



Health Indicators Report 2021

West Moreton Health

Acknowledgment of Country:

West Moreton Hospital and Health Service acknowledges the Jagera, Yuggera, and Ugarapul peoples, the Traditional Owners and Custodians of the land, and we pay our respects to Elders past, present and emerging.

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Preface



The health system is helping us to live longer through health promotion and disease prevention, early diagnosis, treatment and management of disease and injury as it strives to meet the health service needs of the community now and into the future. Nevertheless, West Moreton Health faces significant challenges, not the least of which is a projected doubling in population within the next two decades, particularly in older age groups. Residents of West Moreton have rising rates of chronic disease and obesity which are higher than the state average and there is significant socio-economic disadvantage which impacts opportunities for maintaining good health. Of additional concern is addressing the health and life expectancy gap of our First Nations peoples which will require “significant and concerted efforts to continue to improve health outcomes, both directly through health interventions and indirectly by addressing the broader determinants of health”.^a It is critical that that we ensure that every infant and child get a healthy start in life, however there are many opportunities across the life course where we can help our community to adopt healthier behaviours.

In response to these challenges are three important activities. Firstly, the **West Moreton Health Strategic Plan 2021-2025**^b is underpinned by a population-health approach, including working actively with our partners to address health inequality. Our vision is to create a West Moreton community which is thriving and well so an important long-term strategy in addressing this future challenge is to invest more in growing a healthier population. Through the combined effort of partners, clinicians, and health care providers in West Moreton Health and in the wider region, we will continue to provide safe care to those who need it most. We need to listen, involve, and collaborate with consumers, carers, and their families in everything we do.

^a National Indigenous Australians Agency. (2022). Leading causes of mortality. Aboriginal and Torres Strait Islander Health performance framework, Australian Institute of Health and Welfare. <https://www.aihw.gov.au/reports-data/health-conditions-disability-deaths/burden-of-disease/overview>.

^b West Moreton Health (2022) West Moreton Health Strategic Plan 2021-2025. 2022 revision. <https://www.westmoreton.health.qld.gov.au/sites/default/files/inline-files/strategic-plan.pdf>

Secondly, the **West Moreton Health Local Area Needs Analysis (LANA)**^c report is a comprehensive and systematic review of the health issues and service needs facing the West Moreton community. The LANA process was informed through the collection of more than 200 quantitative indicators, as well as consultations with more than 620 consumer, staff, and stakeholders. Finally, the soon to be published **West Moreton Health Prevention Strategy 2022-2025** will help support and guide these strategies. Although approximately one-third of Australia's total burden of disease can be attributed to modifiable risk factors that include smoking, alcohol abuse, physical inactivity, high blood pressure and blood cholesterol, low consumption of fruits and vegetables and overweight and obesity, as little as 2% of total health expenditure funds preventative health services.^d

This Health Indicators 2021 report provides an update to West Moreton Health's ongoing series of reports on the health status of the West Moreton community. The report aims to be a reference document for health practitioners and partners across West Moreton, which provides a retrospective picture of changes (gains and losses) to health status over time. The report is a secondary analysis of health information, using similar data sources to "The Health of Queenslanders 2020, Report of the Chief Health Officer Queensland". The report offers a focused analysis on the health status of the West Moreton community compared with the wider Queensland population. The report highlights important health outcomes for diseases of importance, including mortality and hospitalisations; mortality and incidence rates for selected cancers; cancer screening rates; maternal and child health indicators; and chronic disease risk factors.

The challenges we all face are long-term and will require considerable investment, innovation, and workforce planning. Increasing population will result in increasing demand for health services, placing pressures on already stretched funding sources. West Moreton Health is committed to delivering health and wellbeing services to the people of the West Moreton region throughout their lives. We will work with partners and community to support people to achieve good health, including being more physically active. We will need to work together to not only meet the demand for health services now and in future, but also to help curb the demand for health services through supporting longer term population-based strategies to promote wellness and prevent disease.

Michael Willis

Health Service Board Chair, West Moreton Health

^c Local Area Needs Analysis (LANA), Summary Report 2022-2025. <https://www.westmoreton.health.qld.gov.au/sites/default/files/inline-files/local-area-needs-analysis-summary-report.pdf>

^d Australian Institute of Health and Welfare. (2022). Burden of Disease. Australian Government. <https://www.aihw.gov.au/reports-data/health-conditions-disability-deaths/burden-of-disease/overview>.

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Executive Summary

This report describes the health status of the West Moreton population, identifies important and emerging health issues, and highlights areas of opportunity for innovative public policy and future research. The report has utilised the most recent available data for numerous key health and sociodemographic indicators and health outcomes, including mortality and hospitalisation rates for major diseases, mortality rates and incidence rates for selected cancers, as well as avoidable mortality and potentially preventable hospitalisations. In addition, the report provides cancer screening rates, maternal and child health indicators, and chronic disease risk factors. The term 'First Nations peoples' is respectfully used hereafter to refer to Queensland's Aboriginal and Torres Strait Islander peoples, while acknowledging the tremendous diversity of cultures and experiences of Queensland's First Peoples. ¹

For the first time, health indicators for dental and oral health (health service-related data) are also included. For reader convenience, the authors have included lists of figures and tables, abbreviations, methodological definitions, and an appendix of supplementary information.

Demography

As of 30 June 2021, West Moreton had an estimated resident population of 312,729 people, representing about 6% of the Queensland population. Compared with Queensland, West Moreton has a larger proportion of young children and adolescents (0-19 years), and adults up to 39 years and smaller proportions of residents aged 40 years and over. In 2020, First Nations peoples represented an estimated 4.9% of the population of West Moreton, compared with 4.7% of the Queensland population.

Population growth or projections estimate an increase in overall population of about 134% (to approx. 418,000 people) in West Moreton from 2016 to 2026, well above the Queensland average increase of 18%. Whilst the largest increase in the projected number of West Moreton residents is expected in the 30-44 years age groups, the largest percentage increase in West Moreton is expected in the 65 years and over age groups. Taking a longer view from 2016 to 2036, the projected population will more than double in West Moreton (188% to approx. 587,000 people), again with the largest percentage increase in older age groups (75 years and over). This increase in older persons is expected to have major implications for health service delivery in West Moreton.

The report highlights disparities in socioeconomic status, education, employment, and homelessness in the West Moreton region compared with Queensland. Over half (62%) of the West Moreton population experienced socioeconomic disadvantage, with 35% of the population in the most disadvantaged quintile compared with 20% in Queensland. In West Moreton, 10.1% of families were characterised as low-income families and unemployment was experienced by 7.5% of West Moreton residents compared with 5.5% of Queensland residents. Education within West Moreton for schooling and non-schooling qualifications was lower than the Queensland average, with just over half (53%) of the West Moreton population reported completing Year 11 or 12 or equivalent as the highest level of education, 6% lower than Queensland. Similarly, completion of higher or tertiary education was 4.6% lower in West Moreton than in Queensland.

Hospital separations

There were nearly 150,000 hospital separations per year in West Moreton in the three-year period from 2017-2018 to 2019-2020 (financial years). Rates of hospital separations in West Moreton for all conditions combined (all causes) were significantly higher in West Moreton than in Queensland. West Moreton Health separation rates were significantly higher compared with Queensland for the sub-categories of Asthma, Chronic obstructive pulmonary disease (COPD), Pneumonia and influenza, Heart failure, Diabetes mellitus, Road transport injury and Suicide and self-inflicted injury. Separation rates for Mental health conditions in West Moreton from 2017-2018 (all persons and females) were significantly lower than in Queensland, a change from previous years (2015-2016).

Over the longer timeframe from 2010-2011 to 2019-2020, West Moreton Health hospital separations rates trended upwards for all causes and for the subcategories of Arthritis and musculoskeletal conditions, Asthma (females only), Pneumonia and influenza, Heart failure, Diabetes mellitus (males only), Falls, Road transport injury, all Mental health conditions, Anxiety and depression (males only) Suicide and self-inflicted injury (especially among young females aged 15-24 years in 2017-2018 to 2019-2020). In 2019-2020 (financial year) there were 13,341 hospitalisations in West Moreton which were classified as 'potentially preventable'.

Potentially preventable hospitalisations

Potentially preventable hospitalisations (PPHs) rates can be used as a measure of increased prevalence and/or timely access to or investment primary health care. West Moreton exceeded the rates reported for Queensland in terms of the overall rates of all PPHs combined, as well as across all three of the sub-categories (acute, chronic, and vaccine preventable). One in four of all potentially preventable hospital admissions in West Moreton residents was due to complications of Diabetes mellitus.

Mortality

On average there were 1,513 deaths per year from all causes among residents of West Moreton in the three-year period 2017-2019. Across this period, the age-standardised avoidable mortality rate (all persons) in West Moreton was significantly higher than the corresponding rate in Queensland (554.6 and 524.5 per 100,000 population, respectively). The rate was 85% higher in males than in females, up 12% from the previous reporting years (2014-2017).

In the five years from 2015-2019 death rates due to Chronic obstructive pulmonary disease, Coronary heart disease (males only), Heart failure (females only) and Diabetes mellitus (males only; females higher in previous reporting period (2013-2017)) were significantly higher in West Moreton compared with Queensland. Between 2010-2012 to 2017-2019 West Moreton mortality rates for Coronary heart disease, Stroke, Heart failure, Diabetes mellitus (females only) and Road transport injury all trended downwards while rates for Pneumonia and influenza trended upwards. In the years 2016-2019, there was an average of 362 deaths per year that were classified as potentially avoidable among West Moreton residents.

Cancer

In the five-year reporting period 2014-2018, there were on average 1,478 new cases of cancer^e in West Moreton. ² Approximately 2% of the total incident cases in this reporting period were in First Nations peoples living in West Moreton. The six most common types of Cancer in West Moreton include Melanoma (14%), Prostate cancer (14%), Colorectal cancer (12%), Breast cancer (11%), Haematological cancer (10%) and Lung cancer (9%), together accounting for 70% of all newly diagnosed cancers. For this reporting period, the age-standardised incidence rates of all major cancer types in West Moreton were not significantly different from the Queensland rates.

There were on average 456 deaths per year from all cancers among West Moreton residents in the years 2014-2018. One in five (21%) cancer deaths in West Moreton were due to Lung cancer, followed by Colorectal cancer (12% of all cancer deaths), hepatobiliary (11%) and Haematological cancer (10%). The age-standardised mortality rates for all major cancer types (including Prostate cancer) in West Moreton were not significantly different from the Queensland rates.

Cancer screening

Cervical

The National Cervical Cancer Screening Program (NCSP) (preliminary data) from 2018-2019 indicates participation (crude rate) at 39.6% in West Moreton and 46.1% in Queensland among females aged 25-74 years. West Moreton Cervical cancer screening participation rates were lower than Queensland rates across all age groups. In West Moreton the highest participation rate (43.6%) was among females aged 55-59 and 60-64.

Breast

BreastScreen Australia participation in West Moreton in 2014-2015 to 2019-2020 was similar in Queensland for both age groups presented, with participation rates ranging between 51-57%. In 2019-2020 within the target age group (50-74 years), the Breast cancer screening program participation rates were highest (55-57%) among females aged 60-74 in both West Moreton and Queensland.

Bowel

National Bowel Cancer Screening-Program (NBSCP) participation rates increased with age and were consistently higher in females than in males. In 2018-2019 the West Moreton Bowel cancer screening participation rate (37.7%) was lower than both the Queensland rate (41.6%) and the Australian rate of (43.5%).

^e Excludes basal and squamous cell carcinomas of the skin

Maternal and child health

In West Moreton in 2020 there were 4,269 births to 4,247 mothers. The total life-time fertility rate per female aged 15-49 years in West Moreton (1.88 births per woman) was statistically higher than the Queensland rate of 1.62 births per woman. Birth and fertility rates in both West Moreton and Queensland have fallen consistently since 2007. Age-specific birth rates were significantly higher in West Moreton than in Queensland in the under 20 to 29 years age groups and significantly lower in the 30 to 49 years age groups. The median Maternal age of all West Moreton females who gave birth between 2016 and 2020 was 29 years while the median Maternal age of West Moreton mothers over the same period was 25 years. Almost half (46%) of all births to West Moreton First Nations mothers were to females under 25 years, while this was the case for only 22% of Queensland females. There was also a significant difference in the under 20 years Maternal age group (13% versus 4%).

In 2019-2020, 15% of pregnant females in West Moreton reported smoking cigarettes for all or part of their pregnancy (significantly higher than the Queensland prevalence of 12%). Approximately 41% of First Nations mothers in West Moreton reported smoking cigarettes for all or part of their pregnancy, similar to Queensland (44%). Between 2016-2020 rates of Maternal smoking were relatively stable in both West Moreton and Queensland. Among First Nations mothers, Maternal smoking rates increased in both West Moreton and Queensland by 18% and 9% respectively. By comparison, non-Indigenous mothers in both regions decreased by 16%. In the period 2016-2020, 14% of West Moreton mothers had Diabetes in pregnancy, an increase from 10% in previous reporting years (2013-2017). Between 2013 and 2020 there was a 34% increase in the prevalence of Diabetes in pregnancy in mothers in West Moreton.

The infant mortality rate (representing deaths in the first year of life) in West Moreton (5.9 deaths per 1,000 live births) was 40% higher than the Queensland rate (4.1 deaths per 1,000 live births) in 2016-2019. The Perinatal mortality rate (representing stillbirths and deaths in the first 28 days of life) in West Moreton (11 deaths per 1,000 live births) was statistically similar to the Queensland rate (10 per 1,000 births) in 2016-2020. Most mothers from West Moreton in 2016-2020 attended five or more Antenatal visits over the course of their pregnancy (95%). The proportion of First Nations mothers in West Moreton attending five or more Antenatal visits increased in the period from 2016 to 2020 (from 86% to 91%), although were still significantly less likely to reach the target of five or more visits than were non-Indigenous mothers from West Moreton.

Chronic disease risk factors

Adults

In 2019-2020, 68% of adults in West Moreton self-reported being overweight or obese (self-reported data) compared with 60% of adults in Queensland. This significant difference was mainly accounted for by the increase in self-reported obesity prevalence which was 10% higher in West Moreton than in Queensland (35% versus 25%). Over the past 10 years (2009 to 2020), trend data shows a decrease (1.1% annually; 10.9% in total) in overweight prevalence in adults in West Moreton, while there was a considerable increase in obesity prevalence (3.5% annually; 46% in total), indicating an overall upward shift in this chronic disease

risk factor. However, this was not significantly different from the respective percentage changes in Queensland, overall.

Rates of people self-reporting having undertaken sufficient physical activity for health benefit (54%) was somewhat lower than the corresponding Queensland prevalence (58%) (not statistically significant) in 2019-2020. Notably, only about half of West Moreton and Queensland adults had a sufficient fruit intake (2+ serves/day) and less than 10% of adults had a sufficient vegetable intake (5+ serves/day). The daily smoking rate in West Moreton of 12% was similar to the Queensland rate (11%), though trend data shows the daily smoking rate decreased by 5% annually or 43% in the 11 years from 2009 to 2020 (not statistically significant). Reports of single occasion risk drinking level (at least monthly) were significantly lower in West Moreton adults (26%) compared with Queensland adults (30%). West Moreton adults (53%) were equally likely as Queensland adults to have been sunburnt in the last 12 months prior to being surveyed.

Children

In 2019-2020, 31% of children (5-17 years) in West Moreton were reported as being overweight or obese, slightly higher compared with Queensland children (26%). Adequate fruit consumption was reported in 67% of children in West Moreton, however only 5% of children reported having the recommended vegetable intake. These findings were similar with Queensland. Over half of children in West Moreton reported undertaking sufficient physical activity for health benefit (52%), an increase from previous reporting period (46% in 2017-2018). Sunburn prevalence (in the last 12-months) in West Moreton decreased from 59% in the previous reporting period to 43%.

Methodology

Data sources

This report was produced by the West Moreton Public Health Unit and utilised the most recent available data at the time of writing. Reporting years for specific datasets are as follows:

- Resident profile data: 2016-2020; ³
- Hospital separations data: 2017-2018 to 2019-2020 (reported by financial years); ⁴
- Potentially preventable hospitalisations data: 2019-2020; ⁴
- Mortality data: 2015-2019, 2016-2019; ⁵
- Cancer incidence and mortality data: 2014-2018, ^{6,7} (cervical 2015-2019); ⁸
- Cancer screening data: 2018-2019 (cervical), 2014-2015 to 2019-2020 (breast), 2014-2015 to 2018-2019 (colorectal); ⁹
- Maternal and child health data: 2016-2020; ¹⁰
- Oral health data: 2015-2017 to 2019-2021 (West Moreton Health Oral Health Services) ¹¹, 2012-2014 (Child and Oral Health Survey); ¹²
- Chronic disease risk factor survey data: 2019-2020. ¹³

Privacy and confidentiality

Data privacy and confidentiality was preserved in accordance with the guidelines developed by the National Health Information Standards and Statistics Committee for aggregate and unit record data. ¹⁴ Aggregate data suppression rules have been followed throughout this report to suppress small cell counts (less than five) for aggregations at hospital and health service (HHS), statistical area level 2 (SA2), statistical area level 3 (SA3) or state level, three- or five-year reporting periods.

Limitations

Limitations of available data have prevented making comparisons in the oral health outcomes of West Moreton residents compared with elsewhere in Queensland, although it is hoped that improvements in the Oral Health data set may facilitate these comparisons at a later time. Similarly, it has not been possible to compare the chronic disease health status of prisoners in West Moreton compared with elsewhere in Queensland. However, a project currently underway to develop an electronic clinical record for all prisoners at Queensland correctional centres may facilitate these comparisons at a later time. The scope of this report does not currently explore community mental health or drug and alcohol services. These defined areas will be considered for subsequent reports and/or via complementary resources such as a factsheet/statistical bites.

Our Region

West Moreton Health (WMH)

West Moreton Health (WMH) provides health services to a population of 312,729, representing 6% of Queensland's population. West Moreton Health provides preventative and primary health care services, ambulatory services, acute care, sub-acute care and oral health, mental health, and other specialised services (including prison health services and alcohol and other drugs services) to the region. The region extends from the New South Wales border and Boonah in the south through Ipswich and the Lockyer Valley and north past the town of Esk in the Brisbane Valley (Figure 1). Ipswich Hospital is the major acute teaching hospital located 40 kilometres west of Brisbane, in Ipswich. West Moreton Health has developed community profiles for eight planning regions within the West Moreton catchment area.

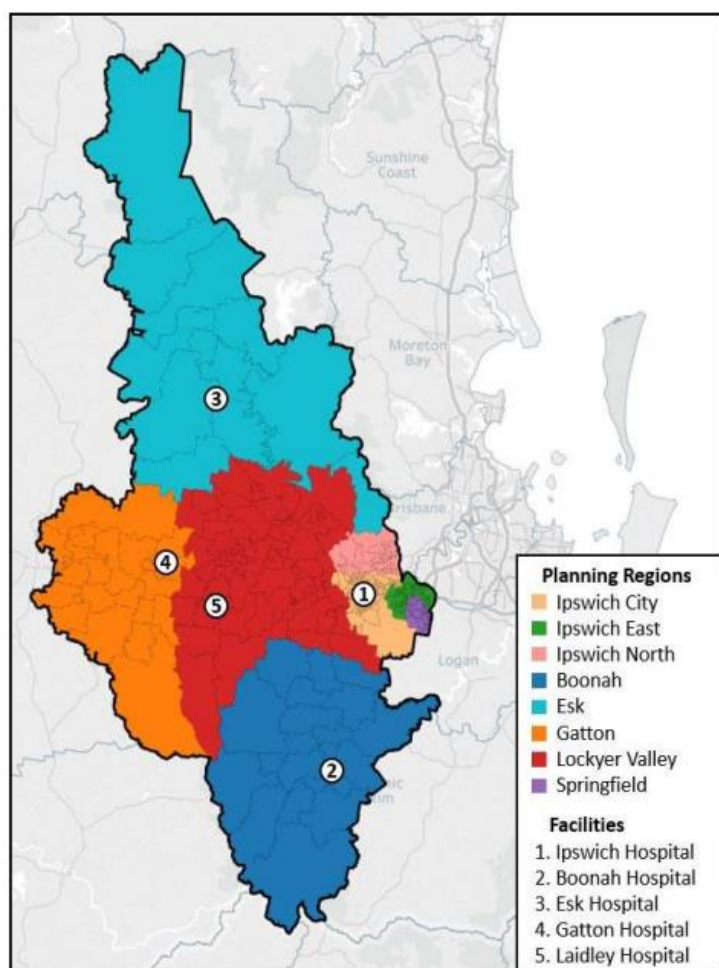


Figure 1: West Moreton Health planning regions and public hospital locations

With a budget of more than \$700 million and approximately 4,200 staff (fulltime equivalent), West Moreton Health is one of the largest employers in the region. West Moreton Health contains one major public referral hospital (Ipswich Hospital) and four rural health services at Boonah, Esk, Gatton and Laidley.

West Moreton Health services include medical, surgical, emergency, obstetrics, paediatrics and specialist outpatient services and mental health, critical care, sub-acute and clinical support services. West Moreton Health has a large prison health service servicing six adult prisons, ^f two youth detention facilities, ^g and a forensic psychiatric and rehabilitation service. ^h

Community health services in West Moreton Health operate from both the Ipswich Health Plaza and Goodna Community Health Centre and provide an outreach service to rural areas. Gailes Community Care Unit (CCU) is an extended accommodation, treatment and rehabilitation services providing 24-hour, seven-days a week care to the community. Oral Health Services are provided in 35 fixed and mobile clinics across the region, coordinated to provide comprehensive adult and school-based services. West Moreton Health also provides school-based primary oral health care services, community mental health services for all age groups and alcohol, tobacco, and other drug services.

In addition, the West Moreton region has two private hospital facilities; the largest of these is St Andrew's Ipswich Private Hospital. There is also one (Ipswich) day hospital and one (Ipswich) hospice care service.

The geographical area of West Moreton is in south-east Queensland, immediately west of Brisbane, and covers a geographic area of 9,521 km², representing 0.5% of the total area (the fourth smallest Hospital and Health Service (HHS) by area) of Queensland. The West Moreton region extends from Springfield, Ripley, and Ipswich in the east, to Boonah in the south, north to Esk and west to Gatton. Ipswich is the major city of the region. West Moreton encompasses the entire local government areas (LGAs) of Ipswich City Council and Lockyer Valley Regional Council plus the Statistical areas of Somerset Region – Esk (part of Somerset LGA), Scenic Rim Region – Boonah (part of Scenic Rim LGA) and Karana Downs – Lake Manchester (part of Brisbane LGA) and is comprised of 31 statistical areas level 2 (SA2s).

West Moreton Public Health Unit

West Moreton Public Health Unit is a service of West Moreton Health. Public Health Units (PHUs) have a focus of protecting health, preventing disease, illness, and injury; and support the promotion of health and wellbeing at a population or whole of community level. This is distinct from the role of the rest of the health system which is primarily focused on providing healthcare services to individuals and families.

The key functions of PHUs include:

- preventing and responding to acute public health risks that have the potential to cross borders and threaten people worldwide;
- coordinating disease control initiatives, including responding to notifiable (and specific non-notifiable) disease outbreaks;

^f Brisbane Correctional Centre, Brisbane Women's Correctional Centre, Wolston Correctional Centre, Borallon Training and Correctional Centre, Southern Queensland Correctional Centre, and Arthur Gorrie Correctional Centre (from July 2020).

^g Brisbane Youth Detention Centre and West Moreton Youth Detention Centre.

^h The Park Centre for Mental Health provides a range of specialist extended inpatient and high security mental health, forensic, and rehabilitation programs and highly specialised mental health assessment and treatment to prisons as far north as Maryborough.

- undertaking health surveillance and program evaluation, including monitoring, collation, analysis, and dissemination at the local level;
- supporting and undertaking epidemiological research into the health status, disease trends, distribution, determinants, and prevention of disease in the population (population sub-groups);
- undertaking a range of environmental health initiatives including monitoring compliance with and enforcing public health legislation;
- assessing and coordinating local responses to environmental health risks;
- providing specialist public health advice to health services, other sectors, and the community;
- providing education, training and clinical support for immunisation programs, and coordinate school-based vaccination programs; and
- promoting health and wellbeing at a population or whole of community level.

PHUs are not focussed on prevention, control, treatment, or management of tuberculosis or HIV which are instead the focus of Specialised Health Services and Sexual Health Clinics.

Our People

Population demographics

The estimated resident population of West Moreton as of 30 June 2021 was 312,729 persons, representing about 6% of the Queensland population. Ipswich City Council is by far the largest LGA with more than three-quarters (76.2%) of the West Moreton population and increasing. Lockyer Valley Regional Council (which includes both the Esk and Gatton hospital catchments) comprises 15% of the West Moreton population. The region's demographics are diverse and include both metropolitan and small rural community settings. Approximately 18% of the West Moreton resident population in 2016 were born overseas and 10% speak another language than English at home, this was lower than the Queensland population at 22% and 12% respectively. ¹⁵ Compared with Queensland, West Moreton has a larger proportion of young children and adolescents (0-19 years), and adults up to 39 years and smaller proportions of residents aged 40 years and over ([Figure 2](#)).

[Figure 3](#) shows the 2020 resident population in the West Moreton region stratified by age and sex. There was a higher proportion of male children and adolescents (0-19 years) than females while in a few adult age groups (25-39, 80 years and over) females outnumbered their male counterparts. In 2020, First Nations peoples represented an estimated 4.9% of the population of West Moreton, compared with 4.7% of the Queensland population. ¹⁵ First Nations peoples of West Moreton had a much higher proportion of children and younger people (under 29 years) and a much lower proportion of people aged 30 years and over, specifically in the older age groups (65 years and over) in comparison with the non-Indigenous population of West Moreton ([Figure 3](#) and [Figure 4](#)). However, population estimated for First Nations peoples should be interpreted with caution as they are likely to be underestimated.

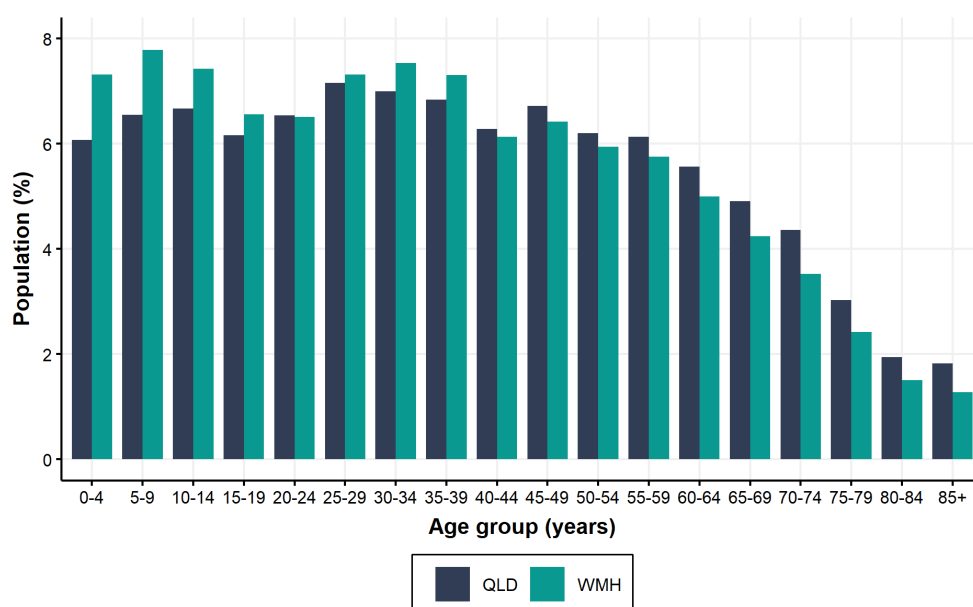


Figure 2: Estimated resident population (%) by age group, West Moreton Health compared with Queensland, 2020

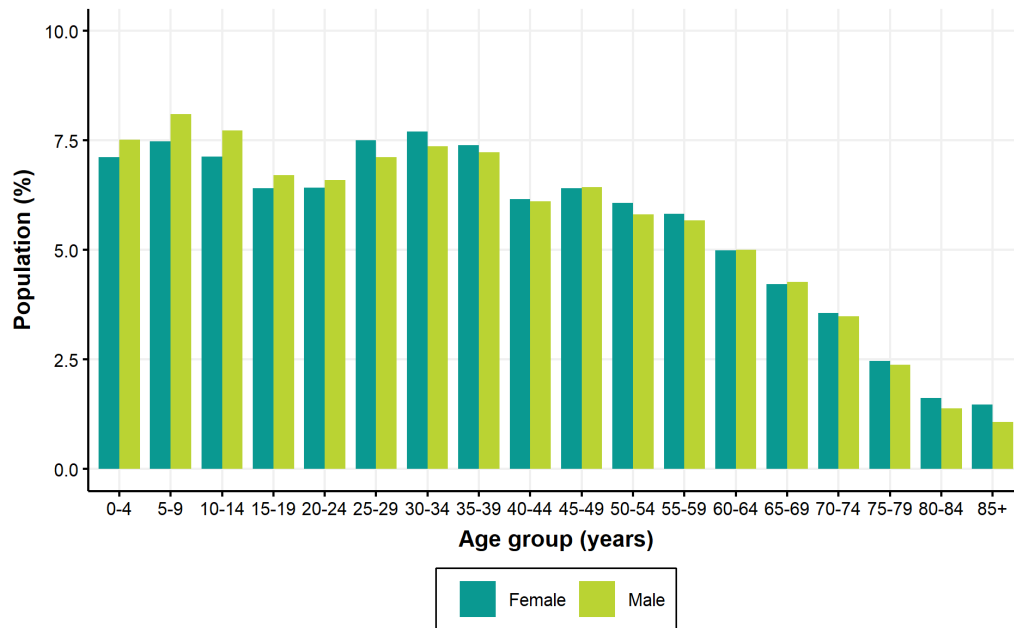


Figure 3: Estimated resident population (%) by age group and sex, West Moreton Health only, 2020

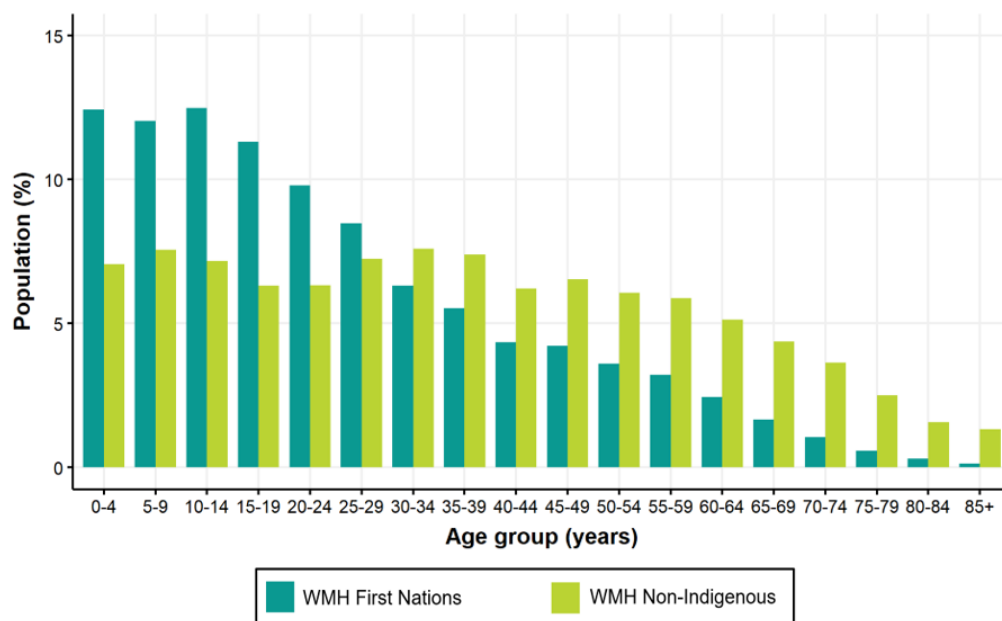


Figure 4: Estimated resident population (%) by age group and First Nations status, West Moreton Health only, 2020

Population growth or projections

Population projections for 2026 and 2036 are presented below. Projections are illustrations of the growth and change in population which would occur if assumptions about future levels of fertility, mortality, overseas migration, and internal migration are to prevail over the projection period. Projections for 2026 are likely to be more robust than 2036 with uncertainty increasing with time due to non-demographic factors such as immigration policy, economic and residential development, natural disasters, and new health innovation/s.

Over the forward projections, West Moreton is expected to experience significant population growth. The most recent (2018) population projections estimate a 50% increase in the West Moreton population from 2016 to 2026 (Table 1). This compares with a projected increase of 18% across all of Queensland over the same period. The overall rate of increase is projected to be highest between 2026 and 2031. The Ipswich City Council area is projected to have the largest percentage increase in population to 2026 (62.4%) or almost 125,000 additional people and comprising 81.5% of the total West Moreton population. Lockyer Valley Regional Council, which includes both the Esk and Gatton hospital catchments, comprises 15% of the WM population.

Table 1: Projected population change (%) by age group, West Moreton Health compared with Queensland, 2016-2026 and 2016-2036

Population	Age group (yrs)	Change in population size from 2016				
		2016	2026		2036	
		n	n	%	n	%
West Moreton	0-14	63,935	92,221	44.2	124,203	94.3
	15-29	58,998	82,730	40.2	113,847	93.0
	30-44	56,770	89,065	56.9	119,079	109.8
	45-64	65,328	93,792	43.6	132,976	103.6
	65+	33,505	60,730	81.3	97,523	191.1
	Total		278,536	418,538	50.3	587,628
Queensland	0-14	954,598	1,072,104	12.3	1,206,611	26.4
	15-29	997,811	1,109,573	11.2	1,266,562	26.9
	30-44	986,458	1,167,412	18.3	1,304,374	32.2
	45-64	1,196,357	1,350,708	12.9	1,556,413	30.1
	65+	713,653	1,022,984	43.3	1,352,644	89.5
	Total		4,848,877	5,722,780	18.0	6,686,604

The largest age group increases are projected to occur in the 65 and over years age groups (Table 1). By 2026, it is projected that there will be over 27,000 more West Moreton residents aged 65 years and over than there were in 2016, with the largest percentage increase to 2026 (more than doubling) in residents aged 75 years and over.

Taking a longer-term perspective, the most recent population projections estimate an increase in overall population of around 111% in West Moreton from 2016-2036 (Table 1). This compares with a projected increase across all of Queensland over the same period of 38%. By far the largest increases are projected to occur in the age groups 65 years and over (Figure 5). The Ipswich City Council area is projected to have the largest percentage increase (140.0%) in population to 2036, more than doubling with more 280,000 additional people. By 2036, it is projected that there will be slightly more than 64,000 additional West Moreton residents aged 65 years and over compared with 2016. The proportion of West Moreton adults aged 75 years and older is also expected to rise, by 2036 it is projected that this proportion will be approaching half (49%). Such substantial ageing of the population will have major implications for the health and hospital system.

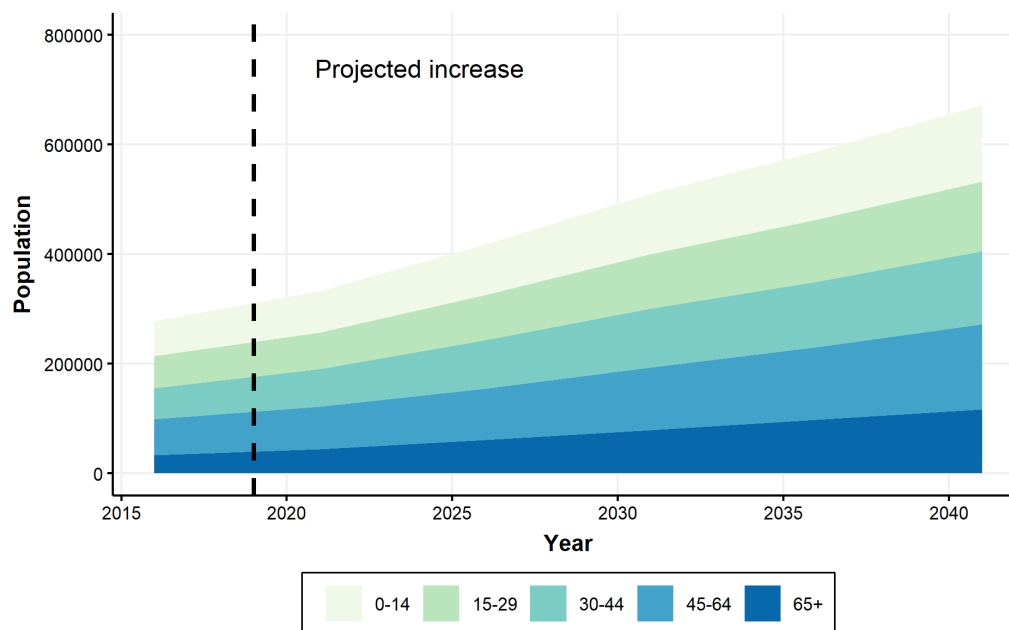


Figure 5: Projected population changes by age group, West Moreton Health only, 2016-2041ⁱ
Sociodemographic profile

Demographic and socioeconomic factors such as education, housing, employment and income, can impact a person's health and overall wellbeing. ¹⁶ A resident sociodemographic profile for West Moreton and Queensland addressing these factors is presented in [Table 2](#). Based on the [Socio-Economic Indexes for Areas \(SEIFA\) Index of Relative Socio-Economic Disadvantage \(IRSD\)](#), More than one-third (34.9%) of persons living in West Moreton were in the most disadvantaged quintile and only 9.2% in the least disadvantaged quintile. ¹⁷ Comparatively, in Queensland, 20% of persons were in the least and most disadvantaged quintiles, respectively. In West Moreton, 10.1% of families were characterised as low-income families, earning \$7,272 less than the median total family income for Queensland (\$86,412).

The unemployment rate for residents of West Moreton was slightly higher (7.5% or 13,501 people) than the Queensland rate (6.1%). Although the homeless rate in West Moreton (36.6 per 10,000 persons) was slightly lower than the Queensland rate (45.6%), the rate in the Ipswich-Central SA2 (127.1 per 10,000) was almost three times the Queensland rate.

West Moreton has a slightly higher percentage of persons in need of assistance with a profound or severe disability (5.9%) compared with Queensland (5.2%), highest in the Riverview SA2 region (12.9%). There was both a smaller percentage of West Moreton school leavers compared with Queensland percentage who completed Year 11 or 12 (53.2% and 58.9% respectively) and a smaller percentage who had a

ⁱ Queensland Government Population Projections, 2018 edition (medium series) by five-year age group and sex, Hospital and Health Service (HHS) areas, Queensland as at June 2016 to 2041. Based on 2011 census figures, ASGS 2011. Prepared and released by Statistical Reporting and Coordination Unit (SCR) and Statistical Analysis and Linkage Unit (SALU), Statistical Services Branch, Department of Health (Hospital and Health Service derived by SALU), 23 January 2019.

higher/tertiary education (54.5% and 59.1% respectively). A more detailed sociodemographic profile table for West Moreton in comparison to Queensland is available in [Appendix A](#).

Table 2: Selected Sociodemographic Characteristics, West Moreton Health compared with Queensland, 2020 ^j

Sociodemographic Characteristics	WMH		QLD	
	<i>n</i>	%	<i>n</i>	%
Persons born overseas	48,344	18.3	1,015,875	21.6
Language other than English spoken at home	26,657	10.1	564,196	12
Persons with a profound or severe disability				
In need of assistance	15,678	5.9	243,267	5.2
Remoteness*				
Living in major cities	190,752	72.3	n.a.	63.1
Dwelling				
No motor vehicles per dwelling†	n.a.	4.8	n.a.	6
Internet access from dwelling‡	72,013	82.1	1,387,499	83.7
Highest level of schooling				
Year 11 or 12 (or equivalent)	103,780	53.2	2,146,809	58.9
Higher/tertiary education§				
Persons with a qualification	111,033	54.5	2,241,124	59.1
Family income¶				
Low-income families	6,929	10.1	115,233	9.4
Median total family income (\$)	79,064	n.a.	86,412	n.a.
Employment 				
Persons unemployed	12,291	7.5	169,924	6.1
SEIFA#				
Quintile 1 (Most disadvantaged)	n.a.	34.9	n.a.	20.0
Quintile 5 (Least disadvantaged)	n.a.	9.2	n.a.	20.0
Homelessness (rate per 10,000 persons)	955	36.6	21,715	45.6

* Remoteness population based on 2016 usual resident population: Australian Bureau of Statistics Remoteness Area (RA) classification.

† Motor vehicles excludes visitors only and other not classifiable households; excludes motorbikes/scooter

‡ Records whether any member of the household accesses the internet from the dwelling.

§ Higher/tertiary (Non-school) qualification includes persons 15 years and over with a qualification within the scope of the Australian Standard Classification of Education.

¶ Family income includes same-sex families.

|| Unemployment and labour force based on a four-quarter smoothed series.

Socio-Economic Indexes for Areas (SEIFA) contains four indexes; the Index of Relative Socio-Economic Disadvantage (IRSD) is presented: quintile 1/5 indicates areas of most/least disadvantage. Quintiles are based on the Queensland population.

n.a. Cell counts insufficient to report

^j Queensland Treasury, Queensland Government Statistician's Office. (2022). Queensland Regional Profiles: Resident Profile for West Moreton Health region (ASGS 2021). Queensland Government. 2022.

