



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 is slightly higher than average for this time of year compared to previous years. However, the disparity between this season and previous years has been decreasing over the last few weeks. At the national level, notifications of laboratory-confirmed influenza have decreased in the past fortnight; however, this may be due in some measure to data entry backlogs.
- **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.
- **Virology** – The majority of confirmed influenza cases reported nationally were influenza A in the year to date (82%) and past fortnight (79%). After an increase in the proportion of cases attributed to influenza B since early May, the proportion has declined in the past month.

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 has decreased in the last fortnight and is only slightly higher than the 5 year average.

- **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, to a high of 12.5% and 12.4% in weeks 27 and 28 respectively, decreasing to 8.6% in week 30 (Figure 1).
- **Sentinel General Practitioners (ASPREN):** 11.0 per 1,000 consultations in sentinel general practices were due to ILI in week 30 (Figure 2), decreasing from a high of 14.0 per 1,000 consultations in week 28. ILI consultations are slightly higher than the 5 year average for this time of year; however, this gap has been decreasing since week 24, and is expected to be on par with the 5 year average in the next fortnight.
- **Flutracking:** Since reporting began in week 17 Flutracking participants reporting ILI (fever and cough) has increased from 1.6% to 2.5% in weeks 24 and 27, decreasing to 2.0% in week 30. Activity in the past fortnight is within the range of activity in the previous five years (Figure 3).
- **Proportion of ILI with confirmed influenza seen by sentinel GPs:** Of the 189 ILI cases presenting to sentinel ASPREN GPs this fortnight who were tested for influenza, 72 (38.1%) had a positive result. This is a decrease from the previous fortnight when 41.1% (120/292) of swabbed ILI patients tested positive for influenza, noting that there is a lag in data entry for week 30. 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, varying between 17% and 27% in weeks 25 to 30.
- **Proportion of ILI with confirmed influenza in sentinel labs:** In the year to date, overall detections of influenza across sentinel laboratories decreased to 17% in week 30 (unweighted percentage of tests

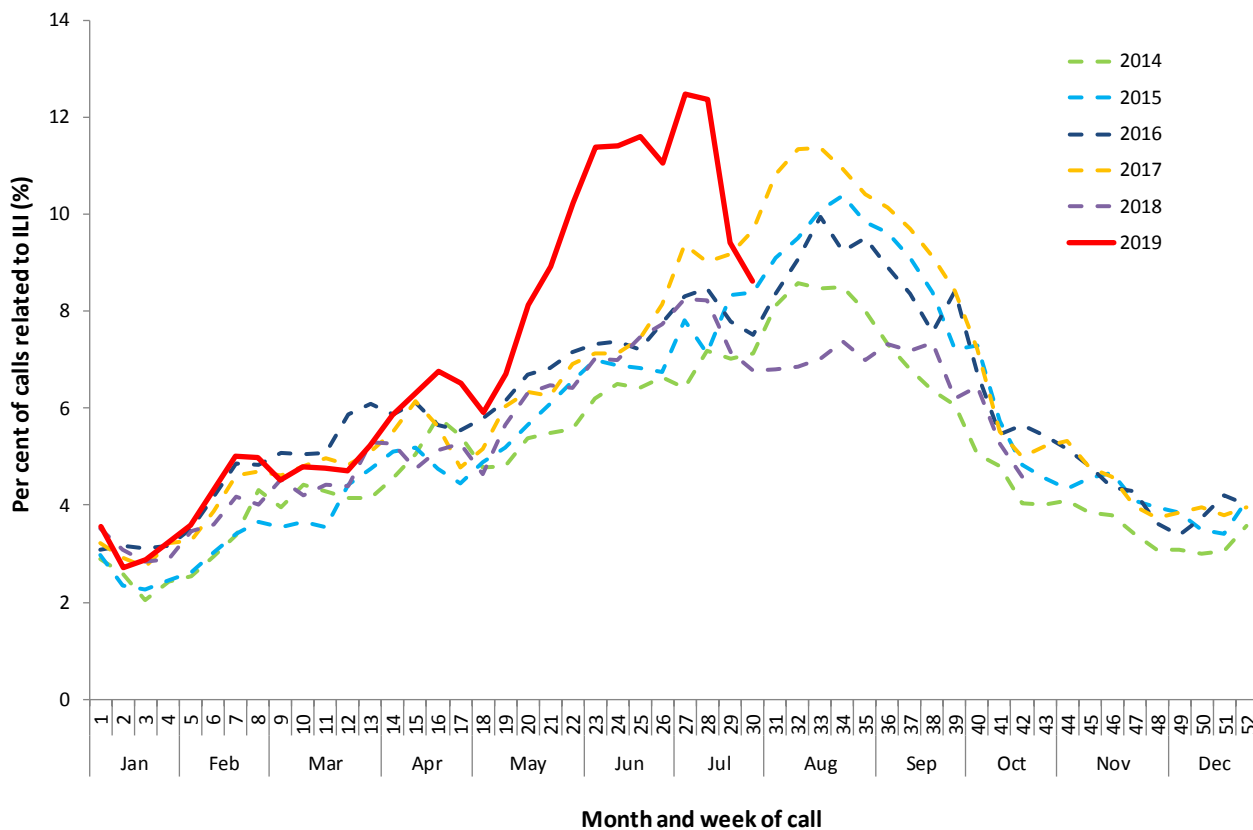
positive for influenza across all sentinel laboratories) after peaks in week 16 of 26.9% and 25.8% in week 23. In the past fortnight, positivity has been highest in Victoria (VIC) (Figure 4); however, percent positivity has decreased across all sentinel labs in the past 3 weeks.

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

- influenza A in both weeks 29 and 30 by the Institute of Clinical Pathology and Medical Research in New South Wales (NSW);
 - rhinovirus in both weeks by South Australia (SA);
 - influenza A in both weeks by the Victorian Infectious Diseases Reference Laboratory (VIDRL);
 - influenza A(H3N2) in week 29 and respiratory syncytial virus in week 30 by PathWest in Western Australia (WA); and
 - influenza A in both weeks by Tasmania (TAS), noting that this only relates to testing performed at the Royal Hobart Hospital.
- **NNDSS notifications**¹: In the year to date, there have been 183,331 notifications of laboratory-confirmed influenza to the National Notifiable Diseases Surveillance System (NNDSS). This fortnight there were 22,926 notifications of laboratory-confirmed influenza to the NNDSS. This is a slight decrease in reported cases compared to the previous fortnight (n=31,378). Notifications this fortnight were higher compared to this period in the previous five years, with the exception of the start of the 2017 season (Figure 5). Whilst it appears that the number of cases has dropped in the past week, this is at least partly due to a backlog in data entry in some states and territories.
 - **FluCAN**: Since seasonal sentinel hospital surveillance began on 1 April 2019, a total of 2,352 people have been admitted with confirmed influenza (Figure 6). In the fortnight to 28 July 2019, 211 people have been admitted with confirmed influenza. This is a decrease from the 346 reported in the previous fortnight, however, it is likely that this is a result of an administrative backlog and that numbers will be revised upwards. This is still greater than the 5-year average for the same fortnight (n=196.9). However, the number of admissions is not abnormal when compared to data during a typical influenza season (activity from late June to October).

