

# Burden of Vaccine-preventable disease in older people

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Vaccination of Older People Masterclass

Melbourne May 2026

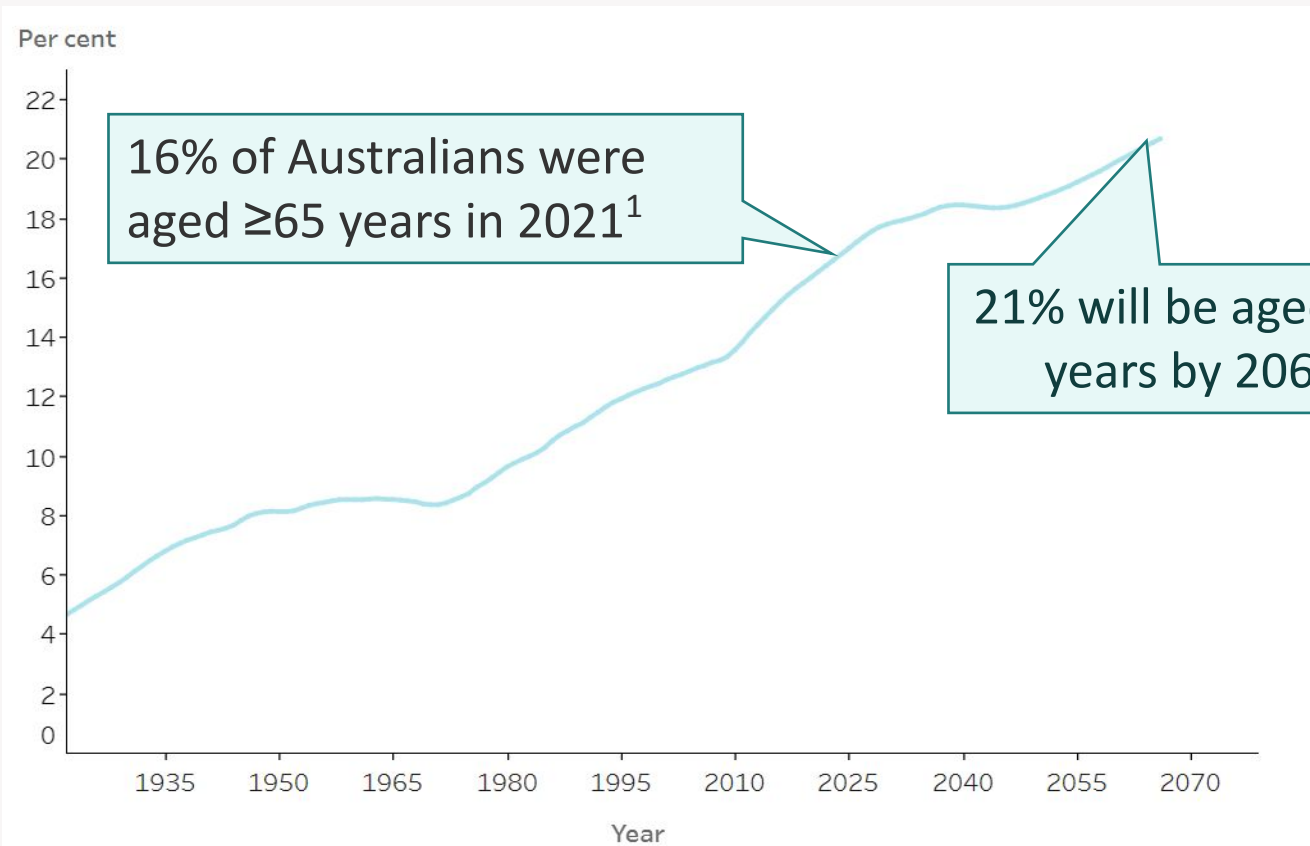
# SPEAKER DECLARATION

Over the last 12 months, I have received Honoraria for speaking and expert opinion from:

- GSK
- CSL/Seqirus
- Pfizer
- MSD/Merck
- Novo Nordisk
- Roche
- Novartis
- Sanofi
- Moderna
- Janssen/ Johnson and Johnson

# We have an ageing population

## Percentage of the Australian population aged 65 years and over (on June 30) over time



- 1 in 5 people aged  $\geq 65$  years experience severe or profound core activity limitation.<sup>2</sup>
- 1 in 2 are severely limited by age 85.<sup>2</sup>

1. Australian Institute of Health and Welfare (2023) Older Australians, AIHW, Australian Government. Available from: <https://www.aihw.gov.au/reports/older-people/older-australians> Accessed 08 May 2024.

2. Pond CD et al. Med J Aust 2019; 211 (2): 60-62.

# Global demographic context



## Worldwide

The population over 65 years old is growing at the fastest rate in the world.<sup>1</sup>

In 2050, according to the World Population Prospects<sup>1</sup>, it is expected that:

- 1 in 6 people will be over 65 years old
- The number of people aged 80+ will triple



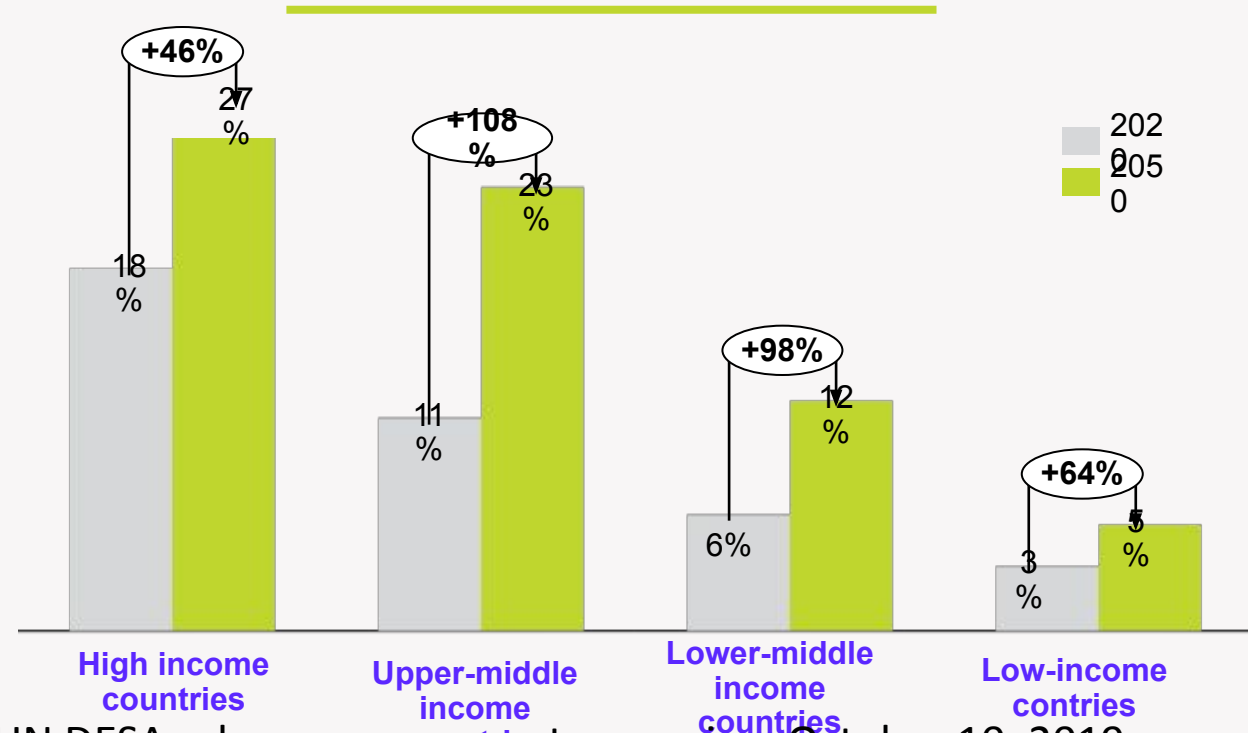
## In Europe

Among OECD countries, over the last 5 decades, life expectancy at 65 years has increased by an average of 5.7 years.<sup>2</sup>

In 2019, people lived an average of ~20 years beyond 65, but only 10 of those years were spent in good health.<sup>2</sup>

## Projected evolution of the population aged 65 and over, worldwide<sup>3</sup>

(% of the total population)



1. United Nations. Our world is growing older: UN DESA releases new report on ageing. October 10, 2019.

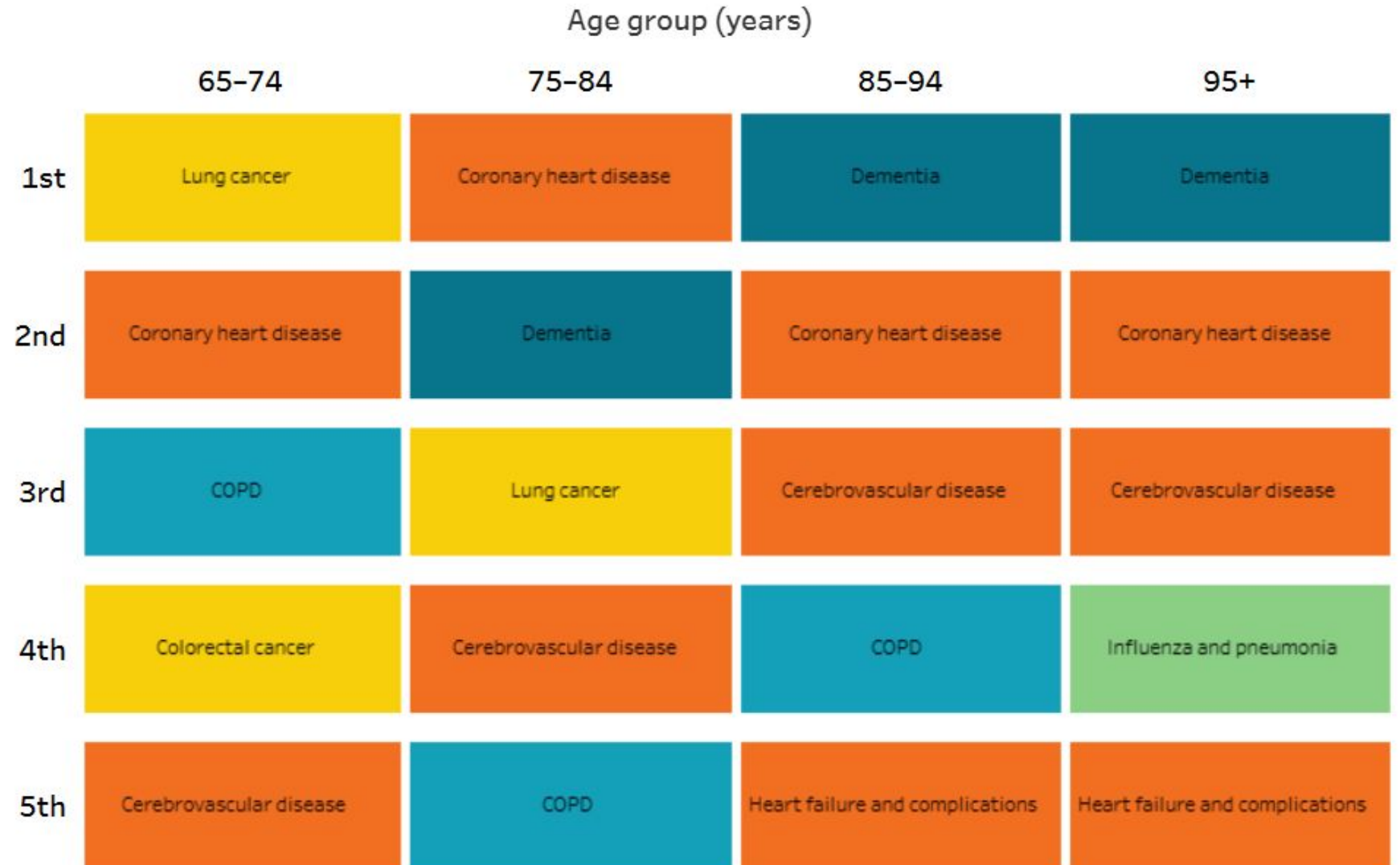
<https://www.un.org/development/desa/en/news/population/our-world-is-growing-older.html#:~:text=Our%20world%20is%20rapidly%20growing,will%20increase%20by%2019%20years> Accessed April 2025. 2. OECD. Health at a

Glance 2021. [https://www.oecd.org/en/publications/health-at-a-glance-2021\\_ae3016b9-en.html](https://www.oecd.org/en/publications/health-at-a-glance-2021_ae3016b9-en.html) Accessed April

2025. 3. NOVA center for global health lab. Longevity. A Think Tank initiative dedicated to adult vaccination. Final

# Leading causes of death in older people

Five leading causes of death for older Australians by age group, 2018–20



# Chronic disease and modifiable risk factors<sup>1</sup>

About 32% of Australia's total burden of disease can be attributed to modifiable risk factors<sup>1</sup>

● Strong evidence in support of direct association

□ Either not a direct association or evidence is not strong

**Table I.1. Strong evidence of direct associations between selected chronic diseases and behavioural and biomedical risk factors<sup>5</sup>**

Chronic disease	Behavioural Tobacco smoking	Behavioural Insufficient physical activity	Behavioural Excessive alcohol consumption	Behavioural Dietary risks	Biomedical Obesity	Biomedical High blood pressure	Biomedical Abnormal blood lipids
CVD	●	●	—	●	●	●	●
Stroke	●	●	●	—	●	●	●
Type 2 diabetes	●	●	—	●	●	—	—
Osteoporosis	●	●	●	●	—	—	—
Colorectal cancer	●	—	●	●	●	—	—
Oral health	●	—	●	●	—	—	—
CKD	●	—	—	—	●	●	—
Breast cancer (female)	—	—	●	—	●	—	—
Depression	—	—	—	—	●	—	—
Osteoarthritis	—	—	—	—	●	—	—
Rheumatoid arthritis	●	—	—	—	—	—	—
Lung cancer	●	—	—	—	—	—	—
Cervical cancer <sup>††</sup>	●	—	—	—	—	—	—
COPD	●	—	—	—	—	—	—
Asthma	●	—	—	—	—	—	—

# But what is missing from these modifiable risk factors?

- VACCINATION

# Vaccination as a priority in Global Health

## Alignment among international health organizations



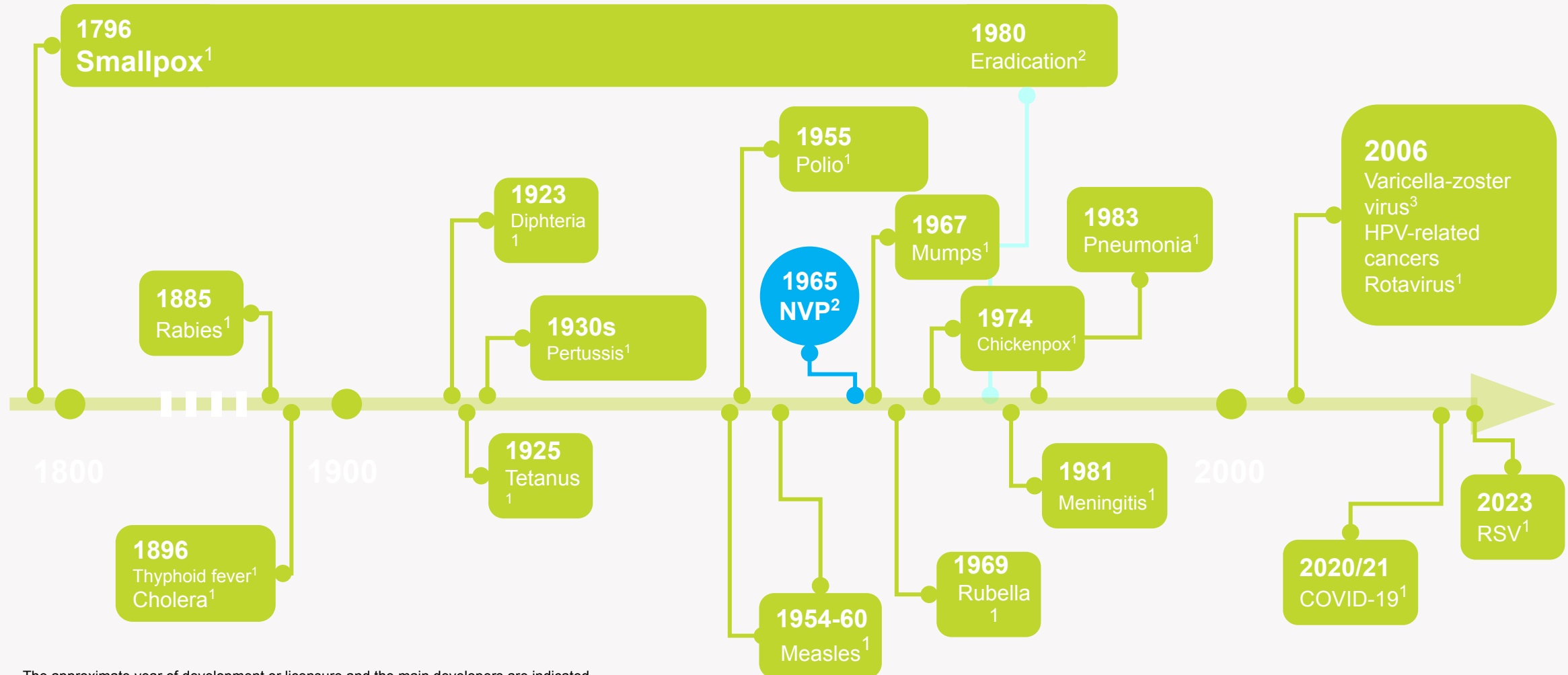
1. World Health Organization. Immunization Agenda 2030: A Global Strategy To Leave No One Behind. April 1, 2020.

