

# Incidence

A major objective of the National Cervical Screening Program is to minimise the incidence of cervical cancer by detecting treatable pre-cancerous lesions before their progression to cancer. However, where these pre-cancerous lesions cannot be detected, diagnosis of cancer at its earliest stage, the micro-invasive stage, is the most desirable outcome. The next two indicators measure the incidence rates of micro-invasive and all cervical cancers in the community.

In 1994 the International Federation of Gynaecology and Obstetrics endorsed the following definition of micro-invasive carcinoma of the cervix:

Stage 1a1. Measured invasion of stroma no greater than 3 mm in depth and no wider than 7 mm.

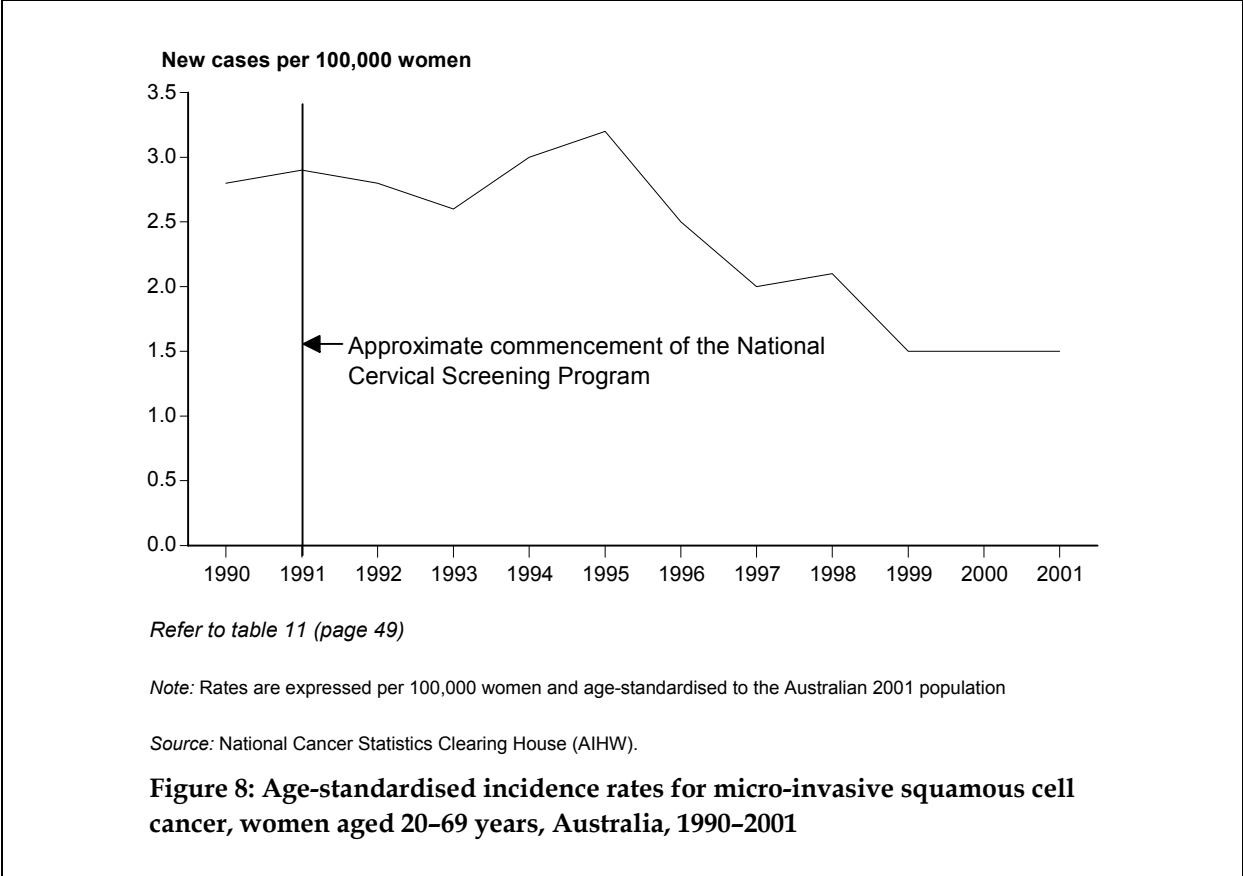
Stage 1a2. Measured invasion of stroma between 3 mm and 5 mm in depth and no wider than 7 mm. The depth of invasion should be measured from the base of the epithelium, either surface or glandular, from which it originates. Vascular space involvement, either venous or lymphatic, should not alter the staging (Ostor & Mulvany 1996).

In interpreting cervical cancer incidence statistics, note that cervical screening has been available on an ad hoc basis since the 1960s, but it is only since the late 1980s and early 1990s that there has been an organised national approach to screening at a population level. The introduction of cervical screening programs which achieve higher participation rates may result in the paradox whereby in the short term the number of new cases of micro-invasive cancer increases because cancers are found earlier than they would have been without screening, but the rate of more advanced cancers decreases in the longer term.

For this report the most recent national data available on incidence are for 2001, in contrast to screening data and mortality data which are available for 2003. This time lag in availability of incidence data is expected to reduce over the next 2 years.

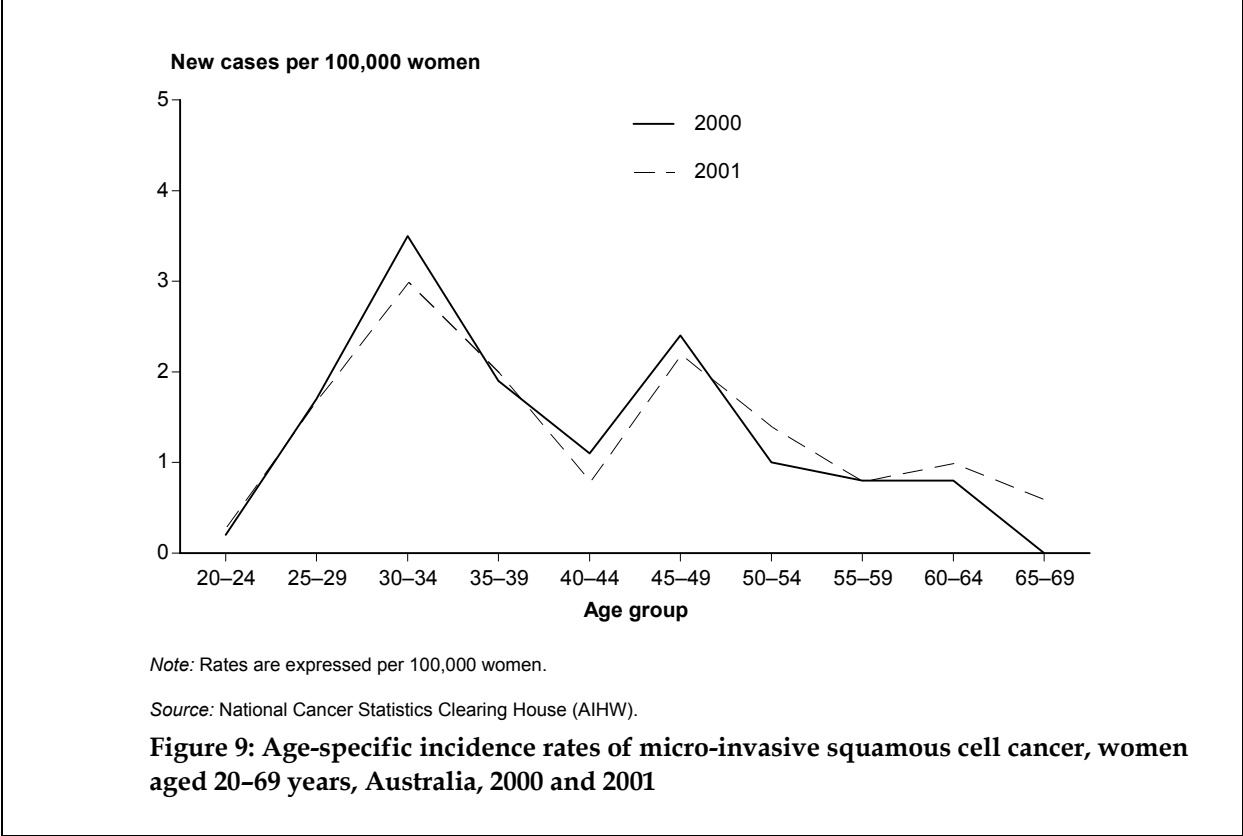
# Indicator 5.1: Incidence of micro-invasive cervical cancer

