

Mesothelioma in Queensland

An Overview – 2012

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Foreword

Mesothelioma in Queensland: An overview - 2012 provides clinicians, cancer patients and their families with up to date and relevant information on mesothelioma in Queensland.

This report presents cancer data for 2012 and projections for 2021. It is one of a series of cancer specific reports and is part of the Oncology Analysis System (OASys) online library.

The report has three parts. Mesothelioma projections for 2021 are presented in part one, part two presents Queensland mesothelioma statistics and part three presents mesothelioma statistics for Queensland Hospital and Health Services.

Data sources

Key to QCCAT's program of work is our ability to link population based cancer information on an individual patient basis, using a master linkage key specifically developed by our team. This matched and linked data is housed in the Queensland Oncology Repository (QOR), a resource managed by QCCAT. This centralised repository, QOR, compiles and collates data from a range of source systems including Queensland Cancer Registry, hospital admissions data, death data, treatment systems, public and private pathology, hospital clinical data systems and Queensland Oncology On-Line (QOOL). QOR contains approximately 32 million records between 1982 – 2014. Our matching and linking processes provide the 411,809 matched and linked records of cancer patients between 2000 – 2012, which are the starting point for this analysis.

Highlights

In 2021:

An estimated 240 new cases of mesothelioma will be diagnosed among Queensland residents, while it is expected that 225 Queenslanders may die of the disease.

The projected incidence for 2021 shows a 42% increase and the projected mortality shows a 43% increase. Male incidence and mortality continues to be more than 4 times that of female incidence and mortality.

In 2012:

169 new cases of mesothelioma were diagnosed in Queensland; of these 137 cases were reported in males and 32 in females. Mesothelioma incidence and mortality generally increased with age, with incidence rates dropping slightly for the 85+ age group. Very few cases of mesothelioma were recorded for persons under the age of 65 (<10 cases per 100,000).

Between 1982 and 2012 the number of new cases of mesothelioma among Queensland residents has increased by approximately ten times. These increases were largely due to population growth and ageing. Mortality age-standardised rates also increased over time from 1982 to 2012.

There were an estimated 179 people living with a diagnosis of mesothelioma in the previous five years.

The average five-year relative survival in 2008 to 2012 for mesothelioma was 4.4%, a decrease of 3.2% from the 1993 to 1997 5 year relative survival of 7.6%.

From 2010 to 2012:

Incidence rates for mesothelioma varied by remoteness for both males and females. The major city areas demonstrated the highest mesothelioma incidence and mortality rates while the outer regional areas demonstrated the lowest.

Age-standardised incidence and mortality rates varied by Hospital and Health Service. Metro South had the highest age-standardised incidence rates and the Sunshine Coast had the highest age-standardised mortality rates. The majority of mesothelioma patients resided in the Metro South and Metro North Hospital and Health Services contributing to 45% of the total mesothelioma incidence.

Part 1

Mesothelioma Projections



The International Classification of Diseases for Oncology (ICD-O) has defined mesothelioma as those with primary sites of C45 – mesothelioma.¹ Patients with a diagnosis other than mesothelioma and those patients who reside outside Queensland are not included in this report.

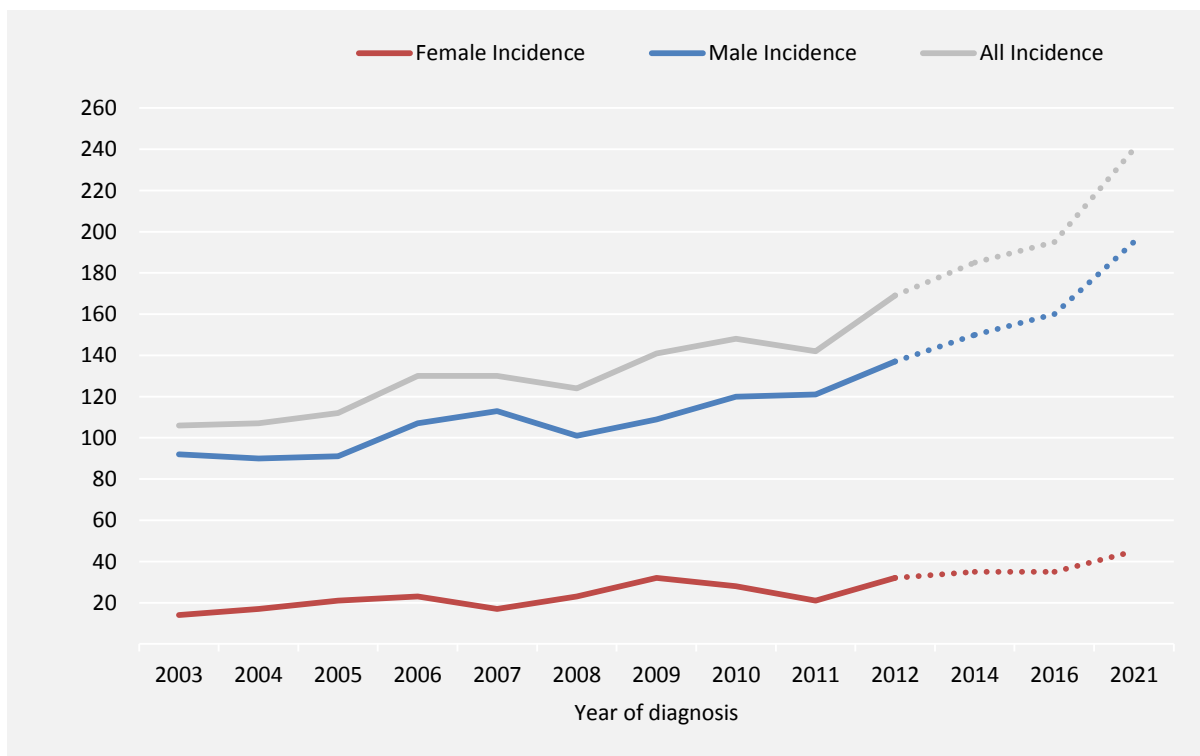
Projections Queensland 2021

It is estimated in 2021 that 240 new cases of mesothelioma will be diagnosed among Queensland residents and that 225 Queenslanders will die of the disease.

Mesothelioma incidence is expected to continue to be more than 4 times in males (195 new cases) compared to females (45 new cases). Projected incidence for 2021 shows a 42% increase from the 2012 incidence of 169 cases.

157 mesothelioma deaths were recorded in 2012 with an expected increase of 43% for mesothelioma by 2021.

