Government of **Western Australia**
Department of **Health**

Western Australian Burden of Disease 2011-2023

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Western Australian Burden of Disease 2011-2023

Acknowledgement of Country and People

The Department of Health acknowledges the Aboriginal people of the many traditional lands and language groups of Western Australia. It acknowledges the wisdom of Aboriginal Elders both past and present and pays respect to Aboriginal communities of today.

Summary

This bulletin provides an overview of the disease burden by age group and sex to assist with public health planning and support collaborative efforts by government and other agencies to continue improving health outcomes for Western Australian residents.

Life expectancy has increased over time

Western Australian residents born in 2023 had an increased life expectancy compared with those born in 2018 and could expect to live just over 85 per cent of their lives in good health. The number of years lived in good health has increased between 2011 and 2023 for most of the Western Australian population. Females aged 33 and over and males aged 12 years and over had increased health-adjusted life expectancy when compared with 2018.

Females had a lower burden of disease rate than males

In 2023, an estimated 557,566 years of healthy life were lost among the Western Australian population. There has been 4.4 per cent decrease in age standardised DALY rate since 2011, due to an 8.4 per cent reduction in the male age standardised DALY rate. The female disease burden rate remained unchanged from 2011 to 2023. Females had a lower disease burden rate than males, however, the gap between males and females is narrowing.

Chronic disease groups cause most of the burden of disease

The largest contributors to disease burden in 2023 in order were:

1. Mental and substance use disorders, mostly non-fatal burden
2. Cancer and other neoplasms, mostly fatal burden
3. Musculoskeletal disorders, mostly non-fatal burden
4. Cardiovascular diseases, mostly fatal burden
5. Injury (external cause), mostly fatal burden

Mental and substance use disorders, and injuries tend to affect people earlier in life, while cardiovascular disease and cancer and other neoplasms, and neurological conditions become more common in older age groups.

Since 2011, the burden of disease rates of cardiovascular disease, cancer and other neoplasms, and injuries have decreased substantially. In contrast, the overall rate of burden of disease for mental and substance use disorders has increased since 2018, largely due to an increase in non-fatal burden.

Changes to condition rates

Notable changes to burden of disease rates for individual conditions were:

1. Back pain and other problems became the condition with the highest disease burden rate in 2023, overtaking coronary heart disease.
2. Coronary heart disease decreased from a rate of over 13 years per 1,000 population in 2011, to below 9 years per 1,000 population in 2023.
3. The age-standardised rate of anxiety disorders was similar from 2018 to 2023 and was the highest ranked condition for females in 2018 and 2023.
4. COVID-19 continues to have an impact, especially in older age groups and was the 15th highest contributor to fatal burden (age-standardised rate) among the Western Australian population in 2023.

The fifteen conditions with the highest burden of disease rate are shown in Figure 1.

Overall, there have been substantial improvements in the disease burden, but further work is required to reduce the total burden experienced by the Western Australian population, particularly by increasing the proportion of life expected to be lived in good health as life expectancy continues to rise.

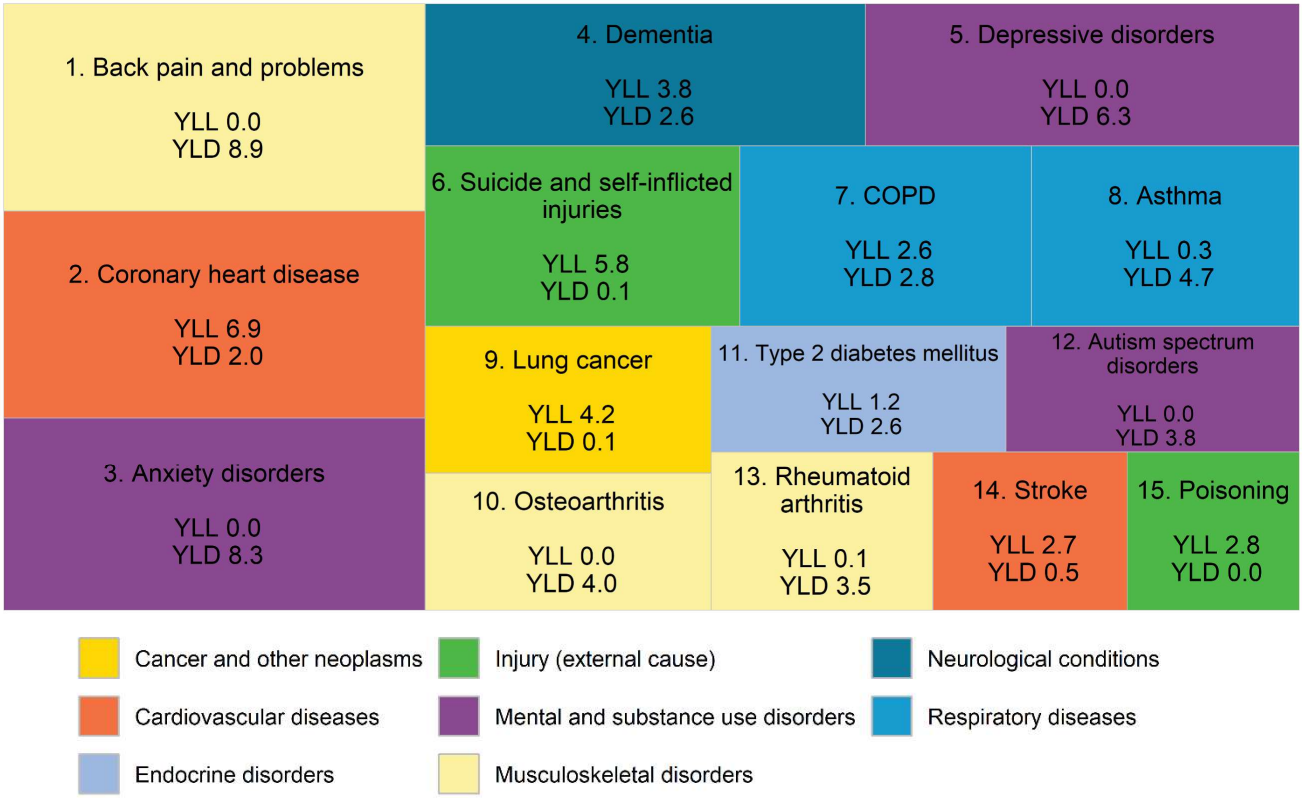

Figure 1. The fifteen conditions with the highest DALY rate per 1,000 population by disease group, 2023, persons. Note: ‘other’ or ‘unknown’ conditions, for example, other cardiovascular diseases, have been excluded from the ranking. The size of the box indicates the proportion of total disease burden for the disease group.

Introduction

The burden of disease is an estimate of the number of years of life lost due to illness or injury (non-fatal burden) and premature death (fatal burden) in a population. It combines deaths and prevalence measures with estimates of disease severity to give an understanding of the total impact of conditions on the health of the population.

This bulletin aims to provide an overview of the burden of disease among the Western Australian population from 2011 to 2023. Data are disaggregated by sex, five-year age group, disease group, condition, and burden type (i.e., fatal and non-fatal). Changes in disease burden over the period are provided. Key terms are defined in Box 1.

The Western Australian Burden of Disease 2011-2023 study provides estimates of the total non-fatal and fatal burden for over 200 conditions for the years 2011, 2015, 2018 and 2023 for the Western Australian population. Further details on inclusions and exclusions are given in Appendix 1.

Box 1: Key Terms

Age Standardised Rate (ASR) - Age standardisation is a method of adjusting the crude rate to eliminate the effect of differences in population age structures when comparing crude rates for different periods of time, different geographic areas and/or different population sub-groups. In this report, ASRs are calculated using the direct standardisation method and all age groups of the 2001 Australian Standard Population and are reported as per 1,000 population.

Age Specific Rate - The number of events in an age group divided by the population for the age group, expressed as per 1,000 population.

Disability-Adjusted Life Years (DALY) - The total fatal and non-fatal years of life lost. DALY is calculated by summing the Years of Life Lost (YLL) and the Years of Life Lost due to Disability (YLD).

Disease Group - The WABODS 2023 disease list comprises over 200 specific diseases or conditions (such as coronary heart disease, stroke, lung cancer or bowel cancer), grouped into 17 disease groups of related diseases or conditions (such as cardiovascular disease or cancer). A list of conditions included in each disease group can be found at Australian Burden of Disease Study: Methods and supplementary material 2018, Data - Australian Institute of Health and Welfare

Health-adjusted life expectancy (HALE) - Health-adjusted life expectancy (HALE) extends the concept of life expectancy (the number of years a person can expect to live) by considering the number of years a person of a particular age could expect to live in full health (without disease and/or injury) and in ill health (with disease and/or injury) (1). The proportion of healthy life lived is calculated by dividing HALE by the total life expectancy at the given age.

Years of Life Lost (YLL) - The fatal component of disease burden. YLL represents the difference between a person's age at death and the length of an ideal lifespan.

Years of Life Lost due to Disability (YLD) - The non-fatal component of disease burden. YLD is calculated as the time a person lives with a condition, multiplied by a disability weighting factor to estimate the disease severity, or impact on quality of life.

Results

Demographics of the population of Western Australia

In 2023 there were 2,881,227 people residing in Western Australia, an increase of 527,818 people (22.4 per cent) since 2011. In 2023, the age group with the highest proportion of the population in Western Australia was 35-39 years, compared to 2011, when the largest proportion was in the 25-29 age group. Between 2011 and 2023 there has been an increasing proportion of people aged 60 years and over, alongside a decline in the proportions of people aged under 5 years and between 20 to 29 years, indicating an ageing population over time (Figure 2).

