Australian Bureau of Statistics

NEW ISSUE

1994

EMBARGOED UNTIL 11:30 AM ..... AUGUST 1996

Occasional Paper

Mortality of Indigenous Australians

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ABS Catalogue No. 3315.0

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MORTALITY OF INDIGENOUS AUSTRALIANS

Phil Anderson, Kuldeep Bhatia and Joan Cunningham

1994

Aboriginal and Torres Strait Islander Health and Welfare Information: a joint program of the Australian Bureau of Statistics and the Australian Institute of Health and Welfare.

CONTENTS

INQUIRIES

- *for further information about statistics in this publication and the availability of related statistics*, contact Joan Cunningham in Darwin on (08) 8943 2165.

LIST OF ACRONYMS AND SYMBOLS

ABS	Australian Bureau of Statistics
AIHW	Australian Institute of Health and Welfare
ASDR	Age-standardised death rate
CDR	Crude death rate
ICD–9	International Classification of Diseases, Ninth Revision
SIDS	Sudden infant death syndrome
SMR	Standardised mortality ratio
. .	Not applicable
*	$0.01<p<0.05$
**	$0.001<p<0.01$
***	$p<0.001$

PREFACE

This publication is the first to be produced by the Aboriginal and Torres Strait Islander Health and Welfare Information Unit. It was completed jointly by staff of the Australian Institute of Health and Welfare and members of the Unit.

The Aboriginal and Torres Strait Islander Health and Welfare Information Unit was established in 1995 and is a joint program of the Australian Institute of Health and Welfare and the Australian Bureau of Statistics. It is part of the National Centre for Aboriginal and Torres Strait Islander Statistics in Darwin. Major funding for the Unit is provided by the Commonwealth Department of Health and Family Services.

The purpose of the Unit is to improve the collection, analysis, dissemination and use of statistics relating to the health and welfare of Indigenous Australians.

As the publication is a joint one, both the Australian Bureau of Statistics and the Australian Institute of Health and Welfare have catalogued the publication. The Australian Institute of Health and Welfare Catalogue No. is IHW1. The Australian Bureau of Statistics Catalogue No. is 3315.0.

Australian Bureau of Statistics

Australian Institute of Health and Welfare

September 1996

SUMMARY

This report describes the mortality of Aboriginal and Torres Strait Islander people in 1992–94. It also presents information on trends in Indigenous death rates between 1985 and 1994.

In 1992–94, Indigenous Australians in all States and Territories with adequate data quality experienced higher rates of death than did non-Indigenous Australians. While the death rates for Indigenous males were higher than those for Indigenous females, the difference between Indigenous and non-Indigenous rates of death was greater in relative terms for females than for males. In those States and Territories with acceptable quality of Indigenous identification on death records (Western Australia, South Australia and the Northern Territory), the mortality of Indigenous people in 1992–94 was about 3.5 times greater than expected for males and about 4 times greater than expected for females, based on comparisons with non-Indigenous rates. The differences were most pronounced among adults of working age, especially those aged 25–54 years, for whom there were 6–8 times the expected number of deaths.

Life expectancy in Western Australia, South Australia and the Northern Territory was 14–18 years lower for Indigenous males and 16–20 years lower for Indigenous females compared to their non-Indigenous counterparts. The identification of Indigenous status in the death records of New South Wales, Queensland, Victoria and Tasmania was not of sufficient quality to allow for adequate characterisation of mortality or life expectancy in those States.

Diseases of the circulatory system, injury and poisoning, respiratory diseases, neoplasms and endocrine diseases accounted for about three-quarters of all deaths of Indigenous people. The rates of death in Indigenous people were higher than expected for every cause of death examined, with the exception of breast cancer and suicide for females and prostate cancer for males.

Between 1985 and 1994, overall death rates for Indigenous males declined by an estimated 1.5% per year, but this fall was not enough to reduce the gap between Indigenous and non-Indigenous males, as the death rates for the latter group also fell by similar amounts. For Indigenous females, no such decline in death rates was evident.

There were significant declines in death rates for some causes of death. Many of the apparent improvements managed only to match those among non-Indigenous people, however, and large gaps between the two groups remained. Death rates from infectious and parasitic diseases fell for Indigenous males by an estimated 6% per year, but there were still about 15 times more deaths than expected for this group of diseases. Death rates from circulatory diseases declined by about 2% per year for Indigenous males, but there was no significant overall decline for Indigenous females. However, there did appear to be a reduction in

death rates among Indigenous females for some types of circulatory disease. Death rates from chronic rheumatic heart disease fell sharply (by an estimated 14.5% per year) for Indigenous females but there were still 10 times more deaths from this cause than expected. Although there was a decrease in death rates from alcohol dependence syndrome of an estimated 11% per year in Indigenous males, there were still about 14 times more deaths than expected.

Not only was there little if any improvement in mortality in relative terms, there were also areas in which the situation became worse in absolute terms. Death rates for diabetes mellitus increased between 1985 and 1994 by almost 10% per year for Indigenous males and by over 5% per year for Indigenous females. By the end of the period, deaths from diabetes were about 12 times greater than expected for males and more than 17 times greater than expected for females. Deaths from cerebrovascular disease also increased in Indigenous females by an estimated 8.5% per year and the gap between Indigenous and non-Indigenous females widened.

Some of the apparent trends in cause-specific death rates may have reflected changes in diagnostic practice rather than in actual causes of death. For example, a decrease in the rates of death from ill-defined conditions suggests that there may have been increasing accuracy in the diagnosis of cause of death among Indigenous people. Despite such apparent improvement, however, there were still 10–15 times more deaths characterised as being from ill-defined conditions than expected.

There may have been changes in the health of Indigenous people, for better or worse, that would not be apparent in an analysis of mortality such as this one. This report does not examine changes in important areas such as morbidity, quality of life, and other indicators of health and well-being. Such measures may be more sensitive to subtle changes in health than mortality. Because of the long time course of many of the diseases from which people die, it may take several years for any changes to be reflected in death rates. Despite these factors, mortality remains the ultimate outcome to measure.

In summary, over the ten-year period from 1985 to 1994, there was very little improvement in the mortality experience of Australia's Indigenous people. While there appeared to be a small decrease in all-cause mortality rates for men, no such decline was observed for women. Although there were some causes of death for which mortality rates dropped, in most cases these declines were not enough to reduce the gap between Indigenous and non-Indigenous people.

INTRODUCTION

The health disadvantages experienced by Australia's Indigenous people are well documented and occur throughout the life cycle, from babies of low birth weight, to greater illness and hospitalisation rates in children and adults, to early death from a variety of causes (see, for example, Bhatia and Anderson 1995). In order to assess the success of programs which have been implemented to address such problems, it is necessary to be able to identify changes in health status over time.

Several measures can be used to examine trends in health status, but for the Indigenous population this has largely been limited to mortality statistics because of a lack of suitable information of high quality for many other aspects of health and well-being. Death is an endpoint of importance because it is untreatable and irreversible. The legal requirements regarding notification of death mean that the fact that a death has occurred is generally very accurately recorded. The centralised nature of vital statistics reporting means that such information is relatively easy to collate and analyse. Even for death statistics, however, it is difficult to obtain a truly national picture because of incomplete identification of Indigenous people in the death records of some States. The identification of Indigenous people in the registration of deaths in Western Australia, South Australia and the Northern Territory has been of sufficiently good quality (Benham and Howe 1994) to allow the characterisation of Indigenous mortality in those jurisdictions. The information from these States and Territories has been combined to produce quasi-national mortality statistics, which form the basis of this report.

Death rates in Australia have shown a downward trend from the beginning of this century, and have almost halved since 1921 (d'Espaignet et al. 1991). Significant shifts in the age- and cause-specific patterns of mortality have occurred, due mainly to dramatic declines in infant mortality rates (by almost 90%) between 1921 and 1992. Deaths from infectious and parasitic diseases have become uncommon among non-Indigenous Australians, with lifestyle disorders now becoming the major contributors to death. Most deaths now occur in the later years of life.

The decline in death rates in Australia during the last three decades has been due largely to a reduction in deaths from cardiovascular diseases. Between 1981 and 1992, age-standardised death rates (ASDRs) in Australia for cardiovascular diseases declined at an average annual rate of 3.8% for males and 3.3% for females (Bennett et al. 1994). Deaths due to motor vehicle traffic accidents, pneumonia and influenza also declined between 1981 and 1992, although death rates for malignant neoplasms rose during this period (Bennett et al. 1994).

This report examines the mortality of Aboriginal and Torres Strait Islander people from 1985 to 1994. Death rates are examined in both absolute and relative terms. Absolute change is indicated in the

presentation of trends over time. Change relative to the non-Indigenous population is measured through the use of standardised mortality ratios (SMR) in which the number of observed deaths is compared to those which would be expected based on non-Indigenous death rates. Both absolute and relative changes are important, but they measure different aspects of mortality. An increase in the SMR could, for example, occur because of an increase in the Indigenous death rate or because of a decrease in the non-Indigenous death rate. A falling death rate for the Indigenous population could signify improvement in absolute terms, yet if the decline were not as steep as for the non-Indigenous population, then there would be a worsening in relative terms.

It is worth noting that death rates may not be sensitive in the short term to some changes in health, especially subtle ones. Because the disease process leading to death can be long-term, there can be a delay in being able to see real progress (or regression). That is, changes for the better now may not result in falling death rates for some years to come because of already established chronic disease which will play itself out over time. Despite such limitations, however, mortality statistics continue to be an important source of information on the health of Indigenous Australians.

In addition to reporting trends in Indigenous mortality by sex and cause of death over the decade from 1985 to 1994, this publication presents an overview of Indigenous mortality in 1992–94, the most recent period for which data are currently available.

METHODS

MORTALITY DATA

Information on deaths was extracted from the mortality database held by the Australian Institute of Health and Welfare (AIHW). This database consists of data provided to the Institute by the State and Territory Registrars of Births, Deaths and Marriages and includes cause of death as coded by the Australian Bureau of Statistics (ABS). At present the database includes deaths registered up to 1994. Deaths in the database are classified according to the State or Territory of usual residence of the deceased.

Indigenous identification in death registration data

Provision for the identification of Indigenous status on death registration forms has existed in the various States and Territories for different lengths of time. Once such provision for identification has been introduced in a State or Territory, it may take some years before Indigenous status is recorded consistently and accurately, and there is considerable variation in the quality of data on Aboriginal and Torres Strait Islander deaths from State to State (Benham and Howe 1994).

The data for the Northern Territory and Western Australia include some Indigenous records as early as 1980 and 1982–83, respectively, but in both cases it appears that consistent recording of Indigenous status began in 1985. In South Australia, the recording of Indigenous status at death began in 1985, but was only partially implemented before 1988.

New South Wales data include deaths identified as Indigenous after 1980, and the recording of Indigenous status at death began in Victoria in 1987. However, registration of Aboriginal and Torres Strait Islander deaths in these two States is estimated to be only 40% to 60% complete (Benham 1993, and ABS unpublished data).

Identification of Indigenous status has begun in Tasmania but is not yet fully implemented, with only 22 deaths of Indigenous persons recorded since 1989. The identification of Indigenous status on death certificates in the Australian Capital Territory did not commence until 1993, and there was no provision for the recording of Indigenous status for deaths in Queensland prior to 1 January 1996.

In 1994, only the mortality data for Western Australia, South Australia, the Northern Territory and the Australian Capital Territory were considered to be of publishable standard by the ABS (1994a), as registration of Aboriginal and Torres Strait Islander deaths was estimated to be over 90% complete in these jurisdictions. Because of the small number of deaths in the Australian Capital Territory and the very short time during which Indigenous identification has been collected there, much of the analysis reported here is based on mortality data from Western Australia, South Australia, and the Northern Territory.

Correction for late registration of 1994 deaths

About 5–6% of the deaths occurring in Australia in any one year are not registered until the following year or later (Bennett et al. 1994). Analyses of trends in mortality are usually done by year of registration rather than year of occurrence, in order to utilise the data for the latest

year of registration. For Australia as a whole, this makes little difference because the proportion of deaths not registered in the year of occurrence is fairly constant from year to year.

This is not the case for deaths of Aboriginals and Torres Strait Islanders, however. The proportion of Indigenous deaths not recorded in the year of occurrence varies by year and juristiction. It is generally 10–20%, but it is sometimes higher. For example, 46% of the Indigenous deaths occurring in the Northern Territory in 1987 were not registered until 1988 or later. Because an analysis of Indigenous mortality by year of registration could be misleading, the analyses reported here were conducted according to year of occurrence of death.

The number of deaths registered in 1994 was adjusted to account for deaths which occurred in 1994 but were not registered in that year. This was done by applying a correction factor to the number of deaths that both occurred and were recorded in 1994 (i.e. excluding those deaths which were registered in 1994 but occurred earlier) for males and females in each State and Territory. The pattern of registration appears to have been stabilising over time, with a decrease in the year-to-year variability and in the proportion of deaths registered after the year of occurrence, so the adjustment was based on the proportion of deaths occurring in 1993 but registered in 1994, rather than averaging this proportion over all years. The additional deaths were spread across age groups and causes of death in proportion to the number actually recorded.

The figures for 1994 are therefore preliminary estimates. By using the above adjustment, the total number of Indigenous deaths was increased by 13.7% from 1,010 to 1,148. A similar procedure was applied to non-Indigenous deaths, which were increased by about 4.7% as a result. This procedure was assessed by applying it to 1993 deaths (using 1992 percentages), and the number of estimated deaths was very similar to the number of actual deaths, with a slight overestimate of 1.6%.

The 1994 estimates were calculated to two decimal places for the purposes of further analysis, but in tables which give number of deaths, they have been rounded to whole numbers. In some cases this means that due to rounding error, the total of a row or column which includes 1994 deaths may be one more or one less than would be summed from the table itself.

Causes of death

The analyses reported in this publication were carried out for deaths from all causes combined and by cause of death. Causes of death were at the level of chapter headings of the International Classification of Diseases, Ninth Revision (ICD–9; World Health Organisation 1977). More specific causes selected as being of particular importance for Aboriginals and Torres Strait Islanders were also examined.

Deaths included

All deaths that occurred in 1992–94 and were identified as being Aboriginal or Torres Strait Islander are examined briefly in the section entitled *An overview of Indigenous mortality, 1992–94*. In the rest of this publication, however, analysis is restricted to data from Western Australia (1985–94), the Northern Territory (1985–94) and South Australia (1988–94), because of the data quality issues already discussed. For the analysis of trends there is therefore a discontinuity in the time series between 1987 and 1988, which is indicated in the tables and graphs.

The extent to which estimates from Western Australia, the Northern Territory and South Australia apply to other parts of Australia is not known, and caution should be exercised in the extrapolation of these results to other jurisdictions.

Missing data

For the period and States and Territory included in the analysis of trends, nine deaths had Indigenous status recorded as unknown. All of these occurred in 1986 and 1987 in Western Australia and the Northern Territory. These deaths were distributed in proportion to the overall ratio of Indigenous to non-Indigenous deaths, although it is unlikely that such a small number would have a substantial effect on the results of the analysis.

For the data used in the analysis, seven Indigenous deaths (four males and three females) had no age of death recorded. In order to include these deaths in the calculation of age-dependent rates, they were allocated to the mean age group for the appropriate sex and disease category.

POPULATION ESTIMATES

For the calculation of mortality rates it was necessary to have estimates of the Indigenous population by age, sex and State or Territory as at 30 June of each year. For 1986–91, the ABS has published experimental estimates of the Indigenous population (ABS 1994b). Estimates for 1985 were obtained from these figures by linear extrapolation.

Population estimates for 1992–94 are Australian Institute of Health and Welfare (AIHW) projections calculated by the ABS based on assumptions owned by the Institute. These projections were derived from the experimental estimates of the Indigenous population as at the Census date of 6 August 1991, by applying State and Territory specific estimates of:

- Indigenous age-specific fertility rates, based on data for 1988–91; and
- projected age-specific mortality rates based on Indigenous life tables for 1981–86 and 1986–91.

Population estimates for 1985 and 1994 are shown in table 1. The estimates for 1994 are very similar (within 0.3%) to those published elsewhere by the ABS using slightly different assumptions (ABS 1995a).

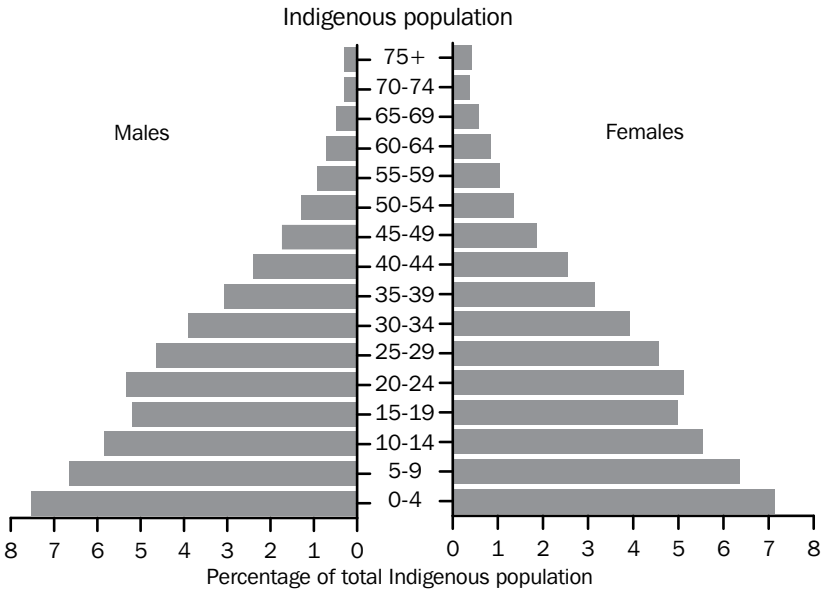
For the total Australian population, ABS final estimates were available for 1985–93, and the latest preliminary estimates for 1994 (ABS 1987, 1993, 1994c, 1995b). These estimates are published by age, sex, State and Territory as at 30 June of each year. Where required, the non-Indigenous population was calculated by subtracting the Indigenous population from the total population. In graph 2 the age structure of the Indigenous population is compared with that of the total Australian population.

1 ESTIMATED INDIGENOUS POPULATION

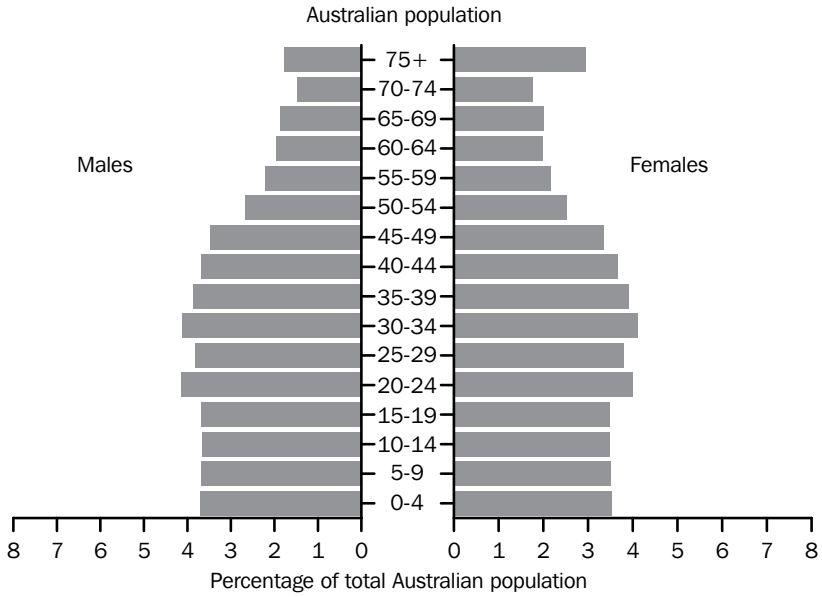
	1985 estimated population				*1994 estimated population*			
State or Territory	*Males*	*Females*	*Persons*	*%*	*Males*	*Females*	*Persons*	*%*
New South Wales	32 551	31 743	64 294	26.3	40 836	40 263	81 099	26.6
Victoria	7 671	7 631	15 302	6.3	9 699	9 647	19 346	6.4
Queensland	32 444	31 686	64 130	26.3	40 093	39 833	79 926	26.3
Western Australia	19 228	18 728	37 956	15.6	23 881	23 474	47 355	15.6
South Australia	7 472	7 455	14 927	6.1	9 257	9 228	18 485	6.1
Tasmania	4 112	3 877	7 989	3.3	5 203	5 002	10 205	3.3
Australian Capital Territory	664	674	1 338	0.5	876	979	1 855	0.6
Northern Territory	19 230	18 855	38 085	15.6	23 050	22 908	45 958	15.1
Australia	**123 372**	**120 649**	**244 021**	**100.0**	**152 895**	**151 334**	**304 229**	**100.0**

Source: 1985 estimates extrapolated from ABS 1986–91 estimates (ABS 1994b). 1994 estimates are unpublished ABS projections calculated for the AIHW.

2 ESTIMATED INDIGENOUS AND TOTAL AUSTRALIAN POPULATIONS, 1994



Source: 1994 estimates are unpublished ABS projections calculated for the AHIW.



Source: Australian Bureau of Statistics 1995b, June 1993 and preliminary June 1994 estimated resident population by sex and age: States and Territories of Australia (3201.0).

MEASURES OF MORTALITY

Three measures of mortality are used in this report. These are crude death rates (CDR), age-specific death rates and age-standardised death rates (ASDR). All rates were calculated separately for males and females and are expressed per 100,000 population.

The CDR for a given year is the total number of deaths in that year divided by the total mid-year estimated resident population. The age-specific death rate is simply the death rate for a particular age group. It is calculated as the number of deaths in that age group divided by the age group's mid-year estimated resident population.

The number of deaths identified in the Indigenous population is an underestimate of the total number of deaths occurring in that population because identification of Indigenous status is not complete. This underestimate of deaths results in an underestimate of death rates, the magnitude of which depends on the level of incompleteness of identification. Thus, the calculated rates for New South Wales and Victoria would represent a greater degree of underestimation than would those of Western Australia, the Northern Territory and South Australia. In the section, *An overview of Indigenous mortality, 1992–94*, crude and age-specific death rates are referred to as crude and age-specific death rates for deaths identified as Indigenous, to remind the reader that these are underestimates.

Direct age-standardisation is a technique for adjusting for the effect of variation in age structures over time or among populations. This involves applying the observed age-specific death rates from different years or populations to a standard reference population. This produces an estimate of the death rate which would have prevailed in the standard population if it had experienced the age-specific death rates of the study population in that year. The reference population used in this report is the total estimated 1991 mid-year Australian population. The problem of under-enumeration of Indigenous deaths because of incomplete identification is also relevant for ASDRs.

In addition to the three types of death rates described above, SMRs were also used in the analysis. The SMR is an indirectly age-standardised measure of relative mortality. In this case, it compares the mortality experience of the Indigenous population with that of other Australians. A ratio of 1 indicates no difference between the death rates of the two populations, whereas a ratio of two, for example, would mean that Indigenous people are dying at twice the rate current in the non-Indigenous population. In general terms:

$$SMR = \frac{O}{E}$$

where O = the observed number of deaths in the study population (in this case the Indigenous population), and E = the expected number of deaths based on the rates of the reference population (in this case the non-Indigenous population).

SMRs were calculated separately for males and females, and figures for 1989–91 were compared to those for 1992–94. More information on age-standardisation and SMRs is provided in the Technical Notes.

TRENDS IN MORTALITY

In order to estimate the size of any positive or negative trends in mortality over time, the numbers of deaths by year for males and females were modelled using Poisson regression techniques. Separate models were used for deaths from all causes and for several categories of cause of death. Age was included in all models to control for its effects.

Estimated annual percent changes are presented along with their 95% confidence intervals in the section, *Trends in Indigenous mortality, 1985–94*.

The models fitted in these analyses estimated trends in mortality as simple constant percentage changes per year. More complex modelling of possible non-linear trends was not justified due to the lack of precision resulting from small numbers of deaths.

The change in availability of data between 1987 (Western Australia and the Northern Territory only) and 1988 (Western Australian, the Northern Territory and South Australia) is highlighted in the graphical presentations as a discontinuity in the time series.

STATISTICAL SIGNIFICANCE

Confidence intervals and *p*–values are used throughout the section on trends to indicate the statistical significance of trends in death rates and of changes in SMRs. Statistical significance provides a means of assessing the probability that a given result is due to chance. The fact that a result is statistically significant does not necessarily mean that it is true or important. Conversely, the absence of statistical significance does not necessarily mean that it is false or unimportant. Statistical significance is merely a guide, and it only addresses the aspect of chance. Other possible explanations, such as changes in diagnostic practice over time, are not reflected in the level of statistical significance.

More technical information on the analytical methods used in this report can be found in the Technical Notes.

OVERVIEW OF INDIGENOUS MORTALITY, 1992–94

MORTALITY BY STATE AND TERRITORY

From 1992–94, there were 1,883 deaths identified in Indigenous males and 1,434 deaths identified in Indigenous females (table 3). Those States and Territories which are believed to have adequate data (Western Australia, South Australia, the Australian Capital Territory and the Northern Territory) generally had mortality rates of similar magnitude. Western Australia and the Northern Territory had the greatest number of recorded deaths over the period. These two jurisdictions had almost the same number of Aboriginal and Torres Strait Islander people and a similar number of deaths, so the CDRs were similar. After adjusting for age, however, the Northern Territory had higher ASDRs and SMRs than did Western Australia for both males and females. South Australia had somewhat lower mortality rates than Western Australia and the Northern Territory. Figures for the Australian Capital Territory were similar but may vary considerably from year to year because of its small Indigenous population.

