

Young Adult Road Safety—A Statistical Picture

At a glance

This paper presents latest available Australian and international statistics on the road safety of young adults. Selected key results are:

- In developed countries, road crashes account for around a quarter of all deaths in the 15–24 years age group.
- World-wide, this age group is over-represented in road crashes, with a population based annual fatality rate over 50% higher than for other age groups.
- During the last five years, road crash outcomes in this age-group have improved significantly faster than most other ages. In Australia fatalities are now 29% lower than five years ago.
- All Australian jurisdictions have achieved reductions in the last five years.
- The highest period for risk is shortly after licensure, and continues up to age 24.
- Males are over-represented in road crash fatalities generally, and even more so in young adult fatalities.
- In fatal crashes, young adults usually die as an occupant of a vehicle (77%), and often (67%) in single vehicle crashes.
- Comparing fatal road crashes involving the deaths of young adults with the total, the former are skewed towards the weekend and night-time hours.

Introduction

Road crashes are a major cause of both injury and mortality for young adults.¹ This paper presents statistics on comparisons between crashes involving the death of a young adult with those involving the deaths of older more experienced road users, as well as comparisons across time for the last decade. Significant improvements are evident in young adult fatality statistics in developed countries, and in Australia. Despite the improvements, young adults remain over-represented in crash statistics.

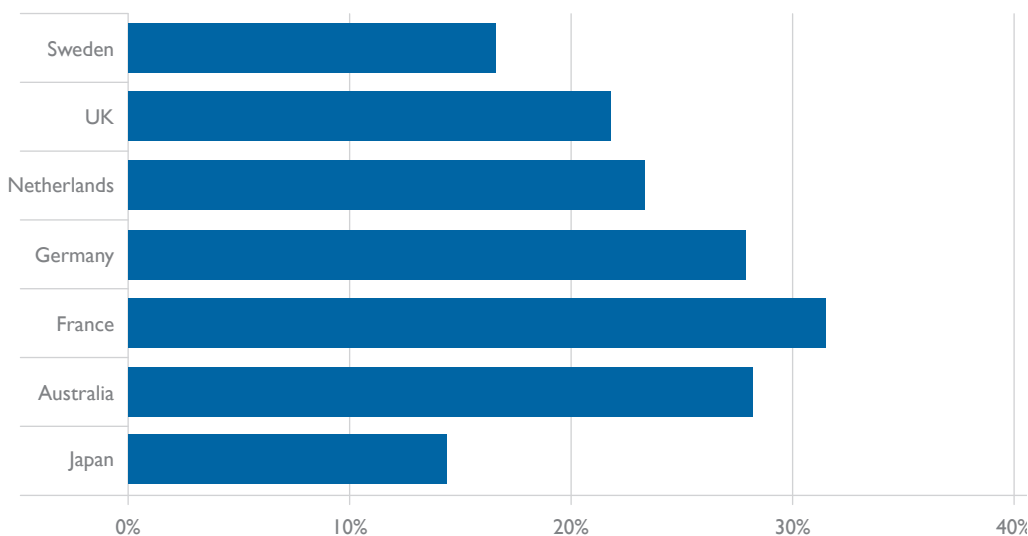
There has been a research focus on young adult road safety for over a decade. See for example ECMT (2006). Some of the increased risk carried on trips made by young or novice operators is due to both inexperience and immaturity, and further increases may be related to the interactions of these with peer passengers, night-time and week-end travel.

The structure of the paper is as follows: firstly, the international experience is summarised using the latest OECD and WHO statistics; next, a discussion around Australia's States and Territories' licensing regimes is provided, and; finally an updated set of Australian statistics is presented. The comparisons are broad and based mainly on fatalities. It is hoped nevertheless that the statistical picture presented is informative and contributes to ongoing research.

International

Road crashes are a leading cause of death for young adults. In many developed countries this cause is ranked highest. Figure 1 shows the proportion of deaths attributed to road crashes for a selection of developed countries, WHO (2008). For more detail, and a wider selection of countries see IHME (2013).

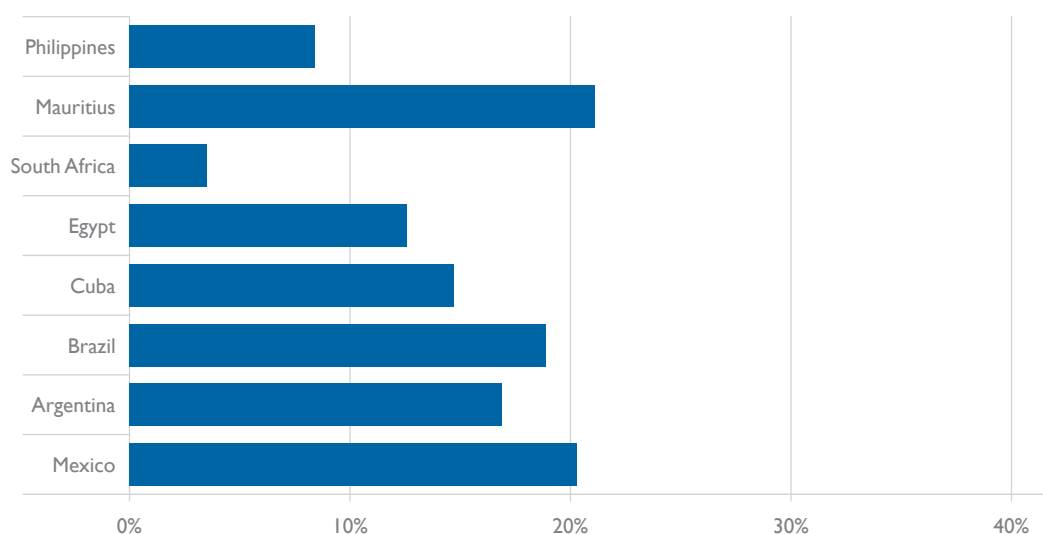
Figure 1 Road crash deaths as a proportion of all deaths of 15–24 year olds, selected developed countries 2008



