



**Risk on the Road**

**Drivers and their  
Passengers**

August 2015



**Ministry of Transport**  
TE MANATŪ WAKA

New Zealand Government

## Contents

Key Facts .....	4
Drivers .....	4
Driver involvement risk by time of day and weekday/weekend .....	9
Passengers .....	10
Glossary .....	14

### **Disclaimer:**

All reasonable endeavours are made to ensure the accuracy of the information in this report.

However, the information is provided without warranties of any kind including accuracy, completeness, timeliness or fitness for any particular purpose.

The Ministry of Transport excludes liability for any loss, damage or expense, direct or indirect, and however caused, whether through negligence or otherwise, resulting from any person or organisation's use of, or reliance on, the information provided in this report.

Under the terms of the New Zealand Creative Commons Attribution 3.0 (BY) licence, this document, and the information contained within it, can be copied, distributed, adapted and otherwise used provided that –

- ▶ the Ministry of Transport is attributed as the source of the material
- ▶ the material is not misrepresented or distorted through selective use of the material
- ▶ images contained in the material are not copied

The terms of the Ministry's [Copyright and disclaimer](#) apply.

## Additional information

For more information about the background to the survey see the Ministry of Transport website at [www.transport.govt.nz/research/TravelSurvey/](http://www.transport.govt.nz/research/TravelSurvey/)

More travel information on drivers and their passengers is available in the Driver Travel fact sheet, linked off [www.transport.govt.nz/research/travelsurvey/reportsandfactsheets/](http://www.transport.govt.nz/research/travelsurvey/reportsandfactsheets/)

More information on risk is available in the risk fact sheets, linked off [www.transport.govt.nz/research/travelsurvey/reportsandfactsheets/](http://www.transport.govt.nz/research/travelsurvey/reportsandfactsheets/)

These include:

- ▶ Introduction and mode comparison
- ▶ Pedestrians, cyclists and motorcyclists

For further information on crash statistics see

[www.transport.govt.nz/research/roadcrashstatistics/](http://www.transport.govt.nz/research/roadcrashstatistics/). This includes links to publications such as *Motor Vehicle Crashes in New Zealand*, the annual statistical statement produced by the Ministry of Transport. Enquires relating to crash statistics may be directed to the Ministry of Transport, PO Box 3175, Wellington, or by email on [info@transport.govt.nz](mailto:info@transport.govt.nz).

A selection of fact sheets is available via the research section of the Ministry of Transport website.

These include:

Crash facts:

- ▶ Alcohol and drugs
- ▶ Speed
- ▶ Cyclists
- ▶ Diverted attention
- ▶ Fatigue
- ▶ Motorcyclists
- ▶ Overseas drivers
- ▶ Pedestrians
- ▶ Trucks
- ▶ Young drivers

Travel survey:

- ▶ Comparing travel modes
- ▶ Driver travel
- ▶ Parking
- ▶ Walking
- ▶ Cycling
- ▶ Public transport
- ▶ Motorcycling
- ▶ Risk on the road
  - ▶ Introduction and mode comparison
  - ▶ Drivers and their passengers
  - ▶ Pedestrians, cyclists and motorcyclists

For more information about road safety, visit the Ministry of Transport website at [www.transport.govt.nz](http://www.transport.govt.nz).

# Risk on the road: Drivers and their passengers

## Key Facts

- ▶ Road crash statistics by themselves don't necessarily tell us who is most at risk on the road because they don't take into account the amount of travel. The amount of travel can be combined with crash statistics to compare the risk of death and injury for different age groups or different modes of travel.
- ▶ 15 – 19 year old drivers are at the highest risk of being involved in a motor vehicle crash.
- ▶ Between midnight and 3am on weekends is the riskiest time to be driving.
- ▶ For passengers, 20 – 24 year olds are at highest risk of dying or being injured in a motor vehicle crash.
- ▶ Males generally have a higher risk of dying in motor vehicle crashes than females, especially in the 15 – 29 year old age groups.

This is the second in a series of fact sheets looking at risk on the road. This fact sheet focuses on drivers and passengers. Crash data are from the Crash Analysis System (CAS) and are based on police reported crashes. Measures of exposure to risk (distance travelled, time spent travelling and trip numbers) are from the New Zealand Household Travel Survey (NZHTS).

Words shown in **blue** (and which are not headings) are defined in the glossary at the end of this sheet.

## Drivers

For the purposes of this fact sheet, unless stated otherwise, we are concerned with drivers of **light 4 wheeled vehicles** i.e. cars, station wagons, utes, vans and SUVs.

In this section we are looking at **drivers** involved in fatal and injury crashes (these drivers do not necessarily die or get injured themselves).

The driver information available is summarised in Table 1. It lists by age the total number of driver trips sampled, the total distance travelled per year, the total time spent travelling, the number of drivers involved in fatal crashes per year and the number of drivers involved in fatal or injury crashes per year.