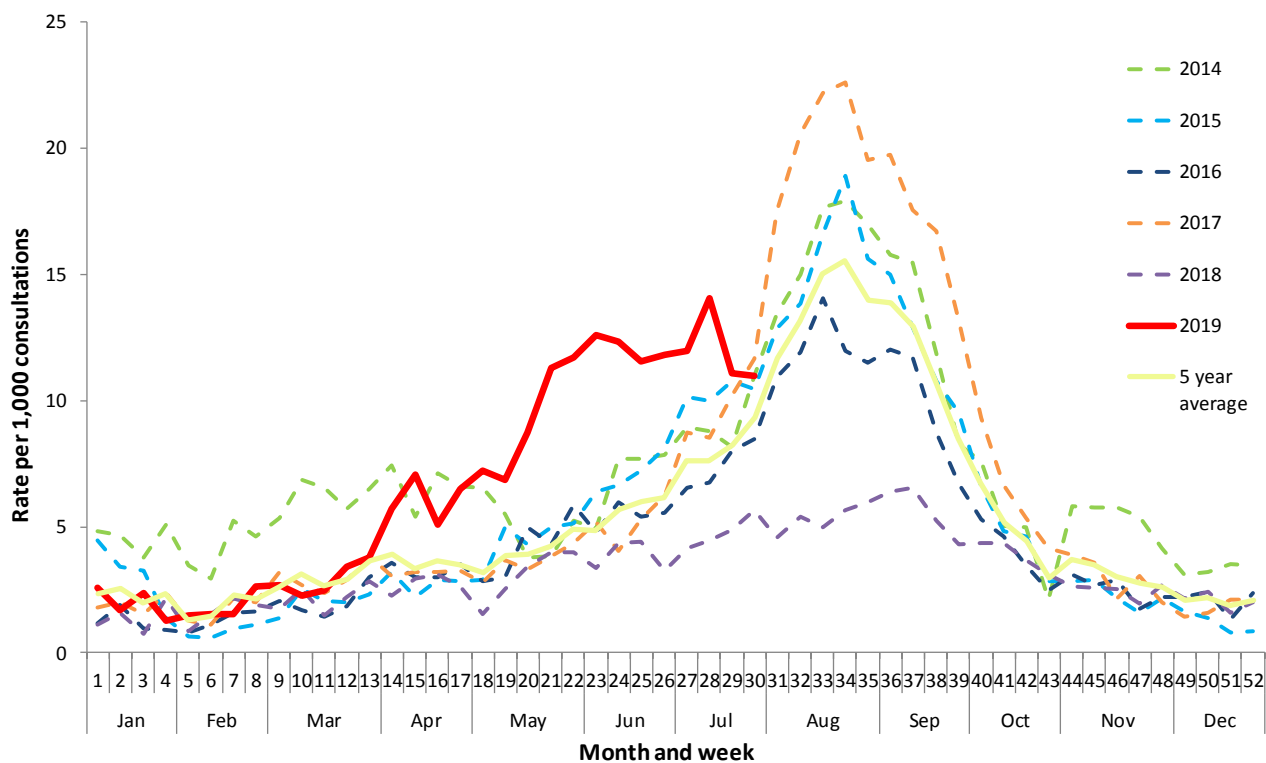
¹NNDSS notification data provided for the current and most recent weeks may be incomplete. All data are preliminary and subject to change as updates are received.

Figure 1. Per cent of calls to Healthdirect related to ILI, Australia, 1 January 2014 to 28 July 2019, by month and week of call.



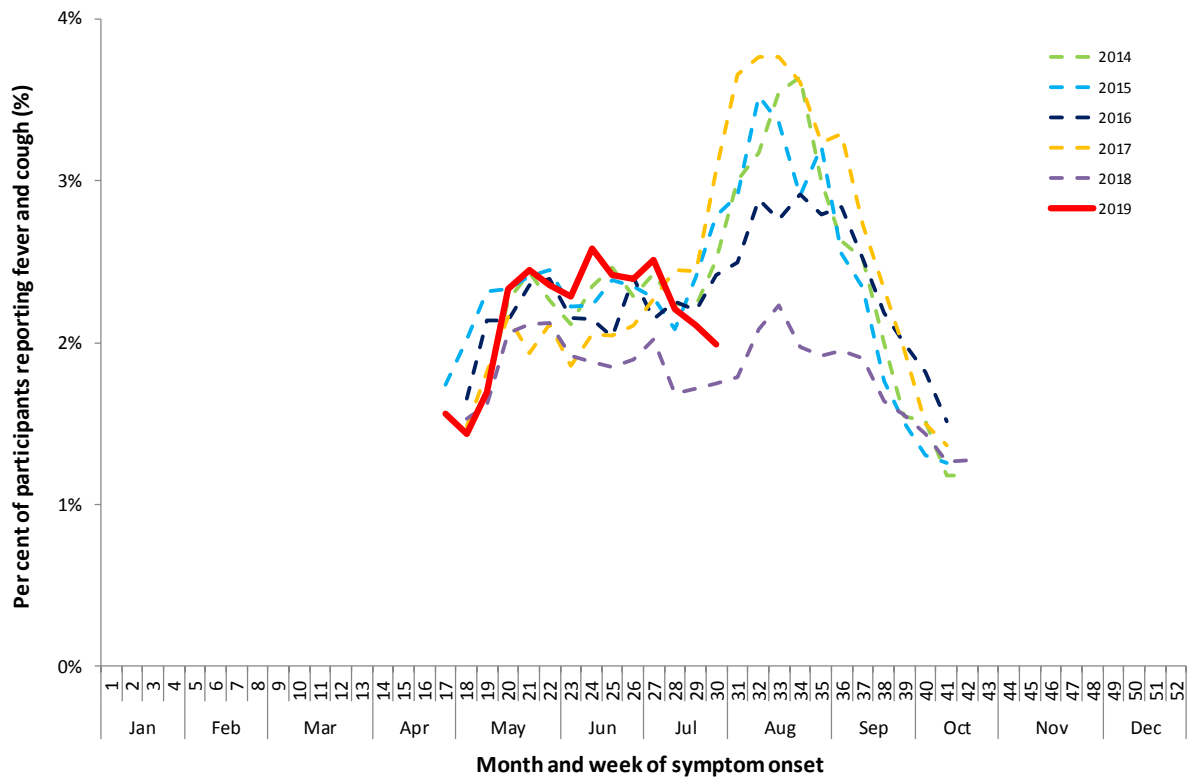
Source: Healthdirect

Figure 2. Unweighted rate of ILI reported from sentinel GP surveillance systems, Australia, 1 January 2014 to 28 July 2019, by month and week.



