Australian Government
Australian Institute of Health and Welfare

Australian Burden of Disease Study 2024

Published 12 December 2024

Burden of disease measures the impact of diseases and injuries on a population. It combines the years of healthy life lost due to living with ill health (non-fatal burden) with the years of life lost due to dying prematurely (fatal burden). A portion of this burden is preventable, being due to modifiable risk factors. The Australian Burden of Disease Study (ABDS) 2024 includes estimates of disease burden due to 220 diseases and injuries in Australia in 2024, as well as the disease burden attributed to 20 individual risk factors.

This report presents findings from the ABDS 2024, with estimates for previous years (2003, 2011, 2015, 2018) for comparison. To explore burden of disease estimates in more detail see the Interactive data on disease burden and risk factor burden and the downloadable Data tables.

For the latest subnational burden of disease estimates, see the ABDS 2018 interactive data visualisations by State and territory, Remoteness areas and Socioeconomic groups. For the latest burden of disease estimates for the First Nations population, refer to the Australian Burden of Disease Study: impact and causes of illness and death in Aboriginal and Torres Strait Islander people 2018.

About the ABDS 2024

In the ABDS 2024, disease burden estimates are projected to the publication year (2024). Projected estimates were done for the first time in ABDS 2022, and have been updated annually since. Burden estimates may be revised in the future as more data becomes available.

ABDS 2024 also includes updated estimates of attributable burden due to selected risk factors, which were last updated as part of ABDS 2018.

The latest progress against the burden of disease targets in the National Preventive Health Strategy 2021–2030 is also included.

For more information on methods used in the Study, refer to the Technical notes.

Highlights

5.8 million years of healthy life were lost in 2024

Australians experienced more **burden from living with illness or injury** than from **premature death**

Living with illness or injury	Premature death
54% of total burden	**46%** of total burden

Overweight (including obesity) and **tobacco use** were the leading risk factors contributing to burden in 2024

Coronary heart disease, dementia, back pain, anxiety disorders and COPD were the **top 5 diseases** causing burden in 2024

The rate of total disease burden **decreased by 10%** between 2003 and 2024 after adjusting for age

36% of the burden in Australia in 2024 could have been avoided or reduced, due to modifiable risk factors included in the study

There was a **41% decline in the rate of burden due to tobacco use** between 2003 and 2024

Alcohol use and **illicit drug use** were leading contributors to burden for **males aged 15–44**

What is burden of disease?

Burden of disease analysis is a way of measuring the impact of diseases and injuries on a population (in this report, the population of Australia). It is the difference between a population's actual health and its ideal health, where ideal health is living to old age in good health, without disease or disability.

Burden of disease is measured using the summary metric of disability-adjusted life years (DALY, also known as the total burden). One DALY is one year of healthy life lost to disease and injury. DALY caused by living in poor health (non-fatal burden) are the 'years lived with disability' (YLD). DALY caused by premature death (fatal burden) are the 'years of life lost' (YLL) and are measured against an ideal life expectancy. DALY allows the impact of premature deaths and living with health impacts from disease or injury to be compared and reported in a consistent manner.

If a disease has a high number of DALY, it is considered to have a high burden on the population. Some diseases have high fatal burden due to the number of premature deaths they cause (for example, cancers) or they cause death at younger ages (for example, SIDS). Others have high non-fatal burden due to the number of people living with the condition and/or the severity of the illness (for example, musculoskeletal conditions). The underlying cause of death is used in this report to calculate fatal burden (consistent with most national mortality statistics). This may underestimate the health impact of some diseases which are commonly reported as associated causes of death such as diabetes and chronic kidney disease.

Burden estimates can be reported for diseases or injuries, which describe a specific health problem (for example, dementia). Reporting can also be for a disease group (for example, neurological conditions), which consists of a number of related diseases. There are 220 separate diseases and injuries, and 17 disease groups, in the ABDS.

Which risk factors are included?

Risk factors are attributes, characteristics or exposures that increase the likelihood of a health disorder or other unwanted condition or event.

There are 40 risk factor components or exposures included in this report (such as cannabis and cocaine use) that combine into 20 individual risk factors (such as illicit drug use). The risk factors are categorised as behavioural, dietary, environmental and metabolic/biomedical risks. While this list is extensive, it does not cover all potential risk factors. The risk factors included needed to meet the following criteria:

- have strong evidence of causal association
- are modifiable
- can be measured in the Australian population
- are linked to diseases that occur in Australia, and are measured in the ABDS.

The same list of selected risk factors was used in 2024 as in the 2018 study. Further information on risk factor methods can be found in the Technical notes.

Gaps in the current risk factor list include more distal environmental factors such as climate change-related exposures and hazards, the built environment (including access to transport, open spaces, housing and level of walkability) and natural environment; access to health services and the social determinants of health (such as income, employment, education and housing). Evidence on the importance of these risk factors and their influence on health outcomes is growing (e.g. for example, *Social determinants of health*). There is increasing work underway to measure the burden of disease attributable to climate change internationally and a number of climate-sensitive conditions (such as coronary heart disease and chronic respiratory diseases) are already captured in the ABDS. Assessing the evidence and developing methods suitable for Australia to include some of these risk factors in ABDS 2024 was outside the scope of this study. However, as part of the next major update of the ABDS (2026), a number of new risk factors will be assessed for inclusion, drawing on the latest evidence.

What is attributable burden?

Attributable burden is the amount of burden (morbidity and mortality) that could be reduced if exposure to the risk factor had been avoided. It uses evidence in the literature or direct evidence from Australian data sources on the links between a risk factor (for example, tobacco use) and a disease or injury outcome (for example, lung cancer), and the amount of increased risk of morbidity or mortality due to exposure to the risk factor. For most risk factors in this study, exposure to the risk factor was estimated using high-quality survey data. For information about the quality of data inputs, see *Australian Burden of Disease Study: Methods and supplementary material 2018*.

Issues with adding risk factor estimates together

For the majority of the analysis in this report, the risk factors are analysed independently. It is important to note that it is not possible to add or combine the separate estimates for different risk factors without further analysis, due to complex pathways and interactions between them. For example, if the burden of coronary heart disease attributable to physical inactivity and to high blood plasma glucose were added, the amount of coronary heart disease burden attributable would be an overestimate. This is because these risk factors can be found along the same causal pathway—for example, where low physical activity increases the risk of having high blood plasma glucose levels, which, in turn, increases the risk of coronary heart disease.

Further analysis is needed to combine risk factors. In this report, an analysis has been undertaken to estimate the attributable burden for 'all risk factors combined' (referred to as the 'joint effect' of all risk factors in this report) which adjusts estimates using mediation factors to account for risk factors on the same causal pathway and prevents the attributable burden due to multiple risk factors from exceeding the total burden for a given disease. Further detail on the methods used for this combined risk factor analysis is described in *Australian Burden of Disease Study: methods and supplementary material 2018*. Analysis has not been undertaken to adjust estimates in the same way (using the joint effect and mediation factors) for individual risk factors in this study. This will be explored further in the next major update of the ABDS.

