

Metro South Public Health Unit

Health Indicators Report:

Logan local government area, Metro South Health

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Logan LGA at a glance

Logan LGA population

- In 2021, estimated resident population: 350,740 people
- Represents 6.7% of the Queensland population
- By 2041, projected to increase by 58% to 554,327 people
- Largest percentage increase in residents 80+ years
- By 2041, there will be over 31,000 residents 80+ years

Key Logan LGA health stats

- 175,050 hospital separations per year for all causes
- 14,133 potentially preventable hospitalisations (PPH)
- 1,642 deaths per year from all causes
- 384 deaths per year classed as potentially avoidable
- 1,623 new cases of cancer per year

Impact of COVID-19

- Increased rates of PPH for dental conditions, diabetes complications and urinary tract infections – may reflect drop in management and prevention during pandemic
- Sharp reduction in hospitalisation rates for respiratory conditions owing to pandemic control measures
- Hospitalisations for anxiety & depression fell while self-inflicted injury rose sharply, particularly in young people
- Fall in bowel and breast cancer screening participation
- Substantial increase in birth rate in 2021

Areas of health success for Logan LGA

Hospitalisations

- Hospitalisation rates for arthropathies, coronary heart disease (CHD), anxiety & depression lower than Queensland
- Rates for asthma & CHD decreasing

Deaths

- Death rates for coronary heart disease (CHD) and stroke decreasing
- Death rate for diabetes in women lower than Queensland

Cancer

- Overall cancer incidence rate lower than Queensland
- Incidence rates of prostate, breast and lung cancers decreasing
- Lung cancer death rate in men decreasing strongly

Risk factors

- Adult smoking rates decreasing
- Adults less likely to drink at risky levels than Queensland

Specific health challenges for Logan LGA

Hospitalisations

- Overall PPH rate higher than Queensland
- Diabetes complications account for 31% of PPHs, with higher rate than Queensland
- Hospitalisation rates for asthma, COPD, influenza & pneumonia, heart failure, diabetes, falls and road transport injury higher than Queensland
- COPD, stroke, diabetes, falls, road transport injuries, arthropathies, influenza & pneumonia, anxiety & depression and self-inflicted injury all have increasing hospitalisation rates

Deaths

- Avoidable mortality rate higher than Queensland
- Female COPD and male CHD death rates higher than Queensland

Cancer

- One in five (21%) cancer deaths due to lung cancer
- Lung cancer incidence rate higher than Queensland

Risk factors

- Smoking in pregnancy at 16% - higher than Queensland
- 43% of Indigenous mothers smoked during pregnancy
- Gestational diabetes tripled in last 14 years to 20%
- Two-thirds of adults (67%) are overweight or obese
- Adults less likely to do enough exercise and eat sufficient fruit than Queensland
- Key emerging issue – health effects of e-cigarettes use

Broad future challenges for Logan LGA

Continuing to provide quality healthcare when:

- Logan LGA population is rapidly ageing
- Hospitalisations are increasing, especially in conditions associated with ageing (e.g. diabetes, falls, arthropathies, COPD)
- Many modifiable chronic disease risk factors remain high and likely will contribute to high hospitalisation rates

Areas of specific challenge:

- Diabetes - increases in hospitalisation, preventable hospitalisation and incidence in pregnant women
- Mental health – both anxiety & depression and self-harm
- Recovering from the impacts of COVID-19, particularly in the areas of preventable hospitalisations, mental health and cancer screening
- Reduction of PPHs – currently 8% of all hospitalisations

Executive Summary

This report describes the health status of the Logan local government area (LGA) population, identifying important and emerging health issues. The focus is on demographics and health outcomes including mortality and hospitalisation rates for major diseases, mortality and incidence rates for selected cancers, as well as avoidable mortality and potentially preventable hospitalisations. The report also includes sections on cancer screening rates, maternal and child health indicators and chronic disease risk factors. Where data for the relevant period are available, the impact of the COVID-19 pandemic on key indicators is discussed.

Key Findings

Demographics

As at 30 June 2021, Logan LGA had an estimated resident population of 350,740 people, representing about 6.7% of the Queensland population. Compared with Queensland as a whole, Logan LGA had a much larger proportion of children and teenagers (birth to 19 years), a larger proportion of young adults (20 to 39 years) and a smaller proportion of persons aged 45 years and over. In 2020, Indigenous people represented an estimated 3.8% of the population of Logan LGA, compared with 4.6% of the Queensland population.

It is projected that the overall population of Logan LGA will increase by 58% between 2021 and 2041, significantly above the projected state average increase of 37%. The largest percentage increase in Logan LGA is expected in the 80+ years age group (249%). By 2041 it is projected that there will be over 102,000 Logan LGA residents of 'retirement age' (65+ years) with over 31,000 of these aged 80 years or over. This substantial increase in the number and proportion of older persons has major implications for health service delivery.

Hospital separations

On average there were just over 175,000 hospital separations per year in Logan LGA residents in the three years to 2020/21. Rates of hospital separation in Logan LGA were significantly higher than Queensland for all conditions combined (all causes) and for the sub-categories of asthma, chronic obstructive pulmonary disease (COPD), influenza & pneumonia, stroke (females only), heart failure, diabetes, falls and road transport injury.

Hospital separation rates were significantly lower in Logan LGA residents compared with Queensland for arthropathies and systemic connective tissue disorders, coronary heart disease, all mental health conditions (combined) and anxiety & depression.

Over the past ten years, Logan LGA hospital separations rates trended upwards for all causes and for the subcategories of arthropathies and systemic connective tissues disorders, COPD, influenza & pneumonia, stroke, heart failure (females only), diabetes, falls, road transport injuries (especially in young people aged 15 to 24 years), all mental health conditions, anxiety & depression and self-inflicted injury (especially among young people aged 15 to 24 years).

Logan LGA hospital separation rates trended downwards over the same period for asthma, coronary heart disease and heart failure (males only).

COVID-19 pandemic impact:

International border closures, travel restrictions and the suite of public health mitigation measures implemented from 2020 onward were likely to have been key factors contributing to recent sharp downward movement in separation rates for the respiratory conditions asthma, chronic obstructive pulmonary disease (COPD) and influenza & pneumonia. Separation rates for stroke (females only) and road transport injury in young males rose during the pandemic period. The pandemic appears to have had no consistent or appreciable effect on separation rates for diabetes or most cardiovascular disease conditions (coronary heart disease, stroke (males only), heart failure).

Separation rates for anxiety & depression fell during the pandemic period while those for self-inflicted injury rose sharply, particularly in young people (15 to 24 years). It is reasonable to suggest that access to some health services such as mental health services were more difficult during the pandemic. This in turn could partially explain the drop in hospitalisation rate for anxiety & depression and possibly consequent higher rate for self-harm episodes.

Potentially preventable hospitalisations (PPH)

In 2020/21 there were over 14,000 hospitalisations of Logan LGA residents classified as 'potentially preventable'. The rates of all PPHs combined and the sub-categories of all acute, all chronic and vaccine preventable PPHs were all significantly higher in Logan LGA residents than in Queensland.

Overwhelmingly the condition with the highest rate of PPH in Logan LGA residents was diabetes complications which represented over 30% of all Logan LGA PPHs.

COVID-19 pandemic impact:

Rates of PPH for respiratory and respiratory-related conditions fell during the pandemic period. Rates of PPH for dental conditions, diabetes complications and urinary tract infections increased during this time. This may reflect a drop in management and preventative measures usually associated with these conditions during this period.

Mortality

On average there were 1,642 deaths from all causes per year in Logan LGA residents in the three years to 2019. Mortality rates in Logan LGA were significantly higher than Queensland for all causes combined and for the sub-categories of COPD (females only) and coronary heart disease (males only). The mortality rate for diabetes (females only) was significantly lower in Logan LGA than in Queensland.

Over the past ten years Logan LGA mortality rates for all causes, coronary heart disease and stroke all trended downwards while rates for all mental health conditions (males only) and suicide trended upwards.

In 2016-19 there was an average of 384 deaths per year of Logan LGA residents which were classified as 'avoidable'. The age standardised avoidable mortality rate in Logan LGA was significantly higher than the rate in Queensland over this period.

COVID-19 pandemic impact:

At time of publication, deaths data was only available up to 2019, therefore the impact of the COVID-19 pandemic on death rates cannot yet be assessed at the local government area level. In Australia, all causes mortality rates decreased in 2020, the first year of the pandemic, but increased in 2021.

Cancer

On average there were 1,623 new cases of cancer and 497 cancer deaths per year in Logan LGA residents in 2015 to 2019. Over this period, the age standardised death rates for all cancers combined and the sub-groups of lung and hepatobiliary cancers were significantly higher in Logan LGA than in Queensland. Death rates for all other major cancer types in Logan LGA were statistically similar to Queensland rates.

More than one in five (21%) cancer deaths in Logan LGA residents were due to lung cancer. The other cancers most commonly causing death in Logan LGA were hepatobiliary (12%), colorectal (12%) and haematological (10%).

Lung cancer death rates among Logan LGA males trended strongly downwards between 2002 and 2019 while rates in females did not show a consistent trend.

In 2015 to 2019, age standardised rates of new cancer cases (incidence) were significantly lower in Logan LGA residents than in Queensland for all cancers combined, and the sub-groups of prostate, female breast cancer and melanoma. The incidence rates of lung, gynaecological and upper gastrointestinal cancers were significantly higher in Logan LGA than in Queensland. Of the new cancers diagnosed in Logan LGA residents in this period, the most common were prostate cancer (12% of all new cases), female breast (12%), haematological (12%), colorectal (11%), melanoma (11%) and lung (10%) cancers.

Logan LGA incidence rates of prostate, female breast and lung cancers trended downwards between 2010 and 2019. No cancer incidence rates trended upwards in Logan LGA residents in this period.

Cancer screening

In 2019-20 the Logan LGA National Bowel Cancer Screening Program participation rate (34%) was lower than the Queensland rate (39%). Program participation rates increased with increasing age and were consistently higher in women than in men. While the Queensland participation rate trended upwards between 2014-15 and 2018-19, in Logan LGA the rates was steady at 36% between 2015-16 and 2018-19.

At time of publication of this report BreastScreen Queensland and the Queensland Cervical Screening Program did not publish participation rates at the LGA-level. In Metro South Health (MSH) participation rates in BreastScreen Queensland trended downwards between 2014-15 and 2019-20, reaching 51% in 2019-20. In 2018-20, MSH participation in cervical screening was 56%.

COVID-19 pandemic impact:

The COVID-19 pandemic impacted people's access to and use of health services such as screening programs. Participation in the bowel cancer screening program by Logan LGA residents decreased in 2019-20 to the lowest level seen since 2014-15. BreastScreen participation rates in MSH fell in 2019-20 more sharply than in previous years.

It is not possible to determine the exact scale of the impact of the pandemic on cervical screening because of recent changes to the program.

Maternal and child health

In 2021 there were 5,258 births to 5,199 Logan LGA mothers. The total life-time fertility rate per female aged 15-49 years in Logan LGA (2.07 births per woman) was significantly higher than the Queensland rate. Total life-time fertility rates fell between 2010 and 2020 with a substantial increase recorded in 2021.

The overall median maternal age in Logan LGA in 2021 was 29 years while the median Logan LGA Indigenous maternal age was 25 years.

In 2020-21, 16% of pregnant women in Logan LGA reported smoking cigarettes for all or part of their pregnancy (significantly higher than the Queensland prevalence of 12%). In comparison, 43% of Indigenous Logan LGA mothers smoked during pregnancy.

The prevalence of gestational diabetes more than tripled in Logan LGA between 2007 (6%) and 2021 (20%). This substantial increase indicates a likely increase in related adverse pregnancy outcomes, especially if the trend is sustained over time.

The Logan LGA infant mortality rate (deaths in the first year of life) (4.9 deaths per 1,000 live births) was statistically similar to the Queensland rate (4.0 deaths per 1,000 births) in 2016 to 2020.

The perinatal mortality rate (stillbirths and deaths in the first 28 days of life) in Logan LGA (10.6 deaths per 1,000 live births) was statistically similar to the Queensland rate (10.3 per 1,000 births) in 2017 to 2021.

COVID-19 pandemic impact:

A substantial increase in total life-time fertility rate was recorded in Logan LGA women in 2021, despite Australian survey results from late 2020 indicating that the pandemic had a negative impact on many women's intentions of having children.

Chronic disease risk factors

In 2019 to 2020, two-thirds (67%) of adult Logan LGA residents were overweight or obese (self-reported data) and 16% reported being daily smokers with the prevalence of both risk factors being significantly higher than in Queensland.

Just over half (51%) of Logan LGA adults reported doing sufficient physical exercise for health benefit, and 47% reported adequate fruit intake for health benefit. The Logan LGA prevalence of each of these protective factors was significantly lower than in Queensland.

Only 7% of Logan LGA adults reported adequate vegetable consumption for health benefit which was similar to the Queensland prevalence (8%). Just over half (51%) of Logan LGA adults reported being sunburnt in the last 12 months which was also statistically similar to the prevalence in Queensland (53%).

COVID-19 pandemic impact:

At the time of publication, insufficient data was available to assess the impact of the COVID-19 pandemic on risk factor behaviours in Logan LGA.

Introduction

The aim of this report is to examine the health status of people living within the geographical boundaries of the Logan local government area (LGA). Logan LGA is located between the LGAs of Brisbane, Ipswich, Redland and Gold Coast and encompasses 70 suburbs and a total land area of 958.1 km².

In 2021 Logan LGA had an estimated resident population of 350,740 persons, representing 6.7 per cent of Queensland's population and 29% of the population of the Metro South Hospital and Health Service area. The region's demographics are diverse and include metropolitan and small rural community settings.

Logan LGA contains one major public referral hospital (Logan Hospital) and two private hospital facilities, both of which are small day hospitals.

Community Health Services in Logan LGA operate from Community Health Centres in Beenleigh, Browns Plains and Logan Central. Oral Health services are provided through Dental Clinics at Logan Hospital, Logan Central, Beenleigh and Browns Plains.

Metro South Health

Logan LGA sits within the geographical area covered by Metro South Health (MSH). MSH is the major provider of public health services and health education and research in this area. It is one of 16 hospital and health services in Queensland and serves an estimated population of just over 1.2 million people representing 23 per cent of Queensland's population. In addition to Logan LGA, MSH also encompasses the geographical areas of Redland LGA, Brisbane LGA south of the Brisbane River and part of Scenic Rim LGA.

Metro South Public Health Unit

Metro South Public Health Unit (MSPHU) is located at Queensland Health Forensic and Scientific Services, Coopers Plains. Public Health Units focus on protecting health; preventing disease, illness and injury; and promoting 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 MSPHU include:

- coordinate disease control initiatives, including response to disease outbreaks
- undertake a range of environmental health initiatives, including monitoring compliance with and enforcing public health legislation in relation to food safety and standards, water quality standards, regulated drugs and poisons, and tobacco control
- assess and coordinate local responses to environmental health risks
- undertake epidemiology and health surveillance activities, including the collation, analysis, monitoring and dissemination of information on health status and disease trends

- provide specialist public health advice to health services, other sectors and the community, and develop their capacity to collaboratively plan and implement effective public health programs
- provide education, training and clinical support for immunisation programs, and coordinate school-based vaccination programs.

Data Sources

This report was produced by MSPHU and utilised the most recent available data at the time of writing. Years and sources for specific datasets are as follows:

Dataset	Years reported	Data source
Mortality (non-cancer)	2010 - 2019	Cause of Death Unit Record File (COD URF), Australian Coordinating Registry Data extracted by Statistical Service Branch, Queensland Health, September 2021.
Hospital separations	2011/12 - 2020/21 <i>(reported by financial year/s)</i>	Queensland Hospital Admitted Patient Data Collection (QHAPDC), Department of Health Data extracted by Statistical Services Branch, Queensland Health, June 2022
Cancer incidence and mortality	2010 – 2019	Oncology Analysis System (OASys), Cancer Alliance Queensland, Queensland Cancer Control Analysis Team. Data extracted by MSPHU, July 2022.
Cancer screening	2014-15 – 2019-20	Australian Institute of Health and Welfare. Cancer screening programs: quarterly data
Maternal and child health	2017 - 2021	Queensland Perinatal Data Collection (QPDC) Data extracted by Statistical Services Branch, Queensland Health, September 2022
Chronic disease risk factors	2018 – 2019 and 2019 – 2020 <i>(varies with risk factors)</i>	Queensland Survey analytics system (QSAS), Detailed Queensland and regional preventive health survey results. Data extracted by MSPHU, September 2022.

Population profile

Geographical area

The LGA of Logan is located between Brisbane and Redland to the north, Ipswich to the west, Scenic Rim to the south and Gold Coast to the east. It encompasses 63 suburbs from Rochedale South and Underwood in the north, to Carbrook in the east, Greenbank and Lyons in the west and Mundoolun and Cedar Vale in the south. The LGA covers a geographic area of 958.1 km², representing less than 0.1% of the total area of Queensland (Figure 1).



Figure 1: Map showing boundary of Logan local government area

Demographics

The estimated resident population of Logan LGA as at 30 June 2021 was 350,740 persons, representing 6.7% of the Queensland population. Compared with Queensland, Logan LGA had a much larger proportion of children and teenagers (birth to 19 years), a larger proportion of young adults (20 to 39 years), and a smaller proportion of persons aged 45 years and over (Figure 2). Figure 3 shows a population pyramid for Logan LGA, as at 30 June 2021.

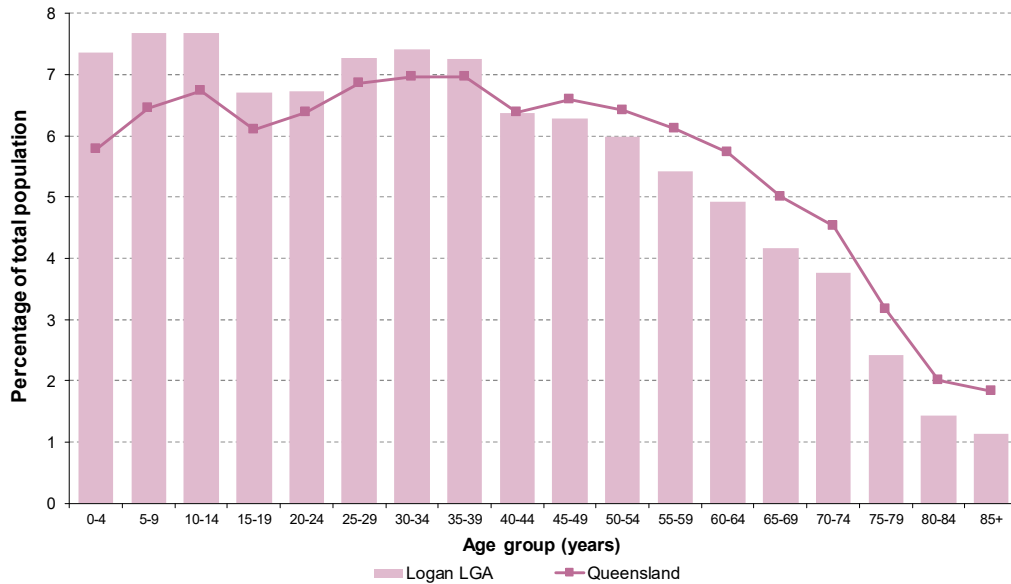


Figure 2: Percentage of total estimated population by age group, Logan LGA and Queensland, 30 June 2021

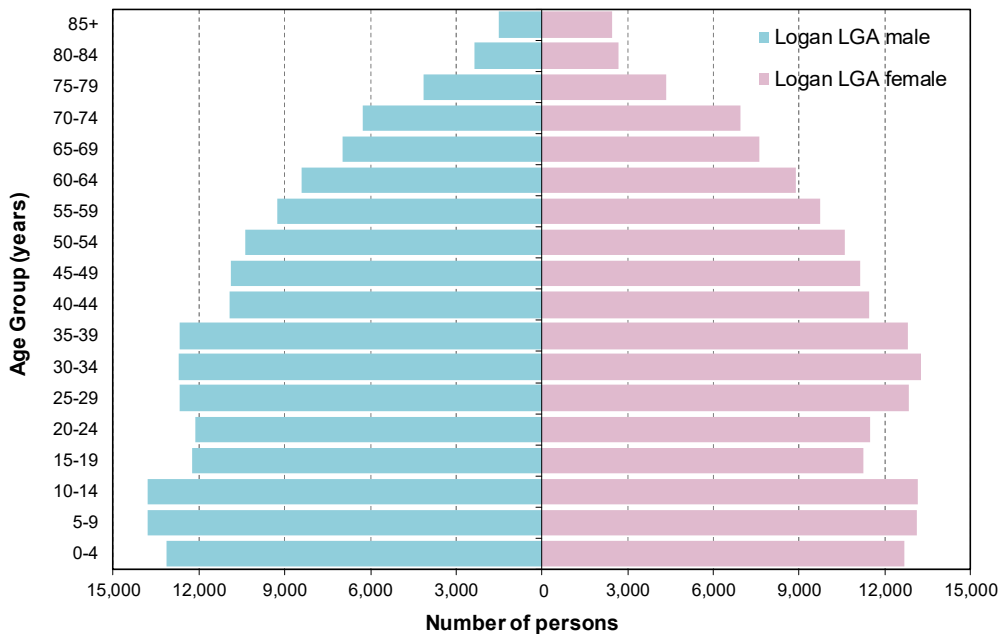


Figure 3: Estimated resident population by age group and sex, Logan LGA, 30 June 2021

In 2020, Indigenous people represented an estimated 3.8% of the population of Logan LGA, compared with 4.6% of the Queensland population. The Indigenous population of Logan LGA had a much higher proportion of people aged under 30 years and a much lower proportion of people aged 30 years and over in comparison with the overall population of the LGA (Figure 4). It is to be noted that Indigenous population estimates should be interpreted with caution as they are likely to be underestimates.

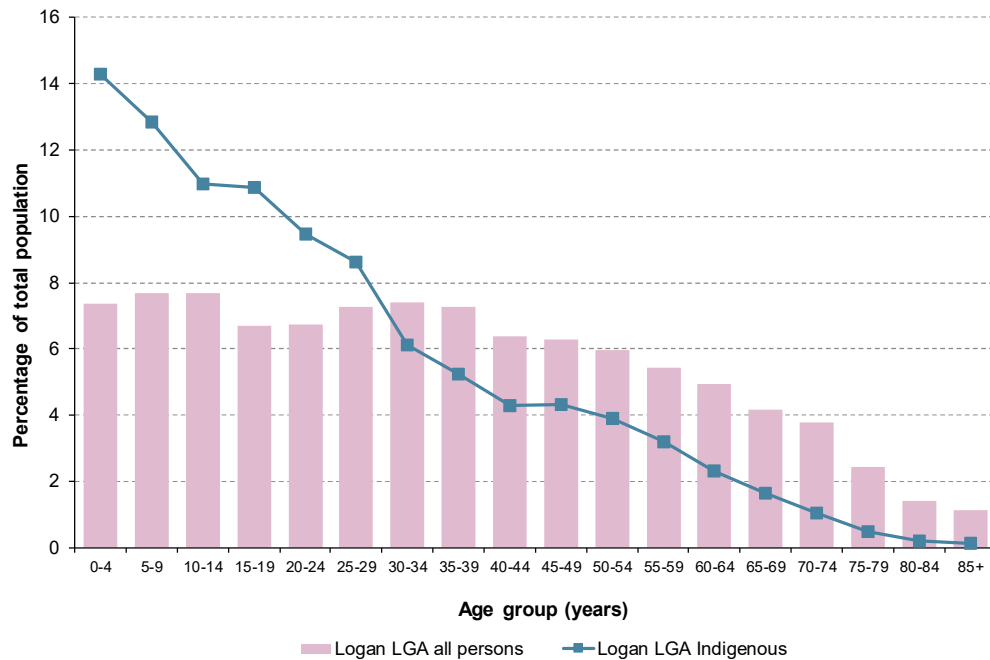


Figure 4: Percentage of estimated resident population by age group, Logan LGA all persons and Logan LGA Indigenous population, 2020

Population projections

2020 to 2031

The most recent population projections (undertaken in 2018) estimate an increase in overall population of just over 25% in Logan LGA between 2021 and 2031 (Table 1). This is higher than the increase of 19% projected to occur across Queensland as a whole over the same period. The largest increases are projected to occur in the age groups over 65 years, largely representing retirees (Table 1; Figure 5). By 2031, it is projected that there will be over 26,000 additional Logan LGA residents aged 65 years and over compared with 2021, with more than one third of this increase in those over 80 years of age.

Table 1: Projected population count and percentage increase by age group, Logan LGA with Queensland comparison, 2021 to 2031

Age group (years)	Logan LGA population		Percentage increase	
	2021 (ERP)	2031 (proj.)	Logan LGA	Queensland
0 to 14	79,704	95,144	19.4	15.0
15 to 24	47,121	59,635	26.6	21.3
25 to 39	76,962	85,165	10.7	13.3
40 to 64	101,613	129,274	27.2	14.3
65 to 79	36,341	53,163	46.3	28.1
80+	8,999	18,677	107.5	69.4
Total	350,740	441,057	25.8	19.0

Logan LGA is expected to experience higher population growth than Queensland across all five-year age groups except those aged birth to four years and 25 to 34 years (Figure 5). It is estimated that the number of Logan LGA residents aged over 80 years will more than double by 2031. (Figure 5). These growth projections represent major demographic changes for the Logan LGA in the near-term.

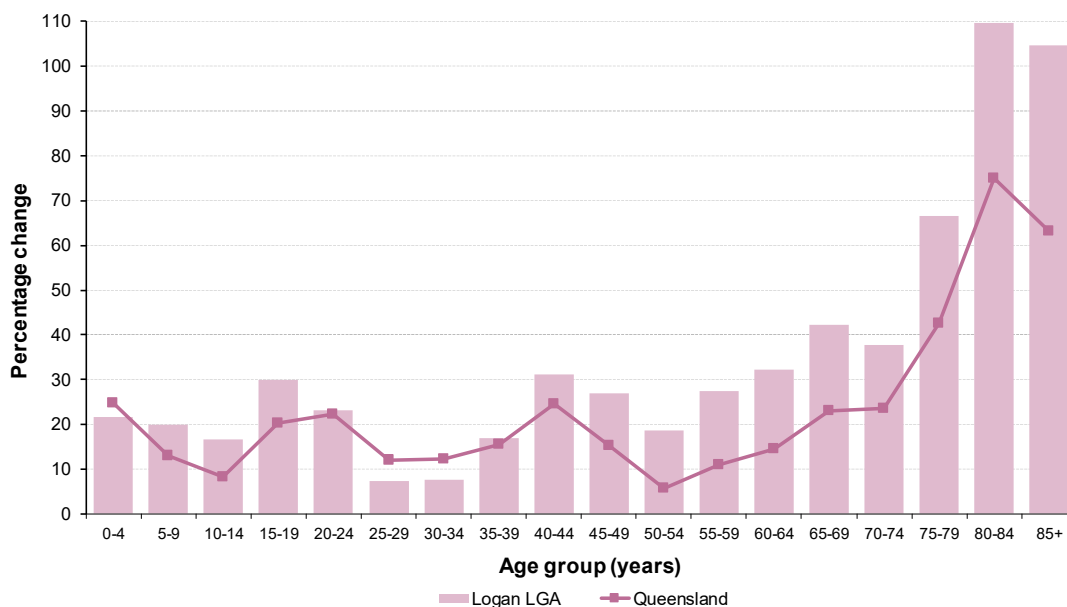


Figure 5: Projected percentage population changes by age group, Logan LGA and Queensland, 2021 to 2031

2021 to 2041

Taking a slightly longer-term perspective, it is projected that there will be a population increase of 58% in Logan LGA between 2021 and 2041. This is significantly greater than the projected increase across all of Queensland over the same period of 37%. By far the largest percentage increases are projected to occur in the age groups over 80 years (Table 2, Figure 6).

Table 2: Projected population count and percentage increase, Logan LGA with Queensland comparison, 2021 to 2041

Age group (years)	Logan LGA population		Projected percentage increase	
	2021 (ERP)	2041(proj.)	Logan LGA	Queensland
0 to 14	79,704	114,592	43.8	28.8
15 to 24	47,121	71,691	52.1	33.6
25 to 39	76,962	104,678	36.0	27.0
40 to 64	101,613	161,062	58.5	31.2
65 to 79	36,341	70,909	95.1	50.9
80+	8,999	31,395	248.9	150.4
Total	350,740	554,327	58.0	37.3

In Logan LGA, the number of residents aged over 85 years is predicted to increase by over 300% by 2041 (Figure 6), equating to approximately 12,000 additional residents in this age group within 20 years.

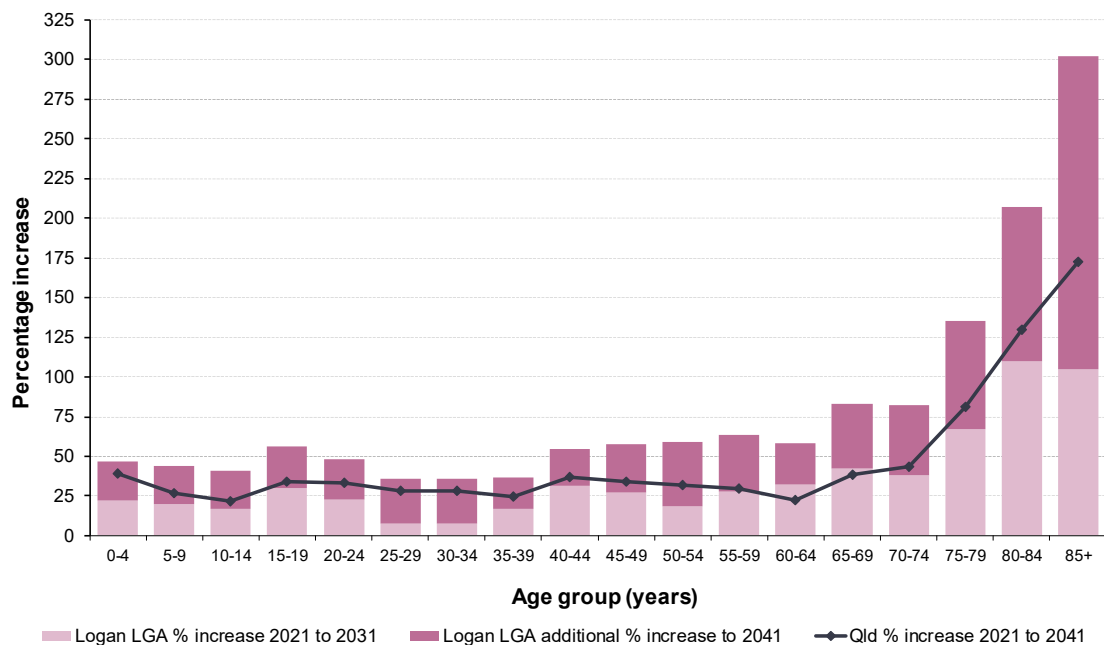


Figure 6: Projected percentage population changes by age group, Logan LGA and Queensland, 2021 to 2041

By 2041, it is projected that there will be over 102,000 Logan LGA residents of ‘retirement age’ (65 years and over) which is an increase of about 57,000 from 2021. While in 2021 one in five (20%) of those Logan LGA residents aged 65 years and over were in the 80 years and over age group, by 2041 it is projected that this proportion will have increased to 31%. This equates to over 31,000 Logan LGA residents aged 80 years and over by 2041.

In 2021, 58% of Logan LGA residents were in the ‘working ages’ of 20 to 64. By 2041 the balance between working and retirement ages will be undergoing a substantial change with a reduction in the percentage of ‘working age’ residents to 54%. The population pyramid (Figure 7) illustrates the projected changes across age groups by sex over this period.

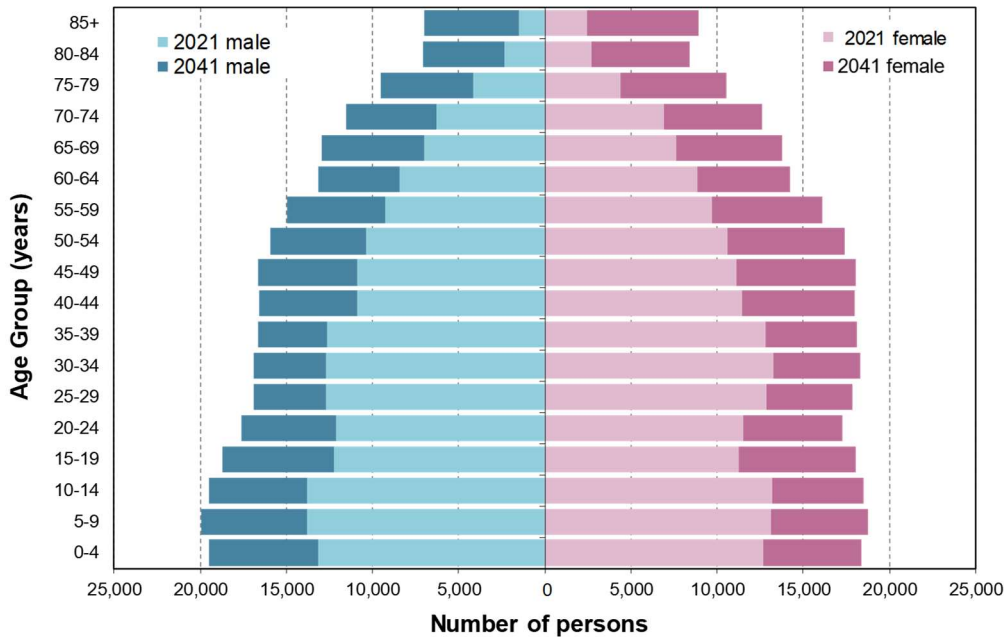


Figure 7: Estimated resident population by age group and sex, Logan LGA, as at 30 June 2021 and projection to 2041

The substantial ageing of the population predicted to occur over the coming 20 year period will have major implications for the health and hospital system. In Logan LGA the rate of population growth is expected to be higher than the state average in every age group, with a massive percentage increase in the very elderly. It can be expected that Logan LGA will experience and have to manage more people living with disability and chronic health conditions, an increasing demand for GP and other primary health services and a substantially increasing need for aged care services and hospital beds.

Avoidable mortality

A death is defined as being premature if it occurs in a person less than 75 years of age¹. In 2018, 37% of all Queensland deaths were premature and just over half (51%) of these were defined as being potentially avoidable under nationally agreed criteria². The proportion of premature deaths that were potentially avoidable was higher in males (52%) than in females (48%). Avoidable deaths are those premature deaths which, in the context of the present health system, are from conditions potentially preventable through individualised care and/or treatable through existing primary or hospital care².

Prior to 2015, avoidable deaths were classified as either being 'treatable' (amenable to healthcare) or 'preventable' (those deaths which result from conditions which could have been prevented from occurring in the first place)¹. However, this classification and the definitions underpinning it were not without complications. Therefore, throughout 2014 work was undertaken on this indicator by the Potentially Preventable Hospitalisations/Potentially Avoidable Deaths Working Group, with further revisions by the Australian Institute of Health and Welfare (AIHW) including an examination of international work in avoidable mortality. As a result of this work, the sub-classifications of 'treatable' and 'preventable' were abolished from 2015 onwards and the National Healthcare Agreement (NHA) (2022) Health, Standard 24/09/2021 now includes the PI-16 Potentially avoidable deaths, 2022 indicator³.

Because of this relatively recent change in the definition of 'avoidable mortality', no time series data are presented in this report. It is also important to note that further revisions of this NHA potentially avoidable deaths standard are proposed, so stability of definitions is unlikely to be achieved over the coming years.

In the four years from 2016 to 2019, an average of 384 Logan LGA resident deaths per year were classified as potentially avoidable. This represented 33% of all of the potentially avoidable deaths throughout Metro South Health over that period, which was slightly more than the 29% which would have been expected on a purely population proportional basis.

The age standardised avoidable mortality rate in Logan LGA (120 per 100,000 persons; [95% CI: 114 – 126]) was significantly higher than the rate in all of Queensland (110 per 100,000 persons; [95%CI: 109 – 111]).

Between 2016 and 2019, in both Logan LGA residents and all Queenslanders, avoidable mortality rates for males were significantly higher than for females (Figure 8). In Logan LGA, the avoidable mortality rate for males was 73% higher than the female rate while in Queensland the male rate was 87% higher than the female. Rates for Logan LGA and Queensland males were statistically similar while rates for Logan LGA females were significantly higher than Queensland females (Figure 8).

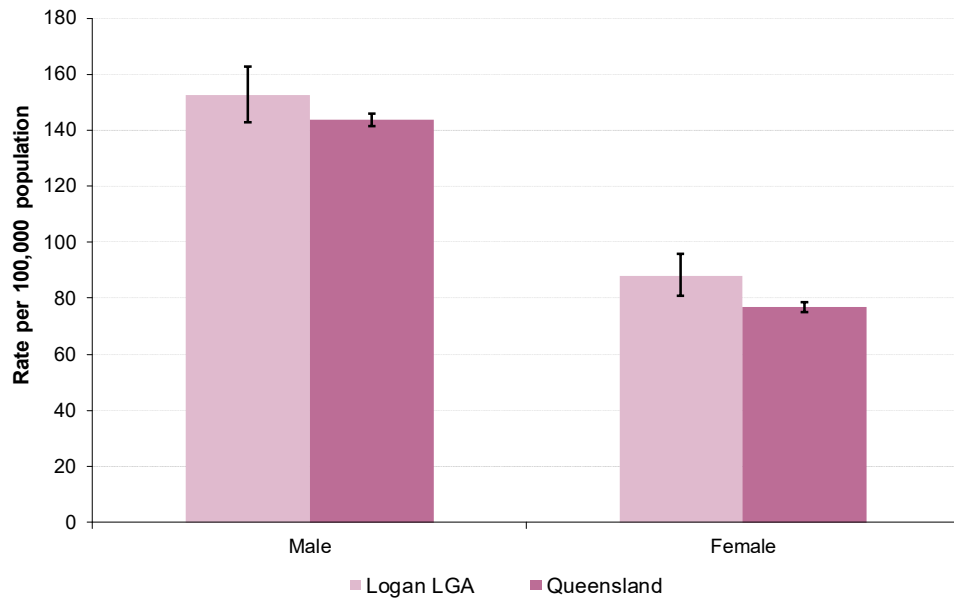


Figure 8: Age standardised avoidable mortality rates by region and sex with 95% confidence intervals, 2016 to 2019

Potentially preventable hospitalisations

Potentially preventable hospitalisations (PPHs) are defined by the AIHW (*National Healthcare Agreement: 2022*) as 'admissions to hospital for a condition where the 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 (including by general practitioners, medical specialists, dentists, nurses and allied health professionals)'. Separation rates for PPHs therefore have potential as indicators of the quality or effectiveness of non-hospital care⁴. For the purposes of this report, the Queensland Health definition which excludes renal dialysis was used, owing to inconsistencies in coding practices across Queensland.

