

Estimating road trauma in the Australian Indigenous population

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Abstract

This report compares the annual road death rate of both Indigenous and non-Indigenous Australians in three jurisdictions, which currently collect this information, and then estimates the Indigenous road toll Australia-wide. Two conclusions can be drawn from the analyses in this report. First, road crashes account for a greater proportion of all deaths in the Indigenous population than the non-Indigenous population. Secondly, based on the Australian Indigenous road death estimates, the road death rate in the Indigenous population may be three times higher than that of the non-Indigenous population. It is estimated that in 1997 there were 31 Indigenous deaths per 100,000 population. This is three times the estimate for the non-Indigenous population (10 deaths per 100,000 population).

Keywords

INDIGENOUS ROAD TRAUMA

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EXECUTIVE SUMMARY

This report compares the annual road death rate of both Indigenous and non-Indigenous Australians in three jurisdictions, which currently collect this information, and then estimates the Indigenous road toll Australia-wide. Two conclusions can be drawn from the analyses in this report. First, road crashes account for a greater proportion of all deaths in the Indigenous population than the non-Indigenous population. Secondly, based on the Australian Indigenous road death estimates the road death rate in the Indigenous population may be three times higher than that of the non-Indigenous population.

Since 1994, the Australian Bureau of Statistics has published data on the causes of death in the Indigenous populations of Western Australia, South Australia and the Northern Territory. Over the period 1994 to 1997, road crashes represented 5.6% of all deaths in the combined Indigenous populations of these jurisdictions. This is comparable to diabetes (6.7%) and stroke (6.3%) as a major cause of death. In contrast, road crashes are the lowest ranking of the main causes of death for the non-Indigenous populations in the same jurisdictions, making up only 1.7% of all causes of death.

The number of deaths for every 100,000 population is a measure of public health risk associated with road use. The available mortality data is used in conjunction with population data to generate road death rates for the Indigenous and non-Indigenous populations in Western Australia, South Australia and the Northern Territory. The total road crash death rate over the four years is 39 deaths per 100,000 Indigenous persons and 12 deaths per 100,000 non-Indigenous persons.

The available road death data and the estimated Indigenous population for each of Australia's States and Territories were then used to estimate the number of Indigenous road deaths Australia-wide. Two methods were employed. The first is a simple pro-rata method and the second (preferred method) takes into account possible differences in the road death rates between each of the States and Territories.

Using the second method it is estimated that in 1997 there were 31 Indigenous deaths per 100,000 population. This is three times the estimate for the non-Indigenous population (10 deaths per 100,000 population). The simple pro-rata method results in a slightly higher estimate of Indigenous deaths (35 deaths per 100,000 population).

Reliable data on the extent of road trauma are required to develop adequate road safety countermeasures. There is a clear need for improved information on the extent of involvement of Indigenous people in serious road crashes. The Commonwealth is currently supporting an initiative which should assist in meeting this goal. The National Coronial Information System, under development by Monash University, will allow the identification Australia-wide of injury deaths involving Indigenous people.

OBJECTIVE

The purpose of this paper was to identify the differences in road fatality rates between the Indigenous and non-Indigenous populations of Western Australia, South Australia and the Northern Territory and then estimate the number of road related fatalities in the Indigenous population Australia-wide.

METHOD

Since 1994, the Australian Bureau of Statistics has published data on the causes of death in the Indigenous populations of Western Australia, South Australia and the Northern Territory.

This paper uses the Australian Bureau of Statistics published mortality data from Causes of Death Australia and Australian Bureau of Statistics population data from Australian Demographic Statistics, for both Indigenous and non-Indigenous Australians. Projected population figures for 1997 Indigenous Australians, are averages of low series and high series figures from Australian Demographic Statistics. For the purpose of some analyses the number of Indigenous road deaths and Indigenous population figures were combined for Western Australia, South Australia and the Northern Territory.

This paper presents the per-capita rate of road deaths in the Australian Indigenous population compared with non-Indigenous population in the three jurisdictions where Indigenous deaths are separately recorded. These rates are then used in conjunction with estimated Indigenous population figures to estimate the national Indigenous per-capita road death rate.

RESULTS

Causes of death

Figure 1 compares road crashes to seven other main causes of death for the combined Indigenous population of Western Australia, South Australia and the Northern Territory for the years 1994 – 1997 combined. Figure 2 shows the same information for the non-Indigenous population. For the Indigenous population, road crashes, which account for 5.6% of all deaths, are comparable to stroke (6.3%) and diabetes (6.7%), and are greater than suicide (3%) as a major cause of death. In contrast, road crashes are the lowest ranking of the main causes of death for the non-Indigenous population, making up only 1.7% of all causes of death. Road crashes are comparable to both suicide and diabetes as a cause of death in the non-Indigenous population.

Figure 1: Main causes of death as percentages of all causes of death in the Indigenous population of Western Australia, South Australia and the Northern Territory for the years 1994 – 1997.