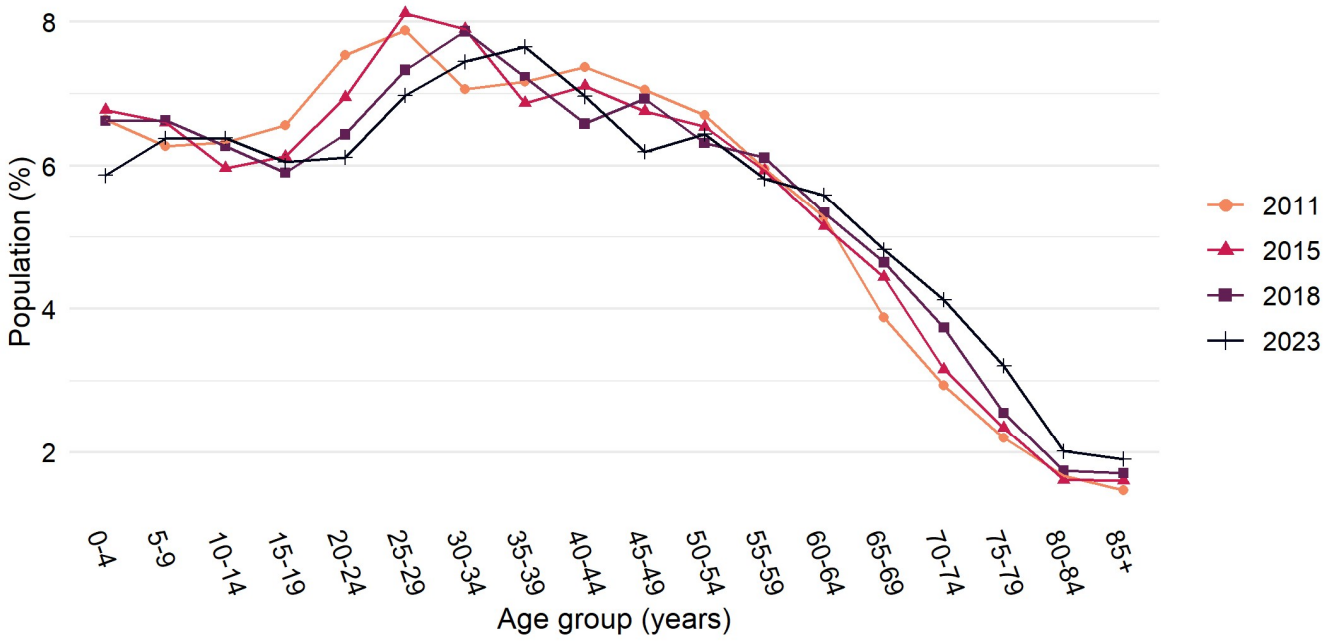

Figure 2. Population by age group (%), Western Australia, 2011 to 2023.

Health-adjusted life expectancy, 2018 and 2023

When disaggregated by age and sex, all the Western Australian population could expect to live most of their remaining lives in good health, meaning no disease or injury (2), (Figure 3).

Western Australian residents born in 2023 could expect to live over four fifths of their life in good health (87.9 per cent for males, 86.1 per cent for females). Females born in 2023 have a higher total life expectancy than males (85.8 and 82.0 years, respectively), but males have a higher HALE proportion at all ages. Males aged 80 years in 2023 could expect two thirds (67.8 per cent) of their remaining life to be in good health, and females of the same age could expect to live 63.6 per cent of their remaining life in good health.

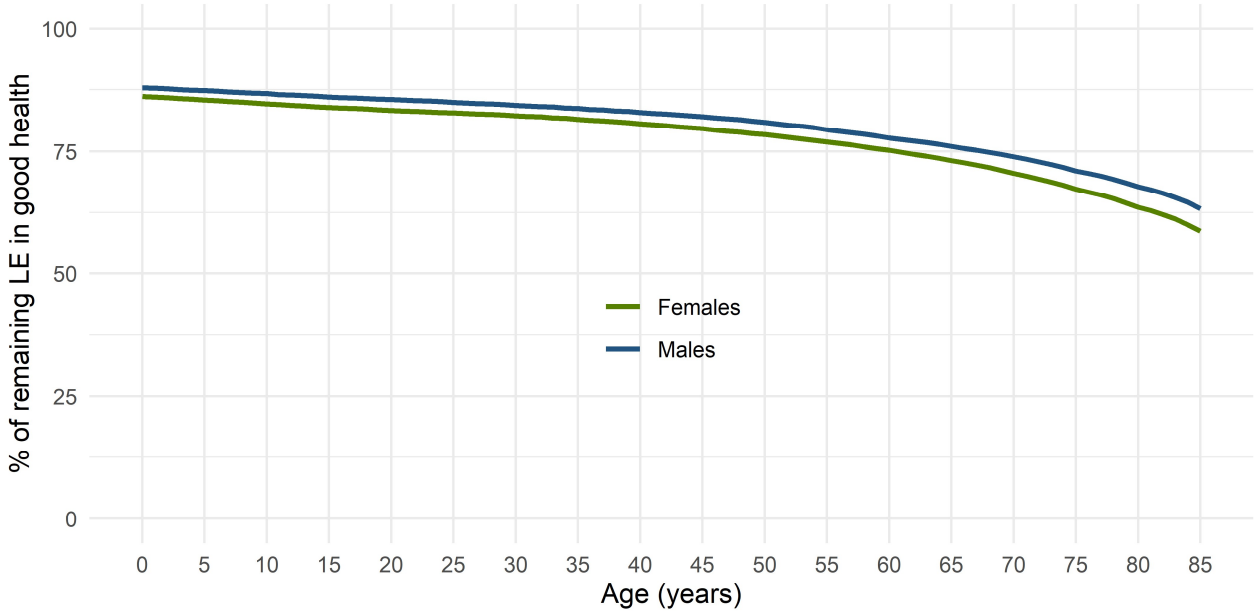

Figure 3. Per cent of remaining life expectancy in good health (HALE) for the Western Australian population, by sex, 2023.

Compared with 2018, most of the Western Australian population had an increased life expectancy in 2023. Females aged under 77 years and over 94 years and males aged under 81 years or over 91 years had increased life expectancy. The average increase was 0.3 years for males and 0.2 years for females (top row, Figure 4).

In parallel, HALE also increased across most age groups from 2018 to 2023. Females aged over 33 (excluding those age 93), and males at birth or aged over 12 years (excluding age 24) had increased HALE when compared with 2018 (middle row, Figure 4).

However, in many age groups, the increase in life expectancy has outpaced the increase in HALE, resulting in a lower overall proportion of life lived in good health for most of the Western Australian population. Specifically, females under 64 years of age and males aged 60, 59 or under 58 years of age had a smaller proportion of HALE years in 2023 when compared with 2018. Conversely, older Western Australians could expect an increased proportion of their lives to be lived in good health (bottom row, Figure 4).

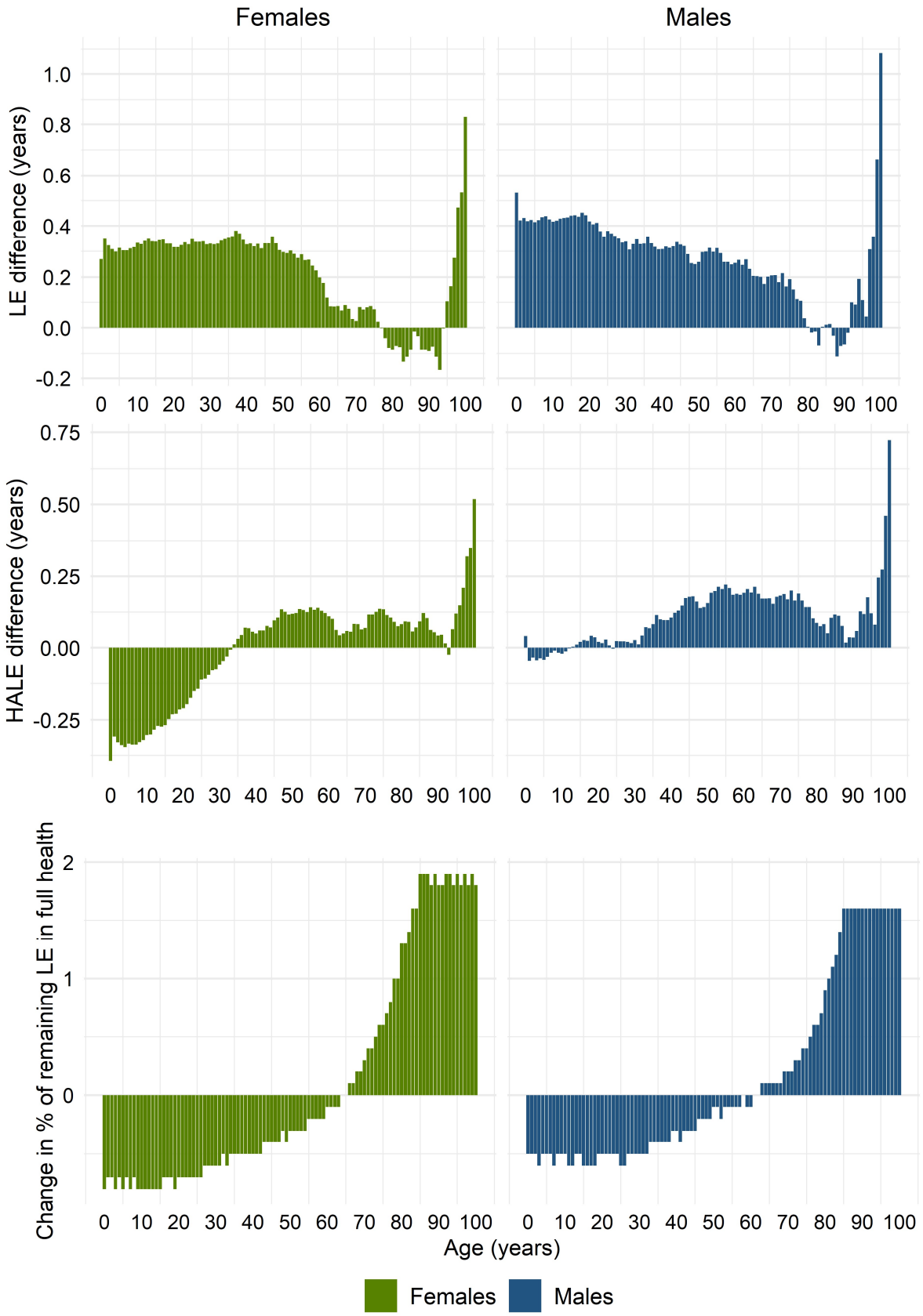

Figure 4. Change in life expectancy (LE) (top row), change in the number of HALE years (middle row), and change in the HALE proportion (bottom row) from 2018 to 2023, by sex, Western Australia.

