

International comparisons

Cancer incidence and mortality patterns vary internationally. This variation may be the result of variations in risk factor exposure (e.g. smoking, diet, and ultraviolet radiation), in genetic susceptibility, in detection and treatment of cancer or in the level of cancer registration and in coding practices.

Australia is one of the few countries in which cancer registration occurs on a national basis. Many countries either have State/Province, regional or hospital based cancer registries to record cancer incidence, although most countries have national mortality collections. Data have been presented in Figures 8–11 for a selection of common cancers—lung, colorectal, liver, prostate, melanoma, breast and cervix—and for a selection of countries for which recent data were available. In order to gain some data consistency between these countries internationally standardised data sources have been used (see data sources, page 84). Figures 8–11 present Australian incidence and mortality rates for 1997.

Australia's incidence rate for the aggregation of all cancers combined in both males and females is similar to most of the selected countries (Figures 10 and 11). Differences among countries are more noticeable when individual cancer sites are examined. Incidence and mortality rates for melanoma in Australia are at very high levels matched only by New Zealand. A comparison between Australia and England & Wales shows a sevenfold difference in incidence, but it is known that this ranges up to 150-fold compared with other countries. The international spread of mortality rates is more narrow as melanoma has a relatively high survival rate.

In comparing Australia's incidence and mortality rates for other cancers with those of the selected group of countries it was found that:

- Australian males have relatively low rates of lung cancer incidence and mortality. Australian females show a slightly higher ranking;
- colorectal incidence and mortality rates for both males and females are ranked amongst the countries with the highest rates;
- Australian males have low rates of liver cancer;
- prostate cancer incidence rates are lower than those of the United States (SEER–Surveillance, Epidemiology and End Results data) and New Zealand but higher than those of the European countries in the group. Mortality rates are similar across the group;
- breast cancer incidence and mortality rates are similar to those of other countries; and
- Australia's cervical cancer rates compare favourably with the selected countries.

Cancer in New Zealand

One of Australia's closest neighbours, New Zealand, shares a similar heritage to Australia and a similar level of economic development. The New Zealand population at 3.8 million is slightly larger than that of Queensland (3.4 million) and slightly smaller than that of Victoria (4.6 million). New Zealand serves as a good comparison for Australia in cancer patterns, as the two countries share similar patterns of cancer risk factors, e.g. diet, smoking patterns and ultraviolet radiation exposure and also share some similarities in their cancer control programs, e.g. cervical and breast cancer screening. Both countries have a sizeable Indigenous population, which exhibit lower life expectancies than the rest of the population. New Zealand Maoris comprise approximately 14.5% of total population and Australia's

Aboriginal and Torres Strait Islander population represent approximately 2.1% of the total population.

The New Zealand Health Information Service has supplied 1996 incidence and 1997 mortality data (Table 3) which enable a direct comparison of recent rates for cancers between Australia and New Zealand. These rates have been standardised to the World Standard Population. Tables 3, 4 and 5 have been used for purposes of comparing the two countries' cancer patterns.

New Zealand has approximately 16,000 new cancers diagnosed each year and 7,300 deaths occur as a result of cancer. The most frequently occurring cancers in Australia and New Zealand are very similar, with prostate, colorectal and lung cancers in males and breast, colorectal and melanoma in females being the dominant cancers. The other common cancers are ranked similarly in the two countries, although the policy for reporting a combination of all leukaemias (New Zealand) and unknown primary (Australia) in the dominant cancers makes for some minor variations in the rankings (Tables 1 and 3).

In comparing the age-standardised incidence rates for all cancers combined (excluding non-melanocytic skin cancer), it is apparent that there is some variation at this aggregate level. New Zealand males (362.0 new cases per 100,000 population) and females (286.9) have rates approximately 5% higher than those of Australian males and females. Mortality rates in males also show approximately the same variation. In females, however, mortality rates in New Zealand (114.7 deaths per 100,000 population) are 20% higher than those of Australian females (94.9). This difference in female mortality rates appears to be spread across a range of cancers, some of which are described below.

Breast cancer incidence rates are similar in both Australian (80.2 new cases per 100,000 population) and New Zealand females (78.4). However, there is a substantial difference in mortality rates (New Zealand 23.2, Australia 18.6 deaths per 100,000 population). The breast screening program in Australia has been operating since approximately 1990 and may have had some impact on mortality rates. The New Zealand breast screening program only commenced in 1999 and benefits from this program may not be seen for some time.