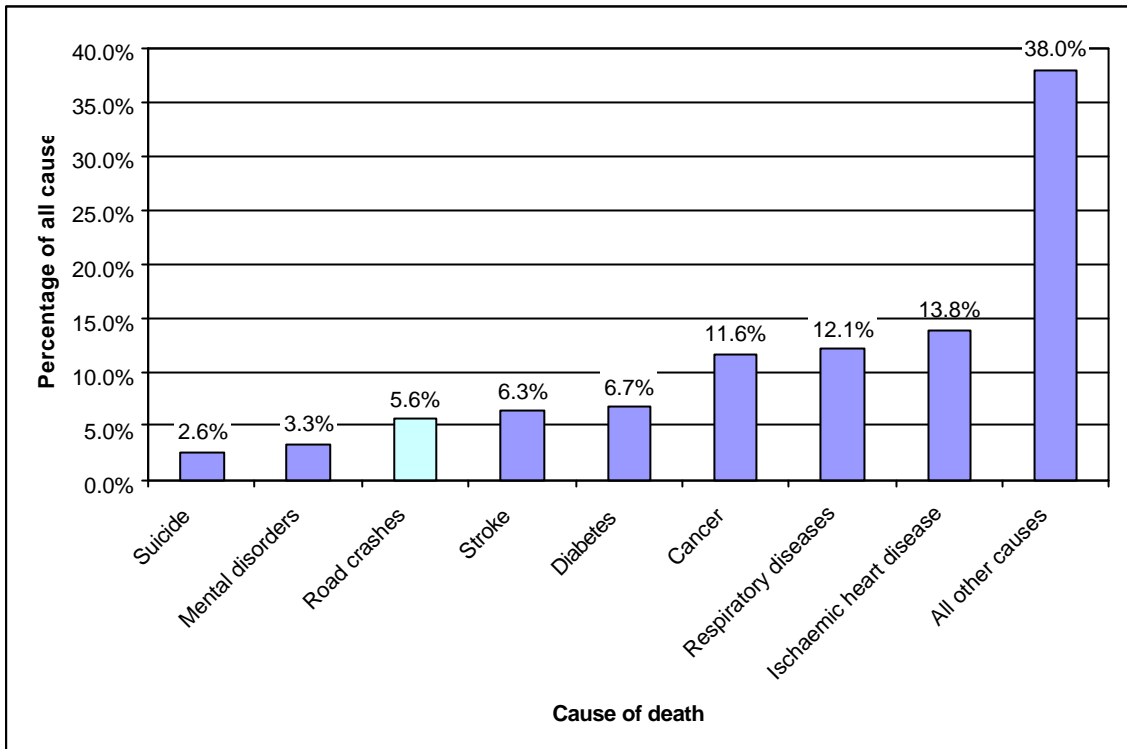
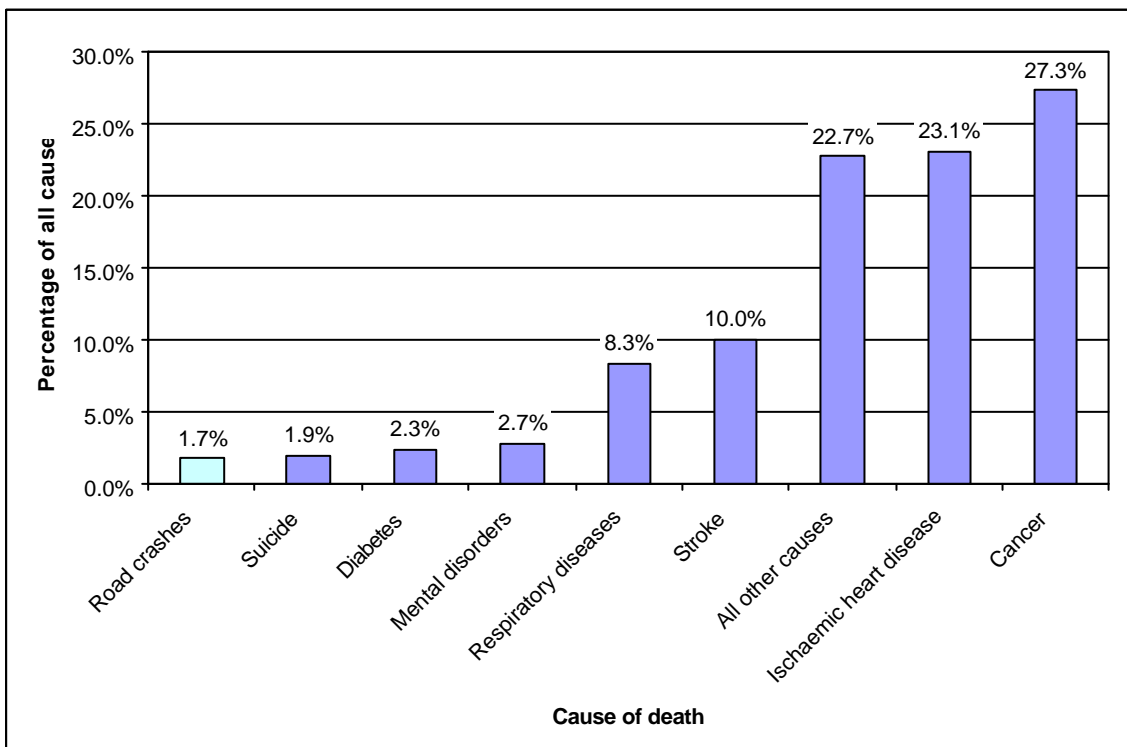


