



Government of **Western Australia**  
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# Cancer incidence and mortality in Western Australia, 2013

A report of the Western Australian Cancer Registry

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**Data Integrity Directorate, Resourcing and Performance Division  
Department of Health  
Perth, Western Australia**

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# Summary - Cancer incidence and mortality in Western Australia, 2013

The Western Australian Cancer Registry has provided population-based cancer data since 1982 for use in the planning of health care services and the support of cancer-related research, at local, national and international levels. Most of this report is concerned with invasive tumours, or “cancers”, using standardised reporting practices as used in other cancer registries in Australia and overseas. This report deals primarily with cancer incidence and cancer-related mortality in Western Australian residents, who comprise approximately 10% of the Australian population.

## CANCER INCIDENCE

There were 11743 new cases of cancer recorded in Western Australians in 2013, 6649 (57%) occurring in males and 5094 in females. Age-standardised incidence rates were 351 per 100,000 males, and 264 per 100,000 females. The incidence rate for males had decreased slightly for the second consecutive year, and the rate in females was lower than the revised 2012 figure. The estimated cumulative risk of cancer to age 75 years was 1 in 3 for males, and 1 in 4 for females.

The most common cancers in males in 2013 were prostate cancer, colorectal cancer, melanoma and lung cancer, while breast cancer predominated among females, followed by colorectal cancer, melanoma and lung cancer. Colorectal cancer was the most common type affecting both males and females.

Based on 2013 data, one in 7 men would be expected to have a diagnosis of prostate cancer before the age of 75, and one in 11 women would be expected to develop breast cancer.

Projections based on 2004-2013 data and estimated population growth suggest that the overall cancer incidence rates in males and females are likely to be stable or to increase only marginally in the next 5 years.

## CANCER MORTALITY

Among Western Australian residents, there were 3994 deaths due to cancer in 2013, 2250 in males and 1744 in females. All-cancers mortality rates for 2013 were 107 deaths per 100,000 males and 74 per 100,000 females, both similar to rates in 2012. As usual in recent years, the most common causes of cancer-related death in males were lung, colorectal and prostate cancers, while lung, breast and colorectal cancers were the most common in females.

As in recent years, lung cancer was the most common cause of cancer-related death for both males and females, killing one in 44 males and one in 60 females before age 75. Based on 2013 data, one in 168 men could be expected to die from prostate cancer, and one in 75 women to die from breast cancer, before age 75.

## CANCER IN CHILDREN

There were 75 children under the age of 15 years diagnosed with cancer in 2013 (Age-adjusted rates 19 per 100,000 in males and 14 in females), slightly fewer cases than in 2012 but still considerably more than in 2010.

## OTHER CANCERS

Melanoma of the skin was the second most common incident cancer in both males and females in the 15-39 years age range, however there were considerably fewer melanoma

deaths in this age range than in 2012. In persons over the age of 40 years, prostate and breast cancers, melanoma, colorectal and lung cancers, remain the most common incident cancers, with lung cancer being the most common cause of cancer-related death.

#### CANCER IN ABORIGINALS

Cancer incidence and mortality data for Western Australian Aboriginals have been revised using updated methodology that has increased incidence estimates considerably, and mortality by a smaller amount. Based on the period 2009-2013, the age-standardized all-cancers incidence rates for females now appears to exceed that in the general population, and the mortality rates were twice those of the general population.

## Acknowledgments

This report is based on data recorded and maintained by the staff of the Western Australian Cancer Registry, whose dedication and attention to detail are much appreciated.

We also wish to acknowledge the invaluable contribution of the Western Australian pathologists, haematologists and radiation oncologists who supply the vast majority of the Registry's primary notifications, and the health professionals and organisations who supply additional information in response to our enquiries.

The cooperation of other Australian Cancer Registries regarding procedures, coding, duplication and demarcation issues, and of staff of the Australian Cancer Database at AIHW, Canberra, is acknowledged as playing a vital part in ensuring data quality and comparability.

The Registry staff are grateful to have access to a variety of supporting services in order to produce reports on cancer; these include population figures and projections, mapping, hospitalisation data, legal advice, computing services and general support and encouragement. The assistance of the Epidemiology branch in particular, has been significant.



# 1 Overview and Methods

## 1.1 This Report

### Overview

This is the latest in the Registry's series of annual reports, and is devoted largely to Western Australian cancer incidence and mortality for 2013. In the interest of timeliness, regular sections may contain less commentary and interpretation than in some past reports, but there is substantially more coverage of technical and data-related issues. It is anticipated that more detailed discussion of particular issues will continue to be made available in other reports as the opportunity arises.

The Western Australian Cancer Registry (WACR) is a population-based cancer registry established in 1981, operating within the Department of Health (Western Australia). The main information sources are reports from pathologists, haematologists and radiation oncologists, supplemented by death registrations, hospital statistical discharge (HMDS) records, as well as information from hospital files and clinical information systems, and responses to enquiries directed to treating medical practitioners.

The WACR is managed within the Data Integrity Branch of the Resourcing and Performance Division of the Department of Health (Western Australia). A summary of the legislative basis of the Registry can be found in Appendix 1.

## 1.2 General structure; how to find information

The major sections are based on cancers diagnosed, and deaths due to cancer, in 2013.

- Data for most common cancers are presented under headings based on incidence, mortality and age,
- Detailed data for all cancers for 2013 are found in the tables of Appendices 3A and 3B. The layout of those tables follows the coding system summarised in material available at [www.health.wa.gov.au/wacr/home](http://www.health.wa.gov.au/wacr/home) .
- Data for selected geographic areas are presented in Appendices 3D and 3E.

Readers seeking detailed information for particular cancers not shown in tables, should contact WACR for further information.

Information from this report, and other WACR information, is available at - [http://www.health.wa.gov.au/wacr/statistics/stats\\_full.cfm](http://www.health.wa.gov.au/wacr/statistics/stats_full.cfm)

## 1.3 Interpretation

Western Australia is particularly polarised into metropolitan and rural areas, with huge differences in population density and there are likely to be some statistical biases due to the difficulties of transport and the location of services within the State. Throughout this report, readers should be aware that assessing the relevance of changes in cancer incidence and mortality is complex and depends on the size of underlying populations and their age structures. Caution is required in assessing changes on the basis of single rate comparisons.

The Cancer Registry database is continually updated in the light of the most recent available information. Accordingly, numbers in this report for earlier years may vary slightly from those in previous publications, as some Western Australian cases are eventually found to have been diagnosed elsewhere, or in earlier years, and case-counts necessarily rise and fall

as new information arrives. Mortality information, in particular, sheds new light on a person's cancer history and often leads to the initiation of new enquiries.

As a guide, while total cancers for 2012 were quoted at 11939 in our previous report,<sup>1</sup> the total currently recorded for 2012 is 12078, an increase of about 1.2%. Mortality data are generally more stable, increased by only 0.2% in the same time. The benefits of more timely incidence reporting must be weighed against the progressive change in revised data as time passes.

## 1.4 Statistical methods

Statistics from the Registry commonly fall into one of two major groups: **incidence** is reported for all malignancies except primary squamous cell and basal cell skin cancers (SCC and BCC), and **mortality** for all malignancies and certain other tumours or tumour-like conditions. The usual statistics calculated for both types of report are briefly discussed below; formulae and relevant details are in Appendix 2B.

**Rates** are calculated separately for males and females, expressed as events (diagnoses or deaths) per 100,000 person-years:

**Age-specific rates (ASPR)** are based on five-year age groups and are calculated by dividing the numbers of cases by the population of the same sex and age group. Whole-population data come from the ABS and regional data from the Epidemiology Branch, Department of Health (WA).

**Age-standardised rates (ASR in Tables)** are calculated by the direct method, as a summation of weighted age-specific rates. Tables show the 95% confidence interval (C.I.) for ASRs. When a subset of age groups (e.g. 15-39 years) is considered, the term **age-adjusted rate (AAR)** is used instead of ASR.

The **World Standard Population 1960**<sup>2</sup> remains in routine use for ASR calculation, as in most cancer registries worldwide. However in some tables a second ASR and 95% C.I. are shown, using the Australian (2001)<sup>3</sup> population standard, labelled "ASR2". These ASRs are usually quite different, and comparisons need to take note of which "standard" is being used.

**Cumulative Incidence and Cumulative Risk** are closely related. **Cumulative incidence** is an estimate of the proportion of persons, up to a specific age, who have been affected by a particular condition at some time. In Registry reports, this is expressed as a percentage.

**Cumulative risk (LR)** estimates the probability of having cancer (incidence) or dying of it (mortality), up to a specific age. This is derived from the relevant cumulative incidence figures, and calculated for ages 0 to 74 years (see **Appendix 2B** for formulae).

In this report, LR is expressed as a "1 in *n*" chance of diagnosis or death. As indicated in relevant tables, a "-" is used to indicate a lack of data (no cases), and a "\*" to indicate no data for cases under 75 years of age, or a "risk" smaller than 1 in 10,000.

**Person years of life lost (PYLL)** is an estimate of the number of years of life lost due to specific causes, calculated to age 75 years; an index of premature death (see Appendix 2B).

**Rates and risks:** It should be noted that incidence and mortality **rates** and cumulative **risks** may not be in proportion to one another because of differences in the age structures of populations.

**Small numbers:** Some small-number case counts and associated percentages and rates in this report have been obscured or omitted where they relate to specific types of conditions.

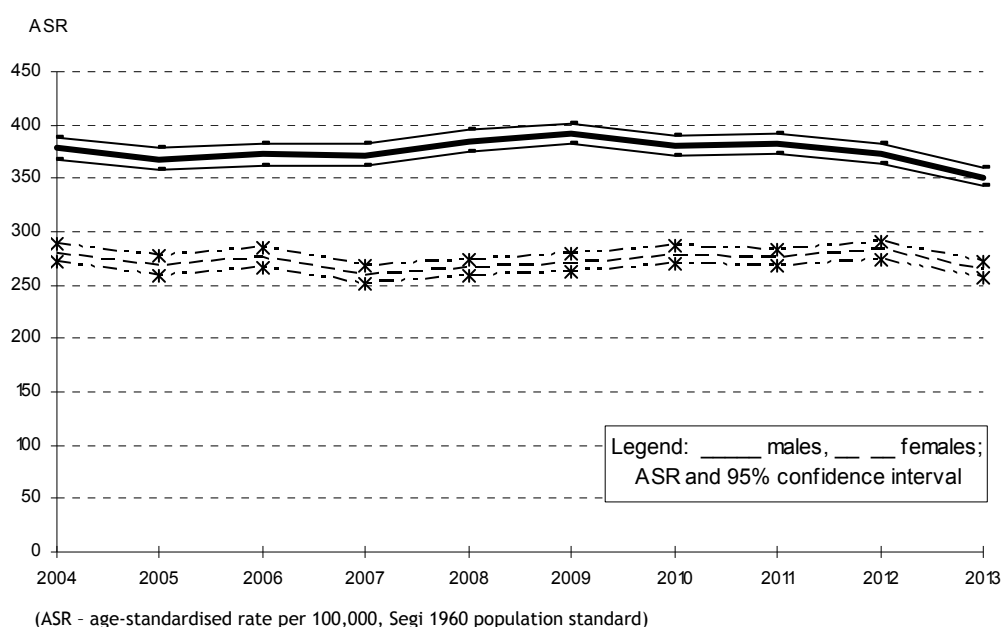
## 2. Cancer in Western Australia, 2013

### 2.1 All cancers

#### 2.1.1 Incidence

In 2013, there were 11743 new diagnoses of cancer in Western Australia, a fall of 1.6% compared with the number reported a year ago for 2012, with the greatest reduction among females. There were 6649 cancers diagnosed in males (ASR 351 per 100,000) and 5094 in females (ASR 244) (Table 1). Cancers in males accounted for 57% of all cases. Although the incidence ASRs were not significantly reduced from the reported 2012 figures, incidence for 2013 does appear reduced compared with current data for 2012 for both males and females (Figure 1) and has fallen in males for the last two years.

**Figure 1. Cancer incidence by diagnosis year, Western Australia, 2004-2013: all cancers combined.**



The estimated cumulative risk of cancer to age 75 years was 1 in 3 for males and 1 in 4 for females; the cumulative incidence of cancer (the proportion of persons in whom cancer had been diagnosed by age 75) was 42% for males and 29% for females. These measures have remained essentially unchanged in recent years.

Cancer is generally more common in females than in males between ages 30 and 55 (mainly ovarian and breast cancers), but prostate cancer and lung cancer account for much of the male predominance in older ages.

*The differences in cancer incidence rates across the age range can be seen for individual cancers and all cancers combined, in Appendix 3A.*

#### 2.1.2 Mortality

Among Western Australian residents in 2013 there were 3994 deaths due to cancer (2250 in males, 1744 in females) (Table 1). Mortality ASRs were 107 deaths per 100,000 males and 74 per 100,000 in females (both slightly increased since 2012 despite a very small decrease in the number of deaths in males). The estimated cumulative risk of death due to cancer before age 75 years was 1 in 10 for males and 1 in 13 for females.

There was no marked change in the age-pattern of cancer mortality in 2013. However mesothelioma deaths were more prominent in males than in previous years, and in females, cancers of unknown primary site were more prominent at the expense of pancreatic cancer. Cancer death rates generally increased for both males and females from age 20. All-cancers death rates among males were consistently higher than in females at ages greater than 55 years.

These cancer deaths include 86 deaths due to non-melanoma skin cancers, 71% of them in males. Of these, 64 (74%) were due to squamous or basal cell carcinomas, types not included in “cancer” incidence statistics. As noted in the Registry’s last report, the annual number of non-melanoma skin-cancer related deaths continues to increase.

Other deaths that are not included in these mortality statistics were -

- 18 cancer-related deaths in persons not normally resident in Western Australia

- 6 deaths due to benign tumours (all but 2 CNS tumours)

- 6 deaths due to “uncertain malignant potential” non-lymphohaematopoietic neoplasms

- 2265 deaths due to non-tumour-related causes among persons with a Registry tumour record (1258 males, 1007 females)

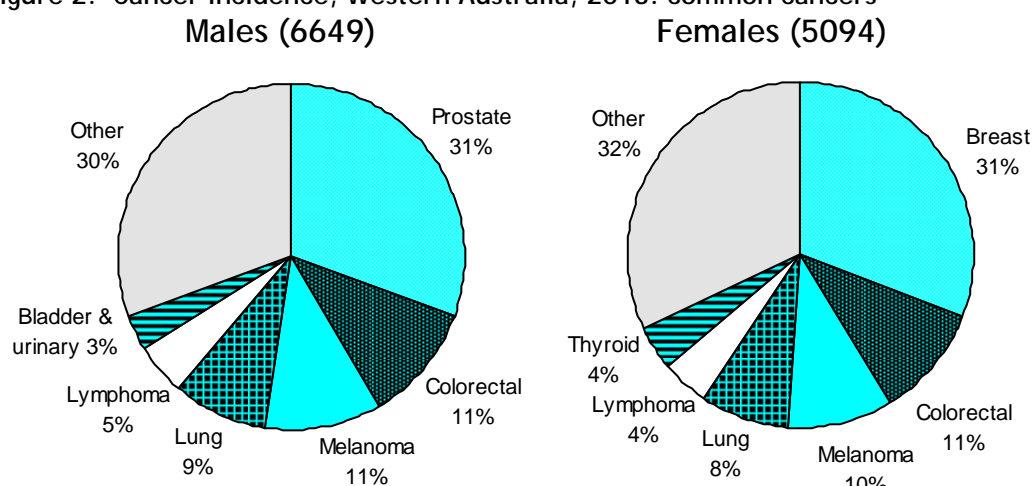
- 41 deaths of unresolved cause among persons with a tumour record (pending outcome of coronial investigations).

## 2.2 Common cancers - Incidence and Mortality

The most common incident cancer types in males and females are shown in summary form in Figure 2, with the detailed statistics in Table 1. Prostate cancer incidence showed a small decrease in 2013, the second annual decline since 2011. Colorectal cancer once more became more common than melanoma in males, but the pattern of most-common cancers in females was stable.

*For further breakdown by age group, and including the less common cancer types, see Appendix 3A; for incidence statistics from different Regions within WA see Appendix 3D.*

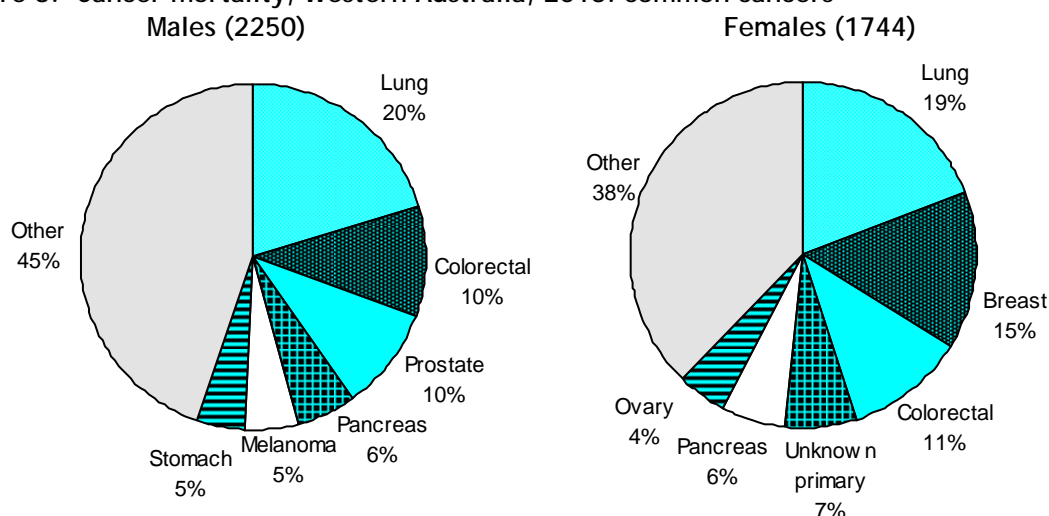
Figure 2. Cancer incidence, Western Australia, 2013: common cancers



The cancers most commonly causing death are shown in summary form in Figure 3, with the detailed statistics in Table 1. There have been only minor differences in the relative impact of these most common types in recent years, and no change since 2012. Lung cancer now appears firmly established as a more frequent cause of mortality in women than breast cancer, and continues to be the most common cause of cancer-related death in males.

*For further breakdown by age group, and including the less common cancer types, see Appendix 3B; for mortality statistics from different Regions within WA see Appendix 3E.*

Figure 3. Cancer mortality, Western Australia, 2013: common cancers



**Table 1. Cancer incidence and mortality, Western Australia 2013: leading types by sex**

Incidence						Mortality					
Males						Females					
	Cases	%	ASR	95%c.i.	Risk		Cases	%	ASR	95%c.i.	Risk
Prostate	2025	30.5	108.6	104-113	7	Breast	1569	30.8	86.8	82.4-91.2	11
Colorectal	739	11.1	38.4	35.5-41.2	22	Colorectal	542	10.6	24.9	22.6-27.2	38
Colon	463	7.0	23.6	21.4-25.8	37	Colon	391	7.7	17.4	15.5-19.3	57
Rectum	275	4.1	14.8	13.0-16.5	55	Rectum	147	2.9	7.3	6.1-8.6	118
Melanoma (skin)	734	11.0	38.9	36.0-41.8	24	Melanoma (skin)	498	9.8	26.5	24.0-28.9	35
Lung	578	8.7	27.9	25.5-30.2	31	Lung	422	8.3	19.4	17.5-21.4	43
Lymphoma	318	4.8	17.8	15.7-19.8	52	Lymphoma	227	4.5	12.0	10.3-13.7	81
Lymphoma NOS	5	0.1	0.3	0.0-0.6	4651	Lymphoma NOS	6	0.1	0.2	0.0-0.4	6121
Hodgkin lymphoma	26	0.4	1.8	1.0-2.5	695	Hodgkin lymphoma	27	0.5	2.0	1.2-2.7	614
NHL	287	4.3	15.7	13.8-17.6	56	NHL	194	3.8	9.9	8.4-11.3	95
Bladder & urinary tract	230	3.5	10.4	9.0-11.7	107	Thyroid gland	203	4.0	12.8	11.0-14.6	82
Kidney	203	3.1	11.3	9.7-12.9	74	Uterus	200	3.9	10.7	9.2-12.2	78
Leukaemia	169	2.5	9.5	7.9-11.0	108	Pancreas	125	2.5	5.2	4.2-6.1	171
Leukaemia NOS	<5	NR	NR	0 - 0.1	*	Unknown primary	122	2.4	4.3	3.5-5.2	297
Lymphoid leukaemia	101	1.5	5.7	4.5-6.9	171	Leukaemia	120	2.4	6.8	5.4-8.2	159
Myeloid leukaemia	66	1.0	3.7	2.7-4.7	298	Leukaemia NOS	<5	NR	NR	0 - 0.2	7613
Leukaemia, other	<5	NR	NR	0 - 0.2	*	Lymphoid leukaemia	55	1.1	3.3	2.3-4.3	290
Stomach	143	2.2	7.1	5.9-8.3	130	Myeloid leukaemia	63	1.2	3.4	2.5-4.4	370
Pancreas	129	1.9	6.4	5.3-7.6	123	Leukaemia, other	<5	NR	NR		
Unknown primary	125	1.9	5.7	4.7-6.8	205	Ovary	113	2.2	6.1	4.9-7.3	152
Lip, gum & mouth	105	1.6	6.0	4.8-7.2	155	Kidney	106	2.1	5.8	4.7-7.0	146
Brain	99	1.5	6.0	4.7-7.2	165	Myeloma	84	1.6	3.9	3.0-4.8	212
Oesophagus	96	1.4	5.0	4.0-6.0	174	Cervix	77	1.5	5.0	3.9-6.2	223
Liver	88	1.3	4.8	3.8-5.9	175	Brain	67	1.3	3.8	2.8-4.8	280
Skin (NMSC exc. SCC/BCC)	88	1.3	4.1	3.2-4.9	268	Bladder & urinary tract	64	1.3	2.3	1.7-2.9	368
Myeloma	85	1.3	4.2	3.3-5.1	222	Stomach	55	1.1	2.6	1.8-3.3	358
Mesothelioma	80	1.2	3.8	2.9-4.6	211	Lip, gum & mouth	52	1.0	2.5	1.8-3.2	373
Thyroid gland	74	1.1	4.5	3.5-5.6	195	Skin (NMSC exc. SCC/BCC)	45	0.9	1.8	1.2-2.3	533
Pharynx	71	1.1	4.1	3.2-5.1	192	Gallbladder / bile ducts	41	0.8	1.7	1.2-2.3	558
Testis	68	1.0	4.7	3.5-5.8	275	Vulva	39	0.8	1.8	1.2-2.4	515
All cancers	6649	100.0	351.2	343-360	3	All cancers	5094	100.0	263.7	256-271	4

Mortality						Mortality					
Males						Females					
	Cases	%	ASR	95%c.i.	Risk		Cases	%	ASR	95%c.i.	Risk
Lung	455	20.2	21.2	19.2-23.3	44	Lung	333	19.1	14.4	12.7-16.0	60
Colorectal	233	10.4	11.1	9.7-12.6	83	Breast	256	14.7	12.2	10.6-13.8	75
Colon	151	6.7	7.3	6.1-8.5	123	Colorectal	198	11.4	7.8	6.6-9.0	127
Rectum	82	3.6	3.9	3.0-4.7	255	Colon	147	8.4	5.8	4.7-6.8	170
Prostate	221	9.8	9.0	7.8-10.2	168	Rectum	51	2.9	2.0	1.4-2.6	506
Pancreas	123	5.5	6.0	4.9-7.1	131	Unknown primary	115	6.6	4.0	3.2-4.8	324
Melanoma (skin)	109	4.8	5.1	4.1-6.1	201	Pancreas	104	6.0	3.9	3.1-4.7	265
Stomach	105	4.7	4.9	4.0-5.9	199	Ovary	78	4.5	3.2	2.5-4.0	285
Mesothelioma	102	4.5	4.9	3.9-5.9	155	Brain	68	3.9	3.8	2.7-4.8	271
Bladder & urinary tract	88	3.9	3.7	2.9-4.5	326	Lymphoma	51	2.9	2.1	1.4-2.7	586
Leukaemia	77	3.4	3.9	3.0-4.9	239	Lymphoma NOS	<5	NR	NR	0 - 0.1	*
Leukaemia NOS	<5	NR	NR	0 - 0.1	*	Hodgkin lymphoma	<5	NR	NR	0 - 0.5	5921
Lymphoid leukaemia	27	1.2	1.3	0.8-1.9	800	NHL	45	2.6	1.8	1.2-2.4	650
Myeloid leukaemia	49	2.2	2.5	1.8-3.3	341	Leukaemia	51	2.9	2.1	1.5-2.8	502
Leukaemia, other	<5	NR	NR		-	Leukaemia NOS	<5	NR	NR	0 - 0.2	7613
Unknown primary	74	3.3	3.2	2.4-3.9	411	Lymphoid leukaemia	13	0.7	0.4	0.2-0.7	2389
Oesophagus	73	3.2	3.7	2.8-4.6	237	Myeloid leukaemia	36	2.1	1.6	1.0-2.2	693
Liver	72	3.2	3.5	2.6-4.3	294	Leukaemia, other	<5	NR	NR		-
Brain	72	3.2	4.7	3.5-5.8	239	Melanoma (skin)	49	2.8	2.1	1.5-2.8	451
Lymphoma	63	2.8	3.1	2.3-3.9	306	Uterus	49	2.8	2.0	1.4-2.7	438
Lymphoma NOS	<5	NR	NR		-	Stomach	41	2.4	1.8	1.2-2.3	468
Hodgkin lymphoma	<5	NR	NR	0 - 0.4	6640	Myeloma	40	2.3	1.8	1.2-2.4	470
NHL	60	2.7	2.9	2.2-3.7	321	Gallbladder / bile ducts	36	2.1	1.5	0.9-2.0	699
Skin (NMSC inc. SCC/BCC)	61	2.7	2.7	2.0-3.4	393	Bladder & urinary tract	30	1.7	1.0	0.6-1.4	1385
Kidney	54	2.4	2.8	2.0-3.6	287	Skin (NMSC inc. SCC/BCC)	25	1.4	0.7	0.4-1.0	2448
Myeloma	51	2.3	2.4	1.7-3.1	383	Oesophagus	24	1.4	1.1	0.6-1.5	765
Myelodysplastic diseases	44	2.0	1.8	1.2-2.3	834	Liver	23	1.3	1.1	0.6-1.6	671
Gallbladder / bile ducts	37	1.6	1.8	1.2-2.4	497	Cervix	22	1.3	1.3	0.7-1.8	804
Pharynx	19	0.8	1.0	0.5-1.5	830	Kidney	21	1.2	0.9	0.5-1.3	903
Tongue	18	0.8	0.9	0.5-1.4	1072	Mesothelioma	16	0.9	0.8	0.4-1.1	1056
All cancer deaths	2250	100.0	106.6	102-111	10	All cancer deaths	1744	100.0	74.3	70.5-78.2	13

(NHL - Non-Hodgkin lymphoma; Refer to *Statistical Methods, Section 1.4*, for other terms & abbreviations used)

## 2.3 Cancer in different age groups

### 2.3.1 Cancer in children

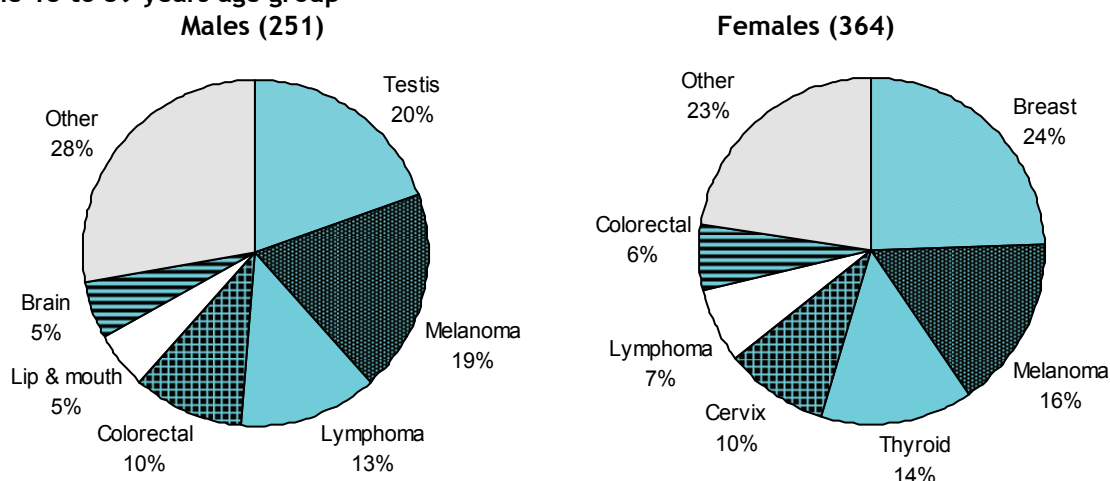
**Incidence:** In children under the age of 15 years, there were 75 cases of cancer diagnosed in 2013, 41 males (decreased since 2012) and 34 females (slightly increased). The most common types were leukaemias (21 cases), brain tumours (9) and neuroblastomas (6). All-cancers incidence rates were decreased in males to 19 per 100,000, and slightly increased in females to 14 per 100,000.

*Numbers and rates by age group are in Appendix 3A and Appendix 3B. An International Classification of Childhood Cancer (Version 3) table based on major diagnostic groups is found in Appendix 3C. That classification includes a further 4 “uncertain malignant potential” brain tumours not included in the statistics above.*

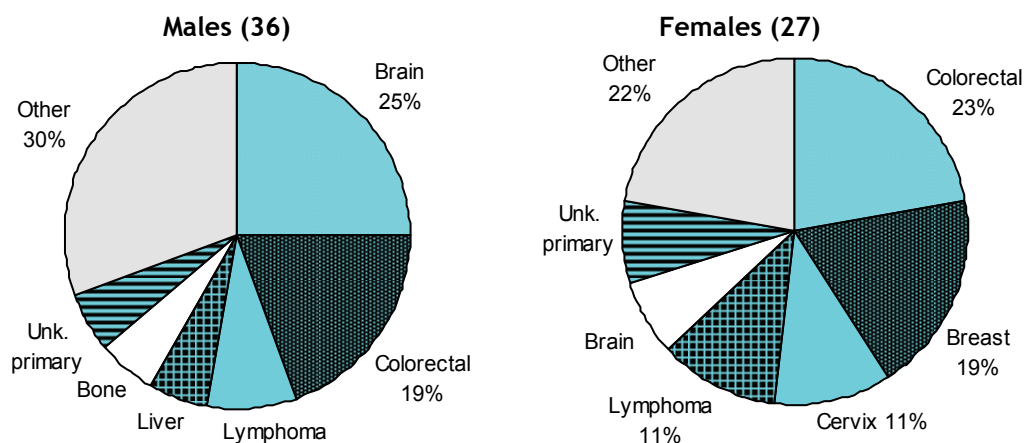
### 2.3.2 Cancer in the 15-39 years age range

In the 15 to 39 years age range, there were 615 cancer diagnoses in 2013, 5% fewer than reported for 2012. There were 63 cancer-related deaths in this age group in 2013, as in 2012, but there were fewer deaths in males, and more in females, than in 2012. The most common types are shown in summary form in Figures 4 and 5, with the detailed statistics in Table 2 and 3.