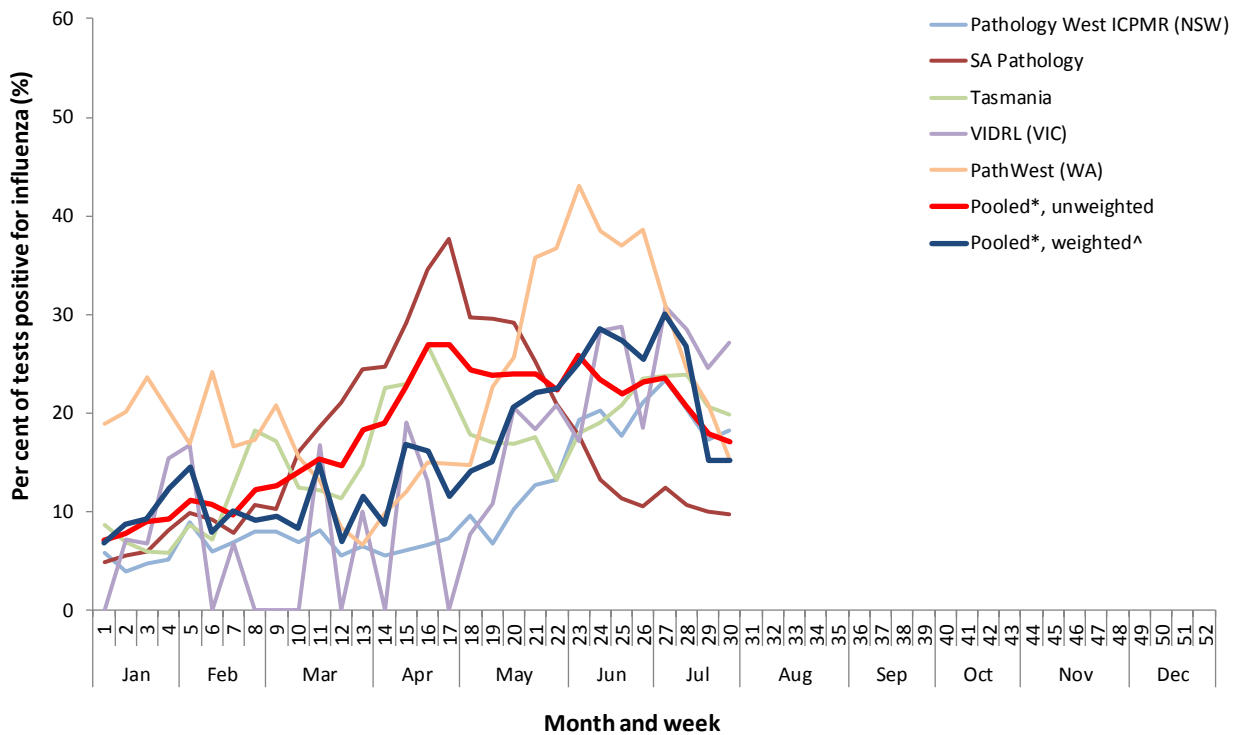
Source: ASPREN

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



Source: FluTracking

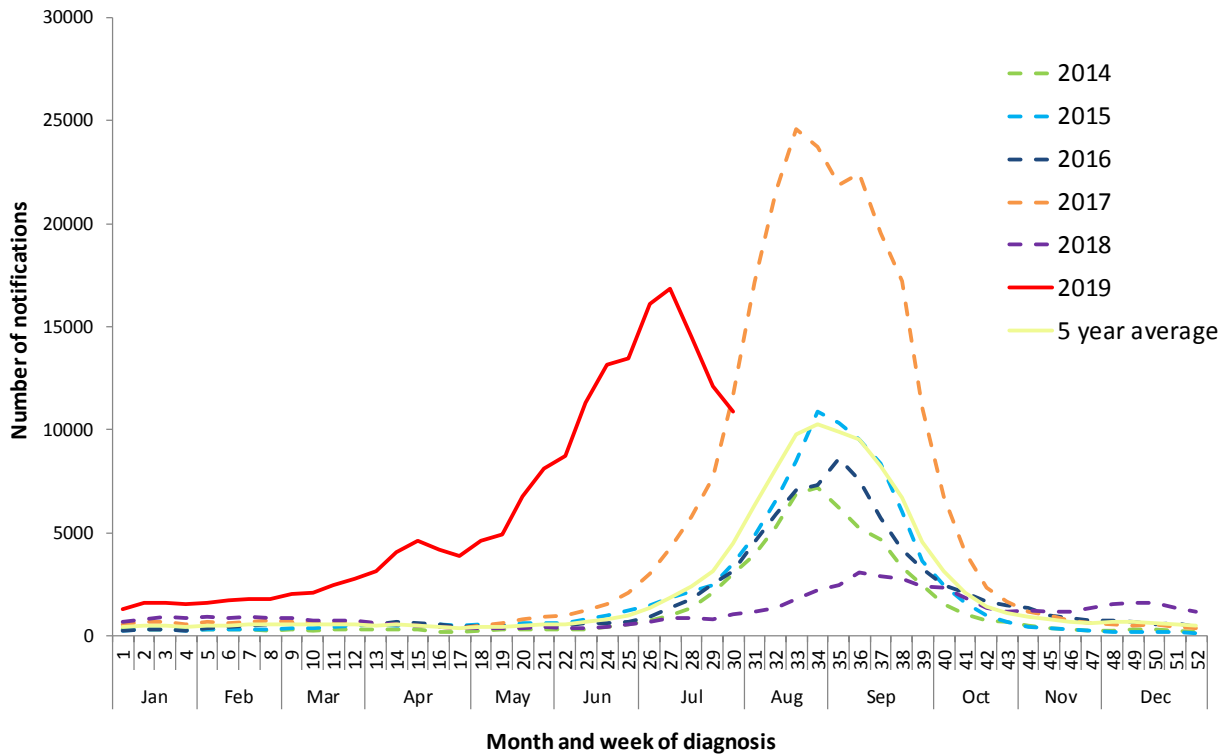
Figure 4. Proportion of sentinel laboratory tests positive for influenza, 1 January to 28 July 2019, by contributing laboratory or jurisdiction and month and week.



* 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.

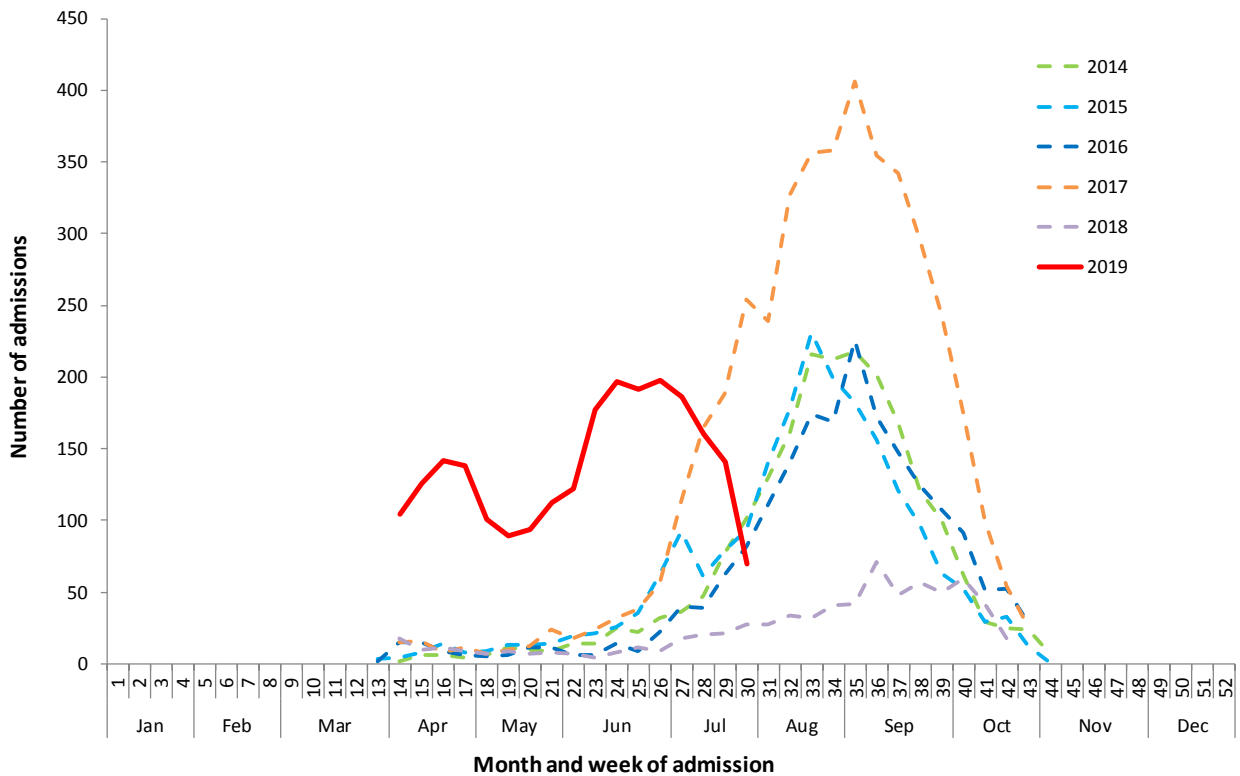
Figure 5. Notifications of laboratory confirmed influenza, Australia, 1 January 2013 to 28 July 2019, by month and week of diagnosis.*



Source: NNDSS

*NNDSS notification data provided for the current and most recent weeks may be incomplete. All data are preliminary and subject to change as updates are received.

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



Source: FluCAN

*FluCAN data provided for the current fortnight may be incomplete. All data are preliminary and subject to change as updates are received.

Geographical distribution of activity

- **Jurisdictional reports:** In the fortnight ending 28 July 2019, the geographic spread of influenza activity was reported by state and territory health departments as being:
 - Widespread – NSW, SA, Perth and the Southern region of WA, the Australian Capital Territory (ACT), the Southern and Central regions of Queensland (QLD), TAS and Victoria (VIC).
 - Regional - North West region of WA.
 - Localised – Northern Territory (NT) and the Tropical region of QLD (Figure 7).