New Zealand prostate cancer rates are similar to those seen in Australia, showing a dramatic rise and subsequent decline, although Australia's rates peaked one year earlier. Both countries' rates have been strongly influenced by the rapidly changing use of PSA testing.

There are some differences in the patterns of colorectal cancer between the two countries. Males in New Zealand (53.3 new cases per 100,000 population) are above their Australian counterparts (48.8). There is a more substantial difference between the females (New Zealand 40.8 and Australia 33.2). These differences between the countries are carried over to the mortality rate for colorectal cancer.

Both Australians and New Zealanders are known for their outdoor lifestyle, which places both populations at risk of melanoma and non-melanocytic skin cancers from the increased ultraviolet radiation exposure. This is reflected in high incidence rates of melanoma in both countries. Of note in assessing the melanoma incidence rates is the relatively small difference between males and females in New Zealand, a sex ratio of 1.1, compared with a ratio of 1.4 for Australia. Australia had approximately the same sex ratio as New Zealand in the early 1980s. Since then there has since been a significant divergence in rates.

Lung cancer incidence and mortality rates in New Zealand and Australian males are similar. The incidence rates in New Zealand females are approximately 25% higher than in Australian females and the mortality rate is nearly 40% higher.

There appear to be substantial differences in the reported cancer incidence and mortality rates between New Zealand and Australia for some of the most common cancers. This

would suggest some differences in the impact of particular risk factors, and in relation to mortality, a difference in the stage at detection and treatment. Investigation of these differences will be pursued further in later reports in this series.

Table 3: Most frequently occurring cancers in New Zealand ^{(a) (b)}

Cancer site	New cases 1996				Deaths 1997			
	Number	% of all new cancer cases	ASR (W)	Lifetime risk ^(c)	Number	% of all cancer deaths	ASR (W)	PYLL ^(c)
Males								
Prostate	2,439	28.5	97.7	1 in 9	525	13.7	19.0	1,428
Colorectal	1,247	14.6	53.3	1 in 16	575	15.0	23.3	4,613
Lung	967	11.3	40.4	1 in 20	882	23.0	35.5	5,563
Melanoma	785	9.2	35.0	1 in 27	121	3.2	5.0	1,260
Bladder	401	4.7	16.0	1 in 56	110	2.9	3.9	453
NHL	302	3.5	13.5	1 in 65	144	3.8	5.6	1,223
Leukaemia	256	3.0	11.4	1 in 96	135	3.5	6.0	2,283
Stomach	251	2.9	10.5	1 in 79	156	4.1	6.1	1,085
Kidney	202	2.4	9.0	1 in 95	78	2.0	3.2	803
Brain	160	1.9	7.9	1 in 141	125	3.3	5.7	2,295
Females								
Breast	1,906	25.4	78.4	1 in 12	620	18.0	23.2	7,800
Colorectal	1,187	15.8	40.8	1 in 20	514	14.9	15.8	3,140
Melanoma	800	10.7	32.6	1 in 31	80	2.3	2.8	995
Lung	576	7.7	21.6	1 in 36	530	15.4	19.1	4,753
Ovary	288	3.8	11.7	1 in 81	166	4.8	5.8	1,570
NHL	274	3.7	10.4	1 in 89	146	4.2	4.5	1,055
Uterus	269	3.6	11.1	1 in 73	49	1.4	1.7	348
Cervix	219	2.9	9.8	1 in 100	73	2.1	2.8	1,338
Leukaemia	213	2.8	8.0	1 in 140	97	2.8	3.4	1,293
Pancreas	174	2.3	5.7	1 in 142	145	4.2	4.2	718
Persons								
Prostate	2,439	15.1	43.5	1 in 18	525	7.2	7.7	1,428
Colorectal	2,434	15.2	46.8	1 in 18	1,089	15.0	19.4	7,753
Breast	1,906	11.9	40.6	1 in 23	620	8.5	12.2	7,800
Melanoma	1,585	9.9	33.5	1 in 29	201	2.8	3.8	2,255
Lung	1,543	9.6	29.9	1 in 26	1,412	19.4	26.3	10,315
NHL	576	3.6	11.8	1 in 76	290	4.0	5.0	2,278
Bladder	538	3.4	9.5	1 in 91	157	2.2	2.3	453
Leukaemia	469	2.9	9.4	1 in 114	232	3.2	4.6	3,575
Stomach	402	2.5	7.4	1 in 112	268	3.7	4.5	1,085
Kidney	328	2.0	6.8	1 in 121	144	2.0	2.6	803

(a) Rates are expressed per 100,000 population and age-standardised to the World Standard Population ASR (W).

