



IMMUNISATION
COALITION



Epidemiology review of 2023 flu season

5:45 pm

Prof Ian Barr

**Deputy Director
WHO Collaborating Centre
for Reference and
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Review of the 2023 influenza season in Australia and what to expect in 2024

Ian Barr

Deputy Director

WHO Collaborating Centre for Reference and
Research on Influenza

www.influenzacentre.org



WHO Collaborating Centre
for Reference and
Research on Influenza
VIDRL

The Melbourne WHO Collaborating
Centre for Reference and Research on
Influenza is supported by the Australian
Government Department of Health

4 Feb 2024



How was the 2023 SH influenza season for you?

- Normal season – nothing much different from any other
- Low season – similar to 2010, 2018
- Medium season – similar to 2011, 2013
- Big season – similar to 2012, 2014, 2015, 2016. 2022
- Massive season – Once in every decade or two
 - Pandemic of 2009
 - Flumageddon of 2017
 - Flunami of 2019
- Little or no influenza – similar to 2020, 2021 - the “Covid years”

Some facts from the 2023 Australian influenza season

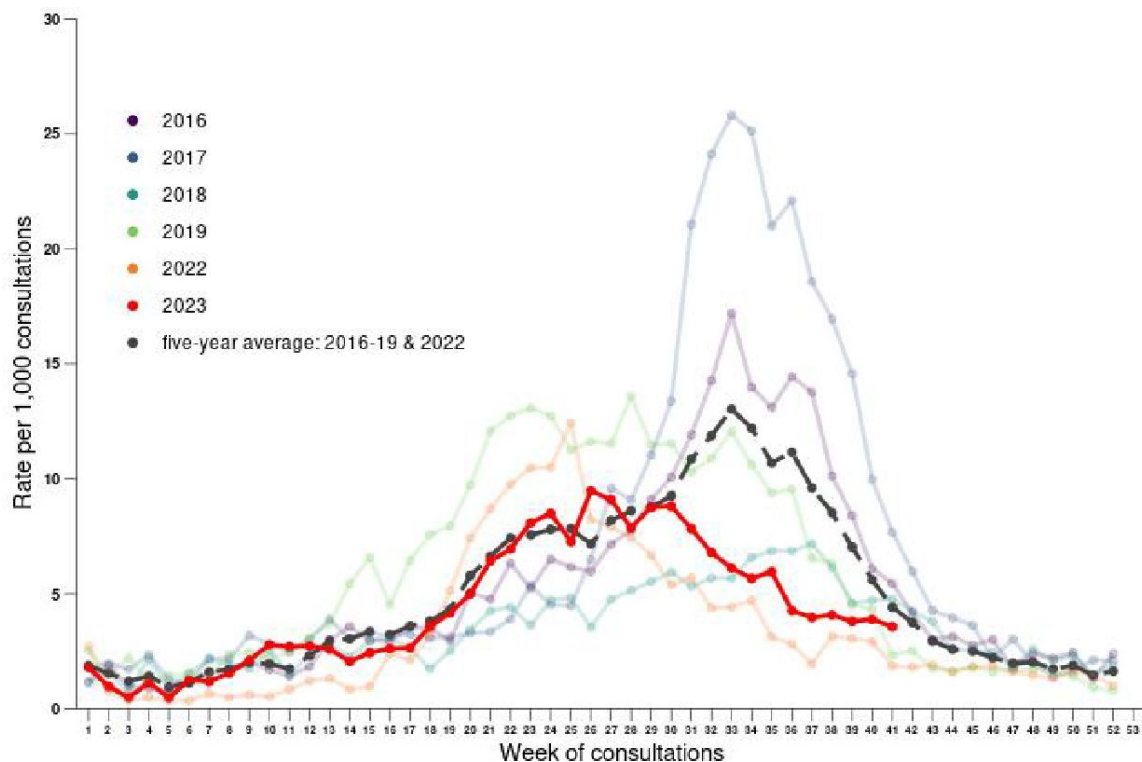


1. <https://nindss.health.gov.au/pbi-dashboard/>
2. Upto 15th October 2023 -
<file:///Users/vidriwhoflu/Downloads/AISR%20%E2%80%93%202023%20National%20Influenza%20Season%20Summary.pdf>
3. <https://www.health.gov.au/resources/collections/influenza-flu-immunisation-data>

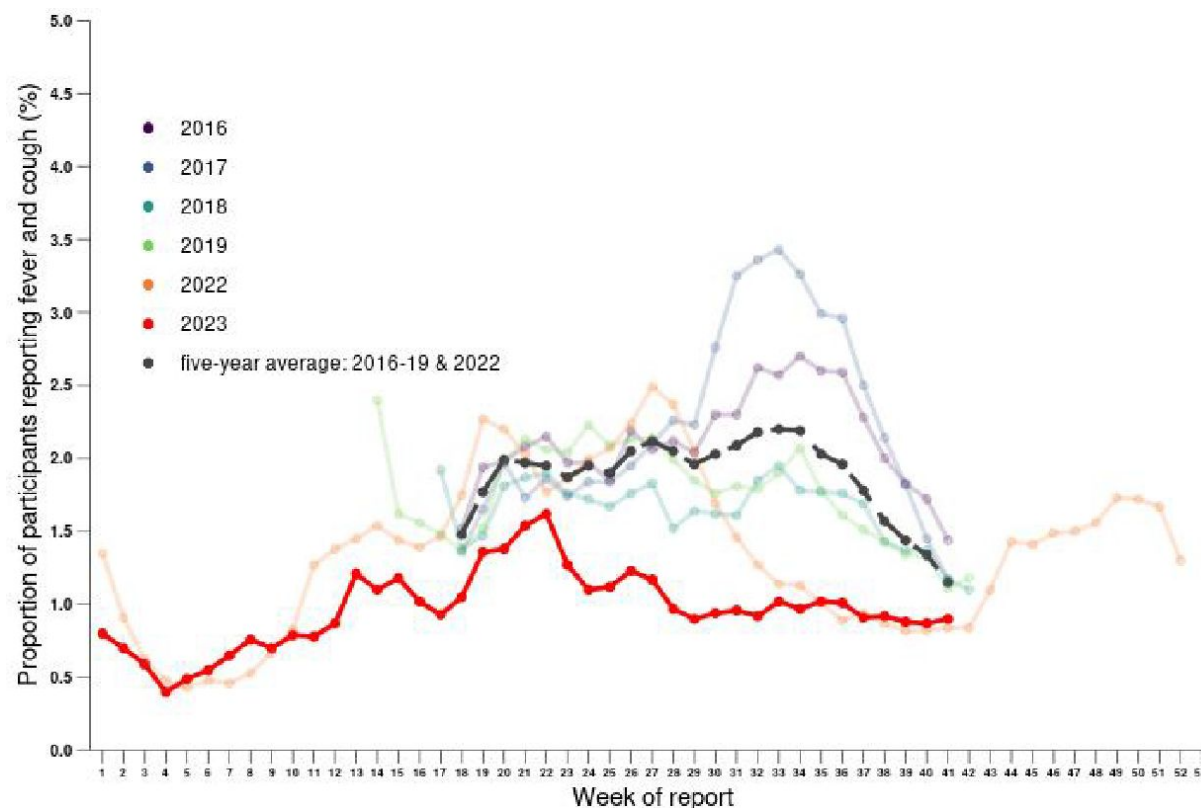
Influenza-like illness (ILI) in Australia in 2023

ASPREN (GP surveillance) and Flutracking (self reported - cough/fever)

ASPREN



Flutracking



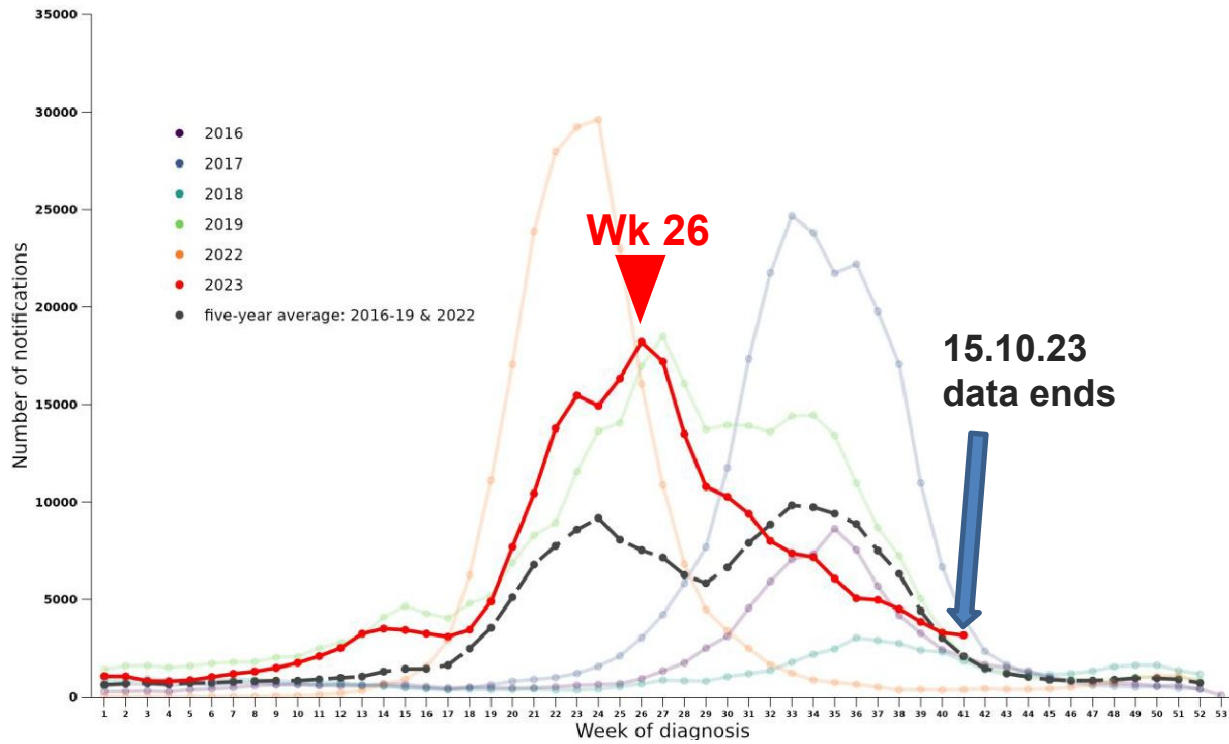
Australian Influenza Surveillance Report

Communicable Disease Epidemiology and Surveillance Section (CDESS)

Report no. 14, 2023

<https://info.flutracking.net/>

NNDSS Lab confirmed influenza in Australia 2018-2024



<https://www.health.gov.au/resources/publications/air-2023-national-influenza-season-summary?language=en>

<https://nindss.health.gov.au/pbi-dashboard/>

National Communicable Disease Surveillance Dashboard

Last Refreshed On: 23/01/2024 4:30:21 AM

Diagnosis Year, Diagnosis Quarter, Diagnosis...