Incidence rates of micro-invasive squamous cell carcinoma per 100,000 estimated resident female population in a 12-month period by 5-year age groups (20–24, 25–29, 30–34, 35–39, 40–44, 45–49, 50–54, 55–59, 60–64, 65–69, 70–74, 75–79, 80–84, 85+) and for the target age group (20–69 years, age-standardised).



	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
	(Number per 100,000 women)											
AS rate (20–69 years)	2.8	2.9	2.8	2.6	3.0	3.2	2.5	2.0	2.1	1.5	1.5	1.5

- The age-standardised incidence rate of micro-invasive cervical cancer was 1.5 per 100,000 women in 2001 for women in the target age group of 20–69 years and 1.0 per 100,000 for women of all ages (0–85+ years) (Table 11, page 49). The 20–69 age group rates fell sharply between 1995 and 1999 and then stabilised between 1999 and 2001 at 1.5 per 100,000 women.
- In 2001 there were 98 new cases of micro-invasive cervical cancers for women of all ages (0–85+ years) and 91 new cases in women aged 20–69 years (Table 10, page 48).



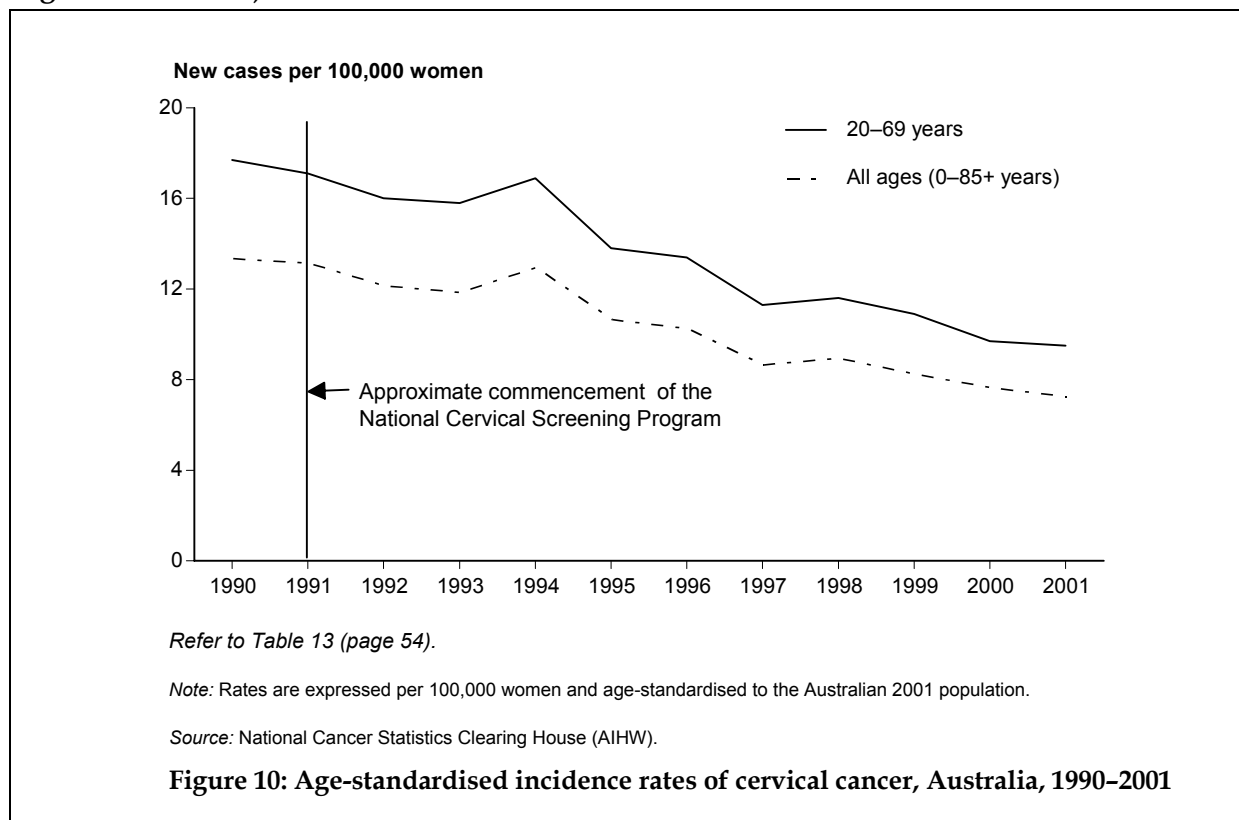
Year	Age group										20–69*
	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	
2000	0.2	1.7	3.5	1.9	1.1	2.4	1.0	0.8	0.8	0.0	1.5 (1.2–1.8)
2001	0.3	1.7	3.0	2.0	0.8	2.2	1.4	0.8	1.0	0.6	1.5 (1.2–1.8)

\*Age-standardised rates (standardised to the Australian 2001 population) with 95% confidence intervals.

- In both 2000 and 2001, the highest detection rates for micro-invasive squamous cell cancer were for women in the 30–34 age group. The rate declined with age in both years to rates of 1.4 per 100,000 and below for women aged 50 years or more; however, there was some fluctuation in the age-specific incidence rates for women aged 35–45 years,
- In 2001 there were 22 cases of micro-invasive squamous cell cancer in women aged 30–34 years. The number of cancers declined to less than 10 for women aged 50–69 years.

