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Abstract
This report presents information on road crashes in Western Australia between the baseline period 2005-2007 (three year average) and 2017. There were 40 fewer people killed on WA roads in 2017 (160) compared with the baseline period (200).

Keywords
Road crash statistics, Fatal crashes, Alcohol, Drink driving, Drugs, Fatality, Helmet use, Injury, Restraint use, Road environment, Metropolitan area, Regional area, Seat belt, Speeding, Vehicle type, Western Australia.

Note
This report is distributed in the interests of information exchange and is available on the Internet at the Road Safety Commission website http://rsc.wa.gov.au/.

Minister's Message

The Road Safety Commission's new publication, Western Australian Road Trauma Trends 2017, is a whole-of-government consensus on road trauma statistics that offers a strong insight into crashes on Western Australian roads.

Detailed data taken from the 2005-2007 baseline, right through to 2017, reveals interesting trends in driver and rider behaviour, the age-groups and regions of WA most susceptible to crashes, information about hospital admissions and more.

Overall, there has been progress in the journey *Towards Zero*.

The number of fatalities dropped from 200 at baseline to 160 people in 2017. This was the lowest annual fatality count since at least 1961 and the lowest fatality rate of 6.2 people killed per 100,000 population.

The reduction is despite additional people using the WA road network; with a 25% increase in the population and a 38% increase in the number of registered vehicles.

This inaugural report represents a successful interagency collaboration between the Road Safety Commission (Commission) and stakeholder agencies and expands upon previous reports, known as Reported Road Crashes in Western Australia, which relied almost exclusively on data collected by Main Roads Western Australia (MRWA).

Participating agencies in the creation of this new report also included the Western Australia Police Force, the Department of Health, Royal Perth Hospital State Trauma Registry, the Department of Transport, the Insurance Commission of Western Australia (ICWA) and the Australian Bureau of Statistics.

I thank the agencies which have contributed their information and helped to build a more complete picture of road trauma, which will help us to strive for better outcomes in the future.

Hon. Michelle Roberts MLA
Minister Police; Road Safety

Reading and interpreting this report

This report provides aggregated data by calendar year between the baseline period (2005-2007 three-year average) to 2017. This report differs substantially from those reports in the series Reported Road Crashes in Western Australia (WA).

Historically, reported road crashes and resulting injuries have been obtained from the Main Roads WA Integrated Road Information System (IRIS) and served as the primary source of information for monitoring road crashes in WA. While this data is collated by Main Roads WA, it is originally collected by the WA Police Force and the Insurance Commission of WA.

Although IRIS is a detailed crash data set, there are multiple complementary sources of information on road crashes and resulting injuries collected across the State. This report aims to provide visibility of a broader set of road safety-related statistics by collating aggregate data from those different sources.

Each of the different agencies who collect information on road crashes and injuries generally does so for their own administrative purposes. This means the crashes and people that are included as well as the definitions varies by agency and cannot be directly compared.

To emphasise these differences, this report is organised by agency. Each agency's section includes a description of what information is included, how it is collected and known issues to be aware of. Where new concepts are introduced, definitions are provided within the text or with the relevant table or figure.

Insurance Commission data in this report relates to people admitted to hospital from a vehicle crash, not people injured who did not attend hospital.

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CONVENTION
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1 Introduction

Aims

The purpose of this publication is to provide a reference source for statistics relating to road crashes in Western Australia. There are a number of government agencies who collect data for their own administrative and business purposes. This report seeks to bring these sometimes disparate sources together. The benefits of presenting this data in this way include providing visibility over known under-reporting (e.g. pedestrians, cyclists, single vehicle motorcyclists), provide a better understanding of injury severity and confirm the priorities set out in the state road safety strategy, Towards Zero 2008 – 2020, remain relevant despite differences in scale.

Data sources and acknowledgements

The Road Safety Commission would like to acknowledge the valuable support and time taken by other agencies to provide the data and definitions included in this report. Below is a list of contributing agencies and where necessary a brief explanation of how data is collected and processed.

- **Main Roads Western Australia**

  Main Roads WA collates data collected by the WA Police Force and Insurance Commission of WA on all reported road crashes in Western Australia. This data is stored in the Integrated Road Information System (IRIS) and is historically the primary source of road crash data in WA. Main Roads WA also collects and collates data on the WA road network, its characteristics and travel. This report draws on Main Roads WA fatality data, road network information and Main Roads WA geographical regions. In 2014 there was a sustained discontinuity in the counts of hospitalisation crashes and persons hospitalised in the Main Roads WA IRIS database and they are therefore not reported here.

- **Insurance Commission of Western Australia**

  The Insurance Commission of WA collects information on all reportable road crashes in Western Australia via the Online Crash Reporting Form (OCRF). The OCRF satisfies the requirement to report relevant crashes to the WA Police Force.

  Western Australian legislation requires that traffic crashes are reported if:

  - the incident results in bodily harm to any person
  - the total value of property damage exceeds $3,000
  - the owner or representative of any damaged property is not present.

  This report only provides data on those persons detained in hospital because of injuries sustained in a road crash who were reported to ICWA. More detail on the scope and definitions are provided in the Insurance Commission of WA section.

- **Department of Health**

  The Department of Health Hospital Morbidity Data System captures over 200 clinical and non-clinical variables on all people admitted to public and private hospitals within Western Australia. This information is used for planning, allocating and evaluating health services. This report uses aggregate data from a custom extract which collates historical data on non-fatal admissions for injuries sustained in Western Australian road crashes. More detail on the scope and definitions are provided in the Department of Health section. More information on the full Hospital Morbidity Data System collection can be accessed at https://www.datalinkage-wa.org.au/resources/dataset-information/.

- **WA State Trauma Registry**

  The Western Australian State Trauma Registry monitors the function and effectiveness of the (WA) trauma system, collecting data about trauma patients from a selection of hospitals and health care facilities throughout the state.

  As at 2019, the Registry collects information from the Royal Perth Hospital, Perth Children's Hospital (formerly Princess Margaret Hospital for Children), Fremantle Hospital, Joondalup Health Campus, Sir Charles Gairdner Hospital, St John of God Midland and Fiona Stanley Hospital. A trauma patient is defined as one who has suffered an 'injury or wound resulting from an external force' (Miller and Keane 1983). To be included in the Registry they must present to a definitive hospital (listed above) for treatment within 7 days of their date of trauma and be hospitalised for greater than 24 hours at the definitive hospital or trauma-related deaths at the definitive hospital regardless of hospital length-of-stay.

  Data is collected by dedicated ANF Level 2 research nurses/research officers with clinical backgrounds in intensive care, emergency department, trauma, clinical trials and health science.

  This report uses aggregate data from a custom extract which collates historical data on non-fatal trauma admissions for injuries sustained in WA road crashes. More detail on the scope and definitions are provided in the State Trauma Registry section. More information about the full WA State Trauma Registry collection can be accessed at <https://ww2.health.wa.gov.au/Articles/U_Z/WA-State-Trauma-Registry >.

- **Australian Bureau of Statistics**

  The ABS is Australia's national statistical agency, providing trusted official statistics on a wide range of economic, social, population and environmental matters of importance to Australia. This report collates historical data from various releases of three key ABS statistical collections: Australian Demographic Statistics (catalogue no. 3101.0), Survey of Motor Vehicle Use, Australia (catalogue no. 9208.0), Motor Vehicle Census (catalogue no. 9309.0). More information on the ABS collections can be accessed at: < http://www.abs.gov.au/ >.

- **Western Australia Department of Transport (WA motor vehicle driver licence counts)**
- **Bureau of Infrastructure, Transport and Regional Economics (Australia-wide road crash fatality data)**
- **WA Police Force (speed infringement data)**
- **IHS Markit (data on new vehicles sold/ANCAP safety ratings in Western Australia and Australia)**

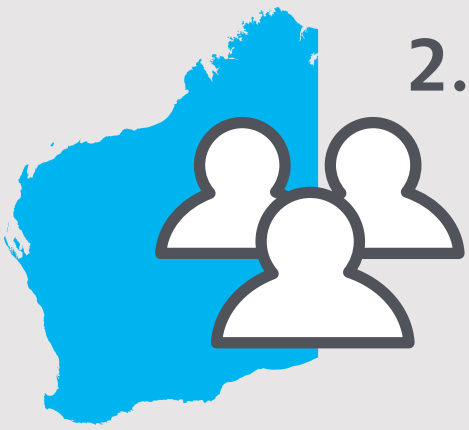
1a

Summary of Key Findings

1a. Exposure and behaviour

Population trends (Table 1, Page 27)

The Western Australian population increased by **25%** between the baseline period and 2017.



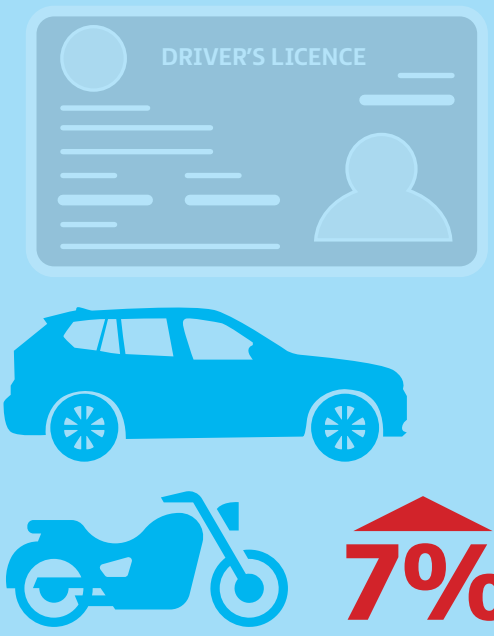
2.1 million

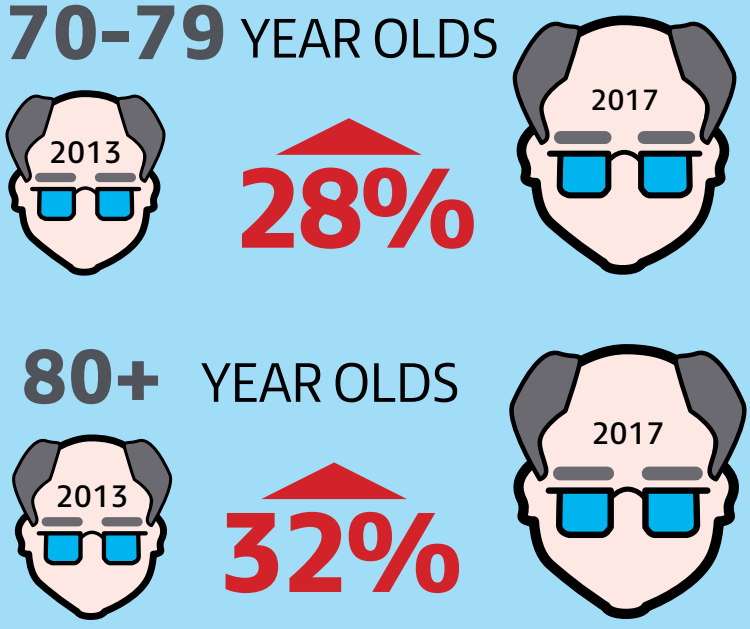
up to 2.6 million

+25%

Drivers licenses (Table 2, Page 28)

Between 2013 and 2017, there was a **7%** increase in the number of licensed drivers and riders in WA. The number of 70-79 and 80+ year olds increased the most over this time (**+28%** and **+32%** respectively.)

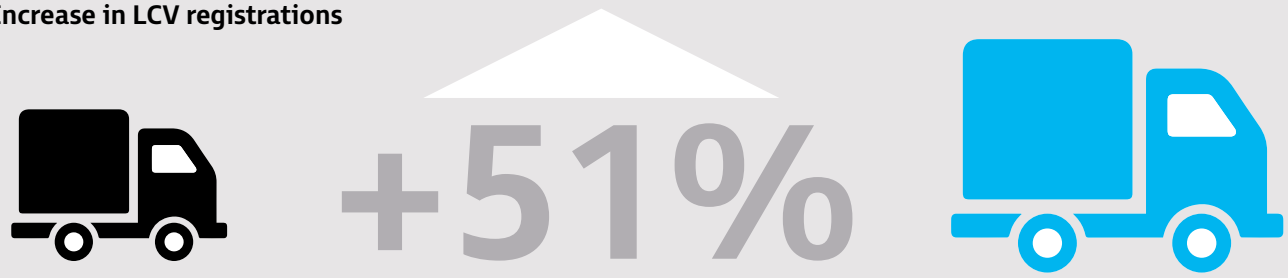




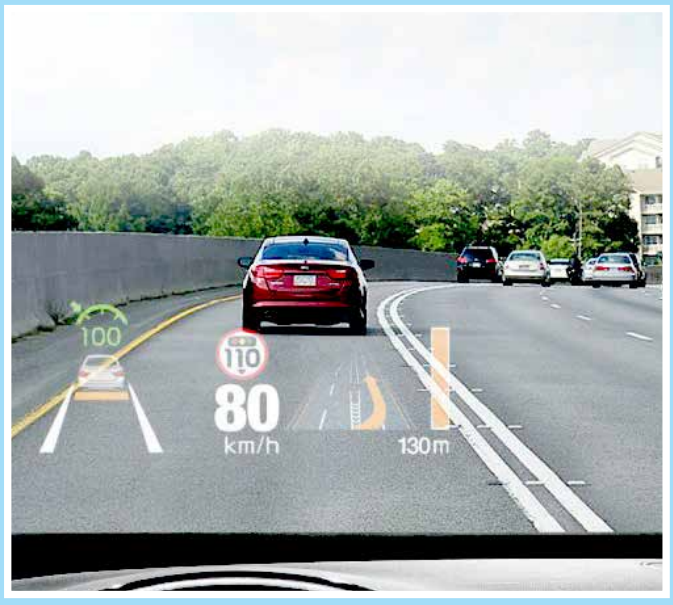
Vehicle registrations (Table 3, Page 28)

The number of registered vehicles in Western Australia has increased by 38% since the baseline period. While all vehicle categories have shown an absolute increase, light commercial vehicles are up **51%** and there has been a **112%** increase in motorcycles.

Increase in LCV registrations



Increase in Motorcycle registrations



Vehicle age (Table 4, Page 29)

There has been no substantial change in the mean age of registered motor vehicles over this period. With an estimated mean age of all registered motor vehicles of **10.7** years, there is still a lag in the safety benefits that can be contributed to inbuilt safety technology associated with new vehicles.

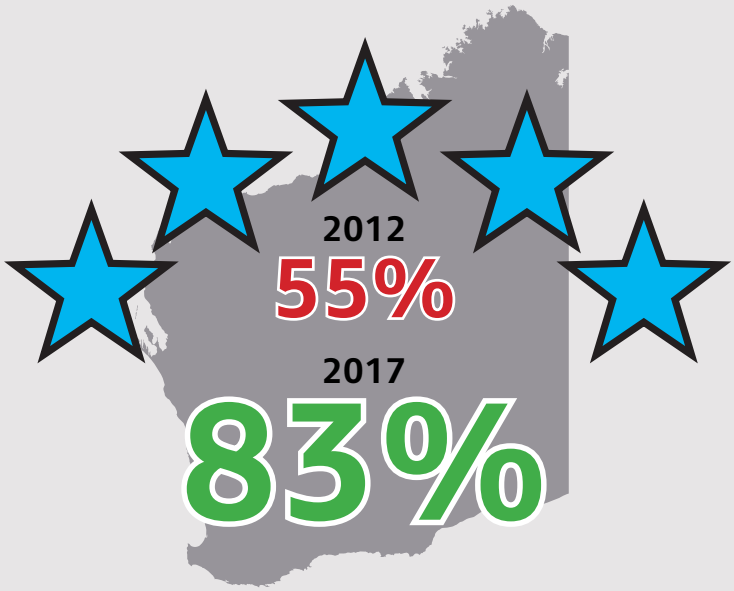
AVERAGE VEHICLE AGE

10.7
YEARS

1a. Exposure and Behaviour

ANCAP safety rating uptake
(Table 5, Page 29)

Western Australia has shown a marked improvement in the uptake of 5 Star ANCAP rated vehicles in recent years. In 2012, only **55%** of new vehicles sold in Western Australia had a 5 star ANCAP rating compared to 60% nationally. By 2017, WA had increased its uptake of 5 star rated vehicles to **83%** of all new vehicles sold, ahead of the national average of 81%.

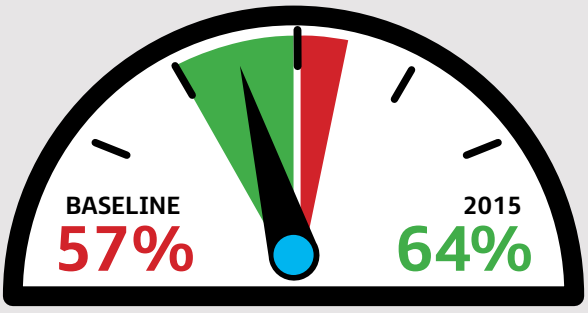


Main Roads region summary statistics 2016-2017 (Table 6, Page 30)

Although the metropolitan area and the South West make up only **1%** of Western Australia's land mass, they account for **74%** of all vehicle KMs travelled on State-controlled roads.

Vehicle speed compliance
(Table 7, Page 31)

Between the baseline period and 2015, the percentage of vehicles travelling within the speed limit in the metropolitan area improved from **57%** to **64%**. However, regional compliance has not seen the same improvement.



Vehicle speed by speed zone metropolitan
(Table 8, Page 31)

More vehicles were found to be speeding in 60km/h metropolitan speed zones than in 100km/h metropolitan speed zones.

