Cancer in Queensland

A Statistical overview 1982-2031

Annual update 2017

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Cancer in Queensland: A Statistical Overview 1982-2031, Annual update 2017

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Table of contents

Message from the Chair

As Chair of the Queensland Cancer Control Safety and Quality Partnership I am pleased to introduce, *Cancer in Queensland: A statistical overview 1982*-2031*, Annual Update* 2017. This report is a comprehensive epidemiological report of cancer incidence and survival in Queensland and is a follow up to *Cancer in Queensland: A statistical overview 2014*. Once again, our aim with this publication is to provide 'data for today' and share the most up to date cancer data that is available.

The report begins with cancer projections for 2031. We follow up the projections with an analysis of cancer incidence, mortality and survival in Queensland from 1982-2017. This data underpins our ability to estimate the impact of cancer in Queensland in 2031. It supports cancer services planning, evaluation and monitoring, and research.

In Queensland we will continue to see growth in the number of people age 75+ which impacts the risk of being diagnosed with cancer. A special section about Cancer in Seniors (aged 75+) has been included in this report.

This report also highlights where differences in cancer outcomes exist between Indigenous and non-Indigenous Queenslanders. We anticipate this information will assist in addressing the Queensland Health policy and accountability framework *'Making tracks toward closing the gap in health outcomes for Indigenous Queenslanders by 2033'*.

We invite your feedback on the value and benefits of this report and hope that this information can make a positive contribution to the future of cancer care.

Professor David E Theile AO

Chair
Queensland Cancer Control Safety and Quality Partnership

Highlights and summary

Cancer in Queensland: A Statistical Overview 1982-2031, Annual update 2017 provides information on cancer incidence and mortality for the state of Queensland. This report presents cancer data for 2017 and projections for 2031 and is the third of a series which will provide information on patterns and trends for cancer, the leading cause of all deaths in 2017[1] and the leading cause of potential years of life lost among Queenslanders.

Cancer incidence rates in Queensland are among the highest in the world. Incidence rates are fairly uniform across the state, with a tendency to slightly lower rates recorded in remote and very remote areas for males and in outer regional areas for females.

The growth in **new cases of cancer** is largely being driven by population growth and ageing. The underlying cancer rate has increased only slightly since 1982:

- In 2017, 30,121 new cases of cancer were diagnosed; of these 16,873 were reported in males and 13,248 in females.
- The most common cancer diagnoses in males were prostate cancer (25%), melanoma (15%), followed by haematological cancers (13%) and colorectal cancer (10%).
- The most common cancer diagnoses in females were breast cancer (27%), melanoma (13%), followed by colorectal cancer (11%) and haematological cancers (11%).
- In children the most common diagnoses were leukaemia (acute) cancers (32%), cancers of the brain (13%) and cancers of bone and soft tissue (11%).
- In 2031, an estimated 44,095 new cases of invasive cancer will be diagnosed in Queensland.

The prevalence of cancer is increasing as more people are diagnosed with cancer and survival improves:

- By the end of 2017, more than 98,000 people were living with a diagnosis of cancer in the previous five years (nearly 4% of all Queenslanders).
- Prostate cancer followed by melanoma and breast cancer were the most prevalent.

Cancer survival appears to be improving for some cancers:

- The average five-year relative survival for 2013-2017 was 72% compared to 71% for 2008-2012.
- The greatest gains were observed for kidney, head and neck, myeloma, bladder and lung cancers.

The number of cancer deaths continues to increase in Queensland:

- In 2017, 5,430 deaths were attributed to cancer in males and 4,012 deaths to cancer in females.
- Lung cancer was the most common cause of cancer death, accounting for 21% of deaths in males and 18% of deaths in females.
- Prostate and colorectal cancers (12% and 12%, respectively) were the next most common causes of cancer death in males, and breast and colorectal cancers (15% and 13%, respectively) the next most common causes of cancer death in females.
- In 2031, an estimated 15,206 deaths will be attributed to cancer.

The mortality rate for cancer has been in decline since the mid-1990s. Mortality rates from cancer are slightly higher in inner regional and outer regional areas compared to major cities.

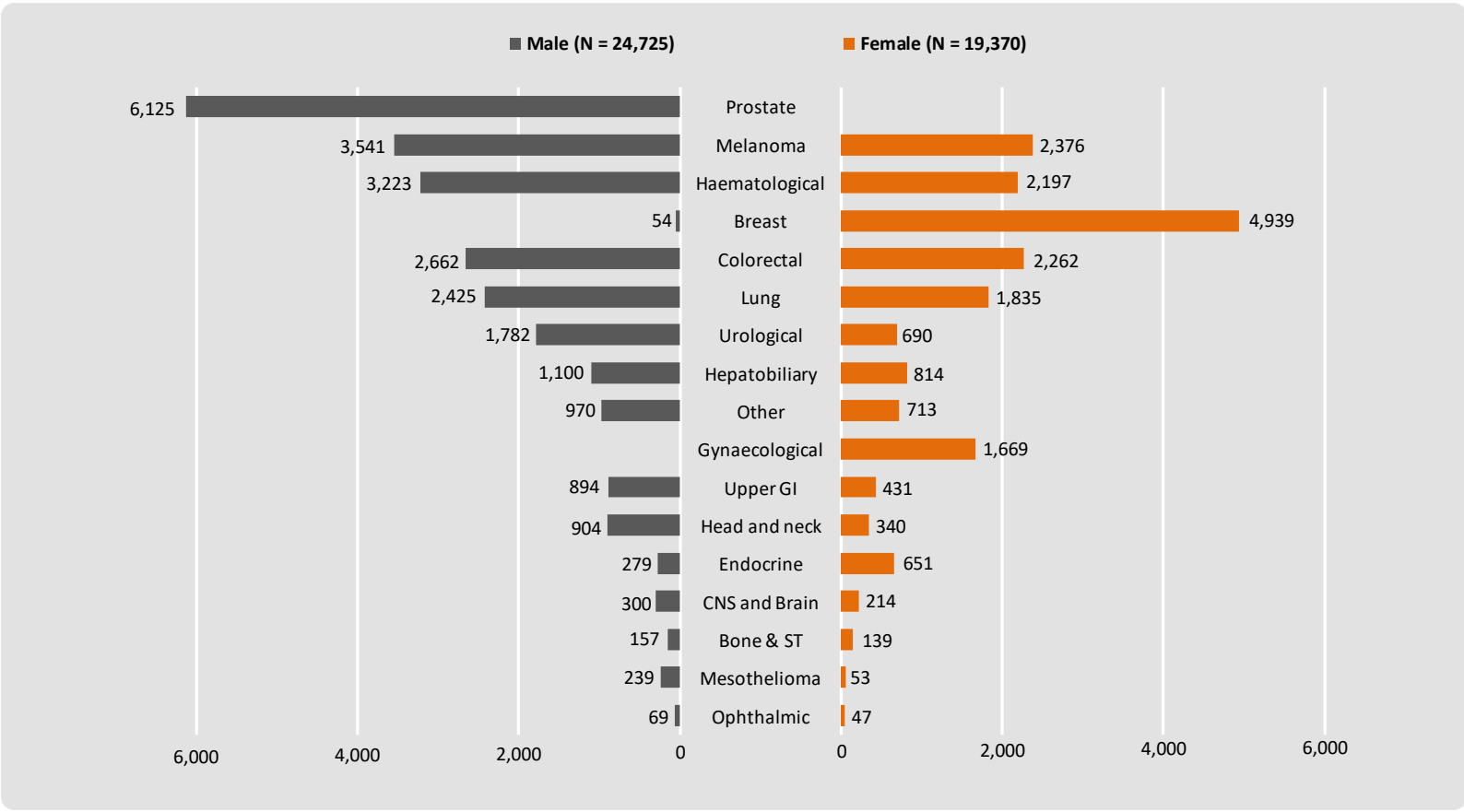
The presentation of **cancer data by Indigenous status** demonstrates the significant variation in the burden of cancer between Indigenous and non-Indigenous Queenslanders.

Cancer projections

Cancer projections Queensland, 2031

In 2031, an estimated 44,095 new cases of invasive cancers will be diagnosed among Queensland residents (Figure 1), while an estimated 15,206 Queenslanders will die of the disease (Figure 2).

Figure 1: Expected cancer incidence, common cancers, Queensland, 2031

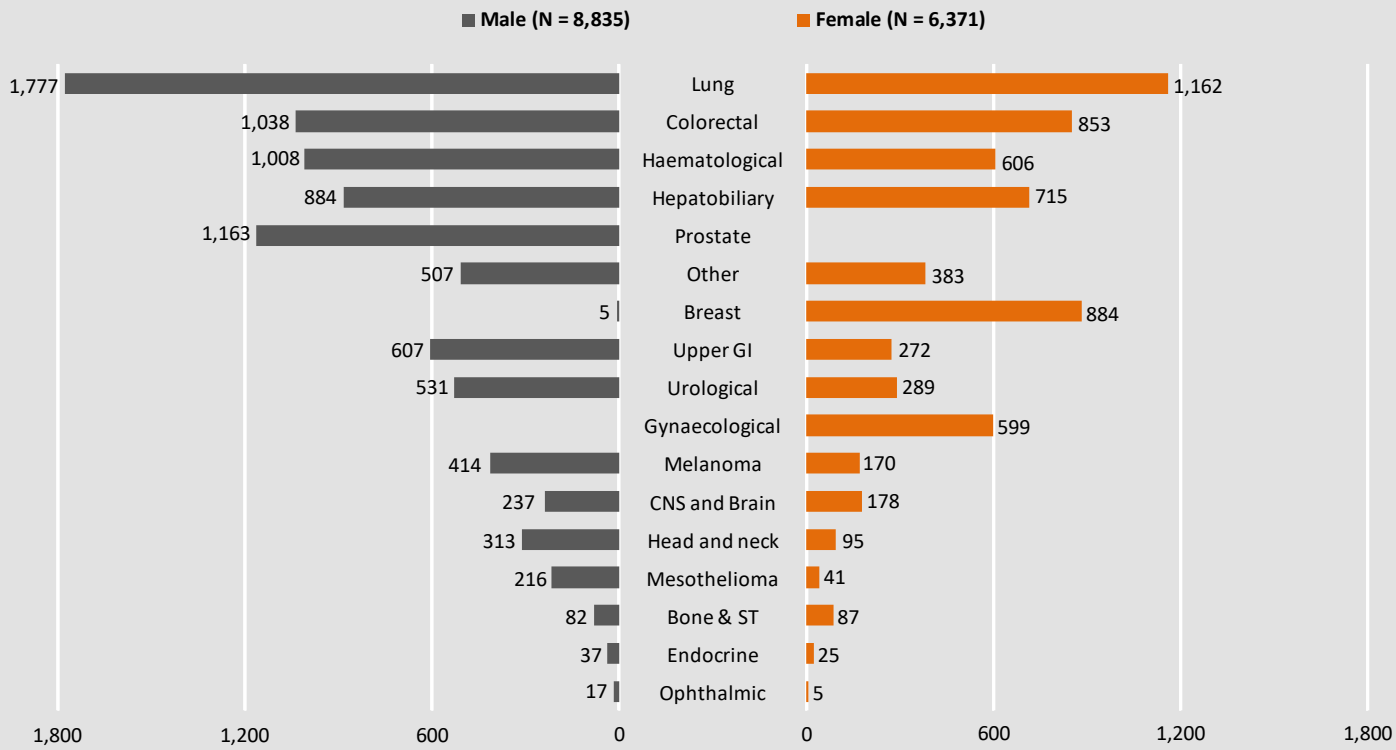


Abbreviations: Bone & ST: Bone and soft tissue.
Source: Oncology Analysis System, Cancer Alliance Queensland. The figures, which have been rounded to the nearest five cases, are provided as a guide and should be used with care. Projections are calculated by applying the most recent cancer incidence rates (2017), stratified by age and sex, to the expected Queensland population in 2031.

From 2017 to 2031, nearly 47% of new cases and 63% of cancer deaths will be among males. Prostate and breast cancers are expected to remain the most commonly diagnosed cancers in males and females respectively, while lung cancer will continue to be the leading cause of cancer death in both sexes. In Queensland, melanoma diagnosis rates are expected to continue to be the highest in the world with more than 5,900 cases expected to be diagnosed in 2031.

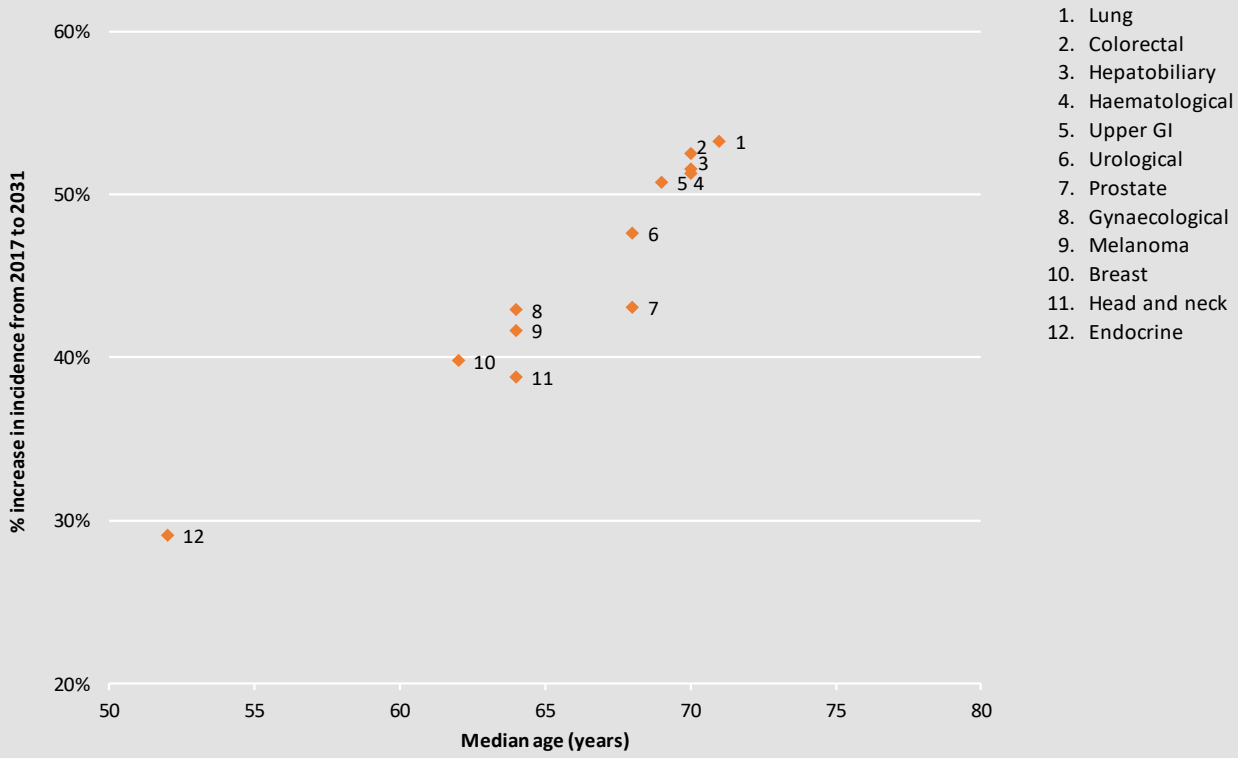
These projections provide an indication of the likely burden of cancer and the demand for cancer services in 2031. As with any forecast, they should be used with care and amended to reflect local trends whenever possible.

Figure 2: Expected cancer mortality, common cancers, Queensland, 2031



Abbreviations: Bone & ST: Bone and soft tissue.
Source: Oncology Analysis System, Cancer Alliance Queensland. The figures, which have been rounded to the nearest five cases, are provided as a guide and should be used with care. Projections are calculated by applying the most recent cancer mortality rates (2017), stratified by age and sex, to the expected Queensland population in 2031.

Figure 3: Relationship between the projected increase in cancer incidence from 2017 to 2031 and the median age at diagnosis for common cancers (see text for details)



Source: Oncology Analysis System, Cancer Alliance Queensland.

Figure 3 shows the expected relative increases in the incidence of common cancers from 2017 to 2031. Assuming no change in incidence rates over this period, cancers which are common in older persons (e.g. lung cancers) are projected to increase at a faster rate than cancers which are common in younger people (e.g. endocrine cancers). These trends are a direct consequence of projected changes in the age distribution of Queensland's population over this period, as the number of people aged 65 years and older is expected to grow at a much faster rate than the rest of the population.

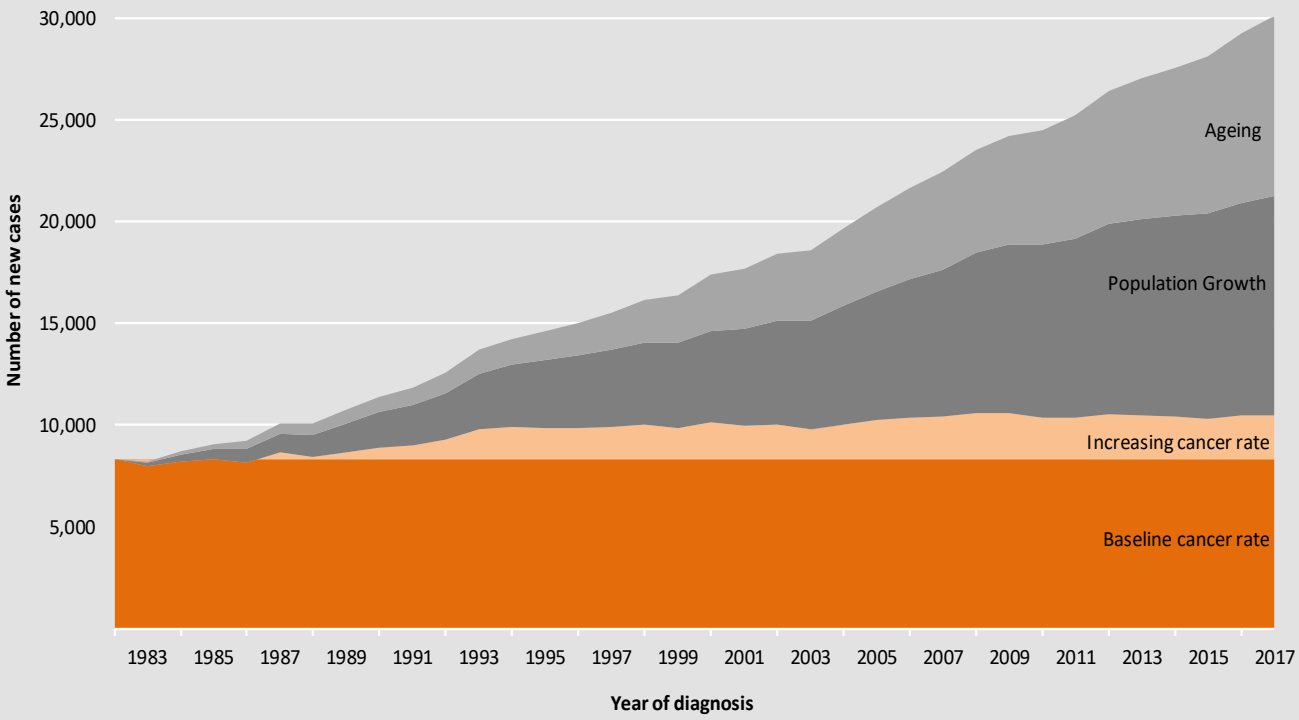
Cancer in Queensland

Incidence and mortality

The number of new cases of cancer among Queensland residents has increased by 263% between 1982 and 2017. For males, the number of new cases increased from 4,600 in 1982 to 16,873 (267%) in 2017; for females, the number of new cases increased from 3,703 in 1982 to 13,248 (258%). These increases are due largely to population growth and ageing (Figure 4).

Queensland's population increased from 2.4 million in 1982 to 4.9 million in 2017, an increase of 104%, making Queensland one of the fastest growing states in Australia and among the fastest in developed countries. The proportion of persons 65 years and older also increased from 9.7% in 1982 to 15% in 2017. Changes in the cancer incidence rate accounted for only a small proportion of the total increase in incidence.

Figure 4: Growth in new cases of cancer, Queensland 1982-2017

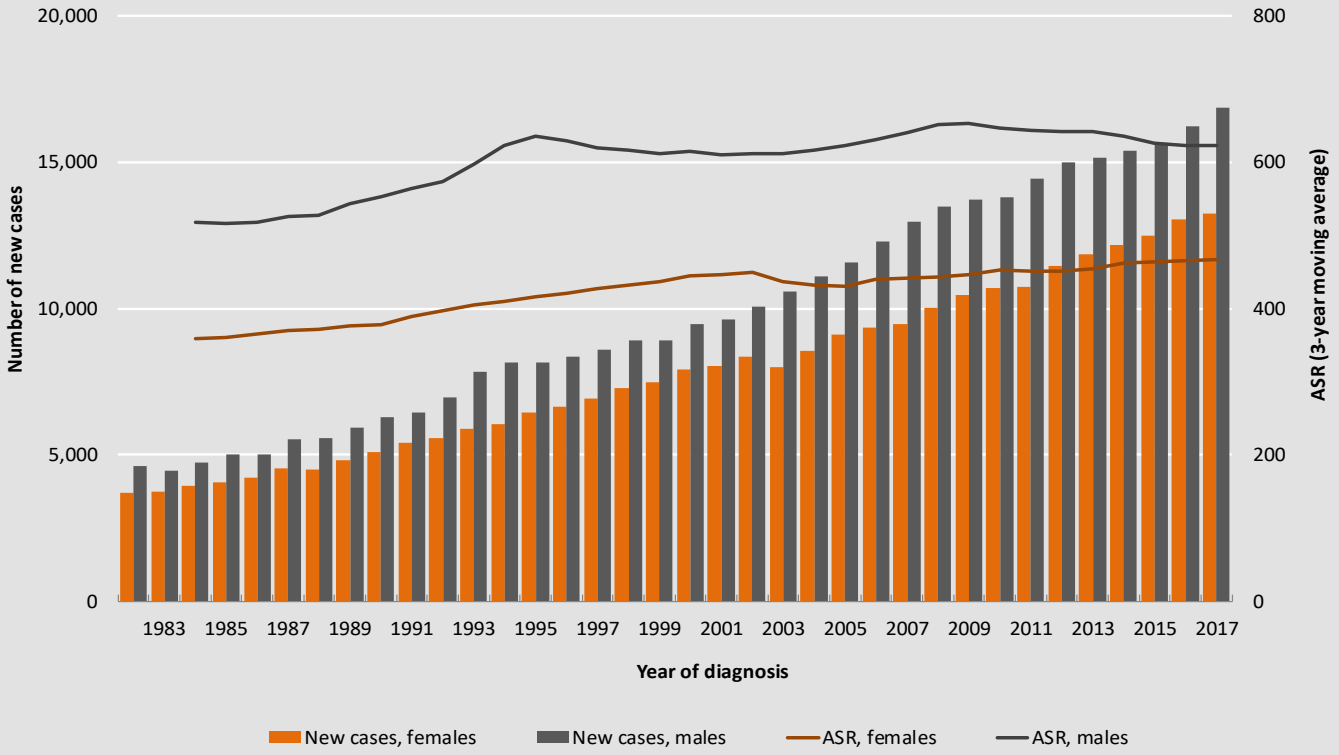


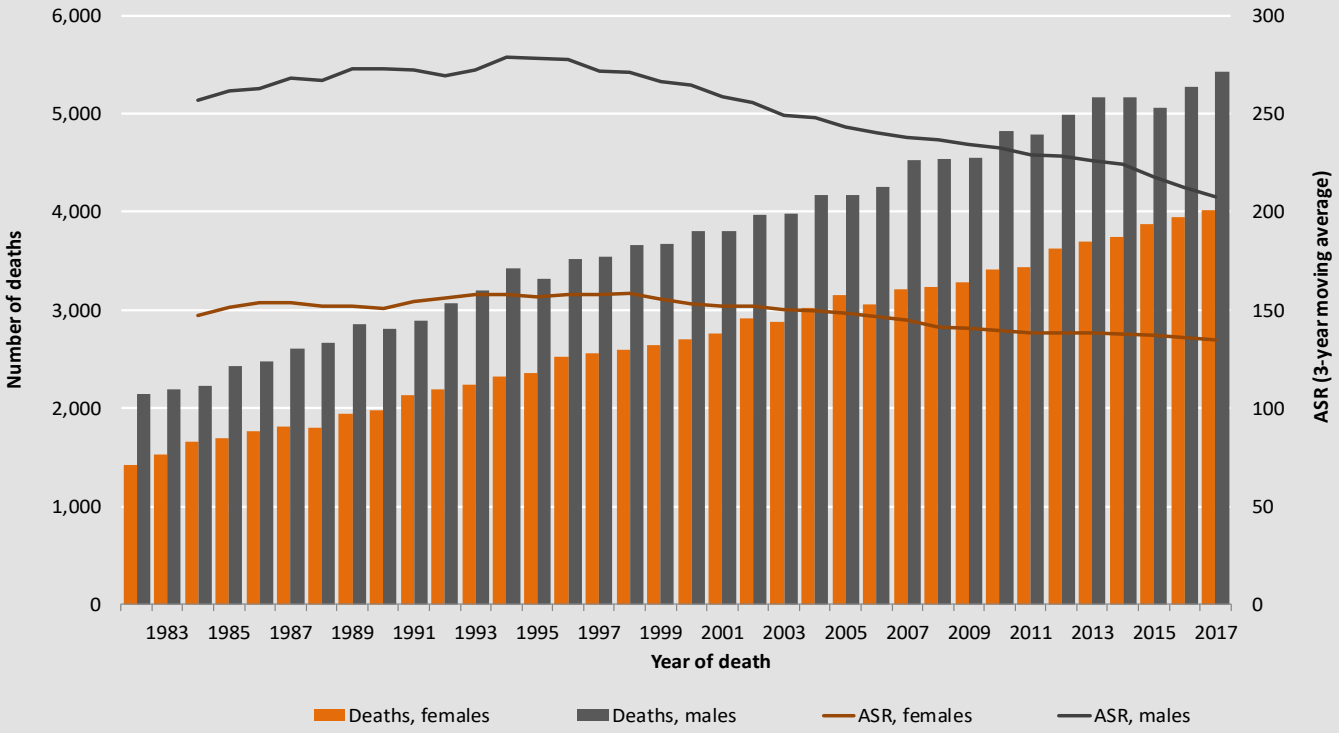
Source: Oncology Analysis System, Cancer Alliance Queensland.

Trends in incidence rates for all invasive cancers and the number of new cases diagnosed annually are summarised in Figure 5. Since 2009 the incidence rate (3-year moving average) for all invasive cancers among females has increased slightly from 447 to 466 per 100,000 population in 2017. For males the incidence rate (3-year moving average) has decreased from 654 in 2009 to 622 in 2017.

Mortality rates have been in decline since the mid-1990s for both males and females (Figure 5). The number of deaths, however, has continued to rise due to the increase in the number of new cases each year and the ageing population.

Figure 5: Trends in numbers and rates for all cancers, Queensland 1982-2017





ASR: Age-standardised rate per 100,000, standardised to 2001 Australian population.
Source: Oncology Analysis System, Cancer Alliance Queensland.

Most common cancers and cancer deaths

FIVE MOST COMMON CANCERS

In 2017 there were 30,121 new cases of cancer diagnosed and 9,442 deaths were attributed to cancer (Figure 6). The five most commonly diagnosed cancers in 2017 were prostate (4,281 cases), melanoma (4,177 cases), haematological (3,583 cases), breast (3,572 cases) and colorectal (3,229 cases). These cancers combined accounted for 63% for all cancer diagnoses.

MOST COMMON CANCERS BY SEX

Cancers were more common in males (16,873 new cases, 691 per 100,000) than in females (13,248 new cases, 533 per 100,000). For both sexes, three cancers accounted for over half of all incidence: in males, prostate cancer represented 25% of cases (4,281 cases), followed by melanoma (2,493 cases) and haematological cancers (2,142 cases), accounting for 15% and 13% of all male cancers respectively. For females, breast cancer was the most common cancer representing 27% of cases (3,533 cases), followed by melanoma (1,684 cases) and colorectal cancer (1,464 cases), representing 13% and 11% respectively of cancers in females. Urological and head and neck cancers were much more common in males than in females; with incidence rates almost three times higher. Endocrine cancers were close to three times more common in females than males (Figure 7).

MOST COMMON CANCER DEATHS

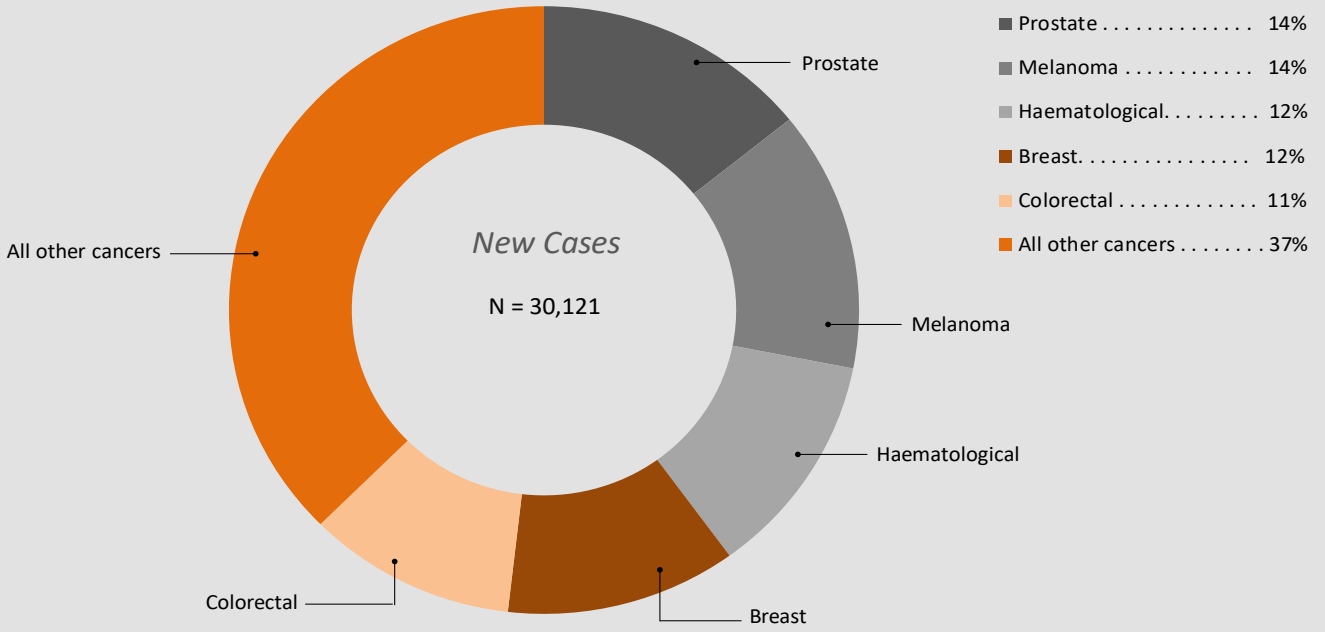
During 2017, lung cancer was the leading cause of cancer death with 1,862 deaths (20%). Colorectal cancer was the next most common cause of cancer death with 1,159 deaths (12%) followed by hepatobiliary cancer with 1,016 deaths (11%). More cancer deaths in Queensland were recorded for males (5,430, 222 per 100,000) than for females (4,012, 161 per 100,000). Lung, prostate, breast and colorectal cancers accounted for nearly half the deaths in both males (44%) and females (46%) (Figure 8).