PPHs are a key indicator of primary care provision under the 2022 National Healthcare Agreement³. 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 such as general practitioners and community health centres, or an appropriate use of the hospital system to respond to greater need. PPHs are usually classified into three broad categories⁴.

- **Vaccine preventable.** These diseases can be prevented by appropriate vaccination and include influenza, bacterial pneumonia, hepatitis, tetanus, diphtheria, pertussis (whooping cough), chicken pox, measles, mumps, rubella, polio and haemophilus meningitis. The conditions themselves are considered to be preventable, rather than the hospitalisation.
- **Acute.** These conditions may not be preventable, but theoretically would not result in hospitalisation if adequate and timely care (usually non-hospital) was received. 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.
- **Chronic.** 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).

The specification for this indicator was revised during 2014, and this new specification has been applied to all years of data presented in this report. Therefore, the data presented here are not comparable with data presented in reports dated pre-2016 and caution should be used in making comparisons over time using different specifications⁴.

PPHs by category

In 2020/21 there were 14,133 potentially preventable hospitalisations among Logan LGA residents, representing 7% of all hospitalisations. The age standardised rate was 4,190 PPHs per 100,000 persons.

The rate of potentially preventable hospitalisation was significantly higher in Logan LGA than in Queensland for all preventable conditions and each of the sub-categories of acute conditions, chronic conditions and vaccine preventable conditions (Figure 9; Table 3).

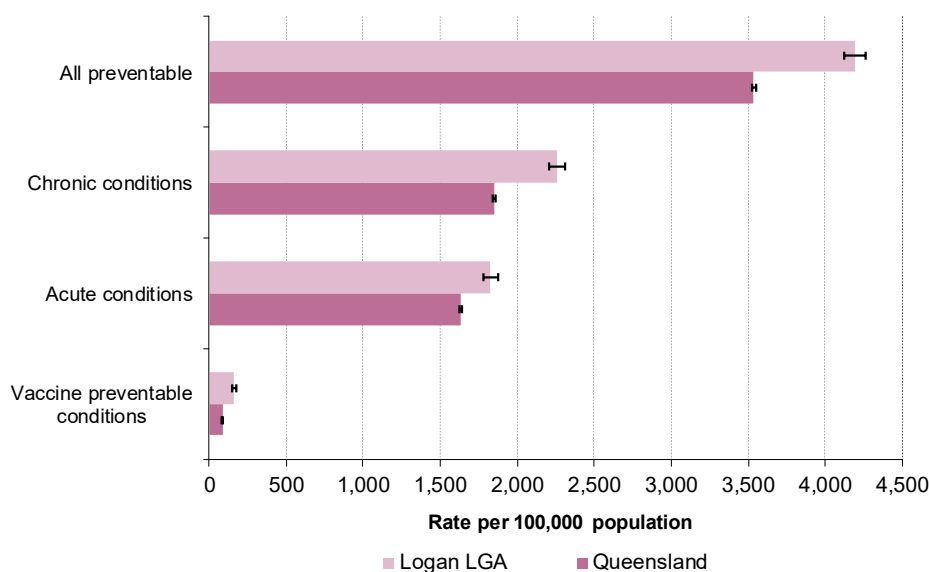


Figure 9: Potentially preventable hospitalisations by category, age standardised rates with 95% confidence intervals, Logan LGA and Queensland, 2020/21

There were over 7,500 PPHs for chronic conditions and over 6,200 for acute conditions among Logan LGA residents in 2020/21 (Table 3). By comparison there were 550 PPHs for vaccine preventable conditions in this period which included 51 for influenza and pneumonia (Table 3; Table 4).

Table 3: Potentially preventable hospitalisations by category, Logan LGA and Queensland, 2020/21

Category of PPH	Number of PPHs		Age standardised rate per 100,000 persons		Statistically significant difference Logan-QLD*
	Logan LGA	QLD	Logan LGA	QLD	
All preventable	14,133	202,759	4,190	3,538	↑
Chronic	7,570	111,645	2,258	1,850	↑
Acute	6,214	88,128	1,827	1,634	↑
Vaccine preventable	550	4,855	164	86.5	↑

* ↑ LGA statistically significantly higher than Queensland; ↓ LGA statistically significantly lower than Queensland; — no statistically significant difference between LGA and Queensland

PPHs by condition

Overwhelmingly the chronic condition with the highest rate of PPH in Logan LGA residents (almost 1,300 PPHs per 100,000 persons) was diabetes complications which represented over 30% of all PPHs in Logan LGA residents. The chronic conditions COPD and congestive cardiac failure had the next highest rates with over 270 PPHs per 100,000 persons each. Among acute conditions, the highest rate was for urinary tract infections followed by cellulitis (Table 4).

Table 4: Number and rate of potentially preventable hospitalisations by sub-category and condition, Logan LGA, 2020/21

Sub-category and condition	Number	Rate per 100,000 persons	% of total count
Vaccine Preventable	550	163.8	3.9
Other vaccine-preventable conditions	499	148.9	3.5
Influenza and pneumonia (vaccine preventable)	51	14.9	0.4
Chronic*	7,570	2,258.1	53.6
Diabetes complications	4,333	1,273.7	30.7
COPD	922	276.4	6.5
Congestive cardiac failure	909	289.7	6.4
Iron deficiency anaemia	568	172.8	4.0
Asthma	451	128.0	3.2
Hypertension	364	112.7	2.6
Angina	345	103.1	2.4
Bronchiectasis	156	47.0	1.1
Rheumatic heart disease	44	13.2	0.3
Nutritional deficiencies	28	7.7	0.2
Acute	6,214	1,827.5	44.0
Urinary tract infections	1,785	543.3	12.6
Cellulitis	1,359	409.9	9.6
Ear, nose and throat infections	996	267.3	7.0
Dental conditions	918	265.1	6.5
Convulsions and epilepsy	691	201.0	4.9
Gangrene	242	72.8	1.7
Perforated/bleeding ulcer	80	24.6	0.6
Pneumonia (not vaccine preventable)	34	10.5	0.2
Total preventable hospitalisations	14,133	4,190.2	100.0

* As more than one condition may be reported for a separation, the sum of all conditions does not necessarily equal the total number of separations recorded for each category

** Cell counts are inadequate to produce age standardised rate

PPH rates were significantly lower in Logan LGA than in Queensland for just two conditions: dental conditions and iron deficiency anaemia (Figure 10).

In comparison, PPH rates were significantly higher in Logan LGA than Queensland for a wide range of conditions including: diabetes complications, urinary tract infections, cellulitis, congestive cardiac failure, ear, nose and throat infections, COPD, hypertension, 'other vaccine preventable' conditions (those other than influenza and pneumonia), asthma, gangrene and bronchiectasis (Figure 10).

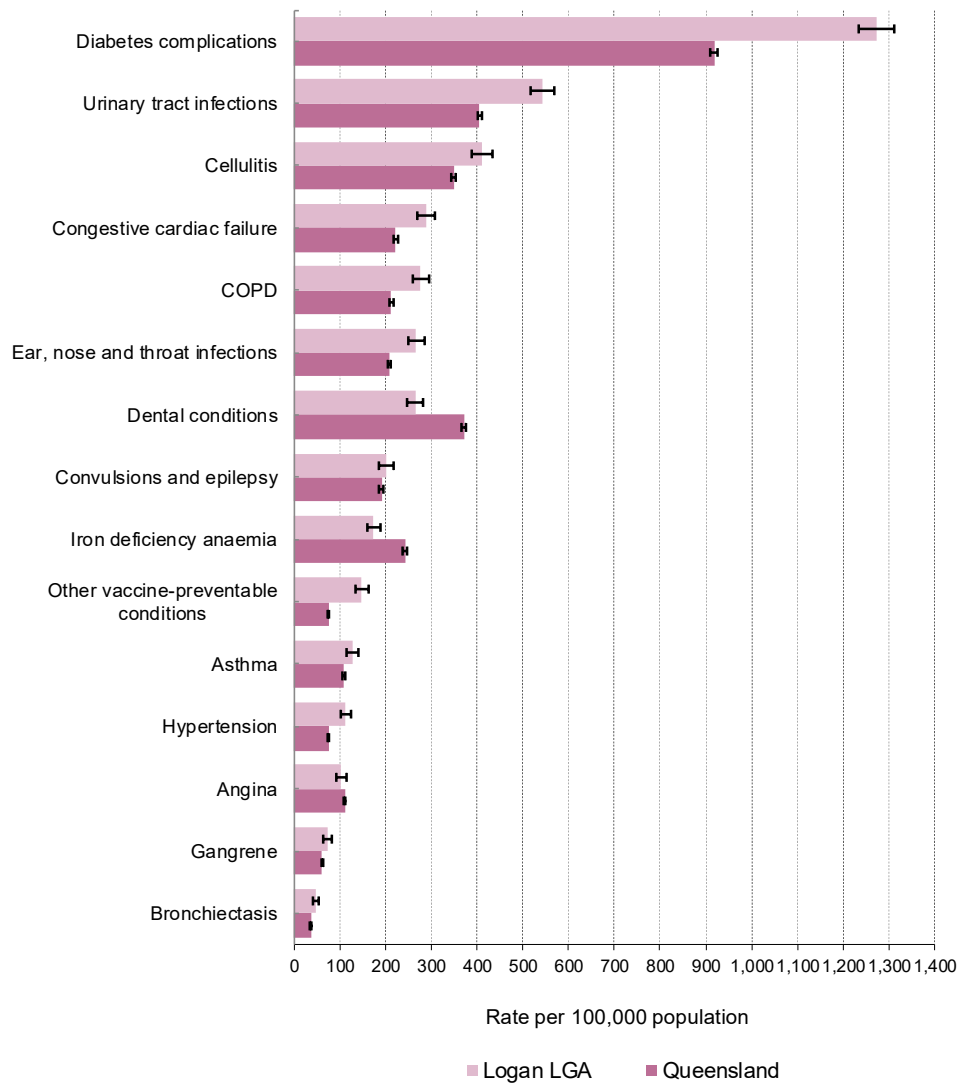


Figure 10: Potentially preventable hospitalisations, age standardised rates and 95% confidence intervals by condition, Logan LGA and Queensland, 2020/21

PPH time series

Historically time series for PPHs have been difficult to interpret owing to periodic changes to clinical coding practices. However coding has been stable since 2012/13 enabling time series data to be presented in this report for the first time.

The rate of PPHs in Logan LGA residents increased steadily from 2012/13 to a peak in 2017/18 after which a decline was recorded (Figure 11). The rate of chronic PPHs followed a similar pattern while acute PPH rates continued to increase to 2018/19 before decreasing slightly (Figure 11).

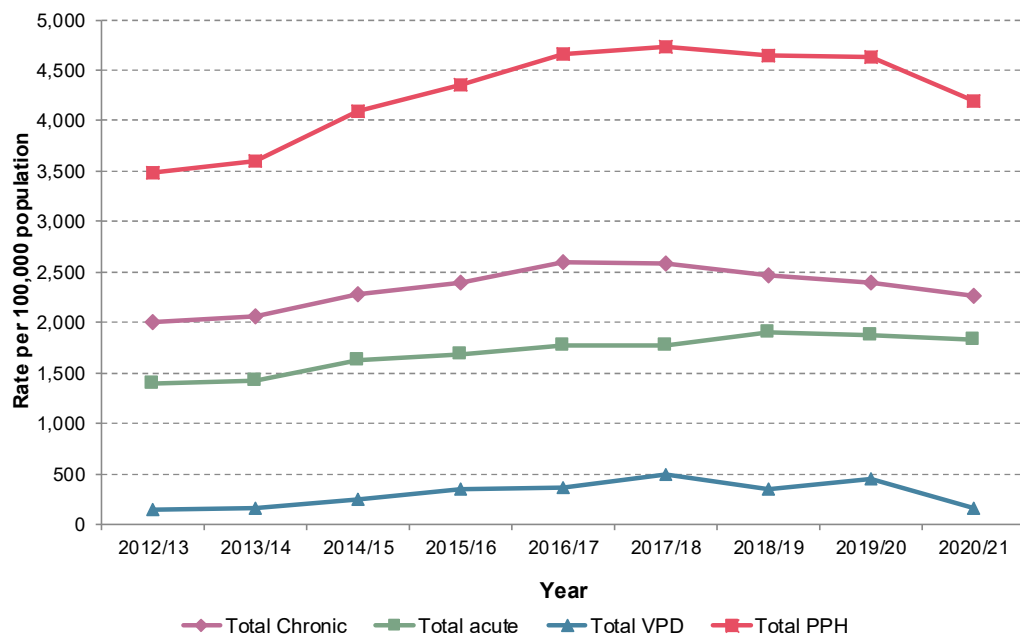


Figure 11: Age standardised rates of total potentially preventable hospitalisations and three sub-categories, 2012/13 to 2020/21, Logan LGA

Vaccine preventable PPHs in Logan LGA also peaked in 2017/18 but experienced a substantial rate drop in 2020/21. This was most likely the result of the public health measures (including closure of the international border, local lockdowns, social distancing) implemented from late-March 2020 onwards and through 2021 in response to the COVID-19 pandemic (Figure 11). During this period influenza notifications in Logan LGA and the rest of Queensland dropped to and remained close to zero⁵. The rate of PPHs for vaccine preventable influenza and pneumonia fell from 285 per 100,000 persons in 2019/20 to 15 per 100,000 persons in 2020/21 (Figure 12).

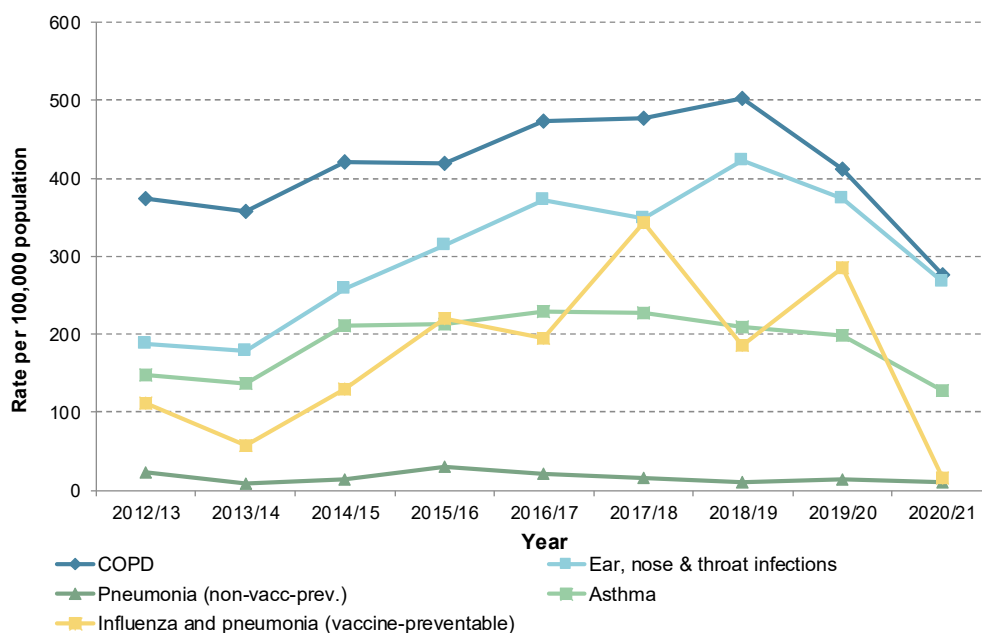


Figure 12: Age standardised rates of potentially preventable hospitalisations for selected conditions, 2012/13 to 2020/21, Logan LGA

Along with vaccine preventable influenza and pneumonia, rates of other respiratory-related PPHs also fell during the period of the COVID-19 pandemic. These included COPD, ear, nose & throat infections, asthma and non-vaccine preventable pneumonia (Figure 12).

Rates of some PPH conditions experienced a noticeable increase in 2020/21 during the main part of the COVID-19 response and lockdowns. These included PPHs for dental conditions, diabetes complications and urinary tract infections (Figure 13). These increases may indicate that management of and preventative measures usually associated with these conditions may have fallen during the COVID-19 pandemic period, leading to hospitalisations which would have been preventable under normal conditions.

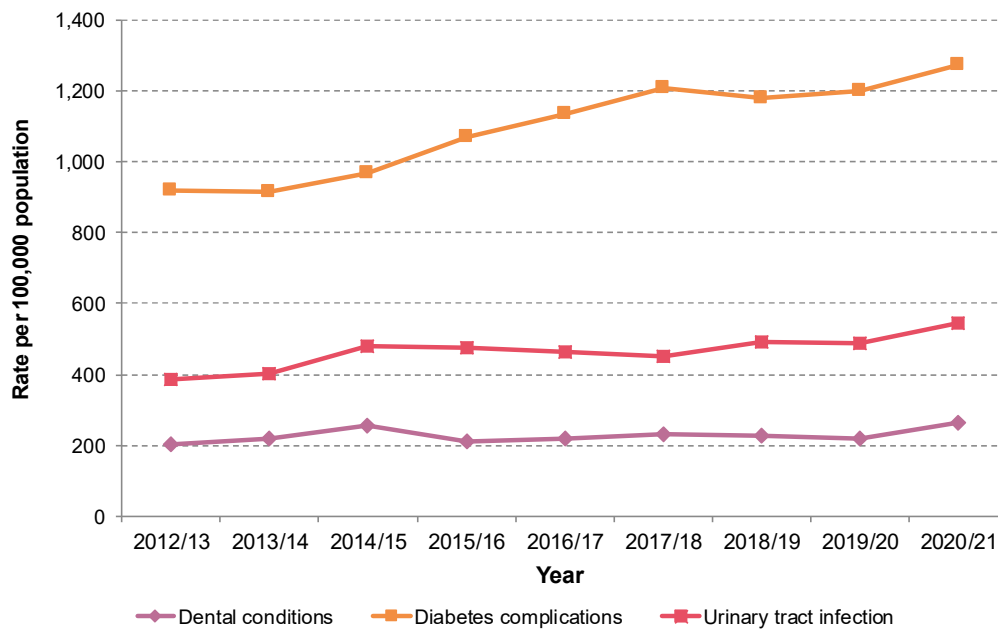


Figure 13: Age standardised rates of potentially preventable hospitalisations for selected conditions, 2012/13 to 2020/21, Logan LGA

Health outcomes

In this section mortality and hospital separation rates are outlined for selected conditions including all causes, arthritis and musculoskeletal conditions, respiratory disease, cancer, cardiovascular disease, diabetes mellitus, injury and mental health. Rates and numbers pertain to events (separations; deaths) occurring to residents of the relevant geographical area (Logan LGA; 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 Logan LGA, this means 100 residents of Logan LGA were hospitalised for the condition, irrespective of the place in which they were hospitalised. It does not mean that there were 100 hospitalisations in facilities within Logan LGA.

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 hospital separation (all causes separations).

Mortality

On average there were 1,642 deaths per year from all causes among residents of Logan LGA in the three years from 2017 to 2019. From 2010-12 to 2017-19, mortality rates due to all causes of death declined for males and females in both Logan LGA and Queensland. Males consistently had significantly higher mortality rates than females across all timepoints (Figure 14).

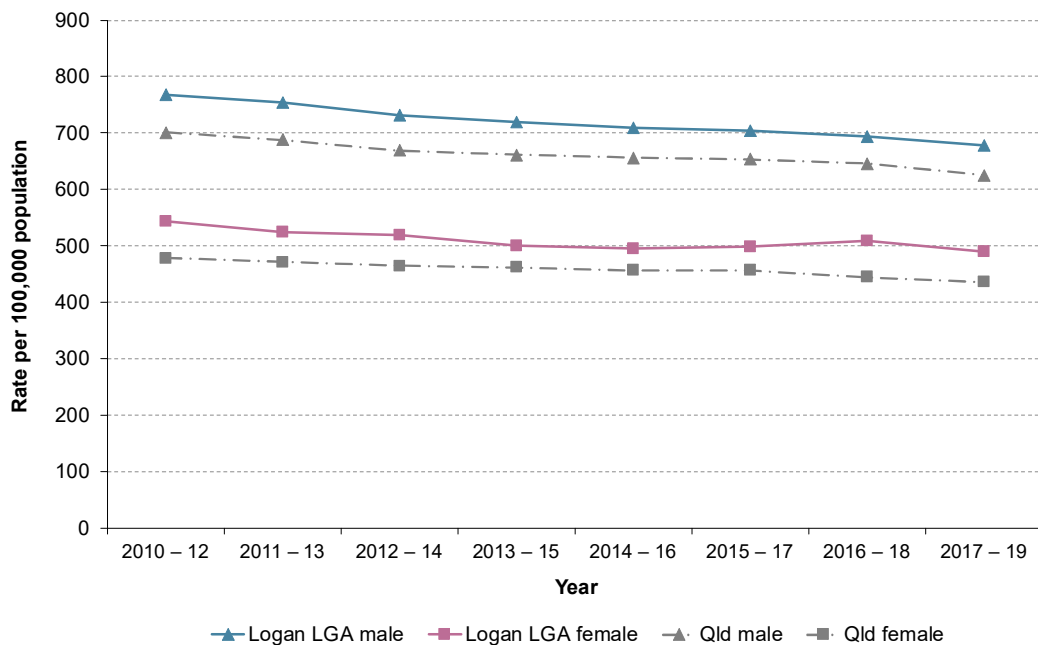


Figure 14: All causes age standardised mortality rates by sex, Logan LGA and Queensland, three-year moving averages 2010–12 to 2017–19

Indirect standardised mortality ratios indicate that the average mortality rate for all causes was significantly higher in Logan LGA than in Queensland for males (8% higher) and for females (10% higher) in the five years from 2015 to 2019 (Table 5).

Table 5: All causes standardised mortality ratios by sex, Logan LGA, 2015 to 2019

Region	Sex	Ratio (95% confidence interval)	Statistically significant difference LGA – QLD*
Logan LGA	Male	1.08 (1.05 – 1.11)	↑
	Female	1.10 (1.06 – 1.13)	↑
	Persons	1.09 (1.06 – 1.11)	↑

* ↑ LGA statistically significantly higher than Queensland; ↓ LGA statistically significantly lower than Queensland; — no statistically significant difference between LGA and Queensland

Logan LGA and Queensland mortality rates had a small peak in the birth to four years age group. Rates were lowest in the years after infancy to around age 14 years. Mortality then increased with age, with the increase following an exponential curve from about the age of 60 years (Figure 15). Death rates were higher in males than in females in each age group.

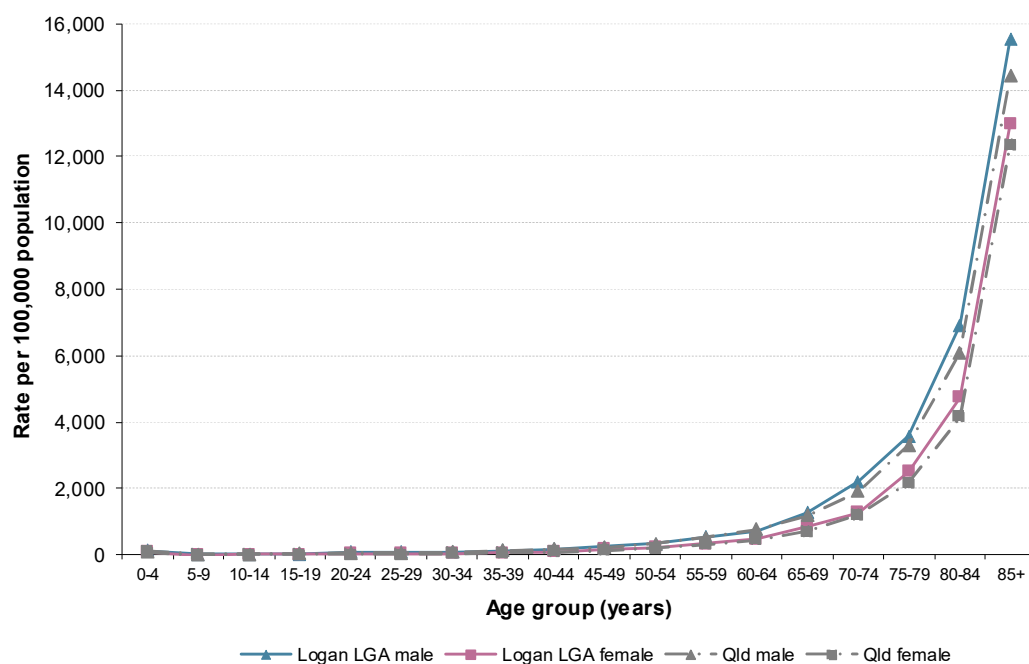


Figure 15: All causes age specific mortality rates by sex, Logan LGA and Queensland, 2013 to 2019

At the time of publication, deaths data for MSH was available up to 2019 only. As a result, the impact of the COVID-19 pandemic on mortality rates in MSH cannot yet be assessed. However, the Australian Bureau of Statistics has examined the impact of the pandemic on Australian mortality in 2020⁶ and 2021⁷.

Australia was one of a handful of countries (including New Zealand and Denmark) which recorded a significantly lower than expected mortality rate during the first year of the pandemic (2020)⁶. The all causes rate decrease between 2019 and 2020 the largest single year change in the past ten years, with rates decreasing across all age groups⁶. In contrast, 2021 showed an increase in Australian mortality rates across

all age groups except those 25 to 44 years⁷. Almost all deaths occurred in July to December during the Delta-variant wave⁷

Subsequent reports will explore the COVID-19 impact on mortality rates in MSH.

Hospital separations

On average there were 175,050 separations per year for all causes among Logan LGA residents in the three years from 2018/19 to 2020/21. Age standardised separation rates due to all causes were consistently significantly higher in Logan LGA females than in males at all timepoints between 2011/12-13/4 and 2018/19-20/21 (Figure 16). This is largely due to women being admitted to hospital to give birth. Rates in both males and females trended upwards from 2011/12 (Figure 16), with rates for Logan LGA all persons increasing by 33% between 2011/12-13/14 and 2018/19-20/21.

From 2017/18-19/20 onwards there was a noticeable flattening of the upwards trend. This was likely the result of various effects of the COVID-19 pandemic which started in 2019/20, including reductions in elective surgery, travel and infectious disease transmission owing to public health measures such as mask wearing and social distancing.

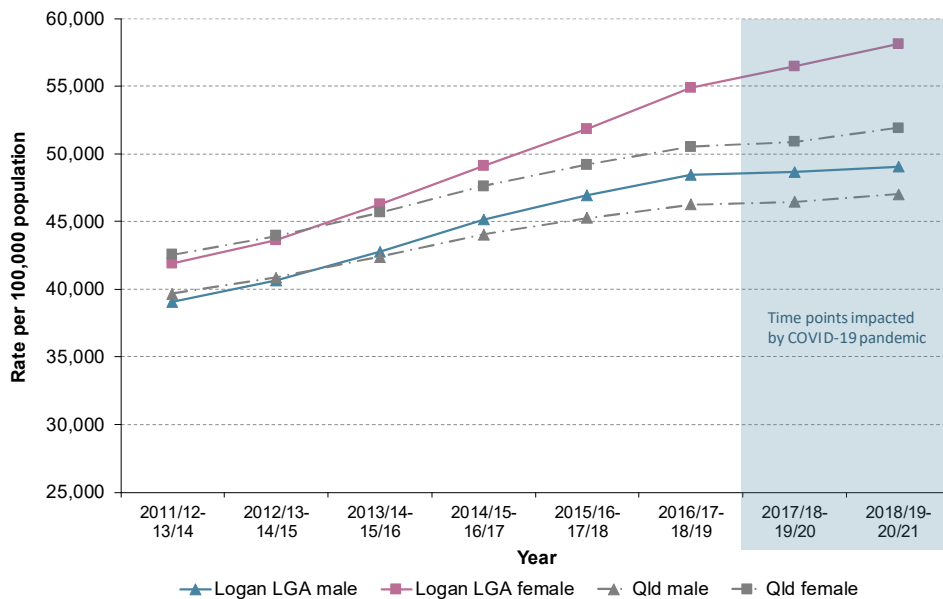


Figure 16: All causes age standardised hospital separation rates by sex, Logan LGA and Queensland, three-year moving averages 2011/12 to 2020/21

Indirect standardised separation ratios indicate that the average separation rate for all causes of hospitalisation was significantly higher in Logan LGA than in Queensland for males (5% higher) and females (12% higher) between 2018/19 and 2020/21 (Table 7).

Table 6: All causes standardised separation ratios by sex, Logan LGA, 2018/19 to 2020/21

Region	Sex	Ratio (95% Confidence Interval)	Statistically significant difference LGA – QLD*
Logan LGA	Male	1.05 (1.04 – 1.05)	↑
	Female	1.12 (1.11 – 1.12)	↑
	Persons	1.08 (1.08 – 1.09)	↑

* ↑ LGA statistically significantly higher than Queensland; ↓ LGA statistically significantly lower than Queensland;
 — no statistically significant difference between LGA and Queensland

In both Queensland and Logan LGA, age specific rates of hospital separation were higher for women in the child-bearing years (15 to 44 year age groups) than for men (Figure 17). This was mostly related to women attending hospital to give birth. From the age of 60 years, males were more likely to be hospitalised than females (Figure 17).

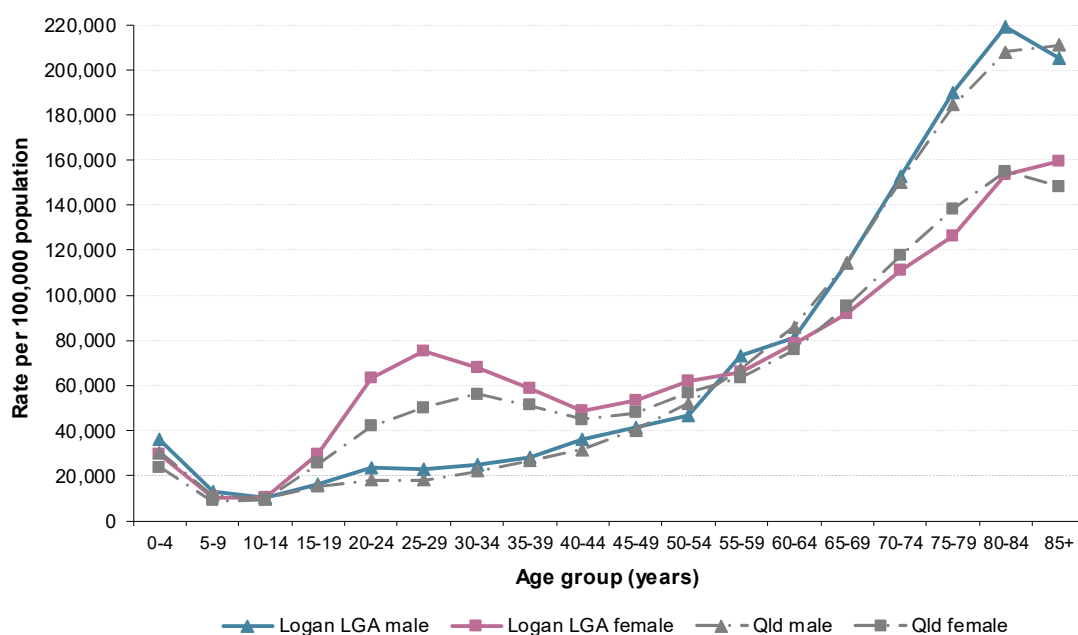


Figure 17: All causes age specific hospital separation rates by sex, Logan LGA and Queensland, 2018/19 to 2020/21

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 joints⁸. 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, overweight and obesity, injury and genetic factors. There are many forms of arthritis, however the most common types are osteoarthritis (due to cartilage loss from overuse), rheumatoid arthritis (an autoimmune disease) and gout (due to excess uric acid in the bloodstream)⁸.

Mortality

On average there were nine deaths per year from arthropathies and systemic connective tissue disorders among Logan LGA residents in the three years from 2017 to 2019.

Hospital separations

Between 2018/19 and 2020/21, there was an average of 11,365 hospital separations per year for arthropathies and systemic connective tissue disorders among Logan LGA residents. Age standardised separation rates were very similar in males and females in Logan LGA (Figure 18). At recent timepoints the same pattern has been seen in Queensland however in past years⁹ and up to 2014/15–16/17, age standardised separation rates were consistently significantly higher in males than in females. Rates in both males and females trended upwards until 2015/16–17/18 after which there was a small decline (Figure 18). Some of this decline may have been the result of the reduction in elective surgery-related separations resulting from the COVID-19 pandemic.

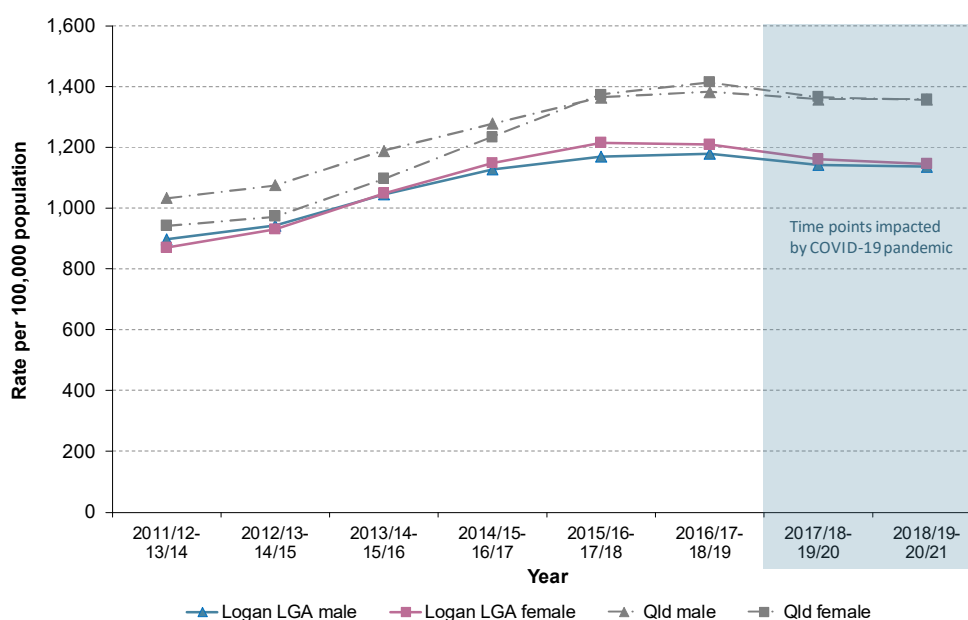


Figure 18: Arthropathies and systemic connective tissue disorders age standardised hospital separation rates by sex, Logan LGA and Queensland, three-year moving averages 2011/12 to 2020/21

Indirect standardised separation ratios indicate that the average separation rate for arthropathies and systemic connective tissue disorders was significantly lower in Logan LGA than in Queensland for both males (16% lower) and females (15% lower) between 2018/19 and 2020/21 (Table 7).

Table 7: Arthropathies and systemic connective tissue disorders standardised separation ratios by sex, Logan LGA, 2018/19 to 2020/21

Region	Sex	Ratio (95% Confidence Interval)	Statistically significant difference LGA – QLD*
Logan LGA	Male	0.84 (0.81 – 0.86)	↓
	Female	0.85 (0.82 – 0.87)	↓
	Persons	0.84 (0.83 – 0.86)	↓

* ↑ LGA statistically significantly higher than Queensland; ↓ LGA statistically significantly lower than Queensland; — no statistically significant difference between LGA and Queensland

Age specific rates of hospital separations for arthropathies and systemic connective tissue disorders in Queensland and Redland LGA generally increased with age, peaking in the 70 to 84 years age groups and then declining with increasing age (Figure 19).

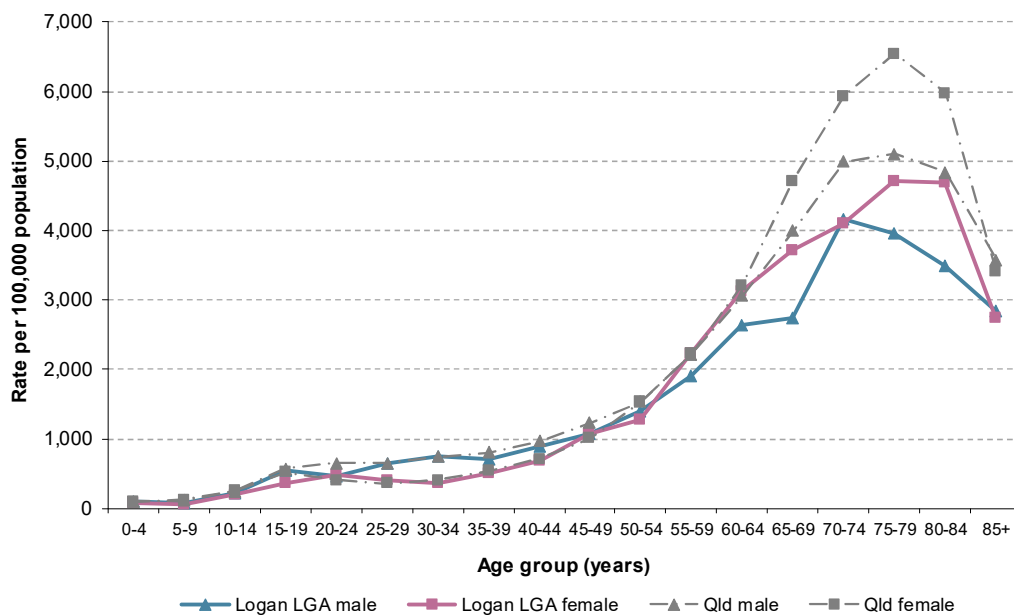


Figure 19: Arthropathies and systemic connective tissue disorders age specific hospital separation rate by sex, Logan LGA and Queensland, 2018/19 to 2020/21

Respiratory diseases

Asthma and chronic obstructive pulmonary disease (COPD) together contribute the greatest burden to respiratory diseases. Asthma is a chronic inflammatory condition of the airways associated with episodes of wheezing, breathlessness and chest tightness. The underlying causes of asthma are still not fully understood however the symptoms can be triggered by viral infections, exposure to allergens and air pollution including tobacco smoke. 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. According to the Australian Centre for Asthma Monitoring, the majority of people with asthma do not have a written action plan, despite national guidelines recommending their use¹⁰.

COPD is a serious chronic lung disease mainly affecting older people. It is progressive, largely irreversible and characterised by shortness of breath, cough and wheeze. Tobacco smoking is the main cause of COPD¹⁰.

Respiratory diseases: asthma

Mortality

On average there were fewer than five deaths per year from asthma among Logan LGA residents in the three-year period 2017 to 2019.