In developing countries, the proportions attributed to road crashes are lower. This is due to comparative increases of disease/medical issues, and to other external causes including assault. See Figure 2.

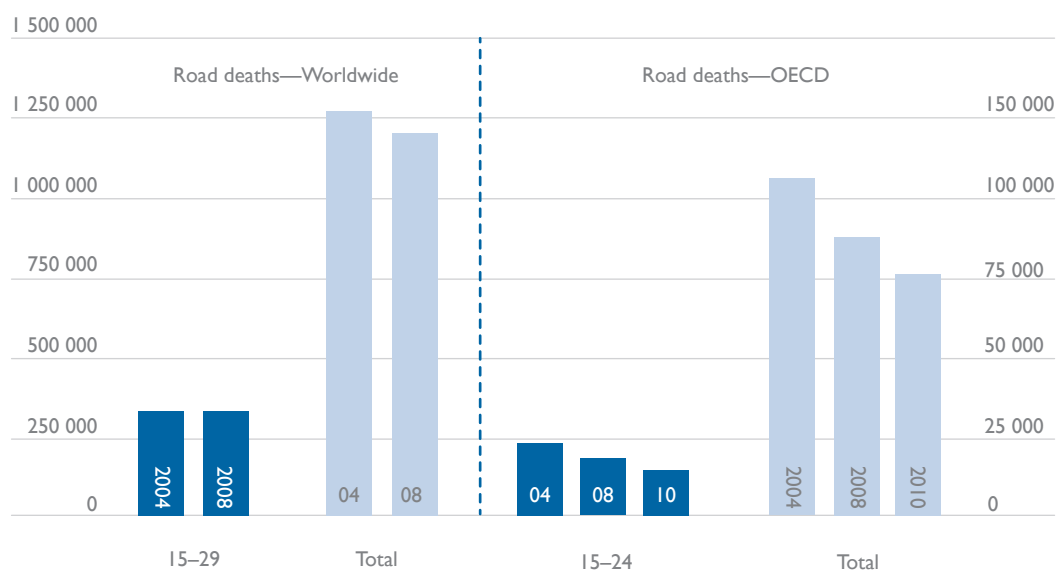
¹ 'Young adults' is a term used here for a person aged approximately between 15 and 25 years. Depending on the focus of the analysis and on data availability, 'young adults' are those with ages approximately within this age band.

Figure 2 Road crash deaths as a proportion of all deaths of 15–24 year olds, selected developing countries 2008



In absolute numbers, each year worldwide there are 360,000 people aged 15–29² killed in road crashes, WHO (2008). This is around 11% of all deaths in that age group. The total number of people killed each year in road crashes is approximately 1.3 million, Lozano (2012). The next figure shows the changes in annual road crash deaths updated to 2010.

Figure 3 Annual road crash deaths for young adults and total—Worldwide and OECD,³ 2004, 2008 and 2010



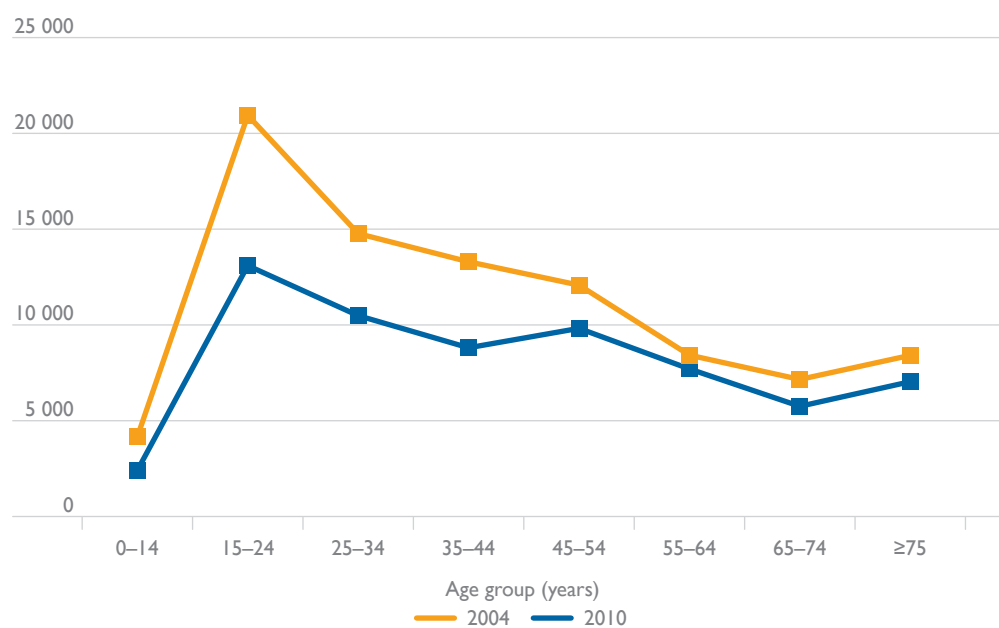
Since 2004, the reductions in developed (OECD) countries have been slightly more pronounced than the average reductions worldwide.