[https://cdn.who.int/media/docs/default-source/immunization/strategy/ia2030/ia2030-draft-4-wha\\_b8850379-1fce-4847-bfd1-5d2c9d9e32f8.pdf?sfvrsn=5389656e\\_69&download=true](https://cdn.who.int/media/docs/default-source/immunization/strategy/ia2030/ia2030-draft-4-wha_b8850379-1fce-4847-bfd1-5d2c9d9e32f8.pdf?sfvrsn=5389656e_69&download=true) Accessed April 2025. 2. World Health Organization. UN Decade of Health Ageing: Plan of Action. 2021-2030. [https://cdn.who.int/media/docs/default-source/decade-of-healthy-ageing/decade-proposal-final-apr2020-en.pdf?sfvrsn=b4b75ebc\\_28&download=true](https://cdn.who.int/media/docs/default-source/decade-of-healthy-ageing/decade-proposal-final-apr2020-en.pdf?sfvrsn=b4b75ebc_28&download=true) Accessed April 2025. 3. World Health Organization. Global Report on Ageism. 2021. <https://iris.who.int/bitstream/handle/10665/340208/9789240016866-eng.pdf?sequence=1> Accessed April 2025. 4. Diario Oficial de le Union Europea. Recomendacio del Consejo de 22 de mayo de 2018. [https://eur-lex.europa.eu/legal-content/ES/TXT/PDF/?uri=CELEX:32018H0607\(01\)&from=EN](https://eur-lex.europa.eu/legal-content/ES/TXT/PDF/?uri=CELEX:32018H0607(01)&from=EN) Accessed April 2025. World Health Organization. 5. European Immunization Agenda 2030. <https://iris.who.int/bitstream/handle/10665/348002/9789289056052-eng.pdf?sequence=1> Accessed April 2025. 6. Federation of European Academics of Medicine. Immunisation for old adults in Europe: scientific and social strategies. FEAM report. March 2022 <https://www.feam.eu/wp-content/uploads/Adult-Vaccination-Report-Design-V12-23-March-2022.pdf> Accessed April 2025.

[https://eur-lex.europa.eu/legal-content/ES/TXT/PDF/?uri=CELEX:32018H0607\(01\)&from=EN](https://eur-lex.europa.eu/legal-content/ES/TXT/PDF/?uri=CELEX:32018H0607(01)&from=EN) Accessed April 2025. World Health Organization. 5. European Immunization Agenda 2030. <https://iris.who.int/bitstream/handle/10665/348002/9789289056052-eng.pdf?sequence=1> Accessed April 2025. 6. Federation of European Academics of Medicine. Immunisation for old adults in Europe: scientific and social strategies. FEAM report. March 2022 <https://www.feam.eu/wp-content/uploads/Adult-Vaccination-Report-Design-V12-23-March-2022.pdf> Accessed April 2025.

<https://www.feam.eu/wp-content/uploads/Adult-Vaccination-Report-Design-V12-23-March-2022.pdf> Accessed April 2025.

# Vaccination milestones

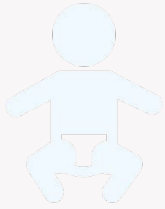


The approximate year of development or licensure and the main developers are indicated.

NVP, National Vaccination Program in Portugal.

1. Montero DA et al. *Front Public Health*. 2024 Jan 9;11:1326154. 2. European Academy of Paediatrics. PORTUGUESE COMMUNITY PHARMACIES: Contribution to Vaccination Anabela Silva & Rute Horta, Associação Nacional das Farmácias, Portugal. [https://www.eapaediatrics.eu/wp-content/uploads/2019/12/NL\\_EAP\\_ANF.pdf](https://www.eapaediatrics.eu/wp-content/uploads/2019/12/NL_EAP_ANF.pdf) Accessed April 2025. 3. Warren-Gash C et al. *Expert Rev Vaccines*. 2017 Oct 30;16(12):1191-1201.

# Vaccines play a crucial role in strengthening immunity and protecting against more than 20 diseases throughout the life course<sup>1</sup>



In the paediatric population, vaccination plays a vital role in strengthening the developing immune system<sup>2</sup>



In the adult population, vaccination contributes to the protection of the body against infections that can exacerbate pre-existing comorbidities and lead to the development of other diseases<sup>3</sup>



In the senior population, it contributes to reducing disease burden, improving quality of life, and promoting healthy ageing with greater independence<sup>3</sup>

~4 million

Of deaths avoided during childhood, per year, globally<sup>4</sup>

>50

million  
Of deaths avoided, from 2021 to 2030, globally<sup>4</sup>

1. World Health Organization (WHO). Vaccines and immunization.

[https://www.who.int/health-topics/vaccines-and-immunization#tab=tab\\_1](https://www.who.int/health-topics/vaccines-and-immunization#tab=tab_1) Accessed April 2025. 2. Centers for Disease Control and Prevention (CDC). Reasons to Vaccinate. August 9, 2024.

<https://www.cdc.gov/vaccines-children/reasons/index.html> Accessed April 2025. 3. Gomensoro E et al. *Ann Med.* 2018;50(3):181-192. 4. Centers for Disease Control and Prevention (CDC) 2023. Fast Facts on Global

# THE VALUE OF VACCINES

## Only Clean Drinking Water Rivals Vaccination in Its Ability to Save Lives<sup>1</sup>

**4.4 m<sup>2</sup>**

deaths prevented every year by vaccination

**750,000<sup>2</sup>**

children saved from disability every year

**\$150bn<sup>3</sup>**

the benefit of vaccines to low and middle-income countries over the next 10 years

**x44<sup>4</sup>**

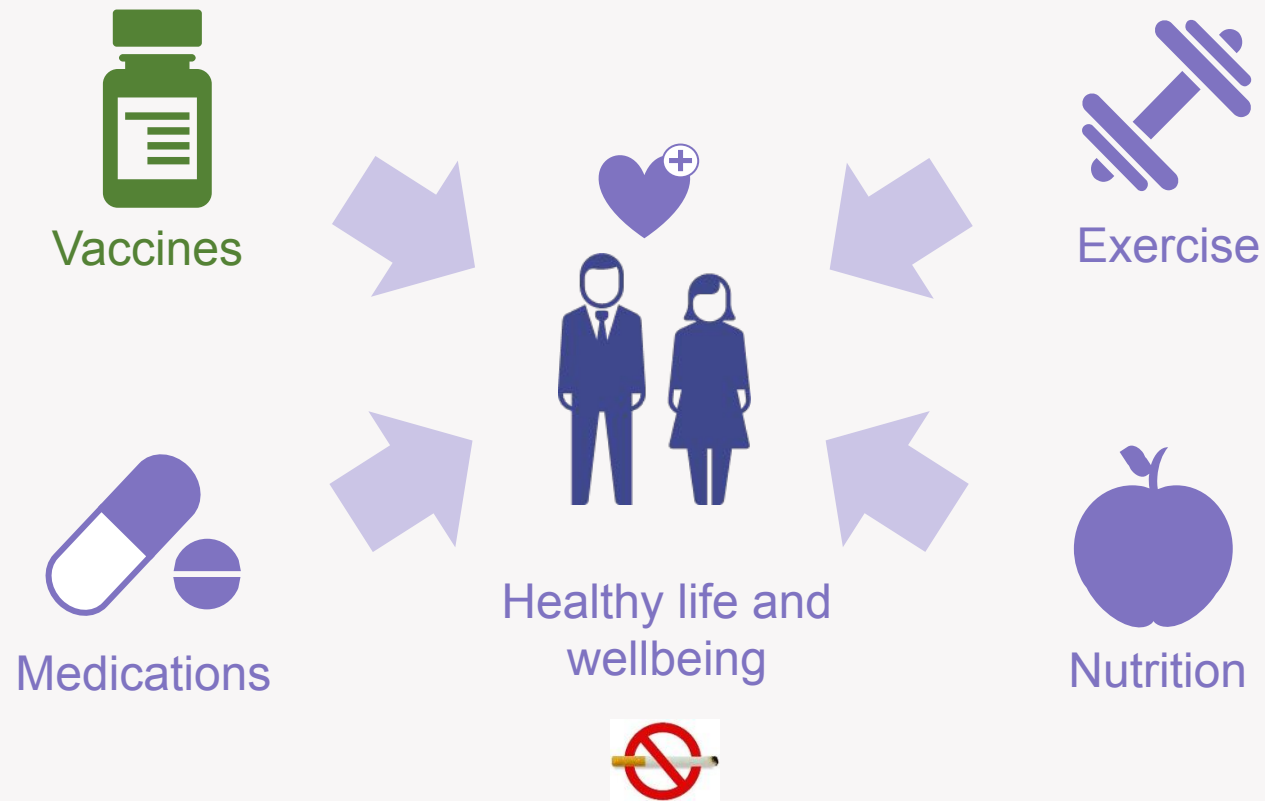
is the estimated return on Investment of the cost of immunization

Healthcare professionals play a central role in public education and communication of vaccine information<sup>5</sup>



# Why is life-course immunisation important? To increase healthy lives and wellbeing in the population

**Life-course immunisation**, along with appropriate lifestyle and healthcare interventions, provides an opportunity to live and age in good health<sup>1,2</sup>

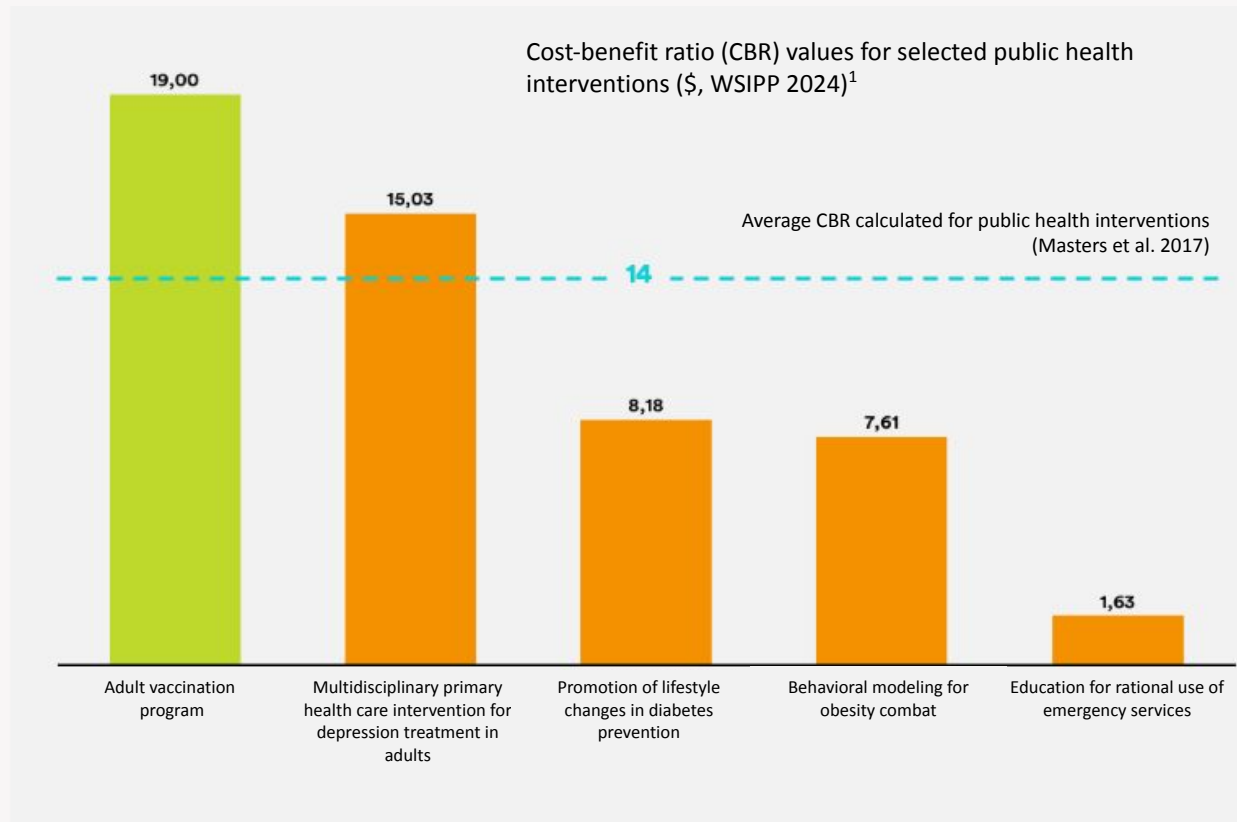


WHO, World Health Organization

1. Global Coalition on Aging, 2013. Life-course immunization: a driver of healthy aging. [http://www.globalcoalitiononaging.com/v2/data/uploads/documents/life-course-immunization\\_gcoa-for-web.pdf](http://www.globalcoalitiononaging.com/v2/data/uploads/documents/life-course-immunization_gcoa-for-web.pdf) (accessed November 2016);

2. WHO, 1999. A life course perspective of maintaining independence in older age. [whqlibdoc.who.int/hq/1999/WHO\\_HSC\\_AHE\\_99.2\\_life.pdf](http://whqlibdoc.who.int/hq/1999/WHO_HSC_AHE_99.2_life.pdf) (accessed December 2016)

# Social and economic outcomes of vaccine-preventable diseases in adult population

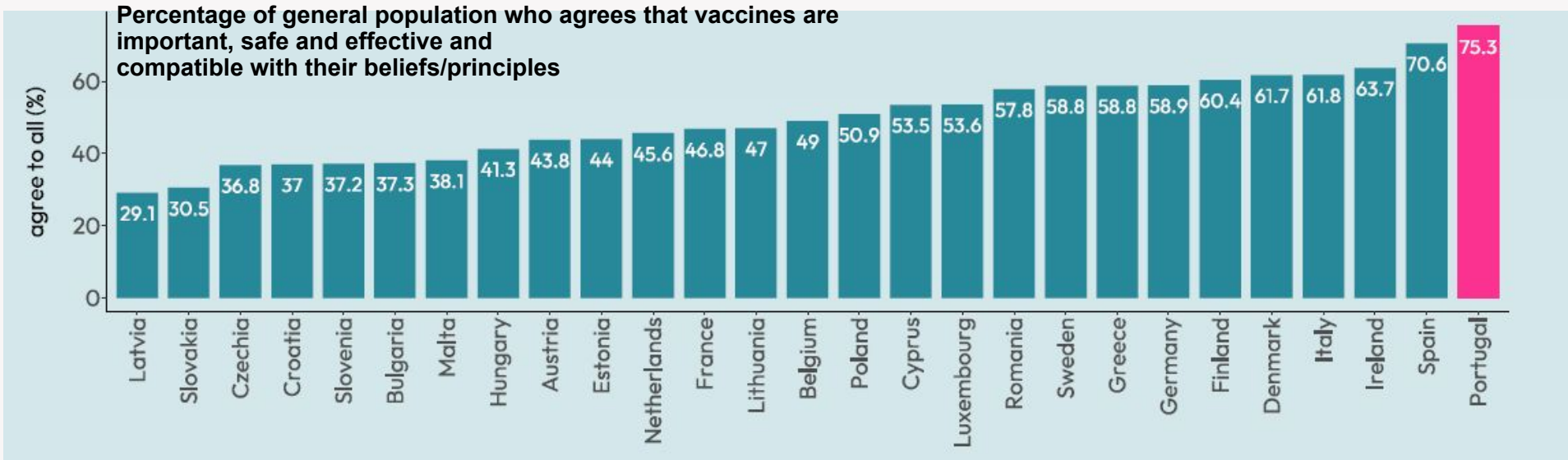
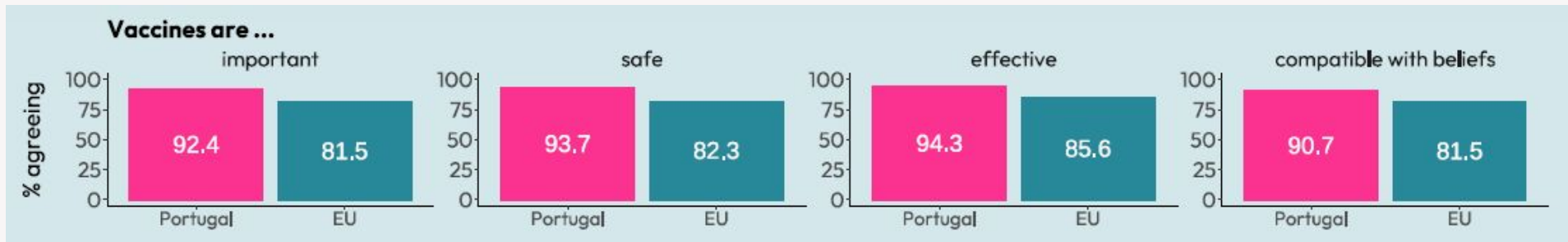


Investment in vaccination strategies targeted at the adult population can generate a **return to society 19 times greater than the investment**<sup>2</sup>

1. NOVA center for global health lab. Longevity. A Think Tank initiative dedicated to adult vaccination. Final report November 2024. 2. OHE. The Socio-Economic Value of Adult Immunisation Programmes. April 2024. <https://www.ohe.org/wp-content/uploads/2024/04/Socio-Economic-Value-of-Adult-Immunisation.pdf> Accessed April 2025.

# Public perception of vaccination

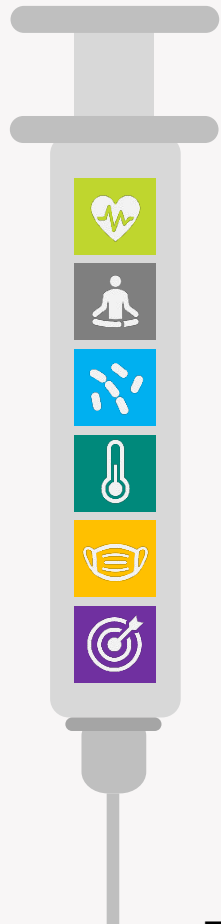
To the general population, vaccines are:



European Commission. Portugal Vaccine Confidence Factsheet 2022.

[https://health.ec.europa.eu/document/download/33360676-e0a8-4f30-a433-b4b95d85b911\\_en?filename=2022\\_confidence\\_factsheet\\_portugal\\_en.pdf](https://health.ec.europa.eu/document/download/33360676-e0a8-4f30-a433-b4b95d85b911_en?filename=2022_confidence_factsheet_portugal_en.pdf) Accessed April 2025.