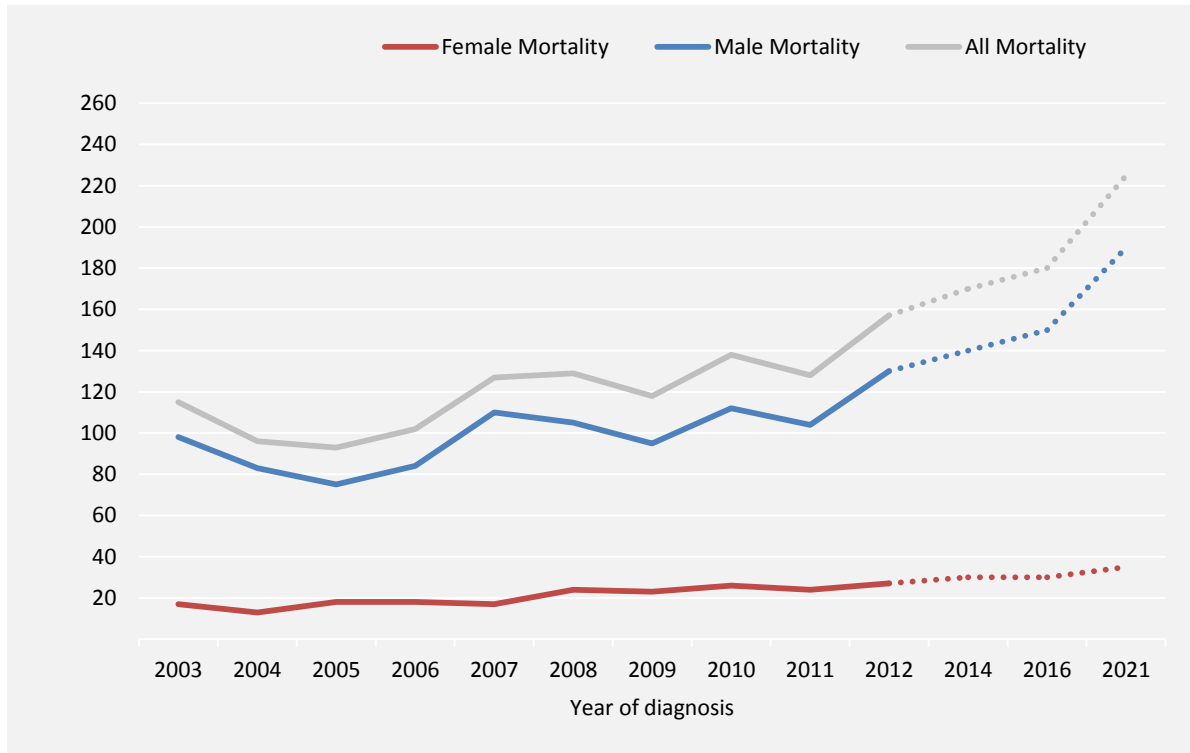
Mesothelioma actual and projected incidence Year of diagnosis 2003-2012, Projected years 2014, 2016, 2021



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

¹ Fritz A, Percy C, Jack A, Shanmugaratham K, Sobin L, Parkin D, Whelan S (ed.). 2000, *International Classification of Diseases for Oncology, 3rd edition*, World Health Organisation

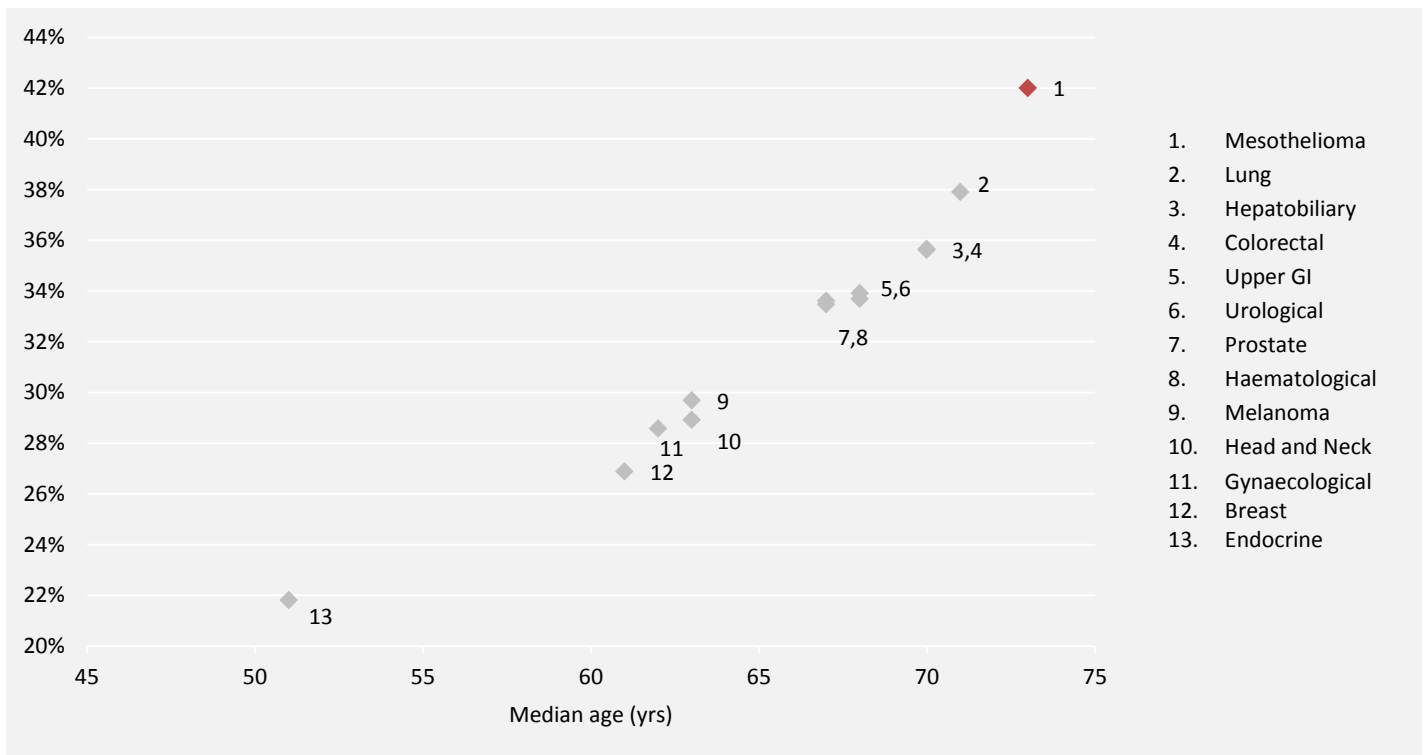
Mesothelioma actual and projected mortality
Year of diagnosis 2003-2012, Projected years 2014, 2016, 2021



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

The percentage change in cancer incidence between 2012 and 2021 is shown below. Assuming no change in incidence rates during this period mesothelioma, more common in older people with a median age of 73 years, is projected to show a 42% increase in the number of new cases. This increase is fairly large compared to other cancers common in older people such as Upper Gastrointestinal, hepatobiliary, colorectal and lung cancers.

Projected percentage change in cancer incidence from 2012 to 2021 for common cancers by median age at diagnosis