Comparing road crash deaths across age groups further, Figure 4 shows the spike during the young adult period. Total deaths by age group for 24 OECD nations across two years are shown.

² The relevant Global Burden of Disease (WHO) data is provided for the 15–29 years age group.

³ The 29 countries included account for 88 per cent of the total deaths across all 34 OECD nations. Age specific data was not available for the remaining five countries.

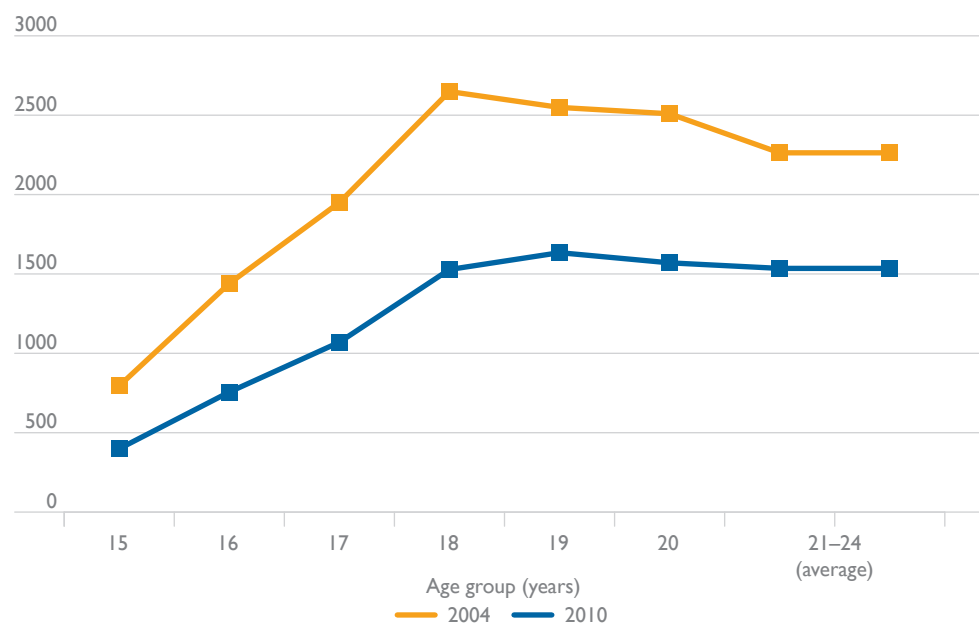
Figure 4 Annual numbers of road crashes deaths by age group—OECD Nations 2004 and 2010



Two main features shown in figure 4 are firstly that between 2004 and 2010, there were reductions in deaths for all age groups, and secondly, the numbers of deaths of people aged 15 to 24 years remains around 30 per cent higher than those in the older 10-year age groups.

The peak during the young adulthood is expanded into single year bands in Figure 5 below.

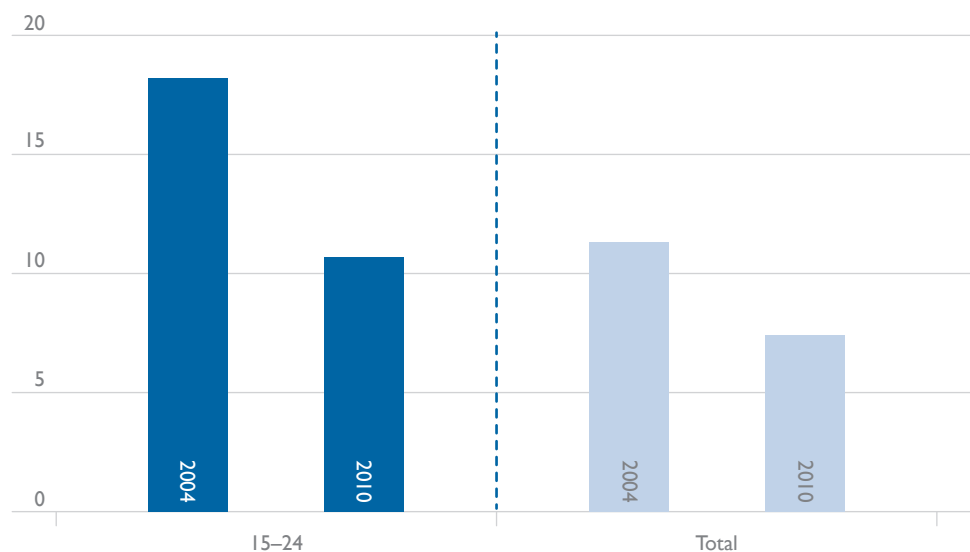
Figure 5 OECD Nations—annual numbers of road crash deaths at each year of age



Following licensure, the number of annual deaths increases rapidly and remains high through to age 24 years.