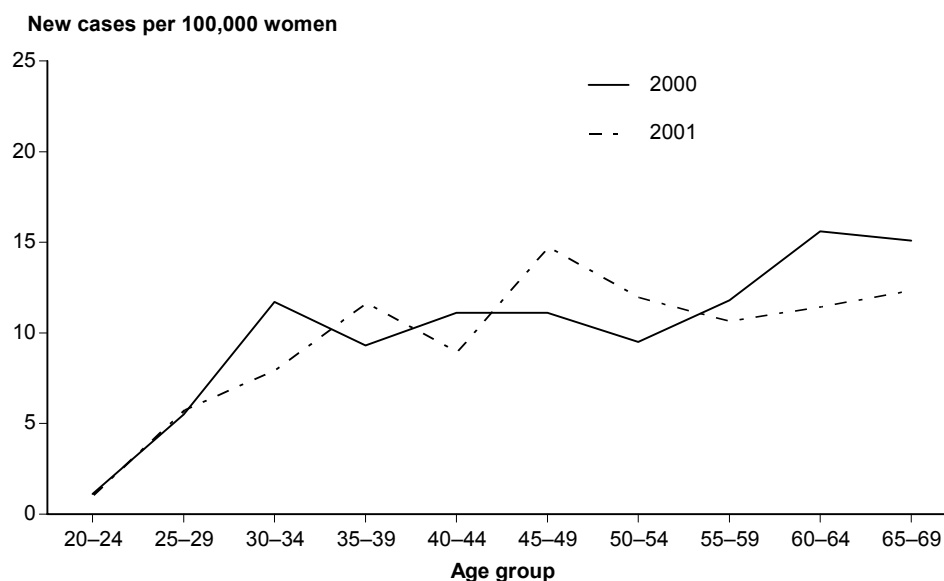
## Indicator 5.2: Incidence of squamous, adenocarcinoma, adenosquamous and other cervical cancer

Incidence rates of squamous, adenocarcinoma, adenosquamous and other cervical cancer (micro-invasive and invasive) per 100,000 estimated resident female population in a 12-month period by 5-year age groups (20–24, 25–29, 30–34, 35–39, 40–44, 45–49, 50–54, 55–59, 60–64, 65–69, 70–74, 75–79, 80–84, 85+) and for the target age group (20–69 years, age-standardised).



Age	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
(Number per 100,000 women)												
All ages 0–85+ years	13.4	13.2	12.2	11.9	13.0	10.7	10.3	8.7	9.0	8.3	7.7	7.3
Target age 20–69 years	17.7	17.1	16.0	15.8	16.9	13.8	13.4	11.3	11.6	10.9	9.7	9.5

- In 2001, there were 735 new cases of cervical cancer diagnosed in Australia compared with the peak of 1,136 new cases in 1994. Of the 735 new cases, 584 were women in the target age group 20–69 years (Table 12, page 50). All but two cases of the remaining 151 were in women aged 70 years and over.
- The age-standardised incidence rate of all cervical cancers declined to 7.3 per 100,000 women for women of all ages (0–85+ years) in Australia in 2001, and to 9.5 per 100,000 women in the target group. Between 1990 and 2001 the decline over all ages was 45.1%, and in the target age group was 46.7% (Table 13, page 51).



Refer to Table 13 (page 51).

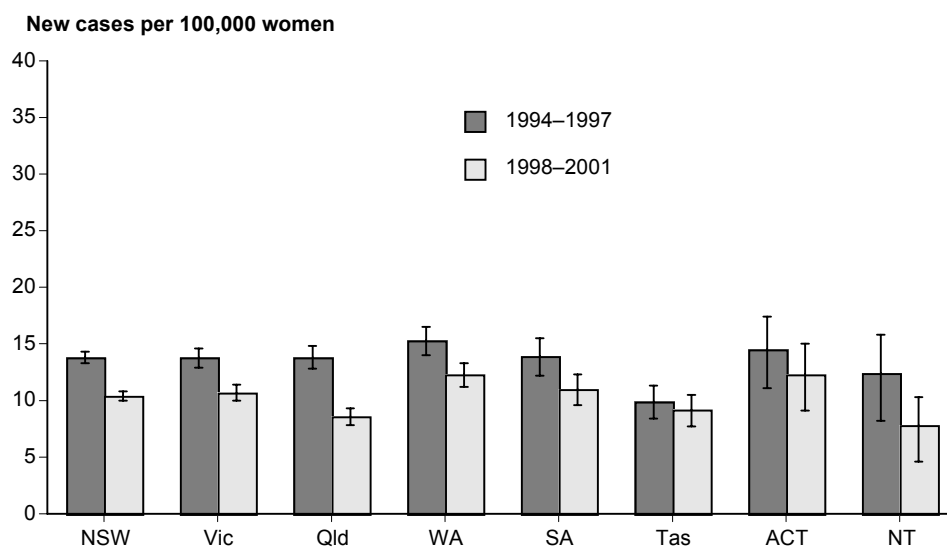
Note: Rates are expressed per 100,000 women.

Source: National Cancer Statistics Clearing House (AIHW).

**Figure 11: Age-specific incidence rates of cervical cancer, Australia, 2000 and 2001**

Year	Age group										
	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	20-69
(Number per 100,000 women)											
2000	1.1	5.5	11.7	9.3	11.1	11.1	9.5	11.8	15.6	15.1	9.7
2001	1.1	5.8	8.0	11.7	9.0	14.8	12.0	10.7	11.5	12.4	9.5

- The age-specific rate of cervical cancer incidence was highest in 2001 for women aged 45-49 with 14.8 per 100,000 women. Although age-specific rates for women in their sixties and seventies have declined since 2000, they remain high.
- The 2001 age-specific rate of cervical cancer incidence increased for women in the 35-39, 45-49 and 50-54 age groups.
- Figure 11 shows two distinct peaks in age-specific cervical cancer in 2001, the 30-34 and 45-49 age groups; however, the underlying trend is rising incidence with increasing age.



Refer to Tables 14b and 15b (pages 53 and 55).

**Notes**

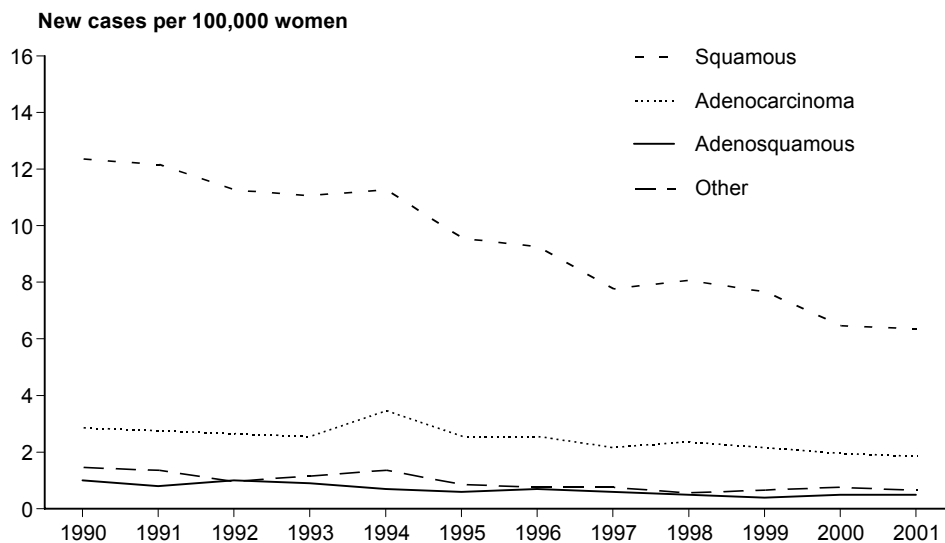
1. Rates are expressed per 100,000 women and age-standardised to the Australian 2001 population.
2. Bars on graphs represent 95% confidence intervals.

