

# Statewide Weekly Influenza Surveillance Report

Reporting Period: 1 January to 31 December 2017

## Influenza Surveillance Report

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## Introduction

Influenza is a viral respiratory disease of global public health importance. The propensity for influenza A viruses to mutate, and change the dynamics of an influenza season, is central to this importance. The seasonal pattern is one of outbreaks or epidemics in the winter months in temperate regions of the world; while in tropical areas, influenza activity may increase at any time of year. The disease varies in severity and may be mild to moderate in some people, but very severe in others. Infection in the very young, the elderly, and those with underlying medical conditions, can lead to severe complications, pneumonia, and death<sup>1</sup>.

Laboratory confirmed influenza is a nationally notifiable condition in Australia, and has been notifiable in Queensland since 2001. In Queensland, notification is mandated under the provisions of the *Public Health Act (2005)* and its subordinate Regulation<sup>2</sup>. A case definition, which requires a positive laboratory result, is applied to identify valid notifications. Annual influenza counts and rates vary by year and jurisdiction within Australia<sup>3</sup>.

In Queensland, the influenza season occurs annually in southern and central areas typically between May and October. In the tropical region, the pattern can be more variable and may include clusters outside this period.

Influenza is present throughout the year in the Queensland population, but at lower levels between seasons than during the annual season. The beginning of the season in the temperate (and sometimes tropical) areas of the state coincides with a sustained increase over several consecutive weeks, of both notification numbers and percentage of laboratory tests that are positive. This usually occurs sometime between late May and the middle of July, but varies each year.

The purpose of this report is to provide a data summary of Queensland influenza activity throughout 2017.

## Methods

Data were extracted for influenza notifications from the Queensland Health notifiable conditions register on 12 February 2018. Hospital admissions data were extracted from *EpiLog*, a register of influenza admissions to Queensland public hospitals, on 14 February 2018. All reported data were correct at the time of extraction but may be subject to change following routine data quality revisions.

The International Organization for Standardization (ISO) week date system 8601 was used to determine the week of disease onset<sup>4</sup>.

Percentage positive values are calculated using only tests with a result at the time of calculation in the denominator.

Data analyses were undertaken using Microsoft Excel 2010<sup>5</sup>, SQL Server Management Studio 2013<sup>6</sup> and RStudio version 0.99.896<sup>7</sup>.

# Summary

	1 January to 31 December 2017
<b>All influenza notifications</b>	<b>56,094</b>
<b><u>Influenza A</u></b>	<b>37,438</b>
A(H1N1)pdm09	587
A/H3N2	2,771
Subtype unavailable	34,080
<b><u>Influenza B</u></b>	<b>18,656</b>
<b><u>Type unavailable</u></b>	<b>0</b>
<b>Influenza hospitalisations‡</b>	<b>6,070</b>
<b>Intensive Care Unit (ICU) admissions</b>	<b>753</b>

‡ Queensland public hospitals only - includes general and ICU admissions

**Australian Influenza Vaccine Committee (AIVC) decision on the influenza vaccine composition for the Australian 2017 season**

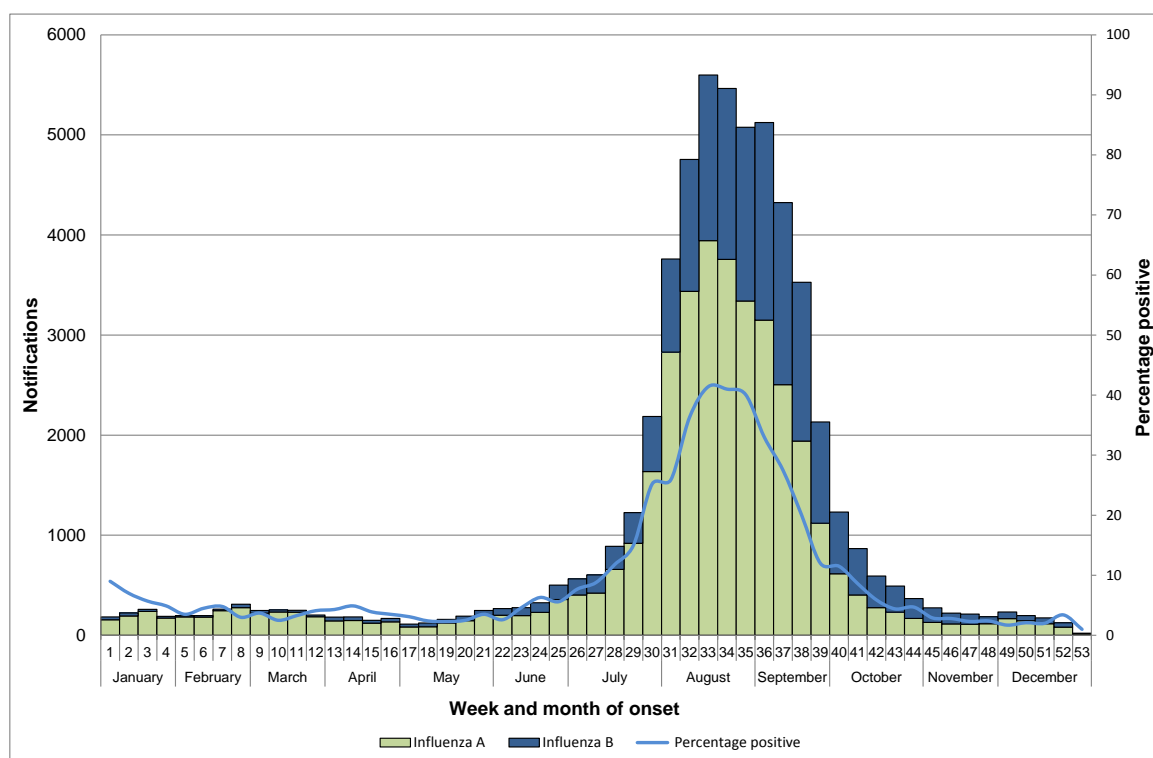
[http://www.influenzacentre.org/surveillance\\_vaccines.htm](http://www.influenzacentre.org/surveillance_vaccines.htm)

- A/Michigan/45/2015 (H1N1)pdm09 - like virus, 15 µg HA per dose
- A/Hong Kong/4801/2014 (H3N2) - like virus, 15 µg HA per dose
- B/Brisbane/60/2008 (Victoria lineage) - like virus, 15 µg HA per dose
- B/Phuket/3073/2013 (Yamagata lineage) - like virus, 15 µg HA per dose.