For Western Australia, South Australia and the Northern Territory, CDRs and ASDRs for males were higher than those for females. Despite the higher absolute levels of mortality in males, however, females experienced a larger disadvantage relative to their non-Indigenous counterparts, with SMRs higher than those for males.

The number of deaths identified as Indigenous in New South Wales was only about half that of Western Australia or the Northern Territory, despite an Indigenous population about 1.7 times larger (see table 1). The CDRs, ASDRs and SMRs were all much lower than those for Western Australia, South Australia, the Northern Territory and the Australian Capital Territory. Figures for Victoria were similar to those for New South Wales, and Tasmanian rates were even lower. It is apparent that many deaths in Indigenous people in these States were not identified as such. While it is not possible to adjust the figures for New South Wales, Victoria and Tasmania to produce reliable estimates of the true mortality rate, undercounting of deaths in these States has been estimated to be as much as 60% (Benham 1993, and ABS unpublished data). No information on Indigenous deaths was available for Queensland, with the exception of three deaths which occurred in other States.

The gap in life expectancy between Indigenous and non-Indigenous populations in Western Australia, South Australia and the Northern Territory remained at up to 18 years for males and 20 years for females. The Northern Territory had the lowest life expectancy for both Indigenous males and Indigenous females, with estimates from 1–4 years lower than those for Western Australia and South Australia.

The rest of this report focuses exclusively on Indigenous mortality in Western Australia, South Australia and the Northern Territory.

3 MEASURES OF MORTALITY AND APPARENT LIFE EXPECTANCY FOR IDENTIFIED INDIGENOUS DEATHS 1992–94[1]

	Number of deaths identified as Indigenous	*CDR (per 100 000 persons) for identified deaths*	*ASDR (per 100 000 persons) for identified deaths*[2]	*SMR for identified deaths*[3]	*Apparent life expectancy for identified deaths*
Males					
New South Wales[4]	336	281	728	[5] . .	[5] . .
Victoria	87	308	769	[5] . .	[5] . .
Queensland[6]	3	. .	. .	. .	. .
Western Australia	627	896	2 062	3.2	57.3
South Australia	189	695	1 704	2.8	61.0
Tasmania	8	53	169	[5] . .	[5,7] . .
Australian Capital Territory[4,8]	9	520	1 719	3.3	[7] . .
Northern Territory	624	920	2 334	3.8	56.7
Non-Indigenous Australians[9]	194 376	753	839	1.0	74.9
Females					
New South Wales[4]	239	203	565	[5] . .	[5] . .
Victoria	61	216	546	[5] . .	[5] . .
Queensland[6]	. .	. .	. .	. .	. .
Western Australia	468	681	1 693	3.5	63.7
South Australia	151	557	1 203	3.0	64.6
Tasmania	6	41	94	[5] . .	[5,7] . .
Australian Capital Territory[4,8]	10	517	4 362	4.7	[7] . .
Northern Territory	499	742	1 891	4.7	61.1
Non-Indigenous Australians[9]	170 210	655	542	1.0	80.6

1 1994 figures are adjusted for deaths not yet registered and are provisional estimates.
2 Age-standardised to the total 1991 Australian population.
3 Expected numbers of deaths were estimated by applying the sex- and age-specific death rates for the total non-Indigenous population (1992–94).
4 Jervis Bay is included in New South Wales.
5 Numbers not published due to unacceptable quality of Indigenous identification.
6 Indigenous status was not yet recorded on death certificates in Queensland. There were 3 deaths recorded in other States for which the deceased's usual State of residence was Queensland.
7 The number of deaths is too small to calculate life expectancy.
8 Figures for the Australian Capital Territory are for 1993 and 1994.
9 Includes all deaths not recorded as Aboriginal or Torres Strait Islander.

Source: AIHW mortality database.

MORTALITY IN WA, SA AND THE NT

Mortality by cause of death

The ASDR for the period 1992–94 for Aboriginals and Torres Strait Islanders in Western Australia, South Australia and the Northern Territory combined was 2,087 per 100,000 males and 1,686 per 100,000 females. The SMR was 3.5 for males and 4.0 for females (table 4). That is, there were three-and-a-half times more deaths of Indigenous males than expected, and four times the number of deaths expected of Indigenous females, based on non-Indigenous rates. Thus, although the ASDR was about 20% lower for Indigenous females than for Indigenous males, the gap between Indigenous and non-Indigenous rates was greater in relative terms for females than for males.

The five major causes of death by ICD–9 chapter for Indigenous people were diseases of the circulatory system, injury and poisoning, respiratory diseases, neoplasms, and endocrine diseases (graph 5). Together, these

accounted for three-quarters of all deaths. The ASDR for each of these causes was significantly greater than for non-Indigenous Australians.

Diseases of the circulatory system (that is, cardiovascular diseases) accounted for 27% of deaths of Indigenous males and 30% of deaths of Indigenous females. These diseases were also the leading cause of death among non-Indigenous Australians, but death rates were three to four times higher for Indigenous people. Ischaemic heart disease and cerebrovascular disease were among the largest contributors to mortality (table 6). Although not as common in absolute terms, death rates due to chronic rheumatic heart disease and hypertensive disease were over 10 times higher for Indigenous people than for other Australians.

Injury and poisoning was the second most common cause of death for males, and the third for females, resulting in 20% and 11% of deaths, respectively. It was the leading cause of death from ages 1–34 years in both sexes (tables 8 and 9). Transport accidents accounted for 40% of the deaths in this category, and suicide and homicide together accounted for about one-third (table 6).

Among Indigenous females, the ASDR for homicide was of similar magnitude to that for transport accidents. The SMR for homicide was also very high, at over 15 for males and 17 for females. The suicide rate for Indigenous males was almost twice that for non-Indigenous males, but there was little difference between Indigenous and non-Indigenous females. Suicide was much more common among males than females, for both Indigenous and non-Indigenous Australians.

Respiratory diseases had the second highest ASDR for Indigenous males and the third highest for Indigenous females (table 4, graph 5), resulting in 14% and 10% of deaths, respectively. The SMR was about eight for males and seven for females, which is much higher than those for circulatory diseases, neoplasms or injury and poisoning. Pneumonia was an important problem especially for Indigenous males, accounting for 45% of the deaths due to respiratory diseases at a rate 19 times greater than for non-Indigenous males (table 6).

4 ASDR AND SMR, 1992–94[1,2]

	ASDR[3]		SMR[4]	
Cause of death (ICD Chapter)	*Males*	*Females*	*Males*	*Females*
Infectious and parasitic diseases	51	48	***14.7	***17.6
Neoplasms	275	249	***1.4	***1.8
Endocrine and nutritional disorders	161	173	***7.2	***12.8
Diseases of blood and blood-forming organs[5]	11	9	*6.6	*7.1
Mental disorders	45	59	***5.5	***5.5
Diseases of the nervous system	40	29	***4.0	**2.4
Diseases of the circulatory system	705	603	***3.1	***3.6
Respiratory diseases	395	197	***7.9	***7.3
Digestive diseases	77	62	***5.2	***6.2
Diseases of the genitourinary system	43	81	***7.7	***14.1
Complications of pregnancy and child birth[6]	. .	0	. .	. .
Skin diseases[5]	1	12	5.9	*15.8
Diseases of the musculoskeletal system[5]	5	11	2.0	*4.5
Congenital anomalies	9	7	***2.8	*2.2
Certain perinatal conditions	11	13	***3.1	***4.0
Ill-defined conditions	34	31	***7.6	***8.5
Injury and poisoning	223	101	***3.6	***4.4
All causes	**2 087**	**1 686**	***3.5**	***4.0**

1 1994 figures are adjusted for deaths not yet registered and are provisional estimates.
2 Western Australia, South Australia and the Northern Territory combined.
3 Age-standardised to the total 1991 Australian population. Figures are per 100 000 population.
4 Expected death rates were estimated by applying the sex- and age-specific death rates for the combined non-Indigenous population (1992–94) of Western Australia, South Australia and the Northern Territory. SMRs that differ statistically significantly from one are indicated as follows: ***p<0.001, **0.001<p<0.01, *0.01<p<0.05.
5 Fewer than 10 male deaths and 10 female deaths.
6 No deaths during the period.

Source: AIHW mortality database.

Neoplasms accounted for 10% of Indigenous male deaths and 13% of Indigenous female deaths. This was the only disease group for which the SMR was less than 2, although it was still significantly greater than 1 for both sexes (table 4). Mortality patterns varied greatly for different types of cancer, however. Lung cancer had the highest ASDR of any cancer site for both sexes, and the SMR was 1.7 for males, and 2.6 for females (table 6).

The relative contributions of cervical cancer and breast cancer were different for Indigenous women and non-Indigenous women. Among Indigenous women, the ASDR for cervical cancer was twice that for breast cancer, whereas for other Australian women breast cancer caused about eight times as many deaths as cervical cancer. Breast cancer resulted in fewer than expected deaths among Indigenous women, but the SMR for Indigenous women from cervical cancer was over eight times that of non-Indigenous women. For Indigenous men, deaths from prostate cancer were significantly lower than expected. Breast cancer and suicide in females and prostate cancer in males were the only conditions with significantly lower ASDRs in Indigenous people than in non-Indigenous people.

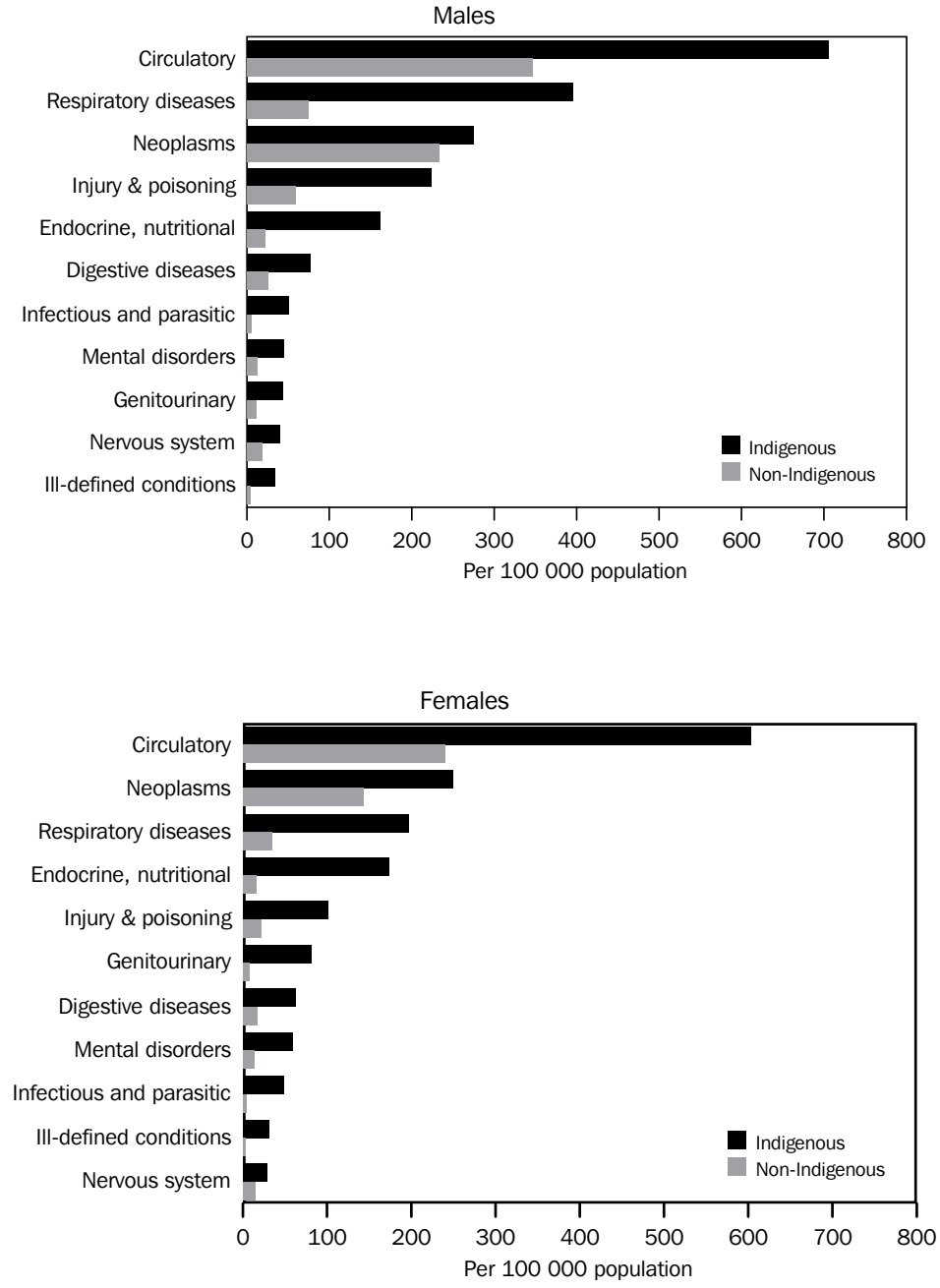
Over four-fifths of Indigenous deaths categorised as resulting from endocrine and nutritional disorders were due to diabetes mellitus, which was directly responsible for about 5% of all male deaths and 8% of all female deaths. Diabetes is a problem in many Indigenous communities (ABS 1995b) and male and female death rates were about 12 and 18 times higher, respectively, than those in the non-Indigenous population (table 6).

Deaths from diseases of the genitourinary system and from infectious and parasitic diseases each comprised only about 3% of all Indigenous deaths, but these two disease groups had the largest SMR, especially for females (table 4). In other words, although these categories do not account for a large number of deaths in absolute terms, the gap between Indigenous and non-Indigenous people was greatest in relative terms. The ASDR for infectious and parasitic diseases in the Northern Territory was over twice that for the other two States.

Digestive system diseases and mental disorders accounted for about 4% and 3% of all Indigenous deaths, respectively, and had SMRs between five and six (table 4). Alcohol abuse was considered to be a factor in many of these deaths. Over half the deaths from digestive system diseases were due to alcohol-related chronic liver disease and cirrhosis, while over two-fifths (44%) of deaths from mental disorders were the result of alcohol dependence syndrome (table 6). Both of these conditions occurred at rates much greater than expected, with especially high SMRs for females, although deaths from these causes were more common in males than in females.

Deaths due to sudden infant death syndrome (SIDS; included under ill-defined conditions) occurred about six times more often than expected for both males and females (table 6). Congenital anomalies and certain perinatal conditions were the other two major causes of death during the first year of life (table 4). The SMRs for these two categories were lower than for SIDS but were still between two and four. Mortality due to slow foetal growth, foetal malnutrition and immaturity was particularly high for Indigenous girls compared to non-Indigenous girls, with more than six times the number of deaths expected (table 6).

5 ASDR, CAUSE OF DEATH, 1992–94



Source: AIHW mortality database.

6 ASDR AND SMR FOR SELECTED CAUSES OF DEATH, 1992–94[1,2]

	ASDR[3]		SMR[4]	
Cause of death	*Males*	*Females*	*Males*	*Females*
Tuberculosis[5]	<1	8	11.1	47.8
Liver cancer[5]	13	7	4.2	8.5
Lung cancer	86	41	**1.7	**2.6
Breast cancer[6]	. .	13	. .	**0.5
Cervical cancer	. .	29	. .	***8.3
Prostate cancer[7]	5	. .	***0.2	. .
Diabetes mellitus	147	153	***12.1	***17.5
Alcohol dependence syndrome[6]	18	11	***13.7	**38.0
Meningitis	3	2	**44.3	15.2
Epilepsy[6]	12	11	***9.4	*6.3
Chronic rheumatic heart disease	15	11	***27.0	**9.7
Hypertensive disease	32	42	***10.6	***10.6
Ischaemic heart disease	391	249	***2.9	***2.9
Cerebrovascular disease	186	201	***3.6	***3.7
Pneumonia	153	53	***19.2	***7.1
Asthma[7]	15	14	*4.0	**5.1
Other chronic obstructive pulmonary disease	126	68	***4.6	***7.9
Chronic liver disease (alcohol-related)	34	25	***8.5	***23.0
Nephritis, nephrotic syndrome and nephrosis	28	41	***6.9	***11.5
Slow foetal growth, foetal malnutrition and immaturity	4	6	**3.3	***6.1
Sudden infant death syndrome	9	7	***6.1	***6.3
Transport accidents	86	31	***4.1	***3.6
Accidental poisoning[6]	7	4	2.0	2.5
Suicide and self-inflicted injury[6]	30	4	***1.8	0.9
Homicide and purposely caused injury	35	27	***15.4	***17.1

1 1994 figures are adjusted for deaths not yet registered and are provisional estimates.
2 Western Australia, South Australia and the Northern Territory combined.
3 Age-standardised to the total 1991 Australian population. Figures are per 100 000 population.
4 Expected death rates were estimated by applying the sex- and age-specific death rates for the combined non-Indigenous population (1992–94) of Western Australia, South Australia and Northern Territory. SMRs that differ statistically significantly from one are indicated as follows: ***p<0.001, **0.001<p<0.01, *0.01<p<0.05.
5 Fewer than 10 male deaths and 10 female deaths.
6 Fewer than 10 female deaths.
7 Fewer than 10 male deaths.

Source: AIHW mortality database.

Mortality from ill-defined conditions in older age groups was also greater for Indigenous people than for the rest of the population (table 4).

Nervous system diseases caused 60 deaths in Indigenous people over the three-year period. These included deaths from meningitis, mostly in the first year of life, and deaths from epilepsy in the middle to older age groups, both at rates greater than those experienced by the non-Indigenous population.

Diseases of the blood and blood-forming organs, skin diseases, and musculoskeletal diseases each averaged 3–4 deaths per year during 1992–94. Despite the small numbers, the mortality rates for these causes appeared to be higher for Indigenous people than for other Australians (table 4).

There were no deaths caused by complications of pregnancy and childbirth during 1992–94.

Mortality by age

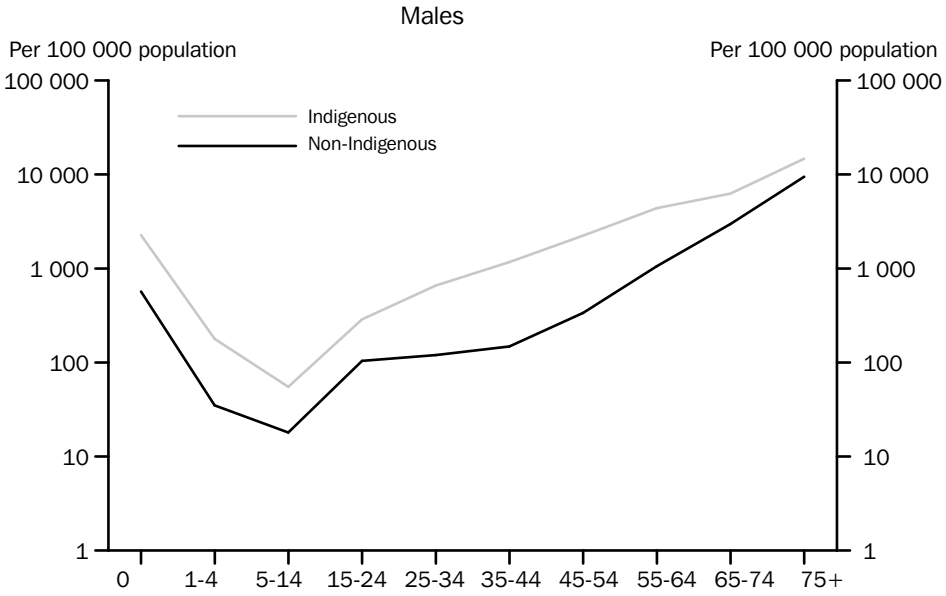
The death rates for Aboriginals and Torres Strait Islanders were greater than those for other Australians at all ages (graph 7). The difference between the two populations was largest in relative terms for the middle age groups, between the ages of 25 and 54 years, in which the Indigenous rates were 5–8 times the non-Indigenous rates.

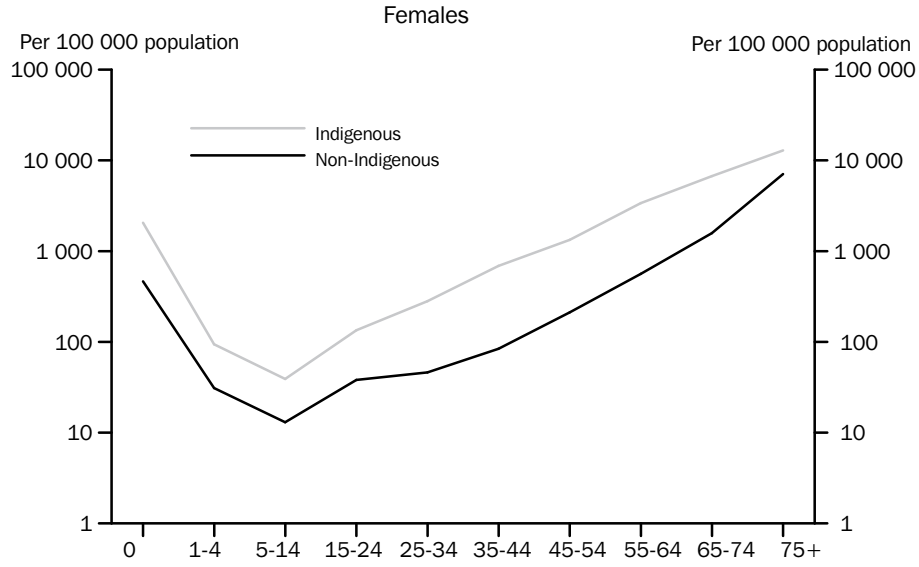
The main causes of death of Indigenous infants were certain perinatal conditions, sudden infant death syndrome and congenital anomalies. Other causes of death at this age included infectious and parasitic diseases, meningitis, pneumonia and cardiovascular disease (tables 8–11).

Between the ages of 1 and 34 years, the leading category of cause of death for both males and females was injury and poisoning, with transport accidents of particular importance, followed by infectious and parasitic diseases and diseases of the nervous system (tables 8 and 9).

Mortality due to injury and poisoning was substantial at all ages. Deaths from suicide occurred mostly between the ages of 15 and 54 years, and those from homicide in those aged 15 years and more (tables 10 and 11).

7 AGE-SPECIFIC DEATH RATES, ALL CAUSES, 1992–94





Source: AIHW mortality database.

8 MALE AGE-SPECIFIC DEATH RATES, 1992–94[1,2]

										Age group (years)
Cause of death (ICD Chapter)	*0*	*1–4*	*5–14*	*15–24*	*25–34*	*35–44*	*45–54*	*55–64*	*65–74*	*75+*
Infectious and parasitic diseases	100	28	7	6	22	30	97	115	112	183
Neoplasms	0	5	2	3	19	80	244	792	1 189	1 822
Endocrine and nutritional disorders	0	5	0	3	18	93	153	400	577	1 127
Diseases of the blood	0	0	0	6	0	0	11	20	37	103
Mental disorders	0	0	0	12	33	51	53	72	79	275
Nervous system diseases	103	17	10	12	18	24	35	75	74	275
Circulatory diseases	80	0	0	19	107	365	722	1 420	2 959	5 027
Respiratory diseases	127	6	0	12	55	171	343	722	956	4 284
Digestive diseases	20	6	0	0	33	62	178	192	112	382
Genitourinary diseases	0	11	0	0	11	13	56	117	37	458
Skin diseases	0	0	0	3	4	0	0	0	0	0
Musculoskeletal diseases	0	0	0	0	0	0	0	18	0	92
Congenital anomalies	438	11	5	3	4	0	0	0	0	0
Certain perinatal conditions	738	5	0	0	0	0	0	0	0	0
Ill-defined conditions	594	5	3	6	19	24	32	98	37	92
Injury and poisoning	63	79	27	203	315	257	315	336	85	565
All causes — Indigenous	**2 264**	**178**	**55**	**288**	**657**	**1 170**	**2 237**	**4 377**	**6 254**	**14 685**
All causes — non-Indigenous	**567**	**35**	**18**	**104**	**120**	**148**	**337**	**1 057**	**2 968**	**9 465**

[1] 1994 figures are adjusted for deaths not yet registered and are provisional estimates.
[2] Western Australia, South Australia and the Northern Territory combined. Figures are per 100 000 population.

Source: AIHW mortality database.

Mortality due to circulatory diseases began to be important by age 25 years and then increased with age (tables 8 and 9). This disease group was the leading category of cause of death in all age groups after age 35 years. Death rates for respiratory diseases, neoplasms and endocrine disorders were low until age 35 years, after which they increased with age. For all these four major categories of cause of death, Indigenous people died at a younger age on average than did non-Indigenous people. This was especially true for circulatory diseases and respiratory diseases.