**Figure 4. Cancer incidence, Western Australia, 2013: common cancers in the 15 to 39 years age group**



**Figure 5. Cancer mortality, Western Australia, 2013: common cancers in the 15 to 39 years age group**

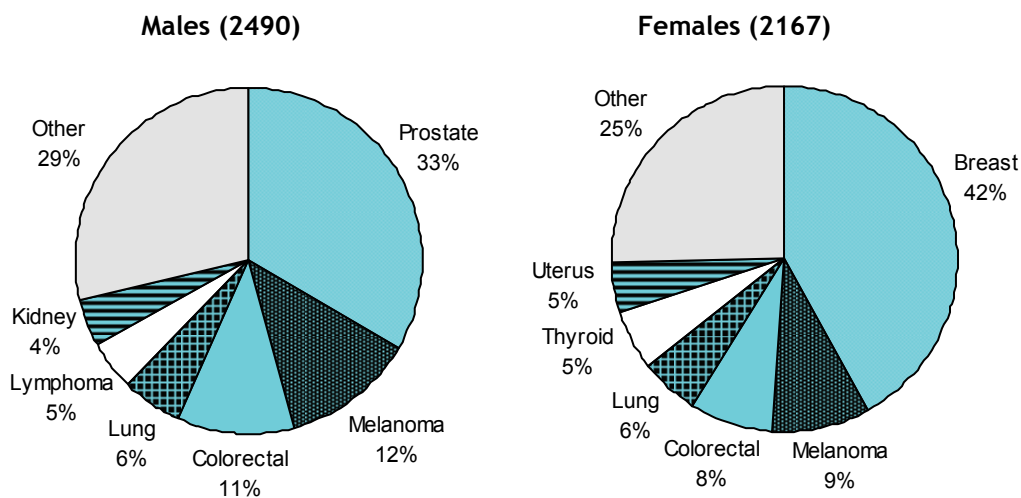


### 2.3.3 Cancer in the 40-64 years age range

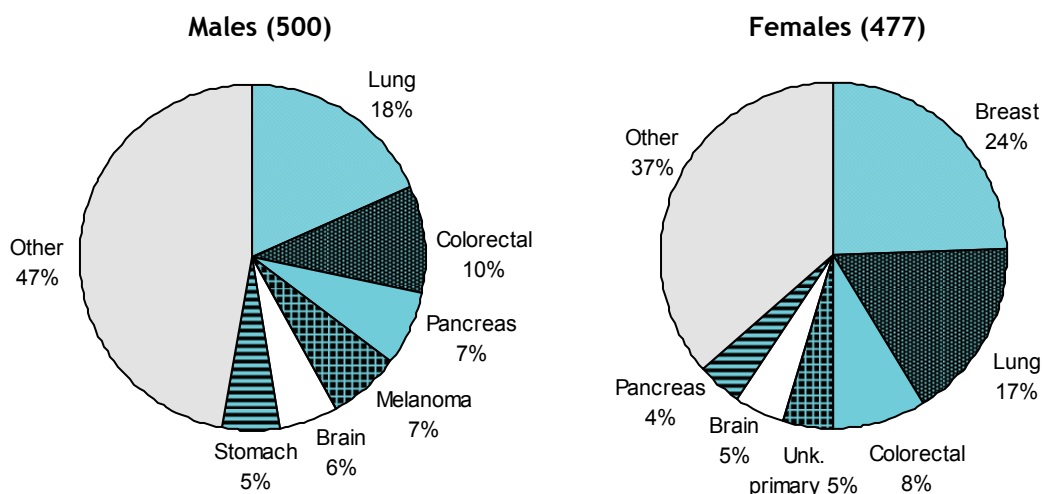
There were 4657 new cancer cases in the age range 40 to 64 years, prostate and breast being most common, with an overall risk of cancer occurring in this age range of 1 in 6 for males and 1 in 8 for females, with a statistically non-significant increase in male incidence and a similar decrease for females. There were 977 cancer-related deaths in this age range, with mortality rates relatively unchanged in males and females.

The most common types are shown in summary form in Figures 6 and 7, with the detailed statistics in Table 2 and 3.

**Figure 6. Cancer incidence, Western Australia, 2013: common cancers in the 40 to 64 years age group**



**Figure 7. Cancer mortality, Western Australia, 2013: common cancers in the 40 to 64 years age group**





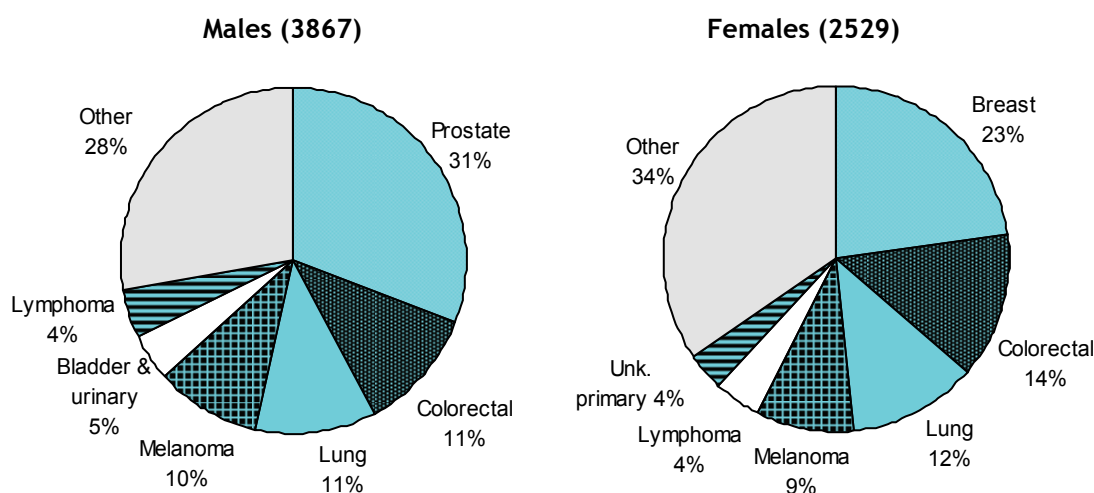
### 2.3.4 Cancer in persons aged 65 and over

There were 6396 new cancer diagnoses in persons over the age of 65 years in 2013. In this age range, prostate cancer (1196 cases) outnumbered any other specific cancer type in either sex (Table 2) and accounted for 31% of diagnoses in males, although there were 7% fewer prostate cancer deaths in 2013. Overall incidence rates in this age group were statistically similar to rates for 2012 for males and for females. Among females, breast cancer predominated (574 cases, 23%).

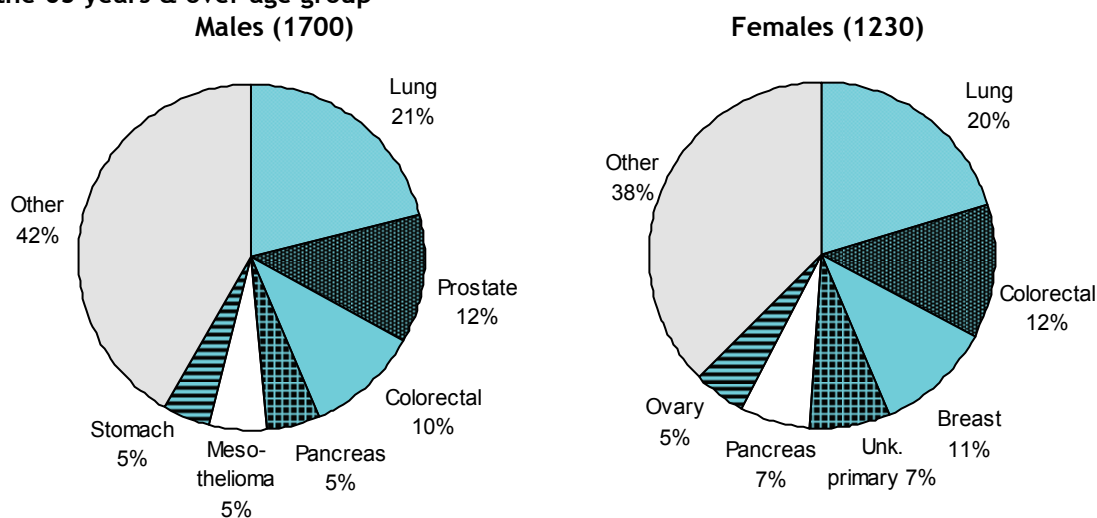
There were 2930 cancer-related deaths in this age range in 2013, with rates similar to those in 2012. In persons over the age of 65 years, lung cancer was the most common cause of cancer-related death, causing 611 deaths, 4% fewer than in 2012.

The most common types are shown in summary form in Figures 8 and 9, with the detailed statistics in Table 2 and 3.

**Figure 8. Cancer incidence, Western Australia, 2013: common cancers in the 65 years & over age group**



**Figure 9. Cancer mortality, Western Australia, 2013: common cancers in the 65 years & over age group**



**Table 2. Cancer incidence, Western Australia, 2013: leading types by sex and age group (ASR: age-adjusted rate)**

**15 to 39 years**

Males					Females						
	Cases	%	ASR	95%c.i.	Risk		Cases	%	ASR	95%c.i.	Risk
Testis	49	19.5	9.4	6.7-12.0	409	Breast	89	24.5	16.9	13.4-20.4	200
Melanoma (skin)	47	18.7	8.8	6.3-11.3	405	Melanoma (skin)	59	16.2	11.8	8.7-14.8	306
Lymphoma	33	13.1	6.8	4.4-9.2	581	Thyroid gland	51	14.0	10.2	7.4-13.0	350
Lymphoma NOS	<5	0.8	0.4	0 - 1.0	*	Cervix	36	9.9	6.9	4.6-9.1	512
Hodgkin lymphoma	12	4.8	2.6	1.1-4.1	1567	Lymphoma	25	6.9	5.2	3.1-7.3	711
NHL	19	7.6	3.8	2.1-5.6	1015	Lymphoma NOS	0				
Colorectal	26	10.4	5.0	3.0-7.0	720	Hodgkin lymphoma	16	4.4	3.5	1.8-5.3	1117
Colon	18	7.2	3.5	1.8-5.1	1037	NHL	9	2.5	1.7	0.6-2.8	1959
Rectum	8	3.2	1.5	0.4-2.6	2353	Colorectal	22	6.0	4.9	2.8-6.9	813
Lip, gum & mouth	13	5.2	2.4	1.1-3.6	1536	Colon	17	4.7	3.9	2.0-5.8	1037
Brain	13	5.2	2.8	1.2-4.3	1490	Rectum	5	1.4	1.0	0.1-1.8	3761
Leukaemia	13	5.2	2.8	1.3-4.4	1408	Ovary	14	3.8	3.0	1.4-4.7	1221
Thyroid gland	12	4.8	2.4	1.0-3.8	1627	Uterus	9	2.5	1.7	0.6-2.8	1962
						Leukaemia	9	2.5	2.0	0.7-3.4	1882
<b>All cancers</b>	<b>251</b>	<b>100.0</b>	<b>48.8</b>	<b>42.7-54.9</b>	<b>77</b>	<b>All cancers</b>	<b>364</b>	<b>100.0</b>	<b>73.3</b>	<b>65.7-81.0</b>	<b>50</b>

**40 to 64 years**

Males					Females						
	Cases	%	ASR	95%c.i.	Risk		Cases	%	ASR	95%c.i.	Risk
Prostate	828	33.3	199.8	186-213	18	Breast	906	41.8	225.1	210-240	17
Melanoma (skin)	311	12.5	76.0	67.5-84.5	49	Melanoma (skin)	200	9.2	49.6	42.7-56.5	78
Colorectal	271	10.9	65.4	57.6-73.2	55	Colorectal	169	7.8	41.7	35.4-48.0	89
Colon	151	6.1	36.4	30.6-42.2	98	Colon	105	4.8	25.7	20.8-30.7	141
Rectum	119	4.8	28.8	23.6-34.0	125	Rectum	61	2.8	15.3	11.4-19.2	248
Lung	142	5.7	33.9	28.3-39.5	102	Lung	123	5.7	29.8	24.5-35.0	120
Lymphoma	113	4.5	27.4	22.3-32.5	133	Thyroid gland	116	5.4	29.7	24.2-35.1	140
Lymphoma NOS	<5	NR	0.5	0 - 1.2	8476	Uterus	104	4.8	25.2	20.3-30.0	145
Hodgkin lymphoma	NR	NR	1.2	0.1-2.2	2844	Lymphoma	90	4.2	22.5	17.8-27.2	170
NHL	106	4.3	25.7	20.8-30.6	141	Lymphoma NOS	<5	NR	0.2	0 - 0.6	*
Kidney	111	4.5	26.8	21.8-31.8	136	Hodgkin lymphoma	NR	NR	2.1	0.6-3.5	1970
Pharynx	57	2.3	13.6	10.0-17.1	260	NHL	81	3.7	20.2	15.8-24.6	188
Lip, gum & mouth	56	2.2	14.0	10.3-17.6	279	Kidney	49	2.3	12.0	8.7-15.4	300
Stomach	49	2.0	11.9	8.6-15.3	294	Ovary	45	2.1	11.1	7.8-14.3	341
Bladder & urinary tract	48	1.9	11.6	8.3-14.9	312	Leukaemia	38	1.8	9.4	6.4-12.5	411
Oesophagus	46	1.8	11.1	7.8-14.3	316						
Leukaemia	44	1.8	10.7	7.5-13.8	339						
<b>All cancers</b>	<b>2490</b>	<b>100.0</b>	<b>602.7</b>	<b>579-626</b>	<b>6</b>	<b>All cancers</b>	<b>2167</b>	<b>100.0</b>	<b>536.7</b>	<b>514-559</b>	<b>8</b>

**65 years and over**

Males					Females						
	Cases	%	ASR	95%c.i.	Risk		Cases	%	ASR	95%c.i.	Risk
Prostate	1196	30.9	837.1	789-885	12	Breast	574	22.7	346.8	317-377	30
Colorectal	442	11.4	288.3	261-316	38	Colorectal	349	13.8	177.7	158-198	73
Colon	294	7.6	188.3	166-210	61	Colon	267	10.6	132.3	115-150	105
Rectum	148	3.8	100.0	83.5-116	101	Rectum	81	3.2	44.6	34.1-55.1	240
Lung	431	11.1	270.8	245-297	45	Lung	296	11.7	168.3	148-189	67
Melanoma (skin)	375	9.7	236.5	212-261	52	Melanoma (skin)	236	9.3	133.6	115-152	81
Bladder & urinary tract	182	4.7	106.3	90.4-122	163	Lymphoma	110	4.3	60.1	48.0-72.2	203
Lymphoma	167	4.3	110.9	93.7-128	100	Lymphoma NOS	NR	NR	2.0	0.0-4.1	*
Lymphoma NOS	<5	NR	0.6	0 - 1.6	*	Hodgkin lymphoma	<5	NR	1.9	0 - 4.1	4405
Hodgkin lymphoma	NR	NR	4.2	0.9-7.4	3088	NHL	102	4.0	56.2	44.4-67.9	217
NHL	159	4.1	106.2	89.3-123	104	Unknown primary	96	3.8	38.5	30.1-46.9	630
Leukaemia	102	2.6	63.1	50.5-75.7	200	Pancreas	94	3.7	46.5	36.3-56.8	265
Lymphoid leukaemia	56	1.4	35.0	25.5-44.4	335	Uterus	87	3.4	54.0	42.1-66.0	182
Myeloid leukaemia	45	1.2	27.7	19.4-36.1	494	Leukaemia	62	2.5	31.8	23.2-40.4	381
Unknown primary	98	2.5	57.0	45.4-68.6	324	Lymphoid leukaemia	30	1.2	17.4	10.7-24.1	540
						Myeloid leukaemia	30	1.2	13.3	8.1-18.5	1550
<b>All cancers</b>	<b>3867</b>	<b>100.0</b>	<b>2529.2</b>	<b>2448-2610</b>	<b>5</b>	<b>All cancers</b>	<b>2529</b>	<b>100.0</b>	<b>1400.2</b>	<b>1342-1455</b>	<b>9</b>

**Table 3. Cancer mortality, Western Australia, 2013: leading types by sex and age group (ASR: age-adjusted rate)**

**15 to 39 years**

Males						Females					
	Deaths	%	ASR	95%c.i.	Risk		Deaths	%	ASR	95%c.i.	Risk
Brain	9	25.0	1.9	0.6-3.3	2091	Colorectal	6	22.2	1.1	0.2-2.0	3042
Colorectal	7	19.4	1.3	0.3-2.2	2781	Colon	<5	NR	0.8	0.0-1.5	4626
Colon	6	16.7	1.1	0.2-1.9	3299	Rectum	<5	NR	0.4	0 - 0.9	8883
Rectum	<5	NR	0.2	0 - 0.5	*	Breast	5	18.5	1.0	0.1-1.8	3407
Lymphoma	<5	NR	0.5	0 - 1.1	6137	Cervix	<5	NR	0.6	0 - 1.2	6161
Liver	<5	NR	0.4	0 - 0.9	8857	Lymphoma	<5	NR	0.6	0 - 1.3	6127
Bone	<5	NR	0.6	0 - 1.4	8257	Brain	<5	NR	0.4	0 - 0.9	8883
Unknown primary	<5	NR	0.5	0 - 1.1	9043	Unknown primary	<5	NR	0.4	0 - 0.9	8517
Leukaemia	<5	NR	0.5	0 - 1.2	8889	Nasal cavity & sinuses	<5	NR	0.2	0 - 0.6	*
Myeloma	<5	NR	0.4	0 - 0.9	8857	Melanoma (skin)	<5	NR	0.2	0 - 0.5	*
						Connective/ soft tissues	<5	NR	0.2	0 - 0.7	*
						Ovary	<5	NR	0.2	0 - 0.6	*
						Spinal cord & cranial nerves	<5	NR	0.3	0 - 0.9	*
						Leukaemia	<5	NR	0.3	0 - 0.9	*
<b>All cancer deaths</b>	<b>36</b>	<b>100.0</b>	<b>7.4</b>	<b>4.9-9.9</b>	<b>516</b>	<b>All cancer deaths</b>	<b>27</b>	<b>100.0</b>	<b>5.4</b>	<b>3.4-7.5</b>	<b>656</b>

**40 to 64 years**

Males						Females					
	Deaths	%	ASR	95%c.i.	Risk		Deaths	%	ASR	95%c.i.	Risk
Lung	92	18.4	22.1	17.6-26.6	153	Breast	116	24.3	28.4	23.2-33.6	129
Colorectal	49	9.8	12.0	8.7-15.4	292	Lung	82	17.2	20.0	15.7-24.4	178
Colon	29	5.8	7.2	4.6-9.8	497	Colorectal	40	8.4	9.7	6.7-12.8	365
Rectum	20	4.0	4.9	2.7-7.0	707	Colon	29	6.1	7.2	4.6-9.8	497
Pancreas	35	7.0	8.1	5.4-10.8	422	Rectum	11	2.3	2.5	1.0-4.0	1367
Melanoma (skin)	34	6.8	8.2	5.4-10.9	424	Unknown primary	23	4.8	5.6	3.3-7.9	621
Brain	28	5.6	6.9	4.3-9.4	516	Brain	22	4.6	5.2	3.0-7.4	690
Stomach	26	5.2	6.4	3.9-8.8	586	Pancreas	21	4.4	5.0	2.9-7.1	652
Oesophagus	24	4.8	5.9	3.5-8.3	609	Ovary	19	4.0	4.8	2.6-7.0	763
Liver	24	4.8	5.7	3.4-8.0	643	Melanoma (skin)	18	3.8	4.4	2.3-6.4	820
Kidney	19	3.8	4.8	2.6-6.9	750	Uterus	14	2.9	3.4	1.6-5.2	981
Prostate	18	3.6	4.4	2.3-6.4	750	Leukaemia	13	2.7	3.3	1.5-5.0	1223
Lymphoma	15	3.0	3.7	1.8-5.6	1002	Cervix	12	2.5	3.1	1.4-4.9	1317
Mesothelioma	14	2.8	3.6	1.7-5.4	950						
<b>All cancer deaths</b>	<b>500</b>	<b>100.0</b>	<b>121.0</b>	<b>110-132</b>	<b>29</b>	<b>All cancer deaths</b>	<b>477</b>	<b>100.0</b>	<b>116.8</b>	<b>106-127</b>	<b>31</b>

**65 years and over**

Males						Females					
	Deaths	%	ASR	95%c.i.	Risk		Deaths	%	ASR	95%c.i.	Risk
Lung	360	21.2	220.0	197-243	63	Lung	251	20.4	133.9	116-152	90
Prostate	203	11.9	113.0	97.1-129	216	Colorectal	152	12.4	70.5	58.2-82.8	209
Colorectal	177	10.4	109.4	92.8-126	121	Colon	114	9.3	52.6	42.0-63.3	273
Colon	116	6.8	72.6	59.0-86.2	172	Rectum	38	3.1	17.8	11.7-24.0	881
Rectum	61	3.6	36.8	27.3-46.4	408	Breast	135	11.0	67.5	55.0-79.9	189
Pancreas	88	5.2	56.4	44.3-68.6	190	Unknown primary	90	7.3	35.2	27.3-43.1	735
Mesothelioma	88	5.2	57.3	45.0-69.6	185	Pancreas	83	6.7	37.4	28.7-46.2	446
Stomach	78	4.6	46.4	35.7-57.0	308	Ovary	58	4.7	28.2	20.3-36.1	466
Bladder & urinary tract	76	4.5	43.2	33.2-53.2	444	Lymphoma	40	3.3	18.4	12.2-24.5	997
Melanoma (skin)	74	4.4	42.5	32.5-52.5	390	NHL	37	3.0	17.4	11.4-23.5	997
Unknown primary	65	3.8	36.8	27.6-46.0	548	Brain	37	3.0	19.6	12.8-26.3	590
Leukaemia	60	3.5	37.3	27.6-47.1	330	Leukaemia	37	3.0	17.2	11.2-23.1	901
Lymphoid leukaemia	23	1.4	13.6	7.8-19.3	999	Lymphoid leukaemia	12	1.0	5.4	2.0-8.7	2791
Myeloid leukaemia	36	2.1	23.4	15.5-31.2	491	Myeloid leukaemia	23	1.9	10.8	6.1-15.5	1610
Skin (NMSC inc. SCC/BCC)	52	3.1	30.5	22.0-39.0	521						
<b>All cancer deaths</b>	<b>1700</b>	<b>100.0</b>	<b>1025.8</b>	<b>976-1076</b>	<b>15</b>	<b>All cancer deaths</b>	<b>1230</b>	<b>100.0</b>	<b>597.0</b>	<b>561-633</b>	<b>23</b>

## 2.4 Cancer incidence projections

### 2.4.1 Use and methods

Projections of future cancer case numbers and rates are presented here as the best available basis for prediction of future need for medical services. Often requested for health service planning reasons, such projections are subject to errors based on the population estimates and unknown changes in risk factors or diagnostic practices, and should be used with some caution.

The updated projections for "All cancers" and the most common cancer type in males and in females presented here were calculated using an exponentially-weighted moving average method, as used and referenced in *Cancer incidence and mortality in Western Australia 2009*,<sup>4</sup>. The underlying population projections were obtained via the Epidemiology Branch, Department of Health (WA) as the best available to date, however it is expected that revised versions will be available by the time of the Registry's next report.

### 2.4.2 Historical incidence data and projections

While the incidence of all cancers combined has tended to increase with time, differences are observed between trends for individual cancer types subject to particular influences. In particular, decreasing lung cancer incidence in males is commonly thought to be associated with a reduction in smoking prevalence, and increased prostate cancer incidence in the 1990s was thought to be associated with increased PSA testing.<sup>1</sup>

#### *All cancers*

Based on data for the last 10 years, male cancer case numbers are expected to increase however the incidence rate (ASR) is projected to stabilize or decrease (Table 4). In females projections likewise show continuing growth in case numbers, and a small incidence rate decrease over the next few years.

#### *Common cancer types*

- Prostate cancer: Incidence doubled in 2 years in the early 1990s, then halved again in 2 years, and later showed a less extreme but consistent increasing trend. Based on data for the last 10 years, incidence in males is now increasing only marginally, and the 2009 projection of 2700 cases in 2014 appears unlikely, with the updated estimate being 2330 (Table 4).
- Breast cancer in females: Based on data for the last 10 years, breast cancer incidence in females is expected to remain stable, rather than decreasing as was projected five years ago.
- Colorectal cancer: slight incidence rate decreases projected for males and for females.
- Lung cancer: projections show a continued decline in incidence rate in males. The incidence rate in females, previously increasing, appears to have stabilized, although the numbers of cases are expected to continue to increase in both.
- Melanoma: projections show small declined in incidence rate in males and females.

Table 4. Historical incidence data and projections, WA, 2004-2023

All cancers (males)					All cancers (females)			
Year	Cases	95% c.i.	ASR	95% c.i.	Cases	95% c.i.	ASR	95% c.i.
2004	5306	-	377.9	367.4 - 388.4	4129	-	279.9	270.8 - 289.0
2005	5346	-	367.5	357.3 - 377.7	4086	-	267.5	258.7 - 276.3
2006	5618	-	371.1	361.0 - 381.1	4339	-	274.7	266.0 - 283.5
2007	5768	-	369.9	360.0 - 379.8	4191	-	259.5	251.1 - 268.0
2008	6172	-	381.7	371.8 - 391.5	4500	-	266.4	258.1 - 274.7
2009	6477	-	388.4	378.6 - 398.2	4644	-	271.0	262.7 - 279.3
2010	6488	-	376.0	366.6 - 385.5	4869	-	279.4	271.1 - 287.7
2011	6741	-	383.7	374.2 - 393.2	5033	-	275.0	266.9 - 283.1
2012	6767	-	357.6	348.8 - 366.4	5311	-	276.9	269.0 - 284.9
2013	6649	-	351.2	342.5 - 359.8	5094	-	263.7	256.0 - 271.4
2014	7518	7446 - 7589	365.9	357.3 - 374.5	5511	5416 - 5605	270.1	262.5 - 277.8
2015	7735	7662 - 7808	364.0	355.5 - 372.4	5660	5562 - 5758	269.8	262.3 - 277.4
2016	7930	7856 - 8005	362.0	353.7 - 370.4	5800	5699 - 5900	269.5	262.1 - 277.0
2017	8151	8075 - 8227	360.1	351.9 - 368.4	5960	5856 - 6063	269.3	261.9 - 276.6
2018	8343	8266 - 8420	358.3	350.2 - 366.4	6103	5997 - 6209	269.0	261.7 - 276.3
2023	9386	9302 - 9469	349.1	341.5 - 356.8	6920	6799 - 7040	267.7	260.7 - 274.6

Prostate cancer (males)					Breast cancer (females)			
Year	Cases	95% c.i.	ASR	95% c.i.	Cases	95% c.i.	ASR	95% c.i.
2004	1518	-	108.4	102.8 - 114.0	1146	-	82.5	77.6 - 87.4
2005	1500	-	102.1	96.8 - 107.5	1165	-	82.0	77.1 - 86.9
2006	1667	-	109.3	103.9 - 114.7	1250	-	85.4	80.5 - 90.3
2007	1829	-	116.5	111.0 - 122.0	1128	-	74.3	69.8 - 78.8
2008	1996	-	122.9	117.4 - 128.4	1341	-	86.1	81.3 - 90.9
2009	2055	-	122.7	117.3 - 128.2	1326	-	82.3	77.7 - 86.9
2010	1914	-	112.1	106.9 - 117.2	1466	-	89.5	84.7 - 94.2
2011	2095	-	119.9	114.7 - 125.1	1412	-	82.3	77.8 - 86.7
2012	2110	-	110.1	105.3 - 114.9	1610	-	89.8	85.3 - 94.4
2013	2025	-	108.6	103.8 - 113.4	1569	-	86.8	82.4 - 91.2
2014	2330	2270 - 2389	112.8	108.1 - 117.5	1612	1561 - 1663	85.1	80.8 - 89.4
2015	2415	2353 - 2477	113.1	108.5 - 117.7	1668	1616 - 1720	85.7	81.4 - 90.0
2016	2493	2430 - 2557	113.5	108.9 - 118.0	1723	1670 - 1776	86.3	82.1 - 90.6
2017	2580	2514 - 2646	113.8	109.3 - 118.3	1784	1729 - 1838	87.0	82.7 - 91.2
2018	2658	2591 - 2726	114.3	109.8 - 118.7	1840	1784 - 1897	87.6	83.4 - 91.8
2023	3063	2984 - 3142	116.2	111.9 - 120.5	2162	2099 - 2225	90.8	86.7 - 94.9

Colorectal cancer (males)					Colorectal cancer (females)			
Year	Cases	95% c.i.	ASR	95% c.i.	Cases	95% c.i.	ASR	95% c.i.
2004	630	-	43.8	40.3 - 47.3	500	-	31.4	28.4 - 34.4
2005	593	-	40.2	36.9 - 43.5	530	-	31.3	28.4 - 34.2
2006	613	-	40.4	37.1 - 43.7	500	-	28.6	25.9 - 31.4
2007	674	-	41.9	38.6 - 45.2	553	-	31.8	28.9 - 34.7
2008	735	-	45.0	41.6 - 48.3	541	-	28.4	25.8 - 31.0
2009	771	-	45.2	41.9 - 48.5	573	-	30.8	28.1 - 33.5
2010	799	-	45.1	41.9 - 48.3	595	-	30.7	28.0 - 33.3
2011	794	-	44.3	41.1 - 47.4	648	-	32.5	29.8 - 35.2
2012	675	-	34.6	31.9 - 37.3	619	-	28.8	26.3 - 31.2
2013	739	-	38.4	35.5 - 41.2	542	-	24.9	22.6 - 27.2
2014	852	827 - 878	40.4	37.6 - 43.3	659	635 - 683	28.8	26.4 - 31.2
2015	874	848 - 900	40.1	37.3 - 42.8	672	647 - 696	28.4	26.1 - 30.8
2016	893	866 - 920	39.7	37.0 - 42.4	683	658 - 708	28.1	25.8 - 30.4
2017	915	888 - 943	39.3	36.6 - 41.9	696	671 - 722	27.8	25.5 - 30.0
2018	935	906 - 963	38.9	36.3 - 41.5	708	682 - 734	27.5	25.2 - 29.7
2023	1043	1008 - 1078	37.3	34.8 - 39.7	775	746 - 804	26.0	23.9 - 28.0

Table 4 (cont.) Historical incidence data and projections, WA, 2004-2023

Lung cancer (males)					Lung cancer (females)			
Year	Cases	95% c.i.	ASR	95% c.i.	Cases	95% c.i.	ASR	95% c.i.
2004	535	-	35.1	32.0 - 38.2	328	-	20.3	18.0 - 22.7
2005	608	-	38.7	35.5 - 41.9	325	-	19.3	17.0 - 21.5
2006	573	-	36.1	33.0 - 39.2	348	-	19.8	17.6 - 22.0
2007	543	-	32.7	29.9 - 35.6	353	-	19.2	17.0 - 21.3
2008	564	-	32.7	29.9 - 35.5	388	-	20.7	18.4 - 22.9
2009	604	-	33.9	31.1 - 36.7	409	-	21.1	18.9 - 23.3
2010	611	-	31.8	29.2 - 34.4	420	-	21.8	19.6 - 24.0
2011	609	-	31.7	29.1 - 34.3	416	-	20.5	18.4 - 22.6
2012	596	-	29.1	26.6 - 31.5	463	-	21.5	19.4 - 23.5
2013	578	-	27.9	25.5 - 30.2	422	-	19.4	17.5 - 21.4
2014	692	670 - 715	30.6	28.2 - 33.0	471	449 - 494	20.3	18.3 - 22.2
2015	699	676 - 722	29.7	27.4 - 32.0	490	467 - 513	20.4	18.4 - 22.3
2016	704	680 - 728	28.9	26.7 - 31.2	508	484 - 532	20.4	18.5 - 22.3
2017	709	684 - 734	28.1	25.9 - 30.2	529	504 - 553	20.5	18.7 - 22.4
2018	711	686 - 737	27.2	25.1 - 29.3	548	523 - 572	20.6	18.8 - 22.5
2023	720	693 - 748	23.2	21.4 - 25.0	660	632 - 688	21.3	19.5 - 23.1

Melanoma (males)					Melanoma (females)			
Year	Cases	95% c.i.	ASR	95% c.i.	Cases	95% c.i.	ASR	95% c.i.
2004	581	-	42.7	39.1 - 46.3	413	-	30.2	27.2 - 33.3
2005	598	-	43.1	39.6 - 46.7	407	-	28.5	25.6 - 31.5
2006	637	-	44.0	40.5 - 47.6	456	-	31.6	28.5 - 34.6
2007	572	-	38.5	35.3 - 41.7	409	-	27.6	24.8 - 30.4
2008	661	-	41.9	38.6 - 45.2	425	-	26.9	24.2 - 29.6
2009	639	-	39.4	36.3 - 42.5	399	-	24.8	22.2 - 27.3
2010	648	-	38.0	35.0 - 41.0	389	-	23.6	21.1 - 26.0
2011	669	-	38.6	35.6 - 41.6	449	-	25.6	23.1 - 28.1
2012	692	-	37.5	34.6 - 40.4	453	-	25.1	22.7 - 27.5
2013	734	-	38.9	36.0 - 41.8	498	-	26.5	24.0 - 28.9
2014	770	735 - 804	38.6	35.8 - 41.4	492	469 - 515	25.6	23.2 - 28.0
2015	787	751 - 822	38.0	35.2 - 40.7	498	474 - 521	25.1	22.7 - 27.4
2016	802	766 - 839	37.4	34.7 - 40.0	502	479 - 526	24.6	22.3 - 26.8
2017	820	783 - 858	36.8	34.1 - 39.4	509	485 - 533	24.0	21.8 - 26.3
2018	836	798 - 875	36.2	33.6 - 38.7	514	490 - 539	23.6	21.4 - 25.7
2023	941	894 - 987	33.6	31.3 - 35.9	555	529 - 582	21.6	19.7 - 23.6

## 2.5 Cancer incidence and mortality in Aboriginals

As numbers of cancer cases among Aboriginal people in Western Australia are low and vary considerably from year to year, Registry statistics are generally presented using several years of pooled data, and are not reported every year. Although this topic was covered in the Registry's last report<sup>1</sup> it is being revisited in this report as there has been a change in methodology that has increased the proportion of Western Australians regarded as being of Aboriginal descent for the purpose of health statistics, and this has had a marked effect on incidence and mortality statistics.