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

Part 2

Mesothelioma in Queensland

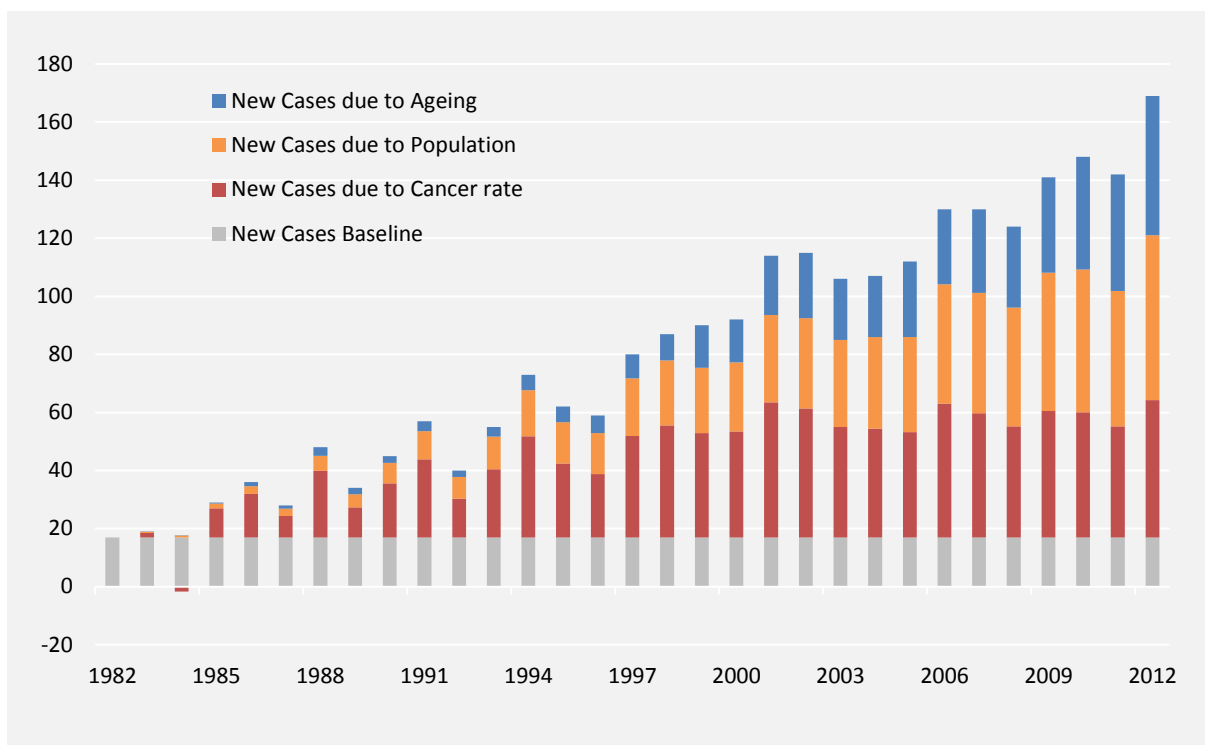


Incidence and mortality

The number of new cases of mesothelioma among Queensland residents has increased by approximately ten times between 1982 to 2012 with 17 cases in 1982 to 169 in 2012. For males, the number of new cases has increased from 16 cases in 1982 to 137 in 2012; for females, the number of new cases increased from 1 in 1982 to 32 in 2012.

There was an increase in the risk of diagnosis of mesothelioma between 1982 and 1996. Since 1996 the risk remains steady and the increase in mesothelioma cases can be attributed to population growth and ageing.

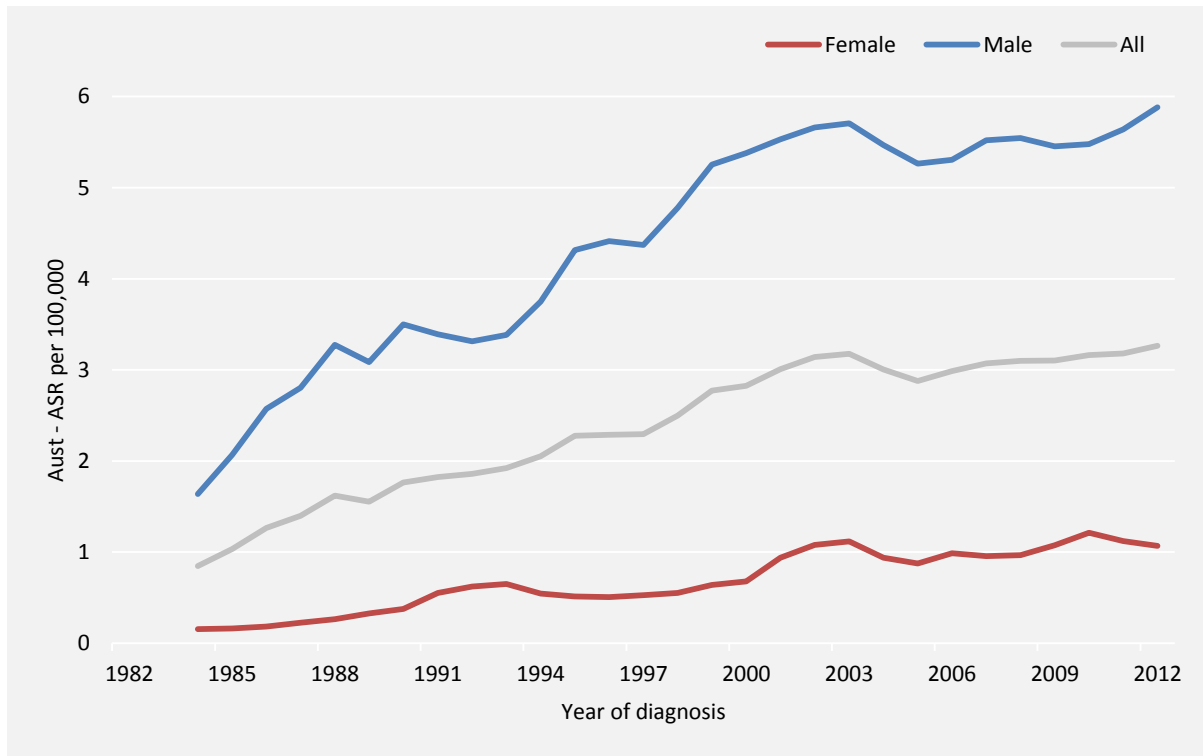
Growth in mesothelioma Year of diagnosis 1982-2012



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

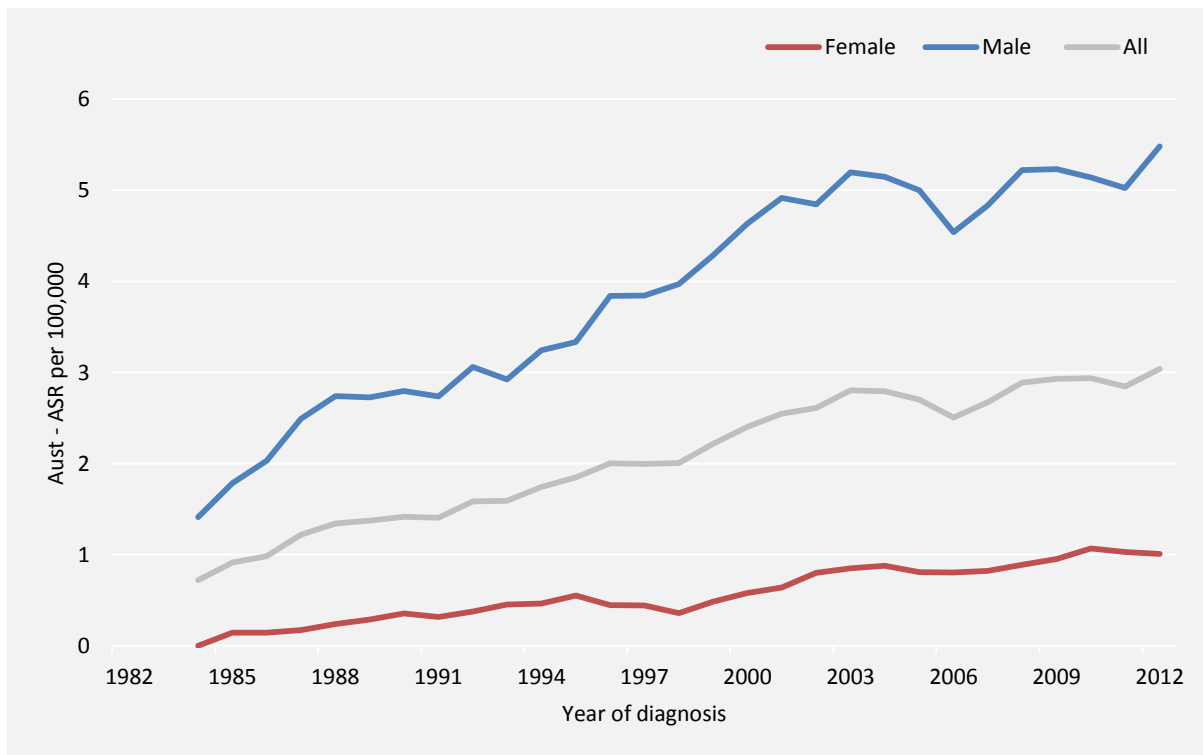
The age-standardised incidence rates of mesothelioma increased from 0.8 per 100,000 in 1984 to 3.3 per 100,000 in 2012. Mortality rates also increased over time from 0.7 per 100,000 in 1984 to 3 per 100,000 in 2012.