Vehicle speed by speed zone regional
(Table 9, Page 32)

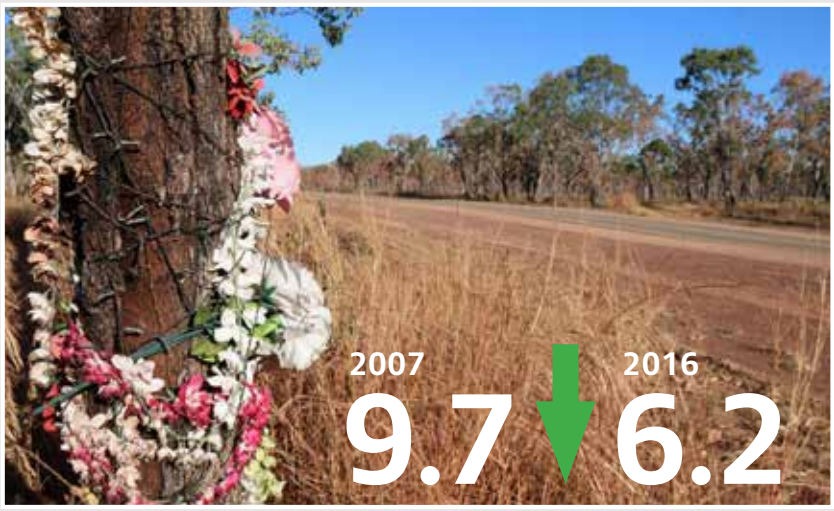
In regional areas, drivers exceed the speed limit relatively evenly across speed zones.

Illegal phone usage (Figure 3 , Page 33)

Illegal mobile phone usage, measured by issued infringements, has increased from a low in 2011, to **16,719** in 2017.

2011 **10,464** ▲ 2017 **16,719**

1a. Main Roads WA – Road crash fatalities



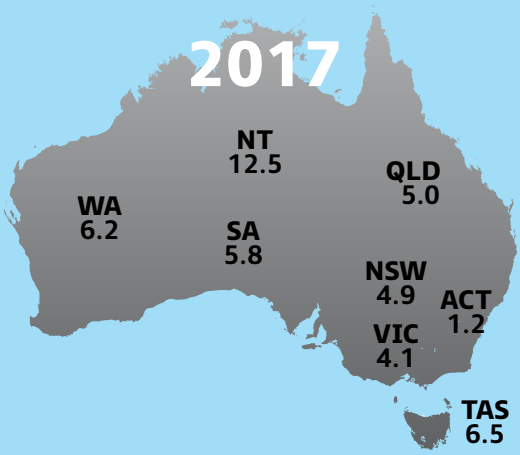
Fatality rates
(Table 10, Page 35)

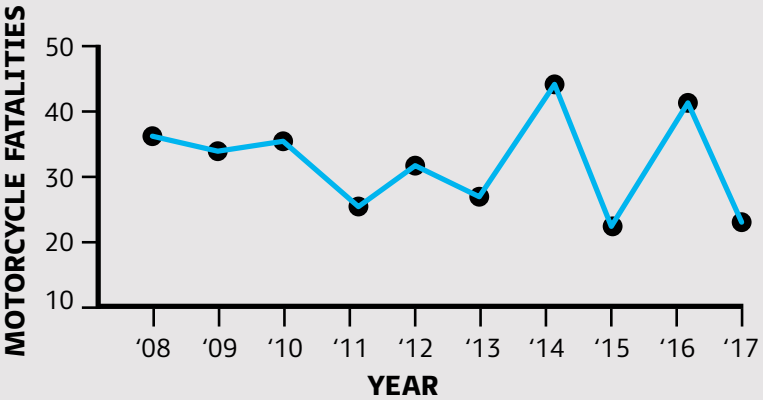
Whilst the number of people killed on WA roads has shown year on year improvement the fact remains that 160 people were killed on WA roads in 2017. This compares to 200 people in the baseline period. Over the same period the fatality rate for every 100,000 persons has dropped from **9.7** to **6.2**.

Fatality rate comparisons by jurisdiction
(Table 11, Page 36)

The fatality rate, as measured by number of deaths per 100,000 people, has improved by **37%** across Australia since baseline, reflecting the same result as Western Australia.

Victoria continues to be the best performing jurisdiction, recording 4.1 deaths per 100,000 in 2017 compared to 6.2 in WA.





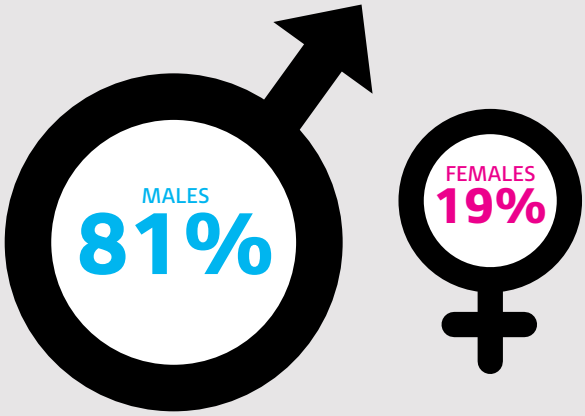
Fatalities by road user group
(Table 13, Page 37)

In 2017, motor vehicle occupants account for the greatest number of people killed on WA roads (107 or **67%**). While motor vehicle occupants have decreased 28% since the baseline period, people killed while walking or riding remains stable. Motorcyclist fatalities vary from year to year.

Fatalities by gender and age group
(Table 14, Page 39)

The highest number of fatalities occurs among people aged 20-29, accounting for 32 deaths or 20% of all fatalities in 2017. Male drivers still account for a disproportionate number of people killed on our roads with 81% of all fatalities being male.

There has been an increase in the number of people aged 80+ killed on our roads, more than doubling from **9** in the baseline period to **20** in 2017.



Metropolitan

24%

Regional

17%

Fatalities by Main Roads region of crash
(Table 16, Page 40)

Despite only accounting for 25% of the population, 60% of road fatalities occurred in regional Western Australia in 2017. The number of fatalities in the metropolitan area has decreased by **24%** since the baseline period while regional areas have decreased by **17%**.

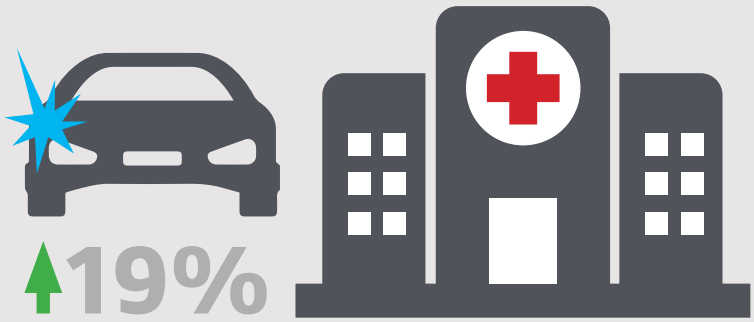
Motor vehicle occupant fatalities not wearing a seatbelt
(Table 17, Page 41)

Of all motor vehicle occupants killed in the metropolitan area in 2017, **2** were not wearing a seat belt. In regional areas the number was **15**.

1a. Department of Health - Road crash hospital admissions

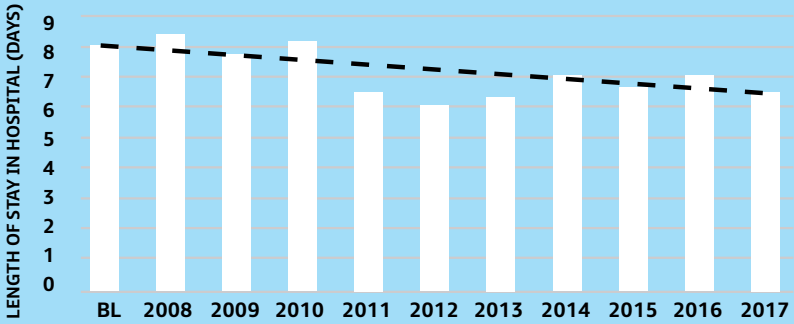
Non-fatal hospital admission rates (Table 18, Page 43)

There has been a **19%** increase in the number of hospital admissions due to road crashes in WA from the base line period (3,365) until 2017 (3,990). Over the same period the rate of admissions per 100,000 population has decreased from 163.7 to 154.9 in 2017.



Cumulative and average length-of-stay for non-fatal admissions (Table 19, Page 44)

The cumulative number of days in hospital for road crash admissions has shown variability over time but is comparable to the baseline (27,002) in 2017 (26,116).

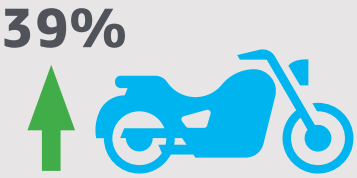


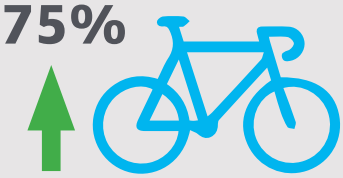
Average length-of-stay by road user group for non-fatal admissions (Table 20, Page 44)

The average length-of-stay in hospital has decreased from **8** days in the baseline period to **6.5** days in 2017.

Non-fatal hospital admissions by length-of-stay groupings (Figure 6, Page 44)

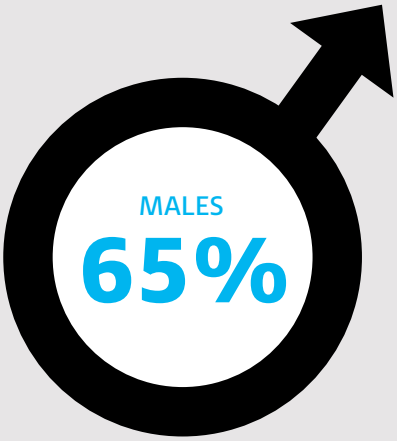
On average, pedestrians consistently stay in hospital the longest, while cyclists consistently have the shortest average stay.





Non-fatal hospital admissions by road user group (Table 22, Page 45)

The increase in the number of admissions appears to be due to an increase in the number and proportion of vulnerable road users admitted for injuries sustained in a road crash. In 2017, vulnerable road users (2017) outnumbered motor vehicle occupants (1,841) in admissions. While other road user groups remain relatively steady, motorcyclists and pedal cyclists are showing substantial increases since the baseline period. Motorcyclist admissions increased **39%** between baseline (717) and 2017 (999). Cyclist admissions increased **75%** between baseline (419) and 2017 (733).



Non-fatal admissions by gender and age group (Table 23, Page 46)

Two-thirds (**65%**, 2,601) of road crash hospital admissions were male in 2017, and that proportion has remained relatively steady over time. The 20-29 year age group consistently contributes around one quarter of road crash admissions, while 1 in 10 are 0-16 years old. The only age groups whose admission numbers are decreasing are 0-16 and 17-19 year age groups. These age groups have reduced 17% and 27%, respectively.

Non-fatal hospital admissions by broad user group and primary reason for admission (Figure 7, Page 47)

People who walk or ride are more likely to be admitted primarily for injuries to the extremities (**62%** in 2017) compared with motor vehicle occupants (**23%**).

62%

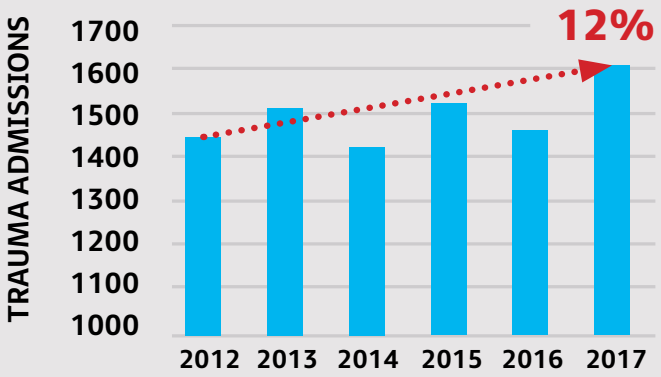
Non-fatal hospital admissions by indigenous status and age group (Table 25, Page 48)

Indigenous persons represent between 6% and 8% of all road crash admissions between the baseline period (277) and 2017 (281). Indigenous hospital admissions are more likely to be 0-16 years old (20% of indigenous admissions compared with 9% of non-indigenous admissions) and less likely to be older road users 50 years and over (12% of indigenous admissions compared with 31% of non-indigenous admissions).

Non-fatal hospital admissions by indigenous status and road user type (Table 27, Page 49)

Indigenous motorcyclist admissions appear to be increasing since the baseline period, rising from 21 in the baseline period to 57 in 2017.

1a. WA State Trauma Registry - Road trauma admissions



Non-fatal trauma admission rates
(Table 29, Page 52)

Road trauma admissions have increased by **12%** between 2012 (1,439) and 2017 (1,608). The rate per 100,000 persons has also increased from 59.3 to 62.4 road trauma admissions per 100,000 population. However, these measures show variability over that period, with no clear trend.

Trauma admissions by type of trauma and year (includes fatalities during admission) (Table 30, Page 53)

Road trauma consistently represents around 1 in 10 (11-13%) trauma admissions. However, major road trauma represents 34-39% of all major trauma admissions.

TOTAL DAYS SPENT IN HOSPITAL

2012 **10,503** → 2017 **10,123**

AVG. LENGTH OF STAY IN HOSPITAL

2012 **7.3** → 2017 **6.3**

Cumulative, average and median length-of-stay for non-fatal trauma admissions
(Table 31, Page 53)

The total number of days road trauma admissions spent in hospital (cumulative length-of-stay) has decreased from 10,503 in 2012 to 10,123 in 2017, while the average length-of-stay has decreased from **7.3** to **6.3** days.

Average length-of-stay (days) for trauma admission by road user type
(Table 32, Page 53)

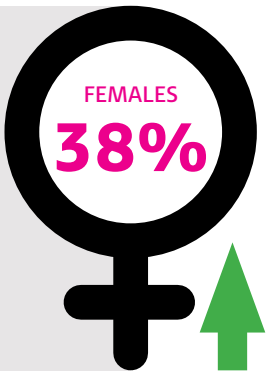
The average length-of-stay for all road user types has decreased over the review period. Pedestrians consistently record the highest average time spent in hospital (**8.2** days in 2017), while pedal cyclists record the lowest (**3.8** days in 2017).

Non-fatal road trauma admissions by road user type (Table 33, Page 54)

The distribution of road trauma admissions across road user groups remains relatively consistent over the last five years. The proportion of vulnerable road users also remains relatively stable, ranging between **47%** and **49%**.

Tables 29 - 37

Non-fatal road trauma admissions by gender and age (Table 34, Page 54)



While the number of males admitted to hospital as a result of road trauma has remained relatively stable over this period, the number of females admitted as a result of road trauma has increased by **38%** from 387 in 2012 to 534 in 2017. Most of the increases in female admissions have come from females aged 70-79 (+78%) and 30-39 (+72%).

0-16 and 17-19 year olds were the only age groups to see a reduction, while 70-79 (+73%, +38) and 50-59 year olds (+48%, +81) saw the greatest proportional and absolute changes.

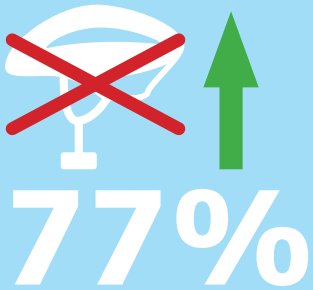
Non-fatal motor vehicle occupant trauma admission by seatbelt use (Table 35, Page 55)

Most motor vehicle occupants who are involved in crashes are wearing a seatbelt (70-80% between 2012-2017). However, 976 people over the 2012-2017 period were not wearing a seatbelt at the time of the crash.

The number of motor vehicle occupant admissions recorded as not wearing a seatbelt has decreased **20%** since 2012, which equates to 36 fewer people. This was largely driven by an increase in driver's seatbelt usage, whereas front and back passengers remained stable.

Since 2012, the proportion of drivers not wearing a seatbelt has reduced from 21% to 12%. However, one in five front passengers were not wearing a seatbelt and 37% of back passengers were not wearing a seatbelt.

Non-fatal motorcyclist and cyclist trauma admissions by helmet use (Table 36, Page 56)



Since 2012 the number of cyclist trauma admissions recorded as not wearing a helmet has increased steadily by **77%** from 26 in 2012 to 46 in 2017. While trauma admissions for motorcyclists not wearing a helmet at the time of a crash is more variable, they recorded a high of 41 admissions in 2017 compared to a range of 26-35 in the preceding 5 years.

One in ten (10%, 41) motorcyclist trauma admissions were not wearing a helmet at the time of the crash, while 1 in 5 cyclists (21%, 46) were not wearing a helmet.

Drug and alcohol use in non-fatal road trauma admissions (Table 37, Page 57)

Over time, the number of trauma admissions expected to have alcohol involvement has reduced in number and proportion to 216 (13%) in 2017. However, the number of those with drugs (50) or alcohol and drugs (44) has increased since the baseline period. In 2017, these groups represented 3% of road trauma admissions.

Non-fatal road trauma admissions by major/minor trauma and road user type (Table 39, Page 58)

Cyclists admitted for major trauma appear to be increasing both in proportion and in absolute terms. Rising steadily from 13 (5%) in 2012, to 31 (11%) in 2017.

1a. Insurance Commission of Western Australia – Hospitalised crash parties

Insurance Commission of Western Australia – Reporting Data

Insurance Commission data in this report relates to people admitted to hospital from a vehicle crash, not people injured who did not attend hospital.