Total disease burden (DALY), 2023

In 2023, there was a total of 557,566 disability-adjusted life years (DALY) among the Western Australian population. The age standardised DALY rate was 176.0 per 1,000 population. Males had a higher age standardised DALY rate compared to females (188.4 and 164.1 years per 1,000 population, respectively). Within each age group, females had a lower DALY count in all age groups except for the 85 years and over age group (Figure 5).

The highest total DALY count was recorded among males aged 75-79 (26,959 DALY) and females aged 85 and over (31,845 DALY). Conversely, the lowest DALY counts were observed in both males and females aged 5 to 9 years. When the population size of each age group was accounted for, the age specific rates per 1,000 population was highest in males and females aged 85 years and over, and lowest in males and females aged 5-9 years (Figure 5).

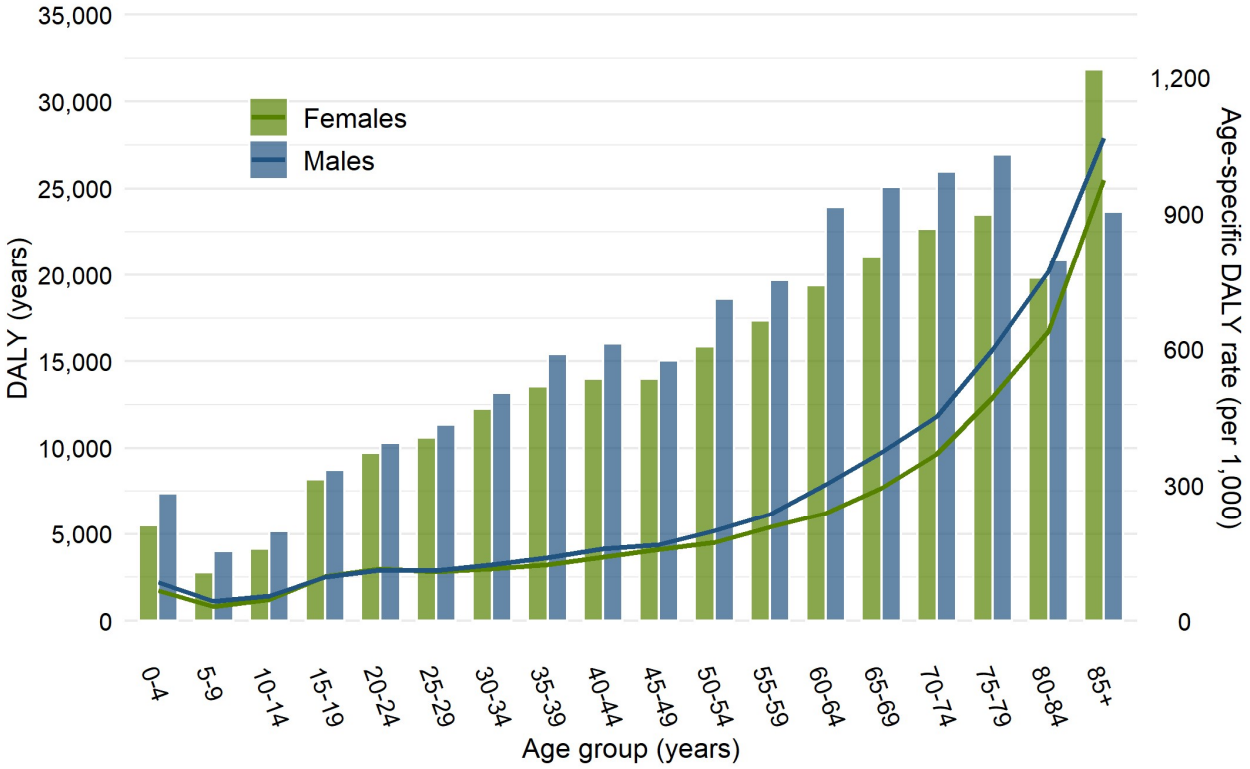

Figure 5. Total DALY (in years, bars) and age specific DALY rate per 1,000 population (lines) by sex, 2023, Western Australia.

Total burden by disease group, 2023

The disease groups with the highest DALY count in 2023, and the corresponding percentages were:

1. Mental and substance use disorders, 15.8 per cent
2. Cancer and other neoplasms, 15.5 per cent
3. Musculoskeletal disorders, 13.2 per cent
4. Cardiovascular diseases, 11.4 per cent

Injury (external cause), neurological conditions and respiratory conditions were also highly ranked disease groups by total disease burden (Figure 6).

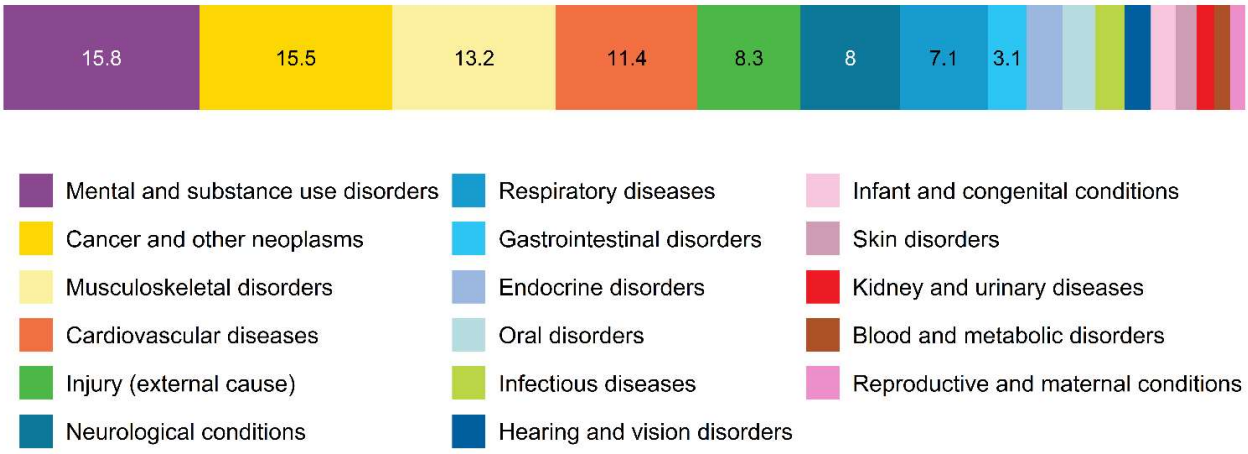

Figure 6. Proportion (per cent) of total burden (DALY), by disease group among the Western Australian population in 2023. Per cent labels are not shown for disease groups contributing less than 3 per cent of burden.

When ranked by total DALY, the largest contributors to disease burden among males were cancer and other neoplasms (16.6 per cent), mental and substance use disorders (15.2 per cent) and cardiovascular diseases (13.3 per cent). For females, the leading contributor was mental and substance use disorders (16.5 per cent), followed by musculoskeletal disorders (15.8 per cent) and cancer and other neoplasms (14.3 per cent), as shown in Table 1. When ranked by age standardised rate, the order of disease groups remained the same, except for mental and substance use disorders, which become the leading contributor among males, ahead of cancer and other neoplasms (31.1 and 29.1 DALY per 1,000 population, respectively). The change in rank position is due to differences in the underlying age structure when compared to the Australian Standard Population.

Disease burden by type - fatal and non-fatal, 2023

Total disease burden is comprised of two components: fatal (YLL – years of life lost) and non-fatal burden (YLD - years lived with disability). The proportion of these components varies by disease group. The fatal burden (YLL) component was over 70 per cent of the total burden for injuries, cardiovascular diseases, cancer and other neoplasms, infectious diseases and infant and congenital conditions (Figure 7). The non-fatal burden (YLD) component was over 90 per cent of the total disease burden for hearing and vision disorders, oral disorders, reproductive and maternal conditions, mental and substance use disorders, musculoskeletal disorders and skin disorders.

Table 1. Disease groups by proportion of DALY and age standardised rates (ASR per 1,000 population), by sex, 2023, Western Australia. Disease groups have been ranked by DALY proportion.

Females				Males			
Female rank	**Disease**	**DALY n (%)**	**ASR (per 1,000 population)**	**Male rank**	**Disease**	**DALY n (%)**	**ASR (per 1,000 population)**
1	Mental and substance use disorders	43,875 (16.5)	31.6	1	Cancer and other neoplasms	48,280 (16.6)	29.1
2	Musculoskeletal disorders	42,020 (15.8)	25.8	2	Mental and substance use disorders	44,281 (15.2)	31.1
3	Cancer and other neoplasms	38,136 (14.3)	22.1	3	Cardiovascular diseases	38,760 (13.3)	23.8
4	Neurological conditions	25,829 (9.7)	14.4	4	Injury (external cause)	32,591 (11.2)	22.7
5	Cardiovascular diseases	25,034 (9.4)	13.2	5	Musculoskeletal disorders	31,463 (10.8)	20.2
6	Respiratory diseases	21,232 (8.0)	12.7	6	Neurological conditions	18,888 (6.5)	11.9
7	Injury (external cause)	13,928 (5.2)	9.2	7	Respiratory diseases	18,286 (6.3)	11.6
8	Gastrointestinal disorders	8,067 (3.0)	4.9	8	Endocrine disorders	9,406 (3.2)	5.8
9	Oral disorders	6,774 (2.5)	4.3	9	Gastrointestinal disorders	9,400 (3.2)	6.1
10	Endocrine disorders	6,651 (2.5)	3.8	10	Oral disorders	7,523 (2.6)	5.0
11	Infectious diseases	6,443 (2.4)	3.7	11	Infectious diseases	6,889 (2.4)	4.4
12	Reproductive and maternal conditions	6,136 (2.3)	4.1	12	Infant and congenital conditions	6,553 (2.2)	4.8
13	Hearing and vision disorders	5,764 (2.2)	3.1	13	Hearing and vision disorders	6,036 (2.1)	3.7
14	Skin disorders	4,730 (1.8)	3.3	14	Kidney and urinary diseases	5,053 (1.7)	3.0
15	Infant and congenital conditions	4,536 (1.7)	3.5	15	Skin disorders	4,763 (1.6)	3.3
16	Blood and metabolic disorders	4,314 (1.6)	2.7	16	Blood and metabolic disorders	2,818 (1.0)	1.8
17	Kidney and urinary diseases	2,777 (1.0)	1.5	17	Reproductive and maternal conditions	327 (0.1)	0.2