# 1. Influenza notifications

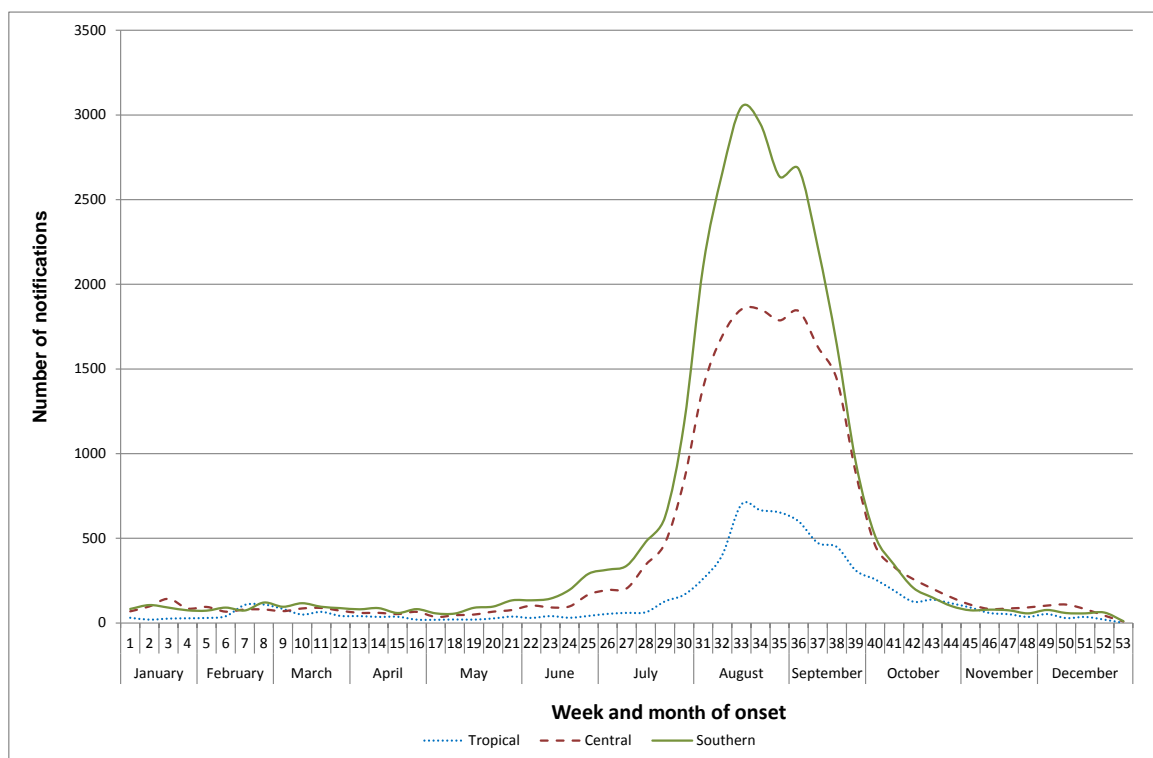
1 January to 31 December 2017 there were 56,094 notifications.

- 37,438 (67%) were typed as influenza A and 18,656 (33%) as influenza B
  - 3,358 influenza A have been subtyped: 587 (17%) were A(H1N1)pdm09 and 2,771 (83%) were A/H3N2
  - Subtype was unavailable for 34,080 influenza A cases.