The change in activity level was reported by state and territory health departments as being:

- Increased - Central region of NT and Southern and Central regions of QLD.
 - Decreased – all regions in WA, NSW, SA, ACT, VIC, TAS.
 - No change – Top End region of NT and Tropical region of QLD.
- **NNDSS:** Of the 22,926 notifications of influenza reported to the NNDSS in the last fortnight, 9,385 were from NSW, 6,508 from QLD, 4,499 from VIC, 1,277 from WA, 593 from SA, 398 from ACT, 209 from TAS and 57 from NT (Figure 8). This is a decrease in notifications reported from the previous fortnight for all jurisdictions.
Of the 183,331 notifications of influenza reported to the NNDSS this year to 28 July 2019, 63,020 were from NSW, 39,968 from VIC, 32,992 from QLD, 21,282 from SA, 20,833 from WA, 2,259 from ACT, 1,879 from TAS and 1,098 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) (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) (<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, 15 to 28 July 2019

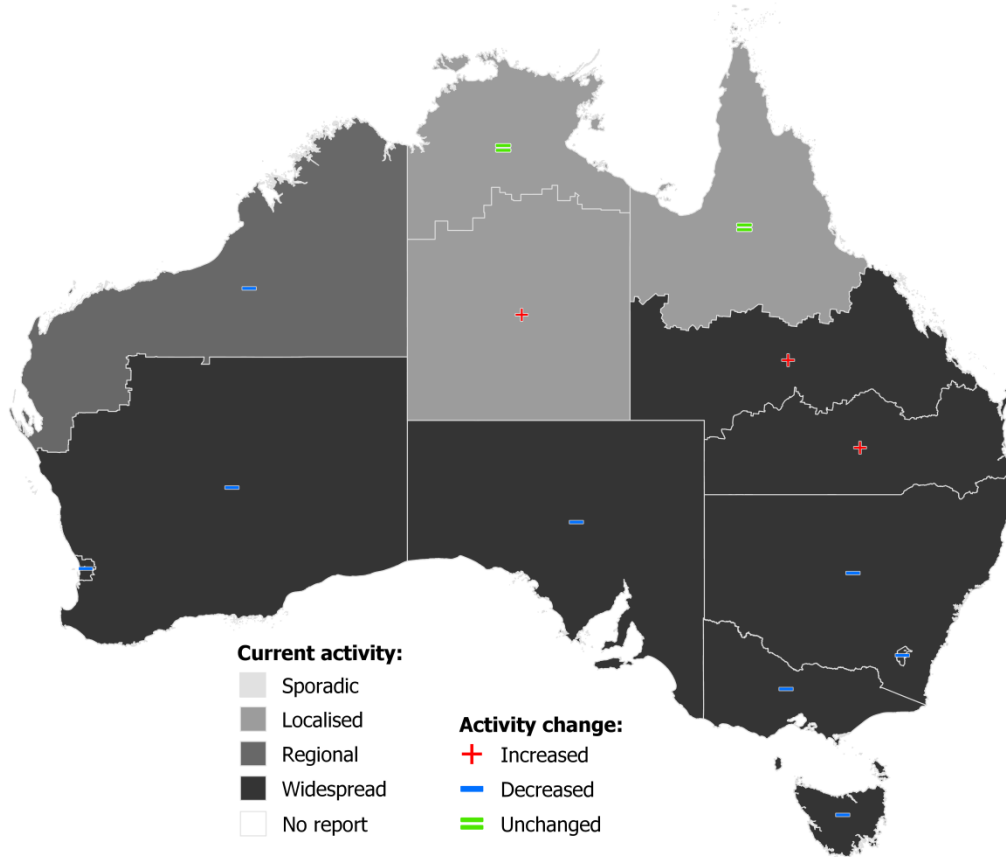
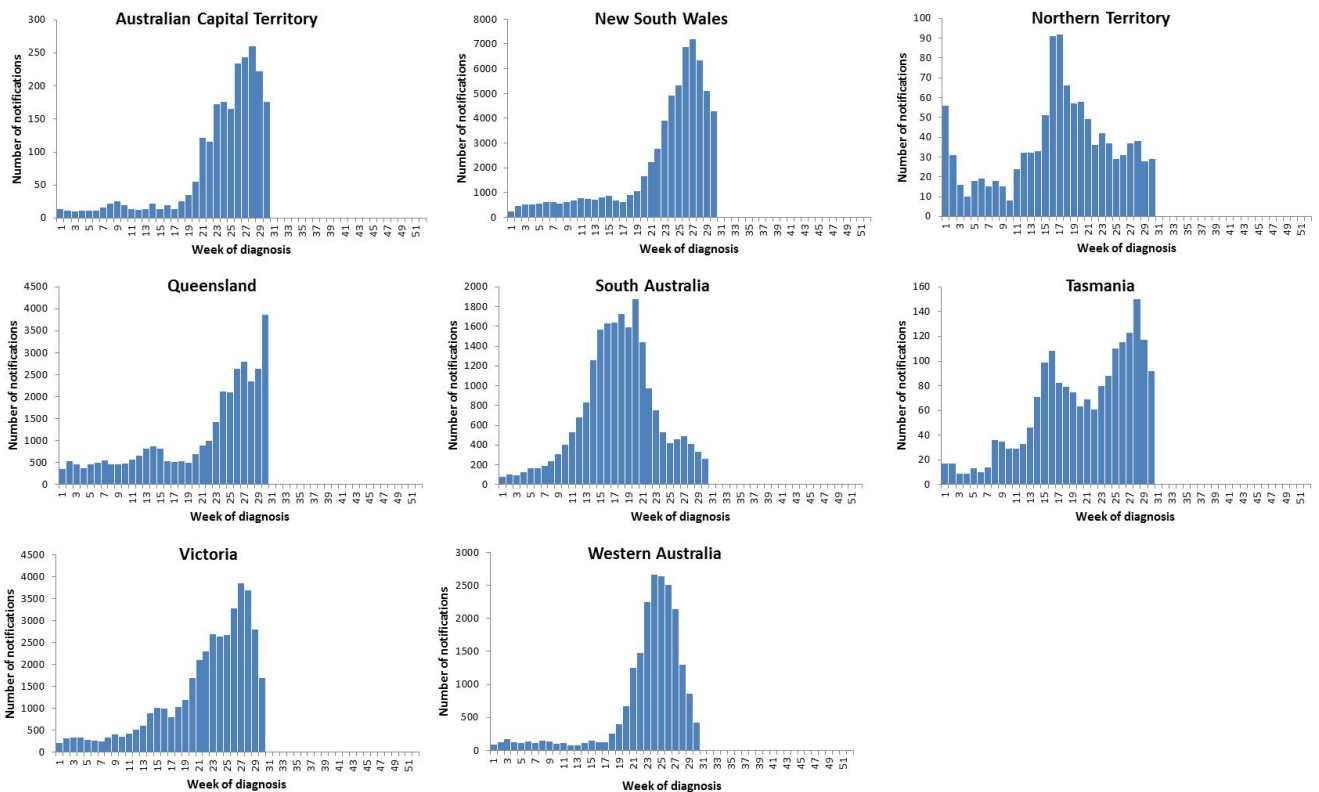


Figure 8. Notifications of laboratory confirmed influenza*, 1 January to 28 July 2019, by state or territory and week.



Source: NNDSS

*NNDSS notification data provided for the current and most recent weeks may be incomplete. All data are preliminary and subject to change as updates are received.

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, 2,352 people with influenza have been admitted to sentinel hospitals. Of those admitted, 139 (5.9%) were admitted to ICU. In the fortnight to 28 July 2019, 9 of the 211 people admitted to sentinel hospitals with confirmed influenza (4.3%) were admitted to ICU. This is an increase in the proportion of people admitted to ICU compared to the previous fortnight (1.4%).