Hospital separations

On average there were 619 hospital separations per year for asthma among Logan LGA residents in the three years from 2018/19 to 2020/21. More than half (55%) of these separations were in persons aged five to 34 years. Asthma age standardised separation rates were consistently significantly higher in females than in males in Logan LGA and Queensland at all timepoints between 2011/12-13/14 and 2018/19-20/21 (Figure 20).

Separation rates in Logan LGA males increased to a peak in 2014/15–16/17 after which they trended downwards (Figure 20). Rates in Logan LGA females peaked at the same time and then remained relatively stable until they decreased significantly in 2018/19–20/21 (Figure 20). This sharp decrease in females and a similar decrease in males may be the result of the reduced prevalence of influenza-like illness in Queensland from April 2020 onwards, with limited opportunity for virus importation and community spread due to the international border closure, travel restrictions and public health mitigation measures such as mask wearing and social distancing.

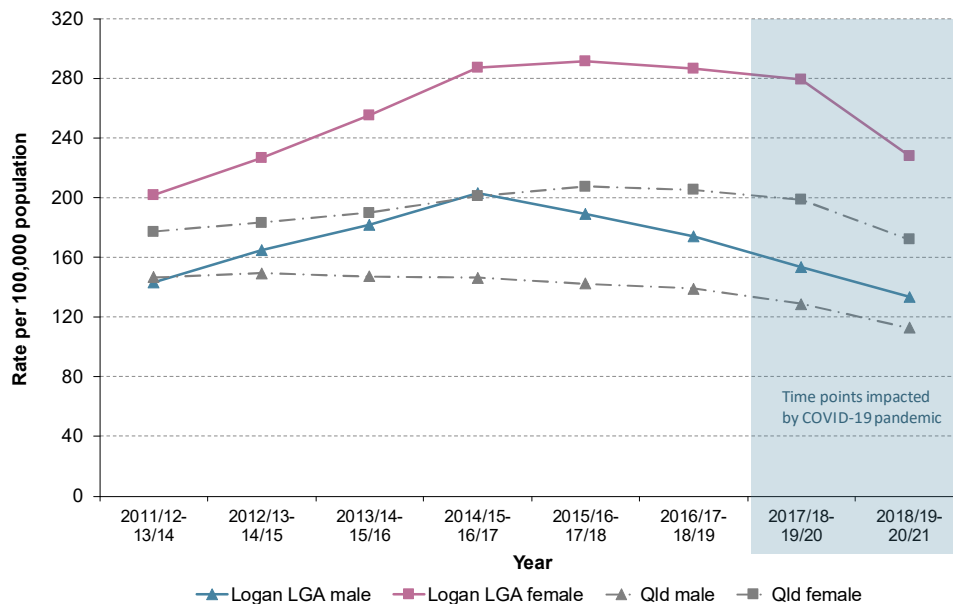


Figure 20: Asthma age standardised hospital separation rate by sex, Logan LGA and Queensland, three-year moving averages 2011/12 to 2020/21

Indirect standardised separation ratios indicate that the average separation rate for asthma was significantly higher in Logan LGA than in Queensland for males (18% higher) and for females (33% higher) between 2018/19 and 2020/21 (Table 8). When only separations among people aged five to 34 years were considered, the rates were significantly higher in Logan LGA than in Queensland in both males (46% higher) and females (55% higher) (Table 8).

Table 8: Asthma standardised separation ratios by sex, Logan LGA, 2018/19 to 2020/21

Region	Age group	Sex	Ratio (95% Confidence Interval)	Statistically significant difference LGA – QLD*
Logan LGA	All ages	Male	1.18 (1.10 – 1.27)	↑
		Female	1.33 (1.25 – 1.41)	↑
		Persons	1.27 (1.21 – 1.33)	↑
	Ages 5 to 34 years	Male	1.46 (1.33 – 1.60)	↑
		Female	1.55 (1.43 – 1.69)	↑
		Persons	1.51 (1.42 – 1.60)	↑

* ↑ LGA statistically significantly higher than Queensland; ↓ LGA statistically significantly lower than Queensland; — no statistically significant difference between LGA and Queensland

Age specific rates of hospital separation for asthma showed a very strong peak in children aged five to nine years, especially among boys. In Logan LGA children aged five to nine years, separation rates were 30% higher in males than in females, reflecting a similar pattern of very high rates in young boys found throughout Queensland (Figure 21). In most five-year age groups from 15 years upwards, rates were significantly higher in females than in males. In adult females asthma separation rates generally increased with increasing age. Among males rates decreased slightly with increasing age but with a peak in those aged 80 to 84 years (Figure 21). When interpreting age specific asthma separation rates it is important to consider that the number of separations per five-year age group was low, particularly in males.

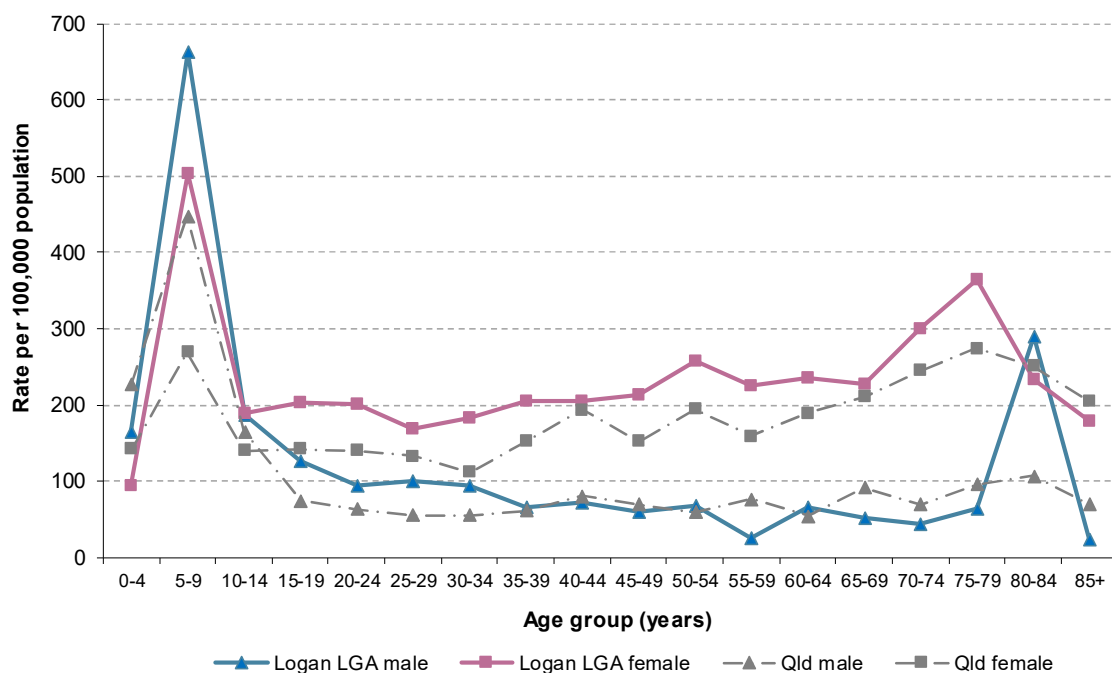


Figure 21: Asthma age specific hospital separation rate by sex, Logan LGA and Queensland, 2018/19 – 2020/21

Respiratory diseases: chronic obstructive pulmonary disease (COPD)

Mortality

On average there were 81 deaths per year from COPD among residents of Logan LGA in the three years from 2017 to 2019. Males accounted for just over half (52%) of these deaths.

Mortality rates for COPD in Logan LGA were higher in males than in females in all three-year timepoints between 2010-12 and 2017-19 (Figure 22) however the difference was not statistically significant at all timepoints. Over this period, rates among Logan LGA and Queensland males decreased slightly while the rates among females were stable in Queensland and increased in Logan LGA (Figure 22).

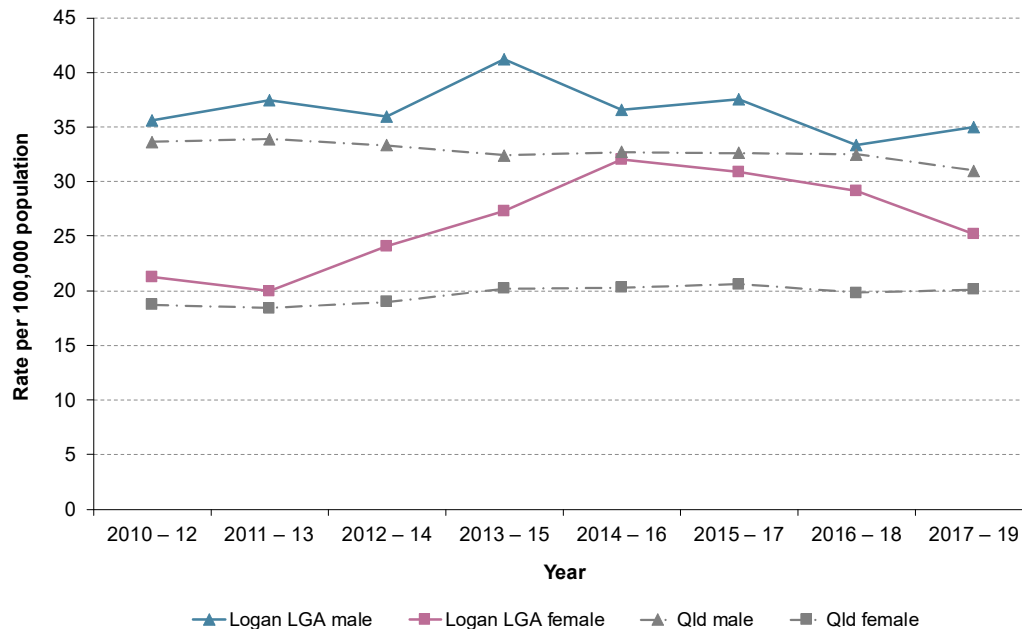


Figure 22: COPD age standardised mortality rate by sex, Logan LGA and Queensland, three-year moving averages 2010-12 to 2017-19

Indirect standardised mortality ratios indicate that the average mortality rate for COPD was significantly higher in Logan LGA than in Queensland for females (34% higher) and all persons (20% higher) in the five years from 2015 to 2019 (Table 9).

Table 9: COPD standardised mortality ratios by sex, Logan LGA, 2015 to 2019

Region	Sex	Ratio (95% confidence interval)	Statistically significant difference LGA – QLD*
Logan LGA	Male	1.10 (0.95 – 1.25)	—
	Female	1.34 (1.17 – 1.54)	↑
	Persons	1.20 (1.09 – 1.33)	↑

* ↑ LGA statistically significantly higher than Queensland; ↓ LGA statistically significantly lower than Queensland; — no statistically significant difference between LGA and Queensland

Hospital separations

On average there were 1,258 hospital separations per year for COPD among residents of Logan LGA in the three years from 2018/19 to 2020/21. These separations were evenly spread between males and females. Between 2011/12 and 2020/21 age standardised separation rates were higher in males than in females in both Logan LGA and Queensland at all timepoints between 2011/12-13/14 and 2018/19-20/21, although the difference was not significant at most timepoints for Logan LGA (Figure 23). Over this period, rates in both males and females in Logan LGA trended upwards until the timepoints impacted by the COVID-19 pandemic

from 2019-20 onwards when decreases were recorded (Figure 23). This was likely the result of various impacts of the COVID-19 pandemic including the reduction in influenza-like illness in the community from April 2020 onwards as a result of the effects of the COVID-19 pandemic response including reduced travel, mask wearing and social distancing.

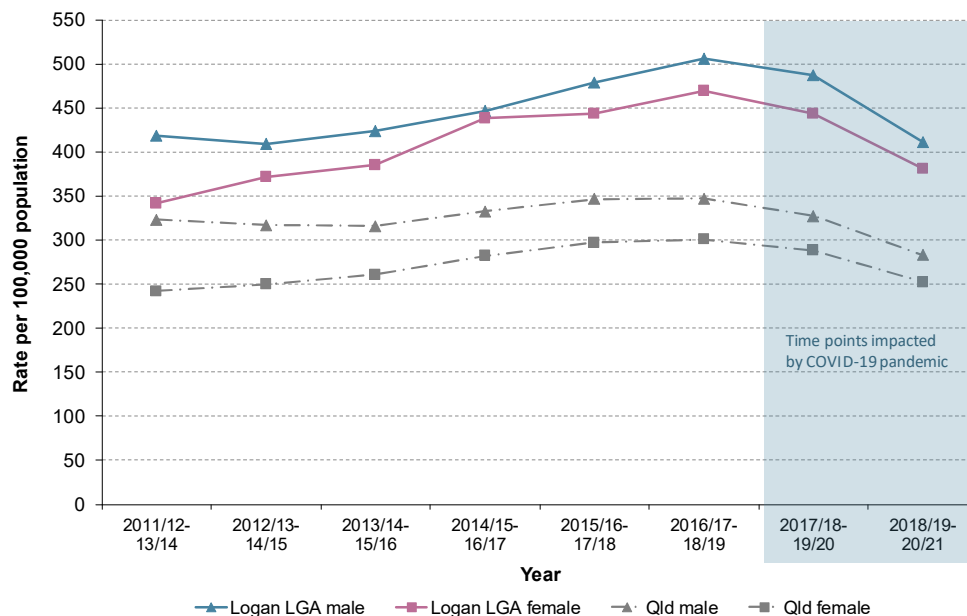


Figure 23: COPD age standardised hospital separation rate by sex, Logan LGA and Queensland, three-year moving averages 2011/12 to 2020/21

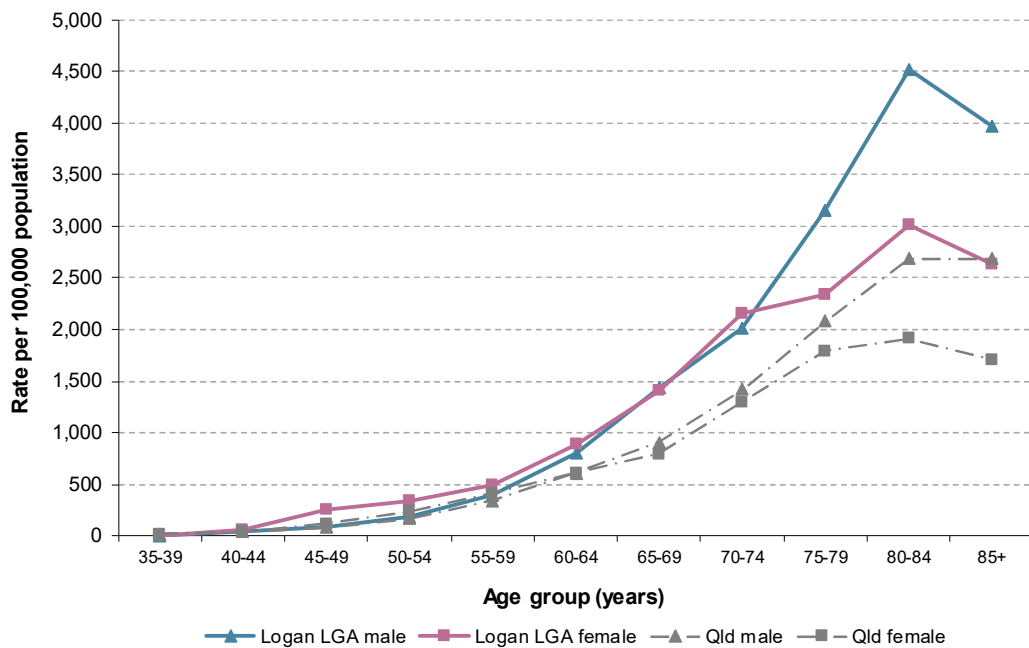
Indirect standardised separation ratios indicate that the average separation rate for COPD was significantly higher in Logan LGA than in Queensland for both males (44% higher) and females (52% higher) in the three years from 2018/19 to 2020/21 (Table 10).

Table 10: COPD standardised separation ratios by sex, Logan LGA, 2018/19 to 2020/21

Region	Sex	Ratio (95% Confidence Interval)	Statistically significant difference LGA – QLD*
Logan LGA	Male	1.44 (1.37 – 1.51)	↑
	Female	1.52 (1.45 – 1.59)	↑
	Persons	1.48 (1.43 – 1.53)	↑

* ↑ LGA statistically significantly higher than Queensland; ↓ LGA statistically significantly lower than Queensland; — no statistically significant difference between LGA and Queensland

Age specific rates of hospital separation for COPD were negligible before the age of 35 years but then rose steadily with age in both sexes. Rates peaked in Logan LGA in the 80 to 84 years age group at just over 4,500 separations per 100,000 persons for males and just over 3,000 per 100,000 persons for females (Figure 24). The corresponding male and female rates for Queensland were significantly lower.



* rates not presented for age groups under 35 years because of low or zero counts

Figure 24: COPD age specific hospital separation rate by sex, Logan LGA and Queensland, 2018/19 to 2020/21*

Respiratory diseases: influenza and pneumonia

Mortality

On average there were 30 deaths per year from influenza and pneumonia among residents of Logan LGA in the three years from 2017 to 2019.

Hospital separations

On average there were 1,505 hospital separations per year for influenza and pneumonia among Logan LGA residents in the three years from 2018/19 to 2020/21. Age standardised separation rates for influenza and pneumonia were consistently higher for males than females at all timepoints between 2011/12-13/14 and 2018/19-20/21 (Figure 25). Separation rates for both males and females in Logan LGA and Queensland trended upwards from 2011/12-13/14 to 2017/18-19/20 but steeply declined in 2018/19-20/21, the first timepoint at which a major impact from the COVID-19 pandemic would be expected (Figure 25).

Immediately pre-COVID-19, the 2020 influenza season started very early (late February) however, with the closure of the international border and the implementation of pandemic response measures including local lockdowns and social; distancing from late March, influenza notifications dropped to and remained at essentially zero for the remainder of 2020 and throughout 2021⁵.

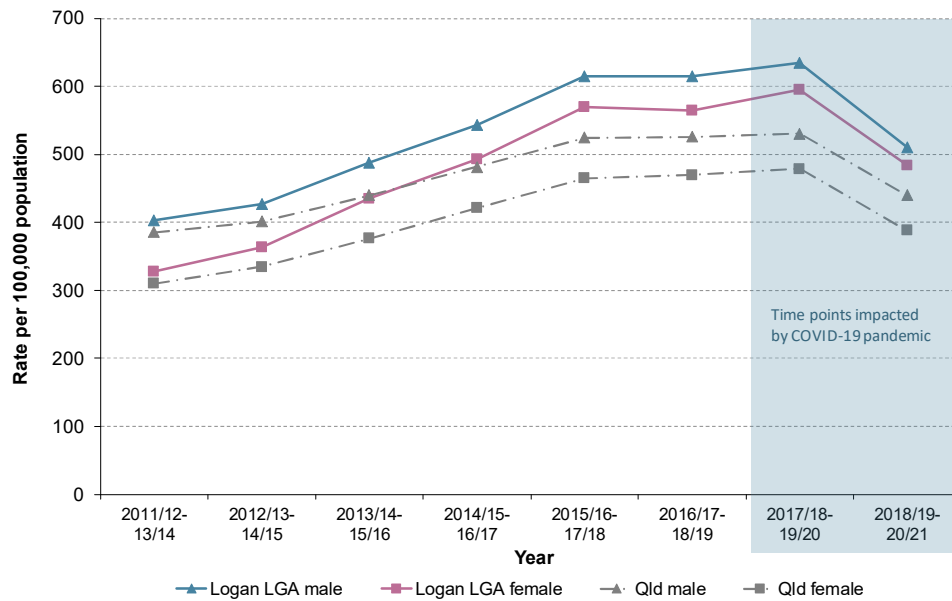


Figure 25: Influenza and pneumonia age standardised hospital separation rate by sex, Logan LGA and Queensland, three-year moving averages 2011/12 to 2020/21

Indirect standardised separation ratios indicate that the average separation rate for influenza and pneumonia was significantly higher in Logan LGA than in Queensland for males (16% higher) and females (24% higher) between 2018/19 and 2020/21 (Table 11).

Table 11: Influenza and pneumonia standardised separation ratios by sex, Logan LGA, 2018/19 to 2020/21

Region	Sex	Ratio (95% Confidence Interval)	Statistically significant difference LGA – QLD*
Logan LGA	Male	1.16 (1.12 – 1.21)	↑
	Female	1.24 (1.19 – 1.29)	↑
	Persons	1.20 (1.17 – 1.23)	↑

* ↑ LGA statistically significantly higher than Queensland; ↓ LGA statistically significantly lower than Queensland; — no statistically significant difference between LGA and Queensland

Age specific 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 under five years of age (Figure 26).

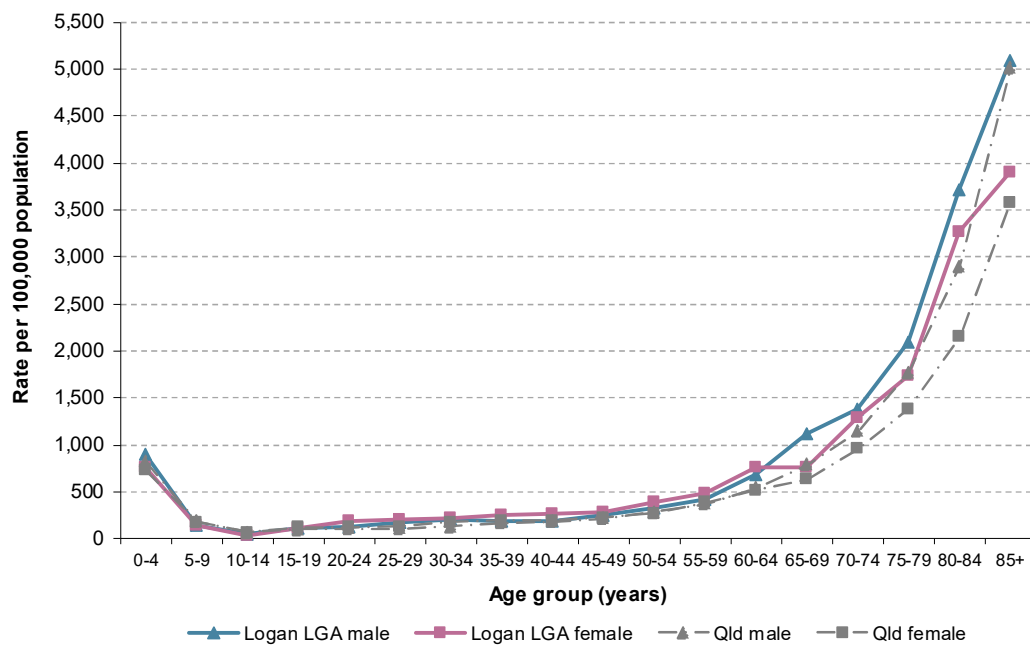


Figure 26: Influenza and pneumonia age specific hospital separation rate by sex, Logan LGA and Queensland, 2018/19 to 2020/21

Cardiovascular disease

The term cardiovascular disease (CVD) refers to a number of conditions affecting the heart and blood vessels. The most common and serious types of CVD in Australia are coronary heart disease (CHD), 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. Risk factors for CVD are well known and include overweight and obesity, smoking, high blood pressure, high cholesterol, insufficient physical activity and diabetes¹¹.

CVD is the largest cause of death in Queensland and the largest cause of health system expenditure². It is largely preventable, with an estimated 68% of the total disease burden attributable to CVD in Australia due to the joint effects of modifiable risk factors¹².

Cardiovascular disease: coronary heart disease

Coronary heart disease (CHD), also known as ischemic heart disease, is the most common form of heart disease. Heart attack (acute myocardial infarction) and angina are the two major clinical forms¹¹.

Mortality

On average there were 203 deaths per year from CHD among Logan LGA residents in the three years from 2017 to 2019. This represented 12% of all deaths of Logan LGA residents in this period. By comparison, in 2010-12 CHD represented 15% of all Logan LGA resident deaths.

Mortality rates for CHD were significantly higher in males than in females at all three-year timepoints between 2010-12 and 2017-19 in both Logan LGA and Queensland (Figure 27). In both males and females, mortality rates trended strongly downwards over this period, being significantly lower in Logan LGA in 2017-19 than in 2014-16 and previous timepoints (Figure 27).

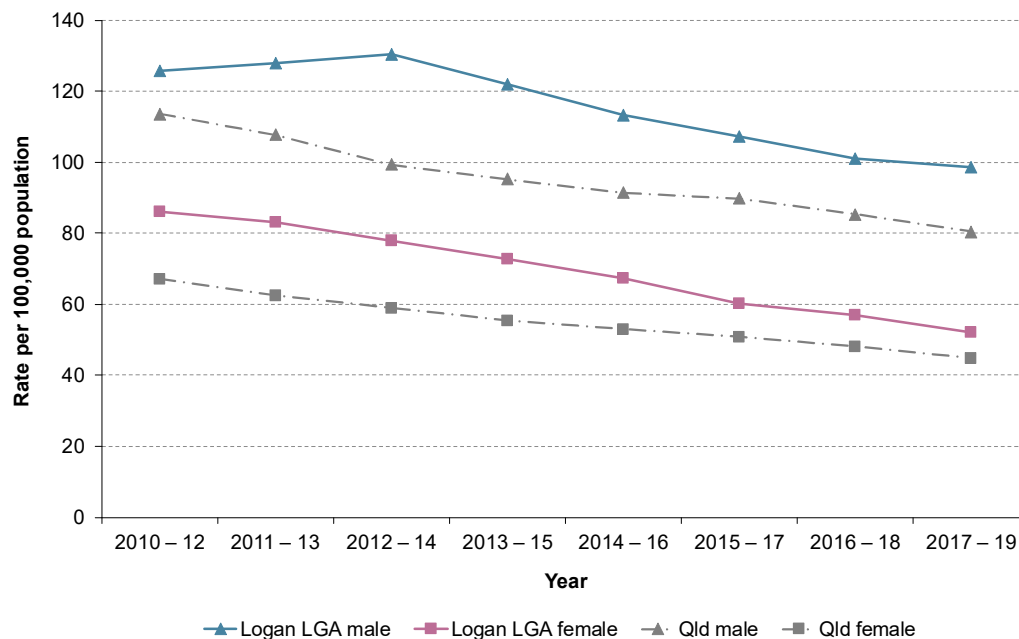


Figure 27: Coronary heart disease age standardised mortality rate by sex, Logan LGA and Queensland, three-year moving averages 2010-12 to 2017-19

Indirect standardised mortality ratios indicate that the average mortality rate for CHD was significantly higher in Logan LGA than in Queensland for males (17% higher) and for females (19% higher) in the five years from 2015 to 2019 (Table 12).

Table 12: Coronary heart disease standardised mortality ratios by sex, Logan LGA, 2015 to 2019

Region	Sex	Ratio (95% confidence interval)	Statistically significant difference LGA – QLD*
Logan LGA	Male	1.17 (1.08 – 1.27)	↑
	Female	1.19 (1.08 – 1.31)	↑
	Persons	1.18 (1.11 – 1.25)	↑

* ↑ LGA statistically significantly higher than Queensland; ↓ LGA statistically significantly lower than Queensland; — no statistically significant difference between LGA and Queensland

Hospital separations

On average there were 1,750 hospital separations per year for CHD among residents of Logan LGA in the three years from 2018/19 to 2020/21. Males accounted for two-thirds (67%) of these separations.

In both Logan LGA and Queensland age standardised separation rates for males were significantly higher than for females at all timepoints from 2011/12-13/14 to 2018/19-20/21, with rates in males more than double the female rates during this time (Figure 28). CHD separation rates for males and females trended

downwards over this period (Figure 28). The Logan LGA female rate decreased by 22% while the male rate decreased by 11%. The COVID-19 pandemic did not appear to have a significant effect on CHD separation rates in Qld or Logan LGA. While rates did decrease in the timepoints impacted by the pandemic, this was largely in line with established trends.

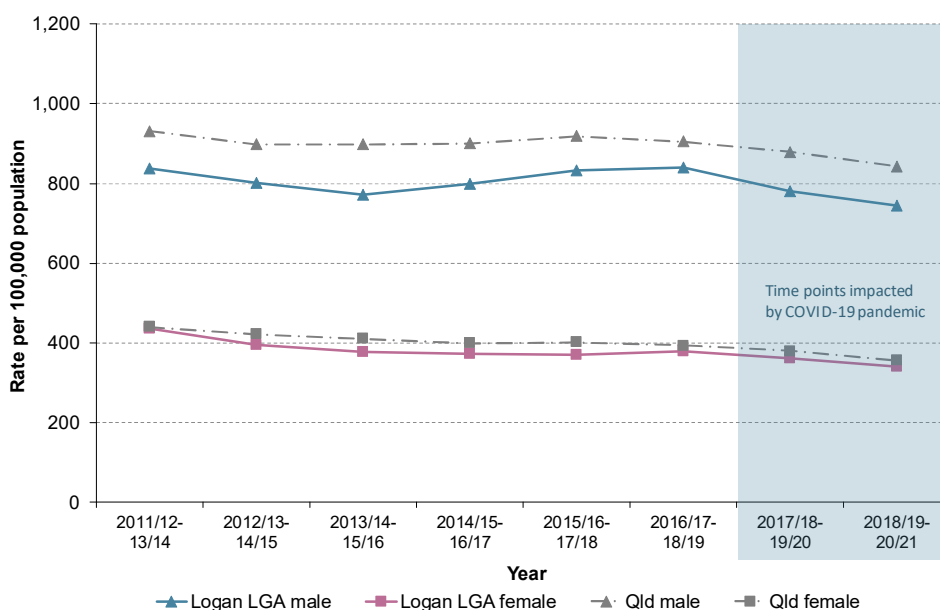


Figure 28: Coronary heart disease age standardised hospital separation rate by sex, Logan LGA and Queensland, three-year moving averages 2011/12 to 2020/21

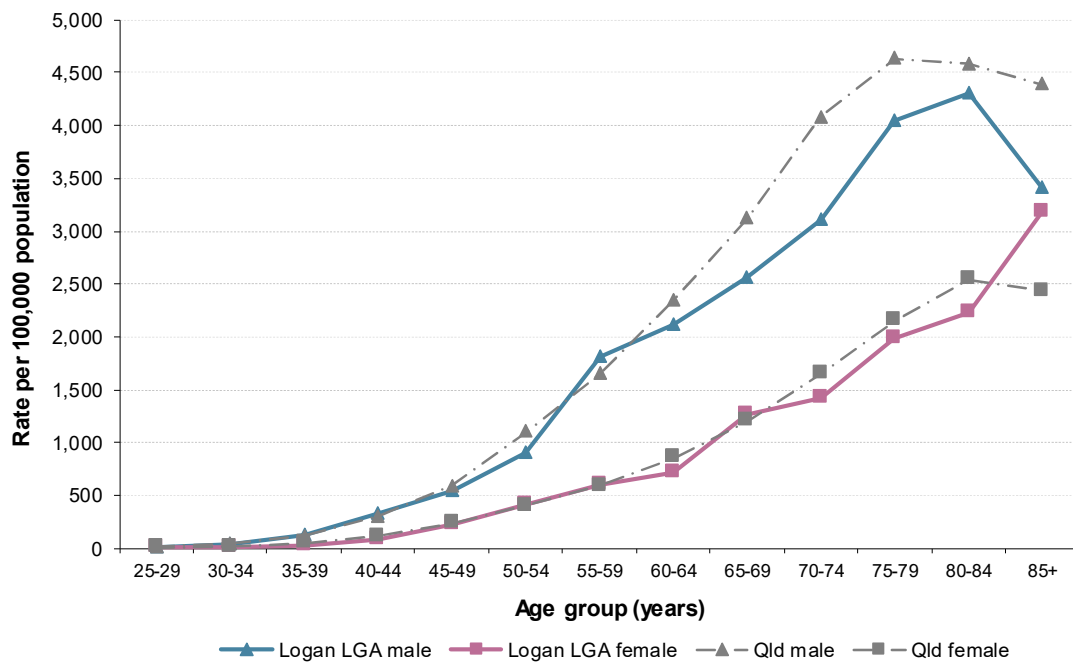
Indirect standardised separation ratios indicate that the average separation rate for CHD was significantly lower in Logan LGA than in Queensland for males (12% lower) and all persons (10% lower) between 2018/19 and 2020/21 (Table 13).

Table 13: Coronary heart disease standardised separation ratios by sex, Logan LGA, 2018/19 to 2020/21

Region	Sex	Ratio (95% Confidence Interval)	Statistically significant difference LGA – QLD*
Logan LGA	Male	0.88 (0.85 – 0.91)	↓
	Female	0.96 (0.91 – 1.00)	—
	Persons	0.90 (0.88 – 0.93)	↓

* ↑ LGA statistically significantly higher than Queensland; ↓ LGA statistically significantly lower than Queensland; — no statistically significant difference between LGA and Queensland

Hospital separation rates for CHD were negligible before the age of 25 years and then generally increased with age in both males and females (Figure 29).



* rates not presented for age groups under 25 years because of low or zero counts

Figure 29: Coronary heart disease age specific hospitalisation rate by sex, Logan LGA and Queensland, 2018/19 to 2020/21*

Cardiovascular disease: stroke

Stroke occurs when a blood vessel to the brain is suddenly blocked or bleeds. As a result, brain function may be lost and activities such as speech, swallowing, vision and thinking may be impaired. Stroke is often fatal¹¹.

Mortality

On average there were 89 deaths per year from stroke among Logan LGA residents in the three years from 2017 to 2019. Females accounted for just over half (54%) of these deaths.

Age standardised mortality rates for stroke in Logan LGA decreased overall between 2010-12 and 2017-19, although since 2013-15 rates have been relatively stable (Figure 30). In this period there was no significant difference in age standardised mortality rates for stroke between males and females in Logan LGA or Queensland (Figure 30).

Indirect standardised mortality ratios indicate that the average mortality rates for stroke were statistically similar in Logan LGA and Queensland for both males and females between 2015 and 2019.

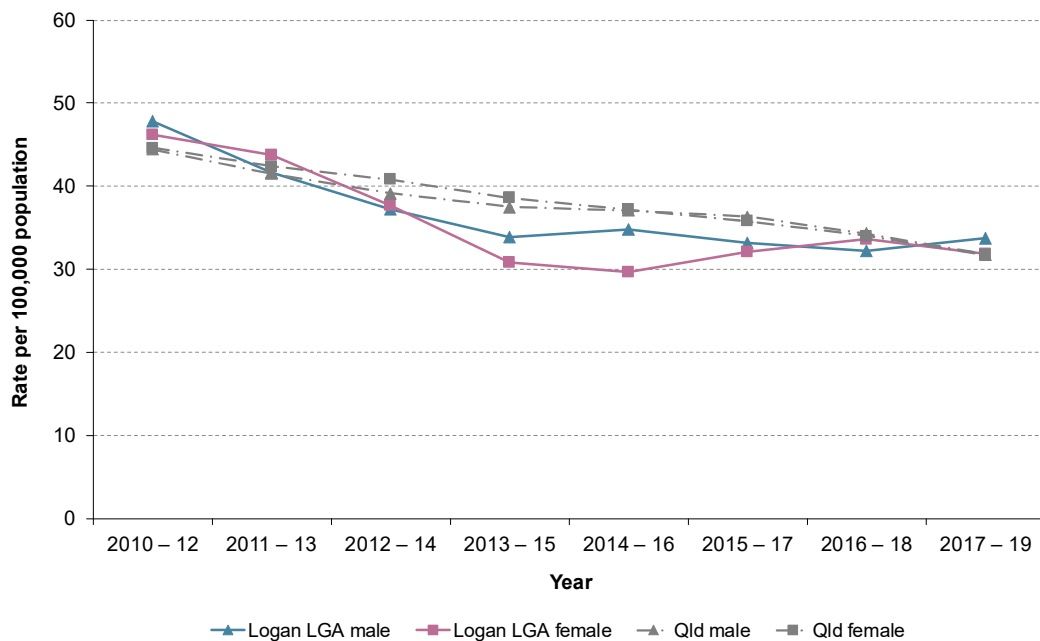


Figure 30: Stroke age standardised mortality rates by sex, Logan LGA and Queensland, three-year moving averages 2010–12 to 2017–19

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 1 July 2015. From this point onwards, rehabilitation episodes of care have been assigned the principal diagnosis code for the underlying condition. Prior to this time a code from the range Z50. – Care involving rehabilitation procedures was assigned as the principal diagnosis code¹³. This change resulted in a large increase in the number of hospital separations recorded for stroke (a common underlying condition for rehabilitation episodes). This increase in numbers does not represent a real increase in stroke separations; it is merely an artefact of an administrative change. Because the time series data are presented as three-year moving averages, it will take three data points for this change to be fully reflected in the data and any new time-trends to become apparent.

On average there were 1,172 hospital separations per year for stroke among Logan LGA residents in the three years from 2018/19 to 2020/21. The age standardised stroke hospital separation rate for males was significantly higher than for females at all timepoints between 2011/12-13/14 and 2018/19-20/21 in Logan LGA and Queensland (Figure 31).

Prior to the coding change introduced from 1 July 2015, stroke hospital separation rates were relatively steady in both Queensland and Logan LGA¹⁴. After the coding change, rates in Queensland males and females trended very slightly downwards. In contrast in Logan LGA, rates in males were relatively stable and while female rates initially increased and then dropped significantly (Figure 31). The COVID-19 pandemic does not appear to have had any appreciable effect on male stroke separation rates or on Queensland female rates (Figure 31). While separation rates have dropped in Logan LGA females in the timepoints impacted by COVID-19 it is not clear whether this is a pandemic effect.