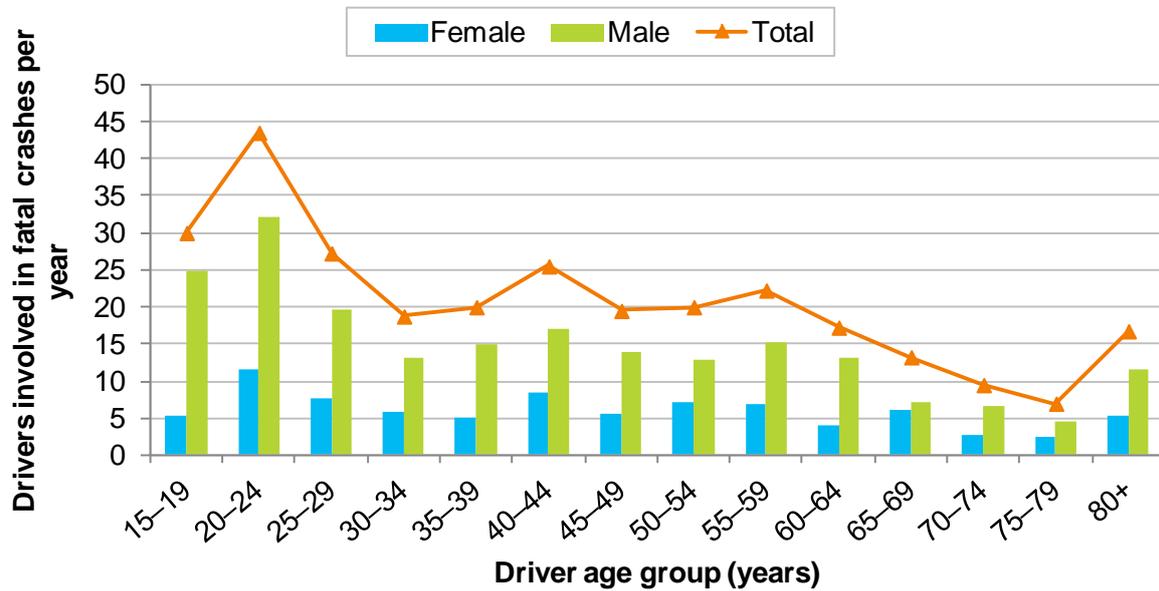
On average each year, over the 4 year period July 2010 – June 2014, 291 drivers were involved in fatal crashes and 11,942 were involved in injury crashes.

**Table 1: Drivers involved in motor vehicle crashes and the associated travel and risk**

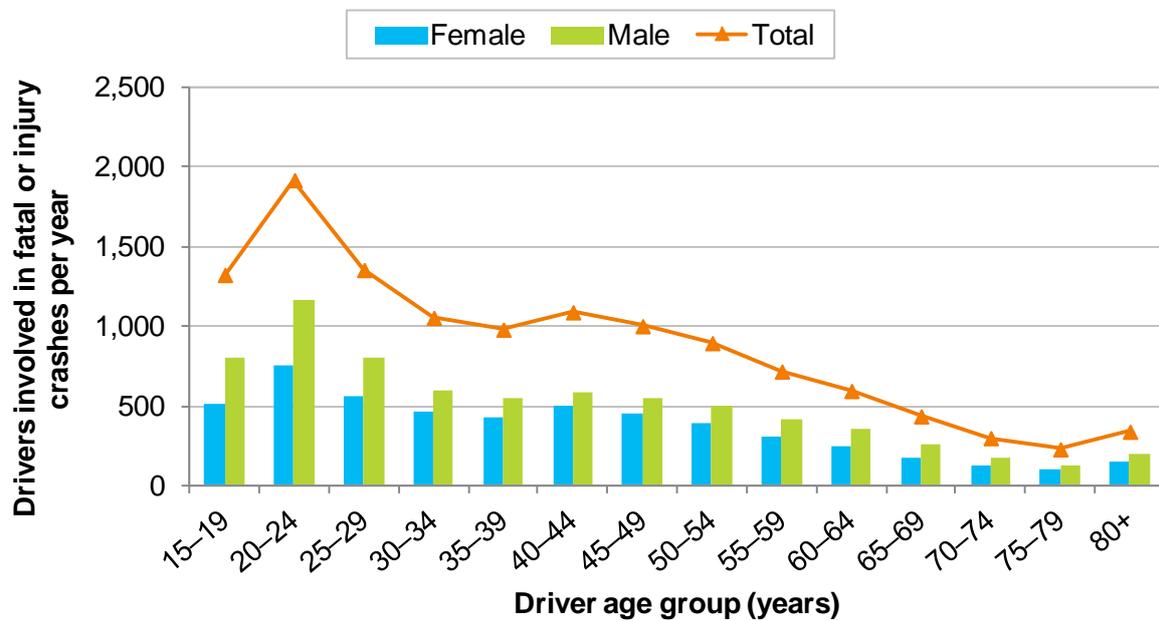
<b>Age group</b>	<b>Total number of driver trip legs sampled (over 4 years)</b>	<b>Total distance travelled per year (100 million km)</b>	<b>Total time travelled per year (million hours)</b>	<b>Drivers involved in fatal crashes per year</b>	<b>Drivers involved in fatal or injury crashes per year</b>
15 – 19	3,126	7.4	19	30	1,323
20 – 24	6,895	21.1	59	44	1,917
25 – 29	8,345	24.8	70	27	1,354
30 – 34	10,545	24.7	71	19	1,054
35 – 39	14,264	30.1	81	20	980
40 – 44	16,376	37.4	96	26	1,089
45 – 49	16,198	36.3	99	20	1,002
50 – 54	14,143	34.9	93	20	896
55 – 59	10,934	28.2	73	22	718
60 – 64	10,613	21.9	59	17	596
65 – 69	7,677	15.0	40	13	437
70 – 74	5,007	8.2	26	10	300
75 – 79	3,322	4.2	14	7	230
80 +	2,711	3.6	14	17	340
<b>All ages</b>	<b>130,156</b>	<b>297.8</b>	<b>811</b>	<b>291</b>	<b>12,233</b>