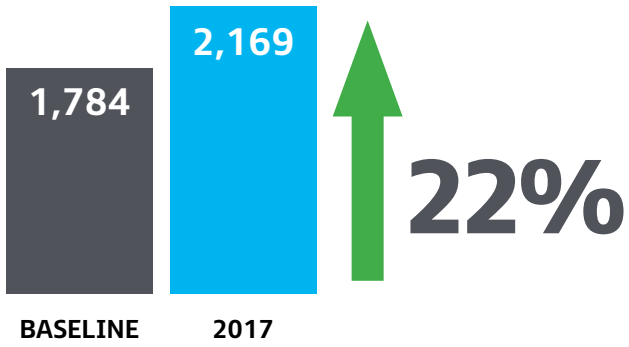
The total number of people reporting an injury from a vehicle crash in 2019 irrespective of whether they attended a hospital was 14,911.

The total number of crashes reported to the Insurance Commission in 2019 was 41,826 of which 10,687 involved at least one injury.

The total cost of injuries from vehicle crashes in 2019 was $448.5m paid by the Insurance Commission. At 30 June 2019, the Insurance Commission expects to pay $2.7 billion in future costs as a result of injuries sustained in crashes reported to the Insurance Commission.

Hospitalised crash party rates by crash year (Table 47, Page 62)

The number of hospitalised crash parties in 2017 was 2,169, which is **22%** increase compared to baseline period (1,784). The rate of hospitalised crash parties shows variability over this time, with a peak of 103.2 in 2011, and a low of 81.7 per 100,000 persons in 2016.



Hospitalised crash parties by average number of bed days and median bed days (Table 48, Page 62)

The average time spent in hospital for crash parties is higher than hospital admissions and trauma admissions, ranging from 8.4 – 12.1 days during the 2008 to 2017 time period.

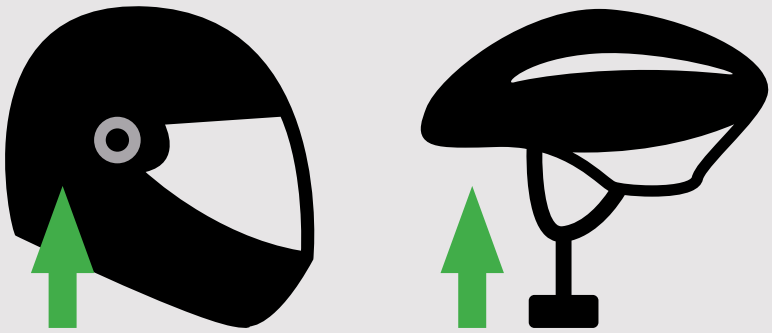
Hospitalised crash parties by recorded bed day grouping and crash year (Table 49, Page 63)

Since the baseline period, between 38% and 49% of all hospitalised crash parties spent just one day in hospital.

Comparison of the percentage of hospitalised crash parties by bed day grouping, baseline and 2017 (Figure 11, Page 63)

Over time the percentage of hospitalised crash parties spending shorter periods in hospital appears to be increasing, while longer stays generally decrease.

54% 88%

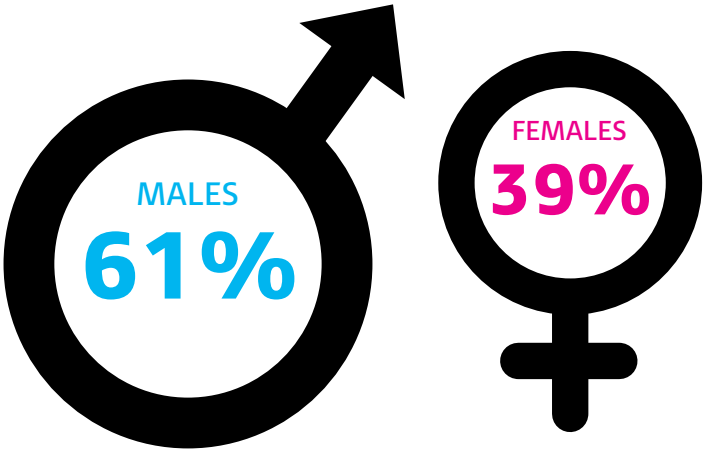


Hospitalised crash parties by role in accident and crash year (Table 50, Page 64)

The number of hospitalised crash parties that were push-cyclists has increased by **88%** since baseline with an absolute increase of 53. They now represent 5% of all hospitalised crash parties. Motorcyclist hospitalisations have increased by **54%**, from 267 in the baseline year to 412 in 2017. They now represent almost 1 in 5 (19%) hospitalised crash parties.

Hospitalised crash parties by gender (Table 51, Page 64)

In 2017, males represented more than half of hospitalised crash parties (**61%**), which is comparable to the baseline period (62%).



Hospitalised crash parties by age group (Table 52, Page 64)

There were 18 fewer 0-16 year old hospitalised crash parties and 45 fewer 17-19 year old hospitalised crash parties in 2017 compared to the baseline period, which is a 11% and 24% reduction, respectively. In contrast, older age groups saw the biggest absolute increases, for example, 40-49 and 50-59 year old age groups saw an increase of 101 and 117 hospitalised crash parties and percentage increases of 50% and 69%, respectively.

2 | Exposure and behaviour

The following section collates various measures of Western Australian road users exposure to risk of sustaining an injury in a road crash and road user behaviours known to influence crash risk.

Table 1. Population by gender and age group, WA (June)

	BL	2012	2013	2014	2015	2016	2017
Males	**1,036,348**	**1,223,614**	**1,254,322**	**1,266,894**	**1,276,698**	**1,281,968**	**1,289,027**
0-16	241,080	269,234	275,729	279,502	282,863	285,237	288,076
17-19	45,424	48,689	49,349	48,982	48,382	48,134	47,926
20-29	147,673	197,415	201,505	198,727	195,932	191,563	186,344
30-39	152,439	177,255	184,609	188,571	191,430	193,310	194,993
40-49	154,878	176,191	178,350	178,048	177,683	176,402	176,007
50-59	134,704	152,425	155,374	157,183	158,280	158,306	159,208
60-69	86,418	112,407	116,251	118,807	121,392	124,324	125,499
70-79	50,623	60,114	62,249	65,207	67,709	70,548	75,427
80+	23,108	29,884	30,906	31,867	33,027	34,144	35,547
Females	**1,019,628**	**1,201,893**	**1,232,622**	**1,250,714**	**1,263,974**	**1,274,010**	**1,285,166**
0-16	226,441	257,900	263,964	267,793	270,461	272,534	274,619
17-19	42,551	46,187	46,299	46,173	45,672	45,456	45,681
20-29	138,991	182,040	188,140	188,601	187,035	183,640	179,400
30-39	148,752	169,298	175,373	179,858	183,979	187,803	191,484
40-49	153,704	171,906	173,929	174,501	174,638	174,283	174,201
50-59	131,430	152,515	155,653	157,655	158,789	159,443	160,539
60-69	83,767	110,897	115,246	118,744	122,628	126,689	128,994
70-79	55,620	65,035	67,010	69,570	72,013	74,426	79,220
80+	38,371	46,115	47,008	47,819	48,759	49,736	51,028
Persons	**2,055,976**	**2,425,507**	**2,486,944**	**2,517,608**	**2,540,672**	**2,555,978**	**2,574,193**
0-16	467,521	527,134	539,693	547,295	553,324	557,771	562,695
17-19	87,975	94,876	95,648	95,155	94,054	93,590	93,607
20-29	286,664	379,455	389,645	387,328	382,967	375,203	365,744
30-39	301,191	346,553	359,982	368,429	375,409	381,113	386,477
40-49	308,583	348,097	352,279	352,549	352,321	350,685	350,208
50-59	266,134	304,940	311,027	314,838	317,069	317,749	319,747
60-69	170,185	223,304	231,497	237,551	244,020	251,013	254,493
70-79	106,243	125,149	129,259	134,777	139,722	144,974	154,647
80+	61,479	75,999	77,914	79,686	81,786	83,880	86,575

Australian Bureau of Statistics (ABS) (2018a), Australian Demographic Statistics, Jun 2018, 'Table 55. Estimated Resident Population by Single Year of Age, Western Australia', cat. no. 3101.0, < http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/3101.0Jun%202018?OpenDocument >

Table 2. Number of licensed driver/riders by age group and year (December)

	2013	2014	2015	2016	2017
0-16	957	892	866	775	690
17-19	44,420	43,954	44,833	45,488	52,527
20-29	310,264	309,025	307,145	302,111	297,094
30-39	337,945	348,606	359,229	365,562	370,350
40-49	342,246	344,455	345,879	346,751	345,616
50-59	306,599	312,027	315,356	317,306	318,951
60-69	228,779	236,346	244,569	249,189	253,591
70-79	117,116	124,161	130,300	139,819	150,465
80+	39,781	42,298	45,287	48,263	52,626
Total	**1,728,107**	**1,761,764**	**1,793,464**	**1,815,264**	**1,841,910**

WA Department of Transport (2018), Licensed drivers and riders, Unpublished statistics.

Notes: These numbers represent unique MDLs which includes Ordinary, Probationary and Extraordinary licences (we do not include Learner licences in these counts). These licences also had a status of either Active or Suspended at the time of extraction.

Table 3. Number of registered vehicles by vehicle type and year

	BL	2012	2013	2014	2015	2016	2017
Registered vehicles	**1,602,225**	**1,977,756**	**2,048,388**	**2,142,307**	**2,185,409**	**2,208,812**	**2,219,291**
Passenger vehicles	1,205,538	1,432,969	1,476,743	1,539,270	1,566,574	1,583,939	1,593,001
Campervans	7,186	8,127	8,215	8,258	8,214	8,154	8,020
Light commercial vehicles	254,790	332,417	347,820	366,219	376,012	380,403	383,778
Light rigid trucks	9,359	14,258	153,22	16,427	16,835	17,293	17,502
Heavy rigid trucks	40,907	50,483	52,218	53,739	54,366	54,219	53,899
Articulated trucks	9,282	13,217	14,226	15,054	15,680	15,609	15,242
Non-freight carrying vehicles	3,813	4,719	4,859	5,023	5,120	5,214	5,244
Buses	11,099	14,371	15,133	15,322	15,463	15,362	14,746
Motorcycles	60,252	107,195	113,852	122,995	127,145	128,619	127,859

ABS (2018b), Motor Vehicle Census, Australia, various releases, cat. no. 9309.0, < https://www.abs.gov.au/ausstats/abs@.nsf/mf/9309.0 >.

Table 4. Estimated mean age (years) of registered motor vehicles by type

	BL	2012	2013	2014	2015	2016	2017
Registered vehicles	**10.7**	**10.2**	**10.3**	**10.3**	**10.4**	**10.5**	**10.7**
Passenger vehicles	10.1	9.8	9.9	9.9	10.0	10.1	10.3
Campervans	21.4	21.7	21.8	22.0	22.4	22.6	22.8
Light commercial vehicles	11.4	12.4	10.4	10.4	10.5	10.7	10.9
Light rigid trucks	12.4	10.9	10.8	10.7	10.9	11.1	11.4
Heavy rigid trucks	18.0	16.9	16.8	16.7	16.8	17.4	17.4
Articulated trucks	12.7	12.0	11.8	11.8	11.8	12.1	12.6
Non-freight carrying vehicles	16.6	15.7	15.6	15.6	15.8	15.9	16.1
Buses	10.8	10.6	10.5	10.7	10.9	11.0	11.1
Motorcycles	11.1	10.1	10.3	10.4	10.8	11.3	11.9

(ABS, 2018b)

The following table shows that although the number of new vehicles being sold is decreasing in recent years, the proportion of new vehicles sold in WA that had a 5-star ANCAP rating rose from 54.6% in 2012 to 82.8% in 2017. This is comparable to the proportion of new vehicles sold nationwide that were 5-star (81.1%).

Table 5. New vehicles sold by ANCAP safety rating and year of sale

	2012		2013		2014		2015		2016		2017	
ANCAP rating	**n**	**Col %**	**n**	**Col %**	**n**	**Col %**	**n**	**Col %**	**n**	**Col %**	**n**	**Col %**
WA	**123,158**	**100**	**121,378**	**100**	**111,831**	**100**	**103,111**	**100**	**97,564**	**100**	**94,662**	**100**
5	67,277	54.6	78,244	64.5	77,608	69.4	75,756	73.5	79,838	81.8	78,381	82.8
4	27,005	21.9	21,343	17.6	14,867	13.3	9,157	8.9	2,712	2.8	1,335	1.4
3	4,033	3.3	2,782	2.3	2,123	1.9	1,449	1.4	1,204	1.2	376	0.4
2	290	0.2	109	0.1	75	0.1	3	0.0	1	0.0	0	0.0
1	122	0.1	43	0.0	0	0.0	0	0.0	0	0.0	0	0.0
NA*	24,431	19.8	18,857	15.5	17,158	15.3	16,746	16.2	13,809	14.2	14,570	15.4
Aust	**1,080,823**	**100**	**1,105,222**	**100**	**1,082,458**	**100**	**1,123,397**	**100**	**1,145,165**	**100**	**1,152,267**	**100**
5	649,292	60.1	753,657	68.2	774,949	71.6	826,441	73.6	924,244	80.7	934,303	81.1
4	206,016	19.1	161,814	14.6	127,133	11.7	88,888	7.9	32,185	2.8	16,273	1.4
3	27,803	2.6	20,127	1.8	16,345	1.5	12,436	1.1	11,201	1.0	6,377	0.6
2	2,751	0.3	1,474	0.1	816	0.1	146	0.0	9	0.0	8	0.0
1	671	0.1	344	0.0	4	0.0	0	0.0	0	0.0	0	0.0
NA*	194,290	18.0	167,806	15.2	163,211	15.1	195,486	17.4	177,526	15.5	195,306	16.9

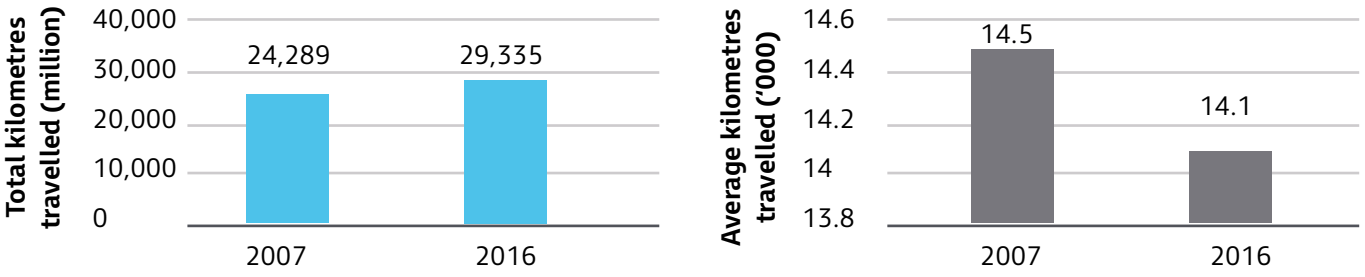
IHS Markit (2018), WA Safety Report, Unpublished statistics. **Not available or no information. New vehicles sold includes passenger vehicles, sport utility vehicles, and light commercial vehicles. Heavy vehicles are excluded.*

Table 6. Main Roads region summary statistics, 2016-2017

Main Roads Regions	Land area (sq. km)		Population *		State road network length (km)		Local road network length (km)		Mill veh km travelled (State road only)	
	n	Col %	n	Col %	n	Col %	n	Col %	n	Col %
Metropolitan	**5,380**	**0.2**	**1,964,500**	**75.1**	**870**	**4.7**	**13,761**	**10.7**	**9,406**	**58.9**
Regional	**2,521,260**	**99.8**	**652,574**	**24.9**	**17,647**	**95.3**	**115,397**	**89.3**	**6,566**	**41.1**
Great Southern	48,751	1.9	62,475	2.4	1,632	8.8	12,586	9.7	547	3.4
South West	28,585	1.1	287,059	11	1,694	9.1	10,692	8.3	2,464	15.4
Goldfields Esperance	940,608	37.2	58,194	2.2	2,486	13.4	18,295	14.2	524	3.3
Kimberley	419,260	16.6	38,825	1.5	2,128	11.5	51,85	4	281	1.8
Wheatbelt	156,711	6.2	73,947	2.8	3,014	16.3	41,009	31.8	1,008	6.3
Pilbara	506,780	20.1	65,675	2.5	2,974	16.1	63,40	4.9	632	4
Mid West Gascoyne	420,571	16.6	66,399	2.5	3,719	20.1	21,290	16.5	1,110	6.9
State	**2,526,646**	**100**	**2,617,074**	**100**	**18,517**	**100**	**129,158**	**100**	**15,972**	**100**

Main Roads WA (2018), Regional Road Digest 2016-2017, Unpublished statistics. **The population counts in this table do not match figures elsewhere in this report due to different geographies and date of capture.*

Figure 1. Estimated total kilometres travelled (millions) and average kilometres travelled ('000)



ABS (2018c), Survey of Motor Vehicle Use, Australia, various releases, cat. no. 9208.0,
< http://www.abs.gov.au/ausstats/abs@.nsf/mf/9208.0 >.

Table 7. Vehicle speed compliance by region and year

	BL	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Metropolitan											
% compliant	57.4	57.6	NA	60.2	59.8	63.1	64.3	66.6	64.1	NA	NA
% low-level speeding*	34.8	34.8	NA	33.4	34.4	32.1	31.6	29.5	31.9	NA	NA
% 10+ km/h above speed limit	7.8	7.6	NA	6.4	5.8	4.8	4.1	3.9	4.0	NA	NA
Regional											
% compliant	66.3	69.1	71.1	NA	70.4	68.8	70.8	69.9	66.1	NA	NA
% low-level speeding*	27.5	25.7	23.8	NA	24.3	26.2	24.2	25.3	28	NA	NA
% 10+ km/h above speed limit	6.2	5.2	5.1	NA	5.3	5.0	5.0	4.8	5.9	NA	NA

Radalj, T. and Sultana, S. (2016a), Trends in driver speed behaviours on Perth Metropolitan road network 2000 to 2015, < https://www.mainroads.wa.gov.au/Documents/Trends%20in%20Driver%20Speed%20Behaviours%20on%20Perth%20Metropolitan%20Road%20Network%202000-2015.RCN-D16%5E23184132.PDF > .

