worksite, on a private road or a public area that is not a public road. These incidents include plane crashes and incidents involving watercraft as well as vehicle crashes on farming properties.
Occupation	A set of jobs with similar sets of tasks. Fatalities data in this publication have been coded to the Australian and New Zealand Standard Classification of Occupations (ANZSCO) (ABS cat. no. 1220.0) First edition and unless specified are shown at the major group level.
Public road incident	A collision on a public road between any vehicle or self-propelled plant and anything else including a pedestrian. Incidents involving vehicles at worksites or on private roads are excluded. Public road incidents can be due to a Vehicle collision or being hit by a vehicle (which is included in the Mechanism of Being hit by moving objects). Vehicles that are caught in bush fires or hit by falling trees while on public roads are not classed as public road incidents as they do not involve a collision.
Rollover of non-road vehicle	Part of the Mechanism classification used to identify when a vehicle that is not normally a road vehicle overturns. This includes tractors and quad bikes being used on farm properties.
Self-employed	Includes both owner managers and employers. An owner manager is a person who works in his/her own business, with or without employees, whether or not the business is of limited liability. An employer is a person who operates his/her own unincorporated economic enterprise or engages independently in a profession or trade, and hires one or more employees.

**Type of occurrence
classification system
(TOOCS)**

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

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

Version 3.1 is used for coding the data presented in this report. Fatalities are only coded by Mechanism and Agency.

Vehicle collision

Part of the Mechanism of incident classification that identifies fatalities that occurred due to a vehicle crash and where the occupant of the vehicle was killed. In the classification, this category is called Vehicle Incident but has been renamed to assist with reader understanding. Vehicle collisions that occur on public roads are further classified as a public road incidents and do not include people hit by a vehicle, which are coded to Being hit by moving objects. Vehicles not only include cars and trucks but also include other motorised equipment such as aircraft, boats, loaders, tractors and quad bikes.

Volunteer

Persons who undertake voluntary work through or for an organisation or group are included in the worker counts where that organisation or group is a business enterprise. It does not include sporting organisations or caring activities.

Worker fatality

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. Workers include employees, self-employed persons, volunteers and contributing family workers.

Inquires

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