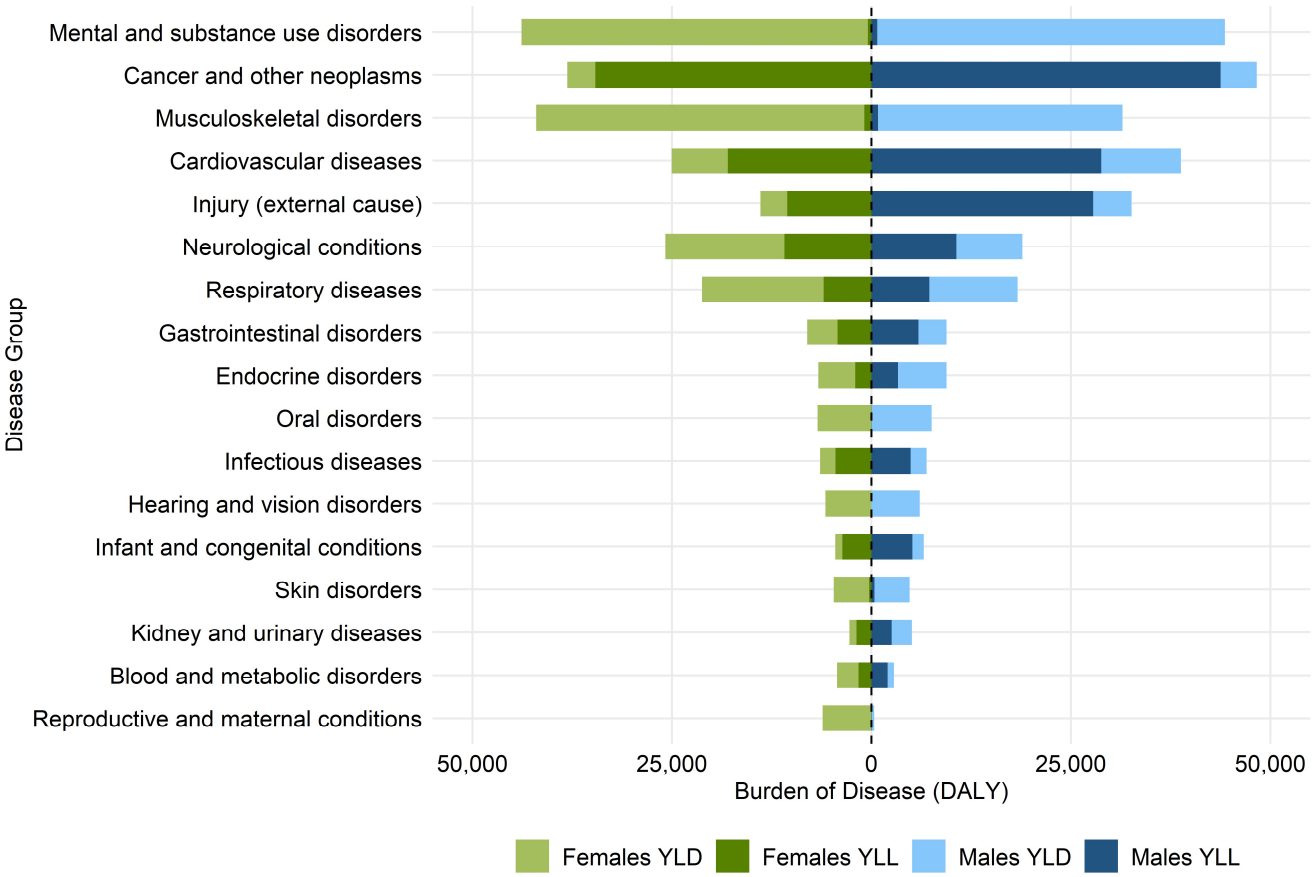

Figure 7. Non-fatal (YLD) and fatal (YLL) burden, by disease group and sex, among the Western Australian population in 2023.

Disease burden by age group, 2023

Most disease groups occur in all age groups; however, some show a marked pattern and are more common at different life stages. These trends can be seen in Figure 8. Injuries and mental and substance use disorders were more common in the early part of life, especially in males, while cancer and other neoplasms, cardiovascular diseases, and neurological conditions increased in later life. The distribution of disease burden at the disease group level was similar between males and females, however females had larger proportions of burden attributable to musculoskeletal disorders and cardiovascular diseases than males. In contrast, males had a higher proportion of burden attributable to injury (external cause) and a lower proportion of neurological conditions compared to females.

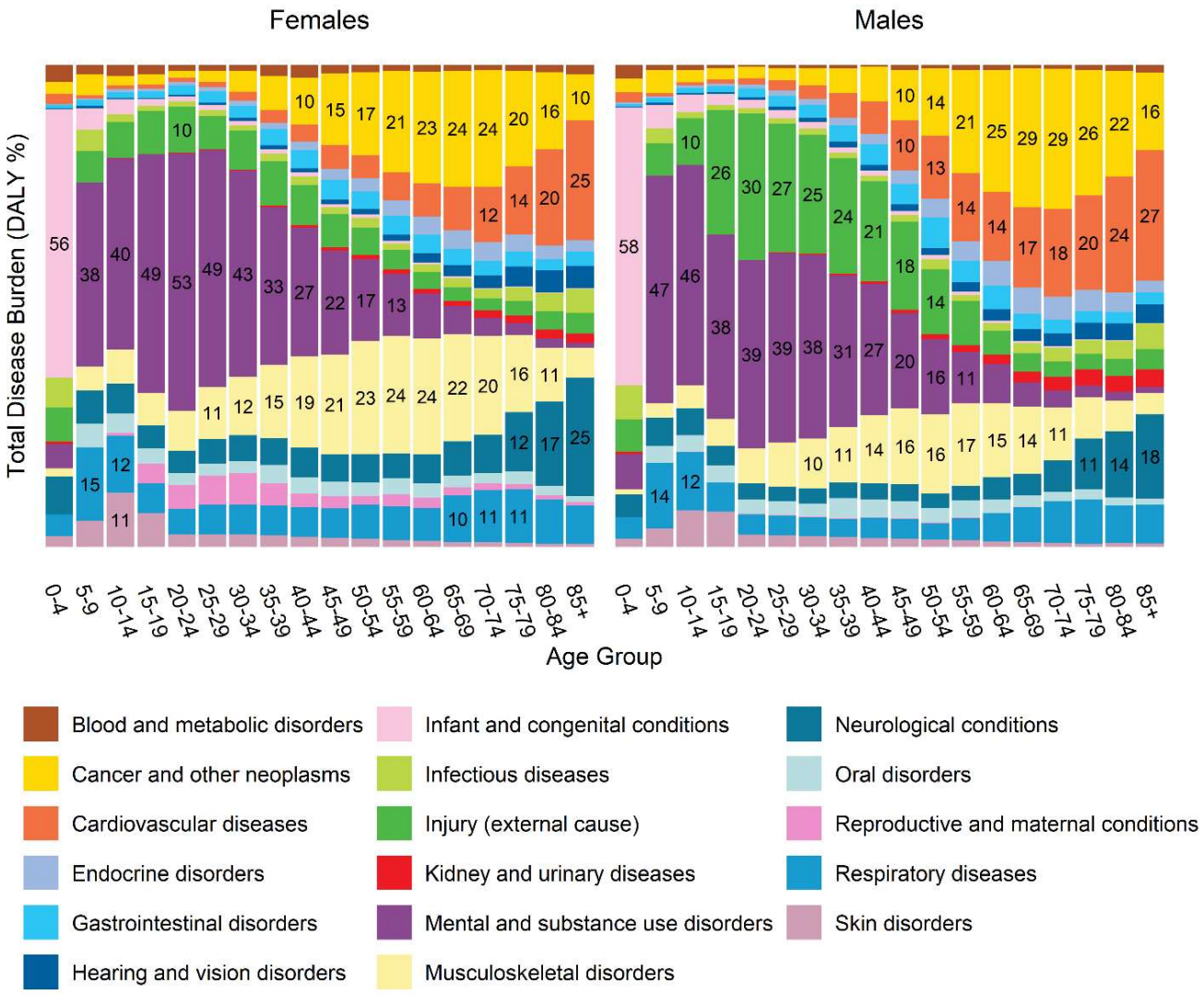

Figure 8. Proportion (per cent) of total burden (DALYs) by age group and sex, among the Western Australian population in 2023. Per cent labels are not shown for disease groups contributing less than 10 per cent of the burden.

Burden by condition, 2023

At the condition level, back pain and problems was the condition with the highest associated DALY rate in 2023 (9.0 per 1,000 population), followed by coronary heart disease (8.9 per 1,000 population) and anxiety disorders (8.3 per 1,000 population). The fatal (YLL) and non-fatal (YLD) components of the fifteen highest ranked conditions for all persons are given in Figure 1.

The pattern differed between males and females. For males, coronary heart disease ranked highest (13.0 per 1,000 population), followed by suicide and self-inflicted injuries (8.8 per 1,000 population), and back pain and other problems (8.7 per 1,000 population). For females, anxiety disorders ranked highest (10.0 per 1,000 population), followed by back pain and problems (9.2 per 1,000 population), and depressive disorders (7.2 per 1,000 population). Figure 9 shows the fifteen highest ranked conditions for males and females and includes the amounts attributed from fatal (YLL) and non-fatal (YLD) components.