Deaths in confirmed influenza cases

- **NNDSS:** So far in 2019, 383 influenza-associated deaths have been notified to the NNDSS. The majority of deaths were due to influenza A (99%, n=378). Where subtyping information was available, 59 were associated with influenza A(H3N2), 25 with influenza A(H1N1)pdm09, and 5 with influenza B. The median age of deaths notified was 85 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 29 and 30, 1.4% of Flutracking survey respondents respectively reported having ILI and taking time off regular duties while unwell, which is within the range of the last five years for the same period. This is decrease from the 1.7% reporting ILI and absence in week 27.

Use of hospital beds

- **FluCAN:** Since seasonal sentinel hospital surveillance began on 1 April 2019, a cumulative total of 34.1% of hospital beds available in FluCAN hospitals were occupied by patients with confirmed influenza. In the past fortnight, 3.1% of beds were occupied with patients with confirmed influenza, compared to 5.0% in the previous fortnight. This is within the range of the rate of influenza admissions per 1000 available hospital beds in the past 5 years. However, it is likely that a number of hospitals may have a backlog of cases, and it is expected that numbers may be revised upwards.

4. Virology

National notification data

- **NNDSS:** In the reporting fortnight, 79% of notifications of laboratory confirmed influenza to the NNDSS were influenza A (76% influenza A(untyped), <1% influenza A(H1N1)pdm09 and 2% influenza A(H3N2)), 21% were influenza B and less than 1% were influenza A&B co-infections or untyped (Figure 9). This is a slight decrease in the proportion of cases reported as influenza B compared to the previous fortnight (22%).

- For the year to 28 July 2019, 82% of notifications of laboratory confirmed influenza to the NNDSS were influenza A (76% influenza A(untyped), 2% influenza A(H1N1)pdm09 and 4% influenza A(H3N2)), 18% 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 73% in WA to 95% in TAS (Figure 10).

Reference Laboratory data

- **World Health Organization Collaborating Centre for Reference and Research on Influenza (WHOCC):** From 1 January to 29 July 2019, the WHOCC characterised 1,148 influenza viruses. Of these, 88% were influenza A (55% influenza A(H1N1)pdm09 and 33% influenza A(H3N2)), and 12% were influenza B (2% influenza B Yamagata lineage and 10% influenza B Victoria lineage).

Sentinel laboratory surveillance

- In the reporting fortnight, 79% of influenza positive samples detected in sentinel laboratories were influenza A (65% were influenza A(untyped), 13% were influenza A(H3N2), and less than 1% were influenza A(H1N1)pdm09), and 21% were influenza B (Figure 11).

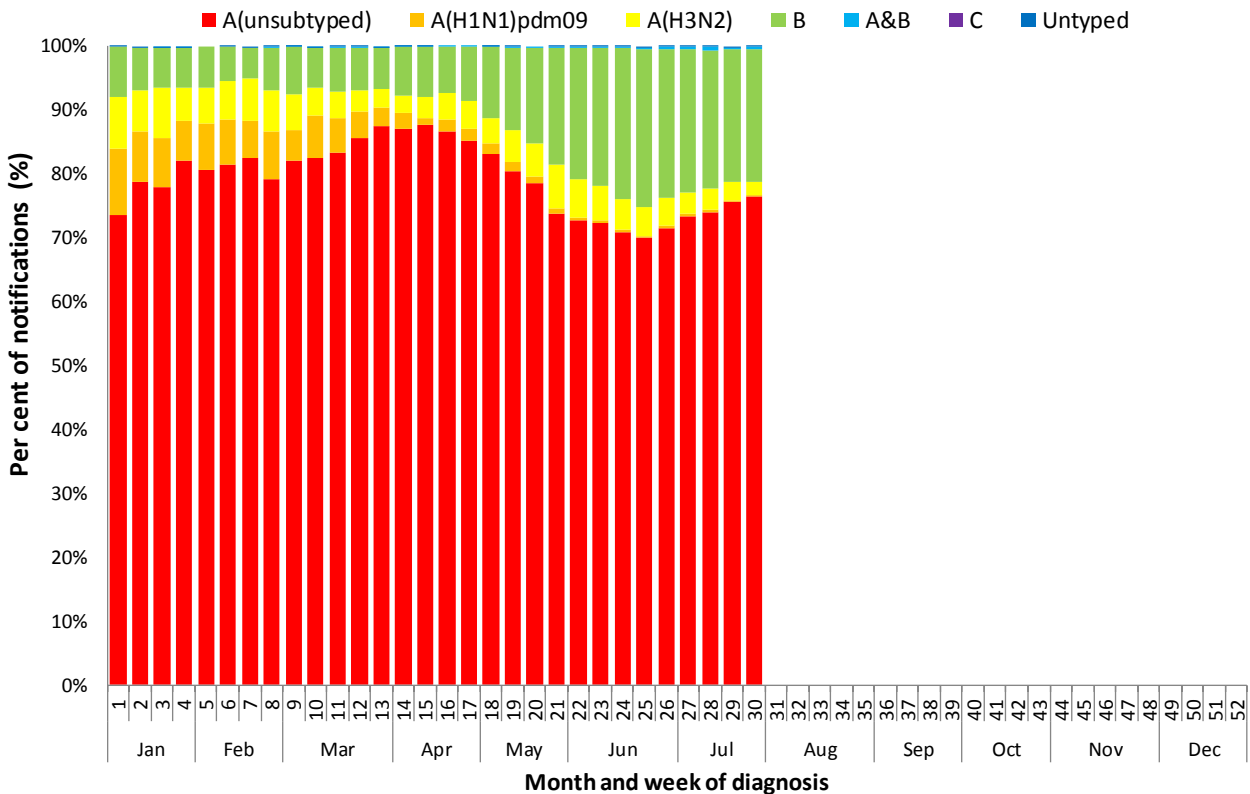
Sentinel GP surveillance

- **ASPREN:** Of the 72 influenza positive samples detected this fortnight through swab testing patients presenting with ILI to ASPREN sentinel GPs, 3% were influenza A (untyped), 58% were influenza A(H3N2) and 14% were influenza A(H1N1)pdm09. The remaining 18 (25%) were influenza B (Figure 12).