Figure 2: Main causes of death as percentages of all causes of death in the non-Indigenous population of Western Australia, South Australia and the Northern Territory for the years 1994 – 1997.



Individual trends in Western Australia, South Australia and the Northern Territory

A. Western Australia

The population and road death figures for the Indigenous and non-Indigenous populations of Western Australia are shown in Table 1 and Figure 3 for the years 1994 – 1997.

It is evident that the rate of death on the roads is much greater for Indigenous people than for the rest of the State's population. Over the four-year period, the annual rate for Indigenous people was 39 deaths per 100,000 persons, which is over three times the non-Indigenous rate of 12 deaths per 100,000 persons.

It can be seen from Figure 3 that the road death rate for the Indigenous population increased from 1994 to 1996, and then decreased substantially in 1997. The road death rate for the non-Indigenous population remained at an approximately constant level over the four years.

Table 1: Road deaths per 100,000 people in the Indigenous and non-Indigenous populations of Western Australia.

Year	Population	Road deaths	Road deaths per 100,000 population
1994			
Indigenous	53 910	21	39
Non-Indigenous	1 662 685	205	12
1995			
Indigenous	55 031	23	42
Non-Indigenous	1 694 288	186	11
1996			
Indigenous	56 205	26	46
Non-Indigenous	1 725 727	215	12
1997			
Indigenous	57 803	16	28
Non-Indigenous	1 753 324	183	10
Total yearly rate 1994 – 1997			
Indigenous	*55 737	*22	39
Non-Indigenous	*1 709 006	*197	12

* Average for 1994 - 1997

Figure 3: Road deaths per 100,000 population in the Indigenous and non-Indigenous populations of Western Australia for the years 1994 – 1997.

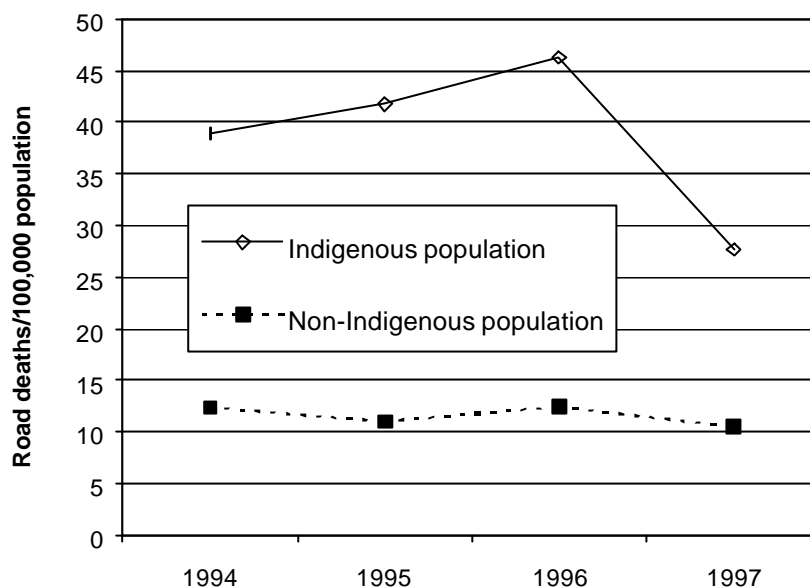
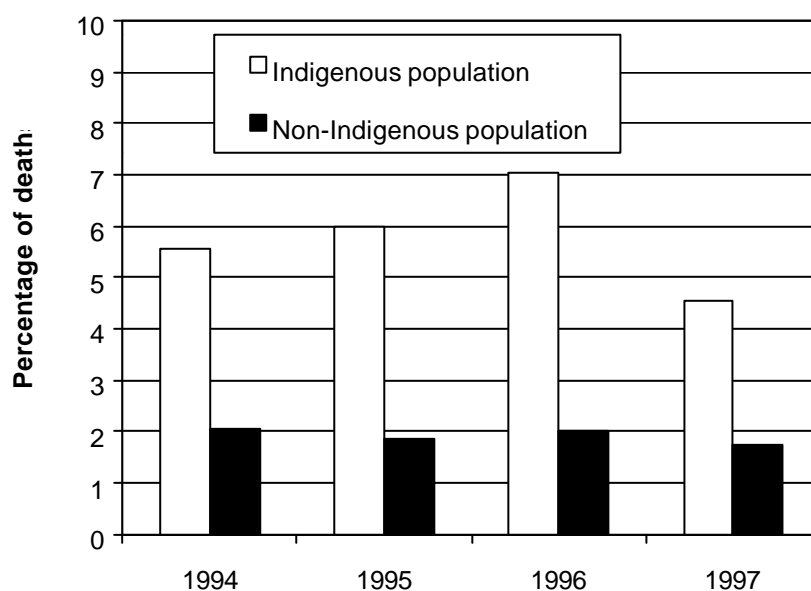