Figure 1 shows drivers involved in fatal crashes by age group. The majority of drivers involved in fatal crashes are male, with the largest number involved being between ages 15 and 24. The number of drivers involved in fatal crashes gradually decreases with driver age. There is a similar pattern for drivers involved in fatal or injury crashes (Figure 2), with the majority of drivers being male, and the largest numbers coming from the 15 to 24 year old age group.

**Figure 1: Light 4 wheeled vehicle drivers involved in fatal crashes by age group (annual average)**



**Figure 2: Light 4 wheeled vehicle drivers involved in fatal or injury crashes by age group (annual average)**



**Figure 3: Distance driven by light 4 wheeled vehicle drivers, by age group (annual average)**

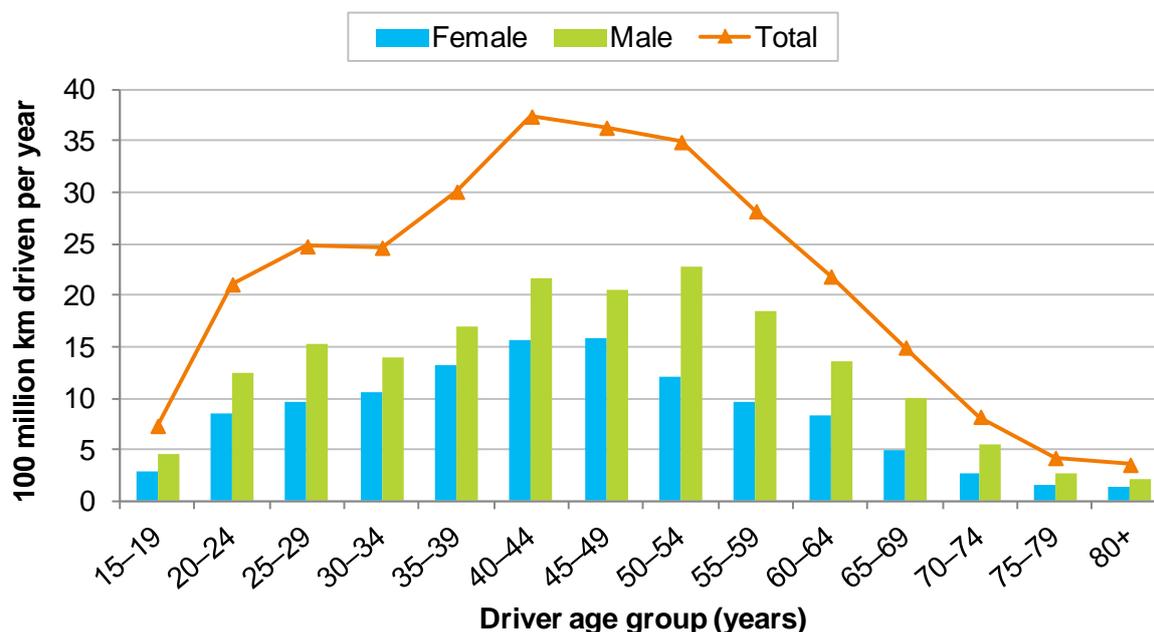


Figure 3 shows the average annual distance driven by gender and age group. This shows quite a different shape with the peak in the distance driven at ages 40–54 years old for both men and women.