Sentinel hospital surveillance

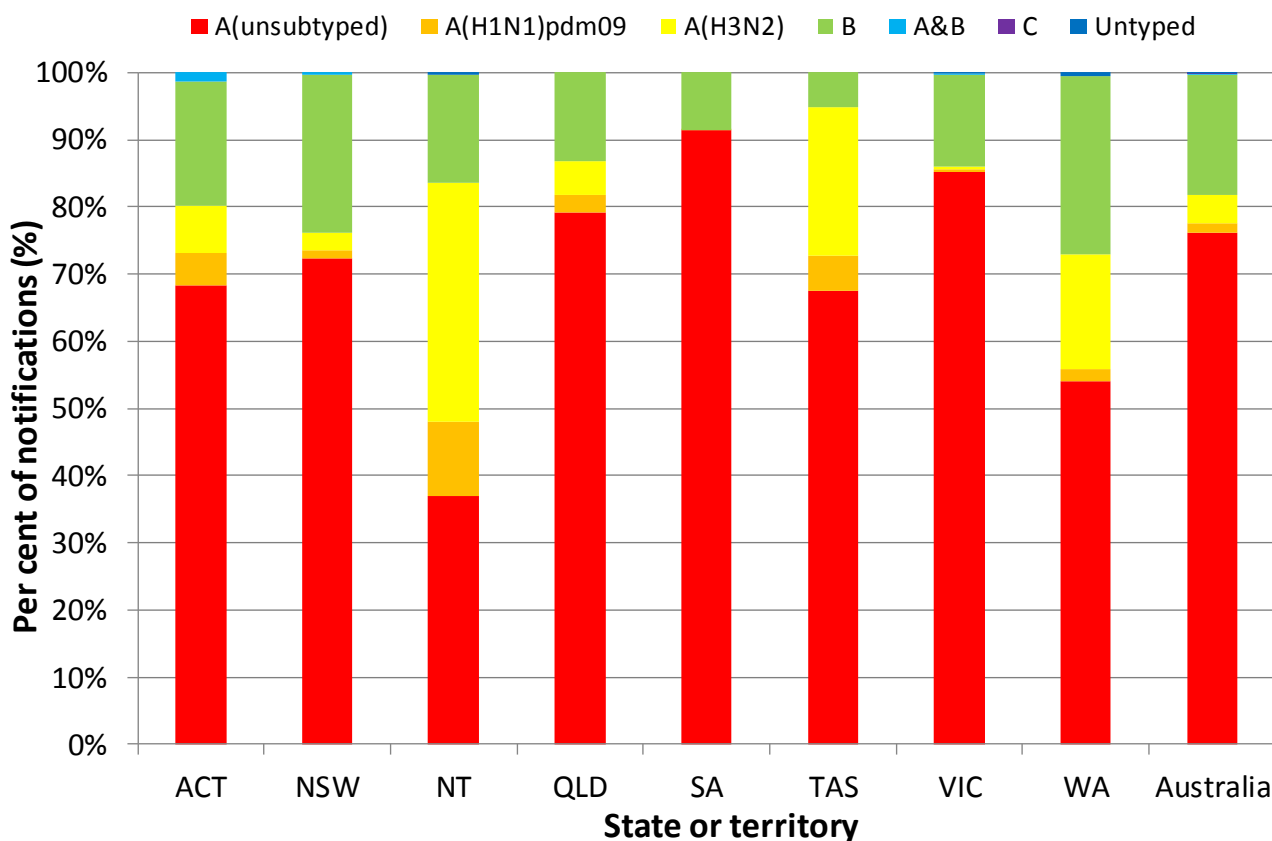
- **FluCAN:** Since seasonal sentinel hospital surveillance began on 1 April 2019, 87% of admissions with confirmed influenza to sentinel hospitals were influenza A (63% A(untyped), 4% influenza A(H1N1)pdm09 and 20% influenza A(H3N2)) and 13% were influenza B (Figure 13). Of the 139 patients admitted directly to ICU, 127 patients were infected with influenza A (61% influenza A(untyped), 20% influenza A(H3N2) and 10% influenza A(H1N1)pdm09), with 12 people infected with influenza B (9%).

Figure 9. Per cent of laboratory confirmed influenza, Australia, 1 January to 28 July 2019 by subtype and week.



Source: NNDSS

Figure 10. Per cent of notifications of laboratory confirmed influenza, Australia, 1 January to 28 July 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 28 July 2019, by subtype and month and week.