9 FEMALE AGE-SPECIFIC DEATH RATES, 1992–94[1,2]

	Age group (years)									
Cause of death (ICD Chapter)	*0*	*1–4*	*5–14*	*15–24*	*25–34*	*35–44*	*45–54*	*55–64*	*65–74*	*75+*
Infectious and parasitic diseases	88	18	3	3	7	11	31	69	240	364
Neoplasms	0	0	5	3	14	79	281	624	943	1 908
Endocrine and nutritional disorders	21	0	0	0	11	73	188	554	713	933
Diseases of the blood	0	0	3	0	0	0	10	32	65	0
Mental disorders	0	0	0	0	11	22	30	19	306	623
Nervous system diseases	21	11	5	0	8	18	10	51	68	303
Circulatory diseases	87	18	3	6	71	196	416	1 051	2 623	5 406
Respiratory diseases	67	6	3	12	22	66	100	470	868	1 522
Digestive diseases	21	6	0	15	23	47	76	169	133	360
Genitourinary diseases	0	0	0	0	4	17	95	131	500	511
Complications of pregnancy	0	0	0	0	0	0	0	0	0	0
Skin diseases	0	0	0	0	4	0	10	16	32	156
Musculoskeletal diseases	0	0	0	3	4	11	21	0	38	68
Congenital anomalies	356	0	0	0	4	6	0	0	0	0
Certain perinatal conditions	845	0	0	0	0	0	0	0	0	0
Ill-defined conditions	461	6	0	6	0	18	21	16	65	272
Injury and poisoning	84	29	18	85	99	122	40	182	106	427
All causes — Indigenous	**2 050**	**94**	**39**	**134**	**281**	**686**	**1 331**	**3 384**	**6 698**	**12 853**
All causes — non-Indigenous	**463**	**31**	**13**	**38**	**46**	**84**	**211**	**562**	**1 576**	**7 056**

[1] 1994 figures are adjusted for deaths not yet registered and are provisional estimates.
[2] Western Australia, South Australia and the Northern Territory combined. Figures are per 100 000 population.

Source: AIHW mortality database.

Mortality due to digestive diseases and genitourinary diseases was concentrated in the age groups above 45 years. The age-specific death rate for infectious and parasitic diseases increased with age after 25 years, eventually surpassing the high rates seen in infants and young children. At all ages the rate was many times that for the non-Indigenous population (tables 8 and 9).

The death rates for mental disorders and nervous system diseases peaked in the over–75 age group, but otherwise were relatively evenly spread across ages 25–74. Deaths due to alcohol dependence syndrome and alcohol-related chronic liver disease were also concentrated between these ages (tables 10 and 11).

10 MALE AGE-SPECIFIC DEATH RATES, SELECTED CAUSES OF DEATH, 1992–94[1,2]

	Age group (years)									
Cause of death	*0*	*1–4*	*5–14*	*15–24*	*25–34*	*35–44*	*45–54*	*55–64*	*65–74*	*75+*
Tuberculosis	0	0	0	3	0	0	0	0	0	0
Liver cancer	0	0	0	0	0	0	12	18	81	92
Lung cancer	0	0	0	0	4	7	122	245	285	665
Prostate cancer	0	0	0	0	0	0	0	18	0	92
Diabetes mellitus	0	0	0	3	0	54	141	380	540	1 127
Alcohol dependence syndrome	0	0	0	6	18	38	32	54	0	0
Meningitis	83	5	3	3	0	6	0	0	0	0
Epilepsy	0	0	0	6	14	12	35	36	0	0
Chronic rheumatic heart disease	0	0	0	16	15	24	0	0	37	92
Hypertensive disease	0	0	0	0	7	6	57	76	116	195
Ischaemic heart disease	0	0	0	0	53	263	519	988	1 481	2 226
Cerebrovascular disease	40	0	0	0	11	30	81	209	1 005	1 850
Pneumonia	80	0	0	6	33	122	178	224	347	1 444
Asthma	0	0	0	0	7	0	11	62	37	107
Other chronic obstructive pulmonary disease	0	0	0	0	0	0	99	301	381	1 413
Chronic liver disease (alcohol-related)	0	0	0	0	26	50	111	75	37	0
Nephritis, nephrotic syndrome and nephrosis	0	0	0	0	11	6	23	78	0	367
Slow foetal growth, foetal malnutrition and immaturity	272	5	0	0	0	0	0	0	0	0
Sudden infant death syndrome	574	5	0	0	0	0	0	0	0	0
Transport accidents	40	22	10	100	135	86	140	203	0	0
Accidental poisoning	0	0	2	12	25	7	0	0	0	0
Suicide and self-inflicted injury	0	0	0	51	66	50	35	0	0	0
Homicide and purposely caused injury	23	5	2	29	45	61	65	18	0	92

[1] 1994 figures are adjusted for deaths not yet registered and are provisional estimates.
[2] Western Australia, South Australia and the Northern Territory combined. Figures are per 100 000 population.

Source: AIHW mortality database.

11 FEMALE AGE-SPECIFIC DEATH RATES, SELECTED CAUSES OF DEATH, 1992–94[1,2]

	Age group (years)									
Cause of death	*0*	*1–4*	*5–14*	*15–24*	*25–34*	*35–44*	*45–54*	*55–64*	*65–74*	*75+*
Tuberculosis	0	0	0	0	0	0	10	0	0	153
Liver cancer	0	0	0	0	0	0	0	16	32	68
Lung cancer	0	0	0	0	0	17	51	131	137	283
Breast cancer	0	0	0	0	0	11	20	64	0	79
Cervical cancer	0	0	0	0	4	0	61	68	135	136
Diabetes mellitus	0	0	0	0	7	43	166	520	681	786
Alcohol dependence syndrome	0	0	0	0	4	22	20	0	65	0
Meningitis	21	0	3	0	4	0	10	0	0	0
Epilepsy	0	6	0	0	4	12	0	35	32	76
Chronic rheumatic heart disease	0	0	3	0	0	23	31	16	32	0
Hypertensive disease	0	0	0	0	0	11	20	99	203	357
Ischaemic heart disease	0	0	0	0	22	51	211	608	1 263	1 667
Cerebrovascular disease	0	0	0	0	8	39	84	208	755	2 586
Pneumonia	0	6	3	3	11	6	30	133	202	453
Asthma	0	0	0	3	0	17	20	37	32	68
Other chronic obstructive pulmonary disease	0	0	0	0	0	22	20	170	460	357
Chronic liver disease (alcohol-related)	0	0	0	3	16	42	55	83	32	0
Nephritis, nephrotic syndrome and nephrosis	0	0	0	0	0	6	74	82	226	215
Slow foetal growth, foetal malnutrition and immaturity	399	0	0	0	0	0	0	0	0	0
Sudden infant death syndrome	438	0	0	0	0	0	0	0	0	0
Transport accidents	0	11	5	31	40	35	10	80	70	0
Accidental poisoning	0	0	0	3	11	11	0	0	0	0
Suicide and self-inflicted injury	0	0	0	6	0	12	10	0	0	0
Homicide and purposely caused injury	0	0	0	44	41	42	10	67	0	0

[1] 1994 figures are adjusted for deaths not yet registered and are provisional estimates.
[2] Western Australia, South Australia and the Northern Territory combined. Figures are per 100 000 population.

Source: AIHW mortality database.

TRENDS IN INDIGENOUS MORTALITY, 1985–94

ALL CAUSES

Males

The total ASDR for Indigenous males in Western Australia, South Australia and the Northern Territory combined, fell gradually from 1985 to 1994 at an estimated average rate of 1.5% per year (tables 12 and 13, graph 14). This trend was statistically significant, with a 95% confidence interval of 0.5% to 2.5%. The mean age-standardised rate over the 10-year period was 2,221 deaths per 100,000 males, with all years after 1989 falling below this level.

Mortality rates for Indigenous males declined at approximately the same rate as for non-Indigenous males, and the gap between the two populations remained about the same. The SMR changed only slightly from 3.6 in 1989–91 to 3.5 in 1992–94 (table 13).

Females

There was no apparent trend in the ASDR for Indigenous females (tables 12 and 13, graph 14). The estimated average yearly increase of 0.4% was not significantly different from no change. The mean rate for the 10-year period was 1,658 deaths per 100,000 females.

The gap in mortality rates between Indigenous and non-Indigenous females did not appear to decrease, and there was little change in the SMR from 1989–91 to 1992–94 (table 13).

12 ASDR[1], ALL CAUSES[2]

Year	*Males*	*Females*
1985[3]	2 354	1 704
1986[3]	2 292	1 656
1987[3]	2 462	1 502
1988	2 101	1 481
1989	2 378	1 628
1990	2 149	1 711
1991	2 211	1 829
1992	2 043	1 536
1993	2 077	1 696
1994[4]	2 142	1 832

[1] Age-standardised to the 1991 total Australian population, per 100 000 persons.
[2] Western Australia, South Australia and the Northern Territory combined.
[3] Data from Western Australia and the Northern Territory only.
[4] 1994 figures are adjusted for deaths not yet registered and are provisional estimates.

Source: AIHW mortality database.

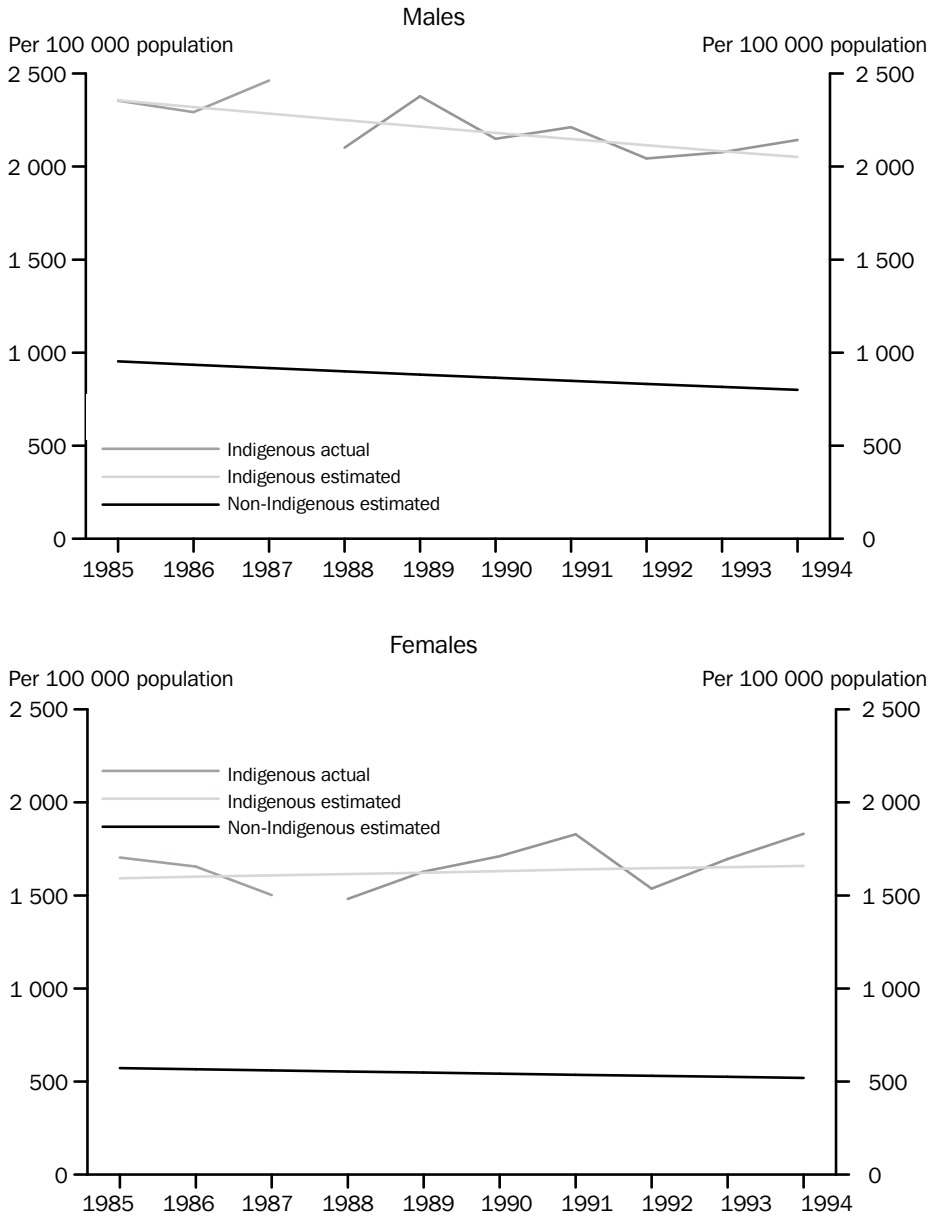
13 ESTIMATED CHANGE IN ASDR AND SMR, ALL CAUSES[1]

	Males	*Females*
Mean annual % change in ASDR, 1985–94	**–1.5	0.4
95% confidence interval	–2.5 to –0.5	–0.8 to 1.6
SMR		
1989–91	3.6	4.0
1992–94	3.5	4.0
% change	–1	–1

[1] Data from Western Australia and the Northern Territory 1985–94 and South Australia 1988–94. Estimates and % changes are not statistically significant at the 5% level unless otherwise indicated: ***p<0.001, **0.001<p<0.01, *0.01<p<0.05.

Source: AIHW mortality database.

14 ASDR, ALL CAUSES



Source: AIHW mortality database, data for Western Australia and Northern Territory 1985–94, and South Australia 1988–94.

INFECTIOUS AND PARASITIC DISEASES

The number of deaths from infectious and parasitic diseases varies greatly from year to year, and it can be difficult to distinguish between real trends and fluctuations caused by outbreaks of particular infectious diseases in given years.

Despite this difficulty, there was a statistically significant general decrease in the ASDR from infectious and parasitic diseases for Indigenous males over the period from 1985 to 1994 (tables 15 and 16, graph 17). This decline, for males, reflected a period of comparatively high rates from 1985 to 1988 followed by a period of comparatively low rates from 1989 to 1994, with the exception of 1990.

For Indigenous females, the apparent trend was much smaller and was not significantly different from no change over the ten-year period.

15 ASDR[1], INFECTIOUS AND PARASITIC DISEASES[2]

Year	*Males*	*Females*
1985[3]	134	64
1986[3]	73	53
1987[3]	111	62
1988	81	71
1989	25	42
1990	99	57
1991	25	65
1992	59	51
1993	62	23
1994[4]	31	71

[1] Age-standardised to the 1991 total Australian population, per 100 000 persons.
[2] Western Australia, South Australia and the Northern Territory combined.
[3] Data from Western Australia and the Northern Territory only.
[4] 1994 figures are adjusted for deaths not yet registered and are provisional estimates.

Source: AIHW mortality database.

The gap between Indigenous and non-Indigenous death rates from infectious and parasitic diseases is quite large in relative terms, and the SMRs for both sexes continued to be the highest of all ICD–9 chapters. Although the SMR appeared to decline somewhat for females between 1989–91 and 1992–94, this decrease was not statistically significant (table 16).

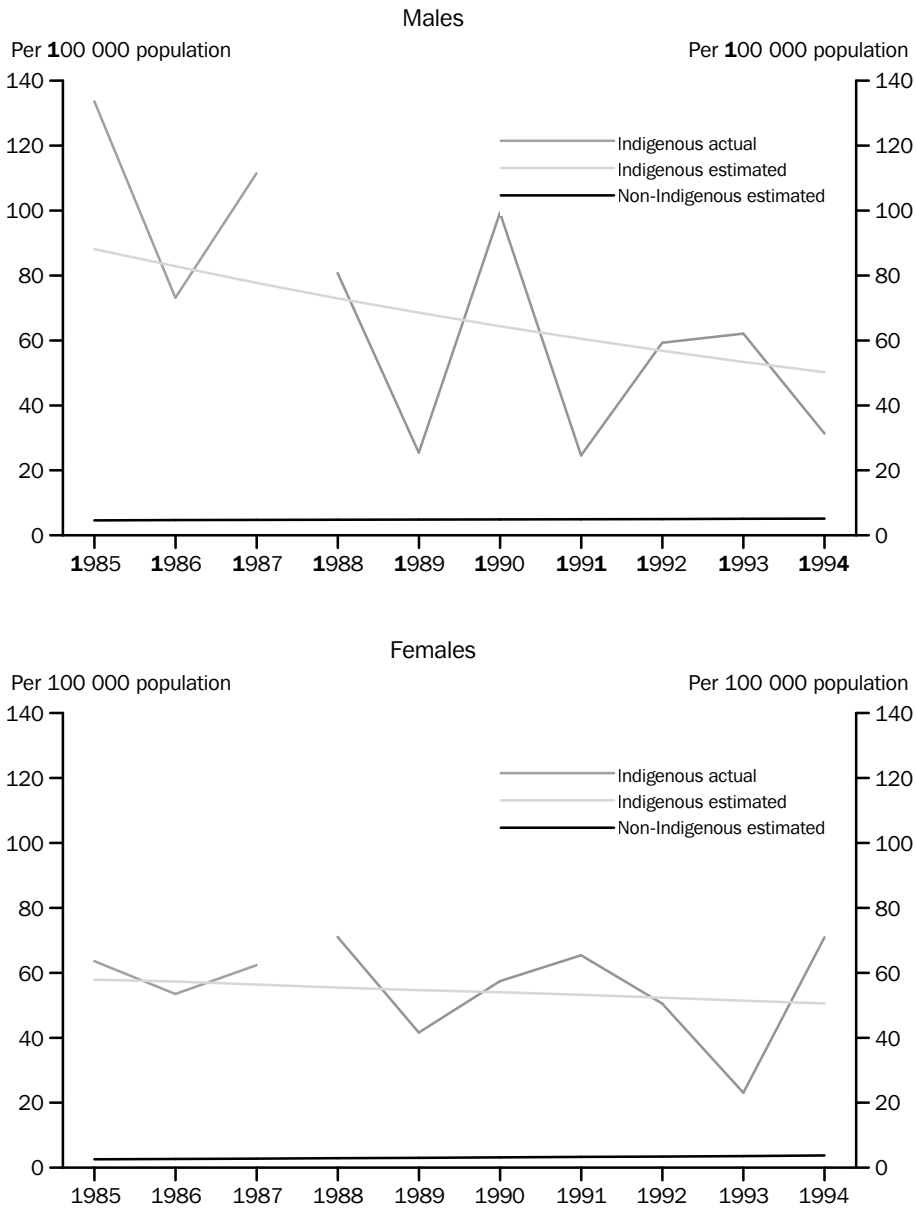
16 ESTIMATED CHANGE IN ASDR AND SMR, INFECTIOUS AND PARASITIC DISEASES[1]

	Males	*Females*
Mean annual % change in ASDR, 1985–94	*–6.0	1.9
95% confidence interval	–11.1 to –0.6	–8.0 to 4.6
SMR		
1989–91	14.7	22.5
1992–94	14.7	17.6
% change	0	–21

[1] Data from Western Australia and the Northern Territory 1985–94 and South Australia 1988–94. Estimates and % changes are not statistically significant at the 5% level unless otherwise indicated: ***p<0.001, **0.001<p<0.01, *0.01<p<0.05.

Source: AIHW mortality database.

17 ASDR, INFECTIOUS AND PARASITIC DISEASES



Source: AIHW mortality database, data for Western Australia and the Northern Territory 1985–94, and South Australia 1988–94.

NEOPLASMS

The rates of Indigenous deaths due to neoplasms fluctuated widely between 1985 and 1994, especially for Indigenous males (table 18, graph 19).

There was a suggestion of an increase in ASDR over the ten-year period, especially for Indigenous females, but this was not statistically significant for either sex (table 20). Overall mortality from neoplasms was higher for Indigenous males than for Indigenous females, but this was not the case in all years. Although female rates exceeded male rates in 1992 and 1993, the pattern was reversed in 1994. The relative difference between Indigenous and non-Indigenous death rates remained virtually unchanged for both sexes for the periods 1989–91 and 1992–94 (table 20).

18 ASDR[1], NEOPLASMS[2]

	1985[3]	*1986*[3]	*1987*[3]	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*[4]
All neoplasms										
Males	225	206	312	227	339	208	294	246	238	342
Females	199	211	152	166	217	237	240	283	274	193
Liver cancer										
Males	32	42	9	38	7	11	7	5	20	13
Females	9	7	0	0	21	0	7	13	6	0
Lung cancer										
Males	53	38	144	33	108	80	59	70	69	117
Females	19	61	21	30	44	34	44	49	41	33
Breast cancer										
Females	5	19	5	6	28	27	37	12	17	11
Cervical cancer										
Females	28	23	41	23	27	36	34	39	26	21
Prostate cancer										
Males	0	0	24	18	0	10	23	4	12	0

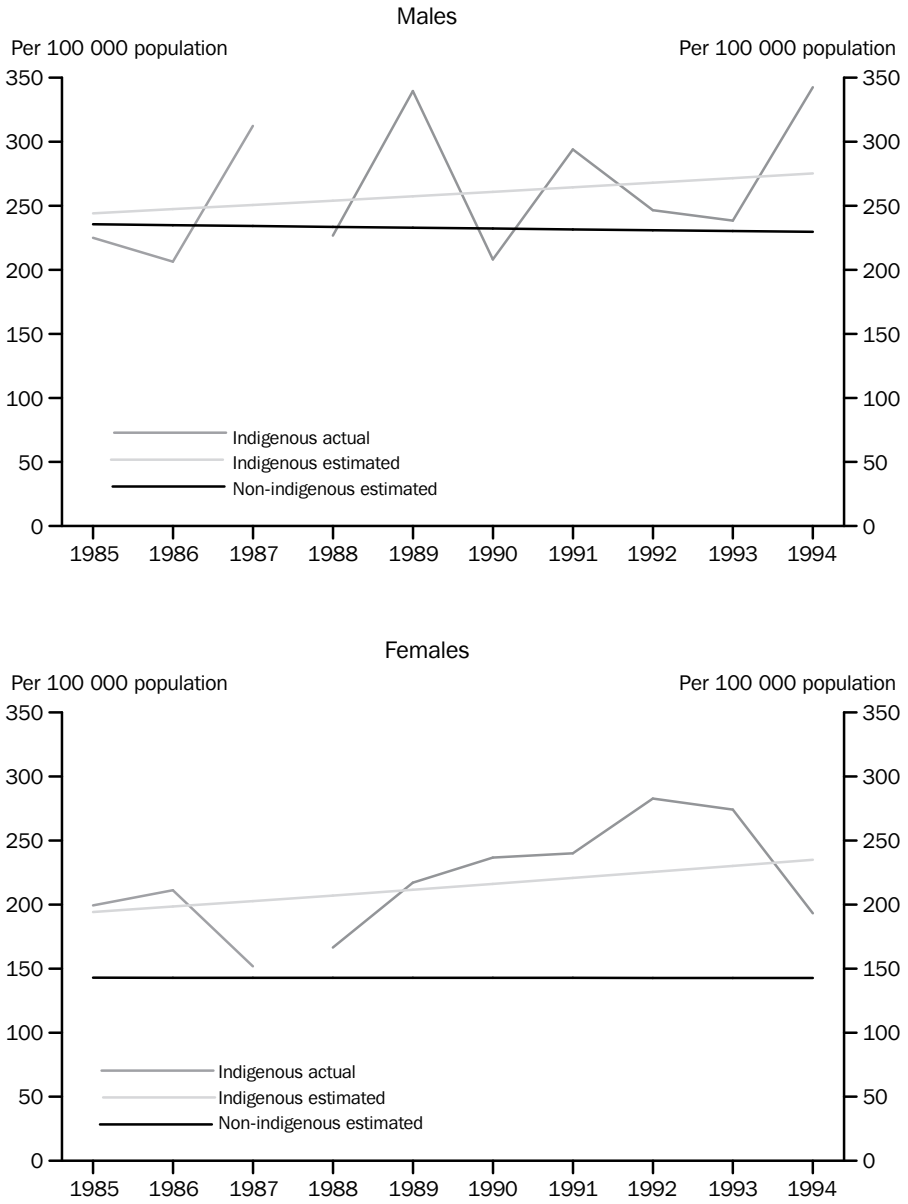
[1] Age-standardised to the 1991 total Australian population, per 100 000 persons.
[2] Western Australia, South Australia and the Northern Territory combined.
[3] Data from Western Australia and the Northern Territory only.
[4] 1994 figures are adjusted for deaths not yet registered and are provisional estimates.

Source: AIHW mortality database.

The fluctuations in death rates for neoplasms as a whole were reflected by the patterns for most individual cancer sites. No statistically significant trends in ASDR were noted for liver, lung, breast, cervical or prostate cancer. For Indigenous males, the rates for liver cancer were much higher than average in 1985, 1986 and 1988 and have since remained relatively low, which may indicate that some change has occurred for this site (graph 21).

Although the SMRs for individual cancer sites all showed a decrease between 1989–91 and 1992–94, only that for breast cancer decreased significantly (table 20). Mortality from breast cancer in Indigenous females peaked noticeably in 1989–91 (table 18) when the ASDRs were just above the rates for non-Indigenous females. The rates for Indigenous females then fell in 1992 and remained low through 1994. As a result, the SMR for breast cancer dropped significantly from 1.1 in 1989–91 to 0.5 in 1992–94.

19 ASDR, NEOPLASMS



Source: AIHW mortality database, data for Western Australia and Northern Territory 1985–94, and South Australia 1988–94.