Source: National Cancer Statistics Clearing House (AIHW).

**Figure 12: Age-standardised cervical cancer incidence rates in women aged 20-69 years, states and territories, 1994-1997 and 1998-2001**

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
1994-1997	13.8	13.8	15.3	13.9	9.9	14.5	12.4	26.2	13.8
95% CI	13.0-14.6	12.9-14.8	14.1-16.6	12.4-15.6	8.6-11.5	11.6-17.9	9.0-16.6	18.1-36.3	13.3-14.3
1998-2001	10.7	8.6	12.3	11.0	9.2	12.3	7.8	16.3	10.4
95% CI	10.0-11.5	7.9-9.3	11.3-13.4	9.7-12.4	7.9-10.7	9.7-15.5	5.3-11.0	10.7-23.5	10.0-10.8

- In the period 1998-2001, the Australian Capital Territory had the lowest incidence at 7.8 new cases per 100,000 women and the Northern Territory had the highest rate of 16.3 per 100,000 women.
- The age-standardised incidence rate declined in all states and territories between the two periods 1994-1997 and 1998-2001. The declines were significant in New South Wales, Victoria and Queensland; the national average was also significantly lower than in the earlier period.



Refer to Table 16b (page 56).

Note: Rates are expressed per 100,000 women and age-standardised to the Australian 2001 population.

Source: National Cancer Statistics Clearing House (AIHW).

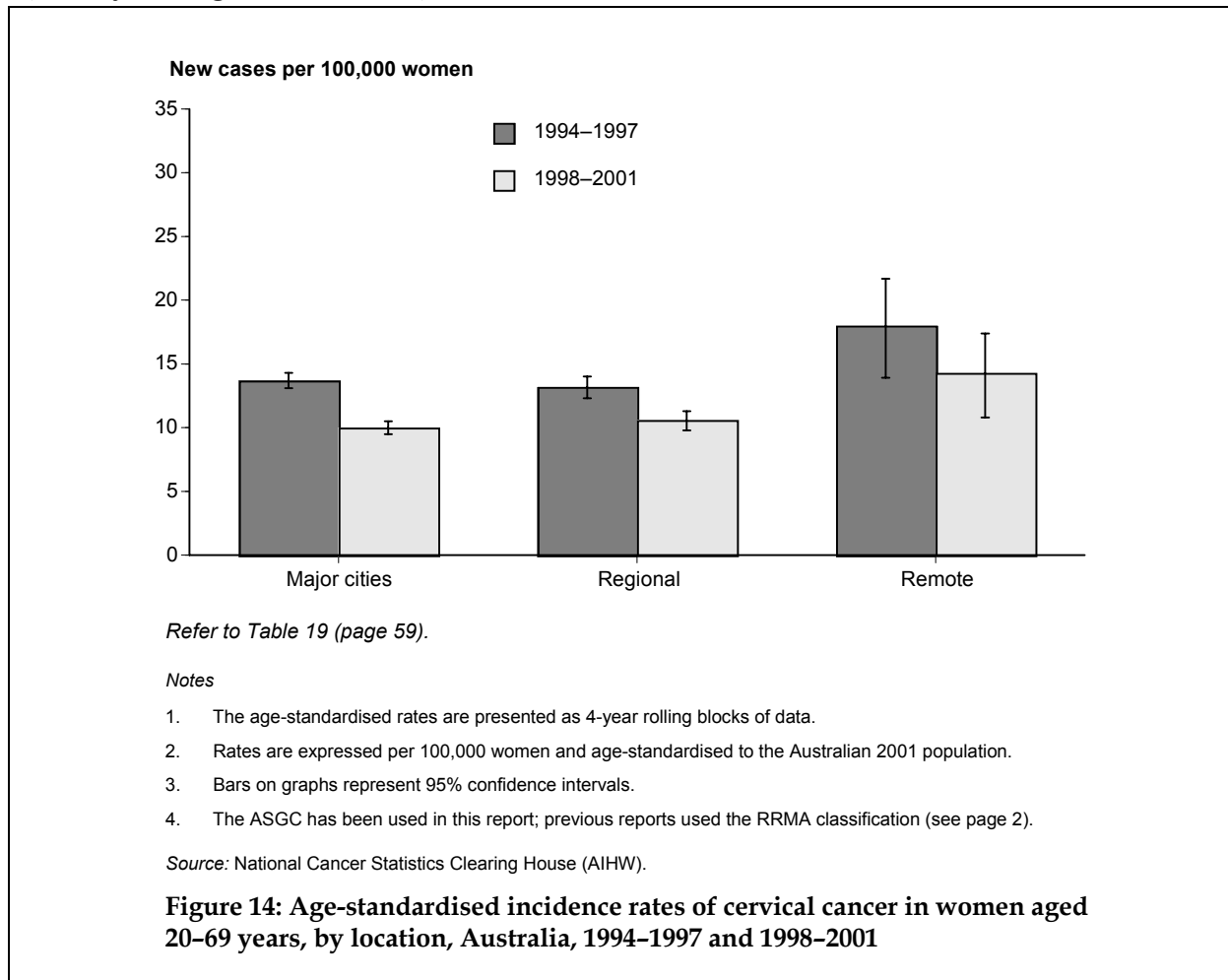
**Figure 13: Age-standardised incidence rates of cervical cancer by histological type, women aged 20–69 years, Australia, 1990–2001**

Histological type	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Squamous	12.4	12.2	11.3	11.1	11.3	9.6	9.3	7.8	8.1	7.7	6.5	6.4
Adenocarcinoma	2.9	2.8	2.7	2.6	3.5	2.6	2.6	2.2	2.4	2.2	2.0	1.9
Adenosquamous	1.0	0.8	1.0	0.9	0.7	0.6	0.7	0.6	0.5	0.4	0.5	0.5
Other	1.5	1.4	1.0	1.2	1.4	0.9	0.8	0.8	0.6	0.7	0.8	0.7

- In 2001, squamous cell carcinomas of the cervix accounted for 67.3% of all new cases of cervical cancer in women aged 20–69 years, adenocarcinomas 19.9%, adenosquamous 5.1%, and the remaining 7.9% a range of other mixed and unknown histologies (Table 16a, page 56).
- The trend from 1990 to 2001 for all histological types has been a decrease in the age-standardised rates of cervical cancer per 100,000 women aged 20–69 years; the difference in the rates between 1990 and 2001 is statistically significant for all types except adenosquamous.
- The incidence rates for all histological types of cervical cancer have almost halved since 1990, before the start of the national screening program.