*Mesothelioma age-standardised incidence rates per 100,000
Year of diagnosis 2003-2012*



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

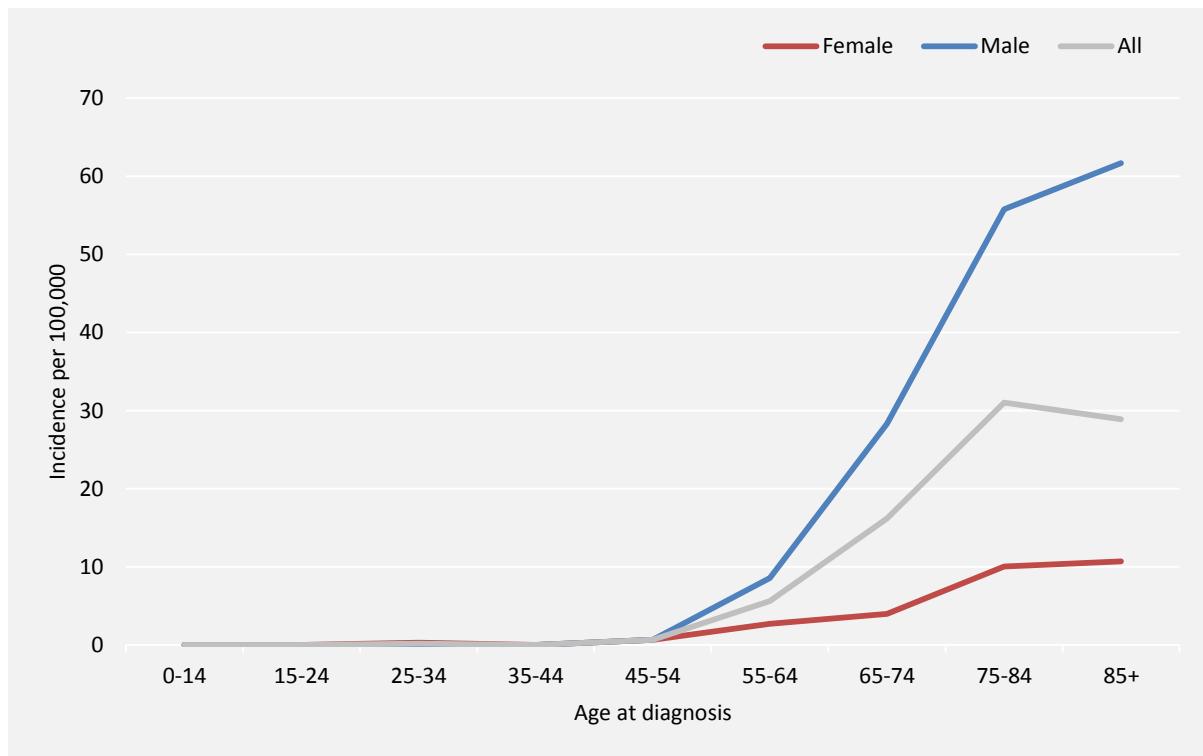
Mesothelioma age-standardised mortality rates per 100,000
Year of diagnosis 2003-2012



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

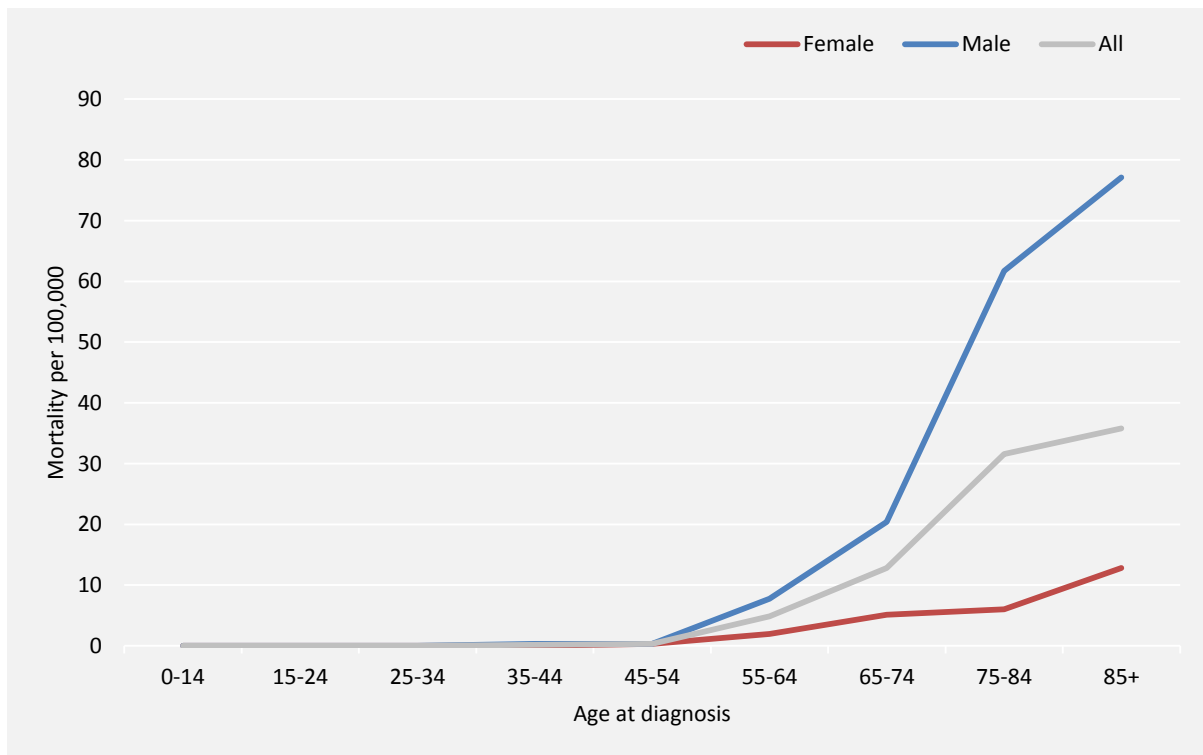
Mesothelioma incidence and mortality rates generally increased with age, with incidence rates dropping slightly for the 85+ age group. For every 100,000 people aged 65 and older approximately 76 were diagnosed with mesothelioma. Very few cases of mesothelioma were recorded for persons under the age of 65 (<10 cases per 100,000).