2023

Disease Group

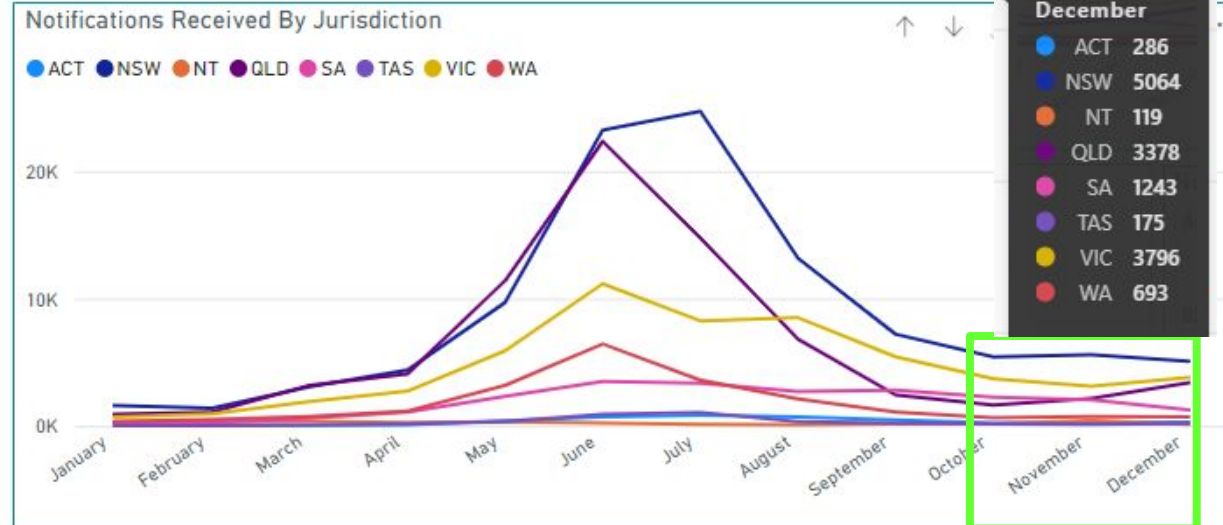
Respiratory diseases

Disease Name

Influenza (laboratory confirmed)