Potentially preventable hospitalisations

Potentially preventable hospitalisations (PPHs) are defined as hospitalisations which could potentially have been prevented through targeted and individualised preventative health management.^k As such, PPHs have the potential as indicators of the quality or effectiveness of non-hospital care and can be used as an indicator of primary care provision.^{18,19} A high rate of PPHs may indicate an increased prevalence of the conditions in the community in question; poorer functioning of, or limitations in, access to primary healthcare; or an appropriate use of the hospital system to respond to greater need. PPHs are usually classified into three broad categories: Vaccine preventable hospitalisations, Acute hospitalisations, Chronic hospitalisations.¹⁸

In 2019-2020 there were 13,341 potentially preventable hospitalisations among West Moreton residents, with an age-standardised rate of 4,481 PPHs per 100,000 population (Table 3).

Table 3: Projected population change by age group, West Moreton Health compared with Queensland, 2016-2026 and 2016-2036

Potentially Preventable Hospitalisations (PPHs)	Number of PPHs		Age-standardized rate per 100,000 population		Difference WMH-QLD*
	WMH	QLD	WMH	QLD	
Total preventable†	13,341	205,085	4,418.9	3,676.2	↑
Total chronic	7,133	110,090	2,369.6	1,887.0	↑
Total acute	5,178	82,262	1,709.4	1,556.3	↑
Total vaccine-preventable	1,282	15,597	422.6	282.9	↑

* West Moreton statistically significantly higher than QLD.

† The sum of the PPH subcategories does not add up to total PPH as a single episode can be counted in multiple subcategories.

The age-standardised rate of PPH was significantly higher in West Moreton than in Queensland for overall and across the subcategories chronic, acute and vaccine preventable PPHs (Figure 6). Chronic preventable conditions accounted for more than half (53.5%) of all PPHs in this reporting period (2019-2020) which is consistent with the previous West Moreton reporting period (2017-2018). The chronic condition with the highest rate of PPH in West Moreton residents was diabetes complications which represented almost one quarter (24%) of all PPHs followed by COPD (9%), iron deficiency anaemia (6%), and congestive cardiac failure (6%). Among acute conditions, the highest rates were observed for urinary tract infections including pyelonephritis (10%), cellulitis (8%), and dental conditions (7%) (Table 4). For most conditions, PPH rates were significantly higher in West Moreton than Queensland, except for dental conditions, ear, nose and throat infections, convulsions, and bronchiectasis where similar PPH rates were reported (Figure 7).

^k Primary health care interventions that can help people avoid hospitalisation for some conditions may include: reducing and managing risk factors for disease; oral health checks; sexual health checks; antenatal care; diagnosis and prescribing to manage infections; lifestyle interventions to reduce the development of chronic conditions; management of chronic conditions to slow progression and risk of complications, including support for self-management; and vaccination.

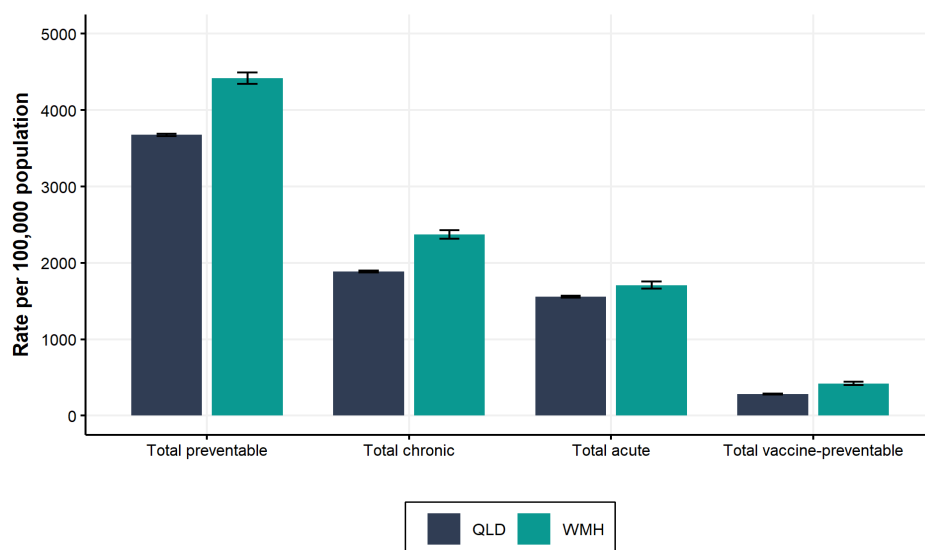


Figure 6: Potentially preventable hospitalisations by category, age-standardised rate ($\pm 95\%$ Confidence Interval, CI), West Moreton Health compared with Queensland, 2019-2020

Table 4: Potentially preventable hospitalisations (number, rate and % of total admissions), West Moreton Health only, 2019-2020

Conditions	Number	ASR*	% Total
Vaccine Preventable	1,282	423	9.6
Influenza and pneumonia	919	304	6.9
Other vaccine-preventable conditions	365	119	2.7
Chronic	7,133	2,370	53.5
Diabetes complications	3,242	1,060	24.3
COPD	1,144	380	8.6
Iron deficiency anaemia	858	292	6.4
Congestive cardiac failure	789	268	5.9
Asthma	718	239	5.4
Angina	402	133	3.0
Hypertension	272	93	2.0
Bronchiectasis	130	44	1.0
Rheumatic heart disease	34	12	0.3
Nutritional deficiencies	17	n.a.	n.a.
Acute	5,178	1,709	38.8
Urinary tract infections	1,399	471	10.5
Cellulitis	1,105	371	8.3
Dental conditions	881	285	6.6
Ear, nose and throat infections	767	242	5.7
Convulsions and epilepsy	613	200	4.6
Gangrene	246	82	1.8
Perforated/bleeding ulcer	50	17	0.4
Pneumonia (not vaccine-preventable)	42	14	0.3
Eclampsia	<5	n.a.	n.a.
Total preventable†	13,341	4,419	100.0

* ASR Age-standardised rate per 100,000 population

† As more than one condition may be reported at hospitalisation, the total sum does not equal the total number of separations recorded for each category

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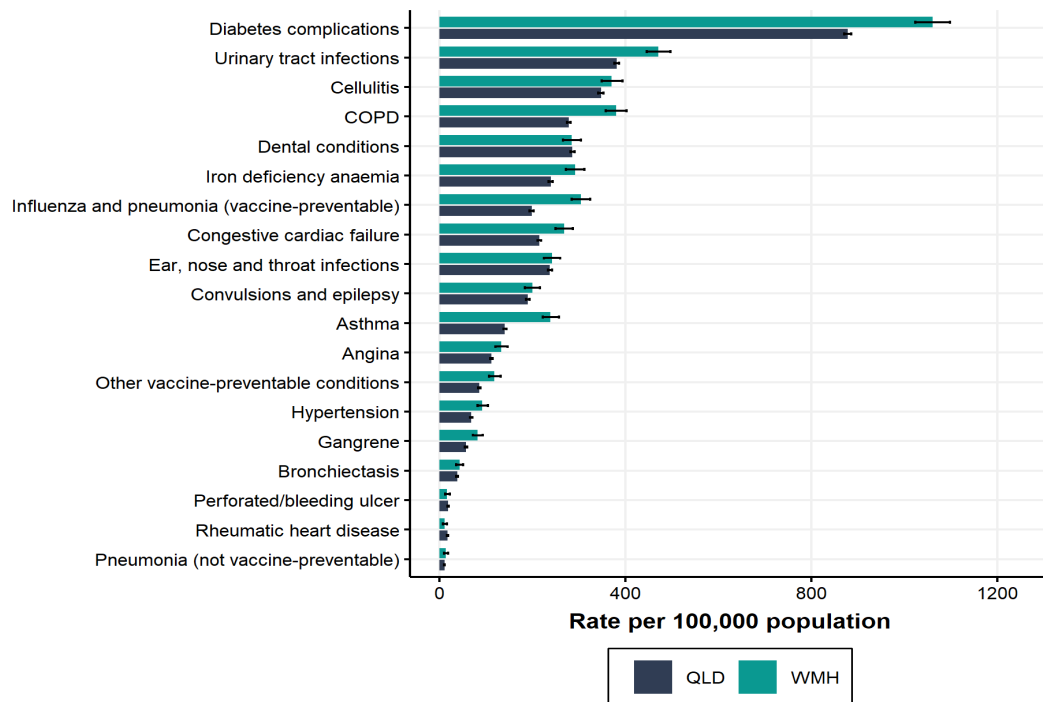


Figure 7: Potentially preventable hospitalisations, age-standardised rates (\pm 95% CI), West Moreton Health compared with Queensland, 2019-2020

Avoidable mortality

Avoidable mortality is defined as a death from a condition occurring in a person under 75 years of age, that is preventable and/or avoidable through individualised care and/or treatment through existing primary or hospital care.²⁰ These deaths are recorded within The National Health Agreement: PI 16-Potentially avoidable deaths, 2021 indicator, which includes a broad range of diseases and conditions as causes of death.¹⁹ In 2018, 37% of all Queensland deaths were premature and about half (51%) of these were defined as being potentially avoidable under nationally agreed criteria.²¹

In the years 2016-2019 among West Moreton residents, there was an average of 362 deaths (6%) per year that were classified as potentially avoidable. Across this period, the age-standardised avoidable mortality rate (all persons) in West Moreton (126 per 100,000 population; [95% CI: 120 – 133]) was significantly higher than the corresponding rate in Queensland (109 per 100,000 population; [95%CI: 108 – 114]).

Figure 8 presents sex-stratified data. Overall, avoidable mortality rates were significantly higher (85%) for males than females, an increase from that reported in the previous report (73%) (2014-2017).²² However, the definition for avoidable mortality prior to 2015 was different and included sub-classifications of 'treatable' (amenable to healthcare) or 'preventable' (those deaths which result from conditions which could have been prevented from occurring in the first place) conditions, which have since been removed.²³ As a result, caution is advised when comparing data prior to 2015 with present data. The West Moreton rates in both sexes were significantly higher than the corresponding rates in Queensland.

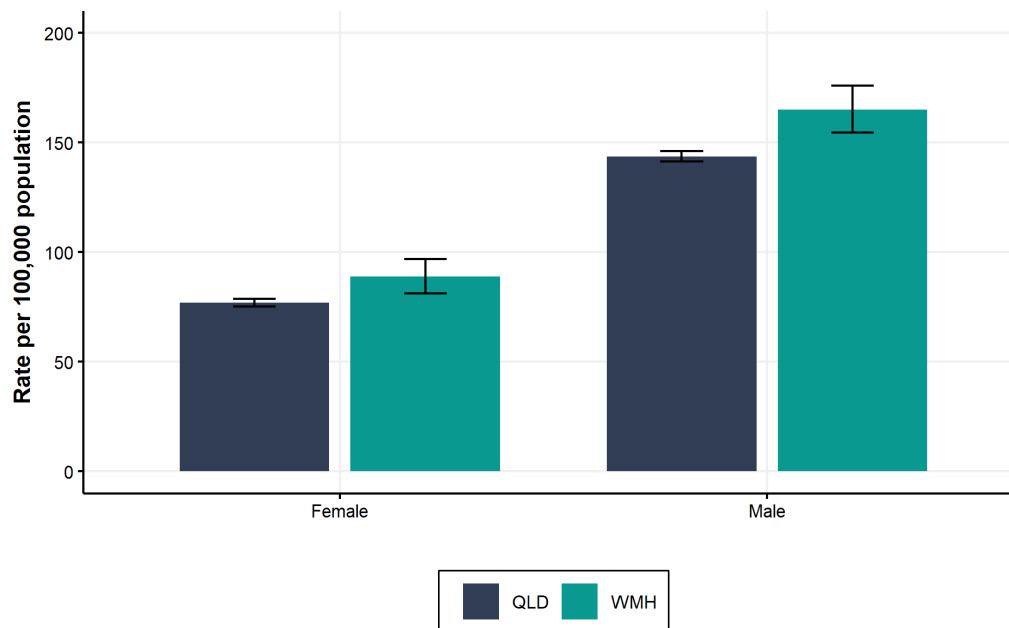


Figure 8: Age-standardised avoidable mortality rates (\pm 95% CI) by sex, West Moreton Health compared with Queensland, 2016-2019

Our Health

In this section hospitalisation and mortality rates are outlined for selected conditions including all causes, arthritis and musculoskeletal conditions, respiratory disease, cancer, cardiovascular disease, diabetes mellitus, injury, and mental health. It is important to note that rates and numbers pertain to events (hospitalisations; deaths) occurring to residents of West Moreton and Queensland, irrespective of the geographical area in which the event occurred. For example, if the text states that there were 100 hospital separations for a condition in West Moreton Health, this means there were 100 hospital separations for residents of West Moreton for that condition, irrespective of the hospital location they were admitted to. It does not mean that there were 100 hospitalisations in facilities within West Moreton Health.

All Causes

The term 'all causes' includes all conditions, diseases or injuries considered to be the primary underlying cause of death (all causes mortality) or hospitalisation (all causes separations).

Hospital separations

On average there were 149,936 separations per year for all causes among West Moreton residents in the three-year period from 2017-2018 to 2019-2020. Indirect standardised separation ratios indicate that the average separation rate for all causes of hospitalisation were significantly higher in West Moreton than in Queensland for both males (by 7%) and females (by 5%) in this period (Table 5). Over time (2010-2020) hospitalisation rates have been slightly trending upwards with consistently higher rates shown for females (Figure 9).

Table 5: All causes standardised separation ratios by sex, West Moreton Health only, 2017-2018 to 2019-2020

Region	Sex	Ratio [95% CI]*	Difference WMH-Qld†
West Moreton Health	Male	1.07 [1.06 - 1.07]	↑
	Female	1.05 [1.05 - 1.06]	↑
	Persons	1.06 [1.06 - 1.06]	↑

* 95% Confidence Interval.

† West Moreton statistically significantly higher than QLD.

For the period 2017-2018 to 2019-2020 in both Queensland and West Moreton, rates of hospital separation were higher for females at childbearing age (15-44 years) than for males (Figure 10). This was mostly related to females attending hospital to give birth. From the age of 60 years, males were more likely to be hospitalised than females, with the highest rates recorded in West Moreton males aged 80-84 years.

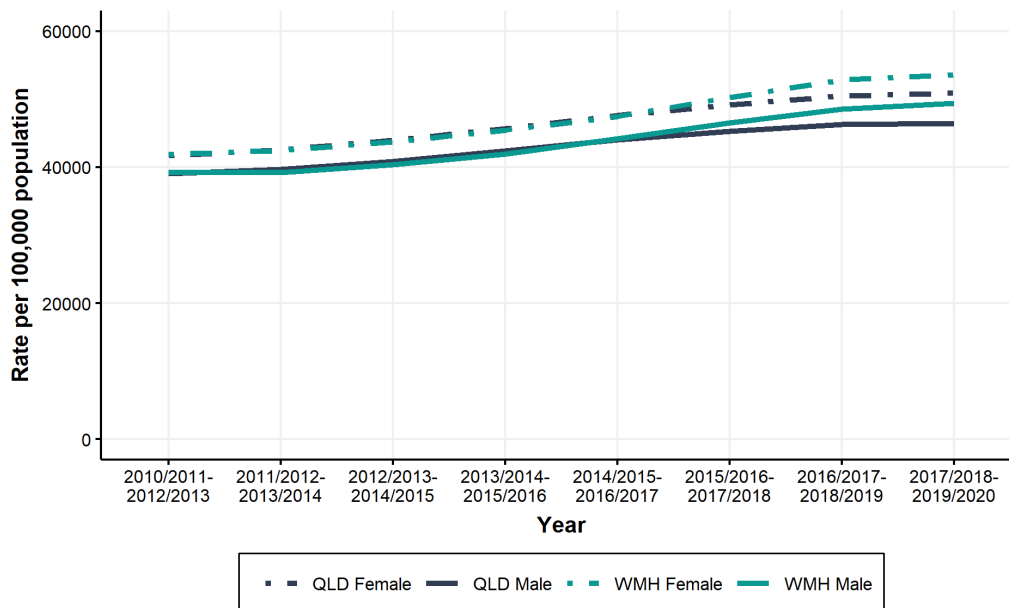


Figure 9: All causes age-standardised hospital separation rates by sex, West Moreton Health compared with Queensland, three-year moving averages 2010-2011 to 2019-2020

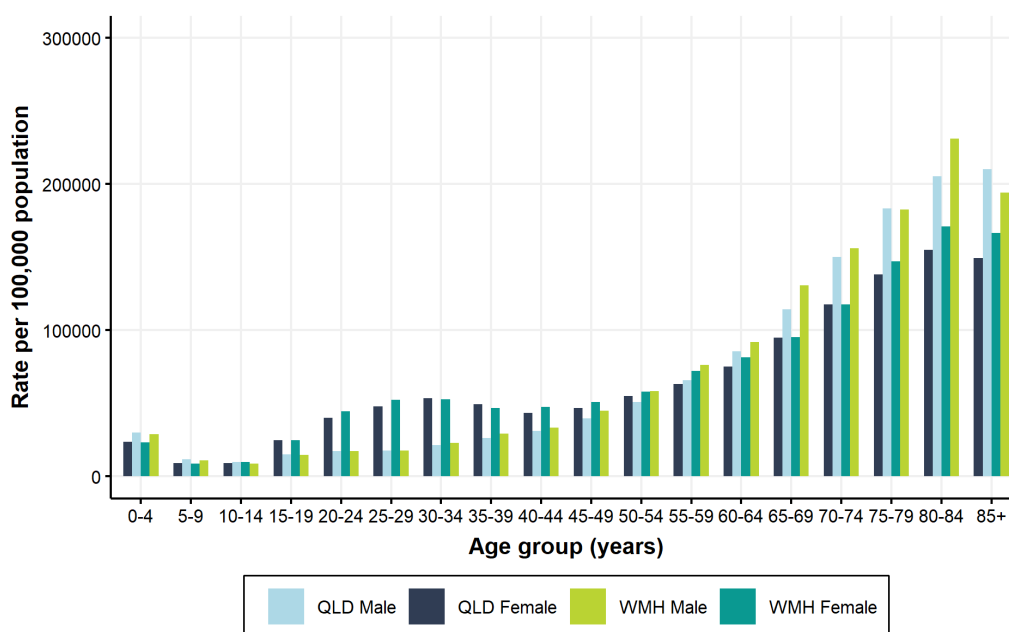


Figure 10: All causes age-specific hospital separation rates by sex, West Moreton Health compared with Queensland, 2017-2018 to 2019-2020

Mortality

On average there were 1,514 deaths per year from all causes among residents of West Moreton in the three-year period 2017-2019. Indirect standardised mortality ratios indicate that the average mortality rate for all causes of death was significantly higher (6%) in West Moreton than in Queensland overall, in the five years from 2015-2019 (Table 6). A similar pattern was also observed in mortality rates in the previous reporting period (2013-2017).

Between 2010-2012 and 2017-2019, all-cause mortality rates declined for males and females in both West Moreton and Queensland (Figure 11). Throughout the period, mortality rates remained higher for males than females in both regions however, the difference between sexes has been growing smaller.

Table 6: All causes standardised mortality ratios (SMR) by sex, West Moreton Health compared with Queensland, 2015-2019

Region	Sex	Ratio [95% CI]*	Difference WMH-QLD†
West Moreton Health	Male	1.06 [1.02 - 1.09]	↑
	Female	1.06 [1.02 - 1.09]	↑
	Persons	1.06 [1.04 - 1.08]	↑

* 95% Confidence Interval.

† West Moreton statistically significantly higher than QLD.

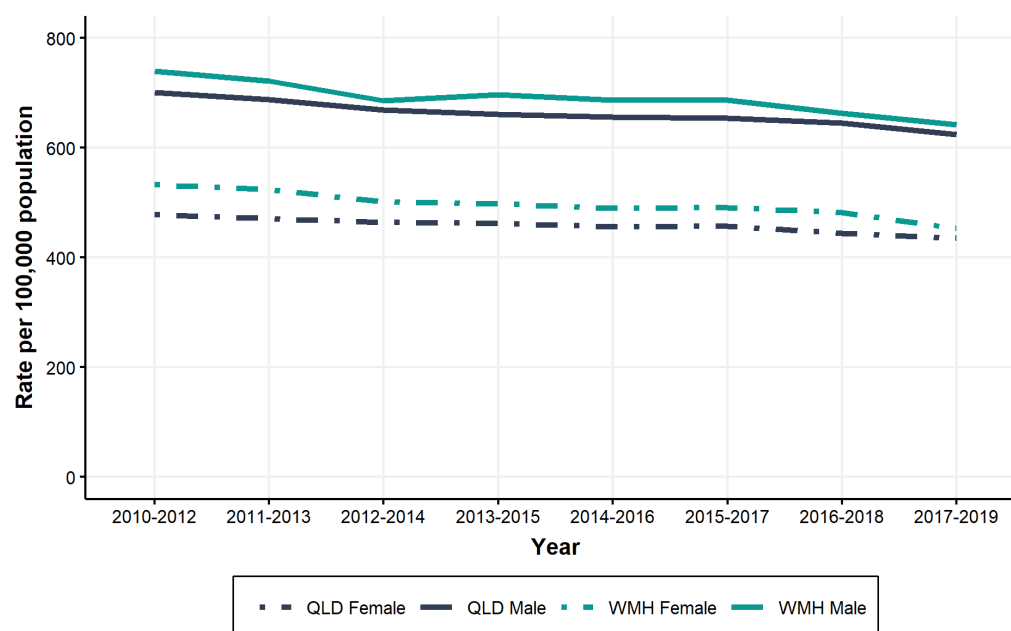


Figure 11: All causes age-standardised mortality rates by sex, West Moreton Health compared with Queensland, three-year moving averages 2010-2012 to 2017-2019

As shown in Figure 12, all-cause mortality rates were lowest in the years after infancy to around 15 years of age, for the period 2013-2019. Mortality then increased with age, with rates following an exponential curve from about the age of 60 years. All-cause mortality was higher in males than in females in each age group.

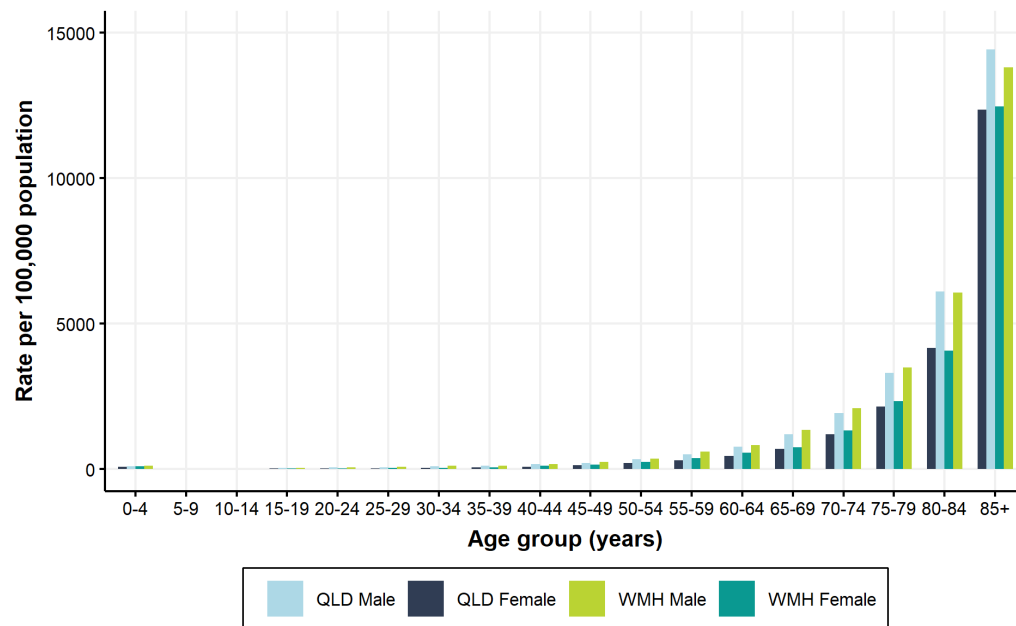


Figure 12: All causes age-specific mortality rates by sex, West Moreton Health compared with Queensland, 2013-2019

Arthritis and musculoskeletal conditions

Arthritis literally means ‘inflamed joint’ and is an umbrella term for a range of inflammatory conditions affecting the bones, muscles, and joints.²⁴ It is characterised by pain, swelling, redness and stiffness in affected joints and can result in joint damage and deformity. Arthritis is a common condition, especially in older Australians and has a significant impact on quality of life due to acute and chronic pain, physical limitations and management and mental health issues. Risk factors for developing arthritis include age, excess body weight, injury, and genetic factors. The most common types of arthritis are osteoarthritis (cartilage loss from overuse), rheumatoid arthritis (autoimmune disease) and gout (excess uric acid in the bloodstream).²⁴ Data is reported as per the ICD code of arthropathies and systemic connective tissue disorders (ICD M00-M3699) of which arthritis and musculoskeletal conditions are a part.²⁵

Hospital separations

For the three-year period 2017-2018 to 2019-2020, there was an average of 3,873 hospital separations per year for arthropathies and systemic connective tissue disorders among West Moreton residents. Indirect standardised separation ratios indicate that the average separation rate was significantly lower (by 3%) in West Moreton than Queensland for all persons across the period (data not shown). This contrasts with the previous reporting period (2015-2018) when no difference was observed between West Moreton and Queensland.

There was no significant difference between male and female age-standardised rates in West Moreton between 2010-2011 to 2019-2020 (Figure 13). Rates in both males and females trended upwards up to about 2015-2018 and then started decreasing, more so for West Moreton than Queensland.

In this reporting period (2017-2020), rates of hospital separations for arthropathies and systemic connective tissue disorders generally increased with age in both West Moreton and Queensland, peaking in the 65-79 years age groups, before declining in elderly people aged 80 years and over (Figure 14).

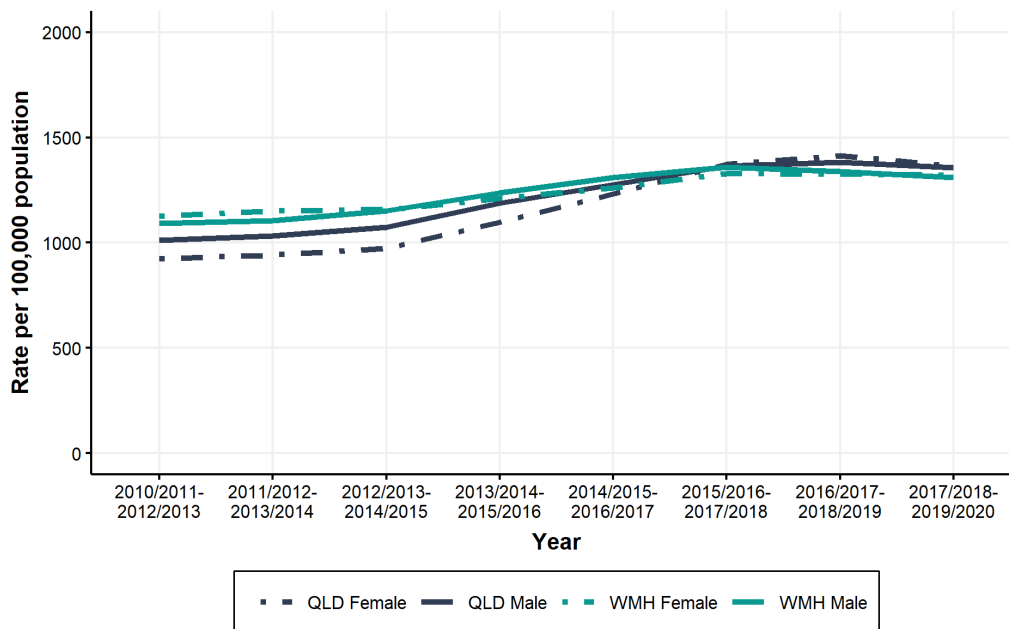


Figure 13: Arthropathies and systemic connective tissue disorders, age-standardised hospital separation rates by sex, West Moreton Health compared with Queensland, three-year moving averages 2010-2011 to 2019-2020

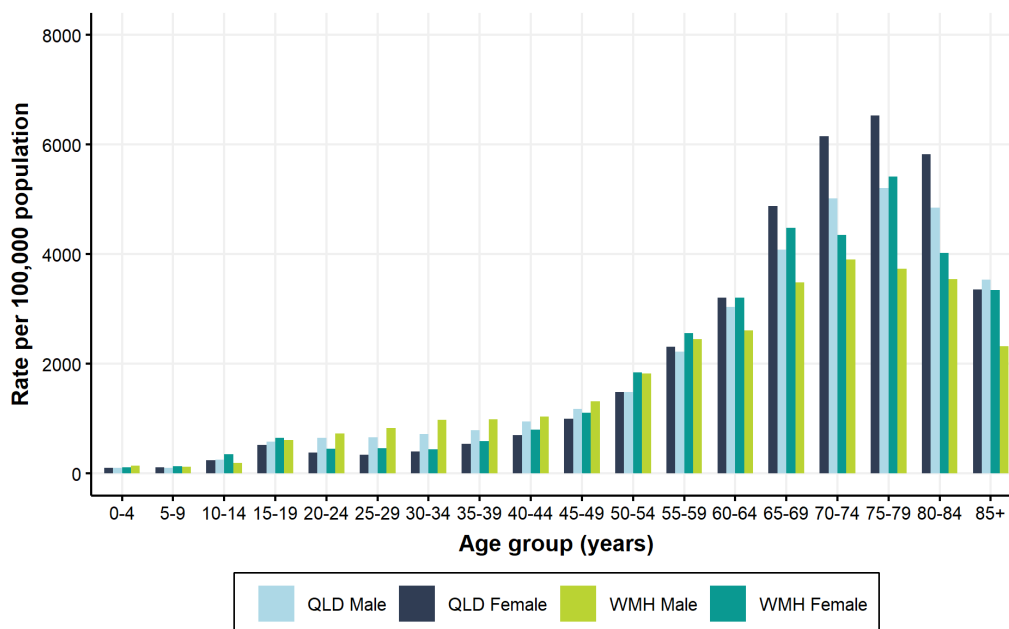


Figure 14: Arthropathies and systemic connective tissue disorders, age-specific hospital separation rate by sex, West Moreton Health compared with Queensland, 2017-2018 to 2019-2020

Mortality

On average there were six deaths per year from arthropathies and systemic connective tissue disorders among West Moreton residents in the five years from 2015-2019. Females accounted for over half of these deaths. The highest disease-specific mortality rate was reported in persons aged 85 years and over for both West Moreton and Queensland in the reporting period (data not shown).

Respiratory diseases

The human lung is constantly exposed to airborne pollutants, irritants, and infectious agents (commonly pneumonia and influenza), making respiratory diseases one of the leading causes of morbidity and death globally.²⁶ These diseases impair the quality of life of the patients and have a negative impact on societies. Important contributors to respiratory disease can include tobacco smoke, indoor air pollution from burning fuels, air pollution from traffic and industrial sources, but may also include low socioeconomic status.²⁷ Asthma and COPD together contribute the greatest burden to chronic respiratory diseases. However, this group may also include lower and upper respiratory tract infections, occupational lung diseases, and lung cancer. People with respiratory disease may be at higher risk of contracting respiratory infections such as COVID-19, as well as be at increased risk of experiencing complications or more severe illness.

Asthma

Asthma is a chronic inflammatory condition of the airways associated with episodes of wheezing, breathlessness, and chest tightness. Although there is currently no cure, good management can control the disease and prevent symptoms from occurring or worsening. Asthma remains a significant health problem in Australia, with a relatively high prevalence by international comparison.²⁸ According to the Australian Centre for Asthma Monitoring, most people with asthma do not have a written action plan, despite national guidelines recommending their use.²⁹

Hospital separations

There was an average of 653 hospital separations per year for asthma among West Moreton residents in the three-year period 2017-2018 to 2019-2020. Indirect standardised separation ratios in this period ([Table 7](#)) indicate that the average separation rate for asthma was significantly higher in West Moreton than in Queensland for all persons (by 32%), specifically for females (by 48%) in this period. Considering only separations among younger people (5-34 years), this pattern remained the same. Overall, the separation rates in both West Moreton females and males are 6% higher in this period compared with the previous reporting period (2015-2018, data not shown). In West Moreton as well as in Queensland, asthma age-standardised separation rates were consistently and significantly higher in females than in males from 2010-2013 to 2019-2020 ([Figure 15](#)).

For the period 2017-2020, ASRs of hospital separations for asthma in West Moreton were highest among adults aged 80-84 years. This reflects a change from previous reporting years (2015-2018) where highest rates in asthma hospital separations were observed among children aged 5-9 years (data not shown). The

greatest increase was seen in West Moreton females aged 40-44 years, almost doubling in asthma hospital separation rates from 227 per 100,000 persons to 442 per 100,000 persons.

Table 7: Asthma, standardised separation ratios by sex and age, West Moreton Health compared with Queensland, 2017-2018 to 2019-2020

Region	Age group	Sex	Ratio [95% CI]*	Difference WMH-QLD†
West Moreton Health	All ages	Male	1.08 [1.00 - 1.16]	NS
		Female	1.48 [1.40 - 1.57]	↑
		Persons	1.32 [1.26 - 1.38]	↑
	5-34 years	Male	1.01 [0.91 - 1.13]	NS
		Female	1.34 [1.22 - 1.47]	↑
		Persons	1.18 [1.10 - 1.27]	↑

* 95% Confidence Interval.

† West Moreton statistically significantly higher than QLD.

NS Non-significant.

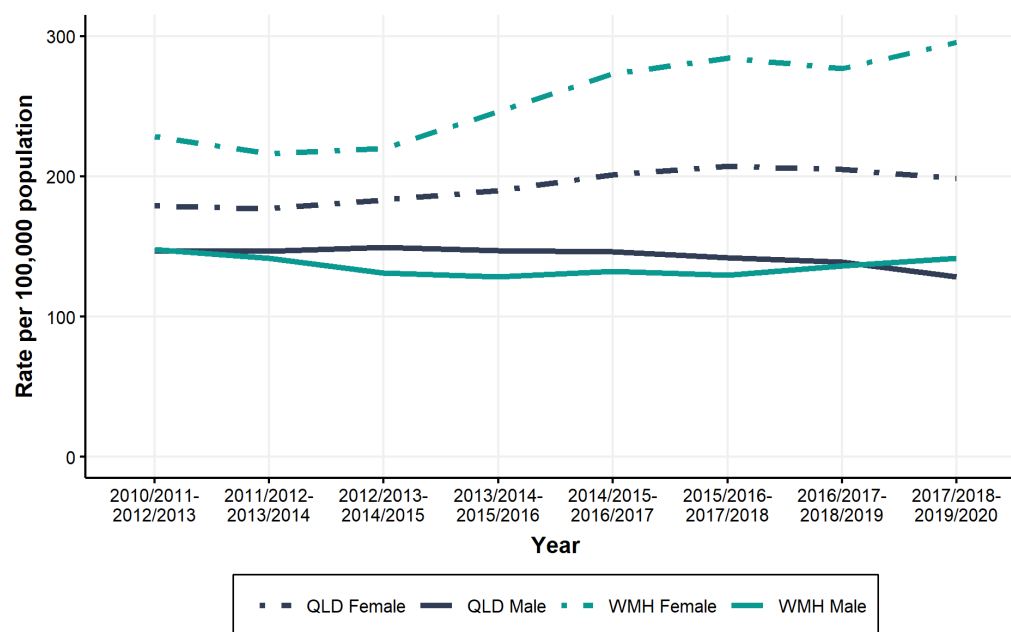


Figure 15: Asthma, age-standardised hospital separation rate by sex, West Moreton Health compared with Queensland, three-year moving averages 2010-2013 to 2017-2020

The age-specific hospital separation rates (Figure 16) indicate that from age 15 years onwards, hospitalisations in West Moreton and Queensland were significantly higher among females than among males, with the highest rates overall recorded for West Moreton females aged 80-84 years. In males, asthma separation rates were highest among children (0-9 years), especially aged 5-9 years. However, in West Moreton children, no statistically significant difference was found between males and females. Numerically, rates for males were higher than for females. Rates decreased from about 15 years onwards and continued to fluctuate across the older age groups in both West Moreton and Queensland.

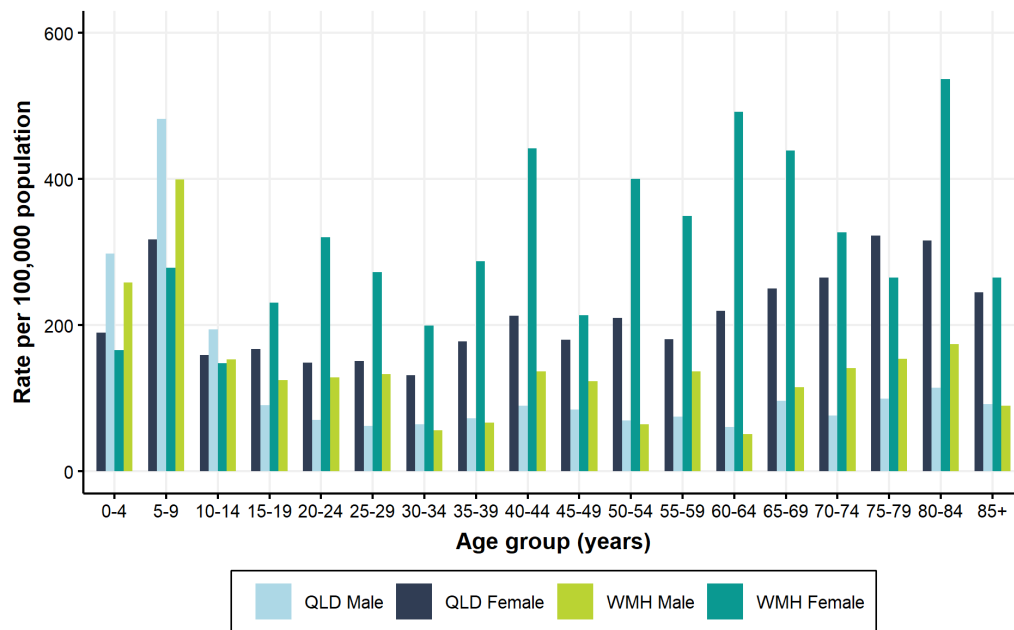


Figure 16: Asthma, age-specific hospital separation rate by sex, West Moreton Health compared with Queensland, 2017-2018 to 2019-2020

Mortality

On average there were four deaths per year from asthma among West Moreton residents in the three-year period 2017-2019. Females accounted for two-thirds of these deaths. The highest rate was reported in persons aged 85 years and over for both West Moreton and Queensland in the period 2013-2019, with higher rates in West Moreton (47 deaths per 100,000) than in Queensland (31 deaths per 100,000).

Chronic obstructive pulmonary disease

COPD is a serious chronic lung disease that mainly affects older people. It is progressive, largely irreversible and characterised by shortness of breath, cough, and wheeze. Tobacco smoking is the main cause of COPD. ²⁹

Hospital separations

On average there were 1,232 hospital separations per year for COPD among residents of West Moreton in the three-year period 2017-2018 to 2019-2020. Males accounted for 51% of these separations showing a 2% increase from the previous reporting years (2015-2018, data not shown). Indirect standardised separation ratios indicate that the average separation rate for COPD was significantly higher (by 40%) for all persons in West Moreton than Queensland in the three-year period 2017-2018 to 2019-2020 (Table 8). This is similar to the previous reporting period.

Table 8: Chronic Obstructive Pulmonary Disease, standardised separation ratios by sex, West Moreton Health compared with Queensland, 2017-2018 to 2019-2020

Region	Sex	Ratio [95% CI]*	Difference WMH-QLD†
West Moreton Health	Male	1.39 [1.32 - 1.45]	↑
	Female	1.42 [1.35 - 1.48]	↑
	Persons	1.40 [1.36 - 1.45]	↑

* 95% Confidence Interval.

† West Moreton statistically significantly higher than QLD.

Age-standardised separation rates were statistically significantly higher in males than in females in West Moreton between 2017-2018 to 2019-2020, similar to Queensland (Figure 17). Rates in West Moreton and Queensland trended downwards since 2016 in both sexes.

In this reporting period (2017-2020), rates of hospital separations for COPD were negligible before the age of 35 years but then rose steadily with age. Rates for males in West Moreton rose steeply from the age of about 65 years, peaking in ages 85 years and over, at almost 4,500 separations per 100,000 population. Rates for females in West Moreton also rose steeply from the age of about 50 years but peaked in the 80-84 years age group at around 2,280 separations per 100,000 population (Figure 18). West Moreton females aged 55-59 years and 60-64 years had the highest hospitalisation rate compared with the other population groups of similar age.