*Mesothelioma incidence per 100,000, by age at diagnosis
Year of diagnosis 2012*



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

Mesothelioma mortality per 100,000, by age at diagnosis
Year of diagnosis 2012



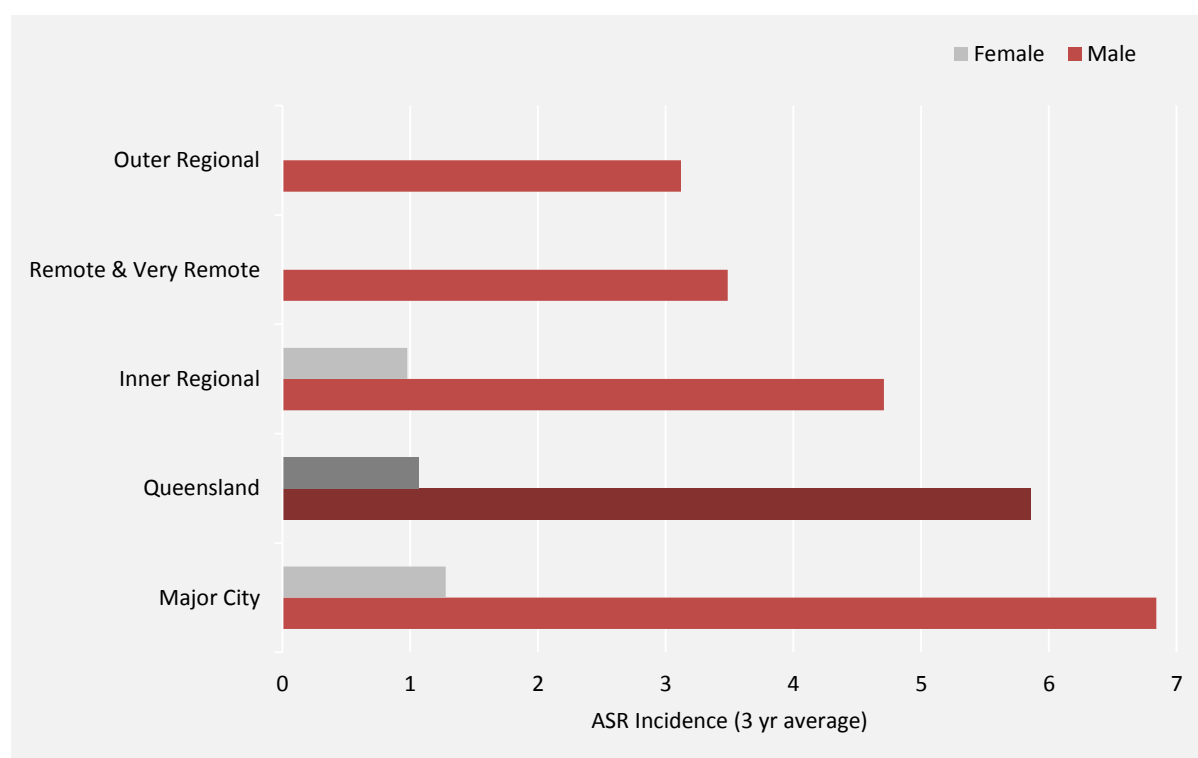
Source: Oncology Analysis System, Queensland Cancer Control Analysis Team.

Regional variation in incidence and mortality

On average, incidence for mesothelioma varied by remoteness of residence for both males and females from 2010-2012. The highest average rate was seen for males who lived in the major city areas of Queensland (6.8 per 100,000) and the lowest was in outer regional areas of Queensland (3.1 per 100,000). For females rates in major city and inner regional areas were similar (approximately 1 per 100,000) while remote & very remote and outer regional areas did not have any incidence.

Age-standardised mortality rates for mesothelioma were again highest in major city areas for males (6.3 per 100,000) and lowest in outer regional areas of Queensland (3.2 per 100,000). Like incidence, for females mortality rates in major city and inner regional areas were similar (approximately 1 per 100,000) while remote & very remote and outer regional areas did not have any mortality.

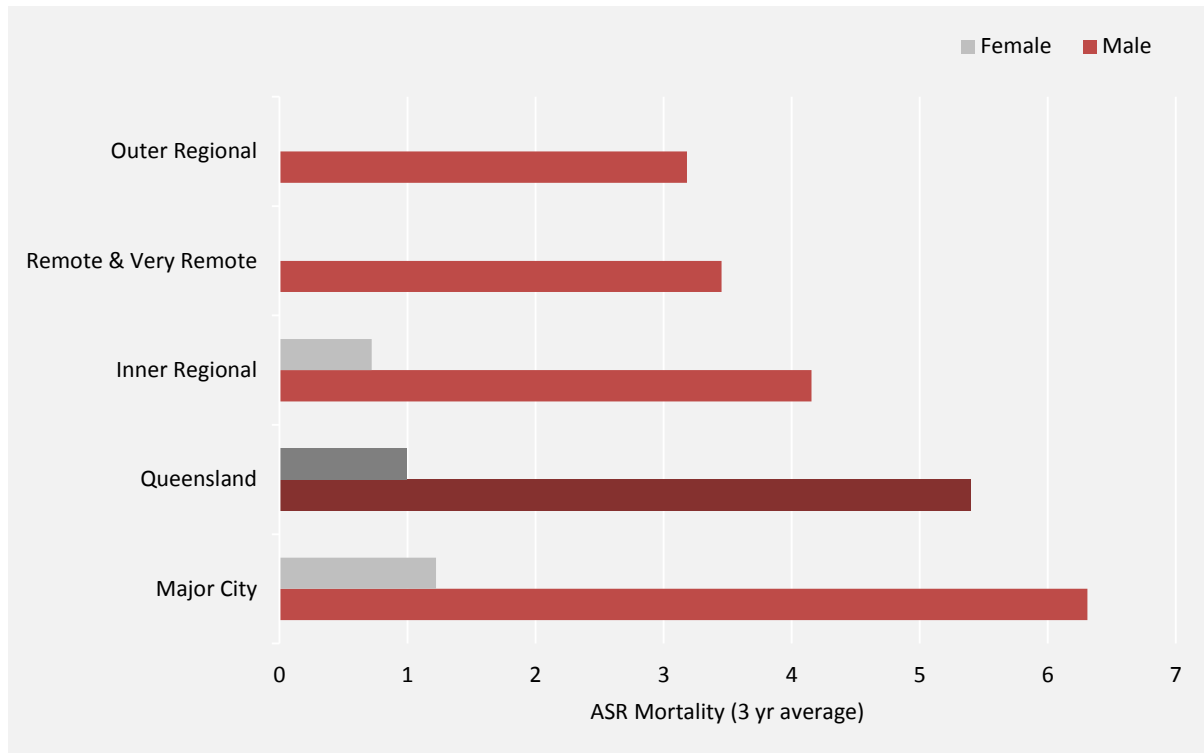
Mesothelioma age-standardised incidence rates by remoteness of residence Year of diagnosis 2010-2012



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

In the interest of completeness, incidence and mortality rates have been included for all Hospital and Health Services 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: http://www.cdc.gov/cancer/npcr/uscs/2007/technical_notes/stat_methods/suppression.htm

*Mesothelioma age-standardised mortality rates by remoteness of residence
Year of diagnosis 2010-2012*



Source: Oncology Analysis System, Queensland Cancer Control Analysis Team
Note: Mortality rates with fewer than 16 cases should be treated with caution

Prevalence

Prevalence represents the number of people living with a cancer and is a measure of the burden of the disease for the individual, families and society. Mesothelioma prevalence is increasing as more people are diagnosed.

