

# Statewide Influenza Surveillance Report

Reporting Period: 1 January to 31 December 2018

## **Influenza Surveillance Report**

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<https://www.health.qld.gov.au/clinical-practice/guidelines-procedures/diseases-infection/surveillance/reports/flu/default.asp>

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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 2018.

## Methods

Data were extracted for influenza notifications from the Queensland Health notifiable conditions register (*NoCS*) on 4 February 2019. Hospital admissions data were extracted from *EpiLog*, a register of influenza admissions to Queensland public hospitals, on 4 February 2019. All reported data were correct at the time of extraction but may be subject to change following routine data quality revisions.

Calendar week commencing 1 January 2018, was used to determine week of onset. Week 53 includes one day - 31 December 2018.

The denominator for percentage positive calculations includes only those tests with a result available at the time of calculation.

Denominator data for rate calculations were obtained from the Queensland Government Statisticians Office<sup>4</sup> on 7 February 2019.

Data analyses were undertaken using Microsoft Excel 2016<sup>5</sup>, SQL Server Management Studio 2015<sup>6</sup> and RStudio version 0.99.896<sup>7</sup>.

# Summary

	1 January to 31 December 2018
<b>All influenza notifications</b>	<b>15,685</b>
<b><u>Influenza A</u></b>	12,670
A/H1N1	1,060
A/H3N2	1,028
Subtype unavailable	10,582
<b><u>Influenza B</u></b>	3,015
Victoria	18
Yamagata	125
Lineage unavailable	2,872
<b><u>Type unavailable</u></b>	0
<b>Influenza hospitalisations‡</b>	<b>1,715</b>
<b>Intensive Care Unit (ICU) admissions§</b>	200

