

RAILWAY ACCIDENT FATALITIES: AUSTRALIA COMPARED WITH OTHER OECD COUNTRIES, 1980-1999

(a report produced and published by the Australian Transport Safety Bureau, Canberra, Feb 2004)

The purpose of this publication is to examine trends in the numbers of railway accident deaths in Australia in the 1980s and 1990s in the light of comparable data from other countries that are members of the Organisation for Economic Cooperation and Development (OECD). Overall, the data indicate that in the period from 1980 to 1999 Australia's rail safety improvement compared favourably with that of other OECD countries and performance reached OECD median levels in the 1990s.

Data for this publication have been obtained from the World Health Organisation's 'Mortality Database' but responsibility for the analyses presented here rests solely with the ATSB.

The OECD was formed in 1961 to promote economic cooperation and development among its members. Current member states are Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, South Korea, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Slovakia, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States.

In addition to those on the ATSB web site under Rail Safety / Statistics, other publications by the ATSB on related topics include:

- *Transport accident fatalities: Australia compared with other OECD countries, 1980-1999*
- *Cross-modal safety comparisons*

In Australia in the 1980s and 1990s there was a downward trend in the number of railway accident fatalities. This was also the case in about one-third of the other OECD countries (**Table 1**).

Table 1
Railway accident fatalities, OECD countries, 1980-1999

| | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 |
|-------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Australia | 56 | 72 | 72 | 66 | 76 | 66 | 66 | 54 | 64 | 67 | 76 | 42 | 61 | 52 | 43 | 46 | 30 | 43 | 43 | 43 |
| Austria | 75 | 77 | 70 | 44 | 53 | 51 | 48 | 46 | 46 | 47 | 48 | 59 | 68 | 72 | 57 | 52 | 34 | 33 | 27 | 42 |
| Belgium | 43 | 39 | 44 | 23 | 25 | 17 | 24 | 20 | 29 | 20 | 22 | 36 | 25 | 27 | 28 | 14 | 12 | | | |
| Canada | 66 | 51 | 56 | 44 | 32 | 45 | 61 | 37 | 33 | 45 | 37 | 50 | 32 | 38 | 40 | 34 | 35 | 47 | 34 | |
| Czech Rep | | | | | | | 187 | 175 | 172 | 176 | 188 | 171 | 138 | 157 | 130 | 122 | 110 | 94 | 86 | 111 |
| Denmark | | | | | | | | | | | | | | | 12 | 15 | 14 | 7 | 8 | |
| Finland | | | | | | | | 22 | 17 | 20 | 32 | 25 | 21 | 11 | 17 | 22 | 18 | 14 | 25 | 18 |
| France | 144 | 150 | 147 | 182 | 159 | 224 | 125 | 132 | 162 | 143 | 142 | 165 | 147 | 144 | 123 | 106 | 102 | 112 | 94 | 89 |
| Germany | | | | | | | | | | | 376 | 340 | 310 | 271 | 305 | 270 | 243 | 242 | 324 | 218 |
| Greece | 16 | 15 | 23 | 13 | 26 | 22 | 8 | 20 | 25 | 14 | 8 | 15 | 12 | 23 | 7 | 2 | 0 | 8 | 10 | 10 |
| Hungary | 246 | 232 | 237 | 232 | 244 | 220 | 221 | 168 | 199 | 182 | 185 | 160 | 142 | 109 | 157 | 109 | 92 | 100 | 110 | 87 |
| Iceland | | | | | | | | | | | | | | | | | | | | |
| Ireland | 21 | 2 | 2 | 9 | 4 | 3 | 2 | 5 | 4 | 3 | 5 | 2 | 4 | 0 | 4 | 1 | 3 | 3 | 1 | 2 |
| Italy | 212 | 194 | 167 | 163 | 146 | 171 | 160 | 160 | 113 | 138 | 118 | 128 | 117 | 78 | 87 | 93 | 104 | 105 | 89 | 87 |
| Japan | 570 | 511 | 477 | 444 | 364 | 382 | 365 | 364 | 427 | 382 | 398 | 438 | 366 | 372 | 364 | 363 | 393 | 347 | 331 | 318 |
| Luxembourg | 4 | 1 | 1 | 1 | 0 | 3 | 0 | 1 | 0 | 2 | 2 | 2 | 1 | 4 | 4 | 2 | 3 | 2 | 1 | 1 |
| Mexico | | | | | | | | | | | | | | | | | | | | 223 |
| Netherlands | 41 | 39 | 27 | 19 | 19 | 23 | 14 | 17 | 10 | 23 | 31 | 16 | 31 | 17 | 15 | 22 | | | | |
| New Zealand | 13 | 18 | 8 | 7 | 10 | 8 | 11 | 16 | 10 | 16 | 15 | 13 | 6 | 13 | 11 | 9 | 7 | 13 | 15 | 12 |
| Norway | | | | | | | 8 | 6 | 5 | 7 | 12 | 10 | 11 | 11 | 3 | 4 | 5 | 7 | 7 | 6 |
| Poland | | | | 954 | 933 | 930 | 806 | 799 | 848 | 811 | 836 | 745 | 655 | 565 | 617 | 525 | 466 | | | 452 |
| Portugal | 144 | 127 | 119 | 159 | 131 | 167 | 142 | 128 | 140 | 127 | 114 | 142 | 142 | 116 | 123 | 96 | 104 | 91 | 83 | 90 |
| Slovakia | | | | | | | | | | | | | 130 | 102 | | | 68 | 91 | 78 | 73 |
| South Korea | | | | | | 353 | 355 | 331 | 286 | 359 | 377 | 366 | 299 | 353 | 221 | 176 | 179 | 158 | | |
| Spain | 175 | 145 | 173 | 184 | 162 | 151 | 154 | 201 | 166 | 149 | 158 | 142 | 159 | 135 | 154 | 134 | 152 | 151 | 138 | 132 |
| Sweden | | | | | | | | 27 | 11 | 12 | 13 | 11 | 19 | 15 | 15 | 20 | 11 | | | 3 |
| Switzerland | | | | | | | | | | | | | | | | | | | | |
| Turkey | | | | | | | | | | | | | | | | | | | | |
| UK | 130 | 97 | 108 | 127 | 119 | 101 | 100 | 113 | 112 | 87 | 143 | 90 | 70 | 54 | 70 | 48 | 64 | 64 | 47 | 57 |
| USA | 632 | 580 | 545 | 544 | 570 | 551 | 556 | 624 | 571 | 608 | 663 | 651 | 642 | 670 | 635 | 569 | 565 | 527 | 515 | 493 |