Figure 4: Road deaths as a percentage of all causes of deaths in the Indigenous and non-Indigenous populations of Western Australia for the years 1994 – 1997.



	1994	1995	1996	1997	1994-1997
Indigenous	5.6%	6.0%	7.0%	4.6%	5.8%
Non-Indigenous	2.1%	1.9%	1.8%	1.8%	1.9%

Figure 4 displays road deaths as a percentage of all deaths. It illustrates the greater proportion of road deaths in Indigenous deaths compared with non-Indigenous deaths. Between 1994 and 1997, 5.8% of Indigenous deaths were due to road crashes while the figure for non-Indigenous people is 1.9%.

B. South Australia

The population and road death figures over the years 1994 – 1997 for the Indigenous and non-Indigenous populations of South Australia are shown in Table 2 and Figure 5. The total four-yearly rate for Indigenous people was 33 deaths per 100,000 persons, and 10 deaths per 100,000 persons for the non-Indigenous group. Similar to Western Australia, it can be seen that the Indigenous population has a road death rate that is over three times higher than the non-Indigenous population.

Figure 5 indicates that the Indigenous road death rate in South Australia has increased over the years 1994 to 1997, while for the non-Indigenous population it remained steady from 1994 to 1996, and then decreased in 1997.

Table 2: Road deaths per 100,000 population in the Indigenous and non-Indigenous populations of South Australia.

Year	Population	Road deaths	Road deaths per 100,000 population
1994			
Indigenous	21 083	6	28
Non-Indigenous	1 446 453	156	11
1995			
Indigenous	21 557	7	32
Non-Indigenous	1 449 688	160	11
1996			
Indigenous	22 051	7	32
Non-Indigenous	1 454 151	166	11
1997			
Indigenous	22 736	9	40
Non-Indigenous	1 460 133	128	9
Total yearly rate 1994 – 1997			
Indigenous	*21 857	*7	33
Non-Indigenous	*1 452 606	*153	10

* Average for 1994 - 1997

Figure 5: Road deaths per 100,000 population in the Indigenous and non-Indigenous populations of South Australia for the years 1994 – 1997.

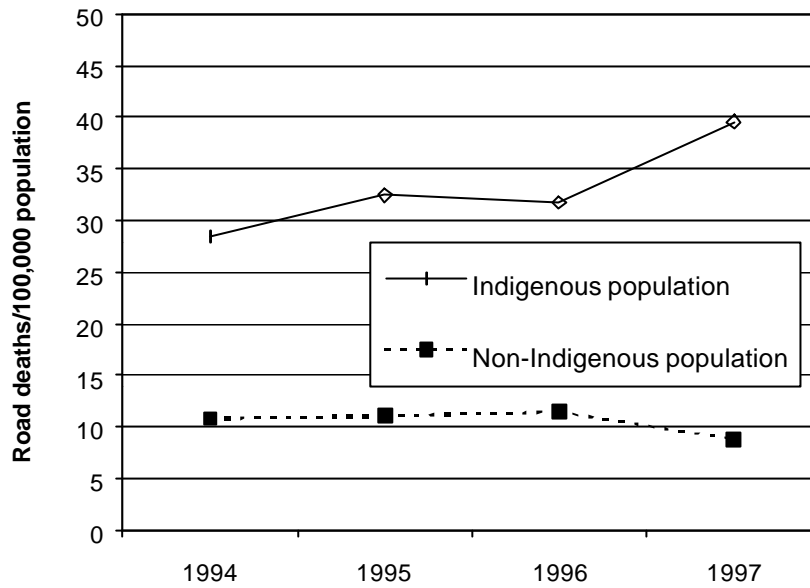
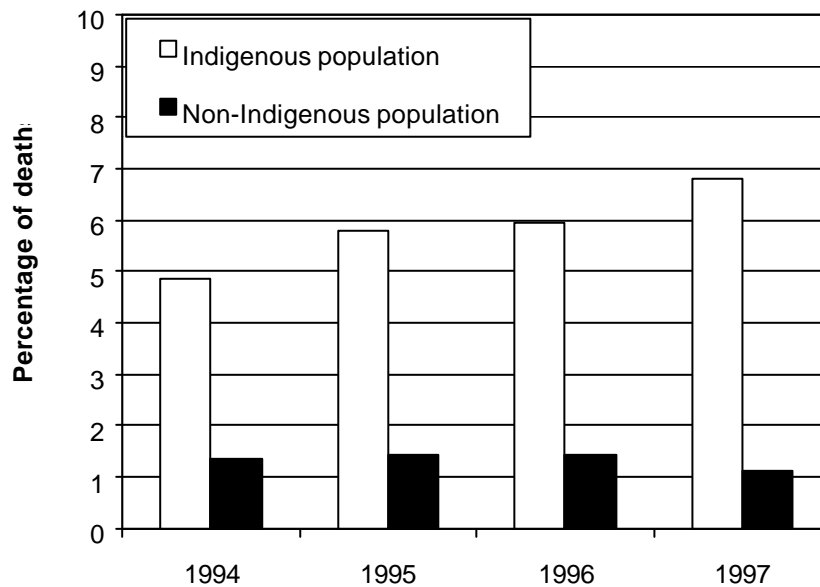


