



The Department of Health acknowledges the providers of the many sources of data used in this report and greatly appreciates their contribution.

KEY MESSAGES

- **Activity** – Currently, influenza and influenza-like illness (ILI) activity are high for this time of year compared to previous years. However, this activity is not unusual when compared to the range of activity during an average influenza season. At the national level, notifications of laboratory-confirmed influenza have increased in the past fortnight; however, some jurisdictions have experienced a notable decrease in activity.
- **Severity** – Clinical severity for the season to date, as measured through the proportion of patients admitted directly to ICU, and deaths attributed to influenza, is low.
- **Impact** – There is no indication of the potential impact on society of the 2019 season at this time.
- **Virology** – In the year to date and in the past fortnight, the majority of confirmed influenza cases reported nationally were influenza A (84% and 75% respectively). The proportion of influenza B nationally has been increasing each week since early May, and particularly in the last month.

ANALYSIS

Introduction

Each year, the influenza virus changes and different strains can circulate in the population. Particular subtypes of influenza can affect different groups of the population more than others. Depending on the susceptibility of the population, the subtypes that are circulating and the changes to the virus itself, the influenza season can be very different year to year. Our surveillance systems help us to understand influenza activity, severity of the infection in individuals and impact of the illness on society in Australia. We are also able to monitor which influenza viruses are circulating, which populations might be more affected, the effectiveness of the vaccine, and any resistance to antiviral drugs that has developed.

1. Activity

Activity measures the capacity of the circulating influenza viruses to spread person to person and may be measured indirectly through systems that monitor influenza-like illness and more directly through systems that monitor laboratory confirmed influenza.

Influenza-like illness

Following high levels of ILI activity over the interseasonal period, ILI in the community is currently high for this time of year and above the historical range for the same period over the past 5 years. However, activity is within the expected range when compared to months when influenza activity has typically occurred historically.

- **Healthdirect:** In the year to date, the proportion of calls to the Healthdirect public health hotline related to ILI have been increasing steadily from 3.6% in week 1, with a sharp increase in early May, and remaining steady at 11.6% and 11.1% in weeks 25 and 26 respectively (Figure 1).
- **Sentinel General Practitioners (ASPREN):** 10.8 per 1,000 consultations in sentinel general practices were due to ILI in week 26 (Figure 2), decreasing from 12.1 per 1,000 consultations in week 25. ILI consultations are almost twice the 5 year average for this time of year, however, this gap has been decreasing since week 23.
- **Flutracking:** Since reporting began in week 15, Flutracking participants reporting ILI (fever and cough) has increased from 1.5% to 2.3% in week 24, remaining steady at 2.1% in weeks 25 and 26. Activity in the past fortnight is slightly above the range of activity in the previous five years (Figure 3).

Confirmed influenza

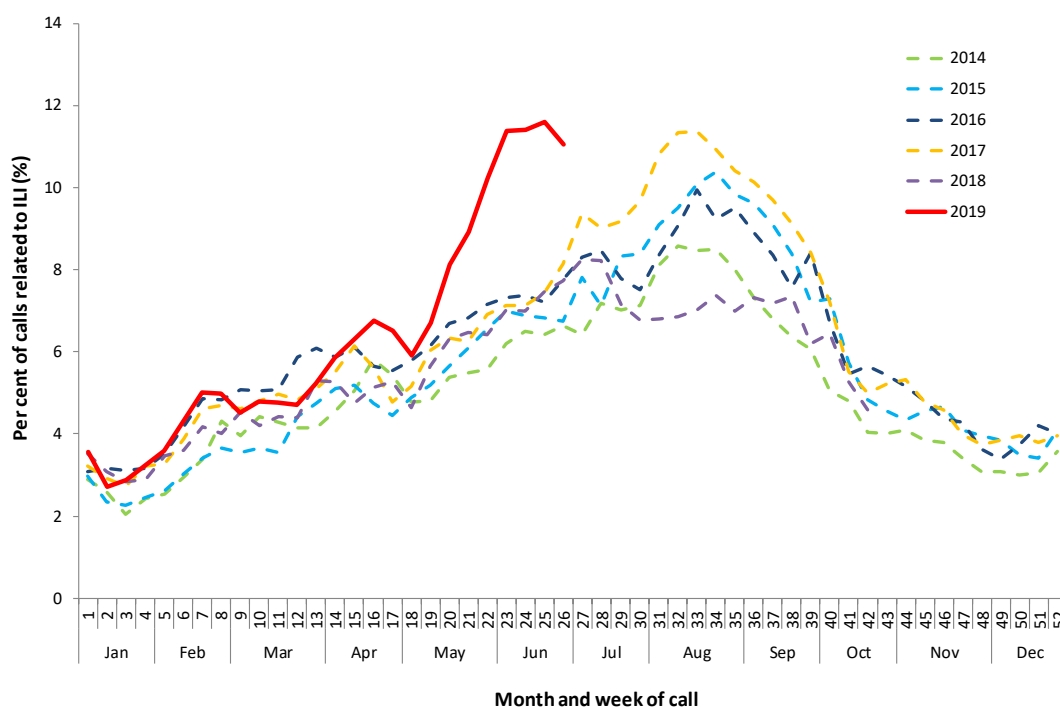
Influenza is above average levels and is a major cause of ILI this fortnight in some jurisdictions.

- Proportion of ILI with confirmed influenza seen by sentinel GPs:** Of the 216 ILI cases presenting to sentinel ASPREN GPs this fortnight who were tested for influenza, 78 (36.1%) had a positive result. This is a decrease from the previous fortnight when 38.8% (80/206) of swabbed ILI patients tested positive for influenza, noting that there is a lag in data entry for week 26. Positive results for patients tested for influenza have continued to increase since a slight drop in week 18. In weeks 1 to 13, all influenza positive cases were influenza A. From week 14 onwards, the proportion of influenza cases testing positive for influenza B has increased steadily to 29% in week 24, dropping slightly to 22% in week 26.
- Proportion of ILI with confirmed influenza in sentinel labs:** In the year to date, overall detections of influenza across sentinel laboratories increased to 26.9% in week 16 (unweighted percentage of tests positive for influenza across all sentinel laboratories) and has decreased slightly to 22.2% in week 26. In the past month, positivity has been highest in Western Australia (WA) (Figure 4), which is consistent with an increase in notifications of laboratory-confirmed influenza from this state.

The most commonly detected respiratory viruses this fortnight by laboratory site were:

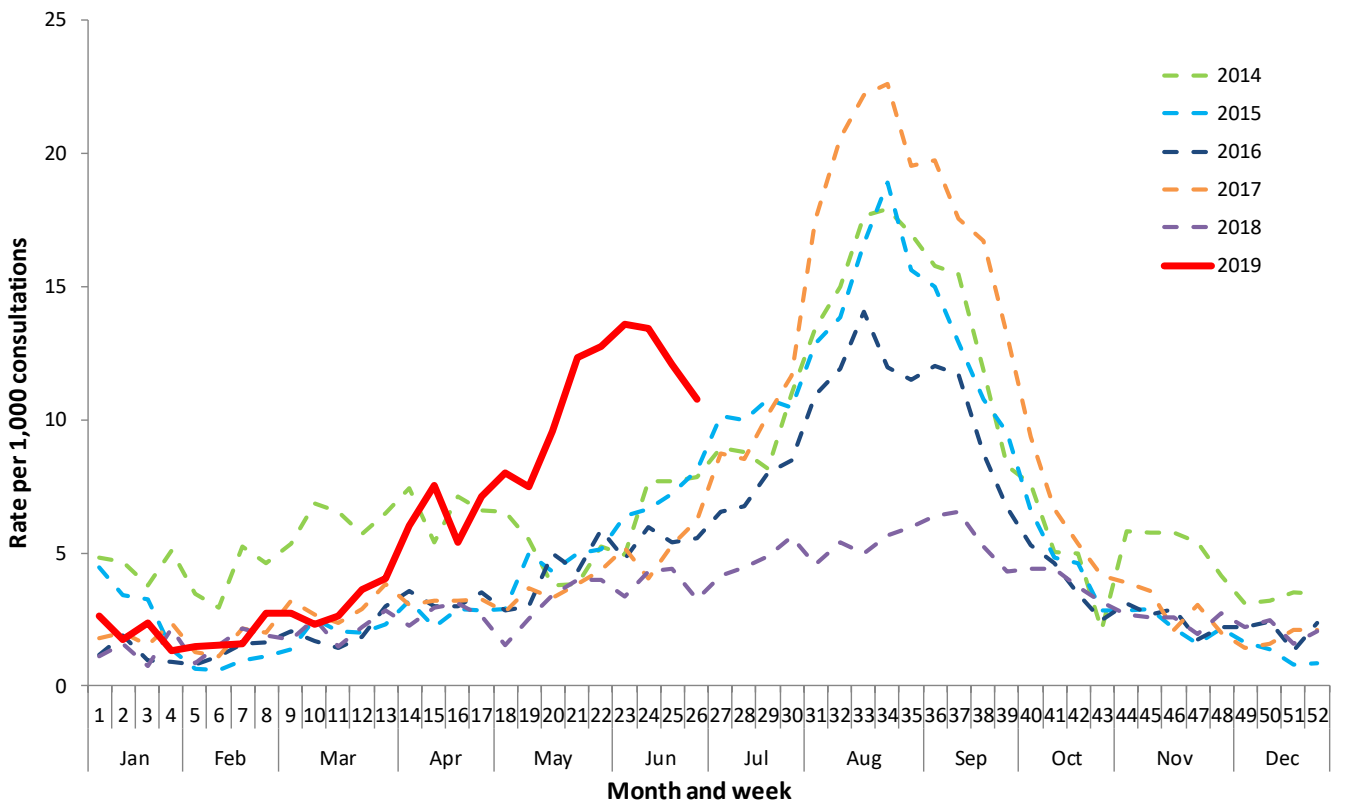
 - influenza A in both weeks 25 and 26 by the Institute of Clinical Pathology and Medical Research;
 - rhinovirus in both weeks by South Australia (SA);
 - influenza A in week 25 and influenza A and picornavirus in week 26 by VIDRL;
 - influenza A(H3N2) in both weeks by PathWest; and
 - rhinovirus in week 25 and influenza A in week 26 by Tasmania (TAS).
- NNDSS notifications:** In the year to date, there have been 119,808 notifications of laboratory-confirmed influenza to the National Notifiable Diseases Surveillance System (NNDSS). This fortnight there were 22,047 notifications of laboratory-confirmed influenza to the NNDSS. This is a slight increase in reported cases compared to the previous fortnight (n=19,353). Notifications this fortnight were substantially higher compared to this period in the previous five years (Figure 5). However, notifications by week have stabilised since week 24.
- FluCAN:** Since seasonal sentinel hospital surveillance began on 1 April 2019, a total of 1,309 people have been admitted with confirmed influenza (Figure 6). In the fortnight to 30 June 2019, 210 people have been admitted with confirmed influenza. This is an increase from the 146 reported in the previous fortnight, and over 3 times the 5-year average for the same fortnight (n=59.2). However, the number of admissions is not abnormal when compared to data during a typical influenza season (activity from late June to October). Note that a number of hospitals may also have a backlog of cases and it is expected that numbers may be revised upwards.