We can then combine the data to see the risk per distance travelled of drivers being involved in fatal crashes (Figure 4) and in fatal or injury crashes (Figure 5). Both show high risk of crash involvement per km travelled for those 15–19 years old. For younger age groups, male drivers are more likely than female drivers to be involved in a fatal crash (per km driven). This difference does not hold for fatal and injury crashes combined.

The graphs also show the number of drivers involved in crashes per 10,000 licence holders in each age group. Male drivers are more likely to be involved in a fatal or injury crash (per 10,000 licence holders) than female drivers.

Figure 4: Light 4 wheeled vehicle drivers involved in fatal crashes per 100 million km travelled (bars), and per 10,000 licence holders (lines), by age and gender

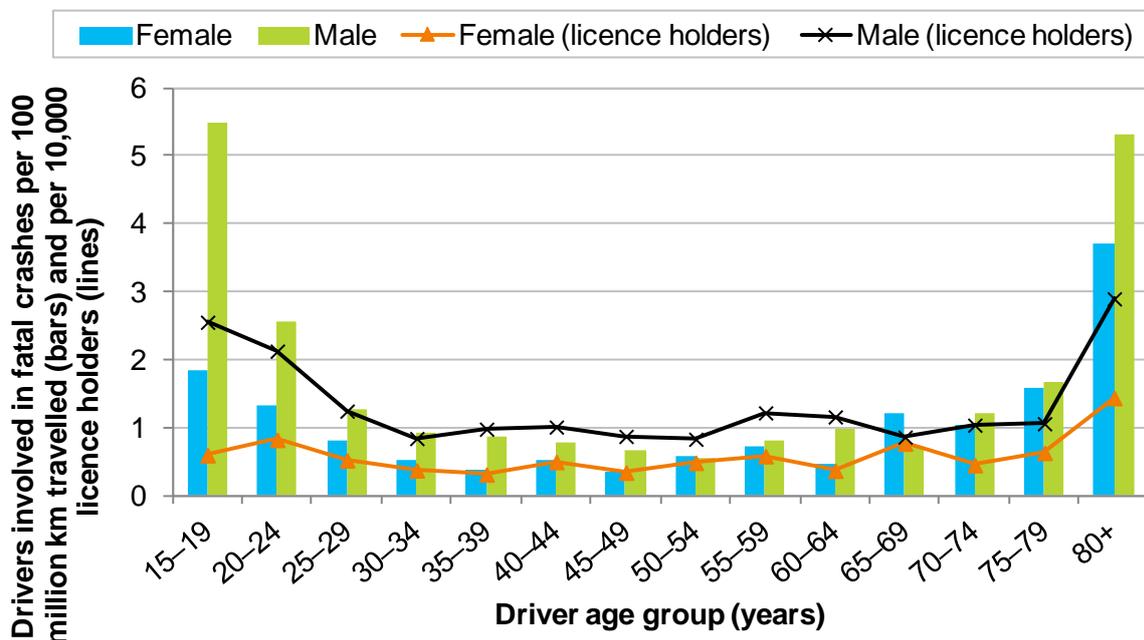
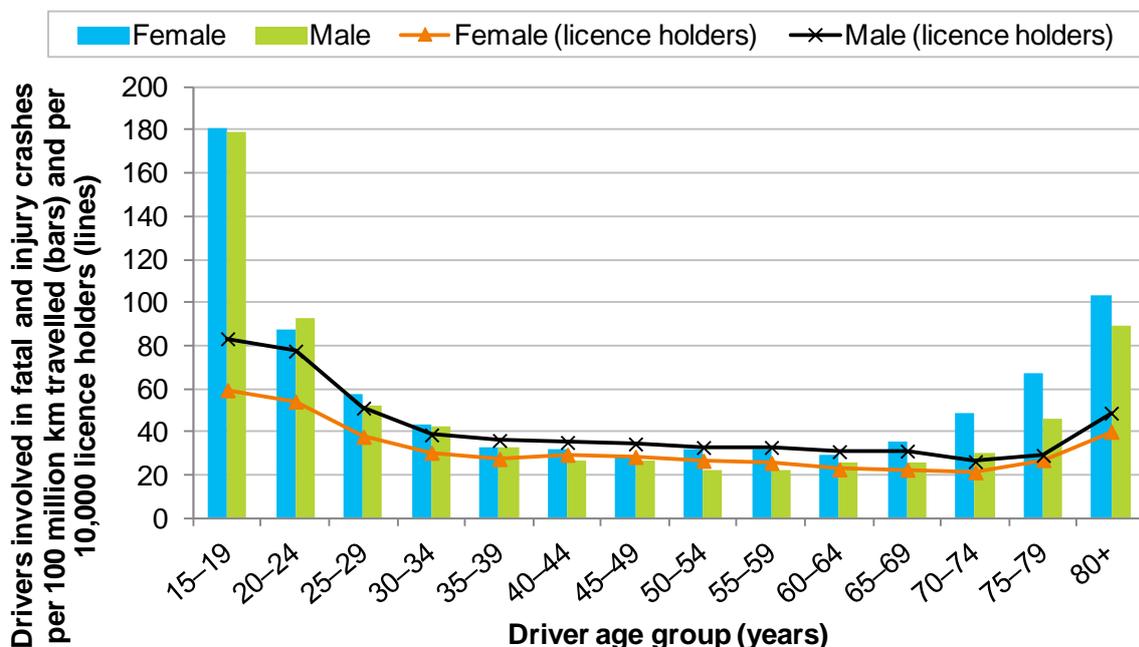