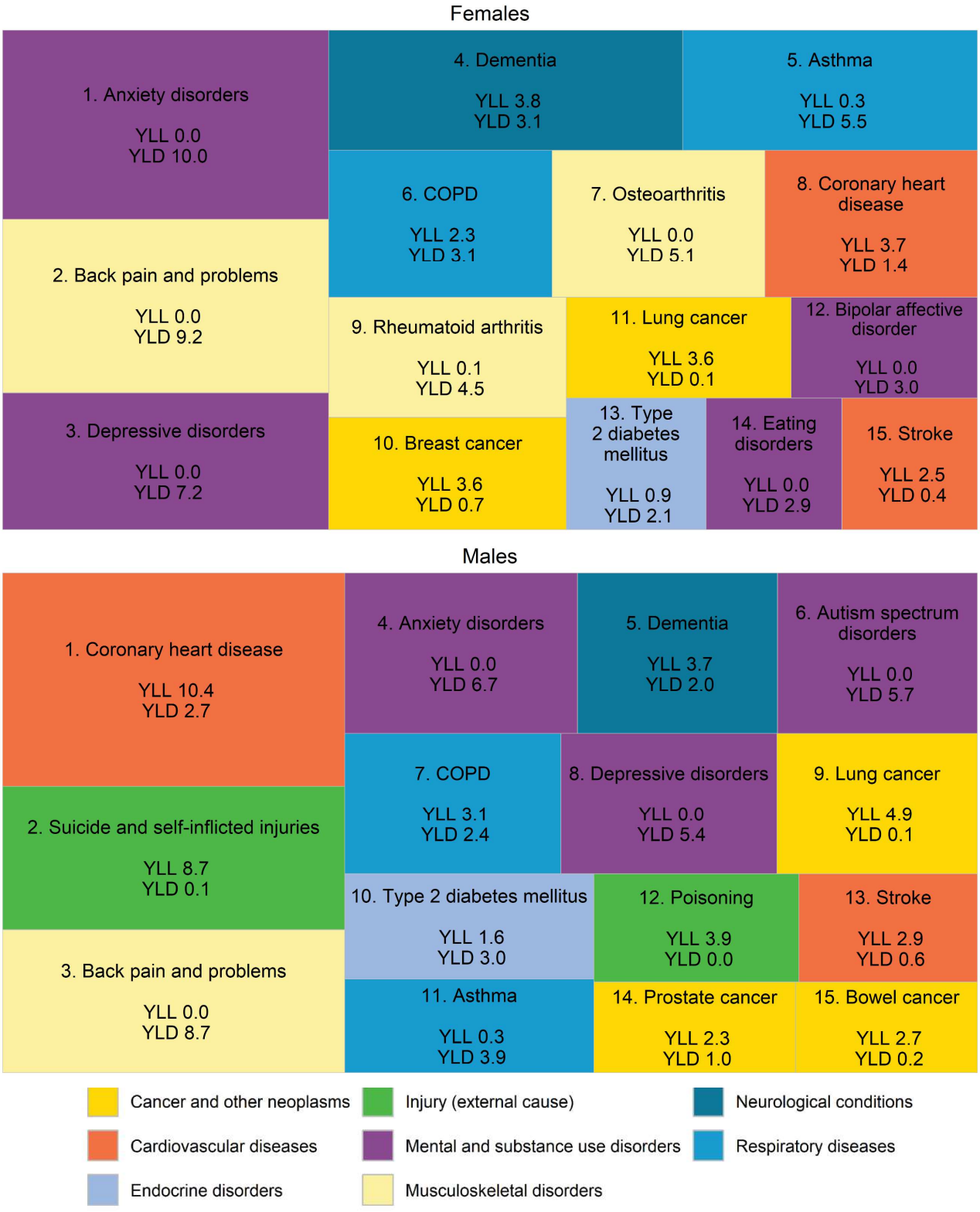

Figure 9. The fifteen conditions with the highest DALY rates per 1,000 population by disease group and sex, Western Australia, 2023. Note: 'other' or 'unknown' conditions, for example, other cardiovascular diseases, have been excluded from the ranking. The size of the box indicates the proportion of the total DALY for that condition.

COVID-19 disease burden, 2023

The disease burden attributable to COVID-19 was calculated for the 2023 study. A total of 4,971 DALYs and a DALY rate of 1.4 years per 1,000 population were attributed to COVID-19. When ordered by DALY rate, COVID-19 was the 32nd highest ranked condition for males and 35th for females. The DALY rate was higher for males (1.6 and 1.3 years per 1,000 population for males and females, respectively). Most of the burden of COVID-19 was fatal (83.1 per cent). COVID-19 had the 15th highest age-standardised YLL rate (18th for males and 13th for females). No fatal burden occurred among females aged under 40 or males under 50 years of age. There was a large difference in COVID-19 burden by age group, with males aged 65 and above and females aged 70 and above having notably higher DALY rates than younger people (Figure 10). Males and females aged 85 and over had DALY rates of over 20 years per 1,000 population.

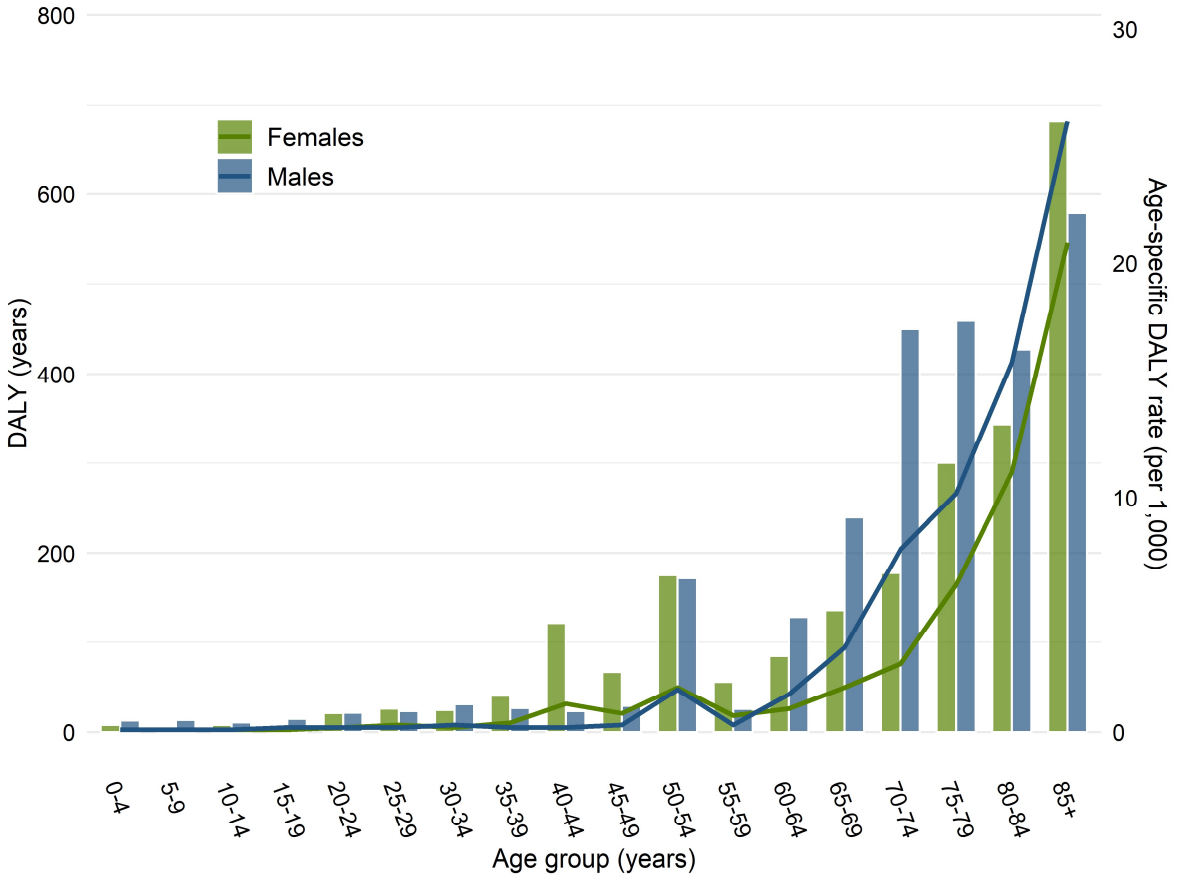

Figure 10. COVID-19 DALY (bars) and age specific DALY rate per 1,000 population (lines) by sex, 2023, Western Australia.

Burden by condition and age group, 2023

At the age group level, higher rates of disease burden were observed in the older age groups and were lower in younger ages. In 2023 the highest age-specific DALY rates overall were for dementia and coronary heart disease (in people aged 80-84 and 85+), chronic obstructive pulmonary disease (COPD), and stroke (in people aged 85+). For 2023, when conditions were ranked by age-specific DALY rate, 49 of the 50 conditions with the highest DALY rates occurred in age groups 50 and above, and 41 of 50 (82 per cent) in age groups 70 and above. The exception was anxiety disorders for people aged 20-24, with an age-specific DALY rate of 18.9 per 1,000 population. Table 2 shows the five highest ranked conditions for each age group.

Table 2. Age-specific DALY rate per 1,000 population for the top 5 ranked conditions for each age group, 2023, Western Australia.

Condition	Age group (years)																	
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+
Dementia															17.4	39.5	84.2	197.0
Coronary heart disease										6.5	9.7	13.4	17.5	23.2	31.3	45.7	69.1	122.9
COPD														19.0	28.9	40.8	45.6	63.9
Stroke																	34.2	57.7
Falls																		39.0
Lung cancer												10.1	15.1	18.2	24.2	25.9		
Type 2 diabetes mellitus													10.8		16.2	19.9	20.7	
Anxiety disorders		4.4	4.4	9.8	18.9	14.3	11.7	10.1	9.4	8.6	7.8							
Back pain and problems					5.8	7.2	8.1	9.5	13.1	14.0	15.2	16.5	16.0	16.6				
Osteoarthritis												8.8	11.4	14.0				
Pre-term birth and low birth weight complications	11.4																	
Suicide and self-inflicted injuries				7.5	10.4	8.5	9.5	9.4	9.5	8.2	6.9							
Depressive disorders			4.5	9.3	10.2	8.9	9.8	7.7	7.6	7.4	6.8							
Rheumatoid arthritis												7.6						
Poisoning								6.7	6.3									
Birth trauma and asphyxia	6.3																	
Eating disorders					5.9	5.7	5.3											
Autism spectrum disorders		4.9	5.9															
Asthma	2.8	4.8	5.4	5.0														
Acne			3.0	5.0														
Sudden infant death syndrome	4.5																	
Cardiovascular defects	4.5																	
Conduct disorder		2.5																
Epilepsy		1.7																

Anxiety disorders and back pain and problems were both ranked in the top five conditions in 10 of 18 age groups. The age-specific rate for anxiety disorders peaked in age group 20-24 years (18.9 DALY per 1,000 population), while back pain and problems were high from ages 55-69 (>16 DALY per 1,000 population). Coronary heart disease and depressive disorders also occurred frequently. However, coronary heart disease rates were much higher than depressive disorders. Both conditions ranked in the top five in 9 of 18 age groups. Coronary heart disease rates were highest in those aged 85 and over (122.9 DALY per 1,000 population), while depressive disorders had the highest rate in the 20-24 age group (10.2 per 1,000 population).