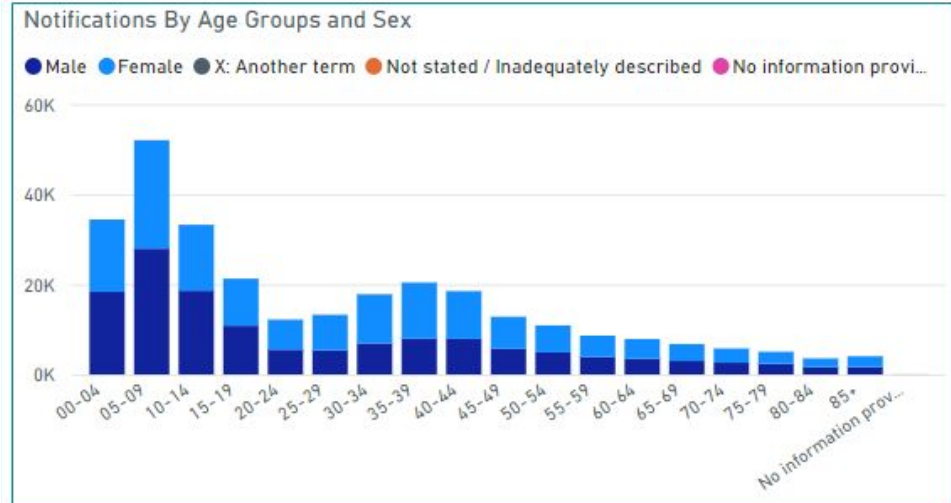
Notifications Received By Jurisdiction

ACT NSW NT QLD SA TAS VIC WA

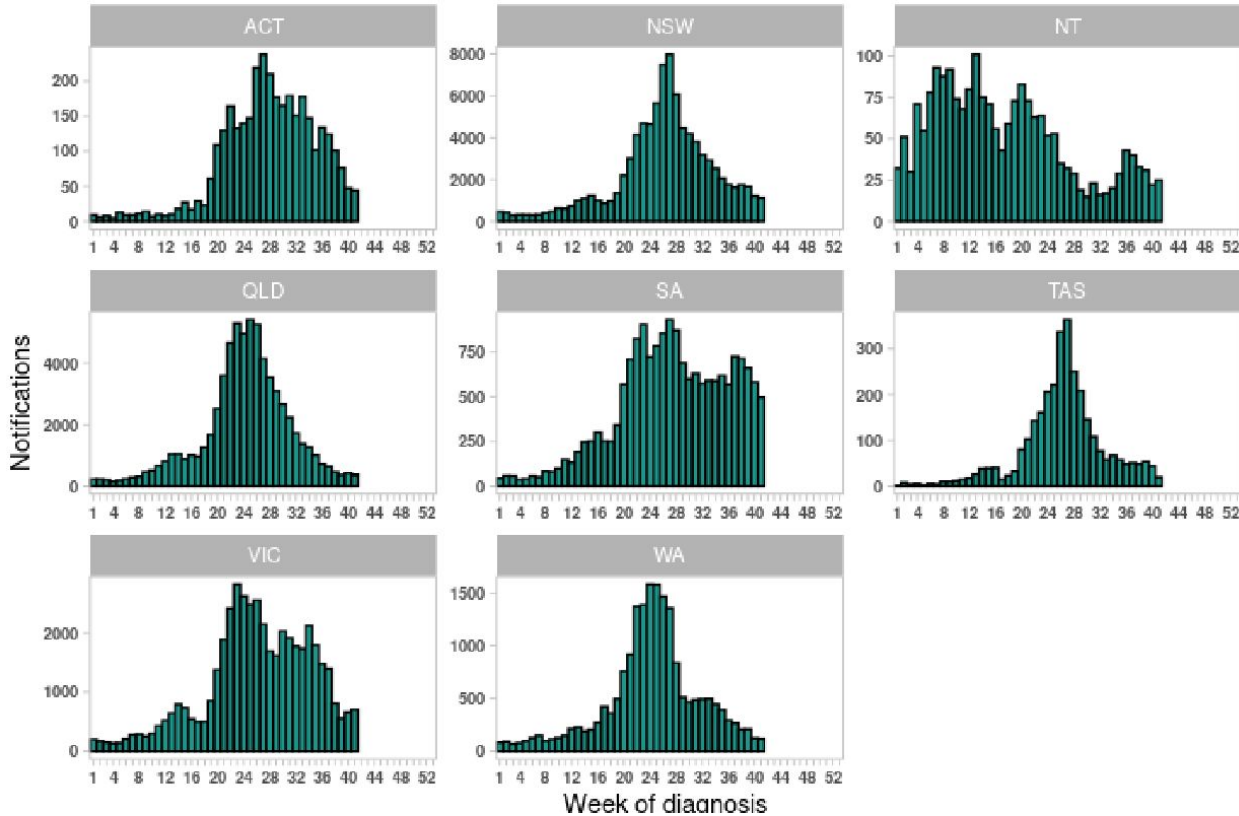


Notifications By Age Groups and Sex

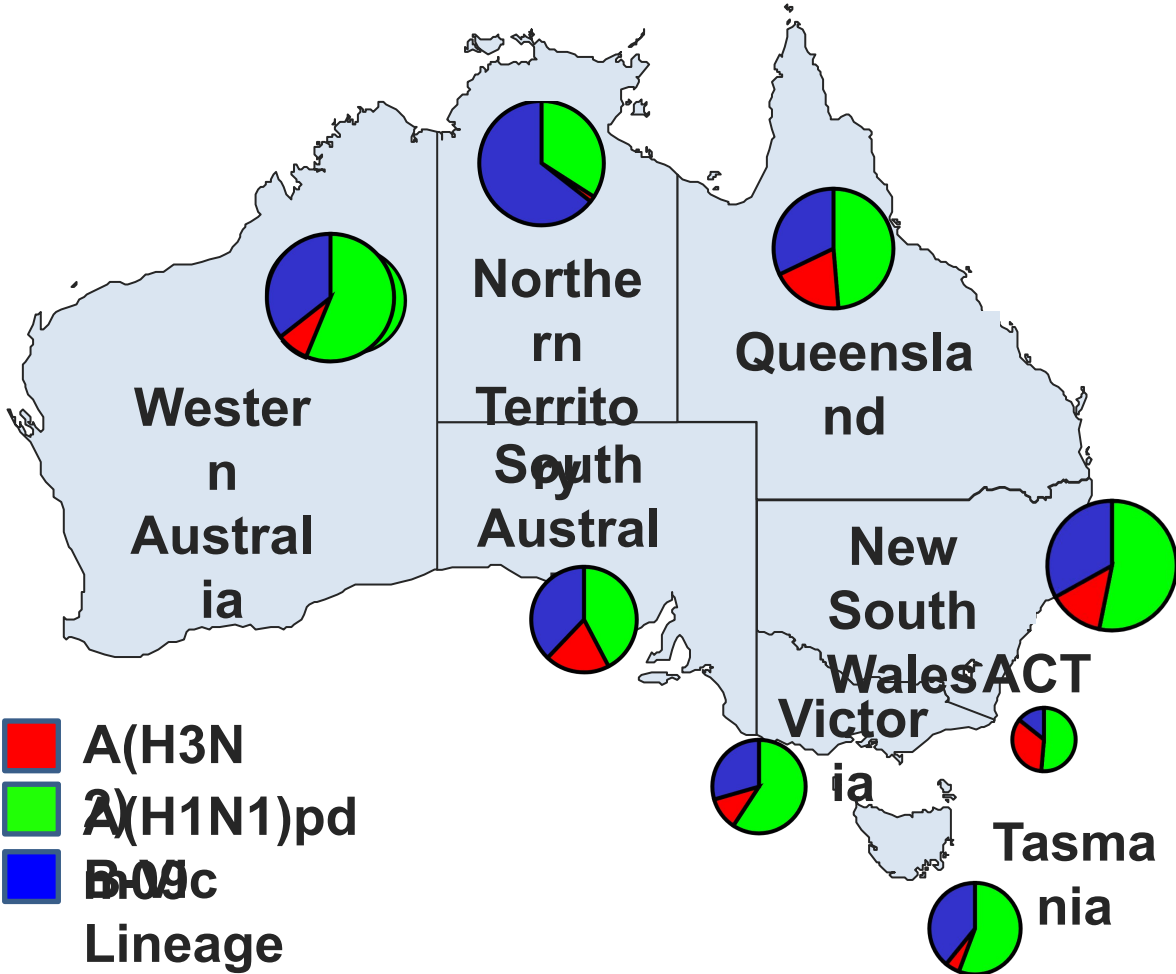
Male Female X: Another term Not stated / Inadequately described No information provi...



Influenza in 2023 by state

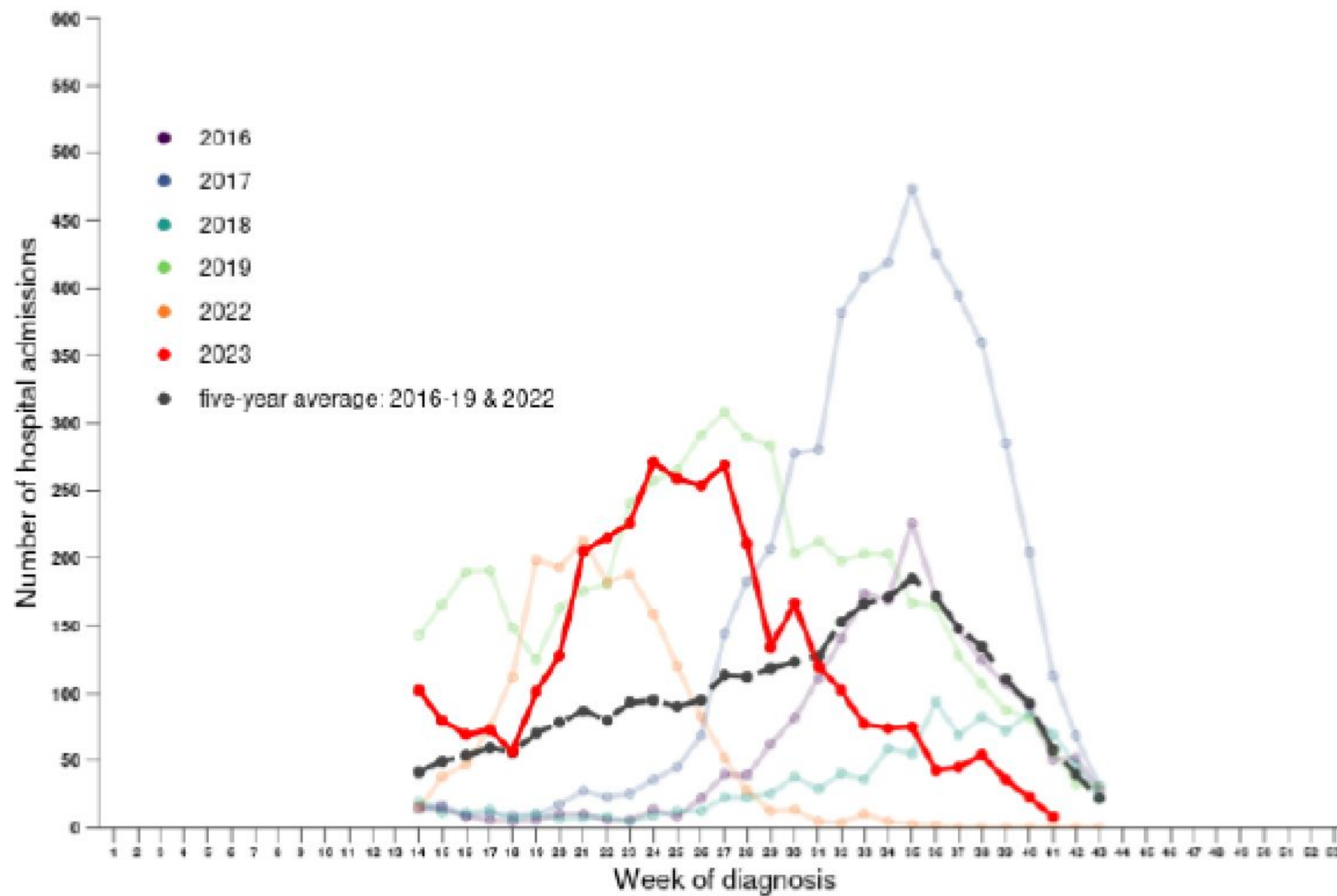


There was some variation in subtype circulation by state



2023 Aus total lab confirmed cases = 288K
 Influenza +ve samples sent to WHO CC = 12,371
 (Approximately 4.3% of total Aus flu + samples)

FluCAN – Sentinel hospitalisation cases with lab confirmed influenza 2016-2023



Source: FluCAN

NNDSS reported influenza associated deaths in Australia

	1 January to 31 December							
	2016	2017	2018	2019	2020	2021	2022	2023*
Notifications ^{*†}	90,858	251,151	58,858	307,907	21,266	598	225,332	288,994
Deaths [§]	273	1181	148	902	37	0	308	376
Case Fatality Rate	0.30%	0.47%	0.25%	0.29%	0.17%	0%	0.13%	0.13

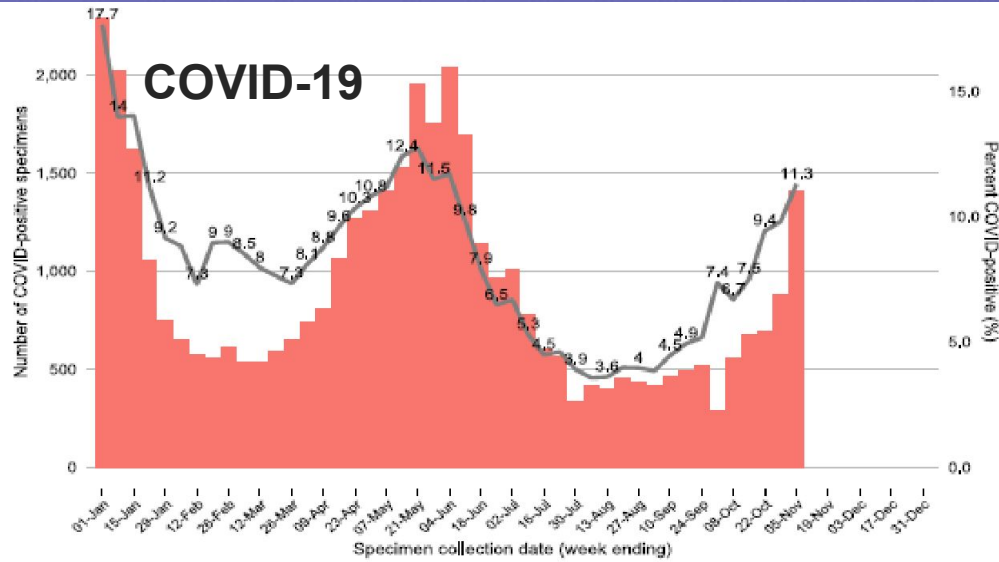
•Data on 'Deaths' should always be used with extreme caution as clinical information is not always collected across the various jurisdictions and timely mortality data is not available. These notification data are based on data extracted from the NNDSS on the date indicated above. Due to the dynamic nature of the NNDSS, data on this extract are subject to retrospective revision and may vary from data reported in published NNDSS reports and reports of notification data by states and territories. In general notification data represent only a proportion of the total cases occurring in the community, that is, only those cases for which health care was sought, a test conducted and a diagnosis made, followed by a notification to health authorities. The degree of under-representation of all cases is unknown and is most likely variable by disease and jurisdiction. In interpreting these data it is important to note that changes in notifications over time may not solely reflect changes in disease prevalence or incidence. Depending on the disease changes in testing policies; screening programs including the preferential testing of high risk populations; the use of less invasive and more sensitive diagnostic tests; and periodic awareness campaigns, may influence the number of notifications that occur annually.