Figure 5: Light 4 wheeled vehicle drivers involved in fatal or injury crashes per 100 million km driven (bars) and per 10,000 licence holders (lines) by age and gender



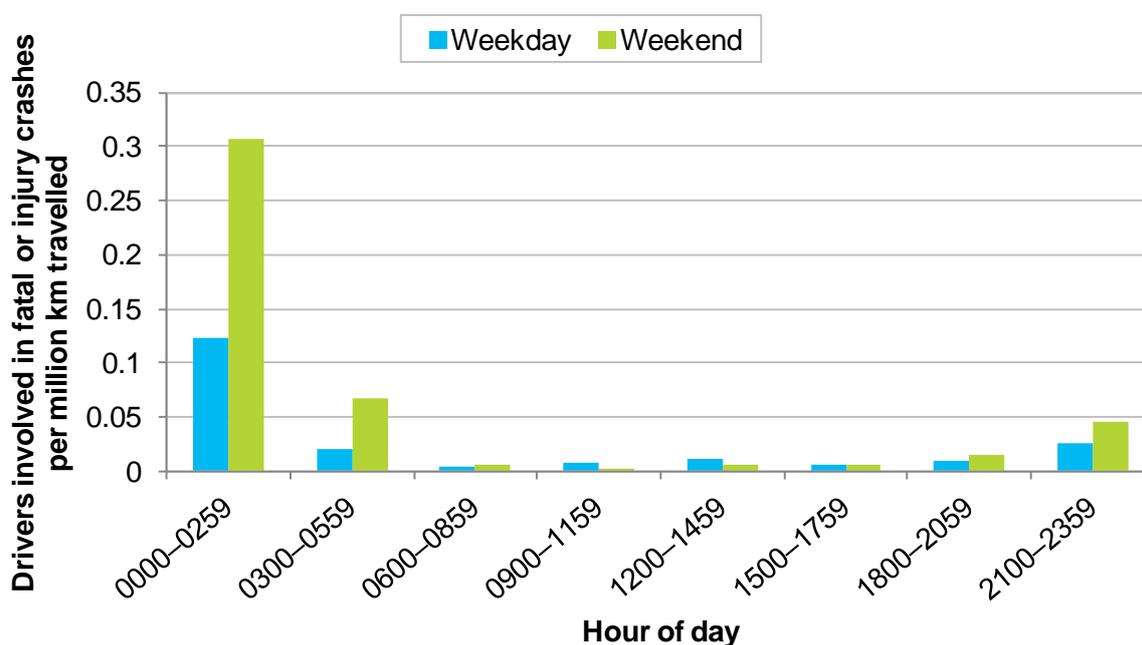
When looking at risk by age patterns you have to take into account that children and those over 70 years old are more fragile. They are more likely to die or be injured in a crash, but this does not necessarily mean they are more likely to get into a situation where they are involved in a crash.

Fragility adjustments<sup>1</sup> to take account of this can only be applied to risk of death, not involvement in crashes, so cannot be applied to the risk graphs above (Figure 4 and Figure 5).

## Driver involvement risk by time of day and weekday/weekend

We can also look at driver crash risk by time of day to see when drivers are most likely to be involved in a crash given the distance driven (Figure 6).

**Figure 6: Light 4 wheeled vehicle drivers involved in fatal or injury crashes per million km driven**



From this we can see that the riskiest times are between midnight and 6am in the weekend and midnight to 3am weekdays. Results from the Travel Survey *Driver Travel* fact sheet<sup>2</sup> show that on weekdays most driving is done between 6am and 6pm with distinct peaks during morning and evening commuting hours. On weekends most driving is done between 9am and 6pm. Relatively little driving is done late at night or in the early morning, but this is when the crash risk is highest.

<sup>1</sup> See *Risk on the road: introduction and mode comparison* for more explanation.

<sup>2</sup> *Driver Travel*. [www.transport.govt.nz/research/Pages/LatestResults.aspx](http://www.transport.govt.nz/research/Pages/LatestResults.aspx)

## Passengers

We now look at the risk exposure for passengers in light 4 wheeled vehicles. Table 2 shows the number of passengers who died or were injured in motor vehicle crashes and the amount of travel they do.