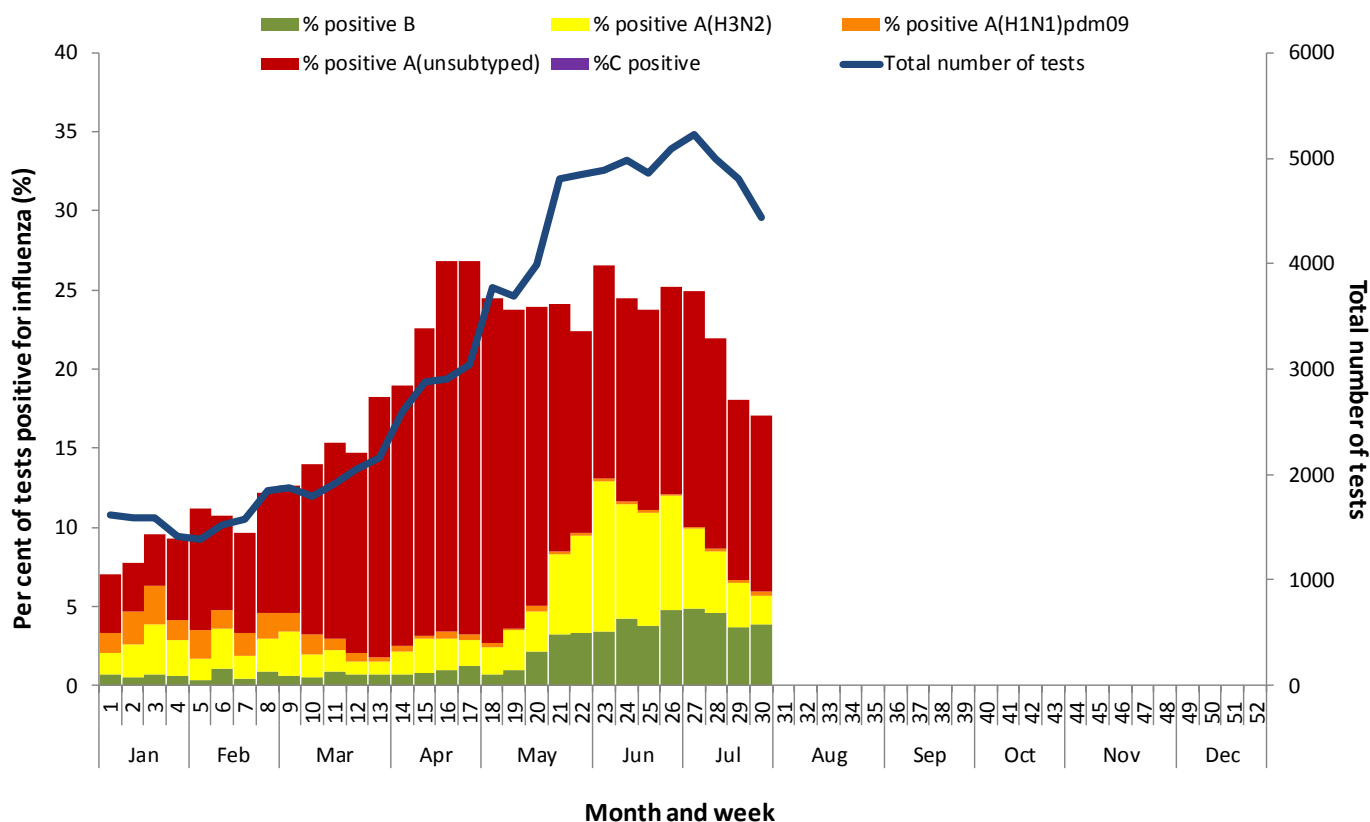
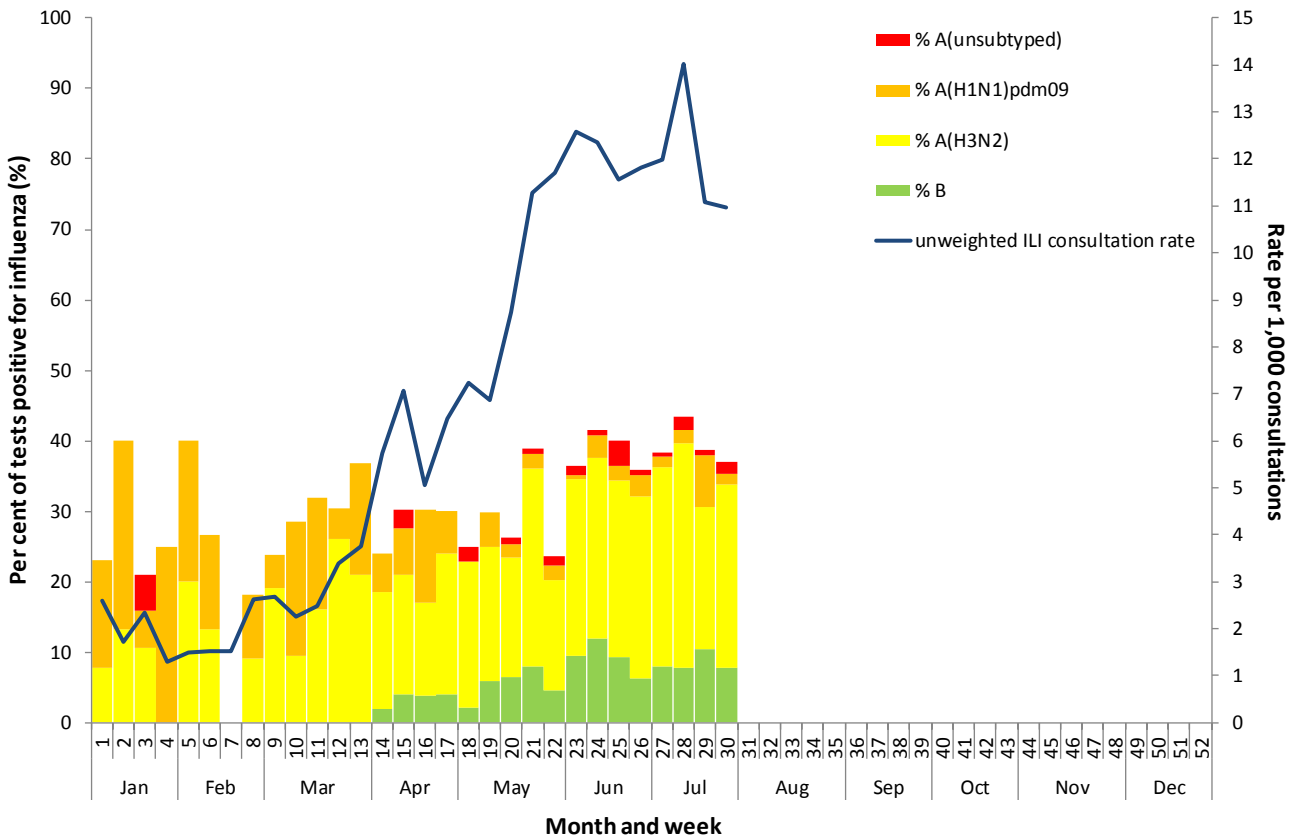
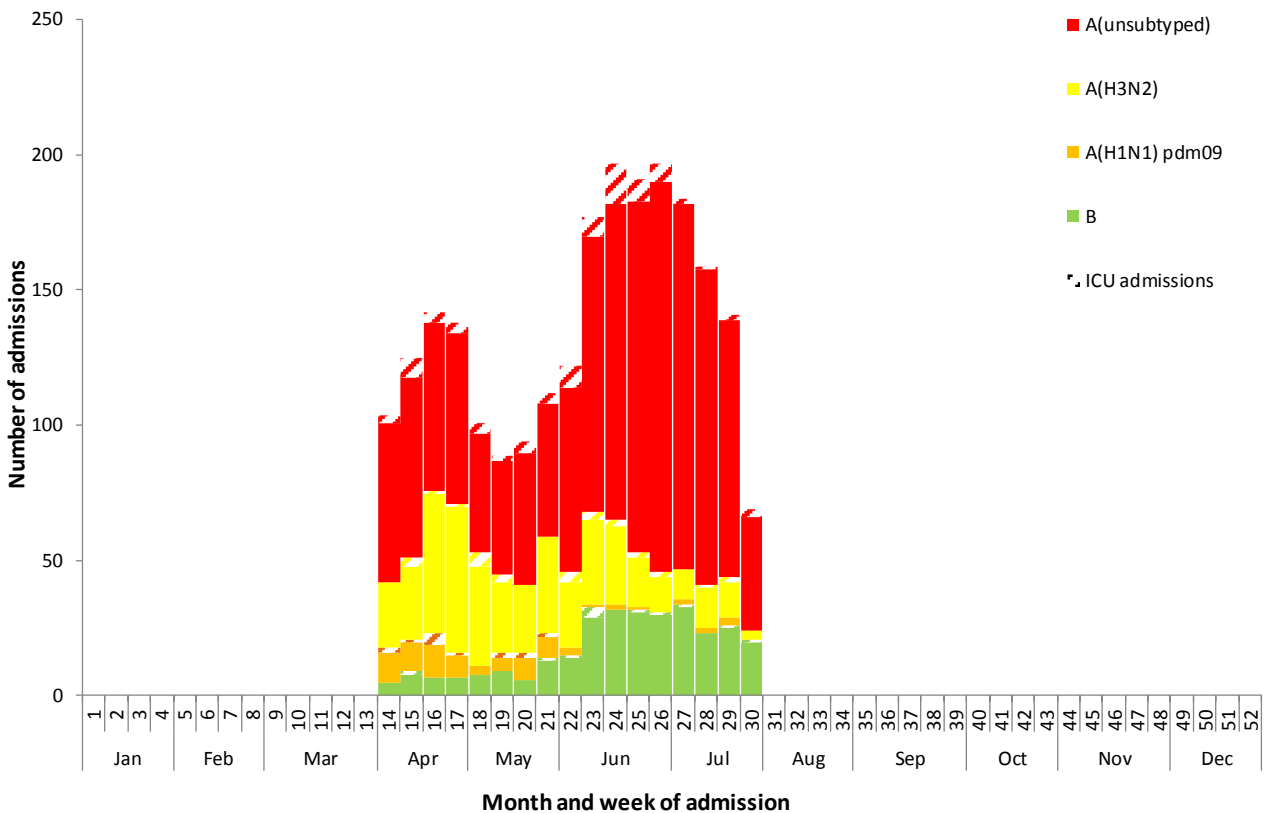


Figure 12. Proportion of respiratory viral tests positive for influenza in ASPREN ILI patients and ASPREN ILI consultation rate, Australia, 1 January to 28 July 2019, by month and week.



Source: ASPREN

Figure 13. Number of influenza hospitalisations at sentinel hospitals by subtype and ICU admission, 1 April to 28 July 2019, by month and week.