## Indicator 5.3: Incidence by location

Incidence rates of cervical cancer per 100,000 estimated resident female population in a 3-year period by location by 5-year age groups (20–24, 25–29, 30–34, 35–39, 40–44, 45–49, 50–54, 55–59, 60–64, 65–69, 70–74, 75–79, 80–84, 85+) and for the target age group (20–69 years, age-standardised).



	Metropolitan		Regional		Remote	
	1994–1997	1998–2001	1994–1997	1998–2001	1994–1997	1998–2001
AS rate	13.7	10.0	13.2	10.6	18.0	14.3
95% CI	13.1–14.3	9.5–10.5	12.4–14.1	9.9–11.4	14.4–22.1	11.3–17.9

- There were 2,046 new cases (66.1% of all new cases) of cervical cancer in major cities in the 4-year period 1998–2001, 965 new cases (31.2% of all new cases) in regional locations and 85 new cases (2.7% of all new cases) in remote locations (Table 18, page 58).
- Age-standardised cervical cancer incidence rates in the period 1998–2001, for women in the target age group 20–69 years, were higher in remote locations (14.3 per 100,000 women) than in regional locations (10.6) and major cities (10.0). The difference in cervical cancer rates for women in the target age groups in remote locations was significantly higher than for women in major cities (Table 19, page 59).



# Mortality

Cancer of the cervix is one of the few cancers for which there is an efficacious screening test for detection of precursors of the disease. Most deaths due to cervical cancer are potentially avoidable (Marcus & Crane 1998). The objective of the National Cervical Screening Program is to reduce this mortality rate.

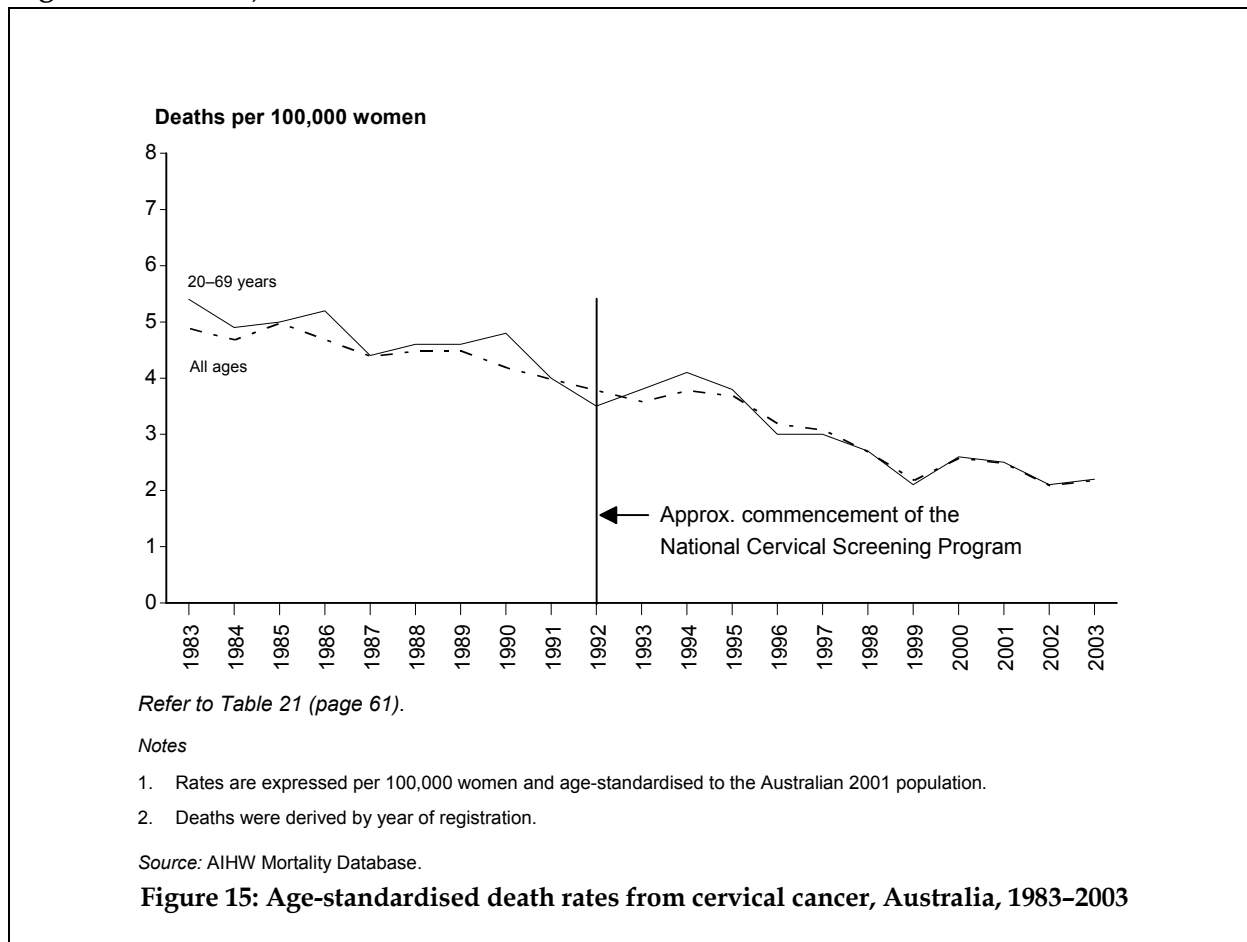
The three mortality indicators are mortality (by age and state), mortality by location (metropolitan, rural and remote), and Indigenous mortality (Indigenous and other Australian women). These indicators measure the level of mortality from cervical cancer in the total female population by age and other demographic characteristics. The mortality indicators are important because from them an assessment can be made of changes in mortality in different age groups and particular target groups over time. However, note that changes in the mortality rates may not be evident for a number of years following an improvement in the participation rate. Therefore, the effectiveness of this measure needs to be viewed in the longer rather than the shorter term.

## Data issues

- Two major changes that have occurred in the classification and processing of Australian mortality data require some caution when interpreting mortality data over time. They are:
  1. the introduction of the tenth revision of the International Classification of Diseases (ICD-10) for classifying deaths registered from 1 January 1999; and
  2. the introduction by the Australian Bureau of Statistics (ABS) of the Automated Coding System (ACS) for processing deaths registered from 1 January 1997.
- As a result, there is now a break in the mortality data series. In order to make mortality data coded using ICD-9 and ICD-10 comparable, the ABS has derived comparability factors to adjust data based on ICD-9. These comparability factors are derived from the movements in the underlying causes of death coded in ICD-9 compared with ICD-10 (ABS 2000).
- For cervical cancer deaths, the comparability factor is 0.98, and the pre-1997 mortality data presented in this report have been adjusted accordingly. The effect of this is that the pre-1997 number of deaths appearing in this report are different from figures in most earlier *Cervical Screening in Australia* reports.
- Before 1998, only South Australia, Western Australia and the Northern Territory had a relatively high coverage of Indigenous status identification in the deaths data. In 1998 Queensland's coverage of Indigenous deaths reached an acceptable level following the introduction of a new *Death Information Form* in 1996-1997 which included a question on Indigenous status (ABS 1999). Therefore, in this report, cervical cancer deaths for Indigenous Australians include data from Queensland (for 1998 to 2000), South Australia, Western Australia and the Northern Territory.