The recent publication *Evidence for the use of an algorithm in resolving inconsistent and missing Indigenous status in administrative data collections*,<sup>6</sup> argues that basing statistics on missing and inconsistent Aboriginal identification can lead to misleading statistics, and describes a method of deriving an index of Aboriginality based on multiple data sources and over time. WA Cancer Registry data were updated using results from applying the "Multi Stage Median algorithm" referred to in that publication. **Table 5** shows incidence and mortality data for the most common cancers, based on application of the Multi-Stage Median algorithm, for the period 2009-2013 combined, with annual average case numbers. Table 5 also shows the total number of cancers following the original or 'unadjusted' approach.

Patterns of incidence of most common cancers are unchanged, however the all-cancers annual case numbers and incidence rates are increased by around 20%, and annual deaths and mortality rates by 11-16%, after the application of the new methodology.

Lung cancer remained the most common incident cancer in Aboriginal males, and the second most common in females. Compared with incidence in the general population, prostate cancer was less common, and melanoma very much less common in both males and females; but primary liver cancer was relatively much more common in both males and in females. For this period, prostate cancer numbers and rates showed the greatest increase using the new methodology.

The revised all-cancers incidence ASRs for Aboriginal males is slightly lower than for the whole population (345.4/100,000 versus 351.2), but is higher than the total-population rate for females. The all-cancers mortality rate among Aboriginals was increased to almost double the rate in the total population (303.9/100,000 compared with 263.7).

**Table 5. Cancer incidence and mortality in Aboriginals, Western Australia, 2009-2013: Common cancers and methodological comparisons**

**INCIDENCE (2009-2013 annual averages)**

Males					Females				
Cancer type	Cases per year	%	ASR	95% c.i.	Cancer type	Cases per year	%	ASR	95% c.i.
Lung	11	13.3	59.2	42.8-75.7	Breast	23	24.5	76.4	61.7-91.1
Colorectal	9	11.4	39.7	27.1-52.3	Lung	9	9.9	34.4	24.1-44.8
Prostate	9	11.2	43.6	30.3-57.0	Uterus	8	8.4	26.5	17.8-35.2
Liver	4	5.1	17.1	9.0-25.1	Colorectal	6	6.4	21.8	13.7-29.9
Oesophagus	4	4.4	13.2	6.6-19.8	Cervix	5	5.2	11.2	6.6-15.8
Tonsil / oropharynx	3	4.1	12.2	5.9-18.5	Leukaemia	4	4.3	11.1	5.9-16.3
Pancreas	3	3.9	13.9	6.8-21.1	Pancreas	3	3.6	13.1	6.6-19.6
Unknown primary	3	3.6	14.7	6.6-22.8	Unknown primary	3	3.2	10.2	4.8-15.6
Lip, gum & mouth	3	3.4	10.3	4.6-16.0	Liver	3	2.8	9	3.9-14.0
Larynx	3	3.2	11.4	4.7-18.1	Ovary	3	2.8	7.6	3.2-12.0
Tongue	2	2.9	9.9	3.8-16.0	Thyroid gland	2	2.6	5.5	2.4-8.7
Stomach	2	2.9	8	3.0-12.9	Oesophagus	2	2.4	7.1	2.8-11.5
Melanoma (skin)	2	2.9	7.6	3.1-12.0	Brain	2	2.1	5.3	1.8-8.8
Testis	2	2.9	5	2.2-7.9	Myeloma	2	2.1	6.1	2.1-10.0
Lymphoma	2	2.9	9.2	3.3-15.0	Stomach	2	1.9	5.7	1.8-9.7
Leukaemia	2	2.9	8.1	2.7-13.5	Melanoma (skin)	2	1.9	5.1	1.5-8.6
Kidney	2	2.4	8.1	2.8-13.4	Tonsil / oropharynx	2	1.7	4.9	1.4-8.3
Gallbladder/ bile ducts	2	2.2	7.4	2.4-12.4	Gallbladder/ bile ducts	2	1.7	5.4	1.6-9.3
<b>All cancers</b>	<b>82</b>	<b>(100)</b>	<b>345.4</b>	<b>309-382</b>	<b>All cancers</b>	<b>93</b>	<b>(100)</b>	<b>303.9</b>	<b>275-333</b>
<i>Comparison using older methodology:</i>									
All cancers	68		282.9	250-316		78		255.7	229-282
<i>Increase due to methodology</i>	20.6%		22.1%			19.2%		18.9%	

**MORTALITY (2009-2013 annual averages)**

Males					Females				
Cancer type	Deaths per year	%	ASR	95% c.i.	Cancer type	Deaths per year	%	ASR	95% c.i.
Lung	8	18.7	43.4	29.3-57.6	Lung	7	18.4	27	18.0-36.1
Liver	4	8.4	15	7.4-22.6	Breast	5	11.4	14.9	8.5-21.2
Oesophagus	3	7.9	13.6	6.5-20.7	Pancreas	3	7.5	11.1	5.3-17.0
Unknown primary	3	7.0	16.7	7.8-25.7	Liver	2	6.0	8.6	3.5-13.7
Pancreas	3	6.5	12.3	5.5-19.1	Unknown primary	2	6.0	7.8	3.2-12.5
Tonsil / oropharynx	2	5.6	9.8	3.6-16.1	Colorectal	2	6.0	9.2	3.8-14.6
Prostate	2	5.6	14.2	5.8-22.5	Oesophagus	2	5.0	6.8	2.4-11.1
Stomach	2	4.7	6.7	2.1-11.4	Leukaemia	2	5.0	6.2	2.2-10.3
Colorectal	2	4.7	11.2	3.9-18.5	Cervix	2	4.5	4.6	1.4-7.8
Lip, gum & mouth	2	3.7	7.1	1.8-12.3	Uterus	2	4.5	7.4	2.4-12.4
Tongue	2	3.7	6.1	1.5-10.6					
<b>All cancers</b>	<b>43</b>	<b>(100)</b>	<b>202.9</b>	<b>174-232</b>	<b>All cancers</b>	<b>40</b>	<b>(100)</b>	<b>139.3</b>	<b>119-159</b>
<i>Comparison using older methodology:</i>									
All cancers	37		175.9	149-203		36		123.3	104-142
<i>Increase due to methodology</i>	16.2%		15.3%			11.1%		13.0%	



### 3. Cancer in Western Australia: Data and technical issues

#### 3.1 Basis of diagnosis

Cancers may be diagnosed by a variety of methods, and many methods may be used in the same case. Cancer registries generally record a “best basis of diagnosis” as a guide to the specificity and reliability of the information. Generally “microscopic” methods (histology, cytology, haematology) are regarded as most reliable as compared with clinical findings or imaging. Diagnoses based only on a death certificate (“DCO”) are not generally well-regarded (see below). The Registry also uses hospital discharge data (“Hospital Morbidity Data System” or “HMDS”) to reduce letter-based enquiries and case note review, if data are consistent. Most recently, on-line access to a public-sector clinical information system has reduced the number of letters and file requests substantially.

Table 6, restricted to invasive malignancies or ‘cancers’, show that over 90% of cases were based on a specific pathology test performed on a specimen of blood or other tissue. Historically, the common cancers least likely to be based on microscopic examination were primary liver cancers, pancreatic cancer and cancers of unknown primary site.

**Table 6. Tumour records in Western Australia, 2013: Diagnosis methods**

<b>Basis of diagnosis</b>	<b>Cases</b>	<b>%</b>	<b>Basis of diagnosis</b>	<b>Cases</b>	<b>%</b>
Microscopic NOS	1	0.0	Surgery	8	0.1
Histology	10801	83.8	Necropsy	8	0.1
Cytology	691	5.4	DCO	33	0.3
Haematology	210	1.6	DC & HMDS	16	0.1
Imaging	414	3.2	Unknown	68	0.5
Clinical	76	0.6			
Biochemical/Immunologic test	21	0.2	All "microscopic" bases	11703	90.8
			Total	12893	(100)

(DC & HMDS - Death certificate and consistent HMDS data only.)

(Includes some cancers not counted in incidence figures e.g. second cancers of similar type, in the same person.)

#### 3.2 Registry-initiated enquiries

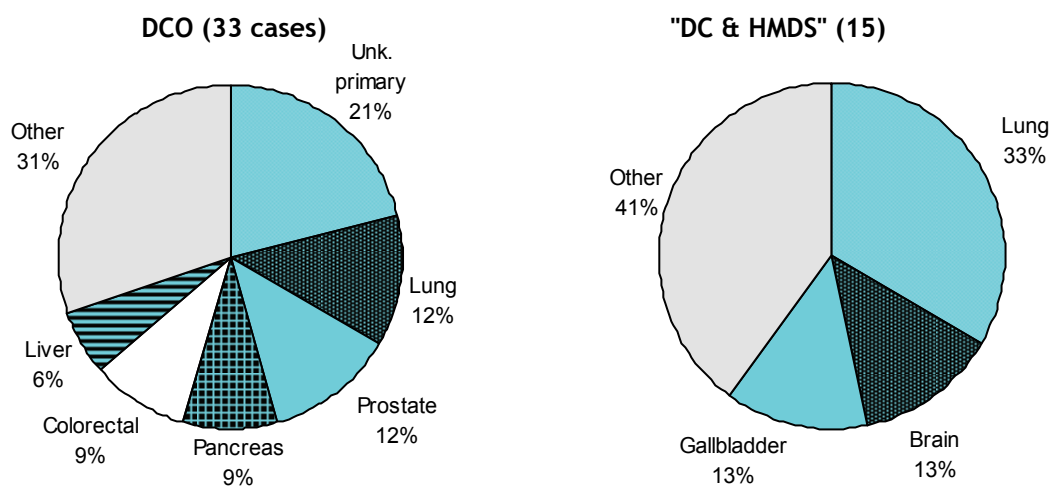
Enhancing the quality of tumour records that begin on the basis of a death certificate or hospital-coded record only, is a result of the hospital file requests and enquiry letters generated by Registry staff. In 2013 there were a total of 1026 individual enquiries and 1587 entries on “grouped enquiry” file request lists sent to hospitals, concerning 2078 separate persons.

### 3.3 Death Certificate and Hospital Morbidity Data System cases

“Death certificate only” (DCO) cancer records are those based solely on a death notification’s cause of death text. In Western Australia, there were 33 DCO cancers recorded for 2013 (0.3% of all cases) and 15 “DC and HMDS” cases recorded for 2013 (Figure 10), with a combined total of only 0.4% (0.5% in 2012).

Having a low proportion of DCO cases is widely regarded as an important index of data quality in a Cancer Registry. Although reliability and specificity concerns limit the reliance placed on the “DC & HMDS” records they are preferred over DCOs. The combined total of these two types of records - 0.4% - is an indicator of good quality in the Registry’s data collection by international standards when the North American “gold standard” for DCO cases is 3% or less.<sup>5</sup>

Figure 10. Death Certificate Only (DCO) and “DC & HMDS” cancers 2013: common types



## 4. References

- 1 Threlfall TJ, Thompson JR (2014). *Cancer incidence and mortality in Western Australia, 2012*. Department of Health, Western Australia, Perth. Statistical series number 99.
- 2 Segi M (1960) *Cancer mortality for selected sites in 24 countries (1950-1957)*. Sendai, Japan, Tohoku University Press.
- 3 Population by age and sex. 2001 Census Edition - Final. Australian Bureau of Statistics, Canberra, cat. 3201.0
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- 5 Nishri D. The Ontario Cancer Registry and its Data Quality. Cancer Care Ontario, referenced at URL - <http://www.apheo.ca/resources/indicators/OCR%20%20its%20data%20quality%20Nishri%20Feb2011.pdf>
- 6 Christensen D, Davis G, Draper G, Mitrou F, McKeown S, Lawrence D, McAullay D, Pearson G, Ridders W, Zubrick S (2014). Evidence for the use of an algorithm in resolving inconsistent and missing Indigenous status in administrative data collections - the Getting Our Story Right project. *Aust J Soc Issues* 49(4),423-443.

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**Note:** Appendix 3A now contains an incidence data summary for the most common cancers on page A3-10.



# Appendix 1. About The Western Australian Cancer Registry

## Appendix 1A. Overview and technical issues

### History and role

The Western Australian Cancer Registry is a population-based cancer registry established in 1981. The Health (Notification of Cancer) Regulations 1981 require the reporting of cancers diagnosed by pathologists, haematologists and radiation oncologists. The Registry was established in recognition of the potential importance of reliable population-based cancer data in the planning of services and in the prevention and treatment of cancer.

Surveillance of cancer extends beyond State and national boundaries and this Registry cooperates with other State registries and the Australian Institute of Health and Welfare (AIHW) which collates State information and manages the Australian Cancer Database in Canberra. Data are also provided to the International Agency for Research on Cancer in Lyon, France, for inclusion in Australian statistics published locally and world-wide.

The Registry is a member of the Australasian Association of Cancer Registries (AACR) which includes all Territory and State cancer registries, and the International Association of Cancer Registries (IACR). The AACR meets regularly to discuss matters such as common coding systems, comparability of data between areas in Australia and involvement in Australia-wide cancer research projects.

### Registry scope

The Western Australian Cancer Registry reports on cancers and other neoplasms diagnosed in persons while resident in Western Australia. A separate register is maintained for recording asbestos exposure and other history for all cases of mesothelioma. In practice, the Registry records available information about Western Australians with cancers diagnosed elsewhere, as this is often vital to the interpretation of new reports or mortality information.

As in other Australian cancer registries, information concerning tumours diagnosed in Western Australia in persons ordinarily resident elsewhere in Australia, is sent to the relevant State or Territory cancer registry, and is not included in Western Australian incidence statistics.

Cancer deaths in current or former Western Australian residents are recorded when possible, regardless of place of death or address at diagnosis, to facilitate survival analysis. However, in routine tables of mortality, geographic location is based on place of residence at time of death rather than on the place of death. Accordingly, the Registry's mortality statistics routinely include deaths in Western Australia, of persons resident in Western Australia at the time. In contrast to incidence, mortality reports include deaths due to all non-melanoma skin cancers including basal cell and squamous cell carcinomas (BCC and SCC).

### Legislative basis

The Registry acted with the delegated authority of the Executive Director of Public Health with respect to the Health (Notification of Cancer) Regulations 1981, until June 2011 when the new HEALTH (WESTERN AUSTRALIAN CANCER REGISTER) REGULATIONS 2011 took effect.

The Regulations require the notification of *in situ* neoplasms and all non-melanoma skin cancers other than primary BCC and SCC, as well as all invasive malignancies and a variety of other neoplasms. The Regulations and a summary of changes can be seen at -

<http://www.health.wa.gov.au/wacr/home/regulations.cfm>

## Sources of data

Most notifications are received from pathology laboratories, which supply pathology reports on paper or computer data files. The electronic notification system relies on the tumour codes or "notify Registry" flags generated by pathologists to select the reports to be sent to the Registry, and it is believed that this has enhanced the completeness of reporting from the larger hospital laboratories. Radiation oncologists also notify the Registry of patients treated for cancer.

In-house linkage routines are used to link pathology and mortality data files to the Registry to permit creation of new records, or the updating of date, place and cause of death information. Additional cancer registrations are obtained from the remaining (unmatched) mortality records after electronically scanning the written cause of death and other fields on a data file. Data are now obtained from the WA Registrar-General's Office via the Data Linkage Branch of the Population Health Division. Where a death notification includes information about a tumour previously unknown to the Registry, records are created and efforts are then made to obtain independent verification of tumour details. Those for which no supporting information can be obtained after research are treated in subsequent reports as "death certificate only" (DCO) tumours.

Additional information, including country of birth and Aboriginality or indigenous status, can often be obtained from extracts of the W.A. Hospital Morbidity Data System (HMDS) files, or via on-line access to clinical information systems.

## Data handling and maintenance

Since 2008 when a new SQL Server database was commissioned, Registry staff have converted all paper records into image files that are stored within the database; the process for historical information is now completed. This permits non-Registry users with appropriate permissions and computer access, to find information without making enquiries of other staff, and frees Registry staff from the task of locating paper records for coding or review.

New registrations and updates are made on the custom-designed database, which also manages and stores the case lists and correspondence associated with the "further enquiry" process. In general, cancer cases are recorded with one demographic record for each person with a separate, linked record for each tumour, each of which may have from one to many associated "notifications". Incomplete records, or those found to be inaccurate in the light of new information, are progressively updated, and the data continually enhanced until the time of any final update (such as when adding mortality information). Registry records that are duplicates of existing cases are now handled by cross-referencing to the "valid" case, rather than deletion, minimising the repetition of "detective" work if more information comes to hand later.

Statistics are produced from database extracts using the Registry's own incidence and mortality rates calculation system and a variety of other statistical and graphics software packages. Software for routine statistical reports is constantly being developed and upgraded to reflect changes in coding systems, geographical area boundaries and the types of information requests received. The vast majority of tables in this report are created directly from this in-house software.

Where resources permit, customised tabulations using similar area and age group subdivisions are available to anyone who makes a request.

## Coding practices

### General

The coding of tumour data is based on the International Classification of Diseases for Oncology (ICD-O) which originated as an extension of Chapter II (Neoplasms) of the Ninth Revision of the International Classification of Diseases (ICD-9); which was superseded by ICD-10.

ICD-O permits separate coding of topography (“site”), morphology (“tissue”) and behaviour, and thus allows a more comprehensive characterisation of some tumours than the single-code ICD-9 and ICD-10 classification system. Topography and morphology codes in this report are from ICD-O third edition (2000) (ICD-O-3),<sup>a</sup> following the successful conversion of software, and translation of historical data in 2003.

In general, for incidence reporting, leukaemias, lymphomas and other lymphohaematopoietic malignancies are grouped on the basis of morphology codes, as for cutaneous melanoma, Kaposi sarcoma and mesothelioma, while others are tabulated on the basis of topography, or location. This Registry uses behaviour code “6” to indicate tumours of unknown primary site.

For the sake of consistency in reporting of incidence and mortality data, causes of death are coded to morphology (lymphohaematopoietic malignancies, Kaposi sarcoma and mesothelioma) and topography (others). Melanoma deaths are coded to the ICD-10 code, C43x, to distinguish them from deaths due to non-melanoma skin cancers (C44n). In accordance with IACR guidelines adopted by AACR, deaths due to melanomas of unknown primary site are treated as primary skin melanoma for tabulation purposes.

Diagnoses in non-Western Australian residents are excluded from incidence reporting routines but are recorded for reference. A system of “aliasing” duplicate or otherwise invalid records allows ongoing reconciliation of old and current data, necessary for follow-up studies.

Cancer Registry mortality reporting has been based on death certificate coding performed within the Registry since 1990. Reconciliation with coding by the Australian Bureau of Statistics was once a useful monthly process but ABS has refused to support this since 2005. This exchange was extremely helpful, as annual ABS-coded mortality files are normally not released until well into the year following death, which is, in some cases, a delay of almost 2 years.

### Multiple tumours

Two or more discrete tumours of different (3-character) sites in any individual are counted separately for the purposes of incidence statistics. However, in accordance with international practice, similar tumours arising in sites coded with the same first three characters are counted as one.

This, in effect, means that a person who has two similar tumours diagnosed, even many years apart, is reported only once in incidence statistics. This applies even when tumours arise in paired organs, e.g. lung or breast and are regarded as truly separate, unless the tumour types are different enough to permit both to be counted. Groups of types considered to be different, for the purposes of allowing the counting of more than one tumour of the same “site”, are based on an ICD-O-3-based table as promulgated by the International Association of Cancer Registries (refer to [http://www.iacr.com.fr/MPrules\\_july2004.pdf](http://www.iacr.com.fr/MPrules_july2004.pdf)). Using these rules, for example, a squamous cell carcinoma of the lung and an adenocarcinoma of the lung arising at any time will both be counted in incidence statistics. Lymphohaematopoietic malignancies are treated differently, being tabulated by morphology, and their discovery in a

<sup>a</sup> World Health Organization (2000) *ICD-O: International classification of diseases for oncology* (Third Edition). WHO, Geneva.

particular site does not preclude the counting of different types of neoplasms in the same site. The urinary tract is treated as a special case of an “extended site”, whereby multiple transitional cell carcinomas of sites C65x to C68x , *including* bladder (C67x), are counted only once in a person.

While these practices govern the reporting of cancers for incidence statistics in accordance with international practice, it is an inescapable conclusion that multiple tumours have separate effects on health, and the best illustration of this is in relation to survival. Cases occur in which a person has a breast carcinoma, and is treated and considered cured, only to die from a second primary breast carcinoma arising many years later. Measuring survival time from the first tumour diagnosis (the “incident” tumour) and ignoring the presence of the second, can lead to a simplistic analysis which falsely overestimates survival times. To allow better analysis, the Registry continues to record all tumours separately, so that statistics counting tumours, rather than cases, can be provided if required.

This Report uses the “multiple-primary” rules based on the ICD-O-3 classification and tumour groupings will differ slightly from those used in some previous publications (see Appendix 2E).

### **“Death certificate only” cancers**

“Death certificate only” (DCO) cancers are those for which no information other than a death certificate is available. From mortality data, records of previously unknown tumours are created on the Cancer Registry, and efforts are made to obtain independent verification of details. Those for which no supporting information can be obtained after research are treated in subsequent reports as DCO tumours. Up to 60 tumours are followed up in this way each month, and supporting information is eventually obtained for the vast majority. Very few tumour records remain in this category. Tumours of unknown primary site have been consistently more common among DCO cases than among cancers in general.

To achieve such a low proportion of DCO cases, reporting of statistics must be delayed until most follow-up is complete. Rapid access to death notifications assists the Registry to commence enquiries while information is still accessible. Due to workload issues, DCO cases are now being treated as “resolved” if a compatible coded hospital discharge record is found, and a special Basis of Diagnosis code of “D” is used.

### **Lymphomas**

ICD-O codes are used for coding lymphomas, however several “in-house” morphology codes are used when the best ICD-O code is too general; these are shown in the footnote to the table in Appendix 2E(b). These codes are converted, when contributing data to others, to the relevant less-specific ICD-O code.

### **Basis of diagnosis**

Most notifications result from diagnoses made on the basis of tissue examination (histology, cytology, haematology), and these are regarded as the most reliable. Their percentage of the total cases is shown in the “TD%” column of some tables in this report.

### **Additional data for specific tumour types**

A number of additional data items are collected for some tumours. For primary invasive breast cancer, the Registry records, for example, maximum tumour diameter, number of axillary lymph nodes biopsied and the number affected by cancer, whether a tumour is multi-centric, and whether there is associated ductal carcinoma in situ (DCIS) outside the margins of the invasive tumour. For primary skin melanoma, the thickness of the tumour and Clark's



level are recorded (Breslow 1970<sup>a</sup>; Clark *et al* 1975<sup>b</sup>) and used in many of this Registry's reports.

## Quality assurance

Data quality is assessed in various ways, both continuous and occasional. On a continuous basis, all coding on pathology reports, and the details entered on the database, are checked by a second member of the Registry staff, and queries are referred to a Registry medical officer. In addition, the Registry database system incorporates various "unusual case" warnings, based on dates, sex, and age. A case-flagging system, based on site and tissue combinations and the rules encapsulated in a modified version of IARC's "Check" routine, warns of unusual code combinations. A verification code is assigned to records which do not fit the "rules" but which are believed to be correctly coded.

Available external indicators of Registry completeness are all potentially biased in favour of cancers which are more often serious, causing hospitalisation or death. Reports from radiation oncologists supplement the receipt of reports based on previous pathology specimens, and support the recording of those cancers which were not diagnosed histologically. The Hospital Morbidity Data System, which records details of all hospitalisations in Western Australia, is another potential source of information regarding Registry completeness.

If trends in incidence, mortality and migration are constant, then the ratio of the number of new cancer diagnoses registered to the number of cancer deaths (mortality to incidence ratio) serves as a crude indicator of completeness.

## Uses of Cancer Registry data

Non-identifying data are available for release to interested parties, subject to time constraints, as data files or as finished tables and figures. Only data which do not identify any patient, care provider or institution can be treated in this manner. Release of named information is strictly controlled (see "Confidentiality guidelines") and data can only be released to persons other than the original providers (or other clinicians involved in ongoing care of the individual) with personal consent, or a formal approval from the Department of Health (WA)'s Human Research Ethics Committee (HREC).

Data are used in a wide variety of research projects, including the recruitment of subjects for descriptive and case-control studies. Specific requests have included data on incidence in specific areas, cancer deaths by location and institution type, melanoma levels and depths, mesothelioma deaths and occupation, teenage cancers, myeloma survival and ocular melanoma. Registry data have been used in a number of studies of cancer incidence, and in a number of national projects, most notably those commissioned by the National Breast Cancer Centre (now part of Cancer Australia).

In addition to technical and statistical enquiries, the Registry receives general and personal enquiries regarding cancer services and medical problems; these are referred when appropriate to other agencies and treating physicians.

The Registry provides support for four hospital-based cancer registries (HBCRs). In the hospital setting, with clinical and pathological staging and treatment data, the availability of mortality data facilitates the assessment of outcomes using survival analysis.

<sup>a</sup> Breslow A (1970) Thickness, cross-sectional area and depth of invasion in the prognosis of cutaneous melanoma. *Ann Surg* **172**, 902-908

<sup>b</sup> Clark WH *et al* (1975) The developmental biology of primary cutaneous malignant melanoma. *Seminars in Oncology* **2**, 83.

## Appendix 1B. Current issues

### Registry staffing and workload

In 2003, a long process resulted in reclassification of "Clerical Officers" to a higher level, redesignated "Data Quality Officers". In 2011, one position was converted to a Data Quality Coordinator role. A clerical officer was temporarily attached to the Registry until March 2014. The resources now available to service the needs of a population of 2 million people include -

Principal Medical Officer/Manager	1.0 fte
Medical Officer/coding adviser	0.2 fte
Data Quality Coordinator	1.0 fte
Data Quality Officers	2.5 fte
Mesothelioma research officer	0.25 fte
Analyst/programmer	1.0 fte

Additional resources used include financial/ Human Resources services and Epidemiology Branch support for some statistical processes. However all reports such as this are produced primarily within the Registry itself.