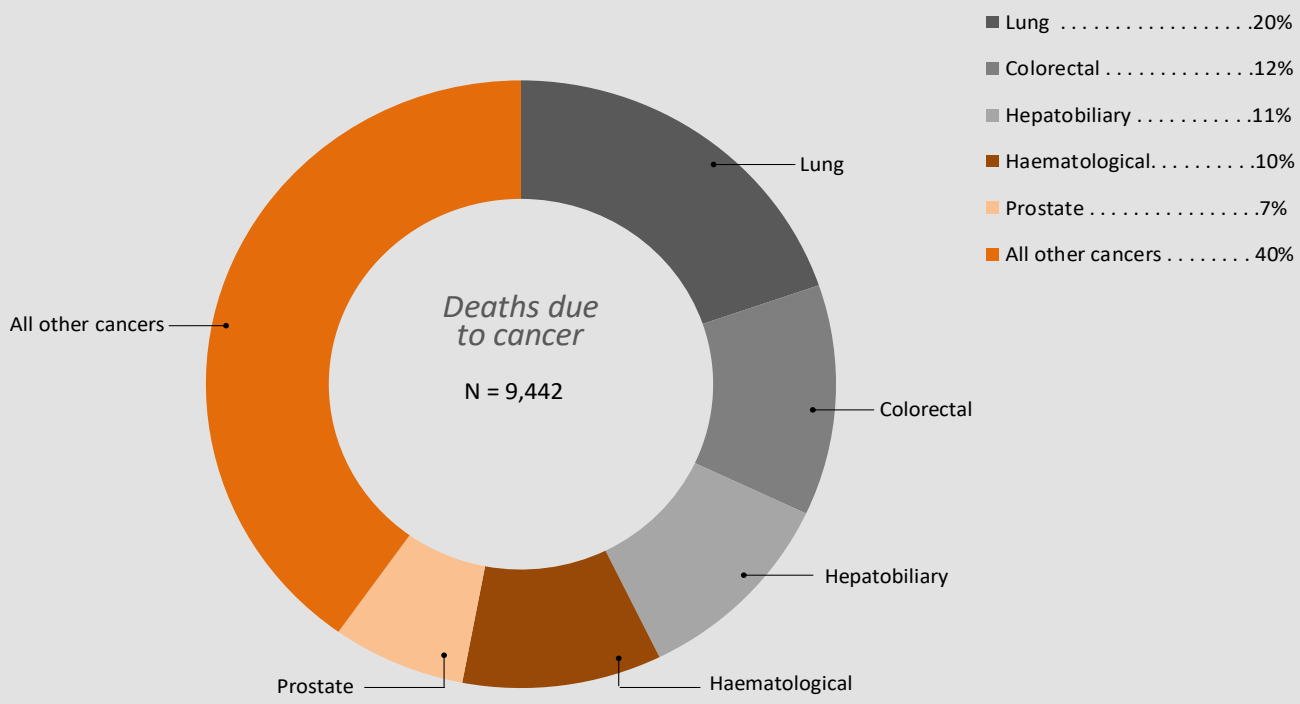
The most common cancers in Queensland are cancers of the prostate and breast, colorectal cancer and melanoma.

Lung cancer is the leading cause of cancer death in Queensland.

Mortality rates have been in decline since the mid 1990's for both males and females.

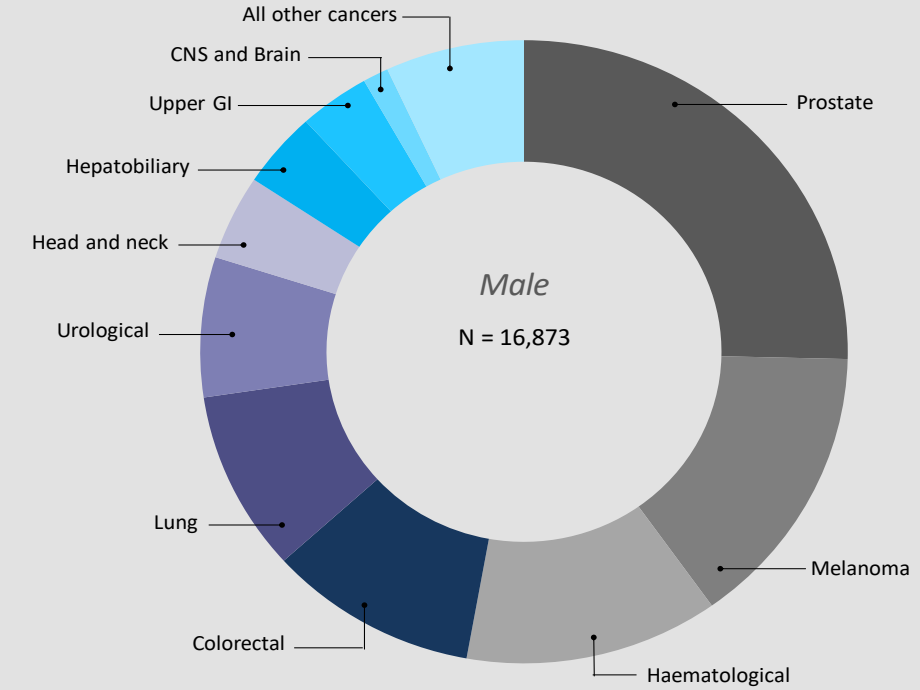
Figure 6: Five most common cancer diagnoses and deaths, Queensland, 2017



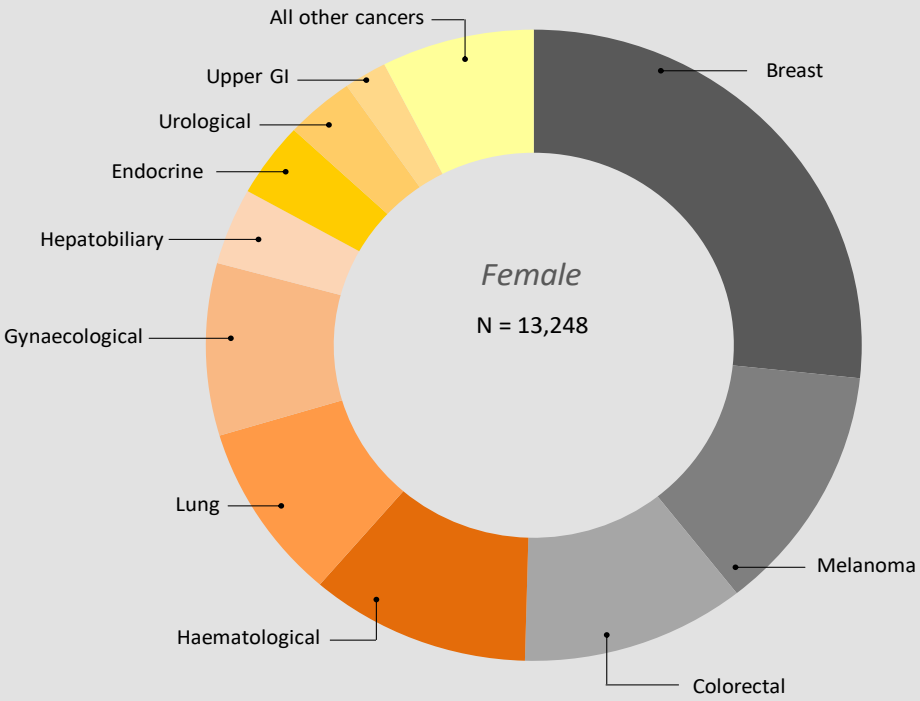


Source: Oncology Analysis System, Cancer Alliance Queensland.

Figure 7: Most common cancer diagnoses, Queensland, 2017



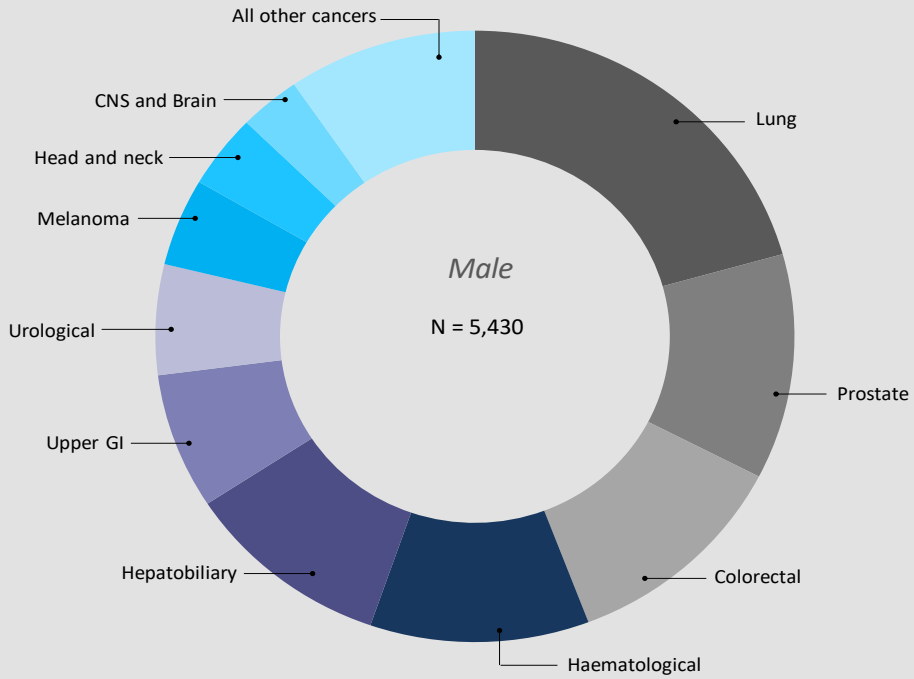
- Prostate 25%
- Melanoma 15%
- Haematological. 13%
- Colorectal 10%
- Lung. 9%
- Urological 7%
- Head and neck 4%
- Hepatobiliary 4%
- Upper GI 4%
- CNS and Brain. 1%
- All other cancers 7%



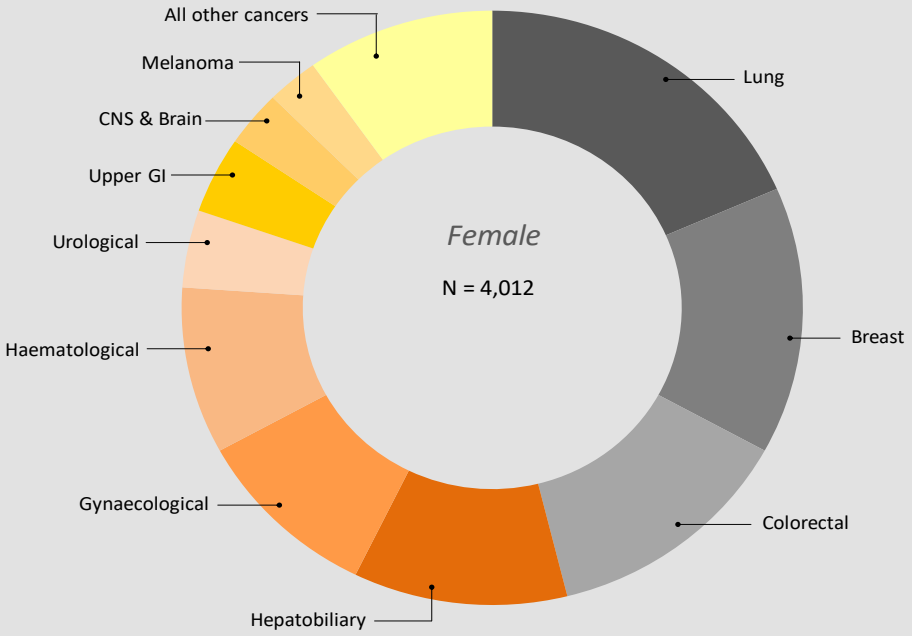
- Breast. 27%
- Melanoma 13%
- Colorectal 11%
- Haematological. 11%
- Lung 9%
- Gynaecological 9%
- Hepatobiliary 3%
- Endocrine. 3%
- Urological. 3%
- Upper GI. 2%
- All other cancers. 8%

Source: Oncology Analysis System, Cancer Alliance Queensland.

Figure 8: Most common cancer deaths, Queensland, 2017



- Lung. 21%
- Prostate 12%
- Colorectal 12%
- Haematological. 11%
- Hepatobiliary 10%
- Upper GI. 7%
- Urological. 6%
- Melanoma. 6%
- Head and neck. 5%
- CNS and brain. 4%
- All other cancers. 7%



- Lung. 18%
- Breast. 15%
- Colorectal 13%
- Hepatobiliary. 11%
- Gynaecological. 10%
- Haematological. 9%
- Urological 4%
- Upper GI. 4%
- CNS and brain. 3%
- Melanoma. 3%
- All other cancers. 10%

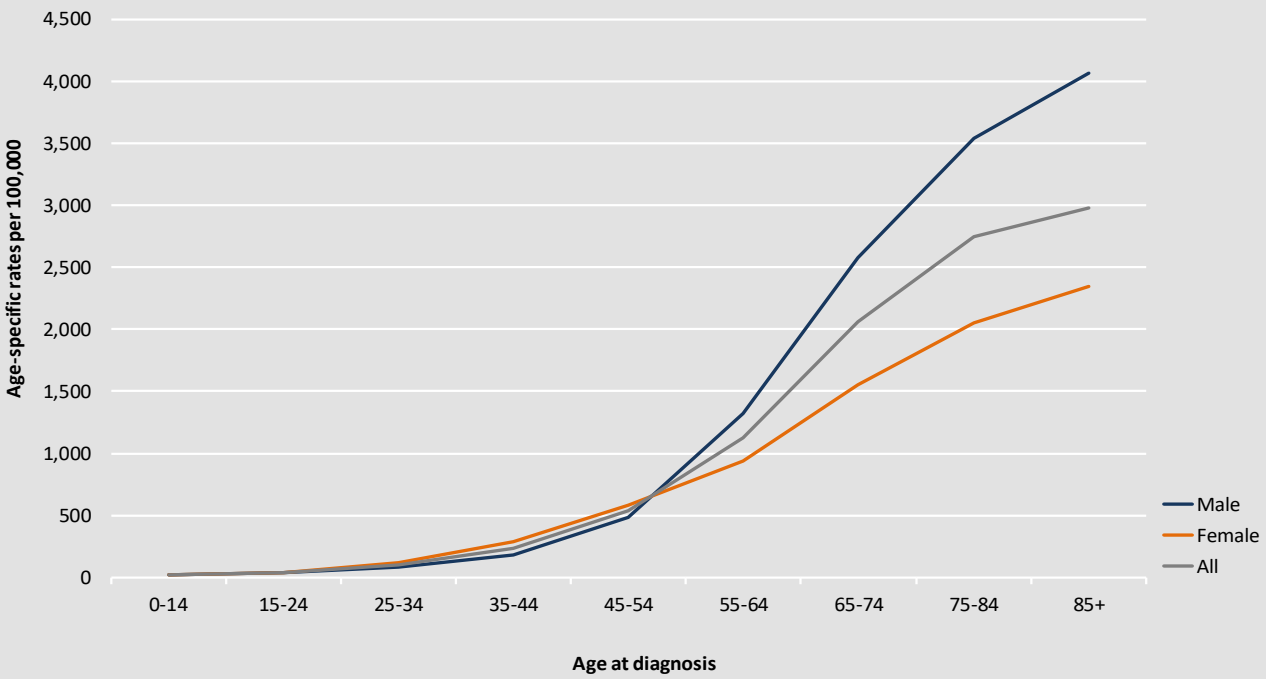
Source: Oncology Analysis System, Cancer Alliance Queensland.

New cases and deaths by age

AGE-SPECIFIC INCIDENCE RATES

Cancer incidence rates increase with age in both sexes (Figure 9). After childhood, incidence rates are slightly lower for males than females until around the age of 50, beyond which incidence rates for males increase sharply. The higher rate for males over 55 reflects the higher rates for cancers common in older males, including prostate, colorectal and lung cancer. The slightly higher rate for females in the younger age groups reflects the contribution of breast and endocrine cancers to the cancer burden in this cohort.

Figure 9: Incidence rates for all cancers, by age at diagnosis, Queensland, 2013-2017



Source: Oncology Analysis System, Cancer Alliance Queensland.

The most common cancers in Queensland are cancers of the prostate and breast, colorectal cancer and melanoma.

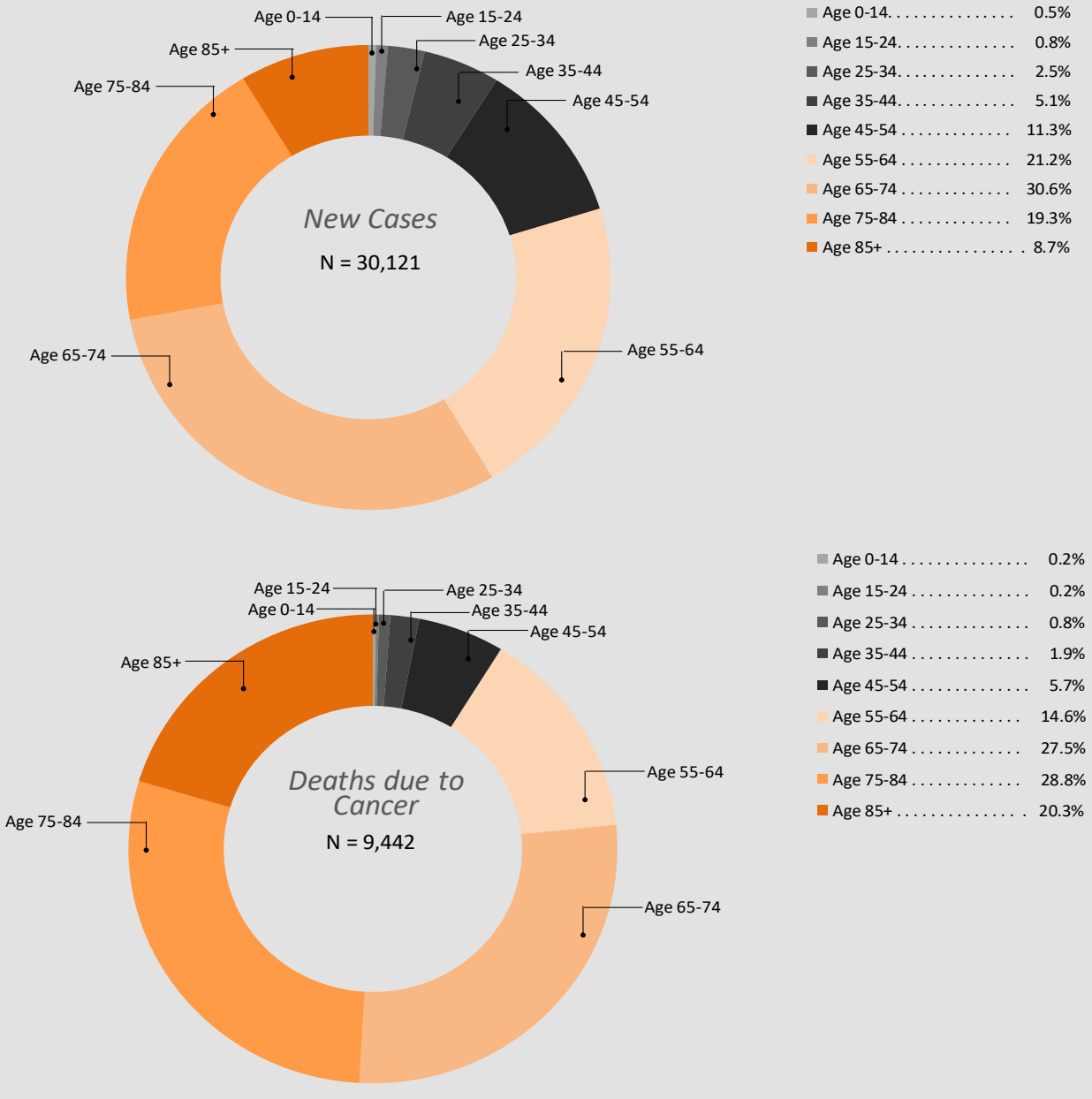
Lung cancer is the leading cause of cancer death in Queensland.

Mortality rates have been in decline since the mid 1990's for both males and females.

CANCER BY AGE GROUP

Cancers in childhood (0-14 years) represent 0.5% of all newly diagnosed cancers; cancers in adolescents and young adults (aged 15-24 years) represent 0.8% of cancers and among adults aged 25-34 years and 35-44 years represent 2.5% and 5.1% respectively (Figure 10). The incidence of new cancers is highest in adults aged 65-74 years (30.6%), followed by adults aged 55-64 years (21.2%) and adults aged 75-84 years (19.3%).

Figure 10: Cancer by age group, Queensland, 2017



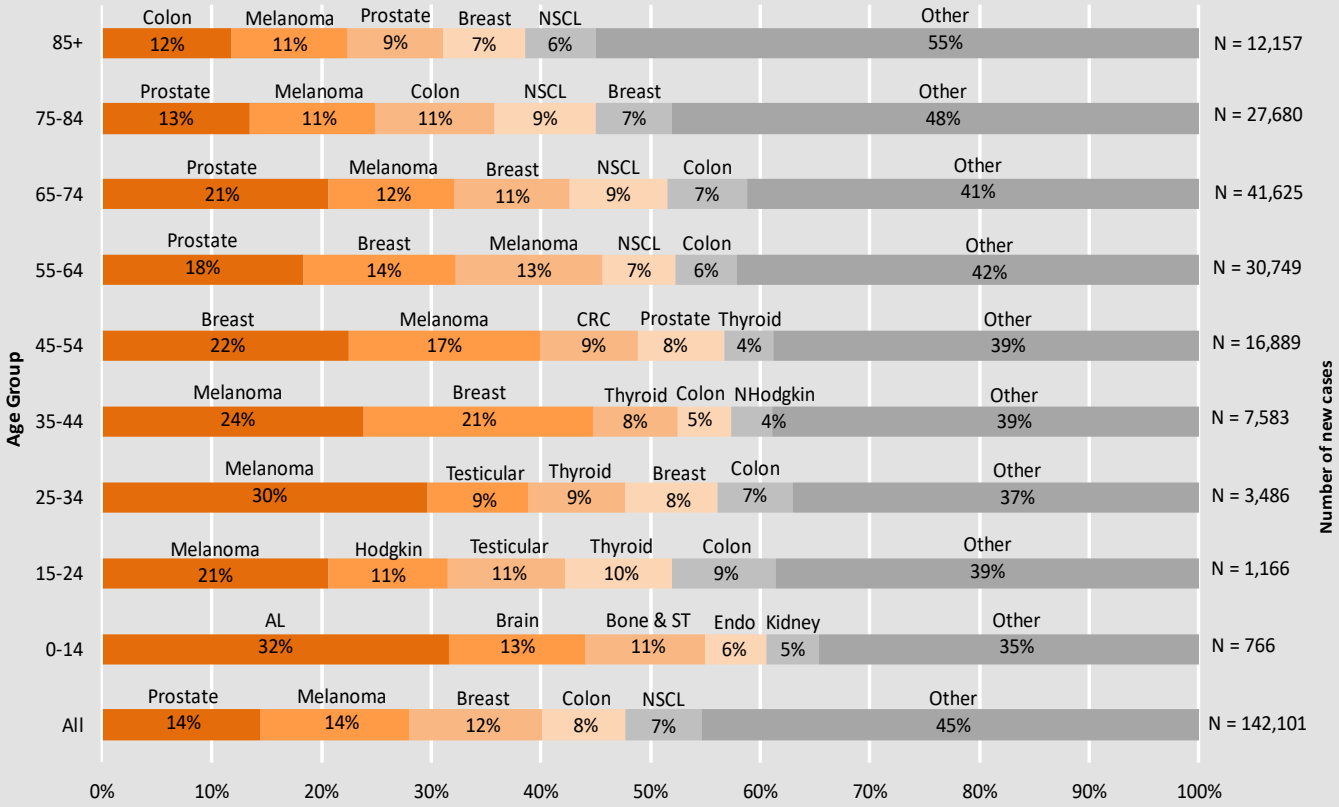
Source: Oncology Analysis System, Cancer Alliance Queensland.

Cancer deaths are most common in adults aged 65 years and older with three out of every four cancer deaths occurring after age 65. Cancer mortality rates were 976 per 100,000 in older (65+) and three per 100,000 in younger adults, respectively. Deaths due to cancer are relatively uncommon in persons under 45 years of age, accounting for less than 5% of all cancer deaths.

MOST COMMON CANCERS BY AGE GROUP

Leukaemia (acute) cancers[i] were the most common cancer diagnoses in childhood (32%) followed by cancers of the brain (13%) and bone and soft tissue (11%) (Figure 11).

Figure 11: The five most common cancer diagnoses by age group, Queensland, 2013-2017



i. The term 'haematological cancers' includes all haematological malignancies, for example, Hodgkin's lymphoma, non-Hodgkin lymphoma and the leukaemias.
Abbreviations: Bone & ST: Bone and soft tissue / CNS & brain: Central nervous system and brain / CRC: Colorectal / Endo: Endocrine / Gyn: Gynaecological / Haem: Haematological / Uro: Urological / AL: Leukaemia (acute) / NHodgkin: non-Hodgkin lymphoma / Hodgkin: Hodgkin lymphoma / NSCL: Non-small cell lung
Source: Oncology Analysis System, Cancer Alliance Queensland.

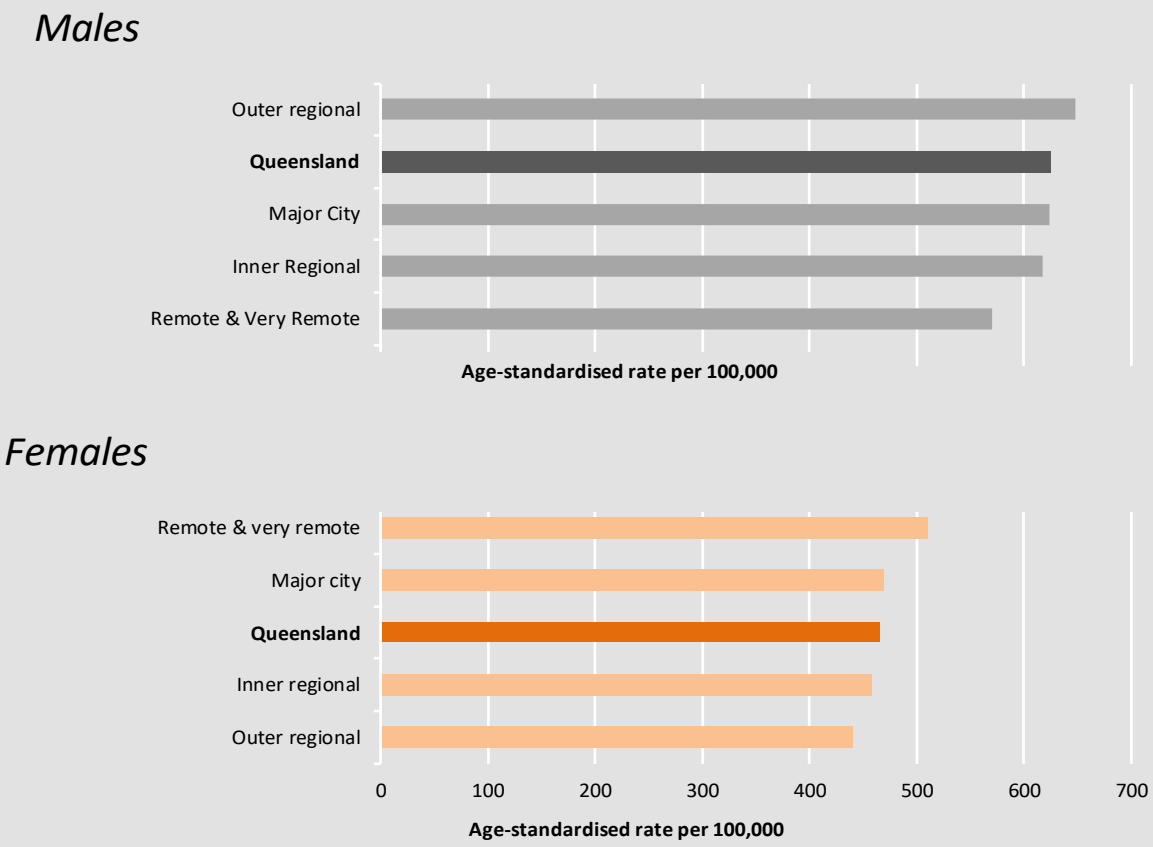
Among adolescents and young adults (15-24 years), melanoma was the most frequently diagnosed cancer (21%), followed by Hodgkin lymphoma (11%) and testicular cancer (11%). Melanoma, testicular and thyroid cancers were the three most frequent cancers in people aged 25-34 years. Melanoma and breast cancer were the most common cancers diagnosed at age 35-44 (24% and 21% respectively), with thyroid gland and colon cancers accounting for 8% and 5% of new cases respectively. Prostate cancer was more commonly diagnosed in the 55-64 and 65-74 age group, accounting for 18% and 21% of the totals, respectively. Breast cancer was similarly more common in these age groups representing 14% in the 55-64 years and 11% in those aged 65-74. Colon, melanoma and prostate cancers were the most commonly diagnosed cancers in the 75-84 and 85+ age groups.

For more detailed analysis of cancer in children, adolescents and young adults refer to Youth Cancer in Queensland[12] report at https://canceralliancegld.health.qld.gov.au.

Regional, national and international variation in incidence

Incidence rates for all invasive cancers varied by remoteness for both males and females (Figure 12; see the Glossary for a definition of remoteness). In females, remote and very remote areas tended to have a higher incidence rate for all cancers compared to other regions.

Figure 12: Cancer incidence rates by remoteness of residence, Queensland, 2017

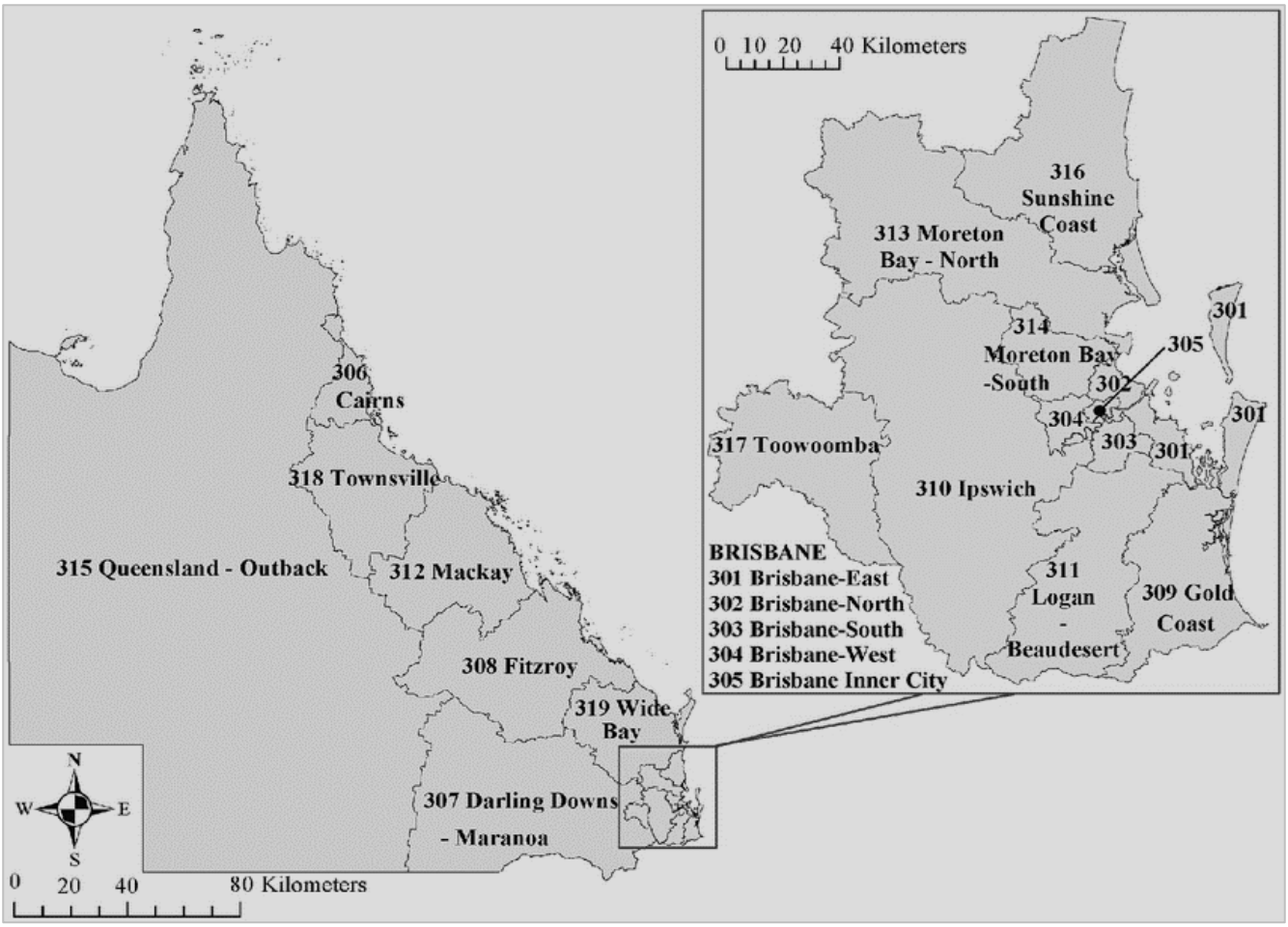


Source: Oncology Analysis System, Cancer Alliance Queensland.