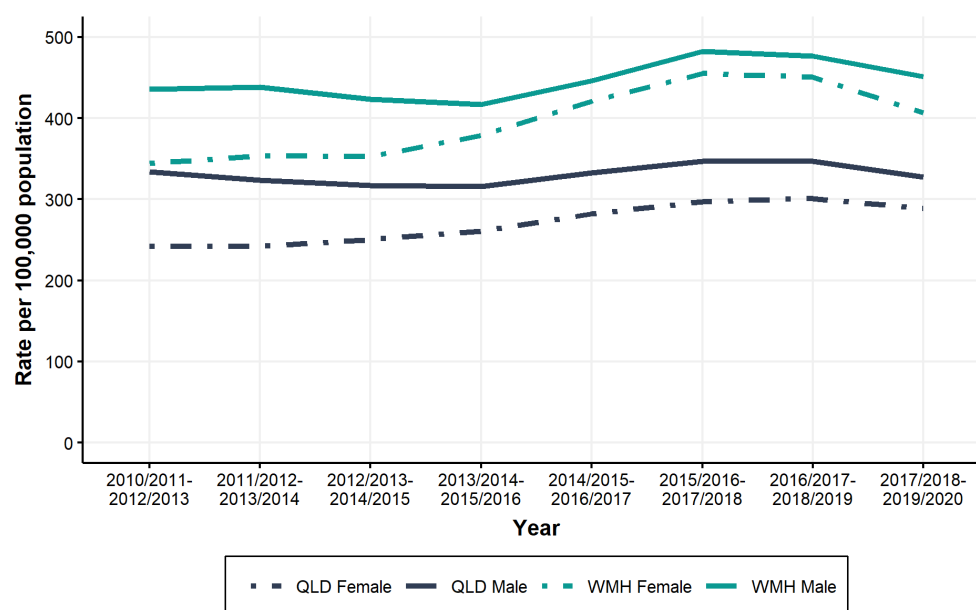


Figure 17: Chronic obstructive pulmonary disease, standardised age-standardised hospital separation rate by sex as three-year moving averages, West Moreton Health compared with Queensland, 2010-2013 to 2017-2020

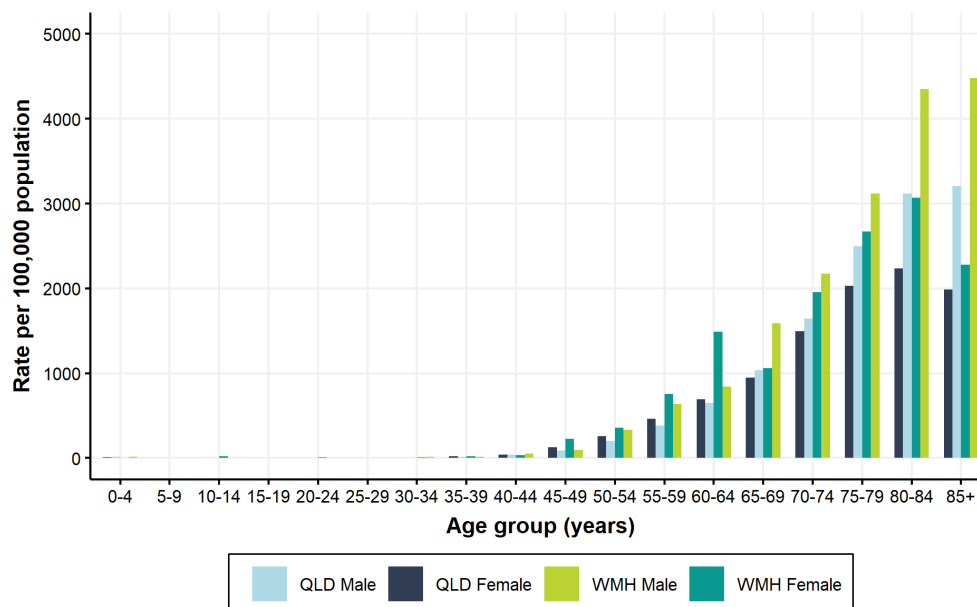


Figure 18: Chronic obstructive pulmonary disease, standardised age-specific hospital separation rate by sex, West Moreton Health compared with Queensland, 2017-2018 to 2019-2020

Mortality

On average there were 82 deaths per year from COPD among residents of West Moreton in the three-year period 2017-2019. Males accounted for 53% of these deaths. Indirect standardised mortality ratios (Table 9) indicate that the average mortality rate for COPD was significantly higher in West Moreton than in Queensland for both females (by 30%) and males (by 16%); a pattern consistent with the previous reporting period (2015-2019).

Table 9: Chronic obstructive pulmonary disease, standardised mortality ratios (SMR) by sex, West Moreton Health compared with Queensland, 2015-2019

Region	Sex	Ratio [95% CI]*	Difference WMH-QLD†
West Moreton Health	Male	1.16 [1.02 - 1.33]	↑
	Female	1.30 [1.12 - 1.50]	↑
	Persons	1.23 [1.11 - 1.35]	↑

* 95% Confidence Interval.

† West Moreton statistically significantly higher than QLD.

COPD-specific mortality rates for both West Moreton and Queensland were significantly higher in males than in females between 2010-2012 to 2017-2019 (Figure 19). Mortality rates for COPD trended downwards in West Moreton males (after 2014) and females (after 2016), though remained relatively stagnant in Queensland residents.

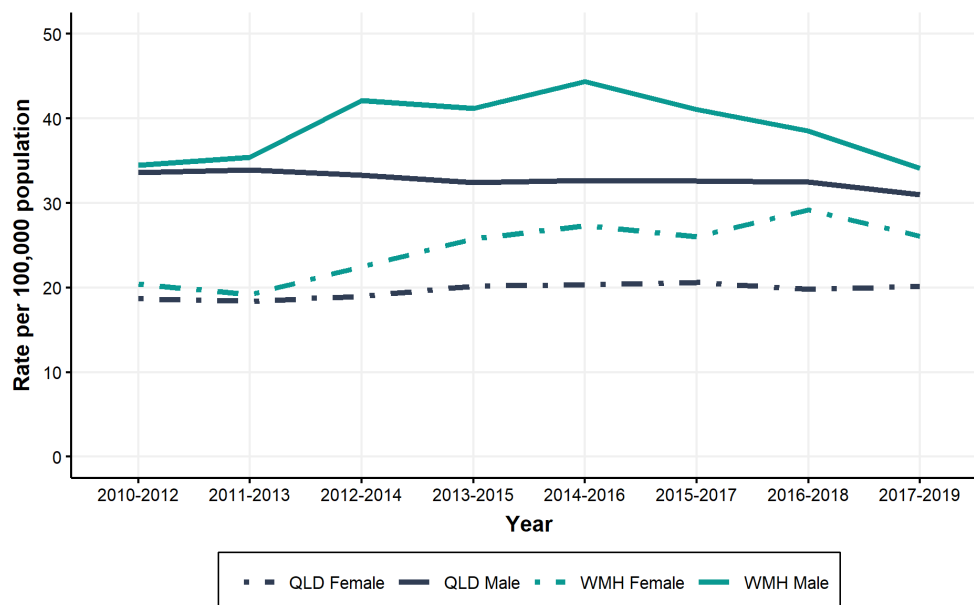


Figure 19: Chronic obstructive pulmonary disease, standardised age-standardised mortality rate by sex, West Moreton Health compared with Queensland, three-year moving averages 2010-2012 to 2017-2019

Pneumonia and influenza

Pneumonia is an infection that inflames the air sacs in one or both lungs. The air sacs may fill with fluid or pus (purulent material), causing cough with phlegm or pus, fever, chills, and difficulty breathing. A variety of organisms, including bacteria, viruses, and fungi can cause pneumonia. Influenza is a specific viral infection that attacks your respiratory system — your nose, throat, and lungs – with effects throughout the body. Annual influenza vaccination is recommended for all people aged 6 months and over, but particularly for older age groups, First Nations people, pregnant women, and people with chronic disease risk factors and comorbidities.³⁰ Influenza vaccination coverage is generally suboptimal across the population in these risk groups, leading to higher disease burden, ICU admission, and mortality.³¹ Immunisation during pregnancy is also sub-optimal.

Hospital separations

On average there were 1,772 hospital separations per year for influenza and pneumonia among West Moreton residents in the three-year-period 2017-2018 to 2019-2020. Females accounted for 50% of these separations. Indirect standardised separation ratios indicate that the average separation rate was significantly higher (by 22%) in West Moreton residents compared with Queensland residents in this reporting period ([Table 10](#)). The hospitalisation rate was 26% higher in females than in males.

Table 10: Influenza and pneumonia, standardised hospital separation ratios by sex, West Moreton Health compared with Queensland, 2017-2018 to 2019-2020

Region	Sex	Ratio [95% CI]*	Difference WMH-QLD†
West Moreton Health	Male	1.19 [1.14 - 1.23]	↑
	Female	1.24 [1.20 - 1.29]	↑
	Persons	1.22 [1.18 - 1.25]	↑

* 95% Confidence Interval.

† West Moreton statistically significantly higher than QLD.

Age-standardised separation rates for influenza and pneumonia were consistently and significantly higher for males than females in both West Moreton and Queensland between 2017-2018 and 2019-2020 (Figure 20). For the reporting period 2017-2018 to 2019-2020, rates of hospital separation for influenza and pneumonia increased exponentially from the age of approximately 60 years. There was also a small peak in the separation rate among children five years of age (Figure 21). Separation rates appeared to be higher for males than females aged 65 and over years.

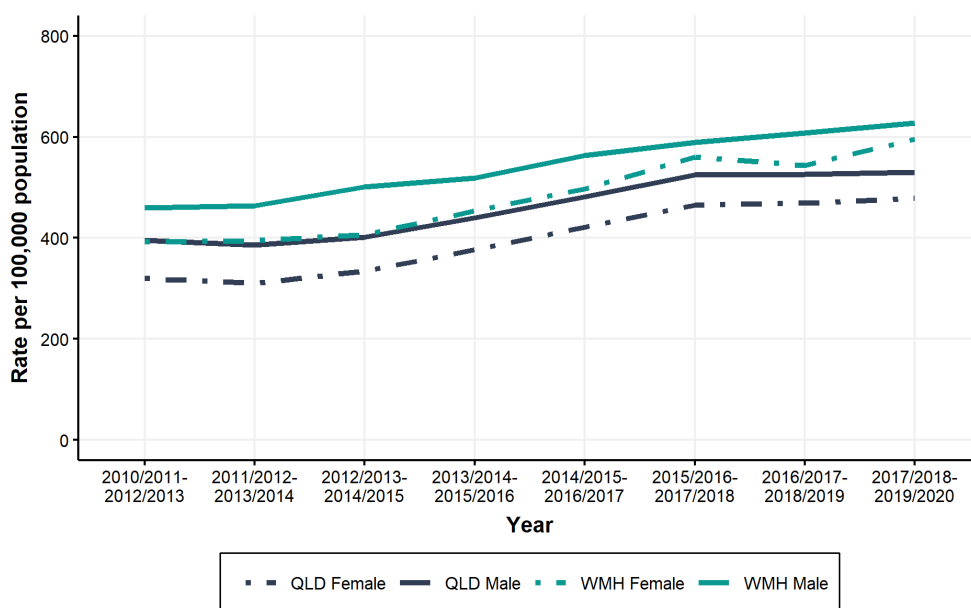


Figure 20: Influenza and pneumonia, age-standardised hospital separation rate by sex, West Moreton Health compared with Queensland, three-year moving averages 2010-2013 to 2017-2020

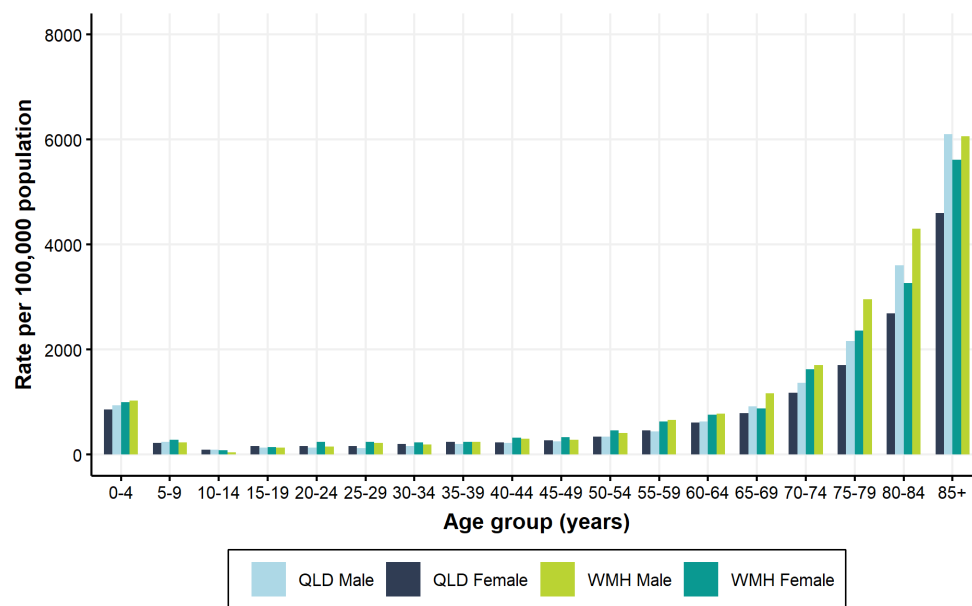


Figure 21: Influenza and pneumonia, age-specific hospital separation rate by sex, West Moreton Health compared with Queensland, 2017-2018 to 2019-2020

Mortality

There was an average of 29 deaths per year from influenza and pneumonia among residents of West Moreton in the three-year period 2017-2019. A higher age-standardised mortality rate is observed in West Moreton females compared with males however, this difference was not statistically significant (data not shown). The highest rates of mortality were seen in persons ages 85 years and over in both West Moreton (415 per 100,000 persons) and Queensland (390 per 100,000 persons). Indirect standardised mortality ratios for all persons in West Moreton residents were not statistically significantly different from rates in Queensland residents (data not shown).

In West Moreton, influenza mortality rates trended upwards from 2010 to 2019, with marginally higher rates than Queensland since 2013 ([Figure 22](#)). In Queensland, death rates were relatively stable and tended to increase slightly over recent years. When comparing males and females (data not shown), mortality rates in West Moreton females (12.7 per 100,000) were significantly higher than in West Moreton males (8.7 per 100,000) in 2017-2019, while mortality rates in Queensland males were numerically higher than their female counterparts throughout the period (2010-2019).

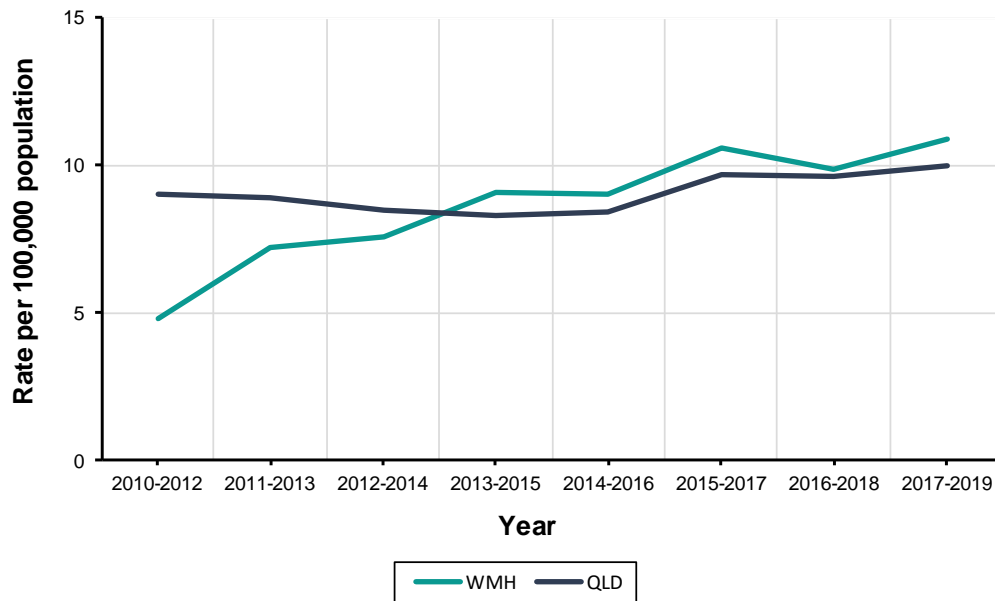


Figure 22: Influenza and pneumonia, age-standardised mortality rate by sex, West Moreton Health compared with Queensland, three-year moving averages 2010-2012 to 2017-2019

Cardiovascular disease

The term cardiovascular disease (CVD) refers to a range of conditions affecting the heart and blood vessels. The most common and serious types of CVD in Australia are coronary heart disease, stroke, and heart failure. The main underlying cause of CVD is a process where abnormal deposits of fats build up in the inner lining of the arteries, known as atherosclerosis. When atherosclerosis blocks the blood supply to the heart it causes angina or heart attack, and if it blocks the blood supply to the brain it causes stroke. In 2020, the top leading cause of death in Queensland (all persons) was ischaemic heart diseases, followed by dementia (including Alzheimer's disease), malignant neoplasms of the trachea, bronchus and lung and cerebrovascular diseases (includes stroke and other disorders of the blood vessels).³² Cardiovascular disease remains the leading cause of public hospital admitted patient expenditure (11% of total) as indicated by national data from 2015-2016.²¹ CVD varies by population groups. The rate of heart, stroke and vascular disease among First Nations adults was more than twice that of non-Indigenous adults (11.4% and 5.4%) based on self-reported data from the Australian Bureau of Statistics (ABS) 2018-2019 Australian Aboriginal and Torres Strait Islander Health Survey.³³

Risk factors for CVD are well known and include overweight and obesity, biomedical risk factors such as high blood pressure and high blood cholesterol, tobacco smoking, insufficient physical activity and diabetes.³³ Additionally, people with CVD may be at increased risk of experiencing complications or more severe illness if infected with COVID-19 or influenza.³⁴ Maintaining physical activity appears to be an important and independent protective factor reducing the risk of serious illness from CVD in older age (more so than in middle age). CVD is largely preventable, with an estimated 68% of CVD deaths in Australia due to the joint effects of behavioural, metabolic/biomedical and environmental risk factors.^{23,35}

Coronary heart disease

Coronary heart disease (CHD), also known as ischemic heart disease, is the most common form of heart disease and occurs when there is a narrowing or blockage in the blood vessels that supply blood to the heart muscle. Heart attack (acute myocardial infarction) and angina are the two major clinical forms.³³ The prevalence of CHD increases rapidly with age.

Hospital separations

When interpreting recent hospital separation data for CHD, it is important to note a change to clinical coding practice was introduced from 1 July 2015, where rehabilitation episodes of care have been assigned the principal diagnosis code for the underlying condition.³⁶ These changes may result in apparent spikes in hospital separations recorded for some conditions such as CHD. Thus far the impact of this coding change appears to be negligible for CHD in West Moreton. The activity for rehabilitation episodes of care accounted for around 1% of all the hospital separations for CHD in West Moreton over the reporting period 2017-2018 to 2019-2020, while it was much higher in Queensland (11%) (data not shown). To remove the impact of any coding change, CHD hospital separation rates excluding rehabilitation episodes of care are presented in this report.

On average there were 1,628 hospital separations per year for CHD among residents of West Moreton in the three-year period 2017-2018 to 2019-2020. Males accounted for 67% of these separations. Overall, the age-standardised separation rates for males were significantly higher than for females, with male rates being over double the female rates (2017-2018 to 2019-2020) in both West Moreton and Queensland. Indirect standardised separation ratios for CHD indicate that hospital separations overall or separately for males and females were not significantly different between West Moreton and Queensland in the years 2017-2018 to 2019-2020 (Table 11). This contrasts with the previous time period (2015-2018) when CVD hospitalisation rates were significantly higher in West Moreton (10% all persons) compared with Queensland (data not shown).

Table 11: Coronary heart disease, standardised separation ratios by sex, West Moreton Health compared with Queensland, 2017-2018 to 2019-2020

Region	Sex	Ratio [95% CI]*	Difference WMH-Qld
West Moreton Health	Male	0.99 [0.96 - 1.02]	NS
	Female	1.02 [0.97 - 1.07]	NS
	Persons	1.00 [0.98 - 1.03]	NS

* 95% Confidence Interval.

NS Non-significant.

In West Moreton, CHD separations for males and females trended downwards between 2010-2012 to 2019-2020, with an overall (all persons) decrease by 39% (Figure 23). In Queensland, separation rates for CHD remained relatively stagnant, decreasing overall by 20% across this 10-year period (all persons). In West Moreton the decline was more obvious, among females in particular.

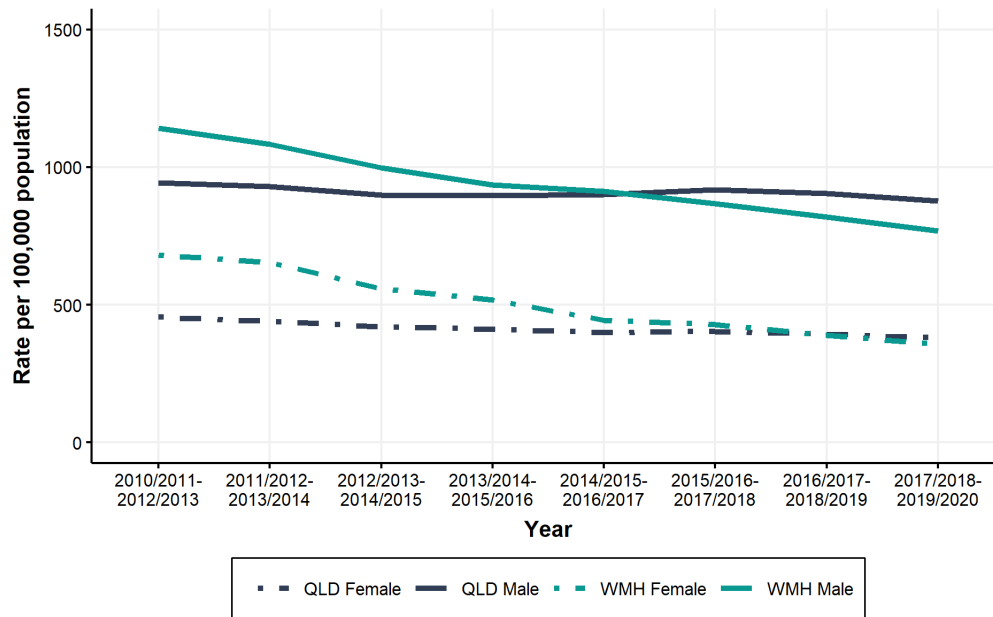


Figure 23: Coronary heart disease, age-standardised hospital separation rate by sex, West Moreton Health compared with Queensland, three-year moving averages, 2010-2013 to 2017-2020

For the period 2017-2018 to 2019-2020, age-specific hospital separation rates for CHD were negligible before the age of 30 years. As expected, hospitalisation rates increased with age in both males and females (Figure 24). Overall, West Moreton Health rates of CHD hospitalisations were below Queensland rates across age groups from age 60 years and above.

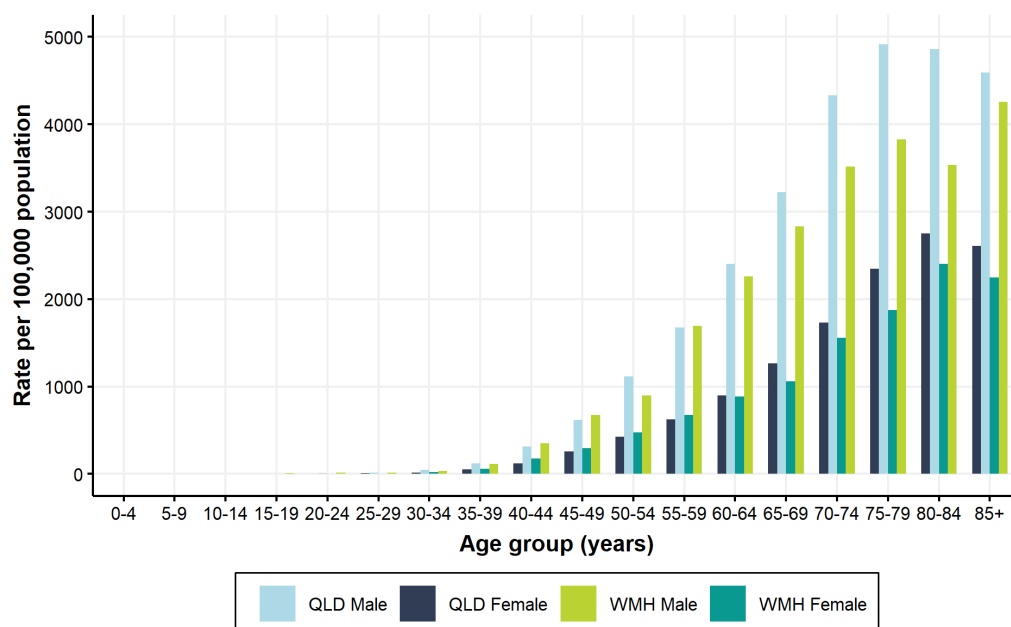


Figure 24: Coronary heart disease, age-specific hospital separation rate by sex, West Moreton Health compared with Queensland, 2017-2018 to 2019-2020

Mortality

There was an average of 175 deaths per year from CHD among West Moreton residents in the three years from 2017-2019. This represented 13% of all deaths of West Moreton residents in this period. Indirect standardised mortality ratios indicate that the average mortality rate for CHD was significantly higher in West Moreton than in Queensland for males (by 11%), but not for females in the five years from 2015-2019 (Table 12). This contrasts with the previous reporting years (2013-2017) where CHD mortality rates for West Moreton males were similar to Queensland, and the rates for West Moreton females were significantly higher.

Table 12: Coronary heart disease, standardised mortality ratios (SMR) by sex, West Moreton Health compared with Queensland, 2015-2019

Region	Sex	Ratio [95% CI]*	Difference WMH-QLD†
West Moreton Health	Male	1.11 [1.02 - 1.21]	↑
	Female	1.02 [0.91 - 1.13]	NS
	Persons	1.08 [1.01 - 1.15]	↑

* 95% Confidence Interval.

† West Moreton statistically significantly higher than QLD.

NS Non-significant.

Age-standardised mortality rates for CHD were significantly higher in males than in females across the three-year moving averages between 2017-2019 in both West Moreton and Queensland (Figure 25). Mortality rates trended downwards over this period, with an overall significant decline in West Moreton from 2010-2012 to 2017-2019.

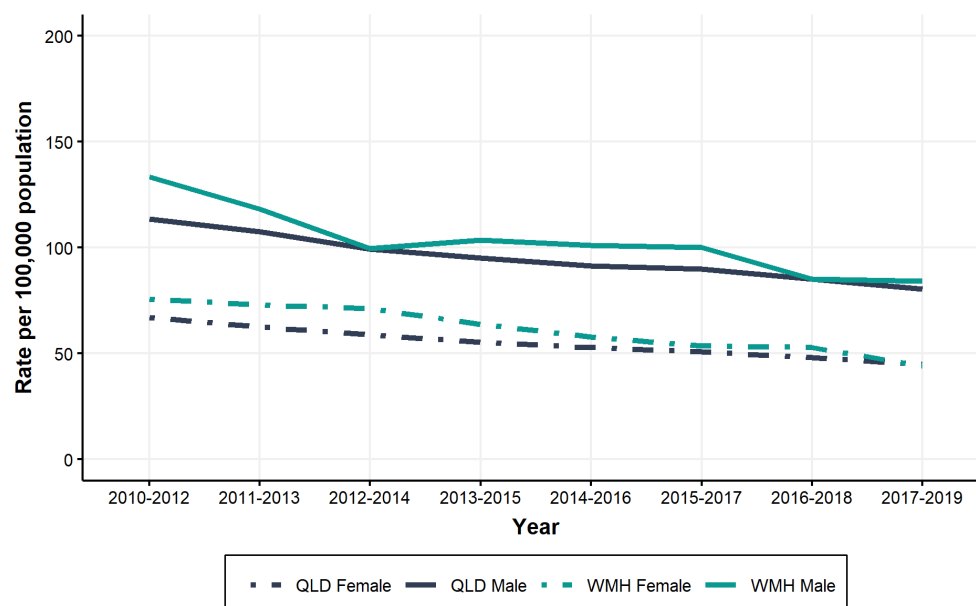


Figure 25: Coronary heart disease, age-standardised mortality rate by sex, West Moreton Health compared with Queensland, three-year moving averages, 2010-2012 to 2017-2019

Stroke

Stroke occurs when a blood vessel supplying blood to the brain either suddenly becomes blocked (ischaemic stroke) or ruptures and begins to bleed (haemorrhagic stroke). A stroke can cause lasting brain damage, long-term disability, or even death. The longer a stroke remains untreated, the greater the chance of stroke-related brain damage impacting on speech, movement and thinking. ³³

Hospital separations

When interpreting recent hospital separation data for stroke, it is important to note that a significant change to clinical coding practice was introduced from first July 2015, when rehabilitation episodes of care have been assigned the principal diagnosis code for the underlying condition. ³⁶ This change resulted in a large increase in the number of hospital separations recorded for stroke, a common underlying condition for rehabilitation episodes. To remove the impact of any coding change, stroke hospital separation rates excluding rehabilitation episodes of care are presented in this report over the reporting period 2010-2013 to 2019-2020. Where appropriate (2017-2018 to 2019-2020), the report also includes an estimate of the percentage of hospital separations for stroke apportioned to rehabilitation episodes of care (i.e. where stroke is the principal diagnosis).

There was an average of 675 hospital separations per year for stroke among West Moreton residents in the three years from 2017-2018 to 2019-2020. Activity for rehabilitation episodes of care, where stroke was the principal diagnosis, represented an average of 189 additional hospital separations per year. Activity for rehabilitation episodes of care accounted for 22% of all the hospital separations for stroke over this reporting period in West Moreton and 34% in Queensland (data not shown).

Indirect standardised separation ratios indicate that there was no significant difference in average separation rates for stroke between West Moreton and Queensland (all persons) in the period 2017-2018 to 2019-2020 ([Table 13](#)). Indirect standardised separation ratios inclusive of rehabilitation episodes of care also showed no differences (data not shown).

Table 13: Stroke, standardised separation ratios by sex, West Moreton Health compared with Queensland, 2017-2018 to 2019-2020

Region	Sex	Ratio [95% CI]*	Difference WMH-Qld
West Moreton Health	Male	1.00 [0.94 - 1.06]	NS
	Female	0.97 [0.91 - 1.03]	NS
	Persons	0.99 [0.94 - 1.03]	NS

* 95% Confidence Interval.

NS Non-significant.

In Queensland and West Moreton, the age-standardised stroke hospital separation rate for males was significantly higher than for females between 2010-2013 and 2017-2020. Over this period, stroke hospitalisations were steady in Queensland and trending slightly downwards in West Moreton ([Figure 26](#)). Age-specific hospital separation rates for stroke were negligible before the age of about 20 years and then increased with age, following an exponential curve from the age of about 50 years ([Figure 27](#)).

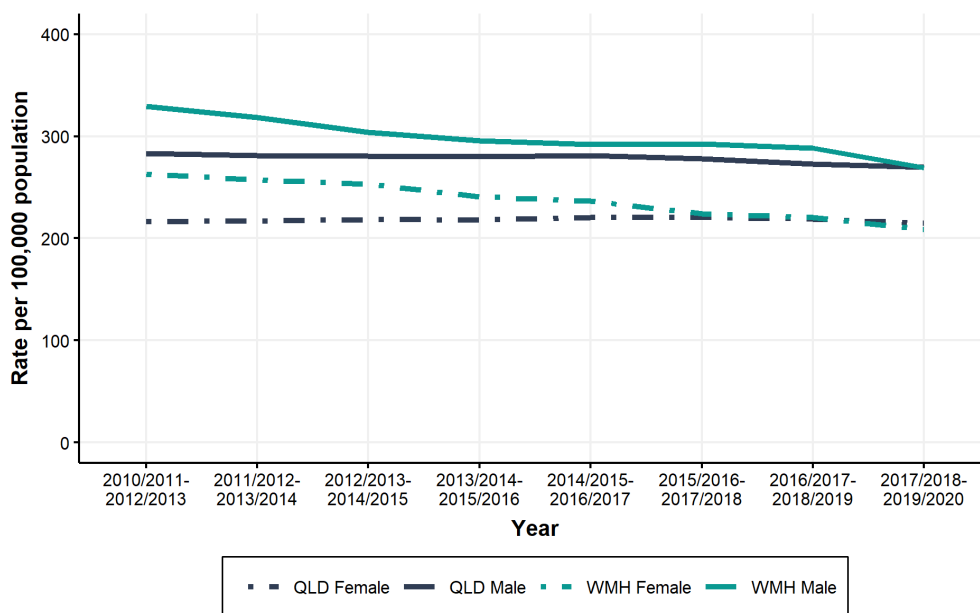


Figure 26: Stroke, age-standardised hospital separation rate (excluding rehabilitation) by sex, West Moreton Health compared with Queensland, three-year moving averages 2010-2013 to 2017-2020

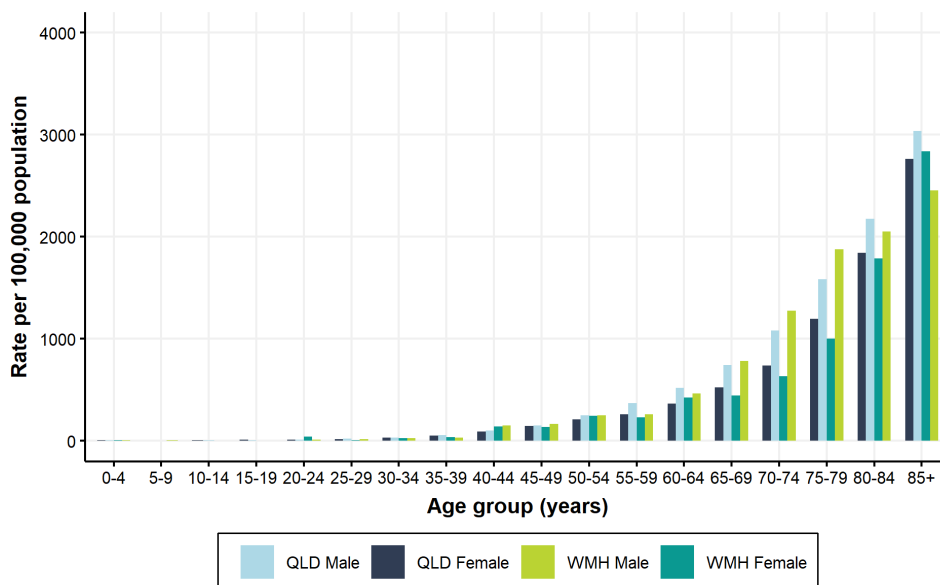


Figure 27: Stroke, age-specific hospital separation rate by sex, West Moreton Health compared with Queensland, 2017-2018 to 2019-2020

Mortality

There was an average of 85 deaths per year from stroke among West Moreton residents in the three years from 2017-2019. Females accounted for a marginally higher proportion (57%) of these deaths. Indirect standardised mortality ratios indicate that the average mortality rates for stroke were statistically similar in West Moreton and Queensland for both males and females in the five years from 2015-2019 (data not

shown). Age-standardised mortality rates for stroke in West Moreton and Queensland decreased overall between 2010-2012 and 2017-2019, with no substantial differences between males and females (Figure 28).

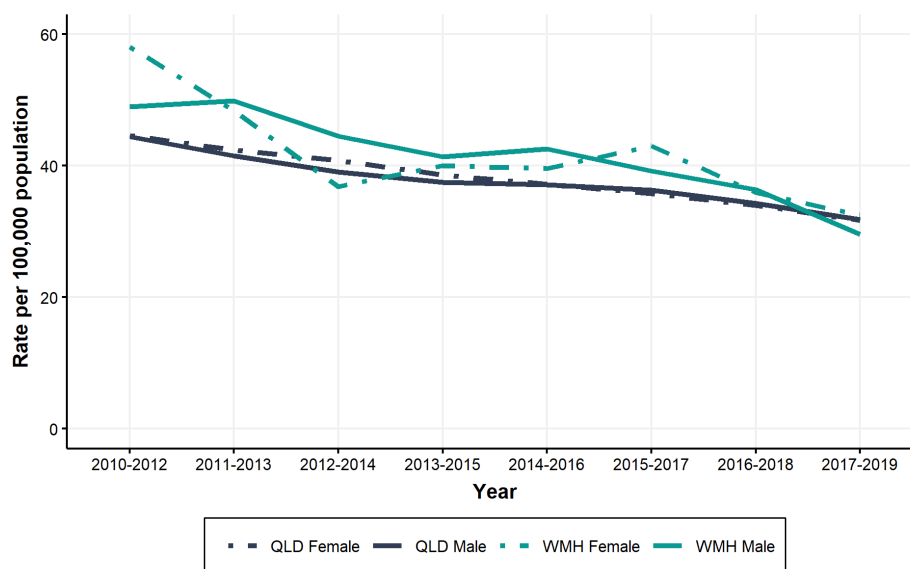


Figure 28: Stroke, age-standardised mortality rates by sex, West Moreton Health compared with Queensland, three-year moving averages, 2010-2012 to 2017-2019

Heart failure

Heart failure (also known as congestive cardiac failure) occurs when the heart begins to function less effectively in maintaining a strong enough blood flow to meet the body's needs. Heart failure can result from a variety of diseases and conditions that impair or overload the heart. These include heart attack, high blood pressure, damaged heart valves or cardiomyopathy (weakening of the entire or large parts of the heart muscle). Although heart failure can occur suddenly, it usually develops over many years as the heart gradually becomes weaker.^{37,33} Mild heart failure may cause few symptoms, but more severe cases can result in chronic tiredness, shortness of breath and reduced capacity for physical activity. Heart failure can be life-threatening and severe cases are associated with poor survival.³³

Hospital separations

On average there were 784 hospital separations per year for heart failure among West Moreton residents in the three-year period 2017-2018 to 2019-2020. In both West Moreton and Queensland, age-standardised separation rates for males were significantly higher than for females in all years from 2010-2011 to 2019-2020. Indirect standardised separation ratios indicate that the average hospital separations for heart failure were significantly higher in West Moreton than in Queensland for all persons (by 31%) in the 2017-2018 to 2019-2020 period (Table 14).

Compared with the previous period (2015-2018) separation rates in West Moreton increased further by 6% in both females and males. Between 2010 and 2020, heart failure hospital separation rates for males and females in West Moreton increased (Figure 29). Whereas in Queensland, the rates remained relatively stagnant. Specifically, rates for all persons increased by 17% in West Moreton and by 7% in Queensland over this period (data not shown). Following a similar pattern to stroke, hospital separation rates for heart

failure were negligible before the age of about 35 years and then increased with age, following an exponential curve from the age of about 60 years (Figure 30).

Table 14: Heart Failure, standardised separation ratios by sex, West Moreton Health compared with Queensland, 2017-2018 to 2019-2020

Region	Sex	Ratio [95% CI]*	Difference WMH-QLD†
West Moreton Health	Male	1.32 [1.25 - 1.40]	↑
	Female	1.28 [1.20 - 1.36]	↑
	Persons	1.31 [1.25 - 1.36]	↑

* 95% Confidence Interval.

† West Moreton statistically significantly higher than QLD.

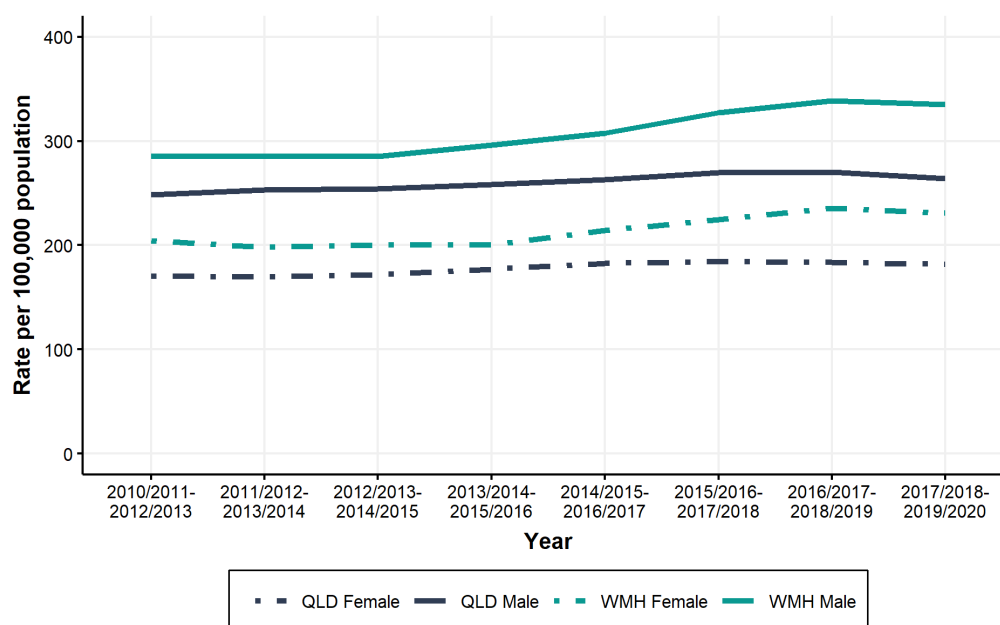


Figure 29: Heart failure, age-standardised hospital separation rate by sex, West Moreton Health compared with Queensland, three-year moving averages 2010-2013 to 2017-2020

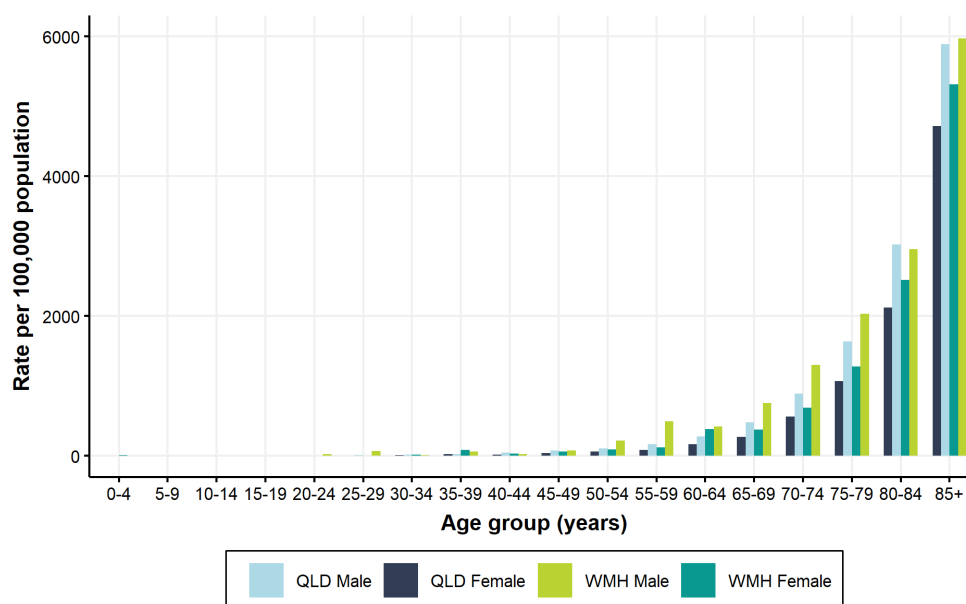


Figure 30: Heart failure, age-specific hospital separation rate by sex, West Moreton Health compared with Queensland, 2017-2018 to 2019-2020

Mortality

In the three years from 2017-2019, there was an average of 19 deaths per year from heart failure among West Moreton residents. Females accounted for more than half (58%) of these deaths. Number of deaths and *age-standardised* rates in males were similar across the current and previous reporting period. Age-standardised rates in both West Moreton and Queensland trended consistently downwards between 2010-2012 and 2017-2019 (data not shown). Indirect standardised mortality ratios indicate that the average mortality rate for heart failure in females was significantly higher (by 36%) in West Moreton than in Queensland between 2015 and 2019, but not significantly different in males (Table 15). This is consistent with findings from the previous reporting period.