Living with illness or injury accounts for just over half of the overall disease burden

In 2024, Australia lost 5.8 million years of healthy life (total burden, DALY) or 0.2 DALY per person, due to:

Living with illness or injury (non-fatal)

54%

of total burden

Dying prematurely (fatal)

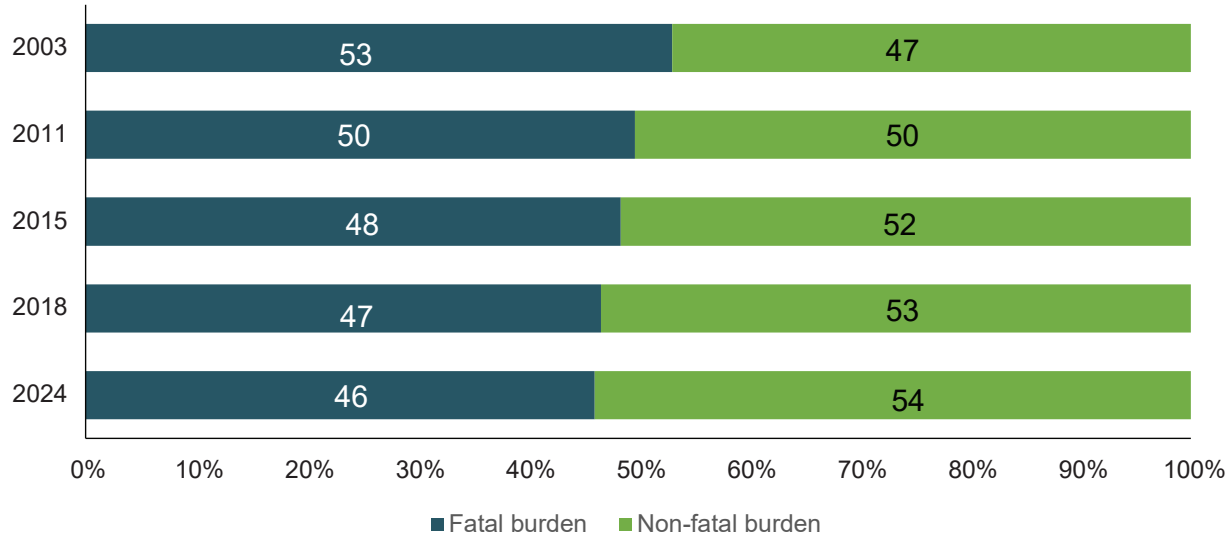
46%

of total burden

Living with illness or injury (non-fatal burden, YLD) caused more disease burden than dying prematurely (fatal burden, YLL). Between 2003 and 2024, there has been a moderate shift from fatal burden to non-fatal burden being the biggest contributor to total burden (Figure 1). This is mostly driven by fewer premature deaths in recent years. The proportion of total burden that is due to fatal burden has decreased at a slower rate between 2018 and 2024 than between 2003 and 2018.

To further explore the contribution of fatal and non-fatal burden over time, see the interactive data visualisations: Burden of disease in Australia and Fatal vs. non-fatal burden.

Figure 1: Proportion (%) of total burden due to fatal and non-fatal burden between 2003 and 2024



Source: AIHW Australian Burden of Disease Database.

Long-term improvements in fatal burden but recent increases in non-fatal burden

Between 2003 and 2024 there was a 39% increase in the total number of DALY (from 4.2 million to 5.8 million) which was mainly due to increases in population size. Over the same period, the crude rate of total disease burden was relatively similar (212 DALY per 1,000 population in 2003 compared with 216 DALY per 1,000 population in 2024). Underlying this was a 12% decrease in the rate of fatal burden while the rate of non-fatal burden increased by 17% over that period.

After adjusting for population ageing, there was an 10% decline in the rate of total burden between 2003 and 2024 (Figure 2). This was driven by a 26% decrease in the rate of fatal burden, as the non-fatal burden rate increased by 7%. Note that when compared with 2018, rates for 2024 were higher for non-fatal burden, lower for fatal burden and similar for total burden after adjusting for age (Figure 2).

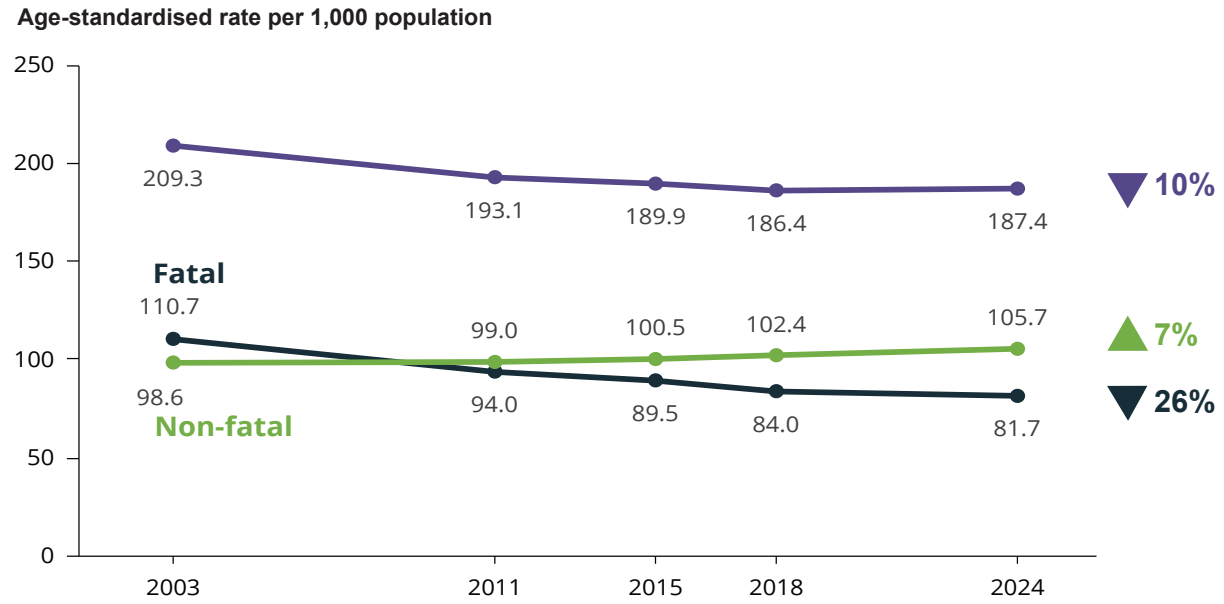
Some of this difference may be attributed to the COVID-19 pandemic which had both direct health effects (from the virus itself) and indirect health effects (from COVID-19 acting as a risk factor for other diseases and the public health measures and restrictions put in place) (AIHW 2022). Therefore, simply subtracting the estimated disease burden due to COVID-19 from the total burden does not necessarily reflect the true disease burden experienced had the COVID-19 pandemic not occurred. This is an area requiring further analysis and exploration.

Interpreting crude and age-standardised rates

Crude rates show the actual rate of disease burden in each year, whereas age-standardised rates show the rate of burden if the population age structure did not change over time. Given that Australia's population is ageing, and the incidence of most chronic diseases increases with age, considering both crude and age-standardised rates is important to determine whether or not changes in disease burden are largely a result of an ageing population.

To further explore changes over time, see the interactive data visualisation: Comparisons over time.

Figure 2: Change in the age-standardised total burden (DALY), fatal burden (YLL) and non-fatal burden (YLD) rate (per 1,000 population) between 2003 and 2024



Source: AIHW Australian Burden of Disease Database, Data tables.

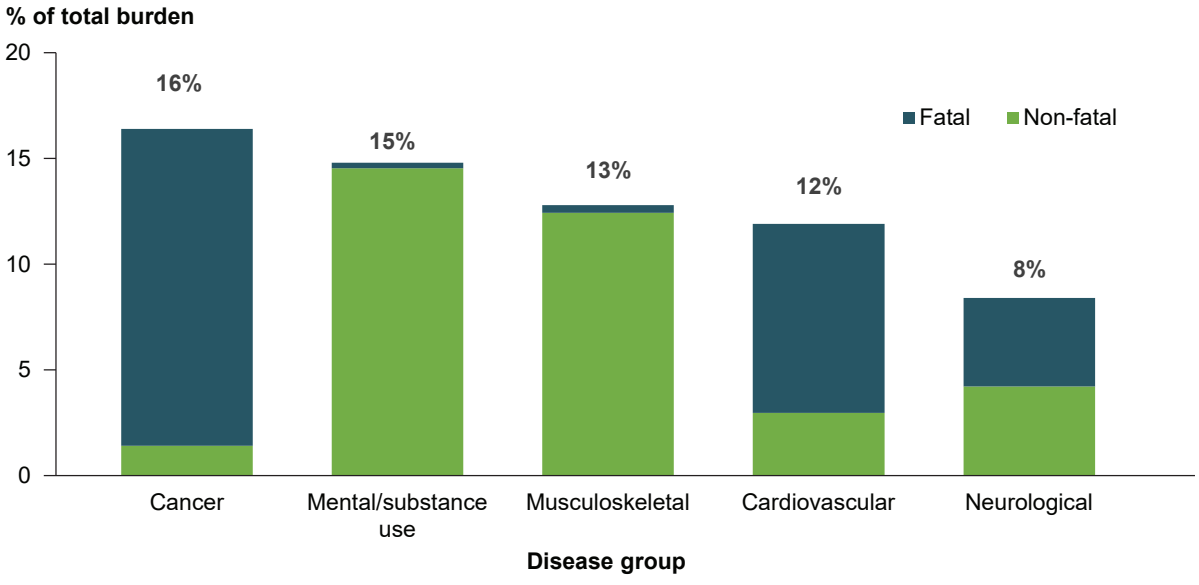
Chronic diseases cause the majority of health burden

In 2024, the 5 disease groups causing the most burden were cancer, mental health conditions & substance use disorders, musculoskeletal conditions, cardiovascular diseases and neurological conditions (Figure 3).