‡ Queensland public hospitals only - includes general and ICU admissions

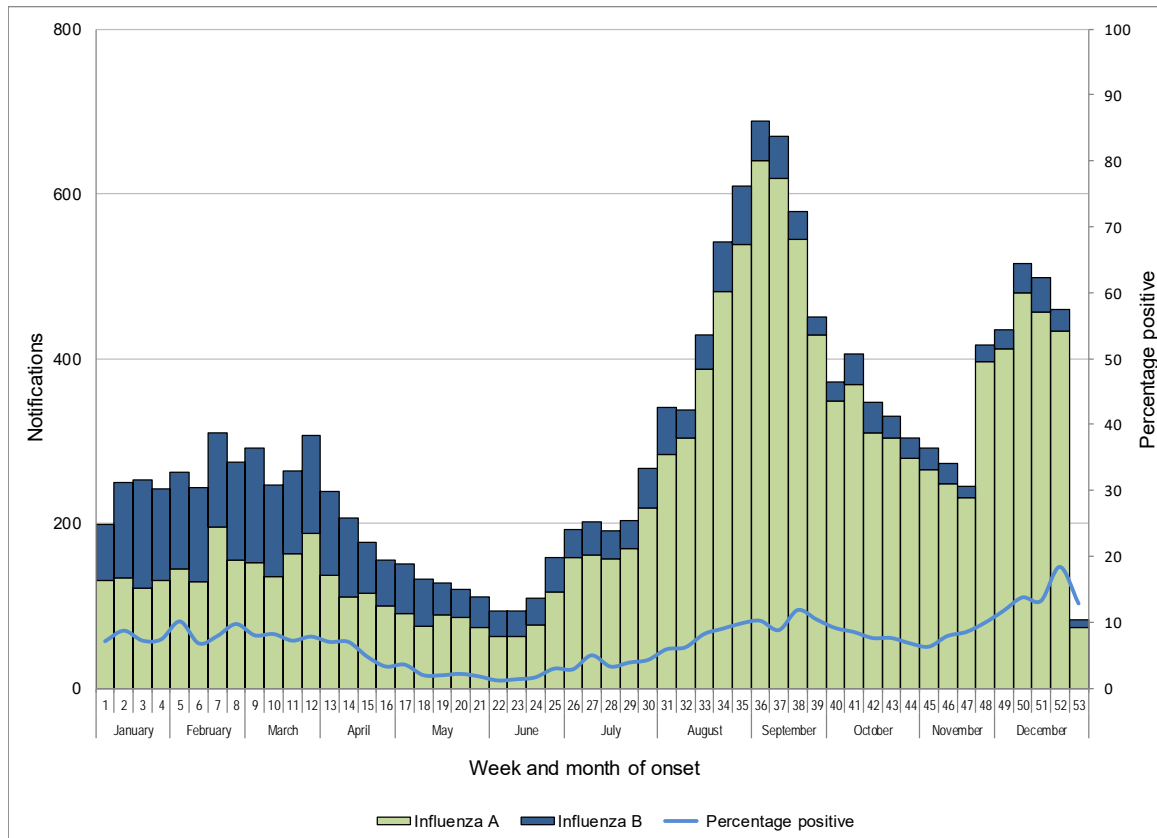
§ Queensland public hospitals only

<p><b>Australian Influenza Vaccine Committee (AIVC) decision on the influenza vaccine composition for the Australian 2018 season</b>  <a href="http://www.influenzacentre.org/surveillance/vaccines.htm">http://www.influenzacentre.org/surveillance/vaccines.htm</a></p>	<p><b>Trivalent vaccine</b></p> <ul style="list-style-type: none"> <li>▪ A/Michigan/45/2015 (H1N1)pdm09-like virus</li> <li>▪ A/Singapore/INFIMH-16-0019/2016 (H3N2)-like virus</li> <li>▪ B/Phuket/3073/2013 (Yamagata lineage)-like virus</li> </ul> <p><b>Quadrivalent vaccine</b>  Viruses listed above, plus the additional B virus:</p> <ul style="list-style-type: none"> <li>▪ B/Brisbane/60/2008 (Victoria lineage)-like virus</li> </ul>
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# 1. Influenza notifications

1 January to 31 December 2018 there were 15,685 notifications.

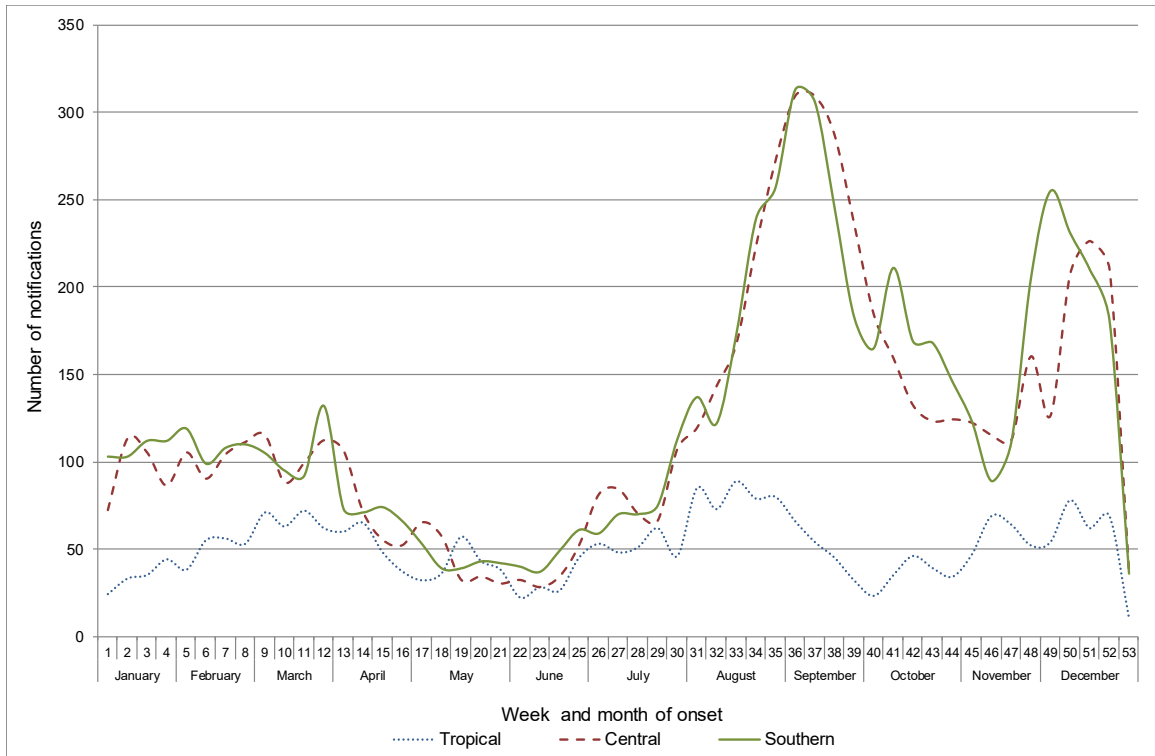
- 12,670 (80.8%) were typed as influenza A, and 3,015 (19.2%) as influenza B
  - 2,088 influenza A have been subtyped: 1,060 (50.8%) were A/H1N1 and 1,028 (49.2%) were A/H3N2
  - Subtype was unavailable for 10,582 influenza A cases.