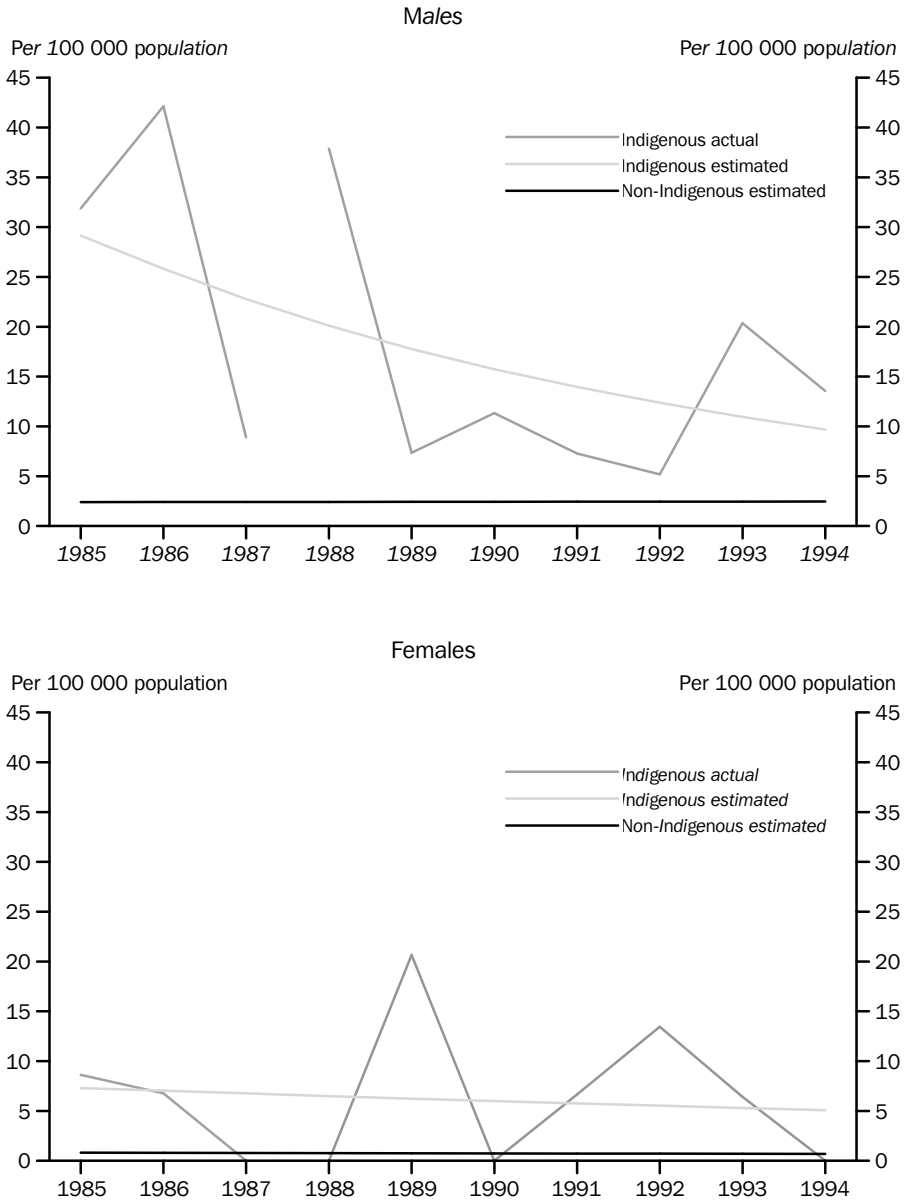
20 ESTIMATED CHANGE IN ASDR AND SMR, NEOPLASMS[1]

	All neoplasms		*Liver cancer*		*Lung cancer*		*Breast cancer*	*Cervical cancer*	*Prostate cancer*
	Males	*Females*	*Males*	*Females*	*Males*	*Females*	*Females*	*Females*	*Males*
Mean annual % change in ASDR, 1985–94	1.4	2.1	–11.5	–4.4	1.5	2.2	3.5	–2.7	–2.2
95% confidence interval	–2.0 to 4.9	–1.5 to 5.7	–23.1 to 2.0	–23.4 to 19.4	–4.6 to 8.0	–6.2 to 11.2	–8.7 to 17.3	–10.6 to 6.0	–23.3 to 24.5
SMR									
1989–91	1.4	1.8	4.5	12.0	1.8	2.7	1.1	9.0	0.3
1992–94	1.4	1.8	4.2	8.5	1.7	2.6	0.5	8.3	0.2
% change	–3	–3	–6	–29	–2	–4	***–50	–8	–41

[1] Data from Western Australia and the Northern Territory 1985–94, and South Australia 1988–94. Estimates and % changes are not statistically significant at the 5% level unless otherwise indicated: ***p<0.001, **0.001<p<0.01, *0.01<p<0.05.

Source: AIHW mortality database.

21 ASDR, LIVER CANCER



Source: AIHW mortality database, data for Western Australia and Northern Territory 1985–94, and South Australia 1988–94.

ENDOCRINE AND NUTRITIONAL DISORDERS

About four-fifths of the deaths from endocrine and nutritional disorders were due to diabetes mellitus, so that the trend for this group as a whole tended to reflect that for diabetes. For Indigenous males, the ASDR for diabetes, and for the group as a whole, rose sharply from 1985 to 1994 (table 22, graph 24). The increase in the ASDR for Indigenous males was estimated to be 7.6% per year for all endocrine and nutritional disorders and 9.6% per year for diabetes (table 23), with both estimates being statistically significant.

22 ASDR[1], ENDOCRINE, NUTRITIONAL AND METABOLIC DISEASES AND IMMUNITY DISORDERS[2]

	All endocrine and nutritional disorders		*Diabetes mellitus*	
Year	*Males*	*Females*	*Males*	*Females*
1985[3]	70	149	54	87
1986[3]	82	203	56	155
1987[3]	99	159	72	113
1988	47	144	43	114
1989	111	128	77	90
1990	129	157	102	138
1991	157	189	104	167
1992	169	122	161	102
1993	167	195	154	180
1994[4]	146	203	124	178

[1] Age-standardised to the 1991 total Australian population, per 100 000 persons.
[2] Western Australia, South Australia and the Northern Territory combined.
[3] Data from Western Australia and the Northern Territory only.
[4] 1994 figures are adjusted for deaths not yet registered and are provisional estimates.

Source: AIHW mortality database.

The ASDR for Indigenous females exhibited more variation from year to year and the estimated increase for all endocrine and nutritional disorders was much smaller than that for males and was not statistically significant (tables 22 and 23, graph 24). It appears that there were conflicting trends in death rates from diabetes and those from endocrine and nutritional disorders other than diabetes. There was a statistically significant estimated increase in the death rate for diabetes of 5.4% per year, which was just over half as big as the estimated increase for Indigenous males. By contrast, there was an estimated decrease for endocrine and nutritional disorders other than diabetes of 9.4% per year (95% confidence limits –17.4 to –0.5; $p < 0.05$). As a result, the proportion of deaths from endocrine and nutritional disorders which were attributed to diabetes increased over the ten-year period for Indigenous females.

Because of the larger increase in the rate of death from diabetes among Indigenous males, the ASDR for Indigenous males approached that of Indigenous females by the end of the ten-year period. Previously the death rate for diabetes was lower for males than for females, in contrast to the non-Indigenous population for which the opposite is true.

Despite the significant upward trends over time, the SMR for all endocrine and nutritional disorders decreased slightly from 1989–91 to 1992–94 in both sexes due in part to higher than expected death rates for non-Indigenous people in 1994. The SMR for diabetes increased from 1989–91 to 1992–94, although not significantly (table 23).

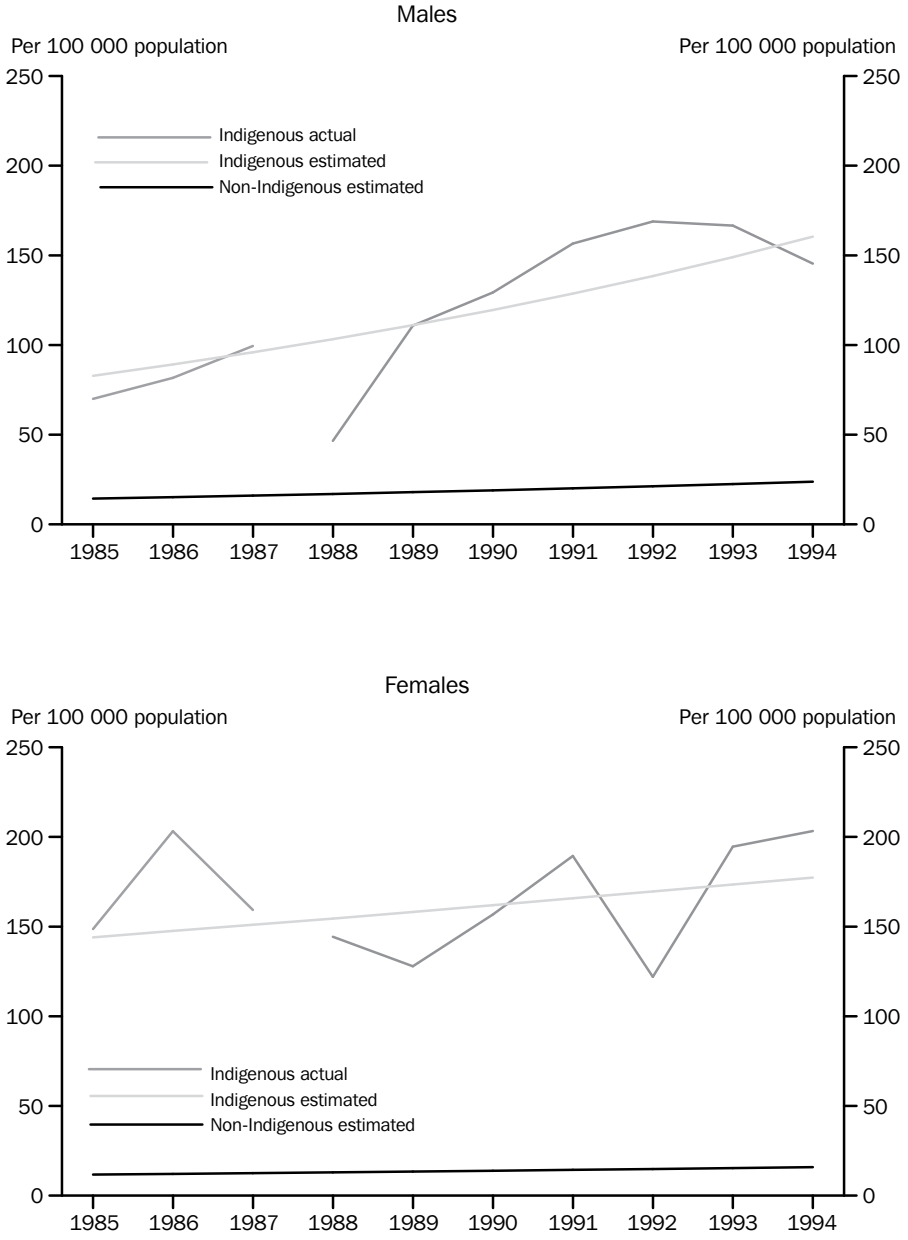
23 ESTIMATED CHANGE IN THE ASDR AND SMR, ENDOCRINE, NUTRITIONAL AND METABOLIC DISORDERS[1]

	All endocrine and nutritional disorders		*Diabetes mellitus*	
	Males	*Females*	*Males*	*Females*
Mean annual % change in ASDR, 1985–94	**7.6	2.2	***9.6	*5.4
95% confidence interval	2.3 to 13.1	–1.9 to 6.5	3.4 to 16.2	0.6 to 10.4
SMR				
1989–91	7.3	14.5	10.2	16.7
1992–94	7.2	12.8	12.1	17.5
% change	–1	–12	19	5

[1] Data from Western Australia and the Northern Territory 1985–94 and South Australia 1988–94. Estimates and % changes are not statistically significant at the 5% level unless otherwise indicated: ***p<0.001, **0.001<p<0.01, *0.01<p<0.05.

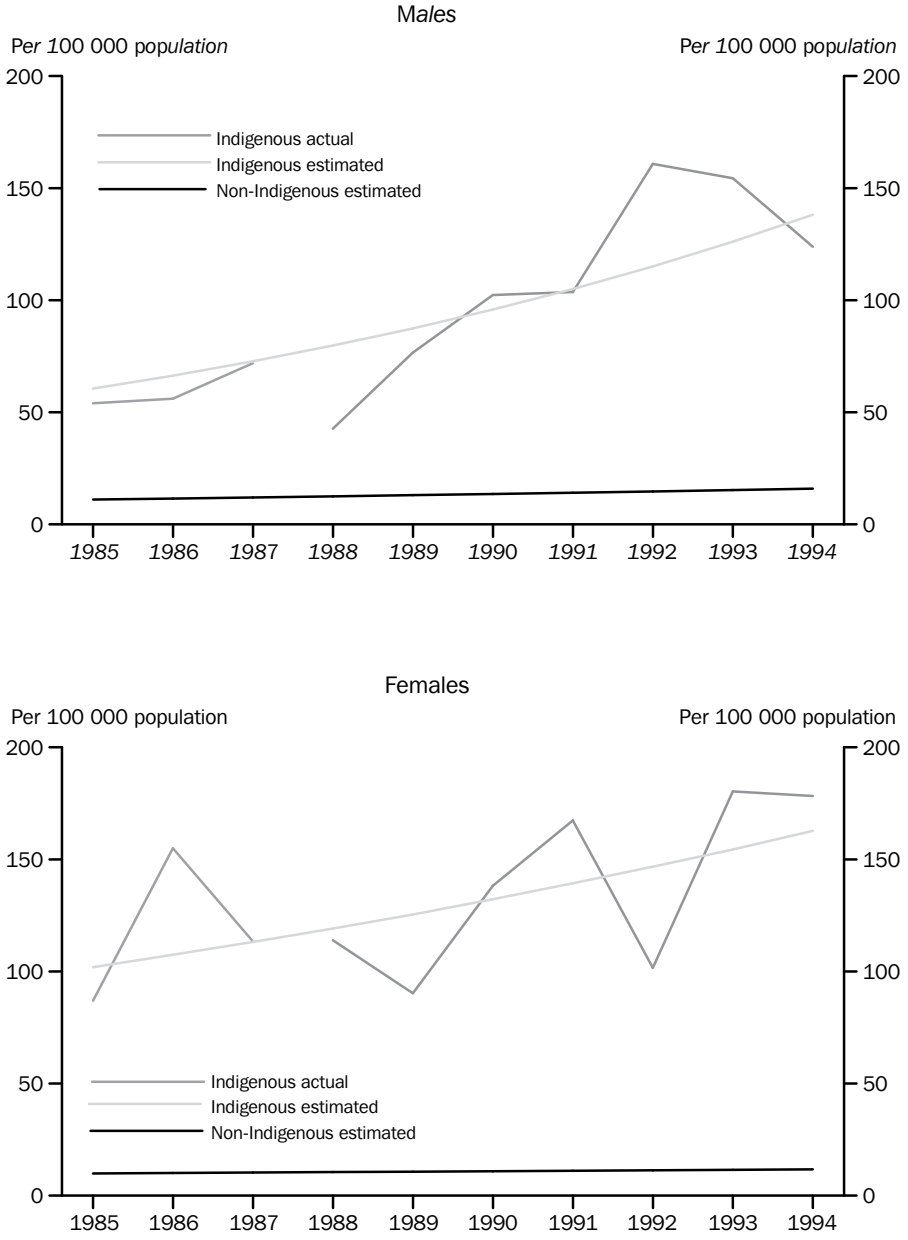
Source: AIHW mortality database.

24 ASDR, ENDOCRINE, NUTRITIONAL AND METABOLIC DISEASES AND IMMUNITY DISORDERS



Source: AIHW mortality database, data for Western Australia and Northern Territory 1985–94, and South Australia 1988–94.

25 *ASDR, DIABETES*



Source: AIHW mortality database, data for Western Australia and Northern Territory 1985–94, and South Australia 1988–94.

DISEASES OF THE BLOOD

Between 1985 and 1994 there were 13 deaths of Indigenous males and 10 deaths of Indigenous females due to diseases of the blood (ASDR per 100,000 persons are presented in table 26). Since 18 of these deaths occurred in the five-year period from 1990 to 1994, it is possible that mortality from diseases of the blood was increasing, but the small numbers did not allow a meaningful analysis of trend. The SMR increased to about seven for both sexes in 1992–94 (table 27).

26 ASDR[1], DISEASES OF THE BLOOD AND BLOOD-FORMING ORGANS[2]

Year	*Males*	*Females*
1985[3]	13	0
1986[3]	21	13
1987[3]	0	7
1988	0	0
1989	0	0
1990	15	0
1991	11	14
1992	9	4
1993	4	21
1994[4]	20	1

[1] Age-standardised to the 1991 total Australian population, per 100 000 persons.
[2] Western Australia, South Australia and the Northern Territory combined.
[3] Data from Western Australia and the Northern Territory only.
[4] 1994 figures are adjusted for deaths not yet registered and are provisional estimates.

Source: AIHW mortality database.

27 ESTIMATED CHANGE IN SMR, DISEASES OF THE BLOOD AND BLOOD-FORMING ORGANS[1]

	Males	*Females*
SMR		
1989–91	4.5	2.9
1992–94	6.6	7.1
% change	46	144

[1] Data from Western Australia and the Northern Territory 1985–94, and South Australia 1988–94. % changes are not statistically significant at the 5% level unless otherwise indicated: ***p<0.001, **0.001<p<0.01, *0.01<p<0.05.

Source: AIHW mortality database.

MENTAL DISORDERS

The ASDR for mental disorders for Indigenous males decreased between 1985 and 1994, especially in the last few years of the period (table 28, graph 29). The estimated average decrease was 8.7% per year, with the trend consistent across age groups and States. Much of this decrease was the result of a significant downward trend in the death rate for alcohol dependence syndrome, which is estimated to have decreased at an average of 11.2% per year (graph 30, table 31). In 1994, the ASDR for this disease was only about one-fifth the rate for the years 1985–88. It is uncertain how much of this drop could be attributed to changes in diagnostic practice. Alcohol dependence syndrome accounted for just over half of the deaths due to mental disorders in Indigenous males during the ten-year period.

In contrast, the ASDR for mental disorders for Indigenous females fluctuated around 40 per 100,000 females, with no statistically significant

trend (tables 28 and 31, graph 29). Mortality from alcohol dependence syndrome in females was much lower than that for males, and varied from year to year without any clear pattern (tables 28 and 31, graph 30). About 39% of deaths from mental disorders in Indigenous females were due to alcohol dependence syndrome.

28 ASDR[1], MENTAL DISORDERS[2]

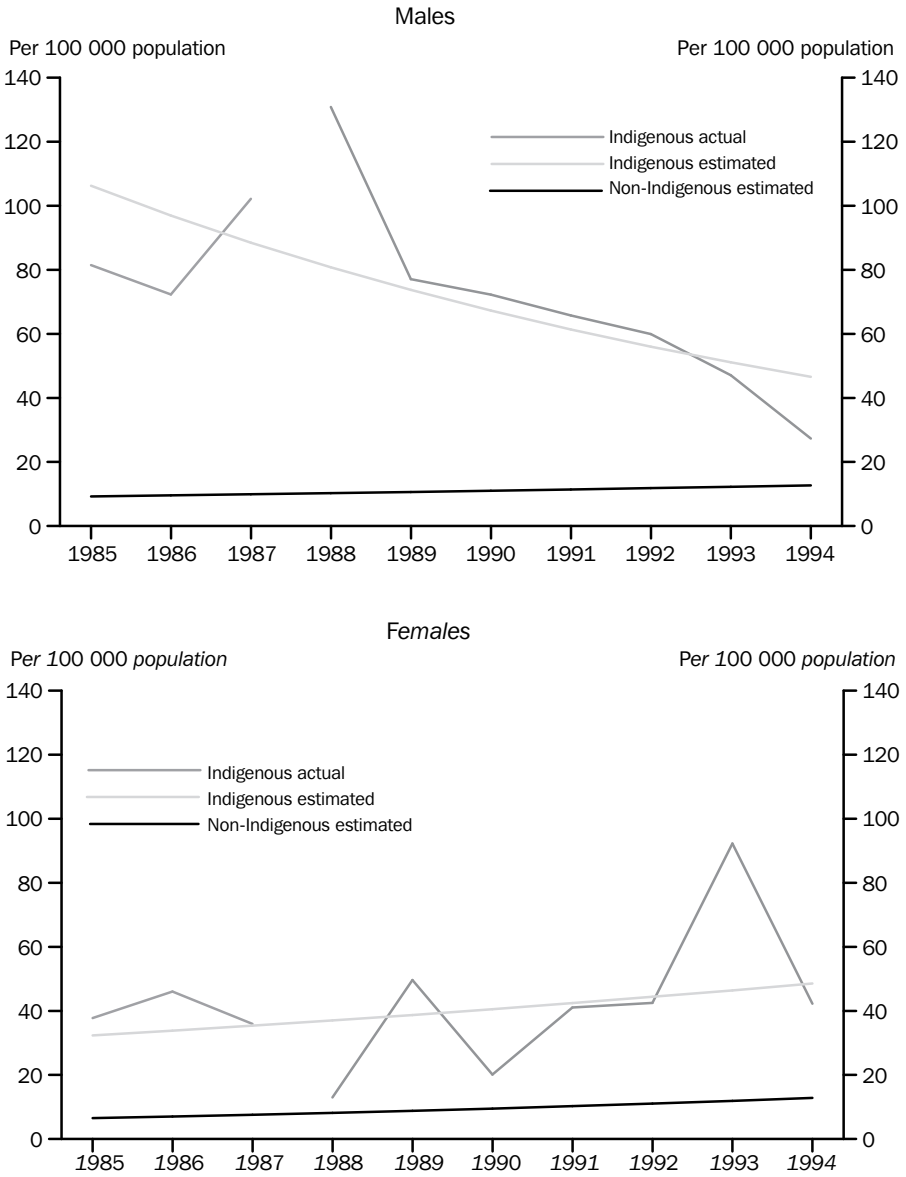
	All mental disorders		*Alcohol dependence syndrome*		*Other mental disorders*	
Year	*Males*	*Females*	*Males*	*Females*	*Males*	*Females*
1985[3]	81	38	49	28	32	10
1986[3]	72	46	54	20	19	26
1987[3]	102	36	42	5	60	31
1988	131	13	61	0	70	13
1989	77	50	29	11	48	38
1990	72	20	34	4	38	17
1991	66	41	36	24	30	17
1992	60	42	16	8	44	34
1993	47	92	28	24	19	68
1994[4]	27	42	11	0	17	42

[1] Age-standardised to the 1991 total Australian population, per 100 000 persons.
[2] Western Australia, South Australia and the Northern Territory combined.
[3] Data from Western Australia and the Northern Territory only.
[4] 1994 figures are adjusted for deaths not yet registered and are provisional estimates.

Source: AIHW mortality database.

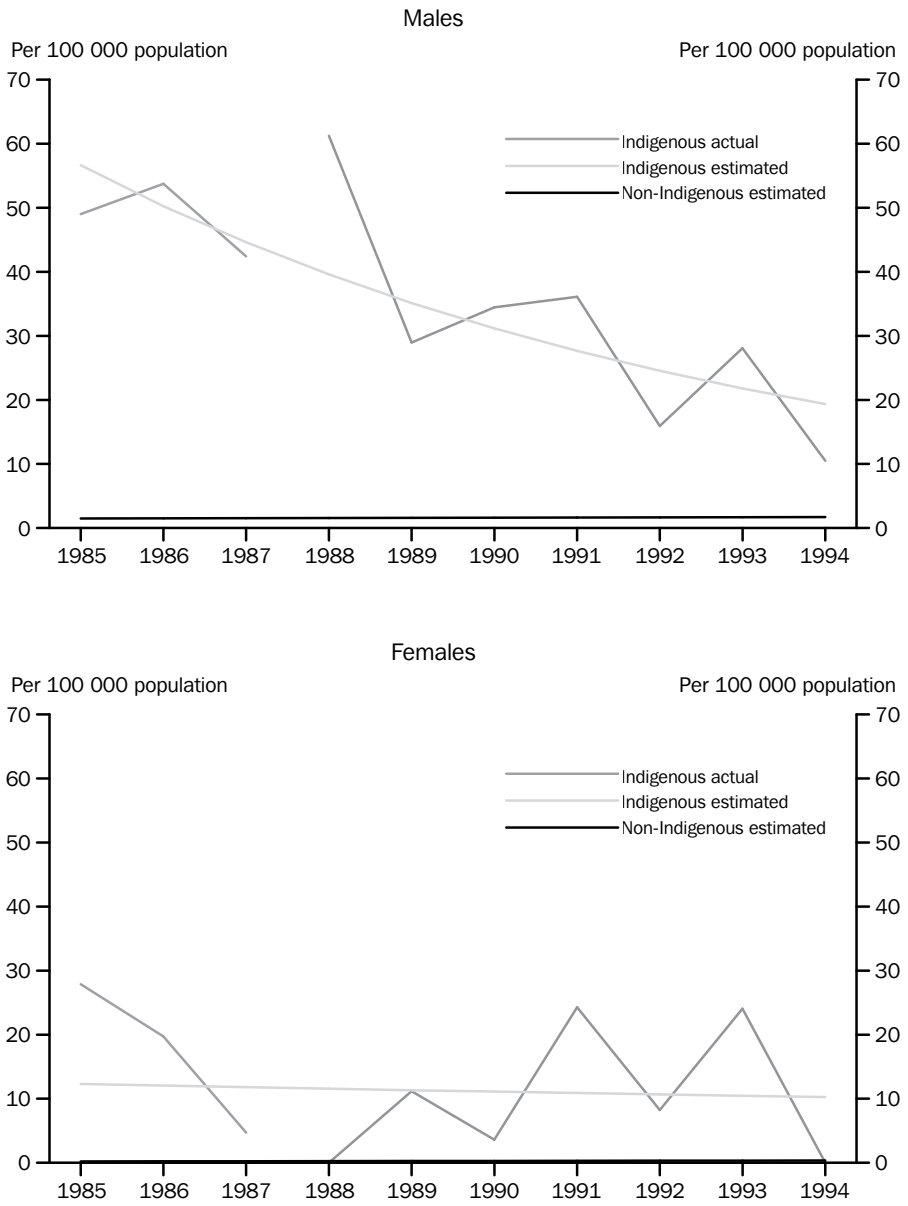
Between 1989–91 and 1992–94, the SMR for mental disorders dropped by over 50% for Indigenous males but did not change substantially for Indigenous females. The figures for males and females were similar in the latter period. The SMR for alcohol dependence syndrome declined by about half for both males and females. Mortality rates due to this cause were very low for non-Indigenous females, however, and the decline in the figure for females may merely reflect haphazard changes in the non-Indigenous death rate.