Together these disease groups accounted for around two-thirds (64%) of the total disease burden. These disease groups include mostly chronic, or long-lasting, conditions.

The contribution of fatal and non-fatal burden to the total burden varies by disease and injury. To explore the contribution of fatal and non-fatal burden to total burden by disease group or by specific disease or injury, see the interactive data visualisation: Fatal vs non-fatal burden.

Figure 3: Proportion (%) of total burden, and fatal and non-fatal composition of total burden, for the leading 5 disease groups in 2024



Source: AIHW Australian Burden of Disease Database, Data tables.

Coronary heart disease the leading specific cause of burden

When considering individual diseases, coronary heart disease was the leading cause of burden for every reference year in the Study. However, the burden from coronary heart disease showed the largest absolute reduction over time and was mainly driven by large declines in fatal burden.

The leading 5 diseases that caused burden (% of total DALY) in 2024:

1. Coronary heart disease (5.5%)
2. Dementia (4.5%)
3. Back pain & problems (4.3%)
4. Anxiety disorders (3.9%)
5. Chronic obstructive pulmonary disease (COPD) (3.7%)

To explore burden for individual diseases and changes in disease burden over time, see the interactive data visualisation: Disease/injury-specific summary.

COVID-19 burden in 2024

An estimated 0.8% of total disease burden in 2024 was due to the direct effects of COVID-19. It ranked 36th among the specific diseases in 2024. The burden from COVID-19 was predominantly fatal (83%) and was higher in males. The burden was highest in those aged 80–89 years. The burden due to COVID-19 in 2024 was lower than that reported in 2023 (AIHW 2023) although estimates are not strictly comparable due to differences in methods and data quality.

COVID-19 was the 19th leading cause of fatal burden (contributing 1.4%) and 51st leading cause of non-fatal burden (contributing 0.2%) in 2024.

For information on how disease burden due to COVID-19 was estimated, refer to the Technical notes.

Males and females experience disease burden differently

Overall, and for most age groups, males experienced more total burden than females. This was driven by males having higher rates of fatal burden.

In 2024, after adjusting for different age structures, males experienced 1.2 times the rate of total burden and 1.6 times the rate of fatal burden of females, while females experienced 1.1 times the rate of non-fatal burden of males.

Mental health conditions & substance use disorders was the leading disease group causing burden for females (15%), while Cancer was the leading disease group causing burden for males (18%).

In 2024, the leading specific causes of total burden among males were coronary heart disease (7.2%), back pain & problems (4.0%) and suicide & self-inflicted injuries (4.0%). Among females, the leading specific cause was dementia (5.7%), followed by anxiety disorders (4.9%) and back pain & problems (4.5%). These rankings were the same as reported for 2023.

Males experienced 3 times the amount of burden due to suicide & self-inflicted injuries and 2 times the amount of burden from coronary heart disease than females. Females experienced more burden than males from dementia, anxiety disorders and osteoarthritis.

Diseases that caused the most burden over the life course

Australians experience health loss from different diseases and injuries at various stages of life. Respiratory diseases caused burden throughout the life course, especially in children and older people. Mental health conditions & substance use disorders dominated the first half of the life course, while musculoskeletal conditions, cardiovascular diseases and cancer feature more prominently in the latter part of the life course. Neurological conditions (namely dementia) are a leading cause of burden in older Australians (aged 65 and over).

Leading causes of burden at various ages can be different for females and males (Figure 4). For example:

- For those aged 15–44, anxiety disorders was the leading specific cause of burden in females, while for males it was suicide & self-inflicted injuries. Asthma and eating disorders also featured among the 5 leading causes of burden in females. Alcohol use disorders and poisoning featured among the leading 5 causes of burden for males.
- For women aged 45–64, back pain & problems, osteoarthritis, anxiety disorders, breast cancer and rheumatoid arthritis were the leading 5 specific causes of burden. For men it was coronary heart disease, back pain & problems, suicide & self-inflicted injuries, lung cancer and chronic liver disease.
- Osteoarthritis was among the 5 leading causes of burden for women aged 65–84, while type 2 diabetes mellitus was among the 5 leading causes of burden for men in this age group.
- Dementia and coronary heart disease were the leading causes of burden in both men and women aged 85 years and over.

Figure 4: Leading causes of total burden (DALY '000; proportion %), by sex and age group, 2024

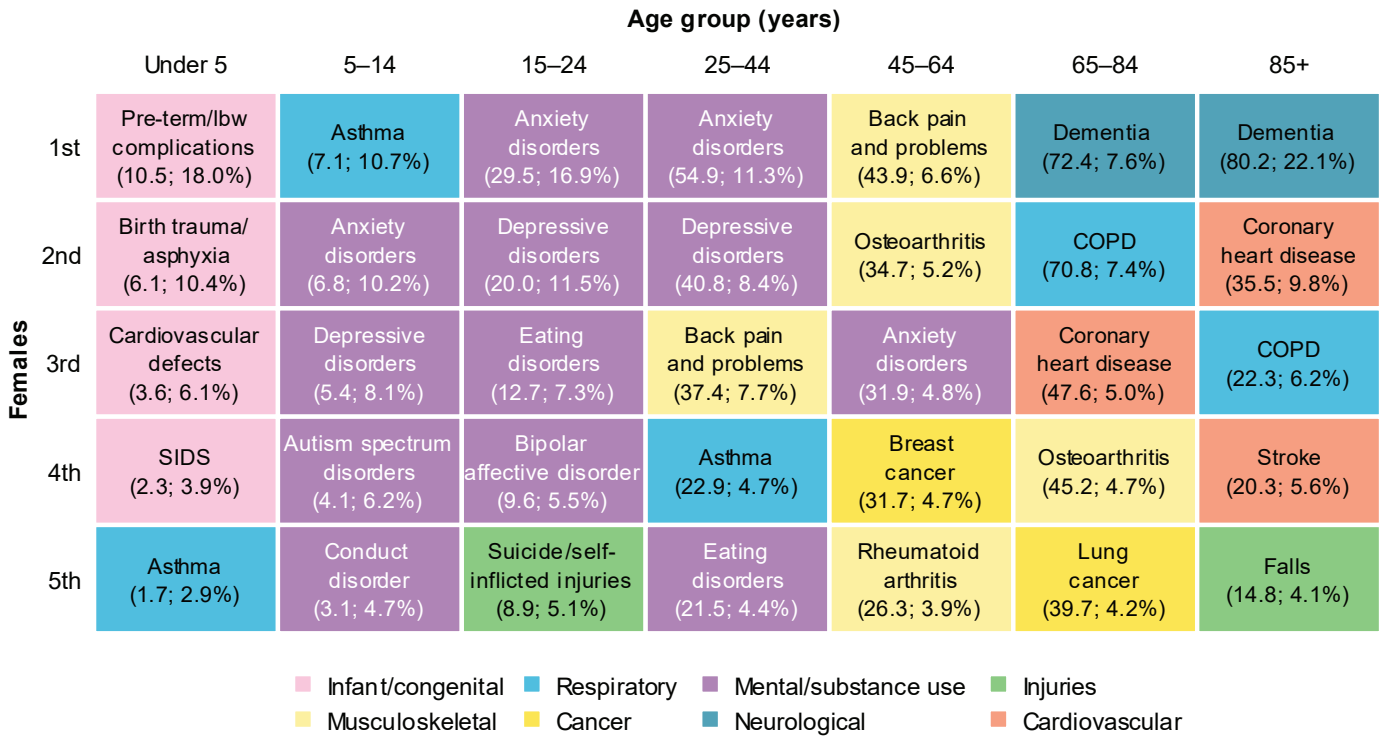
Age group (years)