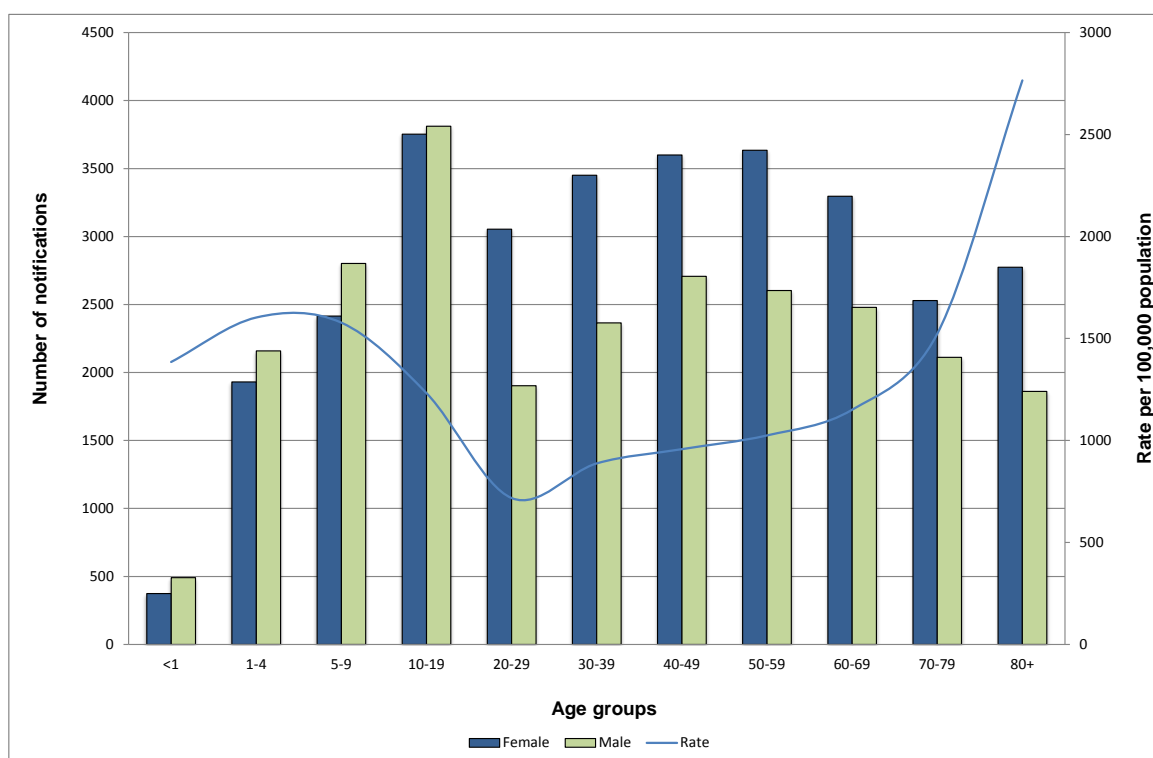


**Figure 1** Weekly influenza notifications in Queensland by type and percentage of positive tests (public laboratory system only) by week and month of testing, 1 January to 31 December 2017.

- Figure 1 shows the statewide notification count by week, month, type, and the percentage of positive influenza tests (public laboratory system only).
- The Queensland season reached its peak in week 33 (week beginning 13 August) with a total of 5,599 notifications and a percentage positive of 41.4%.
- Figure 2 summarises 2017 notification counts by region; and Table 1 by region and Hospital and Health Service (HHS).
- Southern region notifications peaked in week 33 with 3,047 notifications.
- The central region's peak occurred across weeks 33 and 34, with 1,852 notifications in each week.
- The tropical region reached a peak in week 33 with 700 notifications.

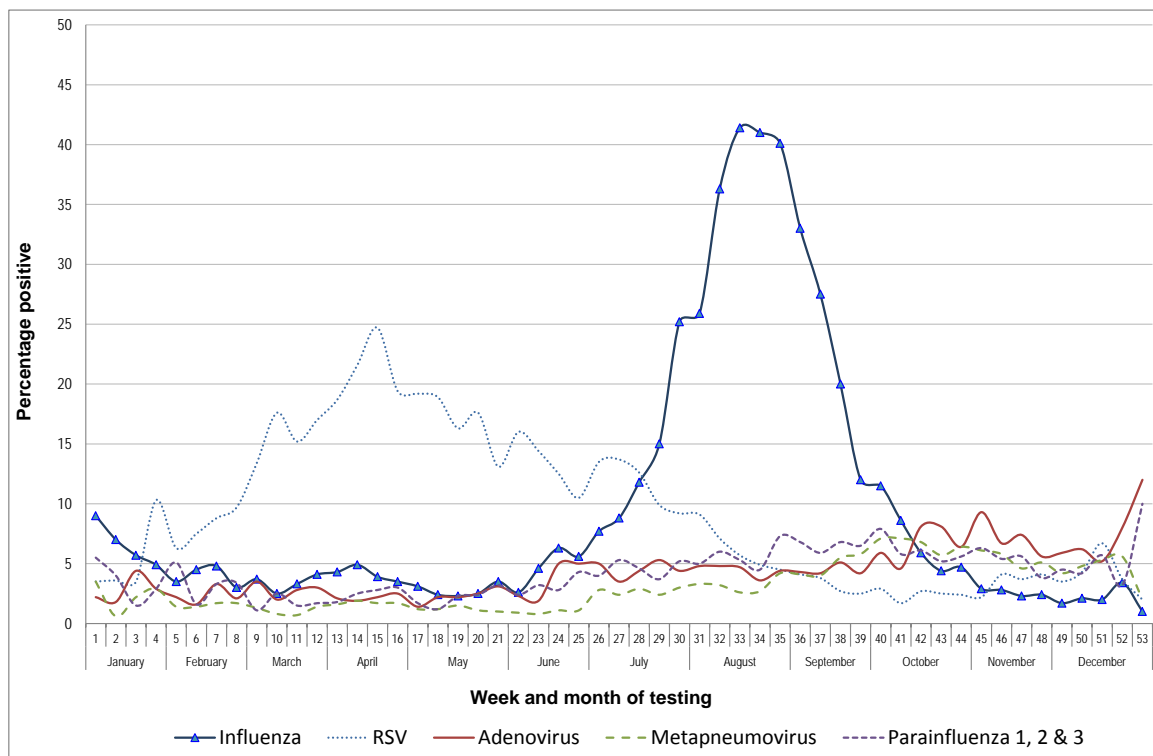


**Figure 2** Queensland regional influenza notifications by week and month of onset, 1 January to 31 December 2017.



**Figure 3** Queensland, 2017 annual influenza notifications by age group, sex, and age specific rates.

- Figure 3 shows the age and sex distribution of notifications.
  - Notifications were higher in females (55%) than males (45%).
  - Median age was 53 years, with a range of 5 days to 105 years.



**Figure 4** Percentage of positive influenza, respiratory syncytial virus (RSV), adenovirus, metapneumovirus and parainfluenza tests (public laboratory system only) by week and month of testing, 1 January to 31 December 2017.

- Figure 4 shows the percentage of positive tests for influenza as well as non-notifiable respiratory viruses, which are important causes of influenza-like illness.