Source: FluCAN

5. At-risk Populations

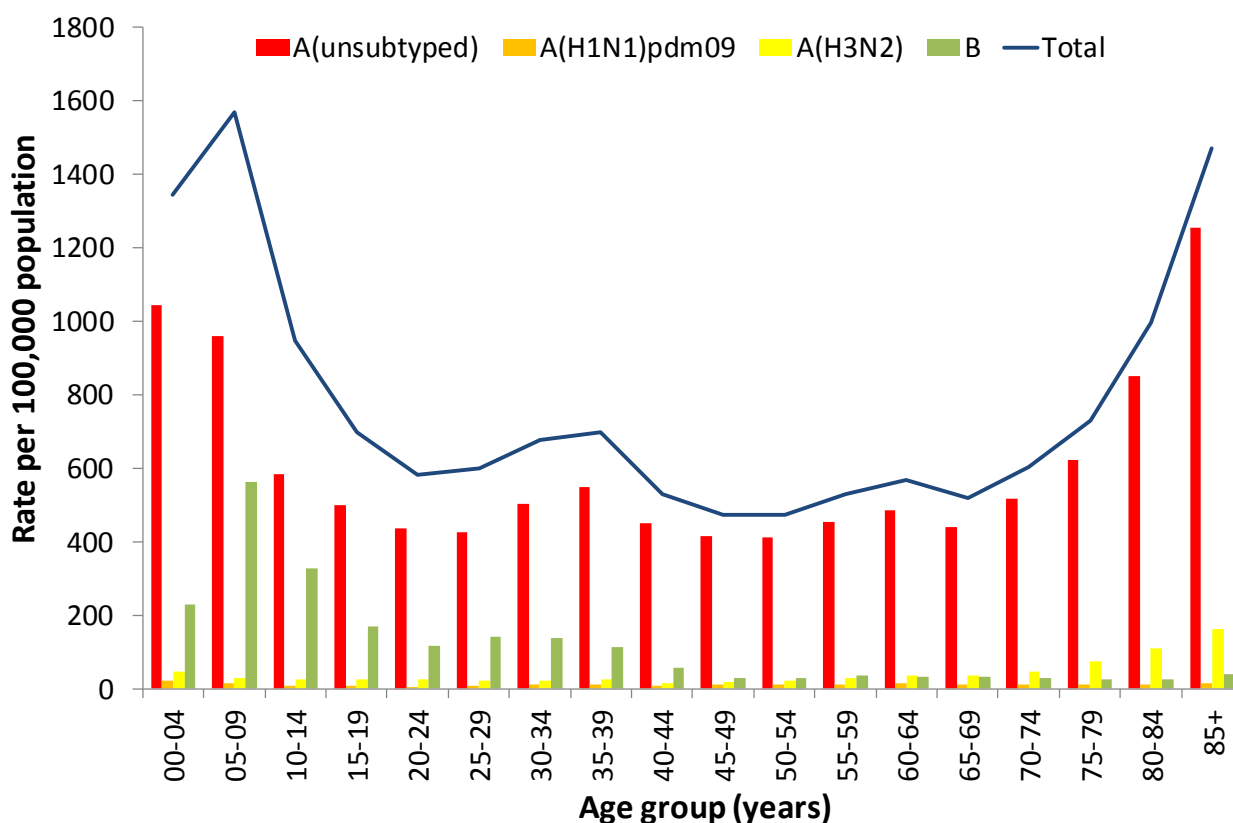
National notification data

- **NNDSS:** As of 28 July 2019, notification rates were highest in children aged between 5 and 9 years of age (1570 notifications per 100,000) followed by adults aged over 85 years (1471 notifications per 100,000) (Figure 14).
- In the year to date, influenza A accounted for the greatest number of notifications across all age groups. Where further subtyping was available, notifications of influenza A(H1N1)pdm09 were highest in children aged less than 4 years (20 notifications per 100,000) and notifications of influenza A(H3N2) were highest in adults aged 85 years and older (162 notifications per 100,000). Notification rates for influenza B were highest in children aged 5 to 9 years (561 notifications per 100,000), nearly twice that of the next greatest rate in children aged 10 to 14 years (328 notifications 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).
- In the past fortnight, notification rates were highest in adults over 85 years of age (247 notifications per 100,000), followed by children aged 4 years and younger (198 notifications per 100,000), compared to the previous fortnight when the greatest rate of notifications was in children aged between 5 and 9 years of age (306 notifications per 100,000) followed by children aged 4 years and younger (273 notifications per 100,000).
- In the past fortnight, influenza A has also accounted for the greatest number of notifications across all age groups, with rates according to subtypes mirroring those in the year to date.

Sentinel hospital surveillance

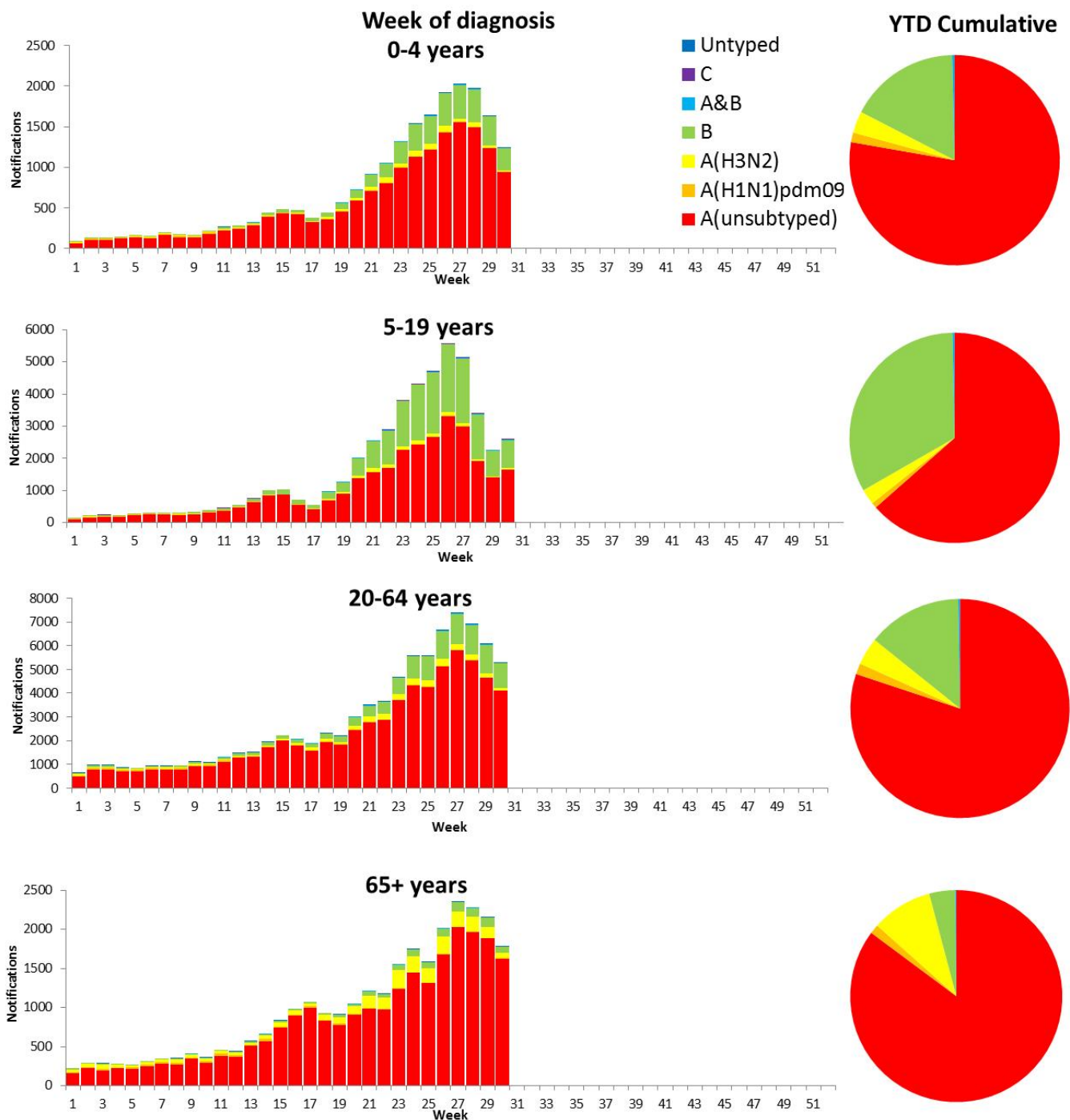
- **FluCAN:** Since seasonal sentinel hospital surveillance began on 1 April 2019, 32% of people admitted with confirmed influenza were children aged 15 years and younger, 31% were adults aged between 16 and 64 years, and 37% were adults aged 65 years and older. Of the children admitted with confirmed influenza to date, 5.2% (n=39) were admitted to ICU, compared to 7.7% of adults aged between 16 and 64 years and 5.0% of adults aged 65 years and older.

Figure 14. Rate of notifications of laboratory confirmed influenza, Australia, 1 January to 28 July 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 28 July 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 29 July 2019, 912 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. 21 A(H1N1)pdm09 and no B/Yamagata viruses 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 383 influenza A(H3N2) isolates, 69 were characterised as low reactors, and an additional 243 isolates were unable to be characterised in the HI assay due to insufficient haemagglutination titre. Of the 113 influenza B/Victoria isolates, 33 were characterised as low reactors.

Table 1. Australian influenza viruses typed by HI from the WHOCC, 1 January to 29 July 2019.

Type/Subtype	ACT	NSW	NT	QLD	SA	TAS	VIC	WA	TOTAL
A(H1N1) pdm09	67	194	48	66	87	12	127	27	628
A(H3N2)	43	66	61	24	64	33	74	18	383
B/Victoria lineage	26	8	23	10	9	1	22	14	113
B/Yamagata lineage	4	6	1	1	9	0	1	2	24
Total	140	274	133	101	169	46	224	61	1148

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 29 July 2019, one of the 1,563 influenza viruses tested for neuraminidase inhibitor resistance, demonstrated reduced inhibition to 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 28 July 2019. NNDSS data were extracted on 31 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).