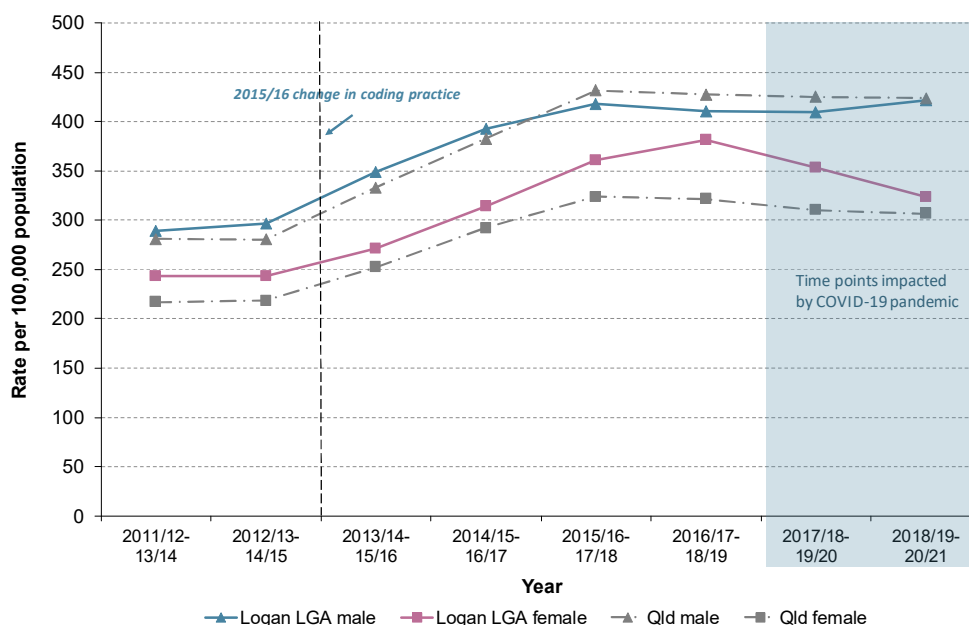


Figure 31: Stroke age standardised hospital separation rate by sex, Logan LGA and Queensland, three-year moving averages 2011/12 to 2020/21

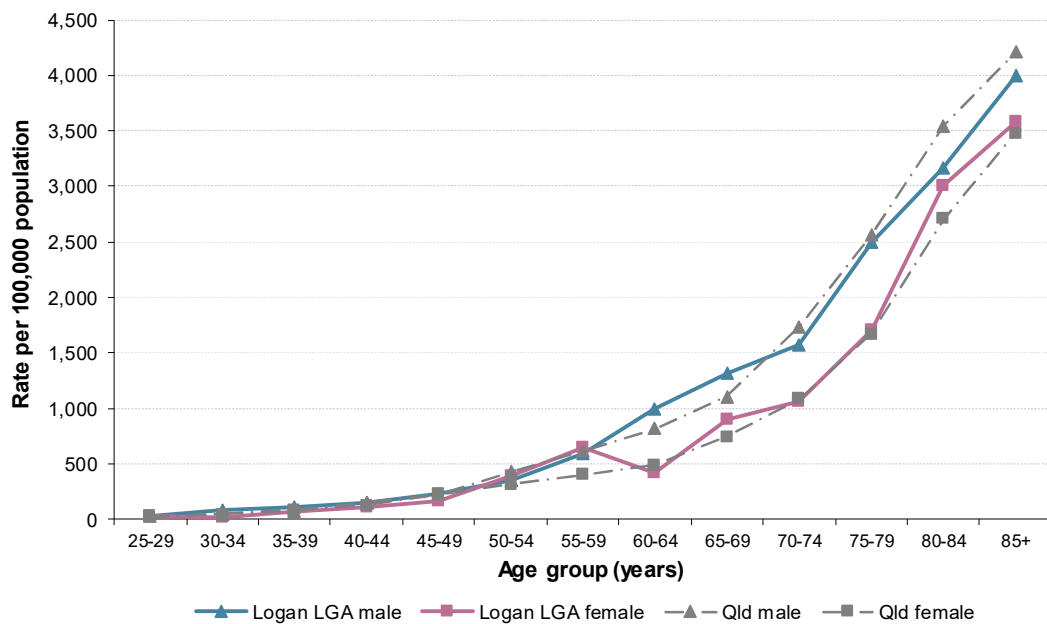
Indirect standardised separation ratios indicate that the average separation rate for stroke was significantly higher in Logan LGA than in Queensland for females (6% higher) between 2018/19 and 2020/21 (Table 14).

Table 14: Stroke standardised separation ratios by sex, Logan LGA, 2018/19 to 2020/21

Region	Sex	Ratio (95% Confidence Interval)	Statistically significant difference LGA – QLD*
Logan LGA	Male	1.01 (0.97 – 1.06)	—
	Female	1.06 (1.01 – 1.12)	↑
	Persons	1.03 (1.00 – 1.07)	—

* ↑ LGA statistically significantly higher than Queensland; ↓ LGA statistically significantly lower than Queensland; — no statistically significant difference between LGA and Queensland

Patterns of age specific rates for stroke were similar in Logan LGA and Queensland, with hospital separation rates negligible before the age of about 25 years and then increasing with age, following an exponential curve from the age of about 70 years (Figure 32).



* rates not presented for age groups under 15 years because of low or zero counts

Figure 32: Stroke age specific hospital separation rate by sex, Logan LGA and Queensland, 2018/19 to 2020/21*

Cardiovascular disease: heart failure

Heart failure (also known as congestive cardiac failure) occurs when the heart muscle has become too weak to maintain a strong enough blood flow to meet the body's needs. Although it can occur suddenly, it usually develops over many years as the heart gradually becomes weaker and works less effectively¹¹. 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 survival¹¹.

Mortality

Between 2017 and 2019, there was an average of 18 deaths per year from heart failure among Logan LGA residents. Females accounted for the more than half (57%) of these deaths

Hospital separations

On average there were 848 hospital separations per year for heart failure among Logan LGA residents in the three years from 2018/19 to 2020/21. In both Logan LGA and Queensland, age standardised separation rates for males were significantly higher than for females at all timepoints between 2011/12-13/14 and 2018/19-20/21 (Figure 33) although the gap between the sexes narrowed in the most recent timepoints.

Separation rates for Queensland males and females increased by 4% and 8% respectively between 2011/12-13/14 and 2018/19-20/21 (Figure 33). In comparison, rates among Logan LGA females increased by 25% over this period while Logan LGA male rates decreased by 8% (Figure 33). The COVID-19 pandemic does not appear to have had any appreciable effect on separation rates for heart failure (Figure 33) as the rate decreases seen in males were in line with a pre-pandemic trend.

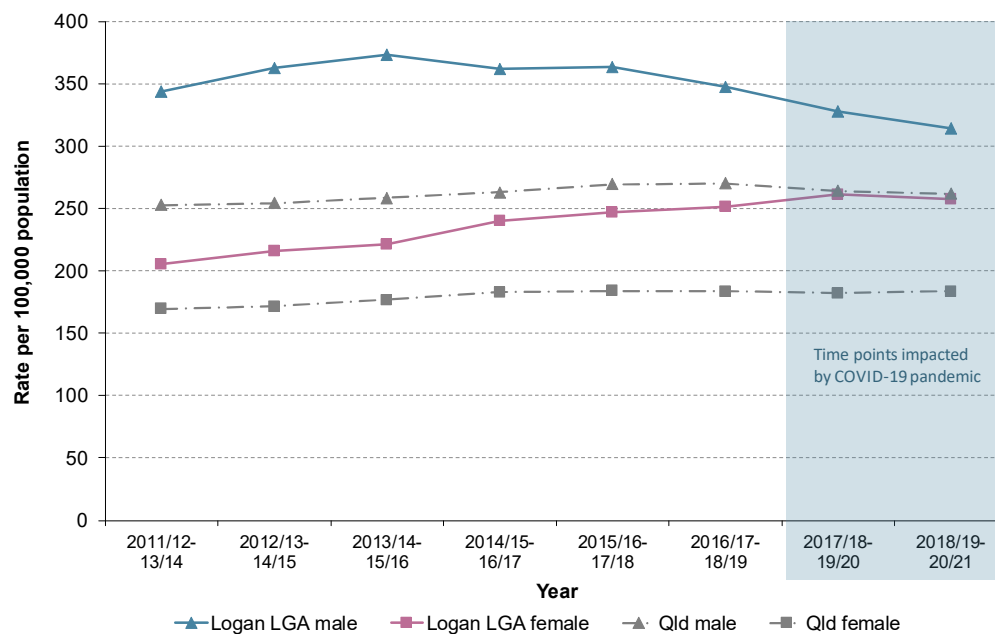


Figure 33: Heart failure age standardised hospital separation rate by sex, Logan LGA and Queensland, three-year moving averages 2011/12 to 2020/21

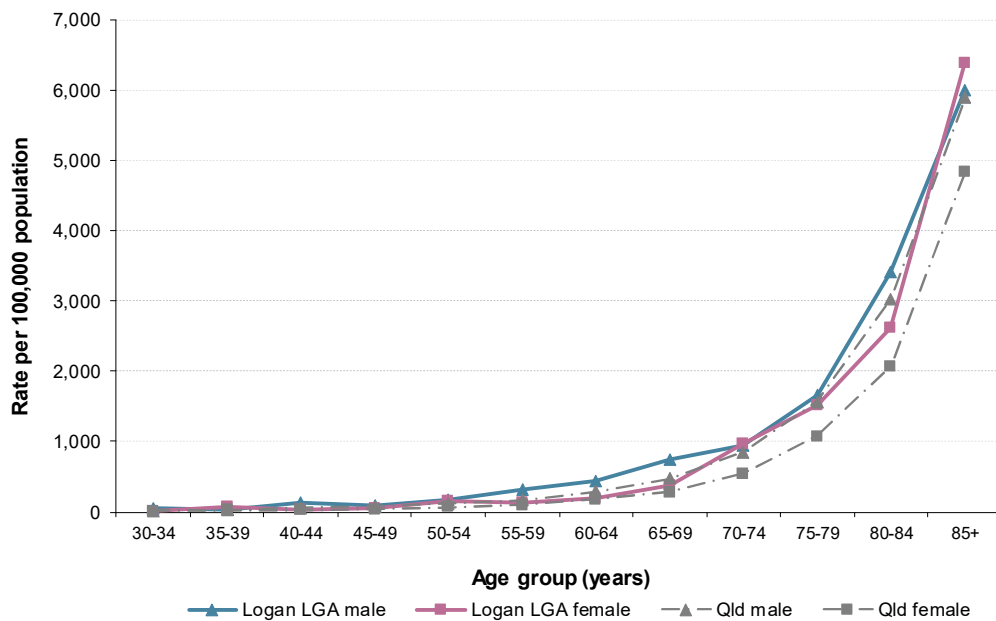
Indirect standardised separation ratios indicate that the average separation rate for heart failure was significantly higher in Logan LGA than in Queensland for males (24% higher) and females (41% higher) between 2018/19 and 2020/21 (Table 15).

Table 15: Heart failure standardised separation ratios by sex, Logan LGA, 2018/19 to 2020/21

Region	Sex	Ratio (95% Confidence Interval)	Statistically significant difference LGA – QLD*
Logan LGA	Male	1.24 (1.18 – 1.31)	↑
	Female	1.41 (1.33 – 1.49)	↑
	Persons	1.32 (1.27 – 1.37)	↑

* ↑ LGA statistically significantly higher than Queensland; ↓ LGA statistically significantly lower than Queensland; — no statistically significant difference between LGA and Queensland

Following a similar pattern to stroke, age specific hospital separation rates for heart failure were negligible before the age of about 30 years and then increased with age, following an exponential curve from the age of about 70 years (Figure 34).



* rates not presented for age groups under 30 years because of low or zero counts

Figure 34: Heart failure age specific hospital separation rate by sex, Logan LGA and Queensland, 2018/19 to 2020/21*

Diabetes mellitus

Diabetes mellitus is a disease marked by high blood glucose levels resulting from defective production and/or utilisation of insulin, the hormone produced by the pancreas that regulates blood sugar¹⁵.

Type 1 diabetes is an autoimmune condition in which the pancreas stops making insulin. Without insulin, cells cannot turn glucose (sugar) into energy and the body then starts to burn fats as a substitute. It usually has onset in childhood but can occur at any age. There is currently no cure and people with type 1 diabetes require daily insulin treatment¹⁵.

Type 2 diabetes is the most common form of diabetes (85% of cases) and is largely preventable as it is often associated with lifestyle factors (overweight and obesity and insufficient physical activity). Type 2 diabetes occurs when insulin secretion becomes progressively slower and key organs become resistant to the effects of insulin. Although it is usually older adults who are affected, increasingly younger people, even children, are being diagnosed¹⁵.

Unless otherwise specified, the diabetes data presented in this report include both type 1 and type 2 diabetes.

Mortality

On average there were 58 deaths per year from diabetes mellitus among residents of Logan LGA between 2017 and 2019. Female mortality rates trended strongly downwards in Logan LGA but only very slightly in Queensland. Logan LGA males rates trended upwards while Queensland male rates were stable (Figure 35).

In Logan LGA the gap between male and female rates widened substantially between 2010-12 and 2017-19 with the difference between the sexes being statistically significant from 2015-17 onwards (Figure 35).

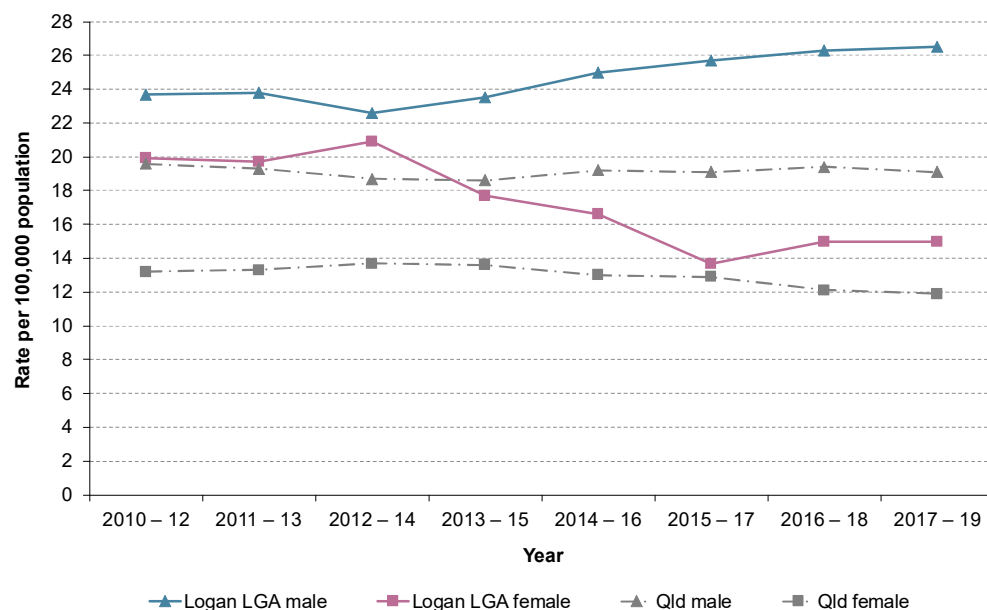


Figure 35: Diabetes mellitus age standardised mortality rate by sex, Logan LGA and Queensland, three-year moving averages 2010–12 to 2017–19

Indirect standardised mortality ratios indicate that the average mortality rate for diabetes was significantly higher in Logan LGA than in Queensland for males (39% higher) and for females (23% higher) in the five years from 2015 to 2019 (Table 16).

Table 16: Diabetes standardised mortality ratios by sex, Logan LGA, 2015 to 2019

Region	Sex	Ratio (95% confidence interval)	Statistically significant difference LGA – QLD*
Logan LGA	Male	1.39 (1.19 – 1.62)	↑
	Female	1.23 (1.01 – 1.48)	↑
	Persons	1.32 (1.17 – 1.49)	↑

* ↑ LGA statistically significantly higher than Queensland; ↓ LGA statistically significantly lower than Queensland;
 — no statistically significant difference between LGA and Queensland

Hospital separations

On average there were 996 hospital separations per year for diabetes mellitus among Logan LGA residents between 2018/19 and 2020/21. In both Logan LGA and Queensland, age standardised separation rates for males were significantly higher than rates for females at all timepoints from 2011/12 to 2020/21 (Figure 36).

Between 2011/12-13/14 and 2018/19-20/21 hospital separation rates for diabetes in males and females in both Logan LGA and Queensland trended upwards with the trend very strong in Logan LGA (Figure 36). Over this period Logan LGA rates among males increased by 48% with female rates increasing by 54%.

The COVID-19 pandemic did not appear to have a significant effect on diabetes separation rates in Queensland or Logan LGA. While rates did increase in the timepoints impacted by the pandemic, this was in line with established trends.

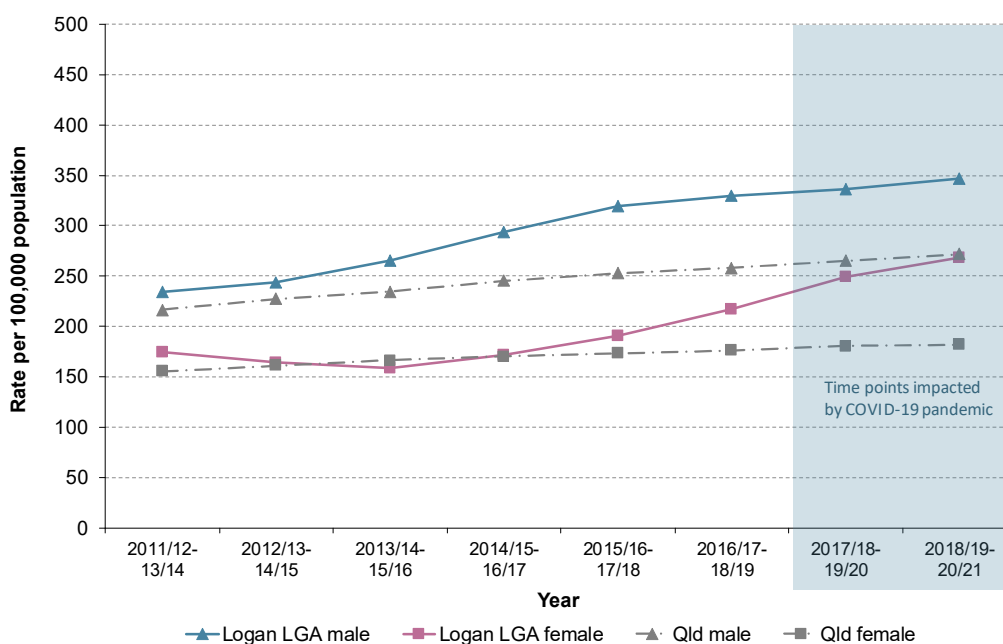


Figure 36: Diabetes mellitus age standardised hospital separation rate by sex, Logan LGA and Queensland, three-year moving averages 2011/12 to 2020/21

Indirect standardised separation ratios indicate that the average separation rate for diabetes was significantly higher in Logan LGA than in Queensland for males (26% higher) and for females (48% higher) in the 2018/19 to 2020/21 period (Table 17).

Table 17: Diabetes mellitus standardised separation ratios by sex, Logan LGA, 2018/19 to 2020/21

Region	Sex	Ratio (95% Confidence Interval)	Statistically significant difference LGA – QLD*
Logan LGA	Male	1.26 (1.20 – 1.33)	↑
	Female	1.48 (1.41 – 1.57)	↑
	Persons	1.35 (1.30 – 1.40)	↑

* ↑ LGA statistically significantly higher than Queensland; ↓ LGA statistically significantly lower than Queensland; — no statistically significant difference between LGA and Queensland

Age specific hospital separation rates for diabetes increased with increasing age. After the age of about 40 years the rate of increase accelerated, especially in males (Figure 37). Separation rates in males were double or almost double the rates in females for all five-year age groups from 50 years upwards.

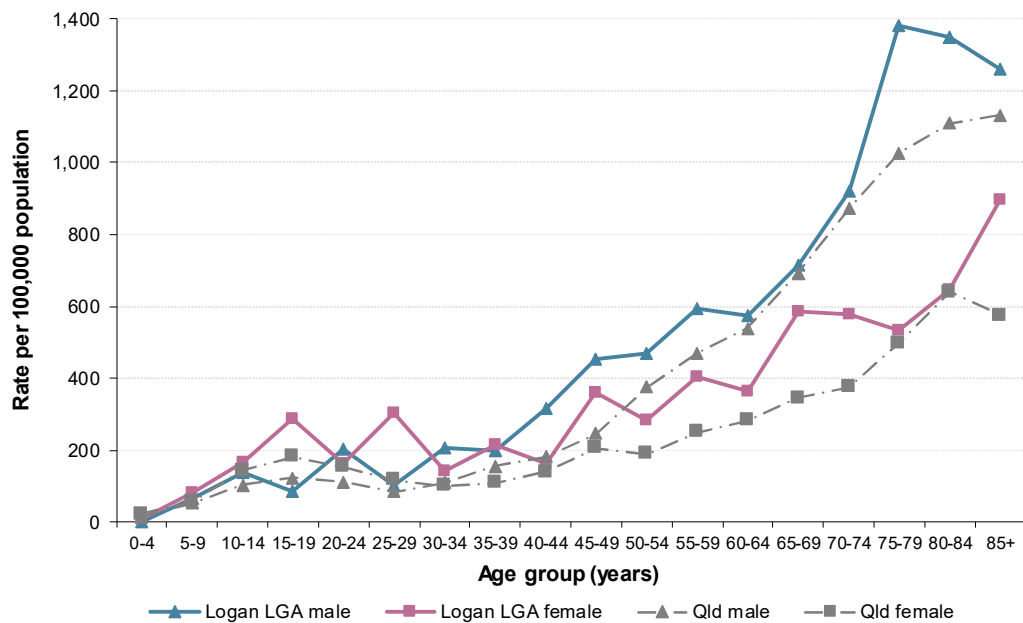


Figure 37: Diabetes mellitus age specific hospital separation rate by sex, Logan LGA and Queensland, 2018/19 to 2020/21

Injury

Injury is a major cause of preventable death and disability in Queensland. Survey results from 2008 indicated approximately one in five Queenslanders, or a member of their immediate family, had been injured in a way that permanently affected their lifestyle, work or leisure activities¹⁶. Injuries are classified according to the type of injury and whether or not it was intentional. Intentional injuries include those that were self-inflicted such as suicide and self-harm while unintentional injuries include categories such as falls and road transport injury¹⁷.

Injury: falls

Falls are Australia's largest contributor to hospitalised injuries and a leading cause of injury deaths¹⁸. Falls are common among older people and often result in fractures and other serious injuries, with people aged 65 years and over more likely to die or be hospitalised due to a fall¹⁸.

Mortality

On average there were 45 deaths per year from falls among Logan LGA residents between 2017 and 2019. The majority of these (93%) were in the 65 years and over age group.

In the 65 years and over age group mortality rates for falls were consistently higher in males than in females (Figure 38), although the differences were not statistically significant. Between 2010-12 and 2017-19 Logan LGA mortality rates for falls in persons of this age group showed no consistent trend with rates in males more variable than in females (Figure 38).

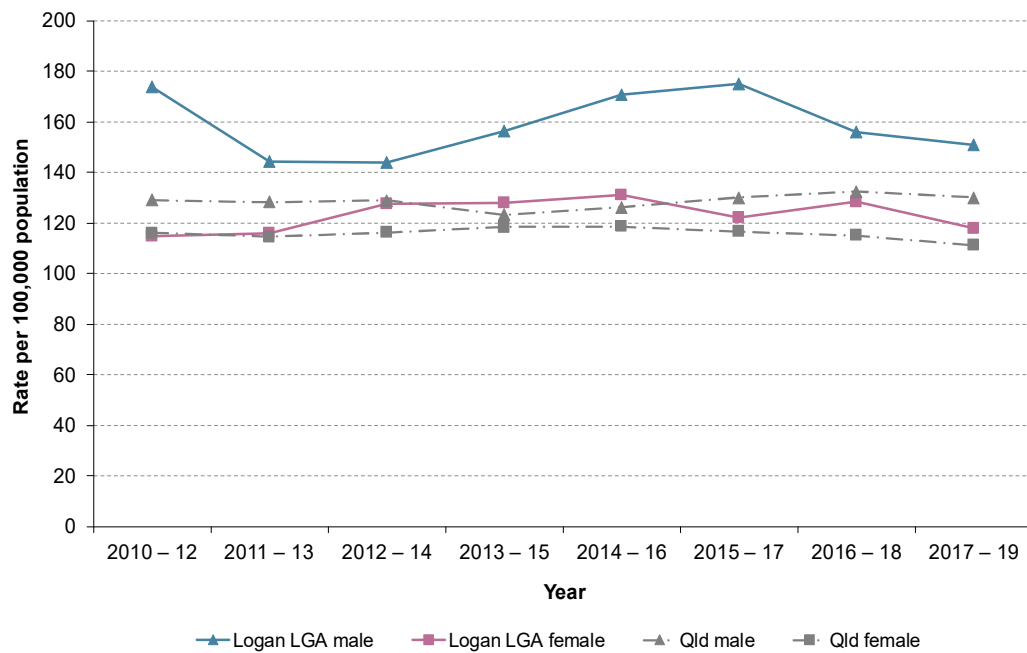


Figure 38: Falls in the 65+ years age group, age standardised mortality rate by sex, Logan LGA and Queensland, three-year moving averages 2010–12 to 2017–19

Indirect standardised mortality ratios indicate that the average mortality rates for falls between 2015 and 2019 were statistically similar in Logan LGA and Queensland for both males and females in all ages and in the 65 years and over age group.

Hospital separations

On average there were 3,928 hospital separations per year for falls among Logan LGA residents between 2018/19 and 2020/21. Age standardised separation rates for females were consistently numerically higher than those among males at each timepoint from 2011/12-13/14 to 2018/19-20/21, with the differences being statistically significant from 2015/16-17/18 onwards (Figure 39).

Falls separation rates in both sexes trended strongly upwards over the reported period (Figure 39). In Logan LGA rates among males and females increased by 53% and 69% respectively. The COVID-19 pandemic did not appear to have a significant effect on falls separation rates in Queensland or Logan LGA. While rates did increase in the timepoints impacted by the pandemic, this was broadly in line with established trends (Figure 39).

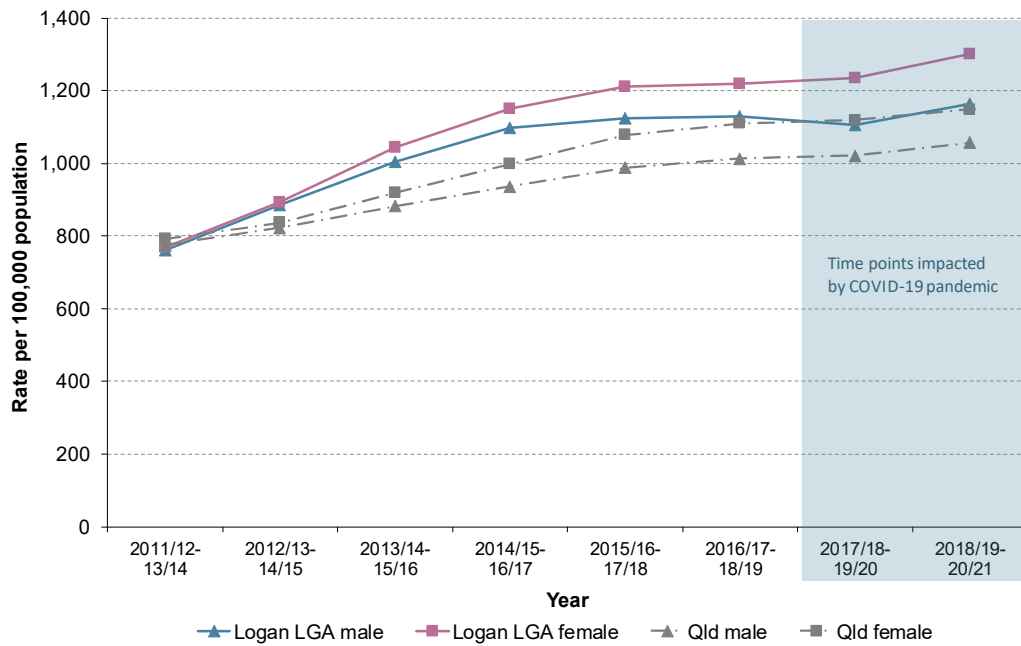


Figure 39: Falls age standardised hospital separation rate by sex, Logan LGA and Queensland, three-year moving averages 2011/12 to 2020/21

In the 65 years and over age group, there was an average of 1,957 hospital separations per year for falls in Logan LGA residents between 2018/19 and 2020/21. Age standardised separation rates for females in this age group were consistently significantly higher than rates for males at all timepoints between 2011/12-13/14 and 2018/19-20/21 (Figure 40). Falls separation rates trended even more strongly upwards in this age group in both Logan LGA and Queensland (Figure 40). Between 2011/12-13/14 and 2018/19-20/21 rates in Logan LGA males and females increased by 79% and 73% respectively.

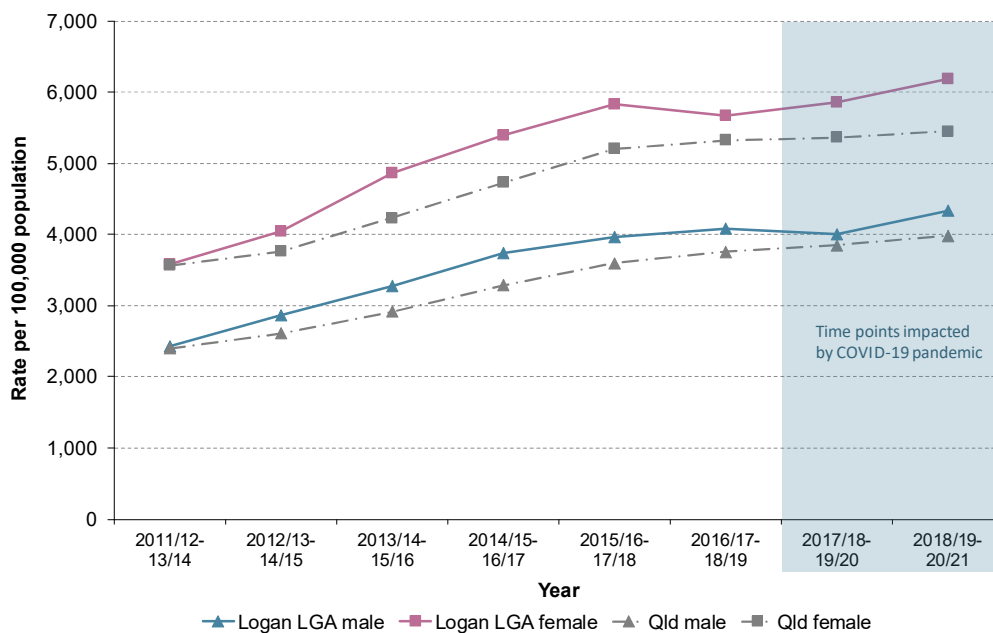


Figure 40: Falls in the 65+ years age group, age standardised hospital separation rate by sex, Logan LGA and Queensland, three-year moving averages 2011/12 to 2020/21

Indirect standardised separation ratios indicate that the average separation rate for falls (all ages) was significantly higher in Logan LGA than in Queensland for males (11% higher) and for females (13% higher) in the period 2018/19 to 2020/21 (Table 8). When only separations among people aged 65 years and over were considered, the rates similarly were also significantly higher in Logan LGA than in Queensland in both males (11% higher) and females (13% higher) (Table 8).

Table 18: Falls standardised separation ratios by sex, Logan LGA, 2018/19 to 2020/21

Region	Age group	Sex	Ratio (95% Confidence Interval)	Statistically significant difference LGA – QLD*
Logan LGA	All ages	Male	1.11 (1.08 – 1.14)	↑
		Female	1.13 (1.10 – 1.16)	↑
		Persons	1.12 (1.10 – 1.14)	↑
	Ages 65 years and over	Male	1.11 (1.06 – 1.15)	↑
		Female	1.13 (1.10 – 1.17)	↑
		Persons	1.12 (1.10 – 1.15)	↑

* ↑ LGA statistically significantly higher than Queensland; ↓ LGA statistically significantly lower than Queensland;
— no statistically significant difference between LGA and Queensland

Injury: road transport injury

This section refers to road vehicle traffic crashes only, that is, accidents occurring in traffic conditions on a public road. Road vehicles include motor vehicles, motor cycles and pedal cycles.

Mortality

On average there were 15 deaths per year from road transport injury among Logan LGA residents in the three years from 2017 to 2019. Males accounted for over half (57%) of these deaths. In 2017 to 2019 in Queensland, 21% of all road transport injury deaths were of persons aged 15 to 24 years while in Logan LGA it was higher at 30%.

Hospital separations

On average there were 1,427 hospital separations per year for road transport injury among Logan LGA residents in the three years from 2018/19 to 2020/21. Males accounted for 58% of these separations.

Age standardised separation rates were significantly higher for males than for females in Logan LGA (by 1.4 to 1.7 times) and in Queensland at all timepoints between 2011/12-13/14 and 2018/19-20/21 (Figure 41). Over this period rates in both males and females trended steadily upwards (Figure 41). The increase was most pronounced in Logan LGA where male rates increased by 45% and female rates by 71% over this period. The COVID-19 pandemic did not appear to have a significant effect on road transport injury separation rates in Queensland or Logan LGA. While rates did increase in the timepoints impacted by the pandemic, this was largely in line with established trends (Figure 41) so cannot be attributed to the pandemic.

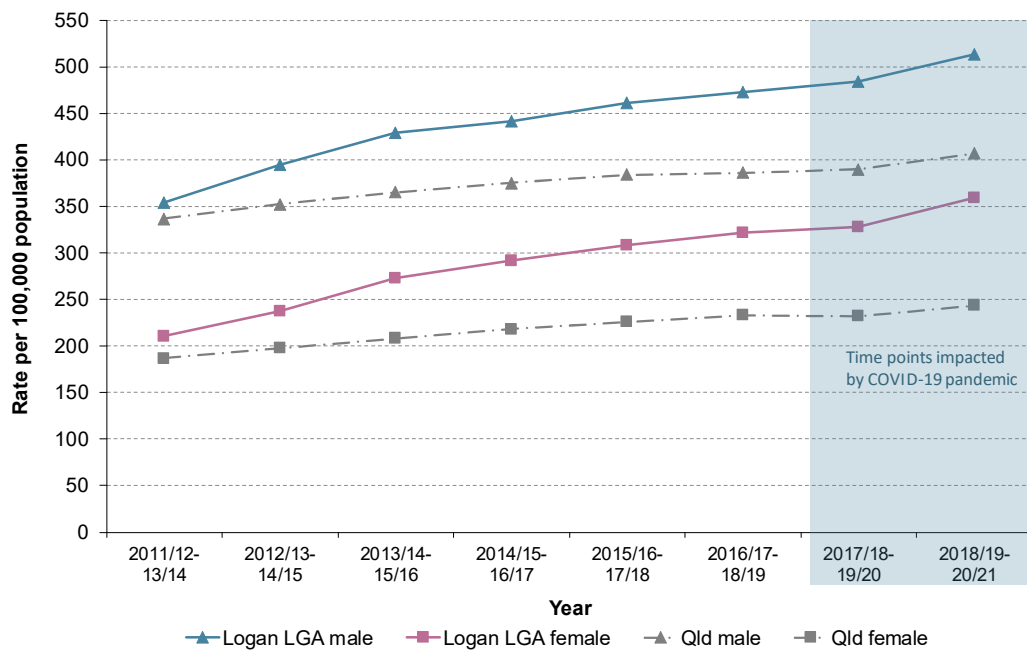


Figure 41: Road transport injury age standardised hospital separation rate by sex, Logan LGA and Queensland, three-year moving averages 2011/12 to 2020/21

In the 15 to 24 years age group, there was an average of 341 Logan LGA hospital separations per year for road transport injury between 2018/19 and 2020/21. Males accounted for 56% of these separations.

In this younger age group, age standardised separations rates for males were significantly higher than for females in Logan LGA and in Queensland at all timepoints from 2011/12-13/14 to 2018/19-20/21 although the gap between the sexes narrowed over time (Figure 42). Logan LGA male separation rates for were 1.8 times higher than female rates in 2011/12-13/14 at the start of the reported period but only 1.2 times higher by 2018/19-20/21 at the end of the period.

Between 2011/12-13/14 and 2018/19-20/21 separation rates in males and females trended upwards with the trend stronger in Logan LGA than in Queensland (Figure 42). Logan LGA male and female rates increased by 105% and 44% respectively while Queensland male and female rates increased by 37% and 12% respectively over this period. The COVID-19 pandemic did not appear to have a significant effect on road transport injury separation rates in Logan LGA females. While female rates did increase in 2018/19-20/21, this was largely in line with established trends (Figure 42) so cannot be attributed to the pandemic. However the separation rate in Logan LGA males increased strongly in 2018/19-20/21 (Figure 42). It is possible that the COVID-19 pandemic may have contributed to this major rise.

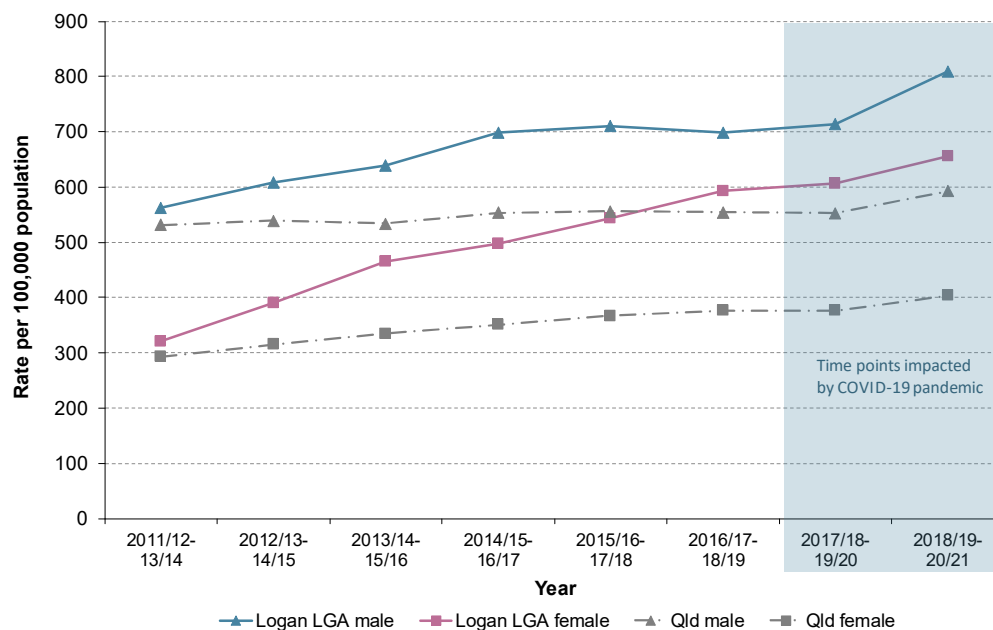


Figure 42: Road transport injury (15 to 24 years) age standardised hospital separation rate by sex, Logan LGA and Queensland, three-year moving averages 2011/12 to 2020/21

Indirect standardised separation ratios indicate that the average separation rate for road transport injury was significantly higher in Logan LGA than in Queensland for males (26% higher) and females (46% higher) between 2018/19 and 2020/21. When only young people in the high-risk 15 to 24 years age group were considered, the difference between Logan LGA and Queensland was greater with the rate among Logan LGA males 37% higher and Logan LGA females 63% higher than their Queensland counterparts (Table 19).