Table 15: Heart failure, standardised mortality ratios (SMR) by sex, West Moreton Health compared with Queensland, 2015-2019

Region	Sex	Ratio [95% CI]*	Difference WMH-QLD†
West Moreton Health	Male	1.12 [0.79 - 1.54]	NS
	Female	1.36 [1.04 - 1.75]	↑
	Persons	1.25 [1.02 - 1.53]	↑

* 95% Confidence Interval.

† West Moreton statistically significantly higher than QLD.

NS Non-significant.

Diabetes mellitus

Diabetes is a chronic condition marked by high levels of glucose in the blood. It is caused either by the inability to produce insulin (a hormone made by the pancreas to control blood glucose levels) or by the body not being able to use insulin effectively, or both. People with diabetes are at increased risk of many heart problems. People with diabetes are at increased risk of hospitalisation and/or experiencing complications or more severe illness. ^{38, 39, 40}

The main types of diabetes are type 1, type 2 and gestational. ^{41,42} Type 1 diabetes is a lifelong autoimmune disease that results in the destruction of insulin-producing cells in the pancreas. Type 1 diabetes usually has onset in childhood and adolescence but can occur at any age. People with type 1 diabetes require daily insulin therapy for survival. ^{41,42}

Type 2 diabetes is the most common form of diabetes and occurs when key organs become resistant to the insulin being produced by the pancreas and insulin production becomes progressively insufficient. While type 2 diabetes has strong genetic and family-related risk factors, it is largely preventable by maintaining a healthy lifestyle. Although it is commonly adults 50 years and older who are affected, diagnosis in younger adults, adolescents and even children is increasingly common. ^{41,42} Findings from a recently published large South Korean cohort study indicate that younger age at onset of type 2 has been associated with higher risk for mortality and cardiovascular harm. ⁴³ Unless otherwise specified, the diabetes data presented in this report includes both type 1 and type 2 diabetes.

Hospital separation

There was an average of 799 hospital separations per year for diabetes mellitus among West Moreton residents in the three-year period 2017-2018 to 2019-2020. Indirect standardised separation ratios indicate that the average separation rate for diabetes was significantly higher in West Moreton than in Queensland for both males (by 18%) and females (by 32%) in the 2017-2018 to 2019-2020 period ([Table 16](#)). Compared with the previous reporting period (2015-2018), these rates are now 7% higher.

Table 16: Diabetes mellitus, standardised separation ratios by sex, West Moreton Health compared with Queensland, 2017-2018 to 2019-2020

Region	Sex	Ratio [95% CI]*	Difference WMH-QLD†
West Moreton Health	Male	1.18 [1.12 - 1.24]	↑
	Female	1.32 [1.25 - 1.41]	↑
	Persons	1.24 [1.19 - 1.29]	↑

* 95% Confidence Interval.

† West Moreton statistically significantly higher than QLD.

In West Moreton and Queensland, age-standardised separation rates for males were significantly higher than rates for females in all years from 2010-2011 to 2019-2020 ([Figure 31](#)). Separation rates in all persons (West Moreton and Queensland) have shown a small upwards trend with somewhat larger rates in males. For the period 2017-2018 to 2019-2020, age-specific hospital separation rates for diabetes were relatively

low until the age of about 55 years after which they rose sharply to a peak between 75-84 years overall (all persons) (Figure 31 and Figure 32).

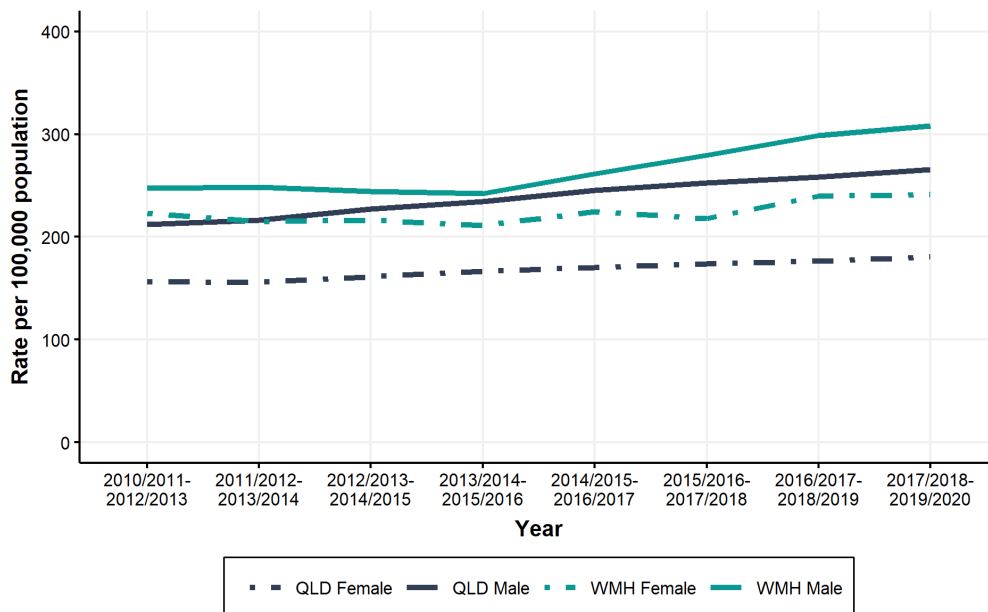


Figure 31: Diabetes mellitus, age-standardised hospital separation rate by sex, West Moreton Health compared with Queensland, three-year moving averages, 2010-2013 to 2017-2020

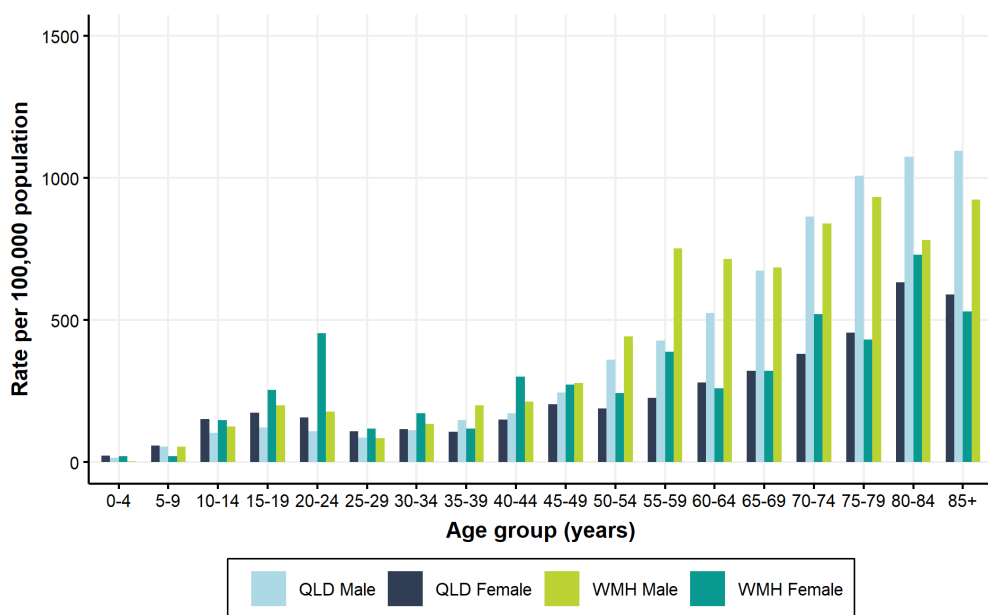


Figure 32: Diabetes mellitus, age-specific hospital separation rate by sex, West Moreton Health compared with Queensland, 2017-2018 to 2019-2020

The increase in separations in males was much steeper with increasing age than that observed in females. There is a small peak in hospital separation rates in West Moreton females in the 20-24 years age group. This age-related increase does not necessarily represent an increase in individuals with diabetes but rather is due to repeated admissions for some individuals living with diabetes (repeat admissions for diabetes is common).

Mortality

On average there were 52 deaths per year from diabetes mellitus among West Moreton residents between 2017-2019. Indirect standardised mortality ratios in the five years from 2015-2019 (Table 17) indicate that the death rate for diabetes was significantly higher (by 25%) in West Moreton males than in Queensland males, but not for females. This contrasts with findings from the previous reporting period when the significantly higher diabetes-specific death rates in West Moreton were observed in both sexes.

Table 17: Diabetes mellitus, standardised mortality ratios (SMR) by sex, West Moreton Health compared with Queensland, 2015-2019

Region	Sex	Ratio [95% CI]*	Difference WMH-QLD†
West Moreton Health	Male	1.25 [1.06 - 1.47]	↑
	Female	1.12 [0.90 - 1.36]	NS
	Persons	1.20 [1.06 - 1.36]	↑

* 95% Confidence Interval.

† West Moreton statistically significantly higher than QLD.

NS Non-significant.

Between 2010 and 2019 the mortality rates for diabetes are trending downwards in West Moreton females, but not in their male counterparts (Figure 33). The death rates in males fluctuated over time and trended upward following the 2014-2016 period. Most recently (2017-2019), rates in males in West Moreton were over double the observed rate in West Moreton females, highlighting a growing gap between sexes (ASR=25.8/100,000 males; ASR=11.2/100,000 females). By comparison, Queensland mortality rates were relatively stable across this period in both sexes with consistently higher rates in males than females.

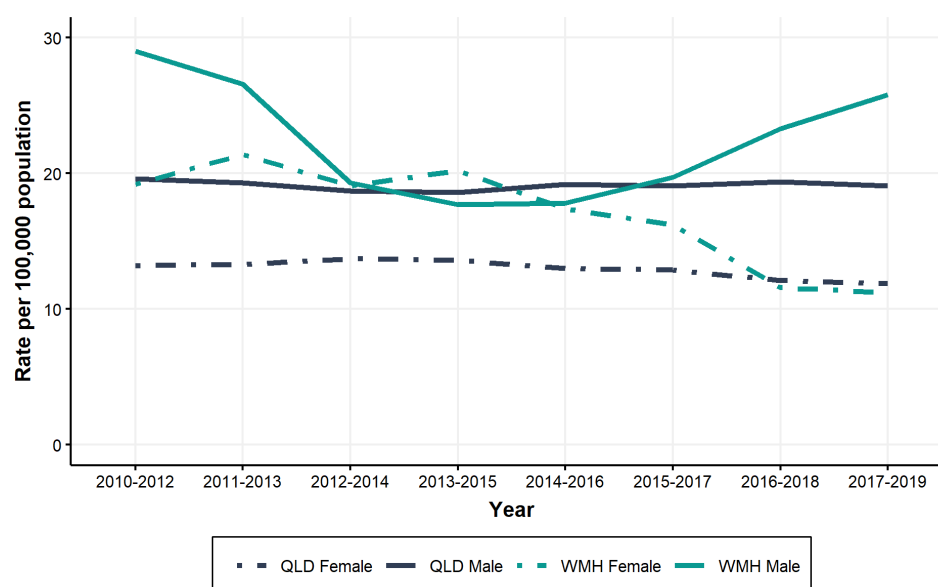


Figure 33: Diabetes mellitus, age-standardised mortality rate by sex, West Moreton Health compared with Queensland, three-year moving averages 2010-2012 to 2017-2019

Injury

Injury is a major cause of preventable death and disability globally. There are numerous types of injury including falls, road transport crashes, burns, drowning, poisoning and acts of violence against others or oneself. ⁴⁵ Injuries, which may be intentional or non-intentional (accidental), are associated with short and long-term impacts including increased risk of mental illness and suicide, alcohol, smoking and substance abuse and chronic conditions, as well as fatal outcomes. ⁴⁵ Public health initiatives and strategies are required to reduce injury and its burden. ²¹

Falls

Falls are common among older people and often result in fractures and other serious injuries. For each hospital admission, many more people who fall present instead to hospital emergency departments (but are not admitted to hospital) or are seen by a general practitioner, and a larger number of generally minor injuries do not receive any medical treatment. ⁴⁶ There is also a small number of people with severe fall injuries which result in death who do not go to hospital and are only captured in mortality data. ⁴⁶ In Australia in 2016-2017, about 57% of falls occurred in people aged 65 years and over and just over half of all cases of hospitalised falls occur in females (66%). ⁴⁷

Hospital separations

On average there were 2,964 hospital separations per year for falls among West Moreton residents in the three-year period 2017-2018 to 2019-2020, with significantly higher rates in females compared with males. Indirect standardised separation ratios indicate that the average separation rate for falls was significantly lower in West Moreton than in Queensland for all persons (6% lower) and males (4% lower). The same pattern was found in falls for 65 years and over, where males (3%) and all persons (5%) were significantly lower than Queensland (Table 18). This presents a change from the previous reporting period (2015-2016 to 2017-2018) where West Moreton females falls separations were significantly higher than in Queensland in both age groups.

Table 18: Falls, standardised separation ratios by sex and age, West Moreton Health compared with Queensland, 2017-2018 to 2019-2020

Region	Age group	Sex	Ratio [95% CI]*	Difference WMH-Qld†
West Moreton Health	All ages	Male	0.94 [0.91 - 0.96]	↓
		Female	0.98 [0.96 - 1.01]	NS
		Persons	0.96 [0.94 - 0.98]	↓
	65+ years	Male	0.93 [0.89 - 0.98]	↓
		Female	0.97 [0.94 - 1.01]	NS
		Persons	0.95 [0.93 - 0.98]	↓

* 95% Confidence Interval.

† West Moreton statistically significantly higher than QLD.

NS Non-significant.

Age-standardised hospital separation rates were significantly higher in both West Moreton and Queensland between 2010-2011 to 2019-2020 (Figure 34). In West Moreton and Queensland, falls separation rates in both males and females trended upwards over the reporting period up until 2016-2017 to 2018-2019 where rates plateaued. The increase in separation rates was somewhat more pronounced in West Moreton where between 2010-2013 to 2017-2020, rates in males and females increased by 37% and 53% respectively. In comparison, rates in Queensland males and females increased by 37% and 47% respectively.

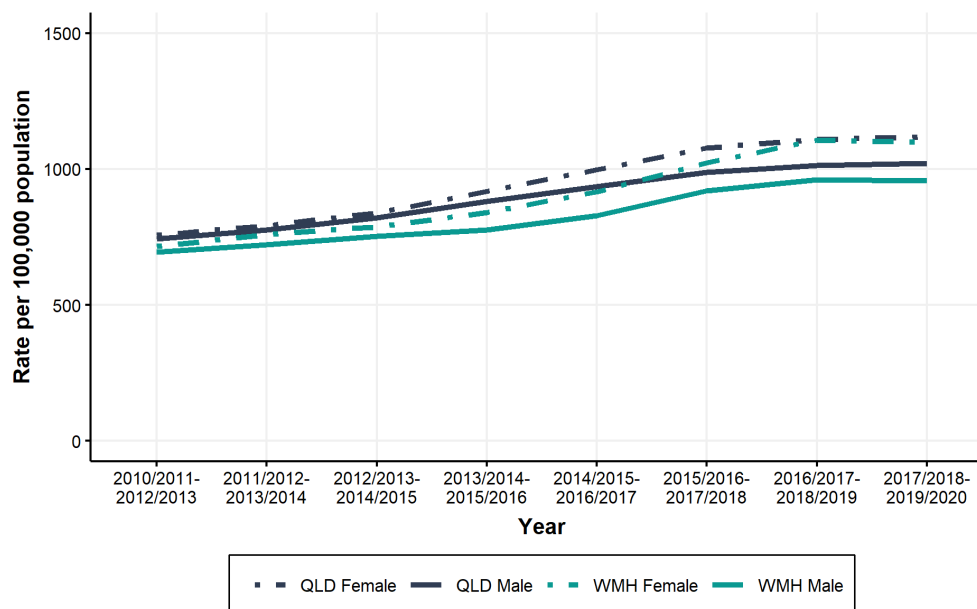


Figure 34: Falls, age-standardised hospital separation rate by sex, West Moreton Health compared with Queensland, 2010-2013 to 2017-2020

In the 65 years and over age group, there was an average of 1,514 hospital separations per year for falls in the three-year period 2017-2018 to 2019-2020. In both West Moreton and Queensland, age-standardised separation rates for females in this age group were consistently significantly higher than rates for males between 2010-2011 to 2019-2020 (Figure 35). Falls separation rates also trended upwards in this age group in both West Moreton and Queensland. Over the reporting period rates in West Moreton, males and females increased by 60% and 55% respectively while Queensland male and female separation rates increased by 68% and 57% respectively.

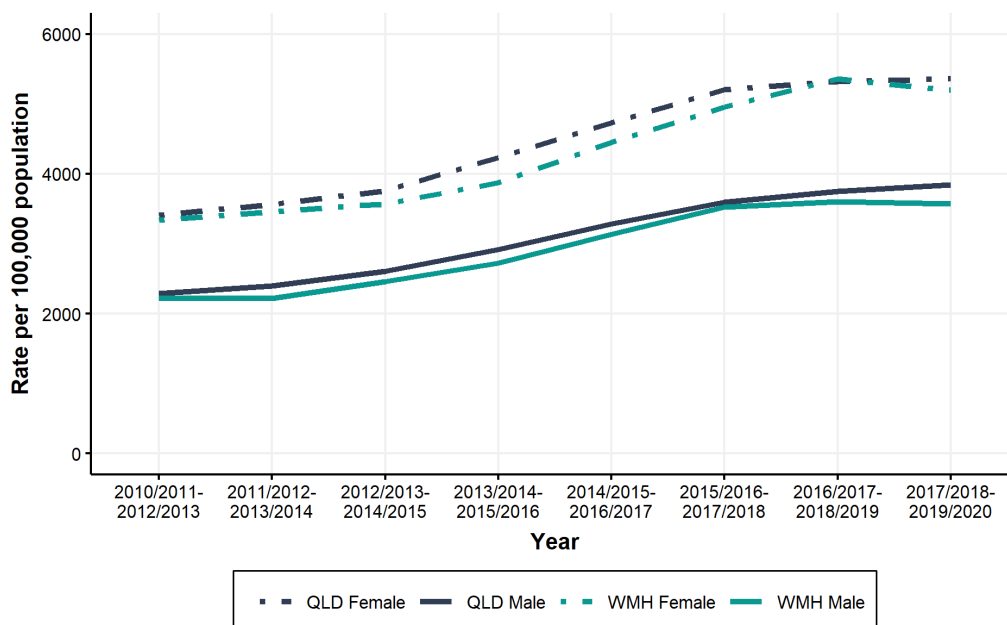


Figure 35: Falls in 65+ age group, age-standardised hospital separation rate by sex, West Moreton Health compared with Queensland, three-year moving averages 2010-2011 to 2019-2020

Mortality

There was an average of 43 deaths per year from falls among West Moreton residents in the three years from 2017-2019. Close to 90% of these deaths were in the 65 years and over age group. Mortality rates in the 65 years and over age group were higher in males compared with females in both West Moreton and Queensland throughout the period 2015-2017 to 2017-2019 (Figure 36). Although the difference was not statistically significant.

Over a ten-year period (2010-2012 to 2017-2019) falls mortality rates in West Moreton in the 65 years and over age group decreased for males by 24% and increased for females by 20%. In Queensland rates remained stable throughout the period, decreasing by 4.6% in females and remaining stagnant in males. Indirect standardised mortality ratios indicate that the average mortality rates for falls were statistically similar in West Moreton and Queensland for both males and females in all ages and in the 65 years and over age group in the five years from 2015-2019.

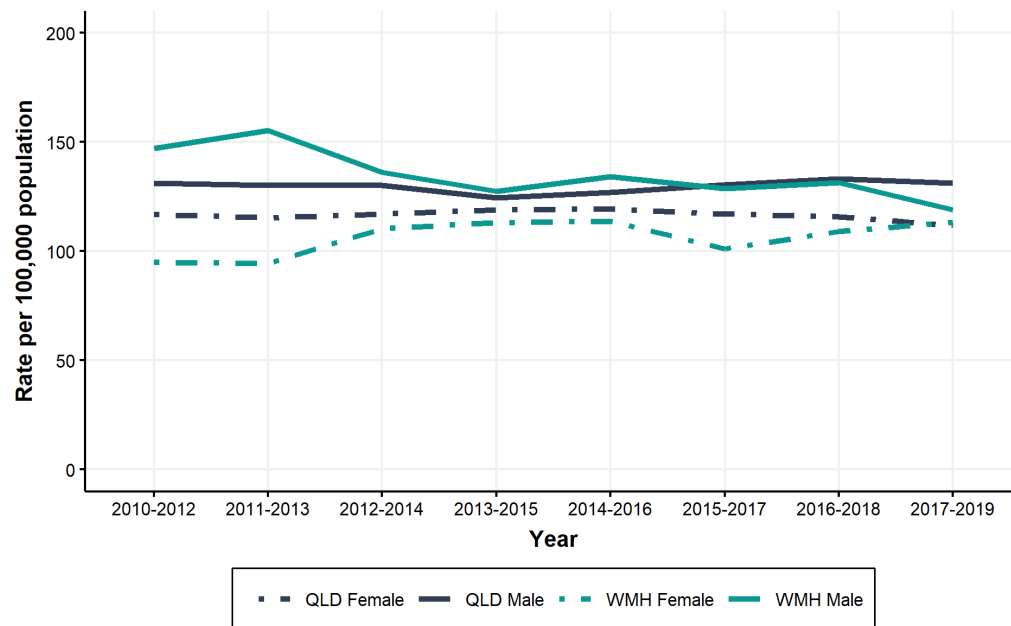


Figure 36: Falls in 65 year and over age group, age-standardised mortality rate by sex, West Moreton Health compared with Queensland, three-year moving averages 2010-2012 to 2017-2019

Road transport injury

This section refers to road vehicle traffic crashes only, that is, accidents occurring in traffic on public roads and involving the driver/rider and/or occupants, most commonly while in a car, or on a motorcycle, or bicycle. Seasonality in traffic accidents has been reported in national data, particularly in October and April, potentially due to increased traffic in school holidays.⁴⁸

Hospital separations

On average there were 1,071 hospital separations per year for road transport injury among West Moreton residents in the three-year period 2017-2018 to 2019-2020, with males accounting for 58% of these separations. Indirect standardised separation ratios indicate that the average separation rate for road transport injury was significantly higher in West Moreton than in Queensland for males (11% higher) and females (32% higher). This was also observed in the high-risk age group of 15-24 years, with separation rates 18% higher in West Moreton males and 36% higher in West Moreton females compared with their Queensland counterparts.

Age-standardised separation rates were significantly higher for males than for females in West Moreton and in Queensland across all years in the reporting period 2010-2013 to 2017-2020 (Figure 37). Since 2010-2011 to 2019-2020, rates in both males and females in West Moreton and Queensland have trended steadily upwards. The increase has been most pronounced in West Moreton where male rates increased by 31% and female rates by 80% over this period. In comparison, Queensland rates for males and females increased by 22% and 35% respectively (Table 19).

Table 19: Road transport injury, standardised separation ratios by sex and age, West Moreton Health compared with Queensland, 2017-2018 to 2019-2020

Region	Age group	Sex	Ratio [95% CI]*	Difference WMH-QLD†
West Moreton Health	All ages	Male	1.11 [1.06 - 1.16]	↑
		Female	1.32 [1.25 - 1.40]	↑
		Persons	1.19 [1.15 - 1.23]	↑
	15-24 years	Male	1.18 [1.07 - 1.30]	↑
		Female	1.36 [1.21 - 1.53]	↑
		Persons	1.25 [1.16 - 1.25]	↑

* 95% Confidence Interval.

† West Moreton statistically significantly higher than QLD.

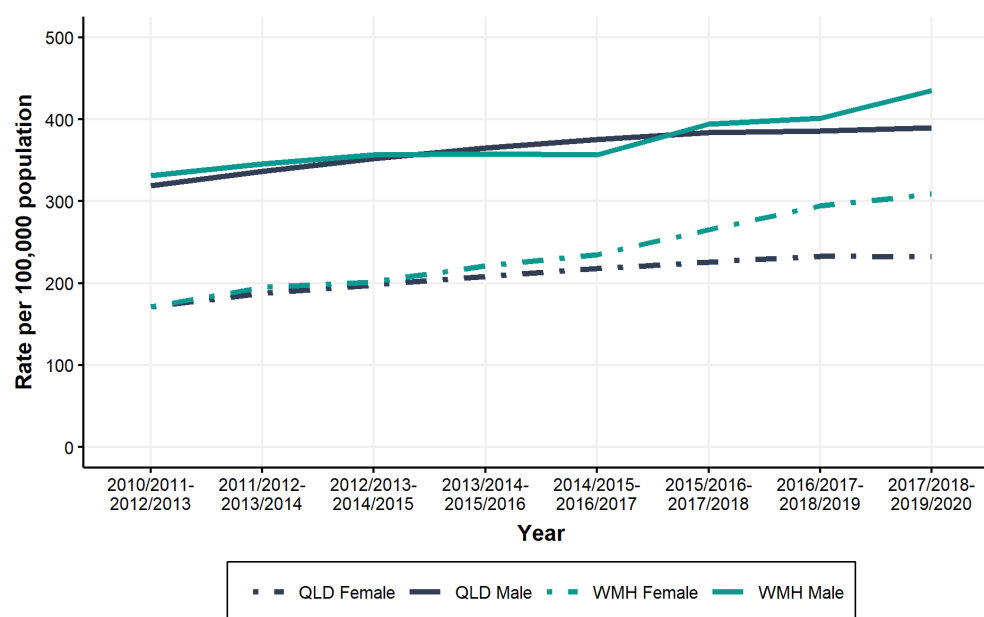


Figure 37: Road transport injury, age-standardised hospital separation rate by sex, West Moreton Health compared with Queensland, three-year moving averages 2010-2011 to 2019-2020

In the 15-24 years age group, there was an average of 232 hospital separations per year for road transport injury in the three-year period 2017-2018 to 2019-2020 (Figure 38). Males accounted for 57% of these separations. There was no consistent statistical difference between male and female age-standardised separation rates in West Moreton between 2010-2011 to 2019-2020, however rates among males were consistently numerically higher than those among females. Separation rates for males in West Moreton were 1.1- 1.9 times higher than the rates for females over the years in this period, with the gap between the sexes narrowing with time.

For the three-year period 2017-2018 to 2019-2020, rates of hospital separation for road transport injury were highest between the ages of 15-24 years for both males and females. Hospitalisation rates in males in West Moreton continued to remain higher for the 25-29 years and 35-44 years age groups. A similar pattern was observed in Queensland males. There was an additional peak in West Moreton and Queensland in the older age groups from 75 years and over in both males and females (Figure 39).

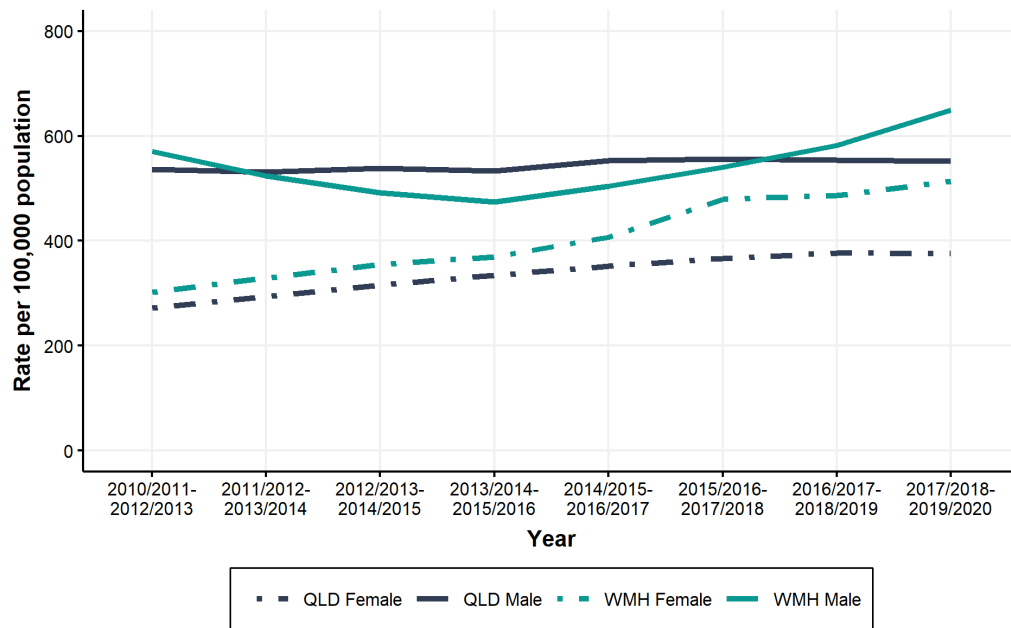


Figure 38: Road transport injury (15 to 24 years), age-standardised hospital separation rate by sex, West Moreton Health compared with Queensland, three-year moving averages 2010-2013 to 2017-2020

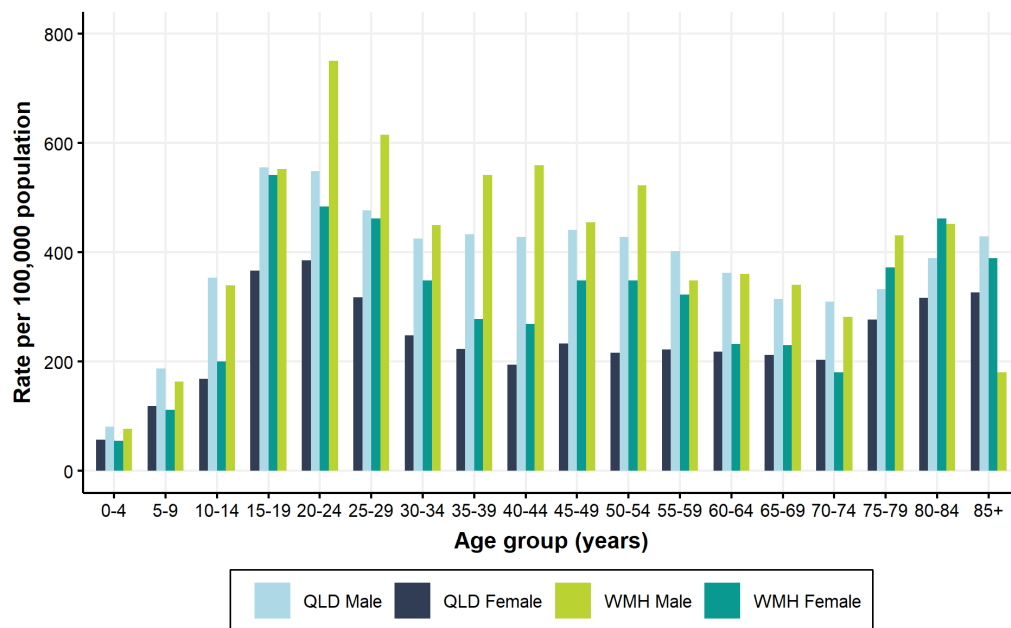


Figure 39: Road transport injury, age-specific hospital separation rate by sex, West Moreton Health and Queensland, 2017-2018 to 2019-2020

Mortality

On average there were 18 deaths per year from road transport injury among West Moreton residents in the three years from 2017-2019. Males accounted for 69% of these deaths and 25% were in persons aged 15-24 years. Road transport injury mortality rates in both West Moreton and Queensland decreased substantially over the reporting period 2010-2012 to 2017-2019. Over this period rates dropped by 41% across all age groups among West Moreton residents.

Total counts in the West Moreton population were inadequate to produce rates for the high-risk age group 15-24 years. In Queensland across all ages, the mortality rate dropped by 33% while in the high-risk age group 15-24 years, rates decreased by 30%. Indirect standardised mortality ratios indicate that the average mortality rates for road transport injury were significantly higher in West Moreton compared with Queensland for all persons (males and females) in the five years from 2015-2019. Among those aged 15-24 years in the same period, indirect standardised mortality rates were statistically similar for West Moreton and Queensland residents.

Mental health

Mental health is defined by the World Health Organisation (WHO) as 'a state of mental wellbeing that enables people to cope with the stresses of life, realise their own potential, learn and work well and contribute to their community'.⁴⁹ Conversely the term mental illness or mental health condition refers to a wide range of conditions that interfere with normal functioning and wellbeing. Episodes of mental illness of sufficient severity to require professional intervention and diagnosis are frequently referred to the narrower term of mental disorders. Examples include anxiety disorders, eating disorders, psychotic disorders, and substance-abuse. The following data excludes dementia.^{1,50}

Mental health conditions are very common. In 2017-2018, one in five or 20% of Australians had a mental or behavioural condition, 13% with an anxiety-related condition and 10% experiencing depression or feelings of depression.⁵¹ An overall increase from the previous reporting period (2014-2015), was largely due to an increase in the number of people reporting anxiety-related conditions and depression or feelings of depression. More recently, (2020-2021) 15% of Australians aged 16-58 years experienced high or very high levels of psychological distress, with higher levels in females (19%) compared with males (12%), and in younger persons aged 16-34 years (one in five or 20%).⁵²

¹ In this section of the report, all the separations data presented pertain to separations from acute public and private hospitals only, that is, they exclude psychiatric hospitals. Also specifically excluded are 'ambulatory-equivalent' episodes of care which are defined by the AIHW as episodes in which a patient is admitted to hospital and provided with care that is similar to the care provided by community mental health care services. Typically, this type of care is for attendance at cognitive behaviour therapy, through a day program or a group program. An example may be a day program for veterans or a post-natal depression group. It appears that the majority of the episodes of care in this category occur in the private system where patients receiving treatment are admitted and then discharged. In the public system these types of episodes would more usually occur through the ambulatory service and be recorded in a different data collection system. Because of this public/private system difference in administration, the inclusion of 'ambulatory-equivalent' separations in the data can give rise to what appear to be anomalies. To control for this effect, separations which meet the standard definition of 'ambulatory equivalent' have been excluded from the data presented in this section of the report.

All mental health conditions

Hospital separations

There was an average of 3,446 hospital separations per year for mental health conditions (excluding ambulatory-equivalent) among West Moreton residents in the three-year period 2010-2011 to 2019-2020. Indirect standardised separation ratios indicate that the average separation rate for mental health conditions was significantly lower in West Moreton than in Queensland for all persons (4% lower) and females (5% lower) in the period 2017-2018 to 2019-2020 (Table 20). A change from the previous reporting period (2015-2016 to 2017-2018) where West Moreton recorded significantly higher separation rates for all persons, males, and females separately.

Table 20: All mental health conditions, standardised separation ratios by sex, West Moreton Health compared with Queensland, 2017-2018 to 2019-2020

Region	Sex	Ratio [95% CI]*	Difference WMH-QLD†
West Moreton Health	Male	0.98 [0.95 - 1.00]	NS
	Female	0.95 [0.93 - 0.98]	↓
	Persons	0.96 [0.95 - 0.98]	↓

* 95% Confidence Interval.

† West Moreton statistically significantly higher than QLD.

NS Non-significant.

Age-standardised separation rates were not consistently significantly higher for females than for males in both West Moreton and Queensland in the period from 2010-2011 to 2019-2020 (Figure 40). Separation rates for males and females trended upwards in both West Moreton and Queensland over this period. Rates in West Moreton males increased 47% over this period while rates in females increased by 33%. This was a considerably lower rate of increase compared with the previous reporting period (2008-2009 to 2017-2018), which increased by 65% in males and 50% in females. Similar increases were observed in Queensland male and female rates increasing by 44% and 48% respectively over the same and previous reporting period. The exception to this upward trend was a plateauing in the trend in West Moreton for males since 2015-2016 and females since 2016-2017 (females), although it is uncertain as to the cause for this change.

Hospital separation rates for mental health conditions among West Moreton males and females showed two peaks, the first very broad peak stretched from 15-49 years and the second, much sharper and higher peak was in the older age groups at 75 years and over (Figure 41). A significantly higher rate was recorded in West Moreton females aged 45-49 years compared with West Moreton males and Queensland males and females.

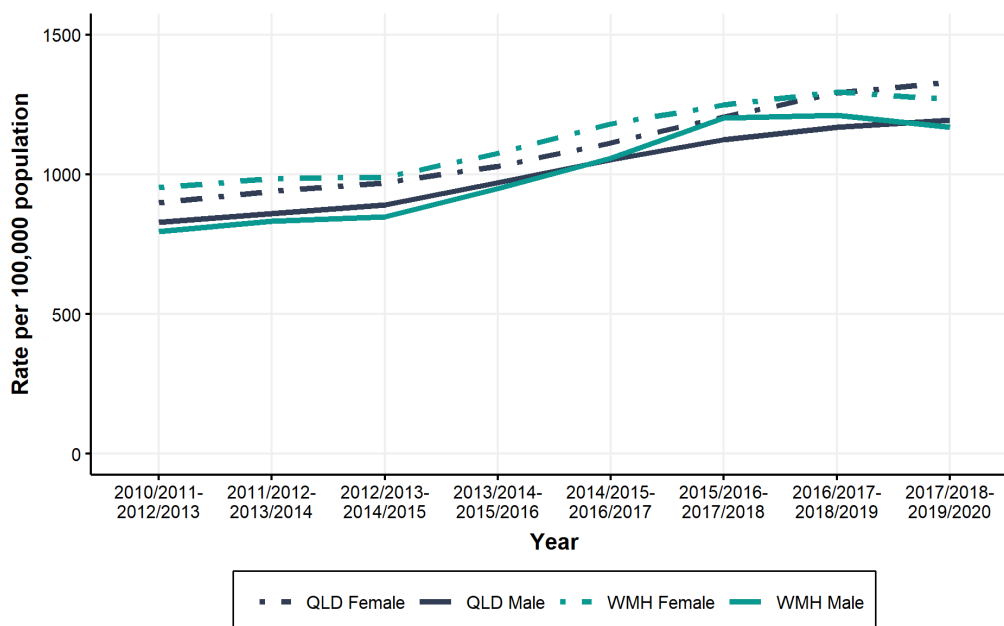


Figure 40: All mental health conditions, age-standardised hospital separation rate by sex, West Moreton Health compared with Queensland, three-year moving averages 2010-2011 to 2019-2020

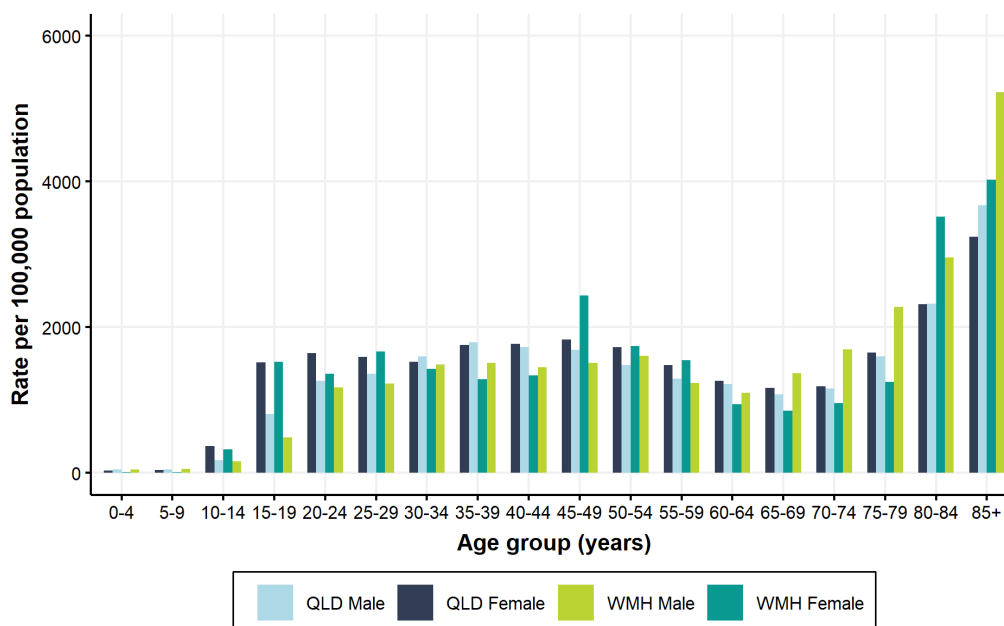


Figure 41: All mental health conditions, age-specific hospital separation rate by sex, West Moreton Health compared with Queensland, 2017-2018 to 2019-2020

Mortality

There was an average of 67 deaths per year from mental health conditions among West Moreton residents in the three years from 2017-2019. Females accounted for 63% of these deaths. Age-standardised mortality rates for all mental health conditions in both West Moreton and Queensland fluctuated between 2010-2012 to 2017-2019, decreasing in West Moreton and plateauing in Queensland from 2016-2018 (Figure 42). In

West Moreton over this period there was a 27% increase in the mortality rate for males and an 24% increase in the mortality rate for females. This translated to a 21% increase overall (all persons). A substantially lower mortality rate compared with the previous reporting period (2008-2010 to 2015-2017) which recorded an increase of 55% for males, 85% for females and 63% overall (all persons). In Queensland the percentage increases were smaller with an overall (all persons) increase of 24%.

Over this same period there was no consistent significant difference in age-standardised mortality rates between males and females in either West Moreton or Queensland. Indirect standardised mortality ratios indicate that the average mortality rate for mental health conditions was significantly lower in West Moreton males, and all persons (overall) compared with Queensland in the five years from 2015-2019. No statistical difference in the mortality rate for females between the regions was reported.