Radalj, T. and Sultana, S. (2016b), Trends in driver speed behaviours on rural road network 2000 to 2015, < https://www.mainroads.wa.gov.au/Documents/Trends%20in%20Driver%20Speed%20Behaviours%20on%20Western%20Australian%20Rural%20Road%20Network%202000%20to%202015.RCN-D16%5E23533766.PDF >.

**Low-level speeding is 1-9 km/h over the speed limit.*

The following tables show the proportion of vehicles exceeding the speed limit by any amount, across different speed zones in the metropolitan and regional areas. For example, more vehicles in 60 km/h metropolitan zones were founding to be travelling above the speed limit than in 100 km/h metropolitan zones.

Table 8. Percentage of vehicles exceeding the speed limit by speed zone – metropolitan

	Avg 2003-08	2009	2010	2011	2012	2013	2014	2015
60 km/h	48.3	NA	46.6	48.2	44.3	41.3	38.3	41.0
70 km/h	42.2	NA	37.4	37.0	33.6	34.0	32.0	35.5
80 km/h	38.8	NA	39.9	34.0	34.8	32.0	27.6	33.1
90 km/h	27.7	NA	26.6	27.8	31.6	27.6	24.0	24.4
100 km/h	30.7	NA	20.2	32.3	20.6	31.3	35.0	26.1
All Metropolitan	43.0	NA	39.8	40.2	36.9	35.7	33.4	35.9

(Radalj & Sultana, 2016a)

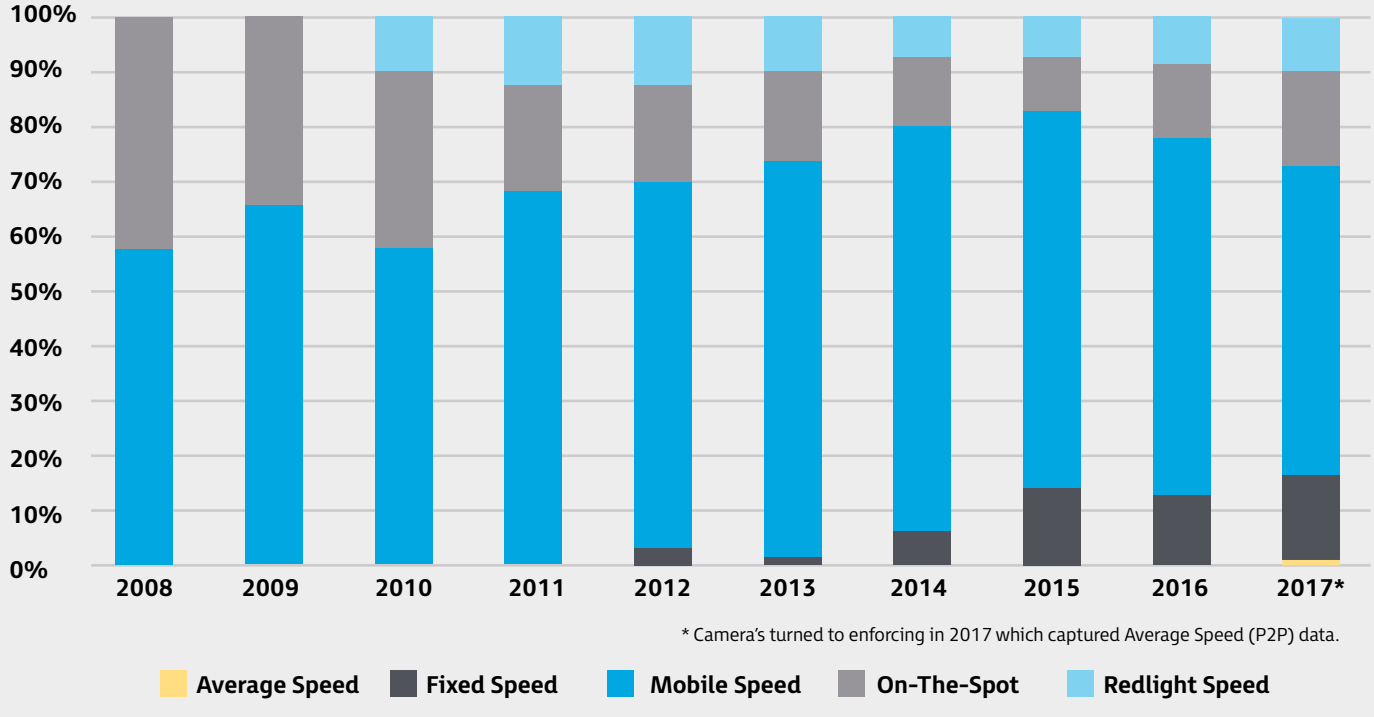
Table 9. Percentage of vehicles exceeding the speed limit by speed zone – regional

	Avg 2003-08	2009	2010	2011	2012	2013	2014	2015
60 km/h	41.0	38.2	NA	32.0	38.1	34.9	34.9	36.0
70 km/h	29.5	21.3	NA	24.1	31.8	29.4	25.6	29.2
80 km/h	31.8	23.5	NA	23.6	22.0	22.2	23.4	36.8
90 km/h	31.9	33.7	NA	40.1	27.4	28.7	28.0	35.1
100 km/h	38.1	43.3	NA	38.0	17.1	42.0	32.3	38.1
110 km/h	30.6	30.3	NA	28.0	33.7	28.7	37.2	35.9
All Regional	32.4	28.9	NA	29.6	31.2	29.2	30.1	33.9

(Radalj & Sultana, 2016b)

Figures 2 and 3 relate to infringements issued by the WA Police Force. It is important to note that infringements are subject to assessment and processing periods between incident detection and issue of infringement and the numbers reported here are categorised by the date the infringement was issued. Only the first infringement in an infringement sequence (for photographic evidence incidents) is counted and withdrawn infringements are excluded. Speed infringements include those for offences under the Road Traffic Code 2000 s. 11, 12,13, 14,16, and 137A. Mobile phone infringements include offences under the Road Traffic Code 2000 s.265.

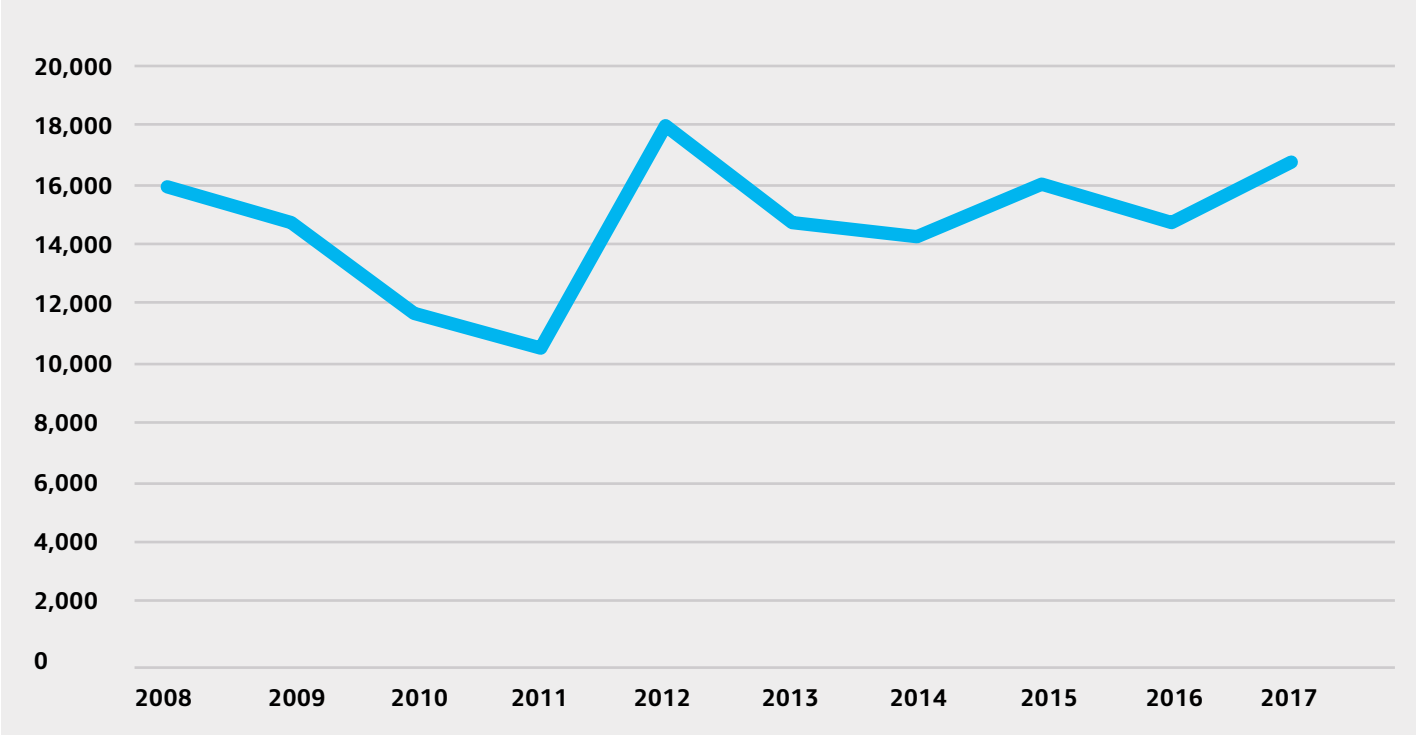
Figure 2. Speed infringements by detection type and year issued



WA Police Force (2018), *Infringement statistics*, Unpublished statistics.

Infringement data is preliminary and subject to change. Infringement data was extracted from WAPF Image and Infringement Processing System (IIPS) on 16 September 2018.

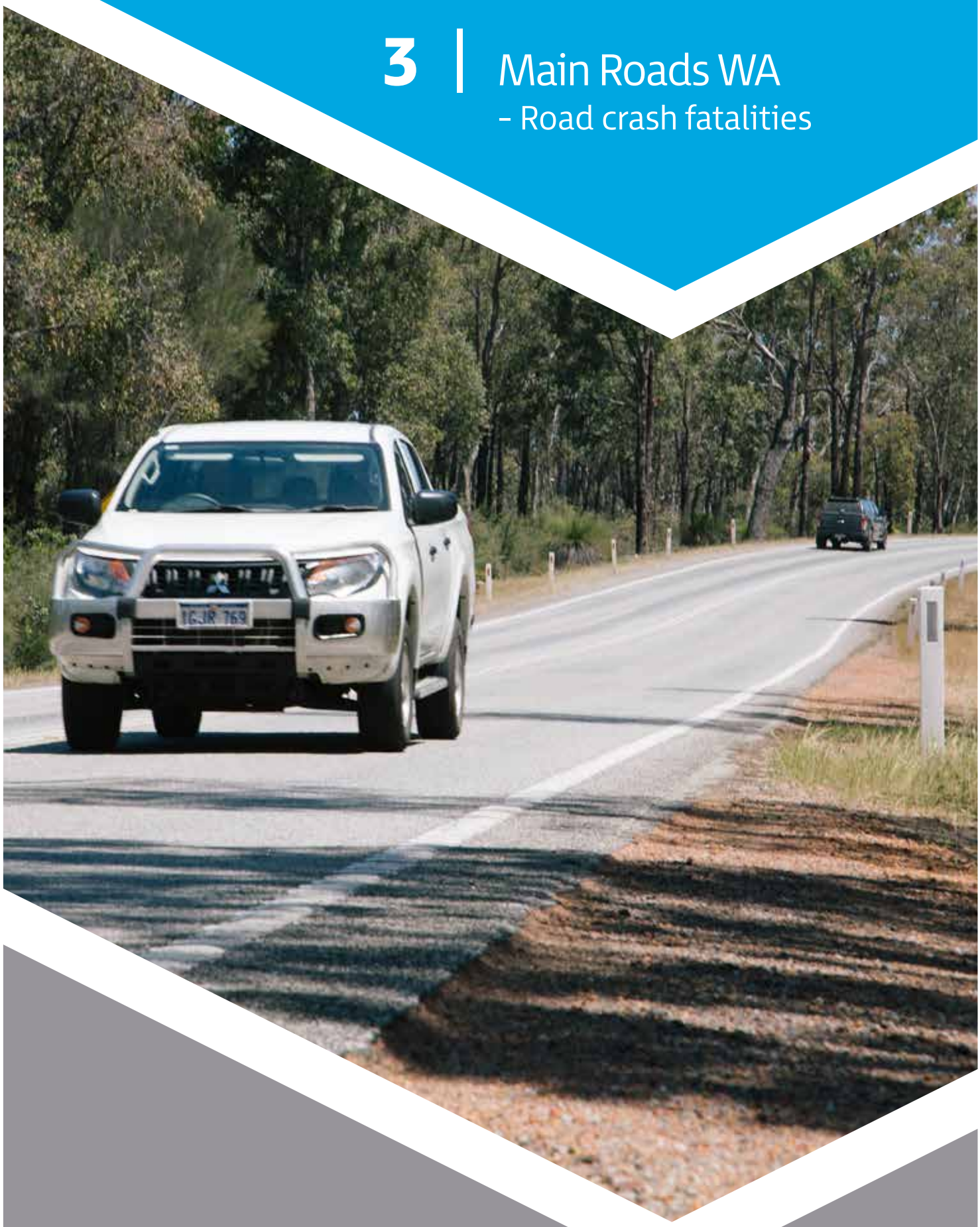
Figure 3. On-the-spot illegal mobile phone use infringements issued by year issued



(WA Police Force, 2018)

Infringement data is preliminary and subject to change. Infringement data was extracted from WAPF Image and Infringement Processing System (IIPS) on 16 September 2018.

3 | Main Roads WA
– Road crash fatalities



Scope definition

This section presents information on reported road traffic fatalities. Western Australian legislation requires that traffic crashes are reported to WA Police Force if:

- the incident results in bodily harm to any person
- the total value of property damage exceeds $3000
- the owner or representative of any damaged property is not present.

Road traffic fatalities are included in this section if they are reported to the WA Police Force or via the Online Crash Reporting Form and if:

- the person died because of injuries sustained in a crash, within 30 days of the crash
- the crash in which the person died occurred on a road which was open to the public at the time of the crash
- the crash involved at least one moving vehicle and
- the crash was not a result of a medical condition or a deliberate act (such as a suicide attempt).

This data is extracted from the Main Roads WA Integrated Road Information System (IRIS). Main Roads WA collates and validates information collected by the WA Police Force and Insurance Commission of WA.

Table 10. Fatality rates

	BL	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Fatalities (n)	200	205	191	192	179	183	161	182	161	195	160
Rate per 100,000 persons	9.7	9.4	8.5	8.4	7.6	7.5	6.5	7.2	6.3	7.6	6.2
Rate per 10,000 registered vehicles	1.2	1.2	1.0	1.0	0.9	0.9	0.8	0.8	0.7	0.9	0.7
Rate per 100 million km travelled	0.9	0.9	0.8	0.7	0.7	0.7	0.6	0.7	0.6	0.7	0.5

(ABS 2018a, ABS 2018b, ABS 2018c)

Table 11. Fatality rates per 100,000 population by year, Australia states and territories

	BL	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
NT	25.1	34.1	13.7	21.8	19.5	20.8	15.3	16.1	20.0	18.3	12.5
Tas	10.3	7.8	12.5	6.1	4.7	6.1	7.0	6.4	6.6	7.1	6.5
WA	9.7	9.4	8.5	8.4	7.6	7.5	6.5	7.2	6.3	7.6	6.2
SA	8.3	6.2	7.4	7.3	6.3	5.7	5.9	6.4	6.0	5.0	5.8
Qld	8.5	7.8	7.6	5.7	6.0	6.1	5.8	4.7	5.1	5.2	5.0
NSW	7.1	5.4	6.4	5.7	5.0	5.1	4.5	4.1	4.6	4.9	4.9
Vic	6.7	5.8	5.4	5.3	5.2	5.0	4.2	4.2	4.2	4.7	4.1
ACT	5.3	4.0	3.4	5.3	1.6	3.2	1.8	2.6	3.8	2.7	1.2
Aust	**7.9**	**6.8**	**6.9**	**6.1**	**5.7**	**5.7**	**5.1**	**4.9**	**5.1**	**5.3**	**5.0**

Bureau of Infrastructure, Transport and Regional Economics (BITRE) (2019), Australia Road Deaths Database, January 2019, < https://bitre.gov.au/statistics/safety/fatal_road_crash_database.aspx >. Australian Bureau of Statistics (2018d), Australian Demographic Statistics, Jun 2018, 'Table 4. Estimated Resident Population, States and Territories (Number)', < http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/3101.0Jun%202018?OpenDocument > .

Notes: WA updated to reflect current information, Aust updated due to updated WA data.