At the end of 2012, 179 people were living with a diagnosis of mesothelioma in the previous five years and 204 people were living with a diagnosis of mesothelioma in the last 25 years.

Prevalence of mesothelioma, by time since diagnosis, as at 31st December, 2012



Source: Oncology Analysis System, Queensland Cancer Control Analysis Team

Prevalence of mesothelioma, by time since diagnosis, as at 31st December, 2012

	Male	Female
5 year	136	43
25 year	151	53

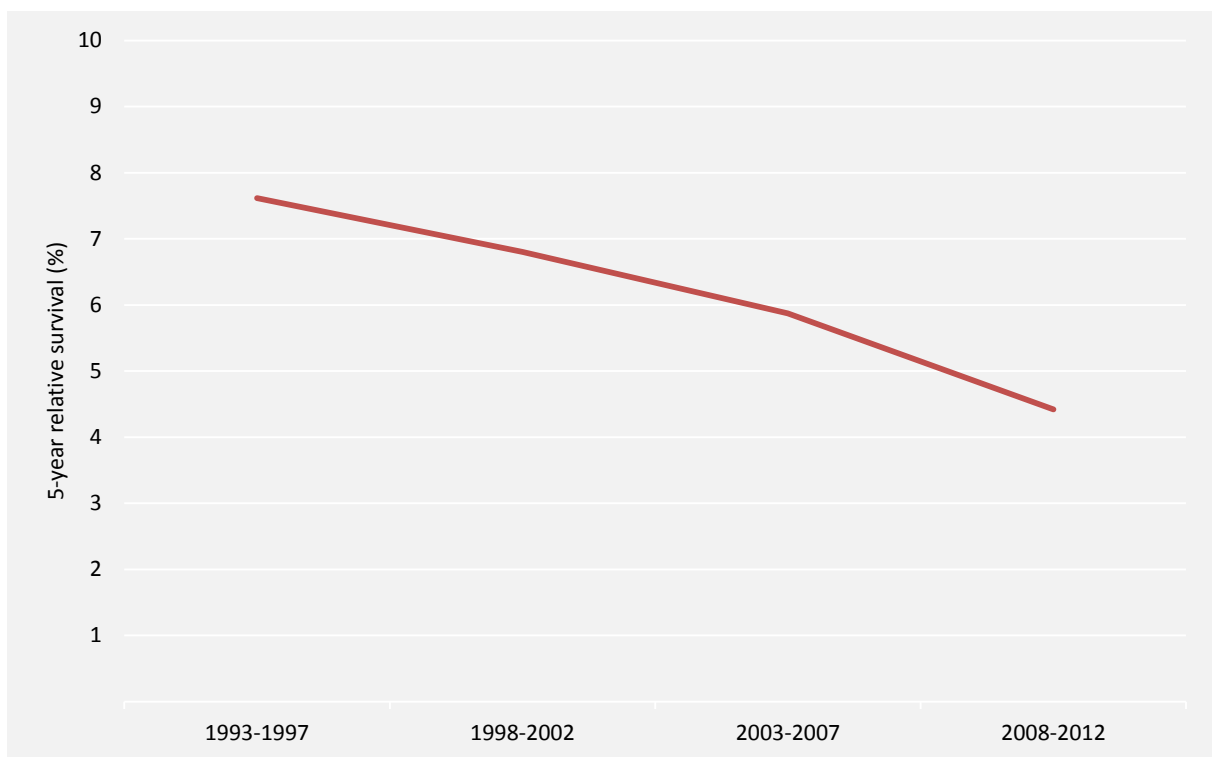
Source: Oncology Analysis System, Queensland Cancer Control Analysis Team

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.

The average 5-year survival in 2008 to 2012 for mesothelioma was 4.4%, a decrease of 3.2% from the 1993 to 1997 5 year relative survival of 7.6%.

5 year relative survival trend of mesothelioma Year of diagnosis 1982-2012



Source: Oncology Analysis System, Queensland Cancer Control Analysis Team

Part 3

Mesothelioma by Hospital and Health Service



Patient Characteristics

In this section an overview of incidence and mortality is presented for the fifteen Hospital and Health Services (HHS) in Queensland for the time period 2010-2012.

The median age for mesothelioma patients in Queensland was 73 with a range of 63-81 years across HHS. Mesothelioma was more common in males representing between 74-100% of incidence across the state. The majority of mesothelioma patients resided in Metro South and Metro North. These two HHS contributed 45% of the total incidence. There were no mesothelioma patients residing in the Central West HHS.

Socioeconomic status varied across Queensland with 72% of cases falling within the middle status group. Approximately 0.2% of all people diagnosed with mesothelioma are indigenous.

*Mesothelioma patient characteristics, by Hospital and Health Service
Year of diagnosis annual average 2010-2012*

	Incidence annual average 2010-2012	Median age	% Male	Socioeconomic Status			
				% Indigenous	% Affluent	% Middle	% Disadvantaged
Metro South	39	73 yrs	83%		23%	66%	10%
Metro North	30	74 yrs	81%		33%	56%	11%
Gold Coast	23	76 yrs	81%		3%	94%	3%
Sunshine Coast	20	73 yrs	85%			90%	10%
Wide Bay	8	75 yrs	83%			17%	83%
Darling Downs	7	68 yrs	75%		10%	45%	45%
West Moreton	6	72 yrs	74%		5%	95%	
Central Queensland	6	68 yrs	82%			94%	6%
Mackay	5	69 yrs	80%			93%	7%
Townsville	4	74 yrs	92%			85%	15%
Cairns and Hinterland	3	65 yrs	89%			67%	33%
Torres and Cape	1	63 yrs	100%				100%
South West	1	81 yrs	100%			100%	
North West	1	67 yrs	100%	50%		100%	
Queensland	154	73 yrs	82%	0.2%	14%	72%	15%

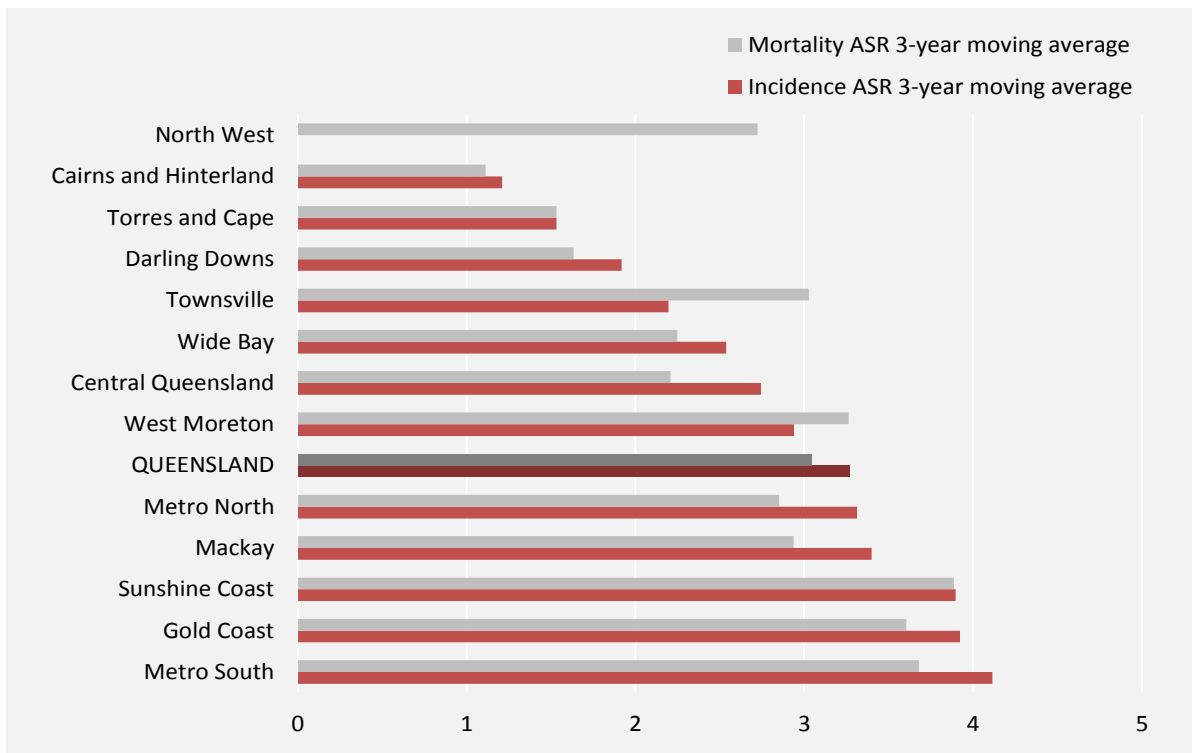
Source: Oncology Analysis System, Queensland Cancer Control Analysis Team