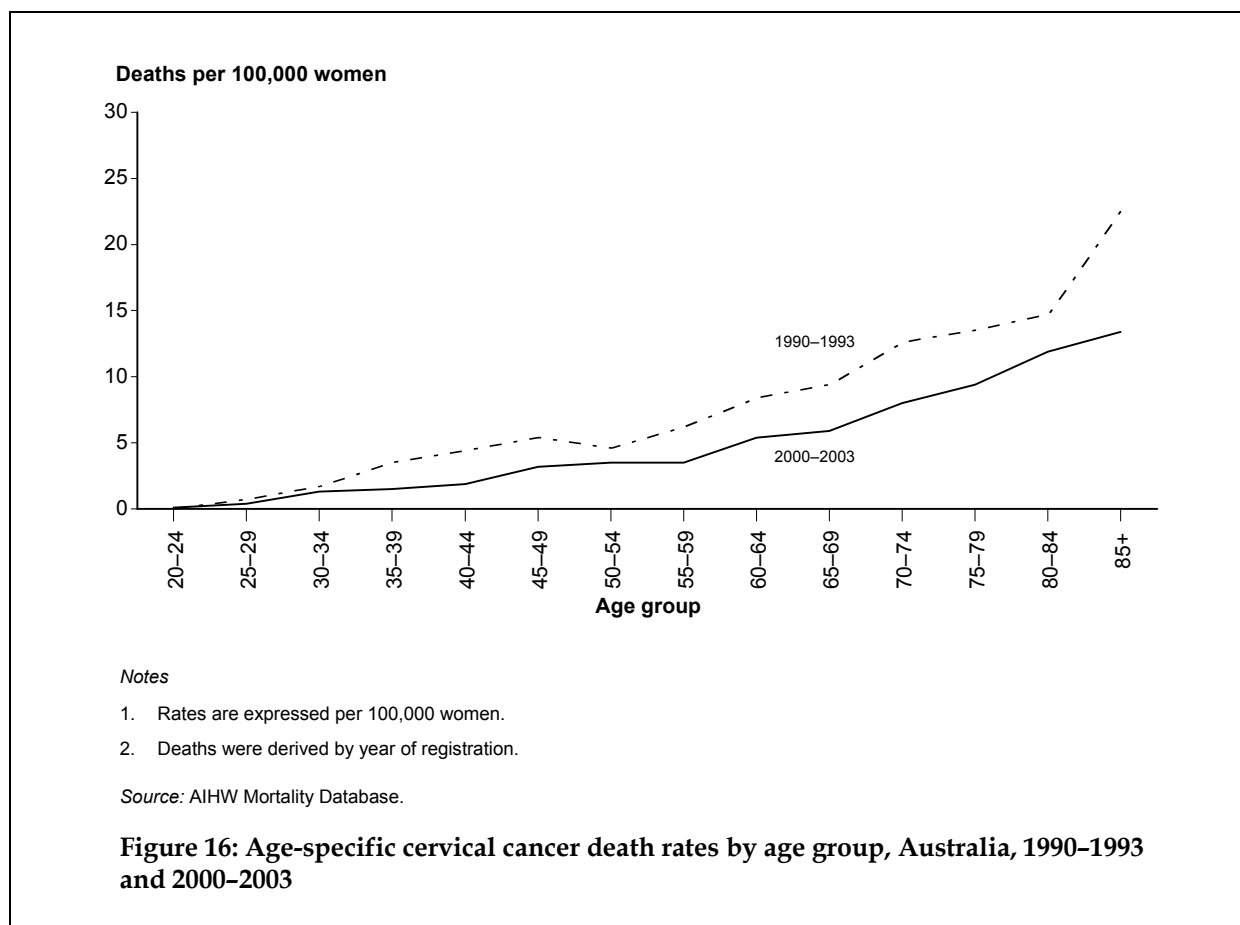
## Indicator 6.1: Mortality

Death rate from cervical cancer per 100,000 estimated resident female population in a 12-month period by 5-year age groups (20–24, 25–29, 30–34, 35–39, 40–44, 45–49, 50–54, 55–59, 60–64, 65–69, 70–74, 75–79, 80–84, 85+) and for the target age group (20–69 years, age-standardised).



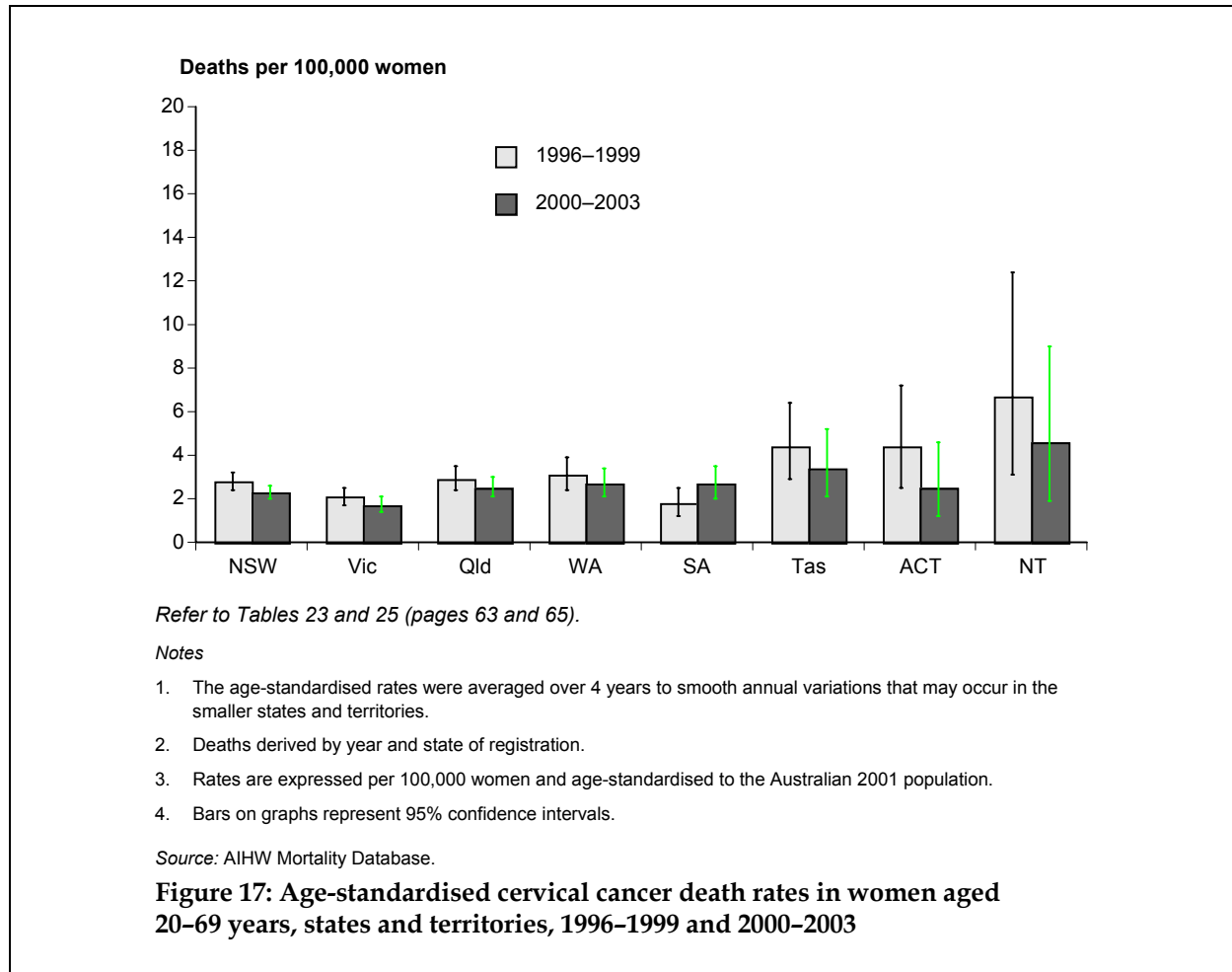
	'83	'84	'85	'86	'87	'88	'89	'90	'91	'92	'93	'94	'95	'96	'97	'98	'99	'00	'01	'02	'03	
All ages																						
0–85+ years	4.9	4.7	5.0	4.7	4.4	4.5	4.5	4.2	4.0	3.8	3.6	3.8	3.7	3.2	3.1	2.7	2.2	2.6	2.5	2.1	2.2	
Target age																						
20–69 years	5.4	4.9	5.0	5.2	4.4	4.6	4.6	4.8	4.0	3.5	3.8	4.1	3.8	3.0	3.0	2.7	2.1	2.6	2.5	2.1	2.2	