Figure 4. Comparison of jurisdiction fatality rates (per 100,000 persons) for baseline and 2017

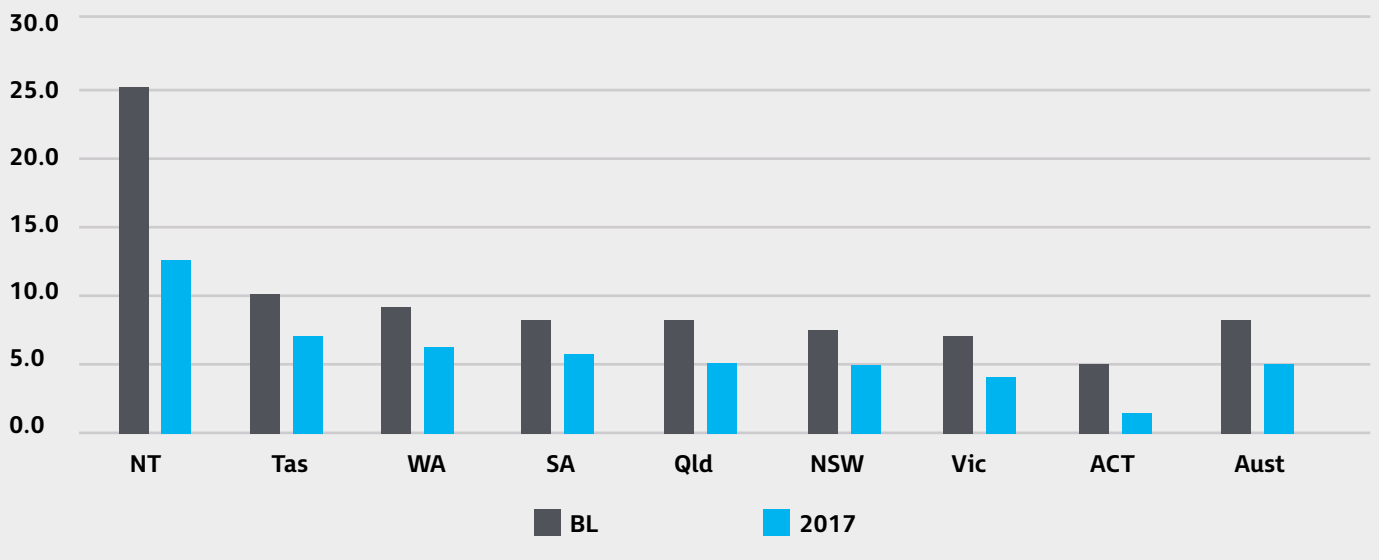


Table 12. Comparison with other Australian states and territories, various fatality rates, 2017

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Aust
Fatalities (n)	389	259	247	100	160	34	31	5	1,224
Rate per 100,000 persons	4.9	4.1	5.0	5.8	6.2	6.5	12.5	1.2	5.0
Rate per 10,000 registered motor vehicles	0.7	0.5	0.6	0.7	0.7	0.7	2.0	0.2	0.7
Rate per total veh km travelled (100 million)	0.6	0.4	0.5	0.6	0.5	0.6	1.5	0.1	0.5

(BITRE 2019, ABS 2018d, ABS 2018b, ABS 2018c).

Notes: WA updated to reflect current information, Aust updated due to updated WA data.

Table 13. Fatalities by road user group

	BL	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
MVO	149	145	133	136	124	122	94	113	121	136	107
MV Driver	98	100	90	96	86	83	65	77	69	99	75
MV Passenger	51	45	43	40	38	39	29	36	52	37	32
Motorcyclist	28	37	33	35	26	32	27	44	22	41	26
Rider	25	37	33	33	26	29	25	42	20	38	25
Pillion	3	0	0	2	0	3	2	2	2	3	1
Pedestrian	19	20	25	17	25	26	33	17	15	14	20
Bicyclist	4	3	0	4	4	3	6	8	3	4	7
Other/unknown	0	0	0	0	0	0	1	0	0	0	0
Total	**200**	**205**	**191**	**192**	**179**	**183**	**161**	**182**	**161**	**195**	**160**

The following figure shows the distribution of fatalities across age groups for the baseline period and 2017. In the baseline period, fatalities were more likely to be younger age groups, with the most common being the 20-29 year old group. While this group is still the most common in 2017, the distribution of fatalities across the age groups is more evenly distributed.

Figure 5. Comparison of percentage of fatalities by age group, baseline and 2017

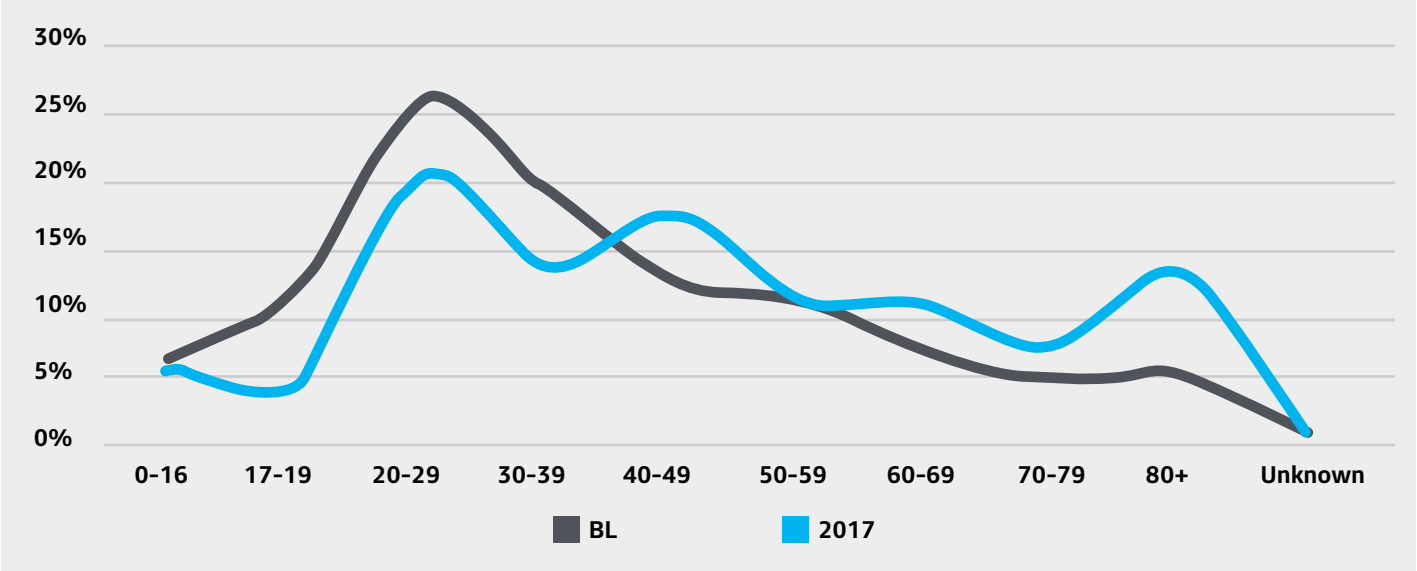


Table 14. Fatalities by gender and age group

	BL	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Female	**53**	**52**	**47**	**58**	**49**	**57**	**30**	**47**	**40**	**52**	**30**
0-16	5	5	5	4	2	3	3	5	6	4	1
17-19	7	7	4	5	3	4	0	1	3	2	0
20-29	9	9	8	14	14	13	6	12	11	20	8
30-39	9	11	10	5	6	10	5	5	3	7	3
40-49	4	5	4	4	5	10	3	6	4	9	4
50-59	8	8	5	11	2	5	2	1	4	3	2
60-69	4	1	6	6	3	5	5	8	4	3	4
70-79	2	2	3	4	8	4	2	3	4	3	1
80+	4	4	2	5	6	3	4	6	1	1	7
Unknown	0	0	0	0	0	0	0	0	0	0	0
Male	**147**	**149**	**141**	**132**	**130**	**125**	**131**	**134**	**121**	**143**	**130**
0-16	7	12	10	7	9	6	9	5	8	9	7
17-19	15	13	9	10	12	8	9	13	13	13	7
20-29	42	47	36	38	31	30	31	30	30	35	24
30-39	29	23	29	27	21	29	22	20	18	30	18
40-49	20	21	20	23	19	20	21	24	17	26	23
50-59	13	13	19	13	14	15	10	13	12	12	15
60-69	9	13	9	7	9	6	12	10	11	7	12
70-79	7	3	5	5	6	5	12	8	7	6	10
80+	6	4	4	2	9	5	5	11	5	5	13
Unknown	1	0	0	0	0	1	0	0	0	0	1
Persons*	**200**	**205**	**191**	**192**	**179**	**183**	**161**	**182**	**161**	**195**	**160**
0-16	12	17	16	13	11	9	12	11	14	13	8
17-19	22	20	13	15	15	12	9	14	16	15	7
20-29	51	58	44	52	45	44	37	42	41	55	32
30-39	38	34	39	32	27	39	27	25	21	37	21
40-49	24	26	25	27	24	30	24	30	21	35	27
50-59	21	21	25	24	16	20	12	14	16	15	17
60-69	13	14	15	13	12	11	17	18	15	10	16
70-79	9	5	8	9	14	9	14	11	11	9	11
80+	9	9	6	7	15	8	9	17	6	6	20
Unknown	1	1	0	0	0	1	0	0	0	0	1

**Total includes 12 persons recorded with gender unrecorded.*

Table 15. Fatalities by month

	BL	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Jan	24	15	12	11	10	9	20	7	10	19	16
Feb	14	12	20	5	20	18	13	15	14	12	7
Mar	18	22	16	17	11	16	8	19	21	22	15
Apr	13	14	13	17	19	11	6	15	14	11	19
May	16	17	17	21	13	17	25	9	8	14	7
Jun	12	22	14	13	17	17	12	17	12	10	12
Jul	15	13	9	14	5	16	13	17	5	19	11
Aug	19	18	11	17	17	12	11	13	21	17	11
Sep	18	11	8	16	17	13	13	16	15	12	13
Oct	14	18	32	12	17	19	12	22	12	21	16
Nov	16	21	21	25	18	19	13	16	12	17	12
Dec	21	22	18	24	15	16	15	16	17	21	21
Total	**200**	**205**	**191**	**192**	**179**	**183**	**161**	**182**	**161**	**195**	**160**

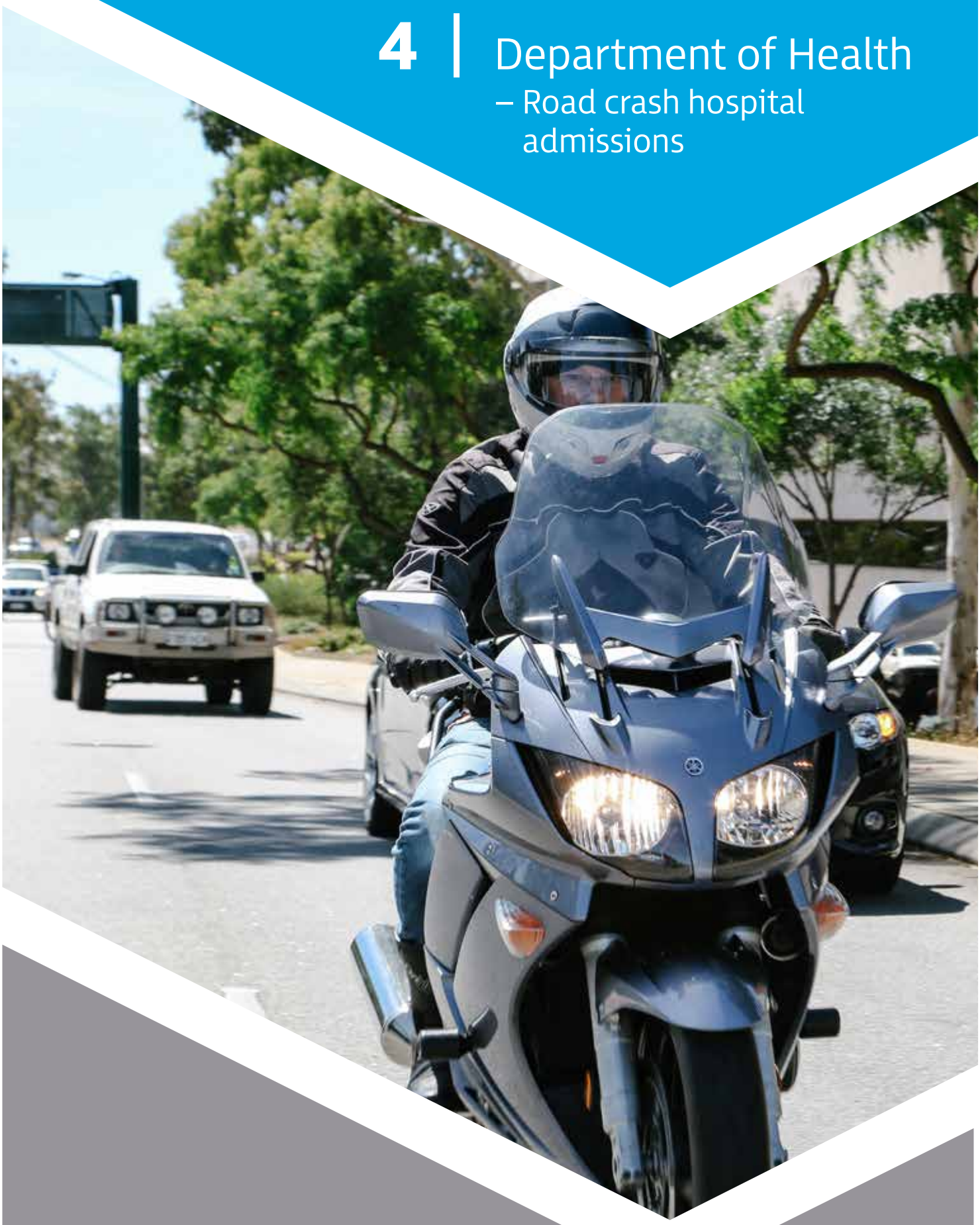
Table 16. Fatalities by Main Roads WA region of crash

	BL	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Metropolitan	**85**	**91**	**76**	**65**	**74**	**85**	**80**	**74**	**69**	**67**	**64**
Regional	**115**	**114**	**115**	**127**	**105**	**98**	**81**	**108**	**92**	**128**	**96**
South West	32	46	29	49	23	25	28	30	23	35	27
Wheatbelt	27	24	26	28	39	30	18	34	23	41	27
Mid West - Gascoyne	13	12	14	12	9	13	13	7	20	11	13
Great Southern	9	6	12	8	7	6	4	9	4	17	10
Kimberley	12	7	3	9	11	5	8	6	10	8	9
Goldfields - Esperance	12	10	16	5	8	10	6	17	3	6	7
Pilbara	10	9	15	16	8	9	4	5	9	10	3
Total	**200**	**205**	**191**	**192**	**179**	**183**	**161**	**182**	**161**	**195**	**160**

Table 17. Motor vehicle occupants (MVO) not wearing an appropriate restraint by Main Roads WA region

	BL	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Metropolitan	**10**	**8**	**8**	**6**	**6**	**9**	**2**	**9**	**7**	**3**	**2**
Regional	**37**	**34**	**29**	**27**	**26**	**18**	**22**	**26**	**23**	**26**	**15**
South West	5	13	2	4	7	3	3	5	4	5	3
Wheatbelt	7	5	6	6	5	3	6	6	2	6	4
Mid West - Gascoyne	4	1	7	4	3	3	6	3	8	4	1
Great Southern	2	1	0	0	1	0	1	2	1	3	1
Kimberley	7	3	0	4	7	2	4	2	5	3	3
Goldfields - Esperance	7	5	8	3	1	3	1	3	1	1	3
Pilbara	4	6	6	6	2	4	1	5	2	4	0
Total	**47**	**42**	**37**	**33**	**32**	**27**	**24**	**35**	**30**	**29**	**17**

4 | Department of Health – Road crash hospital admissions



Scope definition

This section presents information on road traffic casualties who were admitted to public and private hospitals in Western Australia. People who died prior to admission or following discharge are not included. The data is extracted from the WA Hospital Morbidity Data System.[1] It offers an alternative perspective from police-reported data and definitions are different. This data has been specifically extracted for this publication and attempts to replicate our scope as closely as possible.

The scope is restricted to those with an external cause of injury code indicating the injuries are the result of a traffic crash (i.e. where the ICD-10-AM external cause of injury code is in the range V00.0 to V89.9 and is identified as a traffic crash). A traffic crash is defined by the National Centre for Classification in Health (NCCH) for ICD-10-AM as "any vehicle crash occurring on a public highway; where a public highway is specified as a traffic way or street which includes the entire width between property lines of land open to the public as a matter of right or custom for purposes of moving persons or property from one place to another".

The data reported here does not include road users who die at the scene of a crash, during transport to hospital or during their hospital admission. It does not include patients presenting to Accident and Emergency departments who were not admitted to hospital. It will include those who had been admitted to hospital but who died after being discharged.

Multiple admissions by patients often occur for the same injury event. If more than 12 months have passed since the patient's previous relevant admission, subsequent hospital admissions are included as a new injury event.

Table 18. Non-fatal hospital admission rates

	BL	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Hospital admissions (n)	3,365	3,819	3,916	4,014	4,179	4,324	4,300	4,123	4,090	3,855	3,990
Rate per 100,000 persons	163.7	175.9	174.8	175.2	177.6	178.3	172.9	163.8	161.0	150.8	154.9
Rate per 10,000 registered vehicles	21.0	21.9	21.4	21.5	21.8	21.9	21.0	19.2	18.7	17.5	18.0
Rate per 100 million km travelled	14.7	15.9	15.6	15.3	15.5	15.7	15.6	14.9	14.3	13.1	13.2

(ABS 2018a, ABS 2018b, ABS 2018c)

[1] Hospital Morbidity Data System, Inpatient Data Collections, Data Integrity Directorate, Department of Health WA (2018). Unpublished statistics 3 December 2018.

The following table shows that those admitted to hospital for injuries sustained in a road crash in 2017 spent a cumulative total of 26,116 days in hospital, with the average per person being 6.5 days.