Table 19: Road transport injury standardised separation ratios by sex, Logan LGA, 2018/19 to 2020/21

Region	Age group	Sex	Ratio (95% confidence interval)	Statistically significant difference LGA – QLD*
Logan LGA	All ages	Male	1.26 (1.95 – 1.31)	↑
		Female	1.46 (1.97 – 1.53)	↑
		Persons	1.34 (1.96 – 1.38)	↑
	15-24 years	Male	1.37 (1.88 – 1.48)	↑
		Female	1.63 (1.89 – 1.79)	↑
		Persons	1.47 (1.90 – 1.57)	↑

* ↑ LGA statistically significantly higher than Queensland; ↓ LGA statistically significantly lower than Queensland; — no statistically significant difference between LGA and Queensland

Age specific rates of hospital separation for road transport injury were highest between the ages of 15 and 24 years for both males and females. Following this peak rates generally declined with increasing age before increasing slightly in the older age groups over 70 years (Figure 43).

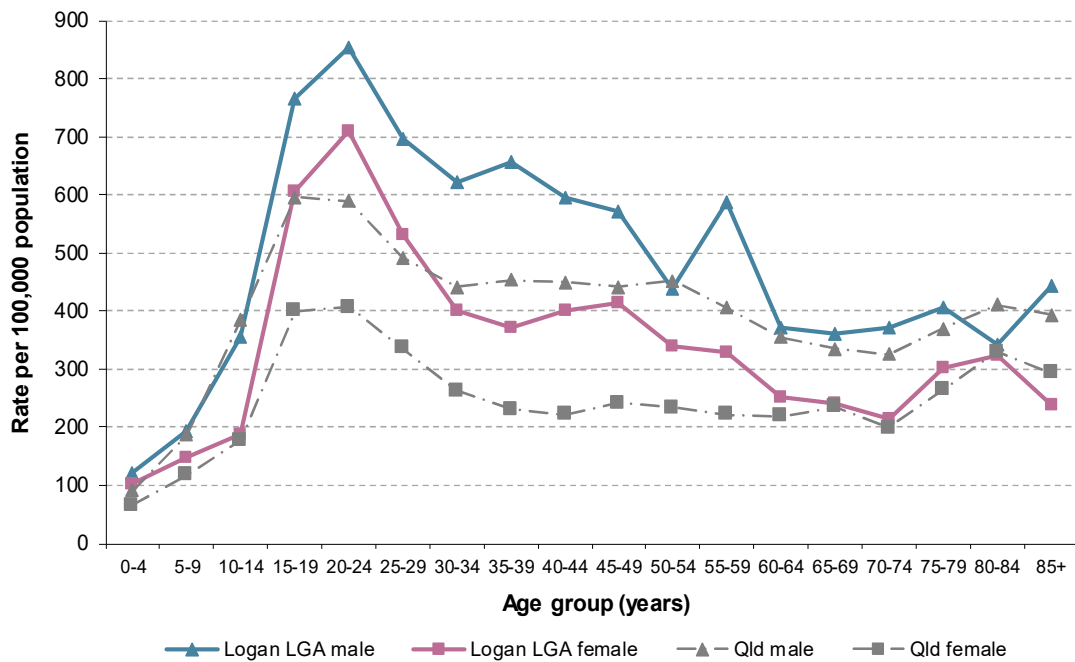


Figure 43: Road transport injury age specific hospital separation rate by sex, Logan LGA and Queensland, 2018/19 to 2020/21

Mental health

Mental health is defined by the World Health Organisation as ‘a state of wellbeing in which the individual realises his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community’^{19,20}. Conversely the term mental illness 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 known as mental disorders and are referred to in this report as mental health conditions. Examples of mental disorders include anxiety disorders, eating disorders, psychotic disorders and substance-abuse. These data do not include cases of dementia. Mental disorders are very common. A survey in 2007 found that almost half the adult population of Queensland had experienced a mental disorder in their lifetime²¹.

Note in this section of the report, all of 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 Australian Institute of Health and Welfare 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 services²². 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.

Mental health: All mental health conditions

Mortality

On average there were 93 deaths per year from mental health conditions among Logan LGA residents in the three years from 2017 to 2019. Females accounted for 61% of these deaths.

Age standardised mortality rates for all mental health conditions in Queensland males and females and Logan LGA males increased between 2010-12 and 2017-19 while rates in Logan LGA females showed no consistent trend (Figure 44). The Logan LGA male mortality rate increased by 28% over this period which was comparable with the 26% increase reported in Queensland males. Over this same period there was no significant difference in age standardised mental health mortality rates between males and females in Logan LGA (Figure 44).

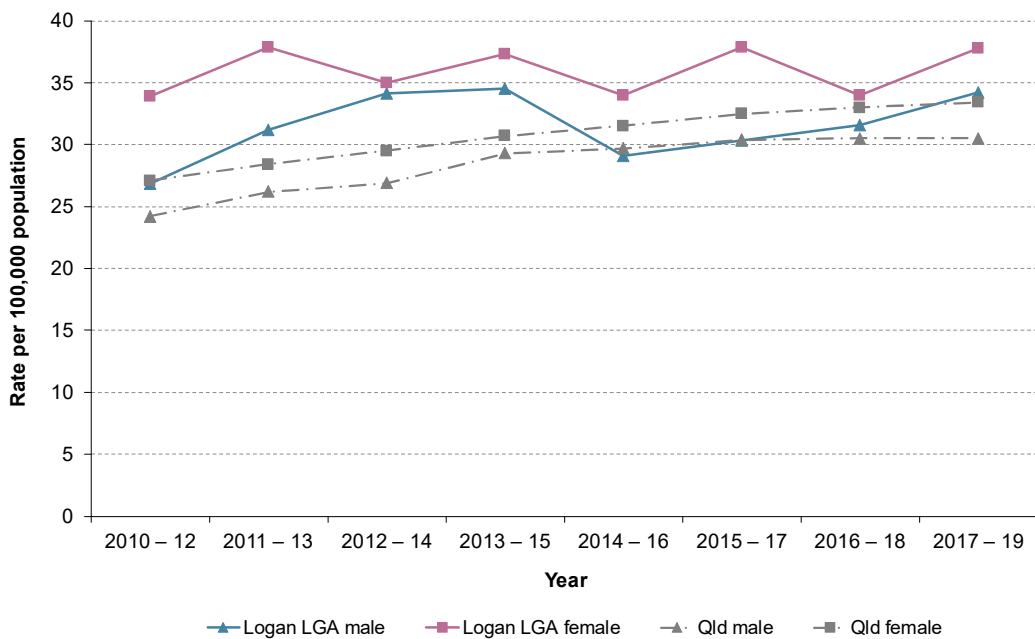


Figure 44: All mental health conditions age standardised mortality rates by sex, Logan LGA and Queensland, three-year moving averages 2010–12 to 2017–19

Indirect standardised mortality ratios indicate that the average mortality rates for all mental health conditions were statistically similar in Logan LGA and Queensland for both males and females in the five years from 2015 to 2019.

Hospital separations

On average there were 3,870 hospital separations per year for mental health conditions (excluding ambulatory-equivalent) among Logan LGA residents in the three years from 2018/19 to 2020/21. Age

standardised separation rates were consistently significantly higher for females than for males in both Logan LGA and Queensland at all timepoints between 2011/12-13/14 and 2018/19-20/21 (Figure 45).

Over this period, both Logan LGA and Queensland separation rates for males and females trended upwards (Figure 45). Rates in Logan LGA males and females increased by 61% and 68% respectively over this period. While separation rates in Logan LGA residents did increase in the timepoints impacted by the COVID-19 pandemic, these increases were in line with established trends (Figure 45) so cannot be attributed to the pandemic.

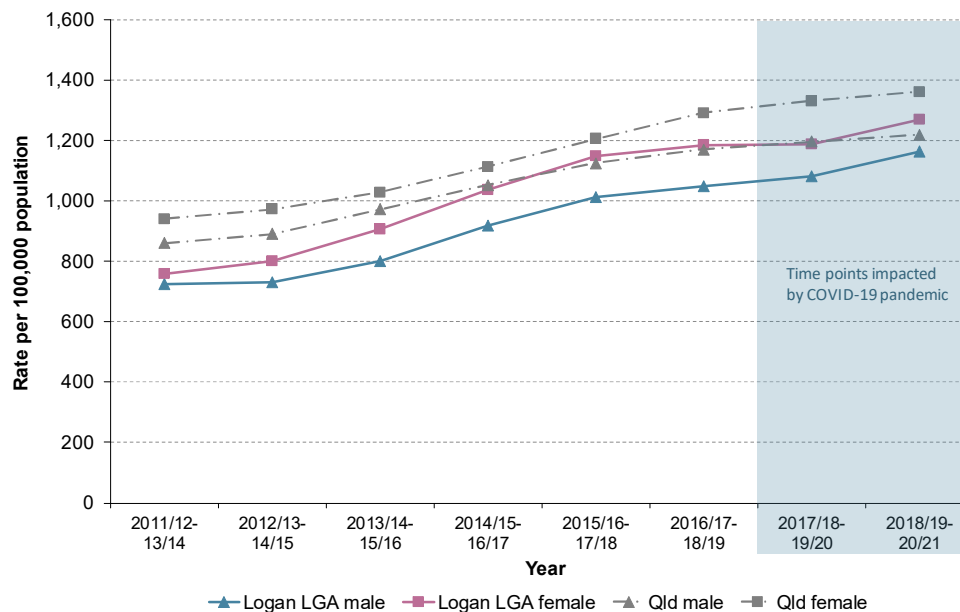


Figure 45: Mental health conditions age standardised hospital separation rate by sex, Logan LGA and Queensland, three-year moving averages 2011/12 to 2020/21

Indirect standardised separation ratios indicate that the average hospital separation rate for all mental health conditions was significantly lower in Logan LGA than in Queensland for males (4% lower) and for females (7% lower) between 2018/19 and 2020/21 (Table 20).

Table 20: All mental health conditions standardised separation ratios by sex, Logan LGA, 2018/19 to 2020/21

Region	Sex	Ratio (95% confidence interval)	Statistically significant difference LGA – QLD*
Logan LGA	Male	0.96 (0.93 – 0.98)	↓
	Female	0.93 (0.91 – 0.95)	↓
	Persons	0.94 (0.92 – 0.96)	↓

* ↑ LGA statistically significantly higher than Queensland; ↓ LGA statistically significantly lower than Queensland; — no statistically significant difference between LGA and Queensland

Age specific hospital separation rates for mental health conditions increased substantially between the age groups of 10 to 14 and 20 to 24 years. In Logan LGA females rates then increased to a minor peak in the 50 to 54 years age group after which they declined gradually until the age of 74 years. From 75 years onwards

rates climbed steeply with increasing age. Among males rates were relatively stable to 54 years after which they declined to 69 years. In males over 70 years a steep increase with increasing age was recorded, paralleling that observed in females (Figure 46).

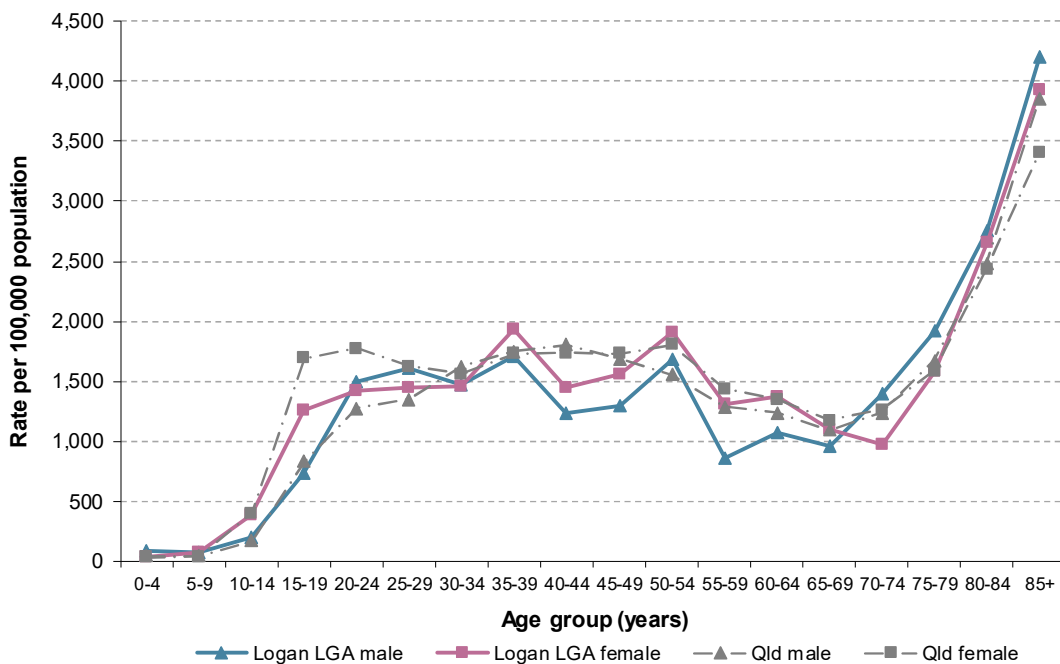


Figure 46: Mental health conditions age specific hospital separation rate by sex, Logan LGA and Queensland, 2018/19 to 2020/21

Mental health: anxiety and depression

Hospital separations

On average there were 1,084 hospital separations per year for anxiety and depression (excluding ambulatory-equivalent) among Logan LGA residents in the three years from 2018/19 to 2020/21. Females accounted for 65% of these separations. Female age standardised separation rates were significantly higher than male rates in both Logan LGA and Queensland across all timepoints from 2011/12-13/14 to 2018/19-20/21 (Figure 47). The gap between the sexes became greater with time.

Over this period, Logan LGA and Queensland separation rates for both males and females trended strongly upwards (Figure 47) with rates at most timepoints significantly higher than the preceding point. Rates in Logan LGA males and females increased by 72% and 103% respectively over this period. In the timepoints impacted by the COVID-19 pandemic, separation rates in both sexes decreased. It is plausible to suggest that persons with anxiety and depression may have experienced greater than usual difficulty accessing hospitalisation for their condition and/or may have had a greater reluctance to attend treatment services at a healthcare service during the pandemic period

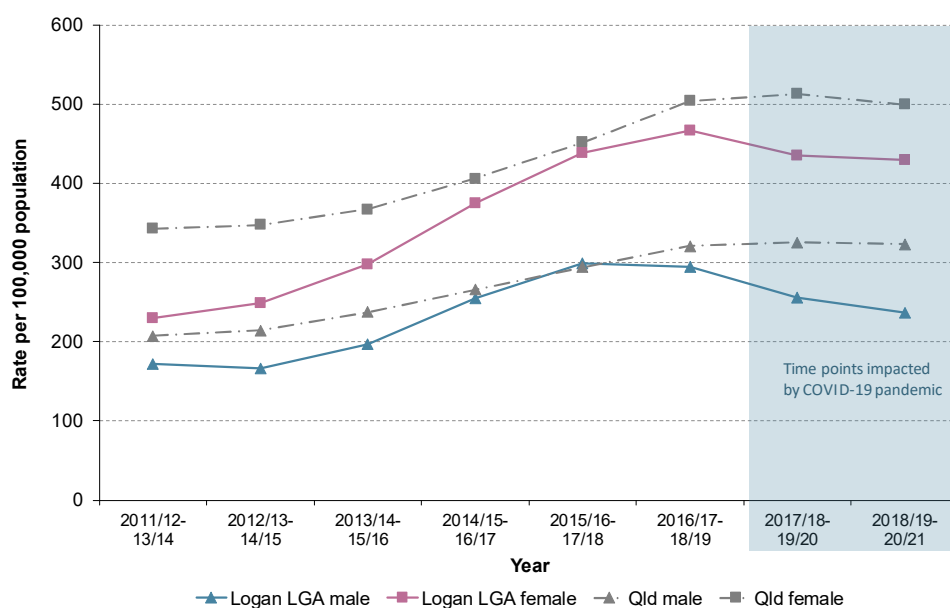


Figure 47: Anxiety and depression age standardised hospital separation rate by sex, Logan LGA and Queensland, three-year moving averages 2011/12 to 2020/21

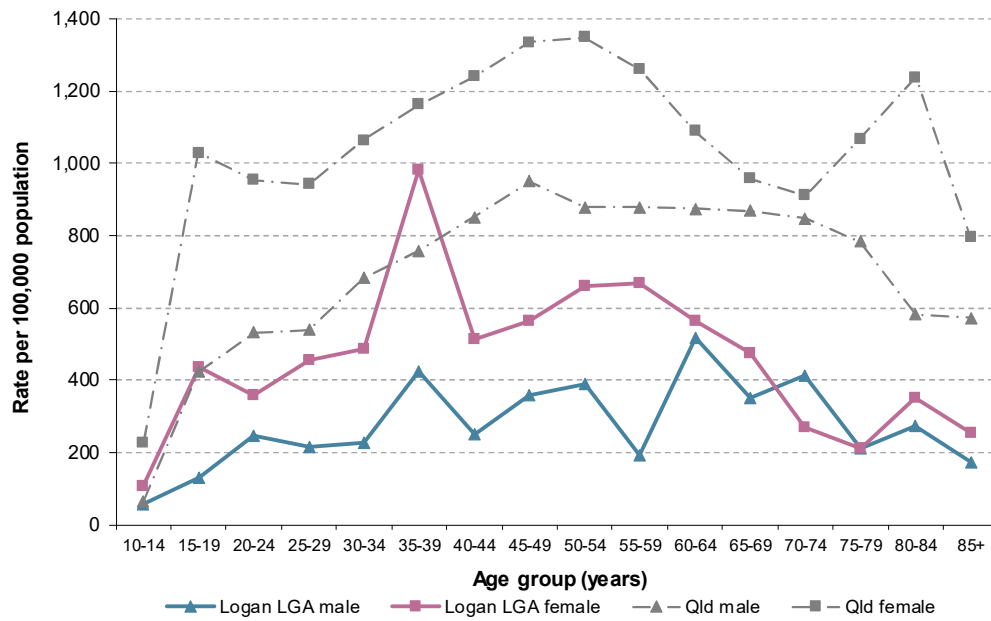
Indirect standardised separation ratios indicate that the average separation rate for anxiety and depression was significantly lower in Logan LGA than in Queensland for males (26% lower) and for females (14% lower) between 2018/19 and 2020/21 (Table 21).

Table 21: Anxiety and depression standardised separation ratios by sex, Logan LGA and Queensland, 2018/19 to 2020/21

Region	Sex	Ratio (95% Confidence Interval)	Statistically significant difference LGA – QLD*
Logan LGA	Male	0.74 (0.70 – 0.78)	↓
	Female	0.86 (0.82 – 0.90)	↓
	Persons	0.81 (0.78 – 0.84)	↓

* ↑ LGA statistically significantly higher than Queensland; ↓ LGA statistically significantly lower than Queensland; — no statistically significant difference between LGA and Queensland

Age specific hospital separation rates for anxiety and depression in Logan LGA females generally increased with increasing age to a peak in the 50 to 59 years age groups after which they declined (Figure 48). There was a pronounced increase in separation rate between the age groups 10 to 14 and 15 to 19 years and then a sharp peak in women aged 35 to 39 years. The rate in this age group was double that seen in adjacent age groups (Figure 48). Rates for males climbed more steadily with age with the highest Logan LGA rates found in those aged 60 to 64 years after which a decline was recorded (Figure 48).



* rates not presented for age groups under 10 years because of low or zero counts

Figure 48: Anxiety and depression age specific hospital separation rate by sex, Logan LGA and Queensland, 2018/19 to 2020/21*

Mental health: suicide and self-inflicted injury

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-harm²³.

Mortality

On average there were 56 deaths per year from suicide among Logan LGA residents in the three years from 2017 to 2019. Males accounted for almost three-quarters (73%) of these deaths. Suicide mortality rates among males were significantly higher than among females in Logan LGA and Queensland, with male rates consistently around three times higher than female rates at all timepoints from 2010-12 to 2017-19 (Figure 49).

Between 2010-12 and 2014-16 mortality rates in Logan LGA males and females were relatively stable. However after 2014-16 rates in both sexes experienced substantial increases (Figure 49).

Indirect standardised mortality ratios indicate that the average mortality rates for suicide were statistically similar in Logan LGA and Queensland for both males and females in all ages and in the 15 to 24 years age group between 2015 and 2019.

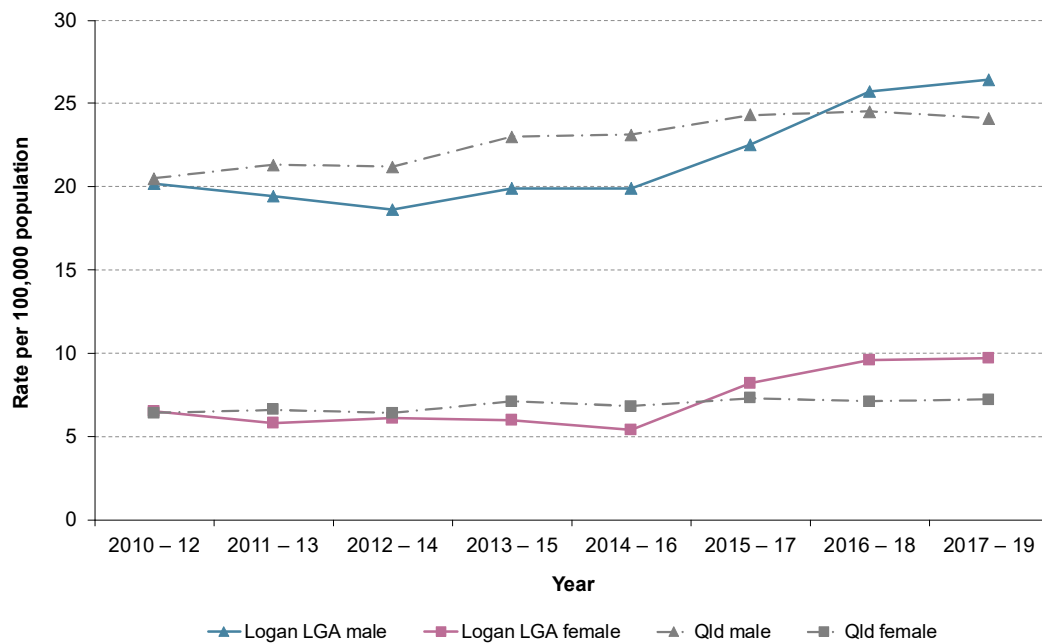


Figure 49: Suicide age standardised mortality rate by sex, Logan LGA and Queensland, three-year moving averages 2010-12 to 2017-19

Hospital separations

On average there were 985 hospital separations per year for self-inflicted injury (all ages) among Logan LGA residents between 2018/19 and 2020/21. Females accounted for two thirds (67%) of these separations. Female age standardised separation rates were consistently significantly higher than for male rates in Logan LGA and in Queensland at all timepoints between 2011/12-13/14 and 2018/19-20/21 (Figure 50). Separation rates for Logan LGA females were 1.6 to 1.9 times higher than male rates over these years.

Over this period, self-inflicted injury separation rates for both males and females trended upwards (Figure 50). Rates in Logan LGA males and females increased by 35% and 68% respectively over this period. In 2018/19-20/21, the timepoint with the greatest COVID-19 pandemic impact to date, separation rates in both Logan LGA males and females increased significantly, by 29% and 33% respectively.

On average there were 354 hospital separations per year for self-inflicted injury in Logan LGA 15 to 24 year olds between 2018/19 and 2020/21, representing 36% of all separations for self-inflicted injury in this period. Females accounted for 68% of the separations in this younger age group and age standardised separation rates for females were consistently 2.1 to 2.7 times higher than rates in males (Figure 50).

Hospital separation rates for self-inflicted injury among young people (15 to 24 years) increased more steeply over the reported period than the all ages group (Figure 50). Rates for Logan LGA young males and females increased by 82% and 88% respectively

At all timepoints between 2011/12-13/14 and 2018/19-20/21 the Logan LGA age standardised hospital separation rate among all persons aged 15 to 24 years was consistently more than double the rate in people of all ages (Figure 50) with the greater part of this difference accounted for by females. Separation rates in young women, trended upwards more sharply over the reported period than did rates in women of all ages (Figure 50).

In 2018/19-20/21, the timepoint with the greatest COVID-19 pandemic impact to date, the separation rate in young Logan LGA females saw a 49% increase from the previous timepoint, with this spike being inconsistent with the previous trend. There was also an increase in the rate in young Logan LGA males at this time of 36%. These highly significant increases in hospitalisation for youth self-harm are consistent with anecdotal news reports throughout 2020-2021 regarding the social and mental health impact of the COVID-19 pandemic and pandemic response measures such as lockdowns and isolation.

The spikes in self-harm separations are concerning on their own. However, considered in the light of the decrease in separation rates for anxiety and depression (Figure 47) these data may suggest that persons with mental health conditions such as anxiety & depression were less able to access hospital-based care over the pandemic period, resulting in higher rates of hospitalisation for self-harm episodes.

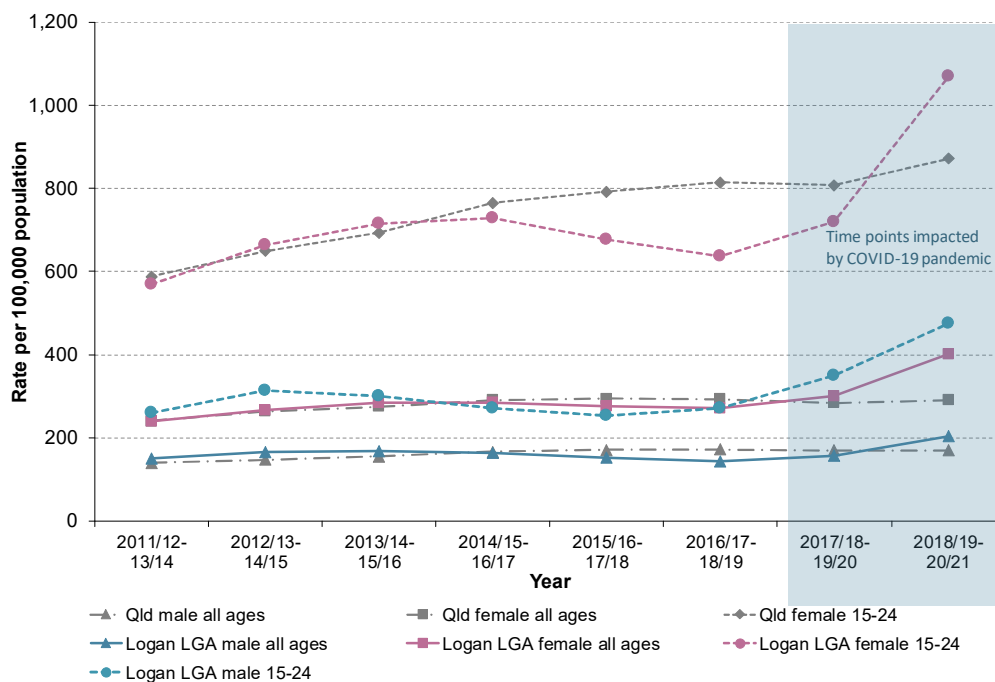


Figure 50: Self-inflicted injury age standardised hospital separation rate by sex and age group, Logan LGA and Queensland, three-year moving averages 2011/12 to 2020/21

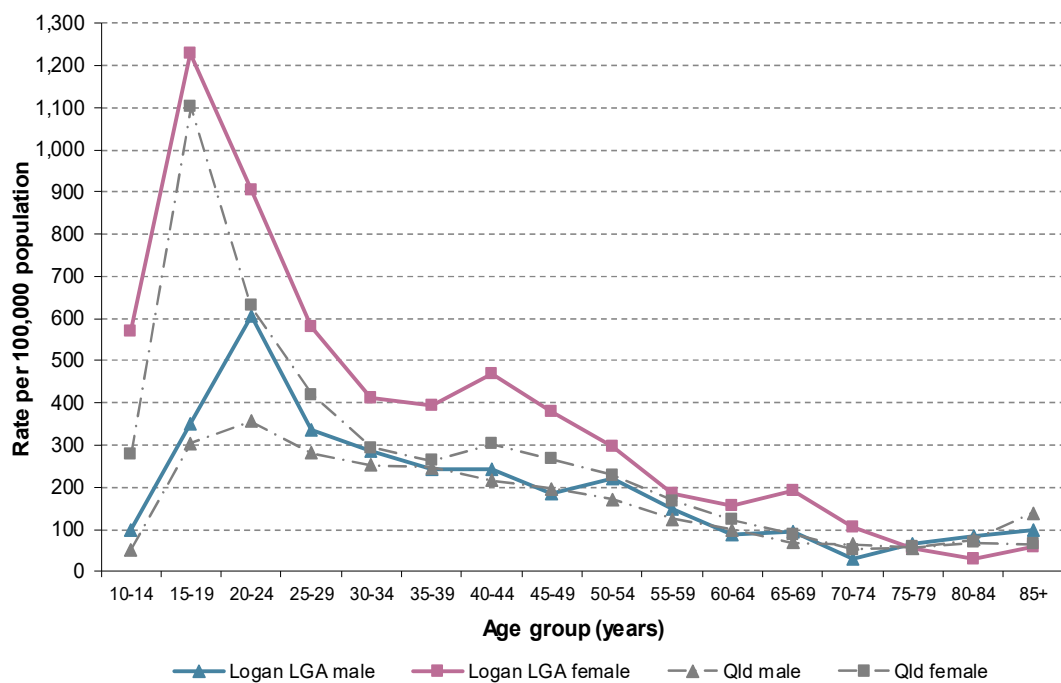
Indirect standardised separation ratios indicate that the average separation rate for self-inflicted injury (all ages) was significantly higher in Logan LGA than in Queensland for males (21% higher) and females (38% higher) in 2018/19 to 2020/21 (Table 22). When only the younger, high-risk 15 to 24 years age group was considered, separation rates were similarly significantly higher in Logan LGA than in Queensland for males (44% higher) and females (23% higher) (Table 22).

Table 22: Self-inflicted injury standardised separation ratios by sex, Logan LGA, 2018/19 to 2020/21

Region	Age group	Sex	Ratio (95% confidence interval)	Statistically significant difference LGA – QLD*
Logan LGA	All ages	Male	1.21 (1.14 – 1.29)	↑
		Female	1.38 (1.32 – 1.45)	↑
		Persons	1.32 (1.27 – 1.37)	↑
	15-24 years	Male	1.44 (1.30 – 1.61)	↑
		Female	1.23 (1.14 – 1.33)	↑
		Persons	1.29 (1.21 – 1.37)	↑

* ↑ LGA statistically significantly higher than Queensland; ↓ LGA statistically significantly lower than Queensland; — no statistically significant difference between LGA and Queensland

Age specific hospital separation rates for self-inflicted injury among males increased through the teen years, peaking in the 20 to 24 years age group after which they declined steadily with increasing age (Figure 51). Among females, separation rates spiked in the 15 to 19 year age group to a rate more than double the peak rate in males. Female rates then dropped sharply by the 25 to 29 year age group and continued to generally decline with increasing age (Figure 51).



* rates not presented for age groups under 10 years because of low or zero counts

Figure 51: Self-inflicted injury age specific hospital separation rate by sex, Logan LGA and Queensland, 2018/19 to 2020/21*

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 Queensland as at 2017, the one in two men and one in two women would develop cancer before their 85th birthday²⁴. In 2018 cancer (malignant + benign neoplasms) was the leading broad cause of death in Australia and was responsible for 19% of deaths overall²⁴. For most cancers, the causes are not fully understood. However factors that place individuals at a greater risk of particular cancers include smoking, alcohol consumption, diet, obesity, physical inactivity, chronic infections, family history and genetic susceptibility²⁵.

All cancers

Mortality

On average there were 497 deaths per year from all cancers among Logan LGA residents in the five years from 2015 to 2019. Six types of cancer (lung, colorectal, hepatobiliary, colorectal, haematological, prostate and upper gastrointestinal) together accounted for two thirds (67%) of all Logan LGA cancer deaths between 2015 and 2019 (Table 23). Lung cancer alone accounted for over one in five (21%) cancer deaths in Logan LGA in this period.

The average annual age standardised mortality rate for all cancers was significantly higher in Logan LGA (172 deaths per 100,000 persons) than in Queensland (159 deaths per 100,000 persons) between 2015 and 2019 (Table 23). This difference was driven by lung and hepatobiliary cancers which were the only major cancer-types with rates significantly higher in Logan LGA (Table 23). The mortality rates of all other groupings of cancer by site were statistically similar in Logan LGA and Queensland in 2015 to 2019 (Table 23).

The all cancer Logan LGA mortality rate for 2015 to 2019 was significantly lower than the rate reported for 2011 to 2015 of 189 deaths per 100,000 persons⁹.

Table 23: Mortality numbers and age standardised mortality rates by site of cancer, Logan LGA and Queensland, 2015 to 2019

Site	Number of deaths, 2015-2019		Average annual age standardised rate per 100,000 population (95% confidence interval)		Statistically significant difference LGA –QLD*
	Logan LGA	QLD	Logan LGA	QLD	
Lung	529	9,147	35.6 (32.6 – 38.6)	32.0 (31.3 – 32.6)	↑
Hepatobiliary	291	4,840	19.7 (17.5 – 22.0)	17.0 (16.5 – 17.4)	↑
Colorectal	286	5,400	20.1 (17.9 – 22.5)	19.0 (18.5 – 19.5)	—
Haematological	244	4,752	17.5 (15.4 – 19.8)	16.8 (16.3 – 17.2)	—
Prostate	160	3,223	27.7 (23.6 – 32.2)	25.4 (24.5 – 26.3)	—
Upper gastrointestinal	152	2,557	10.8 (9.1 – 12.5)	9.0 (8.7 – 9.4)	—
Breast (female)	148	2,824	18.8 (15.9 – 22.0)	19.2 (18.5 – 19.9)	—
Urological	110	2,293	8.1 (6.7 – 9.7)	8.1 (7.8 – 8.4)	—
Gynaecological	115	1,971	14.8 (12.2 – 17.6)	13.3 (12.7 – 13.8)	—
Melanoma	75	1,604	5.2 (4.1 – 6.5)	5.7 (5.4 – 6.0)	—
CNS and Brain	81	1,421	5.1 (4.0 – 6.2)	5.2 (4.9 – 5.4)	—
Head and neck	68	1,300	4.6 (3.6 – 5.8)	4.5 (4.3 – 4.8)	—
Mesothelioma	48	690	3.2 (2.4 – 4.2)	2.4 (2.3 – 2.6)	—
Bone and soft tissue	29	471	Not calculated [#]	1.7 (1.6 – 1.9)	Not calculated [#]
Endocrine	12	191	Not calculated [#]	0.7 (0.6 – 0.8)	Not calculated [#]
Ophthalmic	8	100	Not calculated [#]	0.4 (0.3 – 0.4)	Not calculated [#]
Breast (male)	<5	22	Not calculated [#]	Not calculated [#]	Not calculated [#]
Other invasive cancers	126	2,487	9.2 (7.7 – 10.8)	8.6 (8.3 – 9.0)	—
-TOTAL	2,483	45,293	172.4 (165.7 – 179.2)	159.4 (158.0 – 160.9)	↑

* ↑ Logan LGA statistically significantly higher than Queensland; ↓ Logan LGA statistically significantly lower than Queensland; — no statistically significant difference between Logan LGA and Queensland

Rate not calculated because total number of deaths, 2015 to 2019, less than 50

Source: Queensland Health. Oncology Analysis System (OASys). Queensland Cancer Control Analysis Team

Incidence

On average there were 1,623 new (incident) cases of cancer per year among Logan LGA residents in the five years from 2015 to 2019. The six most common types of newly diagnosed cancer in Logan LGA (prostate, female breast, haematological, colorectal, melanoma and lung; (Table 24) together accounted for 68% of all new cases.

In 2015 to 2019, the average annual age standardised incidence rate for all cancers (combined) in Logan LGA (530 new cases per 100,000 persons) was significantly lower than the Queensland rate (545 new cases per 100,000 persons) (Table 24). The current Logan LGA rate was only marginally higher than the rate reported for 2011 to 2015 of 527 new cases per 100,000 persons⁹.

The incidence rates of prostate and female breast cancers (the two most common newly diagnosed cancers in both Logan LGA and Queensland) along with melanoma were significantly lower in Logan LGA than in Queensland in 2015 to 2019 (Table 24). Three cancer-types (lung, gynaecological and upper gastrointestinal) had significantly higher age standardised incidence rates in Logan LGA compared with Queensland (Table 24).

Table 24: Newly diagnosed cancer cases (incidence) and age standardised incidence rates by site of cancer, Logan LGA and Queensland, 2015 to 2019

Site	Number of new cases, 2015-2019		Average annual age standardised rate per 100,000 persons (95% confidence interval)		Statistically significant difference LGA-QLD*
	Logan LGA	QLD	Logan LGA	QLD	
Prostate	999	22,142	130.7 (122.7 – 138.9)	156.5 (154.5 – 158.6)	↓
Breast (female only)	951	17,857	117.2 (109.9 – 124.8)	127.5 (125.6 – 129.4)	↓
Haematological	943	17,191	62.9 (58.9 – 66.9)	62.0 (61.1 – 62.9)	—
Colorectal	915	16,475	60.9 (57.0 – 64.9)	59.2 (58.3 – 60.1)	—
Melanoma	904	20,592	59.0 (55.2 – 62.9)	75.9 (74.9 – 76.9)	↓
Lung	816	13,675	53.8 (50.2 – 57.5)	47.9 (47.1 – 48.7)	↑
Urological	496	8,508	33.5 (30.6 – 36.5)	30.9 (30.3 – 31.6)	—
Gynaecological	407	6,043	51.3 (46.4 – 56.4)	43.1 (42.0 – 44.2)	↑
Hepatobiliary	384	6,558	25.0 (22.6 – 27.6)	23.1 (22.5 – 23.6)	—
Upper gastrointestinal	299	4,808	19.7 (17.6 – 22.0)	17.1 (16.6 – 17.5)	↑
Head and neck	278	5,173	17.9 (15.8 – 20.0)	18.5 (18.0 – 19.0)	—
Endocrine	240	3,621	15.3 (13.4 – 17.3)	14.1 (13.6 – 14.6)	—
CNS and Brain	117	1,894	7.3 (6.0 – 8.6)	7.1 (6.8 – 7.4)	—
Bone and soft tissue	71	1,229	4.7 (3.7 – 5.8)	4.6 (4.4 – 4.9)	—
Mesothelioma	45	770	Not calculated [#]	2.7 (2.5 – 2.9)	Not calculated [#]
Breast (male only)	12	182	Not calculated [#]	1.3 (1.1 – 1.5)	Not calculated [#]
Ophthalmic	8	419	Not calculated [#]	1.5 (1.4 – 1.7)	Not calculated [#]
Other invasive cancers	229	4,785	16.0 (14.0 – 18.2)	16.9 (16.4 – 17.3)	—
TOTAL	8,114	151,922	529.8 (518.3 – 541.4)	545.3 (542.6 – 548.1)	↓

* ↑ Logan LGA statistically significantly higher than Queensland; ↓ Logan LGA statistically significantly lower than Queensland; — no statistically significant difference between Logan LGA and Queensland

Rate not calculated because total number of new cases, 2015 to 2019, less than 50

Source: Queensland Health. Oncology Analysis System (OASys). Queensland Cancer Control Analysis Team

Prostate cancer

Prostate cancer is the result of abnormal cell growth in the prostate, a gland in the male reproductive system. It can be a slow growing cancer, and the majority of men with low grade prostate cancer live for many years without symptoms. However high grade prostate cancer can spread quickly and can be life threatening²⁶.