Change in disease burden, 2011 to 2023

The population in Western Australia increased by 22.4 per cent from 2011 to 2023. During that period, the total number of healthy years of life lost increased by 27.6 per cent and the age-standardised DALY rate decreased by 4.4 per cent (from 184.2 to 176.0 years per 1,000 population).

Compared to 2011, the age-standardised DALY rate in 2023 decreased by 8.4 per cent for males and it remained steady for females (Figure 11). Females consistently had a lower overall age-standardised DALY rate at all time points, although the gap between males and females is narrowing.

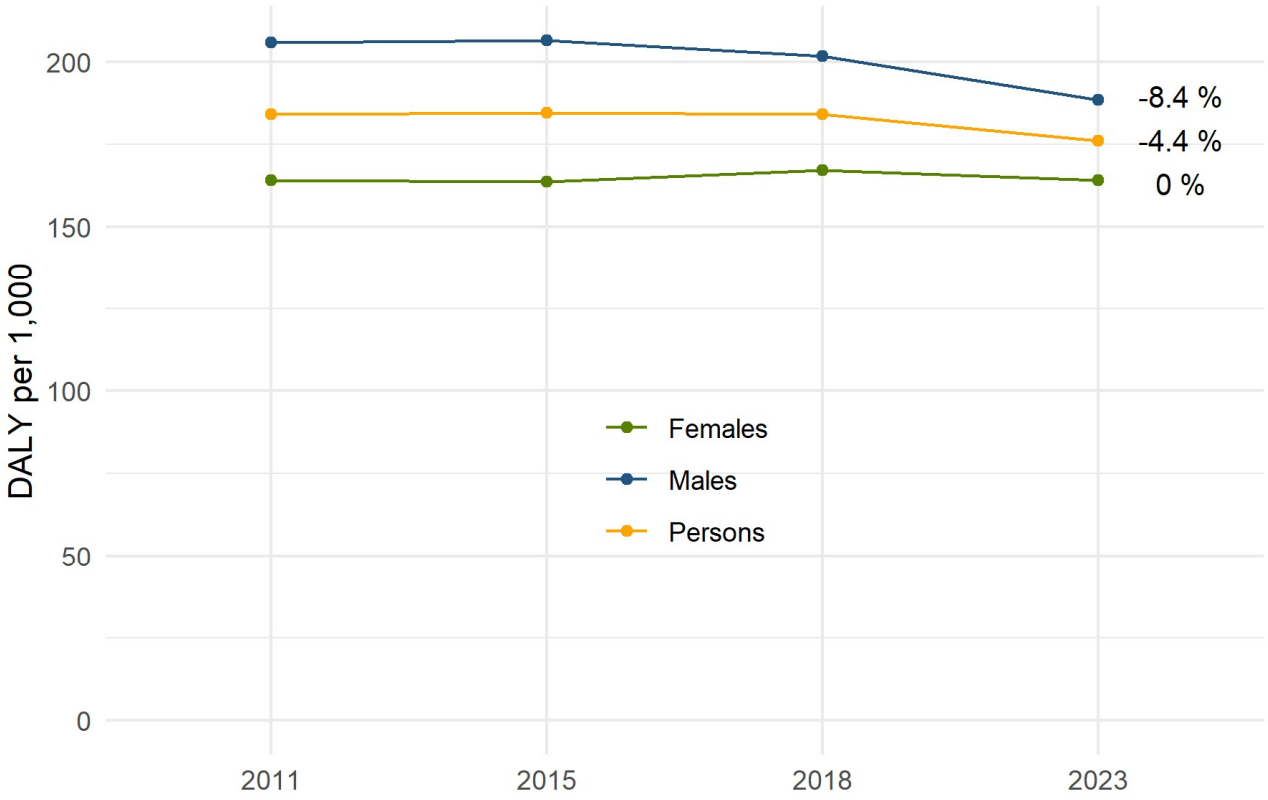

Figure 11. Change in age standardised DALY rate by sex, from 2011 to 2023, Western Australia.

Fatal and non-fatal burden by sex and disease group, 2011-2023

The change in age standardised rate for the top five ranked disease groups from 2011 to 2023 by sex and YLL/YLD component is shown in Figure 12. The largest improvements from 2011 to 2023 were for the fatal burden component of cancer and other neoplasms, which decreased by 9.9 years per 1,000 population in males, and 4.1 years per 1,000 population in females.

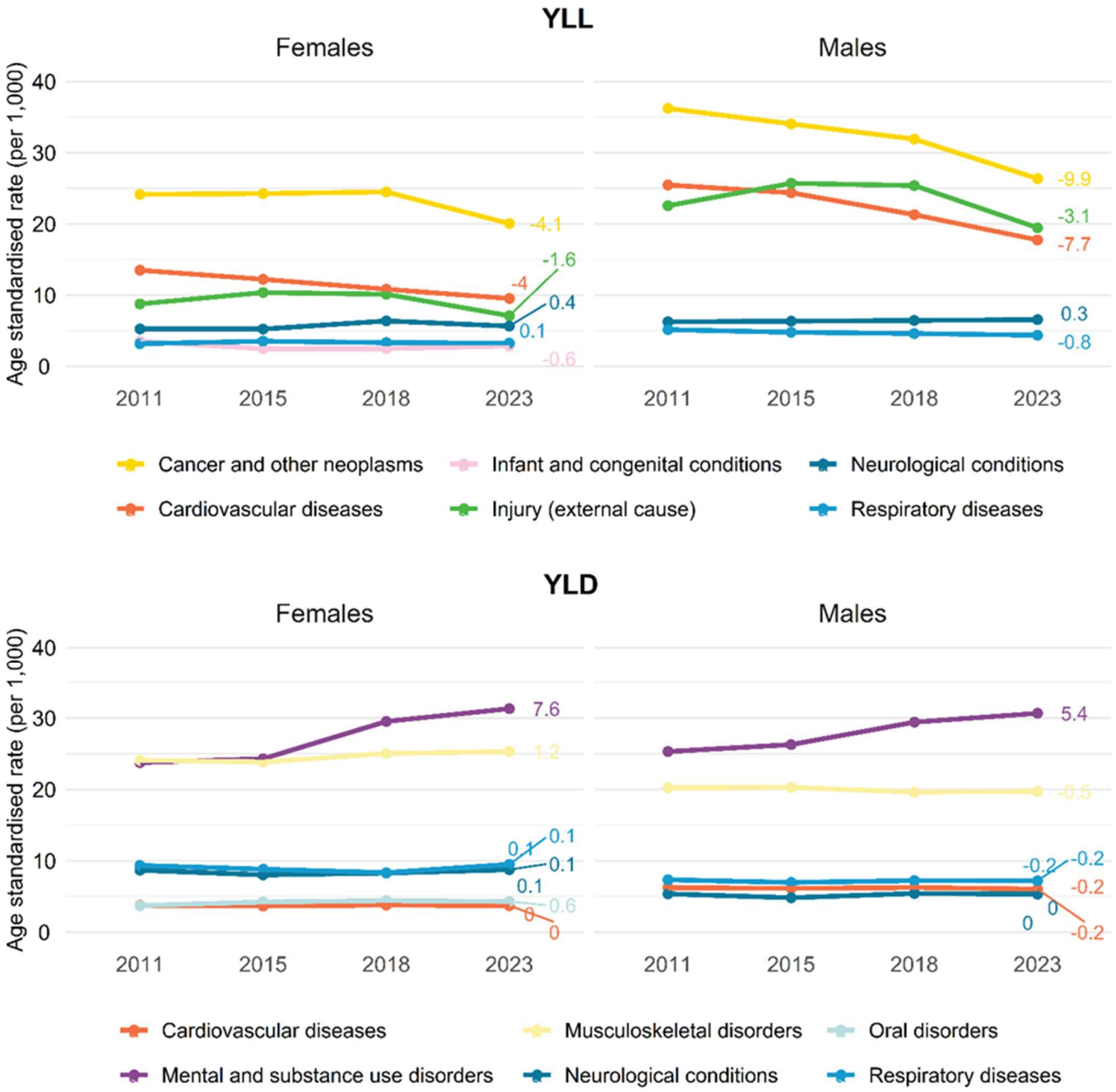

Figure 12. Change in age standardised rate from 2011 to 2023, for the top five disease groups in 2023, by fatal (YLL) and non-fatal (YLD) burden and sex. The number indicates the overall change in ASR (per 1,000) from 2011 to 2023.[1]

[1] Note – Due to methodological changes point estimates and percentage changes for mental and substance use disorders should be used with caution. See “Methodology changes and inter-year comparisons” section in Appendix 1 for further details.

In addition to cancer and other neoplasms, cardiovascular diseases, and injury (external cause) also showed lower fatal burden rates in 2023 compared to 2011 for both males and females. Neurological conditions and respiratory diseases were ranked in the top five for males and females in most years, with age-standardised rates remaining quite stable. For females, infant and congenital conditions were the fifth highest ranked disease group in 2011 and have remained quite stable and similar to age-standardised rates for respiratory diseases.

For non-fatal burden, the top five ranked disease groups for both males and females in most years were mental and substance use disorders, musculoskeletal disorders, neurological conditions, respiratory diseases and cardiovascular diseases. In 2011 the fifth highest ranked disease group for females was oral disorders, with age-standardised rates similar to cardiovascular diseases. Most of these disease groups had minimal change in rates between 2011 and 2023. Mental and substance use disorders had increased DALY rates in 2023 when compared with 2011 (7.6 years per 1,000 females and 5.4 years per 1,000 males), however due to methodology changes these results should be interpreted with caution. Age-standardised rates for musculoskeletal disorders remained steady in males but increased by 1.2 years per 1,000 females during this period.