Males	Under 5	5–14	15–24	25–44	45–64	65–84	85+
1st	Pre-term/lbw complications (12.5; 16.4%)	Autism spectrum disorders (13.6; 15.9%)	Suicide/self-inflicted injuries (23.5; 12.2%)	Suicide/self-inflicted injuries (56.7; 10.6%)	Coronary heart disease (61.3; 8.0%)	Coronary heart disease (107.5; 9.8%)	Dementia (39.0; 14.2%)
2nd	Birth trauma/ asphyxia (9.7; 12.7%)	Asthma (11.0; 12.8%)	Anxiety disorders (19.5; 10.1%)	Back pain and problems (36.6; 6.8%)	Back pain and problems (44.8; 5.8%)	COPD (64.3; 5.9%)	Coronary heart disease (36.8; 13.4%)
3rd	Cardiovascular defects (4.3; 5.6%)	Anxiety disorders (7.8; 9.0%)	Depressive disorders (13.0; 6.8%)	Anxiety disorders (32.8; 6.1%)	Suicide/self-inflicted injuries (30.5; 4.0%)	Dementia (58.6; 5.4%)	COPD (15.7; 5.7%)
4th	SIDS (3.1; 4.1%)	Conduct disorder (5.1; 6.0%)	Autism spectrum disorders (9.1; 4.7%)	Depressive disorders (29.5; 5.5%)	Lung cancer (28.1; 3.6%)	Lung cancer (53.6; 4.9%)	Stroke (13.5; 4.9%)
5th	Asthma (2.6; 3.4%)	Depressive disorders (4.6; 5.4%)	Alcohol use disorders (9.1; 4.7%)	Poisoning (26.8; 5.0%)	Chronic liver disease (26.4; 3.4%)	Type 2 diabetes (42.1; 3.9%)	Prostate cancer (11.7; 4.3%)

Infant/congenital · Respiratory · Mental/substance use · Injuries · Musculoskeletal
Cardiovascular · Cancer · Gastrointestinal · Neurological · Endocrine

(continued)

Figure 4 (continued): Leading causes of total burden (DALY '000; proportion %), by sex and age group, 2024



COPD = chronic obstructive pulmonary disease; lbw = low birthweight; SIDS = sudden infant death syndrome.

Source: AIHW Australian Burden of Disease Database, Data tables.

For more information on the leading causes of total, fatal and non-fatal burden in Australia by sex and age and to explore how this has changed over time, see the interactive data visualisation: Leading causes of disease burden.

Changes in leading specific causes of disease burden over time

Age-standardised rates are often used to look at changes in health outcomes such as disease burden over time. They show the rate of burden if the population age structure did not change over time, which can indicate whether changes in disease burden are largely a result of an ageing population. This is important, as the rate of many of the leading causes of disease burden in Australia increase with age.

Over time, the leading individual causes of disease burden in Australia have changed (Figure 5). Between 2003 and 2024, the rate of total burden, after adjusting for age:

- decreased for coronary heart disease (by 58%), stroke (54%), rheumatoid arthritis (35%), lung cancer (33%) and COPD (13%).
- substantially increased for dementia (42%), and its rank increased from the 12th leading cause of total burden in 2003 to the 5th leading cause in 2024. However, this increase is partly due to changes in practices of coding deaths due to dementia (see the Comparisons over time interactive data visualisation or refer to the Technical notes).
- increased for anxiety disorders (34%), osteoarthritis (26%), suicide & self inflicted injuries (19%), depressive disorders (18%), back pain & problems (8.7%) and asthma (8.5%).

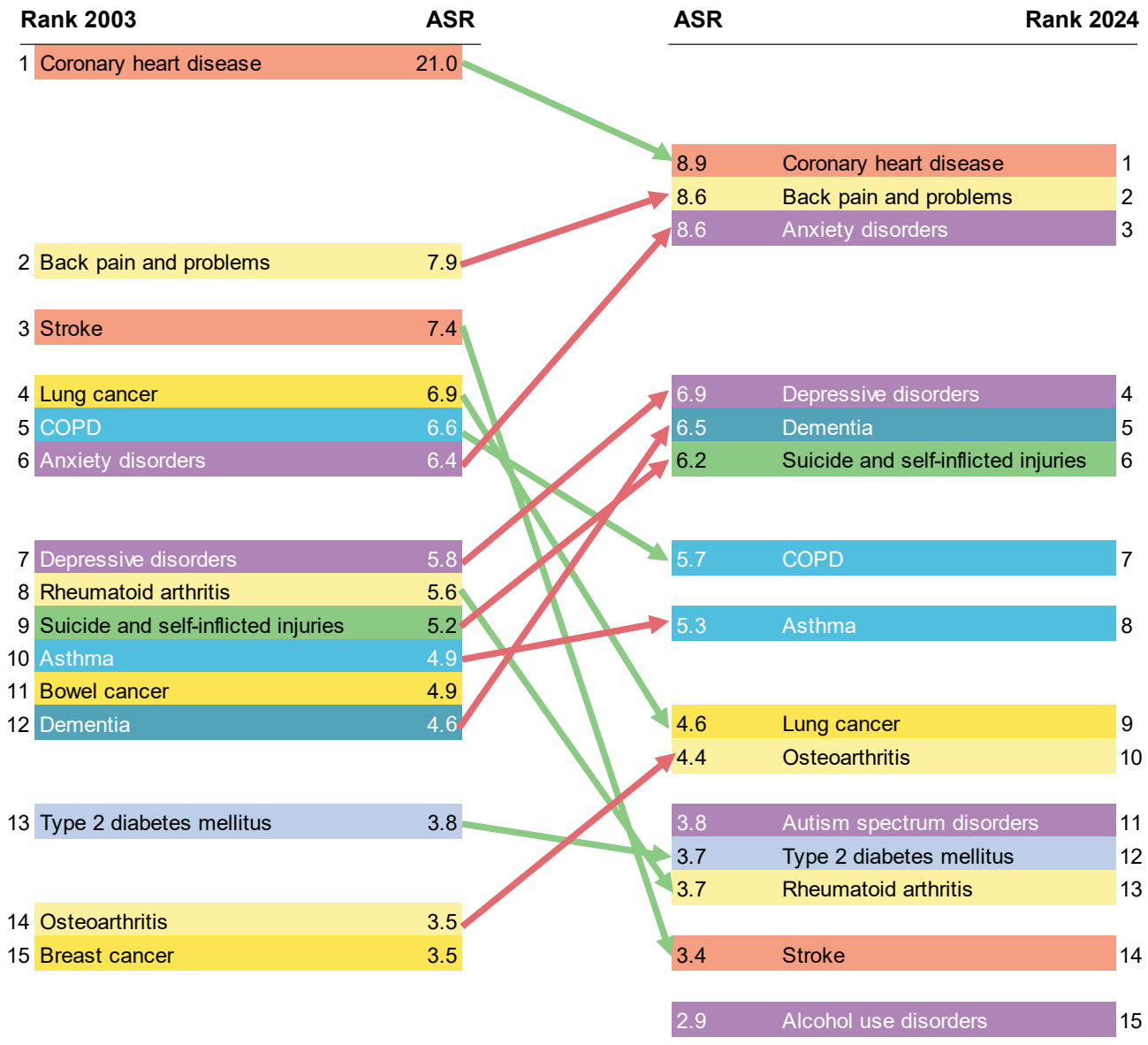
Coronary heart disease and stroke were the leading causes of fatal burden in 2003, however, premature deaths from these causes have decreased over time. Back pain & problems was the leading cause of non-fatal burden in 2024.

There were differences in the leading causes of total burden, and therefore their ranking, when looking at age-standardised burden rates compared with crude rates (based on the number of DALY). The rankings of

age-related conditions (such as dementia, COPD and osteoarthritis) were often lower in more recent years when ranking by age-standardised rates compared with crude rates. For example, dementia was ranked 5th based on the age-standardised rate, and ranked 2nd based on the crude rate. This indicates that an ageing population is one of the factors that influence changes to Australia's leading causes of disease burden.

To explore changes in the leading causes of disease burden over time (by number and age-standardised rate) for 2024 compared with each of the previous years (2003, 2011, 2015 and 2018) see the interactive data visualisation: Leading causes of disease burden.