Region	Hospital & Health Service	Week of onset																									
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Tropical	Torres and Cape	1	0	2	0	0	0	0	1	0	0	3	5	2	0	3	1	1	0	0	5	0	0	1	2	0	0
	Cairns and Hinterland	11	7	3	12	8	9	11	20	22	26	35	19	29	24	30	10	6	6	4	9	7	8	11	8	11	11
	North West	1	2	0	0	0	1	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0
	Townsville	13	4	16	14	19	23	92	85	60	19	24	16	7	9	3	6	5	8	6	8	22	20	18	17	27	35
	Mackay	5	7	5	2	3	7	3	3	1	5	3	1	3	3	1	3	7	7	10	5	9	2	10	4	4	8
Central	Central Queensland	3	12	11	9	9	4	4	3	1	6	3	2	2	8	3	10	6	2	3	5	6	11	3	4	11	14
	Central West	0	0	0	1	9	9	3	0	1	2	0	0	0	0	0	1	0	0	1	0	0	1	0	0	0	2
	Wide Bay	0	11	38	17	14	5	5	8	7	5	2	4	4	2	4	3	4	3	4	6	7	8	6	6	16	9
	Sunshine Coast	31	28	40	17	14	15	14	13	13	16	17	14	12	18	8	15	6	15	13	14	24	24	19	28	35	49
	Metro North	35	47	54	42	49	34	54	56	48	57	67	53	42	32	38	37	20	26	29	42	40	59	64	60	106	121
Southern	Metro South	35	59	51	37	37	42	35	75	45	71	54	47	41	50	35	47	36	30	31	44	49	70	63	83	128	133
	Darling Downs	15	9	7	5	4	10	10	17	9	8	5	9	9	7	5	9	7	11	20	23	35	19	24	43	67	61
	West Moreton	9	6	11	4	8	13	9	11	19	12	5	11	9	8	10	7	4	1	8	3	11	3	21	17	12	23
	South West	21	28	21	29	24	26	17	18	23	22	30	21	22	23	9	19	10	14	30	24	38	41	32	48	83	93
	Gold Coast	3	4	1	0	0	0	3	0	0	4	2	0	0	0	0	0	0	0	1	3	1	1	4	5	1	5
Queensland (Total)		183	224	260	189	198	198	261	310	249	253	251	203	182	184	149	168	112	123	160	191	249	267	277	325	501	564

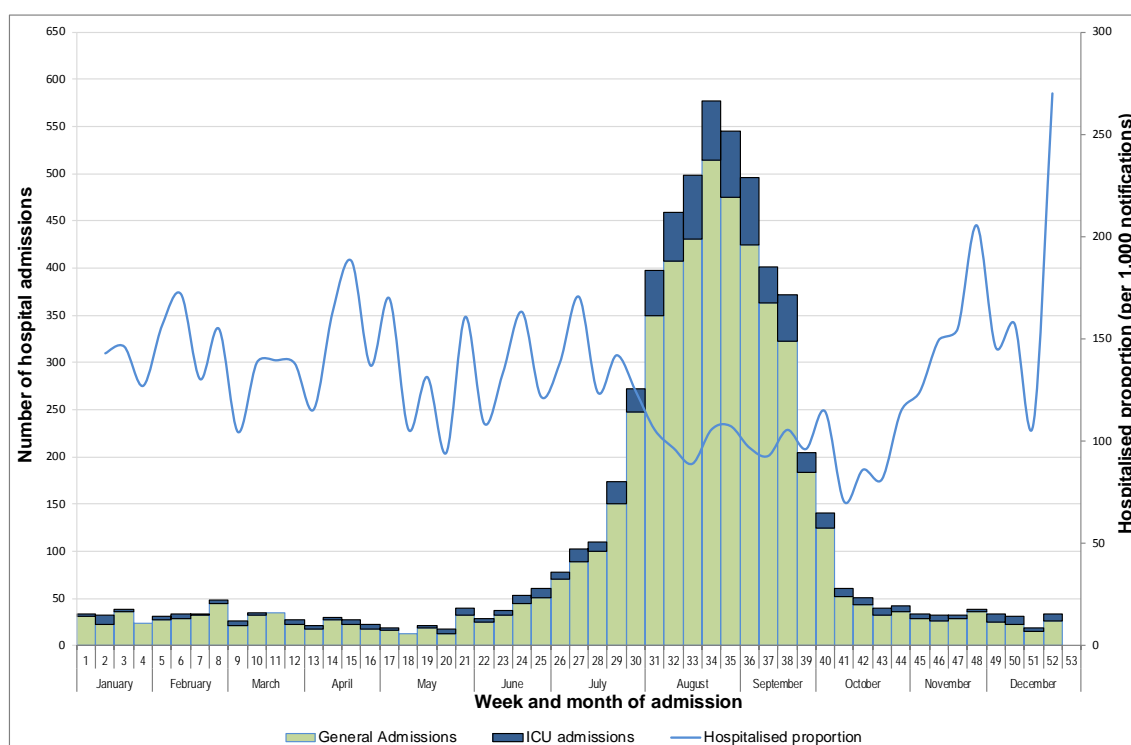
		Week of onset																											
Region	Hospital & Health Service	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	YTD Total
Tropical	Torres and Cape	0	2	3	7	7	12	21	28	34	35	21	56	43	36	26	27	27	21	9	10	11	1	4	0	0	1	0	469
	Cairns and Hinterland	21	25	51	71	86	121	192	185	197	171	128	146	108	96	71	48	41	50	29	24	21	26	23	11	19	10	1	2,329
	North West	5	0	1	7	33	66	101	70	39	20	14	7	3	11	1	0	0	0	0	0	0	0	0	0	0	0	0	386
	Townsville	22	27	51	53	91	142	254	268	280	258	233	169	105	74	51	36	48	32	42	17	11	6	16	8	9	4	0	2,883
	Mackay	12	10	22	29	45	61	132	115	103	116	77	71	50	41	42	15	22	13	11	8	9	3	10	10	8	5	0	1,161
Central	Central Queensland	19	24	33	36	83	126	156	175	222	245	241	242	145	81	60	58	26	29	23	13	15	15	23	10	5	2	1	2,263
	Central West	0	1	4	4	13	6	19	12	18	6	7	7	10	4	1	1	2	0	0	0	0	0	0	0	0	0	0	145
	Wide Bay	13	15	25	46	74	62	142	140	177	204	170	155	119	58	53	29	18	18	12	9	13	23	22	33	25	3	1	1,857
	Sunshine Coast	47	63	94	170	246	318	385	402	339	355	313	293	177	114	64	62	40	32	22	24	18	18	19	35	18	14	1	4,195
	Metro North	126	242	316	586	976	1,183	1,150	1,123	1,031	1,032	900	741	429	202	153	109	117	72	51	37	40	36	39	31	34	25	6	12,099
Southern	Metro South	153	243	306	599	953	1,194	1,303	1,364	1,179	1,241	1,060	739	433	248	184	123	81	42	47	38	29	23	39	37	36	34	5	13,161
	Darling Downs	53	69	118	202	383	500	622	598	588	586	435	302	212	72	29	23	14	16	7	9	11	5	8	4	6	2	1	5,323
	West Moreton	41	42	64	123	253	340	383	373	355	351	302	240	98	56	29	9	11	10	6	6	10	6	7	5	4	5	1	3,385
	South West	87	122	137	244	501	607	695	570	450	444	349	302	155	119	98	50	41	27	14	22	21	22	22	10	11	20	4	5,910
	Gold Coast	5	4	1	10	17	17	44	41	64	59	74	58	45	20	4	3	4	5	1	4	4	1	1	3	0	1	0	528
Queensland (Total)		604	889	1,226	2,187	3,761	4,755	5,599	5,464	5,076	5,123	4,324	3,528	2,132	1,232	866	593	492	367	274	221	213	185	233	197	175	126	21	56,094