Workload is not adequately represented by reported "cancer" totals. In 2013, there were 11743 invasive cancer cases as mentioned earlier in this report. However, in the same year there were 43741 "notifications" handled (pathology reports, letters, case notes and other records) (up from 42503 in 2012), 20741 tumour records created (up from 20341 in 2012), and at least 6553 other tumour records were edited one or more times in some way by staff (and not updated since 2013).

Increases in these workload indices exceed population growth rates, and underscore the need to properly resource disease registries and ensure a continued capacity to deal with the demands of health service planners, researchers, students and the public.

### Assessment of current notification system and Regulations

Until 2011, Western Australia was the only Australian State with no legal requirement for the direct notification of cancer diagnoses by hospitals; there is consequently some incompleteness in WA statistics for some cancer types. As a result of two successful "Graduate Officer" placement requests made under a new Department of Health program in 2004, a review and update of a previous assessment of the opportunities for more complete notification based on hospital data for non-pathologically diagnosed cancers, was completed and is summarised in *Cancer incidence and mortality in Western Australia, 2005*.<sup>a</sup>

These findings were published in support of a process of seeking changes to the Health (Notification of Cancer) Regulations 1981 so as to require hospital notification, among other things. Current data systems cannot be used satisfactorily for this purpose as there are 3 key data items - basis of diagnosis, date of diagnosis and place of residence at diagnosis - that are not included. The Registry has participated in consultations concerning a replacement of the (public) hospital Patient Administration System (PAS), and a cancer notification module from the currently-favoured replacement system has been demonstrated. New Regulations are now in place, but effective changes in some aspects of notification must await changes in hospital information systems.

<sup>a</sup>Threlfall TJ, Thompson JR (2007). Cancer incidence and mortality in Western Australia, 2005. Department of Health, Western Australia, Perth. Statistical Series Number 81.

## Appendix 2. Technical and miscellaneous information

### Appendix 2A. Glossary

#### General

AAR	Age-adjusted rate - rate resulting from age-standardisation using only a subset of the entire age range for cases and population, e.g. 0 - 15 years.
ABS	Australian Bureau of Statistics
ASR	Age-standardised rate per 100,000 persons ("World standard" population) (Segi 1960) <sup>a</sup>
ASPR	Age-specific rate per 100,000 persons in a specified age range
BCC	Basal cell carcinoma
CNS	Central Nervous system (meninges, brain, spinal cord, cranial nerves and pituitary gland)
DCO	Death certificate only
d/o	disorder
ICD-O	International Classification of Diseases for Oncology
LHN	Lymphohaematopoietic neoplasms (mainly lymphomas, leukaemias and myeloma)
LR	Lifetime (cumulative) risk (to a particular age, usually 75 years)
NMSC	Non-melanoma skin cancer
NOS	Not otherwise specified
PYLL	Person-years of life lost (before a particular age, usually 75 years)
SCC	Squamous cell carcinoma
SD	Standard deviation
U/S	Unspecified

#### Additional terms used in headings or cells of incidence and mortality tables:

95%c.i.	Statistical 95% confidence interval
Crude	Crude rate per 100,000 persons
Cum inc	Cumulative incidence (%) (before a particular age, usually 75 years)
Risk	Lifetime risk (usually to age 75; 1 in $n$ ). In some tables, "-" indicates no data, "*" indicates a risk of less than 1 in 1,000.
TD%	Percentage of diagnoses made on basis of tissue examination (histology, haematology or cytology).
<5	Case count between 1 and 4 inclusive
NR	Not Reported - an ASPR or a percentage based on a cell "<5"; or a case count suppressed so as to prevent calculation.

<sup>a</sup> Segi M (1960) *Cancer mortality for selected sites in 24 countries (1950-1957)*. Sendai, Japan, Tohoku University Press.

## Appendix 2B. Statistical methods and formulae

### Age groups

The basis for most statistics is a summation of cases by five-year age groups. Age groups are expressed in whole years, i.e. "10-14" means 10.0 to 14.99... years.

### Rates

Rates in this report are calculated separately for males and females and are expressed as cases per 100,000 person-years. (If one year's data are being analysed, this is equivalent to  $n$  cases per 100,000 population for that year.)

**Age-specific rates** are based on five-year age intervals and are calculated by dividing the numbers of cases by the population of the same sex and age group, over the relevant period.

**Crude rates** are calculated simply as the total cases divided by the total population over a wide age range; they are not suitable as a basis for comparison of rates in different areas if the age-structures of the populations differ.

**Age-standardised rates** (ASR in Tables) are calculated by the direct method<sup>a</sup> and represent a summation of weighted age-specific rates (weighting being determined by the relative proportion of the population in each age group compared with the proportion in the World Standard Population<sup>b</sup>). Weightings by other population standards can be used if requested.

The **standard deviation**, or Estimated Standard Error (ESE) is used as a measure of variability for rates in tables; an approximate 95% confidence interval for a rate is (rate  $\pm$  1.96 ESE).

#### *Formulae:*

$$\text{ASR} = 10^5 \times \sum_i r_i \times w_i; \quad \text{ESE} = 10^5 / W \times [ \sum_i \{ r_i \times (1 - r_i) \times w_i^2 / n_i \} ]^{1/2},$$

where  $w_i$  is the World Standard Population<sup>b</sup> for the  $i$ th age group,  $W = \sum_i w_i$  and  $\sum_i$  denotes summation over all (relevant) age groups.

**Subsets of the full age range:** where a subset of age groups is considered, the term **age-adjusted rate** is used instead of ASR, to indicate that standardisation has taken only the age groups of interest into account for both cases and population.

**Comparison of rates** between different areas may be done using indirect standardisation. In this process, for example, the State population and age-specific rates are used to calculate an expected number of cases in different areas, based on their populations; the observed and expected numbers are compared using the Standardised Incidence (or Mortality) Ratio and a 95% confidence interval.

<sup>a</sup> Rothman KJ (1986) *Modern epidemiology*. Little, Brown & Company, Boston.

<sup>b</sup> Segi M (1960) *Cancer mortality for selected sites in 24 countries (1950-1957)*. Sendai, Japan, Tohoku University Press.

## Cumulative Incidence and Cumulative Risk

The cumulative incidence of a condition (at a given age) is a measure of the proportion of all persons who have, by that age, been affected by the condition; the Registry calculates this for cancer incidence, and death due to cancer. Cumulative rates are calculated by summing the age-specific rates for specified five year age groups, and are expressed as percentages unless otherwise noted.

In general, a risk is derived from the cumulative rate and is interpreted as a "1 in  $n$ " chance of developing the disease, whereas cumulative rates are commonly presented as percentages affected. In Registry reports, risk is usually presented as cumulative risk derived from the cumulative risk for age groups 0-4 to 70-74. However, in tables restricted to age subgroups, risk is derived from the cumulative rate calculated for the age groups listed - e.g. 15-39 years, 40-64 years and 65 years and older.

The method for risk calculations assumes that the risks at the time of estimation remain the same throughout life, and does not account for the effects of death from other causes or interventions which may reduce the chances of a cancer diagnosis.

### Formulae:

The formulae for *CI* and *risk* are:

$$CI = \sum_i r_i \times 5 ; \quad Risk = 1 / (1 - e^{-CI}) .$$

## Person years of life lost

Person-years of life lost (PYLL) is an estimate of the number of years of life lost due to specific causes of death, and is calculated up to age 75 years, as an index of premature death. The calculations rely on the use of all-causes mortality data for the whole of Western Australia using the methods of Hakulinen and Teppo as presented in Holman *et al.* <sup>a</sup>

In this report the PYLL is calculated for age 0 to 74 years as a measure of premature death.

### Formulae:

For each cause of death, the PYLL lost for the  $i$ th five-year age group is given by:

$$S_i = 5 \times \{ \sum_{j=0, \dots, i-1} \{ d_j \times p_j^{1/2} \times P_{j+1, i} \times [ a_i \times (1 - p_i) + p_i ] + d_i \times (1 - a_i) \times (1 + p_i^{1/2}) / 2 \} \}$$

where  $a_i$  is the proportion of the  $i$ th five-year interval that a person dying during that interval lives, on average. The values used are 0.09, 0.46, 0.54, 0.57, 0.49, 0.50, 0.52, 0.54, 0.54, 0.54, 0.53, 0.52, 0.52, 0.52, 0.51, 0.51, 0.48, 0.45 for age groups 0-4, 5-9, ... ,85+,  $d_i$  is the number of deaths from the cause of death of interest in the  $i$ th age group,  $p_i$  is the probability of surviving the  $i$ th age interval after eliminating the cause of death of interest, and

$$P_{j+1, i} = \prod_{k=j+1, \dots, i-1} p_k \quad \text{for } j+1 < i, \quad \text{or } 1 \quad \text{for } j+1 = i .$$

The quantity  $p_i$  is calculated as -

$$p_i = \{ (1 - 5 \times a_i \times r_i) / (1 + 5 \times (1 - a_i) \times r_i) \}^{(D_i - d_i) / D_i}$$

where  $r_i$  is the death rate and  $D_i$  is the total number of deaths for the  $i$ th age group.

<sup>a</sup> Holman CDJ, Hatton WM, Armstrong BK, English DR (1987) *Cancer mortality trends in Australia, volume II, 1910 - 1984*. Health Department of Western Australia, Perth, Occasional Paper number 18.

## Appendix 2C. Populations and geographic areas

### Populations used for calculation of 2013 rates

Age	Males	(%)	Females	(%)	Total	(%)
0- 4	86368	6.8	82139	6.6	168507	6.7
5- 9	82127	6.4	78774	6.3	160901	6.4
10-14	77671	6.1	75266	6.0	152937	6.1
15-19	82568	6.5	77366	6.2	159934	6.3
20-24	96239	7.6	90124	7.2	186363	7.4
25-29	110895	8.7	100519	8.1	211414	8.4
30-34	99931	7.8	92815	7.5	192746	7.7
35-39	88560	7.0	85169	6.8	173729	6.9
40-44	95025	7.5	91227	7.3	186252	7.4
45-49	86094	6.8	83937	6.7	170031	6.7
50-54	83453	6.6	83097	6.7	166550	6.6
55-59	73762	5.8	73866	5.9	147628	5.9
60-64	64040	5.0	63933	5.1	127973	5.1
65-69	53103	4.2	52254	4.2	105357	4.2
70-74	36886	2.9	38061	3.1	74947	3.0
75-79	25945	2.0	29406	2.4	55351	2.2
80-84	17496	1.4	22939	1.8	40435	1.6
85 +	13632	1.1	24634	2.0	38266	1.5
<b>TOTAL</b>	<b>1273795</b>	<b>(100)</b>	<b>1245526</b>	<b>(100)</b>	<b>2519321</b>	<b>(100)</b>

(Data from Australian Bureau of Statistics via Epidemiology Branch, Dept of Health (WA), as collated by Resourcing & Performance Division, DoHWA.)

The Department of Health's area of responsibility is administered through two Area Health Services (AHS) (metropolitan) and the WA Country Health Service (WACHS), comprising seven Regions. Health Districts (HD) each lie entirely within an Area Health Service (AHS) or Health Region (HR). Arrangements vary, however data and population files are synchronised to ensure accurate calculation of incidence and mortality rates in this report.

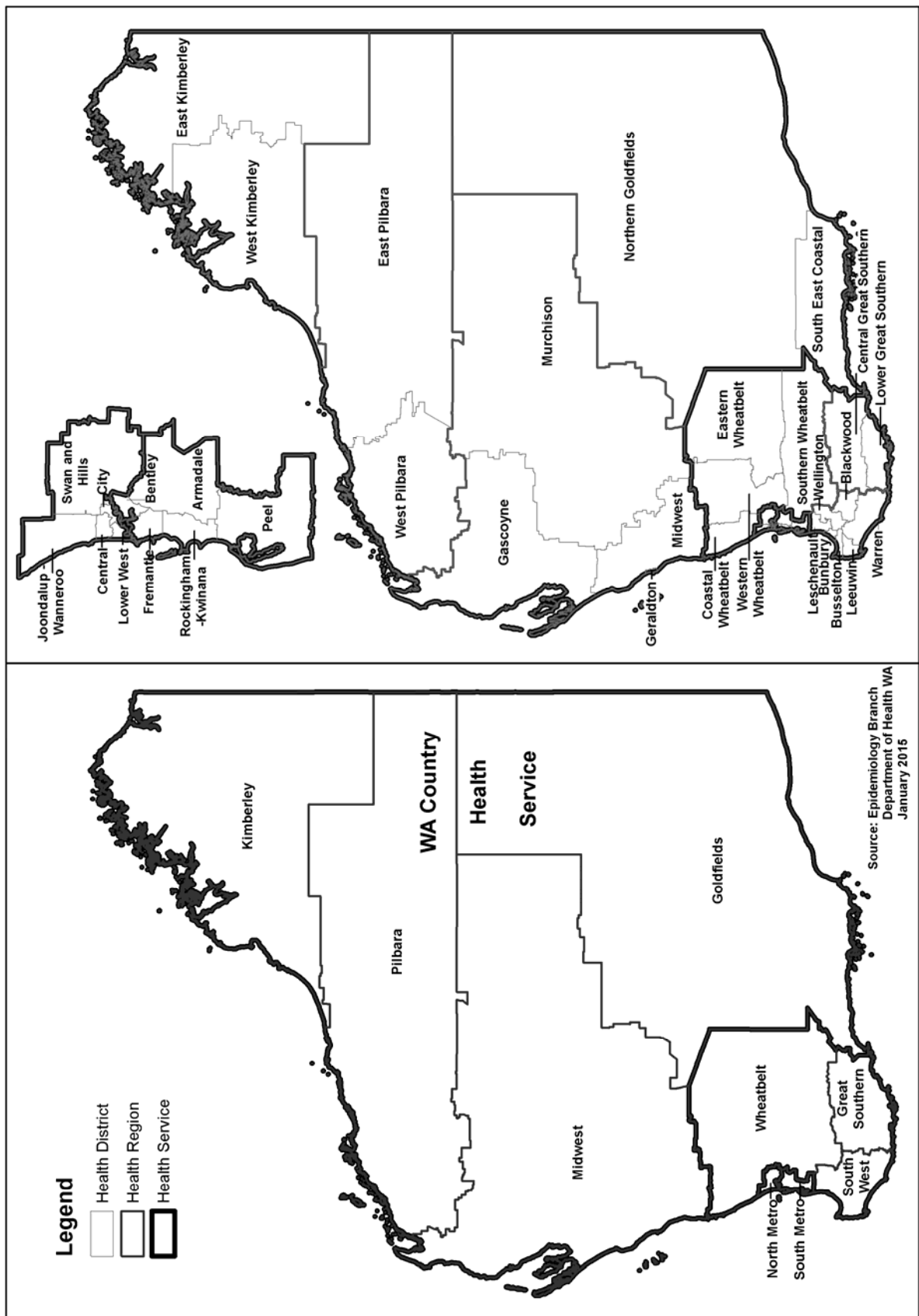
The table and maps below should assist comparison of boundaries and area names with those used previously. Changes since the Registry's last report include revision of North Metro AHS to include 5 Health Districts rather than 8; and boundaries are now based on the new ABS SA2 unit of area rather than on SLAs (Statistical Local Areas).

### Health District composition of Area Health Services and Regions as used for this Report

<b>CHS Kimberley HR</b>	<b>CHS Goldfields HR</b>	<b>North Metro AHS</b>
East Kimberley HD	Northern Goldfields HD	NMAHS Central HD
West Kimberley HD	South East Coastal HD	NMAHS Lower West HD
<b>CHS Pilbara HR</b>	<b>CHS Great Southern HR</b>	NMAHS Swan and Hills HD
East Pilbara HD	Central Great Southern HD	NMAHS Joondalup - Wanneroo HD
West Pilbara HD	Lower Great Southern HD	NMAHS City HD
<b>CHS Midwest HR</b>	<b>CHS South West HR</b>	<b>South Metro AHS</b>
Gascoyne HD	Blackwood HD	SMAHS Armadale HD
Geraldton HD	Bunbury HD	SMAHS Bentley HD
Midwest HD	Busselton HD	SMAHS Fremantle HD
Murchison HD	Leeuwin HD	SMAHS Peel HD
<b>CHS Wheatbelt HR</b>	Leschenault HD	SMAHS Rockingham-Kwinana HD
Coastal Wheatbelt HD	Warren HD	
Eastern Wheatbelt HD	Wellington HD	
Southern Wheatbelt HD		
Western Wheatbelt HD		

\* CHS - Country Health Service; AHS - Area Health Service

WA Area Health Service, Region and Health District boundaries



## Appendix 2D. Access to Registry information

Release of data may occur at a number of levels:

Summarised statistical information containing no means of identifying any individual patient, doctor, laboratory or hospital will be available for the purposes of general information and education.

More detailed statistical information, which may include "unit record" data files for analysis, but containing no means of identifying any individual patient, doctor, laboratory or hospital, may be released by the Principal Medical Officer.

Identified information will normally be made available to relevant Australian State or Territory Cancer Registries and to the Australian Institute of Health and Welfare, for the purposes of improving data quality and consistency. Data are released to the AIHW subject to a provision that any use of such identified data for other purposes is to be referred to this Registry for approval.

Special information pertaining to identified patients of a particular hospital or doctor may be released by the Principal Medical Officer to the Medical Superintendent of the hospital, or to the doctor, in response to a written request; such requests may be referred to the Department of Health (Western Australia)'s HREC if there is concern regarding the identification of individual service providers.

Applications for further information required for specific areas of research will be referred to the HREC which, subject to formal application, may approve the release of identified information to researchers.

The objectives and functions of the HREC include the following key points -

Objectives -

- Promote the ethical use of health information.
- Promote ethical standards of human research.
- Protect the welfare, rights and dignity of individuals.
- Facilitate ethical research through efficient and effective review processes.

Functions -

- To provide independent, competent and timely ethical review of projects involving the use and disclosure of personal health information and other research projects with respect to their ethical acceptability.
- To review projects involving personal health information and other research projects in accordance with the National Statement on Ethical Conduct in Human Research (National Statement) and the DOH Practice Code for the Use of Personal Health Information.
- To review projects requiring the use and disclosure of personal health information without consent.

The Committee's details and relevant documentation may be found at <http://www.health.wa.gov.au/healthdata/HREC/index.cfm>.



## Appendix 2E. Cancer codes

### (a) ICD-O Site codes

Codes(1)	Site/Topography	Codes	Site/Topography
C00 - C06	Lip, gum & mouth (excludes C01-C02)	C49	Connective, subcutaneous & other soft tissues
C01 - C02	Tongue	C50	Breast
C07	Parotid gland	C51	Vulva
C08	Salivary glands	C52	Vagina
C09 - C14	Pharynx (excludes C11)	C53	Cervix uteri
C11	Nasopharynx	C54	Corpus uteri (Uterus)
C15	Oesophagus	C55	Uterus, NOS (rarely used)
C16	Stomach	C56	Ovary
C17	Small intestine	C57	Uterine adnexa & other fem. genital
C18	Colon	C58	Placenta
C19 - C20	Rectosigmoid junction & rectum	C60	Penis
C21	Anus	C61	Prostate gland
C22	Liver & intrahepatic bile ducts	C62	Testis
C23 - C24	Gallbladder & bile ducts	C63	Male genital, other
C25	Pancreas	C64	Kidney (excludes renal pelvis C65)
C30 - C31	Nasal cavity & sinuses, middle & inner ear	C65 - C68	Bladder & urinary tract
C32	Larynx	C69	Eye & lacrimal gland
C33 - C34	Lung, bronchus & trachea	C70	Meninges (cerebral & spinal)
C37	Thymus	C71	Brain
C38	Pleura, heart & mediastinum	C72	Spinal cord & cranial nerves
C40 - C41	Bones, joints & articular cartilages	C73	Thyroid gland
C44	Skin	C74	Adrenal gland
C47	Nervous system, peripheral & autonomic	C75	Endocrine glands, other
C48	Retroperitoneum and peritoneum	C80	Unknown primary site

Notes: (1) Only 1st 3 characters shown. Groupings based on IARC rules governing the reporting of incident cancers for ICDO-3. Using these same rules, non-lymphohaematopoietic neoplasms of primary sites reported as C26 (Intestinal tract NOS), C39 (respiratory tract ill-defined / NOS), C42 (haematopoietic system), C76 (large body regions NOS) and C77 (lymph nodes) are tabulated as cancers of unknown primary site.

### (b) Morphology code groups for lymphohaematopoietic malignancies

The tabulation scheme for lymphohaematopoietic neoplasms (LHNs) used in previous WACR reports was based on a combination of groupings used in ICD-O, ICD9 and ICD10, which reflected, to varying degrees, previous well-accepted classification schemes such as the REAL and the Working Formulation. Increasingly, classification of such tumours as used by pathologists and clinicians has changed, and older headings have become somewhat irrelevant to modern medical practice.

The tabulation groupings used in this report are based on those used in the ICD-O-3 classification, which has been influenced by the WHO Classification of Haematopoietic and Lymphoid Neoplasms (2001). In the current report, group headings still retain terms such as lymphoma and leukaemia, for the sake of familiarity. While these names remain in the WHO scheme for individual conditions, group headings have in many cases been replaced by less-specific terms such as "B-Cell neoplasms" and "T-cell neoplasms" which may be unfamiliar to some users of Cancer Registry data. Depending on developments in this area (and on decisions made by other Registries, and by others who are concerned that cancer classification should be compatible with non-cancer disease classifications using ICD10), future reports may eventually follow the WHO classification scheme.

Since 2003, some conditions previously not regarded as malignant (e.g. polycythaemia and myelodysplastic diseases) are now included as "cancers".

## Revised multi-level tabulation scheme for reporting of malignant lymphohaematopoietic neoplasms (WACR 2003, updated 2011)

	WACR code	ICD-O-3 M codes
1 All lymphomas	Y**	
1a Lymphomas, NOS/unclassifiable	YUC	9590
1b Hodgkin lymphoma	YHO	9650-9667
1c All NHL	YN*	
1c1 NHL, mature B Cell	YNB	9670-9671, 9673, 9675, 9678-9680, 9684, 9687, 9689-9691, 9695, 9698-9699, 9766
1c2 NHL, mature T / NK cell	YNT	9700-9702, 9705, 9708-9709, 9714, 9716, 9717-9719
1c3 NHL, precursor cell lymphoblastic	YNP	9727-9729
1c4 NHL, other / unclassifiable	YNO	9591, 9596-9599*
1c1x NHL, Burkitt ( <i>subset of 1c1</i> )	YNBB	9687
2 Myeloma/Plasma Cell tumours	P*	9731-9734
3 All leukaemias	L**	
3a Leukaemias, NOS/unclassifiable	LUC	9800-9801, 9805
3b Leukaemias, lymphoid, all	LL*	
3b1 Leukaemias, lymphoid, acute	LLA	9836-9837
3b2 Leukaemias, lymphoid, chronic	LLC	9823
3b3 Leukaemias, lymphoid, other/NOS	LLO	9820, 9826, 9827, 9831-9834
3c Leukaemias, myeloid, all	LM*	
3c1 Leukaemias, myeloid, acute	LMA	9840, 9861, 9866-9867, 9870-9874, 9891, 9895-9897, 9910, 9920, 9930-9931
3c2 Leukaemias, myeloid, chronic	LMC	9863, 9875-9876
3c3 Leukaemias, myeloid, other/NOS	LMO	9860
3d Other leukaemias	LOT	9940, 9945-9946, 9948
4 Other lymphohaematopoietic malignancies		
4a Myelodysplastic diseases, all	HM*	
4a1 Refractory anaemias/cytopaenias	HMR	9980-9985
4a2 Myelodysplastic syndromes	HMS	9986-9989
4b Chronic myeloproliferative diseases, all	HC*	
4b1 Chronic MPD, NOS	HCX	9960
4b2 Polycythaemia rubra vera	HCP	9950
4b3 Myelofibrosis/sclerosis	HCS	9961
4b4 Other chronic MPDs	HCO	9962-9964
4c Other immunoproliferative malignancies	HI*	
4c1 Mast cell tumours	HIM	9740-9742
4c2 Malignant histiocytic/dendritic cell neoplasms	HIH	9750, 9754-9758
4c3 Other & unspecified immunoproliferative neoplasms	HII	9760-9764

\*9597, \*9598 and \*9599 are WACR codes for "NOS" NHL which are able to be grouped as low, intermediate or high grade respectively but which could only be otherwise placed in the ICD-O classification as code 9591.

## Appendix 2F. WACR publications since 1996

*Note: It is strongly recommended that retrospective studies utilise time-series that have been produced using updated versions of historical data, available from the Registry; and that figures from old reports not be used for such purposes. However, various topics of interest may be found in previous publications listed here.*

Threlfall T, Morgan A (1996) *Malignant mesothelioma in Western Australia, 1960 to 1994*. Health Department of Western Australia, Perth, Statistical Series number 46.

Threlfall TJ (1997) *Cancer incidence and mortality projections for Western Australia, 1996-2001*. Health Department of Western Australia, Perth, Statistical Series number 50.

Threlfall TJ, Thompson JR (1997) *Cancer incidence and mortality in Western Australia, 1995*. Health Department of Western Australia, Perth, Statistical Series number 51.

Threlfall TJ, Thompson JR (1998) *Cancer incidence and mortality in Western Australia, 1996*. Health Department of Western Australia, Perth, Statistical Series number 55.

Threlfall TJ, Thompson JR (1999) *Cancer incidence and mortality in Western Australia, 1997*. Health Department of Western Australia, Perth, Statistical Series number 57.

Threlfall TJ, Brameld K (2000) *Cancer survival in Western Australian residents, 1982-1997*. Health Department of Western Australia, Perth, Statistical Series number 60.

Threlfall TJ, Thompson JR (2000) *Cancer incidence and mortality in Western Australia, 1998*. Health Department of Western Australia, Perth, Statistical Series number 61.

Threlfall TJ, Thompson JR (2002) *Cancer incidence and mortality in Western Australia, 1999 and 2000*. Health Department of Western Australia, Perth, Statistical Series number 65.

Threlfall TJ, Thompson JR (2003) *Cancer incidence and mortality in Western Australia, 2001*. Health Department of Western Australia, Perth, Statistical Series number 68.

Threlfall TJ, Thompson JR (2004) *Cancer incidence and mortality in Western Australia, 2002*. Department of Health, Western Australia, Perth. Statistical series number 71.

Threlfall TJ, Thompson JR, Olsen N (2005). *Cancer in Western Australia: Incidence and mortality 2003 and Mesothelioma 1960-2003*. Department of Health, Western Australia, Perth. Statistical series number 74.

Threlfall TJ, Thompson JR (2006). *Cancer incidence and mortality in Western Australia, 2004*. Department of Health, Western Australia, Perth. Statistical series number 76.

Threlfall TJ, Thompson JR (2007). *Cancer incidence and mortality in Western Australia, 2005*. Department of Health, Western Australia, Perth. Statistical Series Number 81.

Threlfall TJ, Thompson JR (2007). *Cancer incidence and mortality in Western Australia, 2006*. Department of Health, Western Australia, Perth. Statistical Series Number 82.

Threlfall TJ, Thompson JR (2009). *Cancer incidence and mortality in Western Australia, 2007*. Department of Health, Western Australia, Perth. Statistical series number 86.

Threlfall TJ, Thompson JR (2010). *Cancer incidence and mortality in Western Australia, 2008*. Department of Health, Western Australia, Perth. Statistical series number 87.

Threlfall TJ, Thompson JR (2011). *Cancer incidence and mortality in Western Australia, 2009*. Department of Health, Western Australia, Perth. Statistical series number 91.

Threlfall TJ, Thompson JR (2012). *Cancer incidence and mortality in Western Australia, 2010*. Department of Health, Western Australia, Perth. Statistical series number 94.

Threlfall TJ, Thompson JR (2013). *Cancer incidence and mortality in Western Australia, 2011*. Department of Health, Western Australia, Perth. Statistical series number 97.

Threlfall TJ, Thompson JR (2014). *Cancer incidence and mortality in Western Australia, 2012*. Department of Health, Western Australia, Perth. Statistical series number 99.

## Appendix 2G. Guide to tables in Appendix 3

**Note:** The order of cancer types in the tables in Appendix 2E is the basis for the wide-format incidence and mortality tables in Appendix 3.

### Terms and formatting

Terms used in table headings are explained under "Statistical methods" (Section 1.4) and abbreviations repeated in Appendix 2A.

Age groups are expressed in whole years, i.e. "10-14" means 10.0 to 14.99... years.

For most cancers in the wide-format tables which follow, there are 2 rows for each sex. The upper one contains total cases, ASR, 95% confidence interval, risk and other summary statistics.

Under the headings for individual age groups, the upper rows also contain counts (cases or deaths) in whole numbers.

The numbers (1 decimal place) shown in the lower rows for each sex are age-specific rates per 100,000 for the relevant age group.

The larger, wide-format tables e.g. Appendices 3A, B and C, contain some sections which are summaries of others within the tables (e.g. "All Lymphomas"), hence the summation of case numbers or rates over all rows of the tables will not match the totals at the end of each table, which were calculated separately.

### Order of cancer types within tables

In general, tables follow the order of cancer types as listed in **Appendix 2E**, with site-specific cancers listed first, then lymphohaematopoietic malignancies - lymphomas, myeloma, mast cell tumours, miscellaneous immunoproliferative tumours, then leukaemias - followed by the Unknown Primary Site and Total Cancers groups.

**Note:** The **mortality** appendix table includes deaths due to **all** non-melanoma skin cancers (NMSC), some of which are **not** listed in the Incidence tables. Some NMSC, such as Merkel cell or sweat gland carcinomas, are included in incidence statistics in this report, but these do **NOT** include basal cell carcinoma or squamous cell carcinoma (ICD-O-3 morphology codes 8050 - 8110).

### - Notes -

**Appendix 3A** now contains an incidence data summary for the most common cancer types on page A3-10.

In **Appendix 3B**, the "Total deaths due to cancer" appears on page A3-19. The "Total deaths (cancer and non-cancer) of Cancer Registry cases" on page A3-20 includes non-cancer and all other deaths in persons with a valid WA tumour record.