Figure 1. Per cent of calls to Healthdirect related to ILI, Australia, 1 January 2014 to 30 June 2019, by month and week of call.



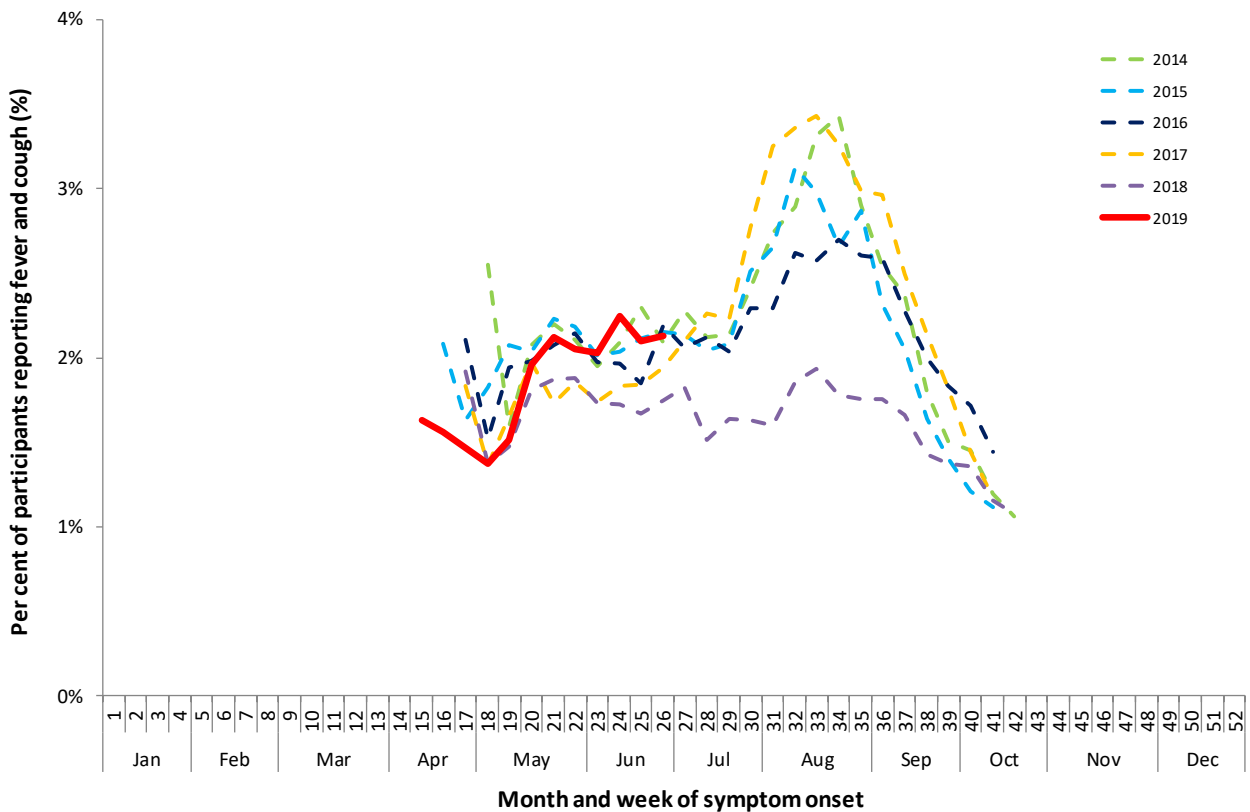
Source: Healthdirect

Figure 2. Unweighted rate of ILI reported from sentinel GP surveillance systems, Australia, 1 January 2014 to 30 June 2019, by month and week.



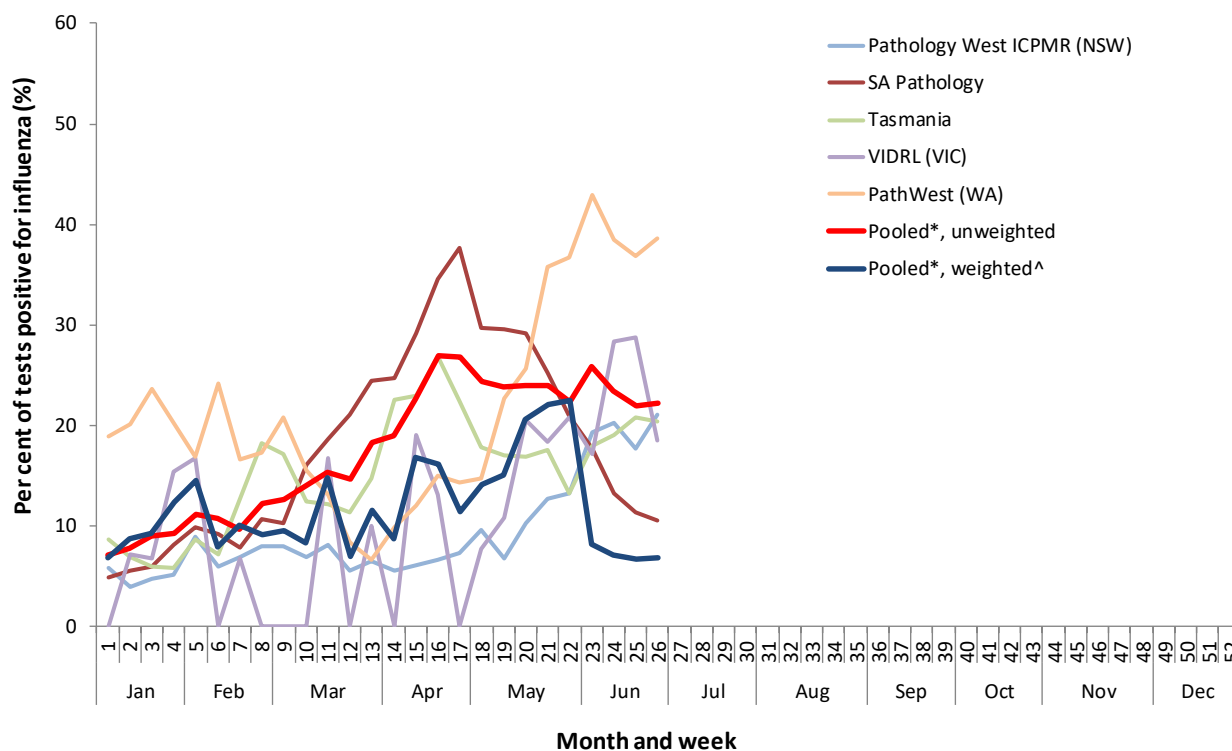
Source: ASPREN

Figure 3. Proportion of fever and cough among FluTracking participants, Australia, between April and October, 2014 to 2019, by month and week.



Source: FluTracking

Figure 4. Proportion of sentinel laboratory tests positive for influenza, 1 January to 30 June 2019, by contributing laboratory or jurisdiction and month and week.