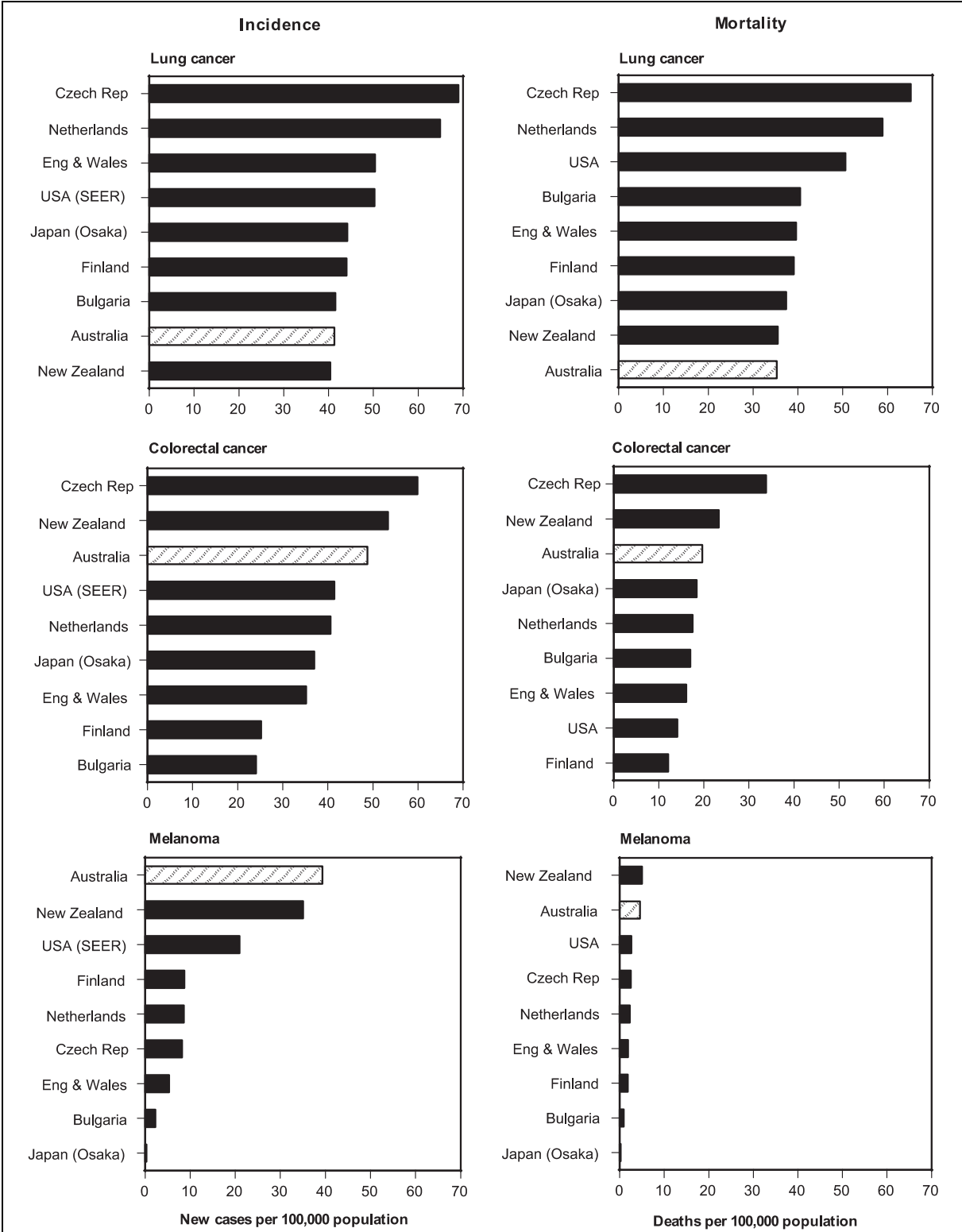
(b) Non-melanocytic skin cancer, known to be the most common cancer type, is excluded from this list, as it is not a registrable cancer.

(c) These measures are calculated for ages 0–74 years; PYLL refers to person-years of life lost. Methods for the calculation of these measures are presented in Appendix B.