Figure 5: Change in disease ranking by total burden (DALY per 1,000 population), 2003 and 2024



ASR = age-standardised rate; COPD = chronic obstructive pulmonary disease.

Notes

1. Diseases are presented in descending order, from highest ASR to lowest ASR, with arrows indicating either an increase (red) or decrease (green) in the ASR over time.
2. 'Other musculoskeletal conditions' are excluded from the rankings.
3. There were changes in practices of coding deaths due to dementia; therefore, caution is recommended when interpreting changes over time for dementia burden.
4. Since the ABDS 2018, the Intellectual Disability Exploring Answers (IDEA) data has been linked to the National Disability Insurance Scheme (NDIS), resulting in higher ascertainment of individuals with autism spectrum disorders. Estimates for 2018 were revised to allow comparisons with 2024 estimates, however, estimates for 2024 are not comparable to estimates for 2015 and earlier due to the addition of a new ascertainment source to the IDEA.

Source: AIHW Australian Burden of Disease Database, Data tables.

Australians living longer but no change in the proportion of life spent in full health

Australians are, on average, living longer and spending more years in full health (meaning no disease or injury), compared with 20 years ago. Years lived in full health is also referred to as health-adjusted life expectancy (HALE). However, years lived in ill health are also increasing, resulting in no change in the proportion of life spent in full health.

Interpreting changes in HALE over time

Whether or not the amount of ill health experienced by older Australians has increased has been the subject of ongoing debate. Assessment of how the relationship between life expectancy and HALE has changed over time (by analysing the ratio and difference between the 2 measures) provides an opportunity to examine which of the scenarios of healthy ageing – compression or expansion of morbidity, or equilibrium – provides the best insight into whether longer lives are healthier lives. These 3 health scenarios are described as follows:

Compression of morbidity

In this scenario, increasing life expectancy is accompanied by better health. As the population ages, there is also a delay in the age of onset of disease. As such, we can expect a reduction in the proportion of life spent in ill health (Fries 1980) as most morbidity occurs at the end of life.

Expansion of morbidity

In this scenario, increasing life expectancy is accompanied by more illness and injury before death. As chronically ill people survive for longer, we can expect an increase in the proportion of their lives spent with illness (Gruenberg 1977).

Dynamic equilibrium

In this scenario, the proportion of the lifetime spent living with illness remains relatively constant over time. As life expectancy increases, so does the onset and progression of disease. However, as diseases become more prevalent, they may also be less severe (Howse 2006). If the ratio of HALE to total life expectancy is constant, there is an equilibrium.

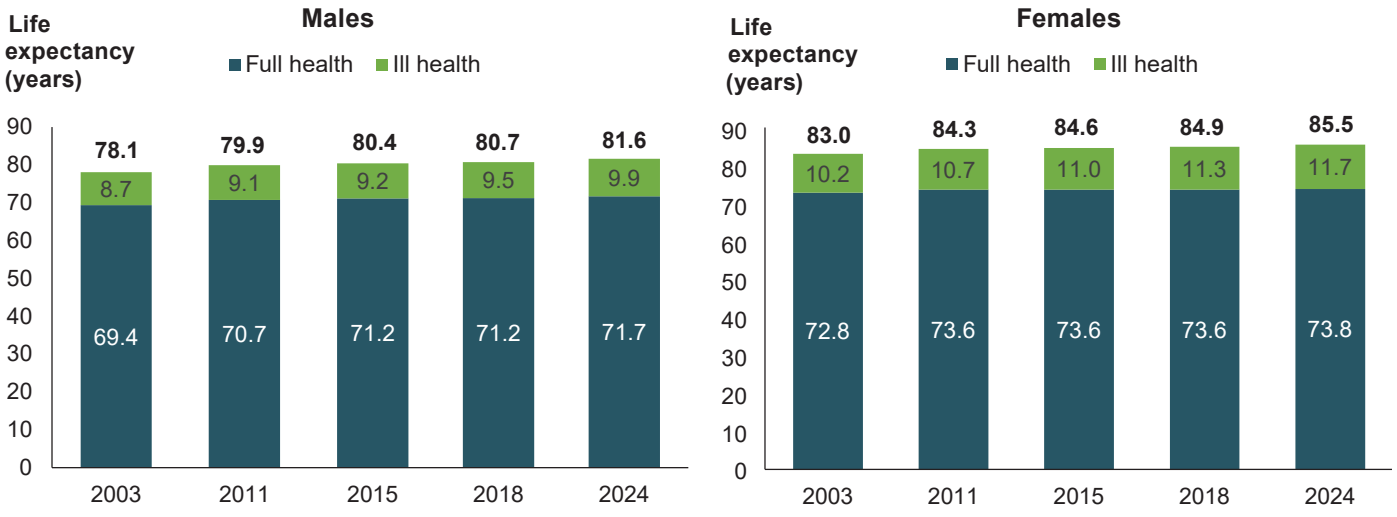
Findings from HALE analysis suggest a scenario of equilibrium between 2003 and 2024: the proportion of time spent living in ill health has remained relatively constant.

Males and females born in 2024 could expect to live an average of 88% and 86% of their lives in full health respectively (71.7 years of the 81.6 years of average life expectancy for males and 73.8 years of the 85.5 years of average life expectancy for females).

Between 2003 and 2024, males gained 3.5 years in life expectancy and 2.3 years in HALE (Figure 6). The corresponding gains for females were 2.5 years in life expectancy and 1.0 years in HALE. Despite these gains in life expectancy and healthy years (which were greater for males than females), the average time spent in ill health increased by 1.2 years for males and 1.5 years for females. The average proportion of life spent in full health over this period was relatively stable (ranging from 89% to 88% for males and from 88% to 86% for females).

These changes are illustrated in Figure 6, showing the split in life expectancy that is average number of healthy years (HALE) and average years in ill health. The results suggest that, at the national level, gains in healthy years at birth are largely comparable with gains in life expectancy at birth. It suggests an equilibrium of morbidity in Australia over this period.

Figure 6: Life expectancy at birth as years lived in full health (HALE) and years lived in ill health, by sex, between 2003 and 2024



Note: For more information on HALE and the life expectancies used, refer to Technical notes.

Source: ABS published life tables, AIHW derived life tables for 2024, AIHW Australian Burden of Disease Database, Data tables.

Changes over time in HALE and life expectancy at age 65 followed a similar pattern as at birth. Life expectancy and HALE at age 65 increased between 2003 and 2024 by 2.6 and 2.0 years, respectively, for males and by 1.8 and 1.1 years, respectively, for females.

For more detailed data on the proportion of life spent in full health by age and how this has changed over time, see the interactive data visualisation: Health-adjusted life expectancy.

National Preventive Health Strategy 2021–2030: burden of disease targets

The National Preventive Health Strategy 2021–2030 (the 'Strategy') outlines the long-term approach to prevention in Australia. The Strategy aims to address the wider determinants of health, promote health equity and decrease the overall burden of disease through a whole-of-systems approach to prevention (Department of Health 2021).

To assess progress over the 10-year period, the Strategy outlines several targets to achieve by the year 2030. There are 6 burden of disease specific targets in the Strategy and data from the Australian Burden of Disease Study 2024 can be used to monitor 3 of the 6 targets:

- the proportion of the first 25 years lived in full health will increase by at least 2 percentage points by 2030
- the proportion of the first 0–4 years of life lived in full health will increase by at least 3.5 percentage points by 2030
- Australians have at least an additional 2 years of life lived in full health by 2030.

The remaining 3 targets involve burden of disease estimates by socioeconomic group, remoteness and for Aboriginal and Torres Strait Islander (First Nations) people which was not in the scope of the current report (however, these will be reported in the next major ABDS study (2026) and First Nations study).

Australia's current performance against the targets

Table 1 shows how the burden of disease measures in 2024 compare with the baseline measures (the year 2018) for each reportable target. An assessment of data reported for these 3 targets suggests there has been no change between 2018 (baseline year) and 2024 in the:

- proportion of the first 0–4 years lived in full health (around 92%)
- proportion of the first 25 years lived in full health (ranging between 91 and 92%)
- average number of years lived in full health (71 to 72 years for males and 74 years for females).