*Up to 15 October 2023

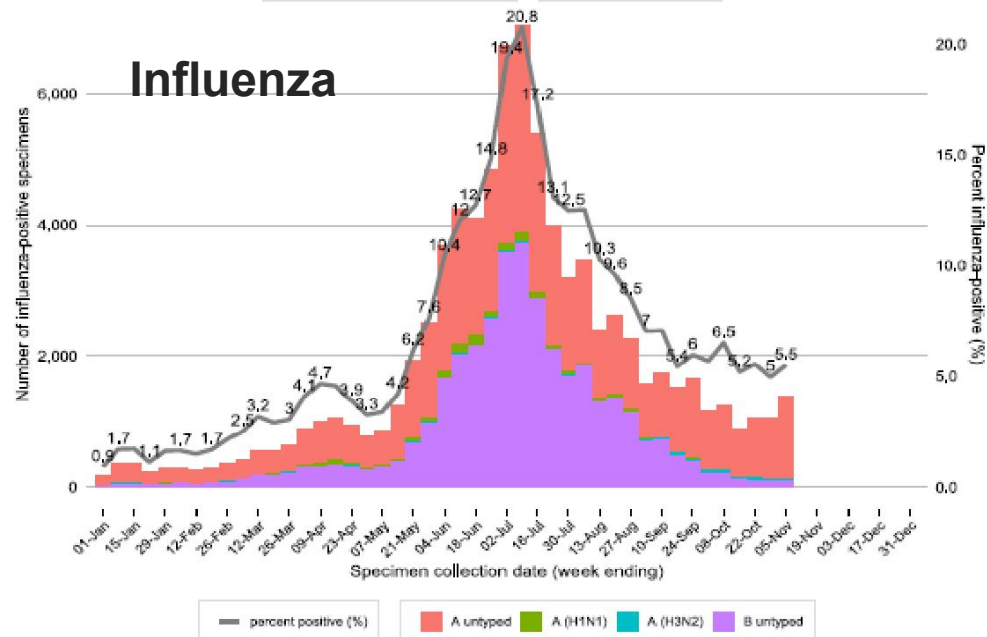
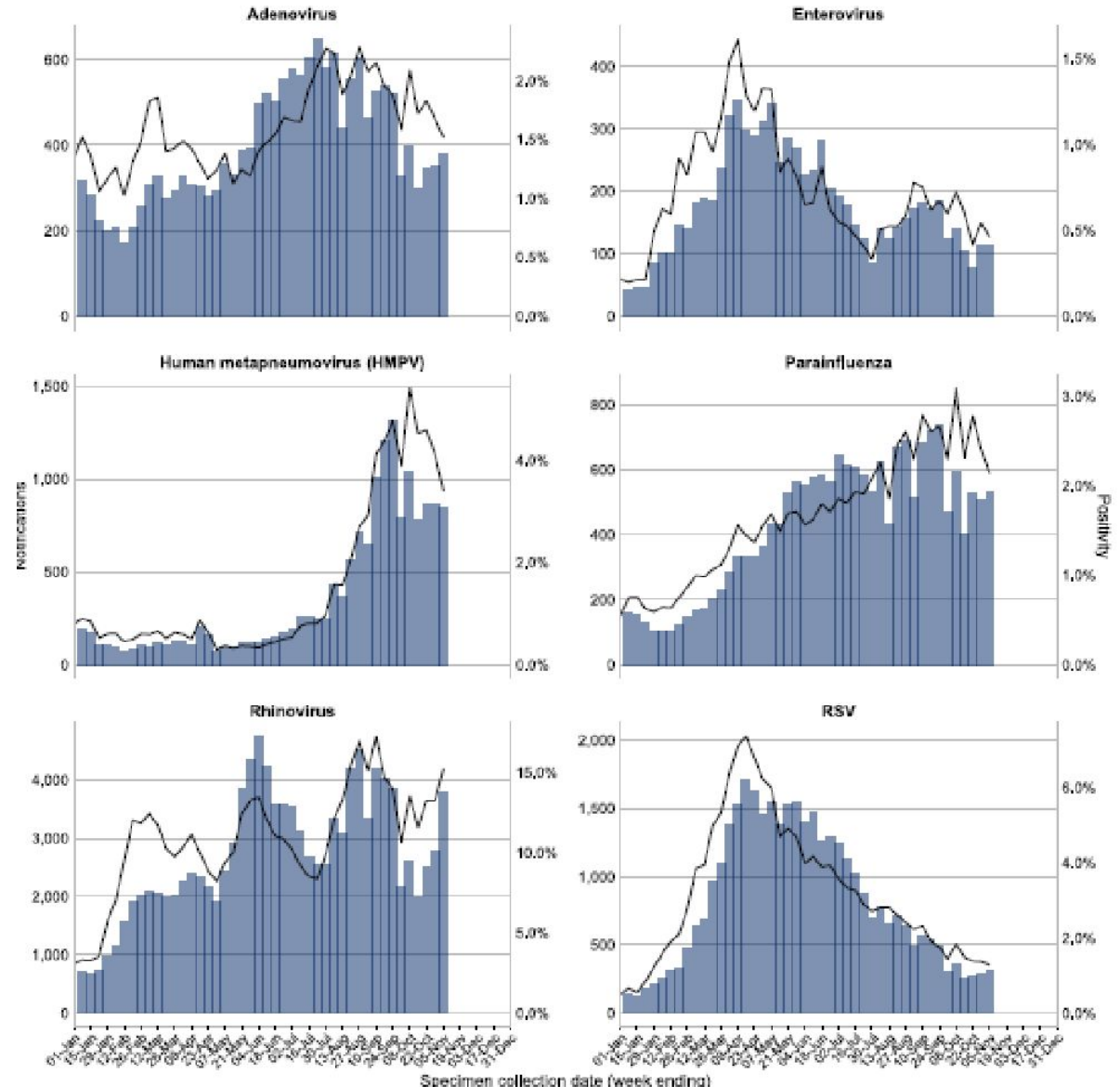
Circulation of other respiratory viruses in NSW Australia (lab confirmed) Jan 1 –Nov 5 2023

NSW COVID-19 WEEKLY DATA OVERVIEW

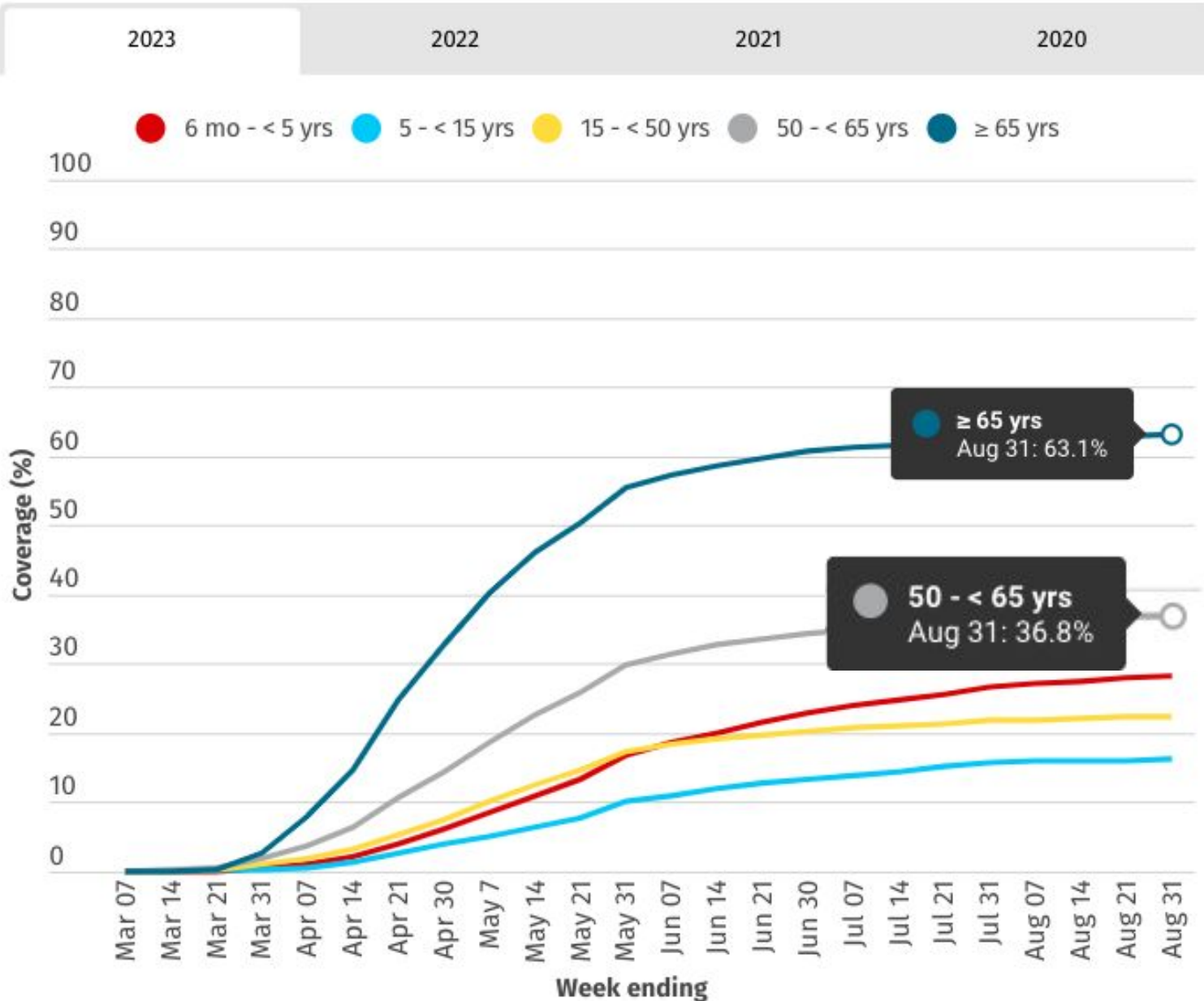
Epidemiological weeks 43 & 44, ending 04 November 2023



Other respiratory virus lab confirmed



AIR data on Australian influenza vaccinations in 2023 (March to October)



2021 - 8,858,610 doses: 34% vaccinated
2022 - 11,081,916 doses: 43% vaccinated
2023 - 9,300,129 doses: 35% vaccinated



Only WA had free influenza vaccine in 2023 (to end of June)
Qld only state to declare free vaccines for all eligible ages in 2024 to date!