At the Statistical Area Level 4 (SA4), age-standardised incidence rates varied across the state for all invasive cancers considered collectively and for the most common cancers (Figure 13). Differences in regional variation in incidence rates were also evident for both sexes. Reasons for the variations are diverse and complex and include exposure to environmental factors, socioeconomic status, access to health services and chance.[2]

ii. In the interest of completeness, incidence and mortality rates have been included for all SA4 including those with fewer than 16 cases. Incidence and mortality rates based on small numbers of cases should be interpreted with caution due to the poor reliability of rate calculations based on small numbers. For example, the relative standard error (RSE) will be equal or greater than 25% when incidence rates are based on fewer than 16 cases. For more information, refer to the technical notes available at: ***https://www.cdc.gov/cancer/uscs/technical_notes/stat_methods/suppression.htm*****.**

Queensland statistical areas, level 4 (SA4) map, Australian Geography Standard (ASGS 2016)

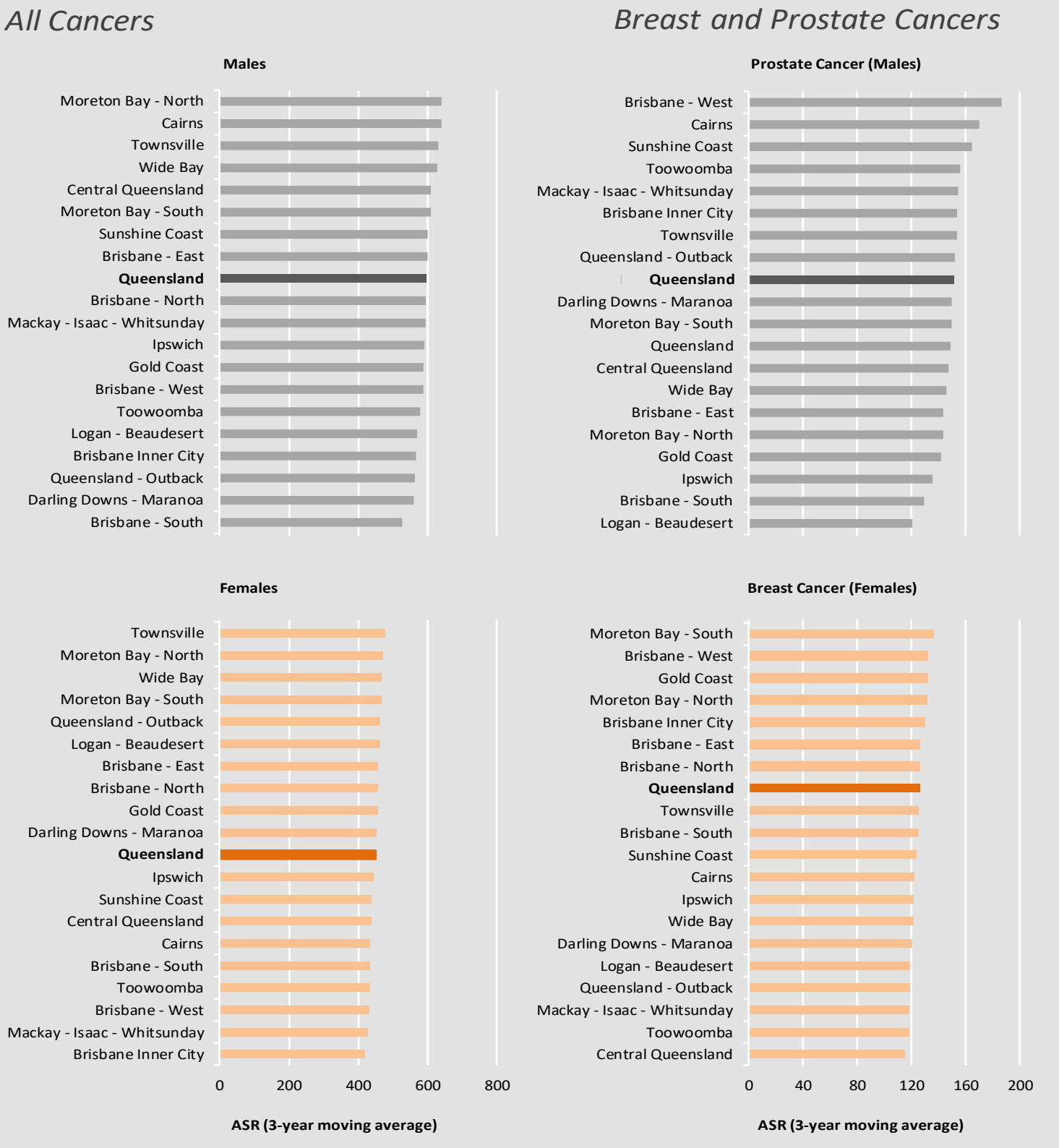


Source: Oncology Analysis System, Cancer Alliance Queensland.

There are 19 Statistical Areas Level 4 (SA4) in Queensland. SA4s are the largest sub-State regions within the main structure of the Australian Statistical Geographical Standard (ASGS) and have been designed for the output of a variety of regional data. A minimum of 100,000 persons was set for the SA4s, although there are some exceptions to this. In regional areas, SA4s are more likely to have populations closer to the minimum (100,000 - 300,000). In metropolitan areas, the SA4s tend to have larger populations (300,000 - 500,000). Reporting at these smaller areas allows for a more comprehensive understanding of results at a local level, which is important for local communities, clinicians and policymakers.

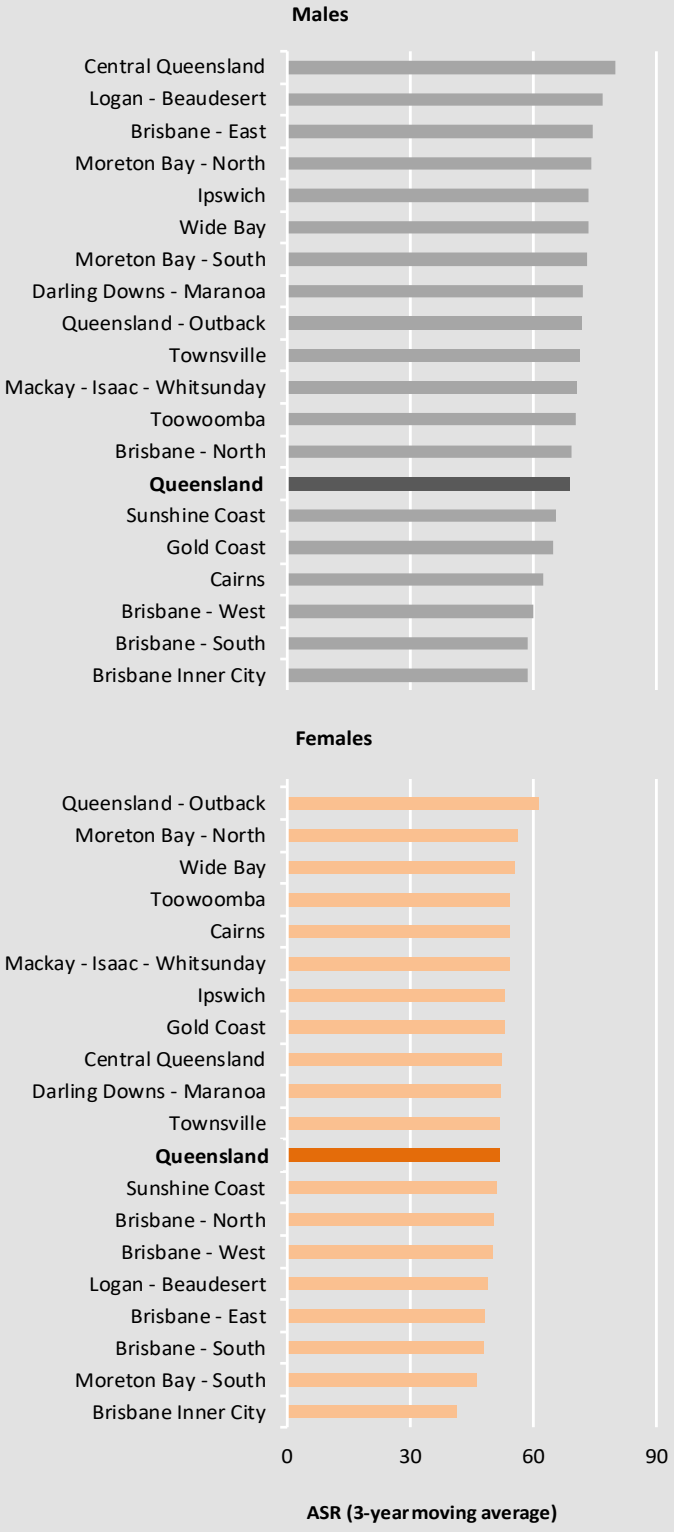
The population characteristics of SA4s can vary considerably. For example, median age is highest in SA4s such as Wide Bay, Sunshine Coast and Darling Downs – Maranoa. Additionally, the proportion of Indigenous Queenslanders is highest in the SA4 of Queensland – Outback, while the proportion of the population born in an Asian country is highest for the SA4 of Brisbane – South. A comprehensive description of the population characteristics of SA4s is available from the Australian Bureau of Statistics 2016 Census of Population and Housing General Community Profile https://datapacks.censusdata.abs.gov.au/datapacks/.

Figure 13: Cancer incidence rates by Statistical Area Level 4 (SA4), Queensland, 2017

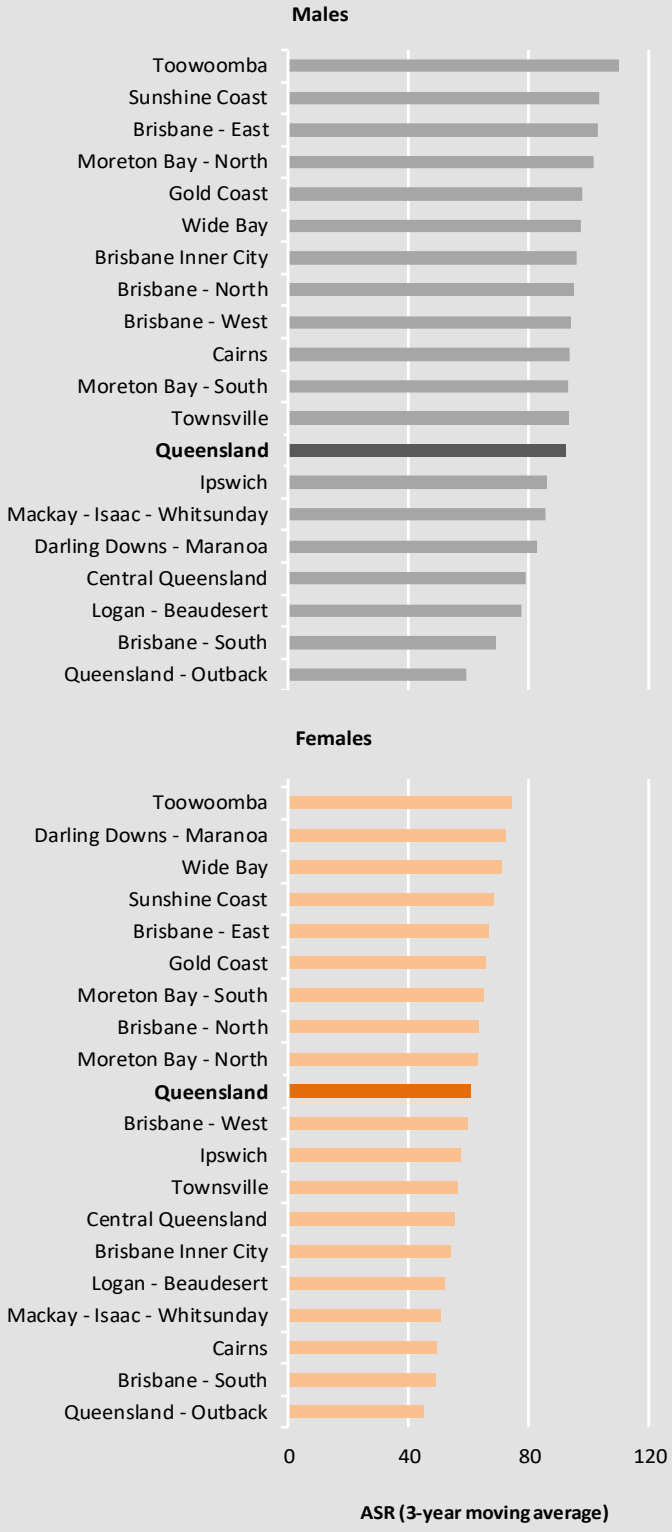


Abbreviation: ASR: Age-standardised rate per 100,000.
Source: Oncology Analysis System, Cancer Alliance Queensland.

Colorectal Cancer



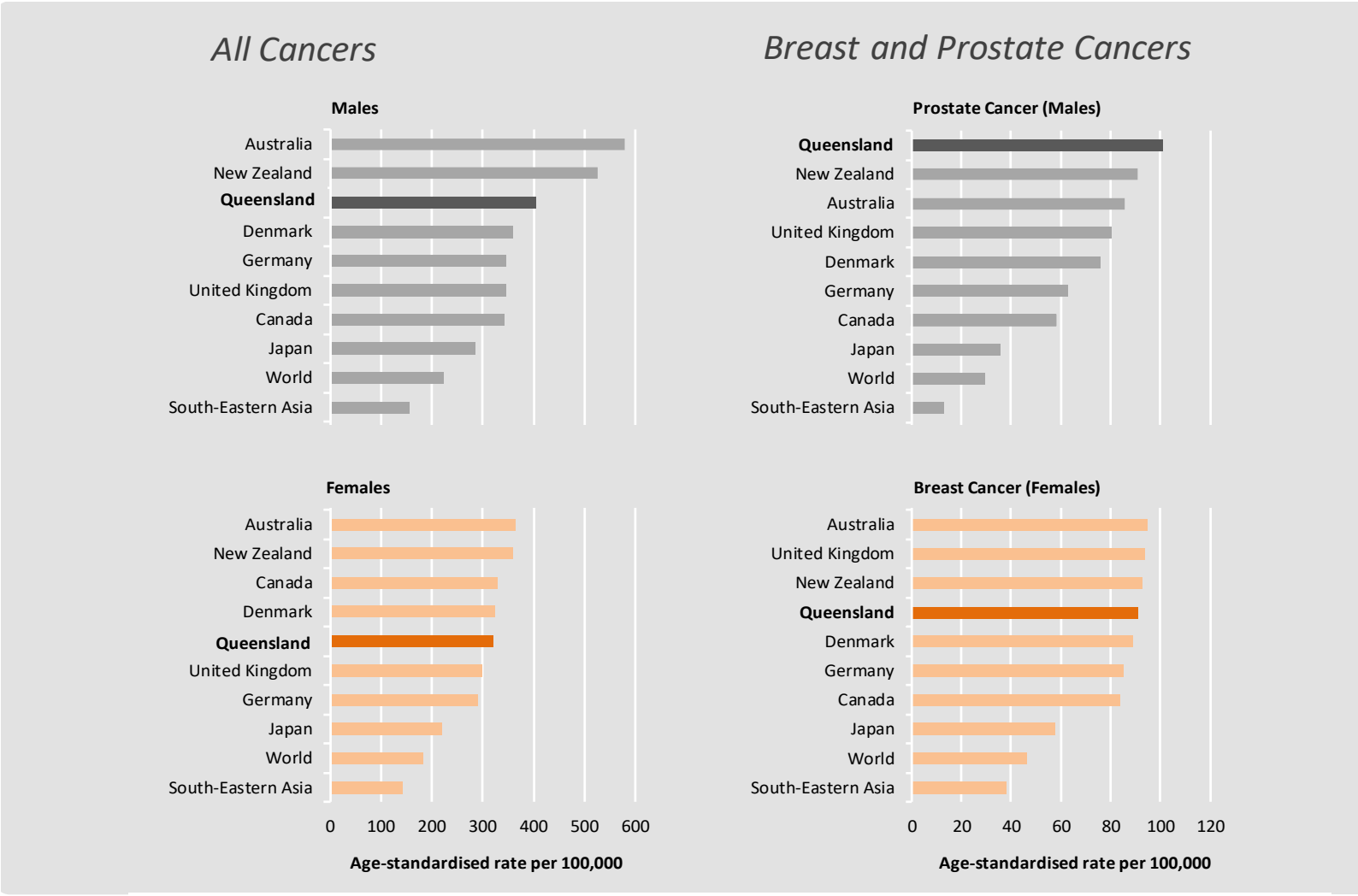
Melanoma



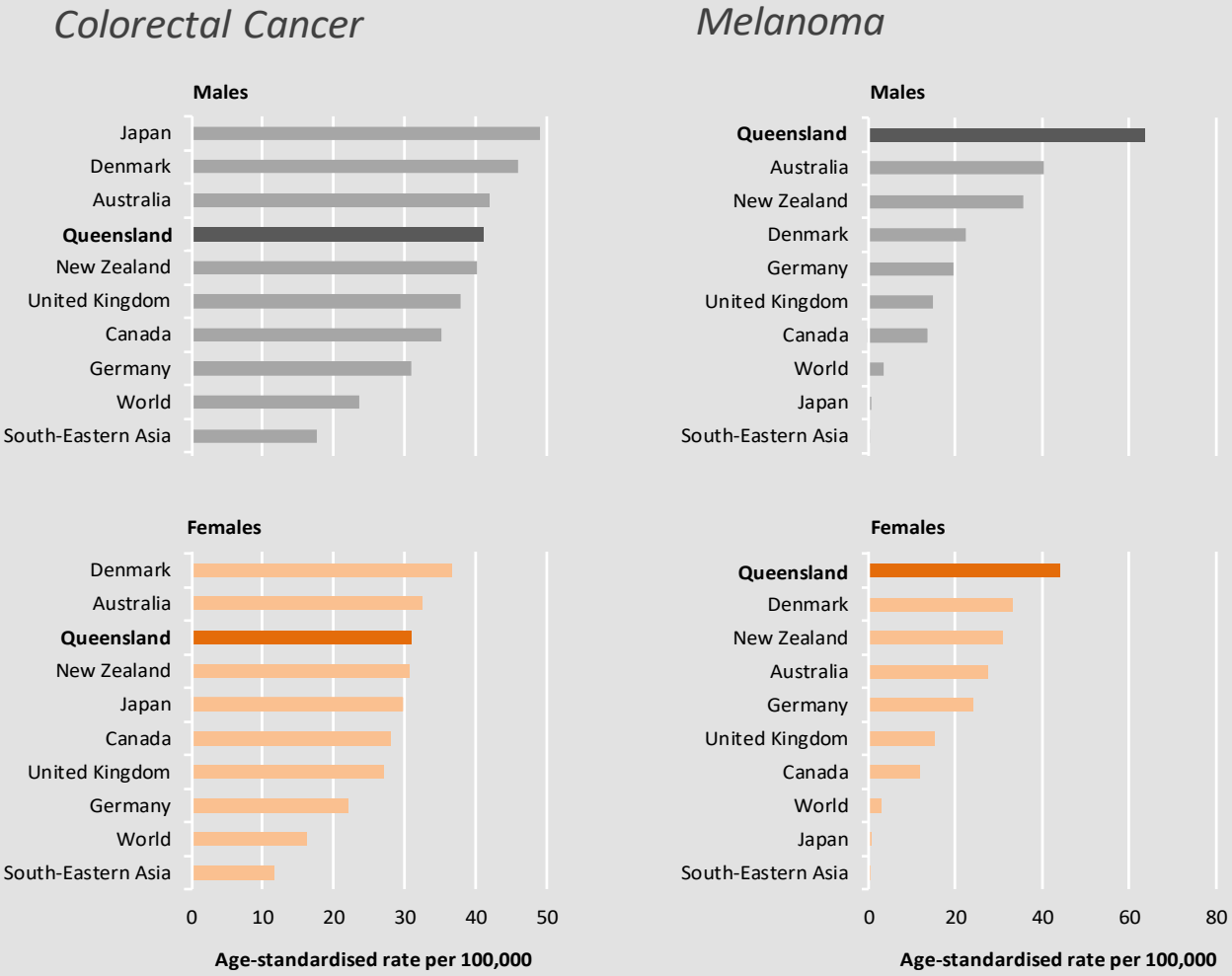
Abbreviation: ASR: Age-standardised rate per 100,000.
Source: Oncology Analysis System, Cancer Alliance Queensland.

Cancer incidence rates in Queensland are among the highest in the world (Figure 14). Cancer rates are somewhat higher than most other developed parts of the world and substantially higher than the less developed regions.

Figure 14: Cancer incidence rates for selected international regions and Queensland, 2017



Note: Cancer incidence and mortality estimated by the International Agency for Research on Cancer (IARC) for 2018 (GLOBOCAN 2018)[3]except for Queensland which is based on Queensland Oncology Repository data for 2017. All rates are standardised to World Standard Population.
Source: Oncology Analysis System, Cancer Alliance Queensland.



Note: Cancer incidence and mortality estimated by the International Agency for Research on Cancer (IARC) for 2018 (GLOBOCAN 2018)[3]except for Queensland which is based on Queensland Oncology Repository data for 2017. All rates are standardised to World Standard Population.
Source: Oncology Analysis System, Cancer Alliance Queensland.

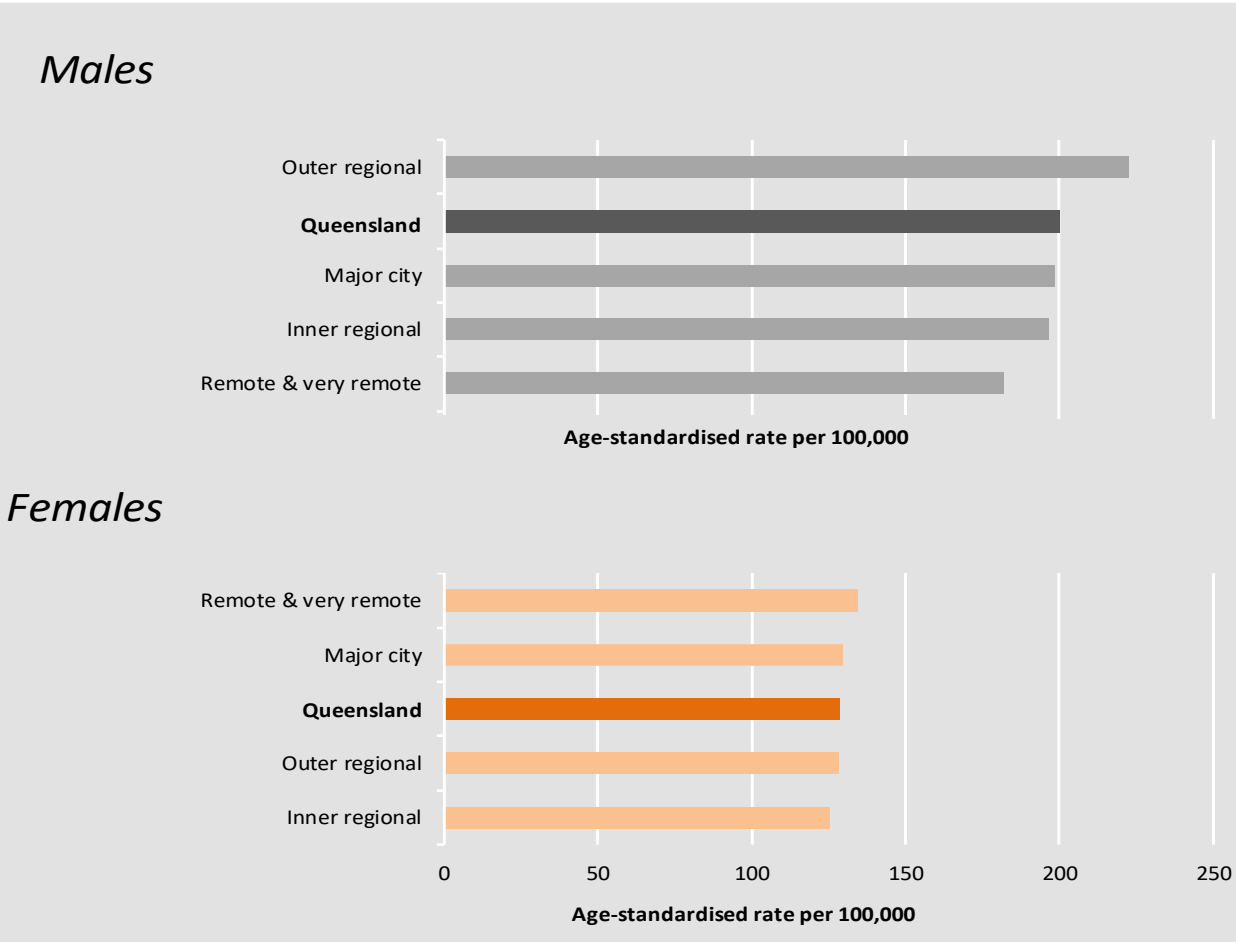
Regional, national and international variation in mortality

Mortality rates for all invasive cancers varied only slightly by remoteness for both males and females (Figure 15). Remote and very remote areas had lower cancer mortality rates than other areas among both males and females.

At the Statistical Area Level 4 (SA4), age-standardised mortality rates varied across the state for all invasive cancers combined as well as for the most common cancers (Figure 16). Reasons for the variations are diverse and complex and include exposure to environmental factors, socioeconomic status, access to health services and chance. It should be noted that remote SA4 have small populations and estimates of mortality rates based on such small numbers may not be as accurate as those areas with larger populations.

While cancer incidence rates in Queensland are among the highest in the world (Figure 16), mortality rates overall compare favourably with other regions (Figure 17). Cancer mortality rates vary widely according to the cancer site and by sex. Mortality rates attributable to breast cancer are lower than most of the selected international regions, while prostate cancer rates are somewhat higher. Lung cancer mortality rates for males are on average lower compared to most other selected countries. For females, lung cancer mortality rates are similar to European countries but higher compared to selected Asian countries (Figure 17).

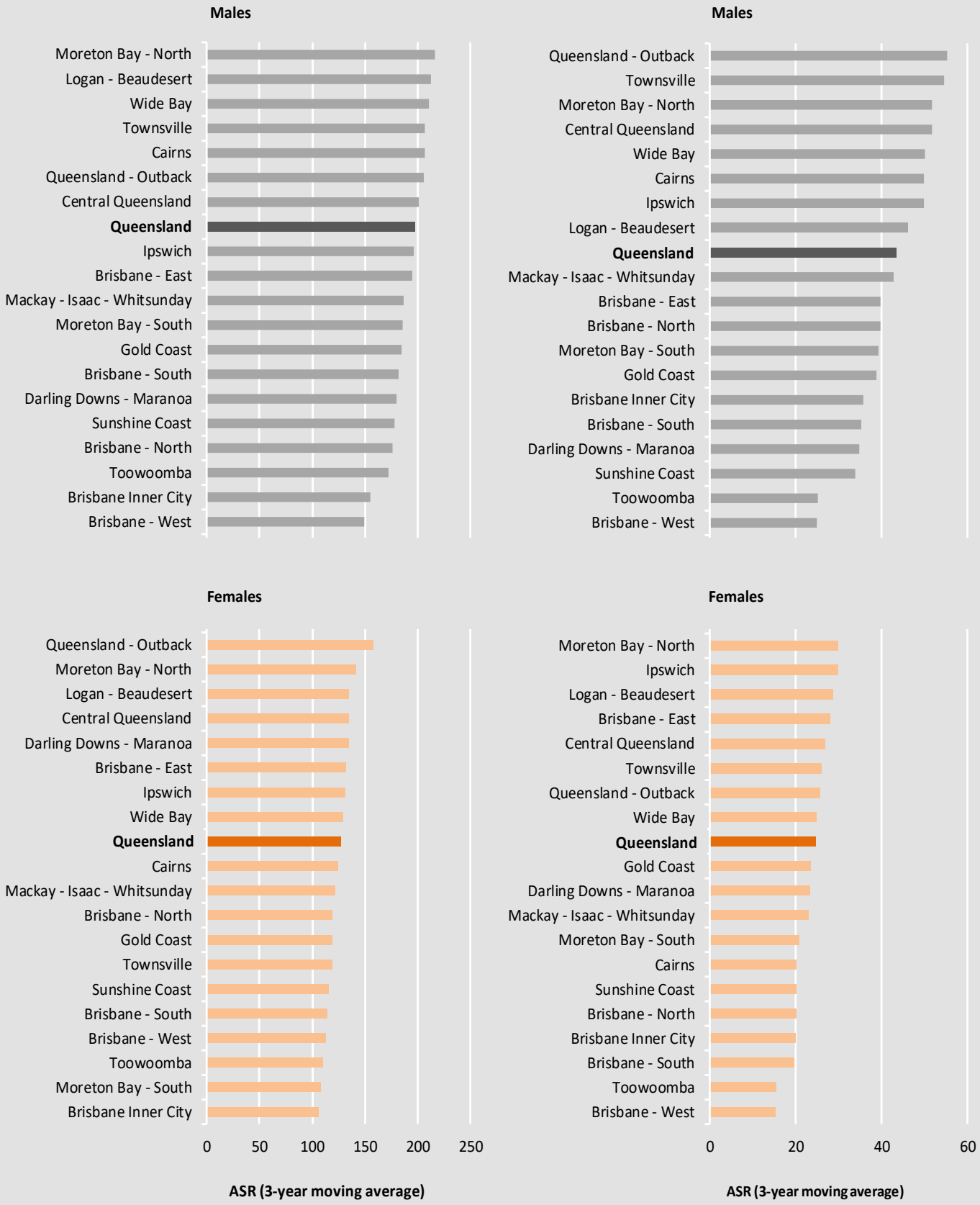
Figure 15: Cancer mortality rates by remoteness of residence, Queensland, 2017



Source: Oncology Analysis System, Cancer Alliance Queensland.

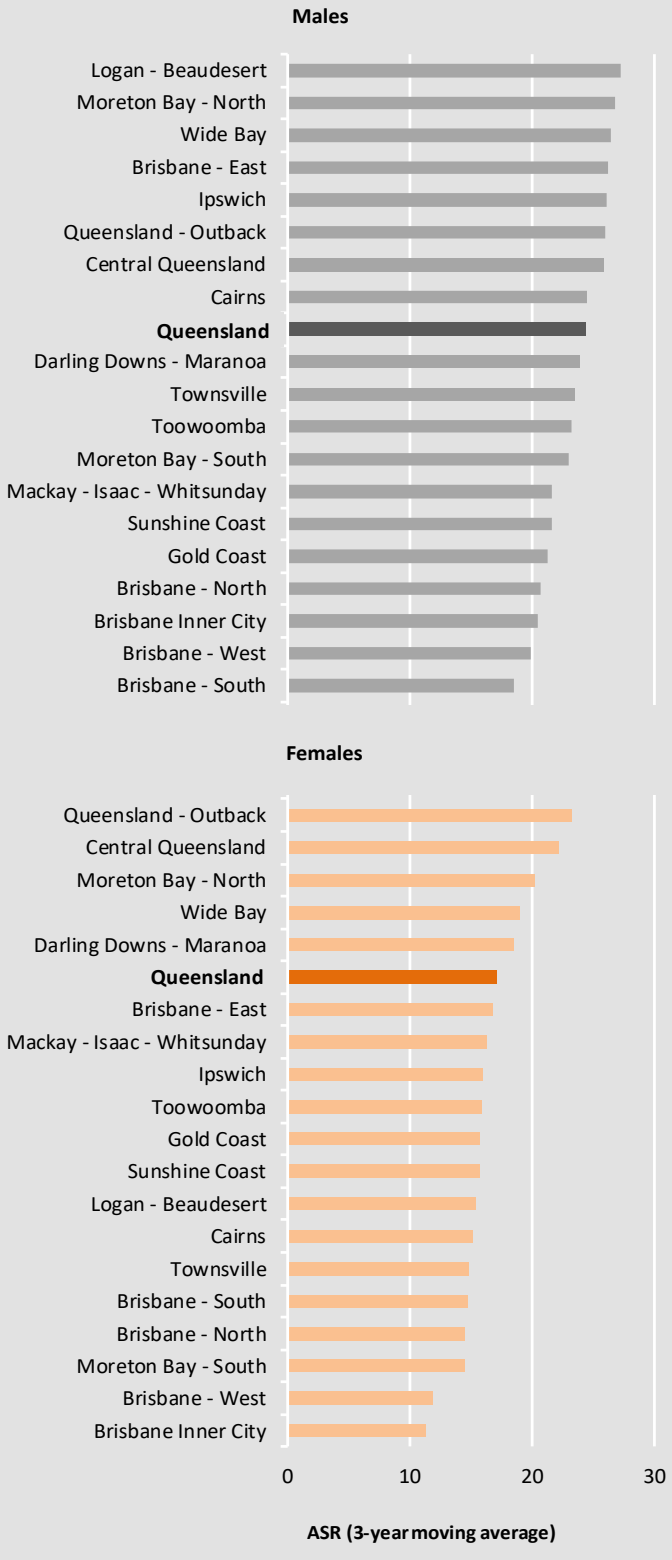
Cancer mortality rates are higher in remote & very remote areas for females, but higher in outer regional for males.