Note: NHL refers to non-Hodgkin's lymphoma.

Source: New Zealand Health Information Service, *Cancer in Australia 1997*, AIHW & AACR 2000.

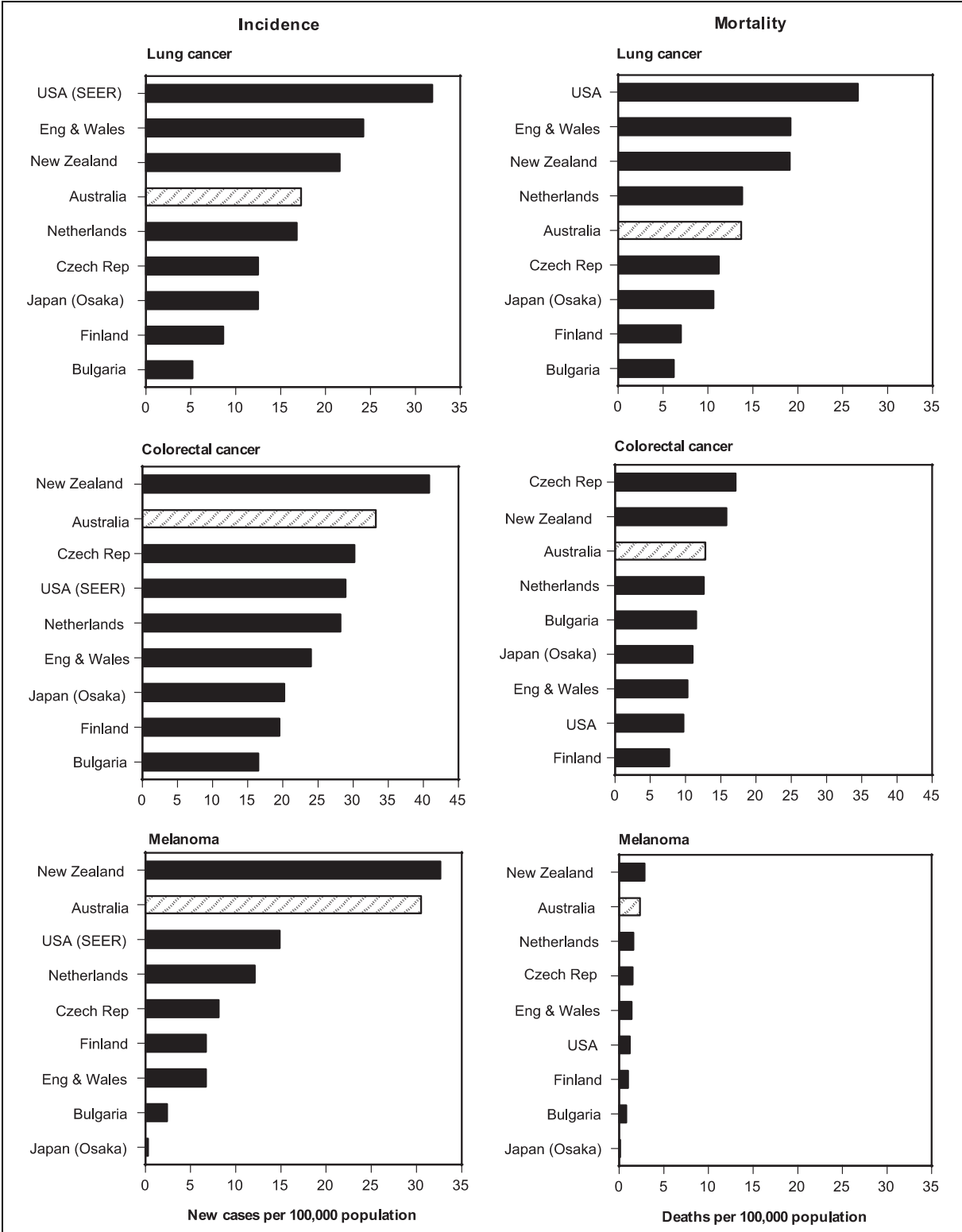
International comparison of melanoma, lung and colorectal cancer for males



Note: Rates are age-standardised to the World Standard Population.
Source: Cancer in Australia 1997, AIHW & AACR 2000, WHO Mortality Database 1997.