Note: Gaps indicate data not available.

The ATSB is currently unable to present rail fatality data from the OECD countries in terms of a rate that enables comparisons while taking account of the different levels of rail activity in each country. This is because reliable and internationally consistent activity data for rail transport in the OECD countries are not currently available. However, if railway accident deaths are expressed as a rate per 100,000 population (a rate commonly used in public health and safety statistics) each year in each country (**Table 2**), it is observed that:

- In the period from 1980 to 1999 in Australia, the number of railway accident deaths per 100,000 population each year trended downwards - from 0.4 in 1980 to 0.2 in 1999. A downward trend in the number of railway accident deaths per 100,000 population each year was also evident in about one-third of the other OECD countries. In some, such as the UK and the USA, the rate was less than 0.05 per 100,000 population throughout most of the period.

Table 2

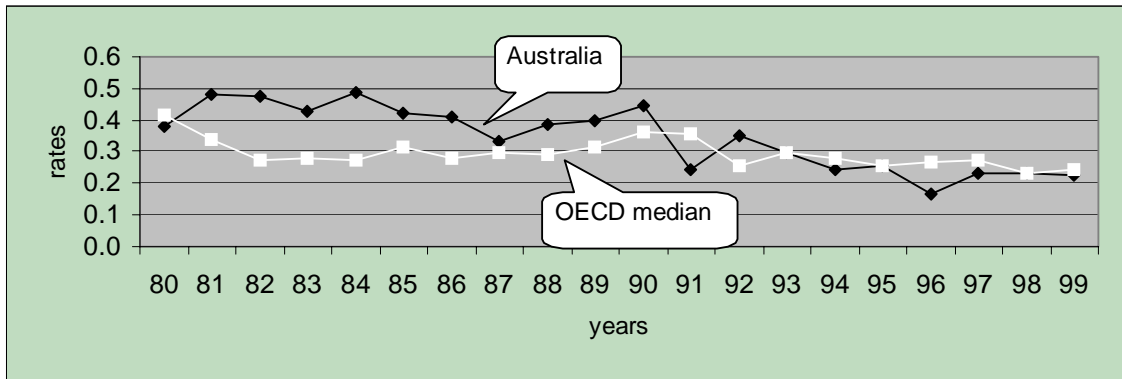
Number of railway accident deaths per 100,000 population, OECD countries, 1980-1999

| | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 |
|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Australia | 0.4 | 0.5 | 0.5 | 0.4 | 0.5 | 0.4 | 0.4 | 0.3 | 0.4 | 0.4 | 0.4 | 0.2 | 0.3 | 0.3 | 0.2 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 |
| Austria | 1.0 | 1.0 | 0.9 | 0.6 | 0.7 | 0.7 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.8 | 0.9 | 0.9 | 0.7 | 0.6 | 0.4 | 0.4 | 0.3 | 0.5 |
| Belgium | 0.4 | 0.4 | 0.4 | 0.2 | 0.3 | 0.2 | 0.2 | 0.2 | 0.3 | 0.2 | 0.2 | 0.4 | 0.2 | 0.3 | 0.3 | 0.1 | 0.1 | | | |
| Canada | 0.3 | 0.2 | 0.2 | 0.2 | 0.1 | 0.2 | 0.2 | 0.1 | 0.1 | 0.2 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.1 | |
| Czech Republic | | | | | | | 1.8 | 1.7 | 1.7 | 1.7 | 1.8 | 1.7 | 1.3 | 1.5 | 1.3 | 1.2 | 1.1 | 0.9 | 0.8 | 1.1 |
| Denmark | | | | | | | | | | | | | | | 0.2 | 0.3 | 0.3 | 0.1 | 0.2 | |
| Finland | | | | | | | | 0.4 | 0.3 | 0.4 | 0.6 | 0.5 | 0.4 | 0.2 | 0.3 | 0.4 | 0.4 | 0.3 | 0.5 | 0.3 |
| France | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.4 | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |
| Germany | | | | | | | | | | | | 0.5 | 0.4 | 0.4 | 0.3 | 0.4 | 0.3 | 0.3 | 0.4 | 0.3 |
| Greece | 0.2 | 0.2 | 0.2 | 0.1 | 0.3 | 0.2 | 0.1 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.1 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 |
| Hungary | 2.3 | 2.2 | 2.2 | 2.2 | 2.3 | 2.1 | 2.1 | 1.6 | 1.9 | 1.7 | 1.8 | 1.5 | 1.4 | 1.1 | 1.5 | 1.1 | 0.9 | 1.0 | 1.1 | 0.9 |
| Iceland | | | | | | | | | | | | | | | | | | | | |
| Ireland | 0.6 | 0.1 | 0.1 | 0.3 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | 0.1 | 0.0 | 0.1 | 0.1 | 0.0 | 0.1 |
| Italy | 0.4 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |
| Japan | 0.5 | 0.4 | 0.4 | 0.4 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.4 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 |
| Luxembourg | 1.1 | 0.3 | 0.3 | 0.3 | 0.0 | 0.8 | 0.0 | 0.3 | 0.0 | 0.5 | 0.5 | 0.5 | 0.3 | 1.0 | 1.0 | 0.5 | 0.7 | 0.5 | 0.2 | 0.2 |
| Mexico | | | | | | | | | | | | | | | | | | | | |
| Netherlands | 0.3 | 0.3 | 0.2 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | | | | |
| New Zealand | 0.4 | 0.6 | 0.3 | 0.2 | 0.3 | 0.2 | 0.3 | 0.5 | 0.3 | 0.5 | 0.4 | 0.4 | 0.2 | 0.4 | 0.3 | 0.2 | 0.2 | 0.3 | 0.4 | |
| Norway | | | | | | | 0.2 | 0.1 | 0.1 | 0.2 | 0.3 | 0.2 | 0.3 | 0.3 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.1 |
| Poland | | | | 2.6 | 2.5 | 2.5 | 2.2 | 2.1 | 2.2 | 2.1 | 2.2 | 1.9 | 1.7 | 1.5 | 1.6 | 1.4 | 1.2 | | | 1.2 |
| Portugal | 1.5 | 1.3 | 1.2 | 1.6 | 1.3 | 1.7 | 1.4 | 1.3 | 1.4 | 1.3 | 1.2 | 1.4 | 1.4 | 1.2 | 1.2 | 1.0 | 1.0 | 0.9 | 0.8 | 0.9 |
| Slovakia | | | | | | | | | | | | | 2.4 | 1.9 | | | 1.3 | 1.7 | 1.4 | 1.4 |
| South Korea | | | | | | 0.9 | 0.9 | 0.8 | 0.7 | 0.8 | 0.9 | 0.8 | 0.7 | 0.8 | 0.5 | 0.4 | 0.4 | 0.3 | | |
| Spain | 0.5 | 0.4 | 0.5 | 0.5 | 0.4 | 0.4 | 0.4 | 0.5 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.3 | 0.4 | 0.3 | 0.4 | 0.4 | 0.4 | 0.3 |
| Sweden | | | | | | | | 0.3 | 0.1 | 0.1 | 0.2 | 0.1 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | | | 0.0 |
| Switzerland | | | | | | | | | | | | | | | | | | | | |
| Turkey | | | | | | | | | | | | | | | | | | | | |
| UK | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| USA | 0.1 | 0.0 | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| OECD median | 0.4 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.4 | 0.4 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.2 | 0.2 |

Note: All figures rounded. Gaps indicate data not available.