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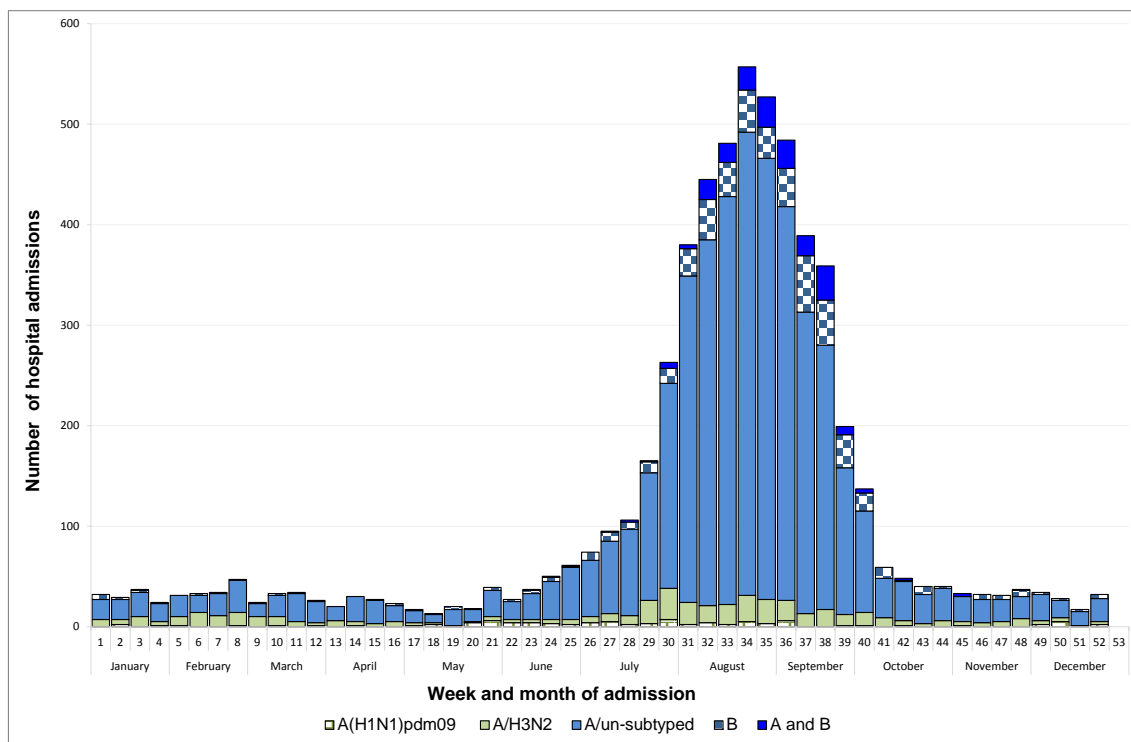
## 2. Influenza hospitalisations (public hospitals)