Figure 16: Cancer mortality rates by Statistical Area Level 4 (SA4), Queensland, 2017

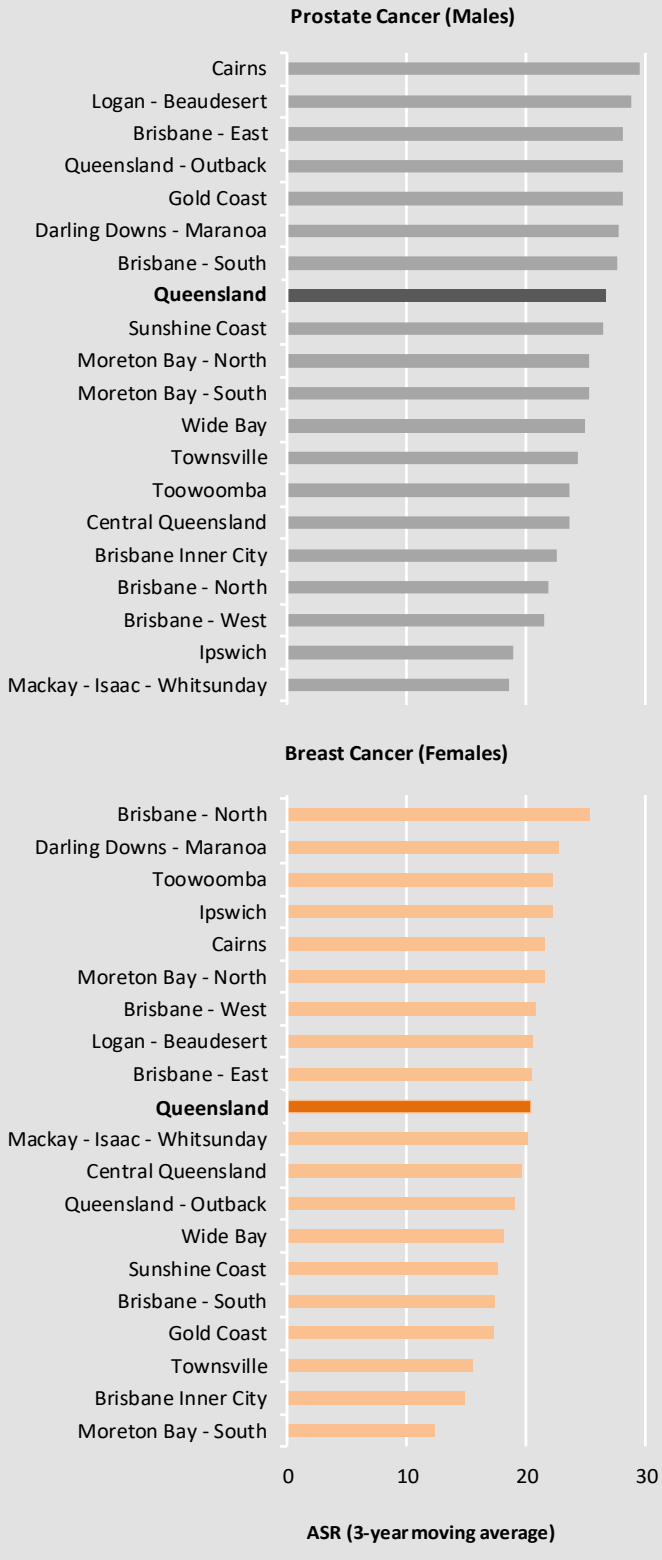


Abbreviation: ASR: Age-standardised rate per 100,000.
Source: Oncology Analysis System, Cancer Alliance Queensland.

Colorectal Cancer

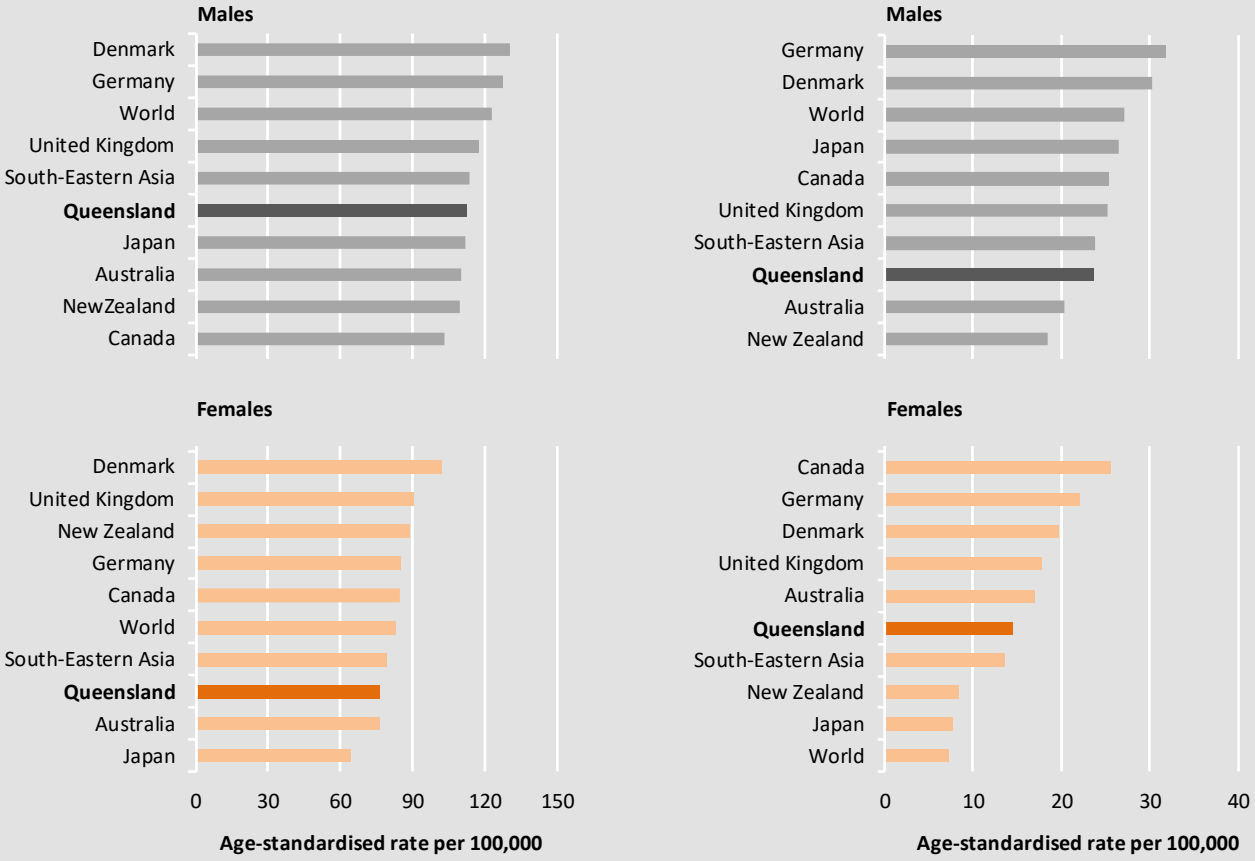


Breast and Prostate Cancers



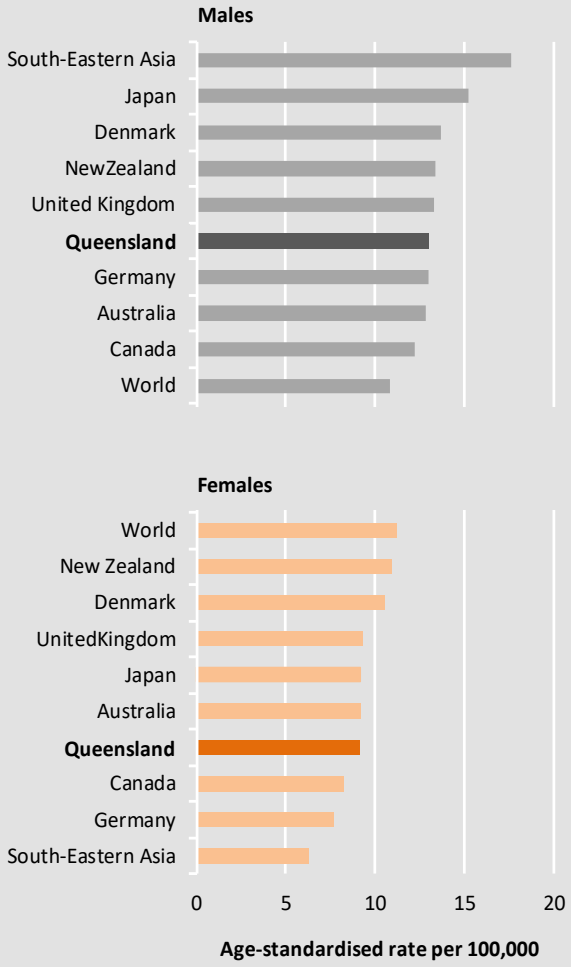
Abbreviation: ASR: Age-standardised rate per 100,000.
Source: Oncology Analysis System, Cancer Alliance Queensland.

Figure 17: Cancer mortality rates for selected international regions and Queensland, 2017

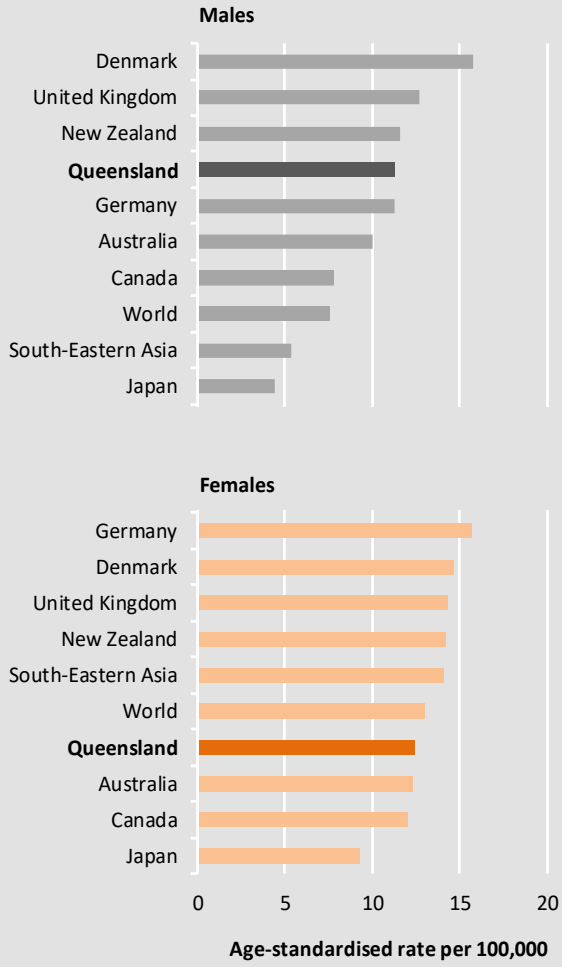


Note: Cancer incidence and mortality estimated by the International Agency for Research on Cancer (IARC) for 2018 (GLOBOCAN 2018)[3]except for Queensland which is based on Queensland Oncology Repository data for 2017. All rates are standardised to World Standard Population.
Source: Oncology Analysis System, Cancer Alliance Queensland.

Colorectal Cancer



Breast and Prostate Cancers



Note: Cancer incidence and mortality estimated by the International Agency for Research on Cancer (IARC) for 2018 (GLOBOCAN 2018)[3]except for Queensland which is based on Queensland Oncology Repository data for 2017. All rates are standardised to World Standard Population.
Source: Oncology Analysis System, Cancer Alliance Queensland.

Prevalence

Prevalence represents the number of people living with a chronic condition such as cancer and is a measure of the burden of the disease for the individual, families and society. The prevalence of cancer is increasing in Queensland as more people are diagnosed with the disease and survival improves. By the end of 2017, more than 98,000 people were living with a diagnosis of cancer in the previous five years, representing nearly 4% of all Queenslanders. Cancer prevalence is summarised in Table 1.

Table 1: Five-year prevalence, most common cancers, Queensland, 31 December 2017

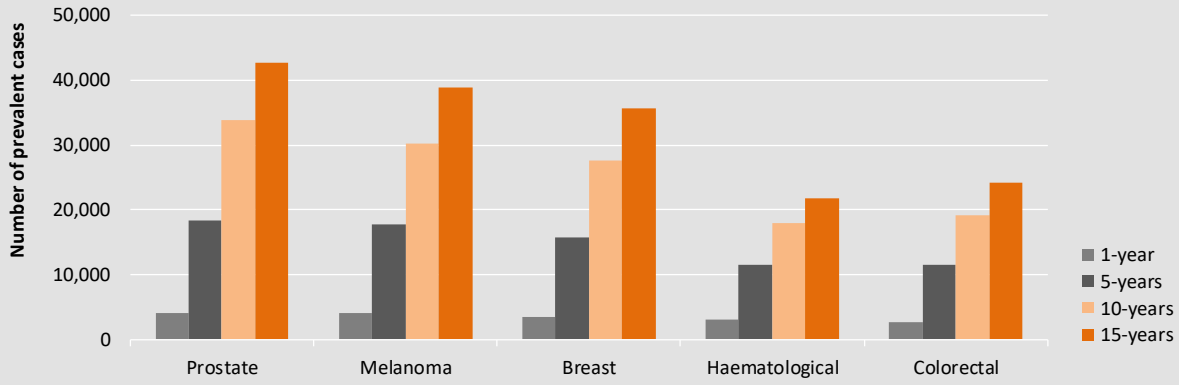
	Both sexes		Male		Female	
	Count	**Percent***	**Count**	**Percent***	**Count**	**Percent***
All cancers	98,233	3.95	52,884	2.16	45,349	1.82
Prostate	18,459	0.74	18,459	0.76		
Melanoma	17,846	0.72	10,354	0.42	7,492	0.30
Breast	15,818	0.64	134	0.01	15,684	0.63
Haematological	11,529	0.46	6,672	0.27	4,857	0.20
Colorectal	11,444	0.46	6,251	0.26	5,193	0.21

**Percent of Queensland population as at 31 December 2017 (4.93 million) (Australian Bureau of Statistics)*
Source: Oncology Analysis System, Cancer Alliance Queensland.

Prostate cancer had the highest prevalence, due to high incidence and good survival, followed by melanoma and breast cancer. These three cancers accounted for more than half (53%) of all prevalent cancers in Queenslanders. It is worth noting that while lung cancer is common, representing 9% of all new cancers, it has a relatively low prevalence (18,459 cases or 19% of all cancers) due to relatively poor survival.

The prevalence of common cancers by time since diagnosis is shown in Figure 18. For cancers with relatively long survival times such as melanoma and breast cancer, increasing time since diagnosis is associated with increasing prevalence; for cancers with short survival times such as lung cancer, increasing time since diagnosis is associated with a smaller proportional increase in prevalence. The time periods used for prevalence approximate different periods of the patient journey, from post-diagnosis and primary treatment (<1 year), through to follow-up (1 to 5 years) and long-term survivorship (>5 years).

Figure 18: Prevalence of the most common cancers, by time since diagnosis, Queensland, 31 December 2017



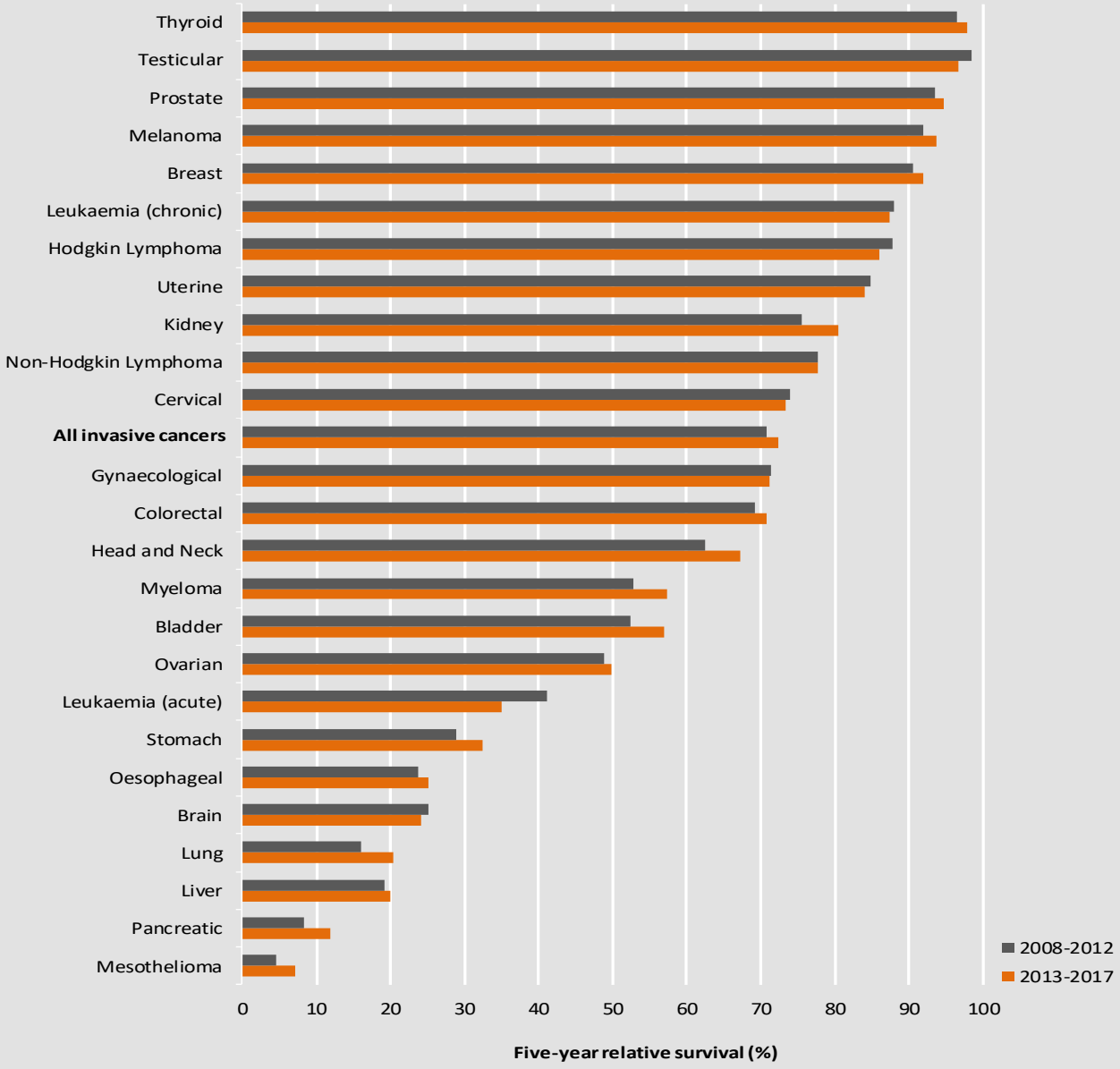
Source: Oncology Analysis System, Cancer Alliance Queensland.

Survival

Relative survival is a measure of the survival of a group of persons with a condition, such as cancer, relative to a comparable group from the general population without the condition. For cancer, five-year relative survival represents the proportion of patients alive five years after diagnosis, taking into account age, gender and year of diagnosis.

Survival varies widely and depends on the type of cancer. Five-year survival ratios vary from over 98% for thyroid cancer to under 7% for mesothelioma cancer (Figure 19). Considered collectively, five year survival ratio for all invasive cancers from 2013-2017 was 71%.

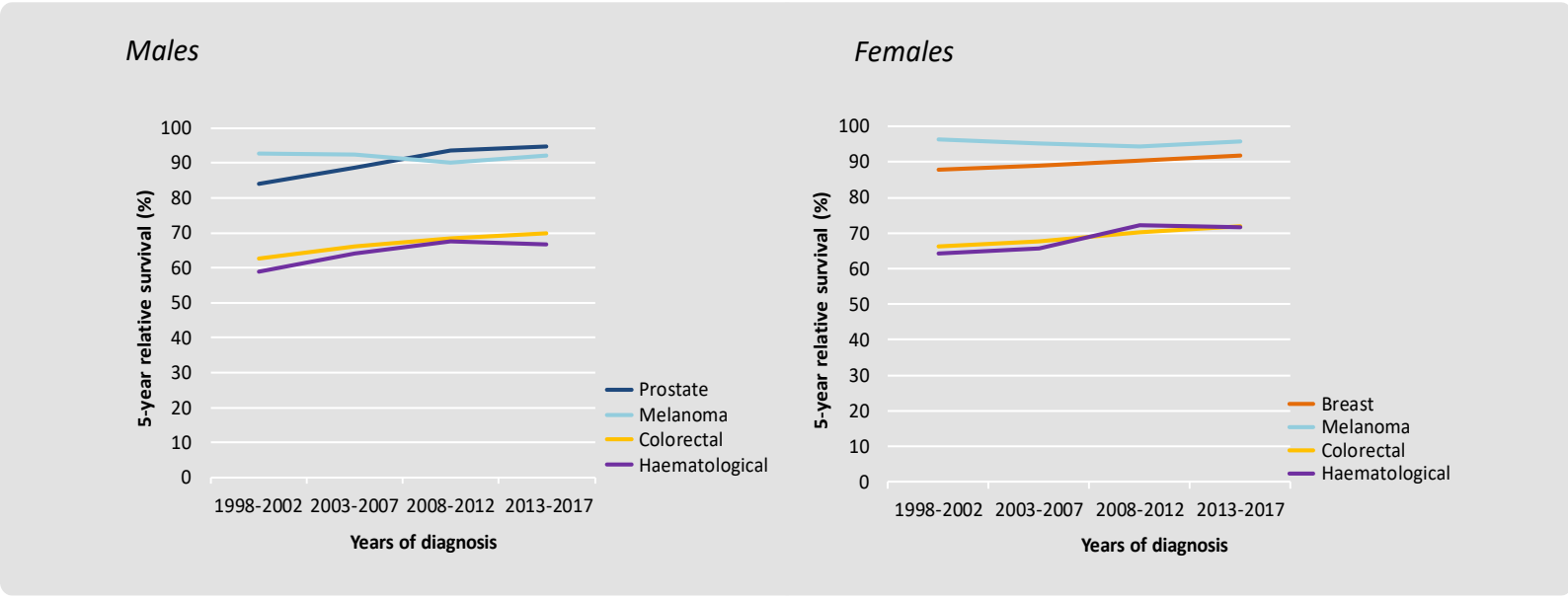
Figure 19: Five year relative survival for the most common cancers diagnosed in Queensland, 2008-2012 vs 2013-2017



Source: Oncology Analysis System, Cancer Alliance Queensland.

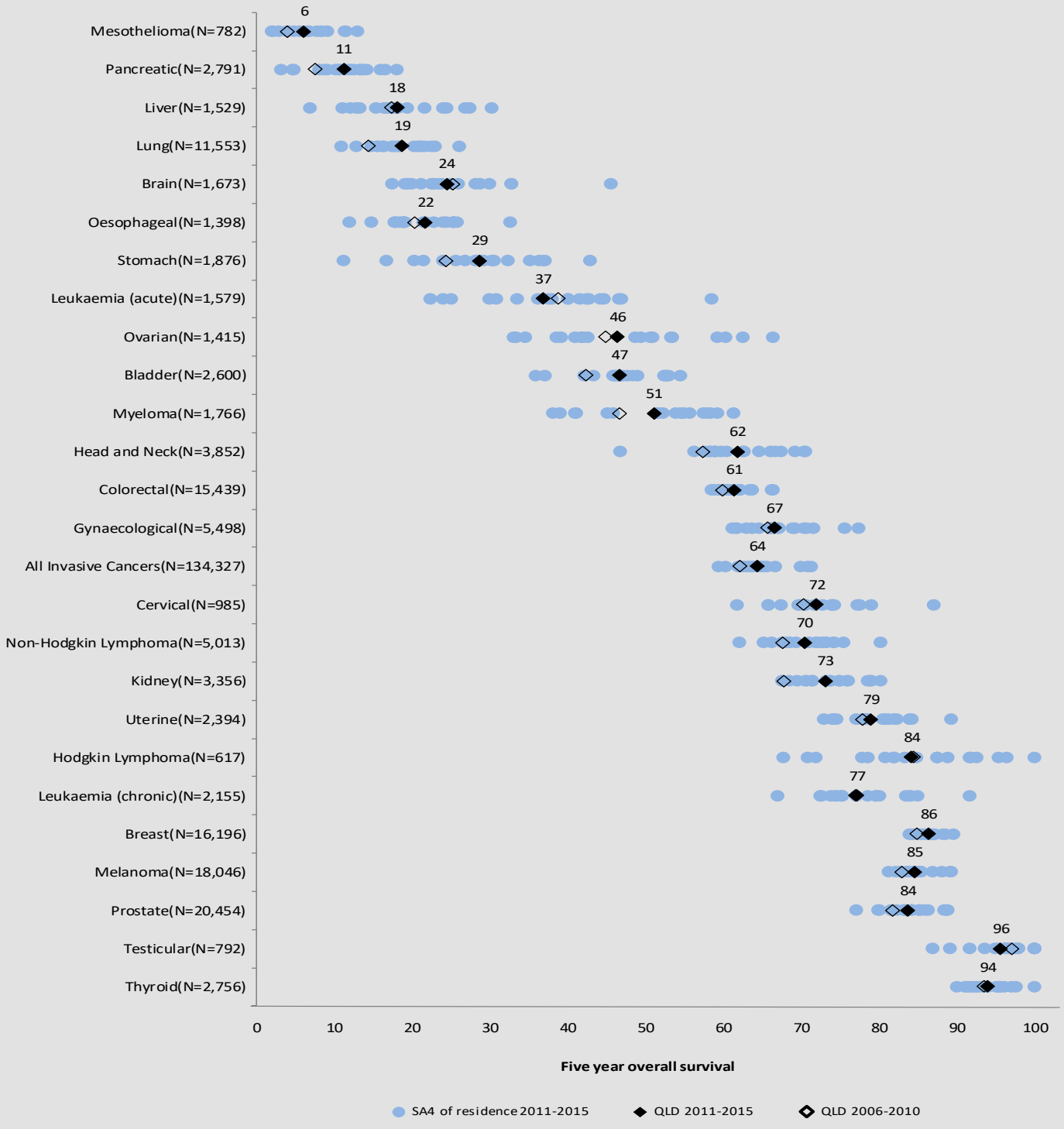
The relative survival ratios for many common cancers appear to be improving, with greatest gains between 2008-2012 and 2013-2017 observed for kidney, head and neck, myeloma, bladder, lung, pancreatic and stomach cancers (Figure 19). Smaller increases in survival are also noted for prostate, breast, colorectal, oesophageal and liver cancers. Improvements in survival may be related to earlier detection and improved treatments.

Figure 20: Five-year relative survival for the most common cancers, Queensland, 1998-2002 to 2013-2017



Source: Oncology Analysis System, Cancer Alliance Queensland.

Figure 21: Five-year overall survival for the most common cancers by SA4, Queensland, 2006-2010 vs 2011-2015



Note: End of follow-up is 31 December 2019, hence cohort patients in 2011-2015 is the latest year for calculating 5-year survival.
Overall survival is an estimate of the probability of surviving all causes of death, including causes of death other than cancer.
Source: Oncology Analysis System, Cancer Alliance Queensland.

Survival increased across several cancers (including lung, stomach, myeloma, head and neck and kidney) for those diagnosed in the period 2011-2015 compared to the period 2006-2010.

For the most recent period (2011-2015) there was little variation in five-year survival for several cancers, for example breast, prostate, melanoma, colorectal and thyroid. More variation across SA4s however can be seen for some cancers, for example: liver, ovarian, acute leukaemia and Hodgkin lymphoma.

Incidence and mortality trends: Most common cancers

Trends in incidence or mortality can be characterised by the rate of change and summarised by the annual percentage change (APC) and may be positive (rates increasing) or negative (rates decreasing). Cancer incidence and mortality trends for the most common cancers are summarised in Table 3 and Figures 21 to 25. Annual percentage changes which are statistically significant are shown in bold in Table 3.

Table 3: Annual percentage change (APC) in age-standardised incidence and mortality rates, most common cancers, Queensland, 1982-2017

	Incidence				Mortality			
	Males		Females		Males		Females	
Cancer	Period	APC	Period	APC	Period	APC	Period	APC
All cancers	1982-1986	-0.5	1982-2000	**1.4**	1982-1994	**0.6**	1982-1984	4.2
	1986-1994	**2.6**	2000-2003	-1.6	1994-2017	**-1.2**	1984-1996	0.3
	1994-2002	-0.5	2003-2017	**0.7**			1996-2017	**-0.8**
	2002-2007	1.5						
	2007-2017	-0.4						
Prostate	1982-1988	0.0			1982-1993	**3.9**		
	1988-1994	**11.0**			1993-2017	**-2.0**		
	1994-1997	-12.1						
	1997-2008	**4.4**						
	2008-2017	**-2.9**						
Female Breast			1982-1998	**2.2**			1982-1993	0.9
			1998-2017	**0.4**			1993-2017	**-1.8**
Colorectal	1982-2000	**1.2**	1982-2006	**0.3**	1982-1991	**1.9**	1982-2017	**-1.4**
	2000-2017	**-1.1**	2006-2017	**-1.4**	1991-2017	**-1.7**		
Melanoma	1982-1997	**3.1**	1982-1986	**6.1**	1982-2013	**1.6**	1982-2017	0.2
	1997-2017	**0.8**	1986-1993	-1.4	2013-2017	-7.3		
			1993-1997	**5.0**				
			1997-2006	-0.5				
			2006-2017	**1.5**				
Haematological	1982-1987	0.2	1982-1999	**2.6**	1982-1998	**1.5**	1982-1996	**1.6**
	1987-1999	**3.3**	1999-2017	**0.8**	1998-2006	**-2.4**	1996-2017	**-1.4**
	1999-2015	**0.7**			2006-2017	0.2		
	2015-2017	8.0						
Hepatobiliary	1982-1984	**-11.0**	1982-2017	**1.0**	1982-2017	**1.1**	1982-2017	**0.7**
	1984-2000	**1.9**						
	2000-2004	-2.6						
	2004-2007	8.2						
	2007-2011	-1.0						
Gynaecological			1982-2004	**-0.9**			1982-2010	**-1.1**
			2004-2017	0.4			2010-2017	1.2
Lung	1982-2017	**-1.3**	1982-2017	**2.3**	1982-2017	**-1.5**	1982-2005	**2.9**
							2005-2017	-0.3
Urological	1982-1989	-1.3	1982-1993	**1.7**	1982-1994	0.7	1982-1991	**3.7**
	1989-1994	3.3	1993-2017	**-0.7**	1994-2017	**-1.1**	1991-2017	**-1.5**
	1994-2008	**-1.6**						
	2008-2017	**1.1**						
Head and neck	1982-2003	**-1.4**	1982-1994	**1.9**	1982-2017	**-1.1**	1982-2017	**-0.6**
	2003-2017	0.5	1994-2002	-2.8				
			2002-2017	**1.2**				
Endocrine	1982-2017	**4.3**	1982-2007	**6.0**	1982-2017	0.0	1982-2017	0.5
			2007-2017	2.0				
Upper GI	1982-2017	**-0.8**	1982-2017	**-0.9**	1982-2017	**-1.5**	1982-2017	**-1.8**
CNS	1982-2017	0.3	1982-2017	0.0	1982-2017	0.3	1982-2017	0.0

** Indicates a significant increase or decrease in annual percentage change (APC), where the likelihood that the observed result is due to chance alone is less than 5% (p<0.05).*

Abbreviations: APC: annual percentage change; GI: gastrointestinal; CNS: Central nervous system (including brain).