Fatal and non-fatal burden of disease by age and sex, 2011-2023

Overall, most age groups had decreased DALY rates in 2023 compared to 2011 (Figure 13). For females, half (9 out of 18) of the age groups had reduced DALY rates. The age groups with the largest reduction in DALY rate were males aged 70-74 and 75-79 (17.7 and 19.4 per cent reductions, respectively). The conditions that contributed the most to these changes were coronary heart disease, stroke, melanoma of the skin, lung cancer, and prostate cancer. For females, the greatest improvement was in those aged 5-9 (16.4 per cent reduction), due to reduced DALY rates for epilepsy, cardiomyopathy and cerebral palsy.

Changes in age-specific DALY rates for middle aged people were mixed. For example, males aged 45-49 had a large reduction in 2023 when compared to 2011, attributable to decreased rates of coronary heart disease, liver cancer and oesophageal cancer. However, females in the same age group had increased DALY rates, attributable to increased rates of backpain and problems, asthma and bipolar affective disorder.

The largest increases in DALY rate for each sex was observed in females aged 20-24 (9.9 per cent increase) and males aged 10-14 (6.3 per cent increase). The conditions contributing most to the increase among females aged 20-24 were anxiety disorders, depressive disorders, bipolar affective disorder and eating disorders. For males aged 10-14 the largest contributors were increased DALY rates for suicide and self-inflicted injuries, and asthma.

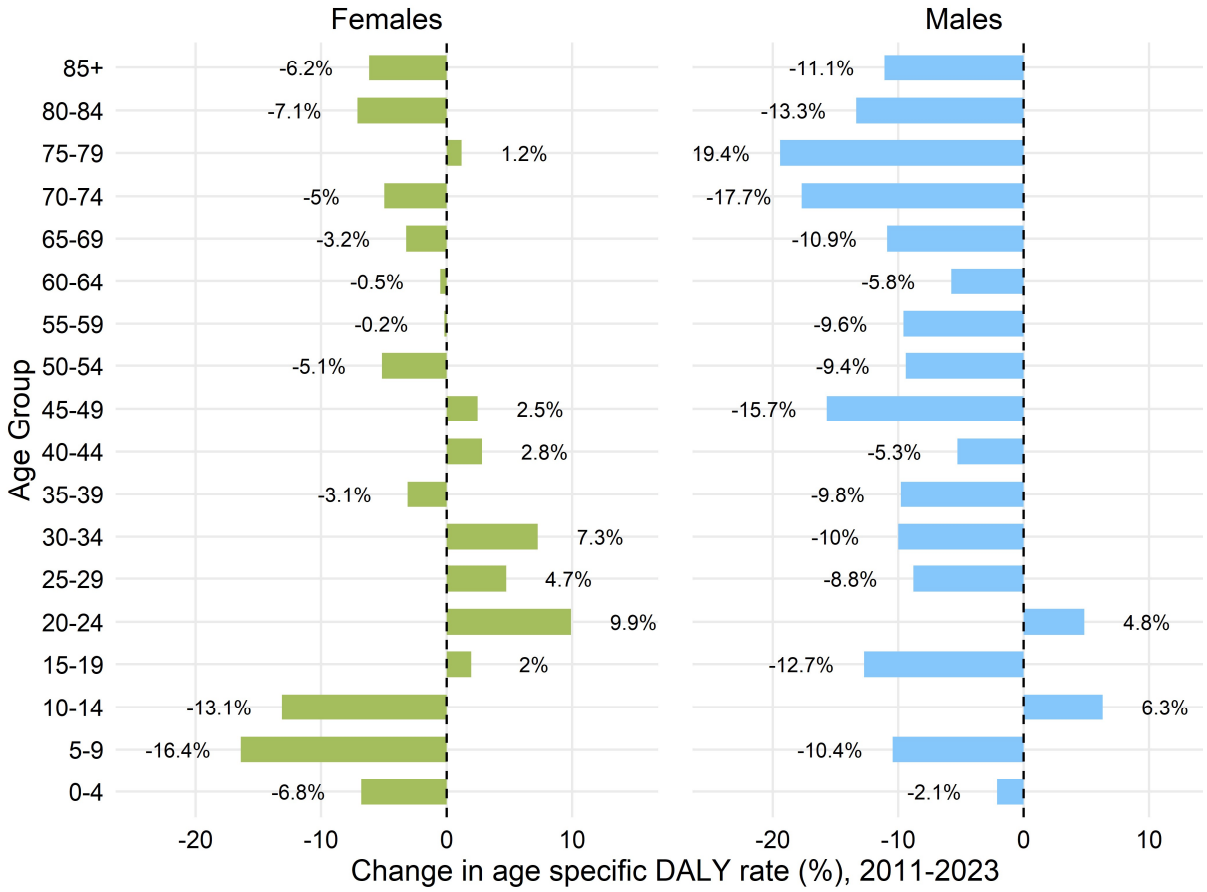

Figure 13. Change in age specific DALY rate by sex and age group, from 2011 to 2023.[2]

Burden by condition, 2011 to 2023

Coronary heart disease, back pain and problems, depressive disorders, suicide and self-inflicted injuries, dementia and anxiety disorders were the six conditions that were ranked within the top five conditions contributing the most to burden of disease at any point from 2011 to 2023. The DALY rate for coronary heart disease decreased consistently over this period, with back pain and other problems overtaking it as the highest ranked condition in 2023. In 2023, dementia was the fourth highest ranked condition, and suicide and self-inflicted injuries decreased to the sixth highest ranked condition. The disease burden attributable to anxiety disorders also increased since 2015, making it the third-highest ranked condition in 2023 (Figure 14).

[2] Note: Age-specific DALY rate totals do not include autism spectrum disorders, accidental poisoning, or other mental and substance use disorders due to methodology changes from 2011 to 2023. See “Methodology changes and inter-year comparisons” section in Appendix 1 for further details.

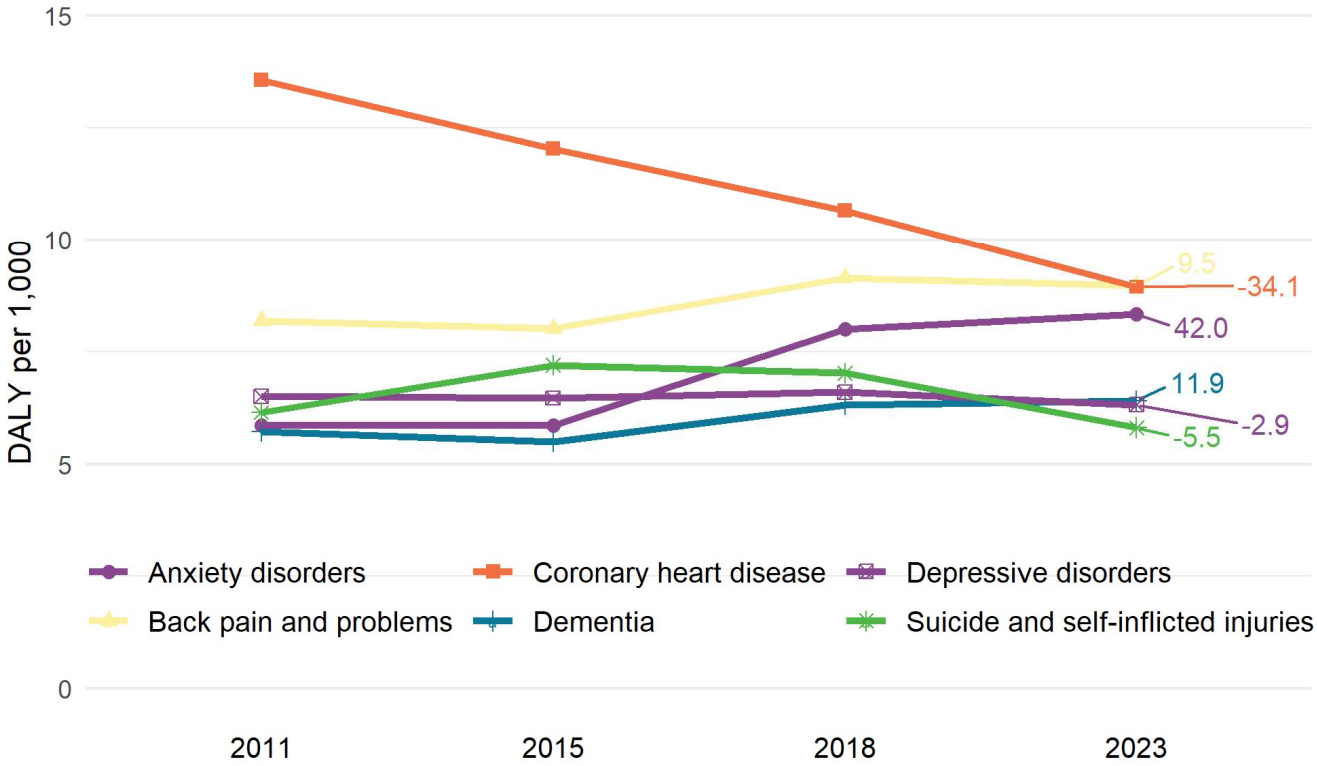

Figure 14. Age standardised DALY rate for the five highest ranked conditions from 2011 to 2023[3].

For males, a total of eight conditions have been ranked in the top five by age standardised DALY rate between 2011 and 2023, with the top three ranked conditions remaining unchanged throughout the period. Coronary heart disease, suicide and self-inflicted injuries, and back pain and other problems, were ranked first to third across the 2011 to 2023 period, respectively. There was greater variation in the fourth and fifth ranked conditions, with lung cancer and COPD in 2011, and anxiety disorders and dementia taking their place in 2023.

For females, six conditions have been ranked in the top five from 2011 to 2023, with the order changing every year. In 2011 the top ranked conditions included back pain and problems, coronary heart disease, and dementia. In 2023 anxiety disorders have become the top ranked condition, followed by back pain and problems, depressive disorders, dementia, and asthma. These rankings and corresponding rates are provided in Table 3. Figure 15 shows how the age-standardised DALY rate has changed for the top fifteen ranked conditions from 2011 to 2023.

[3] Note – Due to methodological changes, ASR estimates and ranks for anxiety disorders and depressive disorders should be used with caution. See “Methodology changes and inter-year comparisons” section in Appendix 1 for further details.

Table 3. Conditions with the largest age standardised DALY rate for males (top) and females (bottom) for 2011 to 2023[4].