Standardising by population within age groups, the issue is even more pronounced: the rate of annual road deaths per population for young adults is more than 50% higher than that for the total population (Figure 6).

Figure 6 Rates of annual numbers of road crash deaths per 100,000 population for young adults and total—OECD Nations, 2004 and 2010



The set of statistics presented above show that since 2004 there have been significant improvements in road deaths within the young adults age group (nearly 40% reduction to 2010). Despite this improvement, this group remains significantly over-represented in fatal crashes.

Australia's Licensing Schemes for new drivers

All states and territories have graduated licensing schemes that are based around a Learner period—with stringent conditions, and a Provisional period—with conditions that aim to give the holder more experience and more freedom. The last decade has seen evolution in the designs of most jurisdictions' schemes and this evolution continues.

Age and inexperience separately and combined are both associated with increased crash risk McCartt (2009). In addition, these factors interact with the ability to manage risk in high-load situations, such as night-time travel, and carriage of passengers. The focus of this paper is *young adults* rather than novice drivers, but clearly the experience gained as a driver transitions to full licensure will affect his/her ongoing risk management and driving safety. Australia's and many other jurisdictions around the world have introduced extended learner periods and sets of restrictions on provisional licence holders that aim to increase drivers' skills *before* situations are encountered that may increase risk to unacceptable levels.

Across Australia's jurisdictions, the Learner period conditions and the rules for Provisional licence-holders vary considerably. Some of the variations in the Learner period relate to minimum tenure, numbers of supervised hours and vehicle speed limits. Learner period commonalities across Australia's jurisdictions are the minimum age (16 years) and the BAC limit (zero). Similarly, variations exist in jurisdictions' Provisional licence rules. Most have two stages (P1 and P2), with a minimum tenure in both. Some also have restrictions on:

- Vehicle travel speed
- Use of high-powered vehicles
- Carriage of peer-aged passengers
- Night-time travel

The more stringent regimes restrict the type of vehicle allowed to be driven, the time of day that carriage of peer passengers is allowed, maximum vehicle speed and hands-free mobile phone use. Less stringent systems do not include night-time travel restrictions or peer passenger restrictions.

It is not possible to evaluate all specific changes in Australia that have occurred in the last decade, but there are some recent published evaluations focusing on major changes in specific jurisdictions, for example Healy (2012). Also, in foreign jurisdictions, evaluations including meta-analyses are being published, for example Vanlaar (2009). These reviews demonstrate that significant improvements have occurred as a result of the changes to licencing rules, and highlight the most effective changes in terms of crash outcomes. These include minimum provisional age McCartt (2009), night-time restrictions Williams et al. (2010) and passenger carriage, Fell (2011).

Compared to a decade ago, in Australia today there are much more stringent rules for novice/provisional drivers. Fatality statistics over the last decade show that of all age groups, the young adult group (which includes almost all novice and provisional drivers) has seen the greatest improvement. The fatality outcomes are explored in greater detail in the next section.

Australia's Young Adult Road Safety Statistics

The age patterns in Australia's road fatality statistics⁴ are similar to that of the OECD countries discussed in Section 1, and this section replicates some of those analyses. Only minimal information is presented for non-fatal injury. The age structure for these appears similar to that of fatally injured road users, but the data is older and the trend over the last decade is less clear.

The reductions in deaths over the last decade (to 2012) have been significant, especially in certain age groups – including young adults. During the last half of the decade, road fatalities decreased much faster than during the first half. The rate of deaths per population for young adults remains more than 50% higher than that of the general population.

Table 1 and Figure 7 present latest available data for Australian road deaths by age.

Table 1 Annual numbers of road crash deaths by age group—Australia 2002, 2007 and 2012

Age group	2002	2007	2012	Per cent change (2002–2007)	Per cent change (2007–2012)
0-14	84	66	52	-21%	-21%
15-24	449	385	273	-14%	-29%
25-34	350	323	248	-8%	-23%
35-54	453	448	334	-1%	-25%
55-64	116	134	151	16%	13%
≥ 65	262	246	248	-6%	1%
Total	1,715	1,603	1,307	-7%	-18%

Over the last five years, the total reduction in annual deaths was 18%. In all age groups below age 55, the reductions have been larger. Figure 7 presents this information in a line chart. Three years are shown.

⁴ Australian road crash fatality data is sourced from Department of Infrastructure and Regional Development (2013). Population data are sourced from ABS (2013).

Figure 7 Annual numbers of road crashes deaths by age group—Australia, 2002, 2007 and 2012