Source: Oncology Analysis System, Queensland Cancer Control Analysis Team.

PROSTATE CANCER

Prostate cancer is the most common cancer in males (Figure 7). Incidence rates increased significantly between 1988-1994 (Table 3), coinciding with the increased use of prostate-specific antigen (PSA) testing. The increased identification of prevalent prostate cancers during this period resulted in a decline in incidence over the following years 1994-1997, before again increasing significantly between 1997 and 2008. For the most recent 10 years incidence rates have been decreasing by 2.9% per year. Mortality rates from prostate cancer peaked in Queensland in early 1990s and thereafter have declined at an annual rate of 2.0% (Table 3; Figure 24). The decline in mortality rates is not clearly understood. Increased PSA testing may be a contributing factor, although this is controversial.[4,5,6,7] It is also suggested that improved treatment of early-stage disease with surgery or radiotherapy, or better treatment of advanced cancers with anti-androgenic therapies may be contributing to the lower rates of mortality.[8]

MELANOMA

Australia has the highest incidence rate of melanoma in the world and Queensland has the highest rate of any Australian State or Territory.[8] Melanoma is the second most common cancer in Queensland (Figure 7). Melanoma incidence rates rose markedly in both males and females in the 1980s and 1990s. Incidence has continued to rise more recently, and although significant the increase is not as great compared to earlier years. Public health campaigns aimed at raising awareness may reflect changing incidence patterns. Between 1982-2013 mortality rates rose significantly in males (APC 1.6%; Table 3) and thereafter a non-significant decline of 7.3% per year was observed.

FEMALE BREAST CANCER

Breast cancer is the most common cancer in females (Figure 7). Incidence rates increased significantly between 1982 and 1998 (Table 3), in large part a reflection of increased breast cancer screening during this period. Incidence rates since 1998 have remained fairly constant (slight increase 0.4% per year). Mortality rates have declined by 1.8% per year since 1993 (Figure 24). This significant decrease has been observed in other countries and is likely due to more effective anticancer treatments[9] along with early detection as a result of Australia's population-based breast screening program (BreastScreen).[10]

HAEMATOLOGICAL MALIGNANCIES

The incidence of haematological malignancies increased by 3.3% annually from 1987 to 1999 in males and has since remained relatively stable (Table 3, Figure 24). A similar pattern was observed for females. Mortality rates also increased in the 1990s before decreasing significantly thereafter (APC –2.4% for males; -1.4% for females). The decreases in mortality most likely reflect the slight decline in incidence combined with improved chemotherapy treatments, particularly for young patients.[11]

COLORECTAL CANCER

Colorectal cancer is the third most common cancer in Queensland (Figure 7). The incidence rate of colorectal cancer in females increased significantly over the period 1982 to 2006 (APC 0.3%), before declining significantly (APC -1.4%) from 2006-2017. Incidence rates in males increased significantly between 1982 and 2000 (APC 1.2%) before declining significantly thereafter at a rate of 1.1% per year (Table 3). Mortality rates for males decreased significantly after 1991 (APC -1.7%); rates for females have decreased steadily and significantly over the entire period (APC -1.4%). Reduction in mortality likely reflect improvements in treatments as well as early detection.

LUNG CANCER

Lung cancer incidence rates declined significantly between 1982 and 2017 for males (APC-1.3%). For females, rates increased significantly between 1982 and 2017 (APC 2.3%; Table 3). Mortality rates followed similar trends for males with again a significant decrease (APC -1.5%). Whereas female mortality rates have continued to increase (significantly between years 1982 and 2005, APC 2.9%; Figure 25), followed by a non-significant 0.3% decrease for 2005-2017. The differences in incidence and mortality rates between males and females have been attributed to past patterns of smoking prevalence.[9] Lung cancer is the leading cause of cancer deaths in females, exceeding those due to breast cancer (Figure 8).

UROLOGICAL CANCERS

Incidence rates for urological cancers in males increased significantly (APC 1.1%; Table 3) from 2008 to 2017. For females, rates decreased by 0.7% during 1993-2017 incidence. Mortality rates for both sexes have decreased significantly between 1991 and 2017, by 1.1% in males and 1.5% per year in females.

HEPATOBILIARY CANCERS

Incidence rates for hepatobiliary cancers varied in males during the period 1982 to 2017 while incidence rates for females increased significantly (APC 1.0%; Table 3). Mortality rates for both sexes have increased, by 1.1% in males and 0.7% per year in females (both significant).

GYNAECOLOGICAL CANCERS

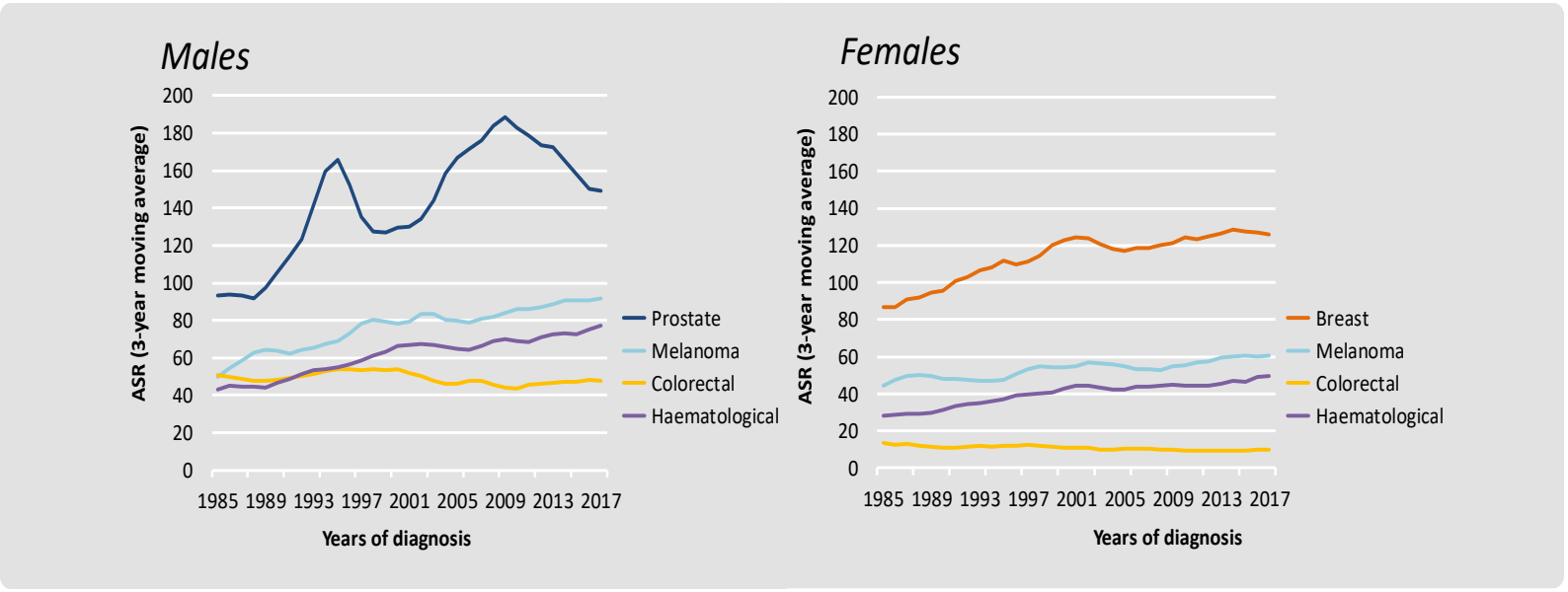
Incidence rates for gynaecological cancers decreased significantly (APC –0.9%; Table 3) from 1982-2004 and have been declining by about 0.4% thereafter. Similarly, mortality rates decreased significantly (APC –1.1%) from 1982-2010, before a slight (insignificant) annual increase of 1.2% from 2010-2017.

HEAD AND NECK CANCERS

Head and neck cancer incidence declined significantly by 1.4% per year from 1982-2003 (Table 3) and has remained relatively stable since then. For females, rates increased significantly between 2002 and 2017 (APC 1.2%). Mortality rates decreased significantly since 1982 (APC -1.1% in males, -0.6% in females) (Table 3).

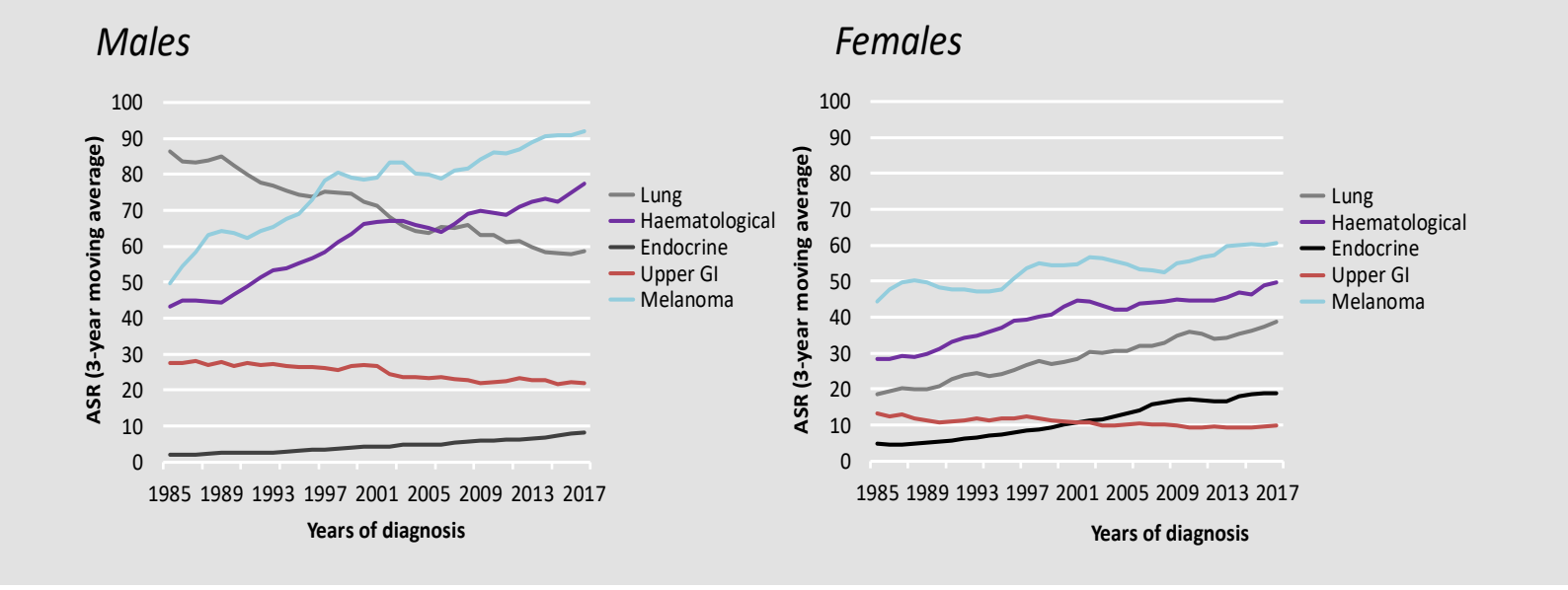
Melanoma incidence rates in Queensland - the highest in the world - have not changed significantly over the past decade.

Figure 22: Incidence trends for the most common cancers, Queensland, 1982-2017



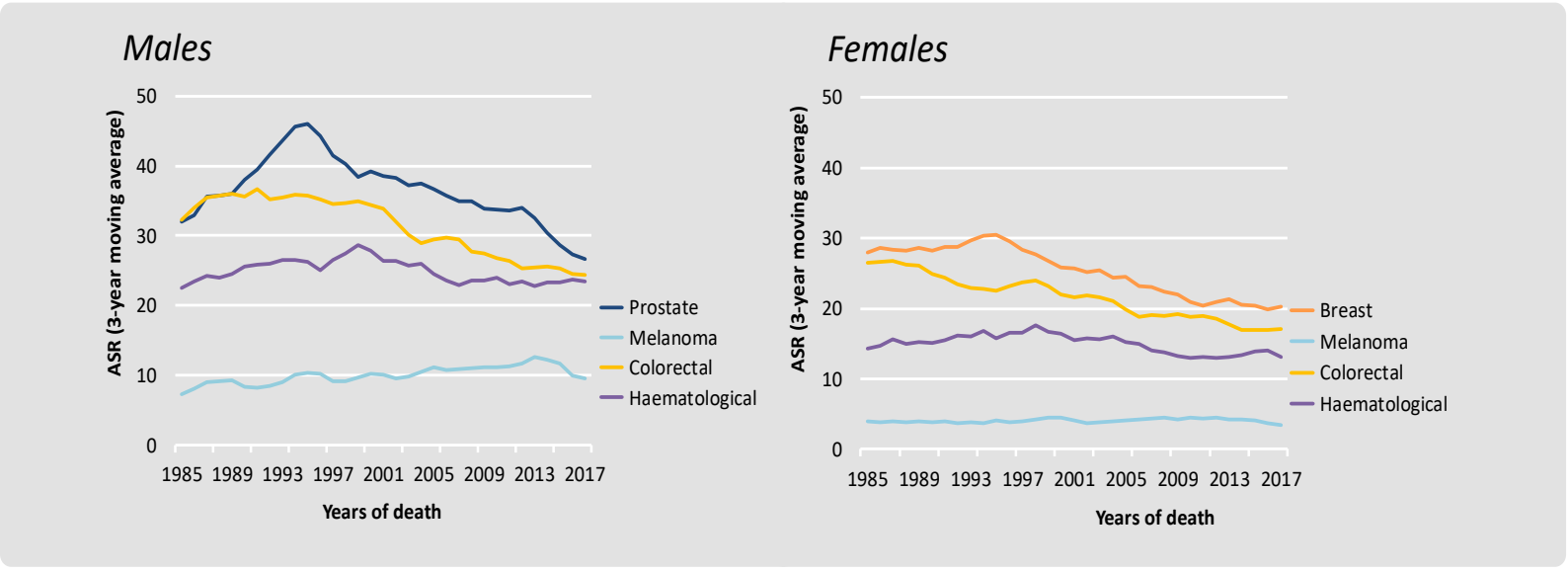
Abbreviation: ASR: Age-standardised rate per 100,000.
Source: Oncology Analysis System, Cancer Alliance Queensland.

Figure 23: Incidence trends for the most rapidly changing cancers, Queensland, 1982-2017



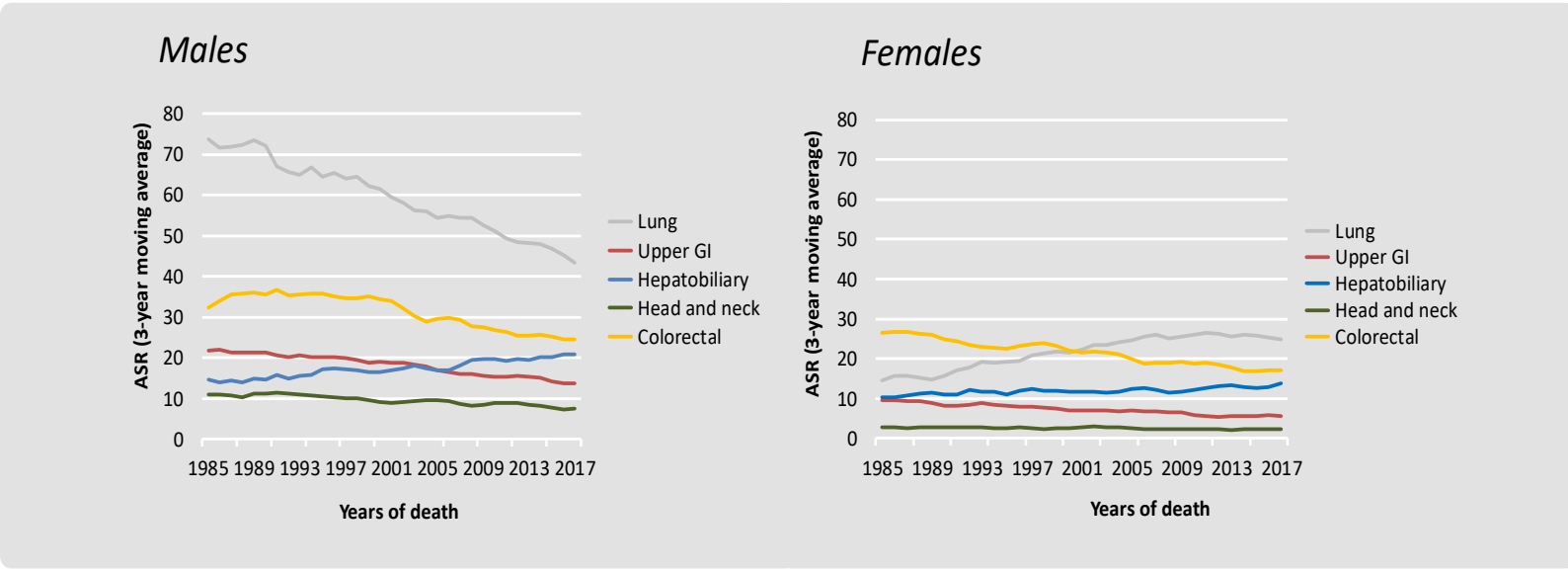
Abbreviation: ASR: Age-standardised rate per 100,000.
Source: Oncology Analysis System, Cancer Alliance Queensland.

Figure 24: Mortality trends for the most common cancers, Queensland, 1982-2017



Abbreviation: ASR: Age-standardised rate per 100,000.
Source: Oncology Analysis System, Cancer Alliance Queensland.

Figure 25: Mortality trends for the most rapidly changing cancers, Queensland, 1982-2017



Abbreviation: ASR: Age-standardised rate per 100,000.
Source: Oncology Analysis System, Cancer Alliance Queensland.

Incidence and mortality trends by age group

Tables 4 and 5 and Figure 26 show incidence and mortality rate trends for the period 1982-2017 for the most common cancers according to age.

Table 4: Annual percentage change (APC) in age-specific incidence rates, most common cancers, by age group, Queensland, 1982-2017

		Males				Females			
		2013-2017		Trend §		2013-2017		Trend §	
Age group	Cancer+	New cases‡	Average rate‡	Period	APC	New cases‡	Average rate‡	Period	APC
0-14	All cancers	395	16.3	1982-2017	0.2	371	16.1	1982-2017	**1.2***
	Haematological	211	8.7	1982-2017	0.5	160	6.9	1982-2017	**1.6***
	CNS & Brain	56	2.3	1982-2017	0.0	53	2.3	1982-2017	5.7
	Bone & soft tissue	39	1.6	1982-2017	-0.1	44	1.9	1982-2017	**2.7***
	Urological	31	1.3	1982-2017	4.8	17	0.7	1982-2017	-1.1
	Endocrine	19	0.8	1982-2017	0.4	24	1.0	1982-2017	1.2
15-24	All cancers	562	34.2	1996-2017	**-1.3***	604	37.9	1995-2017	**-1.0***
	Melanoma	93	5.7	1995-2017	**-5.4***	147	9.2	1995-2017	**-5.1***
	Haematological	150	9.1	1992-2017	0.0	134	8.4	1982-2017	**1.9***
	Urological	127	7.7	1982-2017	**1.5***	8	0.5	1982-2017	18.8
	Endocrine	33	2.0	1982-2017	8.5	90	5.6	1982-2017	**4.1***
	Bone & soft tissue	47	2.9	1982-2017	1.1	27	1.7	1982-2017	16.6
25-34	All cancers	1,433	84.5	1996-2017	-0.4	2,053	119.9	2003-2017	**1.1***
	Melanoma	425	25.1	2000-2017	**-1.1***	608	35.5	1982-2017	**-0.5***
	Haematological	189	11.1	1991-2017	-0.2	186	10.9	1982-2017	**1.4***
	Urological	369	21.8	1982-2017	**1.8***	30	1.8	1982-2017	15.6
	Female Breast	1	0.1			289	16.9	1982-2017	0.2
	Endocrine	73	4.3	1982-2017	**14.1***	249	14.5	1982-2017	**3.5***
35-44	All cancers	2,894	181.3	1982-2017	**0.6***	4,689	285.8	1982-2017	**0.4***
	Melanoma	863	54.1	1987-2017	-0.2	945	57.6	1982-2017	-0.1
	Female Breast	6	0.4			1,587	96.7	1982-2017	**0.8***
	Haematological	407	25.5	1982-2017	**1.1***	334	20.4	1982-2017	**1.6***
	Endocrine	128	8.0	1982-2017	**4.6***	469	28.6	1982-2017	**5.5***
	Colorectal	336	21.1	2002-2017	**3.9***	278	16.9	1982-2017	0.2
45-54	All cancers	7,463	480.4	1982-2017	**0.7***	9,426	583.9	1994-2017	**0.3***
	Female Breast	12	0.8			3,778	234.0	1993-2017	0.3
	Melanoma	1,531	98.6	1997-2017	-0.4	1,420	88.0	1982-2017	**0.7***
	Prostate	1,329	85.5	2007-2017	**-4.0***				
	Colorectal	846	54.5	1982-2017	**-0.7***	672	41.6	2000-2017	-0.1
	Haematological	783	50.4	1982-2017	**1.3***	611	37.8	1982-2017	**1.6***
55-64	All cancers	17,801	1324.8	2008-2017	**-1.0***	12,948	935.6	1999-2017	-0.2
	Prostate	5,628	418.8	2007-2017	**-3.5***				
	Female Breast	42	3.1			4,230	305.7	2000-2017	-0.6
	Melanoma	2,560	190.5	1987-2017	**1.5***	1,572	113.6	1982-2017	**1.3***
	Colorectal	1,672	124.4	1995-2017	**-2.5***	1,184	85.6	1995-2017	**-2.3***
	Lung	1,443	107.4	2013-2017	2.3	1,079	78.0	1982-2017	**1.2***
65-74	All cancers	25,922	2577.1	2007-2017	**-0.8***	15,703	1551.5	1998-2017	**0.5***
	Prostate	8,562	851.2	2007-2017	-1.5				
	Colorectal	2,692	267.6	2006-2017	**-4.1***	1,770	174.9	2006-2017	**-4.3***
	Lung	2,642	262.7	1982-2017	**-1.5***	1,869	184.7	1982-2017	**2.7***
	Melanoma	3,154	313.6	1997-2017	**1.6***	1,651	163.1	1982-2017	**2.1***
	Female Breast	50	5.0			4,336	428.4	1982-2017	**1.8***

		Males				Females			
		2013-2017		Trend §		2013-2017		Trend §	
Age group	Cancer+	New cases†	Average rate†	Period	APC	New cases†	Average rate†	Period	APC
75-84	All cancers	16,705	3538.4	1993-2017	**-0.3***	10,975	2050.4	1998-2017	**0.5***
	Colorectal	2,147	454.8	2012-2017	-3.8	1,898	354.6	2010-2017	-2.0
	Prostate	3,716	787.1	2007-2017	**-3.0***				
	Lung	1,971	417.5	1982-2017	**-0.4***	1,295	241.9	2003-2017	**2.1***
	Haematological	2,243	475.1	1982-2017	**2.2***	1,528	285.5	1992-2017	**1.5***
	Melanoma	2,104	445.7	1993-2017	**2.3***	1,058	197.7	1984-2017	**2.1***
85+	All cancers	6,112	4063.3	1989-2017	-0.2	6,045	2341.8	1982-2017	**0.9***
	Colorectal	747	496.6	1988-2017	0.1	1,077	417.2	1982-2017	0.2
	Haematological	913	607.0	1992-2017	**1.2***	832	322.3	1996-2017	**0.9***
	Melanoma	734	488.0	1982-2017	**3.5***	553	214.2	1982-2017	**3.1***
	Prostate	1,062	706.0	1992-2017	**-3.1***				
	Lung	742	493.3	1982-2017	0.4	475	184.0	1982-2017	**4.3***

† New cases and average rate have been calculated for the last five years (2013-2017).
+ The five most common cancers in each age group are listed.
‡ Average annual age-specific incidence rate per 100,000 for the period 2013-2017. Rates for fewer than 16 cases are presented for completeness but should be treated with caution.
§ Trends were analysed for 1982-2017. If the slope of the trend was not constant over the entire time period, the annual percentage change (APC) in the most recent time period is shown.
**Indicates a significant increase or decrease in annual percentage change (APC), where the likelihood that the observed result is due to chance alone is less than 5% (p<0.05).*
Abbreviations: APC: annual percentage change; CNS: Central nervous system (including brain).
Source: Oncology Analysis System, Cancer Alliance Queensland.

CHILDHOOD CANCERS

In children aged 0-14 years, cancer incidence and mortality rates were higher in boys than girls (Figure 26). Cancer incidence rates for boys were relatively stable over the period 1982-2017 both for all cancers combined and the common cancers of childhood except for urological cancer which demonstrated an increase over this period, although this was not statistically significant. In contrast, incidence rates for all cancers combined, increased significantly for girls between 1982 and 2017 (APC 1.2%). The incidence of haematological cancers and cancers of bone and soft tissue in girls increased by 1.6% and 2.7% per year respectively during this period (Table 4).

For all cancers combined, cancer mortality rates declined significantly in both boys and girls during this period. The decreases in mortality are likely due to improvements in treatment, particularly for the haematological cancers which are the most common cancers in childhood (Table 5).

Table 5: Annual percentage change (APC) in age-specific mortality rates, most common cancers, by age group, Queensland, 1982-2017

		Males				Females			
		2013-2017		Trend		2013-2017			
Age group	Cancer	Deaths†	Average rate†	Period	APC	Deaths†	Average rate†	Period	APC
0-14	All cancers	55	2.3	1982-2017	**-3.3***	42	1.8	1982-2017	**-2.1***
15-24	All cancers	55	3.3	1996-2017	**-5.0***	52	3.3	1995-2017	-0.4
25-34	All cancers	131	7.7	1982-2017	**-1.9***	185	10.8	2003-2017	**-1.1***
35-44	All cancers	429	26.9	1982-2017	**-1.3***	507	30.9	1982-2017	**-1.8***
	Melanoma	54	3.4	1987-2017	**-1.3***	22	1.3	1982-2017	**-2.1***
	Female Breast	1	0.1			147	9.0	1982-2017	**-2.3***
	Haematological	33	2.1	1982-2017	**-5.9***	33	2.0	1982-2017	**-2.8***
	Endocrine	6	0.4	1982-2017	18.5	7	0.4	1982-2017	14.2
	Colorectal	72	4.5	2002-2017	23.1	59	3.6	1982-2017	1.7
45-54	All cancers	1,447	93.1	1982-2017	**-1.8***	1,411	87.4	1994-2017	**-1.9***
	Female Breast	2	0.1			371	23.0	1993-2017	**-3.2***
	Melanoma	105	6.8	1997-2017	-0.3	74	4.6	1982-2017	-0.4
	Prostate	23	1.5	2007-2017	8.0				
	Colorectal	197	12.7	1982-2017	4.6	144	8.9	2000-2017	**-1.5***
	Haematological	112	7.2	1982-2017	**-3.3***	61	3.8	1982-2017	**-3.1***
55-64	All cancers	3,956	294.4	2008-2017	**-2.1***	2,948	213.0	1999-2017	**-1.8***
	Prostate	203	15.1	2007-2017	**-2.9***				
	Female Breast	2	0.1			579	41.8	2000-2017	**-2.3***
	Melanoma	198	14.7	1987-2017	-0.3	91	6.6	1982-2017	0.9
	Colorectal	403	30.0	1995-2017	**-4.6***	304	22.0	1995-2017	-0.6
	Lung	960	71.4	2013-2017	**-2.7***	659	47.6	1982-2017	**0.7***
65-74	All cancers	7,414	737.1	2007-2017	**-2.1***	4,786	472.9	1998-2017	**-1.3***
	Prostate	719	71.5	2007-2017	**-2.9***				
	Colorectal	823	81.8	2006-2017	**-3.9***	465	45.9	2006-2017	5.0
	Lung	1,957	194.6	1982-2017	**-2.6***	1,182	116.8	1982-2017	0.0
	Melanoma	303	30.1	1997-2017	**1.0***	98	9.7	1982-2017	0.0
	Female Breast	8	0.8			662	65.4	1982-2017	**-0.9***
75-84	All cancers	7,845	1661.7	1993-2017	**-1.0***	5,077	948.5	1998-2017	-0.2
	Colorectal	919	194.7	2012-2017	**-0.7***	725	135.4	2010-2017	**-0.6***
	Prostate	1,172	248.3	2007-2017	**-6.5***				
	Lung	1,646	348.7	1982-2017	**-2.4***	966	180.5	2003-2017	0.6
	Haematological	942	199.5	1982-2017	-0.4	634	118.4	1992-2017	-0.5
	Melanoma	387	82.0	1993-2017	**2.5***	103	19.2	1984-2017	0.1
85+	All cancers	4,759	3163.8	1989-2017	0.3	4,280	1658.0	1982-2017	**0.8***
	Colorectal	558	371.0	1988-2017	0.1	726	281.2	1982-2017	-0.3
	Haematological	603	400.9	1992-2017	**1.3***	579	224.3	1996-2017	0.1
	Melanoma	220	146.3	1982-2017	**3.5***	123	47.6	1982-2017	**2.4***
	Prostate	1,101	731.9	1992-2017	**-1.0***				
	Lung	738	490.6	1982-2017	0.4	444	172.0	1982-2017	**4.0***

† Deaths and average rate have been calculated for the last five years (2013-2017).
+ The five most common cancers in each age group are listed.
‡ Average annual age-specific incidence rate per 100,000 for the period 2013-2017. Rates for fewer than 16 cases are presented for completeness but should be treated with caution.
§ Trends were analysed for 1982-2017. If the slope of the trend was not constant over the entire time period, the annual percentage change (APC) in the most recent time period is shown.
** Indicates a significant increase or decrease in annual percentage change (APC), where the likelihood that the observed result is due to chance alone is less than 5% (p<0.05).*
Abbreviations: APC: annual percentage change.
Source: Oncology Analysis System, Cancer Alliance Queensland.

CANCERS IN ADOLESCENTS AND YOUNG ADULTS

In males aged 15-24, the incidence rate for all cancers decreased significantly between 1996 and 2017, largely due to a significant decrease in the incidence of the most common cancer, melanoma. The incidence rates of urological cancers on the other hand increased significantly between 1982 and 2017 (APC 1.5%; Table 4). In females aged 15-24, the incidence rate for all cancers combined also decreased significantly between 1995 and 2017, again mostly driven by decreasing rates of melanoma. The incidence rate for endocrine cancers (mostly thyroid cancer) increased significantly (APC 4.1%; Table 4). Incidence rates for melanoma decreased significantly (APC –5.4% for males and APC - 5.1% for females). The decreasing incidence of melanoma in this age group may be due to their exposure to primary prevention campaigns such as SunSmart. Mortality rates for all cancers combined across males decreased significantly (APC –5.0%) (Tables 5).

CANCERS IN ADULTS

Incidence and mortality rates for all cancers were higher in females aged 35-44 years than males, but the situation was reversed for those over 55 years (Figure 26). In the latter age groups, incidence and mortality rates for individual cancers were generally higher in males than females (Tables 4 and 5).

- **Prostate cancer** incidence rates have decreased in males over 45 years in the last decade. Mortality rates in those over 55 years have decreased significantly over the last decade. The decreased may reflect the increasing use of PSA testing and improvements in the treatment of early-stage disease.

- **Melanoma** incidence increased significantly in those 55 years and over. For females, rates increased significantly for those aged 45 and older. Although mortality rates decreased in males and females aged 35-44 years, mortality rates have increased in older age groups (males and females over 55 years).