	2011		2015		2018		2023	
Males	Rank	ASR	Rank	ASR	Rank	ASR	Rank	ASR
Coronary heart disease	1	19.5	1	17.2	1	15.7	1	13.0
Suicide and self-inflicted injuries	2	8.8	2	10.5	2	10.3	2	8.8
Back pain and problems	3	7.8	3	7.5	3	8.9	3	8.7
Lung cancer	4	7.5	4	6.9	5	6.2	9	5.0
Anxiety disorders	10	4.7	10	4.7	4	6.3	4	6.7
COPD	5	5.9	6	5.6	8	5.5	7	5.4
Dementia	7	5.1	9	4.7	9	5.4	5	5.7
Depressive disorders	6	5.6	5	5.6	7	5.7	8	5.4
Females	Rank	ASR	Rank	ASR	Rank	ASR	Rank	ASR
Anxiety disorders	4	7.1	4	7.1	1	9.7	1	10.0
Back pain and problems	1	8.7	1	8.5	2	9.4	2	9.2
Coronary heart disease	2	8.1	3	7.3	5	5.9	8	5.1
Depressive disorders	3	7.4	2	7.3	3	7.6	3	7.2
Dementia	5	6.0	5	6.0	4	7.0	4	6.9
Asthma	6	5.3	7	5.1	10	4.4	5	5.8
COPD	7	5.2	6	5.4	7	5.5	6	5.3

[4] Note – Due to methodological changes, ASR estimates and ranks for anxiety disorders and depressive disorders should be used with caution. See “Methodology changes and inter-year comparisons” section in Appendix 1 for further details.

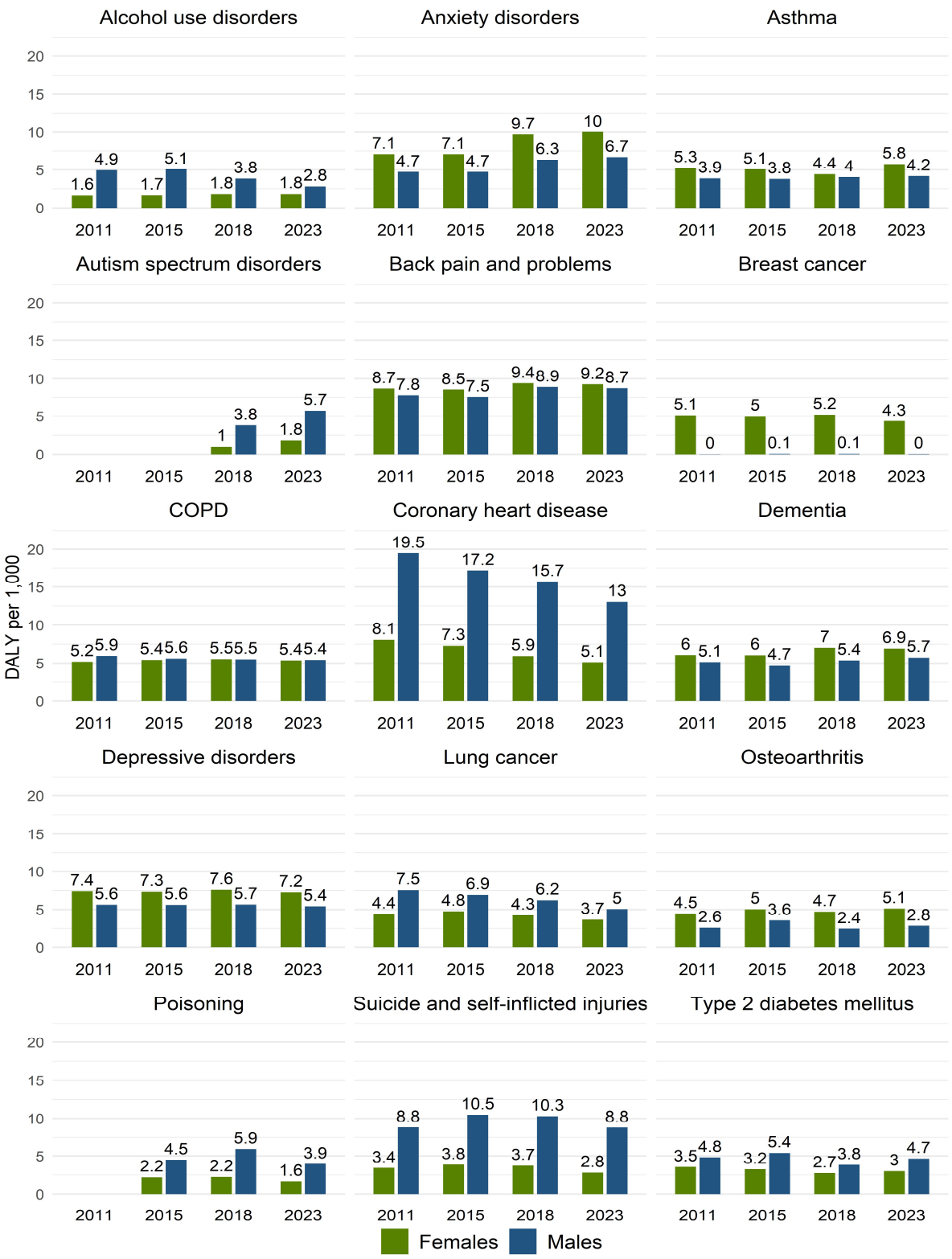

Figure 15. The fifteen highest ranked conditions by age standardised DALY rate, by sex, from 2011 to 2023. [5]

[5] Note: Due to methodological changes, age standardised DALY rate estimates for anxiety disorders, alcohol use disorders, and depressive disorders should be used with caution. Estimates for autism spectrum disorder are not given for 2011 and 2015. Estimates for poisoning are not given for 2011. See “Methodology changes and inter-year comparisons” section in Appendix 1 for further details.

Data Source and Acknowledgements

The Western Australian Burden of Disease Study 2023 (WABoDS 2023) was produced by the Australian Institute of Health and Welfare on behalf of the Department of Health, Western Australia. Estimates produced for WABoDS 2023 are largely comparable with national estimates published in the Australian Burden of Disease Study (ABDS) 2023 (1), and with WA estimates produced as part of ABDS 2018 (3), unless otherwise indicated.

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Enquiries

For feedback, queries or further analysis related to this bulletin, contact epi@health.wa.gov.au.

References

1. Australian Institute of Health and Welfare, 2023, Australian Burden of Disease Study; Technical notes, accessed 29 August 2024. https://www.aihw.gov.au/reports/burden-of-disease/australian-burden-of-disease-study-2023/contents/technical-notes.
2. Australian Institute of Health and Welfare, 2024, *Understanding health and health data*, accessed 17 June 2025. https://www.aihw.gov.au/reports/australias-health/what-is-health.
3. Australian Institute of Health and Welfare, 2018, *Australian Burden of Disease Study: Methods and supplementary material 2018*, Cat. No: BOD 26, accessed 27 February 2025. DOI: 10.25816/te11-2a60. https://www.aihw.gov.au/reports/burden-of-disease/abds-methods-supplementary-material-2018/contents/about.
4. Department of Health Western Australia, 2020, *Western Australian Burden of Disease Study 2015 – Summary Report: 2020.* Perth: Department of Health WA. https://www.health.wa.gov.au/~/media/Corp/Documents/Reports-and-publications/WA-Burden-of-Disease-Study-2015-Summary-report/WA-Burden-of-Disease.pdf
5. Department of Health Western Australia. 2020, *Western Australian Burden of Disease Study 2015 – Aboriginal Report: 2020.* Perth: Department of Health WA. https://www.health.wa.gov.au/~/media/Corp/Documents/Reports-and-publications/WA-Burden-of-Disease-Study-2015-Summary-report/WA-Burden-of-Disease-Aboriginal-Report.pdf
6. Department of Health Western Australia. 2023, *Estimated burden of disease in the Aboriginal population of Western Australia 2011 and 2018.* Perth: Department of Health WA. https://www.health.wa.gov.au/~/media/Corp/Documents/Reports-and-publications/Burden-of-disease/2018-WA-Burden-of-Disease-Aboriginal-Report.pdf

Appendix 1- Technical Notes

The Australian Institute of Health and Welfare (AIHW) was contracted to provide Burden of Disease estimates for Western Australia for 2023, which have been combined with previous study results for Western Australia for 2011, 2015 and 2018. The methodology is primarily based on the Australian Burden of Disease (ABDS) 2018 method (3), with some modifications (1), as outlined in the Methodology changes and inter-year comparison section, below.

Burden of disease estimates for the Aboriginal population, or at the health region or smaller geographical level are not included in the study. However, previous results are available via the WA Department of Health website. The most recent condition level burden of disease estimates by health region can be found in the *Western Australian Burden of Disease Study 2015 Summary report* (4). Condition level estimates for the Aboriginal population are available in the *Western Australian Burden of Disease Study 2015 - Aboriginal report* (5). Disease group estimates are available in the *Estimated burden of disease in the Aboriginal population of Western Australia 2011 and 2018* (6), accessible via the same website.

Methodology changes and inter-year comparisons

The health burden attributable to most conditions have been calculated consistently for all study years allowing inter-year comparison, with exceptions relevant to this Bulletin as follows (1):

- Modelling of YLD estimates for 2018 and 2023 for depressive disorders, anxiety disorders, bipolar affective disorder and alcohol use disorder were updated to incorporate data from the National Survey of Mental Health and Wellbeing (NSMHW) 2020-2022 (Combined cohort). Estimates for 2011 and 2015 were derived using NSMHW 2007 only. Due to the use of different modelling methods between reference years, comparisons between 2011 or 2015 to 2018 or 2023 should be used with caution.

- YLD estimates for 2018 and 2023 for autism spectrum disorder were updated using WA Intellectual Disability Exploring Answers data linked to the National Disability Insurance Scheme. This means YLD estimates for this condition for 2018 and 2023 are not comparable with estimates for 2011 and 2015. As such, estimates for 2011 and 2015 are not presented in this report.

- Changes to the International Classification of Diseases, Tenth Revision (ICD-10) coding practices over time have resulted in increased mortality estimates for accidental poisoning, and decreased mortality estimates due to substance use disorders in 2015, 2018 and 2023 when compared with 2011. As such, YLL (and therefore associated DALY) estimates for 2011 for these two causes are not presented.

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