29 ASDR, MENTAL DISORDERS



Source: AIHW mortality database, data for Western Australia and Northern Territory 1985–94, and South Australia 1988–94.

30 ASDR, ALCOHOL DEPENDENCE SYNDROME



Source: AIHW mortality database, data for Western Australia and Northern Territory 1985–94, and South Australia 1988–94.

31 ESTIMATED CHANGE IN ASDR AND SMR, MENTAL DISORDERS[1]

	All mental disorders		*Alcohol dependence syndrome*		*Other mental disorders*	
	Males	*Females*	*Males*	*Females*	*Males*	*Females*
Mean annual % change in ASDR, 1985–94	***–8.7	4.8	**–11.2	–2.0	–5.1	9.7
95% confidence interval	–13.8 to –3.3	–3.4 to 13.7	–17.7 to –4.3	–13.7 to 11.3	–13.1 to 3.5	–1.4 to 22.1
SMR						
1989–91	11.4	6.5	29.2	69.3	6.6	3.1
1992–94	5.5	5.5	13.7	38.0	3.2	4.1
% change	***–52	14	***–53	**–45	*–53	31

[1] Data from Western Australia and the Northern Territory 1985–94, and South Australia 1988–94. Estimates and % changes are not statistically significant at the 5% level unless otherwise indicated: ***p<0.001, **0.001<p<0.01, *0.01<p<0.05.

Source: AIHW mortality database.

NERVOUS SYSTEM DISEASES

The ASDR for diseases of the nervous system and sense organs showed no clear trends for Indigenous males or females. The ASDR for Indigenous males was generally around 40–60 deaths per 100,000, except for a peak in 1985 and lows in 1986 and 1994 (table 32, graph 33). The death rate for Indigenous females was generally between 20 and 40 deaths per 100,000, but was lower in 1986, 1991 and 1992. There was a sharp rise in death rates for Indigenous females from 1993 to 1994.

32 ASDR[1], DISEASES OF THE NERVOUS SYSTEM AND SENSE ORGANS[2]

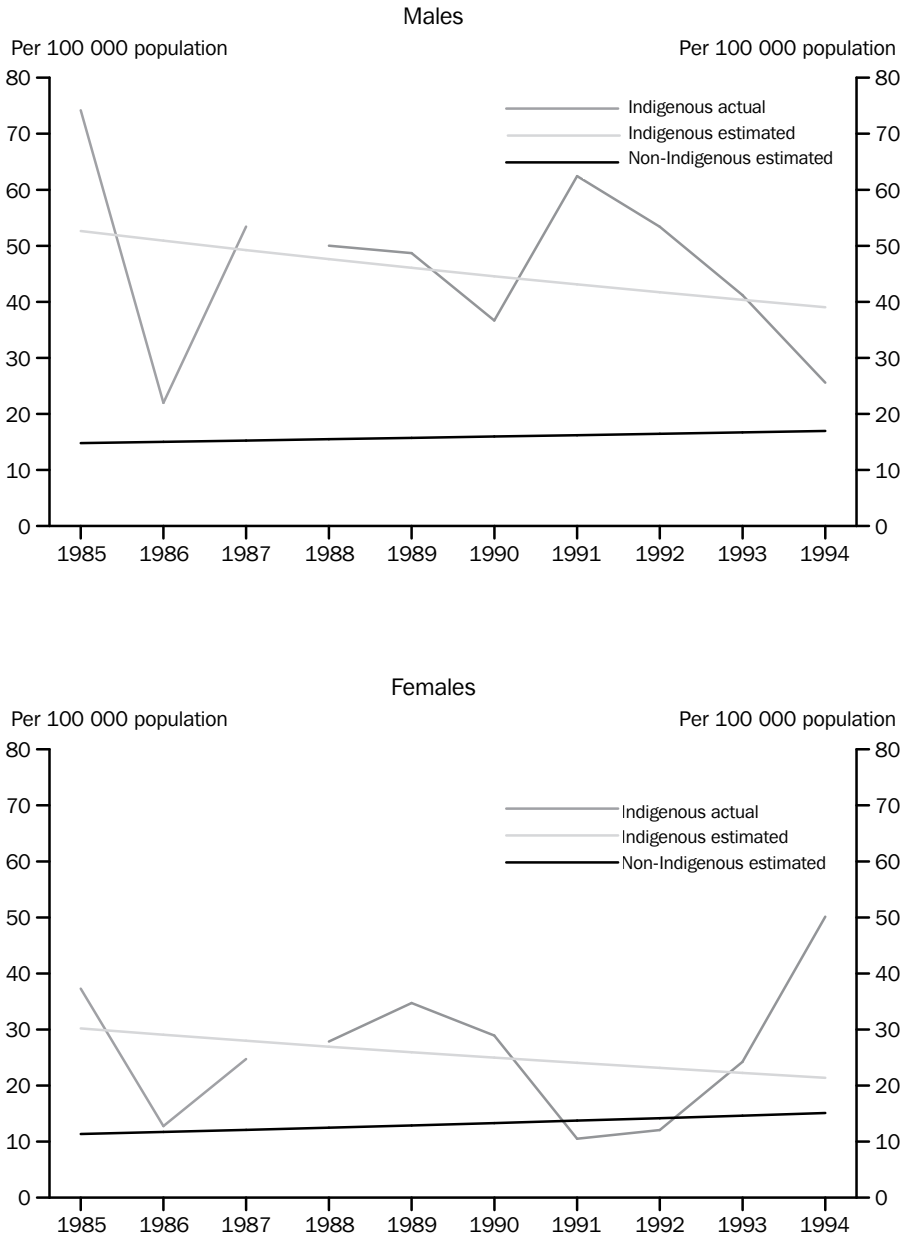
	All nervous system diseases		*Meningitis*		*Epilepsy*	
Year	*Males*	*Females*	*Males*	*Females*	*Males*	*Females*
1985[3]	74	37	17	17	28	10
1986[3]	22	13	4	2	11	5
1987[3]	53	25	18	2	9	0
1988	50	28	8	4	21	10
1989	49	35	8	10	20	9
1990	37	29	4	6	13	3
1991	62	10	1	0	11	5
1992	53	12	1	2	17	1
1993	41	24	5	3	9	15
1994[4]	25	51	4	2	9	18

[1] Age-standardised to the 1991 total Australian population, per 100 000 persons.
[2] Western Australia, South Australia and the Northern Territory combined.
[3] Data from Western Australia and the Northern Territory only.
[4] 1994 figures are adjusted for deaths not yet registered and are provisional estimates.

Source: AIHW mortality database.

The rates of death from nervous system diseases increased for non-Indigenous males and females, so that the difference between the rates of the two populations appeared to decrease, even though there was no significant decline in death rates for Indigenous people. The SMRs for males and females decreased from 1989–91 to 1992–94, but not statistically significantly so (table 34).

33 ASDR, DISEASES OF THE NERVOUS SYSTEM AND SENSE ORGANS



Source: AIHW mortality database, data for Western Australia and Northern Territory 1985–94, and South Australia 1988–94.

The mortality rates for two important nervous system disorders, meningitis and epilepsy, showed no consistent patterns over the period. There was a statistically significant negative trend for death rates for meningitis for Indigenous females, but this appeared to be due almost entirely to a very high rate in 1985. With relatively few deaths from these causes, it is difficult to distinguish between real trends and random fluctuations.

34 ESTIMATED CHANGE IN ASDR AND SMR, DISEASES OF THE NERVOUS SYSTEM AND SENSE ORGANS[1]

	All nervous system diseases		*Meningitis*		*Epilepsy*	
	Males	*Females*	*Males*	*Females*	*Males*	*Females*
Mean annual % change in ASDR, 1985–94	–3.2	–3.7	–1.4	**–17.3	–7.0	7.6
95% confidence interval	–9.0 to 3.0	–11.0 to 4.2	–13.6 to 12.5	–28.6 to –4.2	–15.6 to 2.5	–7.9 to 25.8
SMR						
1989–91	5.1	3.2	13.9	26.4	14.1	4.3
1992–94	4.0	2.4	44.3	15.2	9.4	6.3
% change	–20	–24	219	–42	–33	48

[1] Data from Western Australia and the Northern Territory 1985–94, and South Australia 1988–94. Estimates and % changes are not statistically significant at the 5% level unless otherwise indicated: ***p<0.001, **0.001<p<0.01, *0.01<p<0.05.

Source: AIHW mortality database.

CIRCULATORY DISEASES

There were contrary trends for Indigenous males and females in the ASDR for diseases of the circulatory system, with males having an estimated decrease of about 2% per year, and females an estimated increase of a similar magnitude between 1985 and 1994 (tables 35 and 40, graph 36).

The decline in the death rate for Indigenous males was approximately parallel to that for non-Indigenous males, but for females the gap between Indigenous and non-Indigenous death rates increased (table 40, graph 36). The SMR for females increased slightly from 1989–91 to 1992–94, but for males it remained virtually unchanged.

For both Indigenous males and Indigenous females, there were particularly large increases in death rates from 1993 to 1994. These increases were observed for almost all major categories of circulatory disease.

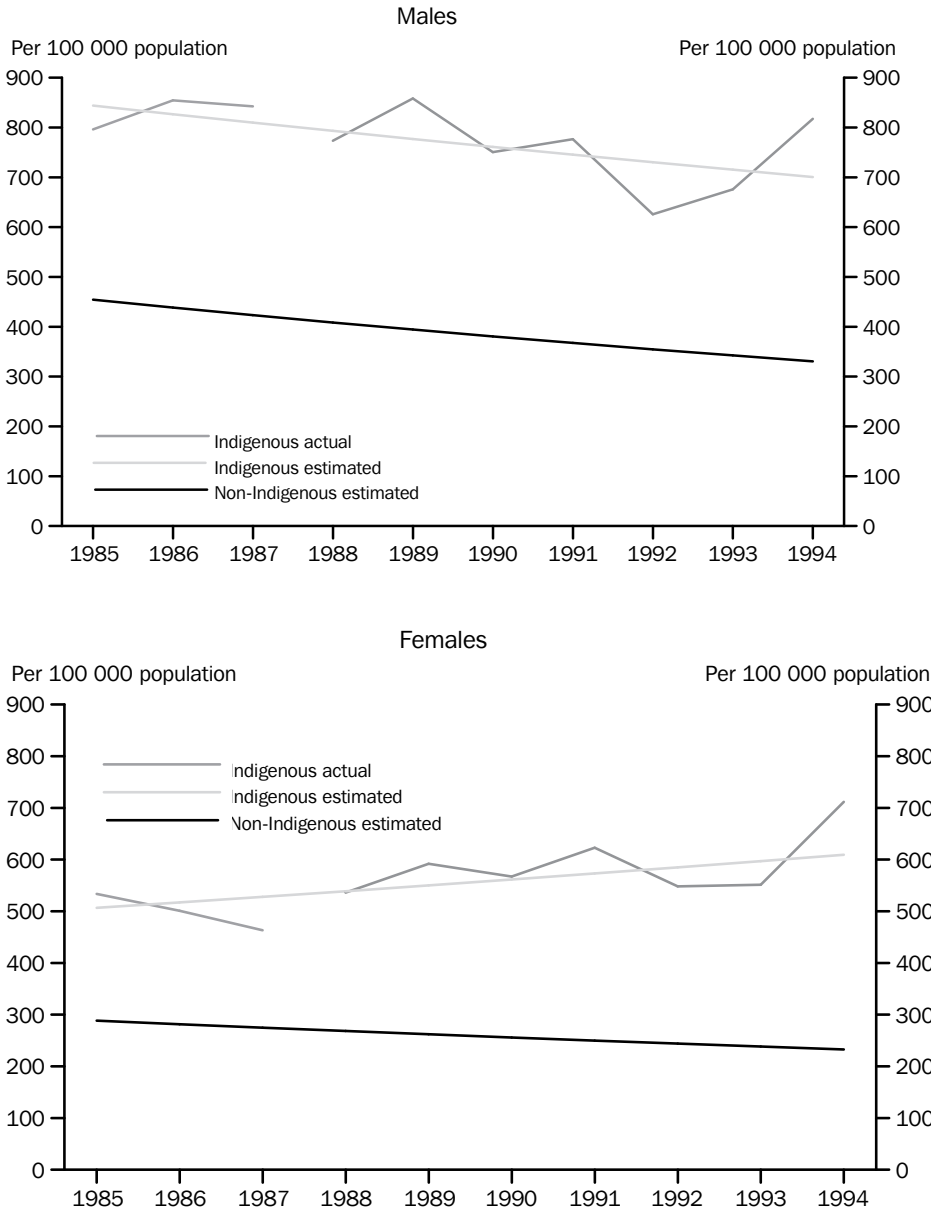
35 ASDR[1], DISEASES OF THE CIRCULATORY SYSTEM[2]

	All circulatory diseases		*Chronic rheumatic heart disease*		*Hypertensive disease*		*Ischaemic heart disease*		*Cerebrovascular disease*	
Year	*Males*	*Females*	*Males*	*Females*	*Males*	*Females*	*Males*	*Females*	*Males*	*Females*
1985[3]	796	533	16	56	50	58	411	186	149	114
1986[3]	854	502	27	18	17	31	387	240	211	139
1987[3]	842	463	26	31	44	0	442	225	191	96
1988	773	536	14	34	31	39	353	256	180	119
1989	858	592	18	21	32	57	424	274	244	123
1990	750	567	13	28	25	28	394	239	162	149
1991	776	623	24	20	37	40	357	301	196	121
1992	626	548	7	10	19	52	342	240	175	164
1993	676	551	26	13	30	33	386	224	145	179
1994[4]	818	713	12	9	46	41	446	283	239	262

[1] Age-standardised to the 1991 total Australian population, per 100 000 persons.
[2] Western Australia, South Australia and the Northern Territory combined.
[3] Data from Western Australia and the Northern Territory only.
[4] 1994 figures are adjusted for deaths not yet registered and are provisional estimates.

Source: AIHW mortality database.

36 ASDR, DISEASES OF THE CIRCULATORY SYSTEM



Source: AIHW mortality database, data for Western Australia and Northern Territory 1985–94, and South Australia 1988–94.

For Indigenous males, the ASDR for ischaemic heart disease fluctuated around 400 deaths per 100,000 persons and that for cerebrovascular disease at around 200 deaths per 100,000 persons, with no apparent trend in either case. The mortality rate from ischaemic heart disease declined rapidly in non-Indigenous males, resulting in a statistically significant increase in the SMR from 2.4 to 2.9 from 1989–91 to 1992–94. The SMR for cerebrovascular disease did not change.

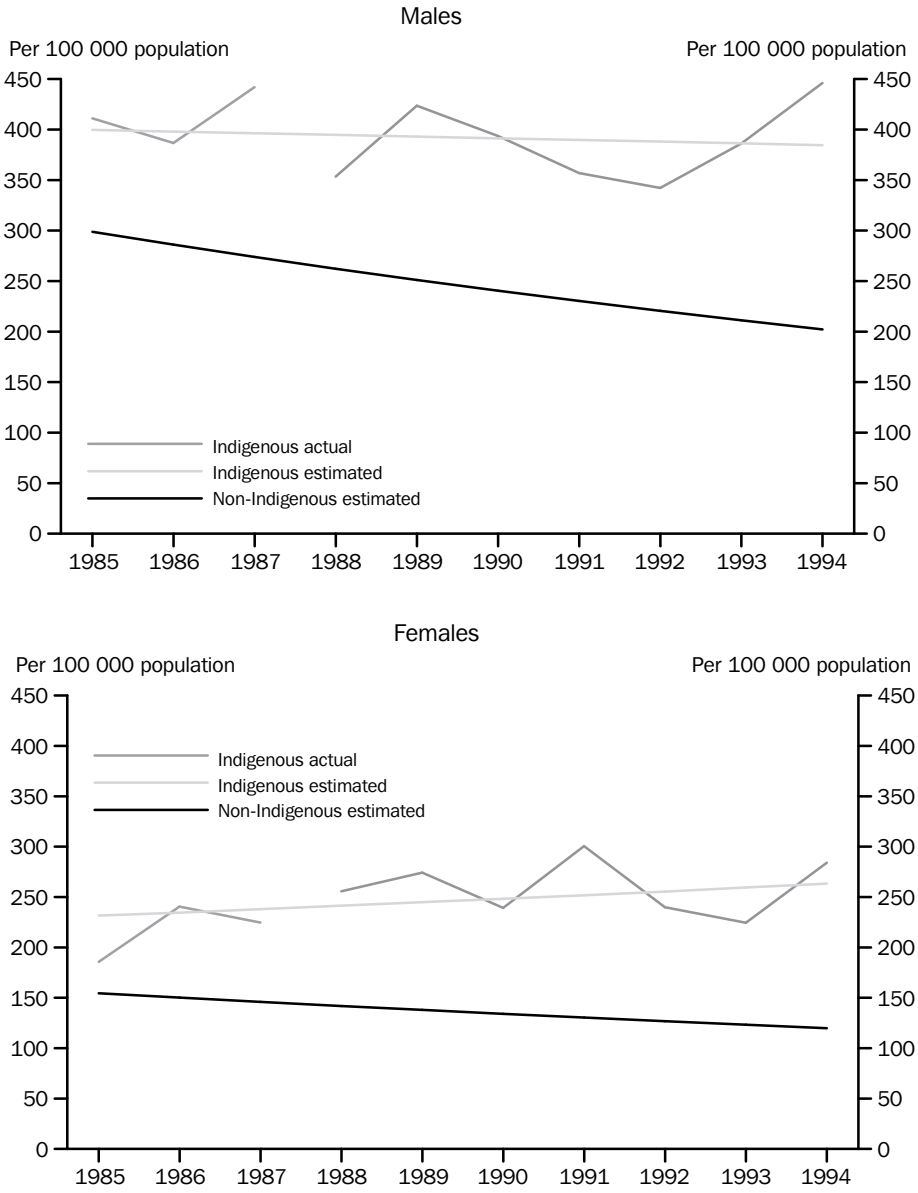
There was a small estimated decline in the death rate for chronic rheumatic heart disease for Indigenous males, but this was not statistically significant. Mortality from hypertensive disease in Indigenous males showed no particular trend. The SMRs for these two causes of

death increased from 1989–91 to 1992–94, but not statistically significantly so.

It would appear that the decline in Indigenous male mortality for circulatory diseases as a whole was due to decreasing trends for the less common cardiovascular diseases. In fact, for these other diseases the ASDR for Indigenous males fell by an estimated 9.1% per year (95% confidence interval –13.2 to –4.8; $p < 0.001$). This could reflect changes in diagnostic practices over the ten-year period.

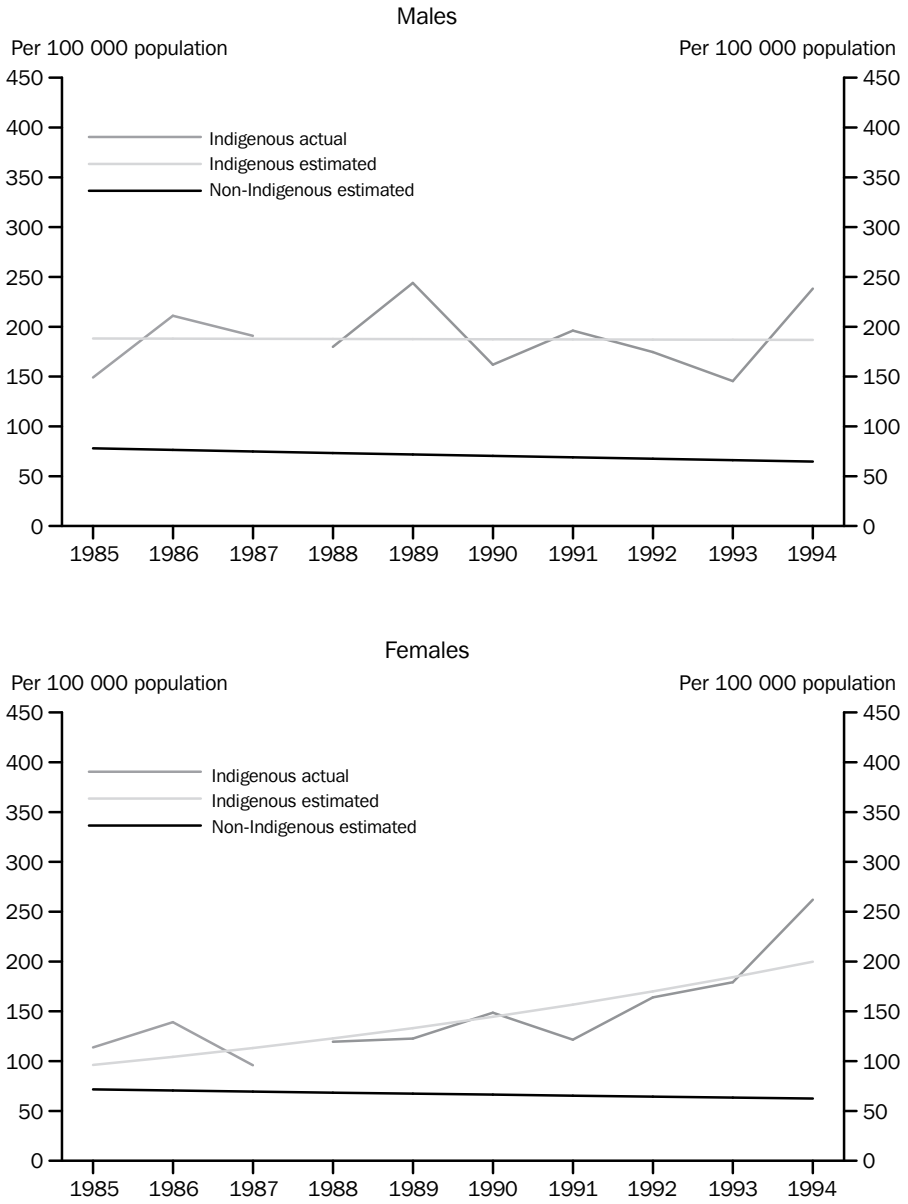
For Indigenous females, there was a large and statistically significant trend in the ASDR from cerebrovascular disease, with an estimated increase of 8.5% per year (table 40). This represents more than a doubling of the rate between 1985 and 1994. This accounted for most of the increase in female mortality from diseases of the circulatory system overall. From 1993 to 1994 there was a particularly large increase above the trend in the ASDR for cerebrovascular disease, from 179 deaths per 100,000 persons to 262 deaths per 100,000 persons. These two years were the first for which the death rate for cerebrovascular deaths for Indigenous females exceeded the Indigenous male rate, and for which the female death rate for this cause approached that of ischaemic heart disease, which has fluctuated around 250 deaths per 100,000 persons since 1986 (table 35).