Table 1: Selected aims and burden of disease targets in the National Preventive Health Strategy 2021–2030: number and proportion (%) of years lived in full health and the percentage point change between 2018 and 2024

Aim	Target	Sex	2018 (baseline)[a]	2024 estimate	Comparison to 2018
All Australians have the best start in life	The proportion of the first 25 years lived in full health will increase by at least 2 percentage points by 2030	Persons	92.1% of first 25 years were lived in full health	91.5% of first 25 years were lived in full health	–0.6[b]
All Australians have the best start in life	The proportion of the first 0–4 years of life lived in full health will increase by at least 3.5 percentage points by 2030	Persons	91.9% of first 5 years were lived in full health	91.3% of first 5 years were lived in full health	–0.6[b]
All Australians live in good health and wellbeing for as long as possible	Australians have at least an additional 2 years of life lived in full health by 2030	Males	71.2 years lived in full health	71.7 years lived in full health	0.5 years[b]
		Females	73.6 years lived in full health	73.8 years lived in full health	0.2 years[b]

(a) Baseline level data for the burden of disease targets have been revised to allow for comparability with 2024 estimates and are different to the published Strategy.

(b) Progress against these targets is currently assessed as no change based on factors such as quality and reliability of the data sources used and magnitude of the observed difference.

Source: AIHW Australian Burden of Disease Database, Data tables.

Estimates for 2024 are projections so progress against the targets may change as 2024 data becomes available. COVID-19's impacts on burden and the health of the Australian population may also affect progress against these targets. More data points and further monitoring is required to determine if the targets set out in the Strategy can be achieved by 2030.

For further information and data on the Strategy's aims, targets and progress, including baseline data, see: National Preventive Health Strategy Monitoring Dashboard.

A large proportion of burden could be prevented

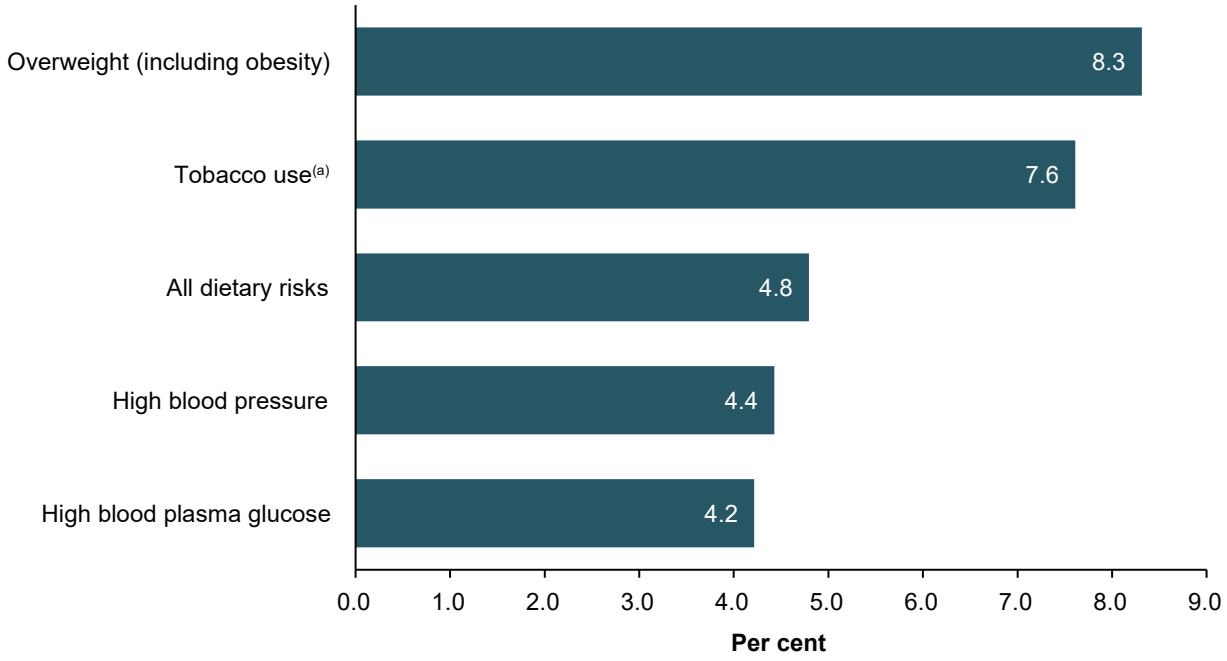
Of the total burden of disease and injury in Australia for 2024, over one-third (36%) was attributable to the risk factors included in this Study. This illustrates the potential for health gain in preventing disease and injury by avoiding or reducing exposure to these risk factors. Although it may not be feasible or achievable to prevent all health loss, it quantifies what is theoretically possible.

The amount of burden that could be attributed to the included risk factors was higher for fatal burden (46%) compared with non-fatal burden (27%). This is due to a high proportion of leading causes of fatal burden, such as cancer and cardiovascular disease, being attributable to these risk factors.

Leading risk factors

The 5 risk factors contributing the most to total disease burden in 2024 were overweight (including obesity) (8.3%), tobacco use (7.6%, excluding nicotine vaping), dietary risks (4.8%), high blood pressure (4.4%) and high blood plasma glucose (4.2%) (Figure 7). Among the dietary risk factors, a diet low in legumes contributed the most to disease burden. This was followed by a diet high in sodium, diet low in wholegrains & high fibre cereals and diet high in red meat.

Figure 7: Leading risk factors contributing to total disease burden (DALY), 2024



(a) Excludes nicotine vaping.

Source: AIHW Australian Burden of Disease Database, Data tables.

The contribution of risk factors to fatal and non-fatal burden was also calculated as part of this study (Table 2). Tobacco use contributed the most to fatal burden followed by overweight (including obesity), dietary risks and high blood pressure. The risk factors that contributed the most to non-fatal burden were overweight (including obesity), tobacco use, high blood plasma glucose, child abuse & neglect and alcohol use.

Table 2: Number and proportion (%) of fatal burden (YLL), non-fatal burden (YLD) and total burden (DALY) attributable to each risk factor, 2024

Risk factor	Number	% of total YLL	Number	% of total YLD	Number	% of total DALY	Rank
Metabolic/biomedical							
Overweight (including obesity)	257,620	9.6	223,207	7.1	480,827	8.3	1
High blood pressure	193,719	7.2	62,513	2.0	256,232	4.4	4
High blood plasma glucose	130,403	4.9	112,806	3.6	243,209	4.2	5
High cholesterol	106,618	4.0	25,487	0.8	132,104	2.3	9
Impaired kidney function	85,004	3.2	33,848	1.1	118,852	2.0	11
Low birthweight & short gestation	43,740	1.6	6,592	0.2	50,331	0.9	14
Low bone mineral density	13,497	0.5	12,552	0.4	26,050	0.4	17
Iron deficiency	312	0.0	19,545	0.6	19,858	0.3	18
Behavioural							
Tobacco use[(a)]	314,058	11.7	126,597	4.1	440,655	7.6	2
Dietary risks	211,583	7.9	65,843	2.1	277,426	4.8	3
Alcohol use	143,823	5.4	94,439	3.0	238,262	4.1	6
Illicit drug use	113,351	4.2	57,206	1.8	170,557	2.9	7
Child abuse & neglect	41,328	1.5	97,309	3.1	138,637	2.4	8
Physical inactivity	83,398	3.1	39,228	1.3	122,626	2.1	10
Intimate partner violence[(b)]	9,240	0.3	37,203	1.2	46,443	0.8	15
Unsafe sex	8,357	0.3	2,870	0.1	11,228	0.2	19
Bullying victimisation	0	0.0	8,814	0.3	8,814	0.2	20
Environmental							
Air pollution	64,490	2.4	28,354	0.9	92,844	1.6	12
Occupational exposures & hazards	29,797	1.1	60,407	1.9	90,204	1.6	13
UV sun exposure	25,513	1.0	4,888	0.2	30,400	0.5	16
Joint effect[(c)]	**1,228,722**	**45.9**	**848,230**	**27.2**	**2,076,953**	**35.8**	

(a) Excludes nicotine vaping.
(b) Intimate partner violence is measured in females only.
(c) Includes all 20 risk factors.
Source: AIHW Australian Burden of Disease Database, Data tables.