Note: In 2022 all states except NT/ACT offered free vaccine to all eligible age groups



Influenza vaccines for Australia and NZ in 2024**

- **A(H1N1)pdm – A/Victoria/4897/2022-like***
- **A(H3N2) – A/Thailand/8/2022-like***

Trivalent vaccine:

- B – B/Austria/1359417/2021 (B/Vic)

Quadrivalent vaccine:

- B – B/Phuket/3073/2013-like (B/Yam)*
- B – B/Austria/1359417/2021 (B/Vic)

Changes to 2022 recommendations

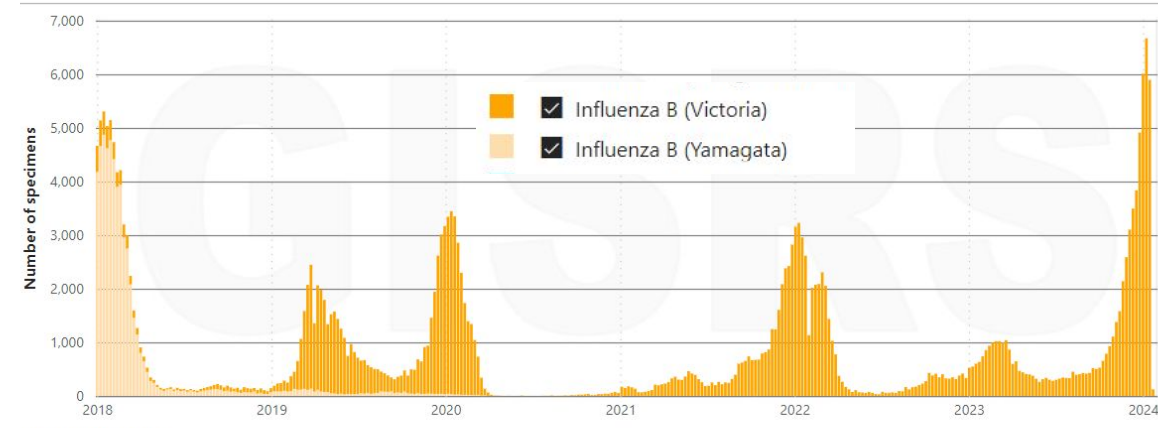
*Isolated at the WHO CC Melbourne

** Like viruses are used in Cell-based influenza vaccines which may have different virus designations

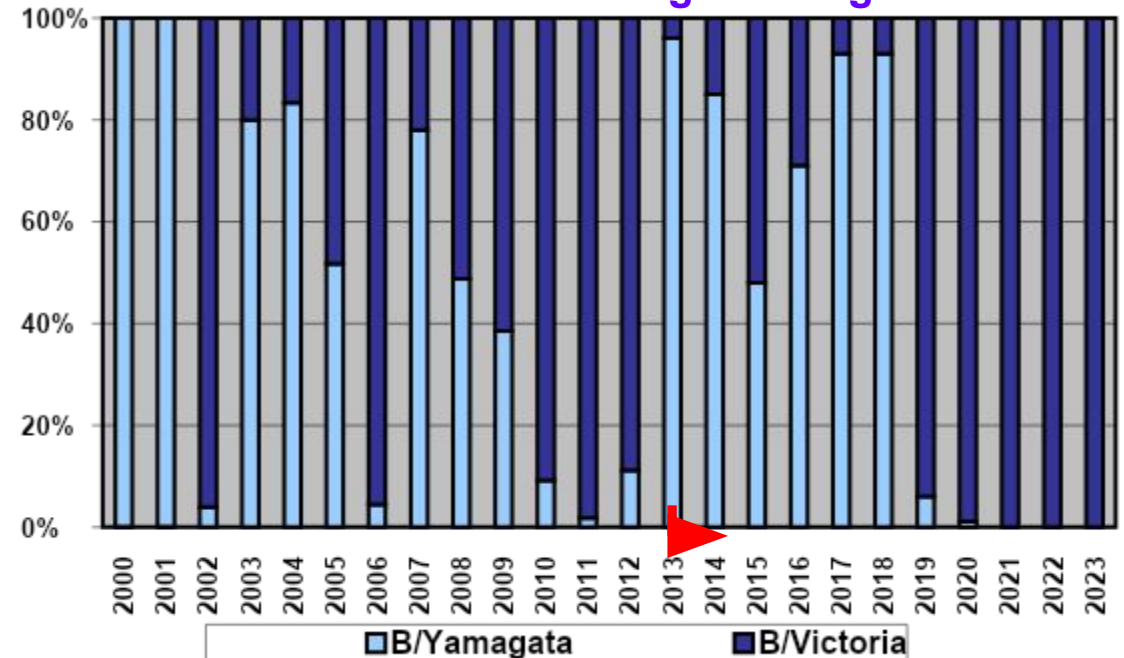
Potential changes to the NH 2024-5 and the SH 2025 influenza vaccines

- The majority of influenza vaccines for the past 10 years have been quadrivalent – 2 B strains or lineages: B/Victoria/2/87-like and B/Yamagata/16/88-like; plus 1 x H3N2 & 1 x H1N1
- Since the COVID-19 pandemic B/Yamagata-lineage viruses have dramatically dropped with no B/Yam virus being detected (AND confirmed) since March 2020
- As it appears that B/Yam viruses are extinct there is a convincing argument to REMOVE B/Yam component from quadrivalent influenza vaccine: ie return to trivalent vaccine
- Time-lines for removal of B/Yam:
 - LAIV likely to be for NH 2024-5
 - Inactivated vaccines; USA 2024-5, other NH 2025-6, Australia ?2025
 - Some countries eg Sth America never adopted quad vaccines
- ?Opportunity to replace the B/Yam with another component eg have 2 different H3 HA/other targets
 - Moderna released Ph1-2 data - mRNA +2/+3 H3's (+ H1/B)

WHO Flunet influenza global B detections 2018-2024



WHO CC Australian circulating B-lineages 2000-2023

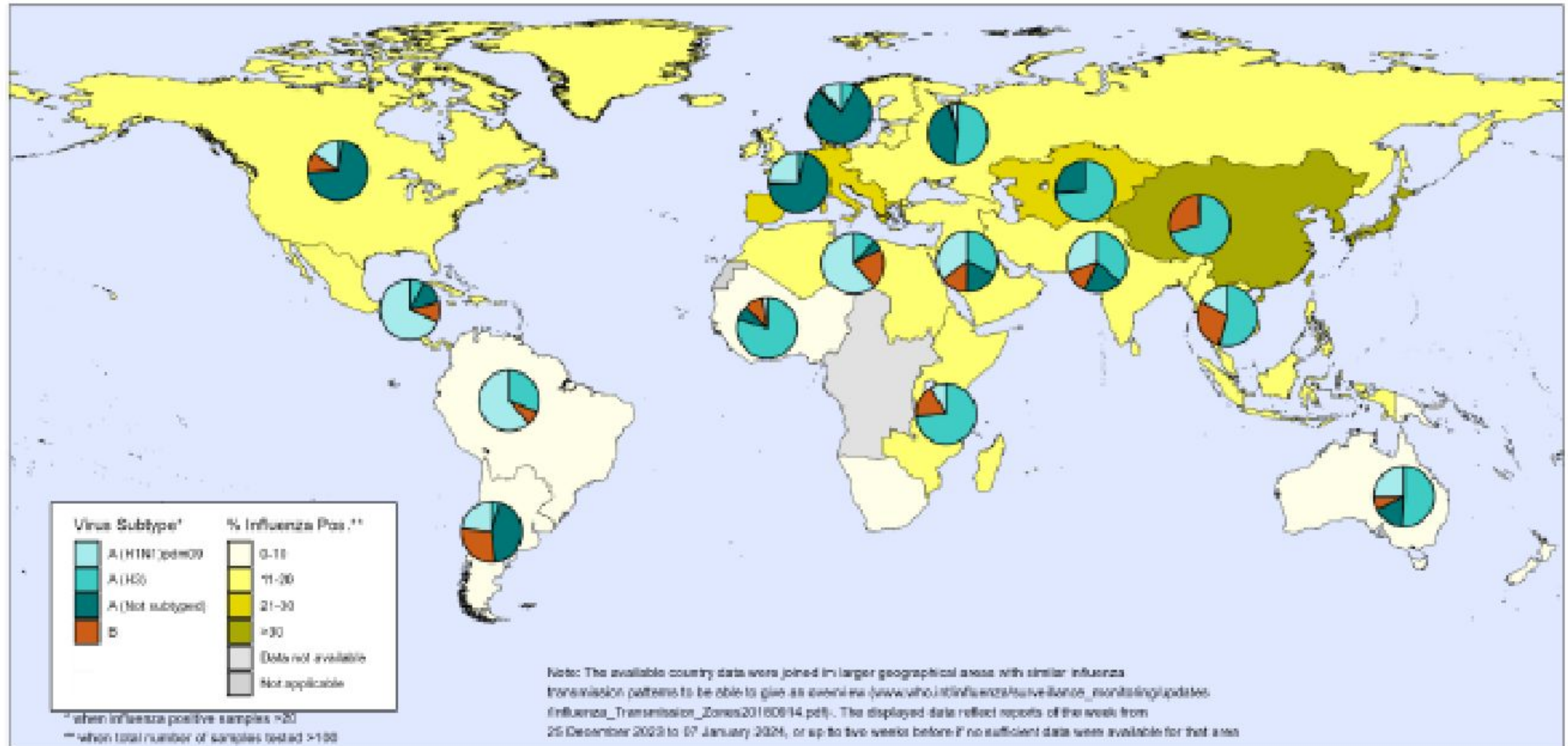


- Egg-based influenza vaccines
 - Quadrivalent inactivated influenza vaccines (Ages vary with brand)
 - Adjuvanted Quadrivalent inactivated influenza vaccine (≥ 65 y)
 - ? High dose Quadrivalent inactivated influenza vaccine (≥ 65 y)
- Cell-based influenza vaccine
 - Quadrivalent inactivated influenza vaccine (Flucelvax QUAD) (> 2 y)
- Still waiting???
 - LAIV (Astra-Zeneca)
 - Recombinant protein - HA (Baculovirus; Protein Sciences/Sanofi; Novavax)
 - mRNA