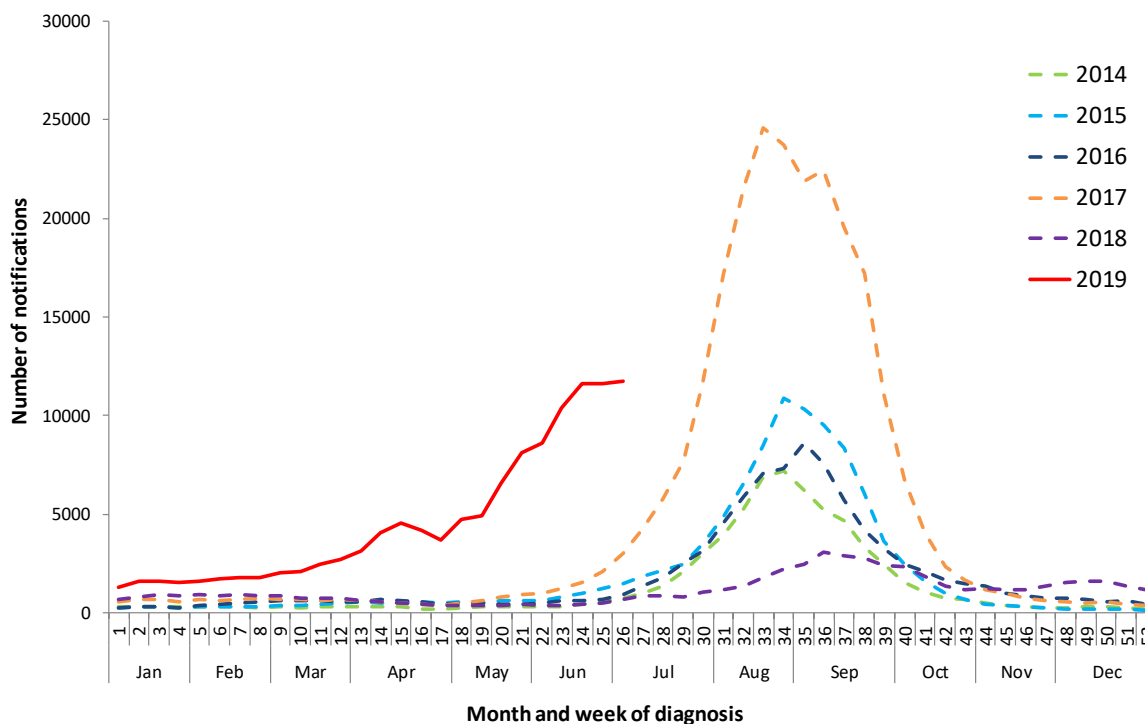


* Pooled percentage positive indicators should be interpreted with caution, noting that collectively pooled contributing laboratories are not representative of testing across Australia and individually contributing laboratories may not be representative of the jurisdiction in which they are located.

^ Weighted according to jurisdictional population in which laboratories are located.

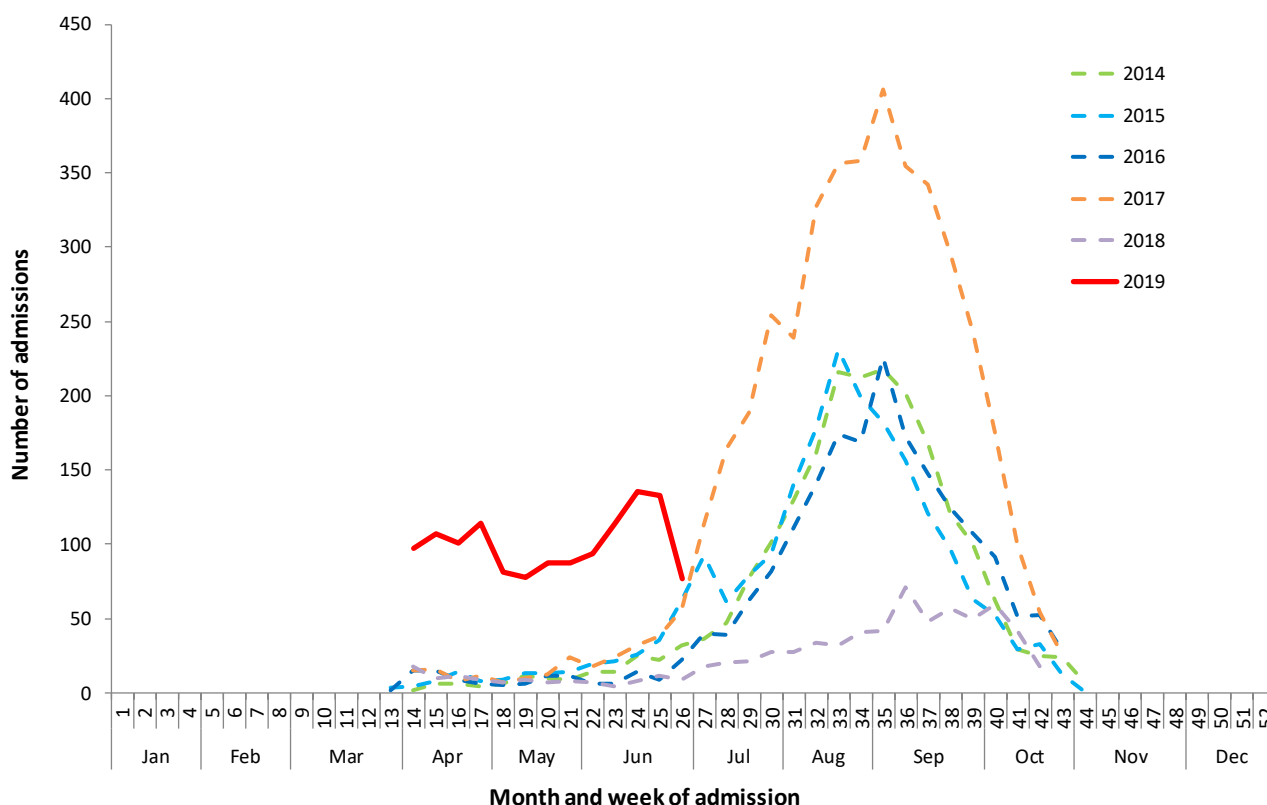
The percentage of tests positive for influenza in the interseasonal period should be interpreted with caution due to small numbers of tests being undertaken in this time, resulting in high variability in the indicators.

Figure 5. Notifications of laboratory confirmed influenza, Australia, 1 January 2013 to 30 June 2019, by month and week of diagnosis.



Source: NNDSS

Figure 6. Number of influenza hospitalisations at sentinel hospitals, between March and October, 2014 to 2019 by month and week.



Source: FluCAN

Geographical distribution of activity

- **Jurisdictional reports:** In the fortnight ending 30 June 2019, the geographic spread of influenza activity was reported by state and territory health departments as being:
 - Widespread - SA, Perth and the Southern region of Western Australia (WA), New South Wales (NSW), the Australian Capital Territory (ACT), the Southern region of Queensland (QLD), TAS and Victoria (VIC).
 - Regional - was noted in the North West region of WA and Central QLD.
 - Localised – Northern Territory (NT) and Tropical region of QLD (Figure 7).
- The change in activity level was reported by state and territory health departments as being:
- Increased - ACT, VIC, TAS, NSW and Southern QLD.
 - Decreased - Southern and North West regions of WA, the Southern and Central regions of the NT and SA.
 - No change – Perth, and Tropical and Central regions of QLD.
- **NNDSS:** Of the 22,047 notifications of influenza reported to the NNDSS in the last fortnight, 8,040 were from NSW, 4,594 from WA, 4,020 from VIC, 3,528 from QLD, 1,271 from SA, 347 from ACT, 168 from TAS and 79 from NT (Figure 8). This is an increase in notifications reported from the previous fortnight for ACT, NSW, TAS and QLD, which is consistent with the activity in the jurisdictional reports. Of the 119,808 notifications of influenza reported to the NNDSS this year to 30 June 2019, 36,573 were from NSW, 23,393 from VIC, 21,268 from QLD, 19,480 from SA, 15,422 from WA, 1,366 from TAS, 1,346 from ACT and 960 from NT.