Differences between males and females

The total burden attributable to risk factors included in the study was higher in males (38%) compared with females (33%). Overweight (including obesity) and tobacco use were the leading risk factors contributing to total disease burden in both males and females (although the proportion of total burden was higher for males than females).

Among females, high blood plasma glucose ranked 3rd, followed by high blood pressure and dietary risks. In males, dietary risks ranked 3rd, followed by alcohol use and high blood pressure. The proportion of attributable DALY due to alcohol use for males was more than 2 times that for females (5.5% compared to 2.6% respectively). Child abuse & neglect ranked much higher in females (6th; 2.9%) than for males (12th; 1.9%), while illicit drug use ranked higher for males (7th; 3.9%) than for females (10th, 1.9%). Intimate partner violence was estimated for females only (as sufficient evidence to identify the causally linked diseases is not currently available for men) and ranked 11th, contributing to 1.7% of total burden in 2024.

To further explore leading risk factors, see the Burden attributable to risk factors interactive data visualisation.

Changes in leading risk factors over time

Changes in burden over time from risk factors may be due to changes in population size, exposure to the risk factors, the age at which exposure occurs, or the overall burden for those diseases or injuries that are linked to these risk factors.

Not all risk factors have data for all years in the study. As a result, caution is recommended when comparing the joint effect of all risk factors over time. Where individual risk factors have data for multiple reference years, the data and methods used for each year in the study are assumed to be largely comparable.

Overweight (including obesity) has overtaken tobacco use as the leading risk factor

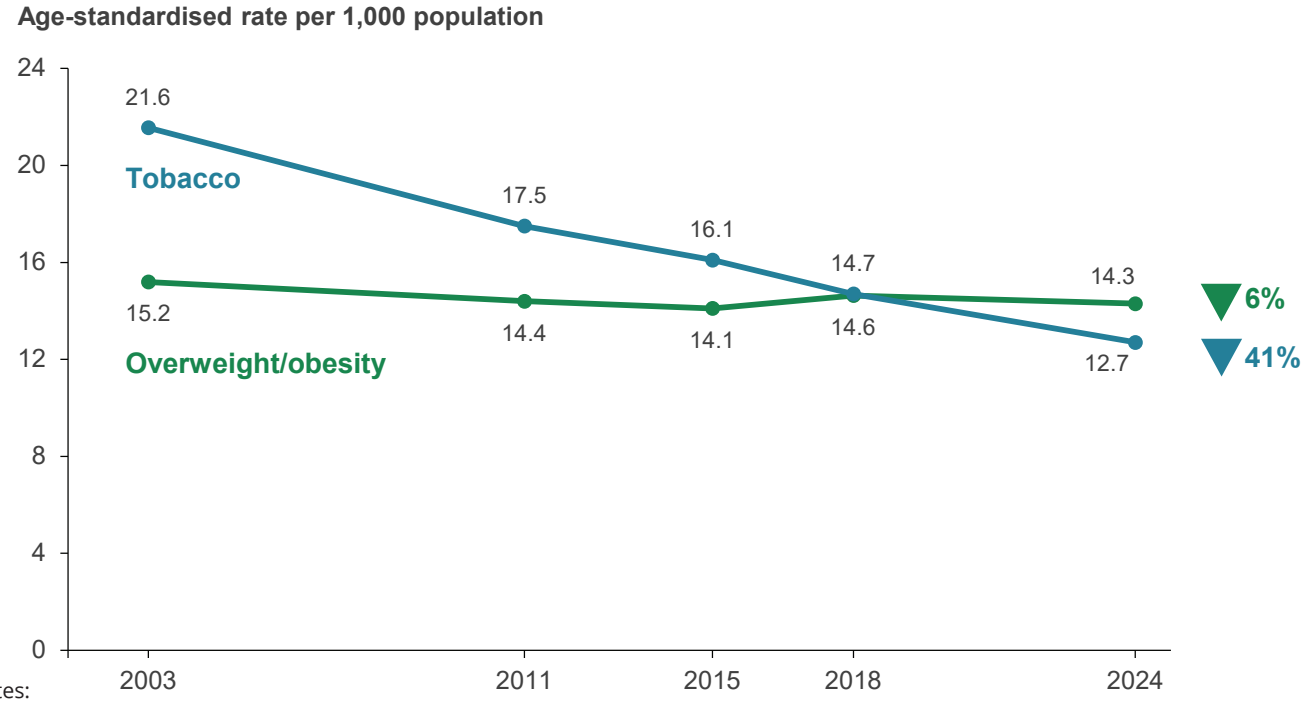
Overweight (including obesity) became the leading risk factor contributing to disease burden in 2024, overtaking tobacco use. It increased from the 4th highest risk factor in 2003 and the second highest risk factor in 2018. However, it should be noted that the rate of total burden attributable to overweight (including obesity) has been relatively stable over time. This trend is partly a result of increases in the rates of burden attributable to obesity and some linked diseases such as dementia, in combination with decreases in the rates of burden attributable to overweight (excluding obesity) and linked diseases such as cardiovascular diseases.

In contrast, there has been a substantial fall (41%) in the age-standardised rate of total burden attributable to tobacco use between 2003 and 2024 (Figure 8). This change is largely a result of declines in smoking prevalence and the major linked diseases.

While smoking prevalence has decreased in recent years, the burden attributable to tobacco use remains high due to the long lag times between smoking and developing diseases such as cancers and chronic respiratory conditions and the remaining risk of developing these diseases in people who have smoked in the past, although this risk continues to fall with prolonged abstinence.

It should be noted that the burden estimates for tobacco use presented here do not include nicotine vaping as this was outside the scope of the current study. However as part of the next major update of the ABDS (2026), a number of new risk factors will be assessed for inclusion, including nicotine vaping and vaping illicit drugs.

Figure 8: Change between 2003 and 2024 in the age-standardised attributable DALY rate (per 1,000 population) for the leading 2 risk factors in 2024



Notes:
1. Rates were age-standardised to the 2001 Australian Standard Population.
2. Tobacco use excludes nicotine vaping.

Source: AIHW Australian Burden of Disease Database, Data tables.

Other risk factors which had notable changes in rankings and age-standardised attributable burden rates between 2003 and 2024 include:

- High blood pressure for which the rate decreased by 57% (and dropped from 2nd highest ranking to 5th highest ranking over this period);
- High cholesterol for which the rate decreased by 61% (and dropped from 5th to 9th ranking);
- All dietary risks for which the rate decreased by 49% (and dropped from 3rd to 4th ranking). Most of this decrease occurred between 2003 and 2011;
- Illicit drug use for which the rate increased by 41% (and increased from 8th to 7th ranking).

Changes in attributable burden can reflect changes in the linked disease burden and/or changes in exposure to the risk factor. For example, the large decreases observed in burden due to coronary heart disease is the main driver of the decreases observed for high cholesterol and dietary risks. This coupled with reduced exposure to high blood pressure in the population are the main drivers of the decline observed in attributable burden due to high blood pressure. An increase in burden due to drug use disorders is one of the drivers of the increase in attributable burden due to the illicit drug use risk factor.

Changes in attributable non-fatal burden

Between 2003 and 2024, there was an increase in the rate of non-fatal burden attributable to overweight (including obesity) (22% increase after adjusting for age). Other risk factors with notable increases in rates of attributable non-fatal burden include intimate partner violence (40% increase) which moved into the top 10 in 2024; illicit drug use (34% increase) and child abuse and neglect (29% increase).

Tobacco use, high blood pressure and all dietary risks saw a decrease in the rate of non-fatal attributable burden between 2003 and 2024 (27%, 44% and 32%, respectively).

Changes in attributable fatal burden

Between 2003 and 2024, rates of fatal attributable burden decreased for a number of risk factors, the largest decline being for high cholesterol which decreased by 62% after adjusting for age, and from 5th ranking in 2003 to 8th in 2024. Over the same period, the rate of attributable fatal burden due to illicit drug use increased by 46% after adjusting for age, and increased from 9th ranking in 2003 to 6th ranking in 2024.

To further explore changes in leading risk factors over time, see the Changes in risk factors over time interactive data visualisation.