# The role of adult vaccination in global health



## 1 CHRONIC DISEASES

The **protective role** of the body against the development or worsening of **comorbidities** associated with **noncommunicable diseases**<sup>1</sup>

## 3 ANTIMICROBIAL RESISTANCE

Prevention of infectious disease episodes, **mitigating the individual's risks** related to **exposure to antimicrobials**<sup>2</sup>

## 5 HEALTH EMERGENCIES

Vaccination helps **protects** the community against **future health threats**<sup>3</sup>

## 2 HEALTHY AGEING

The recognised protective role for **quality of life** in individuals experiencing immunosenescence<sup>1</sup>

## 4 CLIMATE CHANGE

Public health protection against expected outbreaks and changes in the dynamics of pathogens due to **global warming**<sup>4</sup>

## 6 SUSTAINABLE DEVELOPMENT GOALS (SDGs)

The contribution of vaccines to **community health protection** directly or indirectly impacts 14 of the 17 United Nations Sustainable Development Goals<sup>4</sup>

1. Gomensoro E et al. *Ann Med*. 2018;50(3):181-192. 2. Federation of European Academies of Medicine (FEAM). Immunization for old adults in Europe: scientific and social strategies report. March 2022.

<https://www.feam.eu/wp-content/uploads/Adult-Vaccination-Report-Design-V12-23-March-2022.pdf>

Accessed April 2025. 3. Privor-Dumm LA et al. *Vaccine*. 2021 Aug 31;39(37):5240-5250. 4. Decouttere C et al. *Global Health*. 2021 Aug;22(17):27.

# Barriers to vaccination in the adult population



## Access

- Geographic dispersion<sup>1</sup>
- Socioeconomic contrasts<sup>1</sup>
- Healthcare network<sup>1</sup>



## Resources

- Financial<sup>2</sup>
- Technical resources<sup>3</sup>
- Infrastructures<sup>3</sup>



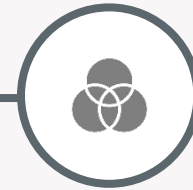
## Literacy

- Misinformation and skepticism<sup>3</sup>
- Healthcare professionals<sup>3</sup>
- Civil society<sup>4</sup>



## Data

- Monitoring of vaccination coverage<sup>5</sup>
- Epidemiological mapping<sup>4</sup>
- Identification of at-risk populations<sup>3</sup>



## Heterogeneity

- Vaccination recommendations<sup>3</sup>
- Social and health profile of the adult<sup>6</sup>

1. Royal Society for Public Health (RSPH). Moving the Needle. Promoting vaccination uptake across the life course. <https://www.rsph.org.uk/static/uploaded/3b82db00-a7ef-494c-85451e78ce18a779.pdf> Accessed April 2025. 2. Privor-Dumm LA et al. *Vaccine*. 2021 Aug 31;39(37):5240-5250. 3. Lanza TE et al. *Journal of Public Health*. 2024. 32;2307-2314. 4. Fisher S and Rosella LC. *BMC Public Health*. 2022 Nov 22;22:2146. 5. Qeshi MS et al. *Nature Sci Rep*. 2024 Nov 4;14(1):26657. 6. Varnosfaderani SM and

# AI in healthcare clinical workflow supporting vaccination

Streamlining **clinical workflow** and **admin tasks**:

- Managing records
- Vaccination status
- Scheduling
- Reminders (for both citizens and HCPs)
- Virtual admin assistants

Varnosfaderani SM and Forouzanfar M. *Bioengineering (Basel)*. 2024

Mar 29;11(4):337.



# Artificial Intelligence applied to infectious diseases

## public health policies

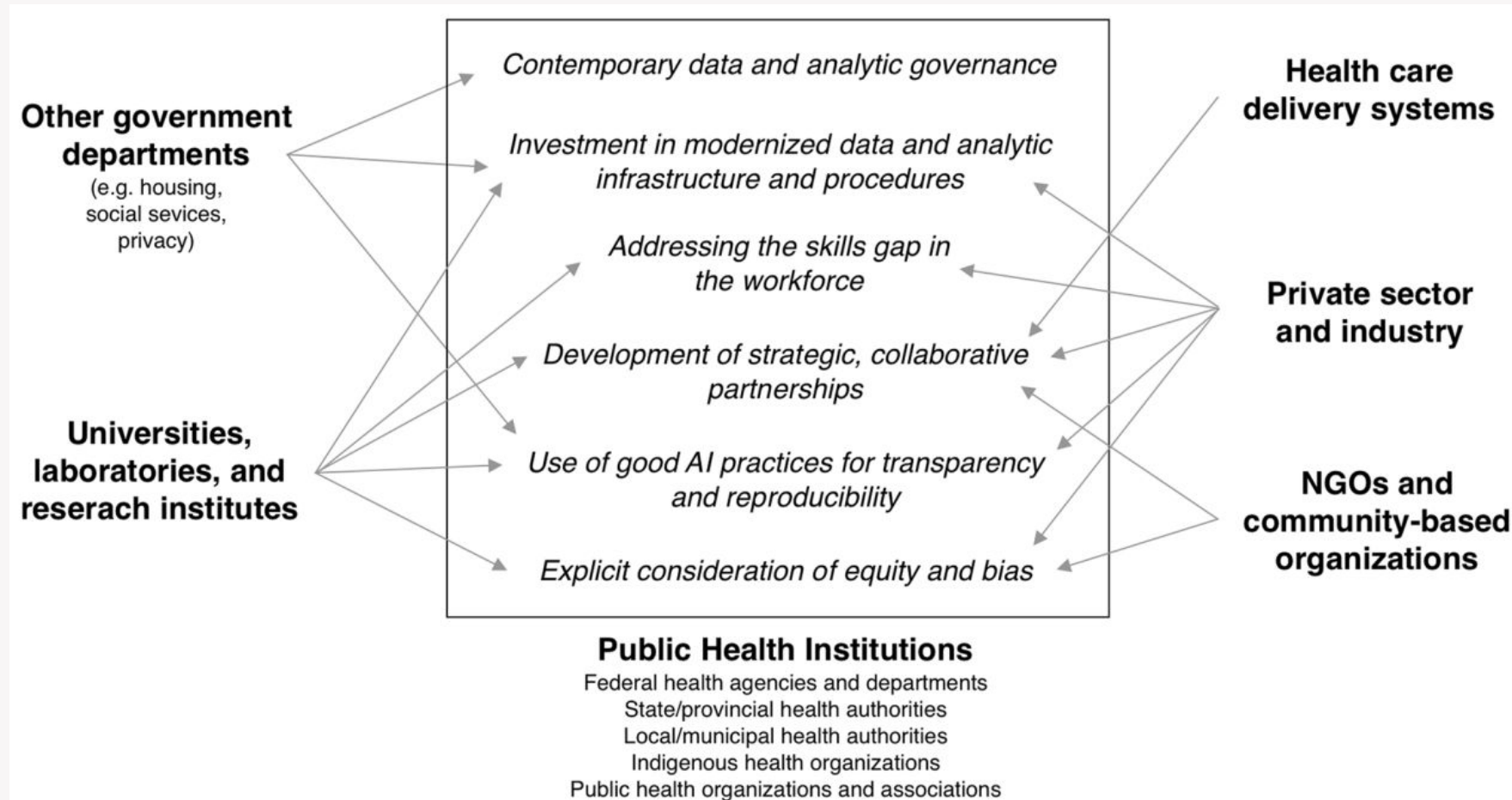


Fig 1. Six key priorities for successful use of artificial intelligence by public health organizations and their relationship to the broader public health system

Fisher S and Rosella LC. *BMC Public Health*. 2022 Nov 22;22:2146.

# What is healthy ageing?

- Linked to concepts of independence, autonomy, purposeful and meaningful existence, and the opportunity to participate and contribute<sup>1</sup>
- Requires that we maintain adequate physical and mental health<sup>1</sup>
- We can manage and modify many age-related and pathological changes<sup>1</sup>
- Involves conducting assessments (e.g. dementia, falls, immunisation status, continence, oral health, hearing and vision), acting upon an assessment, and regular review<sup>1</sup>



# 95% of older people see a GP<sup>1</sup>

“The strengths of primary care should be harnessed to address complexities of the ageing population”<sup>2</sup>

“Primary care providers, with their potential to focus on primary and secondary prevention, their ability to identify disease at an early stage, their knowledge of the patient including their social context and their capacity for ongoing chronic disease management are vital for the health care of this group”<sup>2</sup>

## Perspectives

### Aged care series

## Improving the delivery of primary care for older people

The strengths of primary care should be harnessed to address complexities of the ageing population

The Australian Institute for Health and Welfare estimates that by 2057 there will be 8.8 million Australians aged 65 years and over, representing 22% of the population. This is an increase from 3.8 million (15% of the population) in 2017.<sup>1</sup> The Institute also found that although around 70% self-assess their health as being good, very good or excellent, around 20% overall experience severe or profound core activity limitation. This applies to around 50% by 85 years of age.

In 2017, one-fifth of all presentations to emergency departments was for people aged 65 years and over,<sup>1</sup> but multiple inpatient and outpatient hospital attendances are clearly not an effective way to deal with this growing challenge. Primary care providers, with their potential to focus on primary and secondary prevention, their ability to identify disease at an early stage, their knowledge of the patient including their social context and their capacity for ongoing chronic disease management are vital for the health care of this group. Moreover, primary care has been shown to be cost-effective,<sup>2</sup> an important consideration in a society where taxpaying workers are a shrinking proportion of the population.

although remote areas have a range of distance and other geographical barriers to access,<sup>4</sup> and it may be difficult for people with disabilities to access them. Home visits could strengthen this, but home visits by a person's own GP are less available than they were previously, for multiple reasons,<sup>5</sup> and these should be addressed. Economic accessibility to primary care is reasonable as many will not charge above Medicare Benefits Schedule (MBS) rebates for pensioners, so it is generally possible for older people to be seen, often by someone they know well (continuity of care), although this is at a cost to the GP. However, presentations are often complex, so care of older people fits less readily into standard (< 20 minutes) MBS consultations. This is evidenced by an upward shift in the last decade in the number of problems managed per consultation, and in the length of consultation.<sup>6</sup> The MBS is the list of health professional services subsidised by the Australian government. Established in 2015, the MBS Review Taskforce is reviewing the items on the Schedule, including those for general practice (<https://www.health.gov.au/internet/main/publishing.nsf/Content/MBSReviewTaskforce>). The review report, which is still open for consultation, suggests that longer consultations should be factored into the

1. Australian Institute of Health and Welfare (2023) Older Australians, AIHW, Australian Government. Available from: <https://www.aihw.gov.au/reports/older-people/older-australians> Accessed 08 May 2024.
2. Pond CD et al. Med J Aust 2019; 211 (2): 60-62.

# How many see a specialist that could take a lead on vaccination?

- There are around 1,500 geriatricians
- Many hospital- based
- Assume 1000 have some community practice and see about 5 new patients a week
- Thus 250,000 of Australia's 6 million over 65 seen newly by a geriatrician/yr
- And likely 750,000 review appointments (3 reviews a year)
- Thus one million patient contacts with a geriatrician per year
- Say another two million new patients see other specialists relevant to vaccination
- Thus a further eight million news and reviews
- Broadly consistent with 14.6 Medicare consults of those over 65 with **all** specialists in 2019-20 <sup>1</sup>
- So up to 50% of Australians over 65 see a relevant specialist up to 4 times yearly
- Thus plenty of opportunities to discuss vaccination
  - But still not all those over 65 have relevant specialist contact yearly

1. [www.aihw.gov.au/reports/older-people/older-australians](http://www.aihw.gov.au/reports/older-people/older-australians)

# Paradigm shift- from disease to prevention in older folk

- 50 years ago focus was disease detection and treatment
  - Few exceptions : hypertension, ?obesity
  - Many notable risk factors essentially ignored (eg smoking, alcohol)
- Vaccination was seen as for children, not adults
  - And only a few (polio, smallpox, BCG)
- Around 1970/80 prevention became a focus in older adults
  - In USA, Prevention Services Taskforce published regularly updated guidelines, including older people (first 1989)
  - Including recommending 2 vaccines for older folk (pneumococcal polysaccharide and influenza) and tetanus if not up to date
- Now risk factor detection and disease prevention are an integral part of most specialities, particularly geriatric medicine

# In older adults, vaccines can help prevent infectious diseases and improve quality of life<sup>1,2</sup>

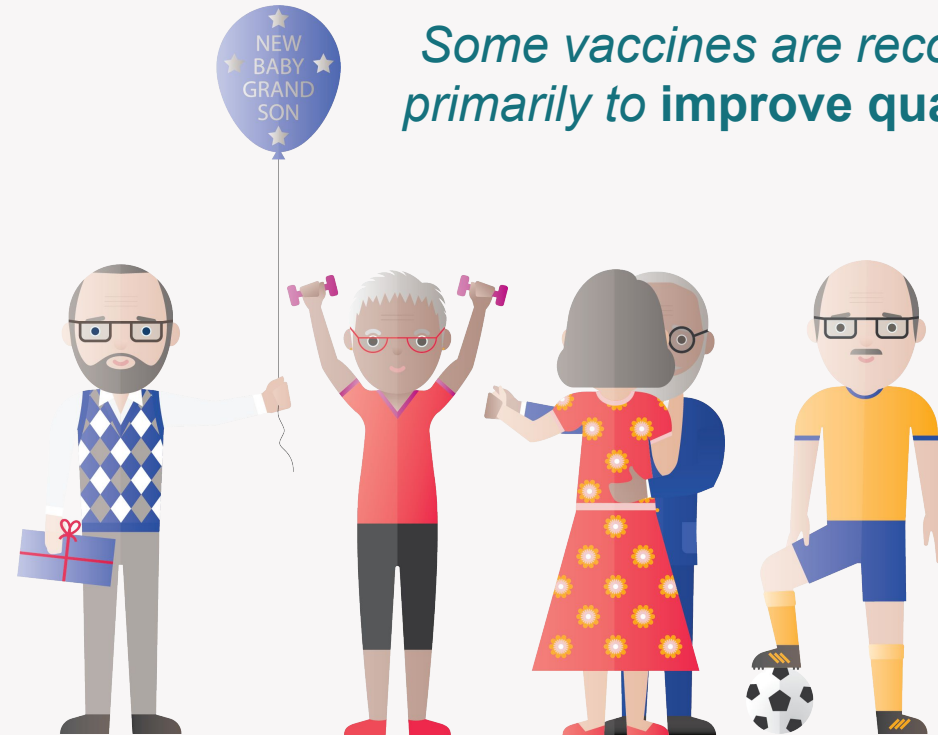
*Some vaccines are recommended primarily to reduce the risk of severe disease*

*Pneumococcus  
Tetanus  
Diphtheria  
Hepatitis A and B  
Influenza  
COVID-19  
RSV*



*Some vaccines are recommended primarily to improve quality of life*

*Pertussis  
Shingles*



\*The vaccines listed on this slide are recommended for older adults in **Australia, a number of European countries and the USA**. Specific vaccine recommendations vary among countries; 1. Lang PO, Aspinall R. *Drugs Ageing* 2014;31:581–599; 2. Carrion AF, Martin P. *Am J Gastroenterol* 2012;107:691–697; Expert opinion slide

# What are the other vaccine-preventable diseases in older people?

- Vaccination to prevent non-infectious disease (“off target”- not the primary focus of the vaccine)
  - CVA
  - Cardiovascular
  - Cancer
  - Dementia
- Likely that all these lists will expand rapidly

# Number of cases preventable by vaccination are rising (US data)

Human Vaccines & Immunotherapeutics, 17:2, 332-343, DOI: 10.1080/21645515.2020.1780847