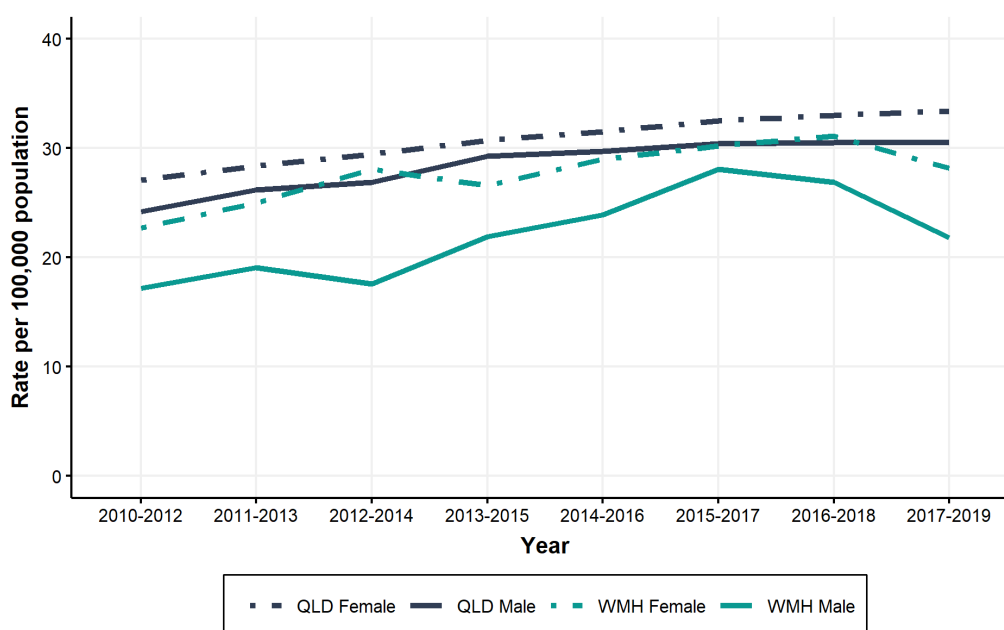


Figure 42: All mental health conditions, age-standardise mortality rates by sex, West Moreton Health compared with Queensland, three-year moving averages 2010-2012 to 2017-2019

Anxiety and depression

Hospital separations

There was an average of 1,143 hospital separations per year for anxiety and depression (excluding ambulatory-equivalent) among West Moreton residents in the three-year period 2017-2018 to 2019-2020. Females accounted for 59% of these separations. Age-standardised separation rates for females were significantly higher than rates for males in both West Moreton and Queensland across all years of the same reporting period (Figure 43). Over the same reporting period, separation rates in West Moreton females did not fluctuate, whereas males in the region increased substantially by 74%. This translated to a 23% increase overall (all persons), whereas in Queensland separation rates increased by 53% in females, 60% in males and 55% overall (all persons).

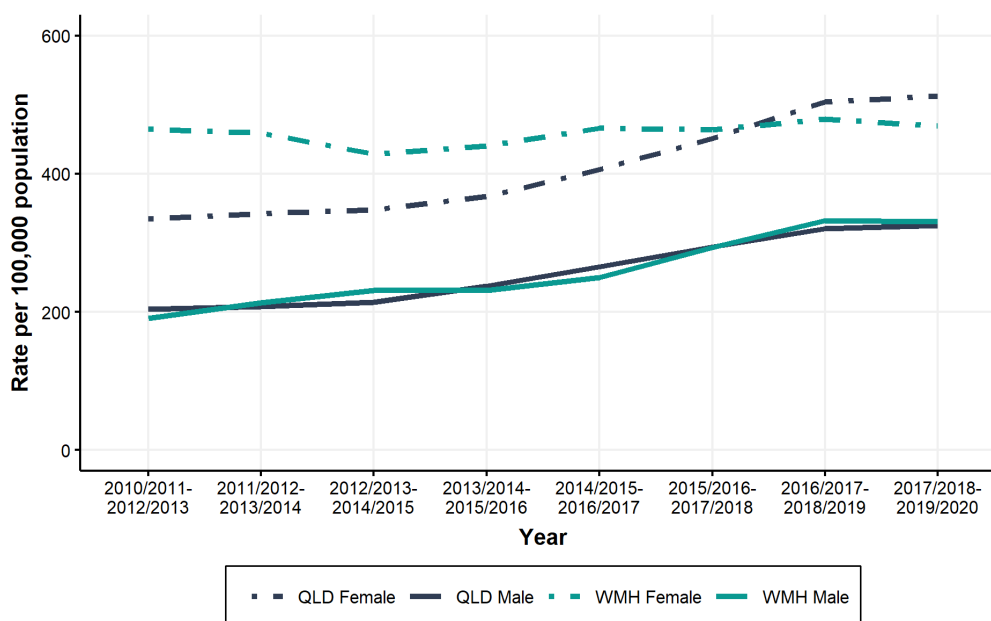


Figure 43: Anxiety and depression, age-standardised hospital separation rate by sex, West Moreton Health compared with Queensland, three-year moving averages 2010-2013 to 2017-2020

Although separation rates for West Moreton females are significantly higher than rates of West Moreton males, the rate of increase appears to have been greater in West Moreton males over the current and previous reporting period (2008-2009 to 2017-2018). Indirect standardised separation ratios indicate that the average separation rate for anxiety and depression was significantly lower in West Moreton females (9% lower) and all persons (5% lower) between West Moreton and Queensland in the period 2017-2018 to 2019-2020. No statistical difference in the mortality rate for males between the regions was reported.

For the period 2017-2018 to 2019-2020, hospital separation rates for anxiety and depression fluctuated across age groups, making it difficult to establish age-specific patterns. Rates for females peaked clearly and sharply in the 40-59 years age groups, with a second peak at 80-84 years and a small early peak at 15-19 years (Figure 43). Significantly higher separation rates were observed in females in West Moreton in ages 45-49 years and 80-84 years compared with West Moreton males and Queensland males and females. Rates for males climbed more steadily with age with the highest rates generally found between the ages of 45 and 64 years with a significantly higher separation rate in West Moreton males in ages 70-74 years compared with West Moreton females and Queensland males and females.

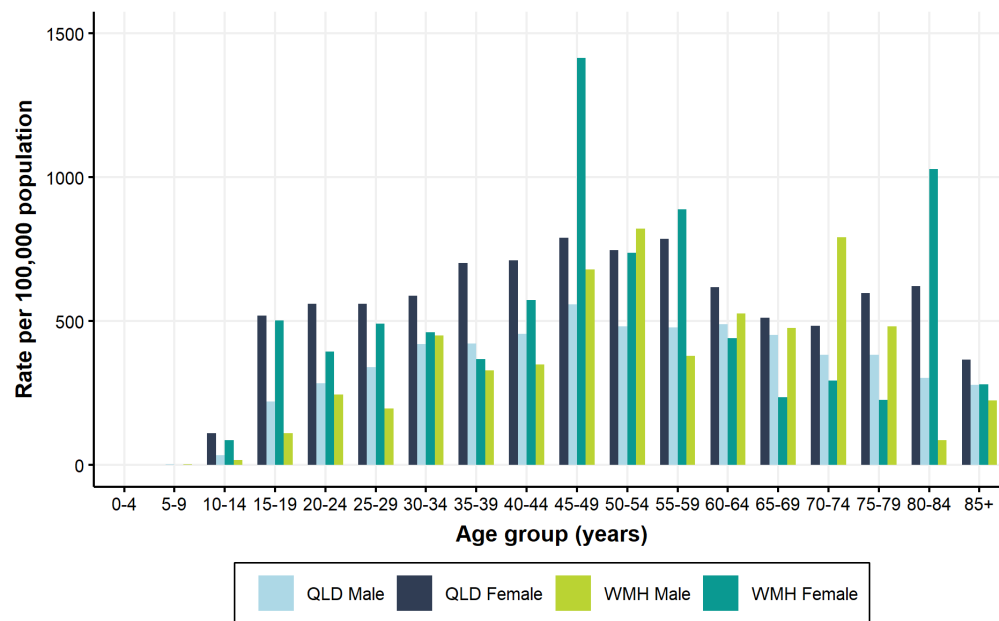


Figure 44: Anxiety and depression, age-specific hospital separation rate by sex, West Moreton Health compared with Queensland, 2017-2018 to 2019-2020

Suicide and self-inflicted injury

Suicide and intentional self-harm are serious but preventable public health problems.^{53 21} Suicide has a profound toll, with far reaching impacts and is associated with multiple often complex contributing factors.⁵³ ²¹ Suicide is classified as death due to intentional self-harm and excludes death due to natural causes. A coronial inquiry must establish that the death resulted from an intentional act of the deceased with the intent of ending his or her own life. Hospitalisations due to self-inflicted or intentional self-harm include injuries in attempted suicide and other self-inflicted injuries or poisonings specified as intentional. Intent must be documented by clinicians in the medical record for self-inflicted injuries to be classified as intentional self-harm.⁵⁴

Hospital separations

On average there were 736 hospital separations per year for self-inflicted injury (all ages) among West Moreton residents in the three-year period 2017-2018 to 2019-2020. Females accounted for almost two thirds (66%) of these separations. Indirect standardised separation ratios indicate that the average separation rate for self-inflicted injury among persons of all ages was significantly higher in West Moreton than in Queensland for females (19% higher) and overall (all persons) (14%) in the same period (Table 21). The same pattern was found among young persons (15-24 years) in West Moreton, with significantly higher (6% higher) separation rates in females and overall (all persons) (4% higher) than the equivalent Queensland rates.

Table 21: Self-inflicted injury, standardised separation ratios by sex and age, West Moreton Health compared with Queensland, 2017-2018 to 2019-2020

Region	Age group	Sex	Ratio [95% CI]*	Difference WMH-QLD†
West Moreton Health	All ages	Male	1.07 [0.99 - 1.14]	NS
		Female	1.19 [1.13 - 1.25]	↑
		Persons	1.14 [1.10 - 1.19]	↑
	15-24 years	Male	1.01 [0.88 - 1.17]	NS
		Female	1.06 [0.97 - 1.15]	↑
		Persons	1.04 [0.97 - 1.13]	↑

* 95% Confidence Interval.

† West Moreton statistically significantly higher than QLD.

NS Non-significant.

Age-standardised separation rates for females were significantly higher than for males in West Moreton and males and females in Queensland in the reporting period 2010-2011 to 2019-2020 (Figure 45). Hospital separation rates for self-inflicted injury increased over the reporting period, especially among females until 2016-2019 when rates trend downwards. Rates for West Moreton and Queensland males increased by 11% and 25% respectively; and rates for West Moreton and Queensland females increased by 32% and 27% respectively.

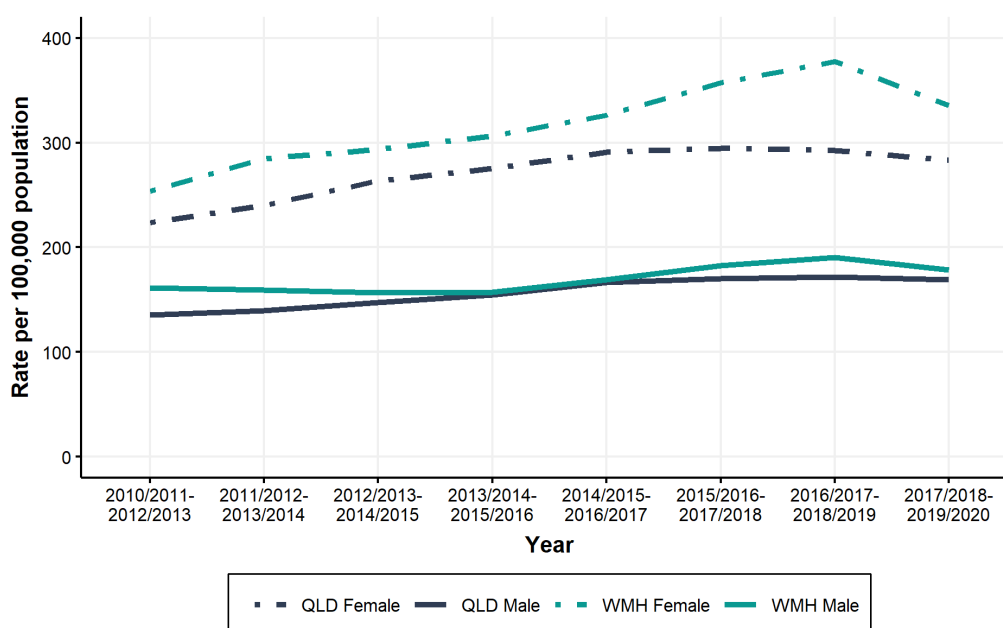


Figure 45: Suicide and self-inflicted injury, age-standardised hospital separation rate by sex and age groups, West Moreton Health compared with Queensland, three-year moving averages 2010-2013 to 2017-2020

There was an average of 231 hospital separations per year for self-inflicted injury among 15–24-year-olds in West Moreton in the three-year period 2017-2018 to 2019-2020. Females accounted for almost three quarters (72%) of these separations. Hospital separation rates for self-inflicted injury among young people (15- 24 years) increased even more substantially over the reporting period for West Moreton females and Queensland males and females. Rates for young West Moreton and Queensland females increased by 55% and 51% respectively between 2010-2011 to 2019-2020. Rates for young Queensland males increased by

41%, while the rates for young West Moreton males marginally increased by 15% in the same period compared with an increase of 71% in the previous reporting period (2008-2009 to 2017-2018) (Figure 46).

For the period 2010-2011 to 2019-2020, hospital separation rates for self-inflicted injury among West Moreton and Queensland females peaked in the 15-19 years age group, steeply decreasing by the 30-34 years age group. Rates among females remained relatively stable between 30 and 49 years, fluctuating slightly in West Moreton females in ages 45-54 years, then reducing with increasing age (Figure 47). Separation rates for West Moreton and Queensland males increased through the teen years (15-19 years) and early twenties (20-24 years), remaining relatively stable until decreasing from the age of about 35-39 years.

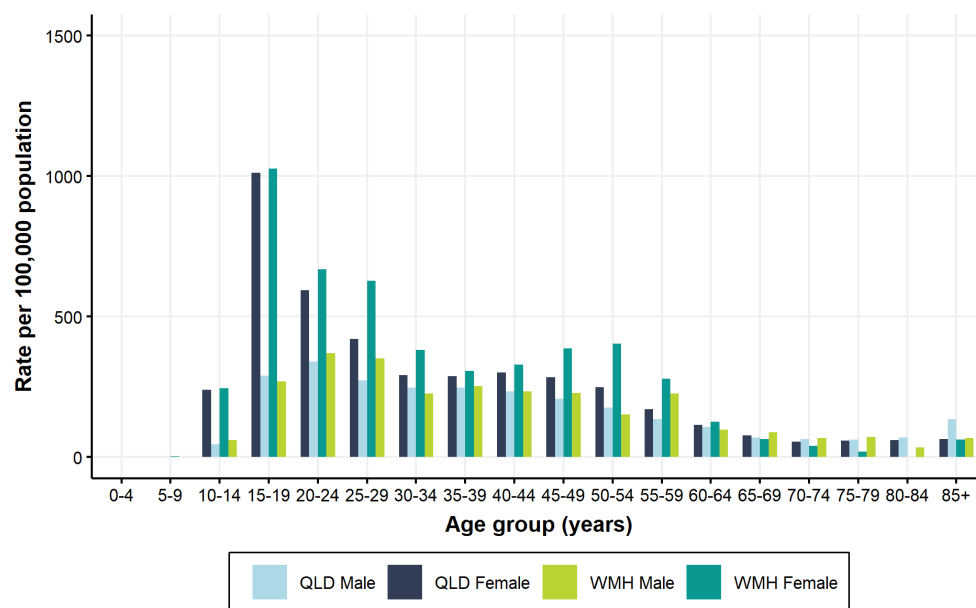


Figure 46: Suicide and self-inflicted injury, age-specific hospital separation rate by sex, West Moreton Health compared with Queensland, 2017-2018 to 2019-2020

Mortality

There was an average of 49 deaths per year from suicide among West Moreton residents in the three years from 2017-2019. Males accounted for more than three-quarters (80%) of these deaths. Suicide mortality rates were significantly higher among males than females in West Moreton, with male rates consistently 3.0-4.5 times higher than female rates between 2010-2012 and 2017-2019 (Figure 47). Indirect standardised mortality ratios indicate that the average mortality rates for suicide were statistically similar in West Moreton and Queensland for both males and females in all ages and those aged 15-24 years in the five years from 2015-2019.

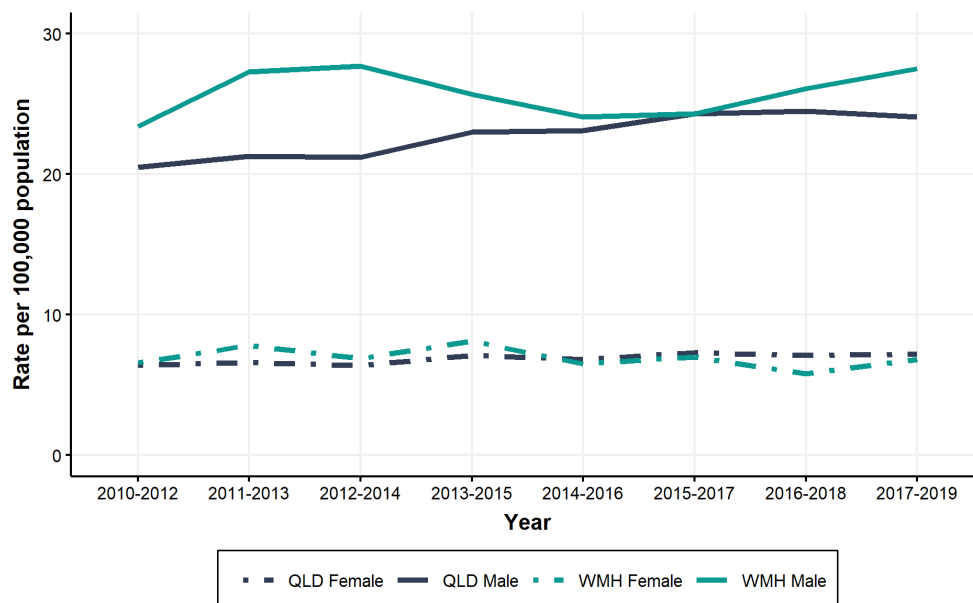


Figure 47: Suicide and self-inflicted injury, age-standardised mortality rate by sex, West Moreton Health compared with Queensland, three-year moving averages 2010-2012 to 2017-2019

Cancer

Cancer is a diverse group of diseases in which abnormal cells multiply out of control and can spread to other parts of the body (metastasise) through the blood and lymphatic systems. There are over 100 known different types of cancer, and most are named after the organ or type of cell in which they start. In 2018, cancer accounted for 18% of the burden of ill health suffered by Australians, more so than other leading contributors to the burden of disease such as cardiovascular diseases or musculoskeletal diseases. In Australia cancer accounted for 9% of total disease expenditure (2015-2016).⁵⁵

In Queensland, one in two men and one in two women will develop cancer in their lifetime (approximate lifetime risk to age 85; 2017).⁵⁶ Over the past 20 years, incidence rates for most of the common cancers have increased in Australia, whereas cancer mortality rates have declined substantially for both males and females between 1989 and 2021. At the same time overall cancer survival has improved with 70% of all people diagnosed with cancer (excluding non-melanoma skin cancer) surviving at least five years after diagnosis.⁵⁵ In Queensland the five-year relative survival for invasive cancer is 72% (2013-2017: 70% for males, 74% for females).⁵⁶ Cancer survival is usually based on the proportion of people newly diagnosed with cancer that are still alive five years later. Given cancer patients may die of causes other than the cancer, relative survival is a measure that adjusts for mortality that normally occur by various ages in Australia.⁵⁷

It is usually not possible to know exactly why one person develops cancer and another doesn't as the causes of cancer are not yet fully understood. Certain risk factors may increase a person's chances of developing cancer, while others may be protective. Some of these risk factors include smoking, alcohol consumption, diet, obesity, physical inactivity, chronic infections, family history, and genetic susceptibility.⁵⁸ It is estimated that almost half (42%) of the cancer burden is attributable to personal and behavioural risk factors (for example, smoking and overweight).⁵⁵ Further, cancer incidence varies by population subgroups, socioeconomic status and region. People with compromised immune systems or pre-existing cancer may be

at increased risk of experiencing complications or more severe illness, and particularly those patients recently or currently receiving chemotherapy.^{38, 39} Below information on all cancers combined and the six most common cancers in West Moreton is presented, followed by cervical cancer, one of three cancers for which population-based screening programs is available.

All cancers

Incidence

On average there were 1,478 new (incident) cases of cancer^m per year among West Moreton residents in the five-year reporting period 2014-2018 ([Table 22](#)).² Approximately 2% of the total incident cases in this reporting period were in First Nations peoples living in West Moreton. The six most common types of cancers among West Moreton residents, including melanoma, prostate, colorectal, breast, haematological and lung, together accounted for 70% of all newly diagnosed cancers. For this reporting period, the age-standardised incidence rates of all major cancer types in West Moreton were not significantly different from the Queensland rates. The age-standardised incidence rate for First Nations peoples living in West Moreton (ASR=404, 95% CI 335-484) was significantly lower than the rate for First Nations peoples living in Queensland (ASR=559, 95%CI 539-579).

Mortality

On average, there were 456 deaths per year from all cancers among West Moreton residents between 2014-2018. There were nine types of cancer with over 100 deaths (lung to gynaecological) together accounted for about 80% of all cancer deaths in West Moreton during this five-year period ([Table 23](#)). Lung cancer alone accounted for 21% (one in five) of cancer deaths among West Moreton residents. The age-standardised mortality rates of all major cancer types in West Moreton were not significantly different from the Queensland ones, including the mortality rate for prostate cancer which was significantly lower in West Moreton than in Queensland during the previous reporting period (2011-2015) (ASR 22.3 versus 29.4). While the mortality rate in West Moreton (ASR 22.8) remained stable over recent years, the rate for Queensland (ASR 26.6) declined, hence no relevant difference in this reporting period (2014-2018). The age-standardised mortality rate for First Nations peoples was not different between West Moreton and Queensland (data not shown).

m Excludes basal and squamous cell carcinomas of the skin

Table 22: Number of new cases and age-standardised incidence rates by cancer site, West Moreton Health compared with Queensland, 2014-2018

Site	Number of new cases 2014-2018		ASR* per 100,000 population [95% CI]		Difference WMH-QLD
	WMH	QLD	WMH	QLD	
Melanoma	1,035	19,820	76.8 [72.2-81.6]	75.0 [73.9-76.0]	NS
Prostate	1,013	21,122	148.6 [139.6-157.9]	154.1 [152.0-156.2]	NS
Colorectal	852	16,169	64.2 [60.0-68.6]	59.9 [59.0-60.8]	NS
Breast†	833	17,628	61.5 [57.4-65.7]	66.2 [65.2-67.2]	NS
Haematological	745	16,466	55.9 [52.0-60.0]	61.2 [60.3-62.2]	NS
Lung	684	13,212	50.5 [46.8-54.4]	47.8 [47.0-48.6]	NS
Urological	442	8,285	33.1 [30.1-36.2]	31.0 [30.3-31.7]	NS
Hepatobiliary	332	6,197	24.7 [22.1-27.4]	22.5 [21.9-23.0]	NS
Gynaecological	311	5,803	45.4 [40.5-50.6]	42.4 [41.3-43.5]	NS
Head and Neck	280	5,094	20.5 [18.1-22.9]	18.7 [18.2-19.3]	NS
Upper Gastrointestinal	248	4,708	18.5 [16.3-20.9]	17.2 [16.7-17.7]	NS
Endocrine	160	3,451	11.9 [10.1-13.8]	13.7 [13.2-14.2]	NS
CNS and Brain	84	1,863	6.2 [4.9-7.6]	7.1 [6.8-7.5]	NS
Bone and Tissue	63	1,213	4.6 [3.5-5.8]	4.7 [4.4-4.9]	NS
Mesothelioma	48	778	n.a.	2.8 [2.6-3.0]	n.a.
Ophthalmic	16	421	n.a.	1.6 [1.4-1.7]	n.a.
Other invasive cancers	236	4,744	18.4 [16.1-20.8]	17.3 [16.8-17.8]	NS
Total	7,389	146,974	547.3 [534.9-559.9]	543.0 [540.2-545.8]	NS

* ASR per 100,000 population, 95% confidence Interval.

† Female breast cancer cases, male breast cancer cases (2014-2018: West Moreton n=7, QLD=174) are not presented.

n.a. Cell counts insufficient to report (n<50).

NS Non-significant.

Source: Queensland Government, prepared by Queensland Cancer Control Analysis Team (QCCAT).
Cancer incidence, All Cancers. Queensland Government.

Table 23: Number of deaths and age-standardised mortality rates by cancer site, West Moreton Health compared with Queensland, 2014-2018

Site	Number of deaths 2014-2018		ASR* per 100,000 population [95% CI]		Difference WMH-QLD
	WMH	QLD	WMH	QLD	
Lung	476	9,272	35.5 [32.4-38.7]	33.6 [32.9-34.3]	NS
Colorectal	280	5,493	21.6 [19.1-24.2]	20.1 [19.6-20.6]	NS
Hepatobiliary	242	4,725	18.3 [16.1-20.7]	17.1 [16.6-17.6]	NS
Haematological	219	4,882	17.4 [15.2-19.8]	17.9 [17.4-18.4]	NS
Upper Gastrointestinal	149	2,627	11.5 [9.7-13.4]	9.6 [9.2-9.9]	NS
Breast†	141	2,855	10.5 [8.9-12.4]	10.5 [10.1-10.9]	NS
Prostate	128	3,233	22.8 [19.1-27.0]	26.6 [25.7-27.5]	NS
Urological	108	2,314	8.6 [7.1-10.3]	8.4 [8.1-8.8]	NS
Gynaecological	103	1,944	15.2 [12.4-18.3]	13.5 [12.9-14.2]	NS
Melanoma	93	1,706	7.3 [5.9-8.8]	6.3 [6.0-6.6]	NS
CNS and Brain	60	1,473	4.4 [3.4-5.6]	5.5 [5.2-5.8]	NS
Head and Neck	61	1,324	4.4 [3.4-5.6]	4.8 [4.5-5.0]	NS
Mesothelioma	38	720	n.a.	2.6 [2.5-2.8]	n.a.
Bone and Tissue	31	473	n.a.	1.8 [1.6-1.9]	n.a.
Endocrine	5	190	n.a.	0.7 [0.6-0.8]	n.a.
Ophthalmic	5	103	n.a.	0.4 [0.3-0.4]	n.a.
Other invasive cancers	142	2,600	11.0 [9.7-13.4]	9.3 [9.2-9.9]	NS
Total	2,281	45,934	174.8 [167.7-182.0]	167.4 [165.8-168.9]	NS

* ASR per 100,000 population, 95% confidence Interval.

† Female breast cancer deaths, male breast cancer deaths (2014-2018: West Moreton n<5, QLD=24) are not presented.

n.a. Cell counts insufficient to report (n<50).

NA Non-significant.

Source: Queensland Government, prepared by Queensland Cancer Control Analysis Team (QCCAT).
Cancer incidence, All Cancers. Queensland Government.

Melanoma

Melanoma arises in cells in the skin called melanocytes. Melanocytes produce melanin that gives colour to the skin. Skin cancer (both melanoma and non-melanoma skin cancers) accounts for the largest number of cancers diagnosed in Australia every year.⁵⁹ The main cause of all types of skin cancer is overexposure to ultraviolet (UV) radiation, which is predominantly produced by the sun. Although melanoma is a less common type of skin cancer, it is considered the most dangerous because it grows quickly and is more likely to spread to other parts of the body. Melanoma can appear at any age and on any area of the body, not only those exposed to the sun.⁶⁰ In Australia, the age-standardised diagnosis rate for melanoma has steadily increased over time, while the mortality rates have remained stable.⁶⁰

In 2017, approximately 14,846 new cases of melanoma of the skin were diagnosed in Australia.⁶¹ The age-standardised incidence rate for melanoma increased over the last 30 years, for which data is available from 38 per 100,000 in 1987 to 54 per 100,000 in 2017. In Queensland, the state with the highest incidence in Australia, melanoma rates in all persons have increased progressively from 57 cases per 100,000 (1987) to 76 cases per 100,000 (2017).⁶¹ In Australia, there were 1,405 deaths caused by melanoma of the skin in

2019. Age-standardised mortality rates have remained relatively steady over the last 30 years, for which data is available from 5.6 deaths per 100,000 in 1989 to 4.7 deaths per 100,000 in 2019. ⁶¹

Incidence

On average there were 207 new cases of melanoma per year among West Moreton residents in the five-year reporting period 2014-2018. This represented 14% of all cases of cancer in this period, making melanoma the leading newly diagnosed cancer in West Moreton. Incidence was significantly higher in West Moreton males (ASR 93 per 100,000 or 614 cases) than West Moreton females (ASR 62 per 100,000 or 421 cases) in the reporting period. A similar sex differential was observed for Queensland.

In 2018, the age-standardised annual incidence rate for melanoma in West Moreton was 69 new cases [95% CI: 60-79] per 100,000 population which was not significantly different from the Queensland rate of 74 new cases [95% CI: 71-76] per 100,000. Over the years 2014-2018 combined, the average annual age-standardised incidence rate for melanoma in West Moreton was not significantly different from the Queensland rate (Table 22). Between 2009 and 2018 annual melanoma incidence rates for all persons in West Moreton fluctuated, while Queensland rates trended slightly upwards (Figure 48). In the years 2014-2018, melanoma incidence rates were negligible in people under the age of 15 years, but then increased with increasing age, to a peak in persons 75 years and over (Figure 49).

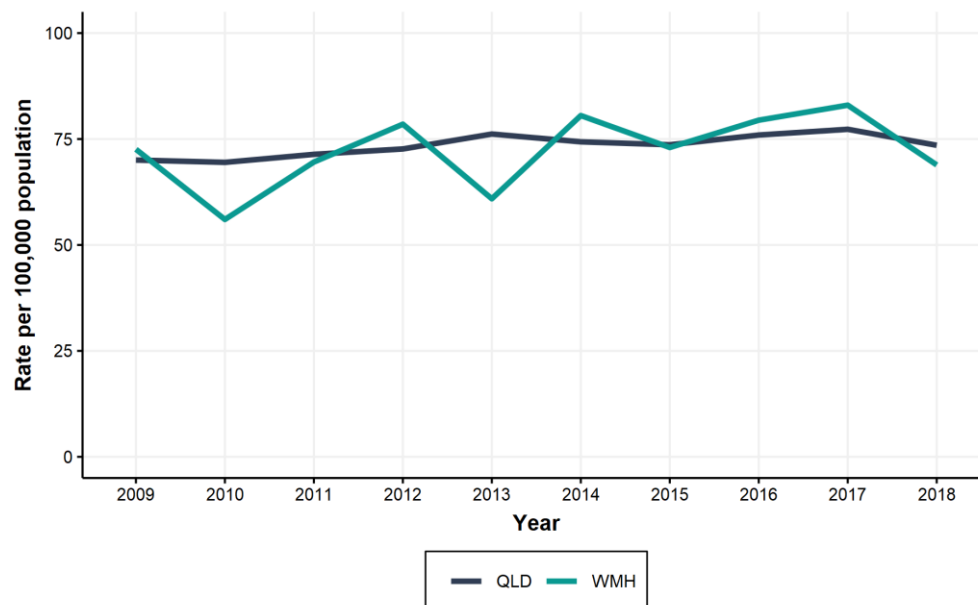


Figure 48: Melanoma, age-standardised incidence rates, West Moreton Health compared with Queensland, 2009-2018

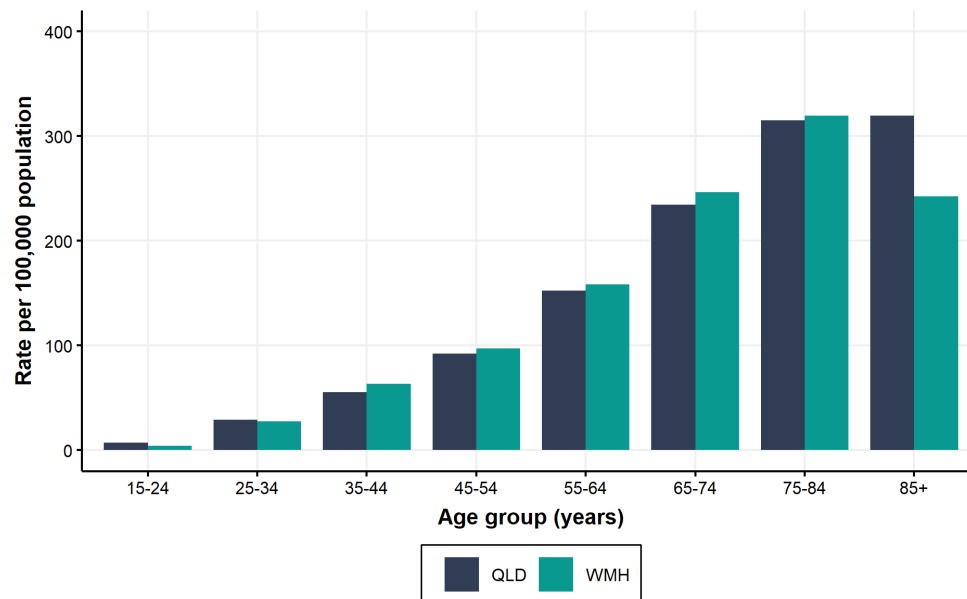


Figure 49: Melanoma, age-specific incidence rates, West Moreton Health compared with Queensland, 2014-2018

Mortality

On average there were 19 deaths per year from melanoma among West Moreton residents in the five-year reporting period 2014-2018. Two thirds of these melanoma deaths occurred in West Moreton residents aged under 65 years. Males accounted for 70% of all melanoma deaths. There was no significant difference in the *age-standardised* mortality rate for melanoma between West Moreton and Queensland over this period (Table 23).

Prostate cancer

Prostate cancer is the result of abnormal cell growth in the prostate, a gland which is part of the male reproductive system. Generally, it is a slow growing cancer, and most males with low grade prostate cancer live for many years without symptoms. However high-grade prostate cancer spreads quickly and can be life threatening.⁶² Prostate cancer is the most diagnosed cancer in Australia (excluding non-melanoma skin cancer) with 20,672 new cases of prostate cancer diagnosed in 2017.⁶³ In Queensland, one in five males are at risk of developing prostate cancer by the age of 85. While prostate cancer is rare before the age of 45, the incidence increases with age with more than 83% of prostate cancers occurring in males aged 60 years and over.⁶⁴

Overall, prostate cancer trends in incidence have been fluctuating over past decades, partly owing to changes in diagnostic guidelines. The prostate-specific antigen (PSA) threshold at which males were referred for a prostate biopsy was lowered in 2002 and this might have contributed to the peak incidence during the mid to late 2000s.⁶⁵ In Queensland, prostate cancer diagnosis rates have significantly decreased by 2.6% per year between 2007 and 2017. This followed an increase in rates by 5.5 per cent per year from 1998-2006.⁶⁴

In Queensland, prostate cancer is responsible for 12% of all male cancer deaths (2017). Overall, state-wide prostate cancer death rates decreased since 1993, with an average decrease of 4.1% per year observed between 2011 and 2016.⁶⁴ Similarly, national age-specific mortality rates for prostate cancer are estimated to have almost halved in 2021 compared with 2001.⁵⁵ This decline is expected to continue. Nationwide, the five-year relative survival was 96% for prostate cancer in the period 2013–17.⁵⁵

Incidence

On average, there were 203 new cases of prostate cancer per year among West Moreton males in the five years from 2014-2018. This represented 14% of all new cases of cancer in West Moreton over this period, making prostate cancer the second leading cancer in West Moreton. The most recent (2018) annual age-standardised incidence rate for prostate cancer in West Moreton was 148 new cases [95% CI: 129 – 169] per 100,000 males, which was not significantly different from the Queensland rate of 162 new cases [95% CI: 158 – 167] per 100,000 males. Similarly, when the years 2014-2018 were combined ([Table 22](#)), the average annual rate in West Moreton was not significantly different from Queensland. Overall, between 2009 and 2018, annual age-standardised incidence rates trended downwards in both West Moreton and Queensland ([Figure 50](#)).

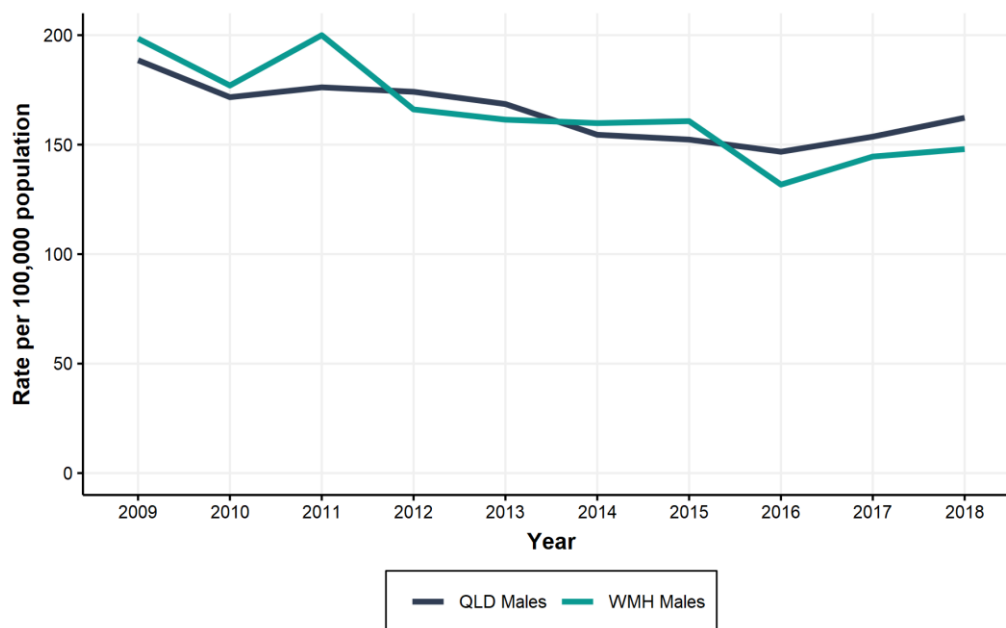


Figure 50: Prostate cancer, age-standardised incidence rates, West Moreton Health compared with Queensland, 2009-2018

In the reporting period 2014-2018, age-specific incidence rates increased sharply from the age of about 45 years ([Figure 51](#)). In Queensland males the incidence peaked in the 65-74 years age group, while among West Moreton males, the peak was in the 75-84 years group.

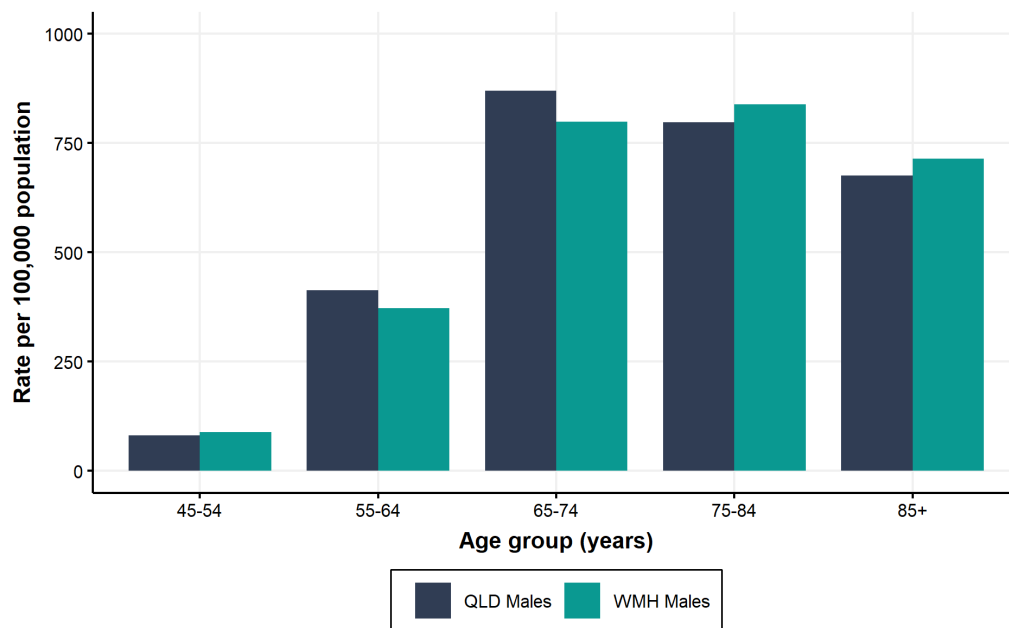


Figure 51: Prostate cancer, age-specific incidence rates, West Moreton Health compared with Queensland, 2014-2018

Mortality

There was an average of 26 deaths per year from prostate cancer among West Moreton males in the five years from 2014-2018. Ninety-one percent of deaths occurred in West Moreton males aged 65 years and over (data not shown). The age-standardised mortality rate for West Moreton was not significantly different from the rate for Queensland over this reporting period ([Table 23](#)).