The NH 2023-24 influenza season (so far)



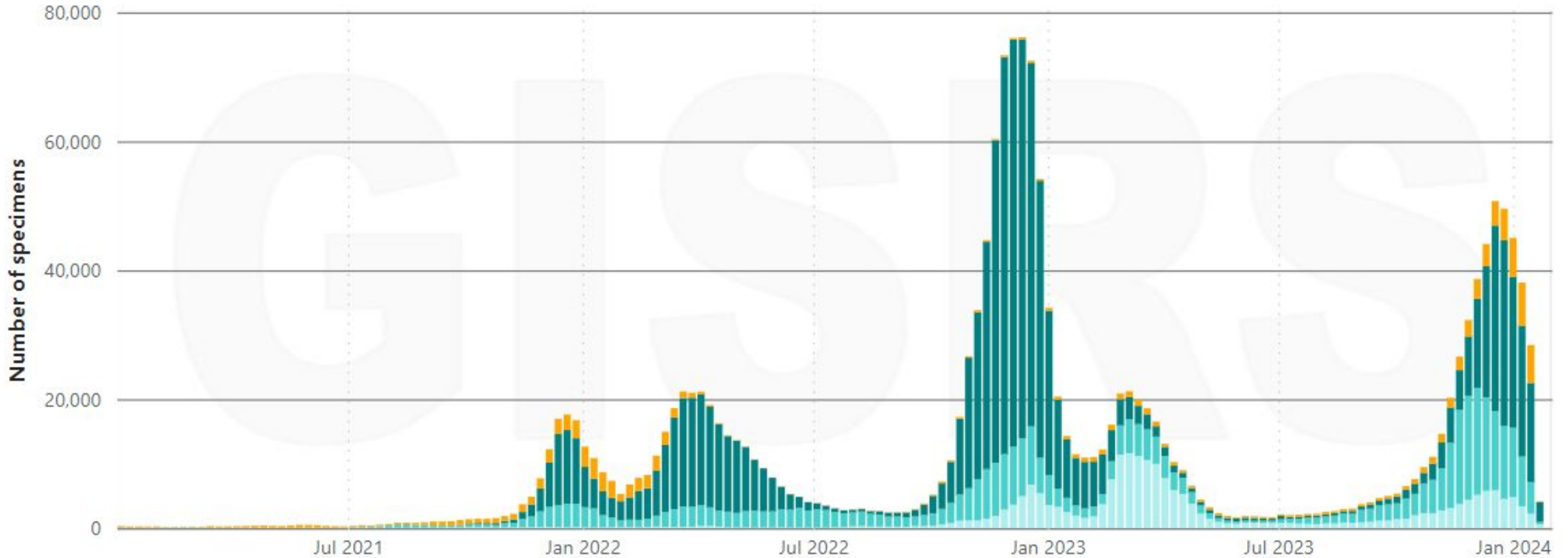
WHO influenza activity map for period 25 Dec 23 – 7 Jan 24



The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.



Influenza viruses detected by WHO Flunet in NH 2021-24



CDC data on influenza in USA 2023-24 (upto wk 3)

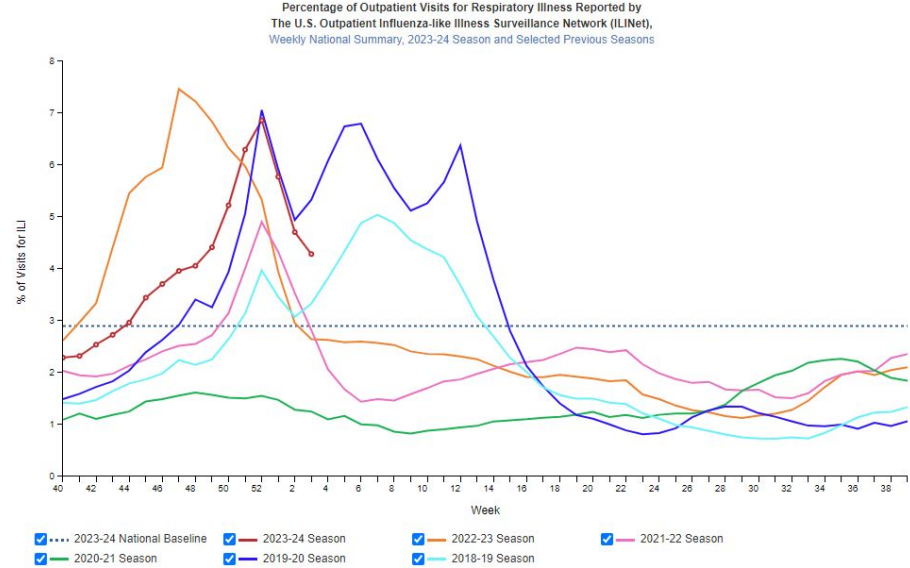
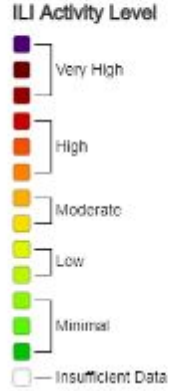
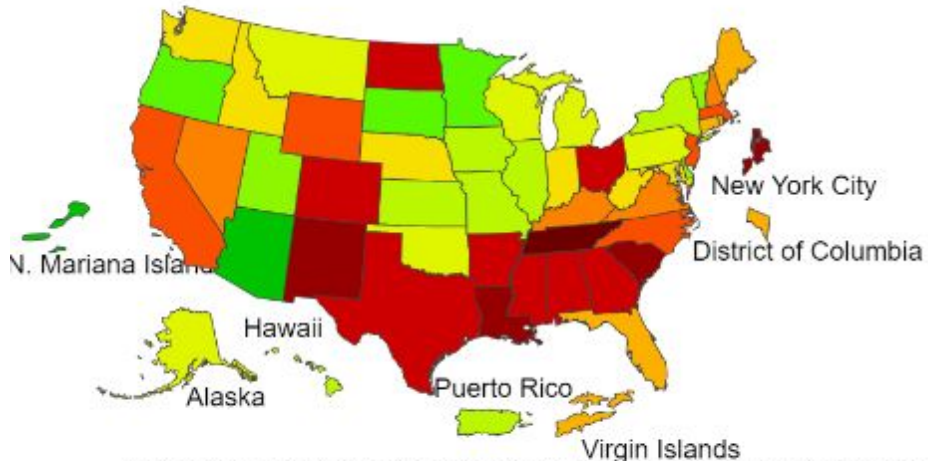


<https://www.cdc.gov/flu/weekly/index.htm>

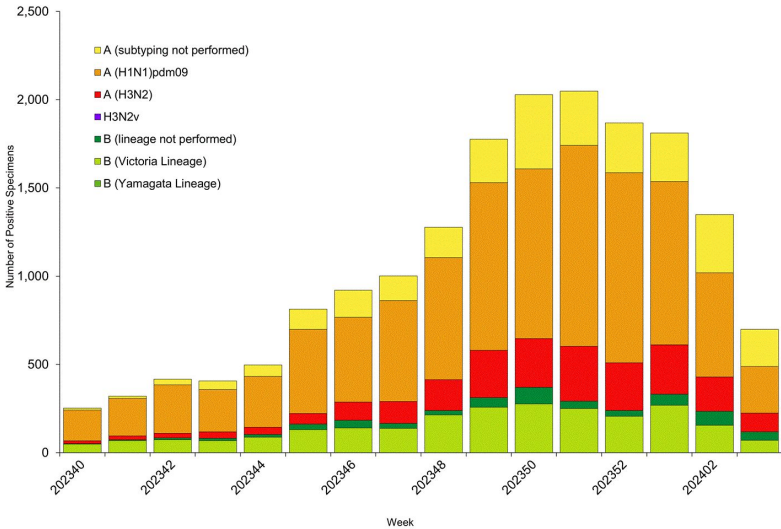


A Weekly Influenza Surveillance Report Prepared by the Influenza Division

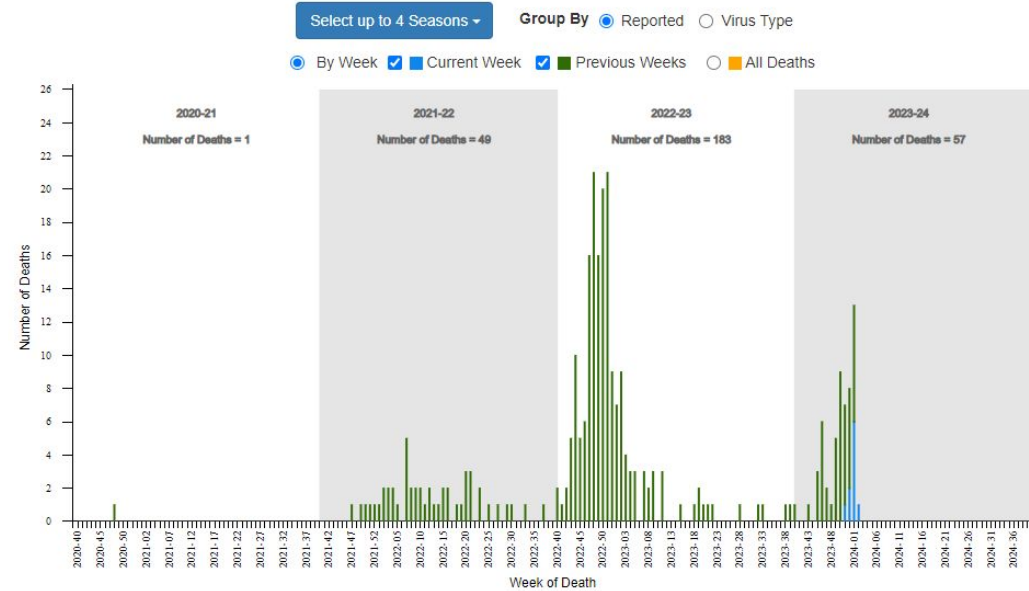
2023-24 Influenza Season Week 3 ending Jan 20, 2024