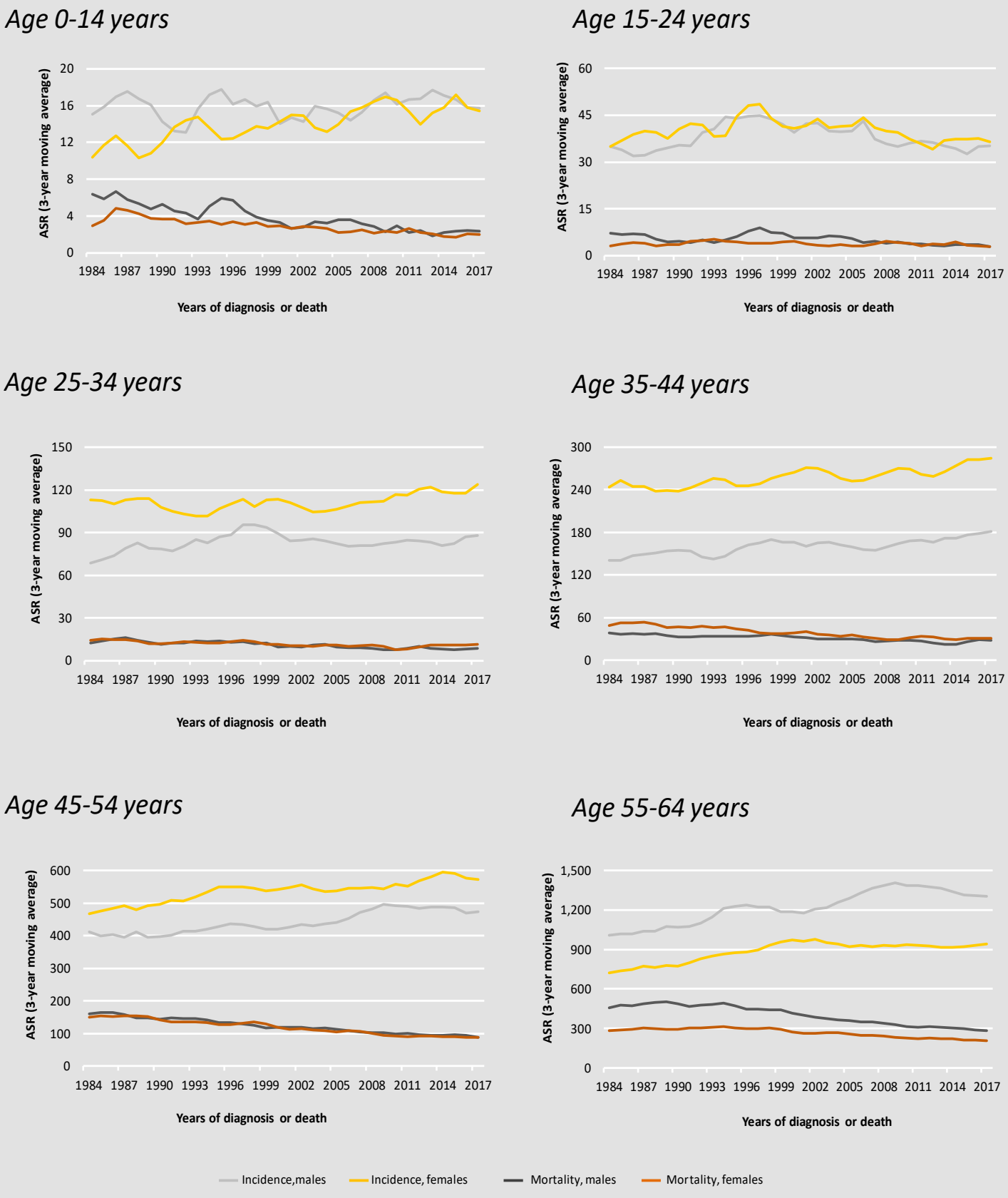
- **Female breast cancer** incidence rates increased significantly in females aged 35-44 and 65-74 years from 1982 (APC 0.8% and 1.8% respectively), but mortality rates for females, including those at high risk for breast cancer (aged 55-64 years), decreased from the early 2000s.

- **Haematological cancers** incidence rates increased significantly in most adult age groups from 1982. In contrast to incidence, mortality rates decreased significantly in most age groups for both males and females, apart from the 85+ year old age group.

- **Colorectal cancer** incidence rates have decreased significantly in the 45-54, 55-64 and 65-74 age groups in males and females since the early 1990s and 2000s. Mortality rates decreased significantly in males over 55 years in the last decade. Mortality rates for females increased insignificantly in the 65-74 age groups.

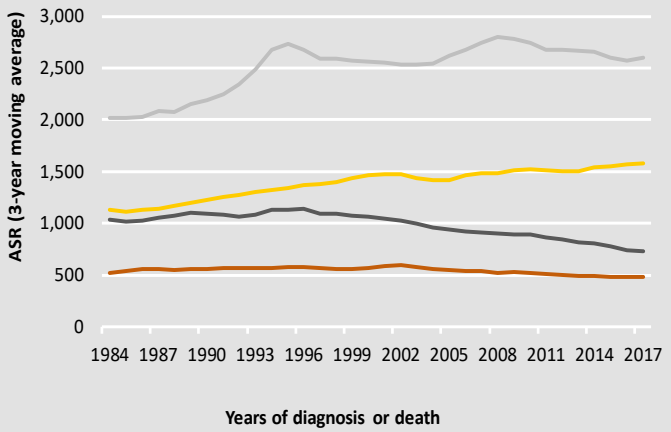
- **Lung cancer** incidence rate for males in 65-74 and 75-84 years decreased significantly (APC -1.5% and –0.4% respectively) while the rate for females increased significantly in those 55 years and over. While mortality rates decreased significantly for males for each of the age groups from 55 to 84 years, mortality increased significantly for females in the 55-64 and 85+ age groups.

Figure 26: Incidence and mortality trends for all cancers by age group, Queensland, 1982-2017

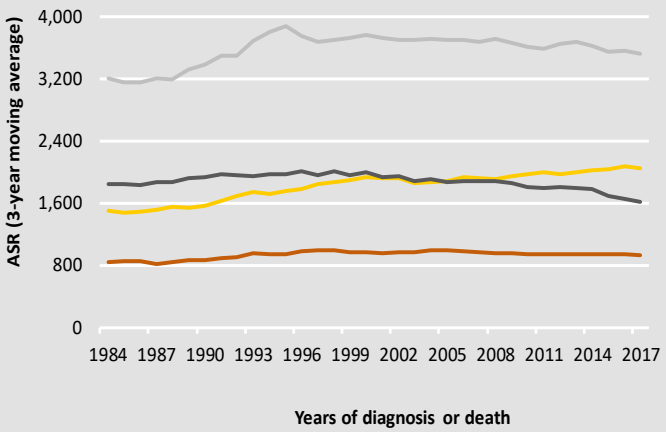


Abbreviation: ASR: Age-standardised rate per 100,000.
Source: Oncology Analysis System, Cancer Alliance Queensland.

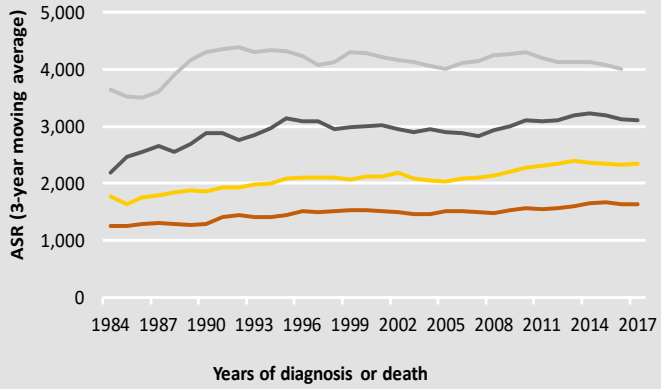
Age 65-74 years

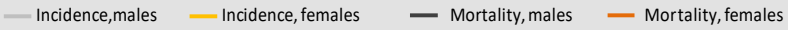


Age 75-84 years



Age 85+





Abbreviation: ASR: Age-standardised rate per 100,000.
Source: Oncology Analysis System, Cancer Alliance Queensland.

Cancer in Aboriginal & Torres Strait Islander people

Key points

POPULATION DEMOGRAPHICS

There were about 218,000 Aboriginal and Torres Strait Islander people (hereafter respectfully referred to as Indigenous) living in Queensland in 2017, around 4% of the total population. Nearly half of all Indigenous Queenslanders lived in remote or very remote areas. The Indigenous population was much younger than the non-Indigenous population with almost 55% of Indigenous Queenslanders aged under 25 compared to 32% of non-Indigenous Queenslanders and less than 1% were aged 75 or more (compared with 6% of non-Indigenous Queenslanders).

IMPORTANT NOTE ABOUT DATA

This is the first time the Queensland Cancer Register (QCR) has had access to electronically matched and linked data from multiple health sources to improve the quality of Indigenous status recorded in the Register.

Historical QCR records indicated that most patients diagnosed in the 1980s did not have Indigenous status recorded. Data from 1980s–2014 highlighted that Indigenous status was missing for around 20% of cancer patients. Cancer Alliance Queensland (CAQ) sought to use the electronically linked data to enhance the reporting of Indigenous status within the QCR and Queensland Oncology Respiratory (QOR) collections.

Following this, CAQ have trialled and implemented an algorithm-based approach to better identify Indigenous status for patients on the QCR. This algorithm is based on the work of Christensen et al (2014) in Western Australia. This implementation has improved unknown Indigenous status from 20% to 10% over the 33-year period in QCR.

INCIDENCE AND MORTALITY ANNUAL AVERAGE

From 2013-2017 there were 542 new cases of cancer diagnosed among Indigenous and 27,601 new cases of cancer diagnosed among non-Indigenous Queenslanders. Among the Indigenous population, there were more diagnoses in females (283 - 52%) compared to males (259 - 48%). In contrast, among the non-Indigenous population, cancer was more commonly diagnosed in males (15,400 - 56%) compared to females (12,201 - 44%).

Indigenous Queenslanders were diagnosed at a younger age (median=60 years) compared to a median of 67 years for non-Indigenous Queenslanders. The lifetime risk* of a cancer diagnosis was similar among the Indigenous and non-Indigenous population (1 in 2).

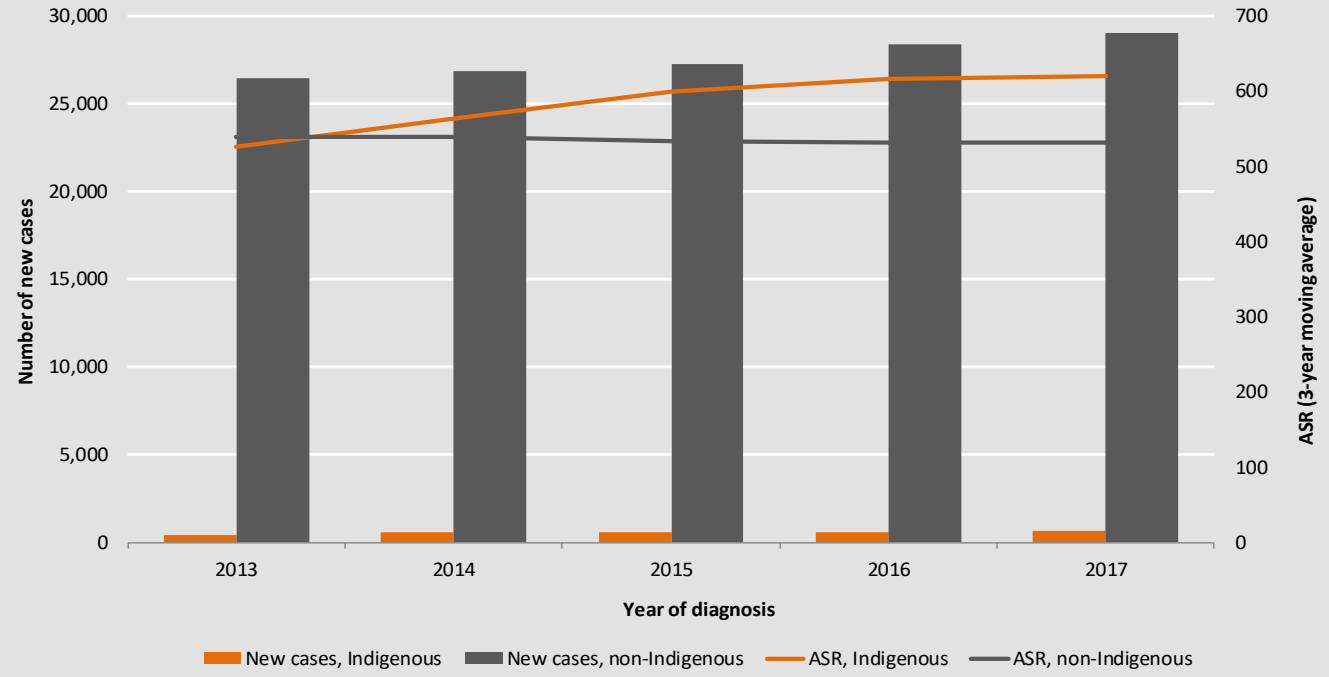
On average each year from 2013-2017, 231 deaths were attributed to cancer in Indigenous Queenslanders and 8,954 in non-Indigenous Queenslanders. More cancer deaths were recorded among males than females for both Indigenous and non-Indigenous (52% and 58%, respectively) Queenslanders.

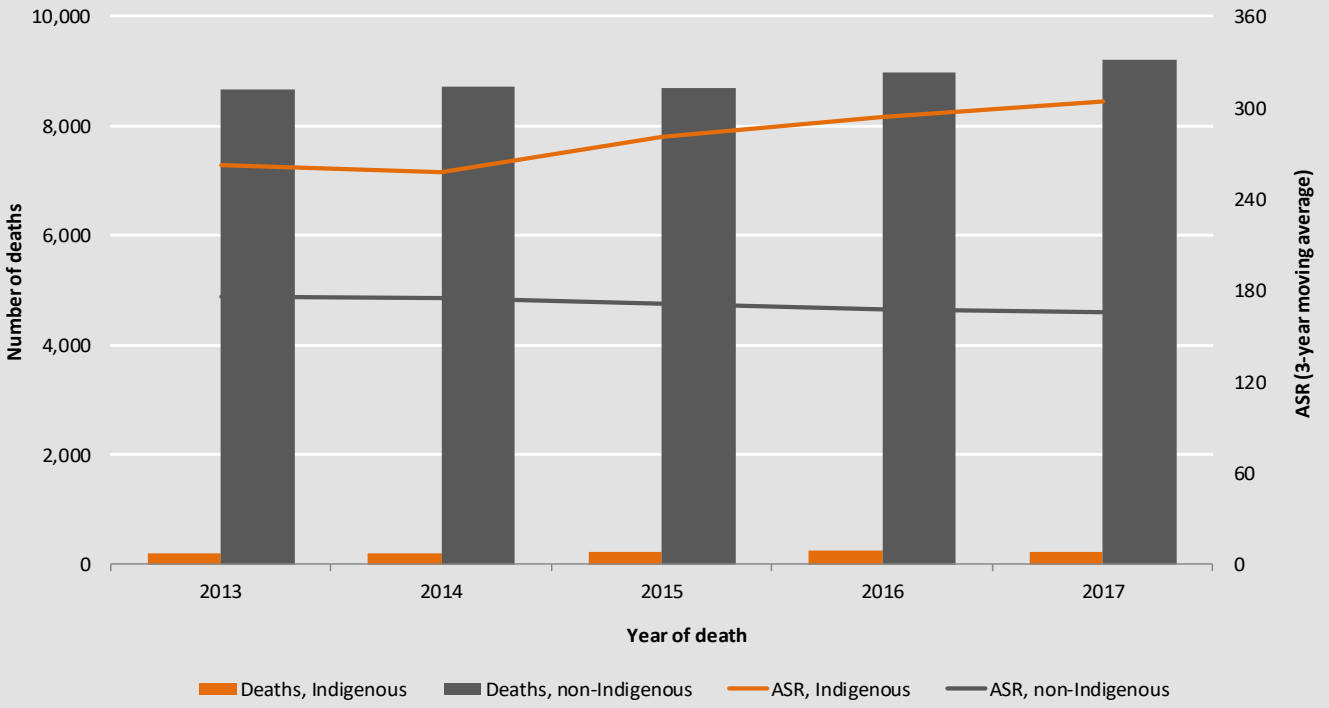
Median age at cancer death was over a decade younger for the Indigenous population (64 years) compared with the non-Indigenous population (74 years). The lifetime risk of cancer death was higher among Indigenous Queenslanders (1 in 4) compared with non-Indigenous Queenslanders (1 in 7).

Trends in incidence rates for all invasive cancers and the number of new cases diagnosed annually are summarised in Figure 27. The incidence rate for all invasive cancers among Indigenous Queenslanders has increased from 525 in 2013 to 620 per 100,000 in 2017. In contrast, the incidence rate for all invasive cancers among non-Indigenous Queenslanders has decreased slightly over the last 5 years (540 in 2013 to 532 per 100,000 in 2017). Overall, both incidence and mortality rates were higher among Indigenous Queenslanders from 2013 to 2017, and this difference is widening.

** Lifetime risk of developing or dying from cancer refers to the chance a person has, over the course of his or her lifetime (from birth to death), of being diagnosed with or dying from cancer.*

Figure 27: Trends in number and rates for all cancers by Indigenous status, 2013-2017

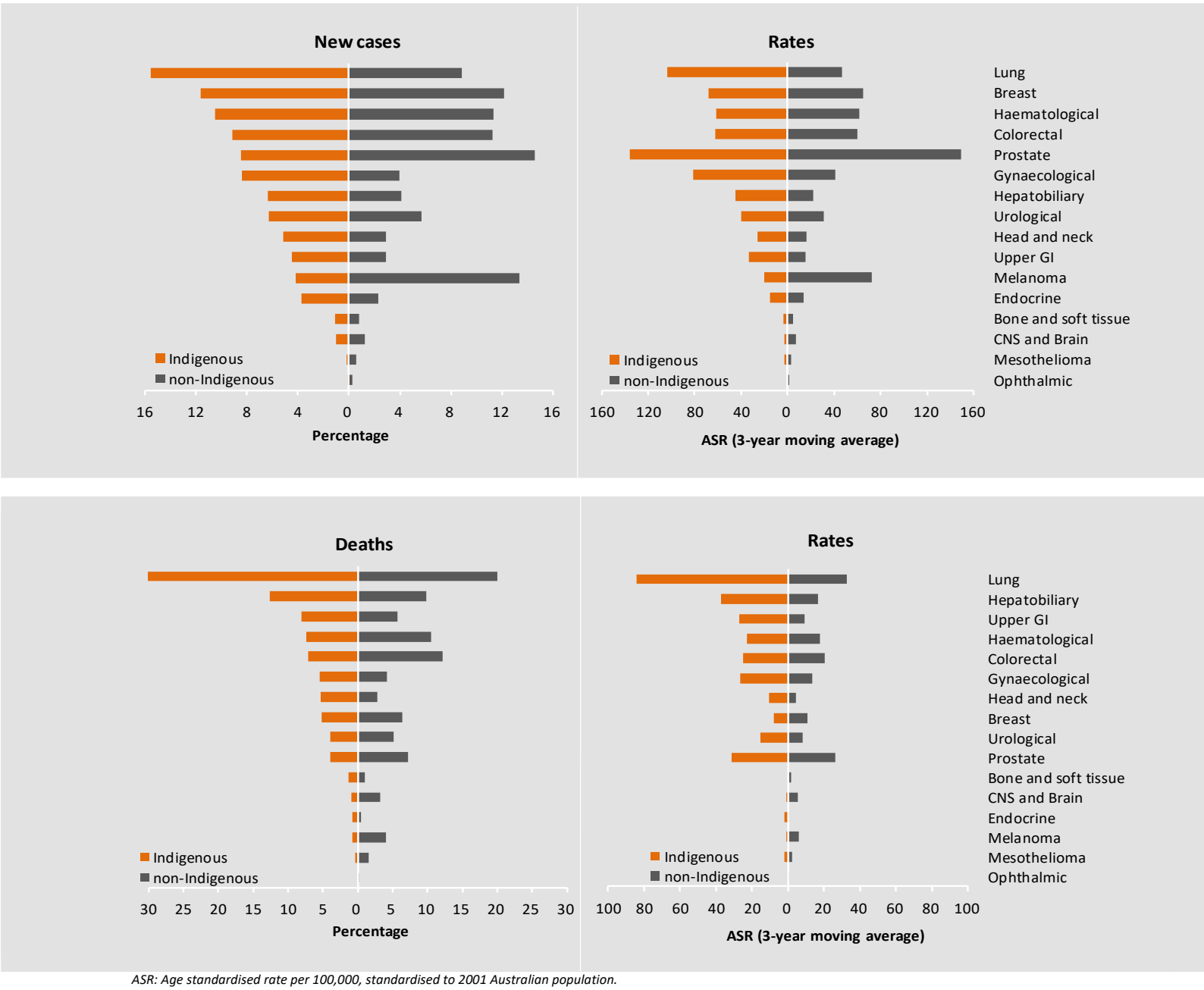




ASR: Age-standardised rate per 100,000, standardised to 2001 Australian population.
Source: Oncology Analysis System, Cancer Alliance Queensland.

Most common cancers and cancer deaths

Figure 28: Annual average proportion and rates of new cases and deaths for selected cancers by Indigenous status, 2013-2017



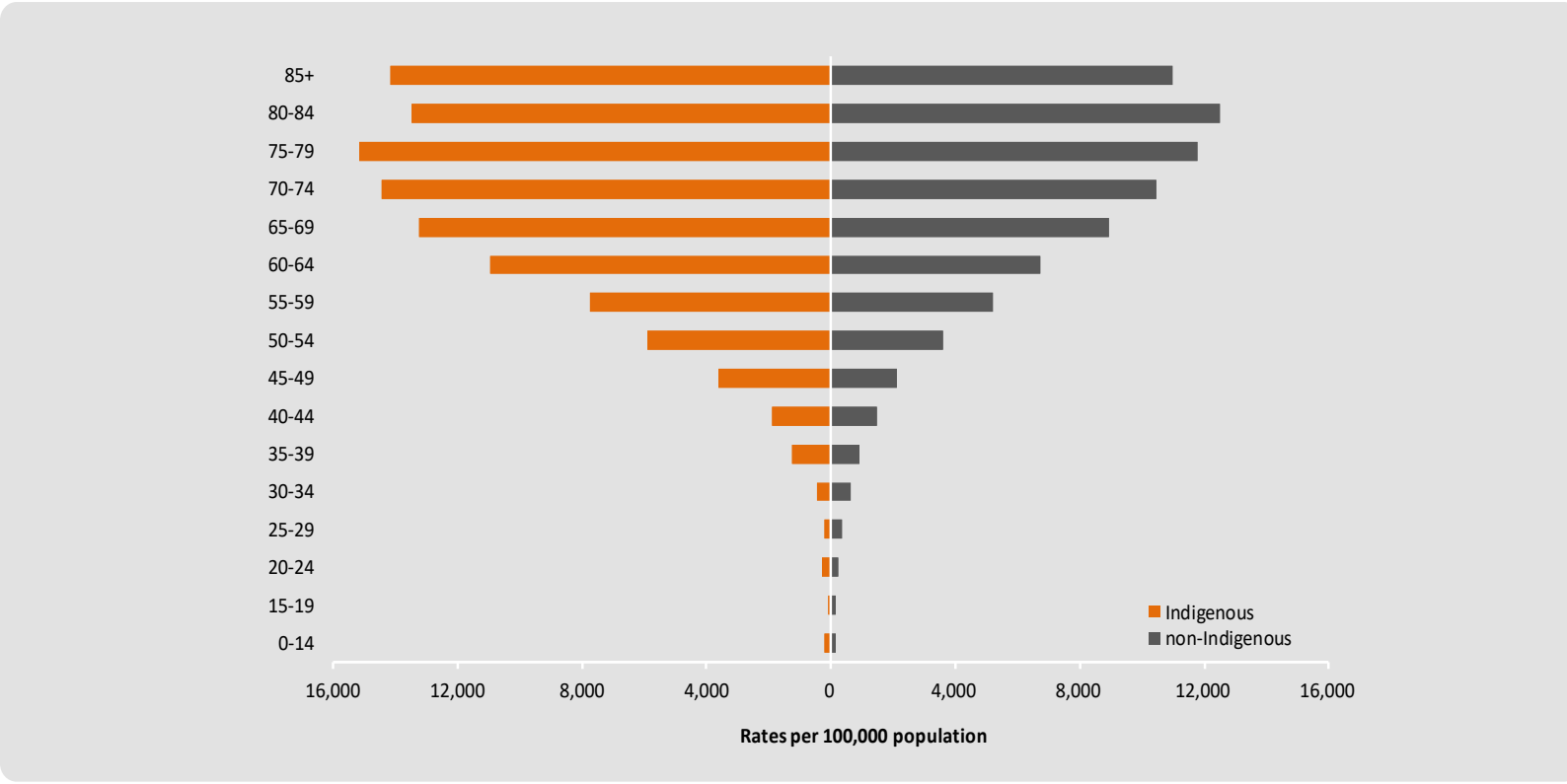
ASR: Age standardised rate per 100,000, standardised to 2001 Australian population.
Source: Oncology Analysis System, Cancer Alliance Queensland.

The most commonly diagnosed cancers in the Indigenous population were lung (16%, 103 per 100,000), breast (12%, 68 per 100,000), haematological (11%, 62 per 100,000) and colorectal (9%, 62 per 100,000) (Figure 28).

During 2013-2017 lung cancer was the leading cause of cancer death for both Indigenous people with 65 deaths (30%, 84 per 100,000) and non-Indigenous people with 1,767 deaths (20%, 32 per 100,000) on average each year. Hepatobiliary cancer was one of the most common causes of cancer death with 27 deaths (13%, 37 per 100,000) in Indigenous people and 873 deaths (10%, 17 per 100,000) in non-Indigenous people on average each year. Upper GI cancer was also a common cause of cancer death with 17 deaths (8%, 27 per 100,000) for Indigenous people and 498 deaths (6%, 9 per 100,000) for non-Indigenous people on average each year (Figure 28).

Potential years of life lost (PYLL)

Figure 29: Annual average rates of potential years of life lost (PYLL) due to cancer, by age and Indigenous status, Queensland, 2013-2017



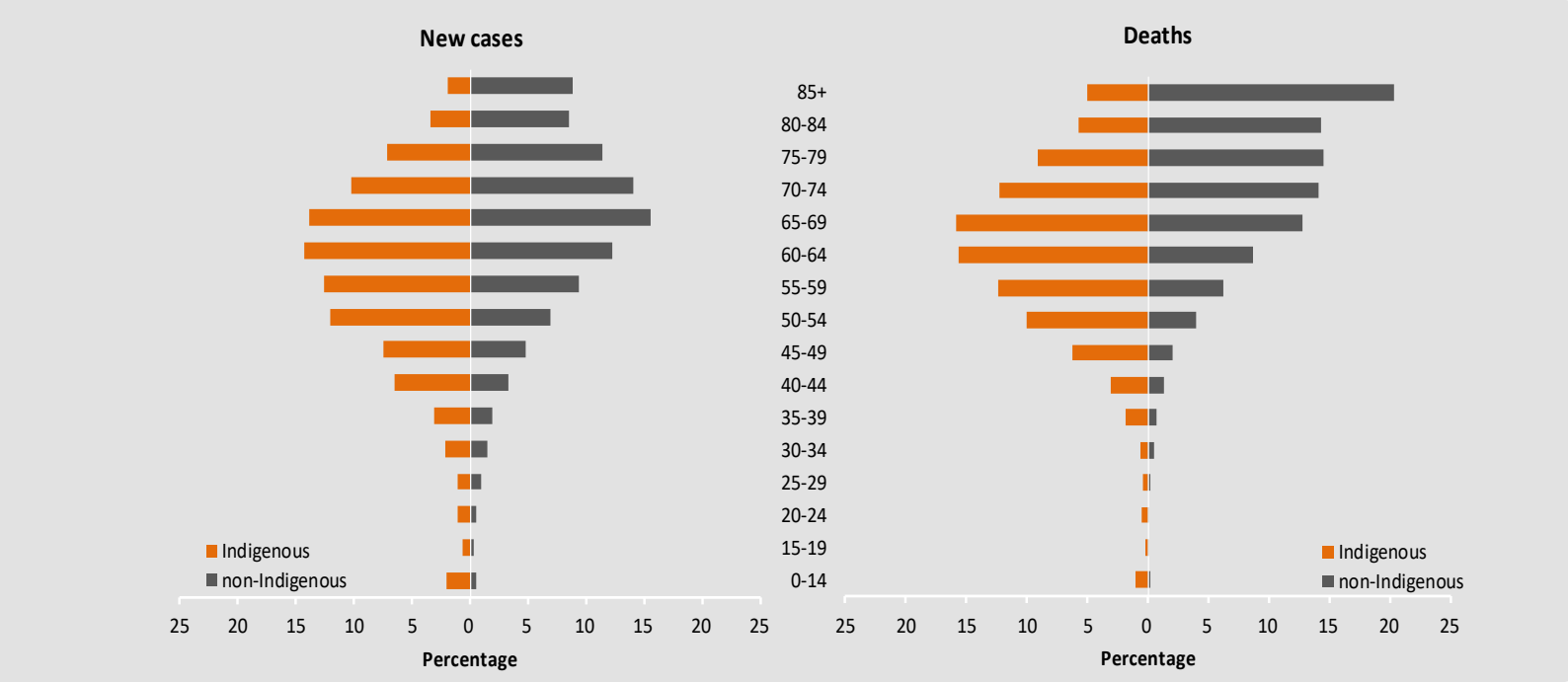
ASR: Age standardised rate per 100,000, standardised to 2001 Australian population.
Source: Oncology Analysis System, Cancer Alliance Queensland.
Notes: Experimental Life Tables by Remoteness, Queensland, 2005-07 from Health Statistic Centre, Queensland Health[13] has been used to calculate for PYLL.

Potential years of life lost (PYLL) is an indicator of premature death. If dying before the age of 70 (expected age) is considered premature, then a person dying at age 55 would have lost 15 years of potential life. The expected age or life expectancy depends on sex, Indigenous status and where they live. PYLL value will be higher if mortality among children or young people is high.

The Indigenous population experienced a higher rate of potential years of life lost due to cancer (PYLL) than the non-Indigenous population across almost all age groups from 45 years onwards. PYLL rate peaks among those aged 75-79 within the Indigenous population and for those aged 80-84 in the non-Indigenous population (Figure 29).

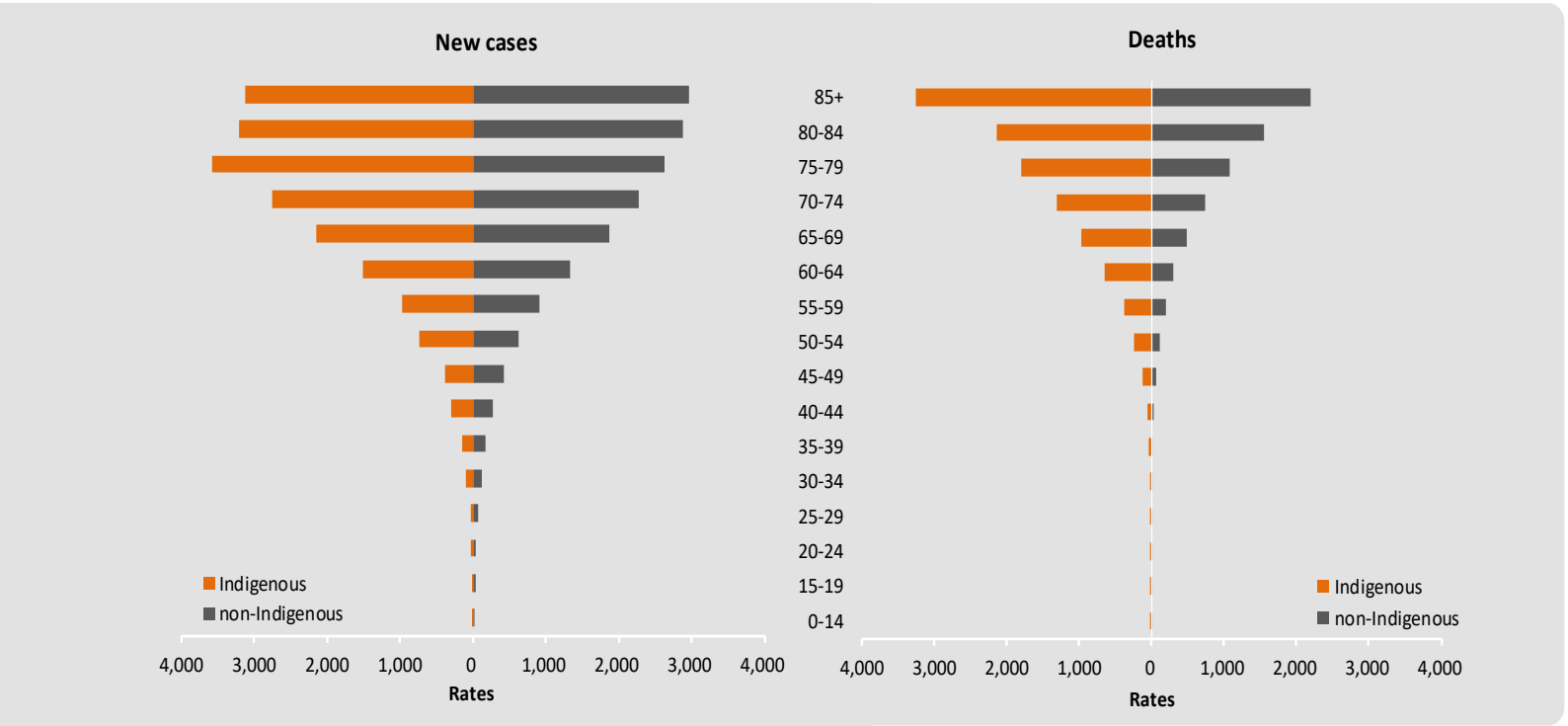
Incidence and mortality by age group

Figure 30: Incidence and mortality proportions for all cancers, by age and Indigenous status, Queensland, 2013-2017



Source: Oncology Analysis System, Cancer Alliance Queensland.