Colorectal cancer

Colorectal (or bowel) cancer generally develops through a multistage process in which a series of cellular mutations occur over time. Most bowel cancers start in the inner lining of the colon or rectum (intestinal mucosa layer). Early stages of these mutations result in benign polyps which may develop further into benign adenoma and, ultimately, into a malignant tumour. ⁶⁶ Colorectal cancer is the second most common cancer in females and third most common cancer in males and accounts for 11% of all cancers diagnosed in Australia. ⁶⁷

In Queensland, the risk of being diagnosed with colorectal cancer by age 85 years is one in 13 (one in 12 for males and one in 16 for females) as estimated in 2020. ⁶⁷ The five-year survival rate from colorectal cancer in Queenslanders is 70% (2012-2016). ²¹ While new colorectal cancer diagnoses in Australia have almost doubled over the last 30 years for which data are available, the age-standardised incidence rate decreased from 60 cases per 100,000 persons in 1987 to 53 cases per 100,000 (61 in males and 47 in females) in 2017. Over the same period (up to 2019), age-standardised mortality rates have declined markedly from 33 deaths per 100,000 persons in 1987 to 17 deaths per 100,000 (20 for males and 14 for females). ⁶⁸

Risk factors for colorectal cancer, aside from older age and development of polyps, include predominantly lifestyle factors, a strong family history and other diseases. ⁶⁷ In the Australian Burden of Disease Study

(ABDS) it was estimated that the largest individual proportions of the colorectal cancer burden are attributable to dietary risks combined (26%), overweight and obesity (14%), and physical inactivity (12%) in 2018. ⁶⁶ Secondary prevention of colorectal cancer is through a faecal occult blood screening test as provided through the free [National Bowel Cancer Screening Program \(NBCSP\)](#) to detect and treat abnormalities while they are in the precancerous stage. The program aims to reduce deaths from bowel cancer through early detection.

Incidence

On average there were 170 new colorectal cancer diagnoses per year among West Moreton residents (57% in males) in the five-year reporting period 2014-2018. This represented 12% of all new cancer cases in West Moreton residents in this period. As shown in [Table 22](#) the age-standardised incidence rate for colorectal cancer in West Moreton was not significantly different from the rate in Queensland which is consistent with the previous reporting period. Between 2009 and 2018 colorectal cancer rates in both West Moreton and Queensland trended slightly downwards ([Figure 52](#)).

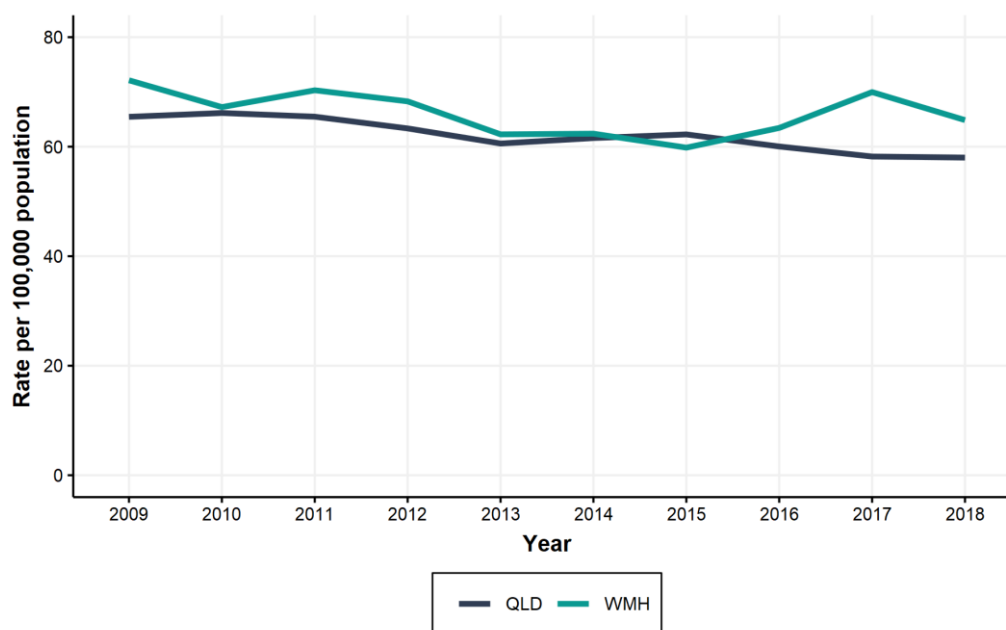


Figure 52: Colorectal cancer, age-standardised incidence rates, West Moreton Health compared with Queensland, 2009-2018

Mortality

On average there were 56 deaths per year from colorectal cancer among West Moreton residents in the five-year reporting period 2014-2018. This represented 12% of all cancer deaths in West Moreton in this period. Males accounted for 58% of these deaths. There was no significant difference in the age-standardised mortality rate for colorectal cancer in West Moreton and Queensland for the reporting period ([Table 23](#)).

Breast cancer

Breast cancer is the most common cancer diagnosed in women in Australia and the second most common cause of cancer deaths following lung cancer.⁶⁹ Although much less common, males can also develop the disease (2017: ASR=1/100,000 males). In this report we present data on women only, since data on male breast cancer in West Moreton is too limited to present meaningful statistics.

The approximate lifetime risk of a Queensland woman to be diagnosed with breast cancer before the age of 85 is one in seven.⁶⁹ Not all breast tumours are invasive, some are benign tumours and are not life-threatening. However, when abnormal cells in the breast tissue multiply and form invasive tumours, these tumours can spread to other parts of the body through the lymphatic or vascular systems and if not treated, the cancer may be fatal.⁷⁰ Secondary prevention of breast cancer i.e. biannual mammogram is provided through the free [National BreastScreen Australia](#) to detect and treat abnormalities while they are in the precancerous or early stage. Particularly for breast cancer, improvements in early diagnosis and treatment in countries with advanced healthcare systems such as Australia, have resulted in more people surviving cancer and having improved quality of life while living with a cancer diagnosis.²¹

In 2017, 17,589 women were diagnosed with breast cancer across Australia.⁷¹ Over the last 30 years for which data are available, [age-standardised](#) incidence rates increased from 91 (1987) to 125 (2017) per 100,000 females.⁷¹ This rise is partly due to the introduction of the national breast cancer screening program.⁷⁰ Incidence rates increase with older age, reaching a peak in females aged 65-75 years. Since the 1990s, mortality rates for breast cancer in Australia have been steadily declining (2019 SMR=20 per 100,000 females).⁷¹

Incidence

On average there were 167 new cases of breast cancer per year among West Moreton females in the five-year reporting period 2014-2018. This represented 11% of all new cases of cancer in West Moreton residents in this period. In 2017 the age-standardised annual incidence rate for female breast cancer in West Moreton was 115 new cases [95% CI: 99-134] per 100,000 population, which was not significantly different from the Queensland rate of 129 [95%CI: 125-134] new cases per 100,000 population. Over the reporting period, the breast cancer incidence rate (ASR) in West Moreton was not significantly different from the Queensland rate ([Table 22](#)). Between 2009 and 2018 annual breast cancer rates varied slightly in West Moreton, while Queensland rates remained relatively stable across this period ([Figure 53](#)).

Between 2014-2018, incidence rates were negligible for West Moreton and Queensland females aged under 25 years. Rates increased with older age, and peaked in 65–74-year-old females, comparable to national data ([Figure 54](#)).

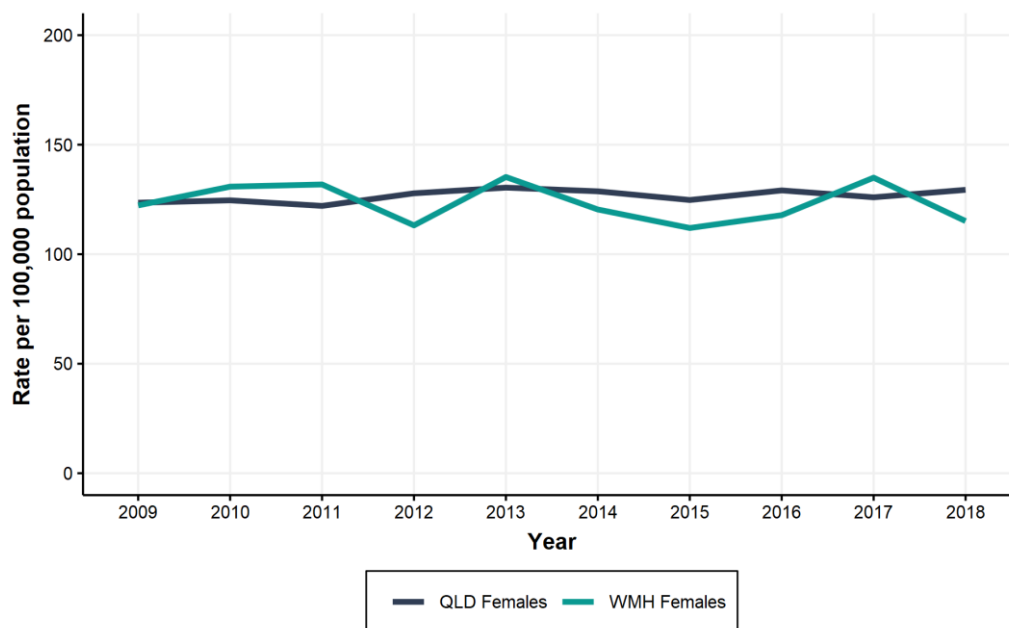


Figure 53: Breast cancer, age-standardised incidence rates, West Moreton Health compared with Queensland, 2009-2018

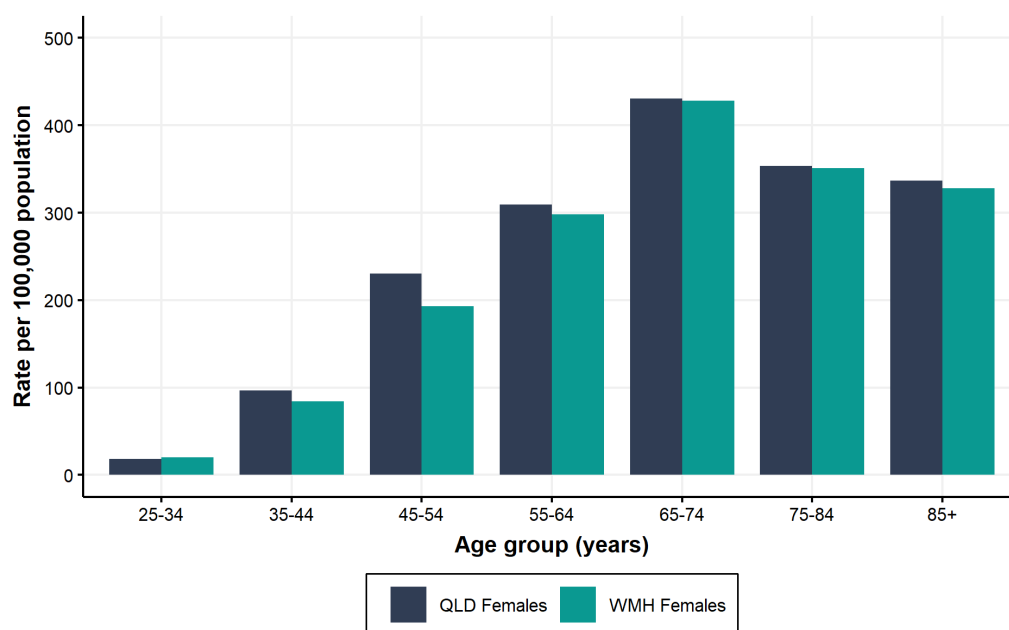


Figure 54: Breast cancer, age-specific incidence rates, West Moreton Health compared with Queensland, 2014-2018

Mortality

On average there were 28 deaths per year from breast cancer among West Moreton females in the five-year reporting period 2014-2018. Females aged 50-74 years accounted for over half (57%) of all breast cancer deaths. Over the reporting period, the standardised mortality rate (SMR) in West Moreton was not significantly different from the Queensland rate (Table 23).

Haematological cancer

Haematological (or blood) cancers comprise of three main groups, namely lymphoma, leukaemia and myeloma, cancers arising from abnormal blood cells, bone marrow or lymph node cells.⁷² Unlike most other forms of cancer, cancers of the blood do not form a solid tumour. Lymphoma develops in the lymphatic system from cells called lymphocytes.⁷³ Leukaemia originates from blood-forming tissue and affects white blood cells⁷⁴ and myeloma (often called multiple myeloma) is a cancer that begins in plasma cells.⁷⁵

Lymphomas are the most common form of haematological cancer in Australia with around 90% being non-Hodgkin lymphomas.⁷³ In 2017, 6,317 people in Australia were diagnosed with lymphoma (5,619 cases of non-Hodgkin lymphoma and 698 cases of Hodgkin lymphoma).^{76,77} The age-standardised incidence rate for non-Hodgkin lymphoma increased over the last 30 years for which data are available from 15 per 100,000 persons in 1987 to 20 per 100,000 in 2017.⁷⁶ In 2019, there were 1,605 deaths caused by non-Hodgkin lymphoma and 75 deaths caused by Hodgkin lymphoma. The age-standardised mortality rate for non-Hodgkin lymphoma decreased over the past decades and is five per 100,000 in 2019.^{76,77}

In 2017, 4,432 Australians were diagnosed with leukaemia (all types). The most common subtypes were chronic lymphocytic leukaemia (2,068 cases) and acute myeloid leukaemia (963 cases).^{78,79,80} Over the last 30 years for which data are available, the age-standardised incidence rate for leukaemia trended upwards from 12 cases per 100,000 persons in 1987 to 16 per 100,000 in 2017.⁷⁸ There were 1,933 deaths recorded in 2019 due to leukaemia (all types) with the highest number of deaths (1,086) for acute myeloid leukaemia.⁷⁹ Overall, age-standardised mortality rates for leukaemia trended downwards from eight deaths per 100,000 persons in 1989 to six per 100,000 in 2019.⁷⁸ There were 1,978 people in Australia diagnosed with myeloma in 2017. Over the last 30 years for which data are available, myeloma age-standardised incidence rates have increased from 4 per 100,000 persons in 1987 to 7 per 100,000 in 2017. In 2019, there were 1,018 deaths recorded from multiple myeloma. Myeloma age-standardised mortality rates were relatively stable over the past decades (three per 100,000 in 2019).⁸¹

Incidence

There was an average of 149 new cases per year of haematological cancer among West Moreton residents in the five-year reporting period 2014-2018. This represented 10% of all new cases of cancer in West Moreton in this period. As shown in [Table 22](#), the age-standardised incidence rate for leukaemia in West Moreton was not significantly different from the rate in Queensland which is consistent with the previous reporting period. Between 2009 and 2018 haematological cancer rates in both West Moreton and Queensland were relatively steady ([Figure 55](#)). In the five-year reporting period, 2014-2018, haematological cancer incidence rates were low for people under the age of 45 years. Rates then increased with age, with the largest rise occurring between the age groups 65-74 to 75-84 ([Figure 56](#)).

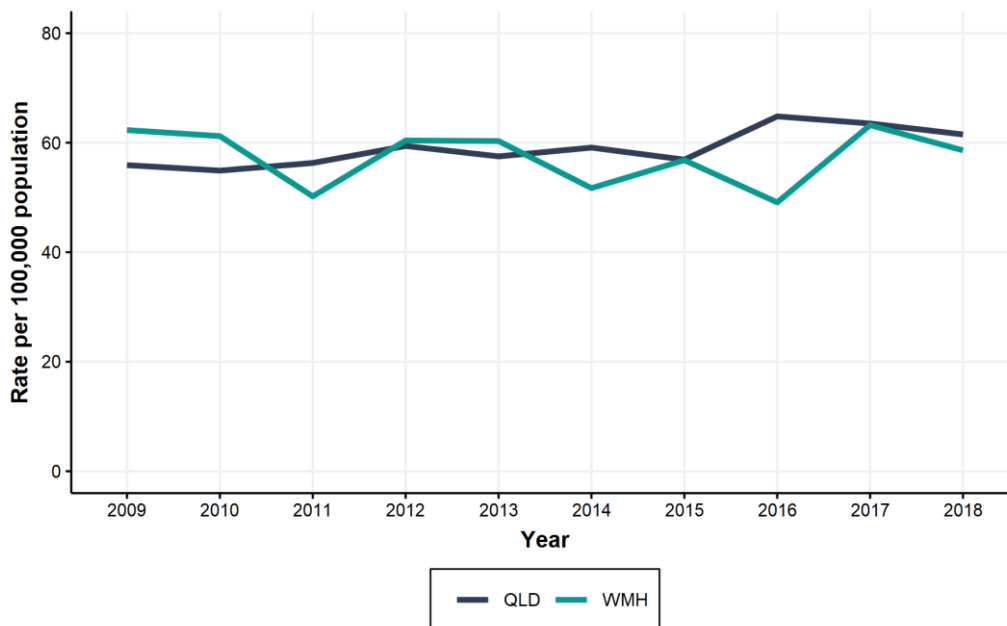


Figure 55: Haematological cancer, age-standardised incidence rates, West Moreton Health compared with Queensland, 2009-2018

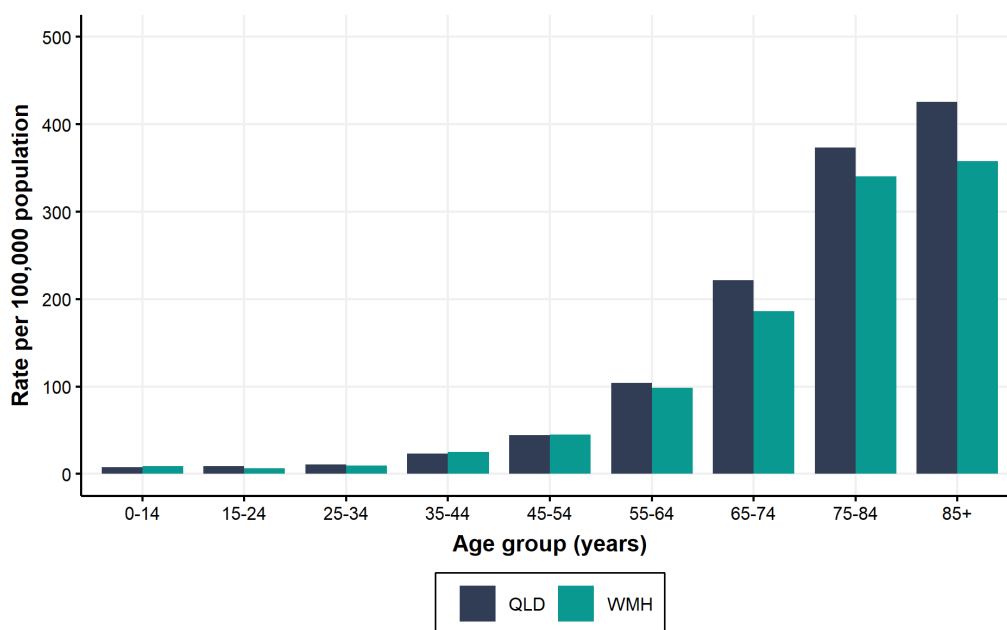


Figure 56: Haematological cancer, age-specific incidence rates, West Moreton Health compared with Queensland, 2014-2018

Mortality

On average there were 44 deaths per year from haematological cancer among West Moreton residents in the five-year reporting period 2014-2017. This represented 10% of all cancer deaths in West Moreton in this period. There was no significant difference in the age-standardised mortality rate between West Moreton and Queensland over the reporting period (Table 23).

Lung cancer

Lung cancer is a malignant tumour starting in the tissues of one or both lungs when abnormal cells grow and multiply in an uncontrolled way.⁸² Lung cancer is the leading cause of cancer death in Australia (2019: 8,739 deaths). From 2014-2018, lung cancer was among the top five leading causes of death for Queenslanders (second for males and fourth for females).²¹

In 2017, 12,585 new cases of lung cancer were diagnosed in Australia.⁸³ The prognosis for those diagnosed with lung cancer is poor and has improved only marginally over the past three decades. On average, people in Queensland diagnosed with lung cancer were 21% as likely to live for another five years compared with the general population (in 2017).⁸² Tobacco smoking is a major cause of lung cancer, and tobacco control is essential for effective lung cancer prevention.⁸² Factors known to increase the risk of developing the disease, other than smoking or second-hand smoking, are occupational exposures and hazards (e.g. asbestos, radioactive gases, air pollution), family history, personal history (e.g. other lung disease), and older age.⁸²

The relatively stable lung cancer incidence rate for Australians over recent periods obscures the fact that rates for males have been decreasing steadily over time, while those for females have been increasing. These changes have been partially influenced by historic changes in male and female smoking behaviour.⁵⁷ In Australia between 1987 and 2017, the age-standardised incidence rate of lung cancer among males decreased by 39% from 83 to 52 cases per 100,000 persons, whereas the age-standardised incidence rate among females increased by 63% from 22 to 36 cases per 100,000 persons.⁸³ Overall, age-standardised lung cancer mortality rates (all persons) decreased from a peak in 1989 of 43 deaths per 100,000 persons to the most recently available rate of 28 deaths per 100,000 in 2019.⁸³

Incidence

On average there were 137 new cases of lung cancer per year among West Moreton residents in the five-year reporting period 2014-2018. This represented 9% of all new cases of cancer in West Moreton in this five-year period. The average age-standardised incidence rate in West Moreton was not significantly different from the Queensland rate across the period (Table 22), despite the previously observed significant difference in the 2015 annual incidence rate (data not shown).

Between 2009 and 2018 lung cancer rates were relatively stable in both West Moreton and Queensland when all persons were considered but were fluctuating and different for males and females (Figure 57). In both West Moreton and Queensland, the age-standardised incidence rate among males decreased, whereas the incidence rate among females slightly increased over these years which is likely to reflect historic changes in male and female smoking behaviour. The higher incidence rates among West Moreton males were significantly different from rates among females in this period except for the years 2001, 2014 and 2017-2018.

In the years 2014-2018, lung cancer incidence rates in West Moreton and Queensland were negligible in persons under the age of 45 years. They increased steadily thereafter, peaking in the 75-84 years age group (Figure 58).

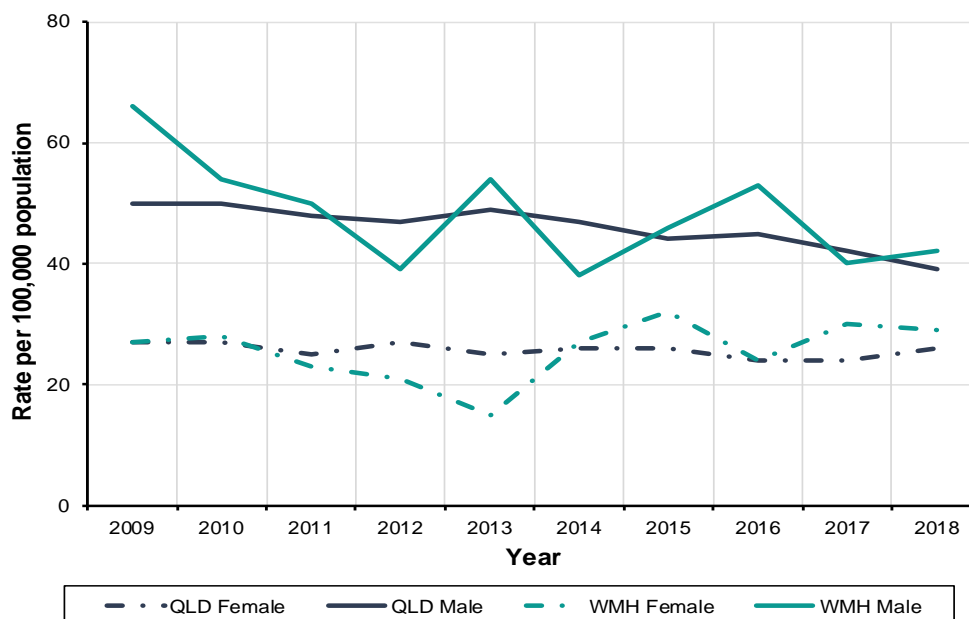


Figure 57: Lung cancer, age-standardised incidence rates by sex, West Moreton Health compared with Queensland, 2009-2018

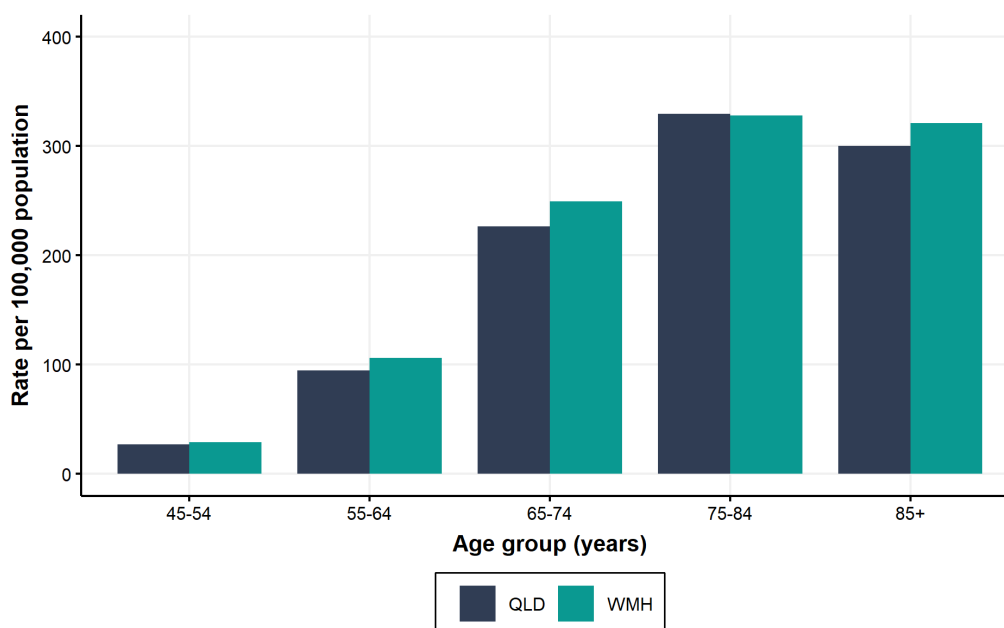


Figure 58: Lung cancer, age-specific incidence rates, West Moreton Health compared with Queensland, 2014-2018

Mortality

There was an average of 95 deaths per year from lung cancer among West Moreton residents in the five-year reporting period 2014-2018. This represented the highest proportion (21%) of all cancer deaths in West Moreton in this period, with males accounting for 58% of these deaths. Almost two thirds (62%) of lung cancer deaths occurred among 50–74-year-old West Moreton residents. There was no significant difference in the lung cancer mortality rate between West Moreton and Queensland in the reporting period ([Table 23](#)).

Cervical cancer

Cervical cancer is a growth of abnormal cells in the lining of the uterine cervix. The most common type, Squamous cell carcinoma (SCC), comprises of about 70% of the cases. Usually, cervical cancer takes many years to develop and is preceded by abnormal changes in cervical cells.⁸⁴ Persistent infection with human papillomavirus (HPV) is the principal cause of cervical cancer. HPV is a common sexually transmitted virus that infects skin or mucosal cells.^{85 86} At least 13 of more than 118 known HPV genotypes can cause cervical cancer and are associated with other anogenital cancers and cancers of the neck and head.⁸⁵ In addition to cancer, infection with HPV can cause genital warts.

The primary prevention of this cancer is through vaccination against HPV via the free National HPV Vaccination Program to prevent females being infected with cancer-causing HPV types. Secondary prevention of cervical cancer is through cervical screening as provided through the free National Cervical Screening Program (NCSP) to detect and treat abnormalities while they are in the precancerous stage.⁸⁷

Worldwide, cervical cancer is the fourth most common cancer affecting females, but the disease burden of cervical cancer is unevenly distributed across nations. In Australia, cervical cancer accounts for less than 2% of all female cancers.⁸⁷ Aside from the HPV infection as the main cause for cervical cancer, there are other known risk factors, including smoking and passive smoking, a weakened immune system, long-term use of oral contraceptives, and exposure to Diethylstilboestrol (DES).⁸⁴

In 2017, there were 839 new cases of cervical cancer diagnosed in Australia. Age-standardised incidence rates have halved from seven cases per 100,000 females in 1987 to three cases per 100,000 in 2017. There were 229 deaths caused by cervical cancer in 2019. Age-standardised mortality rates have decreased over time from three deaths per 100,000 females in 1989 to under one death (0.8) per 100,000 in 2019.⁸⁸ In Queensland, however, cervical cancer diagnosis rates were stable between 2007-2017, while mortality rates increased by 3.6% per year between 2011 and 2017.⁸⁴

Incidence

On average there were 13 new cases of cervical cancer per year among West Moreton females in the five-year reporting period 2015-2019, an increase from ten new cases per year in the previous period (2010-2014). Over the years 2015-2019 combined, the average annual cervical cancer age-standardised incidence rate in West Moreton was not statistically different from the rate in Queensland. In the same period, age-specific incidence rates were negligible in females under the age of 25 years and highest among females aged 80-84 years followed by ages 35-54 years (data not shown). It is important to note however, that numbers in each age group were relatively small making interpretation difficult. Cervical cancer incidence rates over the lifespan show a decrease in ages under 34 years (2.6% decrease) and 35-69 years (3.3% decrease) and an increase in 70 years and over (4.2% increase) from 2010-2014 to 2015-2019.

Mortality

There were approximately four deaths per year from cervical cancer among West Moreton females in the five-year reporting period 2015-2019. Almost all (79%) of these deaths occurred in females aged 50-79 years. Mortality rates were higher for women aged 55 years and over in 2015-2019 compared with the previous five-years (2011-2014).

Cancer screening

The health burden of some cancers can be reduced by the implementation of organised, population-based screening programs. Such programs involve the systematic use of a test to identify individuals who are not showing any symptoms of the disease. Currently in Australia, cervical, breast, and colorectal cancers have met the criteria for approved population-based screening programs. These programs aim to reduce cancer cases, illness, and deaths by detecting abnormalities at an early stage, when it is responsive to treatment.

Cervical cancer screening

Cervical cancer is one of the most preventable cancers. Cancers detected through screening were 77% less likely to cause death than cancers detected in women who had never screened.⁸⁹ Cervical cancer may be eliminated in Australia in 20 years if current vaccine and screening coverage is maintained.²¹

The NCSP was introduced in 1991. In December 2017, the NCSP changed from females aged 20–69 years having a Pap test every two years to females aged 25–74 having a Cervical Screening Test (CST) every five years. A CST is a HPV test, followed by a cytology (examination of cells) test if HPV is found.⁹⁰ Participation in the new five-year program cannot be evaluated appropriately until there are five years of data available. In the interim, preliminary estimates have been calculated. Preliminary participation in cervical screening in the post-renewal reporting period 2017-2018 was 53% among Australian females aged 25-69.⁹¹ Due to these changes, only limited data can be presented for West Moreton in this report. New time series projections were not available at the time of reporting. As indicated in the previous report, cervical screening participation rates in West Moreton were consistently lower than the Queensland rates between 2012-2013 and 2016-2017.^{47,22} Moreover, participation in the NCSP has fallen in both West Moreton (from 49% to 43%) and Queensland (from 56% to 51%) across the period, consistent with national findings that NCSP participation is showing a downward trend.⁹²

Preliminary NCSP data from 2018-2019 indicate a participation (crude rate) of 39.6% in West Moreton and 46.1% in Queensland among females aged 25-74 years.⁹³ The 2018-2019 estimates include pre-renewal and post-renewal data from participants who had either a Pap test or a CST done. All data is based on SA3 level, which includes Ipswich Hinterland, Ipswich Inner and Springfield-Redbank for West Moreton.

Figure 59 shows the participation rate by age group in West Moreton and Queensland (2018-2019). West Moreton participation rates were lower than Queensland rates across all age groups. In West Moreton the highest participation rate (43.6%) was among females aged 55-59 and 60-64. The very low rate among females in the new target age group 70-74 years may have affected or possibly lowered the overall participation rate. As reported elsewhere, in Queensland in 2017–18, 51.6% (crude rate) of women aged 25–69 years had a Pap test or CST.⁸⁹

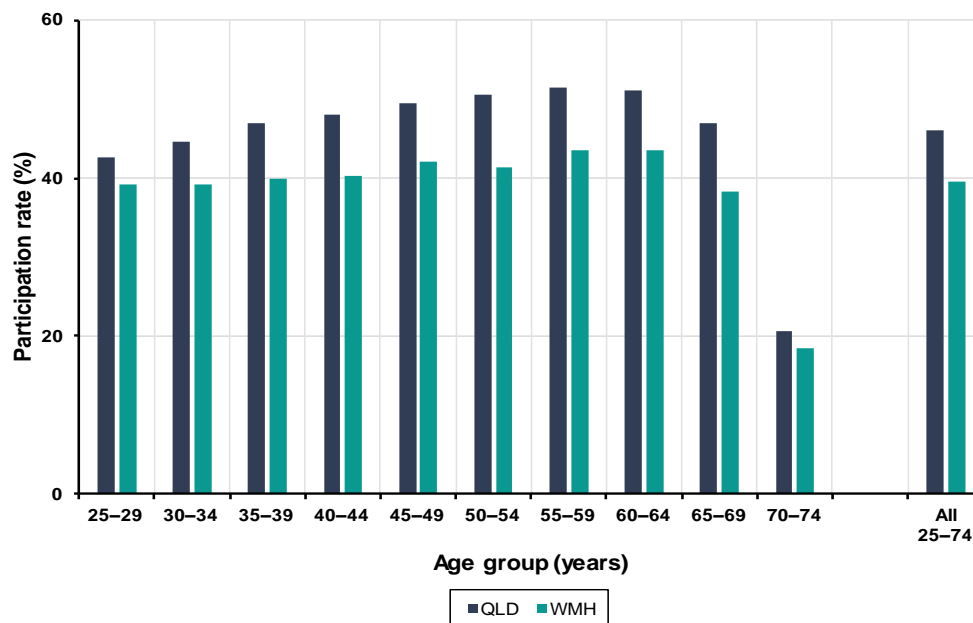


Figure 59: Cervical cancer, screening program participation rates by age group, females aged 25-74 years, West Moreton Health compared with Queensland, 2018-2019

Breast cancer screening

The BreastScreen Queensland Program is part of national population-based breast cancer screening providing free mammograms every two years for females aged 40 years and over.⁹⁴ More than 1.8 million women aged 50-74 (55% of the target age group) had a screening mammogram through BreastScreen Australia in 2017-2018. Participation has stayed about 54-55% since 2010-2011.⁹⁵ Breast cancers detected through BreastScreen Australia had a 54% to 63% lower risk of causing death than breast cancers diagnosed in women who had never screened through BreastScreen Australia.⁹⁶

From 1 July 2013 females aged 70–74 years were actively targeted by BreastScreen Australia, along with females aged 50–69 years. Participation rates for both 50-69 and 50-74 years age groups are presented in (Table 24). Over the reporting period 2014-2015 to 2019-2020, BreastScreen participation in West Moreton was similar in Queensland for both age groups presented, with participation rates ranging between 51-57%. In 2019-2020 within the target age group (50-74 years), the breast screening program participation rates were highest (55-57%) among females aged 60-74 years in both West Moreton and Queensland (Figure 60).⁹³

Table 24: Age-standardised participation rates in the BreastScreen Queensland Program, women 50-74 years in West Moreton compared with Queensland, 2014-2015 to 2019-2020

Year	West Moreton Health %		Queensland %	
	50-69 y*	50-74 y	50-69 y*	50-74 y
2014-15	56.7	56.7	56.6	56.4
2015-16	55.4	55.5	56.0	56.1
2016-17	54.5	54.6	54.8	55.1
2017-18	53.9	54.2	54.3	54.6
2018-19	52.8	53.2	54.0	51.2
2019-20	51.3	51.9	54.4	51.8

* BreastScreen Australia changed its target group to 50-74 years from July 2013, the past age target group (50-69 years) is presented to allow for comparisons.

Source: The West Moreton participation rates have been calculated internally by the QLD Cancer Screening Unit. The QLD state-level data have been sourced from the AIHW.

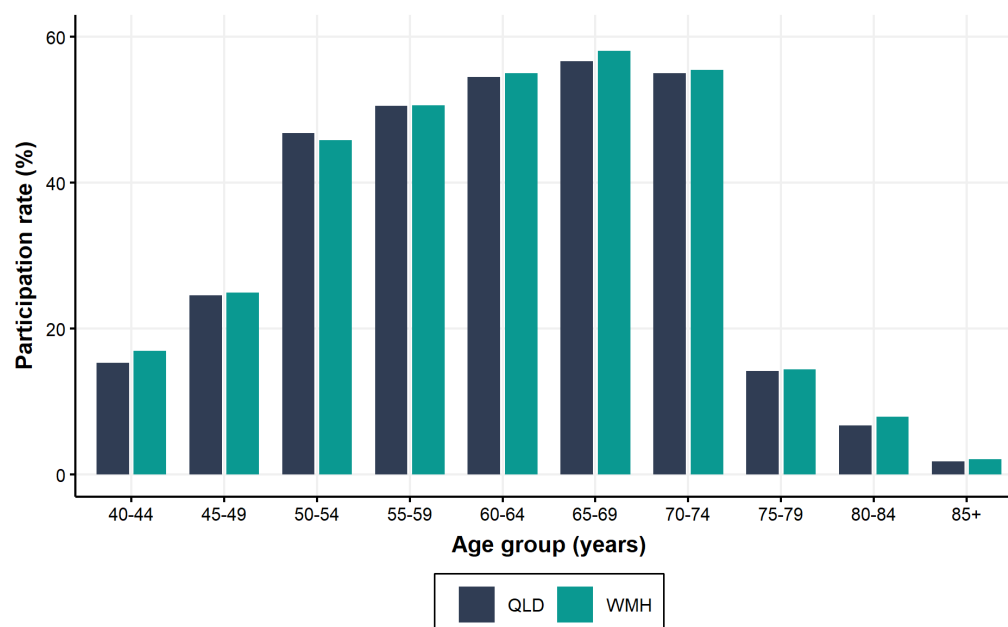


Figure 60: Breast cancer screening program participation rates by age group, West Moreton Health compared with Queensland, 2019-2020

Bowel cancer screening

Bowel cancer, also known as colorectal cancer, is estimated to be the fourth most commonly diagnosed cancer and the second leading cause of cancer death in Australia in 2021. Screening involves a Faecal Occult Blood Test collection kit to complete at home and are provided every two years from the age of 50-74 years (previously only 55 and 65-year-old-s) as part of a program rolled out in 2020. Of the 5.7 million people invited to take part in the NBCSP in 2018-2019, almost 2.5 million (43.5%) participated.⁶⁶

Overall, the crude participation rate for West Moreton rose from 35% in 2014-2015 to 38% in 2018-2019, similar to the slightly higher Queensland rate which increased (38% to 42%) over the same reporting period (Table 25 and Figure 61). This rise is primarily attributed to the higher proportion of older participants eligible for screening in recent years.^{90, 93} In 2018-2019 the West Moreton participation rate (37.7%) was lower than both the Queensland rate (41.6%) and the Australian rate of (43.5%).⁶⁶ Overall, participation rates increased with age in both West Moreton and Queensland. Participation rates in West Moreton residents were higher for females than for males across all age groups (50-54, 55-59, 60-64, 65-69, 70-74) (data not shown). A similar pattern was observed in the sex-specific Queensland participation rates.⁹⁰

Table 25: Participation in the National Bowel Cancer Screening Program, people 50–74 years, West Moreton Health compared with Queensland, 2014-2015 to 2018-2019

Year*	West Moreton Health†	Queensland
	%	%
2014-15	34.5	38.1
2015-16	36.7	40.4
2016-17	37.0	40.8
2017-18	37.0	40.8
2018-19	37.7	41.6

* Biennial screening was fully rolled out in 2020; up to 2018 selected age groups were invited.

† Rates (crude) are based on West Moreton population from SA3 Ipswich Hinterland, Ipswich Inner and Springfield-Redbank. Residents from three SA2 Gatton, Kilcoy (part in WM) and Lockyer Valley-West are not included.

Source: AIHW: Cancer screening programs, quarterly data (version December 2021).

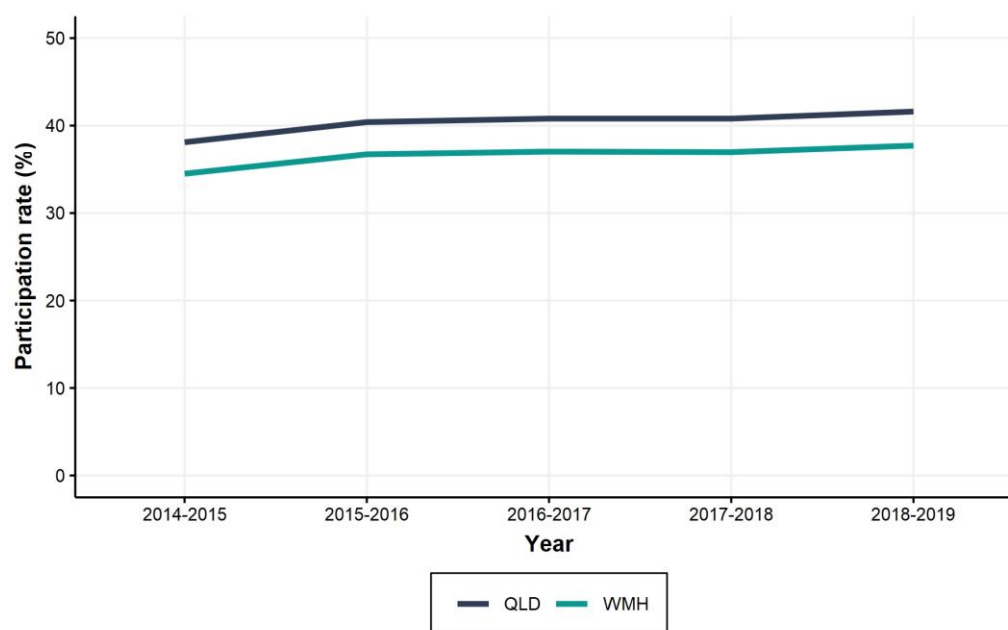


Figure 61: Bowel cancer screening age-standardised participation rate, West Moreton Health compared with Queensland, 2014-2016 to 2018-2019

Maternal and child health

Improving the wellbeing of mothers, infants, and children, and adolescents is an important public health goal. In this section however, the definition of maternal and child health is limited to select indicators of health of the mother and infant during pregnancy, childbirth, and the postnatal period.