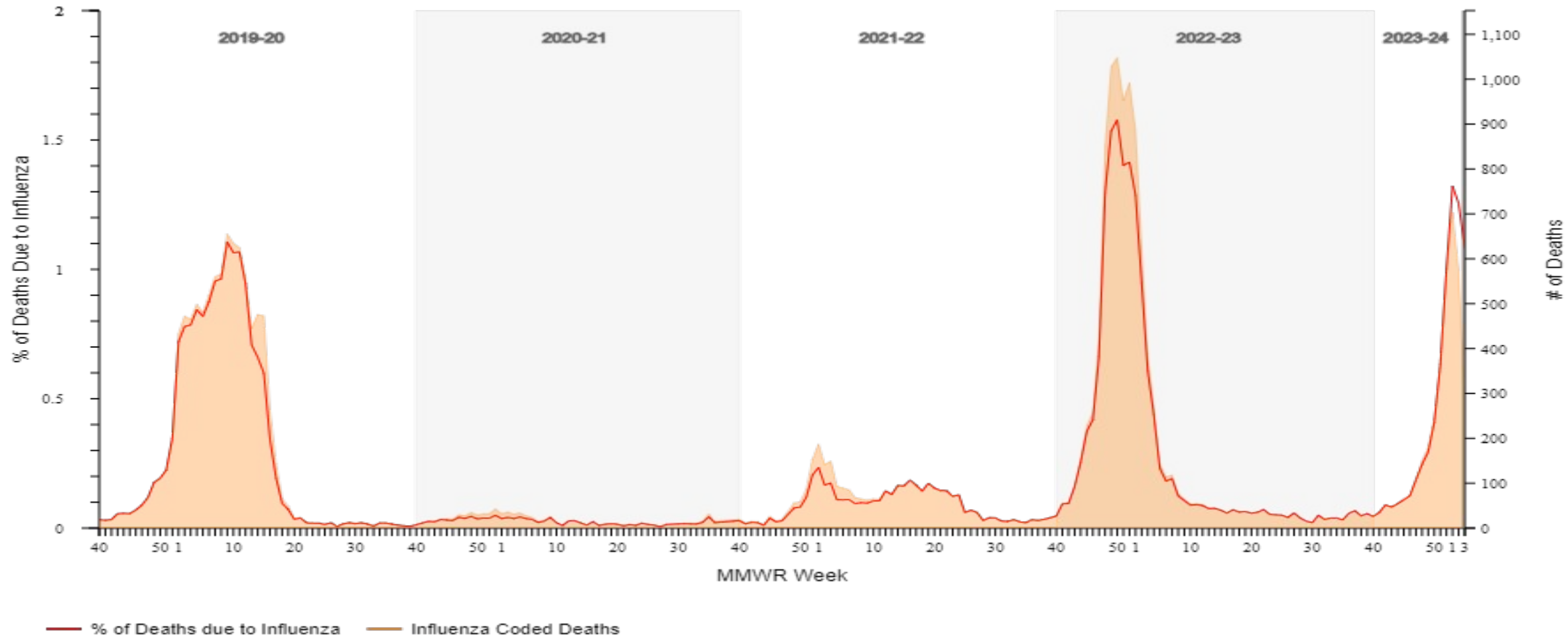
Influenza Positive Tests Reported to CDC by U.S. Public Health Laboratories, National Summary, 2023-2024 Season



Influenza-Associated Pediatric Deaths by Week of Death, 2020-21 season to 2023-24 season



**Pneumonia and Influenza Mortality from
the National Center for Health Statics Mortality Surveillance System
National Summary data through the week ending January 20, 2024**



European Respiratory Virus Surveillance Summary (ERVISS) Severity data Wk 3 2024

Influenza remained above the 10% epidemic threshold at 27% compared to 26% in the prior week. Median country positivity rate for 30 countries and areas was 29% (range: 0%–62%) and 25 countries and areas reported at least 10%. An increasing trend in influenza positivity was observed in 18 reporting countries and areas this week.

<https://erviss.org/>

Country or area	Consultation rates ¹				SARS-CoV-2			Influenza			RSV		
	ARI	MEM ↓	ILI	MEM ↓	Number of tests	Number of detections	Positivity (%)	Number of tests	Number of detections	Positivity (%)	Number of tests	Number of detections	Positivity (%)
Albania		--		--									
Armenia		--		--									
Austria		--		medium				301	80	26.6	0		
Azerbaijan		--		very high	29	1	3.4	29	2	6.9	0		
Belarus		medium		baseline	160	2	1.2	104	14	13.5	34	2	5.9
Belgium		baseline		low									
Bosnia and Herzegovina		--		--				0			0		
Bulgaria		medium		--	383	14	3.7	383	105	27.4	185	7	3.8
Croatia		--		low		0		0	0		0	0	
Cyprus		--		--									
Czechia		low		low									
Denmark		--		medium	161	3	1.9	161	60	37.3	161	9	5.6
Estonia		baseline		medium	20	1	5	20	5	25	20	7	35
Finland		baseline		baseline									
France		--		low	185	10	5.4	185	73	39.5	185	2	1.1
Georgia		--		baseline	45	3	6.7	45	20	44.4	45	3	6.7
Germany		--		--	299	21	7	299	141	47.2	299	37	12.4

A new addition to home testing – Quad plex RATs; Flu A/B, COVID-19 and RSV

VERY HIGH SENSITIVITY | TGA APPROVED | SELF-TESTING

RSV, FLU A/B & COVID-19 RAPID ANTIGEN TEST

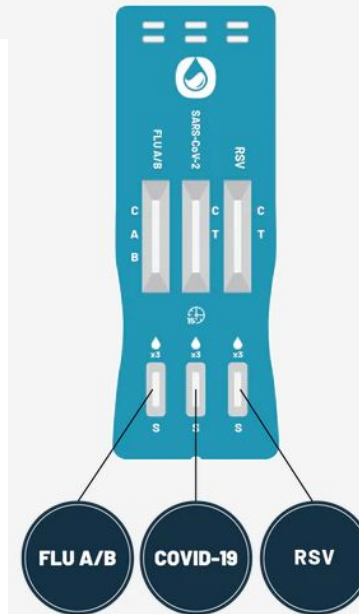
FIRST Triple Combo RAT in Australia-
New Self-Testing kit from TouchBio
that detects four Respiratory
Infections in a single test.



touch[®]
BIO

HYGIENE PRODUCTS RAPID ANTIGEN TESTS ONLINE HEALTH FIND A STORE ABOUT US SHOP ALL

<https://touchaustralia.com.au/pages/rsv-flu-covid-rapid-antigen>



Features:


- **TGA Approved** (ARTG Number: 408459)
- **Very High Sensitivity (> 98%)**: Accurate and reliable results.
- **Comprehensive Testing**: Detect 4 viruses in a single test (RSV, Flu A/B, and COVID-19)
- **Rapid Results**: Obtain your results in 15 minutes, empowering you to make informed decisions about your health
- **Easy-to-Use Self-Testing**: The kit comes with clear instructions and all necessary components for self-testing, making it simple and convenient for users.
- **Compact and Portable**: The kit is designed for easy storage and transport, making it ideal for use at home, work, or while traveling.
- **Specimen Type**: Nasal Swab

Symptoms of these "Triple Respiratory" infections can often be strikingly similar. It is recommended to use the TouchBio RSV, Flu A/B & COVID-19 Rapid Antigen Test when feeling unwell, experiencing respiratory symptoms, or after being in contact with someone diagnosed with any of these viruses.

touch[®]

HYGIENE PRODUCTS RAPID ANTIGEN TESTS ONLINE HEALTH FIND A STORE ABOUT US SHOP ALL


AVAILABLE NOW



RSV, Flu A/B & COVID-19 Rapid Antigen Test - For Self Testing | 02 Tests Kit

BUY NOW **\$29.00**

PREORDER



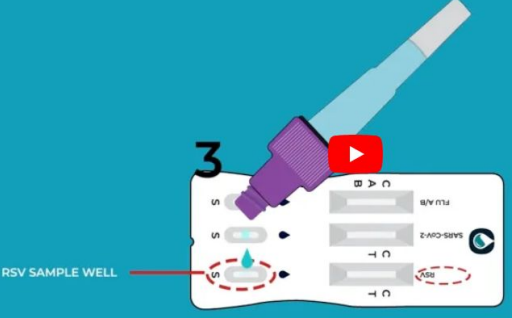
RSV, Flu A/B & COVID-19 Rapid Antigen Test - For Self Testing | 05 Tests Kit

VIEW MORE **\$64.00**

\$10.24 each if you buy 200!