Prostate cancer is the most commonly diagnosed cancer in Australia (excluding non-melanoma skin cancers)^{27,28}. One in five men in Queensland are at risk of developing prostate cancer by the age of 85. The risk increases with age, with at least 83% of Australian cases diagnosed in men aged of 60 years and over^{26,28}.

In Australia in 2019, there were 3,582 deaths caused by prostate cancer²⁹. Mortality rates have decreased over time from 36 deaths per 100,000 males in 1985 to 25 deaths per 100,000 males in 2019²⁹. This decline is expected to continue²⁷.

In 2017, over 20,600 new cases of prostate cancer were diagnosed in Australia²⁹. The Australian age standardised incidence of prostate cancer increased from 80 new cases per 100,000 males in 1982 to 198 per 100,000 in 2009, largely due to increases in the numbers of men presenting for testing^{27,29}. Since peaking in 2009, rates have decreased to 147 per 100,000 in 2018²⁹.

Mortality

On average there were 32 deaths per year from prostate cancer among Logan LGA males in the five years from 2015 to 2019. This represented 6.4% of all cancer deaths in Logan LGA in this period. There was no significant difference in age standardised prostate cancer mortality rate between Logan LGA and Queensland in this period (Table 23, page 65).

Incidence

On average there were 200 new cases of prostate cancer per year among Logan LGA males between 2015 and 2019. This represented 12% of all new cases of cancer in Logan LGA in this five-year period, making prostate cancer the most common newly diagnosed cancer in Logan LGA.

In 2015 to 2019, the average annual prostate cancer age standardised incidence rate in Logan LGA was 131 new cases per 100,000 males which was significantly lower than the Queensland rate of 157 new cases per 100,000 males (Table 24, page 66). The Logan LGA rate for the current period was almost the same as the rate reported for 2011 to 2015 of 132 new cases (95% CI: 123 – 141) per 100,000 males⁹.

Between 2010 and 2019, annual age standardised rates of prostate cancer trended slightly downwards in both Logan LGA and Queensland although both areas showed a rise between 2016 and 2019 (Figure 52).

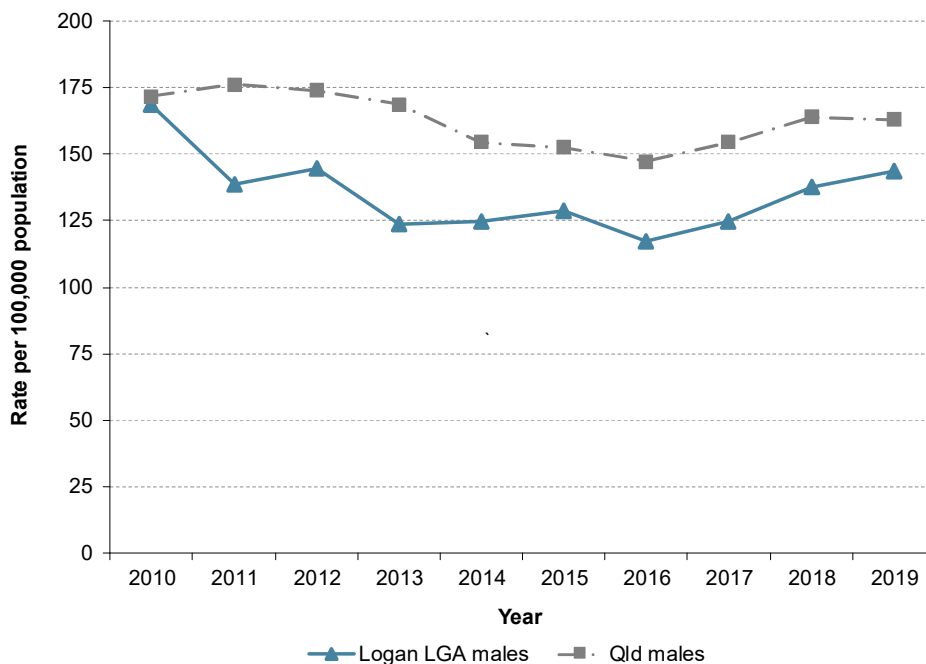
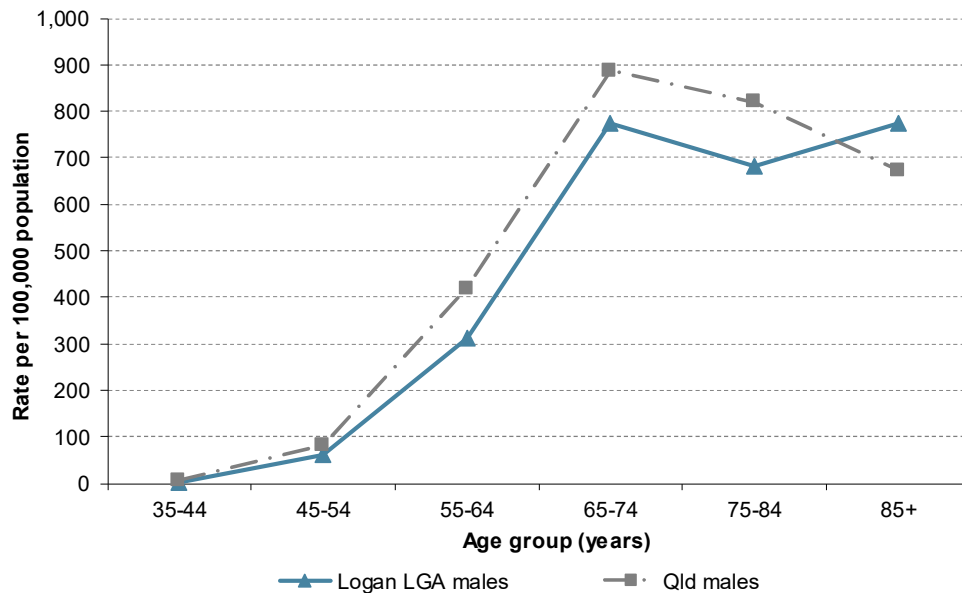


Figure 52: Prostate cancer age standardised incidence rates, Logan LGA and Queensland, 2010 to 2019

In the years 2015 to 2019, prostate cancer incidence rates were nil to negligible in men under the age of 35 years. After the age of about 54 years rates increased sharply. In Queensland rates peaked in the 65 to 74 years age group before declining somewhat in older age groups. In Logan LGA males, however, rates remained high in these older age groups (Figure 53).



* rates not presented for age groups less than 35 years because of low or zero counts

Figure 53: Prostate cancer age specific incidence rates, Logan LGA and Queensland, 2015 to 2019*

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 year³⁰. Queensland has the highest age standardised mortality rates for melanoma in Australia³⁰.

In Australia in 2019, there were 1,405 deaths caused by melanoma²⁹. After remaining relatively consistent for the 30 years to 2015, Australian melanoma mortality rates dropped slightly in 2016 to 2019²⁹.

The Australian age standardised incidence rate for melanoma doubled between 1952 and 2017 to 54 per 100,000 persons²⁹. Australian rates increased in all age groups except those aged less than 40 years. Incidence rates in persons aged 20 to 39 years peaked in the late 1980s and in the late 1990s in persons aged under 20 years²⁹.

Mortality

On average there were 15 deaths per year from melanoma among Logan LGA residents between 2015 and 2019. This represented 3.0% of all cancer deaths in Logan LGA in this five-year period. The age standardised melanoma mortality rate in Logan LGA was statistically similar to the Queensland rate over this period (Table 23, page 65).

Incidence

On average there were 181 new cases of melanoma per year among Logan LGA residents between 2015 and 2019. This represented 11% of all new cases of cancer in Logan LGA in this five-year period, making melanoma the fifth most common newly diagnosed cancer in Logan LGA.

In 2015 to 2019, the average annual melanoma age standardised incidence rate in Logan LGA was 59 new cases per 100,000 persons which was significantly lower than the Queensland rate of 76 new cases per 100,000 persons (Table 24, page 66). The Logan LGA rate for the current period was statistically similar to the rate reported for 2011 to 2015 of 64 new cases (95% CI: 60 – 68) per 100,000 males⁹.

Between 2010 and 2019 annual melanoma incidence rates in Logan LGA peaked in 2014 at 69 new cases per 100,000 persons. After 2014 rates decreased, reaching 54 new cases per 100,000 persons in 2019 (Figure 54). This is in contrast to the whole of Australia²⁹ and Queensland (Figure 54) where rates increased over this ten-year period.

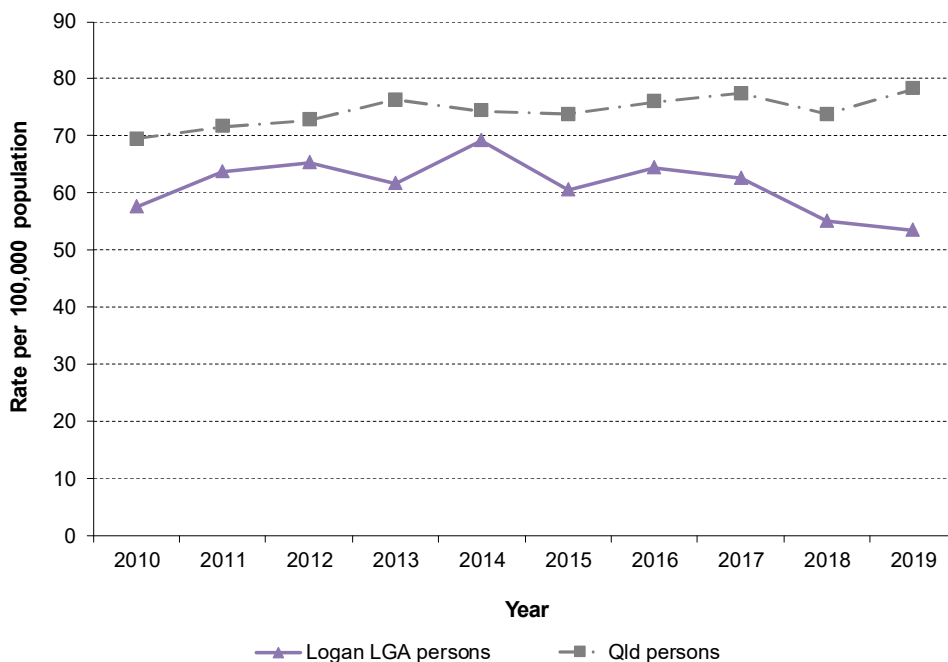
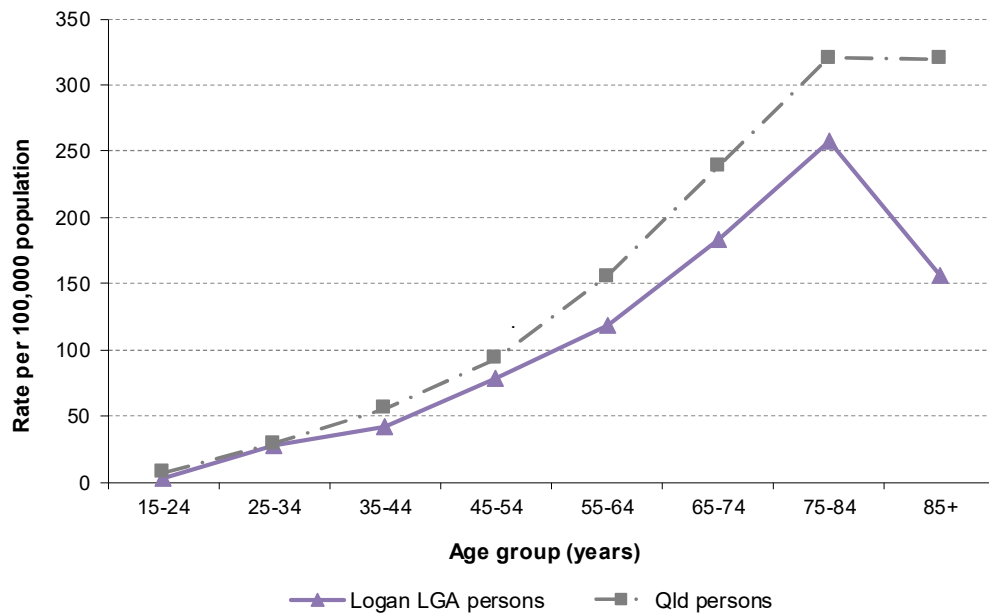


Figure 54: Melanoma age standardised incidence rates, Logan LGA and Queensland, 2010 to 2019

In the years 2015 to 2019, melanoma incidence rates were negligible in people under the age of 15 years, but then increased with increasing age (Figure 55). In Queensland the rate remained consistently high in persons aged 65 years and over, while in Logan LGA rates peaked in persons 75 to 84 years and decreased substantially in those 85 years and over (Figure 55).



* rates not presented for ages under 15 years because of low counts

Figure 55: Melanoma age specific incidence rates, Logan LGA and Queensland, 2015 – 2019*

Breast cancer

Breast cancer is a major cause of illness and death for Australian women. Although much less common, males can also develop the disease³¹. Not all breast cancer is invasive, and these benign tumours 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 fatal³¹.

In Australia in 2019, there were 3,243 deaths from breast cancer (31 males and 3,212 females)²⁹. In females the age standardised mortality rate was 20 per 100,000 females²⁹. While counts of deaths have increased, mortality rates for breast cancer in Australia have steadily declined since the mid-1990s²⁹.

Between 1982 and 2018 age standardised breast cancer incidence rates in Australia increased from 81 to 125 new cases per 100,000 females²⁹. The increase in incidence rate was due in part to the introduction of the national breast cancer screening program³¹. Age specific incidence rates increased with increasing age, reaching a peak in the 65 to 74 years age group³¹, with the Australian rate in that age group reaching 411 new cases per 100,000 females in 2018.

Mortality

On average there were 30 deaths per year from breast cancer among Logan LGA females between 2015 and 2019. This represented 6.0% of all cancer deaths in Logan LGA in this five-year period. The majority of these deaths (84%) were in the 55 years and over age group, with women aged 55 to 79 years accounting for around three quarters (66%) of all breast cancer deaths. In this period there was an average of less than one death per year among Logan LGA males.

There was no significant difference in average annual female breast cancer age-standardised mortality rate between Logan LGA and Queensland over the years 2015 to 2019 combined (Table 23, page 65).

Incidence

On average there were 190 new cases of breast cancer per year among Logan LGA women between 2015 and 2019. This represented almost 12% of all new cases of cancer in Logan LGA in this five-year period, making breast the second most common newly diagnosed cancer in this LGA. By comparison, on average there were fewer than five new cases of breast cancer per year among Logan LGA men over this period.

In 2015 to 2019, the average annual female breast cancer age standardised incidence rate in Logan LGA was 117 new cases per 100,000 females which was significantly lower than the Queensland rate (Table 24, page 66). The Logan LGA rate for the current period was statistically similar to the rate reported for 2011 to 2015 of 120 new cases (95% CI: 112 – 128) per 100,000 females⁹.

Between 2010 and 2019 annual female breast cancer incidence rates in Queensland were relatively steady, averaging 127 new cases per 100,000 persons (Figure 56). However in Logan LGA, following a peak in 2012 of 131 new cases per 100,000 persons, the rate declined fairly consistently, reaching 117 new cases per 100,000 persons in 2019 (Figure 56).

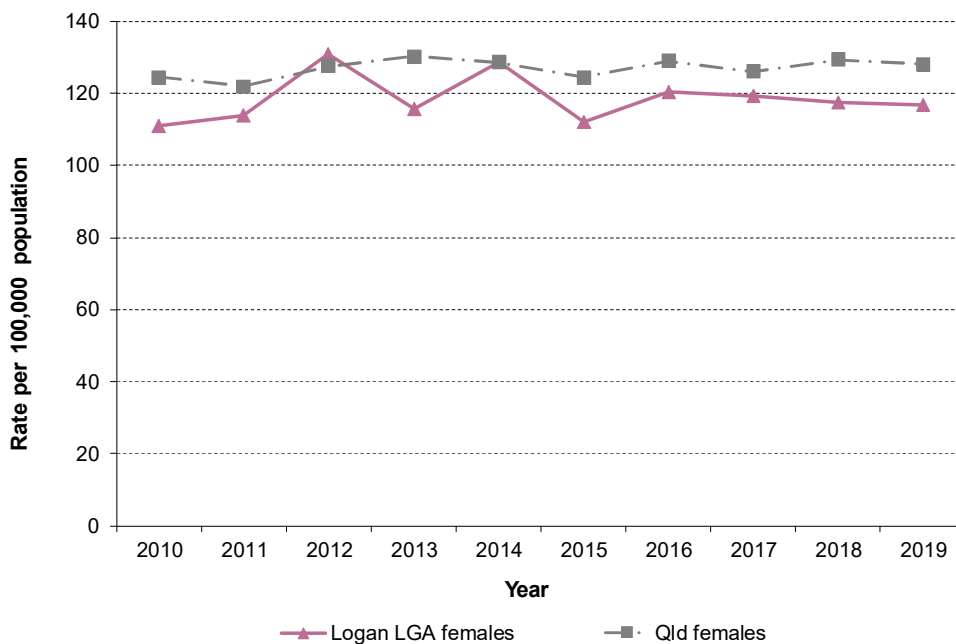
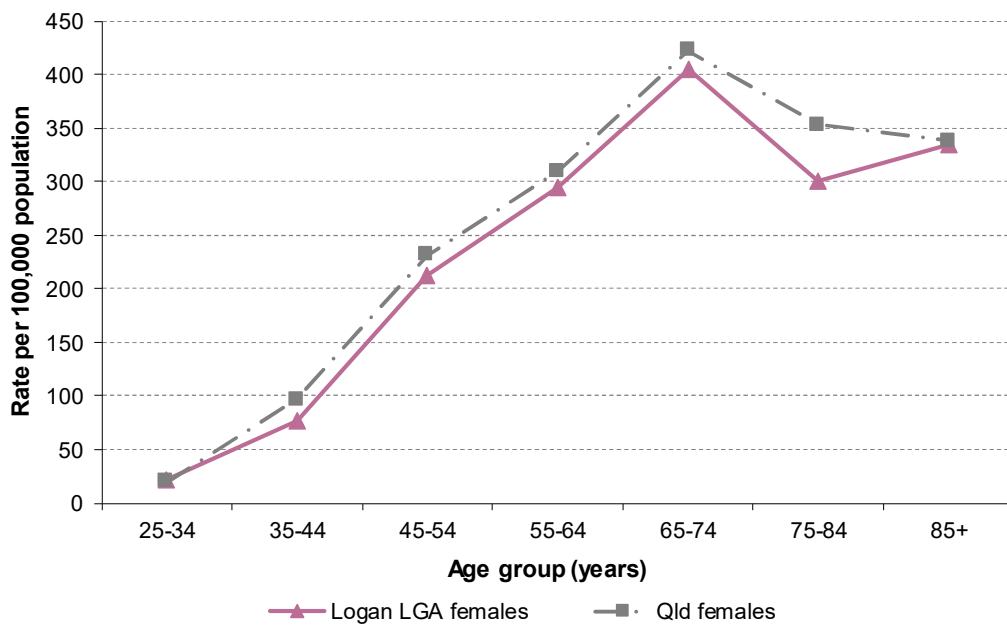


Figure 56: Breast cancer age standardised incidence rates, Logan LGA and Queensland, 2010 to 2019

In the years 2015 to 2019, breast cancer incidence rates were negligible in women under the age of 25 years. Incidence rates increased with increasing age, but declined in women aged 75 years and over (Figure 57).



*rates not presented for age groups under 25 years because of low or zero counts

Figure 57: Breast cancer age specific incidence rates, Logan LGA and Queensland, 2015 to 2019*

Colorectal cancer

Colorectal (bowel) cancer begins in the mucosa or inner lining of the colon or rectum. It usually develops from a small benign growth called an adenoma (polyp). Polyps usually remain benign but some can become malignant and spread to other parts of the body³². Bowel cancer is the third most common cancer in Australia and is most common in people over 50 years but can occur at any age³².

In Australia in 2019, there were 5,255 deaths caused by colorectal cancer²⁹. Age standardised mortality rates for colorectal cancer peaked at 33 deaths per 100,000 persons in 1985 and since that time have halved to 16.5 deaths per 100,000 in 2019²⁹.

The number of new cases of colorectal cancer in Australia per year has doubled from almost 7,000 cases in 1982 to over 15,200 cases in 2017. Between 1982 and 2007 the age standardised incidence rate for colorectal cancer showed no consistent trend, varying between 58 and 66 new cases per 100,000 persons²⁹. However between 2007 and 2017 the rate fell from 66 to 53 new cases per 100,000 persons²⁹.

Mortality

On average there were 57 deaths per year from colorectal cancer among Logan LGA residents between 2015 and 2019. This represented 12% of all cancer deaths in the LGA in this five-year period. The age standardised colorectal cancer mortality rate in Logan LGA was statistically similar to the Queensland rate over this period (Table 23, page 65).

Incidence

On average there were 183 new cases of colorectal cancer per year among Logan LGA residents between 2015 and 2019. This represented 11% of all new cases of cancer in Logan LGA in this five-year period.

In 2015 to 2019, the average annual colorectal cancer age standardised incidence rate in Logan LGA was 61 new cases per 100,000 persons which was statistically similar to the Queensland rate (Table 24, page 66). The Logan LGA rate for the current period was almost exactly the same as that reported for 2011 to 2015 of 57 new cases (95% CI: 57 – 66) per 100,000 persons⁹.

Between 2010 and 2019 colorectal cancer incidence rates in Queensland trended downwards from around 66 to around 58 new cases per 100,000 persons (Figure 58). However in Logan LGA incidence rates showed no consistent trend, averaging 61 new cases per 100,000 per year over this ten-year period (Figure 58).

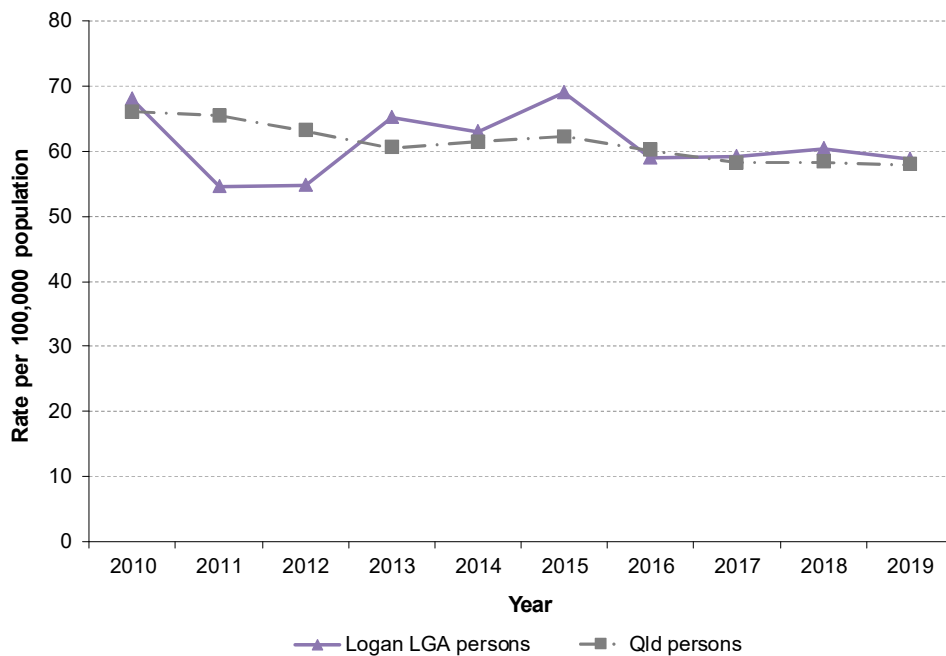
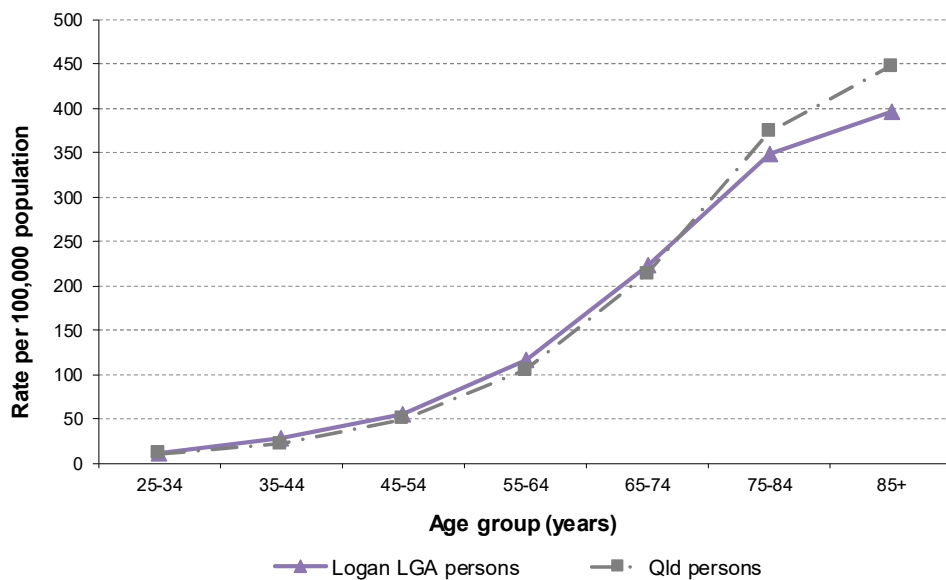


Figure 58: Colorectal cancer age standardised incidence rates, Logan LGA and Queensland, 2010 to 2019

In the years 2015 to 2019, colorectal cancer incidence rates were negligible in people under the age of 25 years. Rates then increased with increasing age, to a peak in the 85 years and over age group (Figure 59).



* rates not presented for ages under 25 years because of low or zero counts

Figure 59: Colorectal cancer age specific incidence rates, Logan LGA and Queensland, 2015 to 2019*

Haematological cancer

Haematological cancers – the main ones being lymphoma, leukaemia and myeloma – are cancers arising from abnormal blood, bone marrow or lymph node cells³³. Unlike most other forms of cancer, cancers of the blood do not form a solid tumour. Lymphomas affect the lymphatic system, leukaemias are cancers of the white blood cells which begin in the bone marrow and myeloma is a cancer that develops from plasma cells³³. Lymphomas are the most common form of haematological cancer in Australia with around 90% being non-Hodgkin lymphomas³⁴.

In Australia in 2019 there were 1,605 deaths caused by non-Hodgkin lymphoma²⁹ and 75 deaths caused by Hodgkin lymphoma²⁹. Australian age standardised mortality rates for non-Hodgkin lymphoma decreased from a peak of 8.9 per 100,000 persons in 1997 to 5.1 per 100,000 in 2019²⁹.

In 2017, 5,317 Australians were diagnosed with lymphoma (5,619 cases of non-Hodgkin lymphoma and 698 cases of Hodgkin lymphoma)²⁹. Between 1984 and 2017 the age standardised incidence rate of non-Hodgkin lymphoma increased from 13 to 20 per 100,000 persons²⁹.

In Australia in 2019 there were 1,933 deaths due to all types of leukaemia²⁹. The type responsible for the highest number (1,086 deaths) was acute myeloid leukaemia²⁹. Australian age standardised mortality rates for leukaemia trended downwards from a peak of 8.3 deaths per 100,000 persons in 1980 to 6.1 per 100,000 in 2019²⁹.

In 2017, the majority of new leukaemia cases in Australia were chronic lymphocytic leukaemia (2,068 cases) and acute myeloid leukaemia (963 cases)²⁹. Between 1982 and 2017 the age standardised incidence rate for leukaemia trended upwards from 12 to 16 cases per 100,000 persons²⁹.

In 2019 1,018 deaths were recorded from multiple myeloma in Australia²⁹. Multiple myeloma age standardised mortality rates increased from 1.9 deaths per 100,000 persons in 1972 to a peak of 3.8 deaths per 100,000 in 1994. Between 1994 and 2019 rates trended generally downwards, reaching 3.2 deaths per 100,000 in 2019²⁹. The Australian age standardised incidence rate for multiple myeloma increased from 4.7 per 100,000 persons in 1982 to 6.8 per 100,000 in 2017²⁹.

Mortality

On average there were 49 deaths per year from haematological cancer among Logan LGA residents between 2015 and 2019. This represented almost 10% of all cancer deaths in the LGA in this five-year period.

The age standardised haematological cancer mortality rate in Logan LGA was statistically similar to the Queensland rate over this period (Table 23, page 65).

Incidence

On average there were 189 new cases per year of haematological cancer among Logan LGA residents between 2015 and 2019. This represented almost 12% of all new cases of cancer in Logan LGA in this five-year period.

In 2015 to 2019, the average annual haematological cancer age standardised incidence rate in Logan LGA was 63 new cases per 100,000 persons which was statistically similar to the Queensland rate (Table 24, page 66). The Logan LGA rate for the current period was significantly higher than the rate reported for 2011 to 2015 of 54 new cases (95% CI: 50 – 58) per 100,000 persons⁹.

Between 2010 and 2019 haematological cancer rates in Queensland trended slightly upwards from 55 to 62 new cases per 100,000 (Figure 60). Rates in Logan LGA however showed no consistent trend (Figure 60).

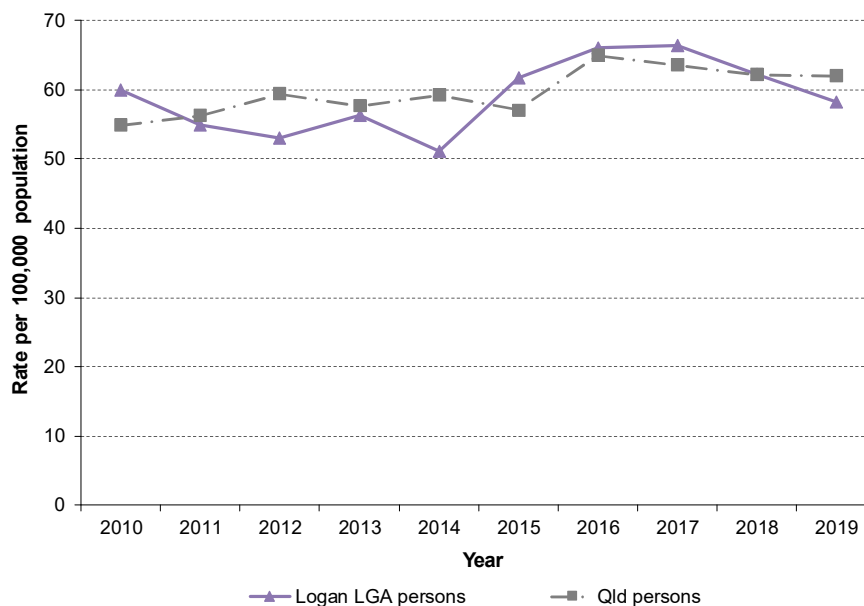


Figure 60: Haematological cancer age standardised incidence rates, Logan LGA and Queensland, 2010 to 2019

In the five years from 2015 to 2019, haematological cancer incidence rates were low for people under the age of 45 years. Rates then increased with age, with the sharpest rises occurring between the ages of approximately 64 and 84 years (Figure 61).

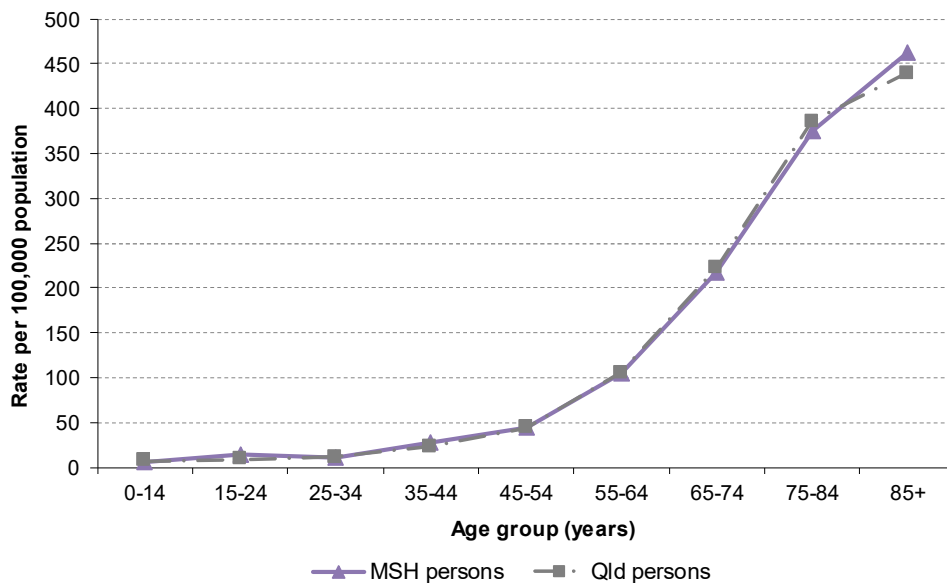


Figure 61: Haematological cancer age specific incidence rates, Logan LGA and Queensland, 2015 to 2019

Lung cancer

Lung cancer is a malignant tumour starting in the tissues of one or both lungs and is the leading cause of cancer death in Australia. The prognosis for those diagnosed with lung cancer is poor and has improved only marginally over the past three decades. Tobacco smoking is a major cause of lung cancer, and tobacco control is essential for effective lung cancer prevention³⁵.

In Australia in 2019, there were 8,739 deaths from lung cancer and it accounted for more deaths than any other cancer²⁹. Age standardised lung cancer mortality rates 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 2019²⁹.

Between 1982 and 2017, the age standardised incidence rate of lung cancer among Australian males decreased by 39% from 85 to 52 cases per 100,000 persons²⁹. However, over the same period the age standardised incidence rate among females increased by 100% from 18 to 36 cases per 100,000 persons²⁹. The difference in pattern between the sexes reflects historical differences in smoking behaviour³⁵. The occurrence of lung cancer is strongly related to age, with the majority of new cancers (83% in 2017) diagnosed in people aged 60 years and older^{29,35}.

Mortality

On average there were 106 deaths per year from lung cancer among Logan LGA residents between 2015 and 2019. This represented 21% of all cancer deaths in the LGA in this five-year period. Males accounted for 58% of these deaths. The age standardised lung cancer mortality rate in Logan LGA was significantly higher than the Queensland rate over this period (Table 23, page 65).

Between 2002 and 2019, lung cancer annual mortality rates in Logan LGA trended downwards in males from a peak of over 70 deaths per 100,000 males in 2010 to 38 deaths per 100,000 persons in 2019. In contrast, over the same period mortality rates in females increased from 2002 to a peak in 2009 of over 40 deaths per 100,000 females then decreased gradually to 23 deaths per 100,000 females in 2019 (Figure 62).



Figure 62: Lung cancer age standardised mortality rates by sex, Logan LGA, 2002 to 2019

Incidence

On average there were 163 new cases of lung cancer per year among Logan LGA residents between 2015 and 2019. This represented 10% of all new cases of cancer in Logan LGA in this five-year period.

In 2015 to 2019, the average annual lung cancer age standardised incidence rate in Logan LGA of 54 new cases per 100,000 persons was significantly higher than the Queensland rate (Table 24, page 66). The Logan LGA rate for the current period was almost the same as the rate reported for 2011 to 2015 of 55 new cases (95% CI: 51 – 59) per 100,000 persons⁹.

Between 2010 and 2019, lung cancer incidence rates in Queensland were relatively stable at an average of around 47 new cases per 100,000 persons per year (Figure 63). In contrast, in Logan LGA rates fell from a peak of 65 new cases per 100,000 persons in 2010 to 45 new cases per 100,000 persons in 2019 (Figure 63).

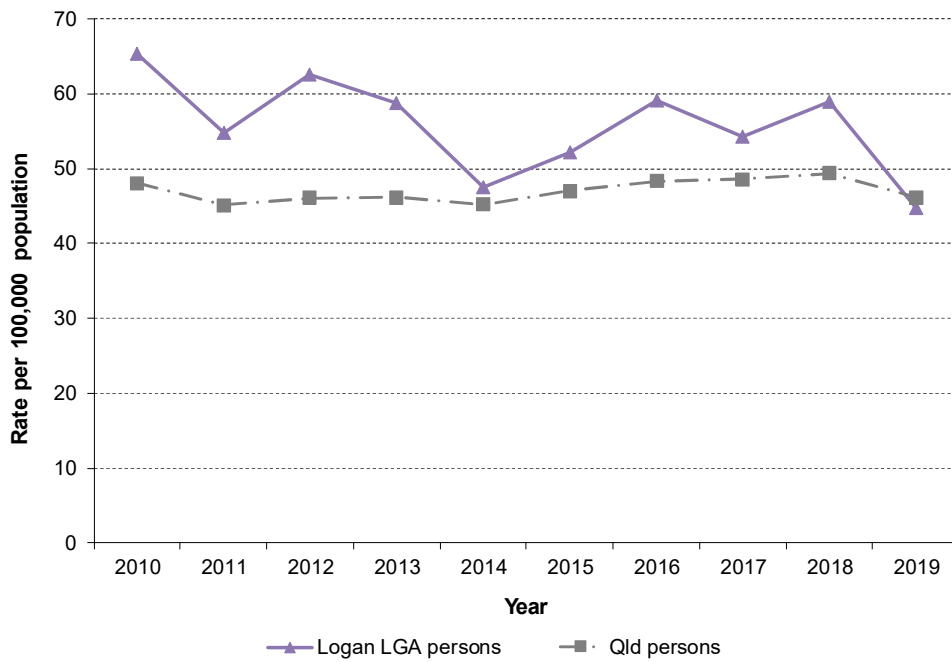
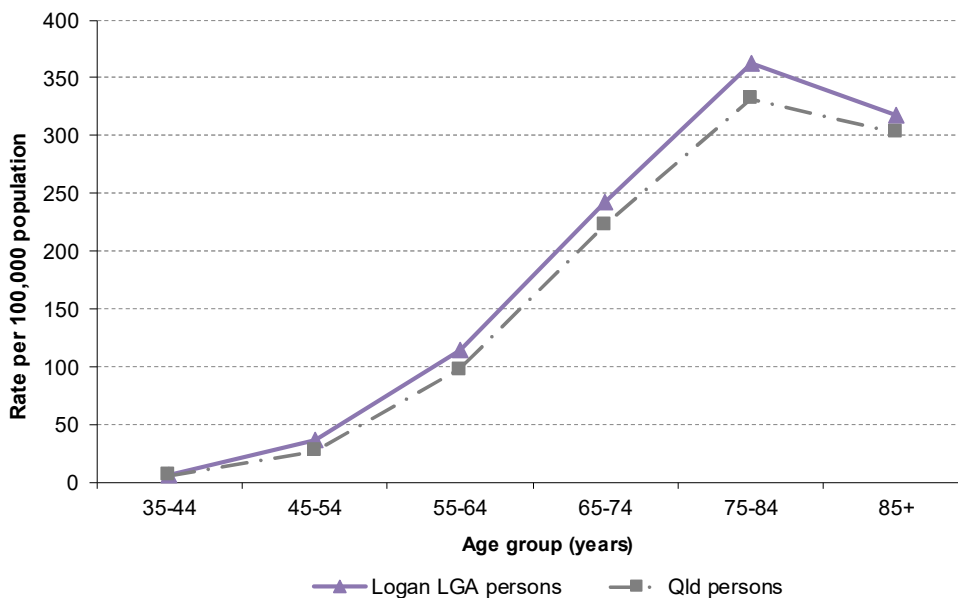


Figure 63: Lung cancer age standardised incidence rates, Logan LGA and Queensland, 2010 to 2019

In the years 2015 and 2019, lung cancer incidence rates were negligible in persons under the age of 35 years. Rates then increased steadily with increasing age, peaking in the 75 to 84 years age group before declining slightly in those aged 85 years and over (Figure 64).