Table 19. Cumulative (CLOS) and Average Length-of-Stay (ALOS) for non-fatal admissions

	BL	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
CLOS (days)	27,002	31,771	30,686	32,712	26,135	25,886	26,504	28,890	26,961	26,879	26,116
ALOS (days)	8.0	8.3	7.8	8.1	6.3	6.0	6.2	7.0	6.6	7.0	6.5

The following table shows that pedestrians had a consistently higher average length-of-stay following admission than other road user types. Cyclists had the lowest average length-of-stay.

Table 20. Average length-of-stay by road user group for non-fatal admissions

	BL	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
MV Driver	7.6	8.2	8.8	6.7	6.2	6.0	5.7	6.8	7.2	7.2	7.1
MV Passenger	8.2	8.9	6.8	7.4	5.5	6.0	6.1	8.8	7.1	7.5	7.1
MV Unknown	5.9	8.4	8.3	6.8	5.6	4.4	5.2	5.4	5.2	6.3	7.9
Motorcyclist	9.3	10.0	8.0	7.8	7.0	7.3	7.1	7.9	7.1	7.8	6.7
Cyclist	5.2	4.2	5.2	4.5	4.8	3.6	4.4	4.1	4.0	4.2	3.6
Pedestrian	13.1	11.3	12.0	22.7	9.3	8.9	10.1	10.7	9.5	11.8	10.1
Other/unknown	7.2	5.5	5.3	9.4	5.3	4.2	5.1	4.7	5.1	5.8	5.2
Total	**8.0**	**8.3**	**7.8**	**8.1**	**6.3**	**6.0**	**6.2**	**7.0**	**6.6**	**7.0**	**6.5**

Figure 6. Comparison of average length-of-stay by road user group, baseline and 2017

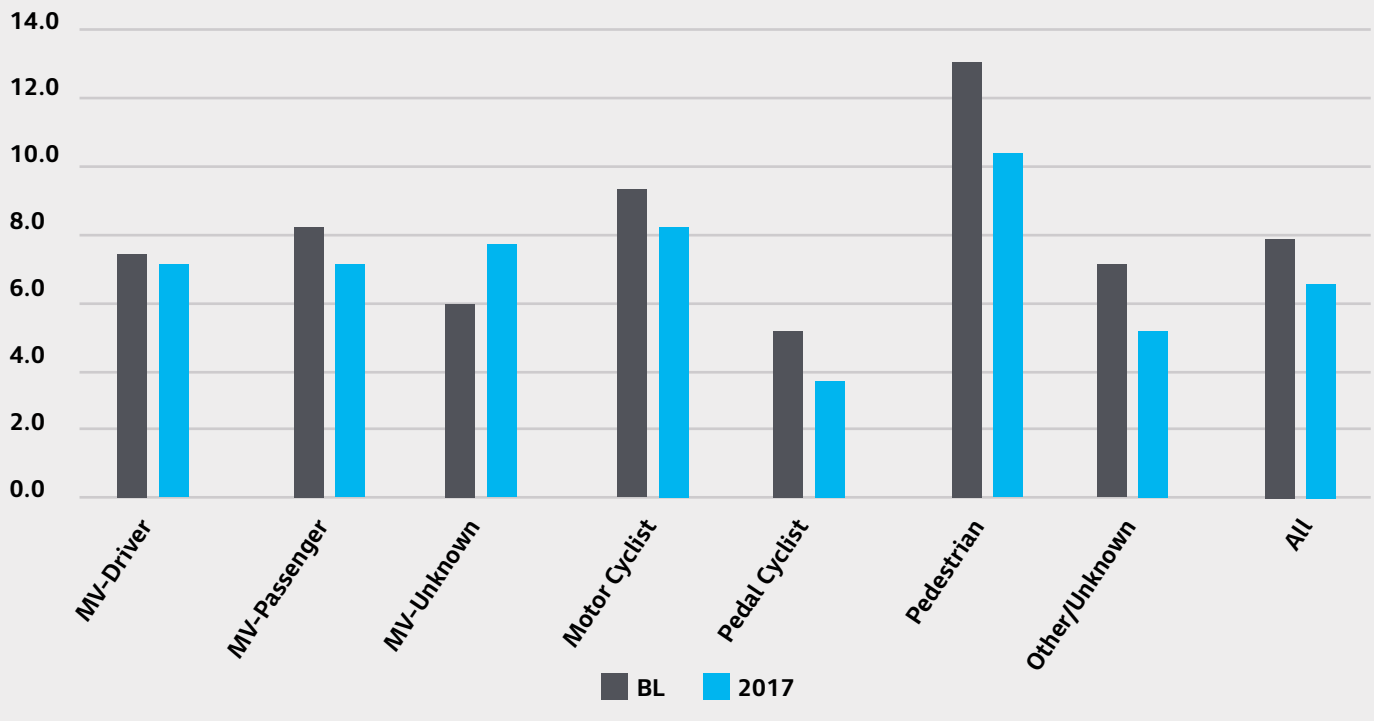


Table 21. Non-fatal hospital admissions by length-of-stay groupings

	BL	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
1 day	1,209	1,336	1,421	1,576	1,811	1,816	1,627	1,425	1,420	1,313	1,333
2-3 days	770	898	967	927	879	969	1,038	1,074	1,070	1,015	1,139
4-7 days	534	636	622	645	638	697	794	732	695	654	725
8-14 days	372	417	398	381	406	410	414	443	459	401	359
15+ days	479	532	508	485	445	432	427	449	446	472	434
Total	**3,365**	**3,819**	**3,916**	**4,014**	**4,179**	**4,324**	**4,300**	**4,123**	**4,090**	**3,855**	**3,990**

Table 22. Non-fatal hospital admissions by road user group

	BL	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
MVO	1,821	1,978	1,995	1,962	2,148	2,189	2,037	1,964	2,013	1,864	1,841
MV Driver	958	1,064	1,052	1,139	1,326	1,290	1,220	1,203	1,230	1,132	1,140
MV Passenger	597	647	678	605	621	673	614	573	592	545	508
MV Unknown	266	267	265	218	201	226	203	188	191	187	193
Motorcyclist	717	887	903	979	971	1,009	1,060	1,003	972	917	999
Pedal Cyclist	419	501	596	602	600	674	761	759	719	739	733
Pedestrian	262	278	311	332	333	319	324	274	275	214	285
Other/unknown	146	175	111	139	127	133	118	123	111	121	132
Total	**3,365**	**3,819**	**3,916**	**4,014**	**4,179**	**4,324**	**4,300**	**4,123**	**4,090**	**3,855**	**3,990**

Table 23. Non-fatal hospital admissions by gender and age group

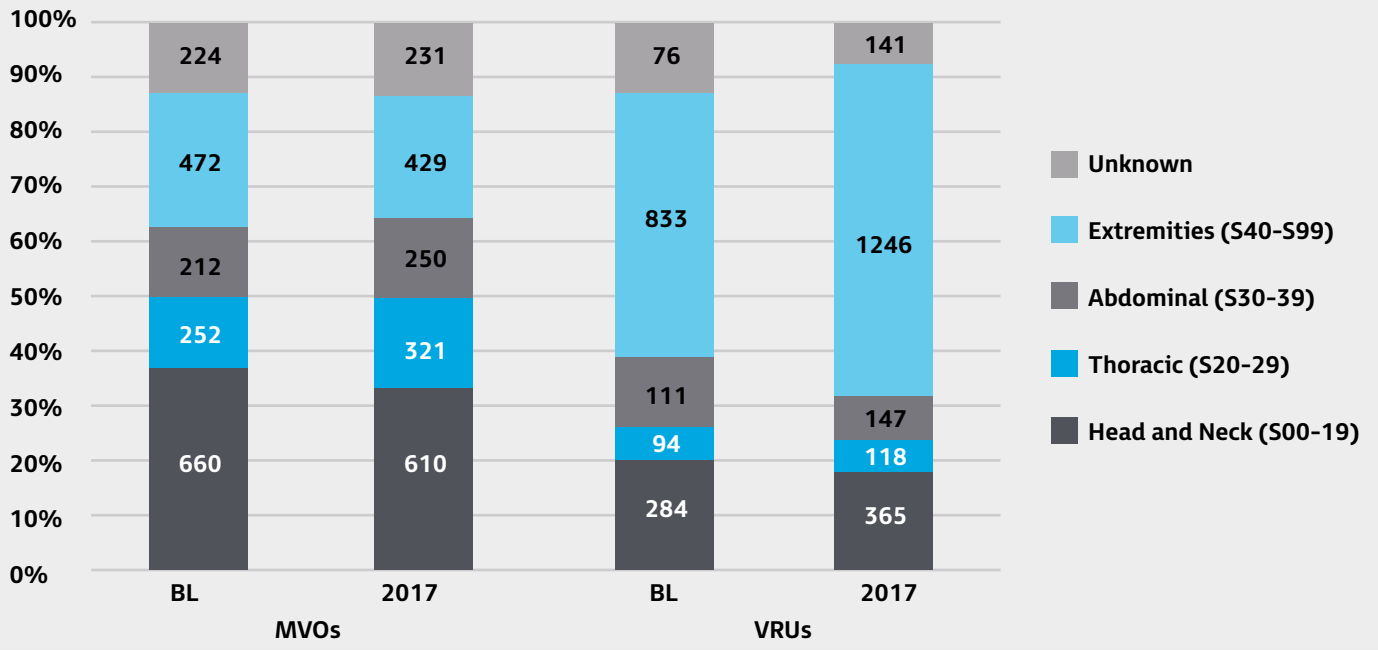
	BL	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Male	**2,249**	**2,534**	**2,565**	**2,586**	**2,748**	**2,881**	**2,848**	**2,705**	**2,635**	**2,535**	**2,601**
0-16	322	397	363	317	305	340	292	271	280	257	262
17-19	224	269	209	241	258	227	234	173	158	160	164
20-29	616	684	675	655	710	762	760	703	638	574	576
30-39	401	428	454	446	468	503	509	443	449	440	432
40-49	290	343	383	394	401	424	412	433	427	396	410
50-59	188	186	240	252	301	295	308	342	316	331	358
60-69	102	97	126	145	154	176	192	177	208	192	206
70-79	61	76	68	83	79	84	84	94	99	110	126
80+	45	54	47	53	72	70	57	69	60	75	67
Female	**1,116**	**1,285**	**1,351**	**1,428**	**1,431**	**1,443**	**1,452**	**1,418**	**1,455**	**1,320**	**1,389**
0-16	151	154	192	167	161	167	124	124	143	115	128
17-19	119	114	131	111	110	103	102	98	107	83	86
20-29	252	315	313	315	351	333	356	357	367	289	330
30-39	172	197	210	186	175	237	225	237	205	206	230
40-49	121	149	159	197	194	162	183	165	161	169	171
50-59	109	114	114	175	159	172	170	148	150	180	163
60-69	65	90	80	113	117	105	116	126	139	125	104
70-79	68	84	93	91	91	78	95	84	96	82	98
80+	60	68	59	73	73	86	81	79	87	71	79
All	**3,365**	**3,819**	**3,916**	**4,014**	**4,179**	**4,324**	**4,300**	**4,123**	**4,090**	**3,855**	**3,990**
0-16	473	551	555	484	466	507	416	395	423	372	390
17-19	343	383	340	352	368	330	336	271	265	243	250
20-29	868	999	988	970	1,061	1,095	1,116	1,060	1,005	863	906
30-39	573	625	664	632	643	740	734	680	654	646	662
40-49	411	492	542	591	595	586	595	598	588	565	581
50-59	297	300	354	427	460	467	478	490	466	511	521
60-69	167	187	206	258	271	281	308	303	347	317	310
70-79	129	160	161	174	170	162	179	178	195	192	224
80+	105	122	106	126	145	156	138	148	147	146	146

Table 24. Non-fatal hospital admissions by month of admission

	BL	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Jan	296	289	333	304	343	347	354	328	324	326	329
Feb	257	292	330	321	326	306	309	336	340	291	279
Mar	305	365	407	341	380	343	416	382	383	335	340
Apr	281	300	329	314	356	385	380	322	357	301	375
May	281	313	350	322	363	383	359	385	349	341	345
Jun	259	324	290	297	328	355	354	354	296	315	308
Jul	261	267	283	317	307	394	344	332	358	329	294
Aug	266	305	297	338	346	344	369	316	296	328	321
Sep	274	267	305	339	339	339	314	314	312	320	310
Oct	280	347	351	393	337	387	395	351	374	308	339
Nov	314	359	332	387	380	379	363	356	387	326	355
Dec	290	391	309	341	374	362	343	347	314	335	395
Total	**3,365**	**3,819**	**3,916**	**4,014**	**4,179**	**4,324**	**4,300**	**4,123**	**4,090**	**3,855**	**3,990**

The following figure shows a substantially larger proportion of people who walk and ride (VRU's) were admitted to hospital primarily for injuries sustained to their extremities. In contrast, the primary reason for admission for protected motor vehicle occupants (MVOs) was injuries to the head and neck. These proportions do not appear to have changed substantially when comparing 2017 with the baseline period.

Figure 7. Non-fatal hospital admissions by broad road user group and primary reason for admission



*Primary reason *is defined by the first ICD-10 diagnosis code, which is the principal diagnosis for which the patient is admitted. Abdominal includes abdomen, lower back, lumbar spine and pelvis. Extremities include shoulder, upper arm, elbow, forearm, wrist, hand, hip, thigh, knee, lower leg, ankle and foot.*

Figure 8. Percentage of indigenous and non-indigenous road crash admissions by age group, 2017

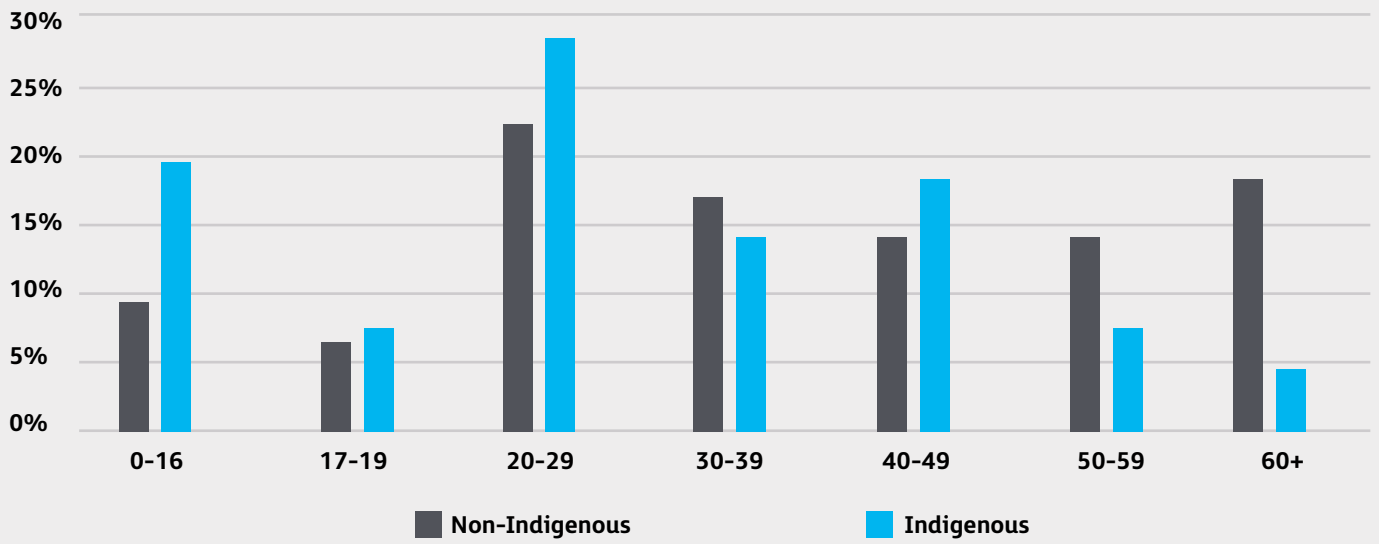


Table 25. Non-fatal hospital admissions by indigenous status and age group

	BL	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Non-indigenous	**3,088**	**3,543**	**3,612**	**3,741**	**3,902**	**4,028**	**4,035**	**3,838**	**3,806**	**3,599**	**3,709**
0-16	401	470	467	409	392	429	353	325	348	302	335
17-19	322	361	308	326	337	305	305	245	238	218	229
20-29	797	922	925	903	983	1018	1046	987	924	806	827
30-39	512	578	598	587	609	693	691	624	608	611	622
40-49	381	465	508	550	560	551	563	565	558	525	529
50-59	284	287	338	414	441	441	461	470	452	495	500
60+	392	460	468	552	580	591	616	622	678	642	667
Indigenous	**277**	**276**	**304**	**273**	**277**	**296**	**265**	**285**	**284**	**256**	**281**
0-16	72	81	88	75	74	78	63	70	75	70	55
17-19	21	22	32	26	31	25	31	26	27	25	21
20-29	71	77	63	67	78	77	70	73	81	57	79
30-39	61	47	66	45	34	47	43	56	46	35	40
40-49	30	27	34	41	35	35	32	33	30	40	52
50-59	13	13	16	13	19	26	17	20	14	16	21
60+	9	9	5	6	6	8	9	7	11	13	13
Total	**3,365**	**3,819**	**3,916**	**4,014**	**4,179**	**4,324**	**4,300**	**4,123**	**4,090**	**3,855**	**3,990**