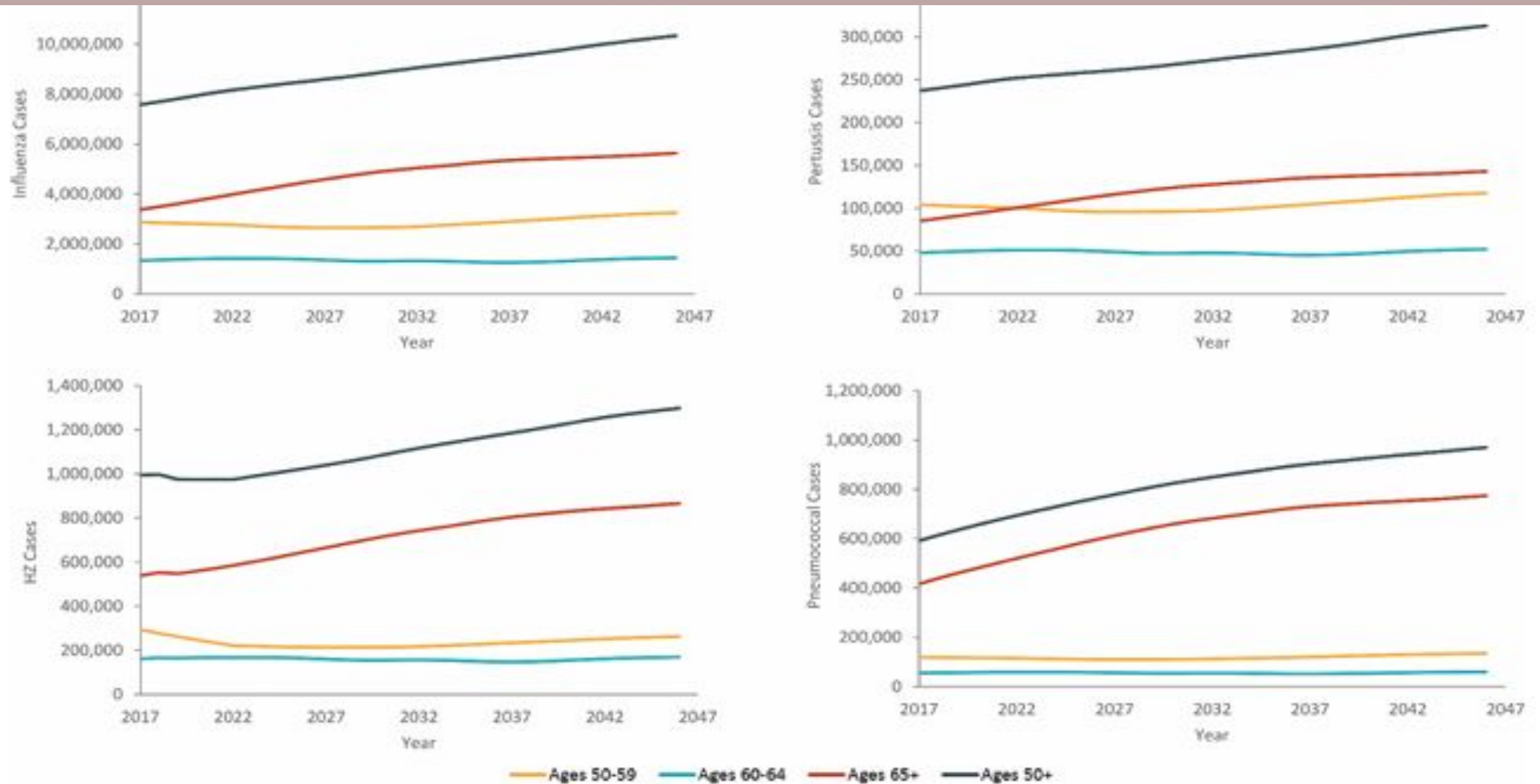
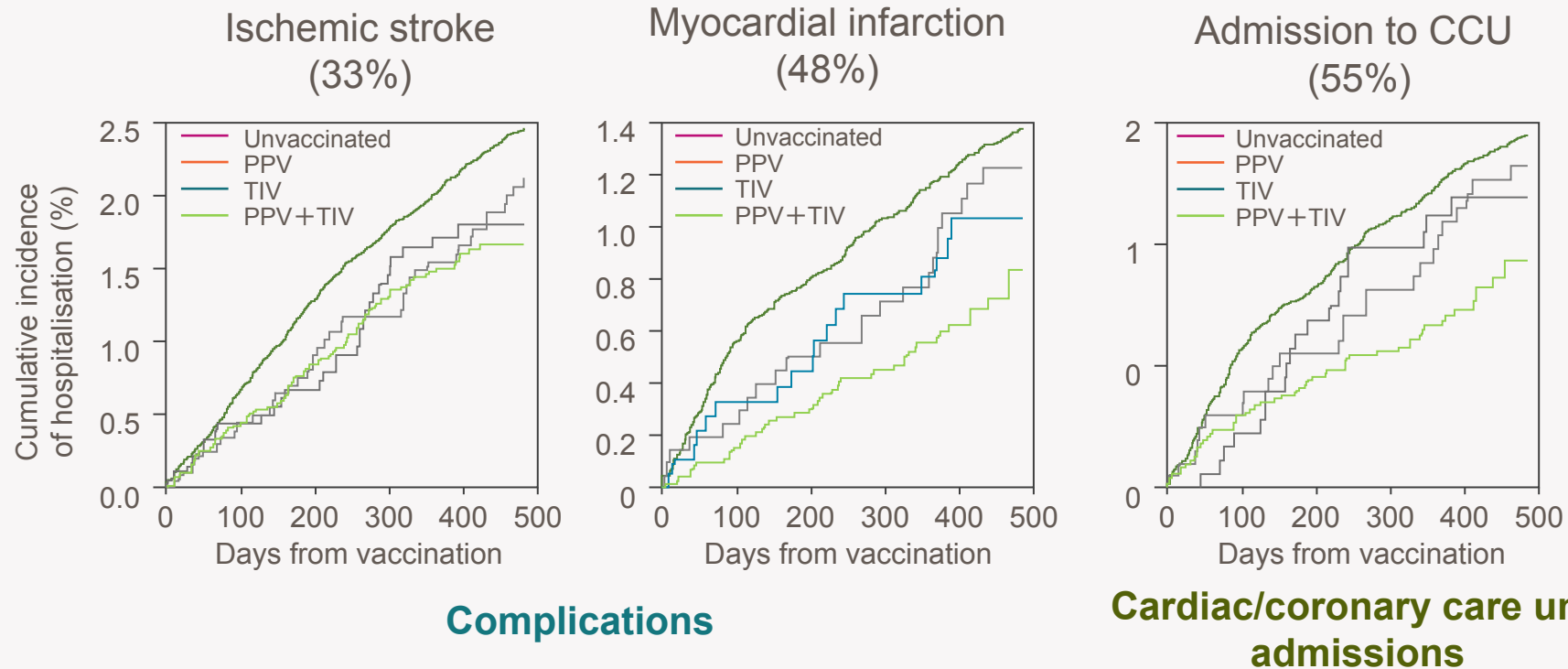


Figure 2. Projected annual (undiscounted) cases of influenza, pertussis, herpes zoster (HZ), and pneumococcal disease by age group, from 2017–2046. Note: The age groups presented in this figure (50–59 y, 60–64 y, and 65+ y) are different sizes.

# Vaccination in older adults can reduce disease-associated complications, reducing healthcare burden and mortality<sup>1</sup>

Pneumococcal and influenza vaccination protects against vascular events, reducing overall healthcare burden

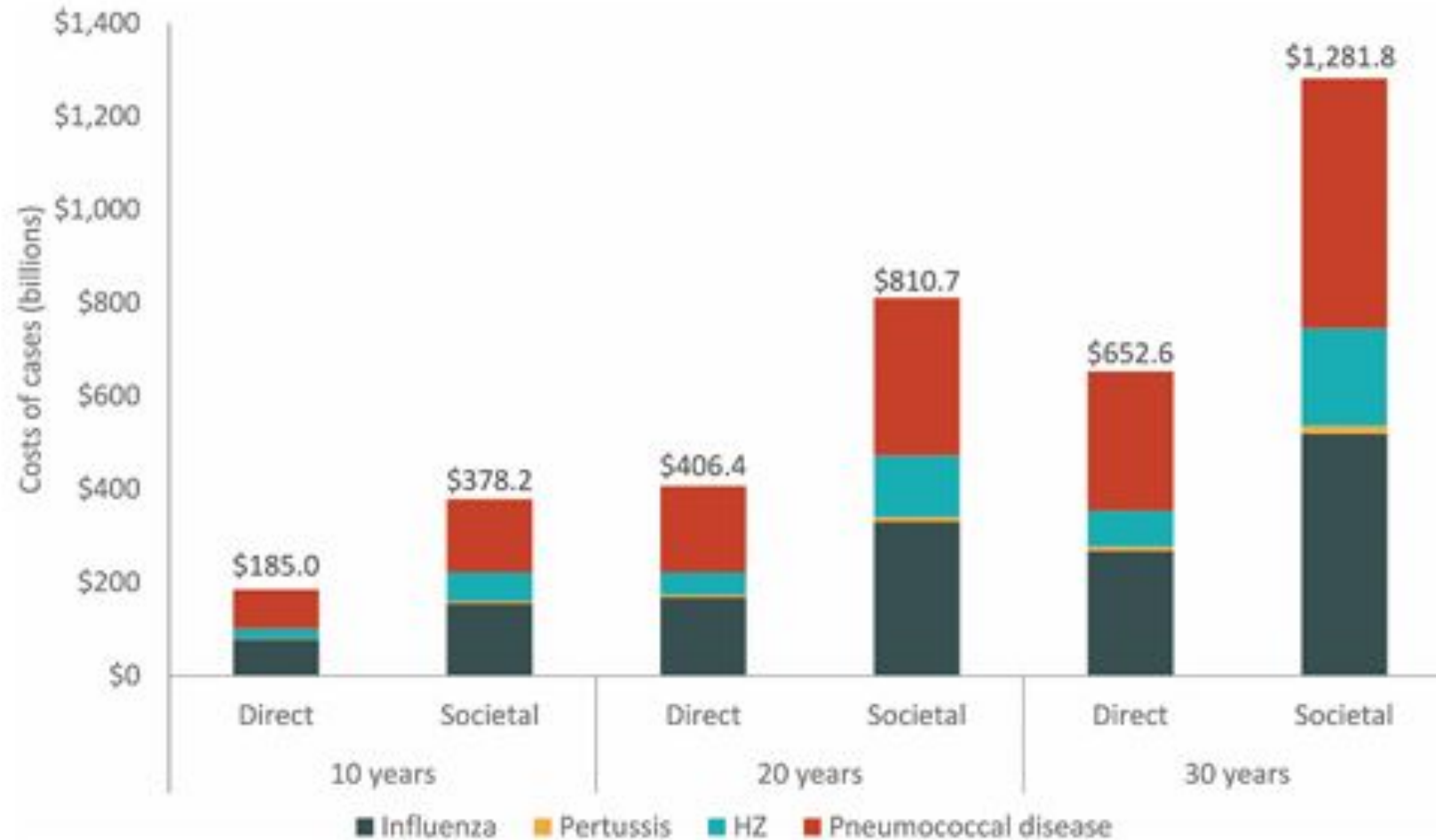


A prospective cohort study of outpatients aged  $\geq 65$  years with chronic illness in Hong Kong, China who participated in a PPV and TIV vaccination programme. Study was conducted from Dec 2007–Jun 2008, with all patients followed until Mar 2009. Of 36,636 subjects recruited, 7292 received both PPV and TIV, 2076 received TIV vaccine alone, 1875 received PPV alone, and 25,393 were unvaccinated. The primary outcome was the rate of death due to the following: pneumonia, COPD, asthma, influenza-like illness, ischaemic stroke, AMI and cardiac failure at Week 64. Compared with the unvaccinated group, PPV + TIV vaccinees had: (a) a 33% reduction in ischaemic stroke (HR: 0.67; 95% CI: 0.54–0.83;  $P < 0.001$ ); (b) a 48% reduction in AMI (HR: 0.52; 95% CI: 0.38–0.71;  $P < 0.001$ ); (c) a 41% reduction in the rate of coronary care unit admission (HR: 0.59; 95% CI: 0.44–0.79;  $P < 0.001$ )

AMI, acute myocardial infarction; COPD, chronic obstructive pulmonary disease; HR, hazard ratio; PPV, pneumococcal polysaccharide vaccine; TIV, trivalent influenza vaccine

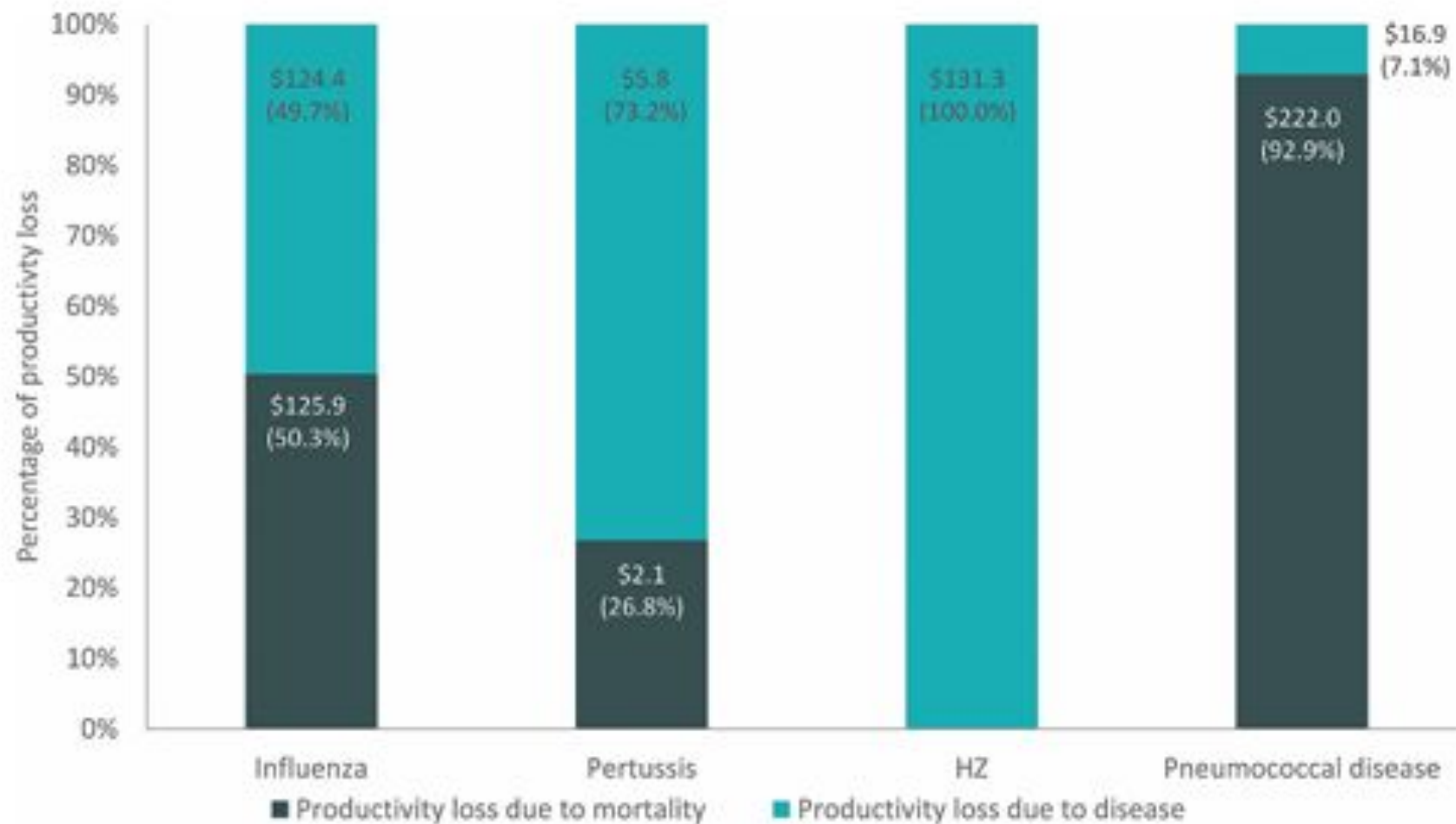
Figures adapted from Hung IFN *et al. Clin Infect Dis* 2010;51:1007–1016, with permission from Oxford University Press

## Direct and societal losses projected to increase over time



**Figure 3.** Cumulative total direct and societal costs of cases over 10-y, 20-y, and 30-y time horizons, by disease (billions, USD). HZ, herpes zoster; USD, United States dollars. Note: All costs are in 2018 USD and are presented undiscounted.

## Productivity loss is either due to mortality or disease



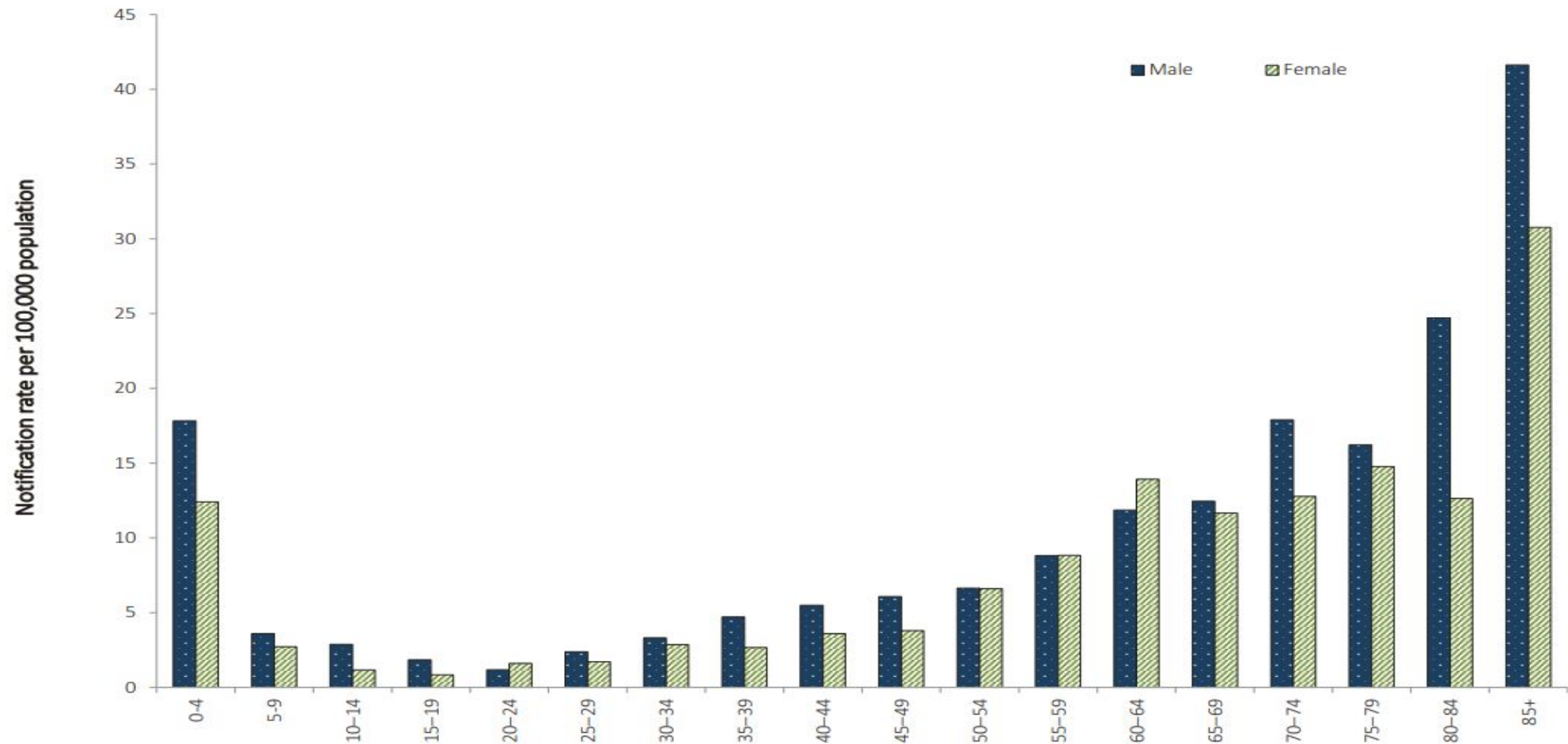
**Figure 4.** Cumulative 30-y productivity loss costs by disease (billions, USD). HZ, herpes zoster; USD, United States dollars. Note: All costs are in 2018 USD and are presented undiscounted.