* rates not presented for age groups under 35 years because of low or zero counts

Figure 64: Lung cancer age specific incidence rates, Logan LGA and Queensland, 2015 to 2019*

Hepatobiliary cancers: liver cancer

The most common cancers of the hepatobiliary system are liver and pancreatic cancer. Primary liver cancer is a malignant tumour that starts in the liver and it is almost three times more common in men than in women in Australia³⁶. The rate of primary liver cancer in Australia has doubled since 1999, possibly due to increasing rates of obesity, type 2 diabetes, hepatitis B and C infections and an ageing population³⁶.

In Australia in 2019 there were 2,187 deaths caused by liver cancer²⁹. Australian age standardised mortality rates increased from 1.4 per 100,000 persons in 1972 to 7.1 per 100,000 in 2019²⁹.

Between 1982 and 2017 the annual number of new cases of liver cancer in Australia increased almost ten-fold from 228 cases in 1982 to 2,174 in 2017²⁹. Over this period the age standardised incidence rate for liver cancer increased from 1.8 to 7.6 new cases per 100,000 persons²⁹.

Mortality

On average there were 18 deaths per year from liver cancer among Logan LGA residents between 2015 and 2019. This represented 3.6% of all cancer deaths in Logan LGA in this five-year period.

The 2015 to 2019 annual average age standardised liver cancer mortality rate in Logan LGA (5.7 deaths per 100,000 persons) was statistically similar to the Queensland rate (4.5 deaths per 100,000 persons) over this period.

Incidence

On average there were 27 new cases per year of liver cancer among Logan LGA residents between 2015 and 2019. This represented 1.7% of all new cases of cancer in Logan LGA in this five-year period.

For 2015 to 2019, the average annual liver cancer age standardised incidence rate in Logan LGA was 8.6 new cases (95% CI: 7.2 – 10.1) per 100,000 persons which was statistically similar to the Queensland rate of 7.1 new cases (95% CI: 6.8 – 7.4) per 100,000 persons. The Logan LGA rate for the current period was not significantly different from the rate reported for 2011 to 2015 of 6.5 new cases (95% CI: 5.2 – 7.9) per 100,000 persons.

In the years 2015 to 2019, Logan LGA liver cancer age specific incidence rates were negligible in people under the age of 35 years. Rates increased with increasing age, peaking in the 85 years and over group in Logan LGA. It is important to note that numbers in each age group in Logan LGA were small making interpretation difficult.

Hepatobiliary cancers: pancreatic cancer

Pancreatic cancer is caused by the uncontrolled growth of abnormal cells within the pancreas, a small gland located between the stomach and the spine which produces hormones such as insulin and digestive enzymes³⁷. In its early stages, pancreatic cancer rarely causes obvious symptoms, with symptoms often not occurring until the cancer has spread or is large enough to affect nearby organs³⁷. The causes of pancreatic cancer are not known but risk factors include tobacco smoking, obesity, ageing, high alcohol consumption and long-term diabetes or pancreatitis³⁷.

In Australia in 2019 there were 3,182 deaths due to pancreatic cancer²⁹. Between 1971 and 2019 the number of Australian deaths to pancreatic cancer increased but age standardised mortality rates were very stable at between 9.1 and 10.5 deaths per 100,000 persons²⁹.

Between 1982 and 2002 the Australian annual age standardised incidence rate for pancreatic cancer remained consistently between 9.6 and 10.3 new cases per 100,000 persons²⁹. However after 2002 the rate trended upwards, reaching 12.5 cases per 100,000 persons in 2017²⁹.

Mortality

On average there were 32 deaths per year from pancreatic cancer among Logan LGA residents between 2015 and 2019. This represented over 6% of all cancer deaths in Logan LGA in this five-year period.

The 2015 to 2019 annual average age standardised pancreatic cancer mortality rate in Logan LGA (11.1 deaths per 100,000 persons) was statistically similar to the Queensland rate (9.7 deaths per 100,000 persons) over this period.

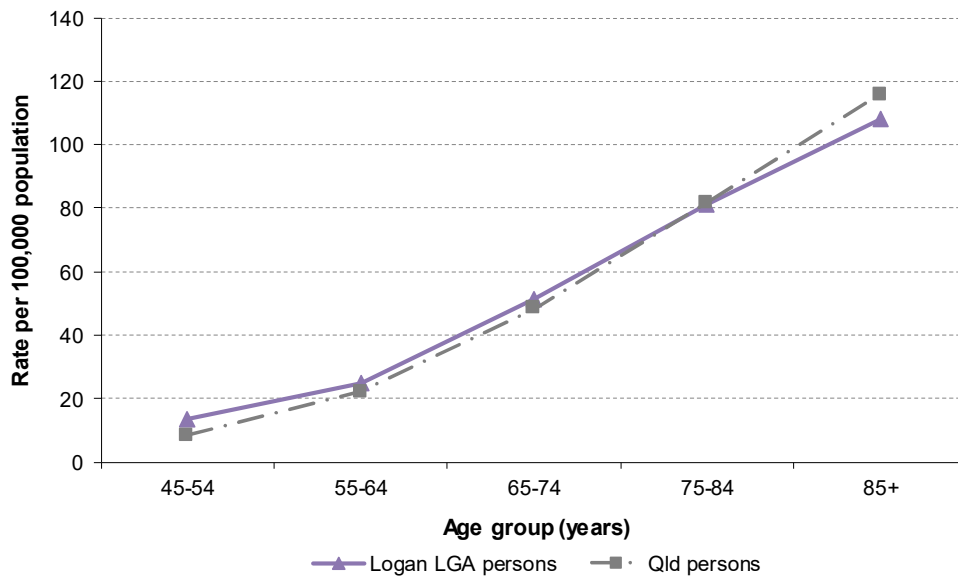
Incidence

On average there were 40 new cases per year of pancreatic cancer among Logan LGA residents between 2015 and 2019. This represented 2.5% of all new cases of cancer in Logan LGA in this five-year period.

In 2015 to 2019, the average annual pancreatic cancer age standardised incidence rate in Logan LGA was 13.4 new cases (95% CI: 11.6 – 15.3) per 100,000 persons which was statistically similar to the Queensland rate of 12.2 new cases (95% CI: 11.8 – 12.6) per 100,000 persons. The Logan LGA rate for the current period was statistically similar to the rate reported for 2011 to 2015 of 12.6 new cases (95% CI: 10.7 – 14.6) per 100,000 persons.

In Queensland between 2010 and 2019 pancreatic cancer rates trended upwards slightly from around 11 to 12 new cases per 100,000 persons respectively. The number of new cases per year in Logan LGA was too small for accurate annual age standardised rates to be calculated.

In the years 2015 to 2019, pancreatic cancer incidence rates were negligible in people under the age of 45 years. Rates then increased with age (Figure 65).



* rates not presented for age groups less than 45 years because of low or zero counts

Figure 65: Pancreatic cancer age specific incidence rates, Logan LGA and Queensland, 2015 to 2019

Kidney cancer

The most common type of kidney cancer is renal cell carcinoma which accounts for about 90% of all cases. Usually only one kidney is affected. Kidney cancer is twice as common in men as in women, with most cases occurring in people over the age of 50³⁸. Most cases have no symptoms and many are diagnosed when seeking treatment for an unrelated condition³⁸. The causes of kidney cancer are unknown but risk factors include tobacco smoking, obesity, high blood pressure, kidney failure and family history³⁸.

In Australia in 2019 there were 944 deaths due to kidney cancer²⁹. Australian annual age standardised mortality rates for kidney cancer peaked in 1991 at 4.7 deaths per 100,000 persons and since then have fallen to 3.0 deaths per 100,000 persons in 2019²⁹.

Between 1982 and 2017 the Australian annual age standardised incidence rate for kidney cancer increased from 6.2 to 13.2 cases per 100,000 persons²⁹.

Mortality

On average there were 6.4 deaths per year from kidney cancer among Logan LGA residents between 2015 and 2019. This represented 1.3% of all cancer deaths in Logan LGA in this five-year period.

The total number of Logan LGA deaths from 2015 to 2019 was too small (<50) for an accurate annual average age standardised kidney cancer mortality rate to be calculated for this period.

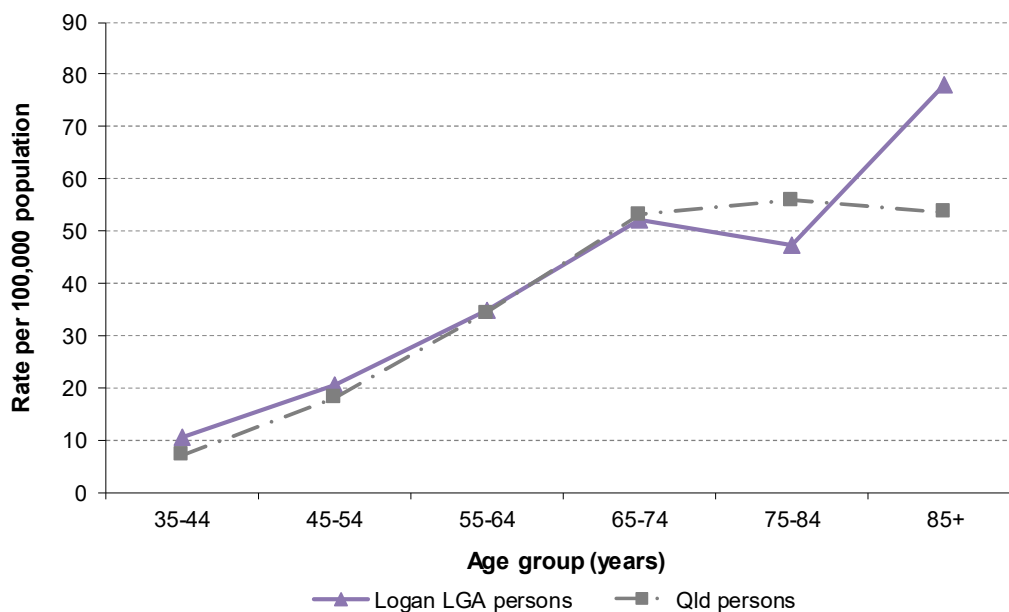
Incidence

On average there were 47 new cases per year of kidney cancer among Logan LGA residents between 2015 and 2019. This represented 2.9% of all new cases of cancer in Logan LGA in this five-year period.

In 2015 to 2019, the average annual kidney cancer age standardised incidence rate in Logan LGA was 15.0 new cases (95% CI: 13.1 – 17.0) per 100,000 persons which was statistically similar to the Queensland rate of 14.1 new cases (95% CI: 13.6 – 14.5) per 100,000 persons. The Logan LGA rate for the current period was not significantly different from the rate reported for 2011 to 2015 of 16.4 new cases (95% CI: 14.3 – 18.6) per 100,000 persons.

In Queensland between 2010 and 2019 kidney cancer rates trended upwards from approximately 12 to 14 new cases per 100,000 persons. The number of new cases per year in Logan LGA was too small for accurate annual age standardised rates to be calculated.

In the five years from 2015 to 2019, kidney cancer incidence rates were extremely low in people under the age of 35 years. Rates then increased with age, peaking in Logan LGA in persons aged 85 years and over, while in Queensland rates remained relatively stable in persons aged 65 years and over (Figure 66).



* rates not presented for age groups less than 35 years because of low or zero counts

Figure 66: Kidney cancer age specific incidence rates, Logan LGA and Queensland, 2015 to 2019

Cervical cancer

Cervical cancer is a growth of abnormal cells in the lining of the uterine cervix. Usually cervical cancer takes many years to develop and is preceded by abnormal changes in cervical cells³⁹. The primary cause of cervical cancer is the human papillomavirus (HPV) with the primary prevention in Australia through vaccination against HPV via the National HPV Vaccination Program to prevent women being infected with cancer-causing HPV

types⁴⁰. Secondary prevention is through cervical screening through the National Cervical Screening Program (NCSP) to detect and treat abnormalities while they are in the precancerous stage⁴⁰.

Worldwide, cervical cancer is the fourth most common cancer affecting women⁴⁰. However, the disease burden of cervical cancer is not evenly distributed across nations, as it accounts for less than 2% of all female cancers in Australia⁴⁰. Diagnoses of cervical cancer in Australia have significantly reduced since the NCSP was introduced in the 1990s. The introduction of the national HPV vaccination program in 2007 and improvements to the screening program in 2017 are expected to further reduce cervical cancer rates³⁹.

In Australia in 2019, there were 229 cervical cancer deaths²⁹. Age standardised mortality rates have decreased over time from 6.8 deaths per 100,000 females in 1971 to 1.6 deaths per 100,000 in 2019²⁹.

Between 1982 and 2002 Australian age standardised cervical cancer incidence rates halved from 14 to seven new cases per 100,000 females²⁹. Between 2002 and 2017 incidence rates remained extremely stable at seven new cases per 100,000 females²⁹.

Mortality

On average there were fewer than five deaths per year from cervical cancer among Logan LGA females in the five years from 2015 to 2019. The majority (87%) of these deaths were women aged 30 to 69 years with almost half (48%) aged 30 to 49 years.

Incidence

On average there were 17 new cases of cervical cancer per year among Logan LGA females between 2015 and 2019.

For 2015 to 2019, the average annual cervical cancer age standardised incidence rate in Logan LGA was 10.7 new cases (95% CI: 8.6 – 13.2) per 100,000 females which was statistically similar to the Queensland rate of 8.6 new cases (95% CI: 8.1 – 9.1) per 100,000 females. The Logan LGA rate for the current period was statistically similar to the rate reported for 2011 to 2015 of 11.5 new cases (95% CI: 9.2 – 14.2) per 100,000 females⁹.

In the years 2015 to 2019, cervical cancer age specific incidence rates were negligible in women under the age of 25 years. Incidence rates were highest in the age group 25 to 54 years and then generally decreased with increasing age. It is important to note however, that numbers in each age group were relatively small making interpretation difficult.

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. Screening programs are based on the understanding that the earlier most cancers, or their precursors, are detected, the greater the likelihood of a better outcome for the individual concerned²¹. Currently in Australia colorectal, breast and cervical cancers have met the criteria for approved population based screening programs.

Colorectal cancer screening

The National Bowel Cancer Screening Program (NBCSP) commenced in Queensland in 2006, providing free bowel screening to people turning 55 and 65 years. Those turning 50 and 60 years were included from July 2008 and 2013 respectively. Program expansion to implement biennial screening for those aged 50 to 74 years commenced in January 2015⁴¹. It has been found that NBCSP invitees (and participants) who had been diagnosed with bowel cancer had a lower risk of dying from the disease and were more likely to have less advanced bowel cancers when diagnosed than non-invitees⁴¹. These findings show that the national program is meeting its goal of reducing bowel cancer morbidity and mortality.

In 2019-20 the overall NBCSP participation rate in Logan LGA was 34% which was lower than both the Queensland (39%) and Australian (42%) rates⁴². Data covering the age/sex breakdown for Logan LGA for the period since the program expansion in 2015 are not available, however these data have been published for Queensland⁴² and are presented in Figure 67. Queensland participation rates were higher for females than for males in all age groups (Figure 67) and participation rates increased with increasing age in both sexes. The Queensland participation rate among persons aged 70 to 74 years (53%) was considerably higher than the rate among persons aged 50-54 years (29%).

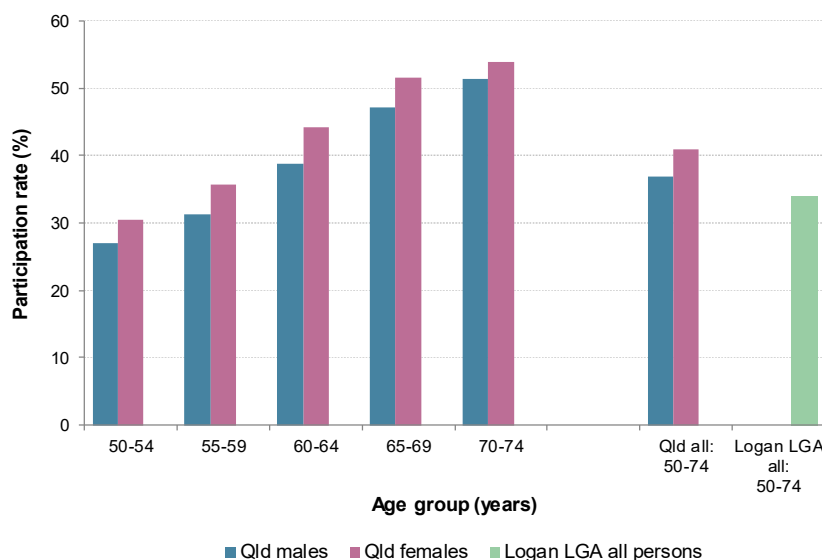


Figure 67: Crude participation rates in the National Bowel Cancer Screening Program by age and sex, Queensland, 2015-16 and all Logan LGA 50-74 years 2019-20

Between 2014-15 and 2019-20 NBCSP participation rates in Logan LGA were consistently lower than the rates in Queensland (Figure 68). Rates in Logan LGA increased between 2014-15 and 2015-16 but then were stable to 2018-19. In 2019-20, the first timepoint impacted by the COVID-19 pandemic, rates in Logan LGA dropped to the lowest level since 2014-15.

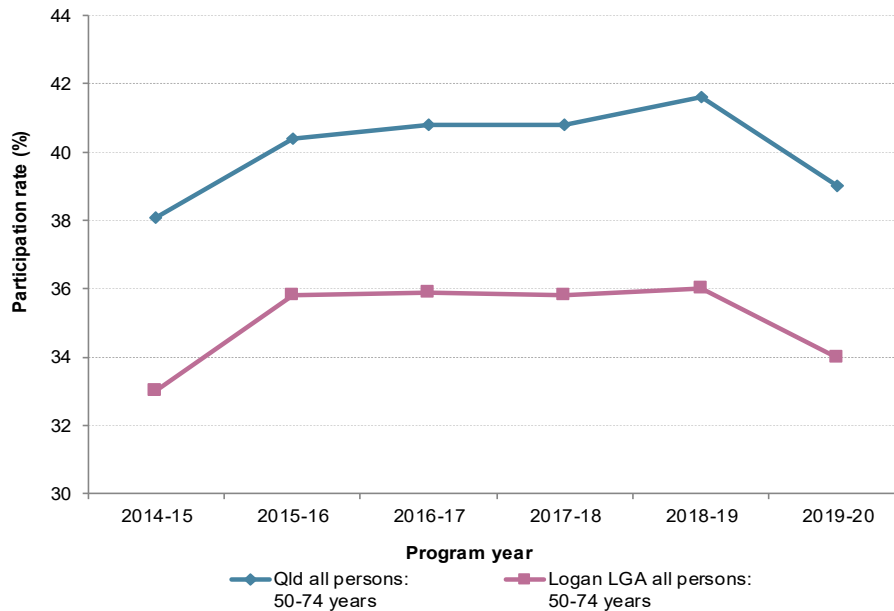


Figure 68: Crude all persons 50 to 74 years participation rates in the National Bowel Cancer Screening Program, Queensland and Logan LGA 2014-15 to 2019-20

The COVID-19 pandemic affected people's access to and use of health services such as cancer screening programs⁴³. The impact varied both between and within states and across the different screening programs. In 2020 on an Australia-wide basis, no clear patterns directly correlating with the COVID-19 pandemic were evident in the data although the number of test kits returned did rise around the time that restrictions first started to ease⁴³. In Queensland the number of kits returned was lowest in comparison with previous years in March, April and August of 2020⁴³ which were months with generally higher levels of restrictions.

Breast cancer screening

The BreastScreen Queensland Program currently recommends women aged 50 to 74 years be screened every two years⁴⁴. Prior to July 2013, the target age group range for this service was women aged 50 to 69 years with data for the current target group available from 2014-15 onwards. Women aged 40 to 49 years and 75 years and over are also able to access free BreastScreen Queensland services but are not actively targeted⁴⁴ and are not included in the data presented in this report.

At the time of publication of this report, breast cancer screening participation data were not published specifically for local government areas such as Logan. As a result the data presented in this section of the report are for Queensland and the Metro South Health area (MSH) which encompasses Logan, Redland and parts of Brisbane and Scenic Rim LGAs.

In 2019-20 within the targeted age group of 50 to 74 years, participation in the BreastScreen Queensland program increased with increasing age, peaking in the 65 to 69 years group at 54% in MSH and 57% in Queensland (Figure 69). MSH participation rates were lower than the equivalent Queensland rates in all age groups except those aged 50 to 54 years – the youngest section of the cohort.

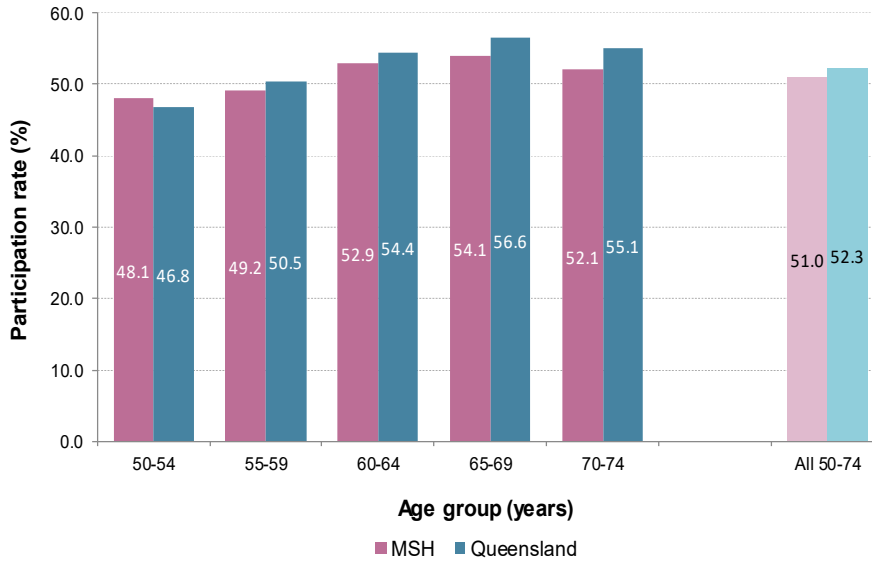


Figure 69: Crude participation rates in the BreastScreen Queensland screening program by age group, Metro South Health and Queensland, 2019-20

Between 2014-15 and 2019-20 BreastScreen Queensland participation rates in MSH were consistently lower than the rates in Queensland, ranging between 51% and 56% (Figure 70). Rates in both MSH and Queensland trended downwards over this period (Figure 70). The sharpest decrease was seen in 2019-20, the first year of the COVID-19 pandemic.

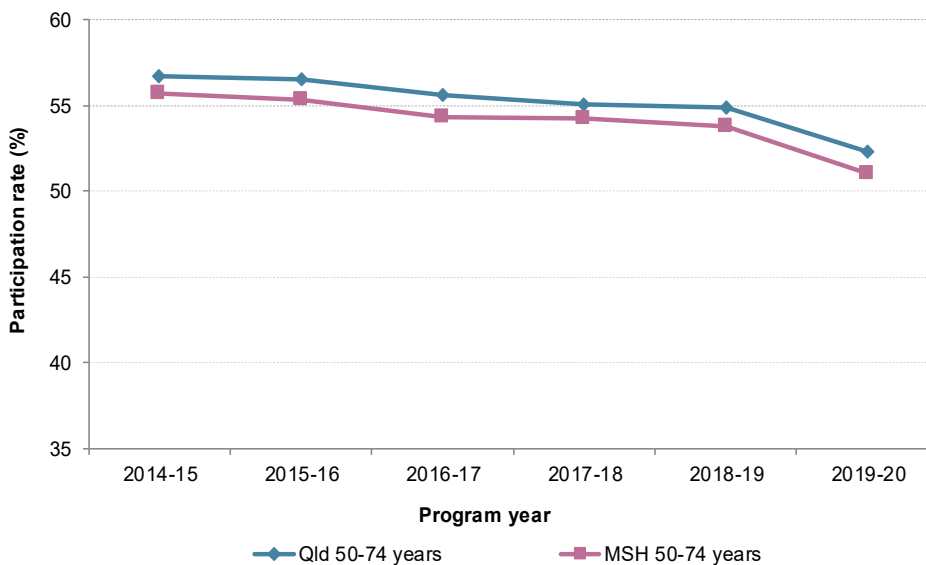


Figure 70: Crude participation rates in the BreastScreen Queensland screening program, all persons 50 to 74 years, Metro South Health and Queensland, 2014-15 to 2019-20

The number of screening mammograms performed through BreastScreen Australia significantly declined in March 2020 as the COVID-19 pandemic worsened and restrictions were put in place from 25 March which included a suspension of all BreastScreen services⁴³. As restrictions were eased and the suspension lifted, the number of screening mammograms increased through May and June. In July to September Queensland conducted more mammograms than were conducted during the same period in 2018⁴³. Younger women were found to be slower to return to screening after the restrictions were lifted⁴³.

Cervical cancer screening

On 1 December 2017 a five-yearly cervical screening test (human papillomavirus [HPV] test) was introduced to replace the previously recommended two-yearly Pap test⁴⁵. The new test is more accurate than the Pap test and is conducted every five rather than every two years⁴⁵. The age at which screening starts was also increased from 20 to 25 years. No data are yet available about participation in the new screening program⁴⁵.

Prior to December 2017, the Queensland Cervical Screening Program recommended women aged 20 to 69 years be screened every two years. Cervical cancer is one of the most preventable cancers with just over 90% cancers occurring in women who have either never been screened or who are lapsed screening program participants⁴⁵.

At the time of publication of this report, cervical cancer screening participation data were not published specifically for local government areas. As a result the data presented in this section of the report are for Queensland and the Metro South Health area (MSH) which encompasses Logan, Redland and parts of Brisbane and Scenic Rim LGAs.

In 2018-20 MSH participation rates were slightly higher than Queensland rates in all age groups except those 25 to 29 years (Figure 71). Over this period in both MSH and Queensland, cervical screening program participation rates were highest in the 45 to 59 years age groups. In MSH the rate of participation was approximately 60% among this age bracket. MSH participation rates increased with age from 25 to 45 years and decreased with increasing age after 60 years, falling away to under 25% in those aged 70 to 74 years, the newest group recommended for screening (Figure 71).

Prior to the change in the Queensland Cervical Screening Program in 2018, participation in the program had fallen in both Queensland and MSH, from a peak of around 60% in 2007-08 to rates of around 53% in 2015-16⁹. This decline was consistent with national findings that participation was showing a downward trend⁴⁵.

It is not possible to present time series data for the current cervical screening program because its relatively recent introduction precludes the calculation of multiple timepoints of data.

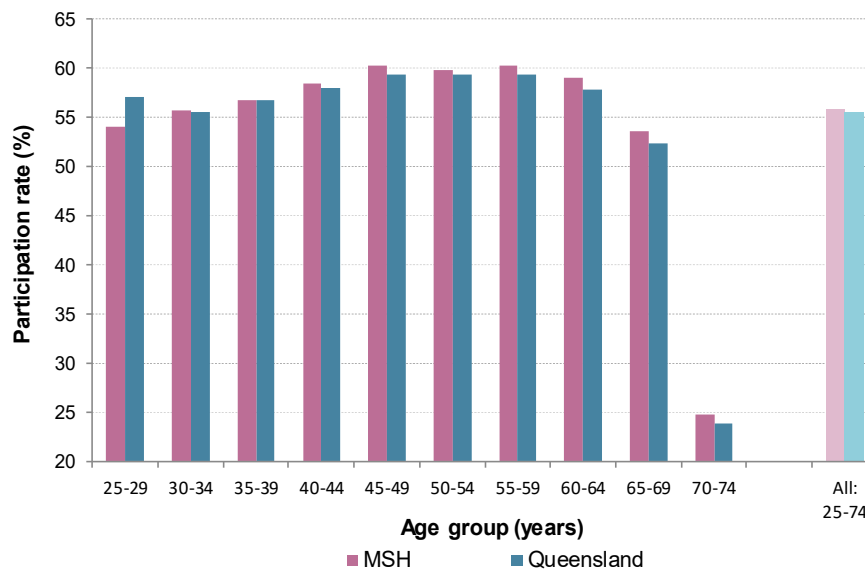


Figure 71: Crude participation rates in the national Cervical Screening Program by age group, Metro South Health and Queensland, 2018 to 2020

Cervical screening tests are usually conducted by a general practitioner. While GP services did continue during the COVID-19 pandemic, there was an increased use of telehealth consultations and cervical screening tests require in-person consultations⁴³. It is difficult to determine the exact scale of the impact the pandemic had on cervical screening because the number of tests conducted was expected to be lower in 2020 than in 2019 due to the change from two- to five-yearly tests. Most people on a regular screening program were due for their first test of the new program in 2018 or 2019, two years after their last Pap test. Screening in 2020 mainly comprised women overdue for their first test of the new program plus those newly-screening. This makes it inappropriate to directly compare 2020 data to 2019 data⁴³.

Maternal and child health

Birth and fertility rates

In 2021 there were 5,258 births to 5,199 Logan LGA mothers, including 5,208 live births and 50 stillbirths. This represented a crude birth rate in Logan LGA of 61.8 live births per 1,000 women (15 to 49 years). This was significantly higher than the Queensland rate of 51.5 live births per 1,000 women. The crude birth rate in Logan LGA was significantly higher than the Queensland rate in each of the five years from 2017 to 2021.

In 2021, age-specific birth rates were significantly higher in Logan LGA than in Queensland in the 15 to 29 years age groups. In the 15 to 24 years age group, the Logan LGA birth rate was 65% higher than the Queensland rate, while in the 25 to 29 years age group the Logan LGA rate exceeded the Queensland rate by 33%. Overall, age specific birth rates in Logan LGA peaked in the 25 to 29 years age group while the peak was later and lower, in the 30 to 34 years age group in Queensland (Figure 72).

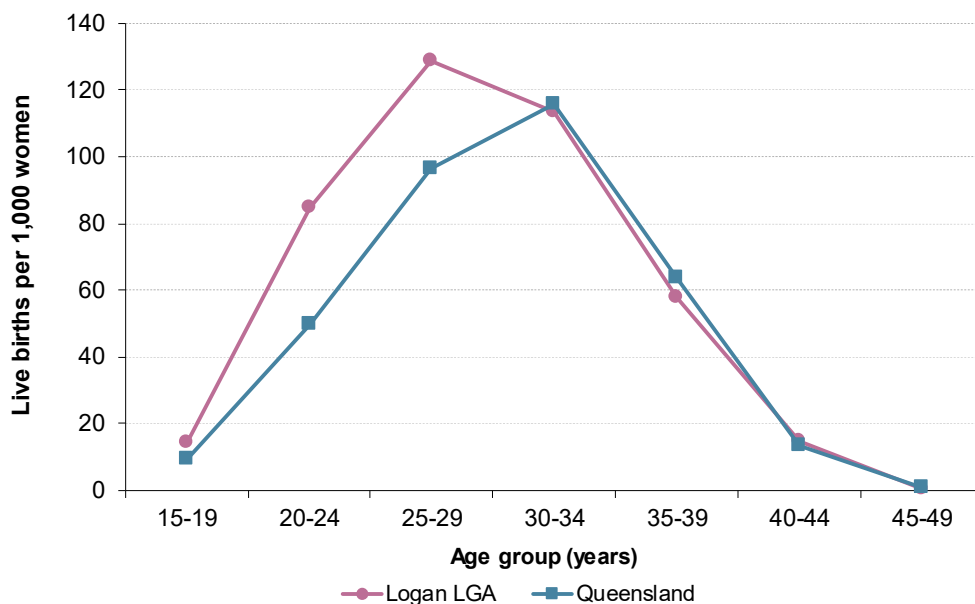


Figure 72: Age specific birth rates for Logan LGA and Queensland, 2021

Total life-time fertility refers to the total number of children an average woman can be expected to have over the course of her life-time. In 2021, the Logan LGA total life-time fertility rate was 2.07 children per female aged 15-49 years. The total life-time fertility rate per female was significantly higher in Logan LGA than in Queensland in each of the five years from 2017 to 2021 (Table 25).

Table 25: Total life-time fertility rate per female by year for Logan LGA and Queensland, 2017 to 2021

Year	Logan LGA Rate (95% CI)	Queensland Rate (95% CI)	Statistically significant difference: Logan LGA - QLD*
2017	2.05 (1.99 – 2.11)	1.72 (1.71 - 1.73)	↑
2018	2.08 (2.02 – 2.14)	1.70 (1.69 – 1.71)	↑
2019	2.08 (2.02 – 2.14)	1.67 (1.65 – 1.68)	↑
2020	2.02 (1.96 – 2.08)	1.62 (1.61 - 1.64)	↑
2021	2.07 (2.01 – 2.13)	1.75 (1.73 – 1.76)	↑

* ↑ LGA statistically significantly higher than Queensland; ↓ LGA statistically significantly lower than Queensland; — no statistically significant difference between LGA and Queensland

Total life-time fertility rates fell in both Logan LGA and Queensland between 2010 and 2021 (Figure 73). In recent years, from 2017 to 2021, fertility rates in Logan LGA were relatively stable although there was a small increase in 2021. In comparison, rates in Queensland trended strongly downwards but with a significant increase in 2021 (Table 25).

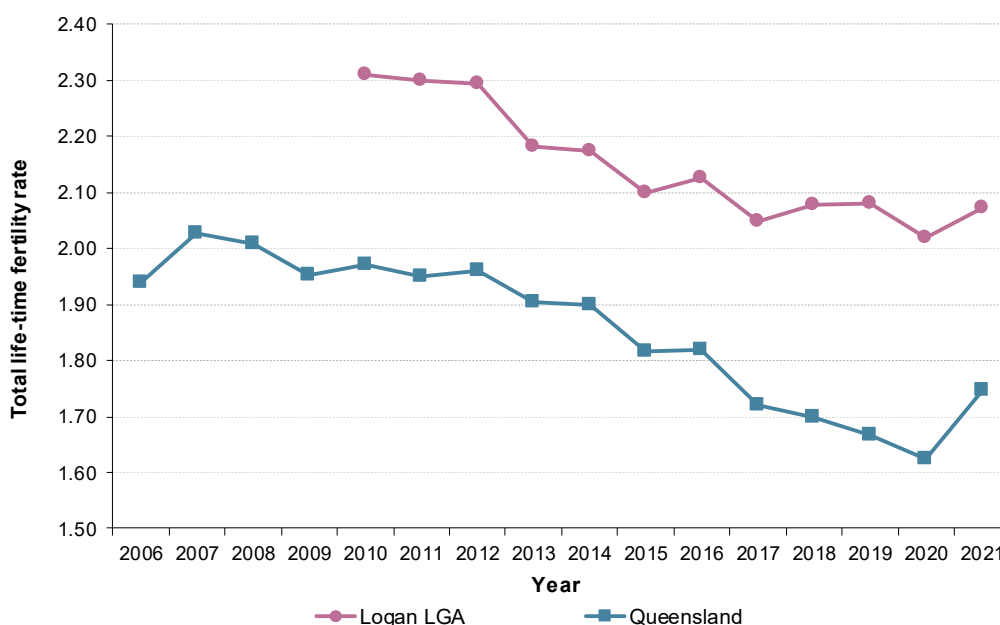


Figure 73: Total life-time fertility rates for Logan LGA (2010 to 2021) and Queensland (2006 to 2021)*

* Data not available for Logan LGA prior to 2010 owing to changes in LGA boundaries

The increase in fertility rate recorded in Queensland in 2021, during the COVID-19 pandemic was somewhat unexpected. The results of the Families in Australia Survey⁴⁶, conducted in late 2020, indicated that for around one in five women under 40, COVID-19 impacted on their intentions of having children. The most commonly reported impacts included delaying the timing of trying to conceive, delayed access to IVF treatment and planning to have fewer children. The key reasons given for delaying or not having children were related to financial concerns, job insecurity and pandemic-related health risks. The survey found a small proportion of women did report that the pandemic brought forward their plans of having children.

The increase in fertility rate seen in Queensland may be at least partly due to the lower impact of COVID-19 on the general population in 2020/2021 compared with many other states. Queensland was able to stay almost COVID-19-free through these two years and consequently avoided the prolonged lockdowns experienced in some other states and therefore some of the more extreme financial, social and health impacts.

The proportionally much smaller increase in fertility rate in Logan LGA may reflect the greater financial and job uncertainty caused by the pandemic in its comparatively lower socioeconomic status population.

Maternal age

Maternal age is an important risk factor for both obstetric and perinatal outcomes. Younger and older mothers are at greater risk of adverse outcomes for both the mother and baby, including a greater risk of giving birth to a baby that is pre-term and/or of low birth weight. Babies of older mothers are more likely to be born with a chromosomal disorder and babies of teenage mothers have an increased risk of pre-term birth, low birthweight and associated complications^{47,48}.

The median maternal age of Logan LGA women who gave birth in 2021 was 29 years. This was lower than the median age of all Queensland mothers (30 years). Indigenous mothers from Logan LGA had a median age of 25 years which was lower than the median age of 26 years for all Queensland Indigenous mothers.

The percentage of births to teenagers and women in their 20s was significantly higher in Logan LGA than in Queensland between 2017 and 2021 (Table 26). Correspondingly, the proportion of births to Logan LGA women aged 30 years and over was significantly lower than in Queensland (Table 26).