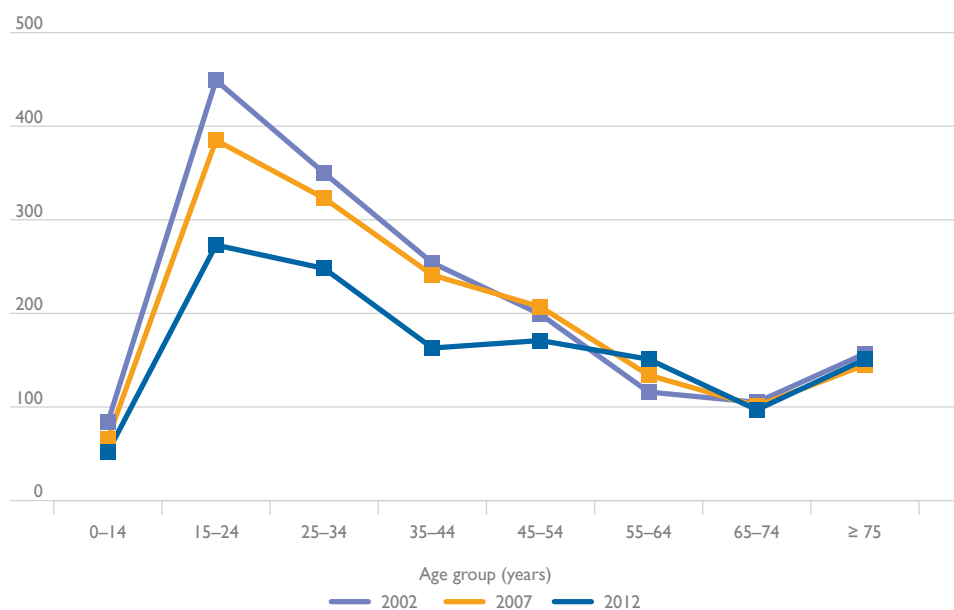


Figure 8 standardises this by population.

Figure 8 Annual numbers of road crashes deaths per 100,000 population by age group—Australia, 2002, 2007 and 2012

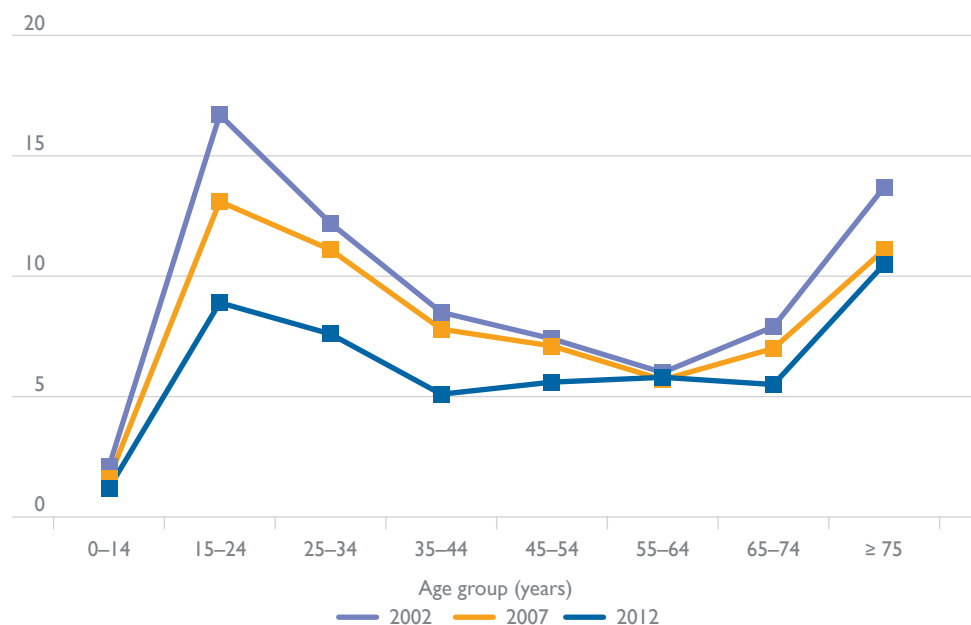
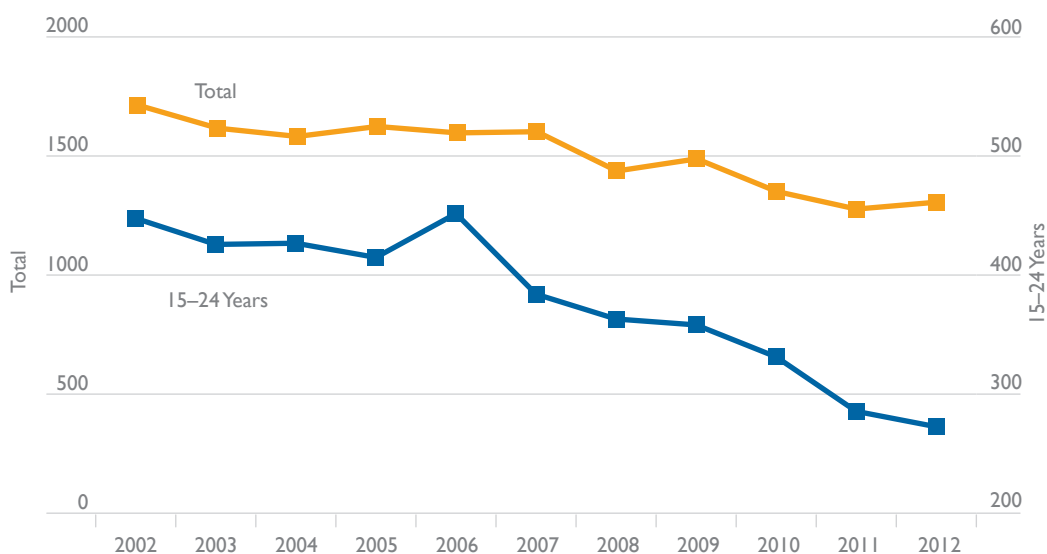