# Burden of Disease from commonly recommended vaccines

- These will be covered further in individual talks tomorrow:
  - Pneumococcal
  - Influenza
  - RSV
  - COVID
  - Shingles
  - Pertussis
- Others:
  - Meningococcus
  - Tetanus
- Others not covered

# Pneumococcal disease burden – highest in the youngest and oldest

Figure 71: Notification rate for invasive pneumococcal disease, Australia, 2016, by age group and sex



# Pneumococcal disease

In 2024:

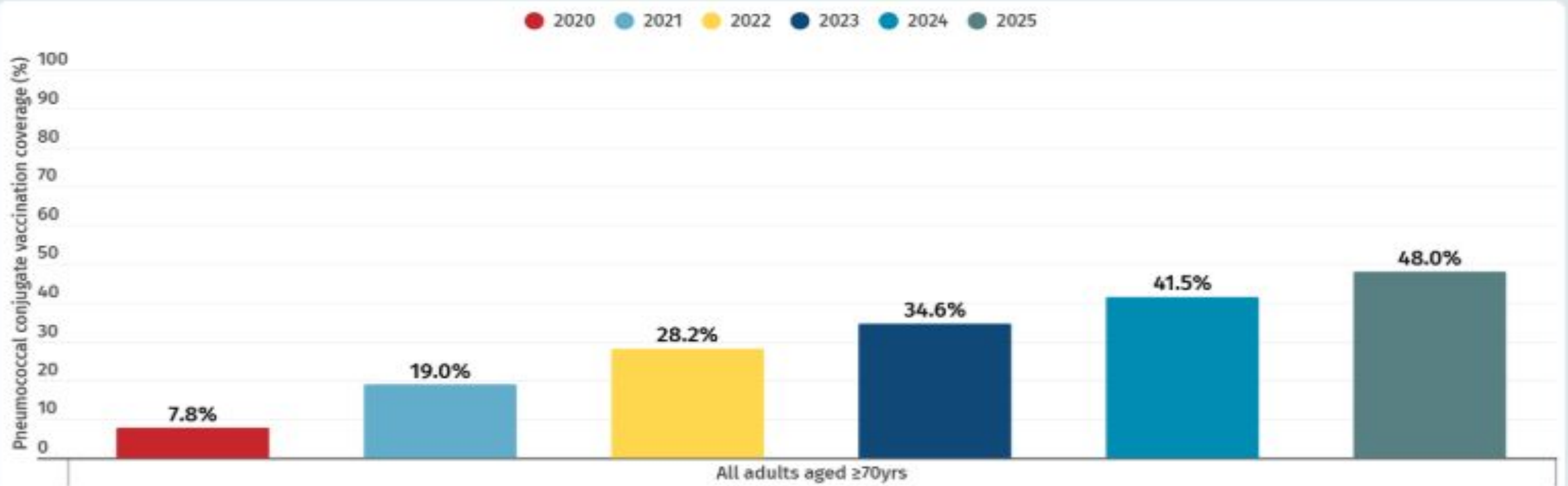
- 616 of the 2,341 notified IPD cases (~26%) were in adults aged  $\geq 70$  years; with 183 cases in adults aged 65-69 years.
- Pneumococcal pneumonia was the most common presentation in adults aged  $\geq 70$  years (38% of IPD cases) followed by bacteraemia (24%).

# Suboptimal PCV vaccination coverage for those >70

## All adults

### Pneumococcal

While **adult coverage of PCV** has continued to increase year-on-year, it remains suboptimal. In 2025, less than half of adults aged 70 years and over were recorded as having previously received an adult dose of PCV.



# Burden of influenza disease



- Annual influenza attack rates: typically, 5-10% of the community.
- In some years, may be up to 20%.
  - Paediatric levels are higher ~30%.
- Influenza-like illness accounts for significant morbidity in the general population and substantial economic losses through increased healthcare utilisation and lost productivity.
- In a typical year, estimated to be responsible for:
  - 1,500,000 lost workdays
  - >300,000 GP visits
  - 18,000 hospitalisations
  - 1,500 - 3,000 deaths

1. <http://www.isg.org.au/index.php/about-influenza/impact-of-influenza/> Accessed 11 Apr 2017;
2. <http://www.isg.org.au/index.php/clinical-information/influenza-and-children/> Accessed 11 Apr 2017
3. Lester-Smith et. al. The Burden of Childhood Influenza in a Tertiary Paediatric Setting (2009) CDI, 33(2)

# Influenza

2025: worst flu season to date.

Some 481,502 confirmed cases of influenza.

-National Notifiable Diseases Surveillance System data.

- 1,738 died

-67 per cent increase on 2023

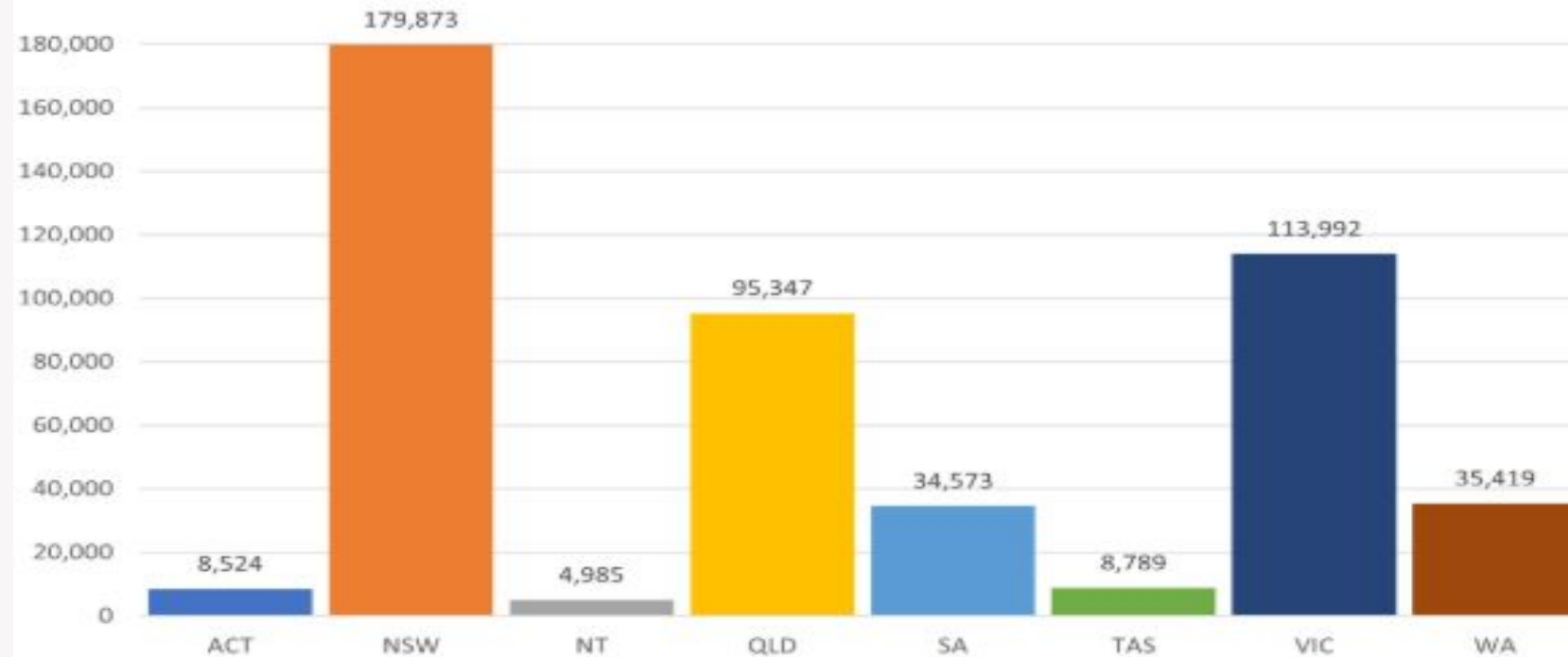
-289,133 confirmed cases

2024 was also higher than 2023

2026: "Super K" has arrived

# Latest numbers

Laboratory Confirmed Influenza Cases in Australia  
from 1 January 2025 to 15 December 2025



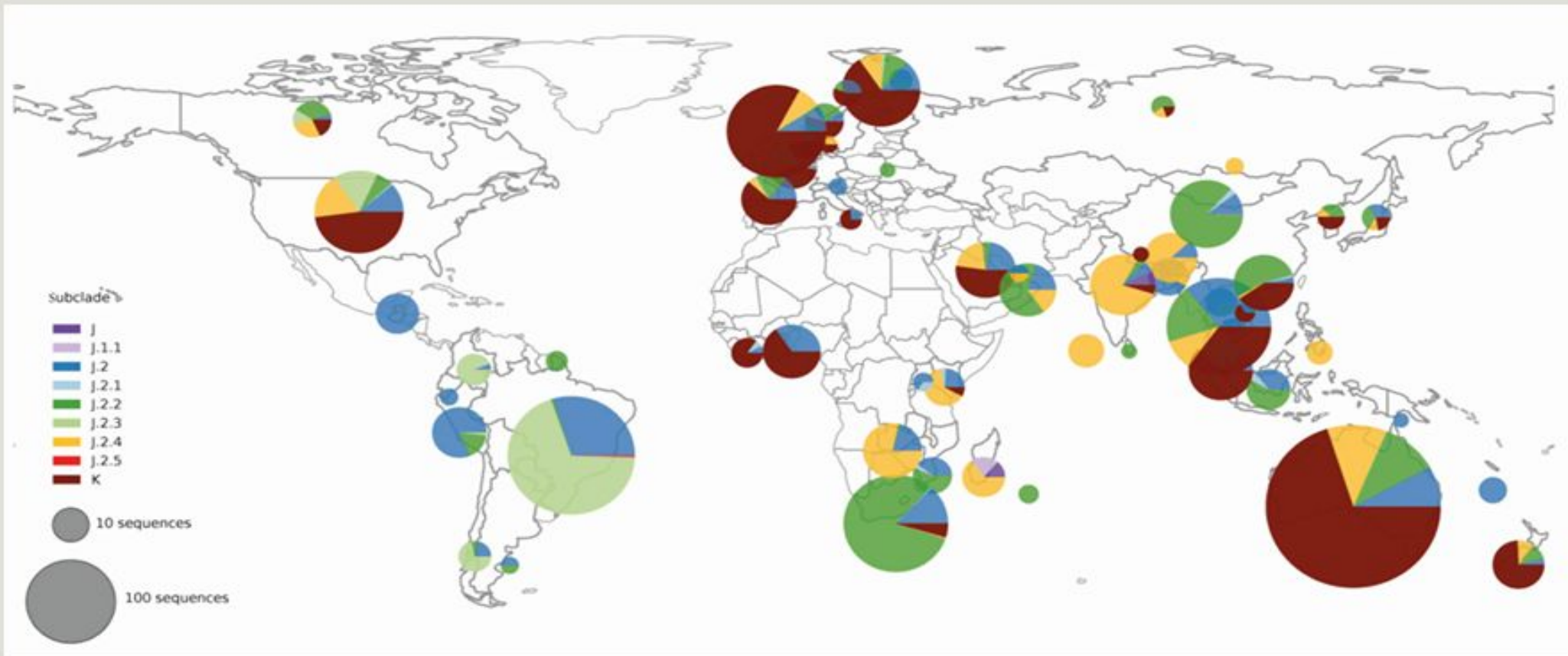
There have been 481,502 notifications of influenza reported to the NNDSS from 1 January 2025 to 15 December 2025.

Data collected from the [National Notifiable Diseases Surveillance System \(NNDSS\)](#).

# Subclade K

## Fast-moving global spread of A(H3N2) subclade K

Proportions of haemagglutinin subclades among genetically characterised A(H3N2) strains globally, (1 Jun to 11 Nov 2025)

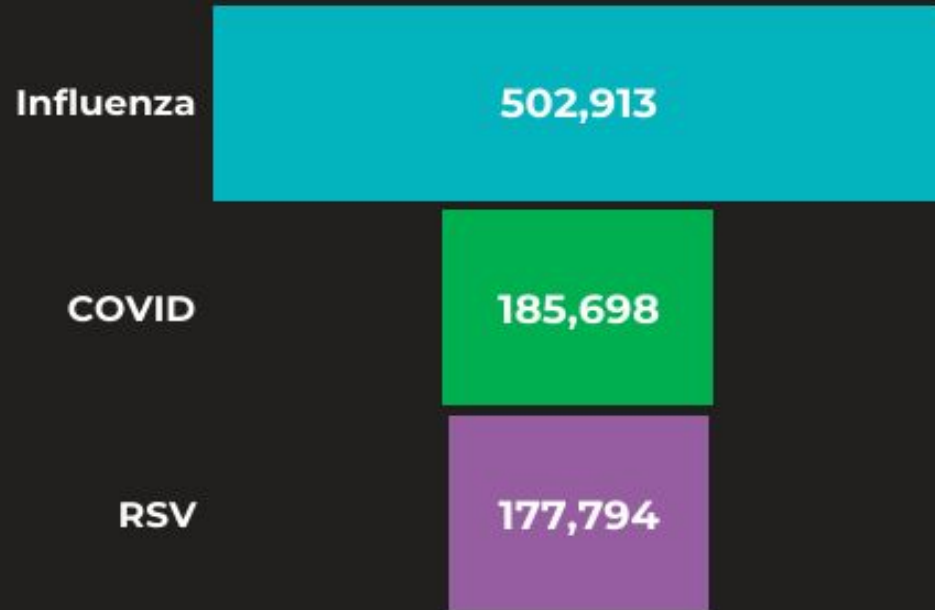


Pie area is proportional to the total number of sequences sampled per country. Plots are based on available haemagglutinin sequences from GISAID and may not accurately represent the situation in countries and do not take into account countries not sequencing viruses or not uploading sequences to GISAID

# Flu vs COVID vs RSV

**Flu cases ~3x higher than COVID and RSV; highest in 2025**

Notified **cases** by disease in Australia  
2025<sup>1</sup>



**Influenza (lab-confirmed) cases** in  
Australia (2019 – 2025)<sup>1-2</sup>

Year	Notifications*
2019 <sup>a</sup>	313,453
2020 <sup>b</sup>	21,343
2021 <sup>c</sup>	750
2022 <sup>d</sup>	233,454
2023 <sup>e</sup>	289,154
2024 <sup>1</sup>	365,589
2025 <sup>1</sup>	502,913

Source: National Notifiable Diseases Surveillance System (NNDSS), as of 6 February 2026.

# RSV cases (all ages) in Australia 2021–Apr 2026<sup>1</sup>

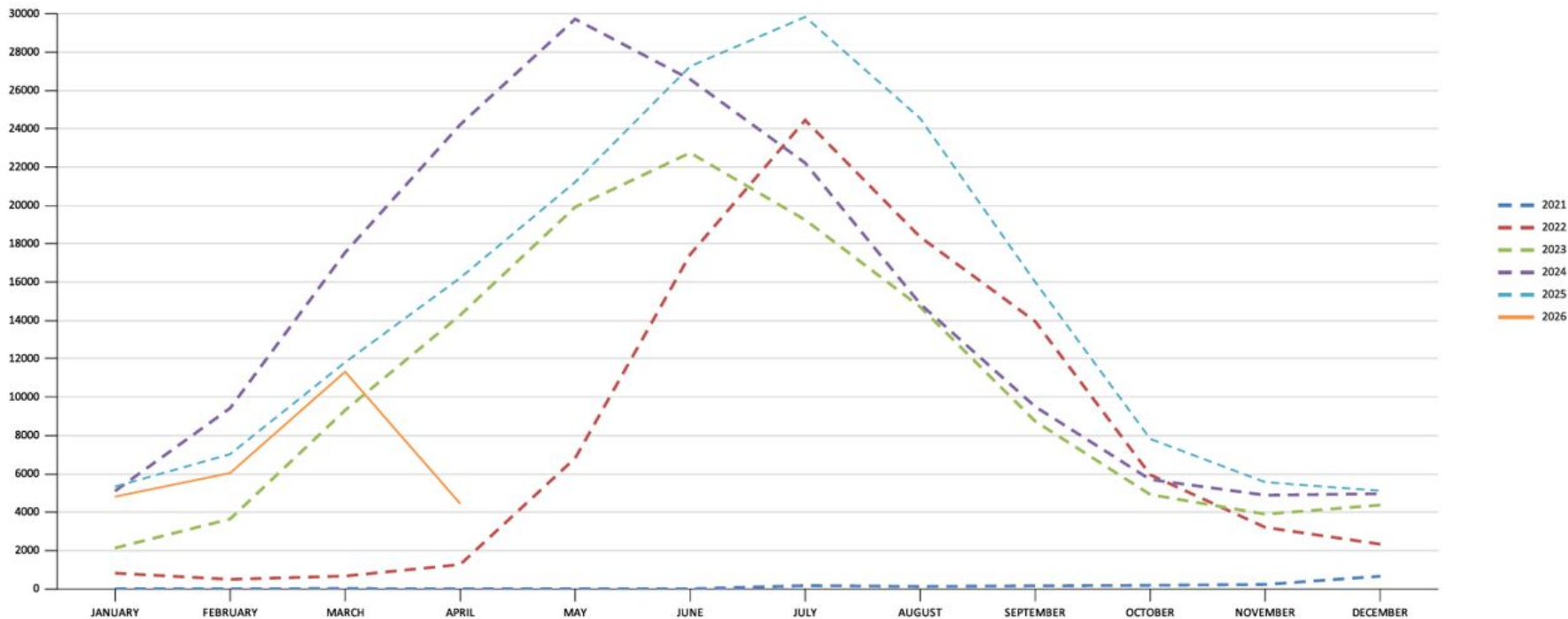
ANNUAL AUSTRALIAN RESPIRATORY SYNCYTIAL VIRUS (RSV) STATISTICS

YEAR	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	TOTALS
2021	1	6	15	-	-	1	172	126	159	185	228	660	1,553
2022	822	496	670	1,268	6,819	17,448	24,452	18,356	13,953	5,954	3,208	2,332	95,778
2023	2,134	3,645	9,319	14,280	19,919	22,751	19,250	14,712	8,744	4,920	3,898	4,372	127,944
2024	5107	9429	17550	24217	29726	26584	22220	14869	9507	5704	4888	4963	174,764
2025	5,337	7,029	11,821	16,224	21,222	27,263	29,839	24,546	16,006	7,823	5,564	5,118	177,792
2026	4,812	6,043	11,327	4,448									26,630