On average each year, over the 4 year period July 2010 – June 2014, 62 passengers died and 2,165 were injured in crashes.

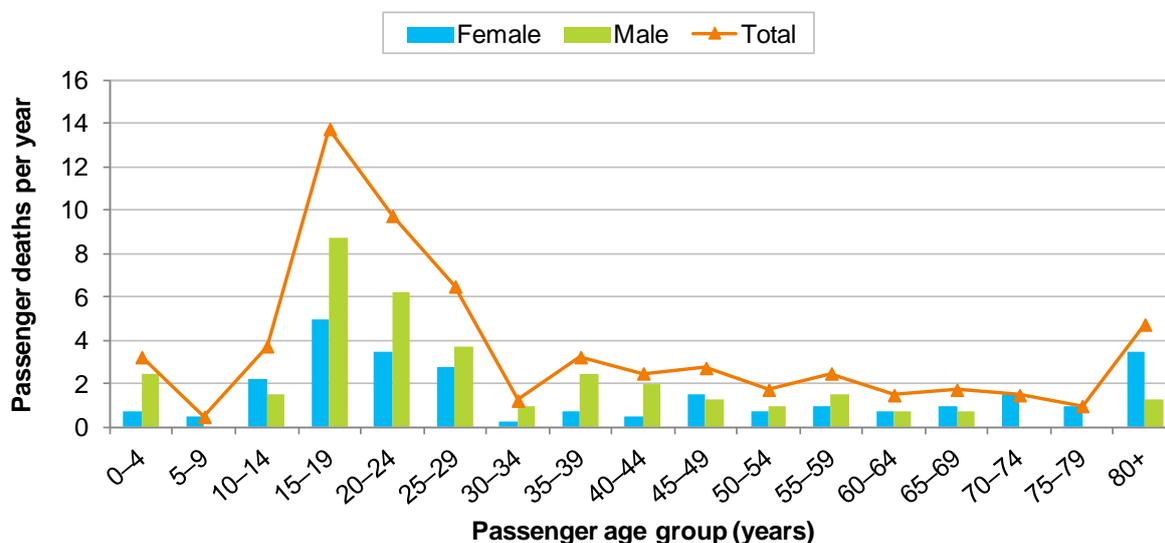
**Table 2: Deaths or injuries in motor vehicle crashes and the associated travel and risk**

Age group	<i>Number of passenger trip legs sampled (4 years)</i>	Total distance travelled per year (100 million km)	Total time travelled per year (million hours)	Total deaths per year	Total deaths or injuries per year
0–4	12,554	23.5	65.1	3.3	80
5–9	11,904	21.6	60.0	0.5	144
10–14	10,251	21.3	54.2	3.8	172
15–19	5,575	17.1	43.7	13.8	510
20–24	2,567	10.8	27.2	9.8	396
25–29	2,075	7.9	21.2	6.5	189
30–34	2,049	8.0	19.2	1.3	113
35–39	2,347	7.0	16.7	3.3	82
40–44	2,172	7.7	17.7	2.5	88
45–49	2,310	6.7	16.5	2.8	82
50–54	2,301	9.1	19.4	1.8	76
55–59	1,976	7.7	16.9	2.5	66
60–64	2,066	6.7	16.0	1.5	58
65–69	1,919	6.1	13.7	1.8	50
70–74	1,490	3.5	8.9	1.5	39
75–79	881	1.8	4.9	1.0	35
80+	1,063	2.4	7.3	4.8	49
All ages	65,500	168.8	428.5	62.0	2,227

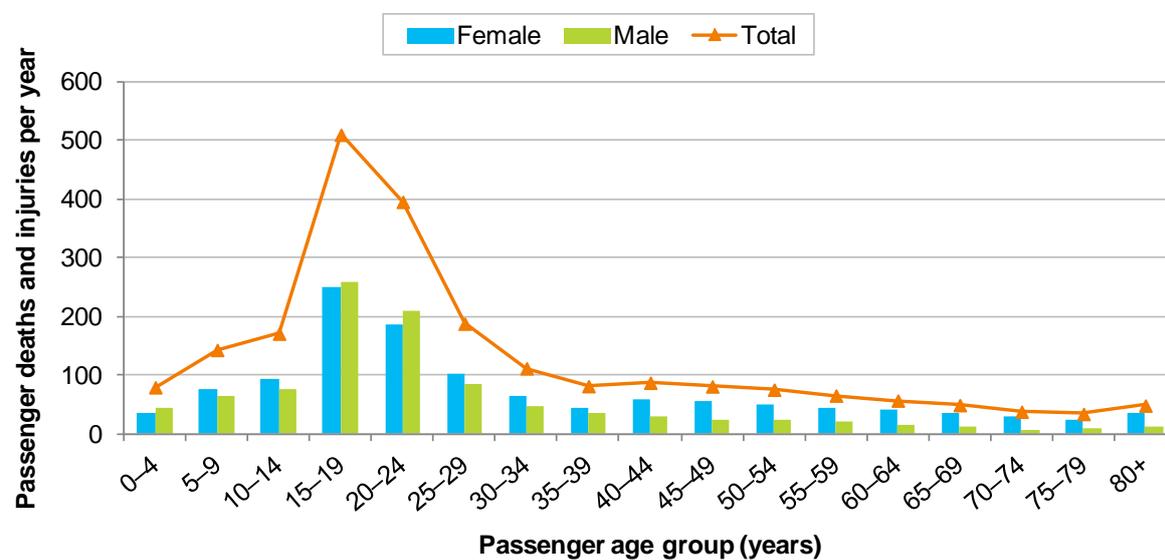
The age groups with the most deaths or injuries on an annual basis are the 15–19 and 20–24 year olds (Figure 7 and 8).