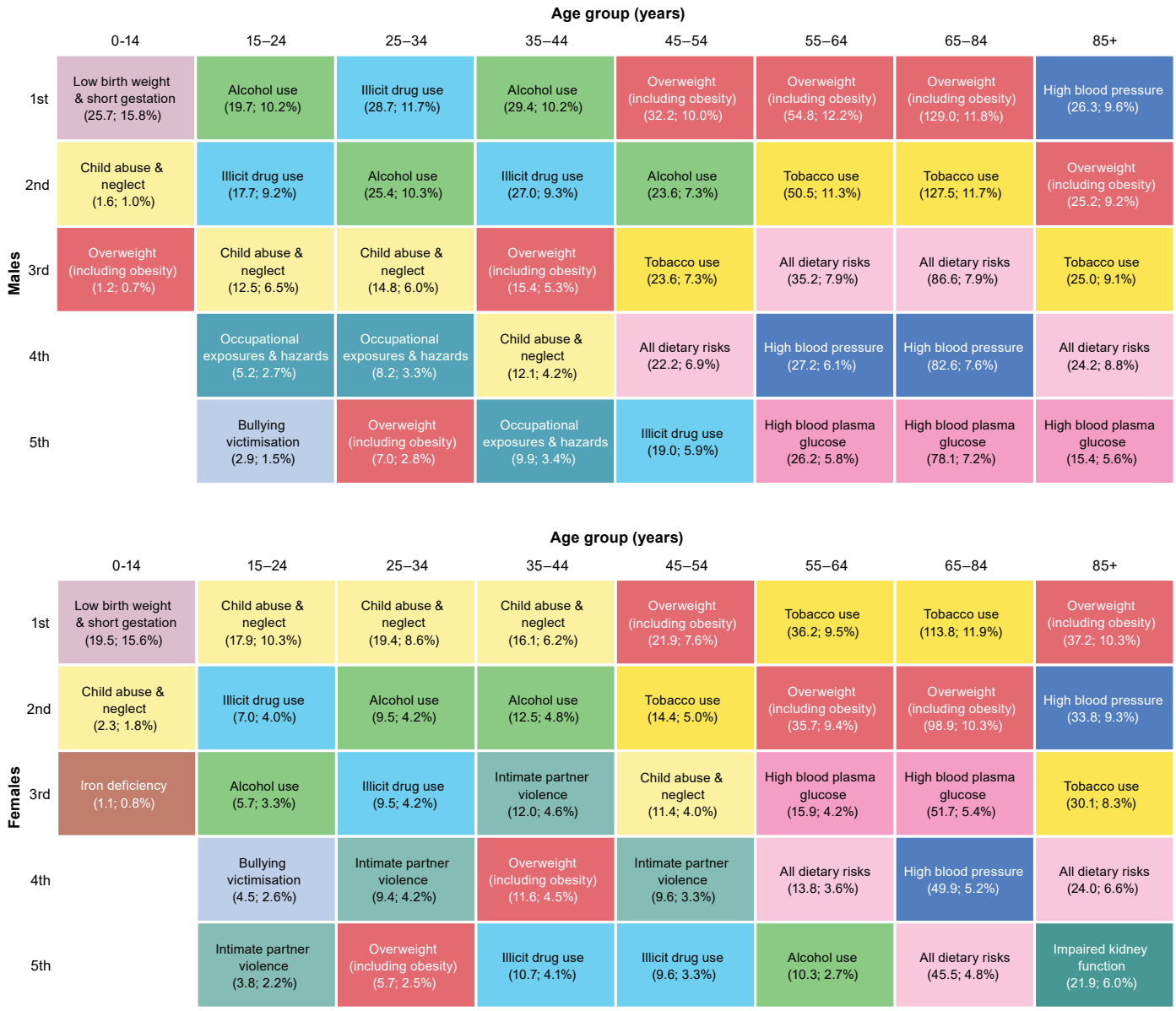
How does attributable burden differ across the life course?

The health impacts due to the modifiable risk factors included in this study varied by age and sex. It should be noted that exposure to risk factors in the past can influence the proportion of burden attributable in the reference year of the study or for a particular age group. This is because evidence of past exposure can be linked to current burden—for example, to take into account the lag time from exposure through to outcomes such as cancer.

Low birthweight & short gestation was the leading contributor to burden for males and females under 15. In males, alcohol use or illicit drug use was the leading contributor for ages 15–44, overweight (including obesity) for ages 45–84 and high blood pressure in the older ages (85 and over).

In females, child abuse & neglect was the leading contributor to burden for ages 15–44, overweight (including obesity) for ages 45–54, tobacco use followed by overweight (including obesity) for ages 55–84, and overweight (including obesity) in the older ages (85 and over) (Figure 9).

Figure 9: Leading risk factor contribution to total burden (DALY '000; proportion %), by sex and age group, 2024



Note: Tobacco use excludes nicotine vaping.
Source: AIHW Australian Burden of Disease Database. Data tables.

To further explore how attributable burden varies across the life course, see the Attributable burden across the life course interactive data visualisation.

Which diseases have the most burden attributable to risk factors?

All the risk factors combined (the joint effect) contributed greatly to the burden for a number of disease groups including endocrine disorders (96%), kidney & urinary diseases (73%), cardiovascular diseases (65%) and respiratory diseases (52%).

The contribution of individual risk factors to the total burden of different disease groups varied. For example:

- Tobacco use contributed to 36% of the total burden from respiratory diseases and 15% of the total burden from cancers.
- Overweight (including obesity) contributed to 28% of the total burden from endocrine disorders and 22% of the total burden from kidney & urinary diseases.

The contribution of individual risk factors to total disease burden also varied for specific diseases. For example:

- Multiple risk factors contributed to total burden from coronary heart disease including dietary risks (22%), high blood pressure (19%), high cholesterol (16%) and overweight (including obesity) (6.9%). Overall, all the risk factors combined (the joint effect) contributed to 87% of the total burden due to coronary heart disease.
- Tobacco use (65%), air pollution (6.9%) and occupational exposures and hazards (2.0%), contributed to the total burden from chronic obstructive pulmonary disease (COPD). Around three-quarters (74%) of the total burden due to COPD was attributable to all risk factors combined.

The above analyses account for the overlap between risk facors that share the same linked diseases. To further explore total burden for specific diseases attributable to risk factors, see the Diseases and associated risk factors interactive data visualisation.

Where do I go for more information?

For more information on the burden of disease in Australia, see:

- ABDS 2024 Supplementary data tables
- ABDS 2018 State and territory estimates, Remoteness areas, Socioeconomic groups interactive data visualisations
- ABDS 2018 Interactive data on risk factor burden
- Australian Burden of Disease Study: Impact and causes of illness and death in Aboriginal and Torres Strait Islander people 2018
- ABDS 2018: Interactive data on disease burden among Aboriginal and Torres Strait Islander people
- ABDS 2018: Interactive data on risk factor burden among Aboriginal and Torres Strait Islander people
- Australian Burden of Disease Study: Methods and supplementary material 2018

For more on this topic, see Burden of disease.

References

AIHW (Australian Institute of Health and Welfare) (2022) *Australia's health 2022: data insights*, AIHW, Australian Government, accessed 17 October 2024. doi:10.25816/ggvz-vr80.

AIHW (2023) *Australian Burden of Disease Study 2023*, AIHW, Australian Government, accessed 15 October 2024.

Department of Health (2021) *National Preventive Health Strategy 2021–2030*, Department of Health, Australian Government, accessed 11 September 2024.

Fries JF (1980) 'Aging, natural death, and the compression of morbidity', *The New England Journal of Medicine* 303(3): 130–5.

Gruenberg EM (1977) 'The failures of success', *The Milbank Quarterly* 55(1): 3–24.

Howse K (2006) *Increasing life expectancy and the compression of morbidity: a critical review of the debate* (Working paper 206), Oxford Institute of Ageing, Oxford University.

Suggested citation

Australian Institute of Health and Welfare 2024. *Australian Burden of Disease Study 2024*. Catalogue number. BOD 40, AIHW, Australian Government.

ISBN 978-1-923272-33-0 (Online)

ISBN 978-1-923272-34-7 (Print)

DOI 10.25816/89ch-p422

Any enquiries about copyright should be directed to the Australian Institute of Health and Welfare, GPO Box 570, Canberra ACT 2601,
Tel: (02) 6244 1000, Email: <info@aihw.gov.au>.