### Public hospital admissions with confirmed influenza:

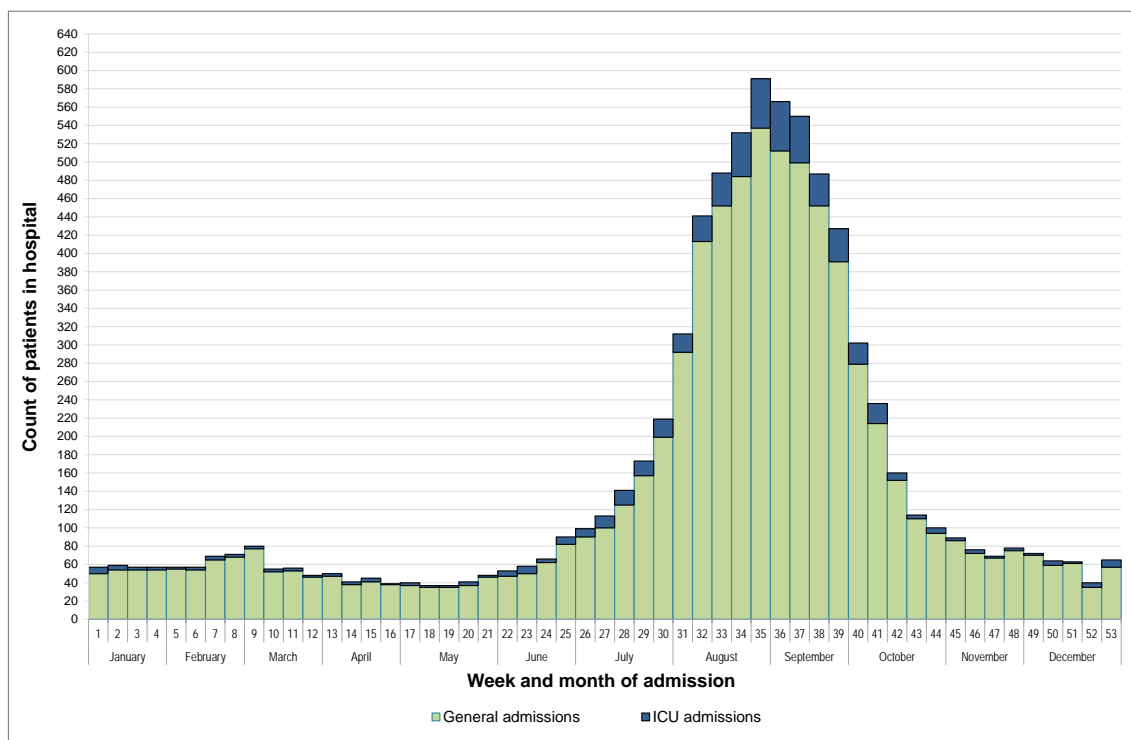
- 1 January to 31 December 2017 there were 6,070 admissions, including 753 to intensive care (Figure 5). These counts include Queensland residents (5,861), interstate residents (163), and overseas visitors (46).
- Public hospital admissions reached a peak in week 34 (week beginning 20 August) with 577 patients admitted with laboratory confirmed influenza.
- Admissions of Queensland residents by influenza type and subtype are summarised in Figure 6.
- 5,146 (88%) of the 5,861 admissions of Queensland residents were due to influenza A.
- The weekly number of beds occupied by patients with influenza in public hospitals is summarised in Figure 7. The season peak occurred in week 35 (week beginning 27 August), with 591 beds occupied.



**Figure 5** Laboratory confirmed influenza admissions to Queensland public hospitals (n=6,070) by week, month and type of admission, and weekly proportion of admitted patients (per 1,000 notifications) to Queensland public hospitals, 1 January to 31 December 2017.

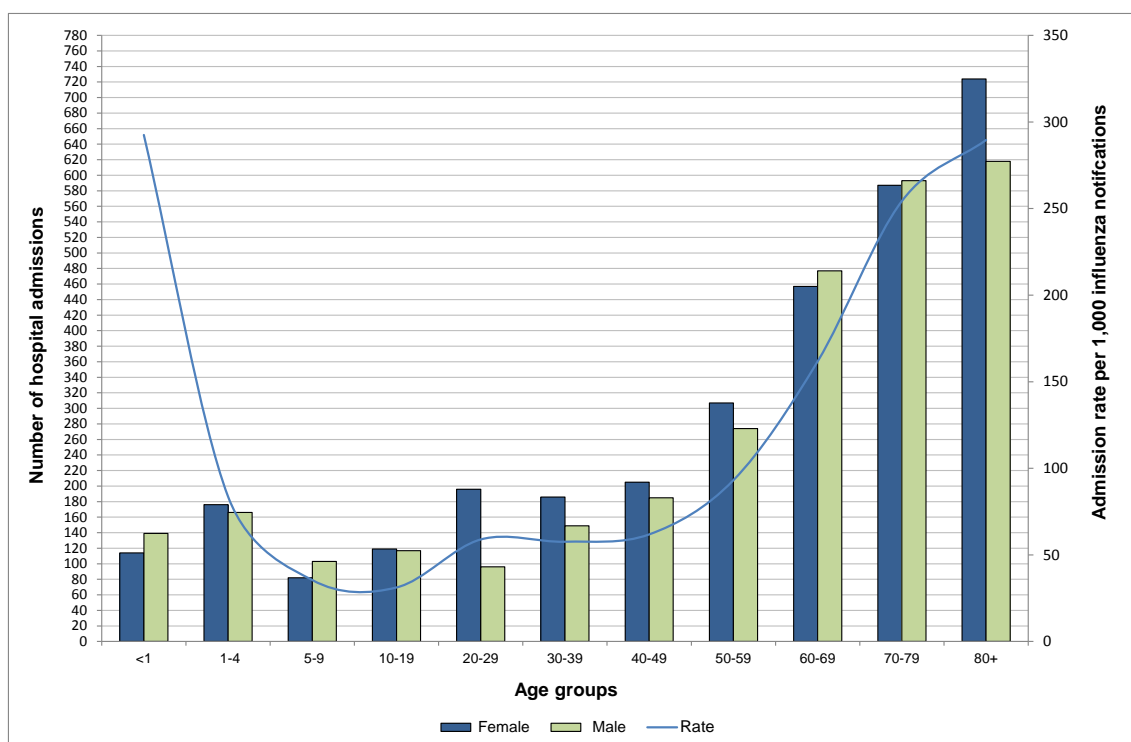


**Figure 6** Laboratory confirmed influenza admissions of Queensland residents to Queensland public hospitals (n=5,861) by week, month, and influenza type/subtype, 1 January to 31 December 2017.