For further information regarding influenza activity at the jurisdictional level, please refer to the following State and Territory health surveillance reports:

- ACT: [ACT Influenza Report](http://www.health.act.gov.au/about-our-health-system/population-health/winter-wellbeing-and-flu/flu-act)
- NSW: [Influenza Surveillance Report](http://www.health.nsw.gov.au/Infectious/Influenza/Pages/reports.aspx)

- QLD: [Statewide Weekly Influenza Surveillance Report](https://www.health.qld.gov.au/clinical-practice/guidelines-procedures/diseases-infection/surveillance/reports/flu) (https://www.health.qld.gov.au/clinical-practice/guidelines-procedures/diseases-infection/surveillance/reports/flu)
- SA: [Weekly Epidemiological Summary](http://www.sahealth.sa.gov.au/wps/wcm/connect/public+content/sa+health+internet/about+us/health+statistics/surveillance+of+notifiable+conditions) (Influenza section) (http://www.sahealth.sa.gov.au/wps/wcm/connect/public+content/sa+health+internet/about+us/health+statistics/surveillance+of+notifiable+conditions)
- TAS: [fluTAS Reports](http://www.dhhs.tas.gov.au/publichealth/communicable_diseases_prevention_unit) (http://www.dhhs.tas.gov.au/publichealth/communicable_diseases_prevention_unit)
- VIC: [Influenza Surveillance Reports](https://www2.health.vic.gov.au/public-health/infectious-diseases/infectious-diseases-surveillance/seasonal-influenza-reports) (https://www2.health.vic.gov.au/public-health/infectious-diseases/infectious-diseases-surveillance/seasonal-influenza-reports)
- WA: [Virus WATch](http://ww2.health.wa.gov.au/Articles/F_I/Infectious-disease-data/Virus-WATch) (http://ww2.health.wa.gov.au/Articles/F_I/Infectious-disease-data/Virus-WATch)

Figure 7. Map of influenza activity by state and territory, Australia, 17 to 30 June 2019

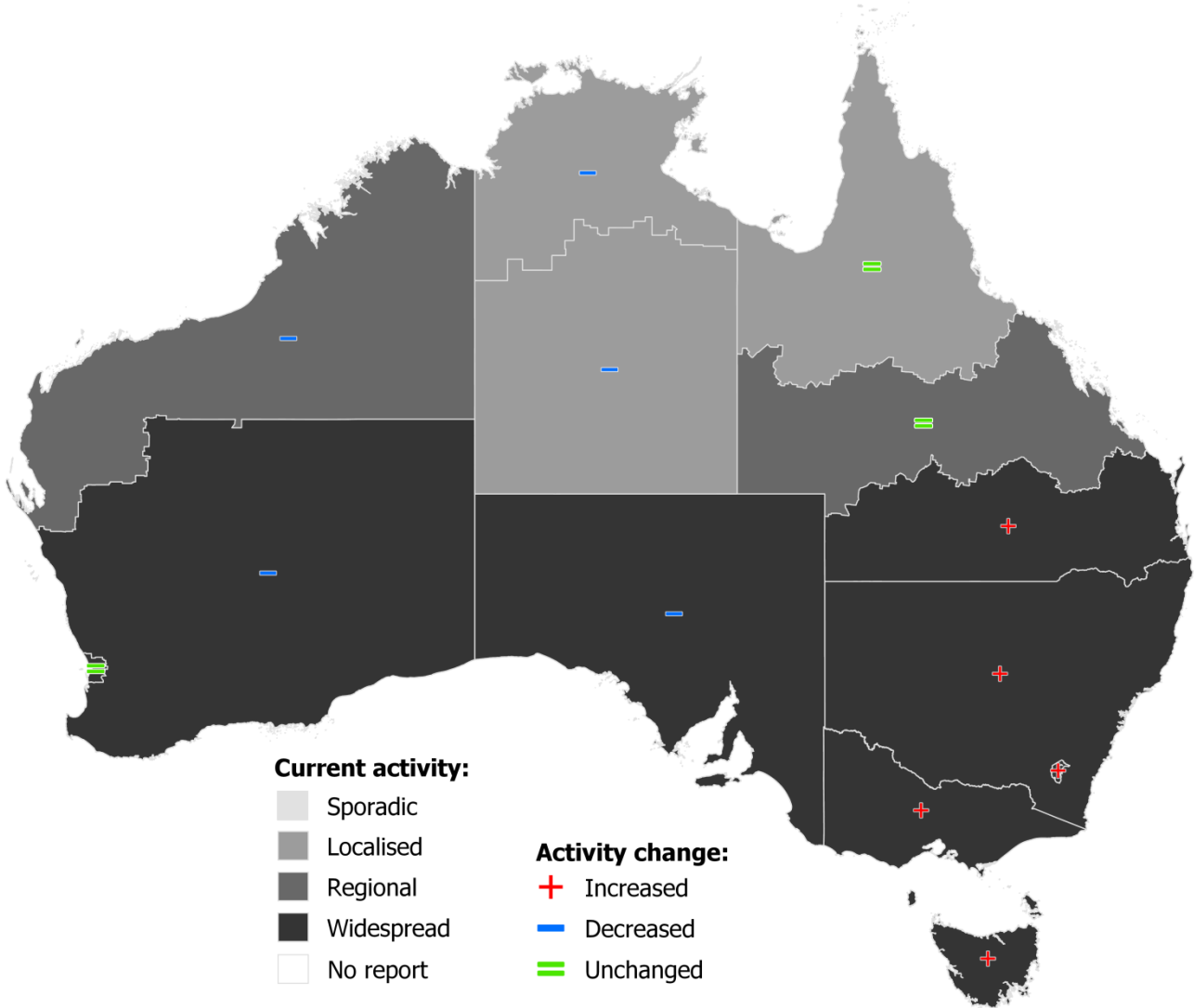
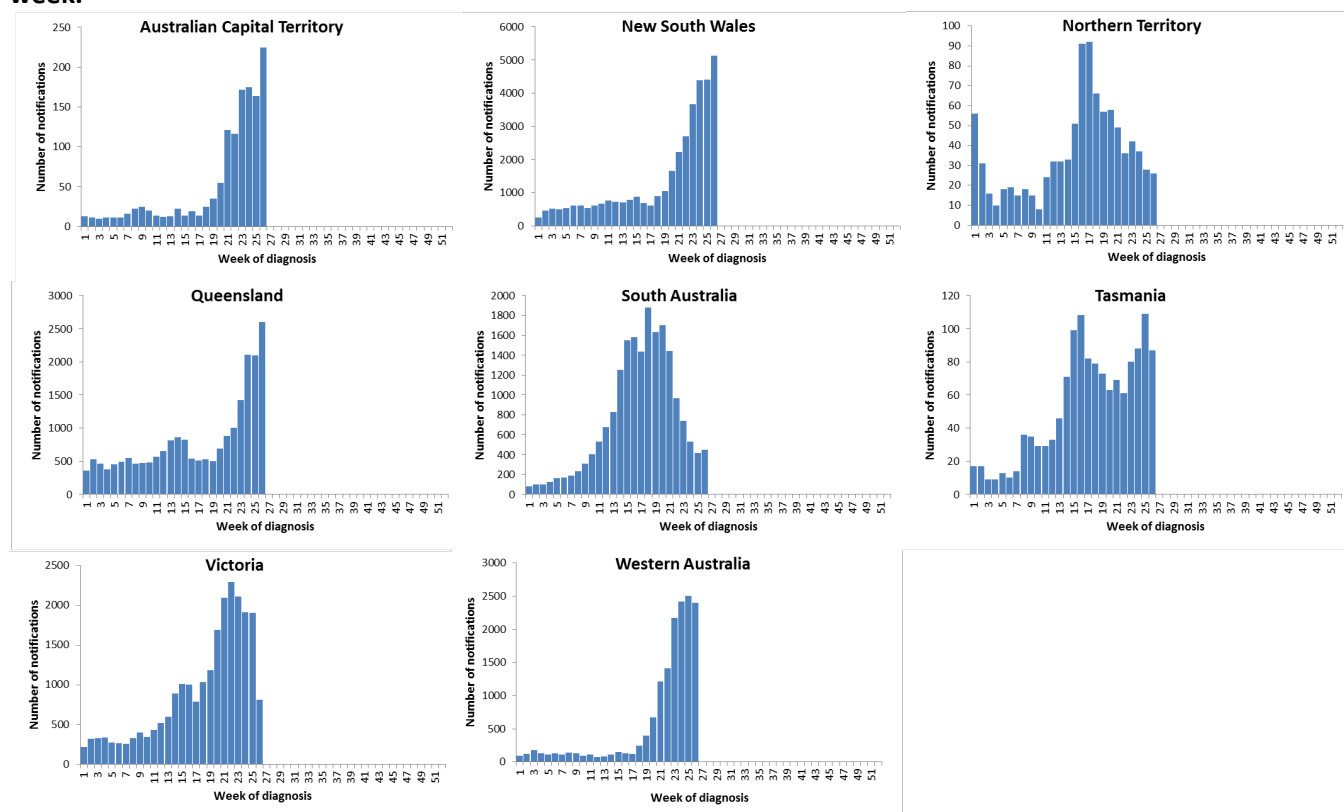


Figure 8. Notifications of laboratory confirmed influenza, 1 January to 30 June 2019, by state or territory and week.



Source: NNDSS

2. Severity

Severity is a measure of adverse outcomes or complications as a result of influenza or influenza-like illness (ILI) such as hospital referrals, admissions, need for intensive care and deaths. Measuring and understanding the severity of circulating influenza is difficult to establish at the beginning of the influenza season. The proportion of confirmed influenza cases with serious outcomes might be skewed initially because there are only a small number of people notified with influenza at the beginning of the season. This means that the measure of severity will vary substantially fortnight to fortnight until after the peak of the season when there is enough data for measurements to stabilise. An assessment of severity can be provided once the signals become clearer.