### Appendix 3A. Cancer incidence, Western Australia, 2013

(age-based case counts and aspr/100,000, and total-population ASR, by sex)

Age	0-4	5-9	10-14	15-19	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 + w/k	Total	ASR	95% c.i.	TD%	CumInc	Risk	ASR2	
<b>Lip, gum &amp; mouth (C000-C069) (not C01 C02)</b>																										
M	5	<5	<5	6	13	16	8	13	13	12	8	<5	8	<5	8	<5	8	<5	105	6.0	4.8-7.2	99.0	0.6	155	8.3 (6.7-9.9)	
F	4.5	<5	<5	6.3	15.1	19.2	10.8	20.3	22.6	21.7	NR	NR	45.7	NR	NR	NR	NR	NR	52	2.5	1.8-3.2	100.0	0.3	373	3.9 (2.8-5.0)	
<b>Tongue (C010-C029)</b>																										
M				7	<5	11	11	11	6	7	<5	<5	<5	<5	<5	<5	<5	<5	50	2.9	2.1-3.7	96.0	0.4	266	3.8 (2.8-4.9)	
F	<5	NR	NR	8.1	NR	14.9	17.2	11.3	19.0	NR	NR	NR	NR	NR	NR	NR	NR	NR	24	1.2	0.7-1.7	100.0	0.1	709	1.8 (1.1-2.6)	
<b>Parotid gland (C070-C079)</b>																										
M				<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	12	0.6	0.2-0.9	92.0	0.1	1237	1.0 (0.4-1.6)	
F	<5	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	11	0.6	0.2-1.0	91.0	0.1	1552	0.8 (0.3-1.3)	
<b>Major salivary glands (not parotid) (C080-C089)</b>																										
M				<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	0-0.3	100.0	0.0	9168	0.2 (0-0.4)	
F	<5	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	<5	0.2	0-0.5	100.0	0.0	6126	0.2 (0-0.5)	
<b>Pharynx (C090-C149) (not C11)</b>																										
M				<5	<5	11	21	17	17	<5	7	<5	<5	<5	<5	<5	<5	<5	71	4.1	3.2-5.1	97.0	0.5	192	5.3 (4.1-6.6)	
F	<5	NR	NR	NR	NR	13.2	28.5	26.5	NR	19.0	NR	NR	NR	NR	NR	NR	NR	NR	15	0.8	0.4-1.2	100.0	0.1	1232	1.1 (0.5-1.7)	
<b>Nasopharynx (C110-C119)</b>																										
M	<5	NR	NR	<5	<5	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	6	0.4	0.1-0.7	100.0	0.0	3558	0.5 (0.1-0.9)	
F	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	<5	0.2	0-0.4	100.0	0.0	3710	0.2 (0-0.4)	
<b>Oesophagus (C150-C159)</b>																										
M	<5	NR	NR	<5	9	15	17	11	11	14	14	14	7	6	6	6	6	6	96	5.0	4.0-6.0	98.0	0.6	174	7.8 (6.2-9.4)	
F	NR	NR	NR	5.8	10.8	20.3	26.5	20.7	29.8	54.0	40.0	44.0	44.0	44.0	44.0	44.0	44.0	44.0	24	1.1	0.6-1.5	100.0	0.1	804	1.8 (1.1-2.5)	
<b>Stomach (C160-C169)</b>																										
M	<5	NR	NR	5	7	10	24	22	16	25	16	14	14	14	14	14	14	14	143	7.1	5.9-8.3	97.0	0.8	130	12.0 (10.0-14.0)	
F	<5	NR	NR	5.3	NR	8.4	13.6	37.5	41.4	43.4	96.4	91.4	102.7	102.7	102.7	102.7	102.7	102.7	55	2.6	1.8-3.3	96.0	0.3	358	4.2 (3.1-5.3)	
<b>Small intestine (C170-C179)</b>																										
M	<5	NR	NR	5	<5	<5	5	5	<5	6	<5	<5	<5	<5	<5	<5	<5	<5	30	1.6	1.0-2.2	97.0	0.2	497	2.5 (1.6-3.4)	
F	<5	NR	NR	5.8	NR	NR	7.8	NR	16.3	NR	NR	NR	NR	NR	NR	NR	NR	NR	23	1.1	0.6-1.5	100.0	0.1	755	1.6 (1.0-2.3)	



### Appendix 3A. Cancer incidence, Western Australia, 2013

(age-based case counts and aspr/100,000, and total-population ASR, by sex)

Age	0-4	5-9	10-14	15-19	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 + wk	Total	ASR	95% c.i.	TD%	CumInc	Risk	ASR2		
<b>Lung, bronchus &amp; trachea (C330-C349)</b>																											
M	<5	<5	<5	<5	<5	24	47	57	98	96	91	80	66	578	27.9	25.5-30.2	87.0	3.2	31	49.4	(45.3-53.4)						
F	NR	NR	NR	NR	NR	8.1	28.8	63.7	89.0	184.5	260.3	350.7	457.2	484.2	422	19.4	17.5-21.4	86.0	2.4	43	31.8	(28.7-34.9)					
<b>Thymus (C370-C379)</b>																											
M	<5	<5	<5	<5	<5	NR	NR	<5	<5	<5	<5	<5	<5	<5	0.2	0 - 0.4	100.0	0.0	3996	0.2	(0 - 0.4)						
F	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	0												
<b>Pleura, heart &amp; mediastinum (C380-C389)</b>																											
M	<5	<5	<5	<5	<5	NR	NR	<5	<5	<5	<5	<5	<5	NR	0.3	0 - 0.6	60.0	0.0	8489	0.3	(0.1-0.9)						
F	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	<5	0.1	0 - 0.2	100.0	0.0	*	0.1	(0 - 0.3)					
<b>Bones, joints &amp; articular cartilages (C400-C419)</b>																											
M	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	11	0.7	0.3-1.2	100.0	0.1	1337	0.7	(0.4-1.4)					
F	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	12	1.1	0.4-1.7	100.0	0.1	1214	1.1	(0.4-1.5)					
<b>Skin (melanoma only) (C440-C449; M-8720 - 8790)</b>																											
M	<5	<5	8	11	22	42	46	55	79	89	87	83	78	65	62	734	38.9	36.0-41.8	99.0	4.2	24	60.5	(56.1-64.9)				
F	NR	NR	5.2	7.2	11.0	24.8	44.2	53.4	65.9	107.1	139.0	163.8	225.0	300.6	371.5	454.8	498	26.5	24.0-28.9	100.0	2.9	35	38.2	(34.8-41.6)			
<b>Skin (not melanoma) (SCC/BCC) (C440-C449)</b>																											
M	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	88	4.1	3.2-4.9	81.0	0.4	268	7.8	(6.1-9.4)
F	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	45	1.8	1.2-2.3	51.0	0.2	533	3.2	(2.3-4.2)
<b>Mesothelioma (M905; ICD10 C45)</b>																											
M	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	80	3.8	2.9-4.6	98.0	0.5	211	7.2	(5.6-8.7)
F	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	14	0.7	0.3-1.1	100.0	0.1	1095	1.0	(0.5-1.5)
<b>Kaposi sarcoma (M914; ICD10 C46)</b>																											
M	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	0.2	0 - 0.4	100.0	0.0	5284	0.2	(0 - 0.4)
F	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	0							
<b>Nervous system, peripheral/autonomic (C470-C479)</b>																											
M	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	5	0.3	0.0-0.6	100.0	0.0	2178	0.3	(0.0-0.7)					
F	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	<5	0.0	0 - 0.1	100.0	0.0	*	0.1	(0 - 0.3)					





### Appendix 3A. Cancer incidence, Western Australia, 2013

(age-based case counts and aspr/100,000, and total-population ASR, by sex)

Age	0-4	5-9	10-14	15-19	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 +	Total	ASR	95% c.i.	TD%	CumInc	Risk	ASR2
Other male genital (C630-C639)																									
M	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	0-0.2	100.0	0.0	*	0.2 (0-0.5)
Kidney (C640-C649)																									
M	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	0-0.2	100.0	0.0	*	0.2 (0-0.5)
F	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	9.7-12.9	97.0	1.4	74	16.1 (13.9-18.3)
Bladder & urinary tract (C650-C689)																									
M	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	4.7-7.0	93.0	0.7	146	8.1 (6.5-9.6)
F	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	1.7-2.9	95.0	0.3	368	4.6 (3.5-5.8)
Eye & lacrimal gland (C690-C699)																									
M	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	0.2-1.0	89.0	0.1	1522	0.7 (0.2-1.1)
F	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	0-0.2	50.0	0.0	*	0.2 (0-0.4)
Meninges (cerebral & spinal) (C700-C709)																									
M	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	0-0.2	100.0	0.0	*	0.2 (0-0.4)
F	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	0				0
Brain (C710-C719)																									
M	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	4.7-7.2	91.0	0.6	165	7.7 (6.2-9.3)
F	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	2.8-4.8	75.0	0.4	280	5.2 (3.9-6.4)
Spinal cord & cranial nerves (C720-C729)																									
M	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	0-0.6	75.0	0.0	3399	0.3 (0.0-0.6)
F	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	0-0.4	100.0	0.0	6169	0.2 (0-0.4)
Thyroid gland (C730-C739)																									
M	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	3.5-5.6	100.0	0.5	195	5.6 (4.3-6.8)
F	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	11.0-14.6	99.0	1.2	82	16.3 (14.0-18.5)
Adrenal gland (C740-C749)																									
M	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	0.0-1.1	100.0	0.0	4319	0.3 (0.0-0.6)
F	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	0-0.7	100.0	0.0	5208	0.2 (0-0.5)
Endocrine glands (not adrenal) (C750-C759)																									
M	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	0-0.4	50.0	0.0	8046	0.2 (0-0.4)
F	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	0				0

### Appendix 3A. Cancer incidence, Western Australia, 2013 (age-based case counts and aspr/100,000, and total-population ASR, by sex)

Age	0-4	5-9	10-14	15-19	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 +	Total	ASR	95% c.i.	TD%	CumInc	Risk	ASR2	
<b>LYMPHOMAS</b>																										
Lymphoma, NOS / unclassifiable																										
M																				NR	0.3	0.0-0.6	80.0	0.0	4651	0.4 (0.0-0.8)
F																				6	0.2	0.0-0.4	67.0	0.0	6121	0.4 (0.1-0.7)
Hodgkin lymphoma																										
M																				NR	1.8	1.0-2.5	92.0	0.1	695	2.1 (1.3-2.9)
F																				27	2.0	1.2-2.7	100.0	0.2	614	2.2 (1.3-3.0)
All NHL																										
M																				287	15.7	13.8-17.6	100.0	1.8	56	23.3 (20.6-26.0)
F																				194	9.9	8.4-11.3	98.0	1.1	95	14.7 (12.6-16.8)
NHL, mature B cell																										
M																				213	11.5	10.0-13.1	100.0	1.4	75	17.2 (14.9-19.5)
F																				148	7.7	6.4-9.0	100.0	0.8	119	11.2 (9.4-13.0)
NHL, mature T/NK cell																										
M																				22	1.2	0.7-1.7	100.0	0.2	576	1.7 (1.0-2.4)
F																				16	0.9	0.5-1.4	100.0	0.1	945	1.2 (0.6-1.8)
NHL, precursor cell lymphoblastic																										
M																				NR	0.5	0.0-0.9	100.0	0.0	3762	0.4 (0.0-0.7)
F																				0						
NHL, other/unclassifiable																										
M																				47	2.4	1.7-3.2	100.0	0.2	411	4.1 (2.9-5.2)
F																				30	1.3	0.8-1.7	87.0	0.1	935	2.3 (1.5-3.1)
Lymphomas (all)																										
M																				318	17.8	15.7-19.8	99.0	2.0	52	25.8 (22.9-28.6)
F																				227	12.0	10.3-13.7	97.0	1.2	81	17.3 (15.0-19.5)
<b>MYELOMA</b>																										
Myeloma/plasma cell tumours																										
M																				85	4.2	3.3-5.1	94.0	0.5	222	7.2 (5.6-8.7)
F																				84	3.9	3.0-4.8	99.0	0.5	212	6.5 (5.1-7.9)

### Appendix 3A. Cancer incidence, Western Australia, 2013

(age-based case counts and aspr/100,000, and total-population ASR, by sex)

Age	0-4	5-9	10-14	15-19	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 +	Total	ASR	95% c.i.	TD%	CumInc	Risk	ASR2	
<b>LEUKAEMIAS</b>																										
Leukaemias, NOS/unclassifiable																										
M																										
F																										
Leukaemias, lymphoid, all																										
M																										
F																										
Leukaemias, lymphoid, acute																										
M																										
F																										
Leukaemias, lymphoid, chronic																										
M																										
F																										
Leukaemias, myeloid, other/NOS																										
M																										
F																										
Leukaemias, myeloid, all																										
M																										
F																										
Leukaemias, myeloid, acute																										
M																										
F																										
Leukaemias, myeloid, chronic																										
M																										
F																										
Leukaemias, myeloid, other/NOS																										
M																										
F																										

### Appendix 3A. Cancer incidence, Western Australia, 2013 (age-based case counts and aspr/100,000, and total-population ASR, by sex)

Age	0-4	5-9	10-14	15-19	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 +	Total	ASR	95% c.i.	TD%	CumInc	Risk	ASR2	
Leukaemias, other																										
M																				<5	0.1	0 - 0.2	100.0	0.0	*	0.1 (0 - 0.2)
F																				NR						
Leukaemias (all)																										
M	8		<5	<5	<5	<5	<5	14	14	9	15	23	21	20	23	15			169	9.5	7.9-11.0	99.0	0.9	108	14.3 (12.1-16.4)	
F	9.3		NR	NR	NR	NR	16.8	12.2	23.4	43.3	56.9	77.1	131.5	110.0					120	6.8	5.4-8.2	100.0	0.6	159	9.3 (7.6-11.0)	
MYELODYSPLASTIC DISEASES																										
Refractory anaemias/cytopaenias																										
M	<5	<5																	34	1.6	1.0-2.3	100.0	0.1	743	3.0 (2.0-4.0)	
F	NR	NR																	14	0.5	0.2-0.8	100.0	0.0	2312	1.0 (0.5-1.6)	
Myelodysplastic syndromes																										
M																			26	1.1	0.6-1.5	92.0	0.1	1979	2.4 (1.5-3.4)	
F																			17	0.6	0.3-1.0	94.0	0.1	1687	1.2 (0.6-1.8)	
Myelodysplastic diseases, all																										
M	<5	<5																	60	2.7	2.0-3.5	97.0	0.2	541	5.5 (4.1-6.8)	
F	NR	NR																	31	1.2	0.7-1.6	97.0	0.1	976	2.2 (1.4-3.0)	
CHRONIC MYELOPROLIFERATIVE DISEASES																										
Chronic myeloproliferative disorder, NOS																										
M																			<5	0.1	0 - 0.2	0.0	0.0	7378	0.1 (0 - 0.3)	
F																			<5	0.1	0 - 0.2	100.0	0.0	*	0.1 (0 - 0.3)	
Polycythaemia rubra vera																										
M																			8	0.4	0.1-0.8	100.0	0.0	2820	0.7 (0.2-1.2)	
F																			<5	0.2	0 - 0.3	100.0	0.0	7227	0.2 (0 - 0.5)	
Myelofibrosis/sclerosis																										
M																			5	0.2	0.0-0.4	100.0	0.0	6176	0.4 (0.0-0.8)	
F																			NR	0.3	0.0-0.5	100.0	0.0	4853	0.4 (0.1-0.8)	
Other chronic myeloproliferative d/o																										
M																			NR	0.3	0.1-0.6	100.0	0.0	3668	0.5 (0.1-0.9)	
F																			10	0.7	0.2-1.2	100.0	0.1	1553	0.8 (0.3-1.3)	

### Appendix 3A. Cancer incidence, Western Australia, 2013

(age-based case counts and aspr/100,000, and total-population ASR, by sex)

Age	0-4	5-9	10-14	15-19	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 + w/k	Total	ASR	95% c.i.	TD%	Cuminc	Risk	ASR2	
Chronic myeloproliferative d/o, all																										
M	<5	NR	<5	NR	NR	NR	<5	NR	NR	NR	NR	<5	NR	NR	NR	NR	NR	NR	NR	20	1.0	0.6-1.5	95.0	0.1	1082	1.7 (1.0-2.5)
F	<5	NR	<5	NR	NR	NR	<5	NR	NR	NR	NR	<5	NR	NR	NR	NR	NR	NR	NR	21	1.2	0.6-1.8	100.0	0.1	923	1.6 (0.9-2.3)
<b>OTHER CHRONIC IMMUNOPROLIFERATIVE DISEASES</b>																										
Mast cell tumours																										
M	<5	NR	<5	NR	NR	NR	<5	NR	NR	NR	NR	<5	NR	NR	NR	NR	NR	NR	NR	<5	0.1	0 - 0.2	100.0	0.0	*	0.1 (0 - 0.2)
F	<5	NR	<5	NR	NR	NR	<5	NR	NR	NR	NR	<5	NR	NR	NR	NR	NR	NR	NR	0						
Histiocytic/dendritic cell malignancies																										
M	<5	NR	<5	NR	NR	NR	<5	NR	NR	NR	NR	<5	NR	NR	NR	NR	NR	NR	NR	<5	0.1	0 - 0.2	100.0	0.0	*	0.1 (0 - 0.2)
F	<5	NR	<5	NR	NR	NR	<5	NR	NR	NR	NR	<5	NR	NR	NR	NR	NR	NR	NR	0						
Other & U/S immunoproliferative neoplasms																										
M	<5	NR	<5	NR	NR	NR	<5	NR	NR	NR	NR	<5	NR	NR	NR	NR	NR	NR	NR	6	0.3	0.1-0.6	100.0	0.0	2993	0.5 (0.1-0.9)
F	<5	NR	<5	NR	NR	NR	<5	NR	NR	NR	NR	<5	NR	NR	NR	NR	NR	NR	NR	<5	0.1	0 - 0.2	100.0	0.0	*	0.2 (0 - 0.4)
Other chronic immunoproliferative d/o, all																										
M	<5	NR	<5	NR	NR	NR	<5	NR	NR	NR	NR	<5	NR	NR	NR	NR	NR	NR	NR	8	0.4	0.1-0.7	100.0	0.1	1975	0.6 (0.2-1.0)
F	<5	NR	<5	NR	NR	NR	<5	NR	NR	NR	NR	<5	NR	NR	NR	NR	NR	NR	NR	<5	0.1	0 - 0.2	100.0	0.0	*	0.2 (0 - 0.4)
Unknown primary site (C26, C39, C76, C80; Behaviour 6/9)																										
M	<5	NR	<5	NR	NR	NR	<5	NR	NR	NR	NR	<5	NR	NR	NR	NR	NR	NR	NR	125	5.7	4.7-6.8	74.0	0.5	205	11.1 (9.1-13.1)
F	<5	NR	<5	NR	NR	NR	<5	NR	NR	NR	NR	<5	NR	NR	NR	NR	NR	NR	NR	122	4.3	3.5-5.2	52.0	0.3	297	8.4 (6.9-9.9)
<b>All cancers</b>																										
M	27	7	7	22	27	57	68	77	152	255	445	689	949	1138	905	768	574	482	6649	351.2	343-360	95.0	41.6	3	541.8 (529-555)	
	31.3	8.5	9.0	26.6	28.1	51.4	68.0	86.9	160.0	296.2	533.2	934.1	1481.9	2143	2454	2960	3281	3536								
F	9	8	17	22	23	65	92	162	292	357	462	524	532	616	490	540	409	474	5094	263.7	256-271	94.0	28.8	4	386.5 (376-397)	
	11.0	10.2	22.6	28.4	25.5	64.7	99.1	190.2	320.1	425.3	556.0	709.4	832.1	1179	1287	1836	1783	1924								



### Appendix 3B. Cancer mortality, Western Australia, 2013

(age-based case counts and aspr/100,000, and total-population ASR, by sex)

Age	0-4	5-9	10-14	15-19	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+	Total	ASR	95% c.i.	PYLL	CumInc	Risk	ASR2	
Lip, gum & mouth (C000-C069) (not C01 C02)																										
M																										
F																										
Tongue (C010-C029)																										
M																										
F																										
Parotid gland (C070-C079)																										
M																										
F																										
Major salivary glands (not parotid) (C080-C089)																										
M																										
F																										
Pharynx (C090-C149) (not C11)																										
M																										
F																										
Nasopharynx (C110-C119)																										
M																										
F																										
Oesophagus (C150-C159)																										
M																										
F																										
Stomach (C160-C169)																										
M																										
F																										
Small intestine (C170-C179)																										
M																										
F																										





### Appendix 3B. Cancer mortality, Western Australia, 2013

(age-based case counts and aspr/100,000, and total-population ASR, by sex)

Age	0-4	5-9	10-14	15-19	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+	Total	ASR	95% c.i.	PYLL	CumInc	Risk	ASR2		
<b>Lung, bronchus &amp; trachea (C330-C349)</b>																											
M	<5	<5	<5	<5	<5	<5	<5	47	78	64	81	77	60	455	21.2	19.2-23.3	2264.3	2.3	44	39.5	(35.8-43.1)						
F	NR	NR	15.6	35.2	73.4	146.9	173.5	312.2	440.1	440.1	440.1	440.1	440.1	333	14.4	12.7-16.0	1950.7	1.7	60	24.6	(21.9-27.3)						
<b>Thymus (C370-C379)</b>																											
M	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	0.1	0-0.3	18.6	0.0	4918	0.3	(0-0.6)	
F	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	0.1	0-0.3	26.1	0.0	*	0.2	(0-0.4)	
<b>Pleura, heart &amp; mediastinum (C380-C389)</b>																											
M	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	0.0	0-0.1	0.0	0.0	*	0.1	(0-0.3)	
F	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	0.0	0-0.1	0.0	0.0	*	0.1	(0-0.2)	
<b>Bones, joints &amp; articular cartilages (C400-C419)</b>																											
M	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	8	0.5	0.1-0.9	141.0	0.1	1973	0.7	(0.2-1.1)
F	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	0.1	0-0.2	11.9	0.0	*	0.1	(0-0.2)
<b>Skin (melanoma only) (C430-C439)</b>																											
M	<5	<5	6	8	16	10	12	11	21	20	20	20	20	109	5.1	4.1-6.1	699.9	0.5	201	9.4	(7.6-11.2)						
F	NR	NR	7.2	10.8	25.0	18.8	32.5	42.4	120.0	146.7	146.7	146.7	146.7	49	2.1	1.5-2.8	407.7	0.2	451	3.6	(2.6-4.7)						
<b>Skin (non-melanoma; includes SCC-BCC) (C440-C449)</b>																											
M	<5	<5	<5	<5	<5	6	10	8	10	18	18	18	18	61	2.7	2.0-3.4	221.3	0.3	393	5.5	(4.1-6.9)						
F	NR	NR	NR	NR	NR	11.3	27.1	30.8	57.2	132.0	132.0	132.0	132.0	25	0.7	0.4-1.0	33.4	0.0	2448	1.6	(1.0-2.3)						
<b>Mesothelioma (M905; ICD10 C45)</b>																											
M	<5	<5	<5	<5	12	23	24	15	15	11	11	11	11	102	4.9	3.9-5.9	409.1	0.6	155	8.7	(7.0-10.4)						
F	NR	NR	NR	NR	18.7	43.3	65.1	57.8	85.7	80.7	80.7	80.7	80.7	16	0.8	0.4-1.1	85.9	0.1	1056	1.2	(0.6-1.8)						
<b>Kaposi sarcoma (M914; ICD10 C46)</b>																											
M	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	0.0	0-0.1	0.0	0.0	*	0.1	(0-0.3)	
F	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	0	0	0	0	0	0	0	0	0	0	0	0	0	
<b>Nervous system, peripheral/autonomic (C470-C479)</b>																											
M	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	0.1	0-0.2	11.6	0.0	*	0.1	(0-0.2)	
F	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	0	0	0	0	0	0	0	0	0	0	0	0	0	

### Appendix 3B. Cancer mortality, Western Australia, 2013 (age-based case counts and aspr/100,000, and total-population ASR, by sex)

Age	0-4	5-9	10-14	15-19	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+	Total	ASR	95% c.i.	PYLL	CumInc	Risk	ASR2	
Retroperitoneum and peritoneum (C480-C489)																										
M																				<5	0.1	0-0.3	11.6	0.0	*	0.3 (0-0.6)
F																				5	0.3	0.0-0.5	50.0	0.0	2100	0.4 (0.0-0.7)
Connective, subcutaneous & other soft tissues (C490-C499)																										
M																				14	0.7	0.3-1.1	148.3	0.1	1286	1.1 (0.5-1.7)
F																				NR	0.7	0.2-1.1	264.9	0.0	2254	0.7 (0.2-1.2)
Breast (C500-C509)																										
M																				<5	0.1	0-0.1	0.0	0.0	*	0.2 (0-0.5)
F																				256	12.2	10.6-13.8	2575.5	1.3	75	18.8 (16.5-21.1)
Vulva (C510-C519)																										
F																				9	0.3	0.1-0.5	40.4	0.0	3858	0.7 (0.2-1.1)
Vagina (C520-C529)																										
F																				6	0.2	0.0-0.4	52.3	0.0	8698	0.4 (0.1-0.7)
Cervix uteri (C530-C539)																										
F																				22	1.3	0.7-1.8	410.4	0.1	804	1.7 (1.0-2.4)
Corpus uteri (C540-C549)																										
F																				49	2.0	1.4-2.7	255.1	0.2	438	3.6 (2.6-4.6)
Uterus, nos (C550-C559)																										
F																				0					-	
Ovary (C560-C569)																										
F																				78	3.2	2.5-4.0	448.3	0.4	285	5.8 (4.5-7.1)
Uterine adnexa & oth. fem gen. (C570-C579)																										
F																				NR	0.2	0.0-0.5	49.9	0.0	4486	0.4 (0.0-0.7)
Placenta (C580-C589)																										
F																				0					-	
Penis (C600-C609)																										
M																				0					-	
Prostate gland (C610-C619)																										
M																				221	9.0	7.8-10.2	445.6	0.6	168	20.6 (17.8-23.3)
Testis (C620-C629)																										
M																				<5	0.1	0-0.2	49.7	0.0	*	0.1 (0-0.2)

### Appendix 3B. Cancer mortality, Western Australia, 2013

(age-based case counts and aspr/100,000, and total-population ASR, by sex)

Age	0-4	5-9	10-14	15-19	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+	Total	ASR	95% c.i.	PYLL	CumInc	Risk	ASR2	
Other male genital (C630-C639)																										
M																				<5	0.0	0-0.1	0.0	0.0	*	0.1 (0-0.3)
																				NR						
Kidney (C640-C649)																										
M																				5	2.8	2.0-3.6	409.3	0.3	287	4.4 (3.2-5.6)
																				36.7						
F																				<5	0.9	0.5-1.3	62.2	0.1	903	1.7 (1.0-2.4)
																				NR						
Bladder & urinary tract (C650-C689)																										
M																				18	3.7	2.9-4.5	302.4	0.3	326	8.0 (6.3-9.7)
																				132.0						
F																				11	1.0	0.6-1.4	95.3	0.1	1385	2.1 (1.3-2.9)
																				44.7						
Eye & lacrimal gland (C690-C699)																										
M																										
F																										
Meninges (cerebral & spinal) (C700-C709)																										
M																										
F																										
Brain (C710-C719)																										
M																										
F																										
Spinal cord & cranial nerves (C720-C729)																										
M																										
F																										
Thyroid gland (C730-C739)																										
M																										
F																										
Adrenal gland (C740-C749)																										
M																										
F																										
Endocrine glands (not adrenal) (C750-C759)																										
M																										
F																										

### Appendix 3B. Cancer mortality, Western Australia, 2013 (age-based case counts and aspr/100,000, and total-population ASR, by sex)

Age	0-4	5-9	10-14	15-19	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+	Total	ASR	95% c.i.	PYLL	CumInc	Risk	ASR2
<b>LYMPHOMAS</b>																									
Lymphoma, NOS / unclassifiable																									
M																			0						
F																			<5	0.1	0-0.1	0.0	0.0	*	0.2 (0-0.5)
Hodgkin lymphoma																									
M																			<5	0.2	0-0.4	42.0	0.0	6640	0.3 (0-0.6)
F																			<5	0.2	0-0.5	117.9	0.0	5921	0.2 (0-0.5)
All NHL																									
M																			60	2.9	2.2-3.7	428.2	0.3	321	5.2 (3.9-6.6)
F																			45	1.8	1.2-2.4	246.8	0.2	650	3.4 (2.4-4.4)
NHL, mature B cell																									
M																			49	2.4	1.7-3.1	360.5	0.3	375	4.3 (3.1-5.5)
F																			35	1.3	0.8-1.7	104.9	0.1	844	2.7 (1.8-3.5)
NHL, mature T/NK cell																									
M																			5	0.3	0.0-0.5	65.2	0.0	3200	0.4 (0.0-0.7)
F																			<5	0.2	0-0.3	48.0	0.0	6687	0.3 (0.0-0.6)
NHL, precursor cell lymphoblastic																									
M																			<5	0.0	0-0.1	0.0	0.0	*	0.1 (0-0.3)
F																			0						
NHL, other/unclassifiable																									
M																			5	0.2	0.0-0.4	2.4	0.0	7378	0.5 (0.1-0.9)
F																			6	0.3	0.0-0.6	93.8	0.0	4883	0.5 (0.1-0.9)
Lymphomas (all)																									
M																			63	3.1	2.3-3.9	470.2	0.3	306	5.5 (4.1-6.9)
F																			51	2.1	1.4-2.7	364.7	0.2	586	3.9 (2.8-5.0)
<b>MYELOMA</b>																									
Myeloma/plasma cell tumours																									
M																			51	2.4	1.7-3.1	295.5	0.3	383	4.5 (3.3-5.8)
F																			40	1.8	1.2-2.4	245.4	0.2	470	3.0 (2.0-3.9)

### Appendix 3B. Cancer mortality, Western Australia, 2013

(age-based case counts and aspr/100,000, and total-population ASR, by sex)

Age	0-4	5-9	10-14	15-19	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+	Total	ASR	95% c.i.	PYLL	CumInc	Risk	ASR2	
<b>LEUKAEMIAS</b>																										
Leukaemias, NOS/unclassifiable																										
M																										
F																										
Leukaemias, lymphoid, all																										
M				<5	<5																					
F				NR	NR																					
Leukaemias, lymphoid, acute																										
M				<5	<5																					
F				NR	NR																					
Leukaemias, lymphoid, chronic																										
M																										
F																										
Leukaemias, lymphoid, other/NOS																										
M																										
F																										
Leukaemias, myeloid, all																										
M				<5	<5																					
F				NR	NR																					
Leukaemias, myeloid, acute																										
M				<5	<5																					
F				NR	NR																					
Leukaemias, myeloid, chronic																										
M																										
F																										
Leukaemias, myeloid, other/NOS																										
M																										
F																										

### Appendix 3B. Cancer mortality, Western Australia, 2013 (age-based case counts and aspr/100,000, and total-population ASR, by sex)