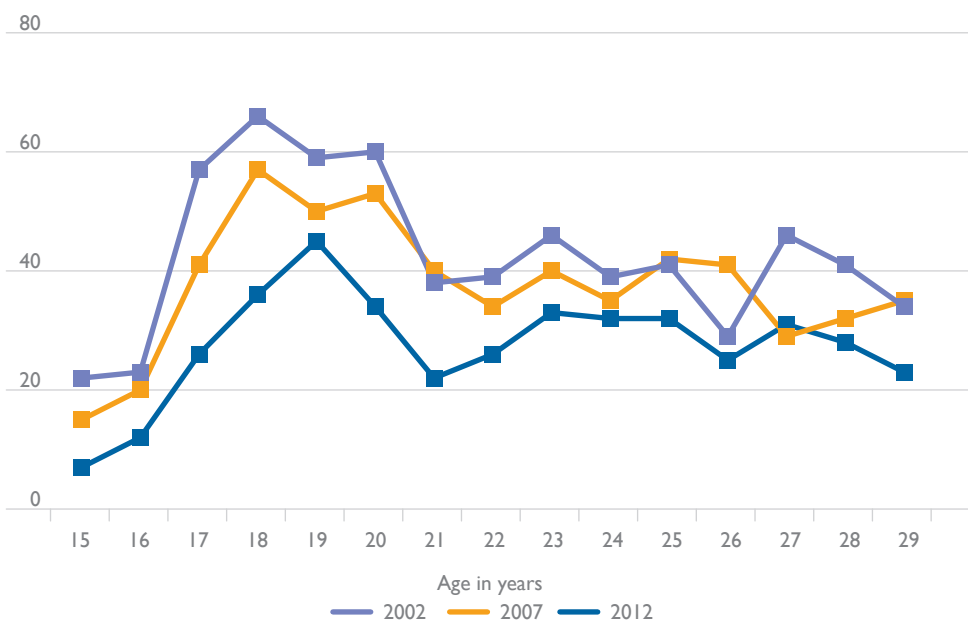
Figure 9 focuses on the time trends. As can be seen in figures 7, 8 and 9, the reductions for young adults have been significant, especially in the last five years. Since 2007, young adult road deaths have declined by 29%. This contrasts with a decline for all Australian road deaths of 18%.

Figure 9 Annual road deaths in Australia—total deaths and 15–24 years age group



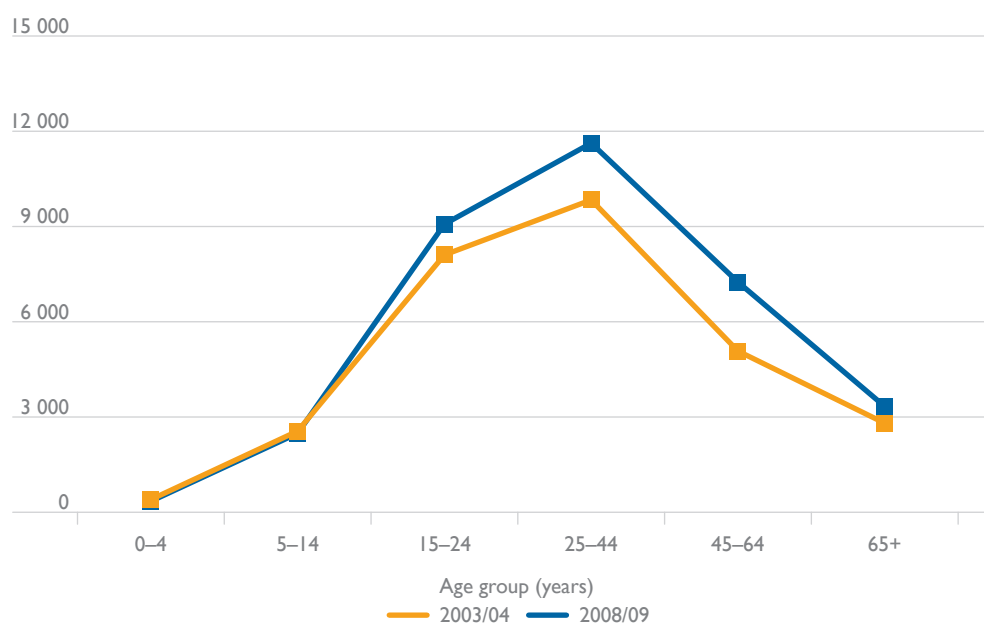
Road deaths by individual year of age are given in Figure 10.

Figure 10 Annual numbers of road crash deaths at each year of age



Like in Figure 5 (OECD), numbers of deaths increase through the late teen years and peak around ages 18 to 19. Non-fatal injuries are presented in Figure 11, AIHW (2012).

Figure 11 Annual hospitalisations for road crashes injuries by age group—Australia, 2003/04, 2008/09



The age pattern in hospitalizations is very similar to fatalities (Figure 7), but the trend is increasing rather than decreasing.

Jurisdictional young adult counts and rates per population are presented in Tables 2 and 3 respectively. There are strong declines in all jurisdictions except the Northern Territory and the Australian Capital Territory. The fitted lines used for the average annual reductions are based on relatively noisy data for these smaller jurisdictions.