Incidence and Mortality

At the Hospital and Health Service level age-standardised incidence and mortality rates vary across the state. 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 Hospital and Health Services have small populations and estimates of mortality rates based on such small numbers may not be as accurate as those for areas with larger populations.

Mesothelioma age-standardised incidence rates are highest in the Metro South Hospital and Health Services with 4.1 per 100,000 diagnosed, while mortality rates are highest in the Sunshine Coast with 3.9 per 100,000 deaths. The Cairns and Hinterland Hospital and Health Services experienced the lowest age-standardised incidence and mortality rates in the state. The Central West Hospital and Health Service did not have any incidence of mesothelioma from 2010-2012.

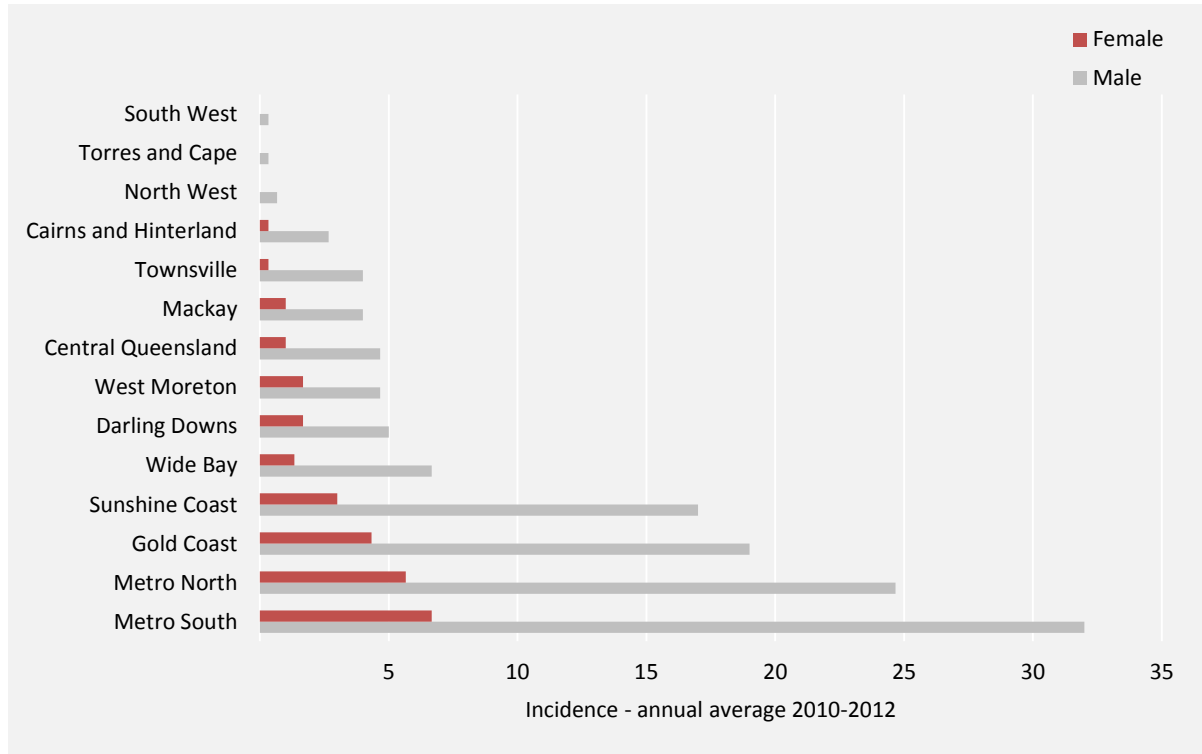
*Mesothelioma age standardised rate 3-year moving average by HHS
Year of diagnosis 2010-2012*



Source: Oncology Analysis System, Queensland Cancer Control Analysis Team

Mesothelioma annual incidence (2010-2012) is highest in Metro South and Metro North Hospital and Health Services accounting for 25% and 20% for the state’s incidence respectively.

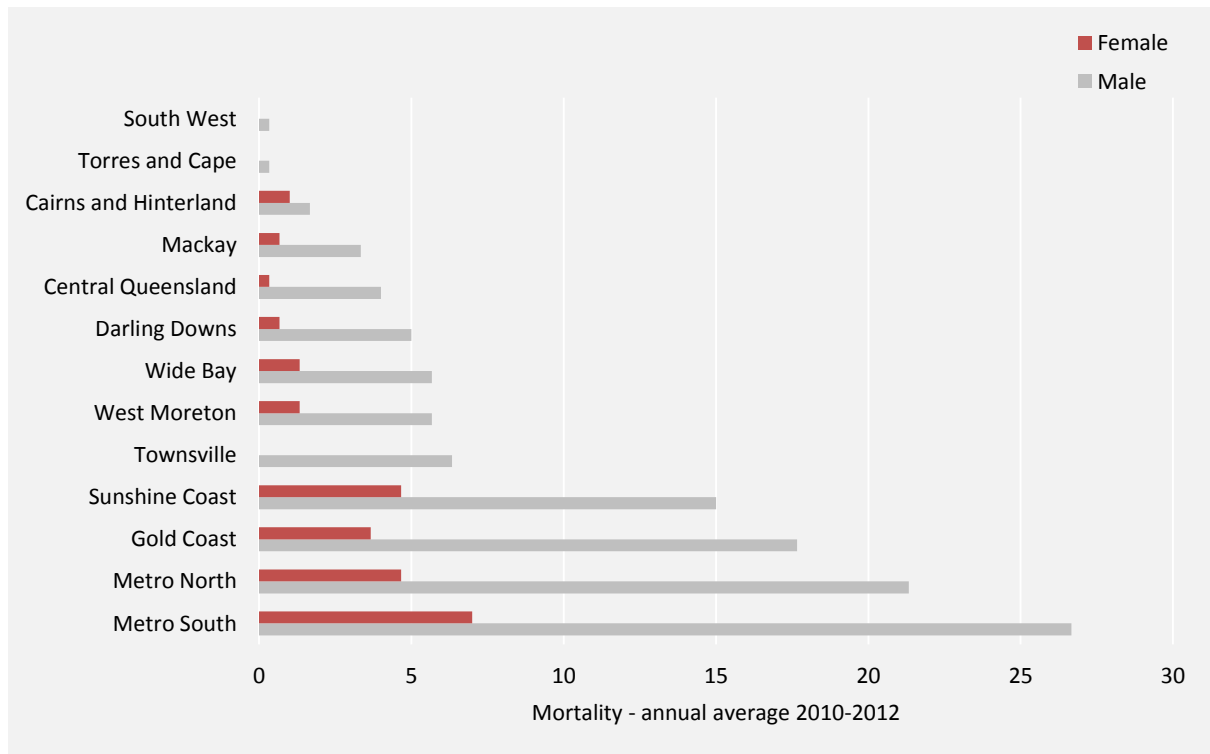
*Mesothelioma annual average incidence by HHS
Year of diagnosis 2010-2012*