Table 26. Non-fatal hospital admissions by indigenous status and gender

	BL	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Non-indigenous	**3,088**	**3,543**	**3,612**	**3,741**	**3,902**	**4,028**	**4,035**	**3,838**	**3,806**	**3,599**	**3,709**
Male	2,075	2,358	2,388	2,424	2,554	2,685	2,672	2,537	2,459	2,380	2,405
Female	1,013	1,185	1,224	1,317	1,348	1,343	1,363	1,301	1,347	1,219	1,304
Indigenous	**277**	**276**	**304**	**273**	**277**	**296**	**265**	**285**	**284**	**256**	**281**
Male	175	176	177	162	194	196	176	168	176	155	196
Female	102	100	127	111	83	100	89	117	108	101	85
Total	**3,365**	**3,819**	**3,916**	**4,014**	**4,179**	**4,324**	**4,300**	**4,123**	**4,090**	**3,855**	**3,990**

Table 27. Non-fatal hospital admissions by indigenous status and road user type

	BL	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Non-indigenous	**3,088**	**3,543**	**3,612**	**3,741**	**3,902**	**4,028**	**4,035**	**3,838**	**3,806**	**3,599**	**3,709**
MVO	1,637	1,817	1,822	1,802	1,999	2,038	1,906	1,803	1,840	1,717	1,702
MV Driver	909	1,007	1,008	1,079	1,272	1,243	1,169	1,150	1,171	1,090	1,085
MV Passenger	501	574	594	528	550	602	552	485	508	471	450
MV Unknown	228	236	220	195	177	193	185	168	161	156	167
Motorcyclist	696	855	872	950	931	952	1,012	965	934	874	942
Pedal Cyclist	403	477	573	577	577	650	733	732	695	716	711
Pedestrian	214	231	250	282	280	268	279	233	233	179	234
Other/Unknown	139	163	95	130	115	120	105	105	104	113	120
Indigenous	**277**	**276**	**304**	**273**	**277**	**296**	**265**	**285**	**284**	**256**	**281**
MVO	184	161	173	160	149	151	131	161	173	147	139
MV Driver	49	57	44	60	54	47	51	53	59	42	55
MV Passenger	97	73	84	77	71	71	62	88	84	74	58
MV Unknown	38	31	45	23	24	33	18	20	30	31	26
Motorcyclist	21	32	31	29	40	57	48	38	38	43	57
Pedal Cyclist	16	24	23	25	23	24	28	27	24	23	22
Pedestrian	48	47	61	50	53	51	45	41	42	35	51
Other/Unknown	8	12	16	9	12	13	13	18	7	8	12
Total	**3,365**	**3,819**	**3,916**	**4,014**	**4,179**	**4,324**	**4,300**	**4,123**	**4,090**	**3,855**	**3,990**

Table 28. Non-fatal hospital admissions by funding source of patient

	BL	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Australian Health Care Agreements	1,484	1,684	1,478	1,485	1,409	1,533	1,647	1,686	1,703	1,464	1,554
Motor Vehicle Third Party Personal Claim	1,502	1,699	1,988	2,091	2,335	2,309	2,041	1,748	1,837	1,774	1,873
Private Health Insurance	236	267	277	283	271	307	423	477	375	456	418
Other Funding Sources	144	169	173	155	164	175	189	212	175	161	145
Total	**3,365**	**3,819**	**3,916**	**4,014**	**4,179**	**4,324**	**4,300**	**4,123**	**4,090**	**3,855**	**3,990**

5 | WA State Trauma Registry – Road trauma admissions

Scope definition

This section presents information on road traffic trauma patients who were admitted to definitive public and private hospitals throughout Western Australia between 2012 and 2017. Road trauma is defined as those persons who suffered 'an injury or wound resulting from an external force' (Miller & Keane, 1983) due to rollover or strike or collision with another vehicle or a stationary object or a pedestrian or an animal, on open public road or street at the time of the accident involving at least one moving vehicle. Definitive hospitals for the period 2012 - 2017 included Royal Perth Hospital, Princess Margaret Hospital for Children, Fremantle Hospital, Joondalup Health Campus, Sir Charles Gairdner Hospital and Fiona Stanley Hospital.

To be included in the data presented below, road trauma patients who have suffered injury must present to a definitive hospital for treatment within 7 days of their date of trauma and be hospitalised for greater than 24 hours at the definitive hospital.

The data is extracted from the WA State Trauma Registry. It offers an alternative perspective from police-reported data and represents a subset of broader hospital admissions. Again, the definitions used may be different. The period of reporting has been restricted to 2012-2017 as this is when the State Trauma Registry was able to collate major and minor trauma data from all the definitive hospitals listed above.

The data reported here does not include road users who die at the scene of a crash, en-route to hospital or during their hospital admission. It does not include patients presenting to Accident and Emergency departments, but not admitted to hospital. It will not include patients who die post-discharge from hospital.

Major trauma admissions are defined as patients who have an Injury Severity Score (ISS) of greater than 15. Minor trauma admissions are defined as patients who meet the inclusion criteria and have an ISS of less than 16. < https://ww2.health.wa.gov.au/Articles/U_Z/WA-State-Trauma-Registry >

Table 29. Non-fatal trauma admission rates

	2012	2013	2014	2015	2016	2017
Trauma admissions (n)	1,439	1,577	1,435	1,556	1,474	1,608
Rate per 100,000 persons	59.3	63.4	57.0	61.2	57.7	62.4
Rate per 10,000 registered vehicles	7.3	7.7	6.7	7.1	6.7	7.2
Rate per 100 million km travelled	5.2	5.7	5.2	5.5	5.0	5.3

(ABS 2018a, ABS 2018b, ABS 2018c)

The following table shows that although road trauma admissions represent a small proportion of all trauma admissions (12% in 2017), major road trauma admissions represented a third of all major trauma admission in 2017 (34%)

Table 30. Trauma admissions by type of trauma, severity and year (includes fatalities during admission)

Year	Road Trauma Admissions			Total Trauma Admissions		
	Major	Minor	Total	Major	Minor	Total
2012	284	1,199	**1,483**	744	11,875	**12,620**
2013	320	1,308	**1,628**	821	12,241	**13,062**
2014	316	1,169	**1,485**	840	10,438	**11,278**
2015	340	1,251	**1,591**	923	12,485	**13,408**
2016	330	1,190	**1,520**	875	12,599	**13,475**
2017	317	1,339	**1,656**	923	13,408	**14,335**

The following tables show that road user admitted as trauma patient at a definitive hospital spent a cumulative total of 10,123 days in hospital. This equated to an average of 6.3 days per person, which is the shortest it has been since 2013. Pedestrians had the highest average length-of-stay, while cyclists recorded the lowest average length-of-stay.

Table 31. Cumulative (CLOS), Average (ALOS) and Median Length-of-Stay (MLOS) (days) for non-fatal road trauma admissions

	2012	2013	2014	2015	2016	2017
CLOS	10,503	10,420	10,276	10,498	10,039	10,123
ALOS	7.3	6.6	7.2	6.7	6.8	6.3
MLOS	4.0	3.0	4.0	3.0	4.0	3.0

Table 32. Average length-of-stay (days) for trauma admissions by road user type

	2012	2013	2014	2015	2016	2017
MV Driver	7.1	6.2	6.8	7.1	6.8	6.7
MV Front Passenger	6.7	5.3	6.4	7.3	7.6	6.2
MV Back Passenger	8.6	7.1	14.5	6.6	6.6	6.0
Motorcyclist	7.8	6.8	7.8	6.9	7.7	6.6
Pedal Cyclist	4.3	5.0	4.1	4.4	3.9	3.8
Pedestrian	9.6	11.1	6.3	8.1	9.3	8.2

Table 33. Non-fatal road trauma admissions by road user type

	2012	2013	2014	2015	2016	2017
MVO	766	802	739	811	747	832
MV Driver	509	534	489	527	505	572
MV Front Passenger	154	150	152	178	148	153
MV Back Passenger	103	118	98	106	94	107
Motorcyclist	401	417	385	407	380	431
Pedal Cyclist	147	216	198	216	237	224
Pedestrian	125	142	113	122	110	121
Total	**1,439**	**1,577**	**1,435**	**1,556**	**1,474**	**1,608**

Table 34. Non-fatal road trauma admissions by gender and age

	2012	2013	2014	2015	2016	2017
Male	**1,052**	**1,078**	**978**	**1,052**	**987**	**1,074**
0-16	82	60	55	71	81	73
17-19	89	87	60	70	50	58
20-29	299	307	274	248	238	267
30-39	203	192	167	207	187	188
40-49	153	172	171	167	155	144
50-59	108	136	122	134	129	169
60-69	63	65	68	92	75	99
70-79	29	38	39	39	48	49
80+	26	21	22	24	24	27
Female	**387**	**499**	**457**	**504**	**487**	**534**
0-16	35	33	30	54	35	36
17-19	32	36	38	36	34	42
20-29	73	113	117	123	106	122
30-39	47	67	58	48	68	81
40-49	53	69	63	55	67	63
50-59	60	73	54	74	77	80
60-69	38	42	44	39	43	40
70-79	23	36	29	36	33	41
80+	26	30	24	39	24	29
All	**1,439**	**1,577**	**1,435**	**1,556**	**1,474**	**1,608**
0-16	117	93	85	125	116	109
17-19	121	123	98	106	84	100
20-29	372	420	391	371	344	389
30-39	250	259	225	255	255	269
40-49	206	241	234	222	222	207
50-59	168	209	176	208	206	249
60-69	101	107	112	131	118	139
70-79	52	74	68	75	81	90
80+	52	51	46	63	48	56

The following figure demonstrates the distribution of each road user type across age groups. While most distributions show roughly similar peaks and troughs, pedal cyclists show a unique distribution with lower proportions of 17-19 and 20-29 year old's and a noticeable higher proportion of pedal cyclist trauma admissions were aged 50-59 years of age.

Figure 9. Percentage of non-fatal road trauma admissions by road user group and age, 2015-2017

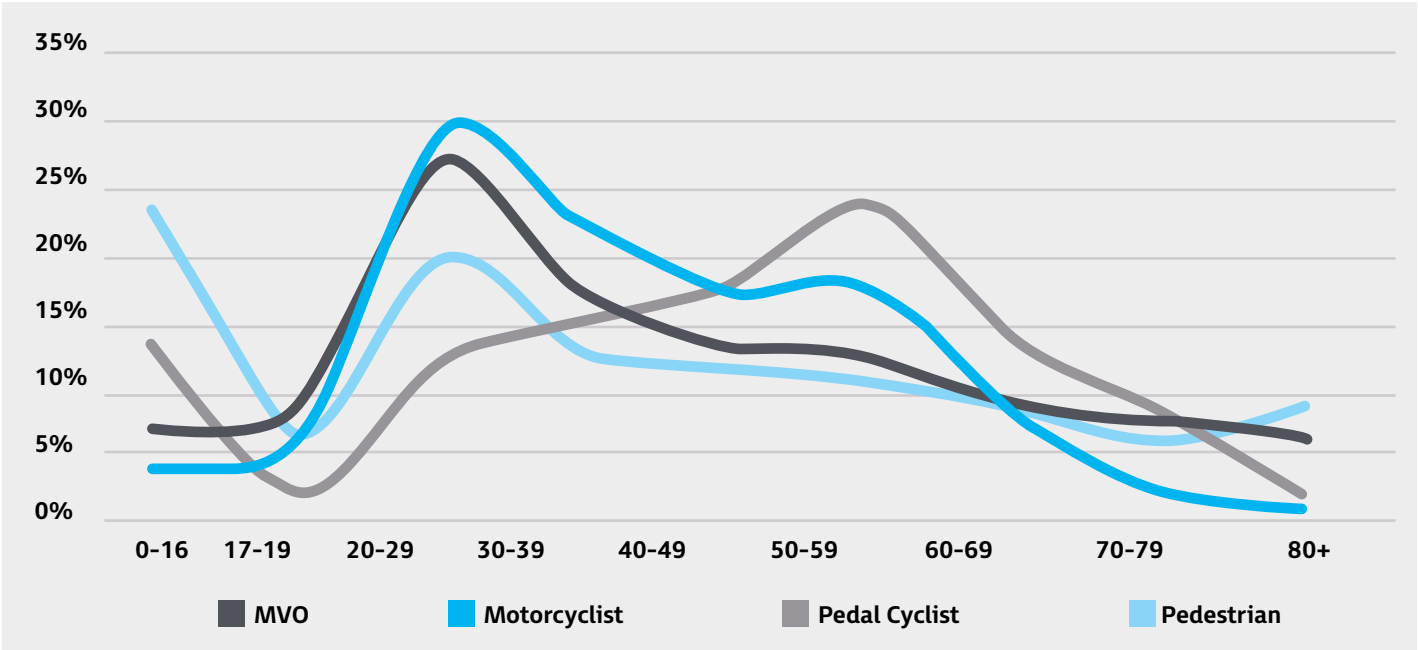


Table 35. Non-fatal motor vehicle occupant trauma admission by seatbelt use

	2012	2013	2014	2015	2016	2017
MVO	**766**	**802**	**739**	**811**	**747**	**832**
Worn	577	598	514	628	578	663
Not worn	176	182	189	155	134	140
Unknown	13	22	36	28	35	29
MV Driver	**509**	**534**	**489**	**527**	**505**	**572**
Worn	391	414	363	440	412	483
Not worn	108	103	104	74	72	71
Unknown	10	17	22	13	21	18
MV Front Passenger	**154**	**150**	**152**	**178**	**148**	**153**
Worn	125	117	114	137	121	122
Not worn	29	31	33	35	24	29
Unknown	0	2	5	6	3	2
MV Back Passenger	**103**	**118**	**98**	**106**	**94**	**107**
Worn	61	67	37	51	45	58
Not worn	39	48	52	46	38	40
Unknown	3	3	9	9	11	9

**Seatbelt use may have been reported by the road user, bystander, pre-hospital care, medical professional opinion based on evidence.*

The following figure shows that the percentage of motor vehicle back passengers thought to be not wearing a seatbelt at the time of the crash is consistently higher than motor vehicle drivers and front passengers.

Figure 10. Percentage of motor vehicle occupant type not wearing a seatbelt

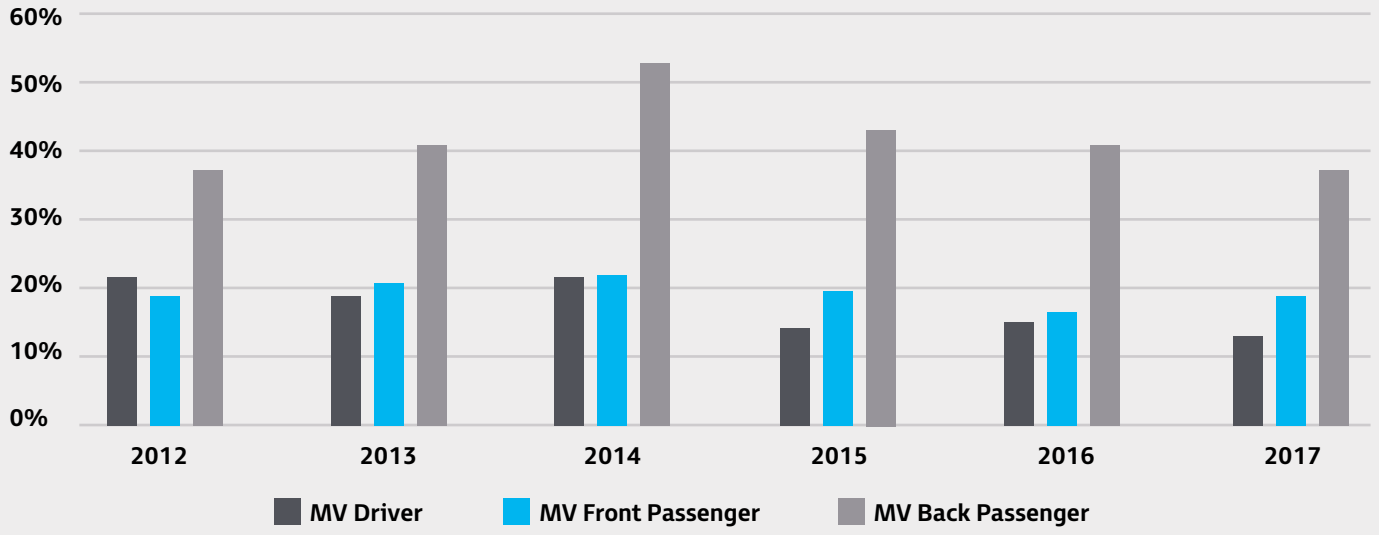


Table 36. Non-fatal motorcyclist and cyclist trauma admissions by helmet use

	2012	2013	2014	2015	2016	2017
Motorcyclist	**401**	**417**	**385**	**407**	**380**	**431**
Worn	325	350	319	332	333	356
Not worn	30	32	26	35	27	41
Unknown	46	35	40	40	20	34
Pedal Cyclist	**147**	**216**	**198**	**216**	**237**	**224**
Worn	82	143	121	148	161	150
Not worn	26	30	31	41	45	46
Unknown	39	43	46	27	31	28

**Helmet use may have been reported by the road user, bystander, pre-hospital care, medical professional opinion based on evidence.*

The following table reports trauma patients' self-reported current habitual use of alcohol or illicit drugs. This is likely to be an underestimate of drug/alcohol presence at the time of the crash. This data does not identify whether these people were under the influence at the time of the crash or in control of a vehicle. The following table shows that reported drug use has increased in recent years, with 58 people reporting illicit drug use in 2012 compared to 94 in 2017. Although the number reporting alcohol use has decreased from 322 in 2012 to 260 in 2017, more people are reporting combined use of alcohol and illicit drugs.