Table 2 Annual road deaths in Australia by jurisdiction—15–24 years age group

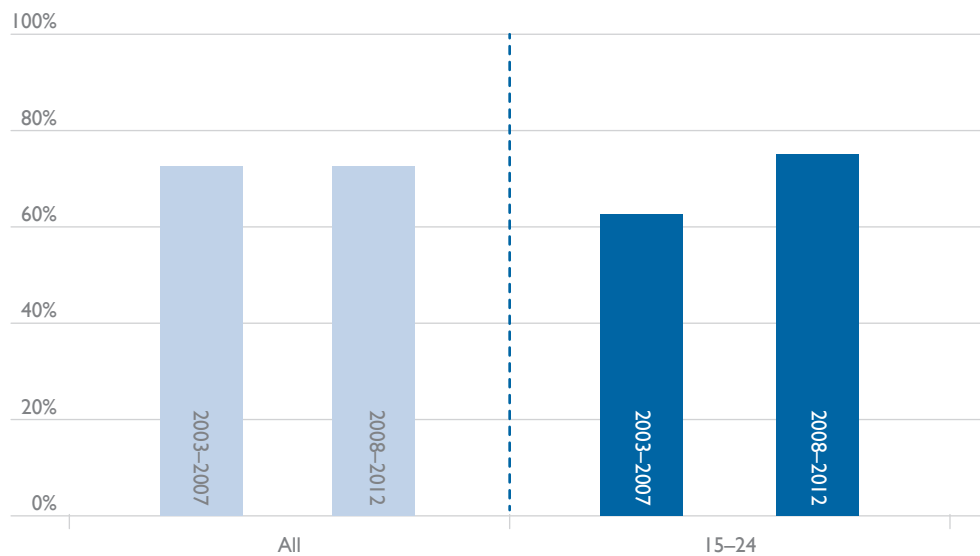
Year	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Australia
2003	121	82	90	43	62	10	17	2	427
2004	115	94	96	36	57	19	10	1	428
2005	109	101	87	48	49	8	6	8	416
2006	146	80	90	29	71	19	14	4	453
2007	91	83	91	36	54	12	14	4	385
2008	91	73	79	29	59	9	21	3	364
2009	99	69	78	44	43	15	9	2	359
2010	97	71	61	31	47	7	14	4	332
2011	79	71	59	11	48	4	13	1	286
2012	81	64	65	17	37	3	4	2	273
Average annual per cent change over decade									
	-4.7	-3.9	-5.1	-10.2	-4.4	-13.2	-4.7	-3.5	-5.2

Table 3 Annual road deaths per 100,000 population by jurisdiction—15–24 years age group

Year	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Australia
2003	13.4	12.1	16.8	21.1	22.2	15.8	55.4	3.8	15.6
2004	12.6	13.7	17.5	17.4	20.1	29.7	32.4	1.9	15.4
2005	11.9	14.4	15.4	22.8	16.9	12.4	18.9	14.8	14.7
2006	15.7	11.2	15.6	13.6	24.0	29.2	43.0	7.4	15.7
2007	9.7	11.3	15.4	16.7	17.7	18.4	41.4	7.2	13.1
2008	9.5	9.7	13.1	13.3	18.7	13.7	60.1	5.3	12.1
2009	10.2	9.0	12.6	20.0	13.2	22.6	25.1	3.5	11.7
2010	10.0	9.2	9.8	14.0	14.3	10.5	38.6	6.9	10.8
2011	8.2	9.2	9.4	5.0	14.5	6.0	36.6	1.7	9.3
2012	8.4	8.3	10.3	7.7	10.9	4.6	11.3	3.5	8.9
Average annual per cent change over decade									
	-5.5	-5.4	-6.9	-11.1	-6.6	-13.6	-6.5	-4.6	-6.5

The remaining comparisons mostly compare the first half of the last decade with the second. Crash characteristics are presented, showing both change over time and young adult versus total. More detail is found in MUARC (2009).

Figure 12 Deaths of males as a proportion of total deaths, 2002–2007 and 2008–2012



Males account for 72% of deaths in total (unchanged over the decade), and 75% of young adult deaths.

Table 4 Proportion of deaths by road user

	All		15 to 24	
	2003–07	2008–12	2003–07	2008–12
Occupants	70%	68%	78%	77%
Pedestrians	14%	13%	8%	9%
Motorcyclists	14%	16%	13%	14%
Other	3%	3%	2%	1%
Total	100%	100%	100%	100%

Compared to all fatalities, fewer young adults are pedestrians and more are vehicle occupants. The respective proportions have not changed over the decade.

Table 5 looks at the type of fatal crash (single vehicle or multiple vehicle) for vehicle occupant deaths.