LAST UPDATED: 14 April 2026

Increasing notifications

ANNUAL AUSTRALIAN CONFIRMED RSV CASES

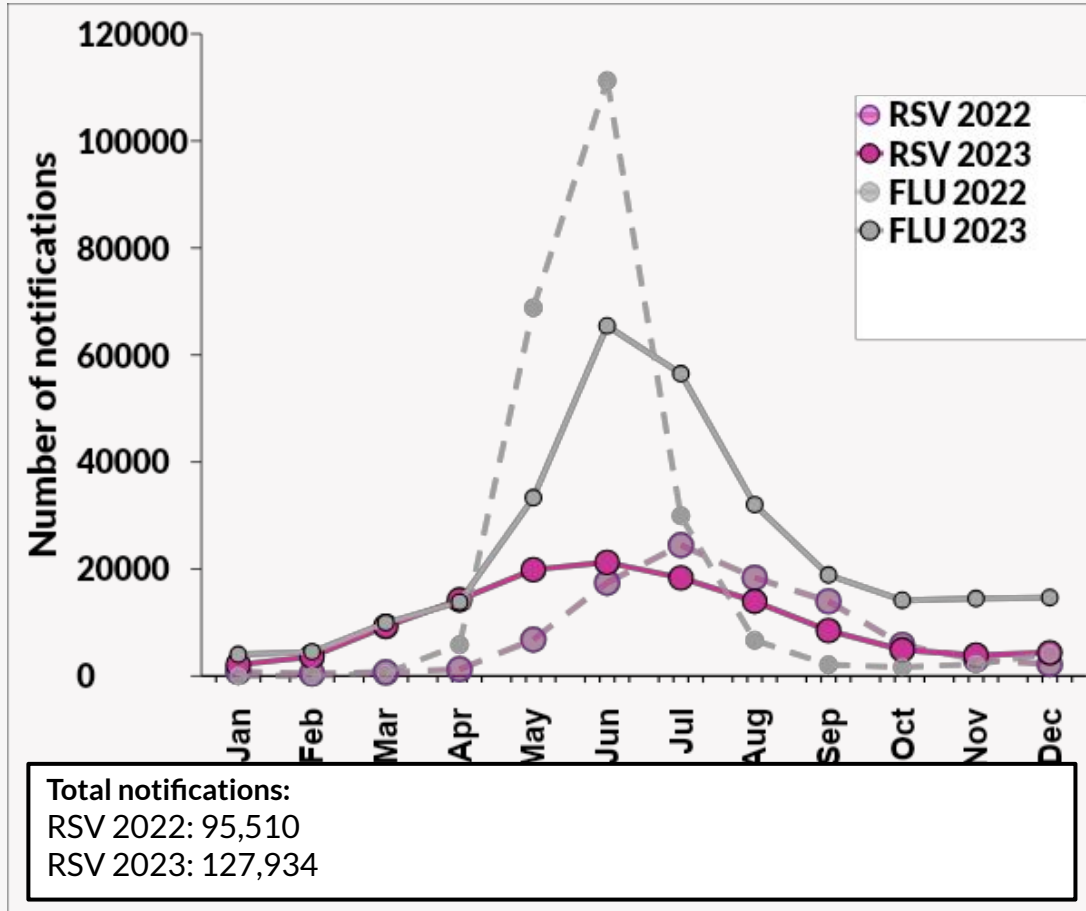


Reference: These statistics are taken from the Aust Government Department of Health, National Notifiable Diseases Surveillance System.

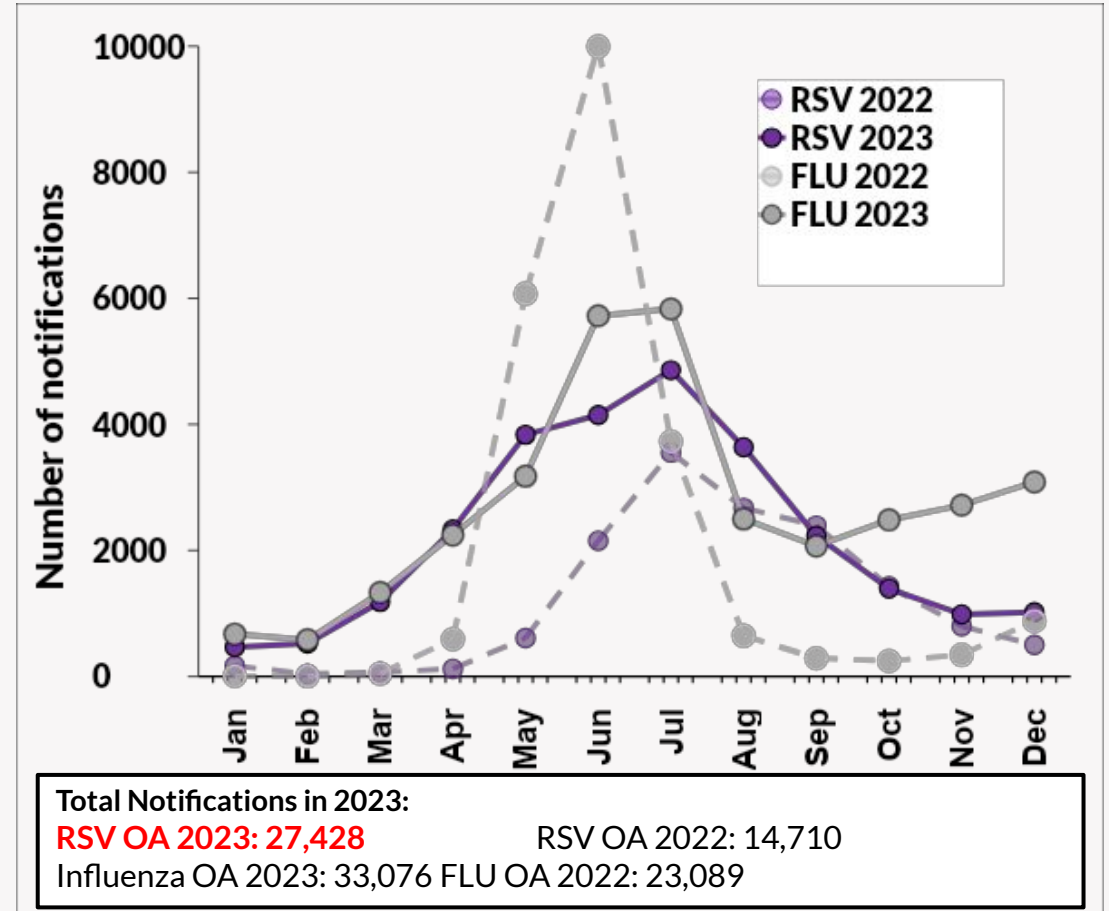
1. Immunisation Coalition. Respiratory syncytial virus (RSV) statistics [updated 2026 Apr 14; accessed 2026 Apr 24]. Available at: [immunisationcoalition.org.au/respiratory-syncytial-virus-rsv-statistics](https://immunisationcoalition.org.au/respiratory-syncytial-virus-rsv-statistics)

# RSV vs. influenza notifications in Australia, 2022 and 2023

## Total notifications



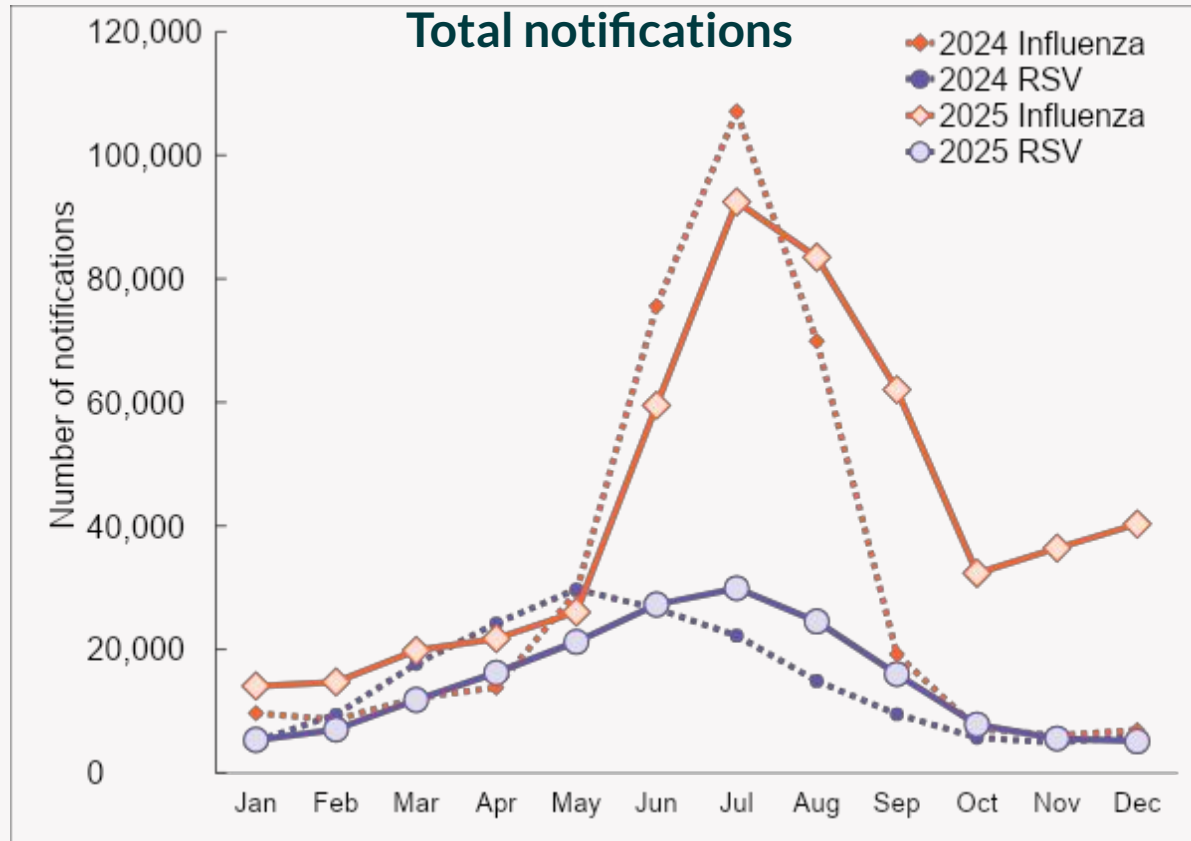
## 60+ OA



Influenza 2022: 233,349

OA, older age; RSV, respiratory syncytial virus.

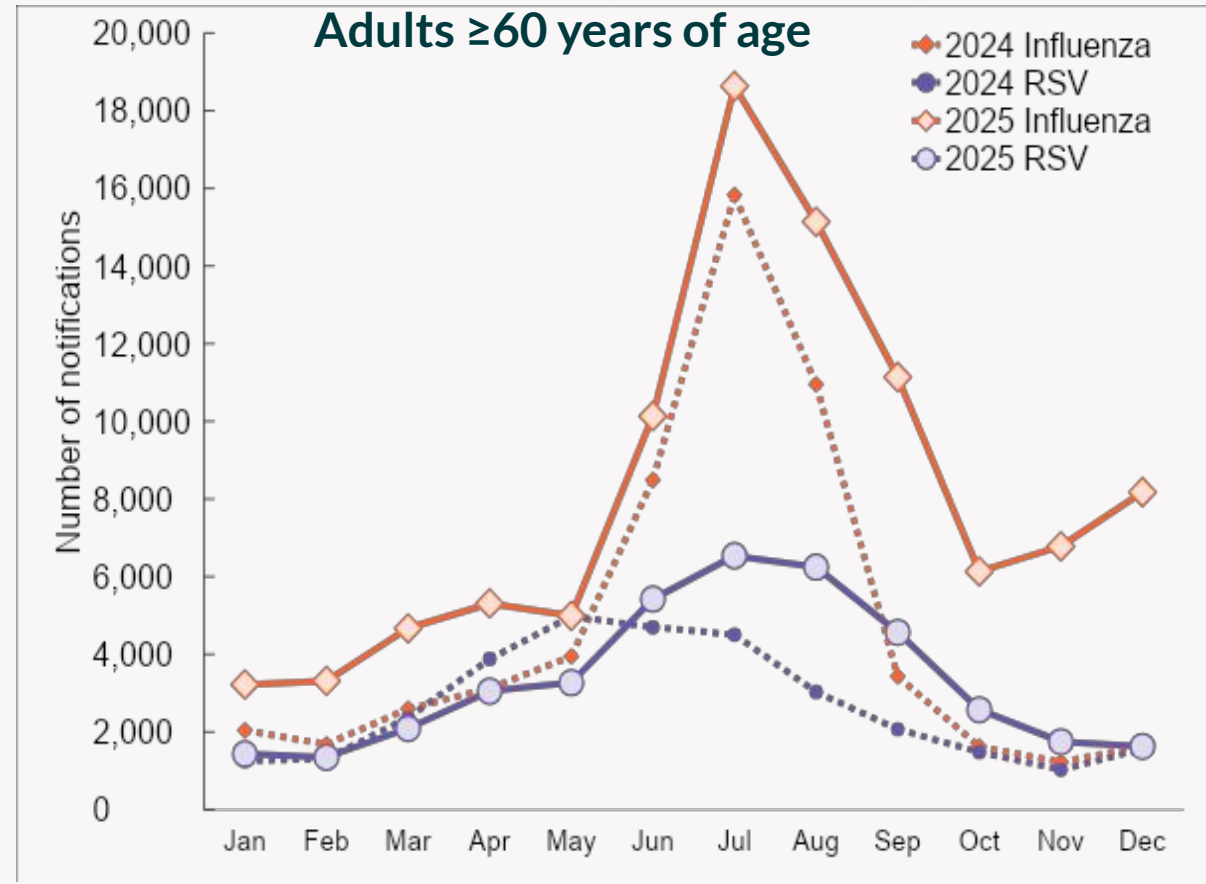
# RSV vs. influenza notifications in Australia, 2024 and 2025



**Total notifications per year:**

RSV 2024: 176,040  
 RSV 2025: 177,953

Influenza 2024: 365,627  
 Influenza 2025: 502,974



**Notifications in adults ≥60 years per year:**

RSV 2024: 32,162  
 RSV 2025: 39,913

Influenza 2024: 56,569  
 Influenza 2025: 97,640

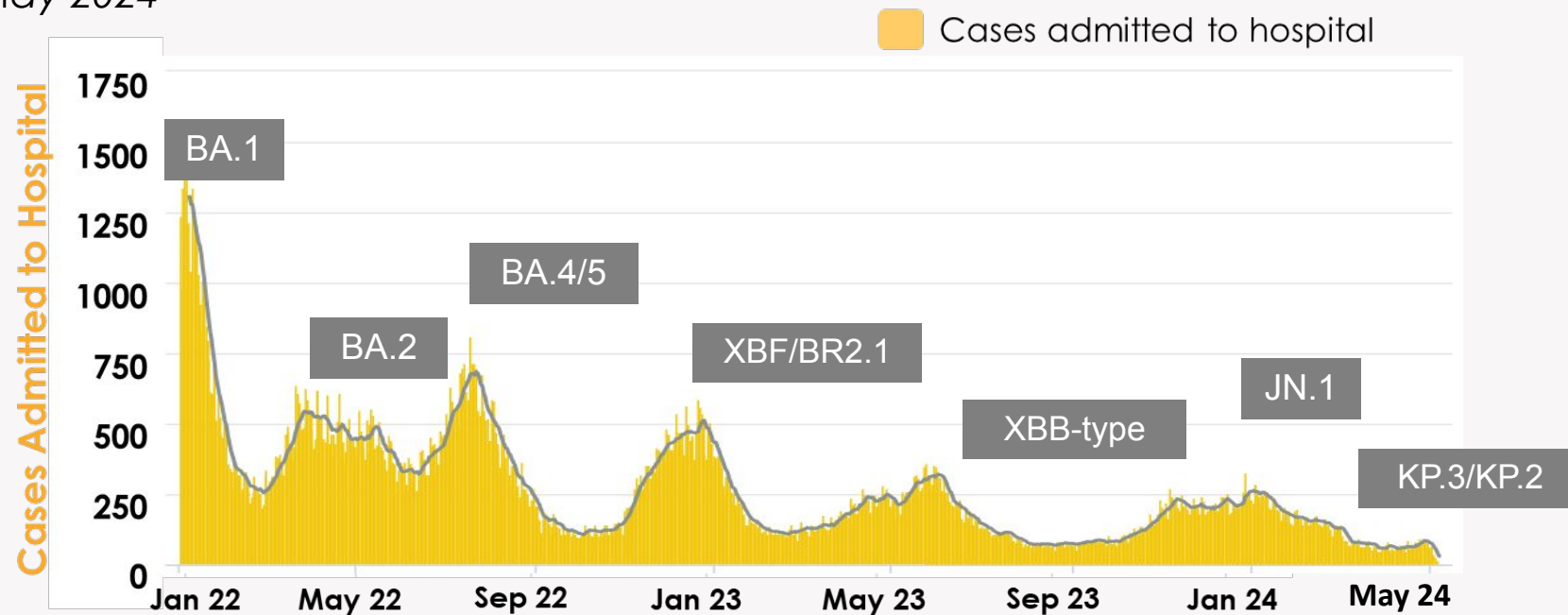
RSV, respiratory syncytial virus

Data source: Australian Government Department of Health and Aged Care. National notifiable disease surveillance system [accessed 2025 April 24]. Available from: [nindss.health.gov.au/pbi-dashboard](https://nindss.health.gov.au/pbi-dashboard)

# COVID-19 is still a burden

- multiple infection peaks throughout the year

1 Jan 2022 – 07 May 2024



Australian Government Department of Health and Aged Care, COVID-19 reporting, 10 May 2024 <https://www.health.gov.au/health-alerts/covid-19/case-numbers-and-statistics> ;