37 ASDR, ISCHAEMIC HEART DISEASE



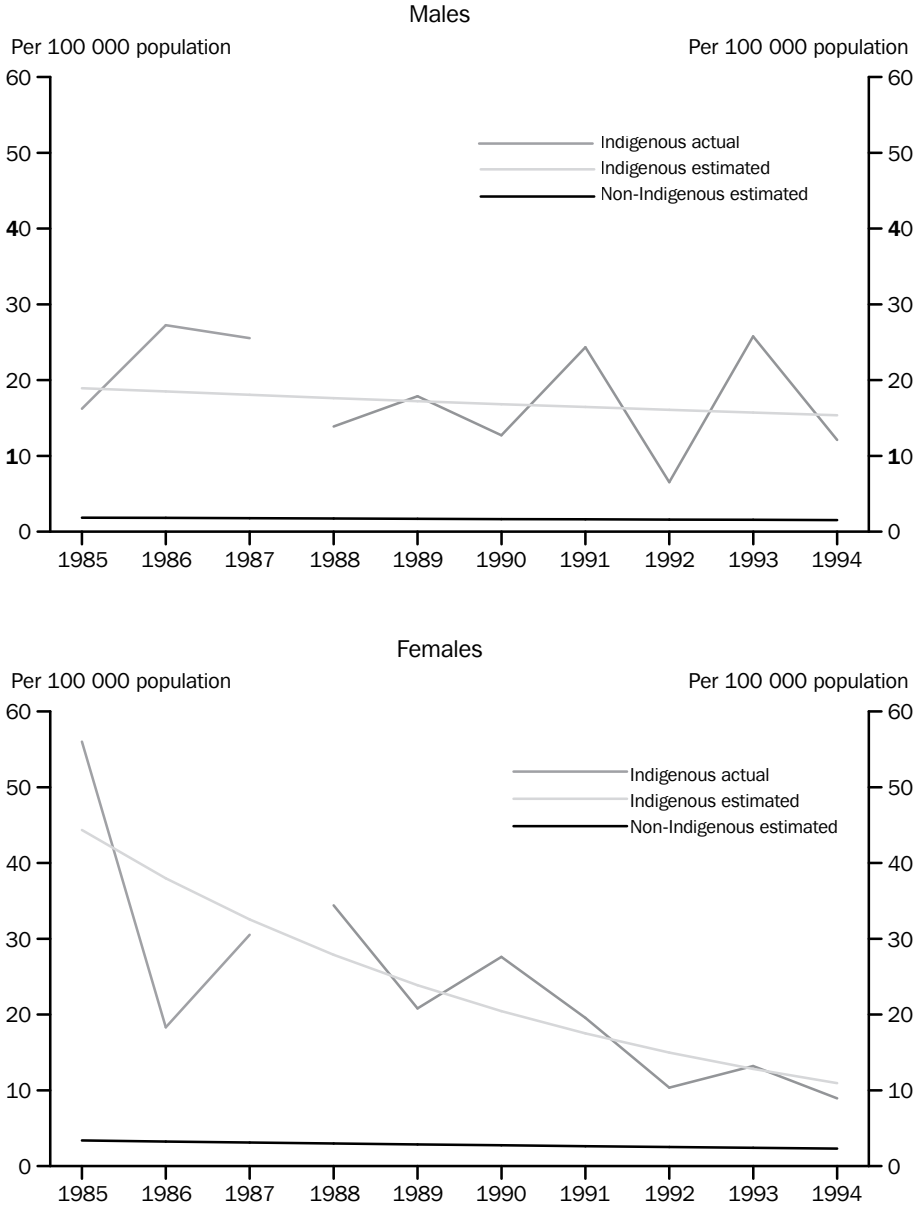
Source: AIHW mortality database, data for Western Australia and Northern Territory 1985–94, and South Australia 1988–94.

38 ASDR, CEREBROVASCULAR DISEASE



Source: AIHW mortality database, data for Western Australia and Northern Territory 1985–94, and South Australia 1988–94.

39 ASDR, CHRONIC RHEUMATIC HEART DISEASE



Source: AIHW mortality database, data for Western Australia and Northern Territory 1985–94, and South Australia 1988–94.

The SMR for cerebrovascular disease for Indigenous females increased significantly from 2.8 in 1989–91 to 3.7 in 1992–94, similar to the SMR for Indigenous males in both time periods. However, the SMR for ischaemic heart disease did not change substantially for Indigenous females.

40 ESTIMATED CHANGE IN ASDR AND SMR, DISEASES OF THE CIRCULATORY SYSTEM[1]

	All circulatory diseases		*Chronic rheumatic heart disease*		*Hypertensive disease*		*Ischaemic heart disease*		*Cerebrovascular disease*	
	Males	*Females*	*Males*	*Females*	*Males*	*Females*	*Males*	*Females*	*Males*	*Females*
Mean annual % change in ASDR, 1985–94	*–2.0	2.1	–2.3	***–14.5	0.9	0.9	–0.4	1.6	0.1	***8.5
95% confidence interval	–3.9 to 0.0	–0.2 to 4.4	–10.8 to 7.1	–21.6 to –6.6	–8.3 to 10.9	–7.7 to 10.4	–3.0 to 2.3	–1.9 to 5.2	–4.2 to 4.6	3.4 to 14.0
SMR										
1989–91	3.1	3.3	23.0	17.3	6.6	9.7	2.4	2.8	3.6	2.8
1992–94	3.1	3.6	27.0	9.7	10.6	10.6	2.9	2.9	3.6	3.7
% change	2	9	17	*–44	61	10	**21	5	–1	**34

[1] Data from Western Australia and the Northern Territory 1985–94, and South Australia 1988–94. Estimates and % changes are not statistically significant at the 5% level unless otherwise indicated: ***p<0.001, **0.001<p<0.01, *0.01<p<0.05.

Source: AIHW mortality database.

In contrast to the two major groups of cardiovascular disease, ischaemic heart disease and cerebrovascular disease, mortality from chronic rheumatic heart disease fell in Indigenous females by an average of 14.5% per year. The magnitude of the fall was largely due to a very high death rate in 1985. Even so, the SMR was nearly halved from 1989–91 to 1992–94.

As for Indigenous males, there was no significant trend in the death rate for hypertensive disease in Indigenous females. In contrast to males, however, there was no statistically significant trend for Indigenous females for deaths from other circulatory diseases.

RESPIRATORY DISEASES

Mortality among Indigenous males and females from diseases of the respiratory system appeared to fall from 1985 to 1994, but the trend was not statistically significant for either sex (tables 41 and 43, graph 42). The peaks and troughs in the ASDR were partly explained by variations in pneumonia deaths.

For Indigenous males, there were no statistically significant trends in mortality due to pneumonia or other chronic obstructive pulmonary disease, although the ASDR appeared to fall over the period. There was little change in the SMR from 1989–91 to 1992–94 (table 43).

41 ASDR[1], DISEASES OF THE RESPIRATORY SYSTEM[2]

	All respiratory diseases		*Pneumonia*		*Asthma*		*Other chronic obstructive pulmonary disease*	
Year	*Males*	*Females*	*Males*	*Females*	*Males*	*Females*	*Males*	*Females*
1985[3]	404	226	180	77	6	21	153	64
1986[3]	442	262	176	84	21	2	143	46
1987[3]	436	255	146	100	0	8	183	78
1988	320	235	138	64	0	8	102	52
1989	434	251	181	87	16	8	135	71
1990	360	290	117	137	7	10	171	111
1991	323	315	160	148	8	8	112	100
1992	416	221	185	47	5	3	146	92
1993	383	160	117	34	9	28	127	59
1994[4]	382	214	156	79	31	10	102	54

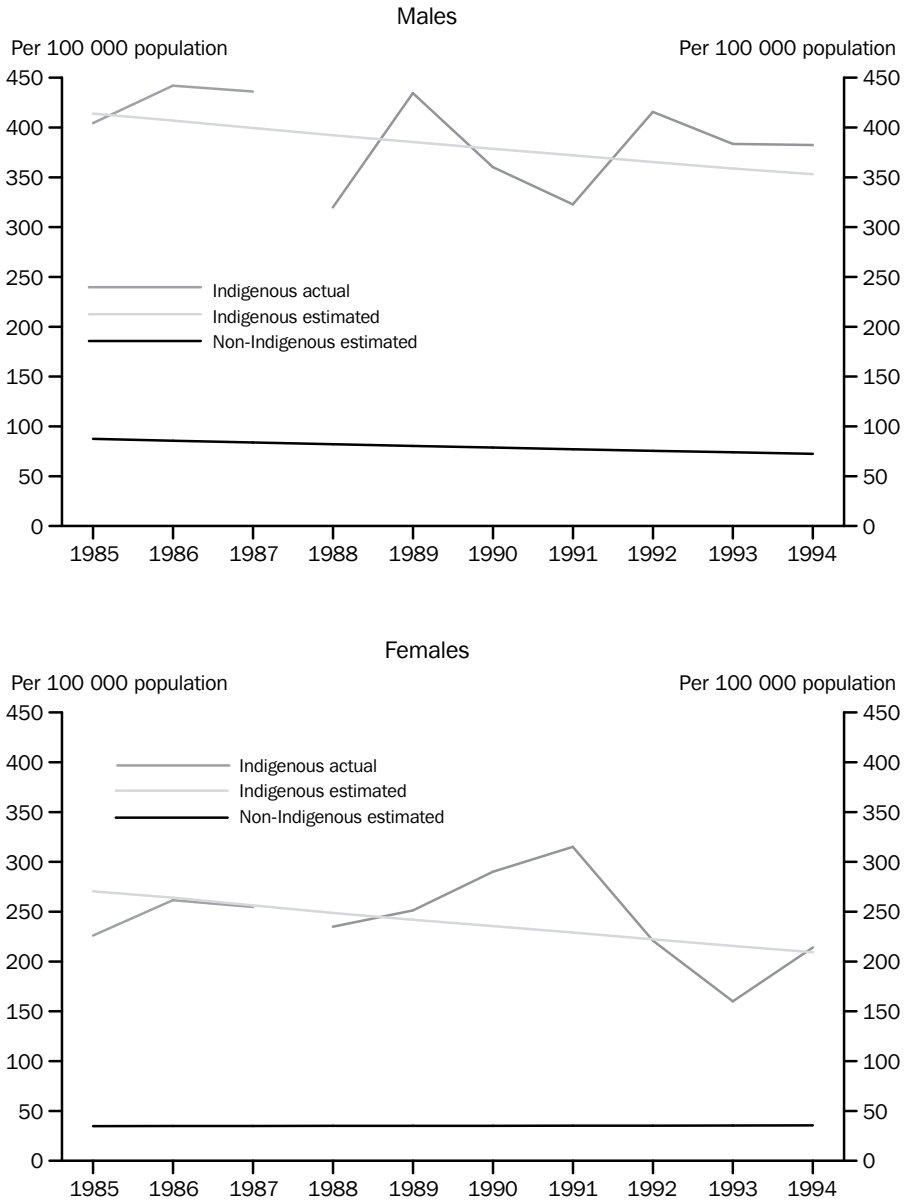
[1] Age-standardised to the 1991 total Australian population, per 100 000 persons.
[2] Western Australia, South Australia and the Northern Territory combined.
[3] Data from Western Australia and the Northern Territory only.
[4] 1994 figures are adjusted for deaths not yet registered and are provisional estimates.

Source: AIHW mortality database.

For Indigenous females, the ASDR for pneumonia decreased by an estimated 6.6% per year, a change which was statistically significant. In this case, however, a model assuming a constant yearly change in rate may not have been appropriate, as there was much variation from year to year, possibly due to outbreaks of pneumonia in particular years. There was no apparent trend in the death rate for other chronic obstructive pulmonary diseases. For both pneumonia and other chronic obstructive pulmonary diseases, the ASDR peaked in 1990 and 1991 then declined. This resulted in a statistically significant decline in the SMR from 1989–91 to 1992–94 for both causes of death. However, it remains to be seen whether this is a long-term trend.

For asthma, the ASDR and the SMR increased for both males and females, but there were relatively few deaths and these trends were not statistically significant.

42 ASDR, DISEASES OF THE RESPIRATORY SYSTEM



Source: AIHW mortality database, data for Western Australia and Northern Territory 1985–94, and South Australia 1988–94.

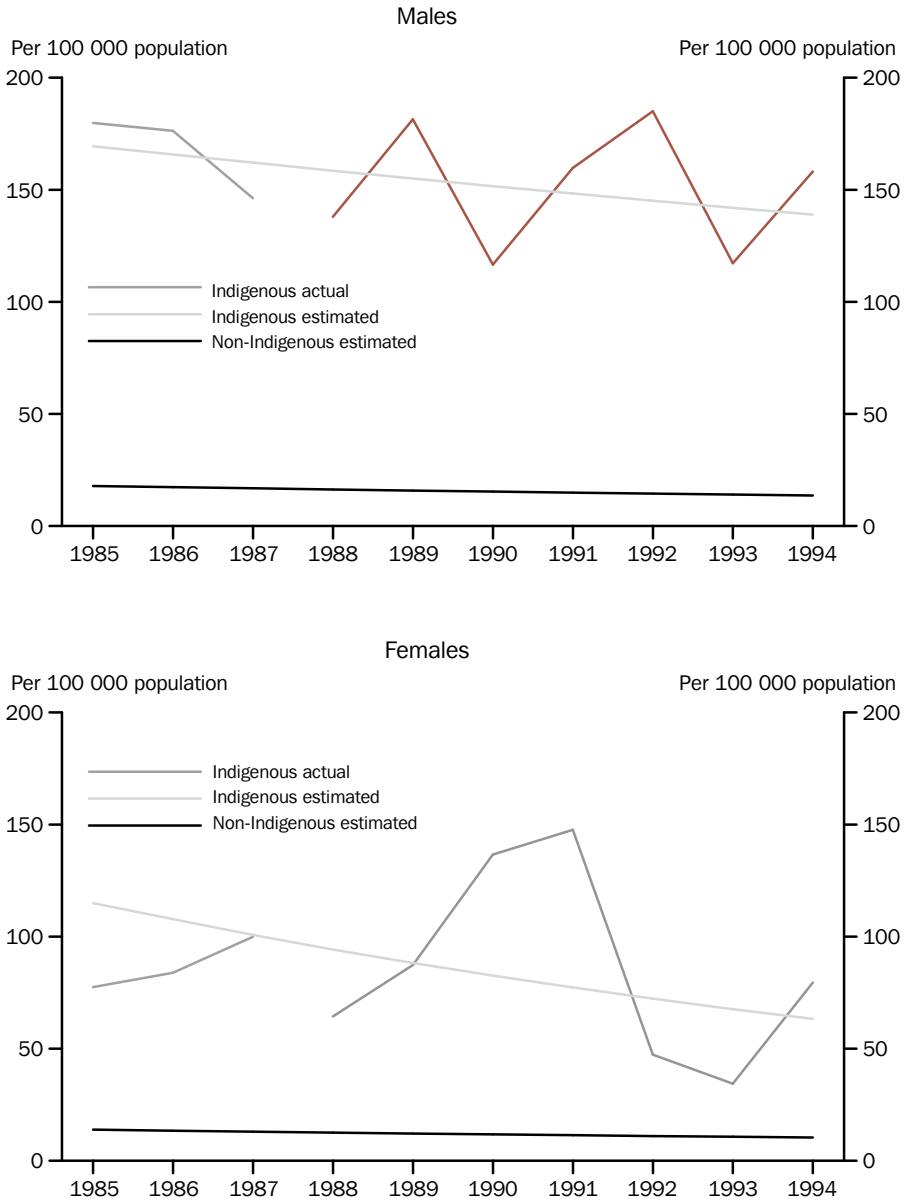
43 ESTIMATED CHANGE IN ASDR AND SMR, DISEASES OF THE RESPIRATORY SYSTEM[1]

	All respiratory diseases		*Pneumonia*		*Asthma*		*Other chronic obstructive pulmonary disease*	
	Males	*Females*	*Males*	*Females*	*Males*	*Females*	*Males*	*Females*
Mean annual % change in ASDR, 1985–94	–1.7	–3.2	–2.1	*–6.6	6.5	3.7	–3.5	0.2
95% confidence interval	–4.4 to 1.0	–6.4 to 0.1	–5.9 to 1.9	–11.6 to –1.3	–9.3 to 24.1	–9.8 to 19.3	–8.4 to 1.7	–5.9 to 6.8
SMR								
1989–91	7.7	10.0	17.7	14.2	2.6	2.8	5.1	11.7
1992–94	7.9	7.3	19.2	7.1	4.0	5.1	4.6	7.9
% change	3	**–27	9	***–50	54	85	–10	**–33

[1] Data from Western Australia and the Northern Territory 1985–94, and South Australia 1988–94. Estimates and % changes are not statistically significant at the 5% level unless otherwise indicated: ***p<0.001, **0.001<p<0.01, *0.01<p<0.05.

Source: AIHW mortality database.

44 ASDR, PNEUMONIA



Source: AIHW mortality database, data for Western Australia and Northern Territory 1985–94, and South Australia 1988–94.

DIGESTIVE DISEASES

There were no statistically significant trends in the rates of death from digestive diseases for Indigenous people of either sex (tables 45 and 46, graph 47). The ASDR for Indigenous males fluctuated around 80 deaths per 100,000 persons. The rate for Indigenous females was around 60 deaths per 100,000 persons, with the notable exception of 1985, when the rate was almost three times the average. This single high year heavily influenced the estimated trend. With 1985 included, the estimated annual change for females was a decrease of 3.1%, whereas the trend from 1986 to 1994 was estimated to be an increase of 1.8% per year (95% confidence limits –4.9 to 9.0; $p > 0.05$), although neither figure was statistically significant. The SMRs were similar for both sexes and in both time periods.

45 ASDR[1], DISEASES OF THE DIGESTIVE SYSTEM[2]

	All digestive diseases		*Chronic liver disease (alcohol related)*	
Year	*Males*	*Females*	*Males*	*Females*
1985[3]	60	169	34	35
1986[3]	73	65	20	25
1987[3]	93	59	48	33
1988	100	55	54	21
1989	103	60	66	19
1990	77	68	26	25
1991	100	63	47	16
1992	51	46	24	20
1993	96	62	43	20
1994[4]	84	77	35	34

[1] Age-standardised to the 1991 total Australian population, per 100 000 persons.
[2] Western Australia, South Australia and the Northern Territory combined.
[3] Data from Western Australia and the Northern Territory only.
[4] 1994 figures are adjusted for deaths not yet registered and are provisional estimates.

Source: AIHW mortality database.

About half the Indigenous deaths from digestive diseases were due to alcohol-related chronic liver disease. The ASDR for this cause fluctuated with no apparent long-term change. The death rate for Indigenous females appeared to decline in the late 1980s and early 1990s but increased again in 1994. Because of this late increase, the SMR increased from 16 in 1989–91 to 23 in 1992–94, although this change was not statistically significant. The SMR for Indigenous males remained at just under nine.

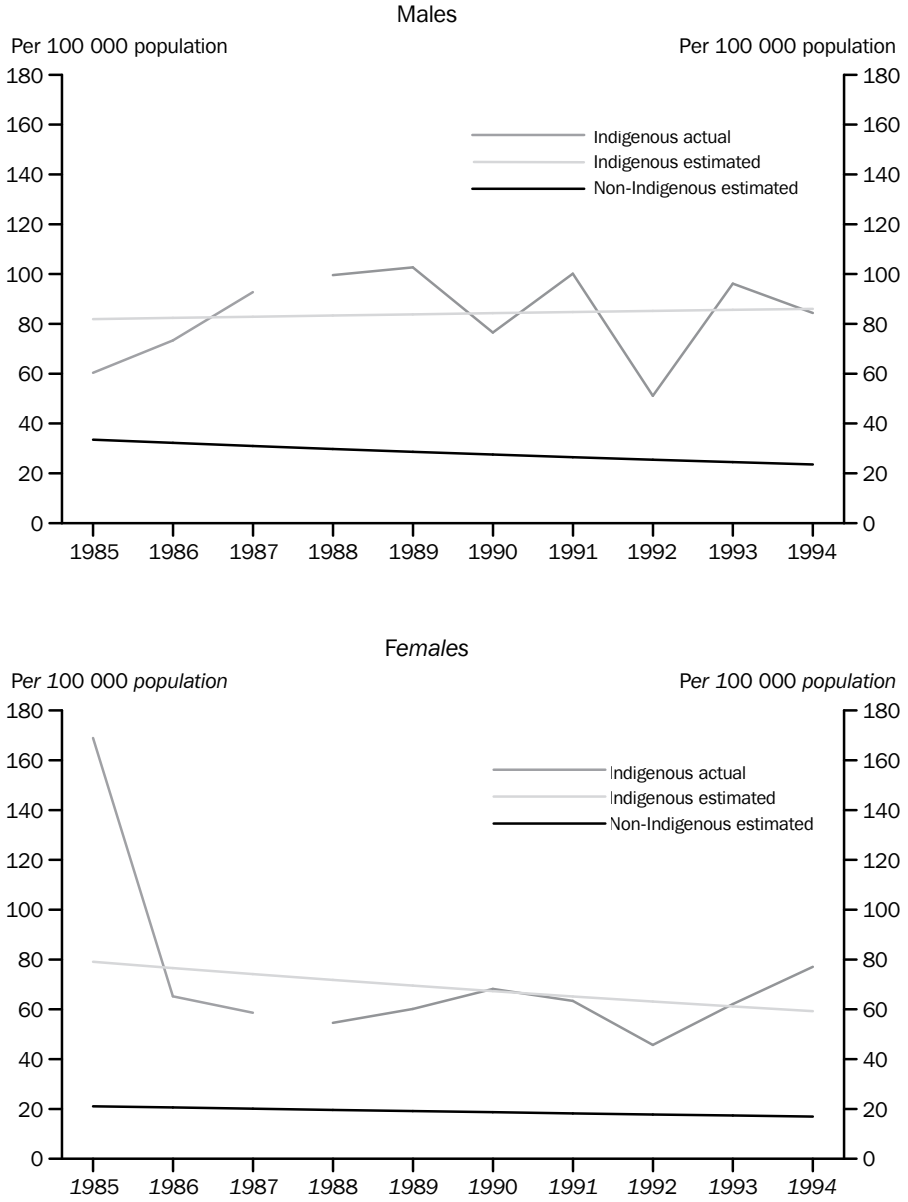
46 ESTIMATED CHANGE IN ASDR AND SMR, DISEASES OF THE DIGESTIVE SYSTEM[1]

	All digestive diseases		*Chronic liver disease (alcohol related)*	
	Males	*Females*	*Males*	*Females*
Mean annual % change in ASDR, 1985–94	0.6	–3.1	–0.5	–2.1
95% confidence interval	–4.5 to 5.9	–8.4 to 2.6	–7.3 to 6.8	–10.2 to 6.6
SMR				
1989–91	5.4	5.3	8.7	16.3
1992–94	5.2	6.2	8.5	23.0
% change	–4	17	–2	41

[1] Data from Western Australia and the Northern Territory 1985–94, and South Australia 1988–94. Estimates and % changes are not statistically significant at the 5% level unless otherwise indicated: ***p<0.001, **0.001<p<0.01, *0.01<p<0.05.

Source: AIHW mortality database.

47 ASDR, DISEASES OF THE DIGESTIVE SYSTEM



Source: AIHW mortality database, data for Western Australia and Northern Territory 1985–94, and South Australia 1988–94.

GENITOURINARY DISEASES

Mortality from genitourinary diseases appeared to decline for both Indigenous males and Indigenous females (tables 48 and 50, graph 49), but neither trend was statistically significant due to the wide fluctuations in the ASDR from year to year. The SMR also decreased from 1989–91 to 1992–94, particularly for Indigenous males, but this change was also not statistically significant.

48 ASDR[1], DISEASES OF THE GENITOURINARY SYSTEM[2]

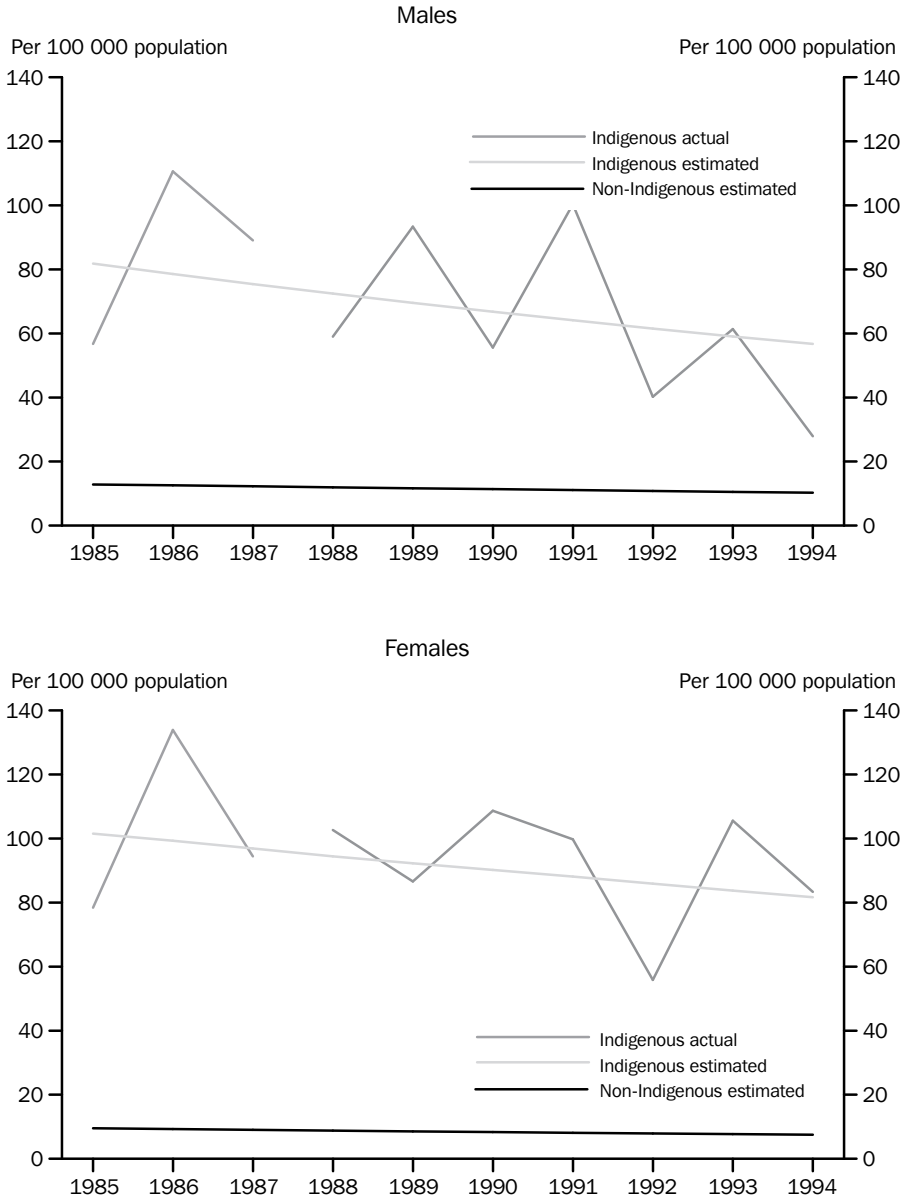
	All genitourinary diseases		*Nephritis, nephrotic syndrome and nephrosis*	
Year	*Males*	*Females*	*Males*	*Females*
1985[3]	57	78	44	48
1986[3]	111	134	81	112
1987[3]	89	94	70	74
1988	59	103	42	57
1989	93	87	38	64
1990	56	109	22	64
1991	100	100	72	50
1992	40	56	14	28
1993	61	106	54	70
1994[4]	28	83	16	26

[1] Age-standardised to the 1991 total Australian population, per 100 000 persons.
[2] Western Australia, South Australia and the Northern Territory combined.
[3] Data from Western Australia and the Northern Territory only.
[4] 1994 figures are adjusted for deaths not yet registered and are provisional estimates.