Birth and fertility rates

In West Moreton, in 2020 there were 4,308 births to 4,247 mothers, including 4,269 live births and 39 stillbirths. This represented a crude birth rate in West Moreton of 57.3 live births per 1,000 females (15-49 years), which was somewhat higher than the Queensland rate of 48.4 live births per 1,000 females. Significantly higher age-specific birth rates were recorded in West Moreton than in Queensland in the 15-29 years age group between 2016-2020. The age-specific birth rate in 2020 for mothers in West Moreton peaked in the 25-29 years age group, five years lower than the Queensland mothers' rate which peaked in the 30-34 years age group (Figure 62).

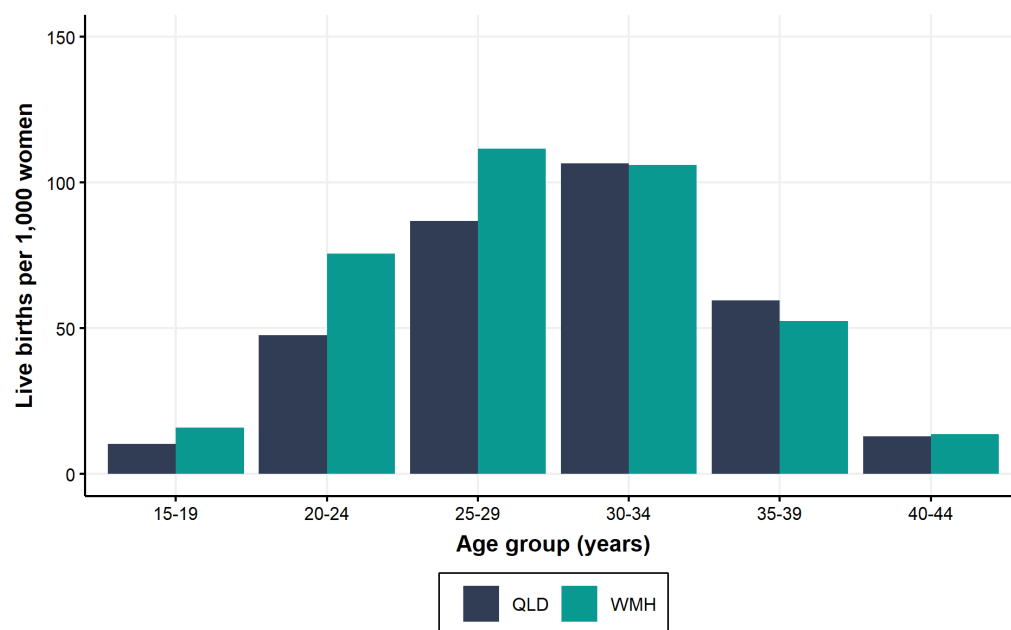


Figure 62: Age-specific birth rates, West Moreton Health compared with Queensland, 2016-2020

Total life-time fertility refers to the average total number of children a woman of childbearing age would have over the course of her lifetime. In 2020, there was a total life-time fertility rate of 1.88 children per female aged 15-49 years in West Moreton; this compared with a rate of 1.62 children per female in Queensland. Over the reporting period, 2016-2020, total life-time fertility rates per female in West Moreton was significantly higher than in Queensland (Table 26). Total life-time fertility rates over the period decreased significantly trending downwards in both West Moreton and Queensland to 2020. Examining a slightly longer-term picture, fertility rates in both West Moreton and Queensland have fallen steadily since 2012 with a slightly greater overall decrease observed in West Moreton compared with Queensland (Figure 63).

Table 26: Total life-time fertility rate (females of childbearing age), by year for West Moreton Health compared with Queensland, 2016-2019

Year	West Moreton Health Rate [\pm 95% CI]*	Queensland Rate [\pm 95% CI]*	Difference WMH - QLD†
2016	2.11 [2.05-2.17]	1.82 [1.81-1.83]	↑
2017	1.98 [1.92-2.04]	1.72 [1.70-1.73]	↑
2018	2.01 [1.95-2.07]	1.69 [1.68-1.71]	↑
2019	1.93 [1.87-1.98]	1.66 [1.65-1.67]	↑
2020	1.88 [1.82-1.93]	1.62 [1.61-1.63]	↑

* 95% confidence interval.

† West Moreton statistically significantly higher than QLD.

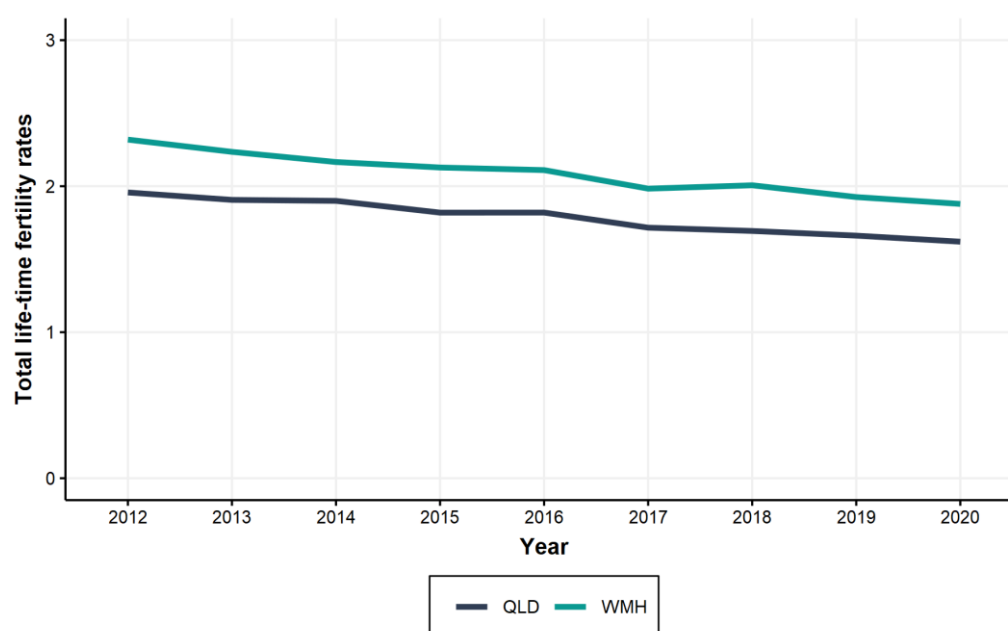


Figure 63: Total life-time fertility rates, West Moreton Health compared with Queensland, 2012-2020

Maternal age

Maternal age is an important risk factor for both obstetric and perinatal outcomes. Younger and older aged mothers are at greater risk of adverse outcomes for both the mother and baby, including a greater risk of pre-term births and/or of low birth weight. Older mothers are more likely to give birth to children with a chromosomal disorder and teenage mothers (defined as those under 20 years of age) have an increased risk of births that are pre-term, low birthweight, and have other associated complications.⁹⁷

The median maternal age of females who gave birth between 2016-2020 was 29 years in West Moreton. This was lower than the median age of 30 years for Queensland mothers. West Moreton First Nations mothers median age of 25 years was lower than non-Indigenous mothers median age of 29 years. This age difference was similar in Queensland (25 years versus 30 years).

The percentage of births to females under 20 years of age and females aged 20-29 years was significantly higher in West Moreton than in Queensland in the reporting period 2016-2020. Correspondingly, the proportion of births to females aged 30 years and over was significantly lower than in Queensland (Table 27).

Table 27: Total births, by maternal age group, West Moreton Health compared with Queensland, 2016-2020

Age Group (yrs)	West Moreton Health		Queensland		Relative Risk [± 95% CI]*	Difference WMH-QLD†
	Total births	% total births	Total births	% total births		
<20‡	904	4.2	9,240	3.1	1.4 [1.3-1.5]	↑
20-24	4,164	19.5	44,139	14.7	1.3 [1.3-1.4]	↑
25-29	6,709	31.5	84,635	28.1	1.1 [1.1-1.1]	↑
30-34	6,070	28.5	99,038	32.9	0.9 [0.8-0.9]	↓
35-39	2,841	13.3	52,208	17.4	0.8 [0.7-0.8]	↓
>40§	641	3.0	11,508	3.6	0.8 [0.7-0.8]	↓
Total	21,329	100.0	300,768	100.0		

* 95% confidence interval.

† West Moreton statistically significantly lower/higher than QLD.

In West Moreton, women aged between 25-34 years had the highest number of births recorded between 2016-2020. By comparison, for West Moreton First Nations women, the highest number of births were recorded for females aged 20-24 years (Figure 64). The percentage of births (46.2%) from First Nations women in West Moreton under the age of 25 years decreased in 2016-2020 compared with the previous reporting period (51.5%; 2013-2017), although was still significantly higher for the same period than the percentage of births of the same age in the general West Moreton population (22.3%) (Table 28).

Table 28: Total births, by First Nations status and maternal age group, West Moreton Health compared with Queensland, 2016-2020

Age Group (yrs)	West Moreton First Nations women		West Moreton all women		Relative Risk [± 95% CI]*
	Total births	% total births	Total births	% total births	
<20‡	169	12.9	904	3.7	3.0 [2.6-3.5]†
20-24	438	33.3	4164	18.6	1.7 [1.6-1.9]†
25-29	382	29.0	6709	31.6	0.9 [0.9-1.0]
30-34	210	15.9	6070	29.3	0.6 [0.5-0.6]
35-39	101	7.7	2841	13.7	0.6 [0.5-0.7]
≥40§	17	1.3	641	3.1	n.a.
Total	1,317	100.0	21,329	100.0	

* 95% confidence interval.

† West Moreton First Nations peoples statistically significantly higher than West Moreton all.

n.a. Cell counts insufficient to report (n<50).

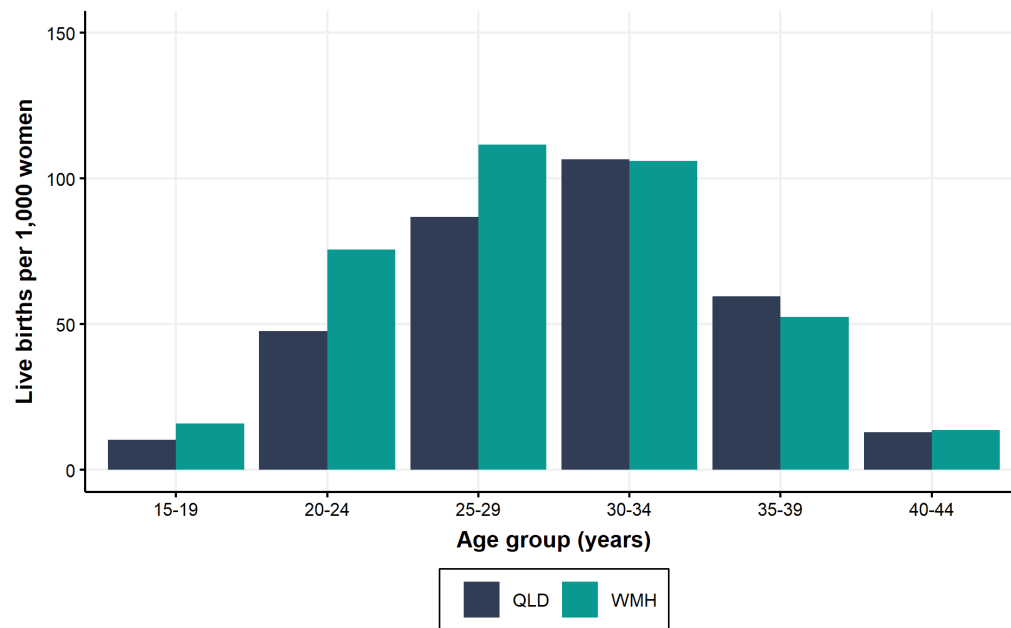


Figure 64: Total live births, by maternal age group, West Moreton Health compared with Queensland, 2016-2020

Maternal smoking

Smoking by mothers during pregnancy has been linked with poor birth outcomes, including an increased risk of pre-term birth, low birth weight, foetal or neonatal death, ectopic pregnancy, placental complications, birth defects, lung function abnormalities and respiratory problems.⁹⁷ The effects of smoking during pregnancy can persist into infancy and childhood with associations found with sudden infant death syndrome (SIDS), childhood cancers, high blood pressure, obesity, asthma, lowered cognitive development and psychological problems.⁹⁷ Smoking abstinence during pregnancy is associated with improved health outcomes for infants and quitting within the first 20 weeks of pregnancy may result in birthweight similar to infants of non-smoking mothers.⁹⁷

In 2019-2020, 15% of pregnant women in West Moreton self-reported smoking cigarettes for all or part of their pregnancy. This was significantly higher (30%) compared with Queensland where 12% of pregnant females reporting smoking during all or part of their pregnancy. Approximately 41% of First Nations mothers in West Moreton smoked during pregnancy, similar to Queensland (44%).

Between 2016-2020 rates of smoking in pregnancy were relatively stable in both West Moreton and Queensland (Figure 65). Among First Nations mothers, gestation smoking rates increased in both West Moreton and Queensland by 18% and 9% respectively. In comparison, non-Indigenous mothers in both regions decreased by 16%.

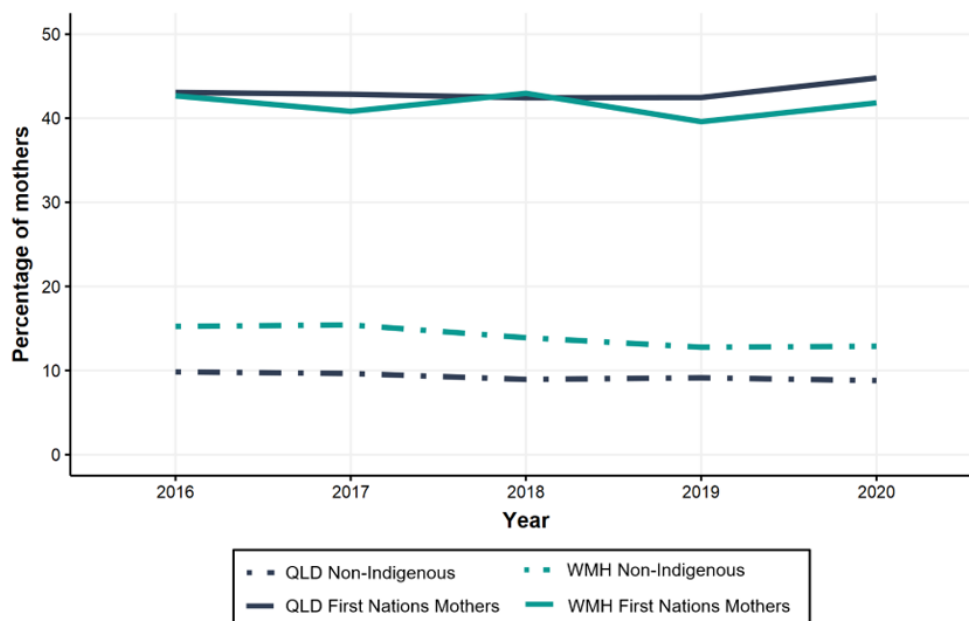


Figure 65: Proportion of mothers who self-reported smoking during pregnancy, by First Nation status, West Moreton Health compared with Queensland, 2016-2020

Diabetes in pregnancy

Gestational diabetes mellitus (GDM) is a condition which is diagnosed for the first time in pregnancy. As with diabetes, GDM prevents the body from processing blood glucose efficiently. Mothers with diabetes and their babies are at increased risk of miscarriage, pre-term birth, pre-term induced labour, caesarean section, hypertension, longer length of stay in hospital (mothers and babies), high birth weight, low Apgar ⁿ score, high level resuscitation and admission to special care.⁹⁸ Adverse outcomes are more frequently recorded among First Nations peoples than non-Indigenous mothers and babies and can cause high blood pressure that can affect your pregnancy and your baby's health.

In the five-year period 2016-2020, 14.8% of mothers in West Moreton had some form of diabetes in pregnancy including 13.7% with GDM and 1.1% with pre-existing diabetes. There was no statistical difference in the prevalence diabetes diagnosed during pregnancy in West Moreton compared with Queensland (14.1% total: 13.2% GDM and 0.9% pre-existing diabetes). Among West Moreton First nations mothers, 12.9% had GDM though this was not significantly different from the prevalence in all West Moreton mothers (Table 29).

In both West Moreton (2.1%) and Queensland (3.4%) there was an increase in GDM prevalence for all mothers between the two reporting periods (2013-2017 to 2016-2020). This represents an overall 34% rise in prevalence in West Moreton compared with 27% in Queensland (Table 29). However, a proportionally greater increase was observed in previous reporting periods (2008-2012 to 2013-2017).

ⁿ Apgar scores are clinical indicators of a baby's condition shortly after birth, including skin colour, pulse, breathing, muscle tone and reflex irritability.

The prevalence of GDM has increased substantially between 2007 and 2020 in both West Moreton and Queensland (Figure 66). Throughout the period the proportion of mothers with GDM increased by 32% in West Moreton and 69% in Queensland (data not shown).

Table 29: Number and proportion of mothers with gestational diabetes, by First Nations status, West Moreton Health compared with Queensland, 2016-2020 and 2013-2017

Region	First Nations status	Mothers with gestational diabetes				Percentage increase in prevalence
		2016 - 2020		2013 - 2017		
		n	%	n	%	2013-17 to 2016-20
West Moreton Health	First Nations mothers	166	12.9	115	10.8	19.4%
	All persons	2,877	13.8	2,115	10.3	34.0%
Queensland	First Nations mothers	2,920	13.8	2,202	11.2	23.2%
	All persons	39,177	13.2	31,550	10.4	27.0%

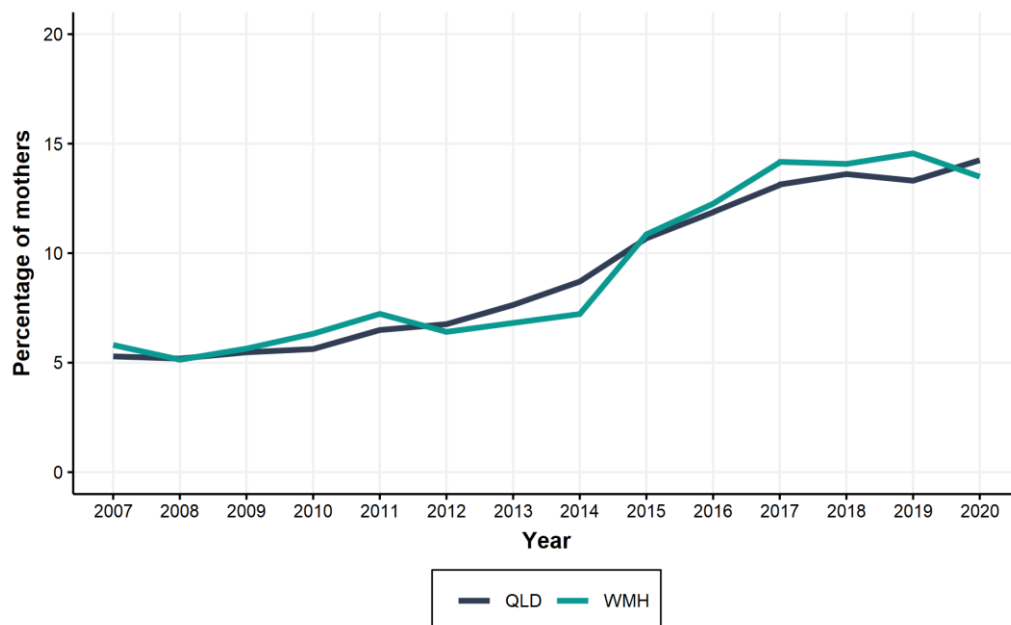


Figure 66: Proportion (%) of mothers with gestational diabetes, West Moreton Health compared with Queensland, 2007-2020

The increase in GDM through the period (2007-2020) may correlate with an increase in both the maternal age and Body Mass Index (BMI) of the Queensland pregnant population and/or be related in part to changing definitions of gestational diabetes.⁹⁹ Increasing numbers of GDM further highlights the importance of screening, diagnosis, and management of GDM throughout pregnancy. From a public health perspective, assessment of all woman early in their pregnancy (e.g. at the first antenatal visit) can help to identify risk factors associated with GDM and provide opportunity to discuss the benefits of achieving or maintaining a healthy lifestyle (e.g. gestational weight gain, nutrition and physical activity).⁹⁹

Birth weight

Babies with low birth weight are at greater risk of illness in infancy and poor health, poor cognitive development, disability, longer periods of hospitalisation and death.⁹⁷ There are a wide range of risk factors for low birth weight including maternal age (younger than 16 years or older than 40 years), multiple pregnancies, smoking, drug use and alcohol consumption, inadequate nutrition and chronic material conditions.⁹⁷

The majority of babies (81%) born to mothers from West Moreton in 2016-2020 were in the normal birth weight range (2,500-3,999g). Low birth weight (under 2,500g) was recorded for 7.5% of babies and high birth weight ($\geq 4,000$ g) for 11.7% of babies (Figure 67). The prevalence of low birth weight babies in West Moreton was not significantly different from the prevalence in all of Queensland, however the prevalence of high birth weight babies (11.7%) was significantly higher in West Moreton than for Queensland (20%).

Within West Moreton, the prevalence of low birth weight among First Nations babies (11.3%) was significantly higher (60% higher) than the prevalence among non-Indigenous babies (7.2%). In comparison, the prevalence of high birth weight among First Nations babies (10.2%) was lower than the prevalence among non-Indigenous babies (11.8%). A similar pattern was observed in Queensland, with low birth weight recorded in 12.1% of First Nations babies compared with 7.0% in non-Indigenous babies and a high birth weight reported in 9% and 10% respectively, of babies.

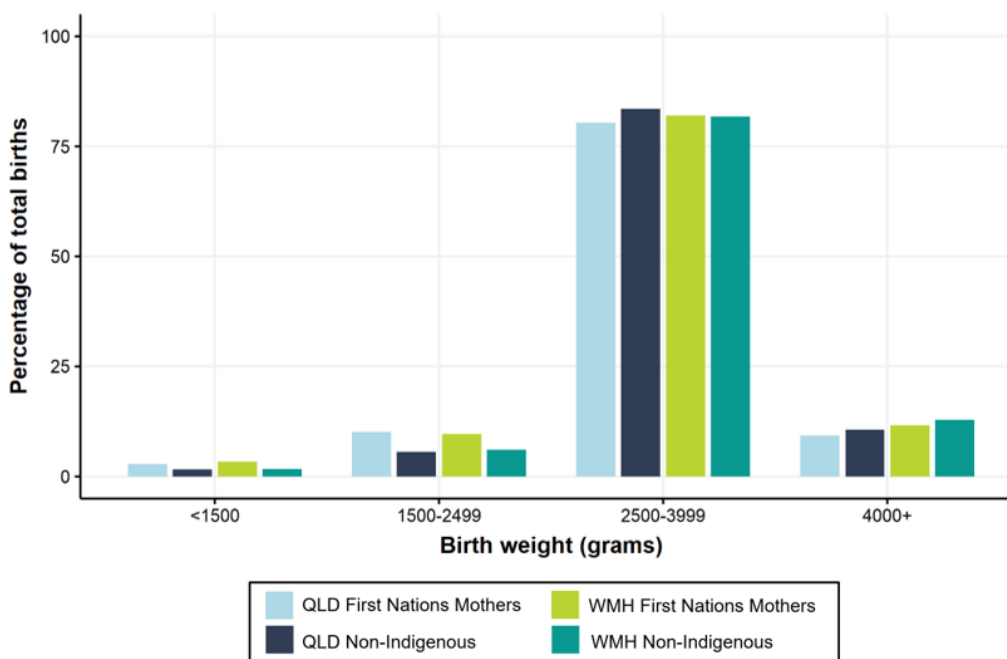


Figure 67: Proportion (%) of birth weight category, by First Nation status, West Moreton Health compared with Queensland, 2016-2020

Infant mortality

Infant mortality rate is considered to be an important indicator of the general health and wellbeing of a population. It is defined as the number of deaths in infants (under one year of age) per 1,000 live births. Infant mortality rates have historically been higher for First Nations infants compared with non-Indigenous.

^{21,97} In West Moreton, between 2016-2019 the infant mortality rate (overall) was six deaths per 1,000 live births, 40% higher than the Queensland rate (under five deaths per 1,000 live births). There were 24 infant deaths per year on average among West Moreton residents in the four years from 2016-2019 (including First Nations infant deaths). Among Queensland residents there were 224 infant deaths per year on average in the same reporting period. Mortality rates have not been specifically calculated for First Nations infants in West Moreton.

In Queensland, the First Nations infant mortality rate of six deaths per 1,000 live births was 43% higher than the non-Indigenous rate (under five deaths per 1,000 live births) in 2018. ²¹ The First Nations infant mortality rate in Queensland declined between 2011 and 2018 from eight to six deaths per 1,000 live births, while the non-Indigenous infant mortality rate was more consistent over this period.²¹

Perinatal mortality

The perinatal mortality rate refers to stillbirths or deaths in the first 28 days of life. There was an average of 46 perinatal deaths per year in West Moreton in the five-year reporting period 2016-2020. The perinatal mortality rate in West Moreton (11 deaths per 1,000 births) was statistically similar to the Queensland rate (10 deaths per 1,000 births).

In West Moreton the perinatal mortality rate for First Nations infants (15 deaths per 1,000 live births) in the reporting period 2016-2020 was statistically similar to the rate for non-Indigenous infants (10 deaths per 1,000 live births) over the same period. However, it is important to note that the rate for First Nations infants was based on very small numbers (an average of four deaths per year). In Queensland the First Nations perinatal mortality rate was 16 deaths per 1,000 live births, which was significantly higher than the rate of nine deaths per 1,000 live births among non-Indigenous infants for the same period.

Antenatal visits

Access to antenatal care is associated with positive health outcomes for mothers and babies. Queensland Health aims to improve the rate of attendance at antenatal visits by First Nations mothers, closing the gap between First Nations and non-Indigenous mothers. The key performance indicator in Queensland for First Nations mothers is attendance at five or more antenatal visits.¹⁰⁰ In 2016-2020, based on mothers who gave birth at 32 weeks gestation or later, the majority of mothers (95%) from West Moreton in 2016-2020 attended five or more antenatal visits over the course of their pregnancy, similar to all Queensland mothers (96%). First Nations mothers from West Moreton were significantly less likely (89%) to attend five or more antenatal visits than their non-Indigenous mothers in West Moreton were (95%). The percentage of West Moreton First Nations mothers attending five or more antenatal visits increased by 5% over the period to 91% in 2020.

Assisted conception

Assisted reproductive treatment includes artificial insemination and the use of assisted reproductive technologies. Assisted reproductive technologies involves the handling of eggs (human oocytes) and sperm or embryo to facilitate pregnancy.¹⁰¹ There was a 5.8% increase in the use of these technologies in Australia and New Zealand in 2019 compared with 2018.¹⁰¹

Fertility treatment can increase the risk of multiple births and therefore increase the risk of pregnancy and birthing complications, pre-term delivery and low birth weight. There has been a decline in multiple gestational births in recent years from 4.4% in 2015 to 2.9% in 2019, primarily due to the increasing uptake of single embryo transfers. ¹⁰¹

There were 996 mothers with 1049 births attributed to assisted conception in West Moreton in the 2016-2020 five-year reporting period, almost all were live births. In this period, mothers in West Moreton who used assisted conception had a higher median age (32-34 years) than those who conceived naturally (28-29 years). The proportion of mothers with births attributed to assisted conception was significantly lower in West Moreton (4.7%) than in Queensland (5.6%) in the 2016-2020 period (**Table 30**). This was similar to the 2013-2017 period.

Table 30: Mothers birthing by assisted conception, West Moreton Health compared with Queensland, 2016-2020

Assisted conception status	West Moreton Health		Queensland		Relative Risk [± 95% CI]*	Difference WMH - QLD †
	Total Mothers		Total Mothers			
	n	%	n	%		
Assisted	996	4.7	16,668	5.6	0.8 [0.79 - 0.89]	↓
Not Assisted	19,998	95.3	279,747	94.4	1.0 [1.01 - 1.01]	NS
Total	20,994		296,415			

* 95% Confidence Interval.

† West Moreton statistically significantly lower than QLD.

NS Non-significant.

The number and percentage of all mothers using assisted conception methods remained relatively stable in the years between 2016 and 2020. In West Moreton the annual number remained between 175 and 227, representing between 4.0% and 5.3% of all mothers, while in Queensland the percentage ranged from 4.9% to 6.1% of all mothers. In both West Moreton and Queensland, the annual number of mothers using assisted conception methods increased in the current period compared with 2013-2017 period.

In 2016-2020, in-vitro fertilisation (IVF) with 685 births was the most frequently reported method of assisted conception in West Moreton, increasing from 477 births in the previous reporting period (2013-2017). Other reported assisted conception methods included ovulation induction (232 births), artificial insemination (83 births) and intracytoplasmic sperm injection (ICSI) (45 births).

Immunisation during pregnancy

The proportion of mothers receiving immunisations for both pertussis (whooping cough) and influenza increased throughout the five-year period 2016-2020, for both First Nations and non-Indigenous mothers in West Moreton and Queensland ([Figure 68](#) and [Figure 69](#)). In 2016-2020, 66% of mothers in West Moreton (15-49 years) received immunisation for pertussis and 39% for influenza during their pregnancy. Similarly, among Queensland mothers, 66% received immunisation for pertussis and 43% for influenza.

By comparison, a smaller proportion of First Nations mothers in West Moreton received pertussis (53%) and influenza (30%) immunisation during pregnancy, as similarly observed for Queensland (55% and 43%, respectively).

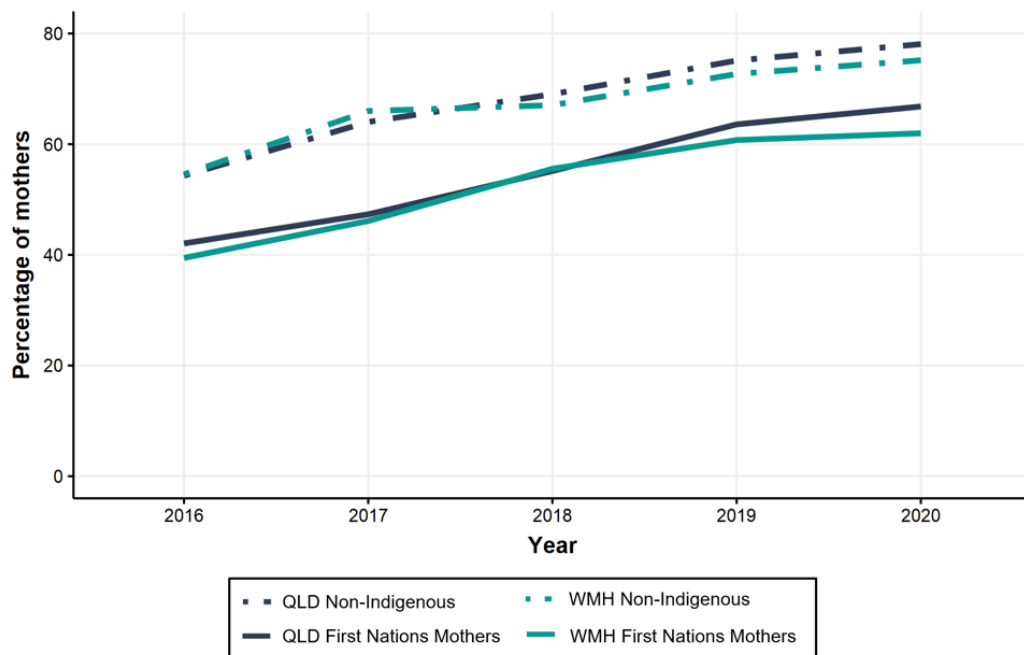


Figure 68: Proportion of mothers who reported being immunised against whooping cough (pertussis) during pregnancy, by First Nation status, West Moreton Health compared with Queensland, 2016-2020

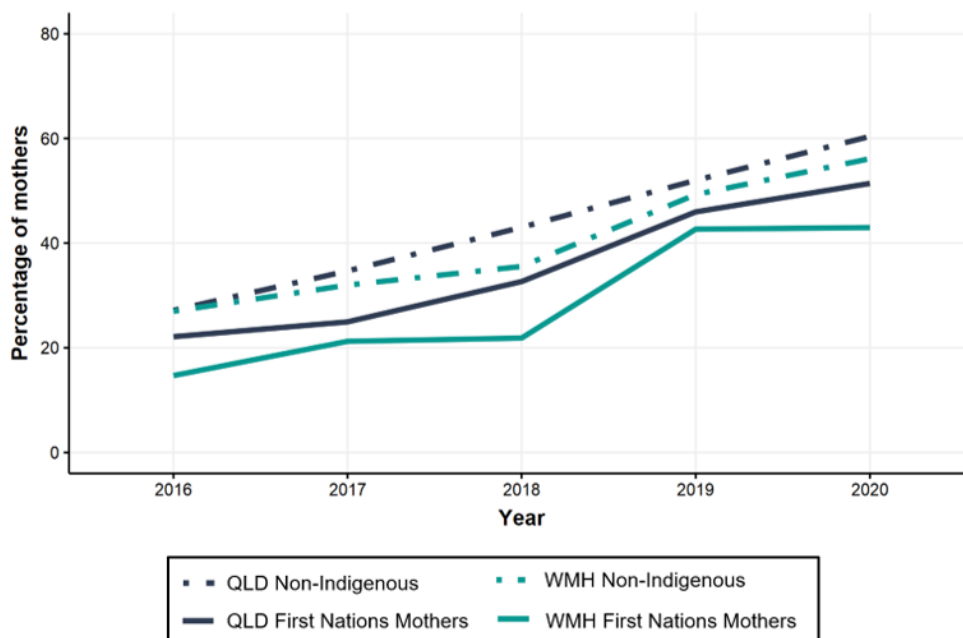


Figure 69: Proportion (%) of mothers who reported being immunised against influenza during pregnancy by First Nation status, West Moreton Health compared with Queensland, 2016-2020

Pertussis and influenza immunisation coverage rates were lower in First Nations mothers in 2020 (62% and 43% respectively) compared with non-Indigenous mothers (75% and 56% respectively). However, as under-reporting immunisations received during pregnancy may be likely, these difference should be interpreted with caution and / or validated through clinical record review.

Dental and oral health

Oral disease, including tooth decay, gum disease and oral cancers, are a leading cause of poor health for both children and adults in Queensland. In children and young adults, oral diseases fall within the ten highest ranked causes of disease burden in Australia.³⁵ Additionally, oral health status indicators from two population oral health surveys show higher levels of disease for Queensland compared with other regions for children aged 5-15 years and adults aged 15 years and over.^{102,103}

The most recent comparative data available on the oral health of West Moreton residents compared with Queensland is the Queensland Child Oral Health Survey 2012-2014. Data from this survey shows that childhood dental caries (tooth decay) and the lifetime experience of dental decay is higher (worse) in children in West Moreton compared with Queensland. West Moreton children aged 5-15 years have an average of 2.5 teeth with caries experience, with 59% of these children with at least one tooth with caries experience, higher than Queensland (Table 31).

Comparative service level data that would provide an accurate depiction of the oral health status of West Moreton residents is currently limited and will need improvement going forward. Service level data is only available for West Moreton since 2015. West Moreton Health Oral Health Services is a primary health care service that sees eligible patients of all ages for oral health and dental care in 35 fixed and mobile clinics across the region. An estimated 23,400 patients were seen over 52,300 appointments in 2020-2021 (financial year).

Table 31: Prevalence of caries experience in children (5-15 years), West Moreton Health compared with Queensland, 2012-2014 °

Region	Prevalence of caries*	Number of teeth with caries †
	%	n
West Moreton Health	59	2.5
Queensland	53	2.0

* Proportion of children with caries experience.

† Average (mean) number of teeth with caries.

Table 32 shows that children aged 0-17 years accessing the service for a check-up have, on average, two teeth affected by decay, and adults have 7.5 teeth affected in the same period. The estimated mean number

o Estimates calculated from the Queensland Child Oral Health Survey 2012-14 (Office of the Chief Dental Officer, Queensland Department of Health, unpublished)

of teeth with caries experience decreased between 2015-2017 to 2019-2021 (financial years) in children aged 0-17 years but fluctuated in adults. An estimated 52% of the children and 78% of adults^p attending the service have teeth affected by tooth decay, and about one in five adults have inadequate dentition (defined as one to nine natural teeth missing) (Table 33 and Table 34). Adult population level data was not available for West Moreton.

Table 32: Mean number of teeth affected by dental caries experience in oral health service patients, West Moreton Health only, 2015-2017 to 2019-2021

Region	Year*	Children (0 to 17 years)†	Adults (18+ years)†
		n	n
West Moreton Health	2015 - 2017	2.36 [2.18 - 2.54]	7.03 [6.78 - 7.28]
	2017 - 2019	2.07 [1.87 - 2.27]	8.98 [8.66 - 9.29]
	2019 - 2021	1.92 [1.87 - 1.98]	7.53 [7.23 - 7.83]

* Year indicates biennial financial year periods.

† Caries experience: at least one tooth affected (decayed, filled and/or teeth missing due to caries).

Note: Caries experience is the cumulative measure of the impact of decay on a tooth. It is a count of teeth on one person that are decayed, filled, or missing due to decay. The count is made at one point in time. This data is representative of West Moreton HHS patients attending West Moreton oral health services for a general exam. This data is not representative of the oral health status of all West Moreton residents. Data was extracted from the electronic patient record of the Queensland Health Information System for Oral Health. Data has been provided as estimates as weighting by age group and socioeconomic status was applied.

Table 33: Prevalence of dental caries experience, in Oral Health Service patients, West Moreton Health only, 2015-2017 to 2019-2021

Region	Year*	Children (0 to 17 years)†	Adults (18+ years)†
		%	%
West Moreton Health	2015 - 2017	55.4 [52.5 - 58.4]	71.5 [69.8 - 73.1]
	2017 - 2019	51.7 [48.4 - 55.0]	91.5 [89.7 - 93.0]
	2019 - 2021	52.1 [51.0 - 53.2]	78.4 [76.3 - 80.4]

* Year indicates biennial financial year periods.

† Caries experience: at least one tooth affected (decayed, filled and/or teeth missing due to caries).

Note: Caries experience is the cumulative measure of the impact of decay on a tooth. It is a count of teeth on one person that are decayed, filled, or missing due to decay. The count is made at one point in time. This data is representative of West Moreton HHS patients attending West Moreton oral health services for a general exam. This data is not representative of the oral health status of all West Moreton residents. Data was extracted from the electronic patient record of the Queensland Health Information System for Oral Health. Data has been provided as estimates as weighting by age group and socioeconomic status was applied.

^p The number of services provided to children far exceeds the number of services provided to adults. Adult services are more commonly for emergencies and as such the full mouth is not charted.

Table 34: Prevalence of inadequate dentition, in adult Oral Health Service patients, West Moreton Health only, 2015-2017 to 2019-2021

Region	Year*	Adults (18+ years)†
		%
West Moreton Health	2015 - 2017	20.1 [18.5 - 21.7]
	2017 - 2019	12.2 [10.6 - 13.9]
	2019 - 2021	17.5 [15.6 - 19.6]

* Year indicates biennial financial year periods.

† Inadequate dentition: one-nine natural teeth missing

Note: Caries experience is the cumulative measure of the impact of decay on a tooth. It is a count of teeth on one person that are decayed, filled, or missing due to decay. The count is made at one point in time. This data is representative of West Moreton HHS patients attending West Moreton oral health services for a general exam. This data is not representative of the oral health status of all West Moreton residents. Data was extracted from the electronic patient record of the Queensland Health Information System for Oral Health. Data has been provided as estimates as weighting by age group and socioeconomic status was applied.

Our Lifestyle

Measuring the prevalence of the risk factors for chronic disease in the community is vital to understanding and interpreting the burden of chronic disease. The main biological risk factors are overweight, obesity, high blood pressure, elevated blood glucose, and abnormal blood lipids and its subset, raised total cholesterol. The main modifiable behavioural risk factors include smoking cessation, increasing physical activity, improved nutrition, and moderating alcohol consumption.¹⁰⁴

In 2018, 38% of the burden of disease in Australia could have been prevented by reducing or avoiding the exposure to these modifiable (behavioural) risk factors.³⁵ Likewise, more than two thirds of the burden of diabetes in Queensland can be attributed to the combined effect of high body weight (body mass) and physical inactivity.^{104,105} In a recent large systematic review, it was estimated that for every 10% increment in body fat in the general adult population, the risk for all-cause mortality increased by 11%; the lowest risk was at a body fat percentage of 25% and a fat mass of 20 kg.¹⁰⁶ Recent modelling has indicated that future disease burden due to insufficient physical activity could be reduced by 13% through an extra 15 minutes of brisk walking, five days per week, and by 26% through an extra 30 minutes of brisk walking.

This chapter presents self-reported data collected from the Queensland regional ([HHS](#) and [LGA](#)) state-wide annual adult and child preventive health survey.^{107,108,109}

Adults

In 2019-2020, 68% of adults in West Moreton were overweight or obese (self-reported data) compared with 60% of adults in Queensland ([Table 35](#)). Conversely, 30.2% of adults in West Moreton in 2019-2020 were of healthy body weight compared with 37.4% of adults in Queensland. These significant differences were mainly accounted for by the increasing obesity prevalence which differed by 10% between West Moreton and Queensland residents (35% versus 25%). The daily smoking rate in West Moreton of 12% was similar to the Queensland rate (11%). The rates were slightly lower, and the gap had also narrowed since the previous reporting period 2017-2018. There was no difference between West Moreton and Queensland residents in alcohol consumption that was risky over the lifetime, but West Moreton adults (26%) were significantly less likely to report a single occasion risky drinking level (at least monthly) compared with Queensland adults (30%).