Clinical severity for the season to date, as measured through the proportion of patients admitted directly to ICU, and deaths attributed to influenza, is low.

Intensive care admissions

- **FluCAN:** Since seasonal sentinel hospital surveillance began on 1 April 2019, 1,309 people with influenza have been admitted to sentinel hospitals. Of those admitted, 88 (6.7%) were admitted to ICU. In the fortnight to 30 June 2019, 10 of the 210 people admitted to sentinel hospitals with confirmed influenza (4.8%) were admitted to ICU. This is a decrease in the proportion of people admitted to ICU compared to the previous fortnight (8.4%).

Deaths in confirmed influenza cases

- **NNDSS:** So far in 2019, 231 influenza-associated deaths have been notified to the NNDSS. The majority of deaths were due to influenza A (98%, n=227). Where subtyping information was available, 36 were associated with influenza A(H3N2), 21 with influenza A(H1N1)pdm09, and 4 with influenza B. The median age of deaths notified was 86 years (range <1 to 105 years).
- The number of influenza-associated deaths reported to the NNDSS does not represent the true mortality associated with this disease. The number of deaths is reliant on the follow up of cases to determine the outcome of their infection. The follow up of cases is not a requirement of notification, and are only inclusive of laboratory-confirmed cases of influenza. Due to retrospective revision, the variation across jurisdictions in methodology, representativeness and timeliness of death data, and reporting of an

outcome of infection not being a requirement of notification, year on year comparisons of deaths in notified cases of influenza may not be reliable.

3. Impact

Impact measures how the influenza epidemic affects society, including stress on health-care resources and societal and economic consequences.

Absenteeism

- **Flutracking:** In weeks 25 and 26, 1.5% and 1.4% of Flutracking survey respondents respectively reported having ILI and taking time off regular duties while unwell, a slight decrease from the 1.6% reporting ILI and absence in week 24.

Use of hospital beds

- **FluCAN:** Since seasonal sentinel hospital surveillance began on 1 April 2019, a cumulative total of 18.9% of hospital beds available in FluCAN hospitals were occupied by patients with confirmed influenza.

4. Virology

National notification data

- **NNDSS:** In the reporting fortnight, 75% of notifications of laboratory confirmed influenza to the NNDSS were influenza A (72% influenza A(untypeded), <1% influenza A(H1N1)pdm09 and 3% influenza A(H3N2)), 25% were influenza B and less than 1% were influenza A&B co-infections or untyped (Figure 9). This is a substantial increase in the proportion of cases reported as influenza B compared to the previous fortnight (22%). In the fortnight to 30 June 2019, all jurisdictions had an increase in the proportion of cases attributed to influenza B, compared to the previous fortnight.
- For the year to 30 June 2019, 84% of notifications of laboratory confirmed influenza to the NNDSS were influenza A (78% influenza A(untypeded), 2% influenza A(H1N1)pdm09 and 4% influenza A(H3N2)), 16% were influenza B, and less than 1% were influenza A&B co-infections or untyped. The proportion of all notifications year to date reported as influenza A has ranged across jurisdictions from 74% in WA to 96% in TAS (Figure 10). Where subtyping information was available, the NT, TAS and WA have reported a greater proportion of influenza A(H3N2) than influenza A(H1N1)pdm09 in the year-to-date. ACT, NSW, QLD and VIC have reported similar proportions of both influenza A subtypes.

Reference Laboratory data

- **World Health Organization Collaborating Centre for Reference and Research on Influenza (WHOCC):** From 1 January to 30 June 2019, the WHOCC characterised 799 influenza viruses. Of these, 88% were influenza A (56% influenza A(H1N1)pdm09 and 32% influenza A(H3N2)), and 12% were influenza B (3% influenza B Yamagata lineage and 9% influenza B Victoria lineage).

Sentinel laboratory surveillance

- In the reporting fortnight, 81% of influenza positive samples detected in sentinel laboratories were influenza A (59% were influenza A(untypeded), 22% were influenza A(H3N2), and less than 1% were influenza A(H1N1)pdm09), and 19% were influenza B (Figure 11).

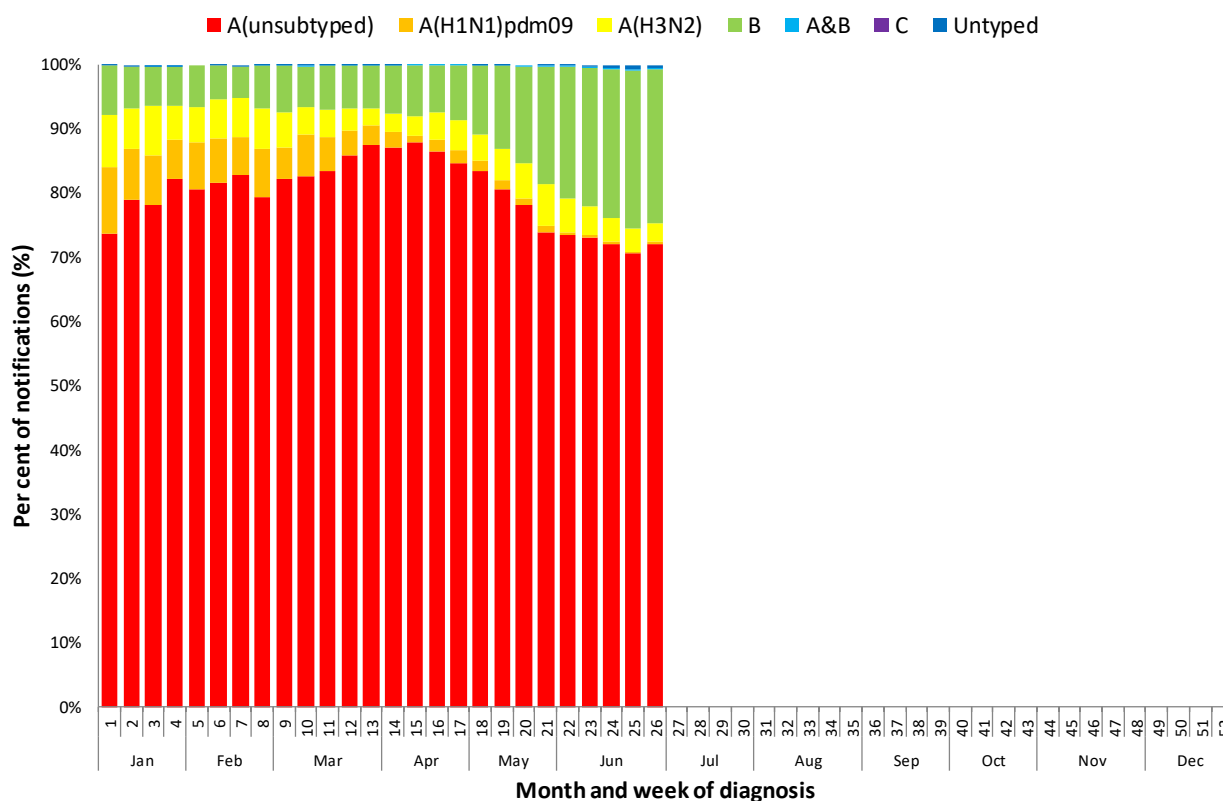
Sentinel GP surveillance

- **ASPREN:** Of the 78 influenza positive samples detected this fortnight through swab testing patients presenting with ILI to ASPREN sentinel GPs, 47% were influenza A (untypeded), 27% were influenza A(H3N2) and 4% were influenza A(H1N1)pdm09. The remaining 17 (22%) were influenza B (Figure 12).