Source: AIHW mortality database.

Nearly two-thirds of Indigenous deaths from genitourinary diseases were due to nephritis, nephrotic syndrome and nephrosis. The ASDRs for this group of diseases were estimated to be declining even more than those for genitourinary diseases as a whole, for both Indigenous males and Indigenous females, but again there was considerable year-to-year variation and the trends were not statistically significant. The SMRs for both males and females also declined somewhat from 1989–91 to 1992–94.

49 ASDR, DISEASES OF THE GENITOURINARY SYSTEM



Source: AIHW mortality database, data for Western Australia and Northern Territory 1985–94, and South Australia 1988–94.

50 ESTIMATED CHANGE IN ASDR AND SMR, DISEASES OF THE GENITOURINARY SYSTEM[1]

	All genitourinary diseases		*Nephritis, nephrotic syndrome and nephrosis*	
	Males	*Females*	*Males*	*Females*
Mean annual % change in ASDR, 1985–94	–3.9	–2.5	–7.1	–6.3
95% confidence interval	–10.3 to 3.0	–7.7 to 3.0	–14.8 to 1.4	–12.7 to 0.5
SMR				
1989–91	10.8	15.7	9.8	14.6
1992–94	7.7	14.1	6.9	11.5
% change	–29	–10	–29	–21

[1] Data from Western Australia and the Northern Territory 1985–94, and South Australia 1988–94. Estimates and % changes are not statistically significant at the 5% level unless otherwise indicated: ***p<0.001, **0.001<p<0.01, *0.01<p<0.05.

Source: AIHW mortality database.

COMPLICATIONS OF PREGNANCY

There were seven deaths due to complications of pregnancy in Indigenous females during the period 1985–94, but none in the last four years of this period. Four of the deaths occurred in 1990, and there was one death in each of 1985, 1986 and 1989. ASDR are presented in table 51.

51 FEMALE ASDR[1], COMPLICATIONS OF PREGNANCY, CHILDBIRTH AND THE PUERPERIUM[2]

Year	*Females*
1985[3]	2
1986[3]	2
1987[3]	0
1988	0
1989	2
1990	8
1991	0
1992	0
1993	0
1994[4]	0

[1] Age-standardised to the 1991 total Australian population, per 100 000 persons.
[2] Western Australia, South Australia and the Northern Territory combined.
[3] Data from Western Australia and the Northern Territory only.
[4] 1994 figures are adjusted for deaths not yet registered and are provisional estimates.

Source: AIHW mortality database.

SKIN DISEASES

There were only four deaths from skin diseases in Indigenous males over the period 1985–94, with ten deaths of Indigenous females. Half the deaths of Indigenous females occurred in just two years, 1993 and 1994. ASDRs are presented in table 52.

52 ASDR[1], DISEASES OF THE SKIN AND SUBCUTANEOUS TISSUE[2]

Year	*Males*	*Females*
1985[3]	3	0
1986[3]	0	2
1987[3]	0	0
1988	4	0
1989	0	8
1990	0	4
1991	0	5
1992	0	2
1993	3	15
1994[4]	0	21

[1] Age-standardised to the 1991 total Australian population, per 100 000 persons.
[2] Western Australia, South Australia and the Northern Territory combined.
[3] Data from Western Australia and the Northern Territory only.
[4] 1994 figures are adjusted for deaths not yet registered and are provisional estimates.

Source: AIHW mortality database.

MUSCULOSKELETAL DISEASES

Deaths due to musculoskeletal diseases in Indigenous males occurred infrequently, with one or no deaths per year except for 1991 when there were three deaths. The number of deaths from musculoskeletal disease in Indigenous females averaged about three per year with no apparent trend. ASDRs are presented in table 53.

53 ASDR[1], DISEASES OF THE MUSCOSKELETAL SYSTEM AND CONNECTIVE TISSUE[2]

Year	*Males*	*Females*
1985[3]	0	24
1986[3]	0	14
1987[3]	0	16
1988	0	9
1989	4	1
1990	4	19
1991	8	18
1992	4	5
1993	12	14
1994[4]	0	13

[1] Age-standardised to the 1991 total Australian population, per 100 000 persons.
[2] Western Australia, South Australia and the Northern Territory combined.
[3] Data from Western Australia and the Northern Territory only.
[4] 1994 figures are adjusted for deaths not yet registered and are provisional estimates.

Source: AIHW mortality database.

CONGENITAL ANOMALIES

The ASDRs for congenital anomalies for both Indigenous males and Indigenous females fluctuated around eight deaths per 100,000 persons with no significant trend (table 54). The SMRs were similar for both sexes and in each of the two periods (table 55).

54 ASDR[1], CONGENITAL ANOMALIES[2]

Year	*Males*	*Females*
1985[3]	16	5
1986[3]	8	14
1987[3]	5	10
1988	3	4
1989	11	10
1990	10	5
1991	6	11
1992	8	9
1993	11	1
1994[4]	7	11

[1] Age-standardised to the 1991 total Australian population, per 100 000 persons.
[2] Western Australia, South Australia and the Northern Territory combined.
[3] Data from Western Australia and the Northern Territory only.
[4] 1994 figures are adjusted for deaths not yet registered and are provisional estimates.

Source: AIHW mortality database.

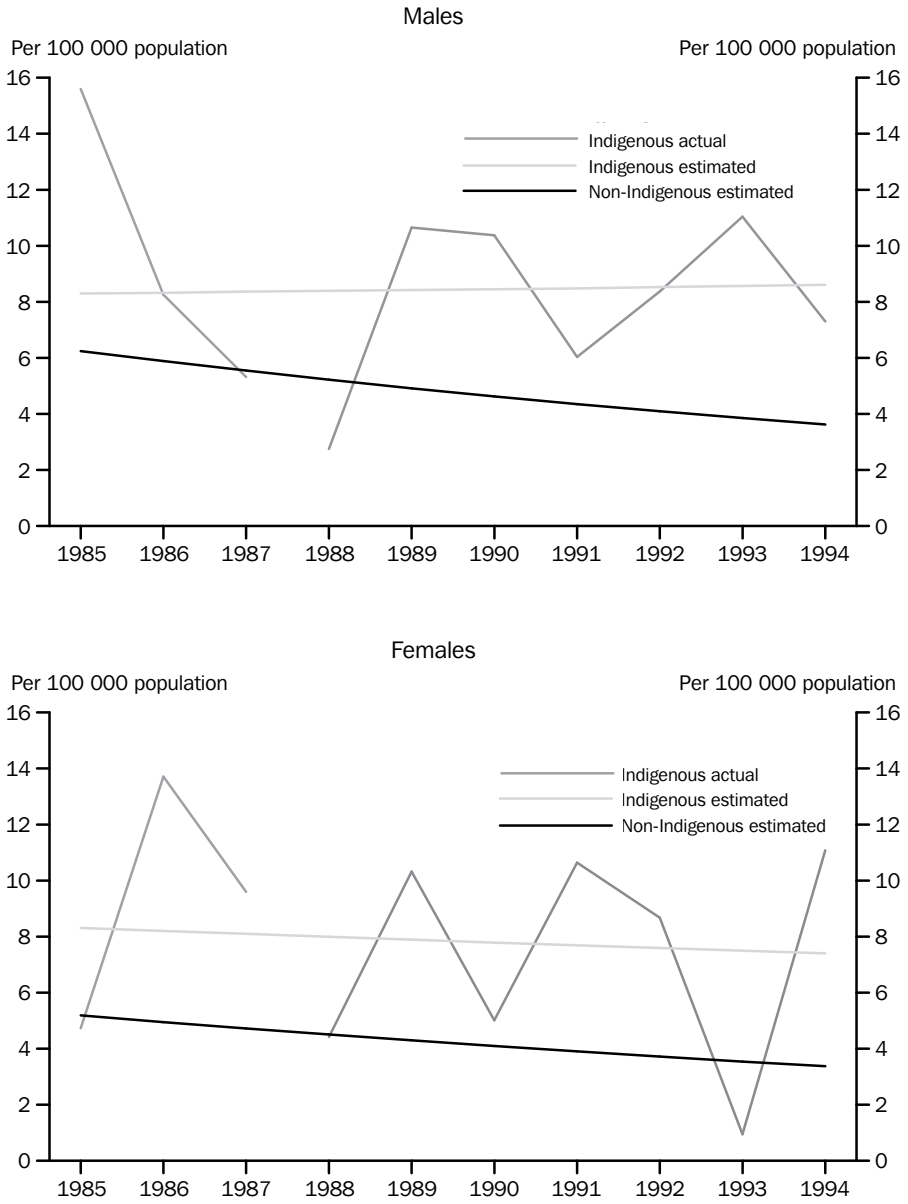
55 ESTIMATED CHANGE IN ASDR AND SMR, CONGENITAL ANOMALIES[1]

	Males	*Females*
Mean annual % change in ASDR, 1985–94	–0.7	–2.2
95% confidence interval	–8.3 to 7.6	–10.6 to 6.9
SMR		
1989–91	2.0	2.2
1992–94	2.8	2.2
% change	40	0

[1] Data from Western Australia and the Northern Territory 1985–94, and South Australia 1988–94. Estimates and % changes are not statistically significant at the 5% level unless otherwise indicated: ***p<0.001, **0.001<p<0.01, *0.01<p<0.05.

Source: AIHW mortality database.

56 ASDR, CONGENITAL ANOMALIES



Source: AIHW mortality database, data for Western Australia and the Northern Territory 1985–94, and South Australia 1988–94.

CERTAIN PERINATAL CONDITIONS

There were no consistent trends in mortality due to certain conditions originating in the perinatal period for Indigenous people of either sex (tables 57 and 58, graph 59). The death rates for slow foetal growth, foetal malnutrition and immaturity also fluctuated widely (table 57). The death rates for Indigenous females were particularly high in 1992 and 1994, which resulted in a doubling of the SMR from 1989–91 to 1992–94 (table 58). Although this change was statistically significant, it seems unlikely to represent a real trend because of the small number of deaths in this category.

57 DEATH RATES IN THE FIRST YEAR OF LIFE[1], CERTAIN CONDITIONS ORIGINATING IN THE PERINATAL PERIOD[2]

	All certain perinatal conditions		*Slow foetal growth, foetal malnutrition and immaturity*	
Year	*Males*	*Females*	*Males*	*Females*
1985[3]	980	946	151	316
1986[3]	311	797	78	239
1987[3]	607	486	152	243
1988	672	470	183	269
1989	1 391	274	569	206
1990	937	1 271	312	334
1991	979	702	392	281
1992	980	836	490	579
1993	841	568	60	126
1994[4]	402	1 128	272	490

[1] Death rates for infants aged less than one year, per 100 000 infants.
[2] Western Australia, South Australia and the Northern Territory combined.
[3] Data from Western Australia and the Northern Territory only.
[4] 1994 figures are adjusted for deaths not yet registered and are provisional estimates.

Source: AIHW mortality database.

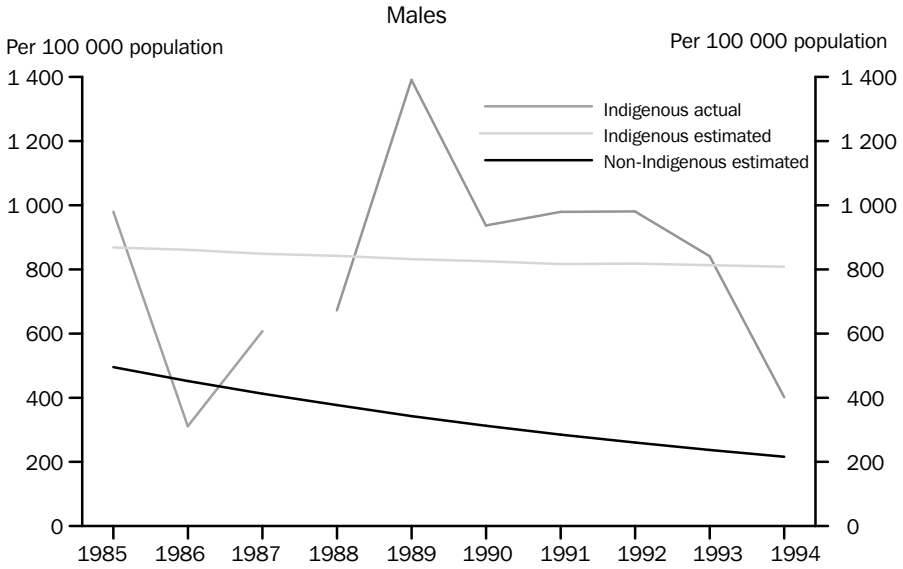
58 ESTIMATED CHANGE IN ASDR AND SMR, CERTAIN CONDITIONS ORIGINATING IN THE PERINATAL PERIOD[1]

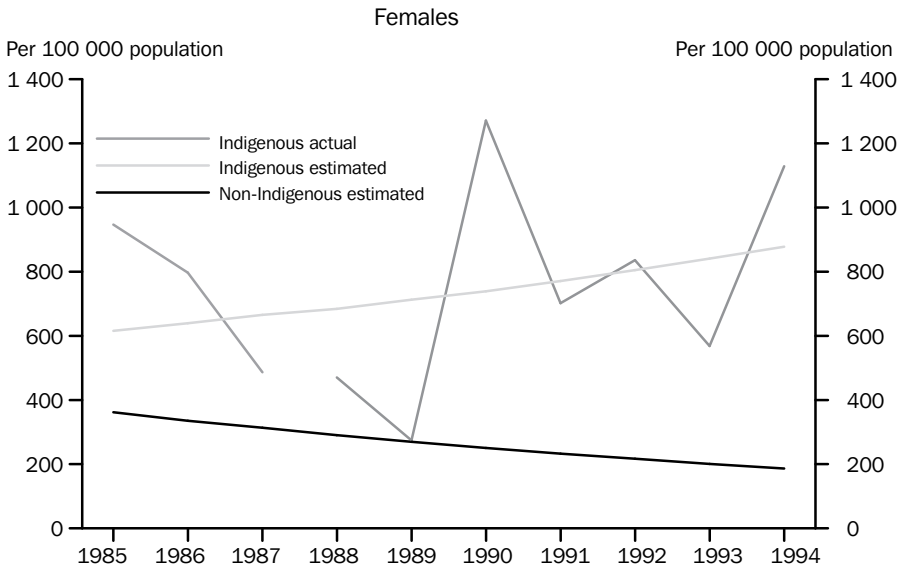
	All certain perinatal conditions		*Slow foetal growth, foetal malnutrition and immaturity*	
	Males	*Females*	*Males*	*Females*
Mean annual % change in ASDR, 1985–94	–0.4	4.4	5.9	6.3
95% confidence interval	–6.5 to 6.1	–2.4 to 11.5	–5.2 to 18.3	–4.2 to 18.0
SMR				
1989–91	3.8	2.9	4.8	2.8
1992–94	3.1	4.0	3.3	6.1
% change	–19	39	–33	*122

[1] Data from Western Australia and the Northern Territory 1985–94 and South Australia 1988–94. Estimates and % changes are not statistically significant at the 5% level unless otherwise indicated: ***p<0.001, **0.001<p<0.01, *0.01<p<0.05.

Source: AIHW mortality database.

59 DEATH RATES IN THE FIRST YEAR OF LIFE, CERTAIN CONDITIONS ORIGINATING IN THE PERINATAL PERIOD





Source: AIHW mortality database, data for Western Australia and Northern Territory 1985–94, and South Australia 1988–94.

ILL-DEFINED CONDITIONS

Between 1985 and 1994, the ASDR from ill-defined conditions overall decreased at an estimated 1.8% per year for Indigenous males and 2% per year for Indigenous females (tables 60 and 62). However, these trends were not statistically significant. The category of ill-defined conditions is by its very nature a heterogeneous one, and it appears that there were conflicting trends for different causes of death within the category. SIDS accounted for just over half (54%) of all deaths classified as due to ill-defined conditions and occurred almost exclusively in

infants under the age of one year. The apparent trend for deaths from SIDS was in contrast to that for non-SIDS deaths.

For ill-defined conditions other than SIDS, death rates for Indigenous males and females aged greater than one year were estimated to be decreasing at an average of about 7% per year, although this trend was only statistically significant for males (tables 60 and 62, graph 61). The SMRs dropped by nearly 40% for both males and females from 1989–91 to 1992–94, but these declines were not statistically significant.

The high SMRs for non-SIDS ill-defined conditions may have been due, at least in part, to a greater likelihood of Indigenous deaths being imprecisely classified, as compared to non-Indigenous deaths. The apparent decline in mortality from these conditions could have represented a real reduction in mortality, or it could have been the result of an improvement in the accuracy of classification of cause of death. Any such improvement in accuracy would mean a shift in the assignment of deaths from the ill-defined category to other more specific categories, but the number of deaths in this category was probably not large enough to substantially affect the trends in other major disease categories.

60 ASDR, SYMPTOMS, SIGNS AND ILL-DEFINED CONDITIONS[1]

	1985[2]	*1986*[2]	*1987*[2]	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*[3]
All ill-defined conditions[4]										
Males	67	78	62	66	53	47	21	38	40	25
Females	42	35	51	39	34	20	31	32	44	17
Sudden infant death syndrome[4]										
Males	6	6	3	11	9	10	6	11	12	4
Females	7	10	6	8	9	4	15	8	7	5
Ill-defined conditions, ages 1 and greater, not SIDS[5]										
Males	62	72	59	54	42	37	15	27	28	21
Females	35	25	44	31	25	16	16	24	38	11
Sudden infant death syndrome, children less than 1 year old[6]										
Males	377	389	228	734	569	687	392	735	721	272
Females	394	638	421	537	548	268	983	515	442	360

1 Western Australia, South Australia and the Northern Territory combined.
2 Data from Western Australia and the Northern Territory only.
3 1994 figures are adjusted for deaths not yet registered and are provisional estimates.
4 Age-standardised to the 1991 total Australian population, per 100 000 persons.
5 Age-standardised to the 1991 Australian population, aged 1 year and older, per 100 000 persons.
6 Death rates for infants aged less than 1 year, per 100 000 infants.

Source: AIHW mortality database.

61 ASDR, FOR PERSONS AGED 1 YEAR AND OVER, SYMPTOMS, SIGNS AND ILL-DEFINED CONDITIONS (EXCLUDING SIDS)

Source: AIHW mortality database, data for Western Australia and Northern Territory 1985–94, and South Australia 1988–94.

For SIDS, the death rate for infants under one year of age increased for Indigenous males by an average of nearly 4% per year (table 62, graph 63). The trend was not statistically significant, however, and largely reflects a difference between the first three years of the period (1985–87) and most of the remaining years which generally have much higher death rates (table 60, graph 63). For Indigenous females, the age-specific death rates fluctuated around 500 deaths per 100,000 infants without any apparent trend.

These patterns were contrary to the trends noted in the non-Indigenous population in which the age-specific death rates for both sexes have decreased by over 50% since the mid–1980s. The decrease in the death rate from SIDS in non-Indigenous infants (which was associated with

changes in sleeping position) was especially steep in the early 1990s and the use of a linear trend for non-Indigenous infants may not be appropriate here.

The SMR doubled for Indigenous males from 1989–91 to 1992–94 and this was statistically significant (table 62). The SMRs for Indigenous females also increased substantially although the change was not statistically significant. SIDS was one of the leading causes of death among infants, and mortality from this cause was over six times more common among Indigenous children than non-Indigenous children in 1992–94. There was a large drop in SIDS death rates for Indigenous males and a smaller one for Indigenous females from 1993 to 1994, but it remains to be seen whether this was simply random variation or the start of a downward trend reflecting that already observed in the non-Indigenous population.

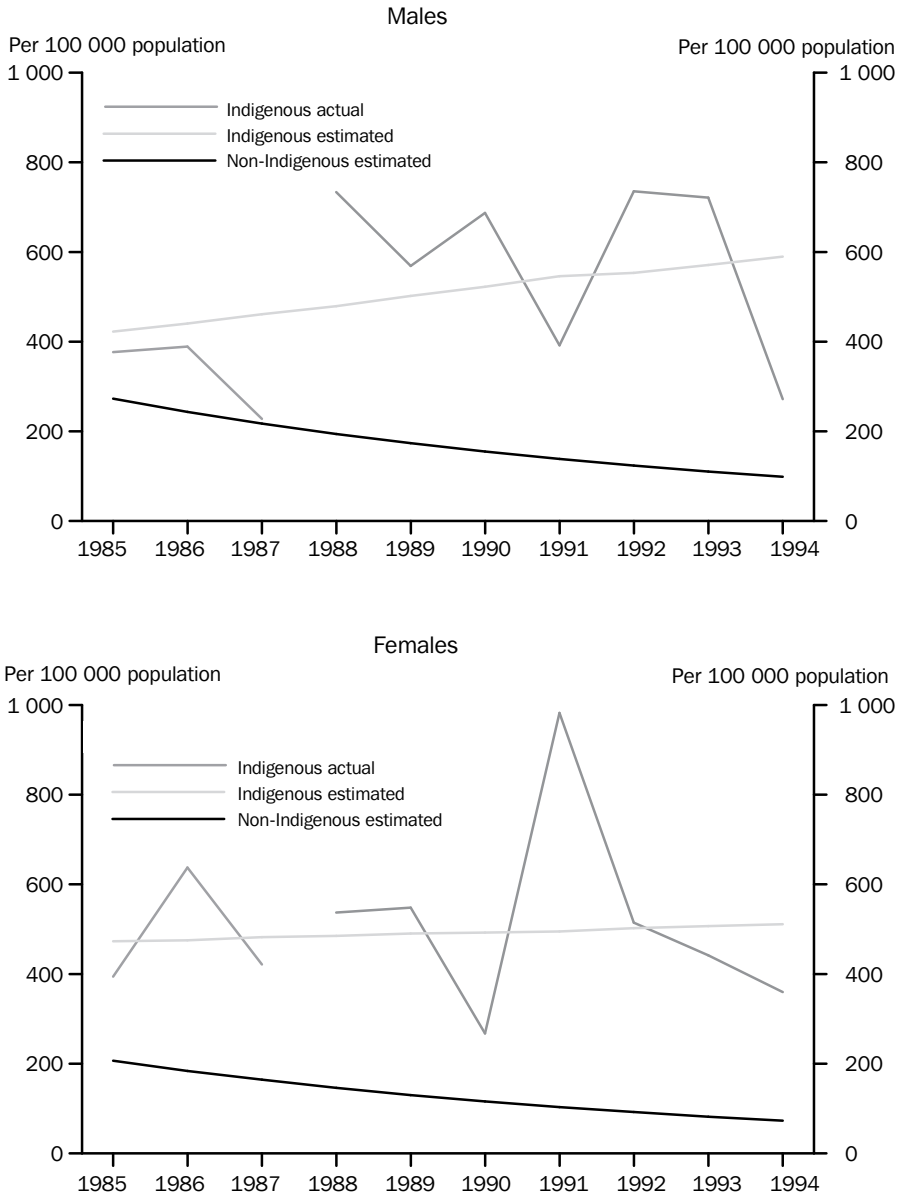
62 ESTIMATED CHANGE IN ASDR AND SMR, SYMPTOMS, SIGNS AND ILL-DEFINED CONDITIONS[1]

	All ill-defined conditions		*Sudden infant death syndrome*		*Ill-defined conditions, ages 1 and greater*	
	Males	*Females*	*Males*	*Females*	*Males*	*Females*
Mean annual % change in ASDR, 1985–94	–1.8	–2.0	3.8	–0.1	**–7.3	–6.9
95% confidence interval	–6.8 to 3.4	–7.5 to 4.0	–4.0 to 12.2	–7.6 to 8.1	–13.9 to –0.2	–13.3 to 0.1
SMR						
1989–91	5.2	6.1	3.0	4.1	16.8	24.9
1992–94	7.6	8.5	6.1	6.3	10.4	15.1
% change	44	39	***102	54	–38	–39

[1] Data from Western Australia and the Northern Territory 1985–94, and South Australia 1988–94. Estimates and % changes are not statistically significant at the 5% level unless otherwise indicated: ***p<0.001, **0.001<p<0.01, *0.01<p<0.05.