Age	0-4	5-9	10-14	15-19	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+	Total	ASR	95% c.i.	PYLL	CumInc	Risk	ASR2		
Leukaemias, other																											
M																				0						-	
F																				0						-	
Leukaemias (all)																											
M	<5	<5	<5	<5	<5	<5	<5	6	15	12	10	14	9	9	3.0-4.9	618.4	0.4	239	77	3.9	3.0-4.9	618.4	0.4	239	6.6 (5.1-8.1)		
F	NR	NR	NR	NR	NR	NR	9.4	28.2	<5	<5	7	10	9	9	1.5-2.8	379.3	0.2	502	51	2.1	1.5-2.8	379.3	0.2	502	3.9 (2.8-5.0)		
MYELODYSPLASTIC DISEASES																											
Refractory anaemias/cytopaenias																											
M	<5	NR	NR	NR	NR	NR	NR	NR	<5	<5	NR	NR	6	6	0.5-1.3	90.4	0.1	1726	22	0.9	0.5-1.3	90.4	0.1	1726	2.0 (1.2-2.8)		
F	NR	NR	NR	NR	NR	NR	<5	<5	<5	<5	NR	NR	34.3	44.0	0-0.3	19.1	0.0	5751	<5	0.2	0-0.3	19.1	0.0	5751	0.2 (0.0-0.5)		
Myelodysplastic syndromes																											
M	<5	NR	NR	NR	NR	NR	NR	NR	<5	<5	NR	NR	5	9	0.5-1.2	21.2	0.1	1613	22	0.9	0.5-1.2	21.2	0.1	1613	2.1 (1.2-3.0)		
F	NR	NR	NR	NR	NR	NR	<5	<5	<5	<5	NR	NR	28.6	66.0	0.1-0.6	35.7	0.0	3708	11	0.4	0.1-0.6	35.7	0.0	3708	0.8 (0.3-1.3)		
Myelodysplastic diseases, all																											
M	<5	NR	NR	NR	NR	NR	NR	NR	<5	<5	6	11	15	15	1.2-2.3	111.6	0.1	834	44	1.8	1.2-2.3	111.6	0.1	834	4.1 (2.9-5.4)		
F	NR	NR	NR	NR	NR	NR	<5	<5	<5	<5	NR	NR	62.9	110.0	0.2-0.8	54.8	0.0	2255	15	0.5	0.2-0.8	54.8	0.0	2255	1.0 (0.5-1.6)		
CHRONIC MYELOPROLIFERATIVE DISEASES																											
Chronic myeloproliferative disorder, NOS																											
M																				<5	0.0	0-0.1	0.0	0.0	*	0.1 (0-0.3)	
F																			NR								
																				0						-	
Polycythaemia rubra vera																											
M																				<5	0.1	0-0.2	2.4	0.0	7378	0.2 (0-0.5)	
F																			NR								
																				<5	0.1	0-0.2	2.4	0.0	7613	0.2 (0-0.4)	
Myelofibrosis/sclerosis																											
M																				<5	0.0	0-0.1	0.0	0.0	*	0.1 (0-0.3)	
F																				NR							
																				<5	0.1	0-0.3	2.4	0.0	7613	0.3 (0-0.6)	
Other chronic myeloproliferative d/o																											
M																				0						-	
F																				<5	0.0	0-0.1	0.0	0.0	*	0.1 (0-0.2)	
																				NR							







### Appendix 3C. Childhood cancer, Western Australia, 2013 (WHO International Classification, version 3)

	All																								
	Males						Females																		
	Age Group 0	1-4	5-9	10-14	Total	ASR	95%c.i.	TD%	Age Group 0	1-4	5-9	10-14	Total	ASR	95%c.i.	TD%									
<b>I. LEUKAEMIAS, MYELOPROLIFERATIVE AND MYELODYSPLASTIC DISEASES</b>																									
All		9	<5	<5	12	5.3	2.3-8.3	100	<5	<5	NR	NR	6	6	5.6	2.5-8.6	100	<5	13	8	25	5.4	3.3-7.6	100	
Lymphoid leukaemia	13.3	NR	NR	NR	6	2.7	0.5-4.8	100	<5	NR	NR	NR	8.1	8.1	2.7	0.5-4.9	100	NR	9.8	5.3	12	2.7	1.2-4.2	100	
Acute myeloid leukaemia	7.4	NR	NR	NR	<5	NR	0-2.2	100	<5	NR	NR	<5	NR	NR	2.1	0.3-3.9	100	NR	NR	NR	7	1.5	0.4-2.6	100	
Chronic MPDs		<5	NR	NR	<5	NR	0-1.1	100	<5	NR	NR	<5	NR	<5	NR	0-1.9	100	<5	NR	NR	<5	0.6	0-1.2	100	
MDS & other MPDs		<5	NR	NR	<5	NR	0-2.8	100	<5	NR	NR	<5	NR	NR	0			<5	NR	NR	<5	0.7	0-1.4	100	
Unspecified/other leukaemia					0										0									0	
<b>II. LYMPHOMAS</b>																									
All		<5	NR	NR	NR	2.1	0.3-4.0	100	<5	NR	NR	NR	<5	<5	<5	NR	0-2.0	100	<5	NR	NR	7	1.5	0.4-2.6	100
Hodgkin lymphoma		<5	NR	NR	<5	NR	0-1.9	100	<5	NR	NR	NR	NR	NR	0				<5	NR	NR	<5	NR	0-1.0	100
Non-Hodgkin lymphoma exc Burkitt		<5	NR	NR	<5	NR	0-2.1	100	<5	NR	NR	NR	<5	<5	<5	NR	0-1.2	100	<5	NR	NR	<5	NR	0-1.4	100
Burkitt lymphoma		<5	NR	NR	<5	NR	0-1.4	100	<5	NR	NR	NR	<5	<5	<5	NR	0-1.3	100	<5	NR	NR	<5	NR	0-1.1	100
Misc. lymphoreticular neoplasms					0										0									0	
Unspecified lymphoma					0										0									0	
<b>III. CNS AND INTRACRANIAL/SPINAL</b>																									
All		<5	NR	NR	9	3.8	1.3-6.2	89	<5	NR	NR	NR	<5	<5	5	2.2	0.3-4.1	80	<5	NR	NR	14	3.0	1.4-4.6	86
Ependymoma/choroid plexus					0				<5	NR	NR	NR	<5	<5	<5	NR	0-1.3	100	<5	NR	NR	<5	NR	0-0.6	100
Astrocytoma		<5	NR	NR	<5	NR	0.0-3.3	75	<5	NR	NR	NR	<5	<5	<5	NR	0-1.2	100	<5	NR	NR	5	1.0	0.1-2.0	80
Embryonal tumours		<5	NR	NR	<5	NR	0-2.7	100	<5	NR	NR	NR	<5	<5	<5	NR	0-2.1	100	<5	NR	NR	5	1.1	0.1-2.0	100
Other gliomas					0				<5	NR	NR	NR	<5	<5	<5	NR	0-1.4	0	<5	NR	NR	<5	NR	0-0.7	0
Other intracranial/spinal		<5	NR	NR	<5	NR	0-2.0	100	<5	NR	NR	NR	<5	<5	0				<5	NR	NR	<5	NR	0-1.0	100
Unspecified					0										0									0	

### Appendix 3C. Childhood cancer, Western Australia, 2013 (WHO International Classification, version 3)

	All																		
	Males				Females				All										
	Age Group 0	1-4	5-9	10-14	Total	ASR	95% <i>c.i.</i>	TD%	Age Group 0	1-4	5-9	10-14	Total	ASR	95% <i>c.i.</i>	TD%			
<b>IV. NEUROBLASTOMA &amp; PERIPHERAL NERVOUS SYSTEM TUMOURS</b>																			
All	<5	<5	NR	2.6	NR	2.6	0.5-4.8	100	<5	<5	NR	NR	<5	<5	NR	2.0	0.7-3.3	100	
Neuroblastoma/ganglioneurol.	<5	<5	NR	2.6	NR	2.6	0.5-4.8	100	<5	<5	NR	NR	<5	<5	NR	2.0	0.7-3.3	100	
Other	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	0			
<b>V. RETINOBLASTOMA</b>																			
All	<5	<5	NR	NR	<5	NR	0 - 1.4	100	<5	<5	NR	NR	<5	<5	NR	<5	NR	0 - 0.7	100
<b>VI. RENAL TUMOURS</b>																			
All	<5	<5	NR	<5	<5	NR	0 - 2.8	100	<5	<5	NR	NR	<5	<5	NR	1.1	0.1-2.0	100	
Nephroblastoma/oth non-epithel.	<5	<5	NR	<5	<5	NR	0 - 2.8	100	<5	<5	NR	NR	<5	<5	NR	<5	NR	0.0-1.7	100
Renal carcinoma	NR	NR	NR	NR	NR	NR	NR	NR	<5	<5	NR	NR	<5	<5	NR	<5	NR	0 - 0.6	100
Unspecified	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	0			
<b>VII. HEPATIC TUMOURS</b>																			
All	<5	<5	NR	<5	<5	NR	0 - 1.4	100	<5	<5	NR	NR	<5	<5	NR	<5	NR	0 - 0.7	100
Hepatoblastoma	<5	<5	NR	<5	<5	NR	0 - 1.4	100	<5	<5	NR	NR	<5	<5	NR	<5	NR	0 - 0.7	100
Hepatic carcinoma	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	0			
Unspecified	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	0			
<b>VIII. BONE</b>																			
All	<5	<5	NR	<5	<5	NR	0 - 2.6	100	<5	<5	NR	NR	<5	<5	NR	<5	NR	0 - 1.3	100
Osteosarcoma	NR	NR	NR	NR	NR	NR	NR	NR	<5	<5	NR	NR	<5	<5	NR	<5	NR	0 - 1.3	100
Chondrosarcoma	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	0			
Ewing & related sarcoma	NR	NR	NR	NR	NR	NR	NR	NR	<5	<5	NR	NR	<5	<5	NR	<5	NR	0 - 1.3	100
Other specified	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	0			
Unspecified	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	0			

### Appendix 3C. Childhood cancer, Western Australia, 2013 (WHO International Classification, version 3)

	Males			Females			All						
	Age Group			Age Group			Age Group						
	0	1-4	5-9 10-14	0	1-4	5-9 10-14	0	1-4	5-9 10-14	Total	ASR	95%c.i.	TD%
<b>IX. SOFT TISSUE SARCOMA</b>													
All	<5 NR	<5 NR	<5 NR	<5 NR	<5 NR	<5 NR	<5 NR	<5 NR	<5 NR	<5	NR	0 - 1.4	100
Rhabdomyosarcoma			0			0				0			
Fibrosarcoma/Neurofibrosarc.			0			0				0			
Kaposi sarcoma			0			0				0			
Other specified	<5 NR	<5 NR	0 - 1.9 100	<5 NR	<5 NR	0	<5 NR	<5 NR	<5 NR	<5	NR	0 - 1.0	100
Unspecified	<5 NR	<5 NR	0 - 1.4 100	<5 NR	<5 NR	0	<5 NR	<5 NR	<5 NR	<5	NR	0 - 0.7	100
<b>X. GONADAL AND GERM CELL</b>													
All	<5 NR	<5 NR	0 - 1.9 50	<5 NR	<5 NR	0 - 1.2 100	<5 NR	<5 NR	<5 NR	<5	NR	0 - 1.3	67
Intracranial/spinal	<5 NR	<5 NR	0 - 1.1 0	<5 NR	<5 NR	0	<5 NR	<5 NR	<5 NR	<5	NR	0 - 0.6	0
Other/unspecified non-gonadal			0			0				0			
Gonadal germ cell	<5 NR	<5 NR	0 - 1.3 100	<5 NR	<5 NR	0 - 1.2 100	<5 NR	<5 NR	<5 NR	<5	NR	0 - 1.0	100
Gonadal carcinoma			0			0				0			
Other and unspecified			0			0				0			
<b>XI. OTHER EPITHELIAL / MELANOMA</b>													
All	<5 NR	<5 NR	0 - 1.8 100	<5 NR	<5 NR	2.0 100	<5 NR	<5 NR	<5 NR	7	1.4	0.4-2.4	100
Adrenocortical carcinoma			0			0				0			
Thyroid carcinoma			0			0				0			
Nasopharyngeal carcinoma			0			0				0			
Malignant melanoma	<5 NR	<5 NR	0 - 1.1 100	<5 NR	<5 NR	0 - 2.6 100	<5 NR	<5 NR	<5 NR	<5	NR	0.0-1.6	100
Skin carcinomas			0			0				0			
Other/unspecified carcinoma	<5 NR	<5 NR	0 - 1.1 100	<5 NR	<5 NR	0 - 2.0 100	<5 NR	<5 NR	<5 NR	<5	NR	0 - 1.3	100



## Appendix 3D. Cancer incidence, Western Australia, 2013: Leading types by sex and geographic area

### CHS Kimberley Region

Males						Females					
	Cases	%	ASR	95%c.i.	Risk		Cases	%	ASR	95%c.i.	Risk
Prostate	18	22.2	95.5	50.5-140	8	Breast	14	28.6	72.0	32.0-112	12
Colorectal	17	21.0	89.9	45.7-134	9	Lung	6	12.2	44.6	7.7-81.5	13
Colon	7	8.6	33.1	7.8-58.4	24	Melanoma (skin)	6	12.2	24.6	4.8-44.4	51
Rectum	10	12.3	56.8	20.5-93.1	13	Oesophagus	<5	NR	NR	0 - 36.9	60
Lung	7	8.6	34.2	8.1-60.4	20	Uterus	<5	NR	NR	0 - 35.5	147
Leukaemia	5	6.2	22.1	2.3-42.0	58	Pharynx	<5	NR	NR	0 - 27.2	78
Leukaemia NOS	0					Connective/ soft tissues	<5	NR	NR	0 - 28.9	60
Lymphoid leukaemia	<5	NR	NR	0 - 36.6	74	Ovary	<5	NR	NR	0 - 40.0	31
Myeloid leukaemia	<5	NR	NR	0 - 11.4	260	Kidney	<5	NR	NR	0 - 34.6	36
Leukaemia, other	0					Lymphoma	<5	NR	NR	0 - 21.9	120
Tongue	<5	NR	NR	0 - 39.7	32						
Lip, gum & mouth	<5	NR	NR	0 - 26.7	73						
Pancreas	<5	NR	NR	0 - 33.1	44						
Melanoma (skin)	<5	NR	NR	0 - 31.6	42						
Kidney	<5	NR	NR	0 - 29.7	71						
<b>All cancers</b>	<b>81</b>	<b>100.0</b>	<b>401.8</b>	<b>312-491</b>	<b>2</b>	<b>All cancers</b>	<b>49</b>	<b>100.0</b>	<b>278.1</b>	<b>196-360</b>	<b>3</b>

### CHS Pilbara Region

Males						Females					
	Cases	%	ASR	95%c.i.	Risk		Cases	%	ASR	95%c.i.	Risk
Prostate	14	23.3	45.3	15.0-75.6	22	Breast	24	41.4	131.0	69.1-193	6
Colorectal	10	16.7	32.2	5.1-59.4	35	Leukaemia	5	8.6	19.6	0.9-38.3	65
Colon	<5	NR	NR	0 - 49.2	52	Leukaemia NOS	0				
Rectum	NR	NR	NR	1.8-16.5	103	Lymphoid leukaemia	<5	5.2	13.6	0 - 30.2	97
Lung	6	10.0	22.9	0 - 47.1	72	Myeloid leukaemia	<5	3.4	6.0	0 - 14.7	200
Tongue	<5	NR	NR	0 - 43.1	26	Leukaemia, other	0				
Melanoma (skin)	<5	NR	NR	0 - 20.8	79	Colorectal	<5	NR	NR	0 - 48.0	80
Liver	<5	NR	NR	0 - 11.1	200	Colon	<5	NR	NR	0 - 48.0	80
Kidney	<5	NR	NR	0 - 24.6	59	Rectum	0				
Myeloprolif. d/o (chronic)	<5	NR	NR	0 - 52.7	*	Lung	<5	NR	NR	0 - 56.3	21
						Melanoma (skin)	<5	NR	NR	0 - 32.6	66
						Uterus	<5	NR	NR	0 - 51.3	82
						Stomach	<5	NR	NR	0 - 29.2	77
						Kidney	<5	NR	NR	0 - 29.7	72
						Thyroid gland	<5	NR	NR	0 - 15.6	185
						Adrenal gland	<5	NR	NR	0 - 26.2	201
<b>All cancers</b>	<b>60</b>	<b>100.0</b>	<b>204.7</b>	<b>139-271</b>	<b>5</b>	<b>All cancers</b>	<b>58</b>	<b>100.0</b>	<b>323.7</b>	<b>227-421</b>	<b>3</b>

### CHS Midwest Region

Males						Females					
	Cases	%	ASR	95%c.i.	Risk		Cases	%	ASR	95%c.i.	Risk
Prostate	56	26.3	96.1	70.5-122	8	Breast	34	23.6	68.2	44.4-92.1	16
Lung	25	11.7	41.2	24.7-57.8	18	Melanoma (skin)	18	12.5	37.0	19.1-54.9	26
Melanoma (skin)	23	10.8	41.1	23.9-58.3	22	Colorectal	16	11.1	24.6	11.9-37.2	40
Colorectal	20	9.4	35.5	19.4-51.6	26	Colon	NR	9.0	20.8	9.0-32.6	44
Colon	13	6.1	23.9	10.4-37.3	35	Rectum	<5	NR	NR	0 - 8.3	430
Rectum	7	3.3	11.6	2.8-20.5	98	Uterus	9	6.3	17.4	5.9-28.9	40
Bladder & urinary tract	10	4.7	15.2	5.5-24.9	90	Lung	8	5.6	14.5	4.3-24.6	41
Lymphoma	9	4.2	14.6	4.8-24.3	60	Lymphoma	6	4.2	10.9	1.7-20.1	156
Lymphoma NOS	<5	NR	NR			Lymphoma NOS	0				
Hodgkin lymphoma	<5	NR	NR	0 - 2.7	*	Hodgkin lymphoma	0				
NHL	8	NR	NR	4.1-23.2	60	NHL	6	4.2	10.9	1.7-20.1	156
Stomach	8	3.8	13.1	3.7-22.5	90	Cervix	5	3.5	12.0	0.8-23.3	118
Leukaemia	7	3.3	12.0	2.7-21.2	79	Thyroid gland	5	3.5	10.2	0.8-19.6	113
Brain	6	2.8	10.3	1.6-19.0	107	Leukaemia	5	3.5	15.6	0.5-30.6	57
						Brain	<5	NR	NR	0.1-17.5	69
						Unknown primary	<5	NR	NR	0.0-8.3	*
<b>All cancers</b>	<b>213</b>	<b>100.0</b>	<b>366.9</b>	<b>316-417</b>	<b>3</b>	<b>All cancers</b>	<b>144</b>	<b>100.0</b>	<b>276.9</b>	<b>229-325</b>	<b>4</b>

## Appendix 3D. Cancer incidence, Western Australia, 2013: Leading types by sex and geographic area

### CHS Wheatbelt Region

Males						Females					
	Cases	%	ASR	95%c.i.	Risk		Cases	%	ASR	95%c.i.	Risk
Prostate	80	26.9	94.4	73.3-116	9	Breast	61	31.1	99.0	72.6-125	10
Colorectal	40	13.5	54.1	35.7-72.6	17	Melanoma (skin)	30	15.3	49.2	29.1-69.3	20
Colon	27	9.1	35.5	21.4-49.7	24	Lung	19	9.7	24.2	12.8-35.6	32
Rectum	13	4.4	18.6	6.8-30.4	51	Colorectal	18	9.2	23.2	11.7-34.7	36
Lung	38	12.8	43.3	29.1-57.5	17	Colon	NR	7.1	16.4	7.2-25.7	50
Melanoma (skin)	38	12.8	53.3	34.7-72.0	18	Rectum	<5	NR	NR	0 - 13.7	123
Lymphoma	16	5.4	25.5	11.2-39.8	44	Lymphoma	13	6.6	17.9	7.5-28.3	43
Lymphoma NOS	0					Lymphoma NOS	<5	NR	NR	0 - 1.9	*
Hodgkin lymphoma	0					Hodgkin lymphoma	<5	NR	NR	0 - 8.8	238
NHL	16	5.4	25.5	11.2-39.8	44	NHL	10	5.1	13.6	4.7-22.5	53
Bladder & urinary tract	9	3.0	10.3	3.2-17.5	177	Uterus	7	3.6	10.0	2.6-17.5	62
Kidney	8	2.7	9.8	2.9-16.7	93	Kidney	7	3.6	10.5	2.7-18.2	65
Lip, gum & mouth	7	2.4	9.7	1.9-17.5	115	Thyroid gland	6	3.1	12.2	2.1-22.2	78
Stomach	7	2.4	6.2	1.5-10.9	486	Unknown primary	6	3.1	4.4	0.7-8.2	310
Oesophagus	6	2.0	7.8	1.4-14.2	107	Pancreas	<5	NR	NR	0.1-11.6	118
Unknown primary	6	2.0	6.2	1.1-11.3	152	Leukaemia	<5	NR	NR	0 - 16.2	132
All cancers	297	100.0	375.0	329-421	3	All cancers	196	100.0	302.1	257-348	3

### CHS Goldfields Region

Males						Females					
	Cases	%	ASR	95%c.i.	Risk		Cases	%	ASR	95%c.i.	Risk
Prostate	50	31.8	127.9	92.3-164	7	Breast	26	26.8	72.7	44.4-101	14
Colorectal	21	13.4	56.1	32.0-80.2	12	Melanoma (skin)	13	13.4	38.4	17.0-59.7	32
Colon	12	7.6	32.1	13.8-50.3	23	Colorectal	10	10.3	22.8	8.2-37.4	55
Rectum	9	5.7	24.0	8.2-39.8	25	Colon	NR	8.2	17.4	4.9-29.8	75
Melanoma (skin)	18	11.5	46.4	24.8-68.0	21	Rectum	<5	NR	NR	0 - 13.1	200
Lung	14	8.9	41.5	19.8-63.3	16	Lung	8	8.2	23.0	6.7-39.2	36
Lip, gum & mouth	6	3.8	15.1	2.9-27.2	58	Pancreas	5	5.2	12.3	1.2-23.4	171
Lymphoma	6	3.8	15.6	3.0-28.2	49	Cervix	<5	NR	NR	0.2-21.4	107
Lymphoma NOS	0					Leukaemia	<5	NR	NR	0 - 22.8	139
Hodgkin lymphoma	0					Uterus	<5	NR	NR	0 - 21.1	71
NHL	6	3.8	15.6	3.0-28.2	49	Kidney	<5	NR	NR	0 - 18.9	85
Kidney	5	3.2	11.8	1.4-22.2	100	Brain	<5	NR	NR	0 - 17.2	123
Stomach	<5	NR	NR	0.2-22.7	143	Thyroid gland	<5	NR	NR	0 - 19.9	124
Larynx	<5	NR	NR	0.1-19.8	66	Lymphoma	<5	NR	NR	0 - 18.4	109
Skin (NMSC exc. SCC/BCC)	<5	NR	NR	0.1-20.8	66						
Leukaemia	<5	NR	NR	0 - 18.4	103						
All cancers	157	100.0	412.7	348-477	2	All cancers	97	100.0	270.9	216-326	4

### CHS Great Southern Region

Males						Females					
	Cases	%	ASR	95%c.i.	Risk		Cases	%	ASR	95%c.i.	Risk
Prostate	70	33.0	121.7	92.0-151	7	Breast	37	23.0	71.4	47.4-95.5	12
Colorectal	32	15.1	54.0	33.8-74.3	18	Colorectal	27	16.8	49.0	26.7-71.3	22
Colon	17	8.0	25.5	12.1-39.0	47	Colon	17	10.6	35.2	14.9-55.4	28
Rectum	14	6.6	26.5	11.9-41.1	32	Rectum	10	6.2	13.8	4.5-23.2	101
Melanoma (skin)	21	9.9	36.4	19.2-53.6	31	Lung	14	8.7	27.1	12.1-42.0	32
Lung	15	7.1	25.1	10.6-39.6	40	Melanoma (skin)	13	8.1	23.8	7.7-39.9	35
Lip, gum & mouth	7	3.3	15.2	3.7-26.8	52	Thyroid gland	8	5.0	20.4	5.9-34.9	48
Lymphoma	7	3.3	20.0	3.2-36.8	56	Uterus	7	4.3	9.9	2.0-17.8	85
Lymphoma NOS	<5	NR	NR			Unknown primary	7	4.3	8.6	1.3-15.8	221
Hodgkin lymphoma	<5	NR	NR	0 - 24.3	158	Lymphoma	7	4.3	17.1	2.3-31.8	61
NHL	5	2.4	9.8	0.7-18.9	86	Lymphoma NOS	<5	NR	NR		
Bladder & urinary tract	6	2.8	9.1	1.6-16.6	75	Hodgkin lymphoma	<5	NR	NR	0 - 20.3	158
						NHL	5	3.1	9.0	0.9-17.1	98
						Kidney	6	3.7	11.1	1.7-20.6	73
						Ovary	5	3.1	17.2	0.3-34.1	67
						Lip, gum & mouth	<5	NR	NR	0 - 17.0	88
						Gallbladder / bile ducts	<5	NR	NR	0 - 8.8	320
All cancers	212	100.0	379.0	324-434	3	All cancers	161	100.0	301.9	249-355	4

## Appendix 3D. Cancer incidence, Western Australia, 2013: Leading types by sex and geographic area

### CHS South West Region

#### Males

	Cases	%	ASR	95%c.i.	Risk
Prostate	182	33.0	130.1	111-149	6
Melanoma (skin)	84	15.2	58.2	45.1-71.2	17
Colorectal	47	8.5	33.1	23.3-43.0	25
Colon	34	6.2	24.2	15.6-32.7	34
Rectum	13	2.4	9.0	4.0-14.0	90
Lung	39	7.1	24.2	16.4-31.9	37
Lymphoma	28	5.1	21.5	13.3-29.7	39
Lymphoma NOS	<5	NR	NR		
Hodgkin lymphoma	<5	NR	NR	0 - 8.1	370
NHL	24	4.4	17.5	10.4-24.6	44
Kidney	13	2.4	9.1	3.9-14.3	98
Leukaemia	13	2.4	10.5	4.1-16.8	90
Leukaemia NOS	<5	NR	NR		
Lymphoid leukaemia	11	2.0	8.3	2.8-13.7	118
Myeloid leukaemia	<5	NR	NR	0 - 5.5	369
Leukaemia, other	<5	NR	NR		
Brain	12	2.2	10.3	3.9-16.8	115
Lip, gum & mouth	11	2.0	8.5	3.4-13.6	103
Pancreas	11	2.0	6.8	2.6-10.9	127
Bladder & urinary tract	11	2.0	6.5	2.6-10.4	132
Unknown primary	11	2.0	7.4	2.6-12.2	208
Stomach	9	1.6	5.6	1.8-9.4	139
Mesothelioma	9	1.6	5.8	1.9-9.6	104
Myeloma	9	1.6	5.9	1.9-9.8	160
Pharynx	7	1.3	5.6	1.4-9.7	158
Oesophagus	7	1.3	4.9	1.2-8.5	156
Gallbladder / bile ducts	7	1.3	4.8	1.2-8.4	162
Liver	6	1.1	3.9	0.7-7.0	172
Skin (NMSC exc. SCC/BCC)	6	1.1	4.1	0.6-7.6	200

#### Females

	Cases	%	ASR	95%c.i.	Risk
Breast	138	32.6	99.3	82.1-117	9
Colorectal	48	11.3	27.6	19.2-36.0	34
Colon	38	9.0	20.8	13.7-28.0	45
Rectum	10	2.4	6.8	2.3-11.2	144
Melanoma (skin)	44	10.4	31.1	21.2-40.9	34
Lung	29	6.9	17.1	10.7-23.6	44
Uterus	19	4.5	11.7	6.2-17.2	75
Lymphoma	19	4.5	13.1	6.4-19.8	90
Lymphoma NOS	<5	NR	NR		
Hodgkin lymphoma	<5	0.7	3.9	0 - 8.4	352
NHL	16	3.8	9.2	4.3-14.1	121
Pancreas	14	3.3	7.5	3.2-11.8	129
Thyroid gland	13	3.1	11.8	4.8-18.8	114
Ovary	9	2.1	7.8	2.6-13.0	109
Unknown primary	9	2.1	3.9	1.1-6.7	261
Cervix	8	1.9	8.1	2.5-13.7	149
Vulva	7	1.7	4.3	1.0-7.6	224
Kidney	7	1.7	4.1	0.8-7.4	205
Myeloma	7	1.7	5.0	1.2-8.7	147
Stomach	6	1.4	3.6	0.5-6.6	298
Leukaemia	5	1.2	3.8	0 - 7.6	351
Leukaemia NOS	<5	NR	NR	0 - 0.9	*
Lymphoid leukaemia	<5	NR	NR	0 - 5.1	1172
Myeloid leukaemia	<5	NR	NR	0 - 3.7	500
Leukaemia, other	<5	NR	NR		
Gallbladder / bile ducts	<5	NR	NR	0 - 4.4	423
Bladder & urinary tract	<5	NR	NR	0 - 3.6	846
Brain	<5	NR	NR	0 - 5.2	626

All cancers 551 100.0 390.9 357-425 3

All cancers 423 100.0 288.7 259-318 4

### WA Country - all

#### Males

	Cases	%	ASR	95%c.i.	Risk
Prostate	470	29.9	109.7	99.7-120	7
Melanoma (skin)	191	12.2	43.5	37.2-49.9	22
Colorectal	187	11.9	43.4	37.1-49.7	20
Colon	114	7.3	26.1	21.2-31.0	32
Rectum	72	4.6	17.0	13.0-21.1	48
Lung	144	9.2	31.8	26.5-37.1	25
Lymphoma	68	4.3	16.8	12.7-20.9	54
Lymphoma NOS	0				
Hodgkin lymphoma	7	0.4	2.0	0.4-3.5	841
NHL	61	3.9	14.8	11.0-18.6	57
Lip, gum & mouth	40	2.5	9.5	6.5-12.5	96
Kidney	40	2.5	9.3	6.3-12.2	96
Bladder & urinary tract	39	2.5	8.3	5.6-10.9	129
Leukaemia	35	2.2	8.5	5.5-11.6	119
Leukaemia NOS	0				
Lymphoid leukaemia	22	1.4	5.1	2.9-7.4	207
Myeloid leukaemia	13	0.8	3.4	1.4-5.4	277
Leukaemia, other	0				
Stomach	32	2.0	6.8	4.4-9.2	170
Pancreas	29	1.8	6.4	4.0-8.8	121
Unknown primary	28	1.8	6.0	3.7-8.4	193
Oesophagus	27	1.7	6.2	3.9-8.6	128
Brain	26	1.7	6.1	3.6-8.5	185
Skin (NMSC exc. SCC/BCC)	22	1.4	4.7	2.7-6.8	195
Pharynx	21	1.3	5.0	2.9-7.2	160
Liver	18	1.1	4.2	2.2-6.2	201
Myeloma	17	1.1	3.8	2.0-5.6	257
Tongue	15	1.0	3.8	1.9-5.7	169
Mesothelioma	15	1.0	3.3	1.6-5.0	196
Testis	13	0.8	3.8	1.7-5.9	317