Figure 8: International comparison of age-standardised incidence and mortality rates for melanoma, lung and colorectal cancers for males, Australia 1997, and other selected countries

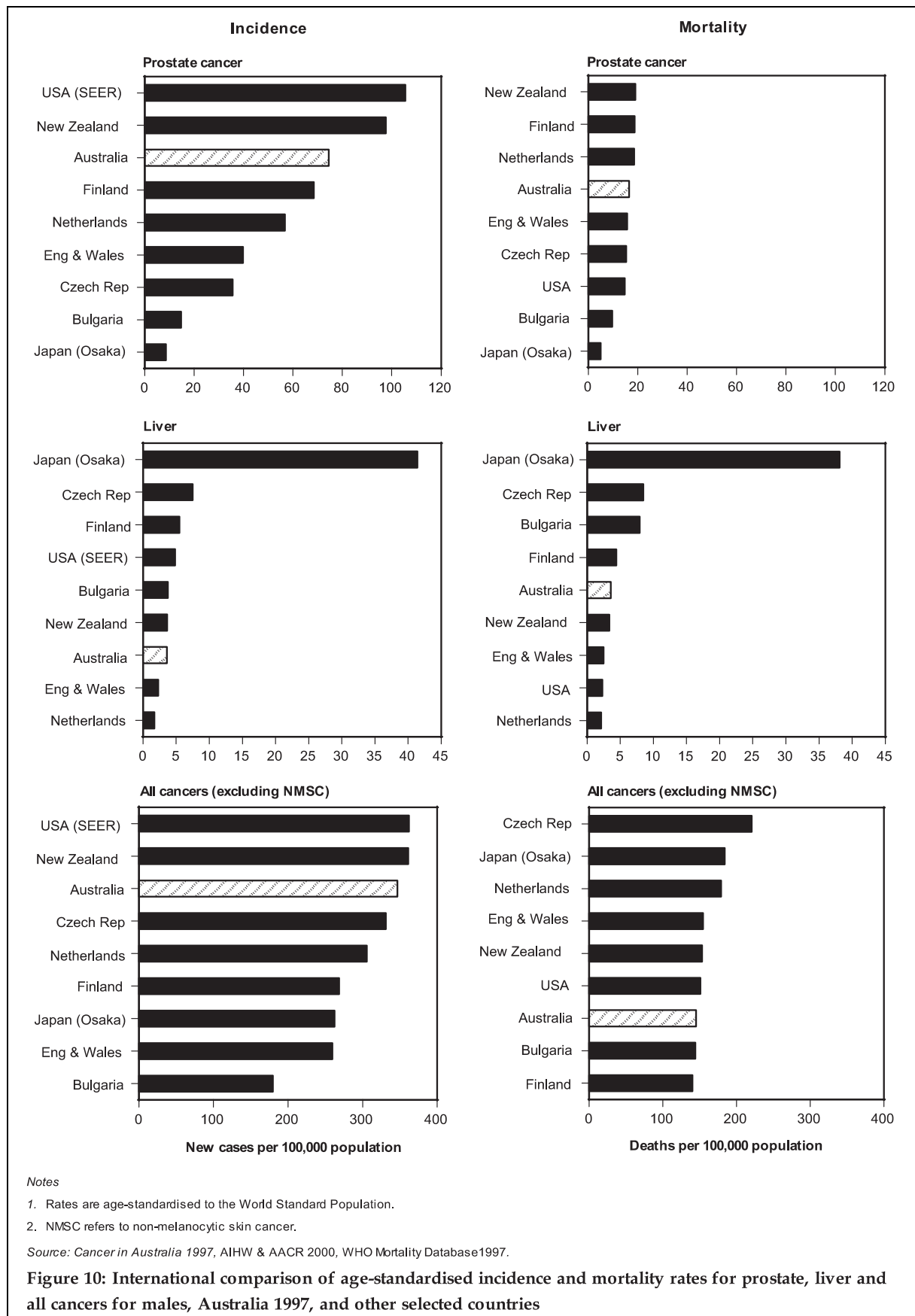
International comparison of melanoma, lung and colorectal cancer for females



Note: Rates are age-standardised to the World Standard Population.
 Source: Cancer in Australia 1997, AIHW & AACR 2000, WHO Mortality Database 1997.

Figure 9: International comparison of age-standardised incidence and mortality rates for melanoma, lung and colorectal cancers for females, Australia 1997, and other selected countries

International comparison of prostate, liver and all cancers for males



International comparison of breast, cervix and all cancers for females