- Cervical cancer was the 18th most common cause of cancer deaths in Australian women in 2003, accounting for 238 deaths.
- The age-standardised death rate for women of all ages (0–85+ years) was 2.2 per 100,000 women in 2003, much lower than the peak of 5.0 per 100,000 women in 1985, which was before the introduction of the organised screening program (this represents a 56% decrease in mortality over this period).



Period	Age group													
	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+
1990-1993	0.1	0.8	1.8	3.6	4.5	5.5	4.7	6.3	8.5	9.5	12.7	13.6	14.8	22.7
2000-2003	0.1	0.4	1.3	1.5	1.9	3.2	3.5	3.5	5.4	5.9	8.0	9.4	11.9	13.4

- Mortality from cervical cancer between the 1990-1993 and 2000-2003 periods declined in all age groups except for the age group 20-24 years, where there was no difference. The decline in mortality rates, particularly for the oldest age groups in 2000-2003, is evident in Figure 16 when compared with the earlier period.
- In both 1990-1993 and 2000-2003 the age-specific rates of cervical cancer mortality climbed with increasing age.

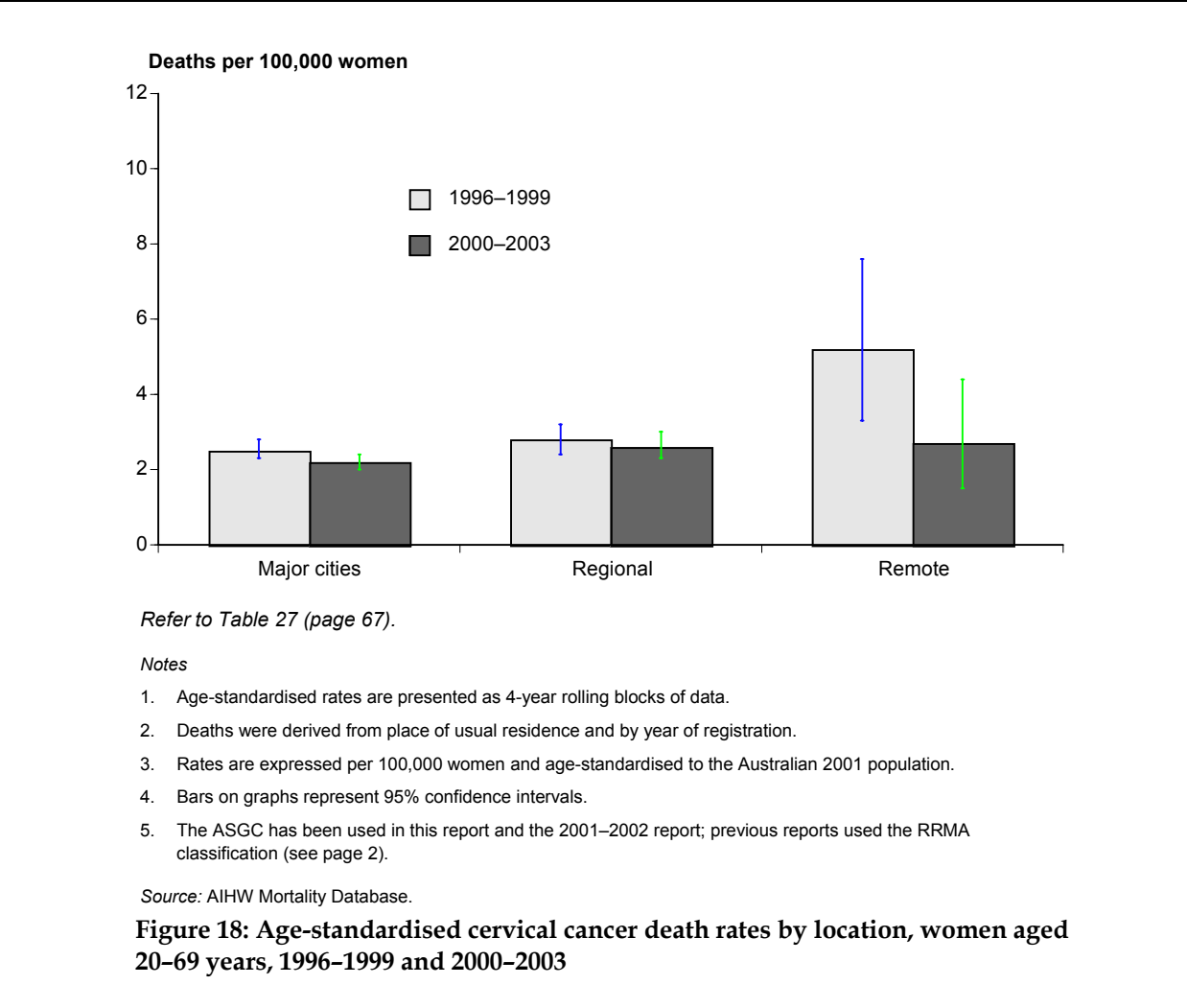


	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Rate 1996-1999	2.8	2.1	2.9	3.1	1.8	4.4	4.4	6.7	2.7
95% CI	2.5-3.2	1.8-2.5	2.4-3.4	2.4-3.9	1.3-2.5	2.9-6.4	2.5-7.2	3.0-12.4	2.5-2.9
Rate 2000-2003	2.3	1.7	2.5	2.7	2.7	3.4	2.5	4.6	2.3
95% CI	2.0-2.7	1.4-2.1	2.1-3.0	2.1-3.5	2.1-3.6	2.1-5.2	1.2-4.6	1.9-9.0	2.1-2.5