The annual average distance travelled by age (Figure 9) shows quite a different pattern. Those under 20 years old clock up a far greater distance as a passenger. Up to age 25, males and females travel similar distances as passengers, but among older age groups, females travel as passengers significantly more than males.

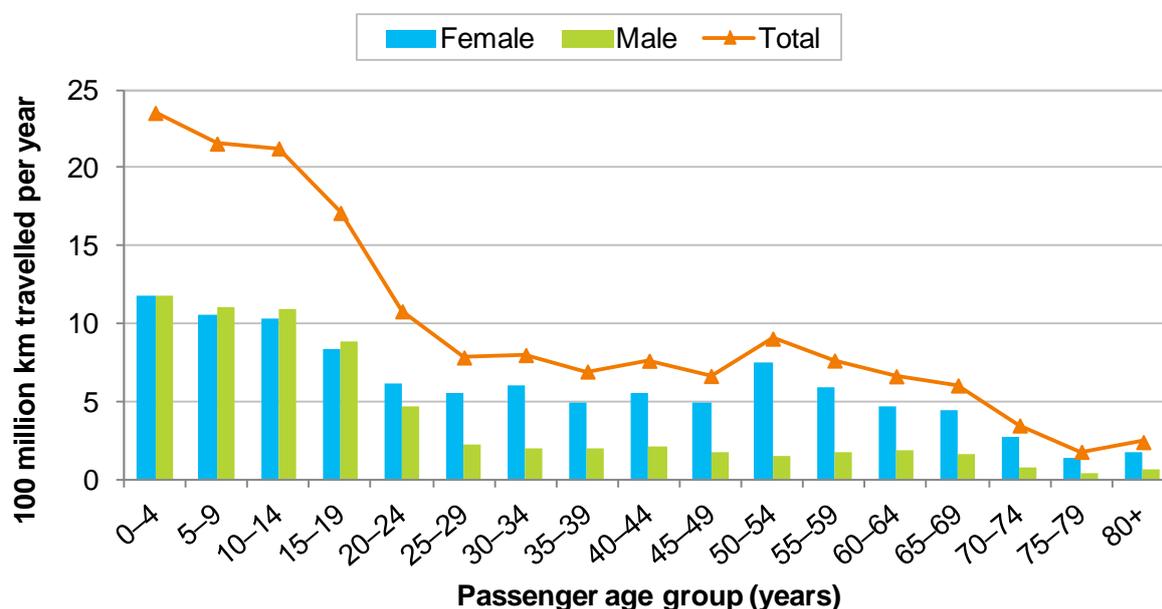
**Figure 7: Passengers in light 4 wheeled vehicles who died in motor vehicle crashes by age and gender (annual average)**



**Figure 8: Passengers in light 4 wheeled vehicles who died or were injured in motor vehicle crashes by age and gender (annual average)**



**Figure 9: Average distance passengers in light 4 wheel vehicles travel per year, by age and gender**



When the deaths and injuries are combined with the distances travelled, we get the passenger risk of death per 100 million km travelled (Figure 10) and risk of death or injury per 100 million km travelled (Figure 11). There is a peak between ages 15 and 29 years for both the risk of death and the risk of death or injury. These values have not been adjusted for fragility. There is large uncertainty associated with the oldest groups because of the small number of trips observed for these age groups.