Sentinel hospital surveillance

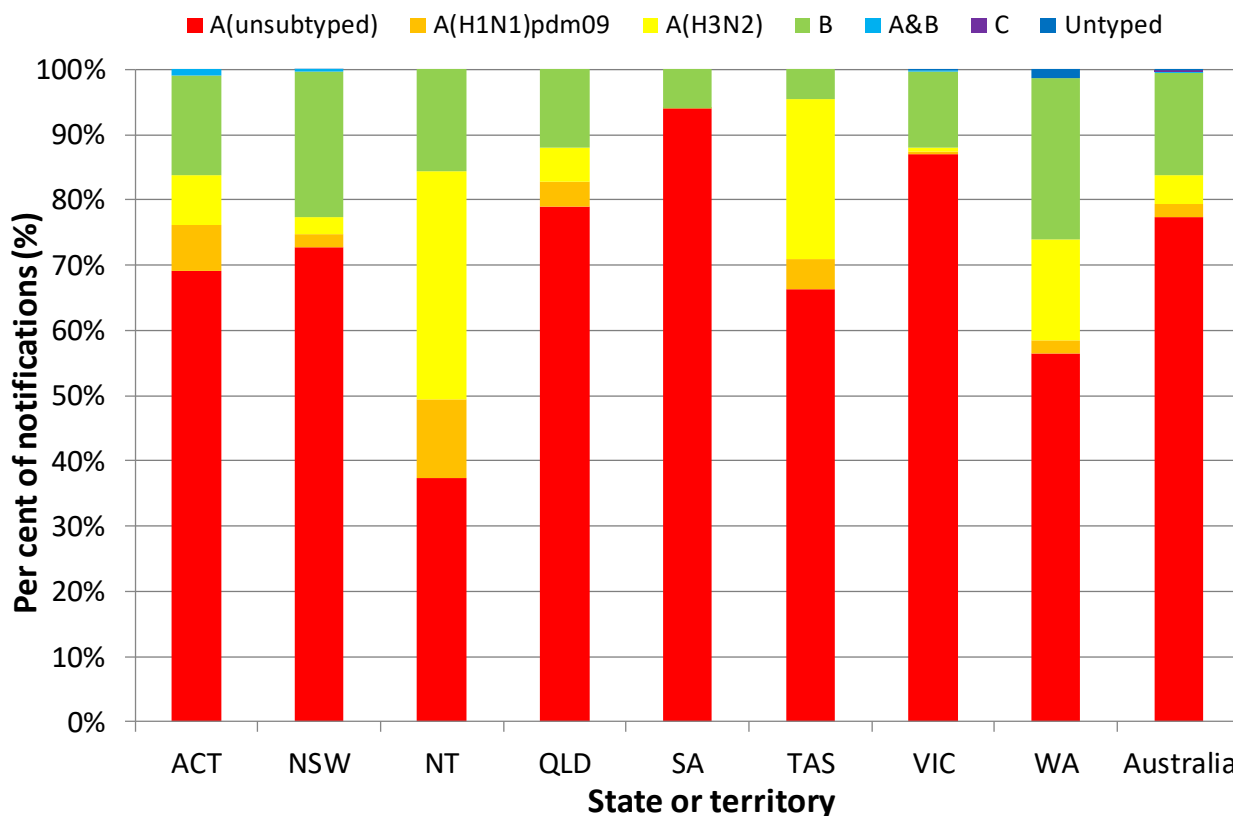
- **FluCAN:** Since seasonal sentinel hospital surveillance began on 1 April 2019, 86% of admissions with confirmed influenza to sentinel hospitals were influenza A (63% A(untypeded), 5% influenza A(H1N1)pdm09 and 18% influenza A(H3N2)) and 14% were influenza B (Figure 13). This is an increase in influenza B from 12% in the previous fortnight, and is consistent with the increase of influenza B cases reported to the NNDSS. Of the 88 patients admitted directly to ICU, 81 patients were infected with influenza A (67% influenza A(untypeded), 15% influenza A(H3N2) and 11% influenza A(H1N1)pdm09), with 6 people infected with influenza B (7%)

Figure 9. Per cent of laboratory confirmed influenza, Australia, 1 January to 30 June 2019 by subtype and week.



Source: NNDSS

Figure 10. Per cent of notifications of laboratory confirmed influenza, Australia, 1 January to 30 June 2019, by subtype and state or territory.



Source: NNDSS

Figure 11. Proportion of sentinel laboratory tests positive for influenza and total number of specimens tested, 1 January to 30 June 2019, by subtype and month and week.

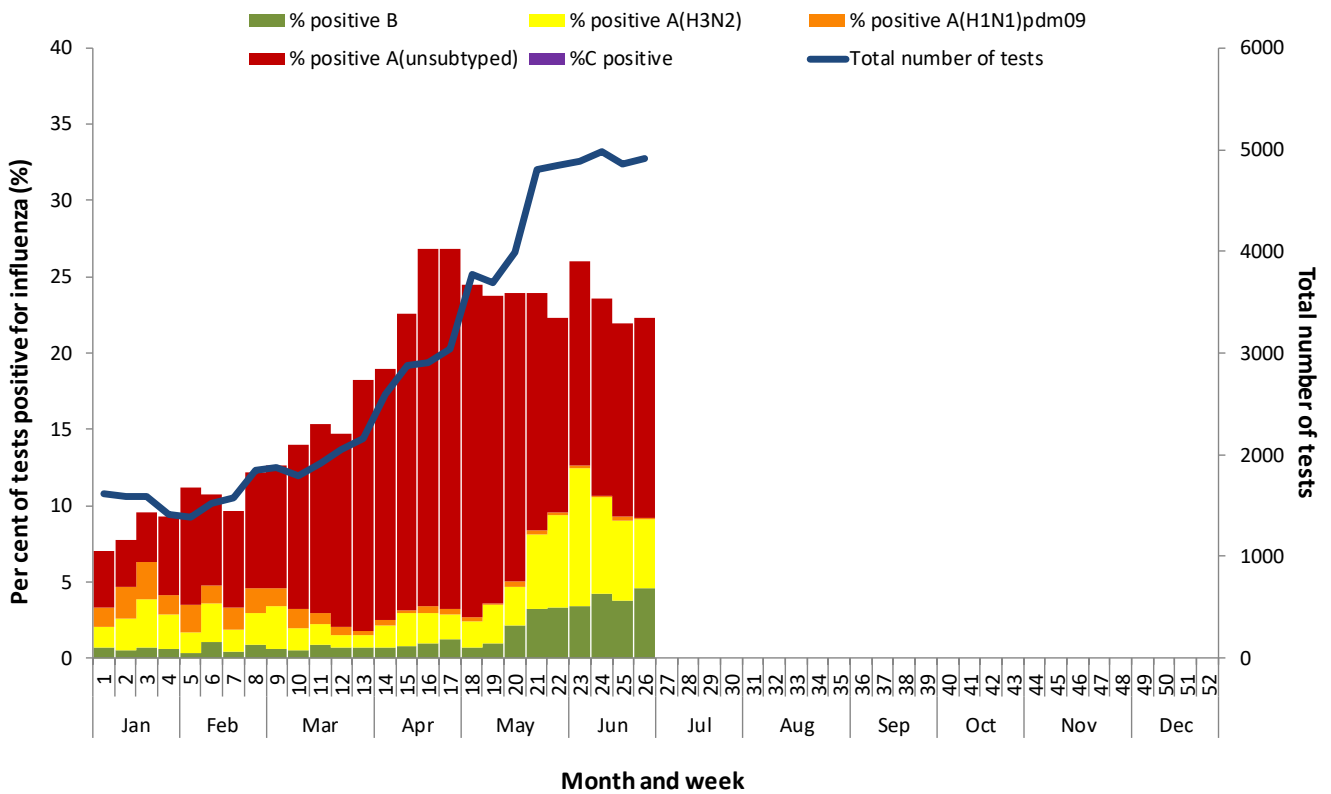
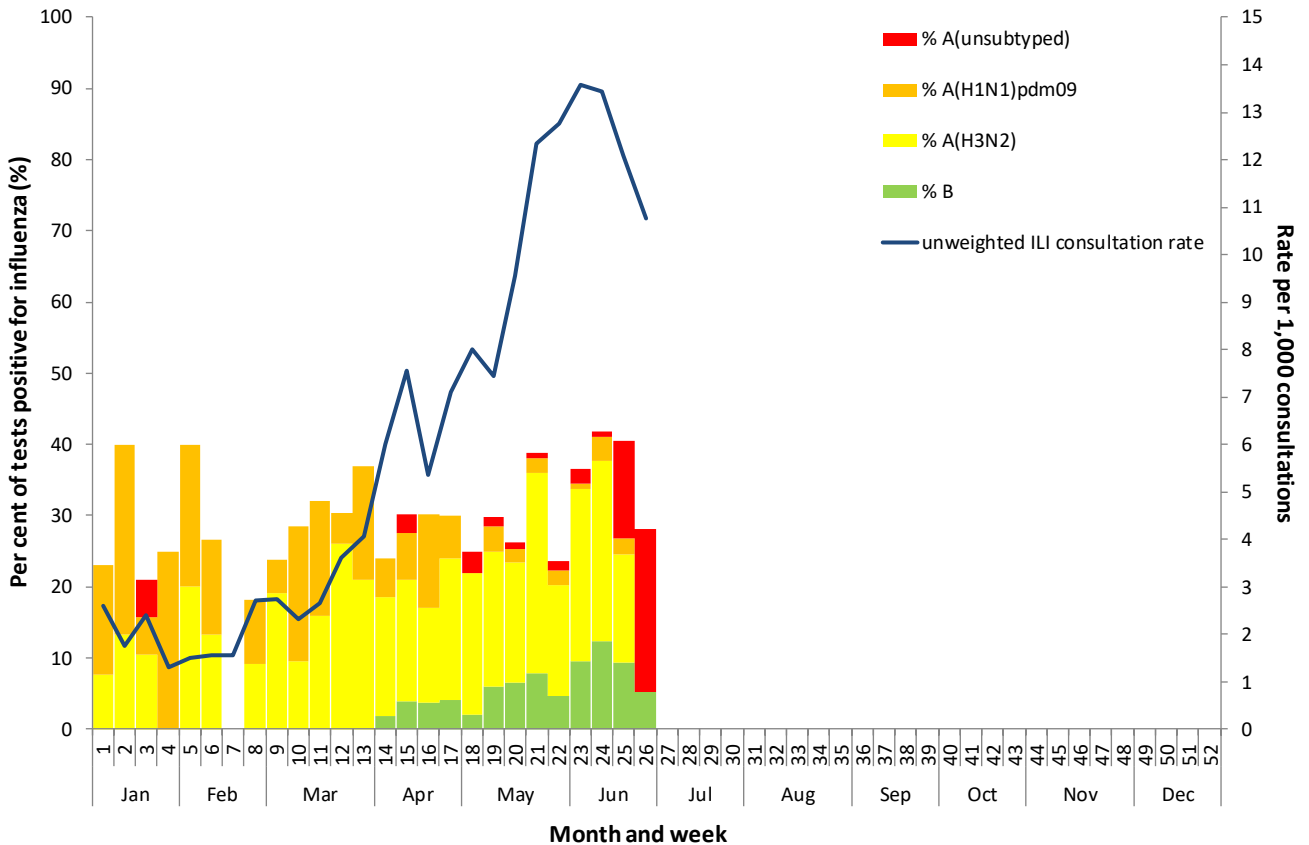
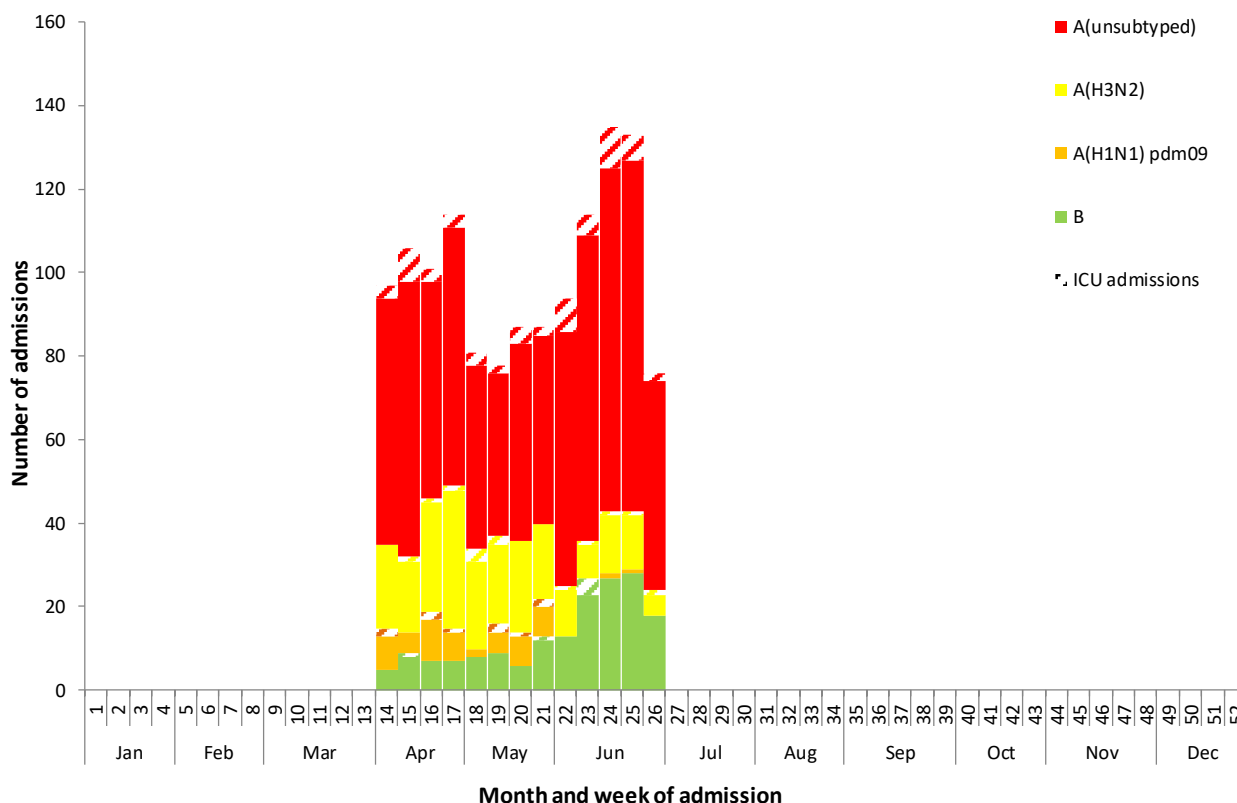