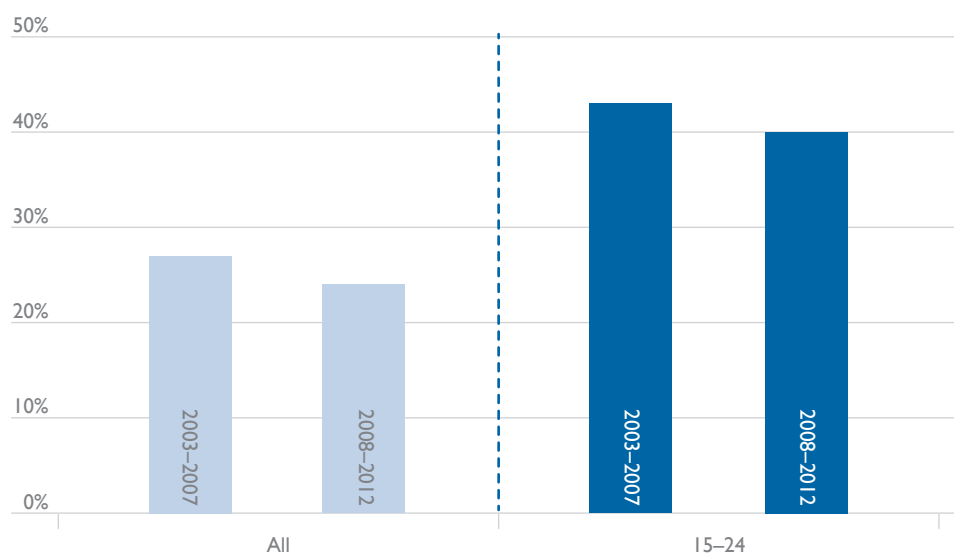
Table 5 Proportion of Occupant road deaths by crash type

	All		15 to 24	
	2003–07	2008–12	2003–07	2008–12
Single	55%	55%	66%	67%
Multiple	45%	45%	34%	33%
Total	100%	100%	100%	100%

The distributions have not changed over the decade but young adults have a greater proportion of single vehicle crashes.

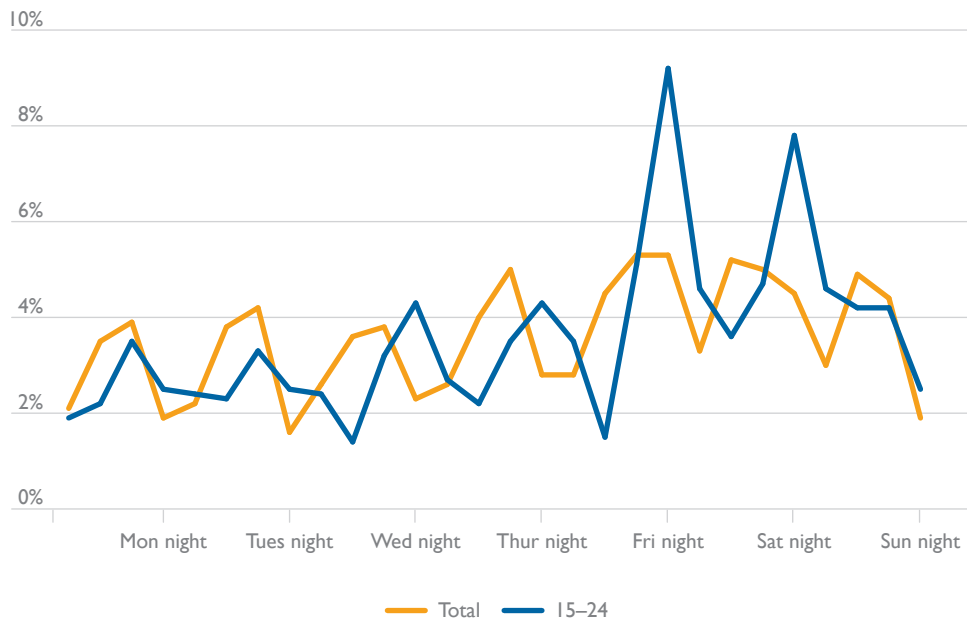
The final two analyses look at time of day and week. Defining 'night-time' in Figure 13 as 9pm to 5am, such crashes account for around 28% of all fatal crashes, but approximately 40% of crashes involving the death of young adults.

Figure 13 Proportion of road deaths occurring at night—total deaths and 15–24 years



In Figure 14, the week is divided into 28 six-hour blocks, and the percentage of fatalities within each is shown. The 'Night' in this figure category is from 9pm one day to 3am the next.

Figure 14 Proportion of road deaths (2008 to 2012) by time of week total deaths and 15–24 years



Looking at the distribution of all fatal crashes, an over-representation occurs in the 'Evening' period (3pm to 9pm) (where most of the peaks occur in the orange series). For crashes in which young adults die, there is a strong bias towards Friday and Saturday nights (blue).

This paper uses available fatality data to highlight some recent key statistics on young adults road safety outcomes. There are clear differences in the crash risk of young adults versus older road users, and these differences result in distinct crash characteristics and higher crash counts. It is clear however that declining trends in fatalities are evident in the raw counts.

There are many other relevant issues and discussions around these may be found in the references provided.

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© Commonwealth of Australia 2013
ISSN 1440-9593
ISBN 978-1-922205-37-7
October 2013/INFRA 1928

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This publication should be attributed in the following way; Bureau of Infrastructure, Transport and Regional Economics (BITRE), 2013, *Young Adult Road Safety—A Statistical Picture*, Information Sheet 51, BITRE, Canberra.

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Department of Infrastructure and Regional Development
Bureau of Infrastructure, Transport and Regional Economics (BITRE)
GPO Box 501, Canberra ACT 2601, Australia

Telephone: (international) +61 2 6274 7210
Fax: (international) +61 2 6274 6855
Email: bitre@infrastructure.gov.au
Website: www.bitre.gov.au