Source: Oncology Analysis System, Queensland Cancer Control Analysis Team

The average annual mortality (2010-2012) is highest in Metro South and Metro North Hospital and Health Services accounting for 24% and 19% of the state's mortality respectively.

*Mesothelioma annual average mortality by HHS
Year of diagnosis 2010-2012*

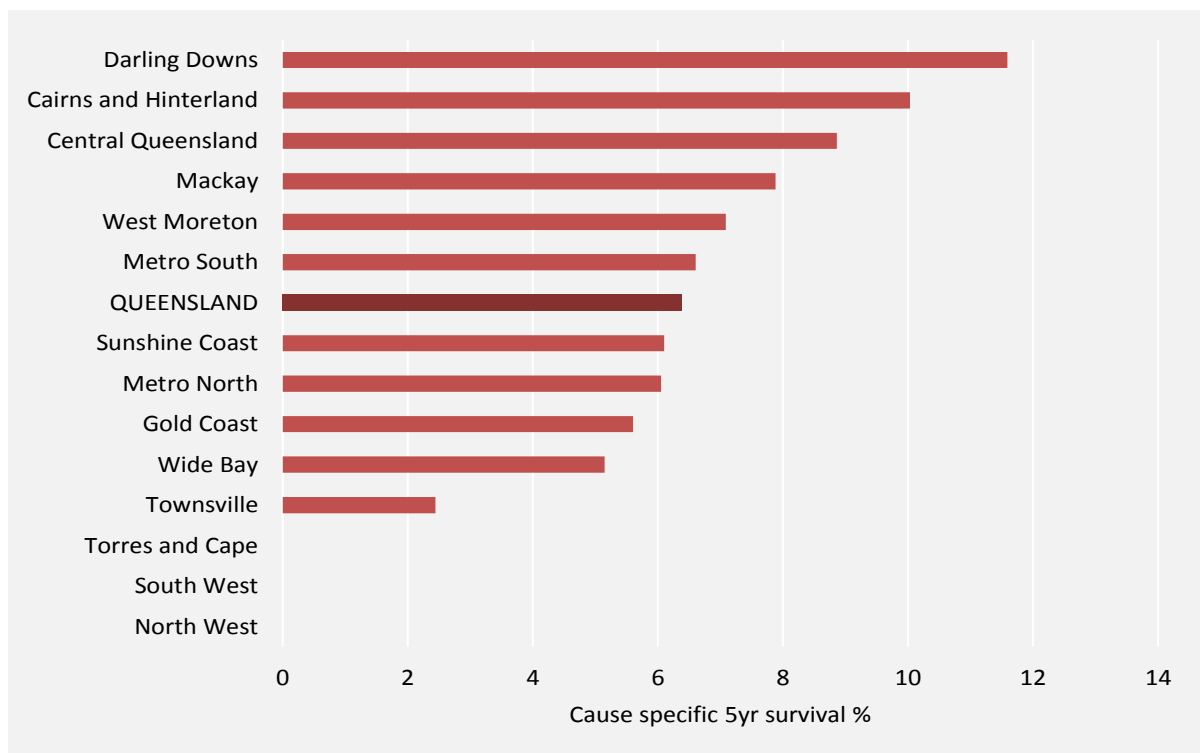


Source: Oncology Analysis System, Queensland Cancer Control Analysis Team

Survival

There is regional variation in cause specific survival of Queensland mesothelioma across the state. The North West, South West and Torres & Cape Hospital and Health Services represented the lowest 5 year survival percentage of 0% and the Darling Downs had the highest at 11.6%. 5 year survival for mesothelioma in Queensland was 6.4% from 1982 to 2012.

Mesothelioma cause specific survival by HHS Year of diagnosis 1982-2012



Source: Oncology Analysis System, Queensland Cancer Control Analysis Team

Appendix



Data Sources

Oncology Analysis System

Oncology Analysis System (OASys) is a state-wide clinical cancer database with diagnostic, treatment, and outcome data on registry-notifiable invasive cancers diagnosed among Queensland residents of all ages (including children) from 1982 to 2012. The database includes inpatient data for public and private admissions and information systems for radiation oncology, pharmacy and pathology. Benign (non-invasive) cancers are excluded. New cancer cases are counted following the rules for counting multiple primary cancers as defined by the International Association for Research on Cancer (IARC).

The data collection, linking and reporting of OASys data is performed under the auspices of Queensland Cancer Control Safety and Quality Partnership, a Quality Assurance Committee gazetted under Section 31, The Health Services Act 1991.

Queensland Oncology Repository

The Queensland Oncology Repository (QOR) is a cancer patient database developed and maintained by the Queensland Cancer Control Analysis Team (QCCAT; 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://qccat.health.qld.gov.au/QOR>

Appendix 2 - Glossary and Common Abbreviations

Age-standardised incidence/mortality rate (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.

Except where noted, incidence and mortality rates are standardised to the Australian age-specific population in 2001.

Annual average

Annual average refers to the sum of numbers divided by the number of years being reported. In this report annual average numbers have been rounded up to the nearest whole number for those with less than 1.

Cause specific survival

Cause specific survival: the percentage of cancer cases attributed to a specific cancer still alive after a specified period of time from diagnosis.

Hospital and Health Services (HHS)

For residence considerations, a Hospital and Health Service is a geographic area defined by a collection of Statistical Local Areas (SLA). For public hospitals and health service facilities, the term Hospital and Health Service is synonymous with a group of Queensland Health facilities and staff responsible for providing and delivering health resources and services to an area which may consist of one or more residential areas.

Incidence (new cases)

The number of new cases of cancer diagnosed in a defined population during a specified time period. For example, 2012 incidence is the number of cancers which were first diagnosed between 1 January 2012 and 31 December 2012.

Indigenous Status

A measure of whether a person identifies as being of Aboriginal or Torres Strait Islander origin.

Median age

The age that divides a population into halves: one older than the median, the other younger than the median.

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.

Prevalence

The number of Queenslanders with a diagnosis of cancer who were alive on 31 December 2012.

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.

Remoteness

The relative remoteness of residence at time of diagnosis, based on the Australian Standard Geographical Classification (ASGC). In this report, remoteness is classified into four groups: Major City, Inner Regional, Outer Regional, and Remote & Very Remote.

Sex

Refers to the biological and physiological characteristics that define males and females.

Socioeconomic status

Socioeconomic classification 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 Local Areas (SLA).

The ABS uses SEIFA scores to rank regions into ten groups or deciles numbered 1 to 10, with 1 being the most disadvantaged group and 10 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.

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