Figure 12. Proportion of respiratory viral tests positive for influenza in ASPREN ILI patients and ASPREN ILI consultation rate, Australia, 1 January to 30 June 2019, by month and week.



Source: ASPREN

Figure 13. Number of influenza hospitalisations at sentinel hospitals by subtype and ICU admission, 1 April to 30 June 2019, by month and week.



Source: FluCAN

5. At-risk Populations

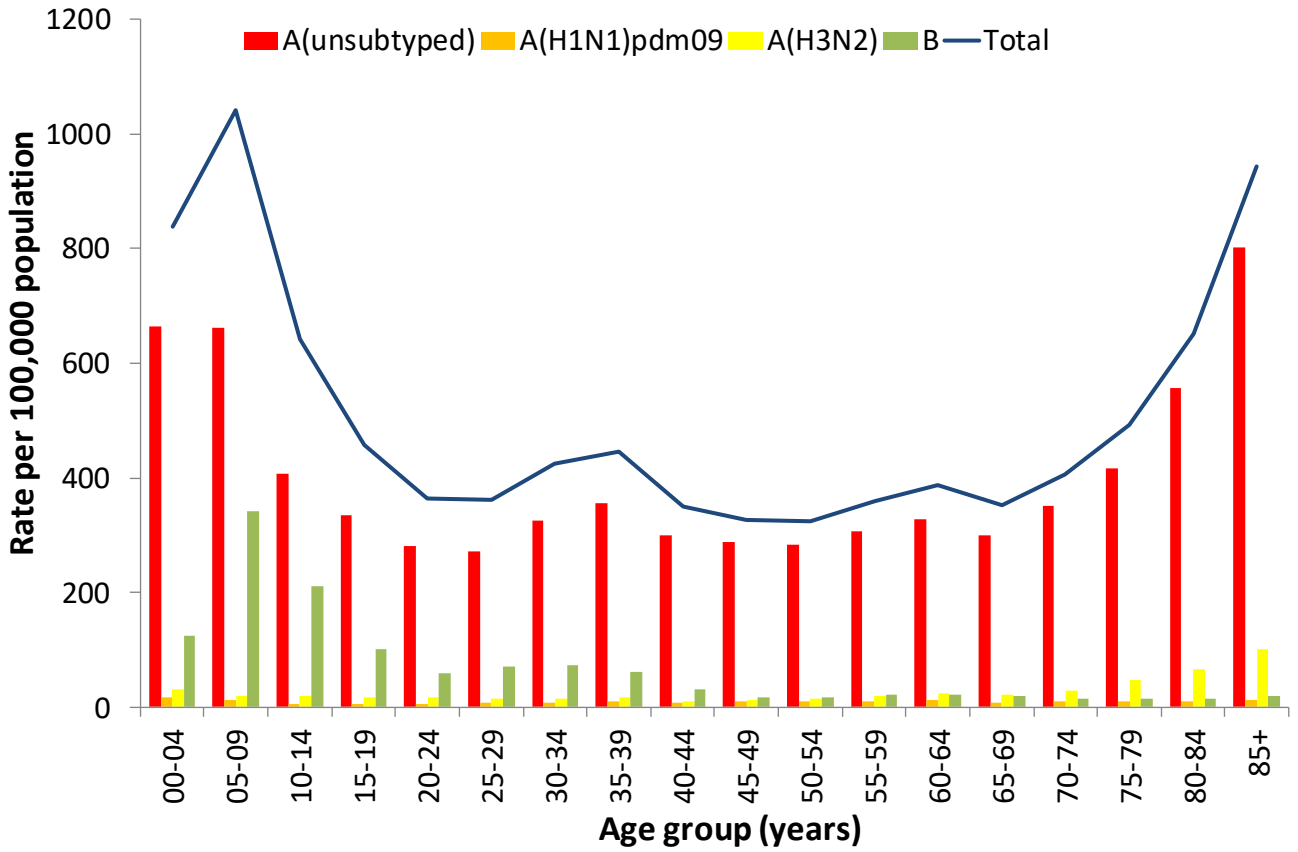
National notification data

- **NNDSS:** As of 30 June 2019, notification rates were highest in children aged between 5 and 9 years of age (1041.3 notifications per 100,000) followed by adults aged over 85 years (942.6 notifications per 100,000) (Figure 14). This is the first time in 2019 that rates in children surpassed those in adults over 80 years of age.
- Influenza A accounted for the greatest number of notifications across all age groups. Where further subtyping information was available, notifications of influenza A(H1N1)pdm09 were highest in children aged less than 4 years (17.7 per 100,000) and notifications of influenza A(H3N2) were highest in adults aged 80 years and older (83.8 per 100,000). Notification rates for influenza B were highest in children aged 5 to 9 years (342.8 per 100,000), compared to 218.7 per 100,000 in the previous fortnight, and followed by children aged 10 to 14 years (210.3 per 100,000).
- Among broader age groups, where further subtyping information was available, influenza B was the predominant subtype in children of all ages and adults between the ages of 20 and 64 years, whereas influenza A(H3N2) was the predominant subtype in adults aged 65 years and older (Figure 15). Additionally, in the most recent fortnight the number of notifications per week in adults and children 4 years of age and under have remained steady, while the number of notifications in children aged 5 to 19 years continues to increase exponentially.