Table 37. Drug and alcohol use in non-fatal road trauma admissions

	2012	2013	2014	2015	2016	2017
Alcohol only	289	244	258	224	201	216
Drug only	25	31	27	46	52	50
Alcohol and drug only	33	29	32	52	39	44
No alcohol or drug / unknown	1,092	1,273	1,118	1,234	1,182	1,298
Total	**1,439**	**1,577**	**1,435**	**1,556**	**1,474**	**1,608**

**Alcohol and drug use relate to the trauma event itself. This information may come from self-reported use within the 12 hours preceding the trauma event, a positive Blood Alcohol Level/toxicology result, alcohol suspected on breath or other reliable documented evidence.*

The Injury Severity Score (ISS) is one method of describing patients with multiple injuries and for evaluating emergency care. It is more detailed measure of a person's injury severity than admission to hospital and considers multiple injuries of varying severity. The higher the ISS score, the more severe the injury. ISS scores of 16 and over have been routinely referred to as major trauma.

The following table shows that that majority of trauma admissions are for less severe injuries ISS <13, while only a small number are for the highest ISS grouping of 41-75.

Table 38. Non-fatal road trauma admissions by Injury Severity Score (ISS) grouping

	2012	2013	2014	2015	2016	2017
Major	**240**	**271**	**268**	**305**	**287**	**276**
ISS 41-75	16	19	25	25	22	15
ISS 25-40	84	93	87	97	87	88
ISS 16-24	140	159	156	183	178	173
Minor	**1,199**	**1,306**	**1,167**	**1,251**	**1,187**	**1,332**
ISS 13-15	105	107	108	119	105	115
ISS < 13	1,094	1,199	1,059	1,132	1,082	1,217
Total	**1,439**	**1,577**	**1,435**	**1,556**	**1,474**	**1,608**

Table 39. Non-fatal road trauma admissions by major/minor trauma and road user type

	2012	2013	2014	2015	2016	2017
Major (ISS >15)	**240**	**271**	**268**	**305**	**287**	**276**
MVO	144	154	154	178	165	151
Motorcyclist	62	64	67	83	78	71
Pedal Cyclist	13	16	23	22	23	31
Pedestrian	21	37	24	22	21	23
Minor (ISS <=15)	**1,199**	**1,306**	**1,167**	**1,251**	**1,187**	**1,332**
MVO	622	648	585	633	582	681
Motorcyclist	339	353	318	324	302	360
Pedal Cyclist	134	200	175	194	214	193
Pedestrian	104	105	89	100	89	98

The following table shows the count and proportion of motor vehicle drivers by the location of the injuries they sustained. The counts and proportions cannot be summed in this instance as people can sustain injuries to more than one of the locations listed. If multiple injuries were sustained to one area, they have only been counted once. Abdominal includes abdomen, lower back, lumbar spine and pelvis. Extremities include shoulder, upper arm, elbow, forearm, wrist, hand, hip, thigh, knee, lower leg, ankle and foot.

In 2017, two-thirds (64%) of motor vehicle driver trauma admissions had sustained head and neck injuries, while one-in-five (19%) had sustained abdominal injuries. Note, categories in the below tables are not mutually exclusive.

Table 40. Non-fatal motor vehicle driver trauma admissions by injury location

	2012		2013		2014		2015		2016		2017	
	n	Col%	n	Col%	n	Col%	n	Col%	n	Col%	n	Col%
Head and neck	272	53%	267	50%	269	55%	305	58%	273	54%	367	64%
Thoracic	199	39%	200	37%	190	39%	236	45%	220	44%	246	43%
Abdominal	94	18%	84	16%	84	17%	110	21%	118	23%	110	19%
Extremities	259	51%	233	44%	215	44%	245	46%	229	45%	224	39%
Total MV Driver	**509**	**-**	**534**	**-**	**489**	**-**	**527**	**-**	**505**	**-**	**572**	**-**

Table 41. Non-fatal motor vehicle front passenger trauma admissions by injury location

	2012		2013		2014		2015		2016		2017	
	n	Col%	n	Col%	n	Col%	n	Col%	n	Col%	n	Col%
Head and neck	71	46%	71	47%	87	57%	94	53%	70	47%	94	61%
Thoracic	53	34%	55	37%	60	39%	81	46%	63	43%	59	39%
Abdominal	30	19%	32	21%	41	27%	45	25%	42	28%	39	25%
Extremities	76	49%	59	39%	70	46%	80	45%	69	47%	54	35%
Total MV Front Passenger	**154**	**-**	**150**	**-**	**152**	**-**	**178**	**-**	**148**	**-**	**153**	**-**

Table 42. Non-fatal motor vehicle back passenger trauma admissions by injury location

	2012		2013		2014		2015		2016		2017	
	n	Col%	n	Col%	n	Col%	n	Col%	n	Col%	n	Col%
Head and neck	50	49%	67	57%	58	59%	67	63%	51	54%	53	50%
Thoracic	33	32%	32	27%	35	36%	47	44%	35	37%	43	40%
Abdominal	23	22%	30	25%	15	15%	33	31%	27	29%	22	21%
Extremities	47	46%	40	34%	42	43%	47	44%	42	45%	39	36%
Total MV Back Passenger	**103**	**-**	**118**	**-**	**98**	**-**	**106**	**-**	**94**	**-**	**107**	**-**

The following tables show 74% of motorcyclist trauma admissions, 72% of cyclists and 64% of pedestrians sustained injuries to their extremities. The tables also show that 64% of pedestrians and 45% of cyclists sustained head and neck injuries, compared with a slightly lower proportion (37%) for motorcyclists.

Table 43. Non-fatal motorcyclist trauma admissions by injury location

	2012		2013		2014		2015		2016		2017	
	n	Col%	n	Col%	n	Col%	n	Col%	n	Col%	n	Col%
Head and neck	144	36%	132	32%	146	38%	139	34%	154	41%	159	37%
Thoracic	107	27%	113	27%	116	30%	121	30%	140	37%	131	30%
Abdominal	46	11%	64	15%	67	17%	56	14%	78	21%	70	16%
Extremities	315	79%	317	76%	290	75%	298	73%	305	80%	320	74%
Total Motorcyclist	**401**	**-**	**417**	**-**	**385**	**-**	**407**	**-**	**380**	**-**	**431**	**-**

Table 44. Non-fatal pedal cyclist trauma admissions by injury location

	2012		2013		2014		2015		2016		2017	
	n	Col%	n	Col%	n	Col%	n	Col%	n	Col%	n	Col%
Head and neck	49	33%	96	44%	90	45%	105	49%	97	41%	101	45%
Thoracic	26	18%	50	23%	42	21%	38	18%	61	37%	65	29%
Abdominal	11	7%	13	6%	16	8%	19	9%	14	21%	17	8%
Extremities	87	59%	131	61%	119	60%	134	62%	150	80%	162	72%
Total Pedal Cyclist	**147**	**-**	**216**	**-**	**198**	**-**	**216**	**-**	**237**	**-**	**224**	**-**

Table 45. Non-fatal pedestrian trauma admissions by injury location

	2012		2013		2014		2015		2016		2017	
	n	Col%	n	Col%	n	Col%	n	Col%	n	Col%	n	Col%
Head and neck	68	54%	92	65%	74	65%	75	61%	63	57%	78	64%
Thoracic	35	28%	42	30%	25	22%	27	22%	25	23%	38	31%
Abdominal	19	15%	28	20%	15	13%	14	11%	16	15%	14	12%
Extremities	85	68%	112	79%	65	58%	87	71%	68	62%	78	64%
Total Pedestrian	**125**	**-**	**142**	**-**	**113**	**-**	**122**	**-**	**110**	**-**	**121**	**-**

Table 46. Non-fatal road trauma admissions by month of admission

	2012	2013	2014	2015	2016	2017
Jan	112	123	122	116	119	138
Feb	105	106	138	130	134	113
Mar	134	138	128	160	123	113
Apr	109	134	105	127	112	153
May	149	118	143	139	125	129
Jun	85	131	123	113	108	110
Jul	153	124	102	130	114	121
Aug	113	148	108	125	124	126
Sep	116	136	105	118	124	141
Oct	132	156	112	124	130	142
Nov	118	130	117	164	119	158
Dec	113	133	132	110	142	164
Total	**1,439**	**1,577**	**1,435**	**1,556**	**1,474**	**1,608**

6 | Insurance Commission of Western Australia – Hospitalised crash parties

Scope definition

The Insurance Commission of WA (ICWA) is responsible for Compulsory Third Party (CTP) insurance and more recently the Catastrophic Injuries Support (CIS) Scheme. The data presented here has been extracted for the purposes of this report and may not match figures or definitions reported elsewhere.

The following data provides counts and percentages of crash parties detained in hospital as a result of road crashes, as reported to ICWA, between the baseline period (2005-07 three-year average) and 2017.

To be included in these counts the individual must have been formally admitted to hospital. The numbers reported are regardless of whether ICWA ultimately determined the claim was eligible.

Given the above criteria, this data is likely to exclude people hospitalised due to injuries where a motor vehicle was not involved. This will exclude crashes without a motor vehicle that involved multiple cyclists, cyclists and pedestrians, or single cyclist crashes. The data will also exclude those who presented to Accident and Emergency Departments for treatment but were not formally admitted.

Table 47. Hospitalised crash party rates by crash year

	BL	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Hospitalised crash parties (n)	1,784	2,047	2,123	2,192	2,429	2,379	2,289	2,172	2,262	2,088	2,169
Rate per 100,000 population	86.8	94.3	94.8	95.7	103.2	98.1	92.0	86.3	89.0	81.7	84.2
Rate per 10,000 registered vehicles	11.1	11.7	11.6	11.7	12.7	12.0	11.2	10.1	10.4	9.5	9.8
Rate per 100 million km travelled	7.8	8.5	8.4	8.3	9.0	8.7	8.3	7.9	7.9	7.1	7.2

(ABS 2018a, ABS 2018b, ABS 2018c)

Table 48. Hospitalised crash parties by average number of bed days and median bed days

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Average Bed Days	11.9	12.1	10.9	10.2	8.9	9.9	9.4	8.4	9.2	8.7
Median Bed Days	3.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0

The following figure demonstrates that most hospitalised crash parties stay in hospital for a short period of time, and that these categories represented a larger percentage of hospitalised crash parties in 2017 compared to the baseline period. In contrast, most of the longer stays are showing a decrease in the percentage of hospitalised crash parties.

Figure 11. Comparison of the percentage of hospitalised crash parties by bed day grouping, baseline and 2017

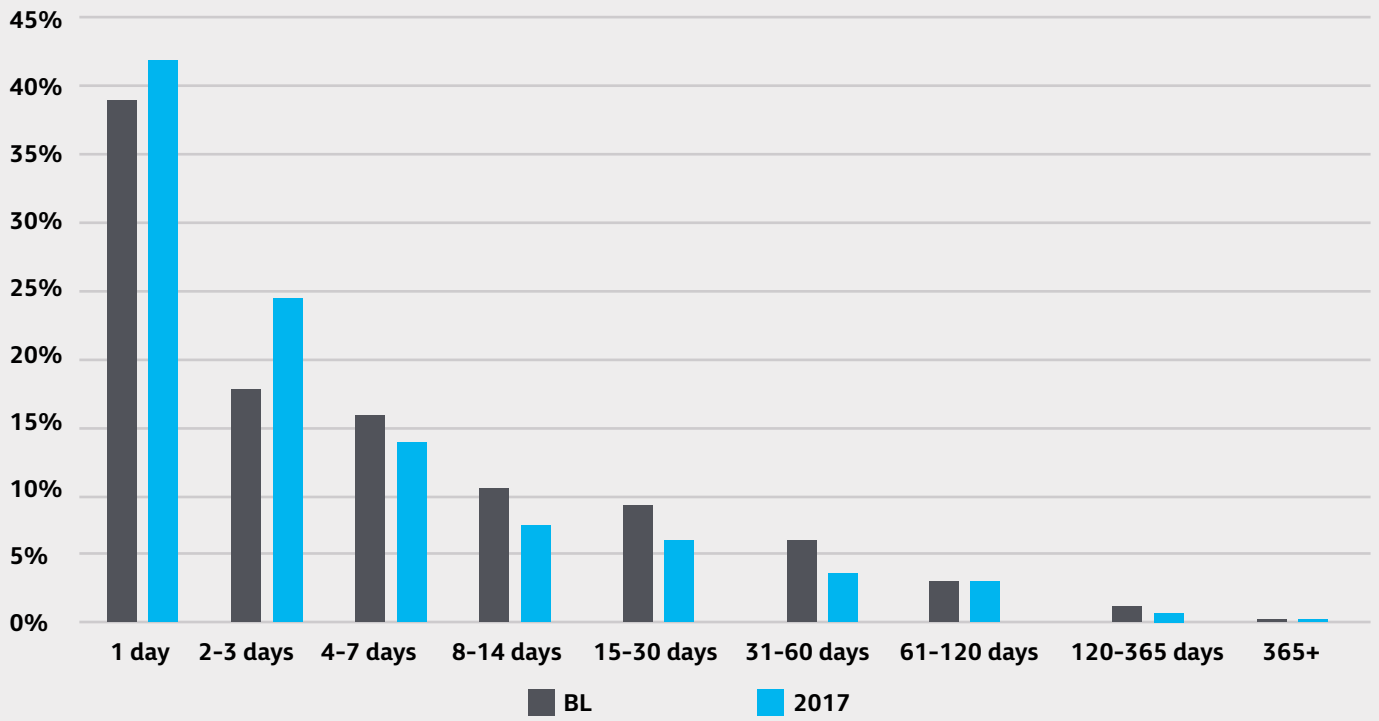


Table 49. Hospitalised crash parties by recorded bed day grouping and crash year

	BL	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
1 day	694	776	868	1,010	1,191	1,114	1,002	981	988	910	911
2-3 days	310	389	378	397	390	420	473	409	468	412	525
4-7 days	271	311	300	263	327	312	293	276	298	286	297
8-14 days	179	202	192	179	177	186	172	178	192	200	159
15-30 days	149	166	160	130	154	158	151	157	162	111	132
31-60 days	106	126	117	129	93	118	114	89	99	96	73
61-120 days	52	53	79	56	62	58	67	68	43	57	58
120-365 days	20	19	28	26	33	13	14	13	12	16	13
365+	2	5	1	2	2	0	3	1	0	0	1
Total	**1,784**	**2,047**	**2,123**	**2,192**	**2,429**	**2,379**	**2,289**	**2,172**	**2,262**	**2,088**	**2,169**

Table 50. Hospitalised crash parties by role in accident and crash year

	BL	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Motor vehicle occupant	**1,266**	**1,440**	**1,444**	**1,482**	**1,644**	**1,618**	**1,486**	**1,445**	**1,516**	**1,414**	**1,417**
Driver	746	904	878	975	1,125	1,085	1,001	1,000	1,012	961	989
Passenger	520	536	566	507	519	533	485	445	504	453	428
Motorcyclist	**267**	**321**	**339**	**384**	**421**	**406**	**436**	**420**	**425**	**387**	**412**
Motorcycle rider	252	303	313	356	395	385	413	400	402	368	398
Pillion Passenger	15	18	26	28	26	21	23	20	23	19	14
Pedestrian	189	201	246	234	255	242	241	203	210	169	225
Push Cyclist	60	79	89	91	109	113	124	103	111	115	113
Other	2	6	5	1	0	0	2	1	0	3	2
Total	**1,784**	**2,047**	**2,123**	**2,192**	**2,429**	**2,379**	**2,289**	**2,172**	**2,262**	**2,088**	**2,169**

Table 51. Hospitalised crash parties by gender

	BL	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Female	678	787	852	868	956	883	877	840	929	803	841
Male	1,102	1,253	1,255	1,310	1,456	1,489	1,402	1,325	1,327	1,273	1,320
Unrecorded	4	7	16	14	17	7	10	7	6	12	8
Total	**1,784**	**2,047**	**2,123**	**2,192**	**2,429**	**2,379**	**2,289**	**2,172**	**2,262**	**2,088**	**2,169**

Table 52. Hospitalised crash parties by age group

	BL	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
0-16	171	175	208	192	209	225	154	148	185	153	153
17-19	185	214	208	214	203	187	186	150	156	136	140
20-29	470	530	513	543	623	611	604	577	545	503	512
30-39	282	321	375	334	337	392	401	337	373	365	340
40-49	201	272	282	312	368	316	301	308	316	290	302
50-59	169	193	207	239	282	264	259	265	262	262	286
60-69	101	122	119	152	178	160	168	165	174	180	176
70-79	83	105	110	113	116	99	126	99	126	116	143
80+	65	77	72	75	90	105	77	91	102	79	103
Unrecorded	57	38	29	18	23	20	13	32	23	4	14
Total	**1,784**	**2,047**	**2,123**	**2,192**	**2,429**	**2,379**	**2,289**	**2,172**	**2,262**	**2,088**	**2,169**

Table 53. Hospitalised crash parties in crashes involving an unlicensed driver*

	BL	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Unlicensed drivers hospitalised	52	87	60	137	182	210	257	193	175	198	165
Other parties hospitalised	65	73	51	75	63	99	90	78	68	78	73
Total	**117**	**160**	**111**	**212**	**245**	**309**	**347**	**271**	**243**	**276**	**238**

**Unlicensed drivers were those with a driver's licence status of suspended and expired. Other parties hospitalised includes all other parties hospitalised in a crash involving an unlicensed driver.*

Table 54. Hospitalised crash parties in crashes involving an unregistered vehicle*

	BL	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Hospitalised drivers of unregistered vehicles	17	18	16	31	32	49	32	53	60	64	83
Other parties hospitalised	4	10	3	11	10	21	6	8	14	17	11
Total	**22**	**28**	**19**	**42**	**42**	**70**	**38**	**61**	**74**	**81**	**94**

**Unlicensed vehicles were those with a motor vehicle licence that was expired. Other parties hospitalised includes all other parties hospitalised in a crash involving an unregistered vehicle.*

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