TouchBio RSV, Flu A/B, and Covid-19 Rapid Antigen Test Self-Testing

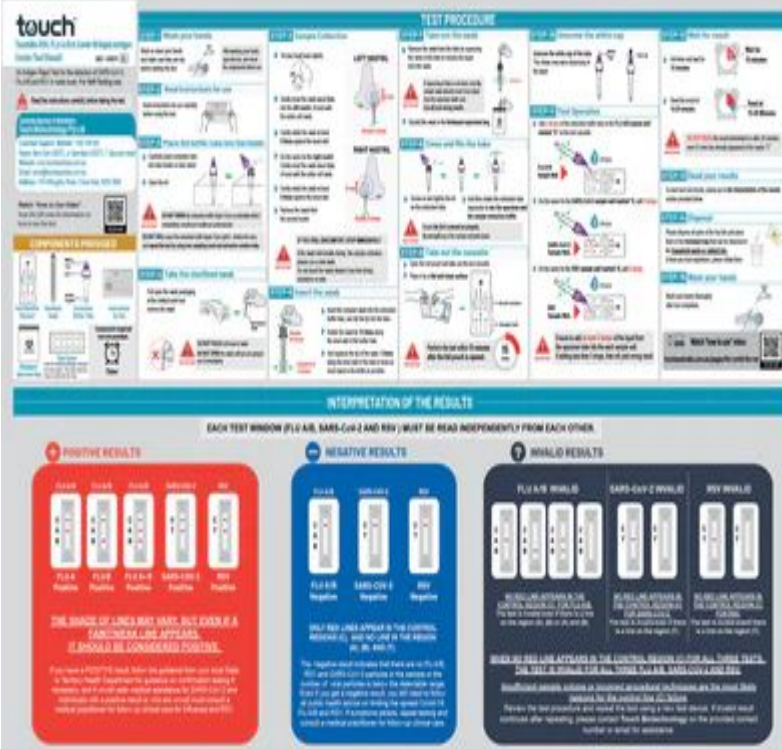
touch[®]



RSV SAMPLE WELL

Online test procedure video

Package insert with Instruction sheet and test interpretation



touch[®] RSV, Flu A/B & COVID-19 Rapid Antigen Test (Nasal) For Self Testing

TEST PROCEDURE

INTERPRETATION OF THE RESULTS

EACH TEST WINDOW (FLU A/B, SARS-COV-2 AND RSV) MUST BE READ INDEPENDENTLY FROM EACH OTHER.

POSITIVE RESULTS

FLU A/B: Positive (C, T, R)
FLU B: Positive (C, T, R)
SARS-COV-2: Positive (C, T, R)
RSV: Positive (C, T, R)

THE BAND OF LINES MAY VARY, BUT EVEN IF A FADING LINE APPEARS, IT SHOULD BE CONSIDERED POSITIVE.

NEGATIVE RESULTS

FLU A/B: Negative (C, T, R)
SARS-COV-2: Negative (C, T, R)
RSV: Negative (C, T, R)

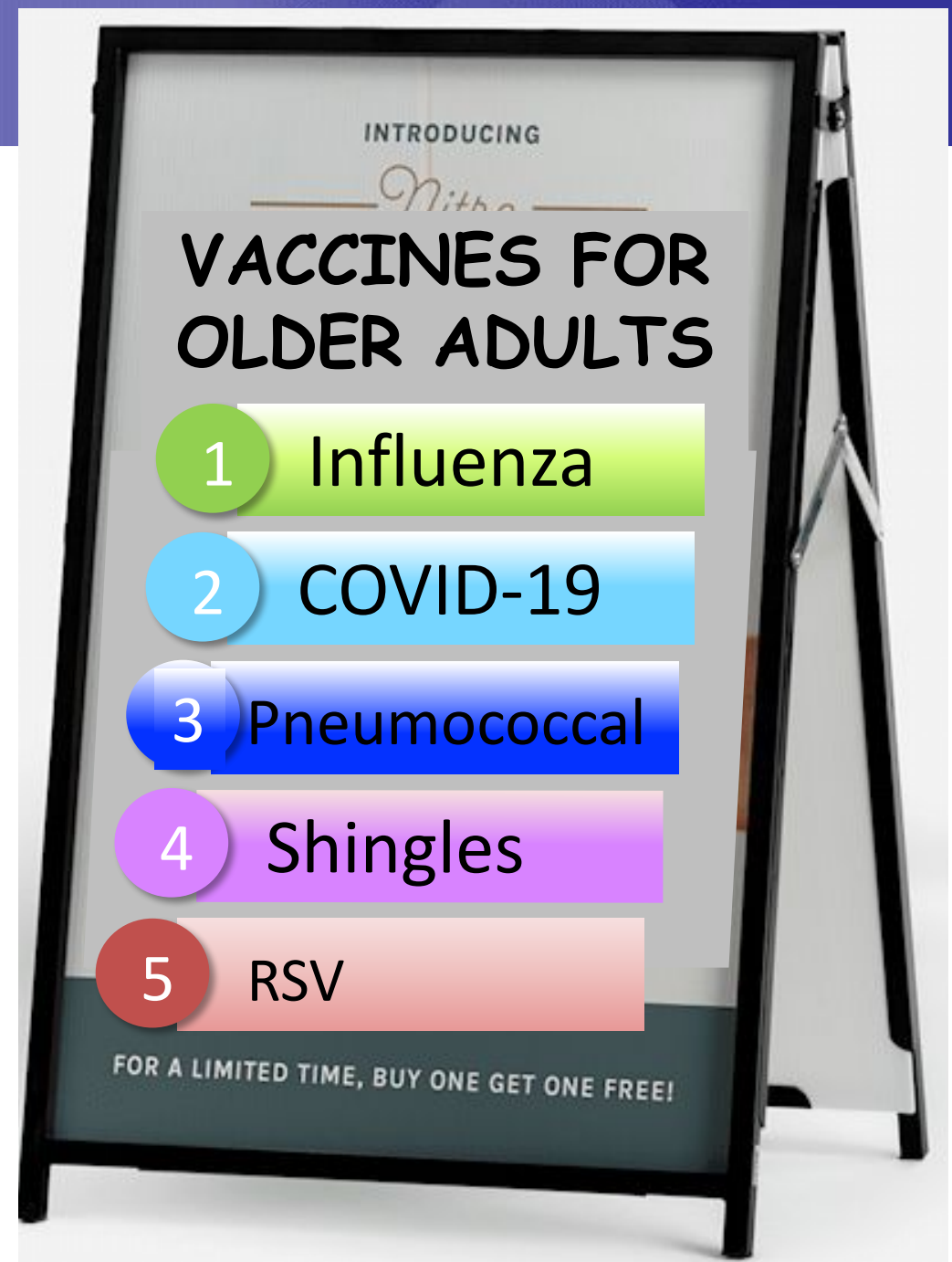
NO BANDS OF LINES SHOULD APPEAR IN THE CONTROL, RESULT, OR TEST WINDOWS.

INVALID RESULTS

FLU A/B: Invalid (C, T, R)
SARS-COV-2: Invalid (C, T, R)
RSV: Invalid (C, T, R)

NO BANDS OF LINES SHOULD APPEAR IN THE CONTROL, RESULT, OR TEST WINDOWS.

“Selling” expanded vaccines for older adults



Summary

- 2023 Aus influenza season started early - **again** (March-April) similar to 2022, peaked week 36 (26 Jun-2 Jul) then declined slowly (unlike 2022 which declined rapidly), with low level circulation Oct/Nov/Dec 23/Jan 24
- High number of lab confirmed cases reported to NNDSS (288,994) in 2023 (2nd highest on record)
- Influenza A(H1N1)pdm09 predominated in most Aus states, B also high especially in NT, H3N2 late cases
- Moderate number of death due to influenza (n=376 - NNDSS data)
- NO B-Yamagata lineage viruses detected AND confirmed in Aus in 2023 and none globally since Mar 2020
- Very few oseltamivir/zanamivir resistant viruses detected; No baloxavir marboxil resistance detected
- Vaccine match – VE's generally better than usual for community infections and hospitalized cases
- Vaccination rates for influenza seem are either plateauing or decreasing – 2023 only 35% Aussies vaccinated
- A(H1N1)pdm09 and A(H3N2) components of Australian/NZ 2024 vaccine updated from 2023
- B/Yamagata component of quadrivalent vaccines likely to be removed in next few years
- Influenza activity 2023-4 in Nth Hemisphere mostly on the downturn and moderate; USA, EU early start mainly H1, China also early start H3 early then B, Japan early season mainly H3
- Prediction for 2024: A moderately-severe year with H3 viruses predominating and low H1/B circulation

12th Options for the Control of Influenza Conference is in Brisbane

29 September – 2 October 2024

- **Biggest influenza meeting held every 2 years - only 2nd time in Aus**
- Sessions on:
 - Human influenza
 - Animal influenza
 - COVID-19
 - RSV
- Opportunity to give a presentation
- International speakers
- Closing dates
 - Abstracts; 5 April 2024
 - Early Bird; ????



<https://www.optionsxii2024.org.uk/>

Acknowledgments

- Various influenza data sources
 - Australian influenza surveillance report
 - NSW COVID-19 weekly report
 - ESR Influenza reports
 - CDC Fluview
 - ERVISS
 - WHO reports
 - AIR influenza database
 - NCIRS
 - NNDSS
- NICs and other labs that have sent us samples
- Staff at Melbourne WHO CC
- Other WHO CC's, TGA
- WPRO and WHO HQ Geneva