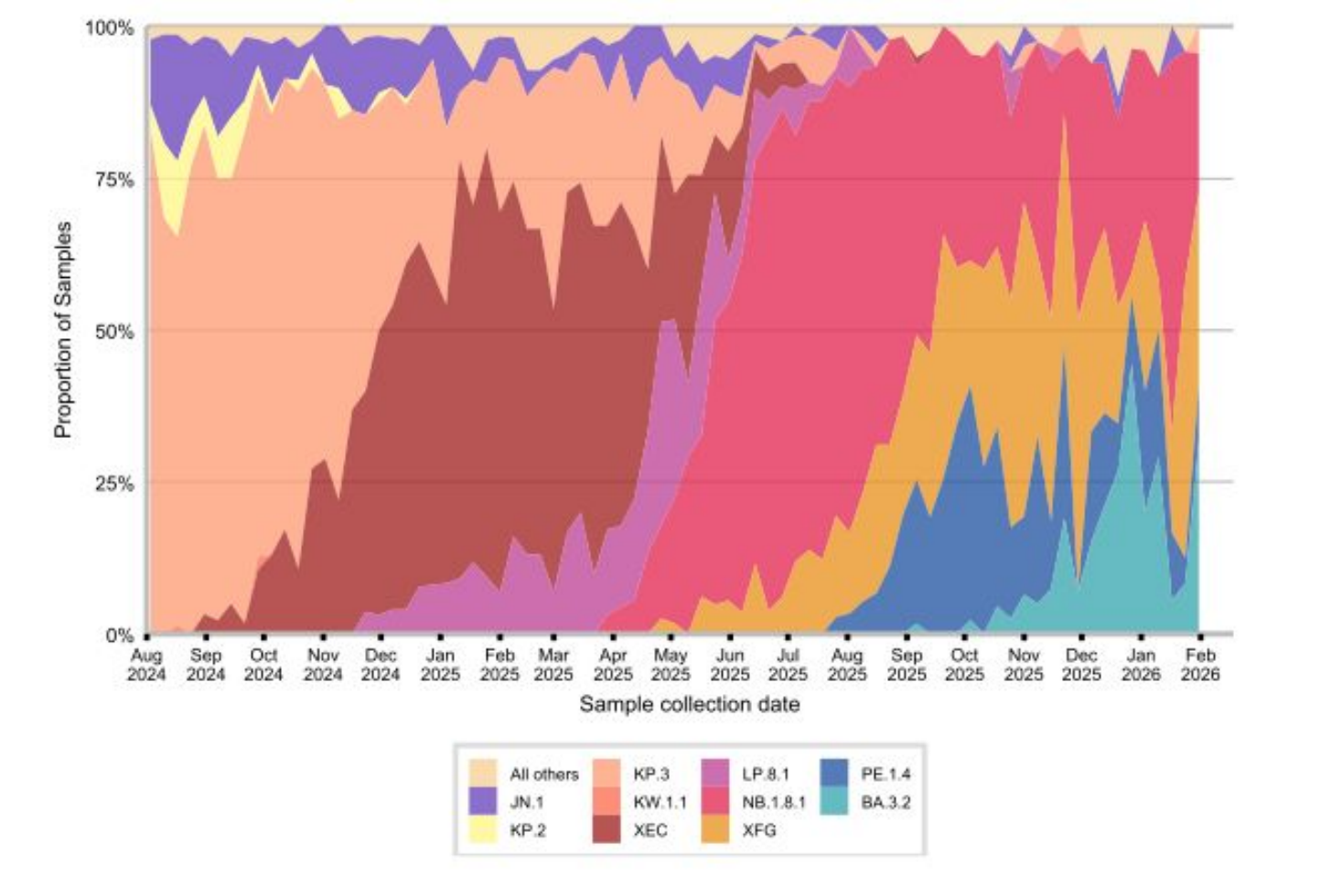
<http://gisaid.org/phylogenetics/global/nextstrain/>; NSW respiratory surveillance report, accessed 22 Jan 2024

<https://www.health.nsw.gov.au/Infectious/covid-19/Pages/reports.aspx> ; Victorian Surveillance Report, accessed 22 Jan 2024

<https://www.health.vic.gov.au/infectious-diseases/victorian-covid-19-surveillance-report>;

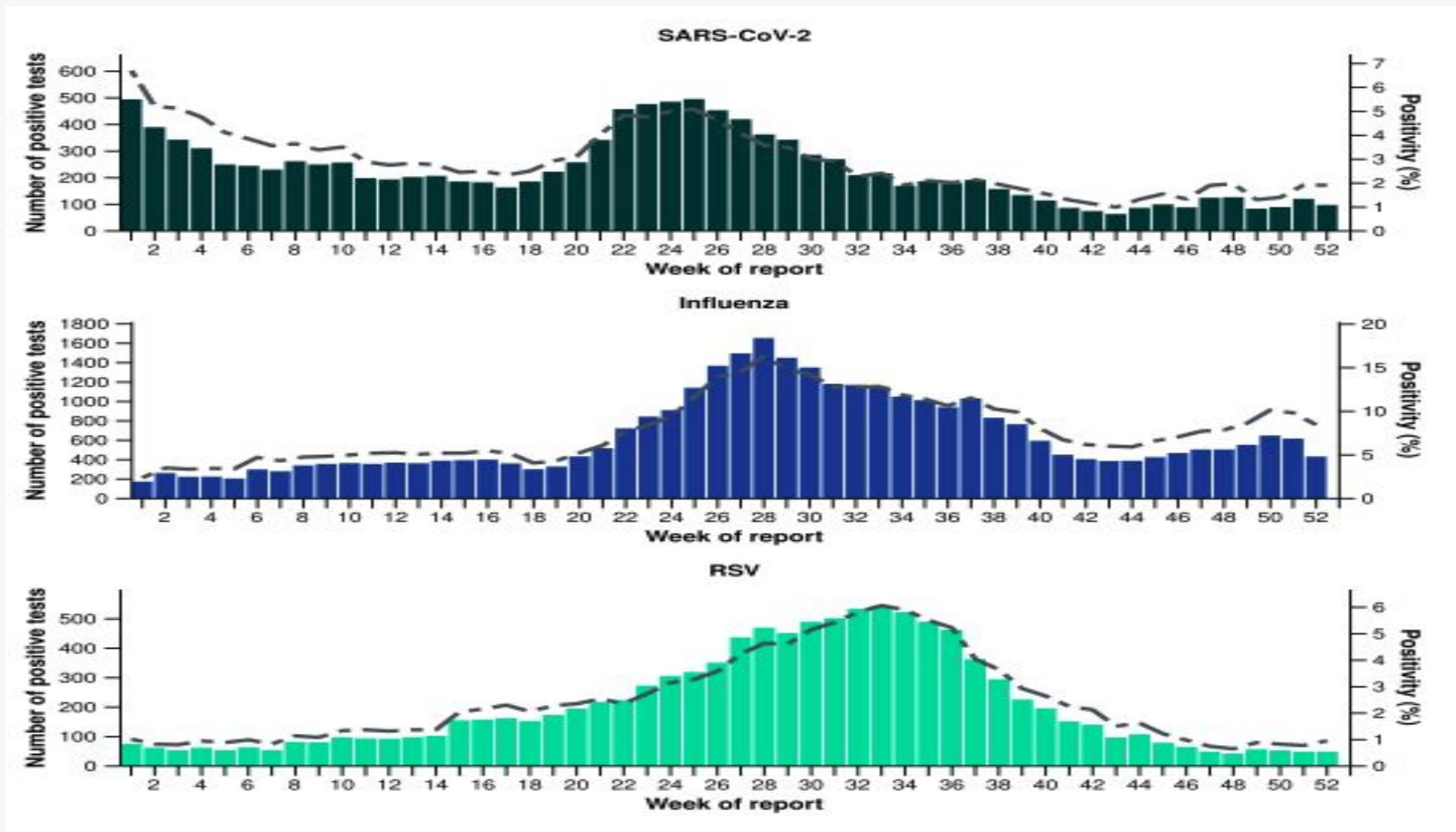
<https://www.health.gov.au/resources/publications/australian-respiratory-surveillance-report-5-20-may-to-2-june-2024?language=en>

# Estimated weekly distribution of COVID-19 sub-lineages in the NSW community, 1 August 2024 to 31 January 2026<sup>1</sup>



1. NSW Respiratory Surveillance Report | Epidemiological week 6 | Ending 7 February 2025

# Number of tests positive (bars) and test positivity (line) for SARS-CoV-2, influenza or RSV of those specimens tested by sentinel laboratories by week of report<sup>\*†</sup>, Australia, 1 January to 28 December 2025



Source: Sentinel laboratories, including National Influenza Centres \* Number of specimens tested excludes data from WA as testing denominator data are different for the three pathogens in Western Australia.† A small minority of total samples from Victoria are tested only by respiratory panel (influenza, parainfluenza, adenovirus, human metapneumovirus, seasonal coronaviruses, RSV, and some picornaviruses) but not for SARS-CoV-2. These minority samples include only forensic materials; all other samples are tested by respiratory panel and SARS-CoV-2 assay.  
 Australian Centre for Disease Control. Respiratory Surveillance Report. 1-28 December 2025

# Respiratory Virus Notifications by Age

## Notified cases by disease, and five-year age group<sup>†</sup>, Australia, 1 January to 28 December 2025

	COVID-19	Influenza	RSV
Age Group (years)	Year to Date (n)	Year to Date (n)	Year to Date (n)
0-4	18,866	59,455	78,959
5-9	5,955	72,382	13,023
10-14	6,056	51,421	5,847
15-19	6,350	33,727	4,046
20-24	6,324	19,613	3,216
25-29	7,785	18,834	3,746
30-34	9,516	23,754	4,747
35-39	10,964	30,046	4,744
40-44	10,393	30,105	4,256
45-49	8,862	23,281	3,996
50-54	8,902	21,255	5,013
55-59	8,610	19,420	5,438
60-64	9,161	19,089	6,100
65-69	9,462	17,605	6,384
70+	57,420	59,495	27,676

Source: National Notifiable Diseases Surveillance System (NNDSS). † Total includes cases with missing age.

# Local Surveillance: Severe Acute Respiratory Infection in Sentinel Hospitals 2025

Total number of patients (children and adults) admitted with a severe acute respiratory infection to sentinel hospitals by disease and week of admission, Australia, 1 January to 14 December 2025

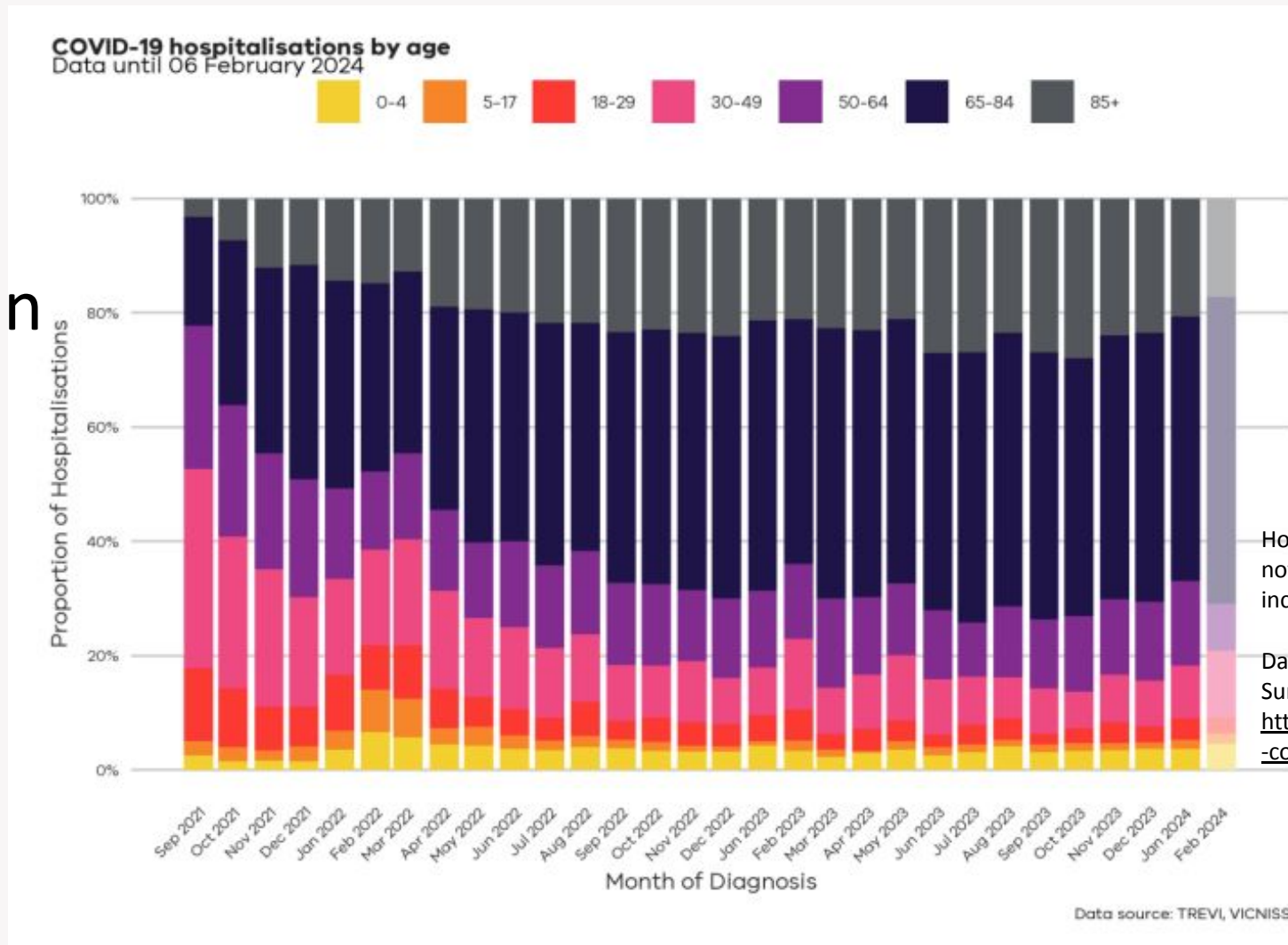
**Respiratory viruses are a major source of hospitalisations in Australia**

^Source: Influenza Complications Alert Network (FluCAN). Does not include patients with missing age; therefore, the sum of age-specific totals above may not equal the total number of patients. † For patients who are still in hospital data may not be complete; therefore, these data are not included in the length of stay or discharge status. In addition, length of stay data excludes patients that acquired their infection in hospital.

Australian Centre for Disease Control. Respiratory Surveillance Report. 1-28 December 2025

# Older adults are the largest proportion of those in-hospital with COVID-19

## Victorian Data



Hospitalisations indicate those COVID-19 positive in-hospital not those hospitalised for COVID-19. Faded areas indicate incomplete data for the period.

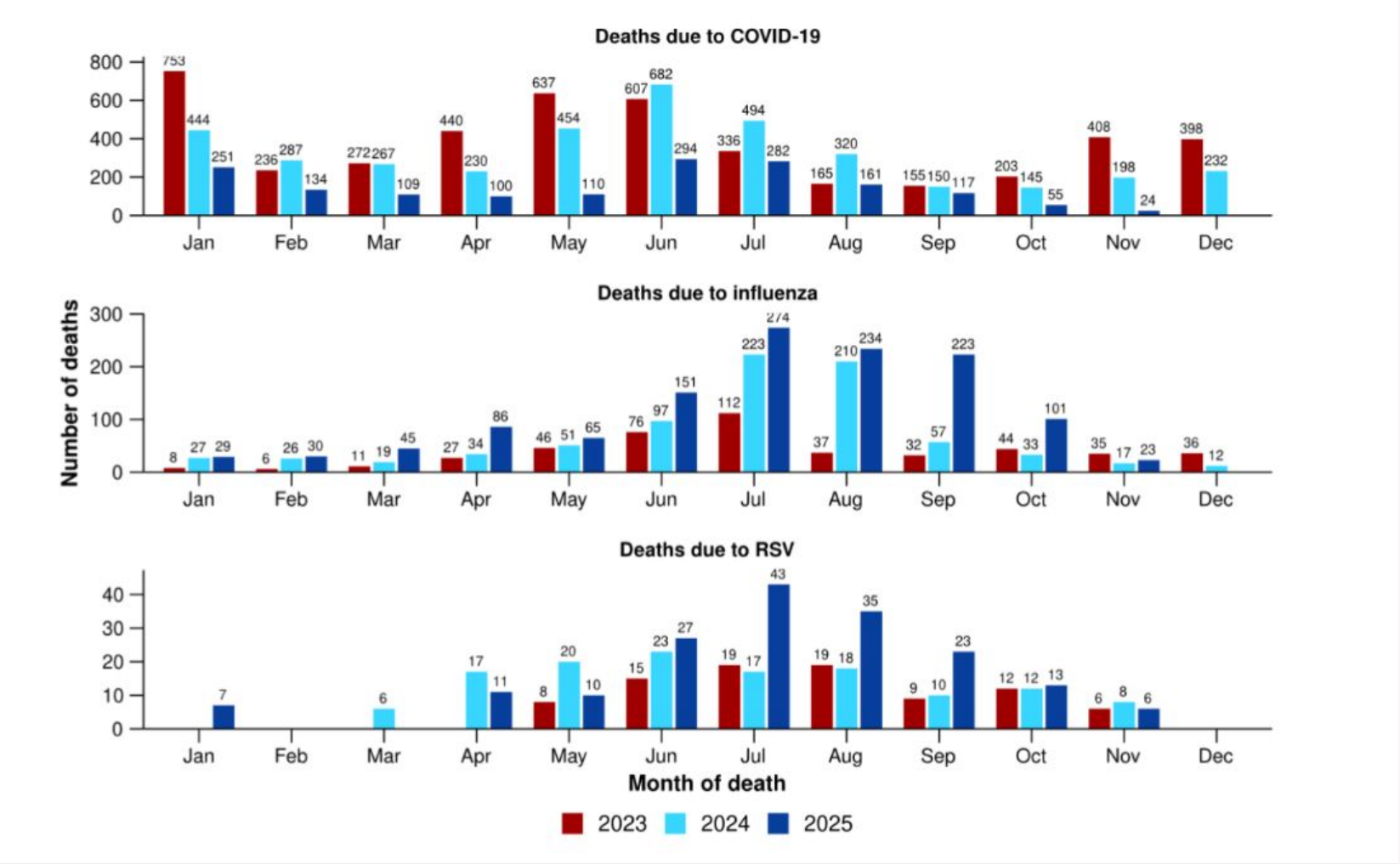
Data to 9<sup>th</sup> February 2024 from the Victorian COVID-19 Surveillance Report, <https://www.health.vic.gov.au/infectious-diseases/victorian-covid-19-surveillance-report>, accessed 16<sup>th</sup> February 2024