Figure 31: Incidence and mortality age specific rates for all cancers, by Indigenous status, Queensland, 2013-2017

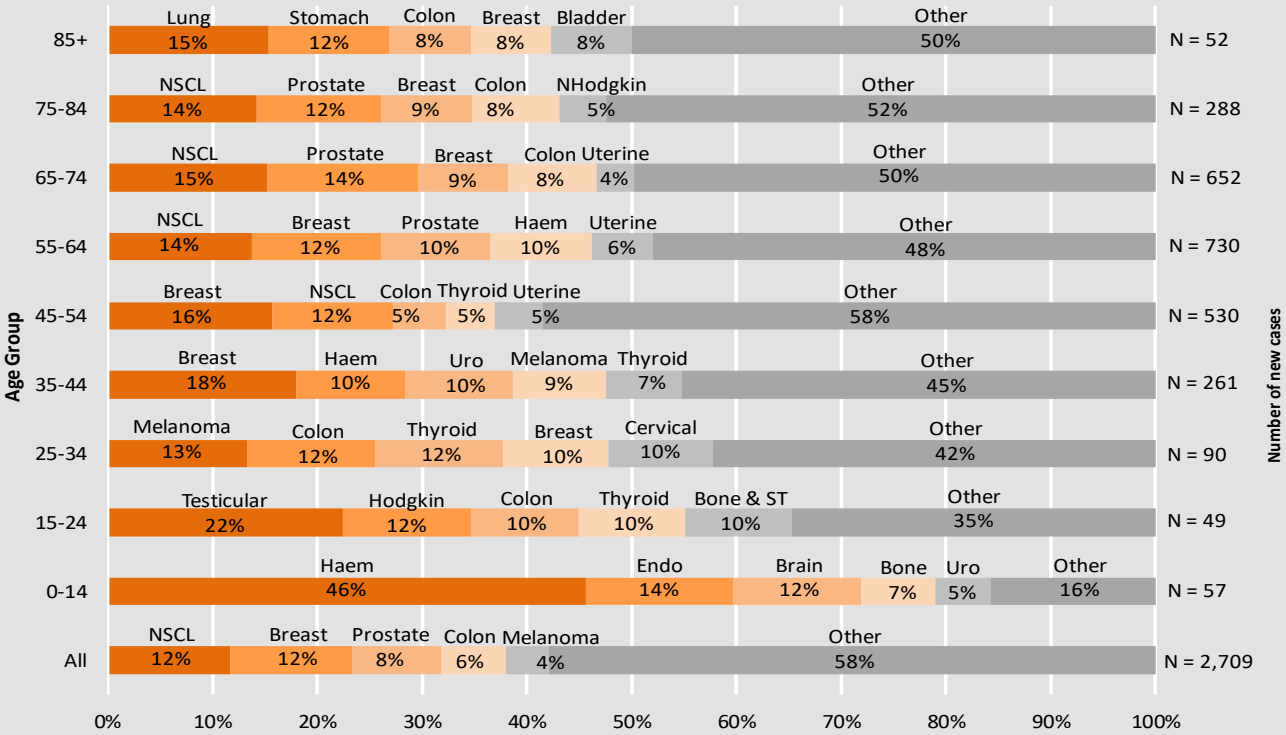


Source: Oncology Analysis System, Cancer Alliance Queensland.

From 2013-2017, the proportion of new cases and number of deaths occurring among Indigenous people in older age groups (75+) is low when compared to the non-Indigenous population, despite similar rates of incidence and mortality in these age groups. This is due to lower overall life expectancy among Indigenous people and reflects the smaller proportion of older persons within this population. Age-specific incidence rates from cancer were higher for Indigenous Queenslanders for age groups 35-39 to 75-79. The age-specific mortality rate was generally higher in Indigenous Queenslanders than non-Indigenous Queenslanders for all age groups except those aged 80-84 (Figure 32).

MOST COMMON CANCERS BY AGE GROUP

Figure 32: The five most common cancer[i] diagnoses by age group for Indigenous Queenslanders, 2013-2017

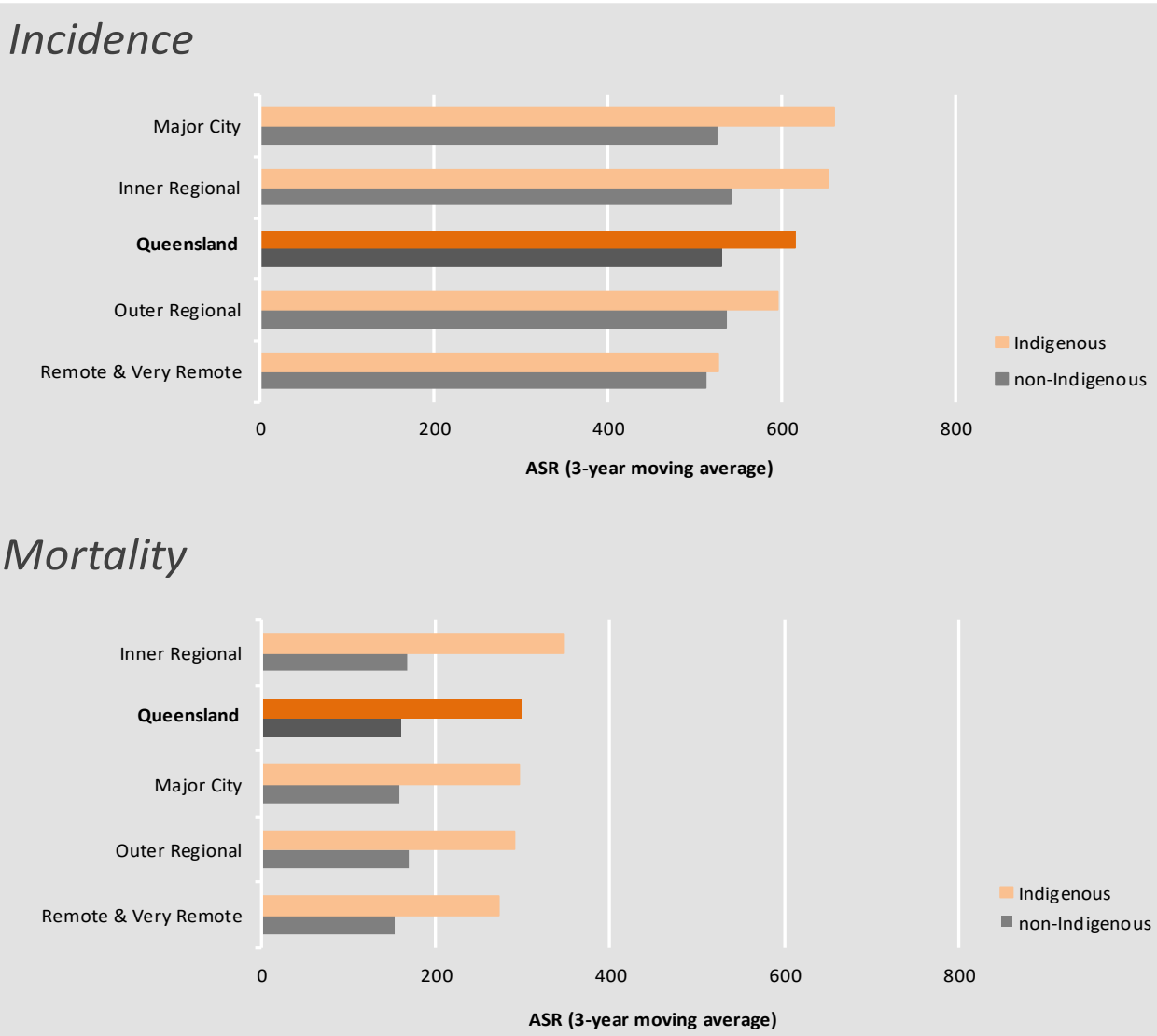


i. The term 'haematological cancers' includes all haematological malignancies, for example, Hodgkin's lymphoma, non-Hodgkin lymphoma and the leukaemias.
Abbreviations: Bone & ST: Bone and soft tissue / CNS & brain: Central nervous system and brain / CRC: Colorectal / Endo: Endocrine / Gyn: Gynaecological / Haem: Haematological / Uro: Urological / AL: Leukaemia (acute) / NHodgkin: non-Hodgkin lymphoma / Hodgkin: Hodgkin lymphoma / NSCL: Non-small cell lung

Source: Oncology Analysis System, Cancer Alliance Queensland.

Incidence and mortality by remoteness

Figure 33: Cancer incidence and mortality rates by remoteness of residence and Indigenous status, Queensland, 2017

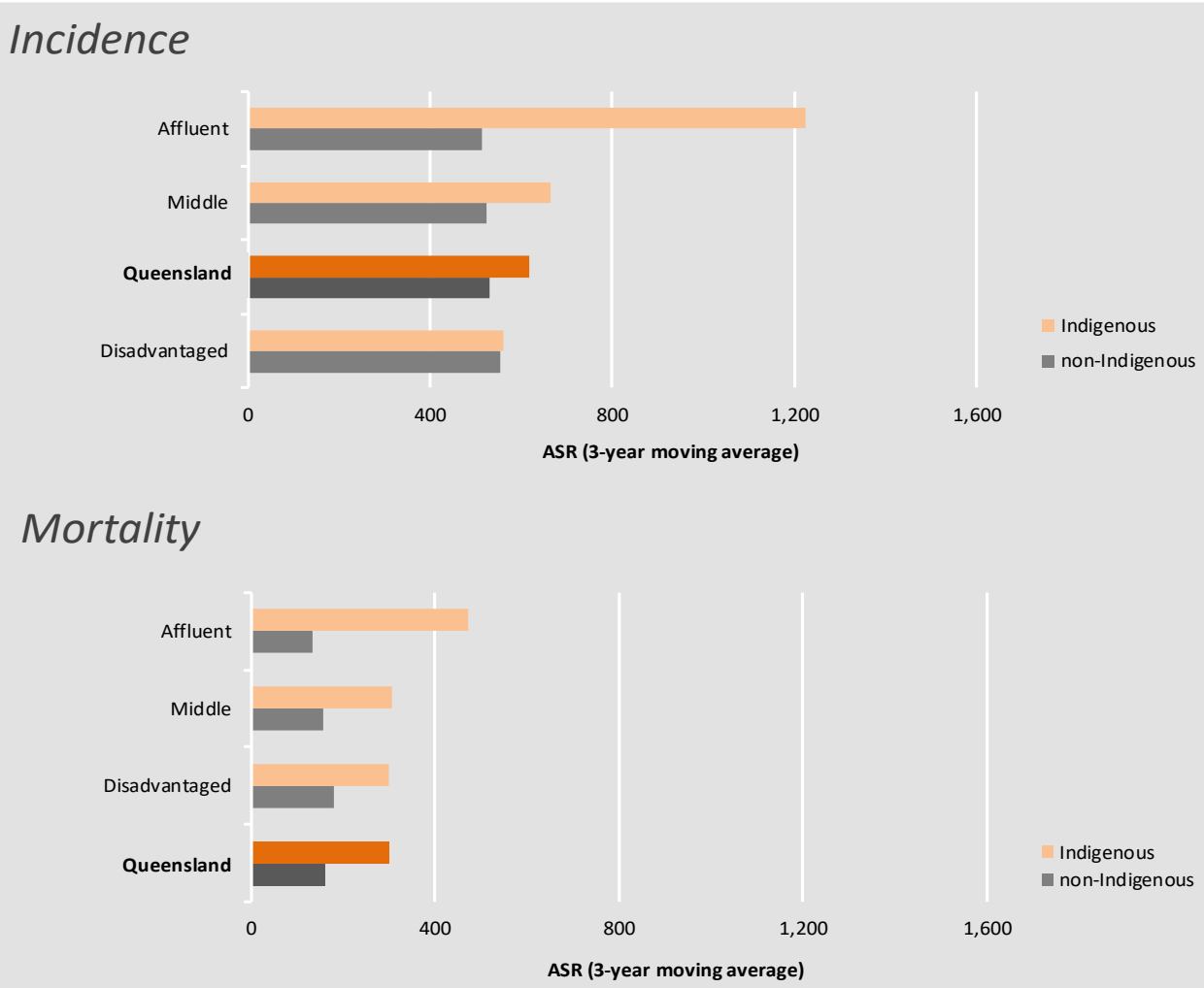


Source: Oncology Analysis System, Cancer Alliance Queensland.

Incidence and mortality rates for all invasive cancers varied by remoteness and were highest in major city and inner regional areas for Indigenous Queenslanders (Figure 33; see the Glossary for a definition of remoteness). Incidence and mortality rates for all invasive cancers varied only slightly by remoteness for non-Indigenous Queenslanders.

Incidence and mortality by socio-economic status

Figure 34: Cancer incidence and mortality rates by socio-economic status and Indigenous status, Queensland, 2017



Source: Oncology Analysis System, Cancer Alliance Queensland.

Incidence and mortality rates for all invasive cancers were higher for both Indigenous and non-Indigenous Queenslanders in areas of socio-economic affluence (Figure 34; see the Glossary for a definition of socio-economic disadvantage).

Prevalence

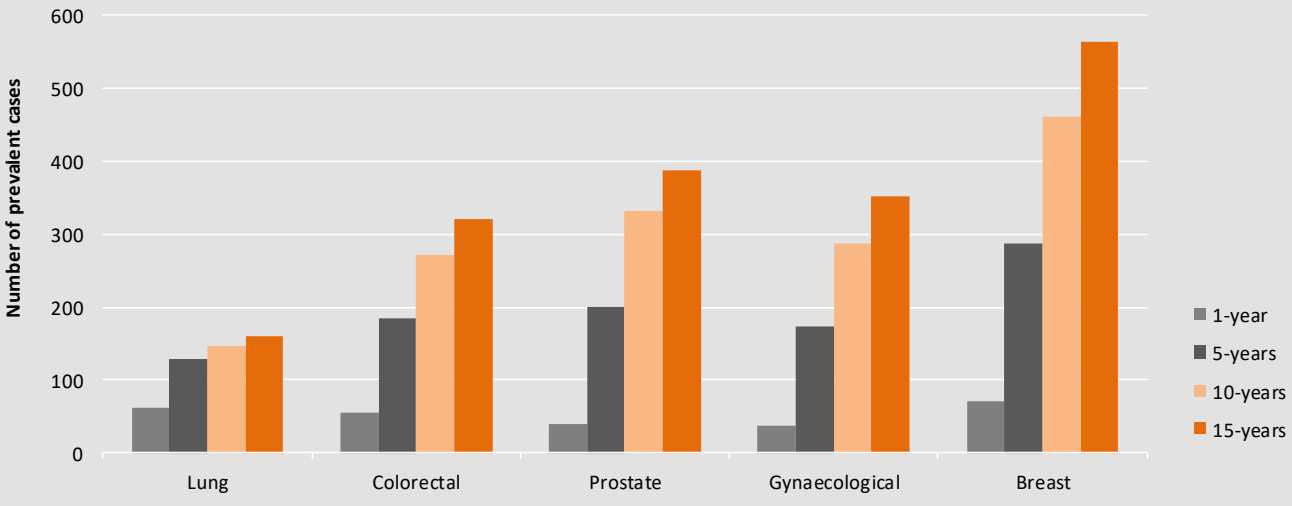
Table 6: Five-year prevalence, most common cancers, Indigenous status, Queensland, 31 December 2017

	All Queensland		Indigenous		Non-Indigenous	
	Count	Percent*	Count	Percent*	Count	Percent*
All cancers	100,849	2.05	1,723	0.79	97,766	2.08
Prostate	18,459	0.37	201	0.09	18,183	0.39
Breast	15,818	0.32	288	0.13	15,455	0.33
Colorectal	11,444	0.23	185	0.08	11,226	0.24
Gynaecological	4,311	0.09	174	0.08	4,126	0.09
Lung	4,575	0.09	128	0.06	4,440	0.09

All Queensland includes Indigenous, non-Indigenous and unknown Indigenous status.
**Percent of Queensland population as at 31 December 2017 (4.93 million) (Australian Bureau of Statistics).*
Source: Oncology Analysis System, Cancer Alliance Queensland.

By the end of 2017, more than 1,700 Indigenous Queenslanders and more than 97,000 non-Indigenous Queenslanders were living with a diagnosis of cancer in the previous five years (Table 6). Breast and prostate cancer had the highest prevalence for both Indigenous and non-Indigenous Queenslanders. Due to relatively poor survival, lung cancer has a relatively low prevalence in both Indigenous and non-Indigenous Queenslanders.

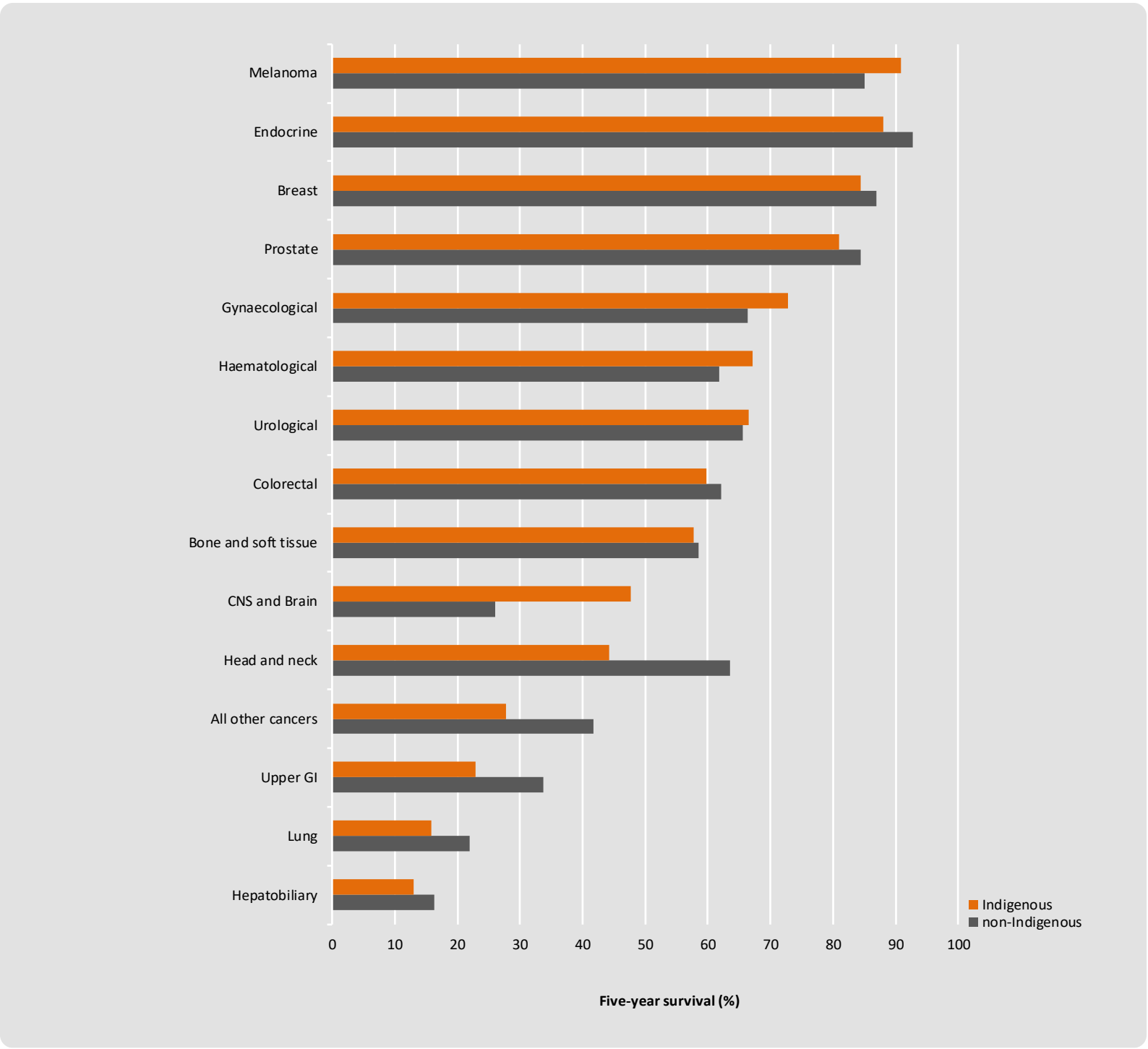
Figure 35: Prevalence for the most common cancers for Indigenous Queenslanders, by time since diagnosis, Queensland, 31 December 2017



Source: Oncology Analysis System, Cancer Alliance Queensland.

Survival

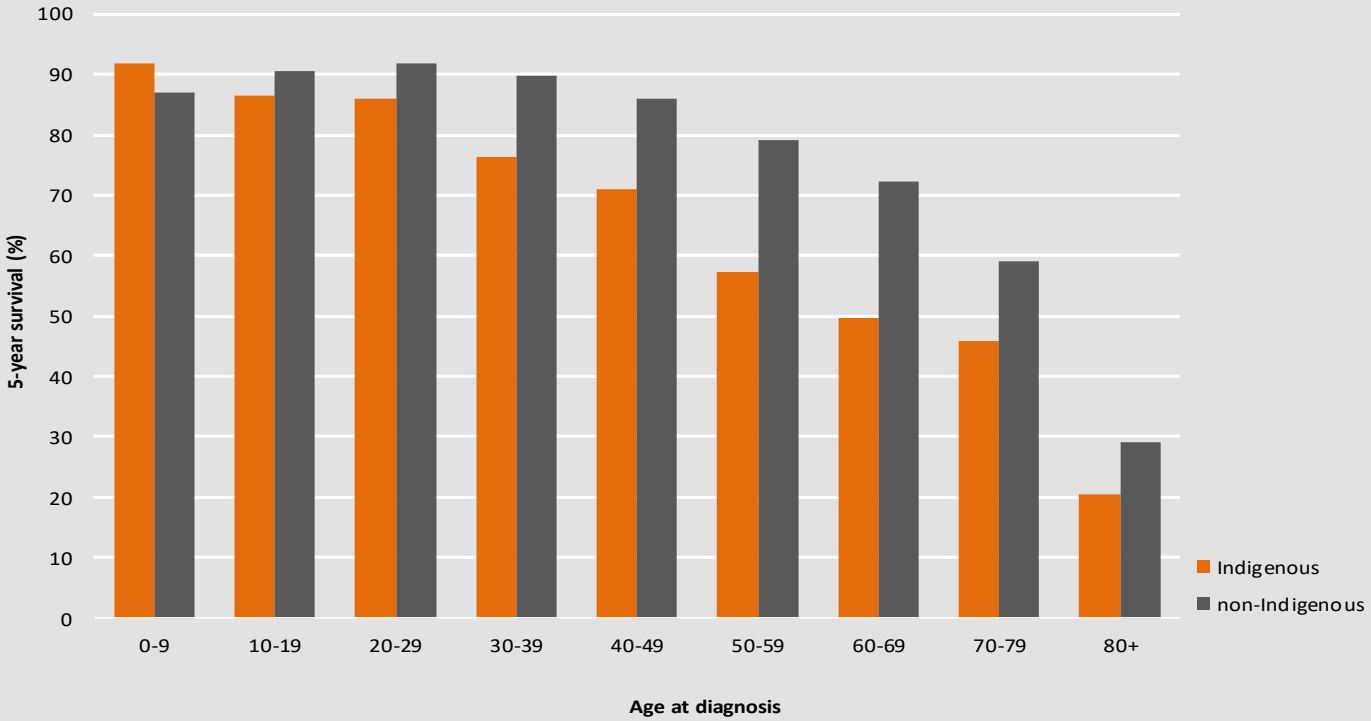
Figure 36: Five year survival for selected cancers and Indigenous status, Queensland, 2013-2017



Source: Oncology Analysis System, Cancer Alliance Queensland.

Survival rates for Indigenous and non-Indigenous Queenslanders are similar across several cancers. However, rates differ for CNS and brain, melanoma, haematological and gynaecological cancers where Indigenous Queenslanders experience higher survival. Indigenous Queenslanders experience lower survival rates for head and neck, upper GI, lung, endocrine, and colorectal cancers (Figure 36).

Figure 37: Five year survival by age at diagnosis and Indigenous status, Queensland, 2013-2017



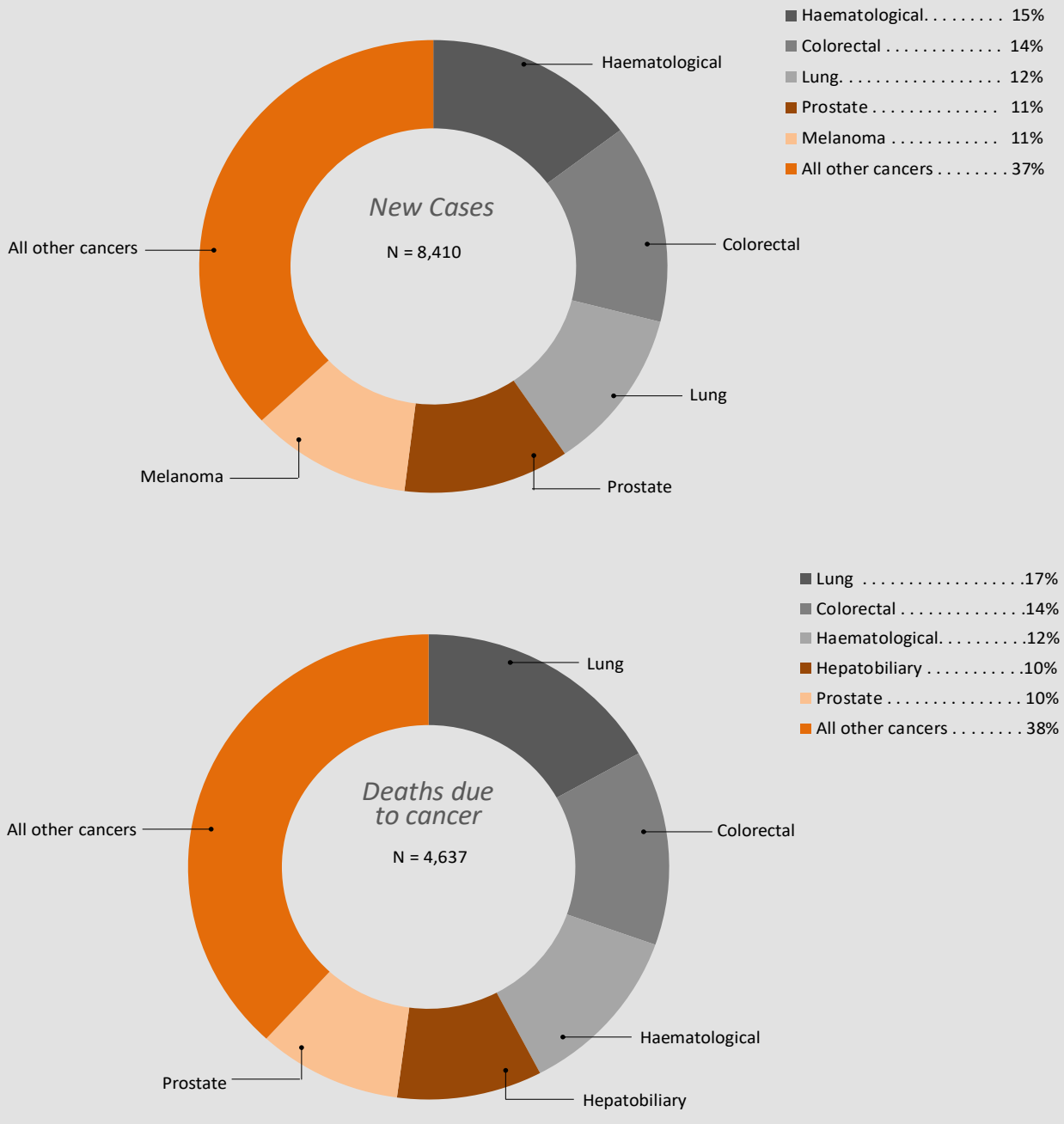
Source: Oncology Analysis System, Cancer Alliance Queensland.

Five year survival rates for the Indigenous population are lower than for their non-Indigenous counterparts in each ten-year age group, with exception of Indigenous people aged 0-9 years. Survival rates are highest in both groups for those aged 10-19 and 20-29 and the survival differential is also smallest within this age group. Decreases in survival are observed from age 30-39 onwards with sharper declines occurring among the Indigenous population. The widening gap with increasing age reflects the overall lower life expectancy experienced by Indigenous Queenslanders in general (Figure 37).

Cancer in seniors (75+ age group)

Most common cancers and cancer deaths

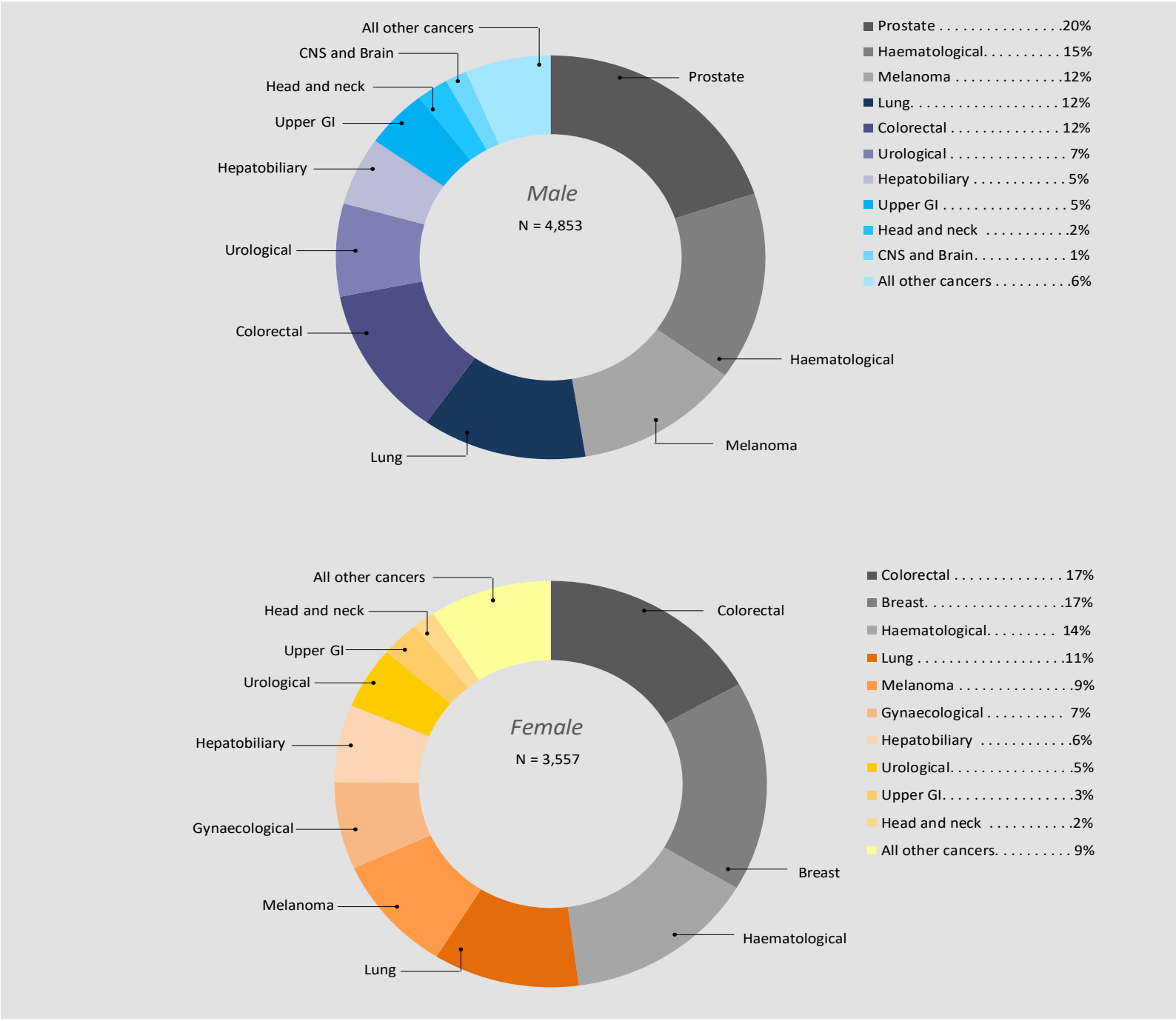
Figure 38: The five most common cancer diagnoses, Queensland seniors, 2017



Source: Oncology Analysis System, Cancer Alliance Queensland.