**Figure 7** Beds occupied by patients with laboratory confirmed influenza in Queensland public hospitals by admission type, week and month, 1 January to 31 December 2017.

- Figure 8 shows the 2017 age and sex distribution of hospitalisations.
  - More females (52%) than males (48%) were hospitalised.
  - Mean and median ages were 56 and 58 years, respectively, with a range of 5 days to 105 years.



**Figure 8** Laboratory confirmed influenza admissions to Queensland public hospitals, by age group, sex, and annual age specific admission rate per 1,000 notifications, 1 January to 31 December 2017.

**Table 2** Laboratory confirmed influenza notifications and admissions to Queensland public hospitals, by region and Hospital and Health Service (HHS), 1 January to 31 December 2017.

Region	Hospital & Health Service	Notifications <sup>^</sup>	Hospital admissions <sup>*</sup>	Percentage of notifications hospitalised
Tropical	Torres and Cape	469	70	14.9
	Cairns and Hinterland	2,329	336	14.4
	North West	386	81	21.0
	Townsville	2,883	341	11.8
	Mackay	1,161	142	12.2
Central	Central Queensland	2,263	204	9.0
	Central West	145	28	19.3
	Wide Bay	1,857	329	17.7
	Sunshine Coast	4,195	315	7.5
	Metro North	12,099	1,441	11.9
Southern	Metro South	13,161	1,333	10.1
	Darling Downs	5,323	346	6.5
	West Moreton	3,385	322	9.5
	South West	528	59	11.2
	Gold Coast	5,910	560	9.5
<b>Total</b>		<b>56,094</b>	<b>5,907</b>	<b>10.5</b>

<sup>^</sup> Notifications include 109 overseas residents notified in Queensland.

<sup>\*</sup> Hospital admissions include 46 overseas residents admitted to Queensland public hospitals.

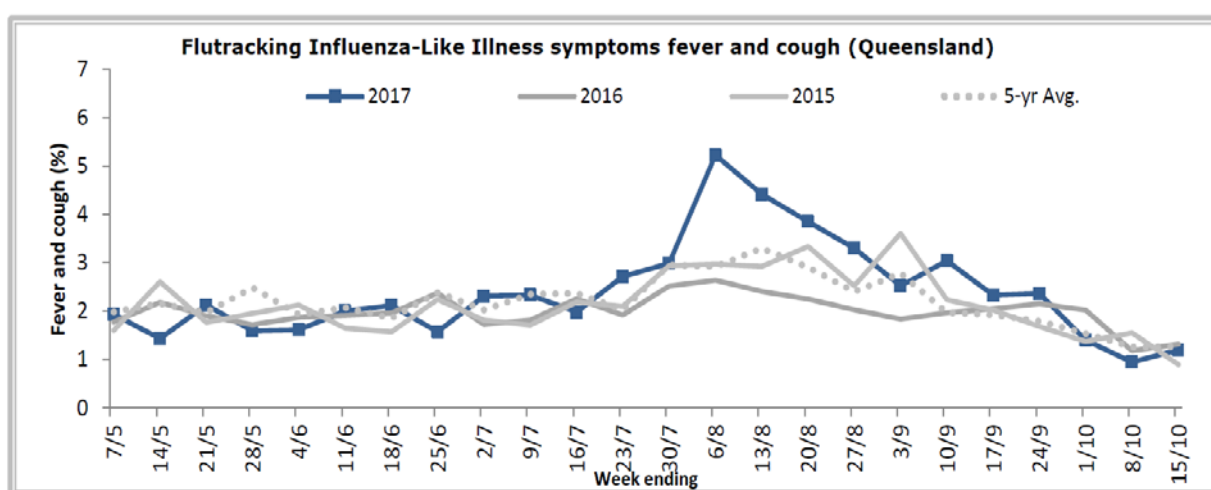
Note: A further 163 interstate residents were admitted to Queensland public hospitals and are not included in the above table.

### 3. FluTracking

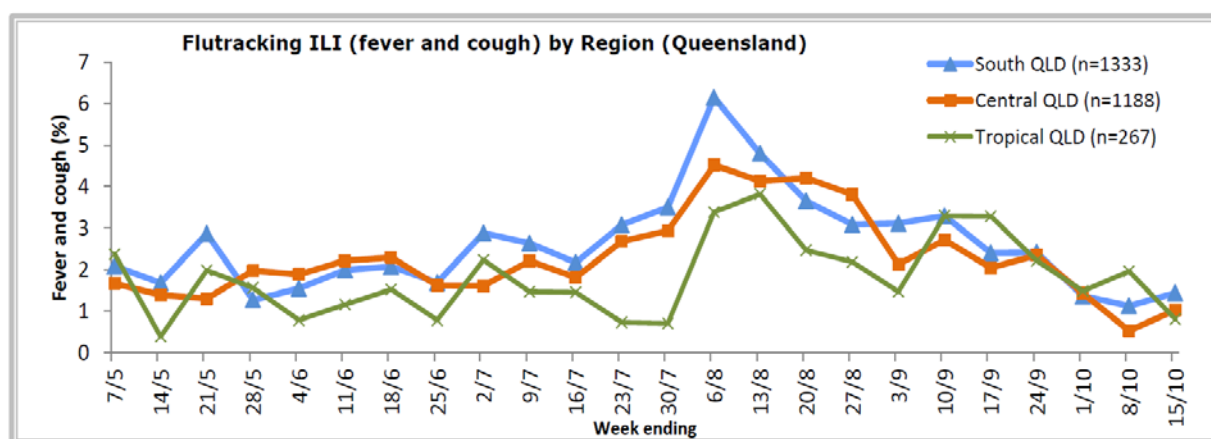
FluTracking is an online surveillance initiative run jointly by Hunter New England (NSW Health), The University of Newcastle, The Hunter Medical Research Institute, and Business Continuity Institute (Australasia). Currently there are around 22,000 participants across Australia, including approximately 2,500 Queensland residents.