#### Females

	Cases	%	ASR	95%c.i.	Risk
Breast	334	29.6	88.4	78.7-98.1	11
Melanoma (skin)	127	11.3	33.5	27.4-39.7	30
Colorectal	124	11.0	27.6	22.4-32.8	35
Colon	95	8.4	20.8	16.3-25.3	45
Rectum	29	2.6	6.8	4.2-9.4	163
Lung	88	7.8	21.2	16.7-25.8	35
Uterus	51	4.5	12.6	9.0-16.2	65
Lymphoma	51	4.5	13.1	9.3-17.0	79
Lymphoma NOS	<5	NR	NR	0 - 1.0	2190
Hodgkin lymphoma	NR	0.7	3.2	0.9-5.5	378
NHL	41	3.6	9.5	6.5-12.6	104
Thyroid gland	37	3.3	11.5	7.6-15.3	97
Pancreas	29	2.6	6.3	3.9-8.7	143
Unknown primary	28	2.5	4.7	2.8-6.5	295
Kidney	27	2.4	6.9	4.3-9.6	109
Leukaemia	27	2.4	8.9	5.3-12.5	117
Leukaemia NOS	<5	NR	NR	0 - 0.9	1593
Lymphoid leukaemia	11	1.0	3.8	1.3-6.3	268
Myeloid leukaemia	14	1.2	4.7	2.1-7.4	239
Leukaemia, other	<5	NR	NR		
Cervix	20	1.8	6.3	3.5-9.1	194
Ovary	20	1.8	6.3	3.4-9.2	122
Myeloma	17	1.5	4.4	2.3-6.6	172
Stomach	15	1.3	3.3	1.5-5.1	271
Brain	14	1.2	3.9	1.7-6.2	250
Gallbladder / bile ducts	12	1.1	2.3	0.9-3.7	469
Lip, gum & mouth	11	1.0	3.2	1.3-5.2	256
Vulva	9	0.8	2.3	0.7-3.9	423

All cancers 1571 100.0 363.5 345-382 3

All cancers 1128 100.0 289.2 271-307 4

## Appendix 3D. Cancer incidence, Western Australia, 2013: Leading types by sex and geographic area

### North Metro AHS

	Males					Females					
	Cases	%	ASR	95%c.i.	Risk	Cases	%	ASR	95%c.i.	Risk	
Prostate	767	29.9	103.4	96.0-111	8	Breast	617	30.8	82.5	75.8-89.2	11
Melanoma (skin)	282	11.0	38.1	33.6-42.7	25	Colorectal	203	10.1	22.4	19.0-25.7	43
Colorectal	279	10.9	36.1	31.7-40.4	25	Colon	139	6.9	15.1	12.3-17.9	70
Colon	185	7.2	23.6	20.1-27.2	37	Rectum	62	3.1	7.0	5.1-8.8	113
Rectum	94	3.7	12.4	9.9-15.0	71	Melanoma (skin)	197	9.8	25.1	21.5-28.8	37
Lung	207	8.1	24.7	21.2-28.2	38	Lung	167	8.3	18.2	15.3-21.2	48
Lymphoma	137	5.3	19.0	15.6-22.3	47	Lymphoma	93	4.6	12.5	9.8-15.2	77
Lymphoma NOS	<5	NR	NR	0 - 0.6	6696	Lymphoma NOS	<5	NR	NR	0 - 0.5	6044
Hodgkin lymphoma	NR	0.4	1.8	0.7-2.9	576	Hodgkin lymphoma	NR	0.6	2.1	0.9-3.4	552
NHL	124	4.8	16.9	13.8-20.0	52	NHL	78	3.9	10.1	7.7-12.5	91
Bladder & urinary tract	91	3.5	9.7	7.6-11.7	140	Thyroid gland	91	4.5	13.7	10.9-16.6	75
Kidney	82	3.2	11.2	8.7-13.7	72	Uterus	72	3.6	9.5	7.2-11.7	90
Leukaemia	64	2.5	8.8	6.5-11.2	107	Ovary	56	2.8	6.8	4.9-8.7	142
Leukaemia NOS	<5	NR	NR	0 - 0.2	*	Leukaemia	50	2.5	6.6	4.5-8.8	168
Lymphoid leukaemia	42	1.6	6.0	4.0-8.0	154	Leukaemia NOS	0				
Myeloid leukaemia	20	0.8	2.6	1.4-3.8	374	Lymphoid leukaemia	23	1.1	3.3	1.7-4.9	287
Leukaemia, other	<5	NR	NR	0 - 0.4	6696	Myeloid leukaemia	27	1.3	3.3	1.9-4.7	402
Stomach	60	2.3	7.7	5.7-9.7	117	Leukaemia, other	0				
Pancreas	52	2.0	6.7	4.8-8.6	121	Pancreas	48	2.4	5.1	3.5-6.6	147
Unknown primary	50	1.9	5.9	4.2-7.6	176	Unknown primary	39	1.9	3.4	2.2-4.6	400
Skin (NMSC exc. SCC/BCC)	43	1.7	4.8	3.3-6.3	245	Myeloma	34	1.7	3.8	2.4-5.1	217
Brain	42	1.6	6.7	4.5-8.8	140	Kidney	29	1.4	3.7	2.3-5.2	229
Thyroid gland	40	1.6	6.1	4.2-8.0	143	Cervix	28	1.4	4.5	2.8-6.2	245
Liver	39	1.5	5.2	3.6-6.9	147	Bladder & urinary tract	27	1.3	2.5	1.5-3.6	267
Myeloma	36	1.4	4.5	3.0-6.0	213	Skin (NMSC exc. SCC/BCC)	26	1.3	2.4	1.4-3.4	384
Testis	33	1.3	5.5	3.6-7.5	221	Brain	26	1.3	3.4	1.9-4.9	417
Mesothelioma	32	1.2	3.8	2.4-5.1	234	Lip, gum & mouth	21	1.0	2.3	1.3-3.4	392
Lip, gum & mouth	31	1.2	4.5	2.9-6.1	181	Connective/ soft tissues	19	0.9	2.4	1.3-3.6	330
Oesophagus	27	1.1	3.4	2.1-4.7	295	Vulva	18	0.9	1.8	0.9-2.7	638
Myelodysplastic diseases	25	1.0	2.7	1.6-3.8	486						
<b>All cancers</b>	<b>2568</b>	<b>100.0</b>	<b>339.8</b>	<b>326-353</b>	<b>3</b>	<b>All cancers</b>	<b>2003</b>	<b>100.0</b>	<b>249.2</b>	<b>238-261</b>	<b>4</b>

### South Metro AHS

	Males					Females					
	Cases	%	ASR	95%c.i.	Risk	Cases	%	ASR	95%c.i.	Risk	
Prostate	788	31.4	113.9	106-122	7	Breast	618	31.5	90.7	83.3-98.1	10
Colorectal	273	10.9	37.9	33.3-42.5	22	Colorectal	215	11.0	26.4	22.5-30.3	35
Colon	164	6.5	22.0	18.5-25.5	38	Colon	157	8.0	18.1	14.9-21.2	54
Rectum	109	4.3	15.9	12.8-18.9	48	Rectum	56	2.9	8.1	5.8-10.3	108
Melanoma (skin)	261	10.4	36.9	32.2-41.5	24	Melanoma (skin)	174	8.9	24.2	20.3-28.1	36
Lung	227	9.0	28.8	24.9-32.8	31	Lung	167	8.5	19.6	16.4-22.8	43
Lymphoma	113	4.5	17.1	13.8-20.4	56	Lymphoma	83	4.2	11.0	8.5-13.6	88
Lymphoma NOS	<5	NR	NR	0 - 1.3	2410	Lymphoma NOS	<5	NR	NR	0 - 0.2	*
Hodgkin lymphoma	NR	0.3	1.7	0.4-2.9	760	Hodgkin lymphoma	NR	0.4	1.1	0.3-2.0	1076
NHL	102	4.1	14.8	11.8-17.8	62	NHL	75	3.8	9.8	7.4-12.2	95
Bladder & urinary tract	100	4.0	12.3	9.8-14.8	79	Uterus	77	3.9	11.1	8.6-13.7	74
Kidney	81	3.2	12.8	9.9-15.7	66	Thyroid gland	75	3.8	12.6	9.6-15.5	83
Leukaemia	70	2.8	10.8	8.0-13.6	104	Unknown primary	55	2.8	5.1	3.6-6.6	234
Leukaemia NOS	0					Kidney	50	2.5	7.4	5.3-9.6	121
Lymphoid leukaemia	37	1.5	5.8	3.8-7.9	175	Pancreas	48	2.4	4.6	3.2-6.1	235
Myeloid leukaemia	33	1.3	5.0	3.0-6.9	252	Leukaemia	43	2.2	5.8	3.8-7.8	186
Leukaemia, other	0					Leukaemia NOS	0				
Stomach	50	2.0	6.5	4.6-8.3	136	Lymphoid leukaemia	21	1.1	2.9	1.5-4.4	306
Pancreas	48	1.9	6.2	4.4-8.0	126	Myeloid leukaemia	22	1.1	2.8	1.4-4.3	474
Unknown primary	47	1.9	5.3	3.7-6.9	258	Leukaemia, other	0				
Oesophagus	42	1.7	5.9	4.0-7.7	145	Ovary	37	1.9	5.3	3.5-7.1	188
Lip, gum & mouth	34	1.4	5.3	3.5-7.2	206	Myeloma	33	1.7	3.7	2.3-5.0	238
Mesothelioma	33	1.3	4.0	2.6-5.4	199	Cervix	29	1.5	4.9	3.1-6.8	220
Myeloma	32	1.3	4.2	2.7-5.7	216	Bladder & urinary tract	29	1.5	2.4	1.4-3.4	460
Liver	31	1.2	4.7	3.0-6.5	197	Brain	27	1.4	4.1	2.4-5.8	218
Brain	31	1.2	5.2	3.3-7.1	191	Stomach	26	1.3	2.9	1.7-4.2	362
Pharynx	28	1.1	4.5	2.8-6.1	179	Lip, gum & mouth	20	1.0	2.2	1.1-3.2	467
Thyroid gland	28	1.1	4.6	2.9-6.4	198	Liver	13	0.7	2.1	0.9-3.4	397
Skin (NMSC exc. SCC/BCC)	23	0.9	2.9	1.6-4.1	396						
Myelodysplastic diseases	23	0.9	3.1	1.6-4.5	458						
<b>All cancers</b>	<b>2509</b>	<b>100.0</b>	<b>355.8</b>	<b>341-370</b>	<b>3</b>	<b>All cancers</b>	<b>1963</b>	<b>100.0</b>	<b>265.8</b>	<b>253-278</b>	<b>4</b>



## Appendix 3D. Cancer incidence, Western Australia, 2013: Leading types by sex and geographic area

### WA Metro - all

	Males					Females					
	Cases	%	ASR	95%c.i.	Risk	Cases	%	ASR	95%c.i.	Risk	
Prostate	1555	30.6	108.4	103-114	7	Breast	1235	31.1	86.4	81.4-91.4	11
Colorectal	552	10.9	37.0	33.8-40.1	23	Colorectal	418	10.5	24.3	21.7-26.8	39
Colon	349	6.9	22.9	20.4-25.3	38	Colon	296	7.5	16.5	14.5-18.6	61
Rectum	203	4.0	14.1	12.1-16.1	57	Rectum	118	3.0	7.4	6.0-8.9	111
Melanoma (skin)	543	10.7	37.6	34.3-40.8	25	Melanoma (skin)	371	9.4	24.7	22.0-27.4	37
Lung	434	8.5	26.7	24.1-29.3	34	Lung	334	8.4	18.9	16.7-21.0	46
Lymphoma	250	4.9	18.0	15.7-20.4	51	Lymphoma	176	4.4	11.8	9.9-13.6	82
Lymphoma NOS	5	0.1	0.4	0.0-0.8	3614	Lymphoma NOS	<5	NR	NR	0 - 0.3	*
Hodgkin lymphoma	19	0.4	1.7	0.9-2.6	652	Hodgkin lymphoma	NR	0.5	1.7	0.9-2.4	720
NHL	226	4.5	15.9	13.7-18.0	56	NHL	153	3.9	10.0	8.3-11.7	93
Bladder & urinary tract	191	3.8	10.9	9.3-12.5	102	Thyroid gland	166	4.2	13.2	11.1-15.2	79
Kidney	163	3.2	12.0	10.1-13.9	69	Uterus	149	3.8	10.3	8.6-12.0	82
Leukaemia	134	2.6	9.8	8.0-11.6	106	Pancreas	96	2.4	4.9	3.8-5.9	180
Leukaemia NOS	<5	0.0	0.0	0 - 0.1	*	Unknown primary	94	2.4	4.2	3.3-5.2	298
Lymphoid leukaemia	79	1.6	5.9	4.5-7.3	163	Ovary	93	2.3	6.0	4.7-7.4	161
Myeloid leukaemia	53	1.0	3.8	2.6-4.9	304	Leukaemia	93	2.3	6.2	4.7-7.7	176
Leukaemia, other	<5	NR	NR	0 - 0.2	*	Leukaemia NOS	0				
Stomach	110	2.2	7.1	5.7-8.5	125	Lymphoid leukaemia	44	1.1	3.1	2.1-4.2	297
Pancreas	100	2.0	6.5	5.2-7.8	123	Myeloid leukaemia	49	1.2	3.1	2.1-4.1	433
Unknown primary	97	1.9	5.6	4.4-6.8	209	Leukaemia, other	0				
Brain	73	1.4	6.0	4.5-7.4	161	Kidney	79	2.0	5.5	4.2-6.8	161
Liver	70	1.4	5.0	3.8-6.2	168	Myeloma	67	1.7	3.7	2.8-4.7	226
Oesophagus	69	1.4	4.6	3.5-5.7	197	Cervix	57	1.4	4.7	3.5-5.9	232
Thyroid gland	68	1.3	5.4	4.1-6.7	165	Bladder & urinary tract	56	1.4	2.5	1.7-3.2	336
Myeloma	68	1.3	4.3	3.3-5.4	214	Brain	53	1.3	3.7	2.6-4.9	289
Skin (NMSC exc. SCC/BCC)	66	1.3	3.8	2.9-4.8	301	Lip, gum & mouth	41	1.0	2.3	1.5-3.0	424
Lip, gum & mouth	65	1.3	4.9	3.7-6.1	193	Stomach	40	1.0	2.4	1.6-3.1	394
Mesothelioma	65	1.3	3.9	2.9-4.9	215	Skin (NMSC exc. SCC/BCC)	38	1.0	1.9	1.2-2.6	469
Testis	55	1.1	4.9	3.6-6.2	267	Vulva	30	0.8	1.7	1.0-2.3	544
Pharynx	50	1.0	3.8	2.8-4.9	206	Gallbladder / bile ducts	29	0.7	1.6	1.0-2.2	588
<b>All cancers</b>	<b>5077</b>	<b>100.0</b>	<b>347.4</b>	<b>338-357</b>	<b>3</b>	<b>All cancers</b>	<b>3966</b>	<b>100.0</b>	<b>257.1</b>	<b>249-266</b>	<b>4</b>

### All Western Australia

	Males					Females					
	Cases	%	ASR	95%c.i.	Risk	Cases	%	ASR	95%c.i.	Risk	
Prostate	2025	30.5	108.6	104-113	7	Breast	1569	30.8	86.8	82.4-91.2	11
Colorectal	739	11.1	38.4	35.5-41.2	22	Colorectal	542	10.6	24.9	22.6-27.2	38
Colon	463	7.0	23.6	21.4-25.8	37	Colon	391	7.7	17.4	15.5-19.3	57
Rectum	275	4.1	14.8	13.0-16.5	55	Rectum	147	2.9	7.3	6.1-8.6	118
Melanoma (skin)	734	11.0	38.9	36.0-41.8	24	Melanoma (skin)	498	9.8	26.5	24.0-28.9	35
Lung	578	8.7	27.9	25.5-30.2	31	Lung	422	8.3	19.4	17.5-21.4	43
Lymphoma	318	4.8	17.8	15.7-19.8	52	Lymphoma	227	4.5	12.0	10.3-13.7	81
Lymphoma NOS	5	0.1	0.3	0.0-0.6	4651	Lymphoma NOS	6	0.1	0.2	0.0-0.4	6121
Hodgkin lymphoma	26	0.4	1.8	1.0-2.5	695	Hodgkin lymphoma	27	0.5	2.0	1.2-2.7	614
NHL	287	4.3	15.7	13.8-17.6	56	NHL	194	3.8	9.9	8.4-11.3	95
Bladder & urinary tract	230	3.5	10.4	9.0-11.7	107	Thyroid gland	203	4.0	12.8	11.0-14.6	82
Kidney	203	3.1	11.3	9.7-12.9	74	Uterus	200	3.9	10.7	9.2-12.2	78
Leukaemia	169	2.5	9.5	7.9-11.0	108	Pancreas	125	2.5	5.2	4.2-6.1	171
Leukaemia NOS	<5	NR	NR	0 - 0.1	*	Unknown primary	122	2.4	4.3	3.5-5.2	297
Lymphoid leukaemia	101	1.5	5.7	4.5-6.9	171	Leukaemia	120	2.4	6.8	5.4-8.2	159
Myeloid leukaemia	66	1.0	3.7	2.7-4.7	298	Leukaemia NOS	<5	NR	NR	0 - 0.2	7613
Leukaemia, other	<5	NR	NR	0 - 0.2	*	Lymphoid leukaemia	55	1.1	3.3	2.3-4.3	290
Stomach	143	2.2	7.1	5.9-8.3	130	Myeloid leukaemia	63	1.2	3.4	2.5-4.4	370
Pancreas	129	1.9	6.4	5.3-7.6	123	Leukaemia, other	<5	NR	NR		
Unknown primary	125	1.9	5.7	4.7-6.8	205	Ovary	113	2.2	6.1	4.9-7.3	152
Lip, gum & mouth	105	1.6	6.0	4.8-7.2	155	Kidney	106	2.1	5.8	4.7-7.0	146
Brain	99	1.5	6.0	4.7-7.2	165	Myeloma	84	1.6	3.9	3.0-4.8	212
Oesophagus	96	1.4	5.0	4.0-6.0	174	Cervix	77	1.5	5.0	3.9-6.2	223
Liver	88	1.3	4.8	3.8-5.9	175	Brain	67	1.3	3.8	2.8-4.8	280
Skin (NMSC exc. SCC/BCC)	88	1.3	4.1	3.2-4.9	268	Bladder & urinary tract	64	1.3	2.3	1.7-2.9	368
Myeloma	85	1.3	4.2	3.3-5.1	222	Stomach	55	1.1	2.6	1.8-3.3	358
Mesothelioma	80	1.2	3.8	2.9-4.6	211	Lip, gum & mouth	52	1.0	2.5	1.8-3.2	373
Thyroid gland	74	1.1	4.5	3.5-5.6	195	Skin (NMSC exc. SCC/BCC)	45	0.9	1.8	1.2-2.3	533
Pharynx	71	1.1	4.1	3.2-5.1	192	Gallbladder / bile ducts	41	0.8	1.7	1.2-2.3	558
Testis	68	1.0	4.7	3.5-5.8	275	Vulva	39	0.8	1.8	1.2-2.4	515
<b>All cancers</b>	<b>6649</b>	<b>100.0</b>	<b>351.2</b>	<b>343-360</b>	<b>3</b>	<b>All cancers</b>	<b>5094</b>	<b>100.0</b>	<b>263.7</b>	<b>256-271</b>	<b>4</b>

## Appendix 3E. Cancer mortality, Western Australia, 2013: Leading types by sex and geographic area

### CHS Kimberley Region

Males						Females					
	Cases	%	ASR	95%c.i.	Risk		Cases	%	ASR	95%c.i.	Risk
Pancreas	5	17.9	<b>26.2</b>	2.6-49.8	22	Liver	<5	NR	<b>NR</b>	0 - 34.7	36
Colorectal	<5	NR	<b>NR</b>	0 - 32.0	64	Lung	<5	NR	<b>NR</b>	0 - 33.8	35
Colon	<5	NR	<b>NR</b>	0 - 21.9	167	Colorectal	<5	NR	<b>NR</b>	0 - 19.4	*
Rectum	<5	NR	<b>NR</b>	0 - 17.1	104	Colon	<5	NR	<b>NR</b>	0 - 19.4	*
Unknown primary	<5	NR	<b>NR</b>	0 - 46.2	104	Rectum	0				-
Tongue	<5	NR	<b>NR</b>	0 - 28.6	220	Pharynx	<5	NR	<b>NR</b>	0 - 11.0	216
Oesophagus	<5	NR	<b>NR</b>	0 - 18.4	130	Peritoneum/retro-p.	<5	NR	<b>NR</b>	0 - 11.0	216
Prostate	<5	NR	<b>NR</b>	0 - 30.9	37	Breast	<5	NR	<b>NR</b>	0 - 20.6	116
Brain	<5	NR	<b>NR</b>	0 - 32.5	139	Uterus	<5	NR	<b>NR</b>	0 - 28.7	42
Lip, gum & mouth	<5	NR	<b>NR</b>	0 - 12.2	291	Lip, gum & mouth	0				-
Stomach	<5	NR	<b>NR</b>	0 - 11.4	260	Tongue	0				-
Gallbladder / bile ducts	<5	NR	<b>NR</b>	0 - 17.1	104	Parotid gland	0				-
Lung	<5	NR	<b>NR</b>	0 - 10.8	220	Major salivary glands	0				-
Melanoma (skin)	<5	NR	<b>NR</b>	0 - 12.9	*	Nasopharynx	0				-
Skin (NMSC inc. SCC/BCC)	<5	NR	<b>NR</b>	0 - 14.2	167	Oesophagus	0				-
Kidney	<5	NR	<b>NR</b>	0 - 14.2	167	Stomach	0				-
Leukaemia	<5	NR	<b>NR</b>	0 - 17.1	104	Small intestine	0				-
<b>All cancer deaths</b>	<b>28</b>	<b>100.0</b>	<b>150.2</b>	<b>93.0-207</b>	<b>7</b>	<b>All cancer deaths</b>	<b>9</b>	<b>100.0</b>	<b>58.1</b>	<b>17.5-98.7</b>	<b>11</b>

### CHS Pilbara Region

Males						Females					
	Cases	%	ASR	95%c.i.	Risk		Cases	%	ASR	95%c.i.	Risk
Lung	6	35.3	<b>41.1</b>	4.7-77.4	16	Lung	<5	NR	<b>NR</b>	0 - 81.0	15
Colorectal	<5	NR	<b>NR</b>	0 - 7.8	295	Stomach	<5	NR	<b>NR</b>	0 - 29.2	77
Colon	<5	NR	<b>NR</b>	0 - 4.9	731	Uterus	<5	NR	<b>NR</b>	0 - 47.8	25
Rectum	<5	NR	<b>NR</b>	0 - 4.8	493	Unknown primary	<5	NR	<b>NR</b>	0 - 17.8	108
Mesothelioma	<5	NR	<b>NR</b>	0 - 40.5	731	Colorectal	<5	NR	<b>NR</b>	0 - 43.1	28
Tongue	<5	NR	<b>NR</b>	0 - 8.6	275	Colon	<5	NR	<b>NR</b>	0 - 43.1	28
Pharynx	<5	NR	<b>NR</b>	0 - 4.0	899	Rectum	0				-
Pancreas	<5	NR	<b>NR</b>	0 - 15.3	117	Pancreas	<5	NR	<b>NR</b>	0 - 25.4	94
Bone	<5	NR	<b>NR</b>	0 - 8.6	275	Breast	<5	NR	<b>NR</b>	0 - 9.5	313
Kidney	<5	NR	<b>NR</b>	0 - 4.9	731	Cervix	<5	NR	<b>NR</b>	0 - 11.3	314
Unknown primary	<5	NR	<b>NR</b>	0 - 8.6	275	Leukaemia	<5	NR	<b>NR</b>	0 - 11.1	215
Myeloma	<5	NR	<b>NR</b>	0 - 4.5	656	Leukaemia NOS	0				-
Lip, gum & mouth	0				-	Lymphoid leukaemia	0				-
Parotid gland	0				-	Myeloid leukaemia	<5	NR	<b>NR</b>	0 - 11.1	215
Major salivary glands	0				-	Leukaemia, other	0				-
Nasopharynx	0				-	Myeloma	<5	NR	<b>NR</b>	0 - 25.4	94
Oesophagus	0				-	Lip, gum & mouth	0				-
<b>All cancer deaths</b>	<b>17</b>	<b>100.0</b>	<b>77.6</b>	<b>30.4-125</b>	<b>11</b>	<b>All cancer deaths</b>	<b>16</b>	<b>100.0</b>	<b>120.2</b>	<b>53.7-187</b>	<b>5</b>

### CHS Midwest Region

Males						Females					
	Cases	%	ASR	95%c.i.	Risk		Cases	%	ASR	95%c.i.	Risk
Lung	20	23.5	<b>31.6</b>	17.5-45.8	24	Breast	9	19.6	<b>12.8</b>	3.7-21.9	103
Prostate	9	10.6	<b>11.6</b>	3.7-19.5	150	Lung	8	17.4	<b>13.2</b>	3.7-22.7	77
Colorectal	7	8.2	<b>10.9</b>	2.4-19.4	82	Colorectal	5	10.9	<b>6.0</b>	0.5-11.5	430
Colon	<b>NR</b>	5.9	<b>6.7</b>	0.6-12.8	139	Colon	<5	NR	<b>NR</b>	0 - 6.1	*
Rectum	<5	NR	<b>NR</b>	0 - 10.1	199	Rectum	<5	NR	<b>NR</b>	0 - 7.7	430
Melanoma (skin)	6	7.1	<b>10.9</b>	2.1-19.7	72	Stomach	<5	NR	<b>NR</b>	0 - 13.1	97
Stomach	5	5.9	<b>10.4</b>	0.2-20.7	144	Pancreas	<5	NR	<b>NR</b>	0 - 6.0	*
Leukaemia	5	5.9	<b>9.1</b>	0.9-17.2	90	Brain	<5	NR	<b>NR</b>	0 - 10.5	104
Leukaemia NOS	0				-	Unknown primary	<5	NR	<b>NR</b>	0 - 6.9	*
Lymphoid leukaemia	0				-	Leukaemia	<5	NR	<b>NR</b>	0 - 18.9	106
Myeloid leukaemia	5	5.9	<b>9.1</b>	0.9-17.2	90	Leukaemia NOS	0				-
Leukaemia, other	0				-	Lymphoid leukaemia	0				-
Mesothelioma	<5	NR	<b>NR</b>	0 - 12.3	177	Myeloid leukaemia	<5	NR	<b>NR</b>	0 - 18.9	106
Brain	<5	NR	<b>NR</b>	0.0-13.8	151	Leukaemia, other	0				-
Oesophagus	<5	NR	<b>NR</b>	0 - 11.9	130	Gallbladder / bile ducts	<5	NR	<b>NR</b>	0 - 4.4	*
Liver	<5	NR	<b>NR</b>	0 - 8.7	487	Mesothelioma	<5	NR	<b>NR</b>	0 - 3.9	*
Pancreas	<5	NR	<b>NR</b>	0 - 10.9	216	Peritoneum/retro-p.	<5	NR	<b>NR</b>	0 - 5.7	208
<b>All cancer deaths</b>	<b>85</b>	<b>100.0</b>	<b>138.0</b>	<b>108-168</b>	<b>7</b>	<b>All cancer deaths</b>	<b>46</b>	<b>100.0</b>	<b>69.8</b>	<b>47.8-91.8</b>	<b>15</b>

## Appendix 3E. Cancer mortality, Western Australia, 2013: Leading types by sex and geographic area

### CHS Wheatbelt Region

Males						Females					
	Cases	%	ASR	95%c.i.	Risk		Cases	%	ASR	95%c.i.	Risk
Lung	22	22.2	26.1	14.2-38.1	31	Lung	16	29.6	18.1	8.8-27.4	41
Prostate	11	11.1	11.5	4.5-18.4	97	Colorectal	9	16.7	11.3	3.7-19.0	59
Colorectal	8	8.1	9.2	2.7-15.8	83	Colon	NR	13.0	9.3	2.2-16.3	69
Colon	NR	5.1	6.0	0.7-11.4	134	Rectum	<5	NR	NR	0 - 5.1	425
Rectum	<5	NR	NR	0 - 7.0	217	Breast	5	9.3	5.7	0.4-11.1	179
Mesothelioma	8	8.1	7.8	2.2-13.3	102	Unknown primary	5	9.3	3.8	0.3-7.3	310
Stomach	7	7.1	8.1	1.6-14.6	104	Lymphoma	<5	NR	NR	0 - 7.6	516
Oesophagus	5	5.1	6.4	0.7-12.0	143	Lymphoma NOS	<5	NR	NR	0 - 1.9	*
Lymphoma	5	5.1	6.0	0.2-11.7	304	Hodgkin lymphoma	0				-
Lymphoma NOS	0				-	NHL	<5	NR	NR	0 - 6.8	516
Hodgkin lymphoma	0				-	Skin (NMSC inc. SCC/BCC)	<5	NR	NR	0 - 3.7	*
NHL	5	5.1	6.0	0.2-11.7	304	Kidney	<5	NR	NR	0 - 5.3	310
Myelodysplastic diseases	<5	NR	NR	0.0-6.6	*	Myeloma	<5	NR	NR	0 - 6.5	179
Pancreas	<5	NR	NR	0 - 6.4	347	Oesophagus	<5	NR	NR	0 - 6.8	521
Melanoma (skin)	<5	NR	NR	0 - 5.0	*	Gallbladder / bile ducts	<5	NR	NR	0 - 1.9	*
Skin (NMSC inc. SCC/BCC)	<5	NR	NR	0 - 7.1	607	Pancreas	<5	NR	NR	0 - 2.6	*
Kidney	<5	NR	NR	0 - 7.6	128	Nasal cavity & sinuses	<5	NR	NR	0 - 1.9	*
All cancer deaths	99	100.0	110.8	87.8-134	9	All cancer deaths	54	100.0	62.5	44.2-80.7	14