Table 26: Number and proportion of total births by maternal age group, Logan LGA and Queensland, 2017 to 2021

Age group (years)	Logan LGA		Queensland		Relative Risk (95% CI)	Statistically significant difference LGA - QLD*
	Total births	% of total births	Total births	% of total births		
<20	1,034	4.2	8,620	2.9	1.5 (1.4 – 1.6)	↑
20-24	4,909	19.8	42,685	14.2	1.4 (1.4 – 1.4)	↑
25-29	7,741	31.2	84,478	28.0	1.1 (1.1 – 1.1)	↑
30-34	6,884	27.7	100,003	33.2	0.8 (0.8 – 0.9)	↓
35-39	3,478	14.0	54,087	17.9	0.8 (0.8 – 0.8)	↓
40-49	778	3.1	11,646	3.9	0.8 (0.8 – 0.9)	↓
Total	24,824	100.0	301,519	100.0		

* ↑ LGA statistically significantly higher than Queensland; ↓ LGA statistically significantly lower than Queensland; — no statistically significant difference between LGA and Queensland

Between 2017 and 2021 the most common age for a Logan LGA woman to have a baby was 25 to 29 years. This was lower than the most common age for Queensland women of 30 to 34 years. By comparison, for Logan LGA Indigenous women, the most common age to have a baby was 20 to 24 years (Figure 74).

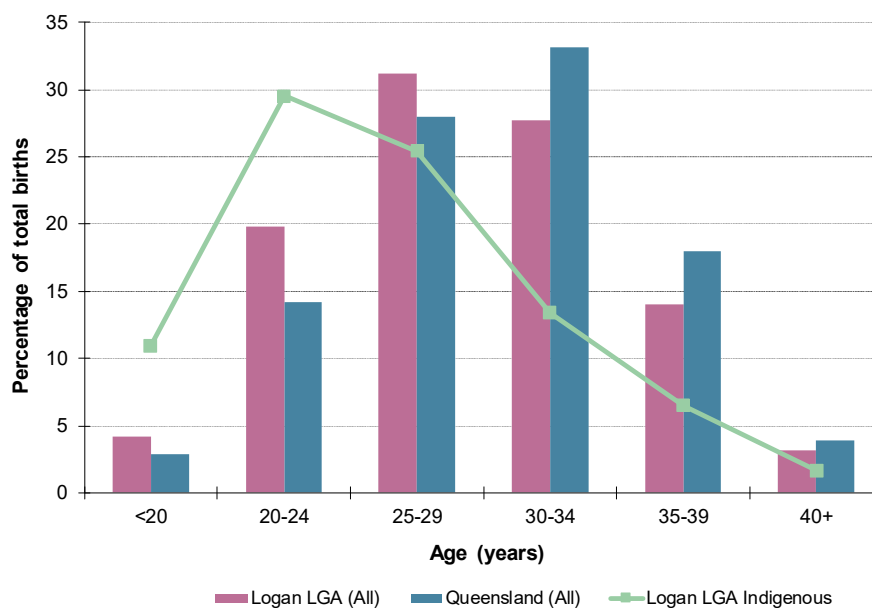


Figure 74: Percentage of total births by maternal age and Indigenous status, Logan LGA and Queensland, 2017 to 2021

Over this five-year period, almost half (46%) of all births to Logan LGA Indigenous mothers were to women under 25 years of age. This was significantly higher than the percentage of births to women under 25 years of age in the overall Logan LGA population (24% of all births) (Table 27).

Table 27: Number and proportion of total births by maternal age group and Indigenous status, Logan LGA, 2017 to 2021

Age group (years)	Logan LGA Indigenous		Logan LGA (All)		Relative Risk (95% CI)	Statistically significant difference LGA - QLD*
	Total births	% of total births	Total births	% of total births		
<20	183	12.6	1,034	4.2	3.0 (2.6 – 3.5)	↑
20-24	492	33.7	4,909	19.8	1.7 (1.6 – 1.8)	↑
25-29	424	29.1	7,741	31.2	0.9 (0.9 – 1.0)	—
30-34	223	15.3	6,884	27.7	0.6 (0.5 – 0.6)	↓
35-39	108	7.4	3,478	14.0	0.5 (0.4 – 0.6)	↓
40-49	28	1.9	778	3.1	0.6 (0.4 – 0.9)	↓
Total	1,458	100.0	24,824	100.0		

* ↑ LGA statistically significantly higher than Queensland; ↓ LGA statistically significantly lower than Queensland; — no statistically significant difference between LGA and Queensland

Maternal smoking

Smoking by mothers during pregnancy has been linked with poorer birth outcomes for both mother and baby 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^{47,48}. 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^{47,48}. Stopping smoking 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^{47,48}.

In 2020-21, 16% of pregnant women in Logan LGA reported smoking cigarettes for all or part of their pregnancy. This was significantly higher than all of Queensland where 12% of pregnant women smoked.

In 2020-21, 43% of Indigenous mothers in Logan LGA reported smoking during pregnancy, significantly higher than the general prevalence of smoking in pregnancy in Logan LGA. The pattern of high rates of smoking among pregnant Indigenous women was also seen throughout Queensland where the reported prevalence was 44% in 2020-21 (Figure 75).

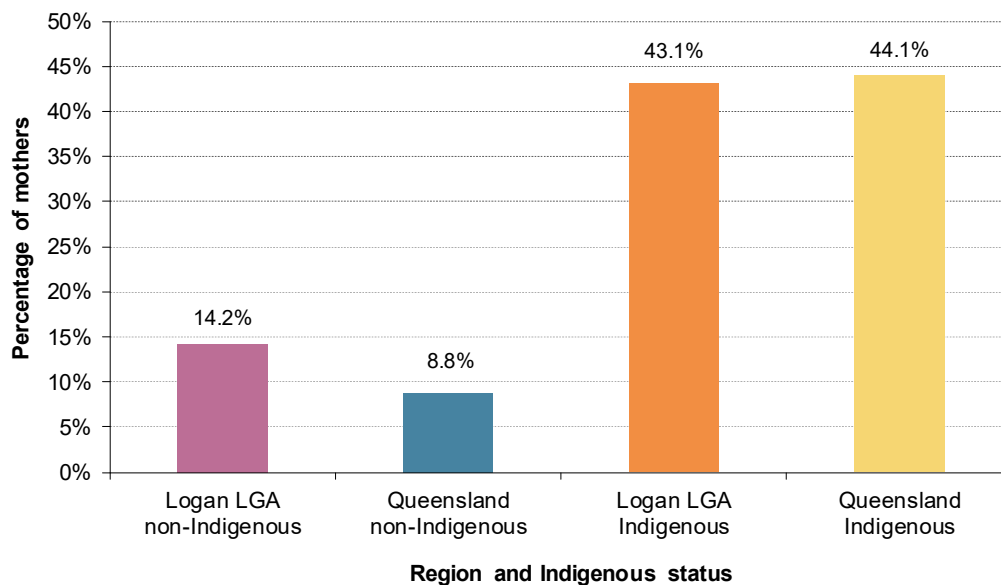


Figure 75: Percentage of mothers who reported smoking during pregnancy, Logan LGA and Queensland with Indigenous status, 2020-21

Between 2010-11 and 2017-18 reductions in rates of smoking in pregnancy were observed in both Logan LGA and Queensland⁹. The rate for all mothers in Logan LGA fell from 20% in 2010-11 to 16% in 2017-18 while in Queensland the rate fell from 17% to 12%⁹. However between 2017-18 and 2020-21 rates in both Logan LGA and Queensland plateaued at 16% and 12% respectively.

Among Indigenous mothers, the rates of smoking in pregnancy also fell between 2010-11 and 2015-16 in both Logan LGA and Queensland⁹. In Queensland the rate also plateaued after 2015-16 at around 43%. However in Logan LGA the rate has been more volatile, peaking at 49.5% in 2013-14, falling to a low of 37% in 2019 and then rising to 43% in 2020-21.

Diabetes in pregnancy

Mothers with pre-existing and gestational diabetes mellitus are at an increased risk of adverse outcomes during pregnancy⁴⁹. 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, high birth

weight, low Apgar score, high level resuscitation and admission to special care⁴⁹. Adverse outcomes are more frequently reported among Indigenous than non-Indigenous mothers and babies⁴⁹.

Between 2017 and 2021, 18.5% of Logan LGA mothers had some form of diabetes in pregnancy including 17.4% with gestational diabetes and 1.2% with pre-existing diabetes. The proportion of Logan LGA mothers with gestational diabetes was significantly higher than the proportion in Queensland (13.9%). However, the proportion of Logan LGA Indigenous mothers with gestational diabetes (12.8%) was significantly lower than the prevalence in all Logan LGA mothers (17.4%).

The prevalence of gestational diabetes in all mothers more than tripled in Logan LGA between 2007 (5.7%) and 2021 (20.4%) (Figure 76). This was a greater increase than that recorded in Queensland where the prevalence in 2018 was 2.9 times higher than in 2007 (Figure 76). In Logan LGA slightly more than one in five mothers had gestational diabetes in 2021.

Such substantial increases in prevalence of gestational diabetes indicate likely increased prevalence for many adverse pregnancy outcomes, especially if the trend towards increased diabetes prevalence remains sustained over time.

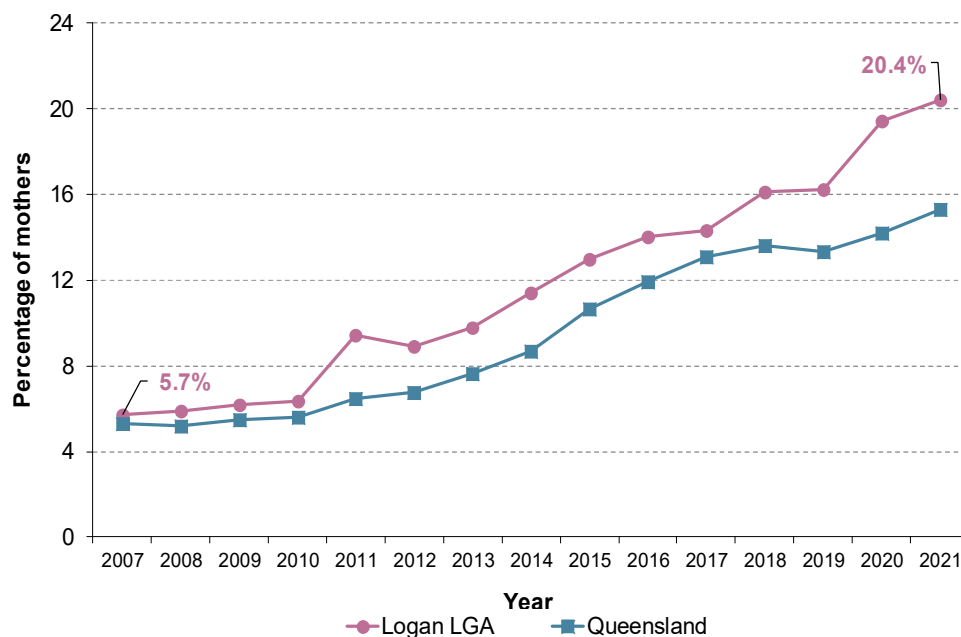


Figure 76: Percentage of mothers with gestational diabetes, Logan LGA and Queensland, 2007 to 2021

The numbers of Logan LGA Indigenous mothers with gestational diabetes were too low for reliable single year comparisons to be undertaken. However, between the five-year periods of 2007 to 2011 and 2017 to 2021 there was an 86% increase in Indigenous gestational diabetes in Logan LGA which was lower than the 107% reported for Queensland Indigenous mothers over the same period (Table 28).

Table 28: Number and percentage of mothers with gestational diabetes by Indigenous status, Logan LGA and Queensland, 2017 to 2021 with comparison to 2012 to 2016 and 2007 to 2011

Region	Indigenous status	Mothers with gestational diabetes			Percentage increase in prevalence 2007-11 to 2017-21	
		2017 – 2021		2012 – 2016		2007 – 2011
		Number	%	%		%
Logan LGA	Indigenous	184	12.8	9.0	6.9	86%
	All persons	4,249	17.4	11.4	6.8	156%
Queensland	Indigenous	3,101	14.3	10.2	6.9	107%
	All persons	41,395	13.9	9.1	5.6	148%

Birth weight

Low birth weight is a key indicator of a baby's immediate health and an important determinant of their future health. Babies with low birth weight are at greater risk of illness or death in infancy⁴⁷. Long-term health effects can include poor cognitive development and an increased risk of developing chronic diseases such as diabetes and cardiovascular disease later in life⁴⁷. Children born with very low birthweight are particularly at high risk of developmental difficulties and poor cognitive and motor skills⁴⁷. There is a wide range of risk factors for low birth weight including pre-term birth, maternal age of under 16 or over 40 years, multiple pregnancy, chronic maternal conditions, exposure to indoor air pollution, maternal smoking and drug use and inadequate maternal nutrition⁴⁷.

High birthweight is also a matter of concern with evidence indicating higher birth weight was associated with increased likelihood of obesity among children aged nine to 11 years⁴⁷.

The majority of babies (82%) born to Logan LGA mothers in 2017 to 2021 were in the normal birth weight range (2,500-3,999g). Low birth weight (<2,500g) was recorded for 8% and high birth weight (4,000+g) for 10% of babies (Figure 77). The prevalences of low and high birth weight in Logan LGA were not significantly different from those in all of Queensland.

The prevalence of low birth weight among Indigenous babies (11%) in Logan LGA was significantly higher than the prevalence among all Logan LGA babies (8%). The prevalence of high birth weight among Indigenous babies in Logan LGA (9%) was statistically similar to the prevalence among all Logan LGA babies.

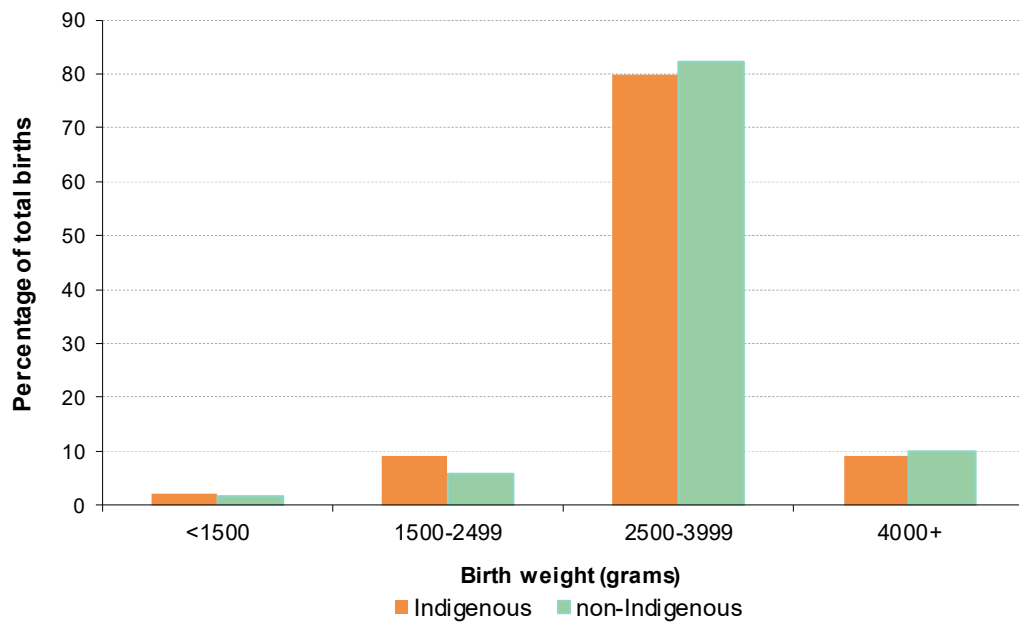


Figure 77: Percentage birth weight by Indigenous status, Logan LGA, 2017 to 2021

Infant mortality

Infant mortality rate is considered to be an important indicator of the general health and well-being of a population and provides insight into the effectiveness of the maternal and perinatal health system⁴⁷. It is defined as the number of deaths in infants (less than one year of age) per 1,000 live births. In Queensland infant mortality rates have historically been higher for Indigenous infants compared with non-Indigenous infants^{2,47}.

In Logan LGA, on average there were 24 infant deaths per year between 2016 and 2020 (including an average of fewer than five Indigenous infant deaths per year). The overall infant mortality rate in Logan LGA (4.9 deaths per 1,000 live births) was statistically similar to the Queensland rate (4.0 deaths per 1,000 live births) over this period. Owing to the small number of Indigenous infant deaths in the area, rates have not been calculated for Logan LGA Indigenous infants.

In 2018 the Queensland Indigenous infant mortality rate of 5.6 deaths per 1,000 live births was 51% higher than the non-Indigenous rate of 3.7 deaths per 1,000 live births². The Queensland Indigenous infant mortality rate declined between 2011 and 2018 from 8.4 to 5.6 deaths per 1,000 live births. The non-Indigenous infant mortality rate also decreased over this period from 4.7 to 3.7 deaths per 1,000 live births².

Perinatal mortality

Perinatal mortality rate refers to stillbirths or deaths in the first 28 days of life. On average there were 52 perinatal deaths per year in Logan LGA between 2017 and 2021.

In this five-year period, the perinatal mortality rate in Logan LGA (10.6 deaths per 1,000 births) was statistically similar to the Queensland rate (10.3 deaths per 1,000 births).

In Logan LGA the number of Indigenous perinatal deaths was too small for a reliable mortality rate to be calculated for the period from 2017 to 2021. It is important to note that the 2017 to 2021 Queensland Indigenous perinatal mortality rate (17.4 deaths per 1,000 live births) was significantly higher than the Queensland non-Indigenous rate (9.7 deaths per 1,000 live births) 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 Indigenous mothers, closing the gap between Indigenous and non-Indigenous mothers. The key performance indicator in Queensland for Indigenous mothers is attendance at five or more antenatal visits⁵⁰.

Based on mothers who gave birth at 32 weeks gestation or later, the majority of Logan LGA mothers (95%) in 2017 to 2021 attended five or more antenatal visits over the course of their pregnancy, similar to all Queensland mothers (96%). Indigenous mothers from Logan LGA were less likely (88%) to attend five or more antenatal visits than were non-Indigenous mothers (95%) however the difference was not statistically significant. The percentage of Logan LGA Indigenous mothers attending five or more antenatal visits increased consistently from 75% in 2007-2010⁹ to 82% in 2012-2016⁹ to 88% in the current period.

Assisted conception

Assisted reproductive treatment includes artificial insemination and the use of assisted reproductive technologies. Assisted reproductive technologies involve the handling of eggs (human oocytes) and sperm or embryo to facilitate pregnancy⁵¹. There was a 48% increase in the use of these technologies in Australia and New Zealand in the five years from 2005 to 2009. However, from 2009 to 2010 there was a 13% decrease in the number of treatment cycles performed in Australia which coincided with a change in government funding for fertility treatment⁵¹.

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 have been fewer multiple gestation pregnancies in recent years due to a reduction in the number of embryo transfers during treatment⁵¹.

There were 1,009 Logan LGA mothers with 1,049 births attributed to assisted conception between 2017 and 2021, including 1,040 live births and nine stillbirths. The percentage of stillbirths was higher among births resulting from assisted conception (0.9%) than in those who conceived naturally (0.7%). In this period, Logan LGA mothers who used assisted conception had a higher median age (33 years) than those who conceived naturally (29 years).

The proportion of mothers with births attributed to assisted conception was significantly lower in Logan LGA (4.1%) than in Queensland (6.0%) between 2017 and 2021 (Table 29).

Table 29: Number and percentage of mothers birthing by assisted conception, Logan LGA, and Queensland, 2017 to 2021

Assisted Conception Status	Logan LGA		Queensland		Relative Risk (95% CI)	Statistically significant difference LGA - QLD*
	Total Mothers	% of Total Mothers	Total Mothers	% of Total Mothers		
Assisted	1,009	4.1	17,799	6.0	0.7 (0.6 – 0.7)	↓
Not assisted	23,480	95.9	279,340	94.0	1.0 (1.0 – 1.0)	—
Total	24,489	100.0	297,139	100.0		

* ↑ LGA statistically significantly higher than Queensland; ↓ LGA statistically significantly lower than Queensland;
 — no statistically significant difference between LGA and Queensland

While the number of Logan LGA mothers using assisted conception methods increased by 15% from 194 in 2017 to 223 in 2021, this represented only a very small increase in proportion of all mothers from 4.2% to 4.3%.

In-vitro fertilisation (IVF) with 724 mothers was the most frequently reported method of assisted conception in Logan LGA between 2017 and 2021, representing almost 60% of births using assisted conception (Table 30). Other significant assisted conception methods included ovulation induction (222 mothers), embryo transfer (127 mothers) and artificial insemination (78 mothers).

Table 30: Percentage of total births attributed to assisted conception by method of assisted conception and year, Logan LGA, 2017 to 2021

Method*	2017	2018	2019	2020	2021	Total
In-vitro fertilisation (IVF)	56.8	66.4	58.1	65.0	52.3	59.4
Ovulation induction	22.5	15.7	21.4	15.4	16.7	18.2
Artificial insemination (AIH, AID)**	5.3	4.6	7.3	3.9	10.1	6.4
Embryo transfer	8.8	7.4	9.0	11.8	13.9	10.4
Intracytoplasmic sperm injection (ICSI)	4.4	3.7	2.6	1.2	4.9	3.4
Donor egg	1.8	1.8	1.3	2.0	1.7	1.7
Gamete intrafallopian transfer (GIFT)	0.4	0.5	0	0.4	0.3	0.3
Other unknown	0	0	0.4	0.4	0	0.2

* > one method per mother can be recorded

** AIH – Artificial insemination by husband; AID – Artificial insemination by donor

Chronic disease risk factors

Chronic diseases continue to be a leading contributor to disease burden across Queensland. It is estimated that 38% of the disease burden is due to modifiable risk factors and could have been avoided or reduced⁵². Behavioural risk factors such as tobacco use, overweight and obesity, physical inactivity, poor nutrition and risky alcohol consumption explain a substantial proportion of the total chronic disease burden in the population^{21,52}. For example, more than two thirds of the burden of diabetes in Queensland can be attributed to the combined effect of high body mass and physical activity²¹ and lung cancer is primarily caused by tobacco smoking, which also contributes to the development of a number of other cancers.

Understanding the risk factors for chronic disease and risk factor prevalence in the community is vital to interpreting chronic disease profiles and trends of these same communities^{21,52}. Furthermore, monitoring health is fundamental to providing evidence-based services and strategies aimed at improving health status, now and in the future⁵³.

Table 31: Summary of selected behavioural and health condition risk factors for chronic disease in adults (18+ years), Logan LGA and Queensland, 2019 to 2020 or 2018 to 2019 (as available)⁵⁴

Risk factor	Population-weighted prevalence [^]		Statistically significant difference LGA - QLD ^{**}
	Logan LGA %	Queensland %	
Body mass index			
Underweight (BMI <18.5)	3.3	2.6	—
Healthy weight (BMI 18.5-<25)	30.0	37.4	↓
Overweight (BMI 25-<30)	33.0	34.9	—
Obese (BMI 30+)	33.6	25.0	↑
All overweight/obese (BMI 25+)	66.7	60.0	↑
Smoking			
Daily smoking	16.0	10.8	↑
Sunburn			
Sunburnt in last 12 months	50.5	52.5	—
Alcohol consumption^{##}			
Lifetime risk	17.4	21.6	—
Single occasion risk – at least monthly	24.9	30.0	↓
Physical activity (18-75 years)			
Sufficient activity for health benefit	50.8	58.3	↓
Fruit and vegetable consumption			
Sufficient fruit intake (2+ serves/day) ^{**}	47.0	52.1	↓
Sufficient vege intake (5+ serves/day) ^{**}	6.6	8.4	—

[^] Survey data were weighted to adjust for differences between the demographic characteristics of the population and of the sample. Weighted results are considered to be an accurate representation of the demographic profile of the adult residents of LGA/Queensland

* ↑ LGA statistically significantly higher than Queensland; ↓ LGA statistically significantly lower than Queensland; — no statistically significant difference between LGA and Queensland

Based upon comparison of age standardised prevalence, not population weighted prevalence

** Data from 2018 to 2019

2009 Australian guidelines to reduce health risks from drinking alcohol

Queensland Health undertakes regular population surveys of adults (Table 31)⁵⁴ and children to determine the self-reported prevalence of a variety of behavioural and chronic disease risk factors at the state and lower geographical levels. This self-reported data is presented in this section of this report. At time of publication, data for children was not available at the LGA level.

Overweight and obesity

Unhealthy weight gain is recognised as a significant public health issue, with rates of obesity in the population increasing over several decades. The pathway to overweight and obesity is complex. The combination of multiple interactions involving genetics, diet, physical activity, social and physical environments, other health conditions and social determinants make overweight and obesity a significant public health challenge².

The health implications of being overweight or obese include increased risk for a range of disease groups including endocrine disorders, kidney and urinary diseases, cardiovascular diseases, musculoskeletal conditions and various cancers⁵². In 2018, overweight and obesity were estimated to account for 8.4% of the total burden of disease in Australia⁵².

In 2019-2020, 67% of adult Logan LGA residents were overweight or obese, which was significantly higher than the Queensland prevalence (60%) (Table 31). This is a higher level of overweight and obesity than the 59% self-reported in Logan LGA in 2009 to 2010⁵⁴. Prevalence of overweight and obesity in adult Logan LGA females increased from 50% in 2009 to 2010 to 64% in 2019 to 2020. In Logan LGA males the prevalence was more stable at around 68% over the same time period.

Smoking

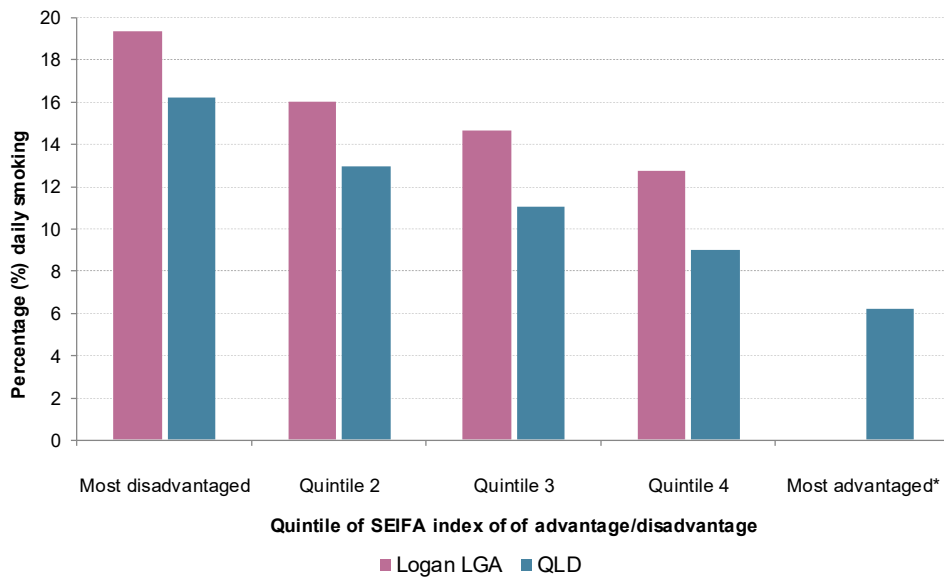
Tobacco smoking remains the leading cause of preventable disease and death in Queensland, despite a significant reduction in smoking rates being recorded in recent decades². Smoking increases the risk of various disease groups including respiratory diseases, various cancers, cardiovascular diseases, infectious diseases, type 2 diabetes, gastrointestinal disorders, hearing and vision disorders, musculoskeletal conditions and neurological conditions⁵². In 2018, tobacco smoking was estimated to account for 8.6% of the total burden of disease in Australia⁵².

In 2019-2020, 16% of Logan LGA adults smoked daily which was significantly higher than the Queensland prevalence (11%) (Table 31). Logan LGA recorded a five percentage point reduction in daily smoking between 2009 to 2010 and 2019 to 2020. Queensland also experienced a five percentage point reduction over this period.

Tobacco smoking was strongly linked with socio-economic status in both Logan LGA and Queensland, with higher rates found in more disadvantaged areas (Figure 78).

The use of electronic cigarettes (e-cigarettes or vapes) which heat liquid into a fine vapour that users inhale² is emerging as a key health issue⁵⁵. E-cigarettes are designed to deliver chemicals via aerosol vapour directly to the lungs. The liquid solution used in them usually contains propylene glycol, glycerol and flavourings and may contain nicotine⁵⁵. The short and long term health effects of e-cigarettes are currently being researched,

and they have not been proven safe to use. In addition, studies are increasingly showing that e-cigarettes emit harmful, possibly carcinogenic substances⁵⁵.



* Insufficient data for calculation of reliable estimate for most advantaged quintile for Logan LGA

Figure 78: Percentage of adults who smoke tobacco daily, by socioeconomic status (SEIFA), Logan LGA and Queensland, 2019 to 2020

No data are available on e-cigarette use in Logan LGA specifically, however in 2018-2019, 14% of adult MSH residents had used e-cigarettes on at least one occasion which was statistically similar to the Queensland prevalence use (13%). Usage was strongly linked with age group, peaking in those aged 18 to 24 years and generally declining with increasing age (Figure 79). In 2017, 16% of Queensland secondary school students aged 12 to 17 years reported having ever used e-cigarettes⁵⁶. No data are available to address usage in younger children.

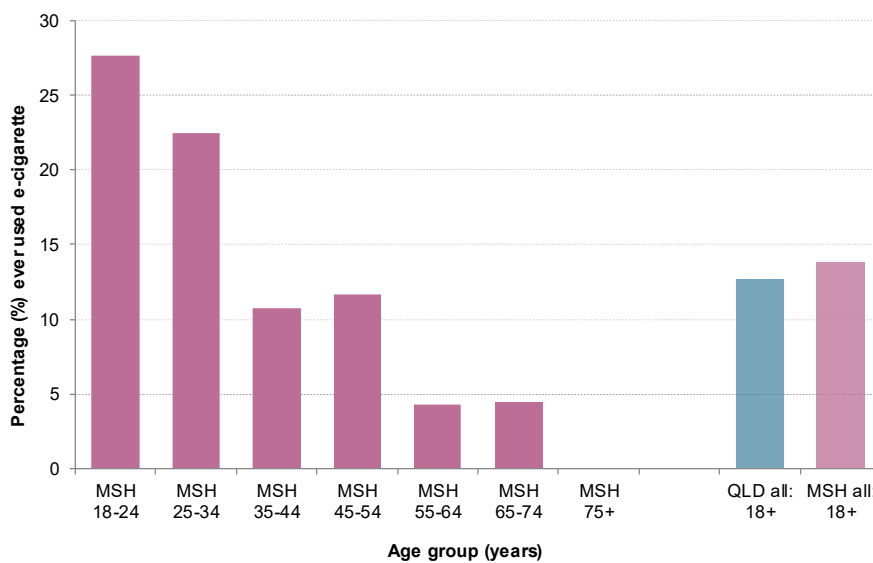


Figure 79: Percentage of adults who have ever used e-cigarettes, by age and sex, Metro South Health and Queensland, 2018 to 2019

Nutrition

Healthy eating is a challenge. While poor health cannot be attributed to a single food or nutrient, in 2018, the Australian Institute of Health and Welfare (AIHW) estimated dietary risks account for 5.4% of the total disease burden in Australia⁵². The health implications of poor diet include increased risk for disease groups, including cardiovascular diseases, type 2 diabetes and bowel and other cancers⁵². Eating a wide variety of nutritious foods from the five food groups daily (vegetables, fruit, grain, lean meat, and dairy) is recommended to promote overall health and wellbeing, reduce the risk of diet related disease, and protect against future chronic conditions^{2,57}. This report focuses solely on fruit and vegetable consumption.

In 2018-2019, Logan LGA adults were significantly less likely (47%) than Queensland adults (52%) to have adequate daily fruit consumption (Table 31). However there was no significant difference in the percentage of Logan LGA and Queensland adults who reported sufficient vegetable consumption (Table 31).

Logan LGA, women were more likely (51%) than men (43%) to report sufficient daily fruit consumption, although this difference was not statistically significant. Logan LGA women (8.7%) were twice as likely as Logan LGA men (4.3%) to report sufficient daily vegetable consumption.

Physical activity

Regular physical activity provides many benefits to both physical and mental health. It can help prevent heart disease, stroke, diabetes, hypertension, breast and colon cancer, overweight and obesity and improve mental health, quality of life and wellbeing². The health impacts of physical inactivity include coronary heart disease, dementia, type 2 diabetes, bowel cancer, stroke, breast cancer and uterine cancer. In 2018, physical inactivity was estimated to account for 2.5% of the total burden of disease in Australia⁵².

In 2019-2020, 51% of Logan LGA adults undertook sufficient physical activity for health benefit which was significantly lower than the Queensland prevalence (58%) (Table 31). Sufficient physical activity decreased with age (Figure 80), with the prevalence generally higher in males than females across age groups except those aged 65 to 75 years.

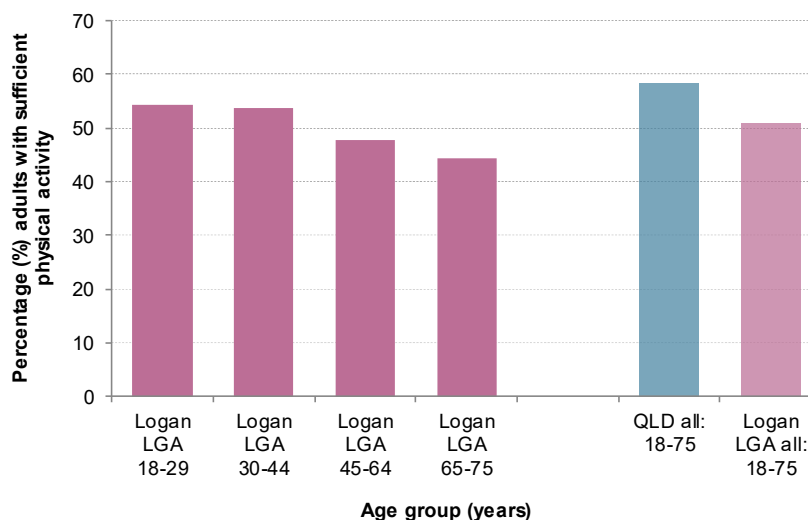


Figure 80: Percentage of adults (18-75 years) who undertook sufficient physical activity for health benefit in the last week, by age, Logan LGA and Queensland (18 to 75 years), 2019 to 2020

Alcohol consumption

The National Health and Medical Research Council (NHMRC) recently reviewed the health effects of alcohol consumption in Australia⁵⁸. The review found increased evidence of relationships between alcohol consumption and the risk of cancers including breast, liver, pancreatic, colorectal, oesophageal, mouth and throat cancers⁵⁸. Evidence of any protective effects of low-level alcohol consumption weakened⁵⁸.

The health impacts of alcohol consumption include multiple injury types (predominantly road traffic, suicide and self-inflicted injuries), chronic liver disease, liver cancer, seven other cancers and coronary heart disease⁵². In 2018, alcohol consumption was estimated to account for 4.5% of the total burden of disease in Australia⁵².

In 2019-2020, Logan LGA adults (25%) were significantly less likely than Queensland adults (30%) to report single occasion alcohol consumption that was risky (at least monthly). They were also less likely to report alcohol consumption that was risky over the lifetime, but this difference was not significant (Table 31).

In 2019-2020, men in Logan LGA were significantly more likely than women to report both lifetime risky levels of alcohol consumption (males 28% vs females 7%) and single occasion risky drinking on at least a monthly basis (males 36% vs females 14%)

Sun safety

Sun exposure is a risk factor for future skin cancer². Differences in ultraviolet exposure (chronic or intermittent) and age at which melanoma occurs both influence disease development². Sunburn frequency, especially in childhood, increases the risk of melanoma². In 2018, high sun exposure was estimated to account for 0.7% of the total burden of disease in Australia⁵².

In 2019-2020, there was no significant difference in the prevalence of being sunburnt in the previous 12 months between Logan LGA (51%) and Queensland adults (53%) (Table 31). Sunburn prevalence peaked in the 30 to 44 years age group and then decreased with increasing age (Figure 81).

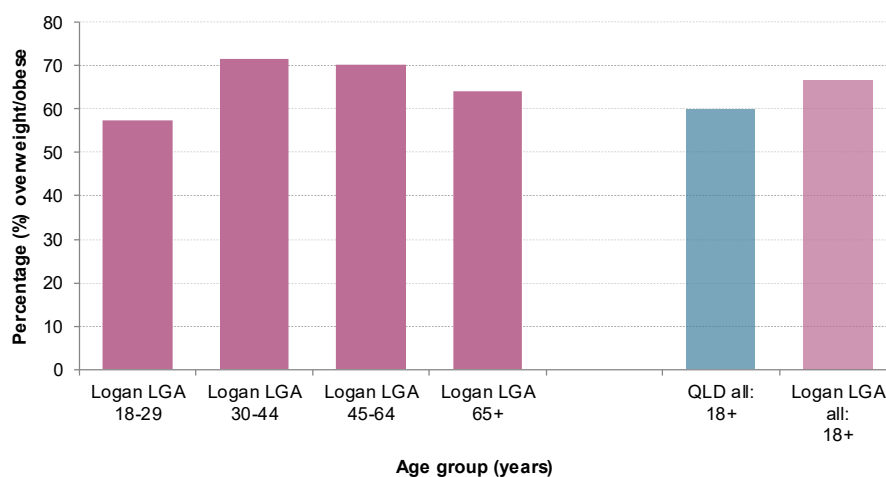


Figure 81: Percentage of adults (18+ years) sunburnt in the previous 12 months, by age, Logan LGA and Queensland, 2019 to 2020

Definitions

Age specific rate: 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: A method used to convert the age structures of different populations to the same 'standard' structure. 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.

Avoidable deaths: 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.

Confidence intervals: Usually expressed 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. 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.

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 the number of live births registered during the calendar year per 1,000 of the estimated resident population (ERP) of women aged 15 to 49 years, as at 30th June of that year.

Estimated resident populations (ERPs): These are the official estimates of the Australian population, which link people to a place of usual residence within Australia. The Australian Bureau of Statistics defines 'usual residence' as the place where each person has lived or intends to live for six months or more from the reference date for data collection.

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.

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.

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 28th day of life.

Prevalence: 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 1 in 10, or 10%.

P value: By convention, a P value of 0.05 or less is usually considered 'statistically significant'. That is, if the P value is less than 0.05, there is a less than one in 20 chance that the observed difference would have arisen by chance alone. When comparing rates between a Hospital and Health Service area and Queensland, 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 less than one in 100.

Relative risk: The ratio of the probability of an event occurring (death, disease) among those exposed to a risk factor compared to 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.

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 to Queensland. The SMR or SSR is the ratio of the observed number of events (deaths, hospitalisations) in a population (e.g. MSH) 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 95% CI 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: The total fertility rate (TFR) refers to the average number of children that would be born per woman if all women 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.

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