The system gathers data on the emerging influenza season by collating and reporting responses to online weekly surveys. Participation is quick and easy, open to any individual who is resident in Australia and can include family and friends.

Figures 9 and 10 summarise data contributed by Queensland based participants. It represents the final data available for 2017 (to 15 October).



**Figure 9** Weekly percentage of Queensland FluTracking participants reporting fever and cough up to the week ending 15 October 2017. Figures presented with permission from FluTracking.



**Figure 10** Weekly percentage of Queensland FluTracking participants by region, reporting fever and cough up to the week ending 15 October 2017. Figures presented with permission from FluTracking.

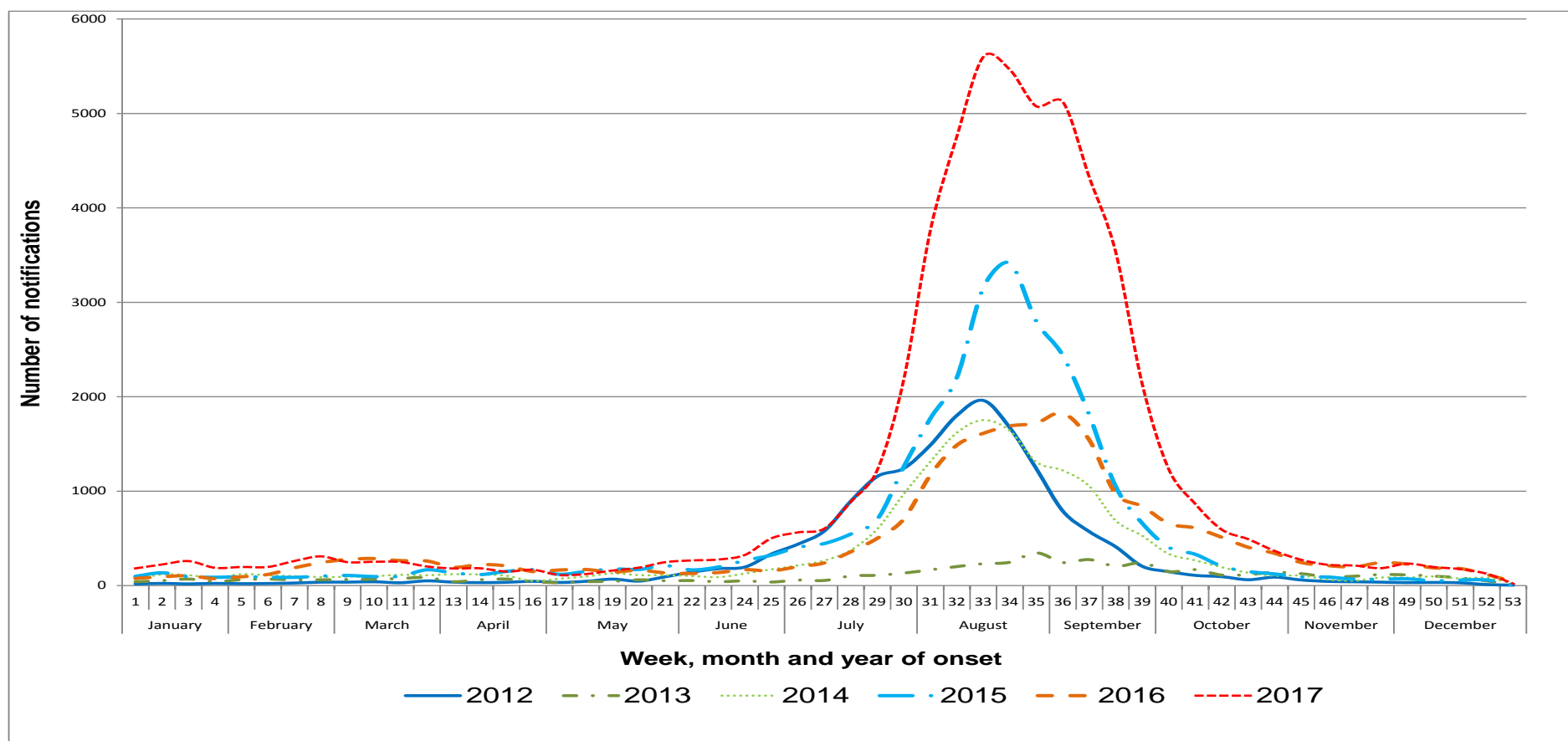
If you would like to find out more about FluTracking, or register to participate, please go to <http://www.flutracking.net/Info>

## References

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[http://www.who.int/influenza/human\\_animal\\_interface/virology\\_laboratories\\_and\\_vaccines/influenza\\_virus\\_infections\\_humans\\_feb14.pdf](http://www.who.int/influenza/human_animal_interface/virology_laboratories_and_vaccines/influenza_virus_infections_humans_feb14.pdf)
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## Appendices

### Appendix 1: Laboratory confirmed influenza notifications in Queensland, by week of onset, 1 January 2012 to 31 December 2017.



## Appendix 2: Hospital and Health Services (2017 edition) with Regions

**Hospital and Health Services, Queensland Health  
by Recognised Public Hospitals  
and Primary Health Centres**



Prepared by: Statistical Reporting and Coordination, Health Statistics Branch, 29 January 2015  
Hospital and Health Services by recognised public hospitals and primary health centres as at 29 November 2014

Regions and Hospital and Health Services		
Tropical	Central	Southern
Torres and Cape	Central Queensland	Metro South
Cairns and Hinterland	Central West	Darling Downs
North West	Wide Bay	West Moreton
Townsville	Sunshine Coast	South West
Mackay	Metro North	Gold Coast