### CHS Goldfields Region

Males						Females					
	Cases	%	ASR	95%c.i.	Risk		Cases	%	ASR	95%c.i.	Risk
Lung	18	35.3	51.8	27.6-76.0	20	Breast	<5	NR	NR	0.2-23.3	67
Colorectal	5	9.8	13.8	1.7-25.9	60	Colorectal	<5	NR	NR	0 - 9.7	*
Colon	<5	NR	NR	0.2-21.8	76	Colon	<5	NR	NR	0 - 4.9	*
Rectum	<5	NR	NR	0 - 8.3	285	Rectum	<5	NR	NR	0 - 7.0	*
Prostate	<5	NR	NR	0.2-23.0	104	Liver	<5	NR	NR	0 - 12.1	299
Melanoma (skin)	<5	NR	NR	0 - 18.6	208	Pancreas	<5	NR	NR	0 - 14.2	171
Mesothelioma	<5	NR	NR	0 - 18.6	63	Lung	<5	NR	NR	0 - 11.7	129
Stomach	<5	NR	NR	0 - 13.9	*	Brain	<5	NR	NR	0 - 17.4	110
Liver	<5	NR	NR	0 - 10.3	206	Leukaemia	<5	NR	NR	0 - 12.7	171
Lymphoma	<5	NR	NR	0 - 12.0	160	Leukaemia NOS	0				-
Lymphoma NOS	0				-	Lymphoid leukaemia	<5	NR	NR	0 - 10.4	171
Hodgkin lymphoma	0				-	Myeloid leukaemia	<5	NR	NR	0 - 4.7	*
NHL	<5	NR	NR	0 - 12.0	160	Leukaemia, other	0				-
Leukaemia	<5	NR	NR	0 - 12.4	285	Tongue	<5	NR	NR	0 - 4.9	*
Leukaemia NOS	0				-	Melanoma (skin)	<5	NR	NR	0 - 9.2	129
Lymphoid leukaemia	0				-	Vulva	<5	NR	NR	0 - 4.7	*
Myeloid leukaemia	<5	NR	NR	0 - 12.4	285	Cervix	<5	NR	NR	0 - 7.8	381
All cancer deaths	51	100.0	142.8	103-182	8	All cancer deaths	23	100.0	60.7	35.0-86.4	16

### CHS Great Southern Region

Males						Females					
	Cases	%	ASR	95%c.i.	Risk		Cases	%	ASR	95%c.i.	Risk
Lung	12	16.0	17.1	6.6-27.7	63	Colorectal	9	16.4	13.4	3.8-23.1	79
Prostate	12	16.0	17.2	6.5-27.9	88	Colon	NR	10.9	9.8	1.3-18.4	98
Colorectal	8	10.7	11.6	3.2-20.0	79	Rectum	<5	NR	NR	0 - 8.1	416
Colon	<5	NR	NR	0 - 7.6	254	Breast	7	12.7	8.8	1.3-16.2	131
Rectum	NR	6.7	8.1	0.8-15.4	114	Lung	6	10.9	11.9	2.4-21.5	60
Pancreas	5	6.7	8.1	0.7-15.5	115	Uterus	5	9.1	6.2	0 - 12.4	190
Melanoma (skin)	5	6.7	6.4	0.6-12.3	143	Gallbladder / bile ducts	<5	NR	NR	0 - 8.8	320
Skin (NMSC inc. SCC/BCC)	<5	NR	NR	0 - 10.6	375	Oesophagus	<5	NR	NR	0 - 4.2	*
Mesothelioma	<5	NR	NR	0 - 10.3	328	Unknown primary	<5	NR	NR	0 - 10.7	186
Leukaemia	<5	NR	NR	0 - 22.1	383	Pancreas	<5	NR	NR	0 - 8.6	158
Leukaemia NOS	0				-	Melanoma (skin)	<5	NR	NR	0 - 7.0	136
Lymphoid leukaemia	<5	NR	NR	0 - 20.7	383	Brain	<5	NR	NR	0 - 6.6	416
Myeloid leukaemia	<5	NR	NR	0 - 3.4	*	Leukaemia	<5	NR	NR	0 - 7.0	136
Leukaemia, other	0				-	Leukaemia NOS	<5	NR	NR	0 - 4.4	271
Oesophagus	<5	NR	NR	0 - 14.8	109	Lymphoid leukaemia	0				-
Kidney	<5	NR	NR	0 - 6.3	*	Myeloid leukaemia	<5	NR	NR	0 - 4.4	271
Stomach	<5	NR	NR	0 - 4.7	*	Leukaemia, other	0				-
All cancer deaths	75	100.0	111.7	83.1-140	11	All cancer deaths	55	100.0	75.9	53.5-98.3	12

## Appendix 3E. Cancer mortality, Western Australia, 2013: Leading types by sex and geographic area

### CHS South West Region

#### Males

	Cases	%	ASR	95%c.i.	Risk
Lung	34	19.9	20.4	13.2-27.5	54
Colorectal	18	10.5	11.7	6.1-17.2	77
Colon	NR	8.2	9.0	4.1-13.9	102
Rectum	<5	NR	NR	0.0-5.3	304
Prostate	16	9.4	9.3	4.6-13.9	106
Melanoma (skin)	13	7.6	8.4	3.6-13.2	149
Unknown primary	9	5.3	5.8	1.4-10.1	264
Pancreas	8	4.7	5.4	1.5-9.2	123
Brain	8	4.7	6.7	1.7-11.6	133
Lymphoma	8	4.7	5.0	1.4-8.6	181
Lymphoma NOS	0				-
Hodgkin lymphoma	0				-
NHL	8	4.7	5.0	1.4-8.6	181
Stomach	7	4.1	3.8	0.8-6.8	539
Mesothelioma	7	4.1	5.1	1.2-9.0	133
Oesophagus	6	3.5	4.2	0.8-7.7	170
Skin (NMSC inc. SCC/BCC)	6	3.5	3.8	0.5-7.1	223
Myeloma	5	2.9	2.7	0.2-5.2	1181
Liver	<5	NR	NR	0 - 5.0	264
Gallbladder / bile ducts	<5	NR	NR	0 - 5.0	276
Leukaemia	<5	NR	NR	0 - 4.3	360
Leukaemia NOS	0				-
Lymphoid leukaemia	<5	NR	NR	0 - 2.9	566
Myeloid leukaemia	<5	NR	NR	0 - 2.4	991
Leukaemia, other	0				-
Myelodysplastic diseases	<5	NR	NR	0 - 2.7	*
Tongue	<5	NR	NR	0 - 2.4	*
Connective/ soft tissues	<5	NR	NR	0 - 3.7	383
Kidney	<5	NR	NR	0 - 2.9	991
Bladder & urinary tract	<5	NR	NR	0 - 2.9	566
<b>All cancer deaths</b>	<b>171</b>	<b>100.0</b>	<b>108.0</b>	<b>91.0-125</b>	<b>10</b>

#### Females

	Cases	%	ASR	95%c.i.	Risk
Lung	23	18.0	13.3	7.6-19.1	68
Colorectal	13	10.2	7.4	3.0-11.7	132
Colon	NR	8.6	6.2	2.2-10.2	149
Rectum	<5	NR	NR	0 - 2.8	1153
Breast	13	10.2	7.8	3.2-12.4	142
Unknown primary	12	9.4	5.5	1.9-9.0	214
Pancreas	11	8.6	5.3	1.9-8.7	170
Melanoma (skin)	7	5.5	4.0	0.9-7.2	267
Brain	5	3.9	4.0	0 - 8.1	405
Myeloma	5	3.9	2.3	0.1-4.5	423
Myelodysplastic diseases	5	3.9	2.6	0.1-5.2	497
Uterus	<5	NR	NR	0 - 3.5	608
Ovary	<5	NR	NR	0 - 4.3	354
Liver	<5	NR	NR	0 - 5.0	318
Lip, gum & mouth	<5	NR	NR	0 - 2.4	608
Gallbladder / bile ducts	<5	NR	NR	0 - 2.8	846
Skin (NMSC inc. SCC/BCC)	<5	NR	NR	0 - 2.4	608
Mesothelioma	<5	NR	NR	0 - 2.8	846
Kidney	<5	NR	NR	0 - 2.4	608
Bladder & urinary tract	<5	NR	NR	0 - 3.1	994
Lymphoma	<5	NR	NR	0 - 3.4	1183
Lymphoma NOS	0				-
Hodgkin lymphoma	<5	NR	NR	0 - 3.0	1183
NHL	<5	NR	NR	0 - 0.9	*
Myeloprolif. d/o (chronic)	<5	NR	NR	0 - 1.4	*
Tongue	<5	NR	NR	0 - 0.9	*
Major salivary glands	<5	NR	NR	0 - 2.8	1284
Stomach	<5	NR	NR	0 - 1.4	*
Anus	<5	NR	NR	0 - 2.1	846
Larynx	<5	NR	NR	0 - 0.9	*
<b>All cancer deaths</b>	<b>128</b>	<b>100.0</b>	<b>70.5</b>	<b>57.1-83.8</b>	<b>15</b>

### WA Country - all

#### Males

	Cases	%	ASR	95%c.i.	Risk
Lung	113	21.5	24.9	20.1-29.6	36
Prostate	54	10.3	11.0	8.0-14.0	106
Colorectal	51	9.7	11.4	8.2-14.6	77
Colon	34	6.5	7.4	4.8-9.9	124
Rectum	17	3.2	4.0	2.1-5.9	205
Melanoma (skin)	31	5.9	6.5	4.1-8.8	185
Mesothelioma	28	5.3	6.1	3.8-8.4	137
Pancreas	26	4.9	5.8	3.5-8.0	135
Stomach	24	4.6	5.1	2.9-7.3	281
Oesophagus	20	3.8	4.8	2.7-6.9	169
Skin (NMSC inc. SCC/BCC)	18	3.4	3.6	1.9-5.4	357
Brain	17	3.2	4.8	2.3-7.2	232
Lymphoma	17	3.2	3.7	1.9-5.6	240
Lymphoma NOS	0				-
Hodgkin lymphoma	0				-
NHL	17	3.2	3.7	1.9-5.6	240
Leukaemia	17	3.2	4.2	2.1-6.4	229
Leukaemia NOS	0				-
Lymphoid leukaemia	6	1.1	1.6	0.1-3.1	676
Myeloid leukaemia	11	2.1	2.6	1.1-4.2	346
Leukaemia, other	0				-
Unknown primary	16	3.0	3.6	1.7-5.5	305
Kidney	13	2.5	2.8	1.2-4.4	307
Liver	11	2.1	2.4	1.0-3.9	379
Myeloma	11	2.1	2.2	0.9-3.6	665
Myelodysplastic diseases	9	1.7	1.4	0.5-2.3	*
Tongue	8	1.5	1.7	0.5-2.8	710
Bladder & urinary tract	8	1.5	1.7	0.5-2.8	690
Gallbladder / bile ducts	6	1.1	1.5	0.3-2.7	457
Pharynx	5	1.0	1.1	0.1-2.1	1040
<b>All cancer deaths</b>	<b>526</b>	<b>100.0</b>	<b>115.5</b>	<b>105-126</b>	<b>9</b>

#### Females

	Cases	%	ASR	95%c.i.	Risk
Lung	61	18.4	13.8	10.2-17.5	57
Colorectal	40	12.1	8.3	5.5-11.0	115
Colon	30	9.1	6.3	3.9-8.7	137
Rectum	10	3.0	1.9	0.7-3.2	729
Breast	40	12.1	8.5	5.7-11.3	128
Unknown primary	25	7.6	4.4	2.5-6.3	270
Pancreas	20	6.0	3.8	2.0-5.6	250
Uterus	13	3.9	2.6	1.1-4.1	281
Brain	12	3.6	3.0	1.1-4.8	319
Myeloma	11	3.3	2.6	1.0-4.2	274
Melanoma (skin)	10	3.0	2.3	0.8-3.7	309
Leukaemia	10	3.0	2.6	0.8-4.4	282
Leukaemia NOS	<5	NR	NR	0 - 0.7	1593
Lymphoid leukaemia	<5	NR	NR	0 - 1.0	2190
Myeloid leukaemia	7	2.1	2.0	0.4-3.6	405
Leukaemia, other	0				-
Gallbladder / bile ducts	9	2.7	1.5	0.4-2.5	1095
Liver	8	2.4	1.9	0.6-3.3	420
Lymphoma	8	2.4	1.5	0.3-2.6	1530
Lymphoma NOS	<5	NR	NR	0 - 0.3	*
Hodgkin lymphoma	<5	NR	NR	0 - 1.0	3560
NHL	6	1.8	1.0	0.1-1.9	2684
Ovary	7	2.1	1.3	0.3-2.4	736
Stomach	6	1.8	1.6	0.3-2.9	503
Myelodysplastic diseases	6	1.8	1.1	0.1-2.1	1342
Mesothelioma	5	1.5	0.9	0.1-1.8	2190
Kidney	5	1.5	0.9	0.1-1.8	797
Oesophagus	<5	NR	NR	0 - 1.5	3560
Skin (NMSC inc. SCC/BCC)	<5	NR	NR	0 - 1.3	1593
Cervix	<5	NR	NR	0.0-2.4	774
<b>All cancer deaths</b>	<b>331</b>	<b>100.0</b>	<b>70.0</b>	<b>61.9-78.1</b>	<b>14</b>

## Appendix 3E. Cancer mortality, Western Australia, 2013: Leading types by sex and geographic area

### North Metro AHS

Males						Females					
	Cases	%	ASR	95%c.i.	Risk		Cases	%	ASR	95%c.i.	Risk
Lung	171	20.0	19.4	16.4-22.5	49	Lung	133	18.7	13.3	10.8-15.7	72
Colorectal	100	11.7	11.9	9.5-14.3	81	Breast	113	15.9	13.3	10.7-15.9	65
Colon	63	7.4	7.7	5.7-9.7	116	Colorectal	78	11.0	6.9	5.2-8.6	150
Rectum	37	4.3	4.2	2.8-5.6	261	Colon	55	7.7	5.0	3.5-6.5	202
Prostate	79	9.2	7.8	6.0-9.6	197	Rectum	23	3.2	1.9	1.0-2.7	574
Pancreas	52	6.1	6.3	4.6-8.1	117	Pancreas	44	6.2	4.0	2.7-5.2	244
Stomach	40	4.7	4.7	3.2-6.2	221	Ovary	38	5.3	3.8	2.5-5.1	245
Liver	38	4.4	4.5	3.0-5.9	230	Unknown primary	36	5.1	2.8	1.8-3.9	643
Melanoma (skin)	34	4.0	3.9	2.5-5.2	228	Brain	31	4.4	4.6	2.7-6.4	248
Mesothelioma	34	4.0	4.2	2.7-5.6	172	Leukaemia	24	3.4	2.3	1.3-3.3	678
Bladder & urinary tract	32	3.7	3.3	2.1-4.5	339	Leukaemia NOS	<5	NR	NR	0 - 0.1	*
Unknown primary	31	3.6	3.2	2.0-4.4	408	Lymphoid leukaemia	5	0.7	0.3	0.0-0.5	*
Brain	28	3.3	4.3	2.6-6.0	240	Myeloid leukaemia	18	2.5	2.0	1.0-2.9	678
Oesophagus	24	2.8	2.9	1.7-4.1	365	Leukaemia, other	0				-
Kidney	24	2.8	3.2	1.9-4.5	248	Uterus	21	3.0	2.2	1.2-3.3	385
Leukaemia	24	2.8	2.8	1.6-4.1	321	Myeloma	17	2.4	1.7	0.9-2.6	626
Leukaemia NOS	<5	NR	NR	0 - 0.2	*	Stomach	16	2.3	1.6	0.7-2.4	401
Lymphoid leukaemia	9	1.1	0.8	0.3-1.4	4191	Melanoma (skin)	15	2.1	1.6	0.7-2.4	879
Myeloid leukaemia	14	1.6	2.0	0.9-3.0	348	Skin (NMSC inc. SCC/BCC)	15	2.1	1.0	0.4-1.6	1477
Leukaemia, other	0				-	Bladder & urinary tract	14	2.0	1.1	0.5-1.8	1177
Skin (NMSC inc. SCC/BCC)	22	2.6	2.3	1.3-3.3	615	Lymphoma	14	2.0	1.5	0.6-2.3	693
Lymphoma	22	2.6	2.6	1.5-3.7	467	Lymphoma NOS	<5	NR	NR	0 - 0.2	*
Lymphoma NOS	NR	NR	NR		-	Hodgkin lymphoma	<5	NR	NR	0 - 0.6	7692
Hodgkin lymphoma	<5	NR	NR	0 - 0.5	7319	NHL	NR	1.7	1.2	0.5-1.9	762
NHL	21	2.5	2.4	1.3-3.5	498	Gallbladder / bile ducts	12	1.7	1.1	0.4-1.8	1181
Myelodysplastic diseases	20	2.3	2.2	1.2-3.2	509	Oesophagus	11	1.5	1.2	0.4-1.9	581
Gallbladder / bile ducts	16	1.9	2.1	1.0-3.1	415	Cervix	10	1.4	1.3	0.5-2.2	738
Myeloma	16	1.9	2.0	1.0-3.0	442	Kidney	9	1.3	1.0	0.3-1.6	733
Connective/ soft tissues	7	0.8	0.8	0.2-1.4	1859	Liver	6	0.8	0.8	0.1-1.4	796
Lip, gum & mouth	6	0.7	0.8	0.1-1.4	1289	Lip, gum & mouth	<5	NR	NR	0 - 0.7	4295
<b>All cancer deaths</b>	<b>855</b>	<b>100.0</b>	<b>99.7</b>	<b>92.8-107</b>	<b>10</b>	<b>All cancer deaths</b>	<b>711</b>	<b>100.0</b>	<b>73.3</b>	<b>67.4-79.3</b>	<b>14</b>

### South Metro AHS

Males						Females					
	Cases	%	ASR	95%c.i.	Risk		Cases	%	ASR	95%c.i.	Risk
Lung	171	19.7	21.1	17.8-24.4	46	Lung	139	19.8	15.8	13.0-18.6	52
Prostate	88	10.1	8.9	7.0-10.8	210	Breast	103	14.7	13.1	10.4-15.8	71
Colorectal	82	9.4	10.1	7.9-12.4	91	Colorectal	80	11.4	8.5	6.4-10.5	116
Colon	54	6.2	6.8	4.9-8.6	132	Colon	62	8.8	6.2	4.5-8.0	164
Rectum	28	3.2	3.4	2.1-4.7	294	Rectum	18	2.6	2.2	1.1-3.4	389
Bladder & urinary tract	48	5.5	5.3	3.8-6.9	239	Unknown primary	54	7.7	5.1	3.5-6.6	228
Pancreas	45	5.2	5.8	4.0-7.5	147	Pancreas	40	5.7	3.8	2.5-5.1	302
Melanoma (skin)	44	5.1	5.6	3.9-7.4	188	Ovary	33	4.7	3.7	2.3-5.1	244
Stomach	41	4.7	5.2	3.5-6.8	155	Lymphoma	29	4.1	3.0	1.8-4.3	388
Mesothelioma	40	4.6	4.9	3.3-6.5	152	Lymphoma NOS	<5	NR	NR	0 - 0.2	*
Leukaemia	36	4.1	4.8	3.1-6.5	193	Hodgkin lymphoma	<5	NR	NR	0 - 0.5	7003
Leukaemia NOS	0				-	NHL	NR	3.8	2.8	1.6-4.1	411
Lymphoid leukaemia	12	1.4	1.7	0.7-2.8	459	Brain	25	3.6	3.4	1.9-4.9	274
Myeloid leukaemia	24	2.8	3.1	1.8-4.4	331	Melanoma (skin)	24	3.4	2.7	1.5-3.9	356
Leukaemia, other	0				-	Stomach	19	2.7	2.0	1.0-3.1	540
Oesophagus	29	3.3	3.9	2.4-5.4	214	Leukaemia	17	2.4	1.7	0.8-2.6	597
Brain	27	3.1	5.0	2.9-7.1	245	Leukaemia NOS	0				-
Unknown primary	27	3.1	2.9	1.8-4.1	510	Lymphoid leukaemia	6	0.9	0.6	0.1-1.2	1179
Lymphoma	24	2.8	3.3	1.9-4.6	256	Myeloid leukaemia	11	1.6	1.0	0.3-1.8	1210
Lymphoma NOS	<5	NR	NR		-	Leukaemia, other	0				-
Hodgkin lymphoma	<5	NR	NR	0 - 0.6	3991	Gallbladder / bile ducts	15	2.1	1.9	0.9-2.9	424
NHL	22	2.5	3.0	1.7-4.4	273	Uterus	15	2.1	1.5	0.7-2.4	805
Myeloma	24	2.8	3.0	1.8-4.3	273	Bladder & urinary tract	13	1.9	1.0	0.4-1.6	1286
Liver	23	2.6	3.0	1.7-4.3	349	Myeloma	12	1.7	1.4	0.5-2.2	539
Skin (NMSC inc. SCC/BCC)	21	2.4	2.5	1.4-3.6	301	Oesophagus	9	1.3	1.2	0.4-2.0	691
Kidney	17	2.0	2.3	1.2-3.5	328	Liver	9	1.3	1.1	0.3-1.9	793
Gallbladder / bile ducts	15	1.7	1.7	0.8-2.7	683	Mesothelioma	8	1.1	1.0	0.3-1.8	624
Myelodysplastic diseases	15	1.7	1.6	0.8-2.4	893	Cervix	8	1.1	1.2	0.3-2.1	920
Pharynx	8	0.9	1.1	0.3-1.8	690	Kidney	7	1.0	0.7	0.1-1.3	1322
Small intestine	7	0.8	0.8	0.2-1.4	1631	Skin (NMSC inc. SCC/BCC)	6	0.9	0.3	0.1-0.6	*
<b>All cancer deaths</b>	<b>869</b>	<b>100.0</b>	<b>108.6</b>	<b>101-116</b>	<b>10</b>	<b>All cancer deaths</b>	<b>702</b>	<b>100.0</b>	<b>77.9</b>	<b>71.5-84.2</b>	<b>13</b>

## Appendix 3E. Cancer mortality, Western Australia, 2013: Leading types by sex and geographic area

### WA Metro - all

#### Males

	Cases	%	ASR	95%c.i.	Risk
Lung	342	19.8	20.2	18.0-22.4	47
Colorectal	182	10.6	11.1	9.4-12.7	85
Colon	117	6.8	7.3	5.9-8.6	123
Rectum	65	3.8	3.8	2.8-4.8	276
Prostate	167	9.7	8.4	7.1-9.7	203
Pancreas	97	5.6	6.1	4.8-7.3	130
Stomach	81	4.7	4.9	3.8-6.1	184
Bladder & urinary tract	80	4.6	4.3	3.3-5.3	283
Melanoma (skin)	78	4.5	4.7	3.6-5.8	207
Mesothelioma	74	4.3	4.5	3.5-5.6	162
Liver	61	3.5	3.7	2.8-4.7	276
Leukaemia	60	3.5	3.8	2.8-4.8	243
Leukaemia NOS	<5	NR	NR	0 - 0.1	*
Lymphoid leukaemia	21	1.2	1.3	0.7-1.8	845
Myeloid leukaemia	38	2.2	2.5	1.6-3.4	341
Leukaemia, other	<5	NR	NR	-	-
Unknown primary	58	3.4	3.1	2.2-3.9	454
Brain	55	3.2	4.6	3.3-6.0	241
Oesophagus	53	3.1	3.4	2.4-4.3	271
Lymphoma	46	2.7	2.9	2.0-3.8	334
Lymphoma NOS	<5	NR	NR	-	-
Hodgkin lymphoma	<5	NR	NR	0 - 0.5	5122
NHL	43	2.5	2.7	1.9-3.5	357
Skin (NMSC inc. SCC/BCC)	43	2.5	2.4	1.7-3.2	407
Kidney	41	2.4	2.8	1.9-3.7	281
Myeloma	40	2.3	2.5	1.7-3.3	340
Myelodysplastic diseases	35	2.0	1.9	1.3-2.6	642
Gallbladder / bile ducts	31	1.8	1.9	1.2-2.6	512
Pharynx	14	0.8	1.0	0.5-1.5	783
Connective/ soft tissues	12	0.7	0.8	0.3-1.2	1305
<b>All cancer deaths</b>	<b>1724</b>	<b>100.0</b>	<b>104.0</b>	<b>98.8-109</b>	<b>10</b>

#### Females

	Cases	%	ASR	95%c.i.	Risk
Lung	272	19.2	14.5	12.6-16.3	61
Breast	216	15.3	13.2	11.3-15.1	68
Colorectal	158	11.2	7.6	6.3-9.0	131
Colon	117	8.3	5.6	4.5-6.7	182
Rectum	41	2.9	2.0	1.3-2.7	469
Unknown primary	90	6.4	3.9	3.0-4.8	343
Pancreas	84	5.9	3.9	3.0-4.8	270
Ovary	71	5.0	3.7	2.8-4.7	245
Brain	56	4.0	4.0	2.8-5.2	260
Lymphoma	43	3.0	2.2	1.5-3.0	504
Lymphoma NOS	<5	NR	NR	0 - 0.1	*
Hodgkin lymphoma	<5	NR	NR	0 - 0.4	7477
NHL	39	2.8	2.0	1.3-2.7	540
Leukaemia	41	2.9	2.0	1.3-2.7	635
Leukaemia NOS	<5	NR	NR	0 - 0.1	*
Lymphoid leukaemia	11	0.8	0.4	0.2-0.7	2444
Myeloid leukaemia	29	2.1	1.5	0.9-2.1	857
Leukaemia, other	0				-
Melanoma (skin)	39	2.8	2.1	1.4-2.8	515
Uterus	36	2.5	1.9	1.2-2.6	514
Stomach	35	2.5	1.8	1.1-2.4	460
Myeloma	29	2.1	1.6	1.0-2.2	579
Gallbladder / bile ducts	27	1.9	1.5	0.9-2.1	636
Bladder & urinary tract	27	1.9	1.1	0.6-1.5	1223
Skin (NMSC inc. SCC/BCC)	21	1.5	0.7	0.3-1.0	2841
Oesophagus	20	1.4	1.2	0.6-1.7	632
Cervix	18	1.3	1.3	0.7-1.9	814
Kidney	16	1.1	0.9	0.4-1.3	935
Liver	15	1.1	0.9	0.4-1.4	799
Mesothelioma	11	0.8	0.7	0.3-1.2	927
<b>All cancer deaths</b>	<b>1413</b>	<b>100.0</b>	<b>75.5</b>	<b>71.1-79.8</b>	<b>13</b>

### All Western Australia

#### Males

	Cases	%	ASR	95%c.i.	Risk
Lung	455	20.2	21.2	19.2-23.3	44
Colorectal	233	10.4	11.1	9.7-12.6	83
Colon	151	6.7	7.3	6.1-8.5	123
Rectum	82	3.6	3.9	3.0-4.7	255
Prostate	221	9.8	9.0	7.8-10.2	168
Pancreas	123	5.5	6.0	4.9-7.1	131
Melanoma (skin)	109	4.8	5.1	4.1-6.1	201
Stomach	105	4.7	4.9	4.0-5.9	199
Mesothelioma	102	4.5	4.9	3.9-5.9	155
Bladder & urinary tract	88	3.9	3.7	2.9-4.5	326
Leukaemia	77	3.4	3.9	3.0-4.9	239
Leukaemia NOS	<5	NR	NR	0 - 0.1	*
Lymphoid leukaemia	27	1.2	1.3	0.8-1.9	800
Myeloid leukaemia	49	2.2	2.5	1.8-3.3	341
Leukaemia, other	<5	NR	NR	-	-
Unknown primary	74	3.3	3.2	2.4-3.9	411
Oesophagus	73	3.2	3.7	2.8-4.6	237
Liver	72	3.2	3.5	2.6-4.3	294
Brain	72	3.2	4.7	3.5-5.8	239
Lymphoma	63	2.8	3.1	2.3-3.9	306
Lymphoma NOS	<5	NR	NR	-	-
Hodgkin lymphoma	<5	NR	NR	0 - 0.4	6640
NHL	60	2.7	2.9	2.2-3.7	321
Skin (NMSC inc. SCC/BCC)	61	2.7	2.7	2.0-3.4	393
Kidney	54	2.4	2.8	2.0-3.6	287
Myeloma	51	2.3	2.4	1.7-3.1	383
Myelodysplastic diseases	44	2.0	1.8	1.2-2.3	834
Gallbladder / bile ducts	37	1.6	1.8	1.2-2.4	497
Pharynx	19	0.8	1.0	0.5-1.5	830
Tongue	18	0.8	0.9	0.5-1.4	1072
<b>All cancer deaths</b>	<b>2250</b>	<b>100.0</b>	<b>106.6</b>	<b>102-111</b>	<b>10</b>

#### Females

	Cases	%	ASR	95%c.i.	Risk
Lung	333	19.1	14.4	12.7-16.0	60
Breast	256	14.7	12.2	10.6-13.8	75
Colorectal	198	11.4	7.8	6.6-9.0	127
Colon	147	8.4	5.8	4.7-6.8	170
Rectum	51	2.9	2.0	1.4-2.6	506
Unknown primary	115	6.6	4.0	3.2-4.8	324
Pancreas	104	6.0	3.9	3.1-4.7	265
Ovary	78	4.5	3.2	2.5-4.0	285
Brain	68	3.9	3.8	2.7-4.8	271
Lymphoma	51	2.9	2.1	1.4-2.7	586
Lymphoma NOS	<5	NR	NR	0 - 0.1	*
Hodgkin lymphoma	<5	NR	NR	0 - 0.5	5921
NHL	45	2.6	1.8	1.2-2.4	650
Leukaemia	51	2.9	2.1	1.5-2.8	502
Leukaemia NOS	<5	NR	NR	0 - 0.2	7613
Lymphoid leukaemia	13	0.7	0.4	0.2-0.7	2389
Myeloid leukaemia	36	2.1	1.6	1.0-2.2	693
Leukaemia, other	<5	NR	NR	-	-
Melanoma (skin)	49	2.8	2.1	1.5-2.8	451
Uterus	49	2.8	2.0	1.4-2.7	438
Stomach	41	2.4	1.8	1.2-2.3	468
Myeloma	40	2.3	1.8	1.2-2.4	470
Gallbladder / bile ducts	36	2.1	1.5	0.9-2.0	699
Bladder & urinary tract	30	1.7	1.0	0.6-1.4	1385
Skin (NMSC inc. SCC/BCC)	25	1.4	0.7	0.4-1.0	2448
Oesophagus	24	1.4	1.1	0.6-1.5	765
Liver	23	1.3	1.1	0.6-1.6	671
Cervix	22	1.3	1.3	0.7-1.8	804
Kidney	21	1.2	0.9	0.5-1.3	903
Mesothelioma	16	0.9	0.8	0.4-1.1	1056
<b>All cancer deaths</b>	<b>1744</b>	<b>100.0</b>	<b>74.3</b>	<b>70.5-78.2</b>	<b>13</b>





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