- In the 4-year period 2000-2003 there were 994 deaths from cervical cancer in all states and territories compared with 1,081 in 1996-1999.
- Age-standardised mortality varied from 1.7 deaths per 100,000 women in Victoria to 4.6 per 100,000 women in the Northern Territory in the 2000-2003 period.
- The age-standardised death rates decreased in all jurisdictions between the two periods except in South Australia. Although the Northern Territory rate decreased sharply between the two periods, the rates are based on very small numbers and are subject to considerable variation.

# Indicator 6.2: Mortality by location

Death rate from cervical cancer per 100,000 estimated resident female population in a 4-year period by location and 5-year age groups (20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65-69, 70-74, 75-79, 80-84, 85+) and for the target age group (20-69 years, age-standardised).



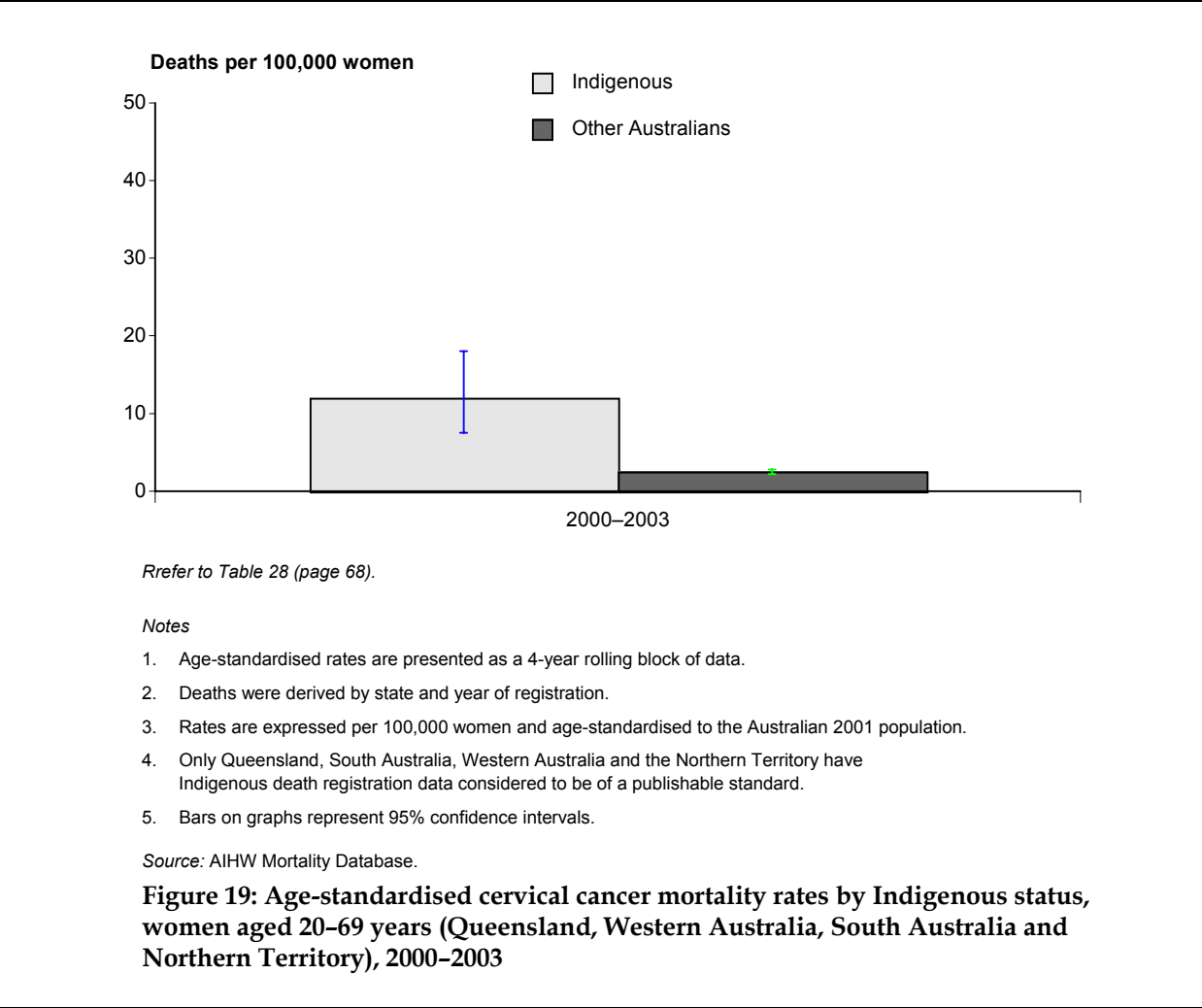
	Major cities		Regional		Remote	
	1996-1999	2000-2003	1996-1999	2000-2003	1996-1999	2000-2003
Rate	2.5	2.2	2.8	2.6	5.2	2.7
95% CI	2.3-2.8	1.9-2.4	2.5-3.2	2.2-3.0	3.2-7.6	1.5-4.4

- During the 4-year period 2000-2003, there were 622 deaths (63% of all cervical cancer deaths in that period) in major cities, 340 deaths (34% of all cervical cancer deaths) in regional areas and 26 deaths (3% of all cervical cancer deaths) in remote areas (Table 26, page 66).

- In all three regions the age-standardised mortality rates declined between the periods 1996–1999 and 2000–2003; however, the declines were not statistically significant. The largest overall mortality reduction, of 33%, was in remote areas, but these rates are based on small numbers and should be treated with caution.

# Indicator 6.3: Indigenous mortality

Death rate from cervical cancer per 100,000 estimated resident female population in a 4-year period by Indigenous status and 5-year age groups (20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65-69, 70-74, 75+) and for the target age group (20-69 years, age-standardised).



	Indigenous	Other Australians
AS rate (A)	12.0	2.5
95% CI	7.5-18.0	2.1-2.8

- Owing to the difficulties of Indigenous identification in health data collections, only Indigenous mortality data from Queensland, Western Australia, South Australia and the Northern Territory are considered to be of publishable standard. Therefore, all cervical cancer mortality data for both Indigenous women and other Australian women used in this analysis are confined to these jurisdictions.

- The age-standardised mortality rate attributable to cervical cancer among Indigenous women in the target age group in the 2000–2003 period was 12.0 per 100,000 women and was considerably higher than the mortality rate for other Australian women in the same age range (2.5 per 100,000 women) (Table 28, page 68).