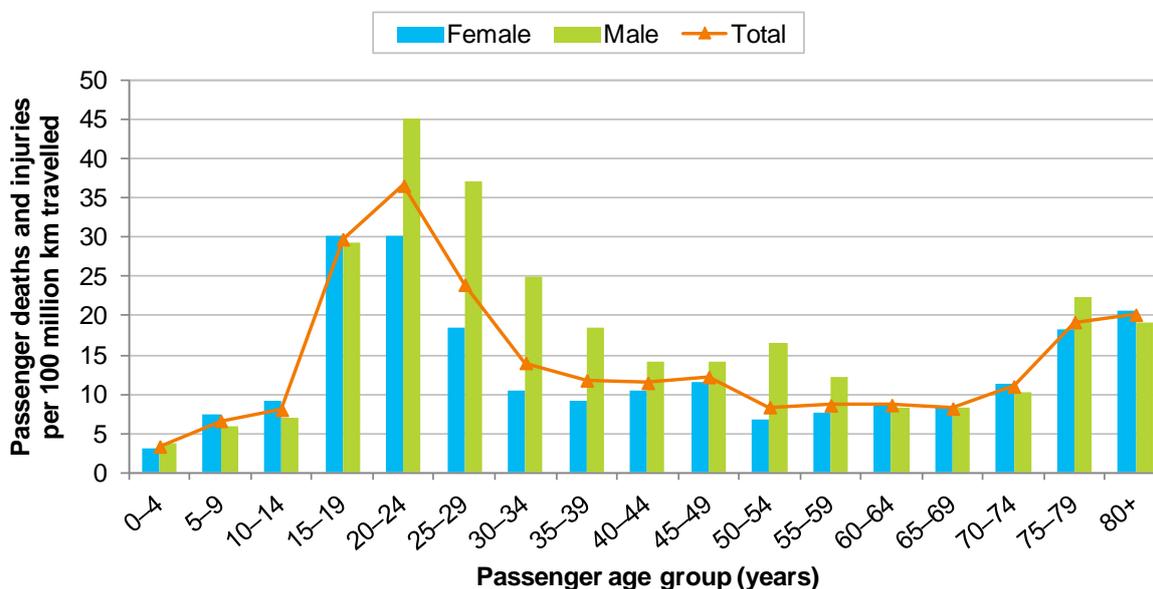
The lowest risk group are children under the age of 15 years old. Results from the Travel Survey *Driver Travel* fact sheet<sup>3</sup> show that children under 15 years old tend to be passengers with older drivers (most often parents/middle aged adults) who have a lower risk of being involved in fatal or injury crashes (Figure 5). 15–19 year old passengers are more likely to travel with drivers of their own age, who have a higher associated crash risk.

<sup>3</sup> *Driver Travel*. [www.transport.govt.nz/research/travelsurvey/reportsandfactsheets/](http://www.transport.govt.nz/research/travelsurvey/reportsandfactsheets/)

Figure 10: Passengers in light 4 wheeled vehicles who die in motor vehicle crashes per 100 million km travelled, by age and gender (not fragility adjusted)



Figure 11: Passengers in light 4 wheeled vehicles who die or are injured in motor vehicle crashes per 100 million km travelled, by age and gender (not fragility adjusted)



## Glossary

<b>Cycle</b>	Excludes off-road activities such as mountain biking.
<b>Driver</b>	In this fact sheet refers to all drivers of light 4 wheeled vehicles (cars, vans, utes, and SUVs).
<b>Injuries</b>	This includes more serious injuries such as fractures, concussions, internal injuries, crushings, severe cuts and lacerations, severe general shock necessitating medical treatment and any other injury involving removal to and detention in hospital, and injuries of a minor nature such as sprains and bruises.
<b>Light 4 wheeled vehicles</b>	Cars, station wagons, vans, utes, or SUVs.
<b>Motorcyclist</b>	Includes scooters.
<b>Passenger</b>	Passenger in a light 4 wheeled vehicle. Passengers in motorcycles, buses, trains and taxis are coded under those categories. Aircraft and boat passengers are included in the 'Other' category.
<b>SUV</b>	Sports utility vehicle. Used in this report to refer to light passenger vehicle with high wheel base and distinctive body shape. Normally, but not always, four wheel drive.
<b>Travel</b>	Includes all on-road travel by any mode; any walk which involves crossing a road or walking for 100 metres or more along a public footpath or road; cycling on a public road or footpath; some air and sea travel. Excludes off-road activities such as tramping, mountain biking, walking around the mall or around the farm.
<b>Travel mode</b>	The method of travel. Includes vehicle driver, vehicle passenger, pedestrian, cyclist, motorcycle rider or passenger, bus or train passenger, ferry or aeroplane passenger and other modes (eg horse riding).
<b>Trip distance</b>	For road-based trips, distances are calculated by measuring the distance from the start address along the roads to the finish address by the quickest (not necessarily the shortest) route. If the respondent states that the quickest route was not used, the interviewer records an intermediate point which is then used in mapping the route.
<b>Ute</b>	Utility vehicle; a light flatbed truck weighing up to 3.5 tonnes.

Typically based on a car or van model with a front cab and a flatbed instead of rear seats or luggage space.

**Walk**

Includes walkers, joggers, skateboarders and children on tricycles.