Figure 6: Road deaths as a percentage of all causes of deaths in the Indigenous and non-Indigenous populations of South Australia for the years 1994 – 1997.



	1994	1995	1996	1997	1994 – 1997
Indigenous	4.9%	5.8%	5.9%	6.8%	5.9%
Non-Indigenous	1.3%	1.4%	1.4%	1.1%	1.3%

Figure 6 shows road deaths as a percentage of all deaths in the Indigenous and non-Indigenous populations of South Australia. Road deaths in the Indigenous community made up a greater proportion of deaths between 1994 and 1997 (5.8%) than in the non-Indigenous population (1.3%).

C. Northern Territory

Table 3 shows the figures for the population and road death rate of the Indigenous and non-Indigenous populations of the Northern Territory, and Figure 7 shows the rate of deaths on the road for the two populations in the years 1994 – 1997. As in Western Australia and South Australia, the Indigenous people have a higher road death rate: 41 deaths per 100,000 persons over the four years, which is nearly two times the rate for the non-Indigenous people, 22 deaths per 100,000 persons.

The Indigenous and non-Indigenous populations of the Northern Territory experienced a similar trend in road death rates from 1994 to 1997 (Figure 7). The road death rates increased from 1994 to 1996 and then came down in 1997.

Table 3: Road deaths per 100,000 people in the Indigenous and non-Indigenous populations of the Northern Territory.

Year	Population	Road deaths	Road deaths per 100,000 population
1994			
Indigenous	49 788	16	32
Non-Indigenous	125 173	23	18
1995			
Indigenous	50 811	22	43
Non-Indigenous	129 668	28	22
1996			
Indigenous	51 876	24	46
Non-Indigenous	133 408	40	30
1997			
Indigenous	52 965	22	42
Non-Indigenous	136 221	25	18
Total yearly rate 1994 – 1997			
Indigenous	*51 360	*21	41
Non-Indigenous	*131 118	*29	22

* Average for 1994 - 1997

Figure 8 shows deaths on the road as a percentage of all causes of deaths in Indigenous and non-Indigenous populations, for the years 1994 – 1997. Unlike Western Australia and South Australia, road crashes make up slightly higher proportion of deaths in the non-Indigenous population (6.9%) than in the Indigenous population (5.4%).

Figure 7: Road deaths per 100,000 population in the Indigenous and non-Indigenous populations of the Northern Territory for the years 1994 – 1997.