# COVID-19

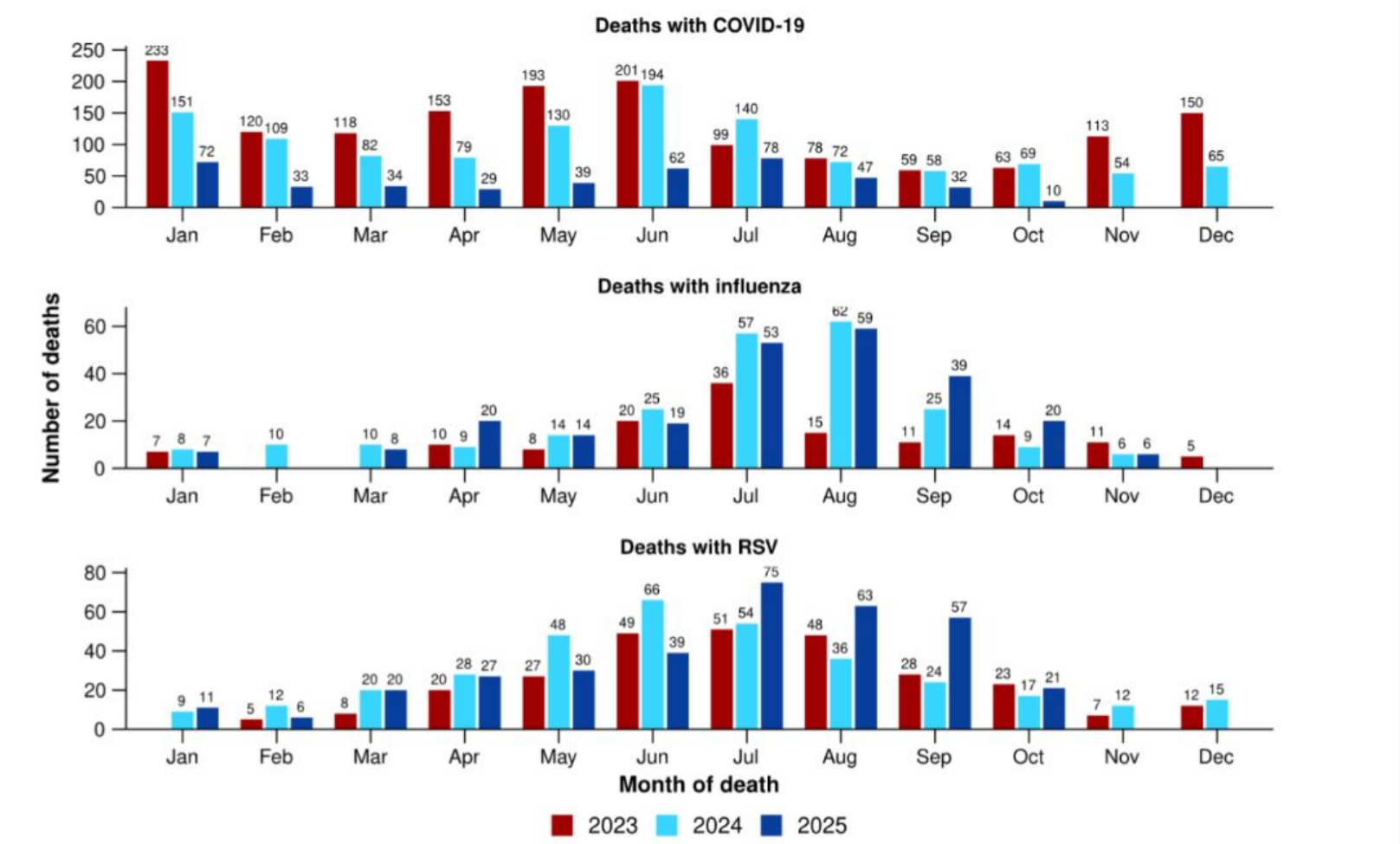
COVID-19 remained biggest acute respiratory killer in 2024

- implicated in 4056 deaths to August
- compared with 851 for flu and 380 for respiratory syncytial virus.

# Provisional numbers of deaths *due* to an acute respiratory infection\*† by month, year, and disease, Australia, 1 January 2023 to 30 November 2025



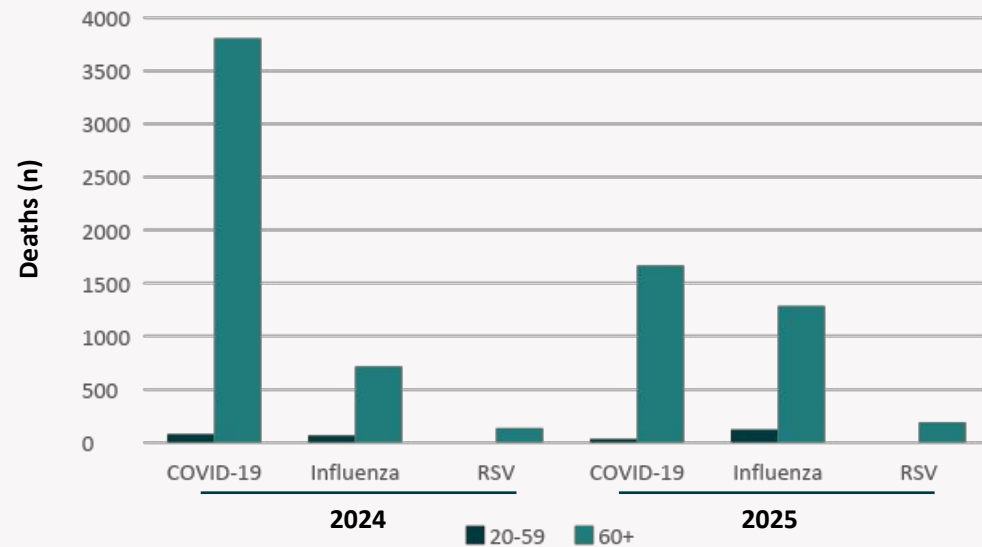
# Provisional numbers of deaths *with* an acute respiratory infection\*† by month, year, and disease, Australia, 1 January 2023 to 30 November 2025



# ARIs are a Major Contributor to Mortality and Loss of Independence in Older Adults

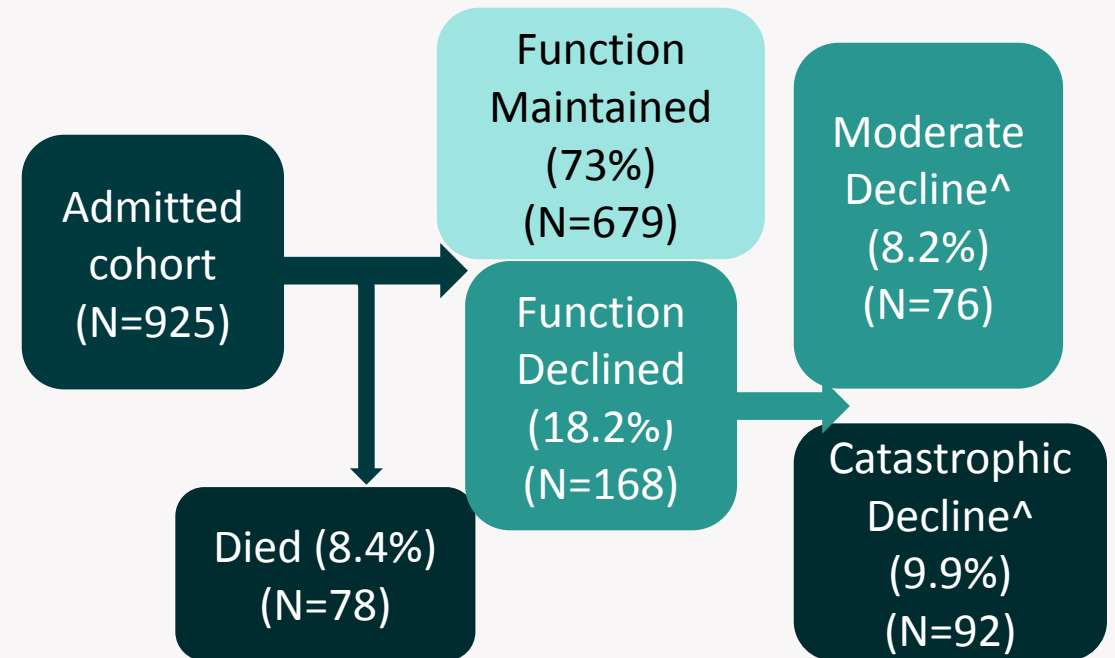
## Most ARI deaths occur in older adults

Deaths due to acute respiratory infections in Australia 2024-2025<sup>1\*</sup>



## Older adults who survive ARI hospitalisation may have persistent functional decline

Persistent Functional Decline Following Hospitalisation with Influenza or Acute Respiratory Illness in US Adults ≥65 years<sup>2</sup>



ARI; Acute Respiratory Illness \*May not reflect total mortality, some values are not published. ^Decline indicates loss of points on Barthel index, moderate decline indicates 10-20 points, catastrophic decline indicates 20 or more points

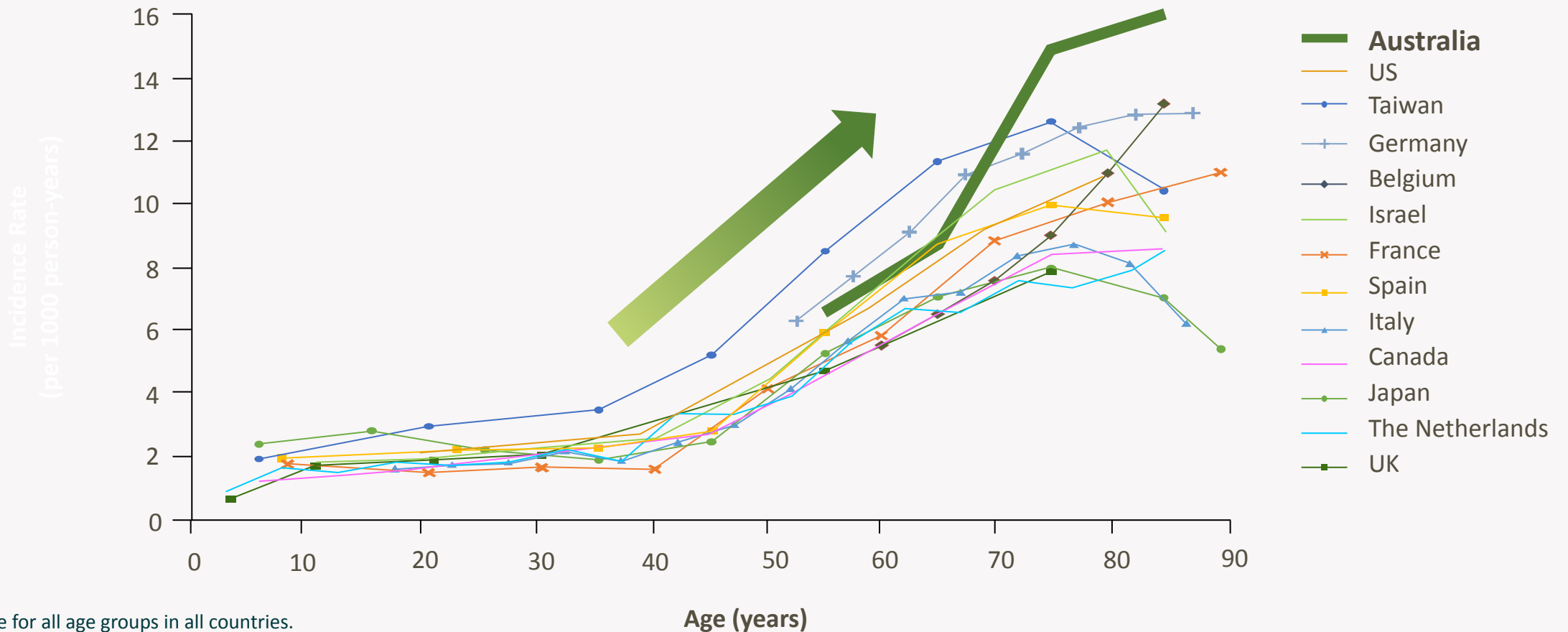
1. Australian Bureau of Statistics. Acute respiratory disease mortality in Australia, including COVID-19, influenza and RSV. Jan 2026

<https://www.abs.gov.au/statistics/health/causes-death/deaths-due-acute-respiratory-infections-australia/latest-release> [Accessed 8 April 2026]; 2. Andrew, M.K et al. (2021). J Am Geriatr Soc, 69: 696-703.

3. Veronese, N. et al. *Age and Ageing*, Volume 54, Issue 12, December 2025

# The incidence of HZ increases with age<sup>1,2</sup>

Incidence of herpes zoster stratified by age\*<sup>2</sup>



\* Data not available for all age groups in all countries.  
HZ herpes zoster

1. Update on Recommendations for Use of Herpes Zoster Vaccine: <https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6333a3.htm> (accessed October 2022).  
2. Kawai K, et al. BMP Open 2014;4:e004833.

# Pertussis

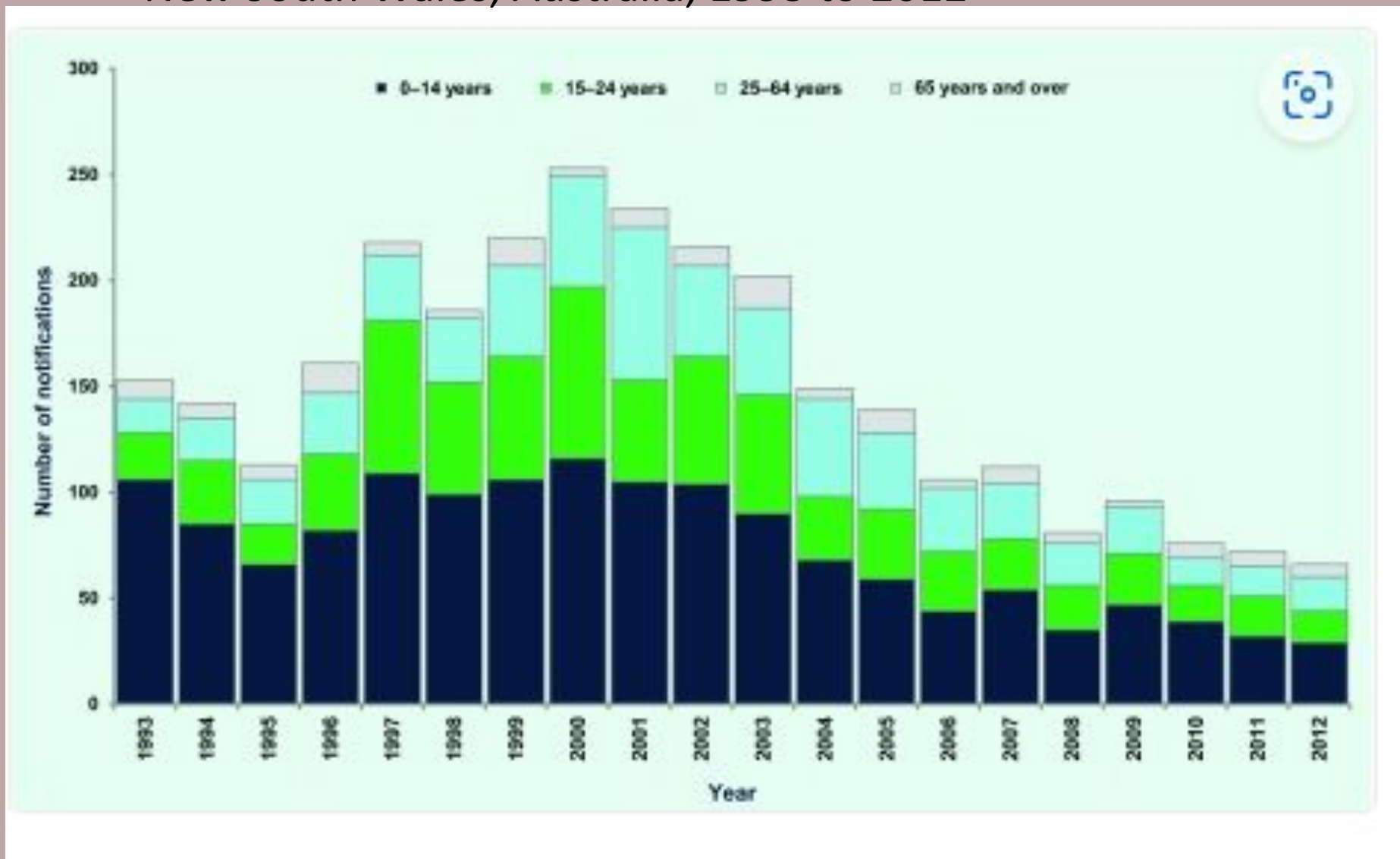
Australia experienced a large increase in whooping cough cases in 2024, with more than 57,000 cases reported – the highest annual total since national monitoring began in 1991 and exceeding the 38,748 cases in 2011.

Case numbers declined in 2025 to just over 25,000 cases, although they remained higher than typical background levels until later in the year.

By 19 Feb 2026, just over 1,300 pertussis cases had been reported nationally, which is about 80% lower than the same period in 2025.

These numbers are consistent with inter-seasonal levels seen in non-outbreak years.

# Invasive meningococcal disease notifications by year and age group, New South Wales, Australia, 1993 to 2012



# Tetanus

The tetanus hospitalisation rate in Australia for people aged 65 years or older declined from 0.24 in 2003–2012 to 0.10 cases per 100,000 population per year in 2013–2019.

However, deaths from tetanus are still reported:

All eleven tetanus- related deaths during 2003–2019 were of people aged 75 years or older; none of those with known vaccination status had received a tetanus- containing vaccine in line with AIH recommendations for adults.

The tetanus- related death of a New South Wales woman in her eighties in April 2023, the result of a minor gardening wound, attracted media attention and led to calls for more widespread vaccination.

# What might reduce this disease burden?

- Better vaccines
  - Cell based and recombinant flu vaccines
  - Capvaxive (PCV 21- wait for tomorrow)
- **Specialist advocacy**
- Better public health campaigns
- AI and better IT
- Other benefits of vaccination
  - eg prevention of the greatest killer and most feared disease
  - tomorrow!

# Conclusions

- Vaccine preventable diseases place a huge burden on older people, healthcare systems and society
- Shift over 50 years from disease management to prevention
- Vaccination of older people is one of the most effective preventions we have
- But it is still grossly underutilized
- We need a whole-of-life approach to vaccination
- All health care professionals should be promoting vaccination
- Including specialist physicians