The percentage of West Moreton adults self-reporting sufficient physical activity for health benefit (54%) was slightly lower than the corresponding Queensland prevalence (58%) but this difference did not reach statistical significance. The prevalence of sufficient fruit or vegetable intake did not differ between the West Moreton and Queensland survey population. Notably, only about half of West Moreton or Queensland adults had a sufficient fruit intake (two or more serves/day) and less than 10% of adults had a sufficient vegetable intake (five or more serves/day). West Moreton adults (53%) were equally likely to Queensland adults to have been sunburnt in the last 12 months prior to being surveyed ([Table 35](#)). More detailed results from the survey data in adults are presented in the [Appendix B](#) and [Appendix C](#).

Table 35: Selected preventive health indicators for chronic disease in adults (18 years and over), West Moreton Health compared with Queensland, 2019-2020^q

Risk factor	Population-weighted prevalence (%)*		Difference WMH-QLD†
	WMH	QLD	
Body mass index (kg/m²)‡			
Underweight (BMI <18.5)	1.5	2.6	NS
Healthy weight (BMI 18.5-<25)	30.2	37.4	↓
Overweight (BMI 25-<30)	33.8	34.9	NS
Obese (BMI 30+)	34.5	25.0	↑
Overweight and obese (BMI 25+)	68.2	60.0	↑
Smoking			
Daily Smoking	12.0	10.8	NS
Sunburn			
Sunburnt in last 12 months	53.1	52.5	NS
Alcohol consumption§			
Lifetime risk	18.0	21.6	NS
Single occasion risk (at least monthly)	25.6	30.0	↓
Physical activity (19-75 y)			
Sufficient activity for health benefit	54.3	58.3	NS
Fruit and vegetable consumption¶			
Sufficient fruit intake (2+ serves/day)	50.8	52.1	NS
Sufficient vegetable intake (5+ serves/day)	8.1	8.4	NS

* Estimates are based on a two-year period of pooled survey data. Survey data are weighted to adjust for differences between demographic characteristics of the population and the regional sample (West Moreton).

† West Moreton statistically significantly lower/higher than Queensland.

‡ BMI (kg/m²) is calculated from self-reported weight and height; categories are based on recommendations from the WHO. ¹¹⁰

§ Categorisation based on National Health and Medical Research Council (NHMRC) 2009 guidelines. ¹¹¹

Fruit and vegetable consumption (prevalence, %) from 2018/2019 survey; categorisation based on 2013 Australian Dietary Guidelines (ADG). ¹¹²

NS Non-significant.

Table 36 shows trends in the selected health indicators over the recent ten years (2009-2020) for which data is available. The largest change over time in West Moreton adults was observed in obesity prevalence increasing by 3.5% annually or 46% in total between 2009-2020. By contrast, the overweight prevalence decreased by 1.1% annually or 10.9% in total over the period. The increase in obesity prevalence despite a decrease in overweight prevalence may indicate an overall upwards shift in BMI in West Moreton adults (Figure 70). By comparison, Queensland adults' obesity prevalence increased by 1.5% per year or 17.2% in total and overweight prevalence from 0.1% annually or 1.4% in total.

^q Queensland Government. Queensland Survey Analytics System (QSAS). File provided by Preventative Health Branch, Prevention Division, Department of Health, Queensland Government. Available from: [Preventive health surveys | Queensland Health](#). Accessed March 2022.

Daily smoking rate trends decreased considerably throughout the period, reducing by 5% annually or 43% in total, with smoking cessation increasing by 1.9% annually and 23.4% in total. Despite these changes being large in both obesity and smoking prevalence, they were not significantly different from the respective percentage changes in overall Queensland. However, West Moreton Health was one of four HHSs that showed a significant increase in adult obesity across the period when HHS trends were compared.²¹ It was advised though that HHS trends should be interpreted with caution because detecting regional change is more difficult, especially in areas with small population size. Changes in other health indicators were relatively small (Table 36).

Table 36: Trends in selected preventive health indicators in adults (18 years and over), West Moreton Health compared with Queensland 2009-2020^r

Risk factor	Average percentage change*				Difference WMH-QLD†
	West Moreton Health		Queensland		
	Per year	Total (2009-20)	Per year	Total (2009-20)	
Body mass index (kg/m²)‡					
Overweight (BMI 25-<30)	-1.1	-10.9	0.1	1.4	NS
Obesity (BMI 30+)	3.5	46.4	1.5	17.2	NS
Overweight and Obesity (BMI 25+)	1.2	13.5	0.7	7.7	NS
Smoking					
Daily smoking	-5.0	-42.8	-3.9	-35.5	NS
Smoking cessation	1.9	23.4	0.8	8.8	NS
Sunburn					
Sunburnt in last 12 months	0.2	2.3	0.3	3.3	NS
Alcohol consumption§					
Lifetime risk	2.1	17.8	0.8	6.9	NS
Single occasion risk (at least monthly)	0.4	3.2	0.29	2.4	NS
Physical activity (18-75 years)					
Sufficient activity for health benefit	0.0	-0.4	0.9	10.8	NS
Fruit and vegetable consumption¶					
Sufficient fruit intake	-0.4	-2.2	-1.5	-8.9	NS
Sufficient vegetable intake	2.2	14.2	1.4	8.9	NS

* Population weighted prevalence (%).

† West Moreton prevalence statistically significantly lower/higher than Queensland.

‡ BMI (kg/m²) is calculated from self-reported weight and height; categories are based on recommendations by the WHO.¹¹⁰

§ Categorisation based on NHMRC 2009 guidelines.¹¹¹

¶ Fruit and vegetable consumption (prevalence, %) from 2018/2019 survey; categorisation based on 2013 Australian Dietary Guidelines (ADG).¹¹²

NS Non-significant.

^r Queensland Government. Queensland Survey Analytics System (QSAS). File provided by Preventative Health Branch, Prevention Division, Department of Health, Queensland Government. Available from: [Preventive health surveys | Queensland Health](#). Accessed March 2022.

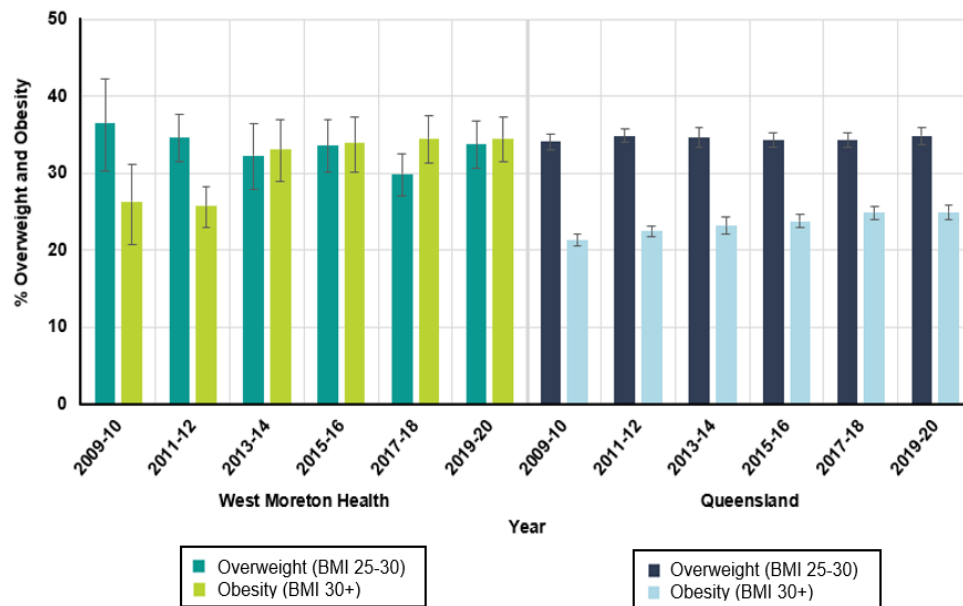


Figure 70: Prevalence of overweight and obesity in adults, West Moreton Health compared with Queensland, 2009-2010 to 2019-2020

Children

In 2019-2020, there were no statistically significant differences in the prevalence of any risk factor between West Moreton and Queensland children aged 5-17 years (Table 37).¹⁰⁷ Almost one third (31%) of West Moreton children and 26% of Queensland children were overweight or obese. Both the prevalence for overweight and obesity was similar to the previous reporting period (2017-2018). About 52% of children in West Moreton undertook sufficient physical activity for health benefit which was slightly higher than previously reported (2017-2018, 46%).

Children in West Moreton in 2019-2020 were more likely (67%) than adults (51%) to have an adequate intake of fruit, however merely 5% of children in West Moreton (parentally) reported having an adequate vegetable intake which is similarly low compared with adults. Among Queensland children in 2020, females were 15% more likely than males to consume the recommended daily amount of fruit (73% compared with 64%), with no difference in daily recommended vegetable intake.²¹ Over half (53%) of children in West Moreton had been sunburnt in the 12 months prior to being surveyed in 2019-2020 (Table 37), representing a substantial skin cancer risk factor for these children.

More detailed results from the survey data in children are presented in the [Appendix D](#) and [Appendix E](#).

Table 37: Selected preventive health indicators for chronic disease in children (5-17 years), West Moreton Health compared with Queensland, 2019-2020 ^s

Risk factor	Population-weighted		Difference WMH-QLD†
	WMH	QLD	
Body mass index (kg/m²)‡			
Under- or healthy weight	69.1	74.4	NS
Overweight	19.3	17.4	NS
Obese	11.6	8.3	NS
Overweight and obese	30.6	25.6	NS
Sunburn§			
Sunburnt in last 12 months	42.7	49.2	NS
Physical activity			
Sufficient activity for health benefit	51.6	47.1	NS
Fruit and vegetable consumption¶			
Sufficient fruit intake	67.0	68.9	NS
Sufficient vegetable intake	4.7	4.3	NS

* Estimates are based on a two-year period of pooled survey data. Survey data are weighted to adjust for differences between demographic characteristics of the population and the regional sample (West Moreton).

† West Moreton statistically significantly lower/higher than Queensland.

‡ Specific BMI (kg/m²) categories vary with age and sex of child. ¹¹⁰

§ Sunburn prevalence (%) from 2018-2019 survey.

¶ Fruit and vegetable consumption (prevalence, %) from 2018/2019 survey; categorisation based on 2013 Australian Dietary Guidelines (ADG). ¹¹²

NS Non-significant.

^s Queensland Government. Queensland Survey Analytics System (QSAS). File provided by Preventative Health Branch, Prevention Division, Department of Health, Queensland Government. Available from: [Preventive health surveys | Queensland Health](#). Accessed March 2022.

Abbreviations and technical definitions

ABS	Australian Bureau of Statistics is an independent statutory agency of the Australian Government. ¹¹³
ADG	Australian Dietary Guidelines provide evidence-based advice about the amounts and kinds of foods that we need to eat for health and wellbeing. Following of the ADG will ensure we consume enough essential nutrients for good health and to reduce the risk of chronic health conditions such as type two diabetes and heart disease. ¹¹⁴
Age-specific rate (ASR)	A rate reported for a specific age group. Age-specific rates are calculated by dividing the number of events (e.g. deaths) occurring in a specific age group by the corresponding population in the same age group.
Age-standardisation	<p>A method used to enhance the comparability of event rates from different populations or different sub-populations over time by adjusting for the confounding effects of differences in age structure between the populations being compared. If there are more older people in a Hospital and Health Service area compared with the Queensland average, then we would expect the crude rates of many diseases associated with ageing to be higher in that Hospital and Health Service. Standardisation allows comparison of disease rates between populations by removing the influence of age. Crude rates can also be used with birth rates and participation rates.</p> <p>There are two methods of standardisation commonly used, and these are characterised by whether the standard used is a population distribution for a standard reference population (direct method) or a set of age-specific rate ratios where the weights are the expected number of events in each age group of the comparison population (indirect method).</p>
AIHW	Australian Institute of Health and Welfare is an independent statutory Australian Government agency producing health and welfare statistics and information. ¹¹⁵
Avoidable mortality	According to the Australian Bureau of Statistics, 1370.0 – Measures of Australia's Progress 2010, a potentially avoidable death is one that theoretically could have been avoided, given our current understanding of the cause of the death, and assuming the adoption of available disease prevention initiatives (such as screening for early detection) and the use of available health care (surgery, chemotherapy etc). Conversely, an example of an unavoidable death is one from dementia, where no substantial gains are currently available through primary, secondary, or tertiary prevention with current medical knowledge.
BMI	The body mass index is an approximate measure of your best weight for health which is calculated by dividing weight (in kilograms) by height (in metres squared or m ²).
BreastScreen	BreastScreen Australia is a joint initiative of the Australian and state and territory governments and aims to reduce illness and death from breast cancer by detecting the disease early. Women over 40 can have a free mammogram every two years and we actively invite women aged 50-74 to screen.
CHD	Coronary heart disease occurs when there is a narrowing or blockage in the blood vessels that supply blood to the heart muscle.

Confidence intervals (CI)	<p>A CI is a range of values that is likely to contain an unknown population parameter. Whereas a <u>P values</u> serves to detect an effect or difference, a CI assesses the magnitude and precision of the observed effect. If you draw a random sample many times, a certain percentage of the CI will contain the population mean. This percentage is the CI.</p> <p>A CI is usually written as [95% CI]. This means we can be 95% confident that the true value of interest lies within the confidence intervals given. We do not usually know what the true value is as we can only estimate it from observations taken from samples. A CI is essentially a range with a lower and upper value (or limit). For example, if the mortality rate is 3.1 per 100,000 [95% CI: 2.9-3.2], we can be 95% confident that the true rate will be between 2.9 and 3.2, and our best estimate is 3.1 per 100,000. A narrower range suggests a more precise estimate.</p> <p>Either P values or CIs can be used to determine whether sample estimate is statistically significant. If a hypothesis test produces both, these results will agree. If the confidence interval does not contain the null hypothesis value (or sample estimate), the results are statistically significant.</p>
COPD	Chronic pulmonary heart disease is a serious chronic lung disease that mainly affects older people. It is progressive, largely irreversible and characterised by shortness of breath, cough, and wheeze.
CST	Cervical screening test is a test done every five years to check for infection with <u>HPV</u> , a common infection that causes most cervical cancers.
CVD	Cardiovascular disease also known as heart, stroke and vascular disease refers to a range of conditions affecting the heart and blood vessels. The most common and serious types of CVD in Australia are coronary heart disease, stroke, and heart failure.
Crude rates	A crude rate is the number of events (deaths, hospitalisations, newly diagnosed cancer cases) from a specific cause over a specified period of time (usually per year) divided by the total population. For example, a crude hospital separation rate is defined as the number of persons who completed an episode of hospital care within a specified time divided by the total population.
Crude birth rate	The crude birth rate is calculated for females aged 15 to 49 as the number of registered live births per 1,000 births per calendar year based on the estimated resident population (ERP) for this age group.
Crude participation rate	The crude participation rate is an indication of the extent to which target groups are being reached in the National Bowel Cancer Screening Program (<u>NBCSP</u>).
Estimated resident populations (ERPs)	The Estimated Resident Population (ERP) is the official measure of the population of Australia as developed by the Australian Bureau of Statistics. The ERP is based on the concept of usual residence and refers to all people, regardless of nationality, citizenship, or legal status, who usually live in Australia, with the exception of foreign diplomatic personnel and their families. Usual residence is defined as the place where each person has lived or intends to live for six months or more from the reference date for data collection. The ERP includes usual residents who are overseas for less than 12 months and excludes overseas visitors who are in Australia for less than 12 months.

Hospital separations	These are episodes of hospital care which can be a total hospital stay (from admission to discharge, transfer or death) or a portion of a hospital stay ending in a change of status (for example, when a patient moves from acute care to rehabilitation). Therefore, there may be more than one episode of care within the one hospital stay, in which case separate episodes of care are counted.
HHS	Each Hospital Health Service area covers a certain geographical region of Queensland, with the exception of the state-wide paediatric specialty service, Children's Health Queensland. There are 16 HHS in Queensland, including West Moreton Health.
HPV	Human papillomavirus is the principal cause of cervical cancer. HPV is a common sexually transmitted virus that infects skin or mucosal cells.
ICD	International classification of diseases. ICD coding allows for systematic recording, analysis and comparison of mortality and morbidity data.
Incidence	A measure of the risk of developing a disease or condition within a specified period of time. Incidence refers to new cases of disease occurring within a specified time period divided by the population at risk. For example, if a population initially contains 100,000 non-diseased persons and 1,000 get the disease in a year, the incidence rate is 1,000 per 100,000 in that year (1%).
Infant mortality rate	The number of deaths in children younger than one year of age in any calendar year per 1,000 live births in the same year.
LGA	Local Government Area. There are 77 LGAs in Queensland and five LGAs in the West Moreton area.
NHMRC	National Health and Medical Research Council is a leading expert in health and medical research, health guidelines and ethical standards. ¹¹⁷
NBCSP	The National Bowel Cancer Screening Program which began in 2006 is an Australian Government program which aims to reduce the morbidity and mortality from bowel cancer by actively recruiting and screening the eligible target population, aged 50–74, for early detection or prevention of the disease.
NCSP	The National Cervical Screening Program (NCSP) began in 1991. It is an Australian Government program which aims to reduce cervical cancer cases, illness, and deaths in Australia. The program originally targeted people aged 20–69 for a two-yearly Papanicolaou (Pap) smear, or 'Pap test' to detect precancerous abnormalities of the cervix. From 1 December 2017, the program changed to five-yearly cervical screening for people aged 25–74, using a primary human papillomavirus (HPV) test with partial HPV genotyping and reflex liquid-based cytology triage ('Cervical Screening Test').
Perinatal mortality	The number of deaths in babies who die in the perinatal period, expressed as a rate per 1,000 live births. The perinatal period includes the period from birth to the 28 th day of life.

PPH	<p>Potentially preventable hospitalisation are defined by the Australian Institute of Health and Welfare (AIHW) as conditions where hospitalisation could have potentially been prevented through the provision of appropriate individualised preventative health interventions and early disease management usually delivered in primary care and community-based care settings.¹⁸</p> <p>For the purposes of this report, Queensland Health selected PPHs were utilised. PPHs are calculated as per the AIHW definition except for diabetes complications. Queensland Health PPHs for diabetes complications capture both hospital separations with diabetes as the principal diagnosis as well as additional hospitalisations for diabetes complications where diabetes is recorded as an additional diagnosis with certain other diagnoses.</p> <p>PPHs are usually classified into three categories:</p> <ul style="list-style-type: none"> * <i>Vaccine preventable hospitalisations.</i> Hospitalisation required because of a vaccine preventable disease is considered non-preventable, however the disease or condition itself is considered preventable through vaccination. These can include influenza, bacterial pneumonia, hepatitis, tetanus, diphtheria, pertussis (whooping cough), chicken pox, measles, mumps, rubella, polio and haemophilus meningitis. * <i>Acute hospitalisations.</i> Conditions that may not be preventable, but if adequate and timely (usually non-hospital) care was received in the community, potentially would not result in hospitalisation. These include eclampsia, pneumonia (not vaccine-preventable), pyelonephritis, perforated ulcer, cellulitis, urinary tract infections, pelvic inflammatory disease, ear, nose and throat infections and dental conditions. * <i>Chronic hospitalisations.</i> These conditions may be preventable through behaviour modification and lifestyle change but can also be managed effectively through timely care (usually non-hospital) to prevent deterioration and hospitalisation. These conditions include diabetes complications, asthma, angina, hypertension, congestive heart failure, nutritional deficiencies, and chronic obstructive pulmonary disease (COPD). <p>The PPH definition was revised during 2014. The new specification has been applied to all years of data presented in this report and is not comparable with data pre-2016. Caution should be used in making comparisons over time using different specifications.¹⁸ Summary data is reported by financial year/s.</p>
PHU	<p>Public Health Units have a focus of protecting health, preventing disease, illness, and injury; and support the promotion of health and wellbeing at a population or whole of community level. This is distinct from the role of the rest of the health system which is primarily focused on providing healthcare services to individuals and families.</p>
Prevalence	<p>Prevalence is the proportion of a population that has a disease or condition at a given point in time. It is usually expressed as a percentage where the number of events is the numerator and the population at risk is the denominator. Therefore if 10,000 people have diabetes in a total population at risk of 100,000, then the prevalence of diabetes in that population at that time is one in 10, or 10%.</p>

P value	<p>In every experiment, we seek to test if there is an effect or difference between groups in a sample i.e. reports of disease between groups (males/females), a new drug (received drug/did not receive drug) etc. The sample is a selection of people from the population and we assume that the sample is representative if the sample is properly selected. A lack of a difference between the groups in the sample is called the null hypothesis. The P value is a statistical measure of the probability (chance) of finding a difference between the experimental groups, assuming the truth of the null hypothesis.</p> <p>By convention, a P value of 0.05 or less is usually considered 'statistically significant'. That is, if the P value is <0.05, there is a < one in 20 or 5% chance that the observed difference would have arisen by chance alone. If the P value is <0.01, this is often referred to 'highly significant' because the probability that the observed difference is due to chance alone is < one in 100 (or 1%).</p> <p>Either <u>P values</u> or <u>confidence intervals (CIs)</u> can be used to determine whether sample estimate is statistically significant. If a hypothesis test produces both, these results will agree. A lower P value thus suggests stronger evidence for rejecting the null hypothesis (no difference between the groups), and the lower the P value, the lower the chance that we will incorrectly find a difference between the groups.</p>
Relative risk (RR)	<p>The ratio of the probability of an event occurring (death, disease) among those exposed to a risk factor compared with those not exposed. It is calculated by dividing the incidence rate in the exposed group by the incidence rate in the non-exposed group. A relative risk of 1.0 means there is no difference in risk between the two groups.</p>
Statistical Area Level (SA)	<p>In Australia statistical area (SAs) levels are based on the Australian Statistical Geography Standard (ASGS) which classifies SAs in four levels (SA1 through SA4). Only SA2s and SA3s are used in this report. SA2s refer to medium sized general-purpose areas while SA3s are designed for regional level data. The classification of geographic areas allows for comparison of SA level data across regions.</p>
Socio-Economic Indexes for Areas (SEIFA)	<p>SEIFA, which is created by the Australian Bureau of Statistics (ABS), is a measure of the collective socio-economic status for people living in a geographic area based on usual residence. It consists of four scales:</p> <ol style="list-style-type: none"> 1) the Index of Relative Socio-Economic Disadvantage (IRSD) 2) the Index of Relative Socio-Economic Advantage and Disadvantage (IRSAD) 3) the Index of Education and Occupation (IEO) 4) the Index of Economic Resources (IER). <p>SEIFA is primarily used to rank areas according to advantage/disadvantage. SEIFA is calculated based on the census domains of household income, education, employment, occupation, housing and other indicators of advantage and disadvantage. Combined, the indexes provide more general measures of socio-economic status than is given by measuring one of the domains in isolation.</p>

Standardised mortality or separation ratio (SMR or SSR)	The SMR or SSR gives a measure of the excess or reduction in mortality/separations in the HHS compared with Queensland. The SMR or SSR is the ratio of the observed number of events (deaths, hospitalisations) in a population (e.g. West Moreton) to the expected number of events in the standard population (Queensland). Ratios between an area and Queensland are reported as indicating a statistically significant difference if the 95% confidence interval does not include 1.00. For example, if the SMR is 1.22 [95%CI: 1.10 – 1.30] then the ratio indicates that the average mortality or separation rate in the area is 22% higher than in Queensland and that the difference was statistically significant because the confidence interval does not include 1.00.
Statistical significance	A statistical test that provides us with information on whether an observed difference or association is unlikely to be due to chance alone (See P value). If it is unlikely to be due to chance alone it is deemed to be 'statistically significant'. However, it is important to note that statistical significance does not necessarily mean that an observed effect or difference is 'real', because by chance alone one in 20 'significant' findings will be spurious (where P=0.05). Also 'statistical significance' does not necessarily mean clinically significant. It is the size of the effect that determines the clinical or public health importance, not the presence of statistical significance alone.
Total fertility rate (TFR)	The TFR refers to the average number of children that would be born per woman if all females lived to the end of their childbearing years and bore children according to the relevant age-specific fertility rate at each year of their age. This is a more direct measure of the level of fertility than the crude birth rate, since it refers to births per woman.
WHO	World Health Organisation.
WMH	West Moreton Health, otherwise known as West Moreton Hospital and Health Service (HHS), is one of 16 HHSs that, along with the Department of Health, form Queensland Health. Queensland Health is the name of the overall public health service in the state of Queensland, Australia.

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Appendices

Appendix A: Resident profile by sociodemographic characteristic, West Moreton Health and Queensland, 2020

Sociodemographic Characteristics	WMH		QLD	
	<i>n</i>	%	<i>n</i>	%
Persons born overseas	48,344	18.3	1,015,875	21.6
Language other than English spoken at home	26,657	10.1	564,196	12
Persons with a profound or severe disability				
In need of assistance	15,678	5.9	243,267	5.2
No need for assistance	227,662	86.4	4,103,669	87.3
Remoteness*				
Living in major cities	190,752	72.3	2,957,012	63.0
Inner Regional Australia	72,170	27.4	941,834	20.1
Outer regional Australia	797	0.3	667,630	14.2
Dwelling				
Number of motor vehicles per dwelling†				
None	n.a.	4.8	n.a.	6
Three or more	n.a.	22.3	n.a.	19
Internet access from dwelling‡				
Accessed	72,013	82.1	1,387,499	83.7
Not accessed	13,319	15.2	224,855	13.6
Emergency services, schools and hospitals				
Schools	122	n.a.	1,774	n.a.
Hospitals	12	n.a.	306	n.a.
Household Composition				
One family households	64,440	73.5	1,159,697	70
Occupied private dwellings§	79,628	90.8	1,269,653	76.6
Rented dwelling§	31,117	35.5	566,479	34.2
Fully owned occupied private dwellings§	21,972	25.1	471,407	28.5
Education				
Highest level of schooling				
Year 8 or below	13,815	7.1	196,488	5.4
Year 9 or 10 or equivalent	59,315	30.4	964,903	26.5
Year 11 or 12 (or equivalent)	103,780	53.2	2,146,809	58.9
Higher/tertiary education¶				
Certificate	48,569	23.8	807,105	21.3
Advanced diploma or diploma	16,996	8.3	330,619	8.7
Bachelor degree or higher	23,592	11.6	693,410	18.3
Persons with a qualification	111,033	54.5	2,241,124	59.1
Family Composition 				
One parent families	13,299	19.4	201,308	16.5
Couple families with children	30,248	44.2	1,221,148	42.5
Couple families with no children	23,803	34.8	481,451	39.4
Family income 				
Low-income families	6,929	10.1	115,233	9.4
Median total family income (\$)	79,064	n.a.	86,412	n.a.
Median total personal income (\$)	32,846	n.a.	34,326	n.a.

Appendix A continued

Employment				
Unemployment and labour force#				
Unemployed	12,291	7.5	169,924	6.1
Labour force	162,807	n.a.	2,784,150	n.a.
Employment by industry				
Health care and social assistance	13,972	12.4	276,945	13
Retail trade	11,387	10.1	211,778	9.9
Employment by occupation				
Technicians and trades	16,870	15.0	305,441	14.3
Professionals	15,850	14.1	423,917	19.8
SEIFA**				
Qunitile 1 (Most disadvantaged)	n.a.	34.9	n.a.	20.0
Qunitile 2	n.a.	27.2	n.a.	20.0
Qunitile 3	n.a.	16.1	n.a.	20.0
Qunitile 4	n.a.	12.6	n.a.	20.0
Qunitile 5 (Least disadvantaged)	n.a.	9.2	n.a.	20.0
Homelessness (rate per 10,000 persons)	955	36.6	21,715	45.6

* Remoteness population based on 2016 usual resident population: Australian Bureau of Statistics Remoteness Area (RA) classification using ARIA+ mean scores.

† Motor vehicles excludes visitors only and other not classifiable households; excludes motorbikes/scooter.

‡ Records whether any member of the household accesses the internet from the dwelling. This includes accessing the internet through a desktop/laptop computer, mobile or smart phone, tablet, music or video player, gaming console, smart TV or any other devices.

§ Private dwelling excludes visitors only and other not classifiable households; rented dwelling includes renting from a real-estate agent, state housing authority, person not in the same household, housing co-op/community/church, other and not stated.

¶ Higher/tertiary (non-school) education includes persons ages 15 + years with a qualification within the scope of the Australian Standard Classification of Education; Includes bachelor's degree or higher includes bachelor's degree, graduate diploma, graduate certificate and postgraduate degree; Certificate includes Certificate, I, II, III, IV and certificates not further defined response.

|| Family income and family composition includes same sex couples; excludes 'Lone person', 'Group', 'Visitors only' and 'Other non-classifiable' households. Excludes overseas visitors.

Unemployment and labour force based on a 4-quarter smoothed series.

** Socio-Economic Indexes for Areas (SEIFA) contains four indexes; the Index of Relative Socio-Economic Disadvantage (IRSD) is presented: quintile 1/5 indicates areas of most/least disadvantage. Quintiles are based on the Queensland population.

n.a. Cell counts insufficient.

Appendix B: Selected preventive health indicators for chronic disease in adults (18+ years), West Moreton Health, 2009-10 to 2019-20

Risk factor	Population-weighted prevalence (%)* (WMMH)					
	2009-10 % [±95% CI]†	2011-12 % [±95% CI]†	2013-14 % [±95% CI]†	2015-16 % [±95% CI]†	2017-18 % [±95% CI]†	2019-20 % [±95% CI]†
Body mass index (kg/m²)‡						
Underweight (BMI <18.5)	n.a.	3.2 [2.0 - 5.3]	3.2 [1.6 - 6.4]	1.7 [1.0 - 2.8]	2.5 [1.3 - 4.7]	1.5 [0.8 - 2.9]
Healthy weight (BMI 18.5-<25)	35.1 [29.1 - 41.6]	36.5 [33.2 - 39.9]	31.3 [27.2 - 35.8]	30.8 [27.4 - 34.4]	33.0 [29.7 - 36.5]	30.2 [27.3 - 33.3]
Overweight (BMI 25-<30)	36.5 [30.7 - 42.7]	34.6 [31.6 - 37.7]	32.3 [28.2 - 36.7]	33.6 [30.3 - 37.1]	29.9 [27.2 - 32.8]	33.8 [30.8 - 36.9]
Obese (BMI 30+)	26.3 [21.4 - 31.9]	25.7 [23.1 - 28.4]	33.1 [29.2 - 37.3]	33.9 [30.5 - 37.6]	34.5 [31.5 - 37.7]	34.5 [31.6 - 37.5]
Overweight and obese (BMI 25+)	62.8 [56.3 - 68.8]	60.3 [56.8 - 63.6]	65.5 [60.8 - 69.8]	67.5 [63.9 - 70.9]	64.5 [60.9 - 67.9]	68.2 [65.1 - 71.2]
Smoking‡						
Daily Smoking	23.7 [18.9 - 29.2]	16.2 [13.9 - 18.7]	19.7 [16.0 - 23.9]	13.2 [11.2 - 15.5]	14.6 [12.5 - 17.0]	12 [10.1 - 14.0]
Sunburn						
Sunburnt in last 12 months	n.a.	53.2 [49.2 - 57.2]	58.5 [54.5 - 62.5]	53.8 [50.2 - 57.3]	54.8 [51.6 - 58.0]	53.1 [49.9 - 56.3]
Alcohol consumption§						
Lifetime risk	n.a.	16.3 [13.5 - 19.5]	13.6 [11.0 - 16.6]	18.7 [16.1 - 21.7]	n.a.	18 [15.6 - 20.7]
Single occasion risk (at least monthly)	n.a.	26.4 [22.8 - 30.2]	23.2 [19.4 - 27.5]	28.5 [25.1 - 32.1]	n.a.	25.6 [22.7 - 28.6]
Physical activity (19-75 y)						
Sufficient activity for health benefit	50.6 [44.2 - 57.0]	53.1 [49.1 - 57.1]	56.3 [51.7 - 60.7]	57.1 [53.3 - 60.8]	50.2 [46.6 - 53.7]	54.3 [50.9 - 57.6]
Fruit and vegetable consumption¶						
Sufficient fruit intake (2+ serves/day)	n.a.	n.a.	55.9 [51.5 - 60.2]	55.3 [51.7 - 58.8]	51.4 [48.2 - 54.7]	50.8 [47.5 - 54.1]
Sufficient vegetable intake (5+ serves/day)	n.a.	n.a.	8.5 [6.5 - 11.1]	7 [5.4 - 9.0]	7.9 [6.0 - 10.3]	8.1 [6.3 - 10.2]

* Estimates are based on a two-year period of pooled survey data. Survey data are weighted to adjust for differences between demographic characteristics of the population and the regional sample (West Moreton);

† 95% confidence interval

‡ BMI (kg/m²) is calculated from self-reported weight and height; categories are based on recommendations from the WHO.

§ Categorisation based on NHMRC 2009 guidelines.

¶ Fruit and vegetable consumption (prevalence, %) from 2018/19 survey; categorisation based on 2013 Australian Dietary Guideline (ADG).

n.a. Cell counts insufficient to report.

Appendix C: Selected preventive health indicators for chronic disease in adults (18+ years), Queensland, 2009-10 to 2019-20

Risk factor	Population-weighted prevalence (%)* (QLD)					
	2009-10 % †95% CI‡	2011-12 % †95% CI‡	2013-14 % †95% CI‡	2015-16 % †95% CI‡	2017-18 % †95% CI‡	2019-20 % †95% CI‡
Body mass index (kg/m²)‡						
Underweight (BMI <18.5)	2.9 [2.5 - 3.4]	2.8 [2.5 - 3.2]	2.6 [2.2 - 3.1]	2.4 [2.1 - 2.8]	2.8 [2.4 - 3.3]	2.6 [2.2 - 3.2]
Healthy weight (BMI 18.5-<25)	41.7 [40.7 - 42.8]	39.9 [39.1 - 40.8]	39.6 [38.1 - 41.2]	39.6 [38.5 - 40.6]	38 [37.0 - 39.1]	37.4 [36.2 - 38.5]
Overweight (BMI 25-<30)	34.1 [33.1 - 35.1]	34.8 [33.9 - 35.5]	34.6 [33.3 - 35.9]	34.3 [33.3 - 35.2]	34.3 [33.3 - 35.3]	34.9 [33.9 - 36.0]
Obese (BMI 30+)	21.3 [20.4 - 22.1]	22.5 [21.9 - 23.2]	23.2 [22.1 - 24.3]	23.8 [23.0 - 24.6]	24.9 [24.1 - 25.8]	25 [24.2 - 26.0]
Overweight and obese (BMI 25+)	55.3 [54.2 - 56.4]	57.3 [56.4 - 58.1]	57.8 [56.2 - 59.3]	58 [57.0 - 59.1]	59.2 [58.1 - 60.3]	60 [58.8 - 61.1]
Smoking‡						
Daily Smoking	15.8 [15.0 - 16.6]	14.4 [13.8 - 15.0]	13.8 [12.9 - 14.8]	12.1 [11.5 - 12.7]	11.4 [10.8 - 12.1]	10.8 [10.2 - 11.5]
Sunburn						
Sunburnt in last 12 months	n.a.	51.9 [50.9 - 52.9]	54.2 [52.8 - 55.6]	53.9 [53.0 - 54.9]	52.6 [51.6 - 53.6]	52.5 [51.4 - 53.6]
Alcohol consumption§						
Lifetime risk	n.a.	21.5 [20.6 - 22.4]	19.8 [18.7 - 20.9]	21.8 [21.0 - 22.6]	n.a.	21.6 [20.7 - 22.5]
Single occasion risk (at least monthly)	n.a.	30.9 [29.9 - 32.0]	29.9 [28.5 - 31.3]	31.6 [30.6 - 32.6]	n.a.	30 [28.9 - 31.1]
Physical activity (19-75 y)						
Sufficient activity for health benefit	54.4 [53.3 - 55.5]	55.6 [54.6 - 56.6]	59.3 [57.8 - 60.8]	59.6 [58.6 - 60.6]	60 [58.9 - 61.1]	58.3 [57.1 - 59.5]
Fruit and vegetable consumption¶						
Sufficient fruit intake (2+ serves/day)	n.a.	n.a.	58.4 [57.0 - 59.8]	57 [56.0 - 58.0]	53.5 [52.5 - 54.6]	52.1 [51.0 - 53.2]
Sufficient vegetable intake (5+ serves/day)	n.a.	n.a.	8.8 [8.0 - 9.6]	7.1 [6.6 - 7.6]	8.7 [8.1 - 9.3]	8.4 [7.8 - 9.0]

* Estimates are based on a two-year period of pooled survey data. Survey data are weighted to adjust for differences between demographic characteristics of the population and the regional sample (West Moreton).

† 95% confidence interval.

‡ BMI (kg/m²) is calculated from self-reported weight and height; categories are based on recommendations from the WHO.

§ Categorisation based on NHMRC 2009 guidelines. Fruit and vegetable consumption (prevalence, %) from 2018/19 survey; categorisation based on 2013 Australian dietary guidelines.

¶ Fruit and vegetable consumption (prevalence, %) from 2018/19 survey; categorisation based on 2013 Australian Dietary Guideline (ADG).

n.a. Cell counts insufficient to report.

Appendix D: Selected preventive health indicators for chronic disease in children (5-17 years), West Moreton Health, 2013-14 to 2019-20

Risk factor	Population-weighted prevalence (%)* (WMH)			
	2013-14 % [±95% CI]†	2015-16 % [±95% CI]†	2017-18 % [±95% CI]†	2019-20 % [±95% CI]†
Body mass index (kg/m²)‡				
Under- or healthy weight	68.1 [62.5 - 73.3]	72 [66.2 - 77.1]	70.1 [63.9 - 75.6]	69.1 [63.3 - 74.3]
Overweight	20.1 [15.8 - 25.1]	18.3 [14.1 - 23.5]	19.1 [14.4 - 25.0]	19.3 [15.1 - 24.4]
Obese	11.8 [8.5 - 16.2]	9.7 [6.6 - 14.0]	10.8 [7.6 - 15.0]	11.6 [8.2 - 16.2]
Overweight and obese	31.9 [26.7 - 37.5]	28 [22.9 - 33.8]	29.9 [24.4 - 36.1]	30.6 [25.7 - 36.7]
Sunburn§				
Sunburnt in last 12 months	58.8 [53.5 - 63.9]	n.a.	n.a.	42.7 [37.1 - 48.5]
Physical activity				
Sufficient activity for health benefit	38 [33.0 - 43.4]	46.8 [41.1 - 52.7]	46.4 [40.4 - 52.5]	51.6 [45.9 - 57.3]
Fruit and vegetable consumption¶				
Sufficient fruit intake	61.4 [56.1 - 66.4]	63.6 [57.9 - 68.8]	n.a.	67 [61.5 - 72.0]
Sufficient vegetable intake	5.6 [3.5 - 9.0]	3.2 [1.7 - 5.9]	n.a.	4.7 [2.9 - 7.6]

* Estimates are based on a two-year period of pooled survey data. Survey data are weighted to adjust for differences between demographic characteristics of the population and the regional sample (West Moreton).

† 95% confidence interval.

‡ BMI (kg/m²) is calculated from self-reported weight and height; categories are based on recommendations from the WHO.

§ Categorisation based on NHMRC 2009 guidelines.

¶ Fruit and vegetable consumption (prevalence, %) from 2018/19 survey; categorisation based on 2013 Australian Dietary Guidelines (ADG).

n.a. Cell counts insufficient to report.

Appendix E: Selected preventive health indicators for chronic disease in children (5-17 years) Queensland, 2013-14 to 2019-20

Risk factor	Population-weighted prevalence (%)* (QLD)			
	2013-14 % [±95% CI]†	2015-16 % [±95% CI]†	2017-18 % [±95% CI]†	2019-20 % [±95% CI]†
Body mass index (kg/m²)‡				
Under- or healthy weight	74.7 [73.2 - 76.1]	75.7 [74.1 - 77.1]	73.8 [72.2 - 75.4]	74.4 [72.8 - 75.9]
Overweight	16.5 [15.3 - 17.7]	17.2 [15.9 - 18.5]	17.4 [16.1 - 18.8]	17.4 [16.1 - 18.7]
Obese	8.9 [7.9 - 9.9]	7.2 [6.3 - 8.2]	8.8 [7.8 - 9.8]	8.3 [7.3 - 9.3]
Overweight and obese	25.3 [23.9 - 26.8]	24.3 [22.9 - 25.9]	26.2 [24.6 - 27.8]	25.6 [24.1 - 27.2]
Sunburn§				
Sunburnt in last 12 months	59.2 [57.7 - 60.8]	n.a.	n.a.	49.2 [47.5 - 50.9]
Physical activity				
Sufficient activity for health benefit	39.4 [37.9 - 41.0]	42.1 [40.4 - 43.8]	43.1 [41.4 - 44.8]	47.1 [45.4 - 48.8]
Fruit and vegetable consumption¶				
Sufficient fruit intake	66.5 [65.0 - 68.0]	69 [67.4 - 70.5]	n.a.	68.9 [67.4 - 70.5]
Sufficient vegetable intake	6.4 [5.6 - 7.2]	3.8 [3.2 - 4.4]	n.a.	4.3 [3.6 - 5.1]

* Estimates are based on a two-year period of pooled survey data. Survey data are weighted to adjust for differences between demographic characteristics of the population and the regional sample (West Moreton);

† 95% confidence interval.

‡ BMI (kg/m²) is calculated from self-reported weight and height; categories are based on recommendations from the WHO.

§ Categorisation based on NHMRC 2009 guidelines.

Note: Fruit and vegetable consumption (prevalence, %) from 2018/19 survey; categorisation based on 2013 Australian Dietary Guideline (ADG).