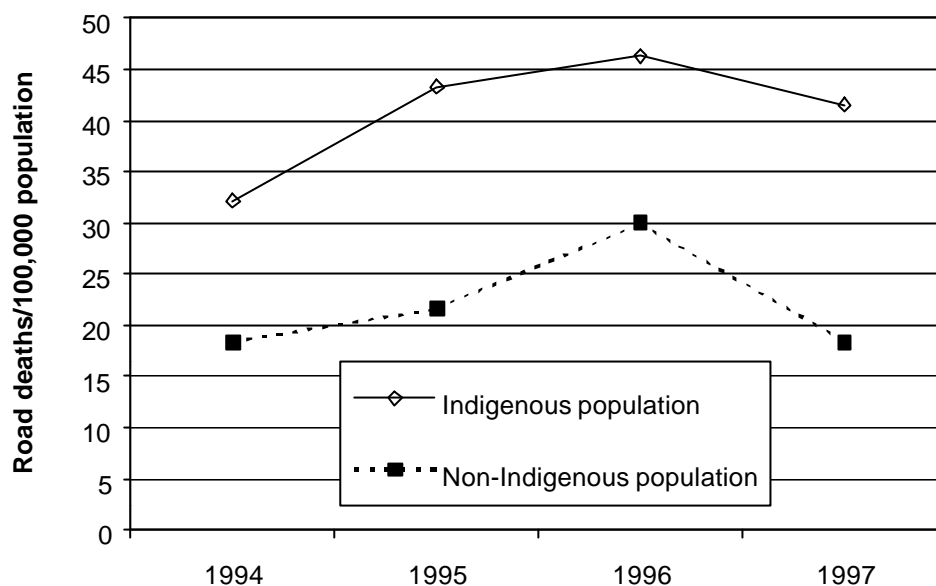
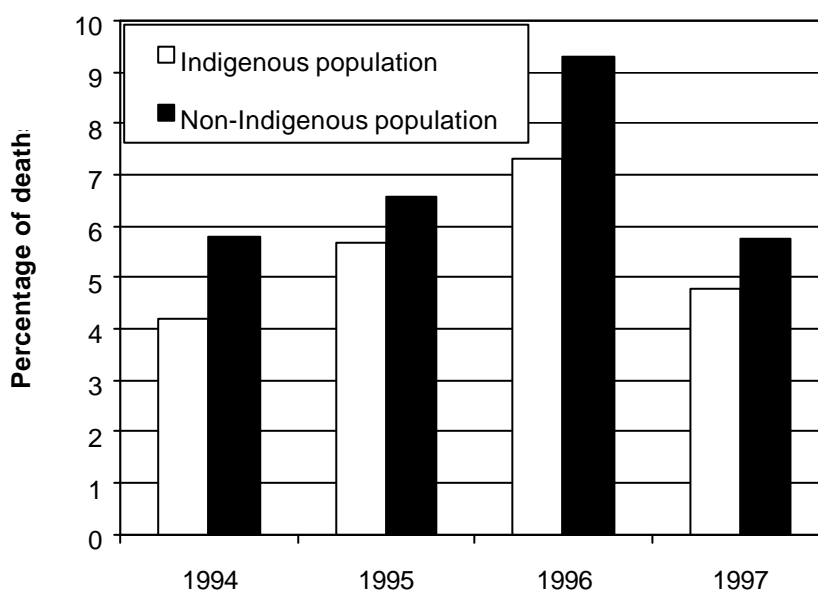


Figure 8: Road deaths as a percentage of all causes of deaths in the Indigenous and non-Indigenous populations of the Northern Territory for the years 1994 – 1997.



	1994	1995	1996	1997	1994 – 1997
Indigenous	4.2%	5.7%	7.3%	4.8%	5.4%
Non-Indigenous	5.8%	6.6%	9.3%	5.8%	6.9%

Combined Trends for Western Australia, South Australia and the Northern Territory

Table 4 shows the population figures and road death rate for Western Australia, South Australia and the Northern Territory combined. Figure 9 shows the road death rate for the two States and Territory over the years 1994 – 1997, and Figure 10 shows the road death rate as a percentage of all deaths for the same figures. The total road death rate for the four years is 39 deaths per 100,000 Indigenous persons and 12 deaths per 100,000 non-Indigenous persons. Consistent with the trends already displayed by the individual States and Territory, the rate for the Indigenous population is three times higher than the rate for the non-Indigenous population.

Table 4: Road deaths per 100,000 population in the Indigenous and non-Indigenous population of Western Australia, South Australia and the Northern Territory.

Year	Population	Road deaths	Road deaths per 100,000 people
1994			
Indigenous	124 781	43	34
Non-Indigenous	3 234 311	384	12
1995			
Indigenous	127 399	52	41
Non-Indigenous	3 273 644	374	11
1996			
Indigenous	130 132	57	44
Non-Indigenous	3 313 286	421	13
1997			
Indigenous	133 503	47	35
Non-Indigenous	3 349 677	336	10
Total yearly rate 1994 – 1997			
Indigenous	*128 954	*50	39
Non-Indigenous	*3 292 730	*379	12

* Average for 1994 - 1997

The road death rate in the non-Indigenous population has stayed at a reasonably constant level over the four years examined, with a downward trend from 1996 to 1997. In the Indigenous population, the rate has increased steadily from 1994 to 1996, but has decreased considerably from 1996 to 1997.

Figure 9: Road deaths per 100,000 population in the Indigenous and non-Indigenous populations of Western Australia, South Australia and the Northern Territory for the years 1994 – 1997.