Source: AIHW mortality database.

63 DEATH RATES IN THE FIRST YEAR OF LIFE, SUDDEN INFANT DEATH SYNDROME



Source: AIHW mortality database, data for Western Australia and the Northern Territory 1985–94, and South Australia 1988–94.

INJURY AND POISONING

Mortality due to injury and poisoning declined for Indigenous males from 244 deaths per 100,000 persons in 1986 to 200 deaths per 100,000 persons in 1994. (The death rate from this cause in 1985 was unusually high; table 64, graph 65). The estimated average decrease was 2.3% per year but this was not statistically significant (table 68).

The decreased death rate for Indigenous males was the result of apparent declines in mortality due to transport accidents and homicide, the two major causes of death in this category (tables 64 and 68, graphs 66 and 67). However, the ASDR for both causes fluctuated widely over the period and neither trend was statistically significant. There was a noticeable drop in the ASDR for transport accidents and homicide from 1993 to 1994 but this may have resulted from random variation. The

SMR for males did not change substantially from 1989–91 to 1992–94 for injury and poisoning deaths as a whole or for either of the major contributing causes.

64 ASDR[1], INJURY AND POISONING[2]

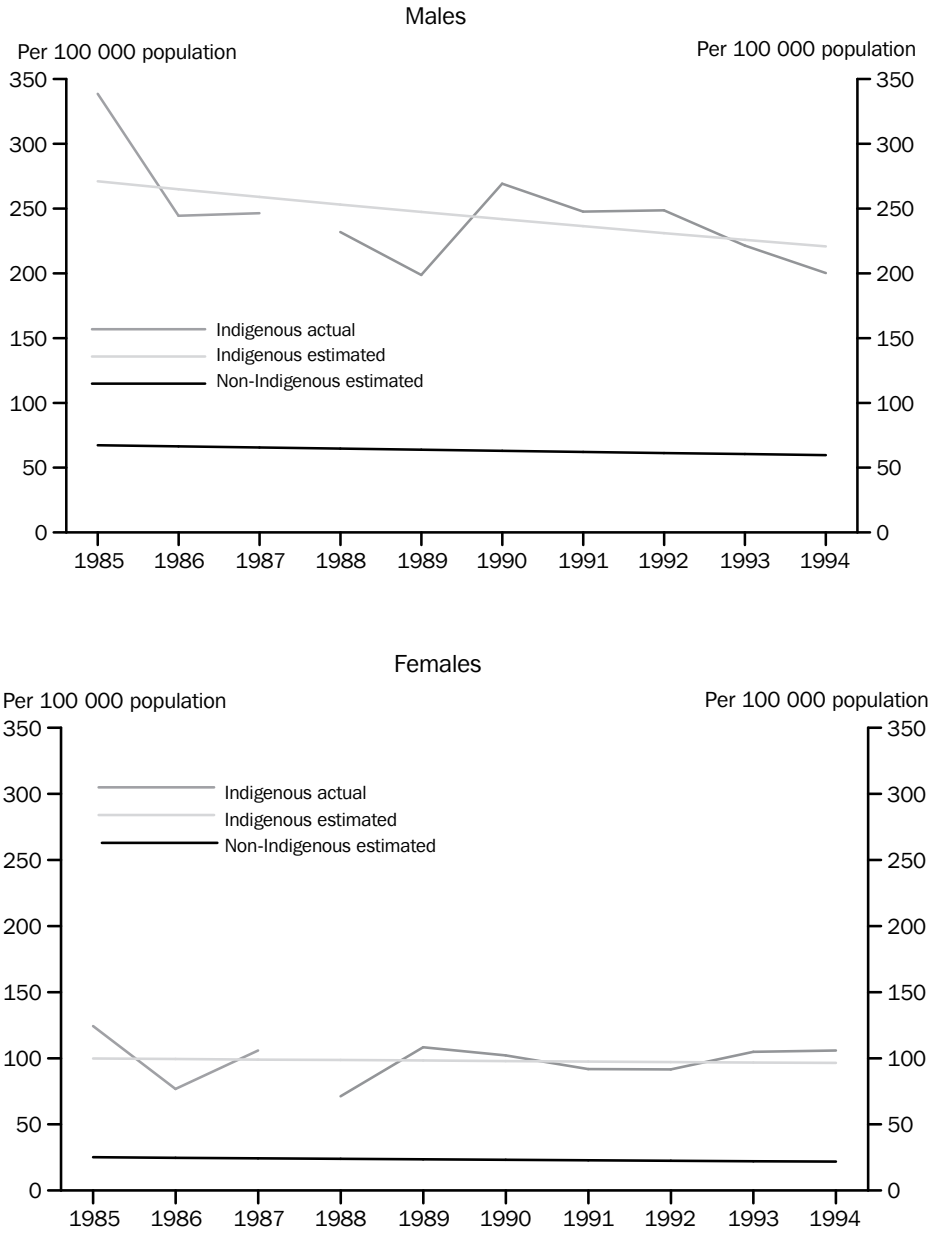
	1985[3]	*1986*[3]	*1987*[3]	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*[4]
All injury and poisoning										
Males	339	244	246	232	199	269	248	249	221	200
Females	124	77	106	71	108	102	92	91	105	106
Transport accidents										
Males	152	110	130	79	75	120	102	93	106	59
Females	43	35	37	17	29	29	43	37	31	25
Accidental poisoning										
Males	5	2	1	9	7	18	13	6	9	6
Females	9	0	2	3	1	6	4	4	5	3
Suicide and self-inflicted injury										
Males	41	6	16	26	41	18	17	28	26	36
Females	0	0	6	5	0	4	6	5	2	5
Homicide and purposely caused injury										
Males	66	59	19	56	28	41	25	30	48	25
Females	32	24	19	15	17	28	16	25	23	33

[1] Age-standardised to the 1991 total Australian population, per 100 000 persons.
[2] Western Australia, South Australia and the Northern Territory combined.
[3] Data from Western Australia and the Northern Territory only.
[4] 1994 figures are adjusted for deaths not yet registered and are provisional estimates.

Source: AIHW mortality database.

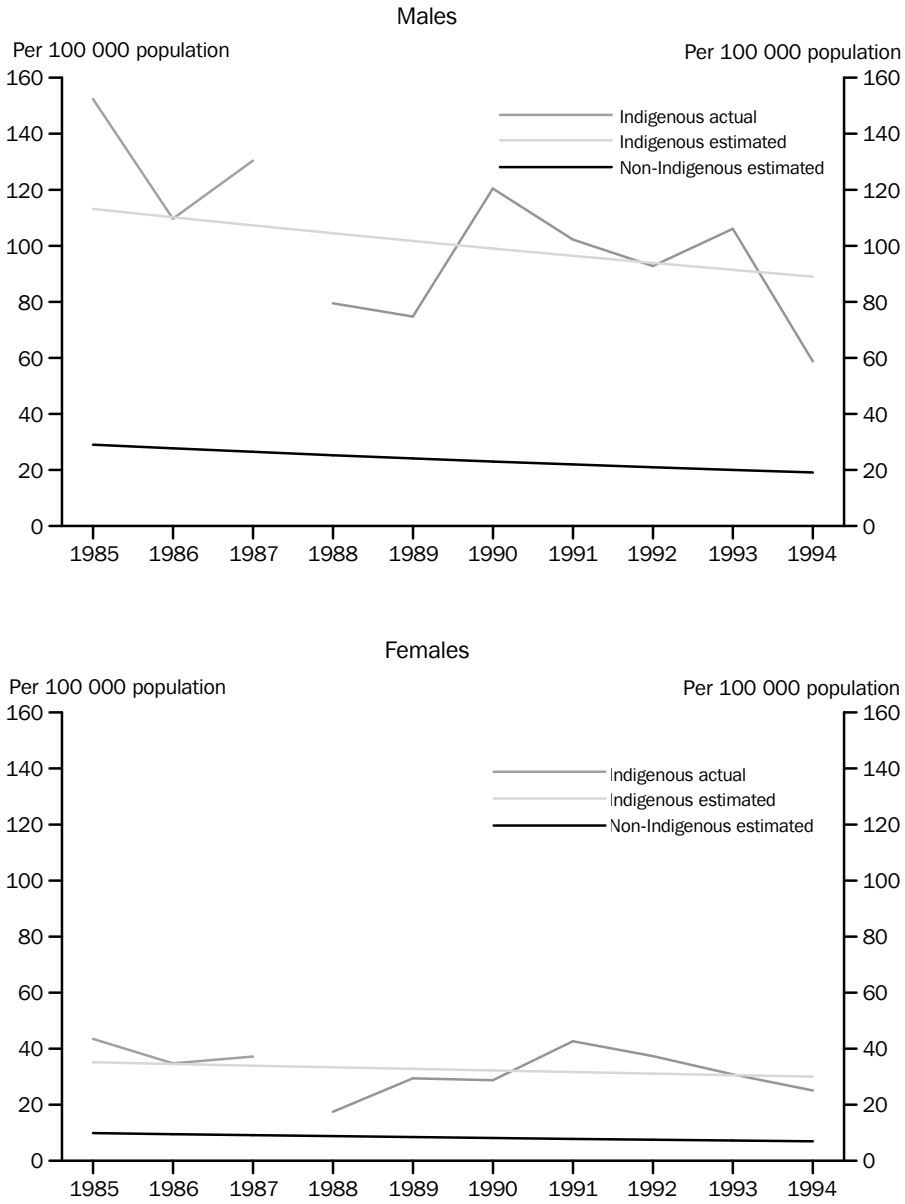
The ASDR for injury and poisoning for Indigenous females varied around 100 deaths per 100,000 persons for the whole of the period 1985–94. There were no statistically significant trends for transport accidents or homicide, or for injury and poisoning overall. The SMRs for Indigenous females fell slightly from 1989–91 to 1992–94, but as for Indigenous males, the changes were not statistically significant.

65 ASDR, INJURY AND POISONING



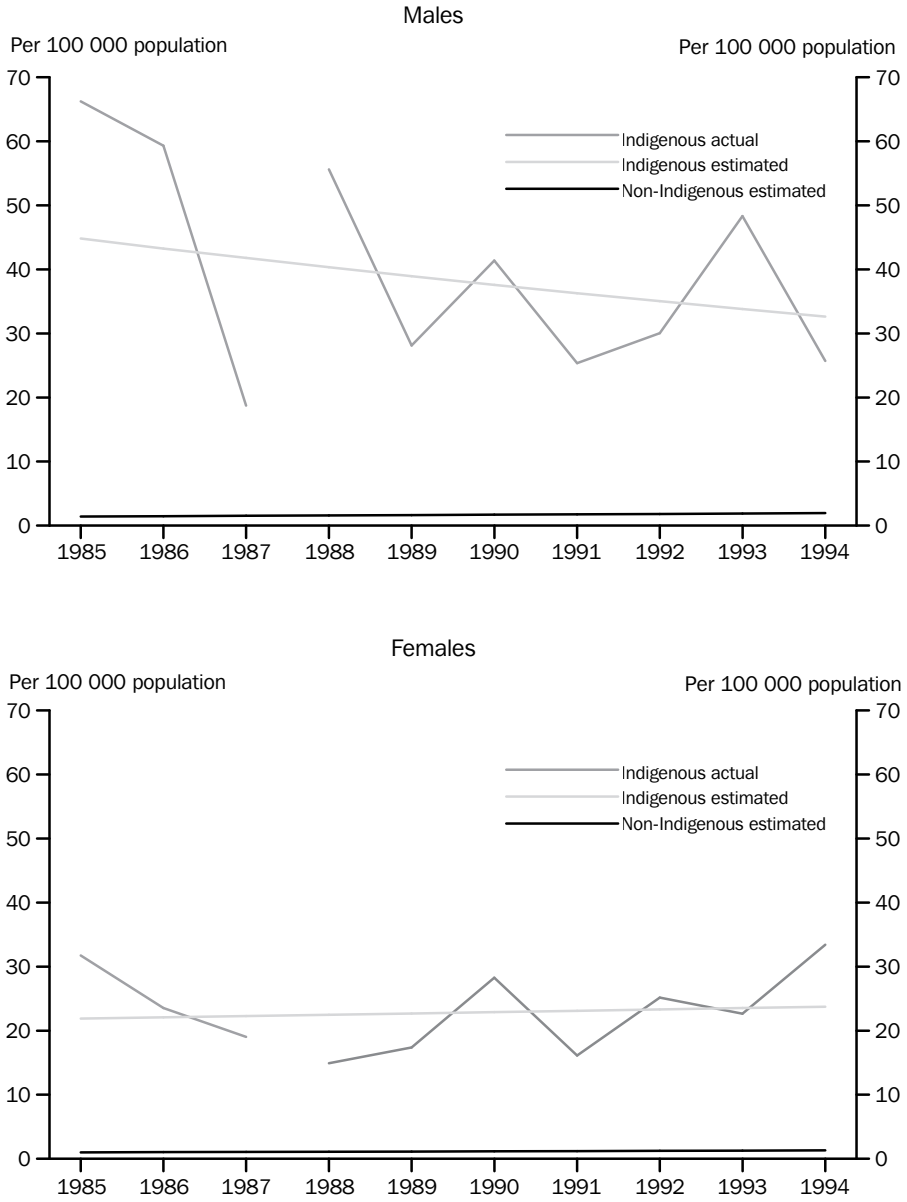
Source: AIHW mortality database, data for Western Australia and Northern Territory 1985–94, and South Australia 1988–94.

66 ASDR, TRANSPORT ACCIDENTS



Source: AIHW mortality database, data for Western Australia and the Northern Territory 1985–94, and South Australia 1988–94.

67 ASDR, HOMICIDE AND PURPOSELY CAUSED INJURIES



Source: AIHW mortality database, data for Western Australia and the Northern Territory 1985–94, and South Australia 1988–94.

The suicide rate for Indigenous males fluctuated widely from year to year with no apparent underlying change over time (tables 64 and 68, graph 69). The rate for 1994 approached those of the peak years of 1985 and 1989. On average, the recorded suicide rate for Indigenous males was slightly higher than for non-Indigenous males. Mortality from accidental poisoning for Indigenous males also fluctuated, but a peak in 1990 and 1991 resulted in a statistically significant drop in the SMR from 1989–91 to 1992–94 (tables 64 and 68).

For Indigenous females, the suicide rate remained at about the same level as for non-Indigenous females, with no evidence of any change over time.

There were 16 deaths from accidental poisoning of Indigenous females during the period, with no apparent trend.

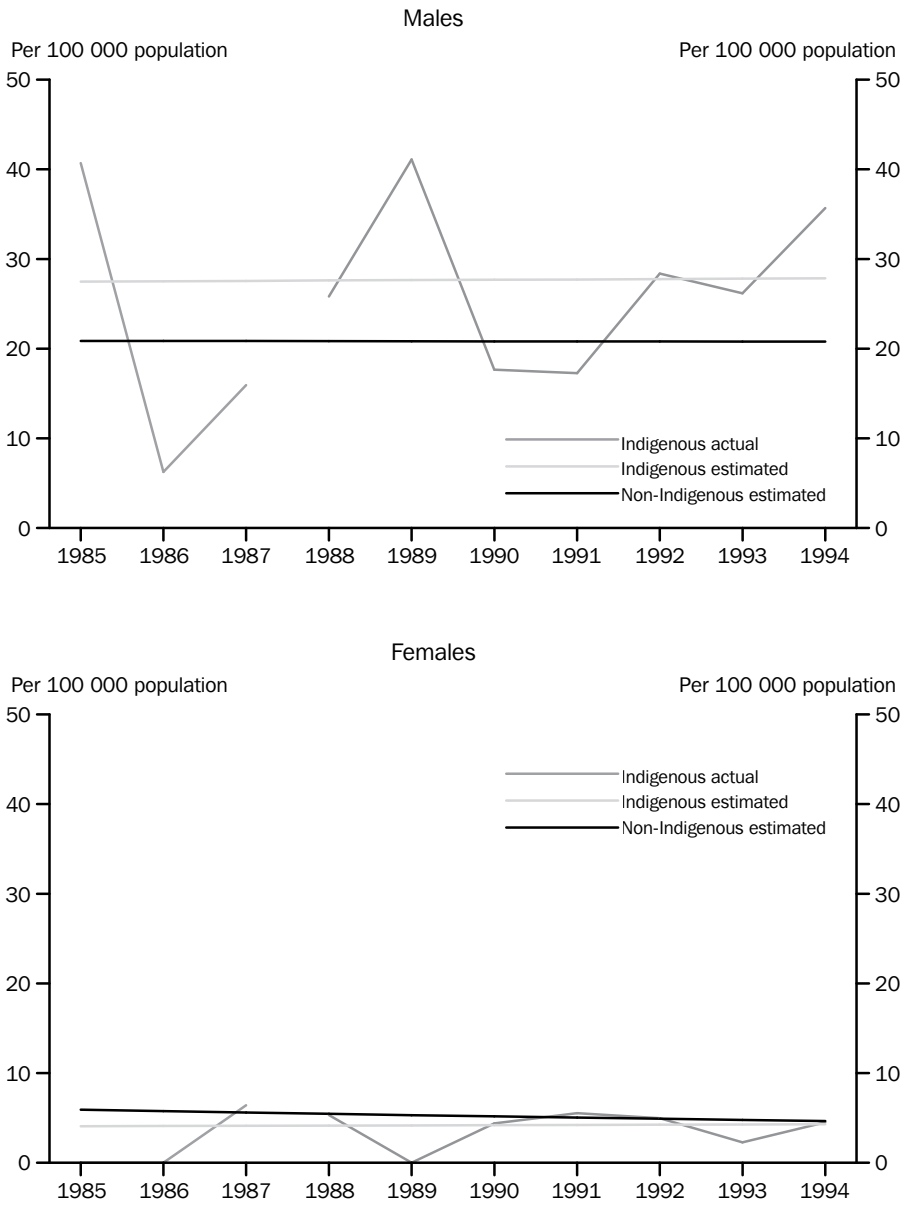
68 ESTIMATED CHANGE IN ASDR AND SMR, INJURY AND POISONING[1]

	All injury and poisoning		*Transport accidents*		*Accidental poisoning*		*Suicide and self-inflicted injury*		*Homicide and purposely caused injury*	
	Males	*Females*	*Males*	*Females*	*Males*	*Females*	*Males*	*Females*	*Males*	*Females*
Mean annual % change in ASDR, 1985–94	–2.3	–0.4	–2.6	–1.7	5.7	3.1	0.2	0.1	–3.4	0.9
95% confidence interval	–4.5 to 0.1	–4.0 to 3.4	–6.0 to 0.9	–7.7 to 4.6	–5.6 to 18.3	–15.0 to 25.0	–6.3 to 7.2	–19.4 to 24.3	–8.9 to 2.4	–5.7 to 8.0
SMR										
1989–91	3.6	4.6	3.6	3.9	5.8	3.6	1.5	1.0	15.8	21.3
1992–94	3.6	4.4	4.1	3.6	2.0	2.5	1.8	0.9	15.4	17.1
% change	0	–5	12	–8	***–65	–29	24	–6	–2	–19

[1] Data from Western Australia and the Northern Territory 1985–94, and South Australia 1988–94. Estimates and % changes are not statistically significant at the 5% level unless otherwise indicated: ***p<0.001, **0.001<p<0.01, *0.01<p<0.05.

Source: AIHW mortality database.

69 ASDR, SUICIDE AND SELF-INFLICTED INJURY



Source: AIHW mortality database, data for Western Australia and the Northern Territory 1985–94, and South Australia 1988–94.

TECHNICAL NOTES

Direct age-standardisation was used in the analysis to control for any effects of differing age structures in the Indigenous and non-Indigenous populations. Age-specific death rates for five-year age groups, defined as 0, 1–4, 5–9, ..., 70–74, 75+ years, have been used for standardisation according to the following formula:

$$ASDR = \sum(R_i \times P_i) / \sum P_i$$

where $ASDR$ = the age-standardised death rate

R_i = the age-specific death rate in age group i

P_i = the standard population in age group i

For the overview section of this report the SMR was calculated as follows:

$$SMR = \sum D_{ai} / \sum(R_{ni} \times P_{ai})$$

where D_{ai} = the number of Indigenous deaths in age group i for the population of interest

R_{ni} = the age-specific death rate in age group i for the appropriate non-Indigenous population

P_{ai} = the Indigenous population in age group i

When comparing temporal variation in SMRs between the 1989–91 and 1992–94 periods, the effect of any variation in age structure over time was controlled for by age-adjusting the sex-specific death rates for 1989–91 to the 1992–94 Indigenous male and female populations for Western Australia, South Australia and the Northern Territory combined. Thus the SMR for 1989–91 was calculated for each sex separately as:

$$SMR = \sum(R_{ai} \times P_i) / \sum(R_{ni} \times P_i)$$

where R_{ai} = the age-specific death rate in age group i in the Indigenous population in 1989–91

R_{ni} = the age-specific death rate in age group i in the non-Indigenous population in 1989–91

P_i = the 1992–94 Indigenous male or female population in age group i

The statistical significance of the SMR was assessed by a chi-square test. This determines whether the difference between the observed SMR and 1 was likely to have occurred by chance alone, that is whether the observed number of deaths was statistically significantly different from the number expected. The formula follows the usual simple continuity corrected chi-square statistic (Breslow and Day 1987):

$$X_1^2 = \frac{(|O - E| - \frac{1}{2})^2}{E}$$

where O = the observed number of deaths, and E = the expected number of deaths.

In the trends section of this report, the SMRs for 1989–91 and 1992–94, and the percentage change in SMR between these two periods were calculated for each cause of death and for deaths overall. The statistical significance of the change in SMR was assessed by a chi-square test as follows (Breslow and Day 1987):

$$X_1^2 = \frac{(|O_1 - E_1^*| - \frac{1}{2})^2}{E_1^*} + \frac{(|O_2 - E_2^*| - \frac{1}{2})^2}{E_2^*}$$

where $E_1^* = O_t E_1 / E_t$

$E_2^* = O_t E_2 / E_t$

$O_t = O_1 + O_2$

and $E_t = E_1 + E_2$

O_1 and O_2 are the observed numbers of deaths, and E_1 and E_2 the expected numbers of deaths for 1989–91 and 1992–94, respectively.

MODELLING OF TRENDS IN MORTALITY

The number of deaths by year, age group, sex and State or Territory were modelled using Poisson regression models. For these models the number of deaths is assumed to have a Poisson distribution. This is a standard assumption for data that are counts of statistically independent events. The Poisson regression models were fitted using GLIM 4 (Francis, Green and Payne 1993).

An important aim of this report was to describe trends in Aboriginal and Torres Strait Islander death rates between 1985 and 1994. The simplest trend is one in which the percentage change in the mortality rate is assumed to be the same for each year between 1985 and 1994. More complicated models could be applied but were not justified due to the shortness of the time period, the incompleteness of the data (that is, the under-enumeration of Indigenous deaths and the need to limit analysis to three jurisdictions) and in many cases the small numbers of deaths.

A constant annual percentage change can be characterised by a single number with a 95% confidence interval which provides a succinct summary. This relationship corresponds to a linear regression term for year in a log-linear model, and to a straight line when the logarithm of the mortality rate is plotted against year. However, because the analysis was over a short period and the annual change was generally not large, in this report trends have been plotted on the normal scale for simplicity.

To estimate the trend in the ASDR the offset was set equal to the natural logarithm of the Aboriginal and Torres Strait Islander population. Adjustment for age was achieved by including age group as a term in the model. For some causes of death, age groups were combined because of small numbers of deaths. The inclusion of terms for State and Territory in the models allowed for adjustment for differences among States and Territories in average mortality rates, and for the differences in the availability of data between South Australia (from 1988) and the other two jurisdictions (from 1985).

Estimated age-standardised rates, with an assumed constant percentage change per year, were calculated from the model parameters. The age groups and States were weighted in the same proportion as the 1991 Australian population. These estimates were used to fit a modelled line through the actual yearly data points in graphs for each cause of death. It should be noted that this line is not equivalent to a line of best fit from a linear regression, although the two are often similar.

For any particular cause of death it is possible that the average annual change varies with age and/or State and Territory. Such variation was represented in models by interaction terms between year and age, and year and State and Territory. In some cases it was possible to examine such interactions, but for many causes of death there were insufficient numbers to do this. Where interaction terms could be assessed and appeared to be important, this is indicated in the text.

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Produced by the Australian Government Publishing Service

2331500001920
ISBN 0 642 23190 7

Recommended retail price: $19.50

ABS Catalogue No. 3315.0 **Mortality of Indigenous Australians** 1994