The number of railway accident deaths per 100,000 population in Australia remained above the OECD median until the early 1990s and stayed close to it thereafter (**Figure 1**).

Figure 1
Number of railway accident deaths per 100,000 population, Australia compared with the OECD median, 1980-1999



In Australia in the period from 1980 to 1999 the proportion of transport accident deaths each year due to railway accidents ranged between 1 and 3 per cent. Similarly, in most other OECD countries (more than two-thirds), the proportion of transport accident deaths due to railway accidents did not exceed 5 per cent in any year in the same period (**Table 3**).

Table 3

Railway accident deaths as a proportion (per cent) of all transport accident deaths, OECD countries, 1980-1999

| | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 |
|----------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Australia | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 3 | 2 | 2 | 2 | 1 | 2 | 2 | 2 |
| Austria | 4 | 4 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 5 | 5 | 4 | 4 | 3 | 3 | 3 | 4 |
| Belgium | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 2 | 1 | 2 | 1 | 1 | 1 | | | |
| Canada | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Czech Republic | | | | | | | 16 | 14 | 13 | 13 | 12 | 11 | 8 | 9 | 7 | 7 | 7 | 6 | 6 | 7 |
| Denmark | | | | | | | | | | | | | | | 2 | 2 | 3 | 1 | 1 | |
| Finland | | | | | | | | 3 | 2 | 2 | 4 | 3 | 3 | 2 | 3 | 4 | 4 | 2 | 5 | 3 |
| France | 1 | 1 | 1 | 2 | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 |
| Germany | | | | | | | | | | | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 3 |
| Greece | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Hungary | 11 | 11 | 11 | 11 | 12 | 10 | 10 | 8 | 9 | 7 | 6 | 6 | 5 | 5 | 8 | 5 | 6 | 6 | 6 | 5 |
| Iceland | | | | | | | | | | | | | | | | | | | | |
| Ireland | 3 | 0 | 0 | 2 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 |
| Italy | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Japan | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 2 |
| Luxembourg | 3 | 1 | 1 | 1 | 0 | 3 | 0 | 1 | 0 | 3 | 3 | 2 | 1 | 5 | 5 | 3 | 4 | 3 | 2 | 2 |
| Mexico | | | | | | | | | | | | | | | | | | | 2 | 1 |
| Netherlands | 2 | 2 | 2 | 1 | 1 | 2 | 1 | 1 | 1 | 2 | 2 | 1 | 2 | 1 | 1 | 2 | | | | |
| New Zealand | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 2 | 2 | 2 | 1 | 2 | 2 | 1 | 1 | 2 | 3 | 2 |
| Norway | | | | | | | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 3 | 1 | 1 | 1 | 2 | 2 | 1 |
| Poland | | | | 13 | 14 | 15 | 13 | 13 | 13 | 10 | 9 | 8 | 8 | 8 | 8 | 7 | 6 | | | 6 |
| Portugal | 5 | 4 | 4 | 5 | 5 | 6 | 5 | 5 | 5 | 4 | 4 | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 5 |
| Slovakia | | | | | | | | | | | | | 12 | 11 | | | 8 | 9 | 7 | 8 |
| South Korea | | | | | | 5 | 5 | 4 | 3 | 3 | 3 | 3 | 2 | 3 | 1 | 1 | 1 | 1 | | |
| Spain | 3 | 2 | 3 | 3 | 3 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 3 | 2 | 2 | 2 |
| Sweden | | | | | | | | 3 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 3 | 2 | | | 1 |
| Switzerland | | | | | | | | | | | | | | | | | | | | |
| Turkey | | | | | | | | | | | | | | | | | | | | |
| UK | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 1 | 1 | 2 | 1 | 2 | 2 | 1 | 2 |
| USA | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 |
| OECD median | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |

Note: All figures rounded. Gaps indicate data not available.

EXPLANATORY NOTES

The data for this publication have been obtained from the World Health Organisation's website at <http://www.who.int/en/>. All OECD countries provide cause of death data to the WHO and all use the ICD, an international standard classification of causes of death which provides a consistent basis for international comparisons. Note that the WHO data record year of death, not year of registration of death. The Australian Bureau of Statistics (ABS) uses the latter in its publications but supplies year of death to the WHO. ABS does

this by collecting two years of registrations and then supplying the data to the WHO. This picks up most of the deaths in any given year, though there will always be a few late death registrations that will appear in the ABS data but not in the WHO data.

Data in this publication are based on ICD 9 and ICD 10. Some countries used ICD 8 in the period studied or departed from standards adopted by most other OECD countries when supplying data to the WHO. In such cases, the data were not used for this publication and a footnote has been added to the tables, 'gaps indicate data not available'.