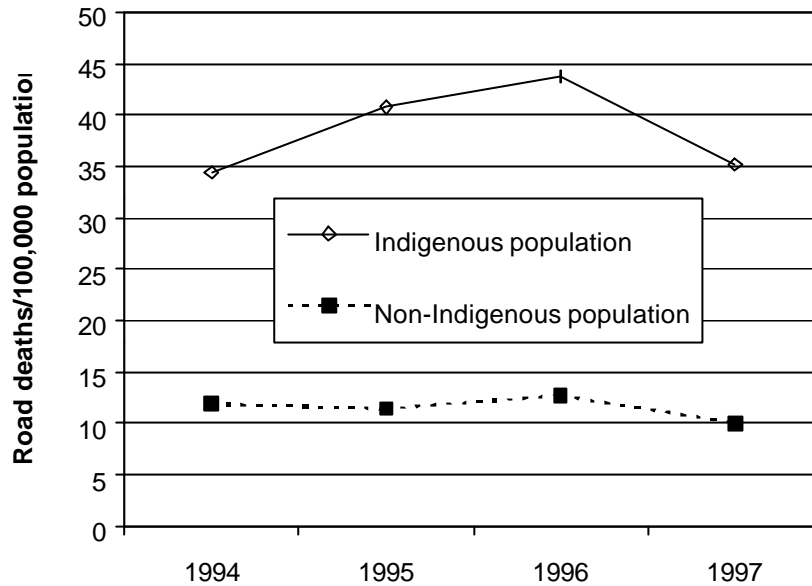
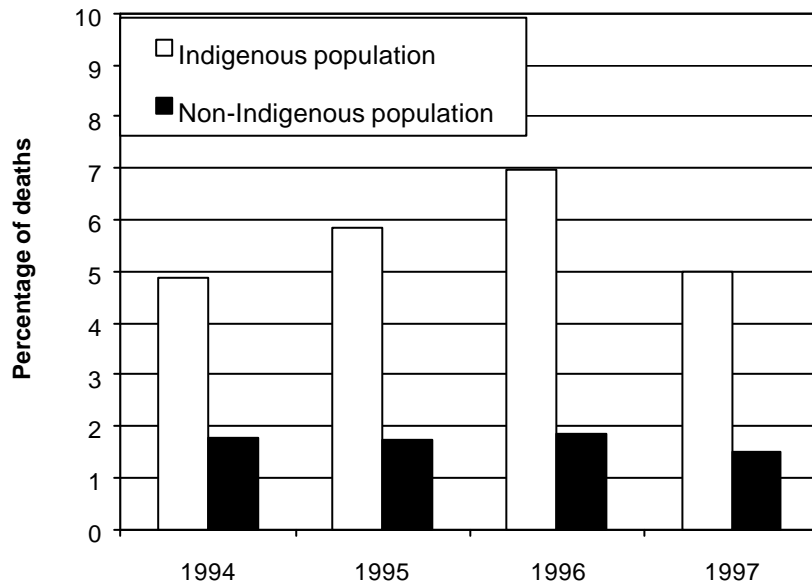


Figure 10: Road deaths as a percentage of all causes of deaths in the Indigenous and non-Indigenous populations of Western Australia, South Australia and the Northern Territory for the years 1994 – 1997.



The overall analysis of road deaths in Western Australia, South Australia and the Northern Territory suggests:

- The road death rate for the Indigenous population is three times the rate for the non-Indigenous population.
- Road crashes account for a greater proportion of deaths in the Indigenous population than in the non-Indigenous population.

Estimated Indigenous road deaths Australia-wide

As noted earlier, information on Indigenous Australian road deaths is only available for Western Australia, South Australia and the Northern Territory. In this section, two methods have been used to estimate the number of Indigenous people killed on the road in the whole of Australia.

Method 1. This method assumes that the known combined road death rate for Western Australia, South Australia and the Northern Territory is the same for all of Australia:

$$AI_R = SI_R$$

Where

AI_R = Australian Indigenous road deaths per 100,000 population

SI_R = combined SA, WA, NT Indigenous road deaths per 100,000 population

An estimate of the number of Indigenous road deaths in Australia can then be made using the formula

$$AI^{Deaths} = AI^{Pop'n} \times AI_R$$

Where

AI^{Deaths} = Australian Indigenous deaths

$AI^{Pop'n}$ = Australian Indigenous population

Method 2. While the above method can give a simple estimate of the total number of Indigenous road deaths in Australia, it does not take into account the differences in road death rates between States. For example, it is possible that the three jurisdictions examined have a higher road death rate than that of Australia as a whole. A second method of estimation which takes this into account is to estimate an Australian Indigenous road death rate per 100 000 population, assuming that the Australian Indigenous road death rate relates to the Australian total rate in the same way that the State Indigenous rate relates to the State total rate:

$$\frac{AT_R}{AI_R} = \frac{ST_R}{SI_R}$$

So that

$$AI_R = AT_R \times \frac{SI_R}{ST_R}$$

Where

SI_R = combined SA, WA, NT Indigenous road deaths per 100,000 population

ST_R = combined SA, WA, NT total population road deaths per 100,000 population

AT_R = Australian total population road deaths per 100,000 population

AI_R = estimated Australian Indigenous population road deaths per 100,000 population

The estimated Australian rate of Indigenous road deaths can then be used to calculate an estimate of the number of Indigenous road deaths in Australia using the formula

$$AI^{Deaths} = AI^{Pop'n} \times AI_R$$

Where

AI^{Deaths} = Australian Indigenous deaths

$AI^{Pop'n}$ = Australian Indigenous population

Table 5 outlines the population figures and road fatality rates used to calculate estimates of Indigenous road deaths Australia-wide. Table 5 also shows the estimated number of road deaths and road death rate for the Australian Indigenous population over the years 1994-1997.