Sentinel hospital surveillance

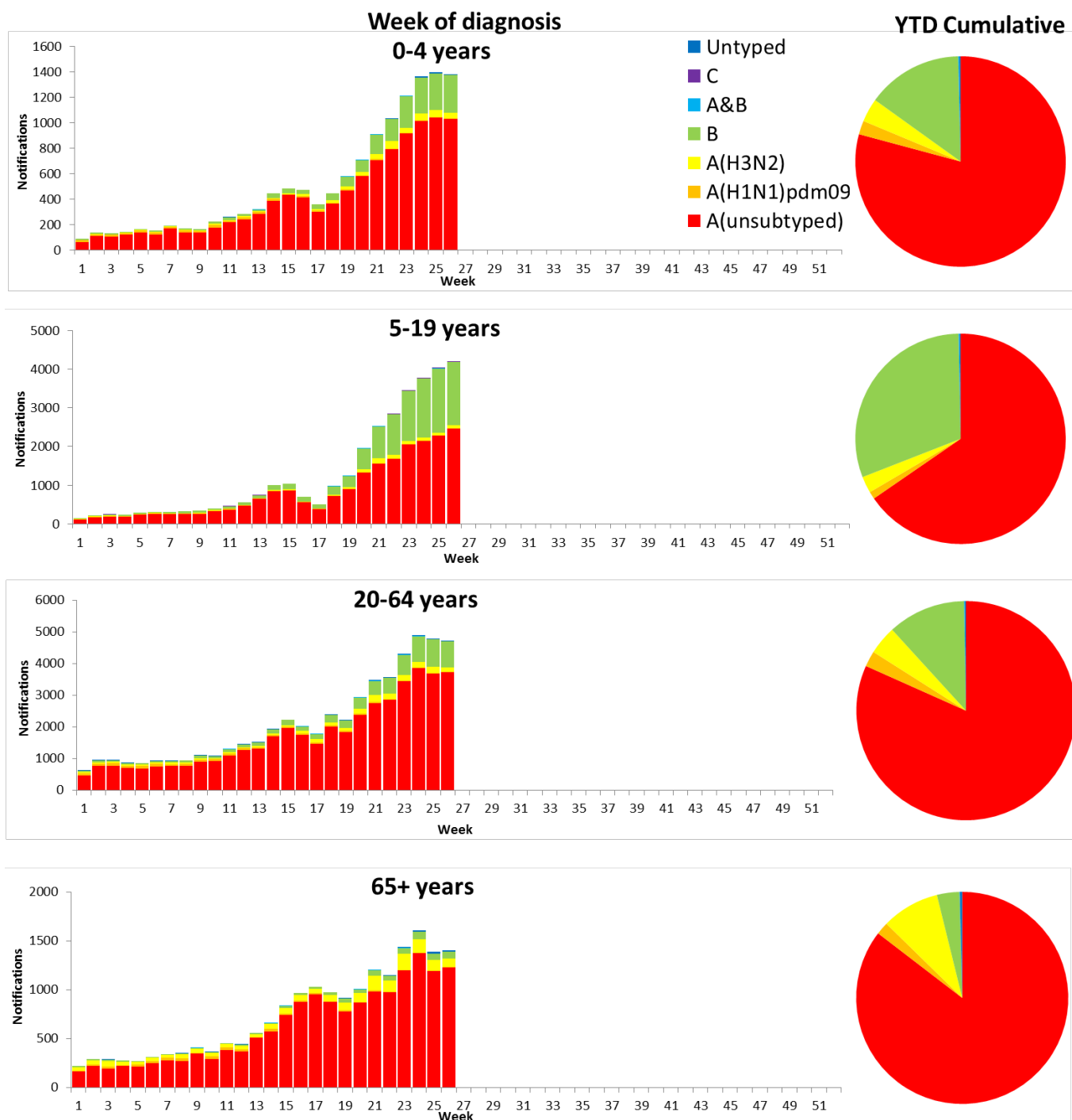
- **FluCAN:** Since seasonal sentinel hospital surveillance began on 1 April 2019, 39% of people admitted with confirmed influenza were children aged 15 years and younger, 32% were adults aged between 16 and 64 years, and 29% were adults aged 65 years and older. Of the children admitted with confirmed influenza to date, 4.0% (n=20) were admitted to ICU, compared to 9.7% of adults aged between 16 and 64 years and 7.1% of adults aged 65 years and older.

Figure 14. Rate of notifications of laboratory confirmed influenza, Australia, 1 January to 30 June 2019, by age group and subtype.



Source: NNDSS

Figure 15. Notifications of laboratory confirmed influenza by week of diagnosis and cumulative year-to-date, Australia, 1 January to 30 June 2019, by age group and subtype.



Source: NNDSS

6. Vaccine effectiveness

Australian Influenza Vaccines Composition 2019

The influenza virus strains included in the 2019 seasonal influenza vaccines in Australia are:

- A/Michigan/45/2015, (H1N1)pdm09-like virus;
- A/Switzerland/8060/2017, (H3N2)-like virus; and
- B/Phuket/3073/2013-like virus, Yamagata lineage.
- B/Colorado/06/2017-like virus, Victoria lineage.

The best way to determine how well the vaccine protects against circulating viruses during the season is by determining the vaccine effectiveness. These estimates provide an indication of how effective the vaccine was in providing protection against influenza infection.

WHOCC

From 1 January to 1 July 2019, 799 isolates were characterised for similarity to their corresponding vaccine components by haemagglutination inhibition (HI) assay (Table 1). Most influenza A(H1N1)pdm09 viruses and influenza B/Yamagata viruses appeared to be antigenically similar to the corresponding vaccine components. 14 A(H1N1)pdm09 were characterised as low reactors. The majority of influenza A(H3N2) and B/Victoria isolates that were able to be assessed by HI assay appeared to be antigenically matched to the vaccine. Of the 216 influenza A(H3N2) isolates, 44 were characterised as low reactors, and an additional 43 isolates were unable to be characterised in the HI assay due to insufficient haemagglutination titre. Of the 74 influenza B/Victoria isolates, 23 were characterised as low reactors.

Table 1. Australian influenza viruses typed by HI from the WHOCC, 1 January to 1 July 2019.

Type/Subtype	ACT	NSW	NT	QLD	SA	TAS	VIC	WA	TOTAL
A(H1N1) pdm09	31	160	41	42	73	6	70	24	447
A(H3N2)	34	62	34	15	42	11	43	13	254
B/Victoria lineage	6	7	21	10	9	1	15	5	74
B/Yamagata lineage	4	6	1	1	9	0	1	2	24
Total	75	235	97	68	133	18	129	44	799

SOURCE: WHO CC

Note: Viruses tested by the WHO CC are not necessarily a random sample of all those in the community.

State indicates the residential location for the individual tested, not the submitting laboratory.

There may be up to a month delay on reporting of samples.

7. Antiviral Resistance

The WHOCC reported that from 1 January to 1 July 2019, none of the 983 influenza viruses tested for neuraminidase inhibitor resistance, demonstrated reduced inhibition to the antiviral drugs Zanamivir or Oseltamivir.

8. Data considerations

This report presents an overview of influenza activity based on a number of complimentary systems. No one single system, including notification data, provides the full picture on influenza, because influenza is a common disease and its presenting symptoms are non-specific. The epidemiology of influenza is informed by a number of different systems based in the community, laboratories, primary care and hospitals, as well as notifiable diseases data, which includes officially reported deaths. The information in this report is reliant on the surveillance sources available to the Department of Health at the time of production.

Data in this summary is reported by International Organization for Standardization (ISO) 8601 weeks, with the week ending on Sunday. Throughout the summary, where the year to date is presented, this includes data from 1 January to 30 June 2019. NNDSS data were extracted on 3 July 2019. Due to the dynamic nature of the NNDSS and other surveillance systems, data in this report are subject to retrospective revision and may vary from data reported in other national reports and reports by states and territories. Detailed notes on interpreting the data presented in this report are available at the Department of Health's [Australian Influenza Surveillance Report website](http://www.health.gov.au/flureport) (www.health.gov.au/flureport).

While every care has been taken in preparing this report, the Commonwealth does not accept liability for any injury or loss or damage arising from the use of, or reliance upon, the content of the report. Delays in the reporting of data may cause data to change retrospectively. For further details about information contained in this report please contact the [Influenza Surveillance Team](mailto:flu@health.gov.au) (flu@health.gov.au).