In 2017 there were 8,410 new cases of cancer diagnosed and 4,637 deaths were attributed to cancer in Queensland seniors. The five most commonly diagnosed cancers in 2017 were haematological cancers (1,238 cases), colorectal cancer (1,196 cases), lung cancer (972 cases), prostate cancer (965 cases) and melanoma (935 cases). These cancers combined accounted for 63% of all cancer diagnoses (Figure 38).

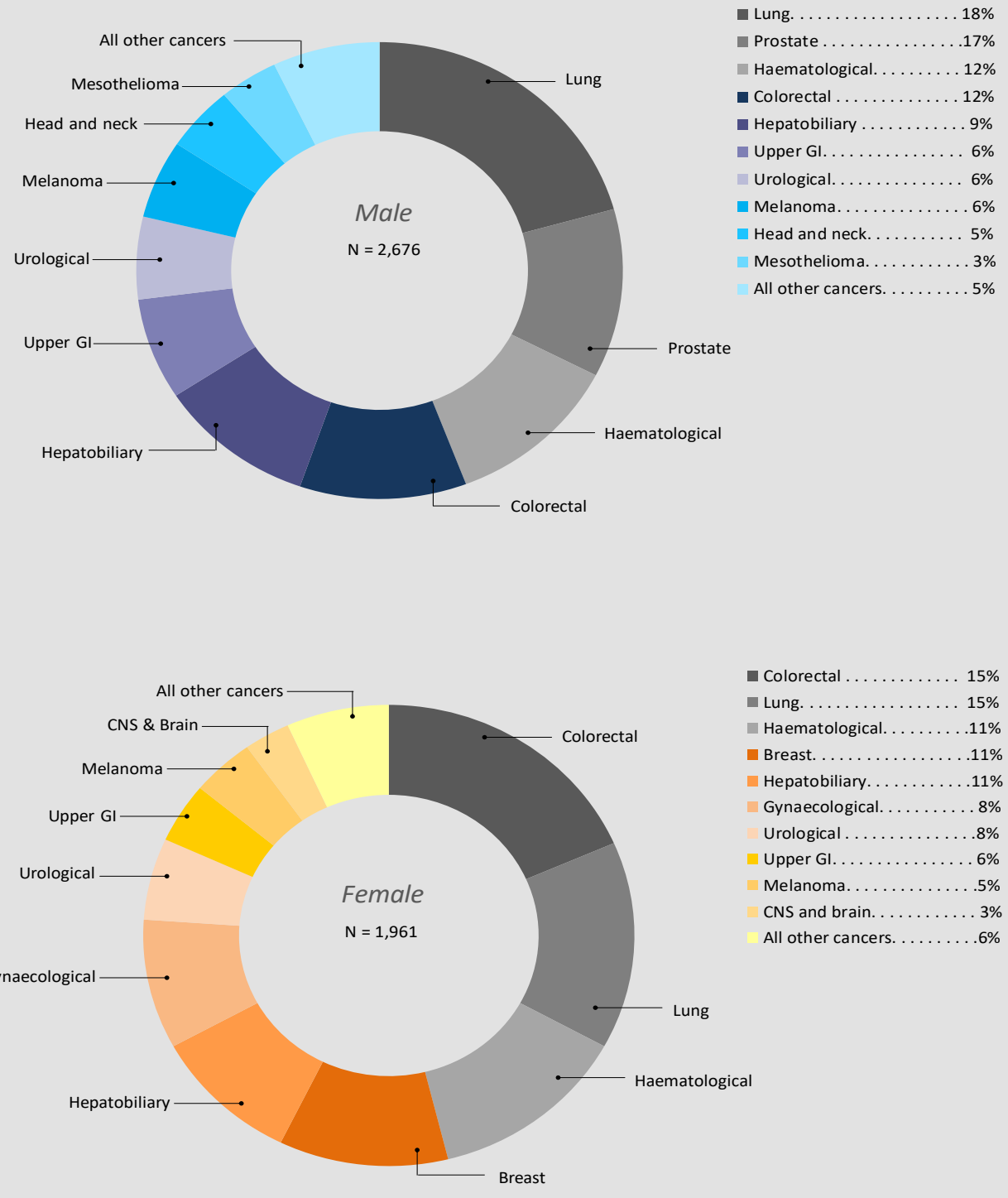
Figure 39: Most common cancer diagnoses, Queensland seniors, 2017



Source: Oncology Analysis System, Cancer Alliance Queensland.

Overall, cancer was more common in males (4,853 new cases, 3,566 per 100,000) than females (3,557 new cases, 2,106 per 100,000). For males, three cancers accounted for over half of all incidence: prostate cancer represented 20% of cases (965 cases), followed by haematological cancers (730 cases) and melanoma cancer (605 cases). For females, colorectal cancer was the most common cancer accounting for 17% of cases (594 cases), followed by breast cancer (590 cases) and haematological cancers (508 cases). Incidence rates of urological cancers were about three times higher in males than females (265 and 103 per 100,000 respectively) (Figure 39).

Figure 40: Most common cancer deaths, Queensland seniors, 2017



Source: Oncology Analysis System, Cancer Alliance Queensland.

During 2017, 4,637 deaths due to cancer occurred in seniors. In males, the most common cancer deaths were lung cancer (18%), prostate cancer (17%) and haematological cancers (12%). Together these cancers accounted for nearly 47% of all cancer deaths in males. In females, colorectal cancer was again the most common cause of death (15%), followed by lung cancer (15%) and haematological cancers (11%) (Figure 40).

Prevalence

Table 2: Five-year prevalence, most common cancers, Queensland seniors, 31 December 2017

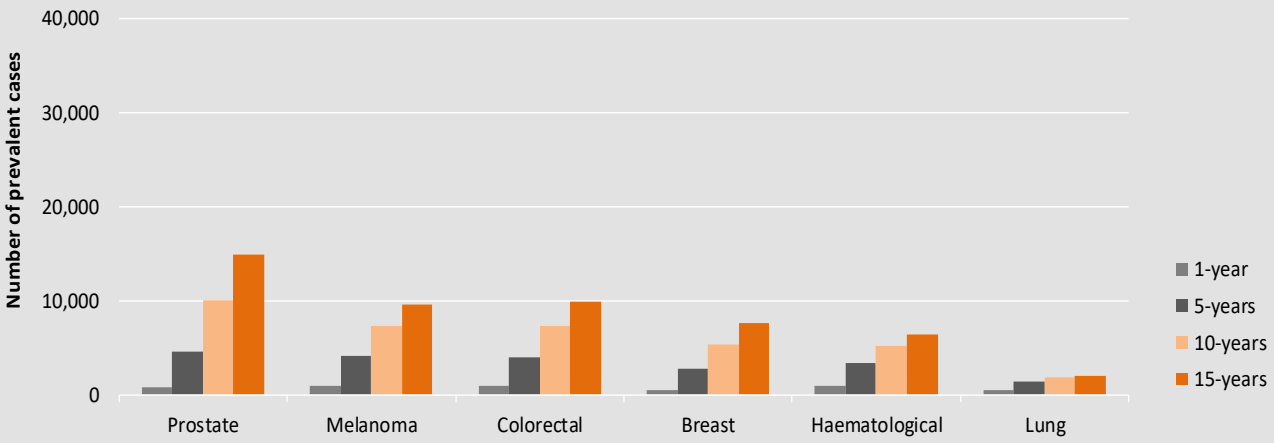
	Both sexes		Male		Female	
	Count	Percent*	Count	Percent*	Count	Percent*
All cancers	23,608	7.74	13,566	9.97	10,042	5.94
Prostate	4,674	1.53	4,674	3.43		
Melanoma	4,211	1.38	2,674	1.96	1,537	0.91
Colorectal	4,054	1.33	2,027	1.49	2,027	1.20
Breast	2,748	0.90	35	0.03	2,713	1.61
Haematological	3,411	1.12	1,939	1.42	1,472	0.87

**Percent of Queensland population as at 30 June 2017 (n=305,021) (Australian Bureau of Statistics)*
Source: Oncology Analysis System, Cancer Alliance Queensland.

By the end 2017, over 23,000 Queensland seniors were living with a diagnosis of cancer within the previous five years, representing 7.7% of the population age 75+ years.

For males, highest prevalence was observed for prostate cancer (4,674 males or 3.43% of the male population 75+ years). Other high prevalent cancers in males included melanoma and colorectal cancer. In females, breast cancer was the most prevalent cancer (2,713 females, or 1.61% of the female population), followed by colorectal cancer. All of these cancers have high incidence and good survival.

Figure 41: Prevalence for the most common cancers, by time since diagnosis, Queensland seniors, 31 December 2017

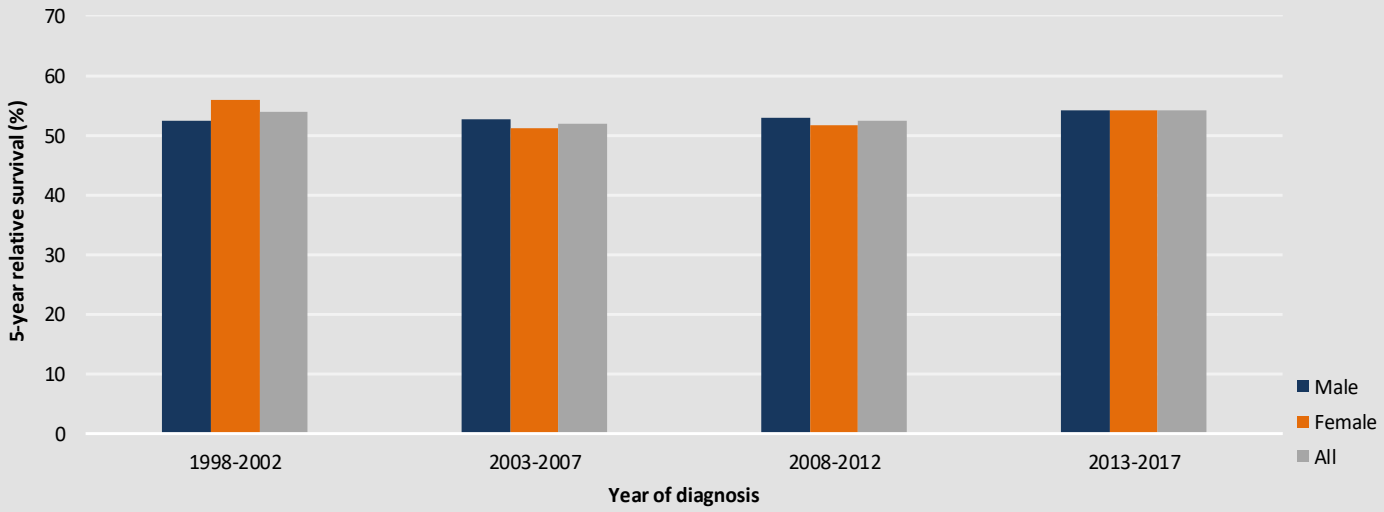


Source: Oncology Analysis System, Cancer Alliance Queensland.

Seniors have a similar pattern of prevalence to all Queenslanders. For prostate, melanoma and breast, increasing time since diagnosis is associated with increasing prevalence. For cancers with poor survival such as lung cancer, prevalence decreases with increasing time since diagnosis.

Survival

Figure 42: Five year relative survival in Queensland seniors, 1998-2002 to 2013-2017



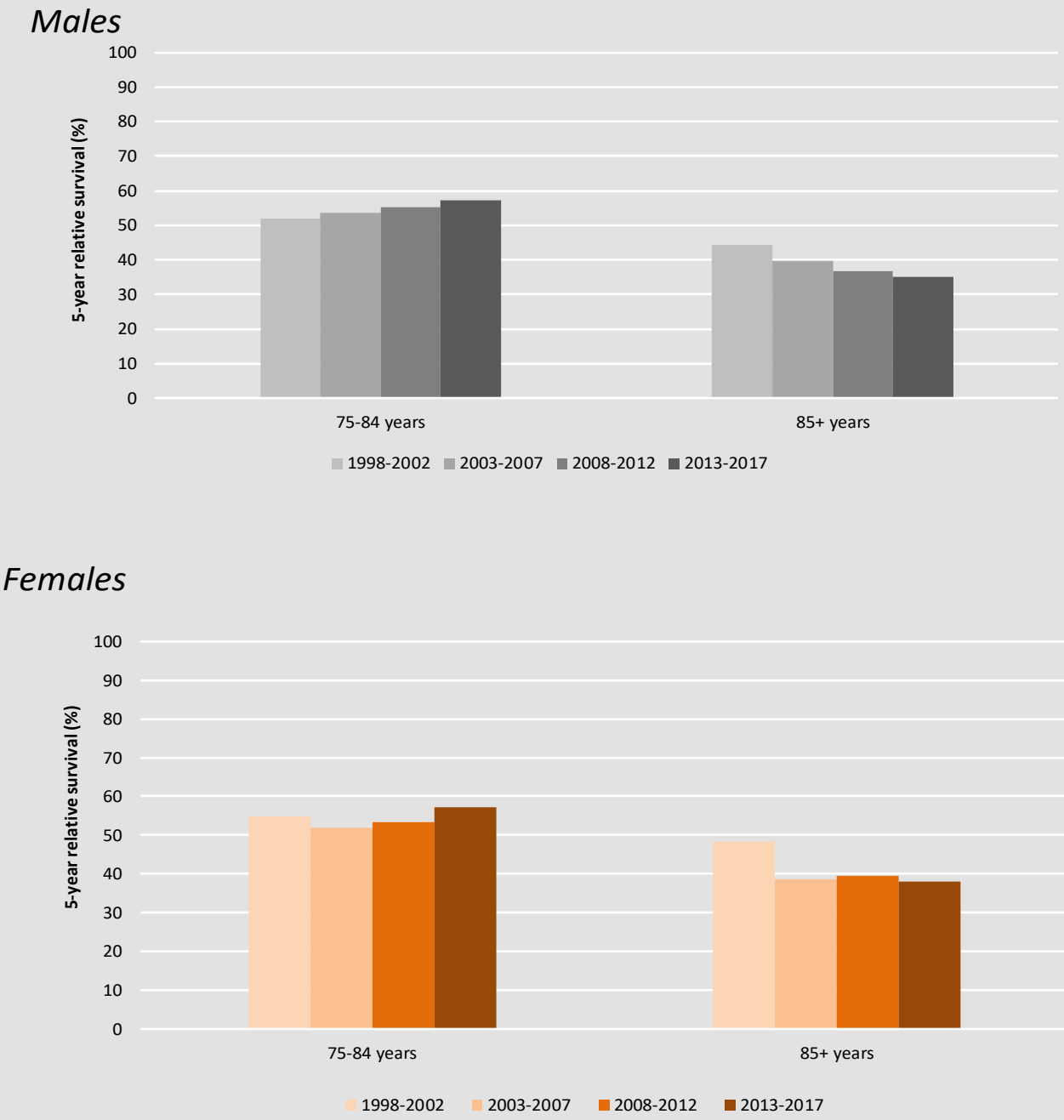
Source: Oncology Analysis System, Cancer Alliance Queensland.

Survival varies widely and depends on type and stage of cancer. In the most recent period (2013-2017) 5-year relative survival was 54%, similar to survival rates in the period 1998-2002 (Figure 42).

For more detailed analysis of cancer in seniors refer to Cancer in Queensland Seniors[16] report at https://canceralliancеqld.health.qld.gov.au/media/1944/cancer-in-queensland-seniors-2007-2016.pdf

Cancer survival rates in Queensland have improved, with the greatest gains observed for kidney, head and neck, myeloma, bladder, lung and stomach cancers.

Figure 43: Five year relative survival in Queensland seniors by age group, 1982-2017

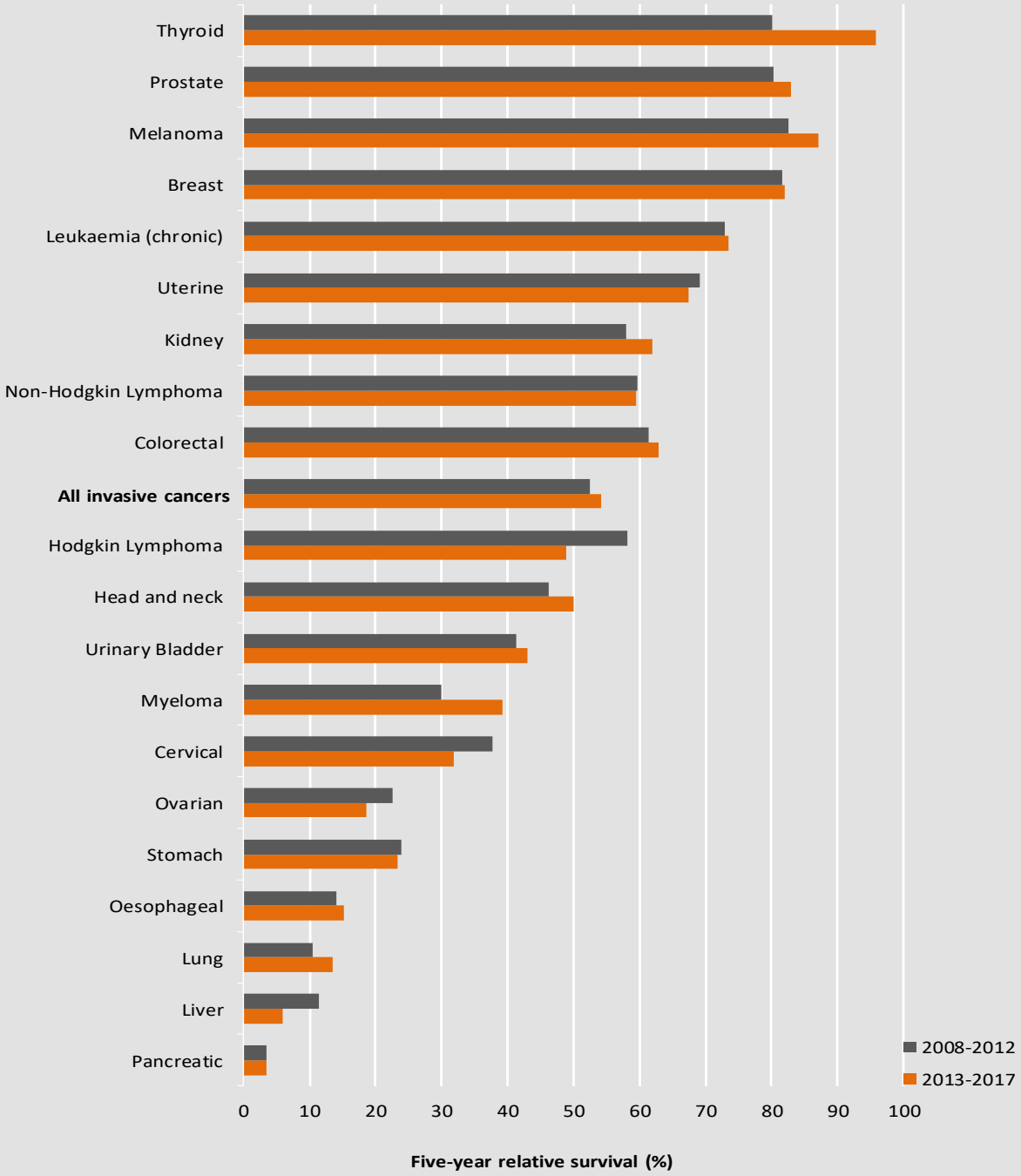


Source: Oncology Analysis System, Cancer Alliance Queensland.

Over time, survival improved marginally for male and female seniors aged 75 to 84 years. Survival appeared to decrease slightly over time in the 85+ age group (Figure 43).

In seniors, highest five-year survival in the most recent period of 2013-2017 was observed for cancers of the thyroid (96%) and prostate (83%). Those diagnosed with pancreatic and liver cancers had the poorest five-year survival (4% and 6%, respectively). Compared to the period 2008-2012, improvements in five-year survival were observed across several cancers for the most recent period. For all cancers combined, five-year relative survival improved from 53% for 2008-2012 to 54% from 2013-2017 (Figure 44).

Figure 44: Five year relative survival for the most common cancers diagnosed in Queensland seniors, 2008-2012 vs 2013-2017



Source: Oncology Analysis System, Cancer Alliance Queensland.

Data for today:

Our aim is to provide data which can inform our decision making as we move through the process of health reform. The challenge now faced by us all is to incorporate this knowledge into our day to day decision making.

Appendix

Glossary and common abbreviations

Age-specific incidence/mortality rate
The number of new cases/deaths attributed to a cancer in a defined age group during a year divided by the number of persons in the age group during the year, expressed as a rate per 100,000 persons in that year.

Age-standardised incidence/mortality (ASR)
The number of new cases or deaths per 100,000 that would have occurred in a given population if the age distribution of that population was the same as that of the Australian population in 2001 and if the age-specific rates observed in the population of interest had prevailed. In international comparisons, the World Standard Population was used as the reference population.

Age-standardised rates are independent of the age-structure of the population of interest and are therefore useful in making comparisons between different populations and time periods.

Annual percentage change (APC)
The annual rate of increase or decrease in cancer incidence or mortality. The APC is calculated by fitting a linear model to the annual rates after logarithmic transformation; the slope represents the APC for the time period. The APCs were calculated using Joinpoint Software Version 4.0.4 from the Surveillance Research Program, National Cancer Institute (US). The software identifies significant changes in rates over time and estimates the periods characterised by different rates.[14]

Five-year survival
All-cause crude survival: the percentage of cases still alive five year after diagnosis.

Five-year relative survival
The rate of survival of persons diagnosed with cancer relative to the expected survival rate of the general population. Five-year relative survival represents the proportion of patients alive five years after diagnosis, taking into account age, gender and year of diagnosis.

HHS
See Queensland Hospital and Health Service (HHS) of residence.

Incidence (new cases)
The number of new cases of cancer diagnosed in a defined population during a specified time period. For example, 2014 incidence is the number of cancers which were first diagnosed between 1 January 2014 and 31 December 2014.

Indigenous
A measure of whether a person identifies as being of Aboriginal or Torres Strait Islander origin. The term 'Indigenous' is used interchangeably with 'Aboriginal or Torres Strait Islander' in order to assist readability.

Mortality (deaths)
The number of deaths attributed to cancer in a defined population during a specified time period regardless of when the diagnosis of cancer was made.

non-Indigenous
A measure of whether a person does not identify themselves as Indigenous.

Potential Years of Life Lost (PYLL)
Potential Years of Life Lost (PYLL) estimates the total number of years of life lost due to a premature death from cancer. The PYLL measure used in this report relates to a reference age from Experimental Life Tables by Remoteness, Queensland, 2005-07 from Health Statistics Centre, Queensland Health[13]. This measure reports the number of years of life lost due to cancer deaths occurring prior to this reference age. For example, a cancer death at age 60 would contribute 25 years to the total PYLL. A cancer death occurring at an age of 85 or more would not contribute any years to the total PYLL being reported.

Prevalence
The number of Queenslanders with a diagnosis of cancer who were alive on 31 December 2017.

Projections
Projections are calculated using the most recent age-specific incidence and mortality rates (2017) and applying these to the population projections produced by the Australian Bureau of Statistics (ABS).

Proportions
A proportion refers to the number representing a part of a population.

Queensland Hospital and Health Service (HHS) of residence
For residence, a Hospital and Health Service (HHS) is a geographic area defined by a collection of Statistical Area Level 2 (SA2)

The list of HHS and their geographic boundaries can be downloaded at
https://qheps.health.qld.gov.au/hsu/infobank/geography.

For public hospital and health service facilities, a HHS is a group of Queensland Health owned and operated facilities that provide health resources and services mainly, but not exclusively, to people who reside in a particular geographic area.

Remoteness
Relative remoteness of residence based on the Australian Standard Geographical Standard (ASGS)[15], with "Remote" and "Very Remote" categories merged into one group and the "Migratory" group excluded.

Remoteness Group
Major City
Inner Regional
Outer Regional
Remote & Very Remote

Socioeconomic status
Socioeconomic status is based on the Socio-Economic Indexes for Areas (SEIFA), a census-based measure of social and economic well-being developed by the Australian Bureau of Statistics (ABS) and aggregated at the level of Statistical Areas (SA).

The ABS uses SEIFA scores to rank regions into ten groups or deciles numbered one to ten, with one being the most disadvantaged and ten being the most affluent group. This ranking is useful at the national level, but the number of people in each decile often becomes too small for meaningful comparisons when applied to a subset of the population. For this reason, this document further aggregates SEIFA deciles into 3 socioeconomic groups.

SEIFA Group	Decile	Percentage of population (approximate)
Affluent	1-2	20%
Middle	3-8	60%
Disadvantaged	9-10	20%

The proportion of cases in each group will vary depending on the subset of the population being examined. For example, the proportion in the Disadvantaged group may be higher than 20% when the data is limited to cancers that are more common in poor compared to rich people.

Affluent - the group of patients whose socioeconomic status is affluent.

Disadvantaged - the group of patients whose socioeconomic status is disadvantaged.

Middle - the group of patients whose socioeconomic status is middle.

https://www.abs.gov.au/ausstats/abs@.nsf/mf/2033.0.55.001

For more details on the calculations and the definitions of terms, go to OASys on
*https:/CancerAllianceQld.health.qld.gov.au/OASys***/** and open the Help file.

Statistical Area Level 4 (SA4)
Statistical Areas Level 4 (SA4) are geographical areas built from whole Statistical Areas Level 3 (SA3s).
https://www.abs.gov.au/websitedbs/d3310114.nsf/home/australian+statistical+geography+standard+(asgs).

Cancer groups

Cancer	Description	ICD-10 AM code
Bone and soft tissue	Bone / Soft tissue	C38, C40-C41, C46-C49
Breast	Invasive breast	C50
CNS and Brain	Brain / Central nervous system	C70-C72
Colorectal	Colon / Rectal	C18, C19-C20,C218
Endocrine	Adrenal gland / pituitary gland / thymus gland / thyroid gland	C37, C73-C75
Gynaecological	Cervix uteri / Corpus uteri / Gestational trophoblastic / Ovary / Vagina / Vulva	C51-C58
Haematological	Hodgkin Lymphoma / Leukaemia / Myeloma / Non-Hodgkin Lymphoma	M965-M966, M980-M994, M973, M967-M972
Head and neck	Larynx / Nasal cavity and paranasal sinuses / Nasopharynx / Oral Cavity / Oropharynx and Hypopharynx / Pharynx / Salivary Glands	C01-C14, C30-C32
Hepatobiliary	Biliary tract (not incl bile ducts and vater) / Gallbladder / Liver / Pancreas	C22-C25
Lung	NSCLC/SCLC	C33-C34
Melanoma	Melanoma	C43
Mesothelioma	Mesothelioma	C45
Ophthalmic	Ophthalmic	C69
Prostate	Prostate	C61
Upper GI	Oesophagus / Small intestine / Stomach	C15-C17
Urological	Kidney / Penis / Renal pelvis and ureter / Testis / Urinary bladder	C60, C62-C68
Other	Ill-Defined and Unknown Sites/ Other non-malignant or secondary cancers	C00-C80

Methods

The incidence and mortality data in this report are based on cancer registrations for 2017 and for 1982-2017 for trend analysis. Rates for common cancer and Indigenous status are aggregated over five years (2013-2017). Unless otherwise stated, information presented in this report is sourced from the database of the Queensland Oncology Repository as of 31 December 2017. Except where noted, incidence and mortality rates are standardised to the Australian age-specific population in 2001.

Projections are calculated using the most recent age-specific incidence and mortality rates (2017) and applying these to the population projections produced by the Australian Bureau of Statistics (ABS).

Data sources

QUEENSLAND ONCOLOGY REPOSITORY

The Queensland Oncology Repository (QOR) is a cancer patient database developed and maintained by the Cancer Alliance Queensland (Queensland Health) to support Queensland's cancer control, safety, and quality assurance initiatives. QOR consolidates cancer patient information for the state and contains data on cancer diagnoses and deaths, surgery, chemotherapy, and radiotherapy. QOR also includes data collected by clinicians at multidisciplinary team (MDT) meetings across the state. For more information, visit **https://cancerallianceqld.health.qld.gov.au/data-access**.

QUEENSLAND CANCER REGISTER

The Queensland Cancer Register (QCR) operates under the Public Health Act 2005 to receive information on cancer in Queensland. The Cancer Register is a population-based registry and maintains a register of all cases of cancer diagnosed in Queensland since the beginning of 1982 (excluding basal and squamous cell carcinomas).

Notification of cancer is a statutory requirement for all public and private hospitals, nursing homes and pathology services throughout Queensland. Over 90% of cancer notifications are now being received electronically.

In May 2017, QCR's legacy database was formally decommissioned and replaced with a new sophisticated data collection application known as QOOL-R. This system contains patient demographic, cancer diagnosis, stage and death information from a range of electronic sources including pathology, hospital notifications and the Register of Births, Deaths and Marriages. This information is pre-populated in QOOL-R for the coders to verify, minimising the effort of manual data entry and increasing accuracy. Due to the accessibility to electronic sources and new processes for collating information, patient demographics such as Unknown Indigenous status has improved significantly.

The QOOL-R application electronically collects and collates information, which better aligns to current medical understanding and more adequately reflects the diagnosis and treatment patterns we see today for Queensland cancer patients regarding the capture of the type and number of cancer cases. The application allows for a more complete accounting of cancer incidence and mortality.

The QCR incidence and mortality data is based on the International Classification of Diseases for Oncology, 3rd edition (ICD-O-3) topography and morphology codes. Due to updates to the ICD-O-3 codes by the International Agency for Research on Cancer (IARC) (World Health Organisation (WHO)), some of the numbers for certain cancers may have increased compared to previous years.

The QCR incidence and mortality data is based on the International Classification of Diseases for Oncology, 3rd edition (ICD-O-3) topography and morphology codes. Due to updates to the ICD-O-3 codes by the International Agency for Research on Cancer (IARC) (World Health Organisation (WHO)), some of the numbers for certain cancers may have increased compared to previous years.

Oncology Analysis System (OASys)

Oncology Analysis System (OASys) is a web based state-wide cancer analysis system with diagnostic, treatment and outcome data on registry-notifiable invasive cancers diagnosed among Queensland residents of all ages (including children) from 1982 to 2017.

The Partnership was gazetted as a quality assurance committee under Part 6, Division 1 of the Hospital and Health Boards Act 2011 in 2004

More on the QCCAT website

For more details on our program of work, go to https://canceralliance qld.health.qld.gov.au

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Notes

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