Using method 1:

- In 1997, the rate for the Indigenous population was 35 deaths per 100,000 population compared to 10 deaths for the non-Indigenous population.
- The rate increased from 34 deaths in 1994 to 41 and 44 deaths in 1995 and 1996 respectively. The 1997 rate was comparable to that in 1994.

Using method 2:

- In 1997, the rate for the Indigenous population was 31 deaths per 100,000 population compared to 10 deaths for the non-Indigenous population.
- The rate increased from 30 deaths in 1994 to 36 and 33 deaths in 1995 and 1996 respectively. The 1997 rate was comparable to that in 1994.

Table 5: Estimated Australian Indigenous road death rate and number for the years 1994 - 1997.

	1994	1995	1996	1997
Australian population	17 951 481	18 196 054	18 422 695	18 631 126
WA/SA/NT population	3 359 092	3 401 043	3 443 418	3 483 180
WA/SA/NT Indigenous population	124 781	127 399	130 132	133 503
Australian road deaths per 100,000 population	11	11	11	10
WA/SA/NT road deaths per 100,000 population	13	13	14	11
WA/SA/NT Indigenous road deaths per 100,000 population	34	41	44	35
Australian Indigenous Population	368 765	377 146	386 049	400 715
Estimated Australian Indigenous road deaths per 100,000 population (method 1)	34	41	44	35
Estimated Australian Indigenous road deaths (method 1)	127	154	169	141
Estimated Australian Indigenous road deaths per 100,000 population (method 2)	30	36	33	31
Estimated Australian Indigenous road deaths (method 2)	109	137	128	124

DISCUSSION

The purpose of this paper was to identify the differences in road fatality rates between the Indigenous and non-Indigenous populations of Western Australia, South Australia and the Northern Territory and then estimate the number of road-related fatalities in the Indigenous population Australia-wide.

The data indicate the rate of road deaths in the Indigenous population is three times that of the non-Indigenous population in Western Australia, South Australia and the Northern Territory. This trend remains consistent over the four years examined despite a drop in the Indigenous road death rate in 1997. The data also suggests that road deaths comprised a much higher proportion of all deaths in the Indigenous population (5-7%) compared with the non-Indigenous population (2%), over the years 1994-1997.

Taking into account the State and Territory differences in road death rates, it is estimated (method 2) that in 1997 there were 31 Indigenous deaths per 100,000 population. This is three times the estimate for the non-Indigenous population (10 deaths per 100,000 population). The simple pro-rata method results in a slightly higher estimate of Indigenous deaths (35 deaths per 100,000 population). Similar results were found for the other years.

While the Indigenous road death rates presented in this report are high they are most probably an under-estimate of the true problem. The Australian Bureau of Statistics suggests that although virtually all Indigenous deaths in Australia are registered as deaths, a significant proportion of these are not registered as Indigenous. The most likely factor influencing non-identification as Indigenous is the persons completing death certificates are often funeral directors or doctors who may not know if the deceased is of Indigenous origin.

The data available allow a comparison of road death rates between the Indigenous and non-Indigenous populations of three jurisdictions in Australia and permitted estimates of the problem Australia-wide to be generated. However, collection of Indigenous death data for all States and Territories would allow a more comprehensive investigation, where individual differences in Indigenous death rates between each of the States and Territories could be addressed.

In general, reliable data on the extent of road trauma are required to develop adequate road safety countermeasures. There is a clear need for improved information on the extent of involvement of Indigenous people in serious road crashes. On the one hand improved collection procedures by jurisdictions would assist, however, there is a national initiative which may also be of relevance.

The Commonwealth is currently supporting an initiative which should assist in meeting this goal. The National Coronial Information System, under development by Monash University, will allow the identification Australia-wide of injury deaths involving Indigenous people.

The information presented in this paper adds to the body of evidence that shows Indigenous Australians, when compared with non-Indigenous Australians, have a far

greater rate of death from injury and in this instance road trauma. Death from road injury is most often looked at in the context of the whole Australian community, however, the results of the current analyses indicate the road death rate in the Indigenous population warrants special attention.

REFERENCES

Australian Bureau of Statistics. *Causes of Death*. ABS Catalogue No. 3303.0; 1994.

Australian Bureau of Statistics. *Causes of Death*. ABS Catalogue No. 3303.0; 1995.

Australian Bureau of Statistics. *Causes of Death*. ABS Catalogue No. 3303.0; 1996.

Australian Bureau of Statistics. *Causes of Death*. ABS Catalogue No. 3303.0; 1997.

Australian Bureau of Statistics. *Australian Demographic Statistics*. ABS Catalogue No. 3131.0; March 1998.

Australian Bureau of Statistics. *Australian Demographic Statistics*. ABS Catalogue No. 3131.0; June 1998.