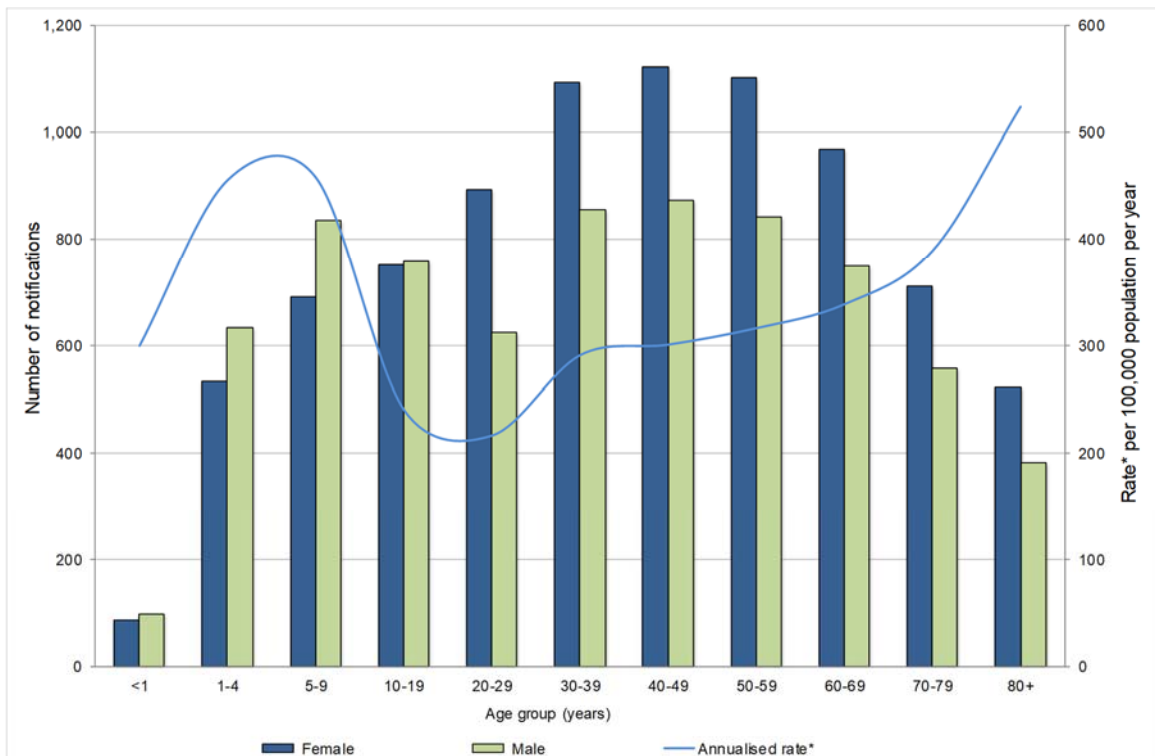
**Figure 1** Weekly influenza notifications in Queensland by type and percentage of positive tests (public laboratory system only) by week and month of testing, 1 January to 31 December 2018.

- Figure 1 shows the statewide notification count by week, month, type, and the percentage of positive influenza tests.
- Influenza notifications showed a bimodal distribution, with peaks in week 36 (week beginning 3 September) with a total of 688 notifications, and week 50 (week beginning 10 December) with 516 notifications.
- The highest percentage of positive influenza tests occurred outside the typical months (May to October) for seasonal activity, with a peak of 18.3% in week 52 (week beginning 24 December).
- Figure 2 summarises 2018 notification counts by region; and Table 1 by region and Hospital and Health Service (HHS).
- Southern and central regions experienced bimodal influenza activity.
- Southern region notifications peaked in weeks 36 (313 notifications) and 49 (255 notifications).

- Central region notifications peaked across weeks 36 and 37 (309 notifications in each week), and in week 51 (226 notifications).
- The tropical region reached a peak in week 33 with 89 notifications.

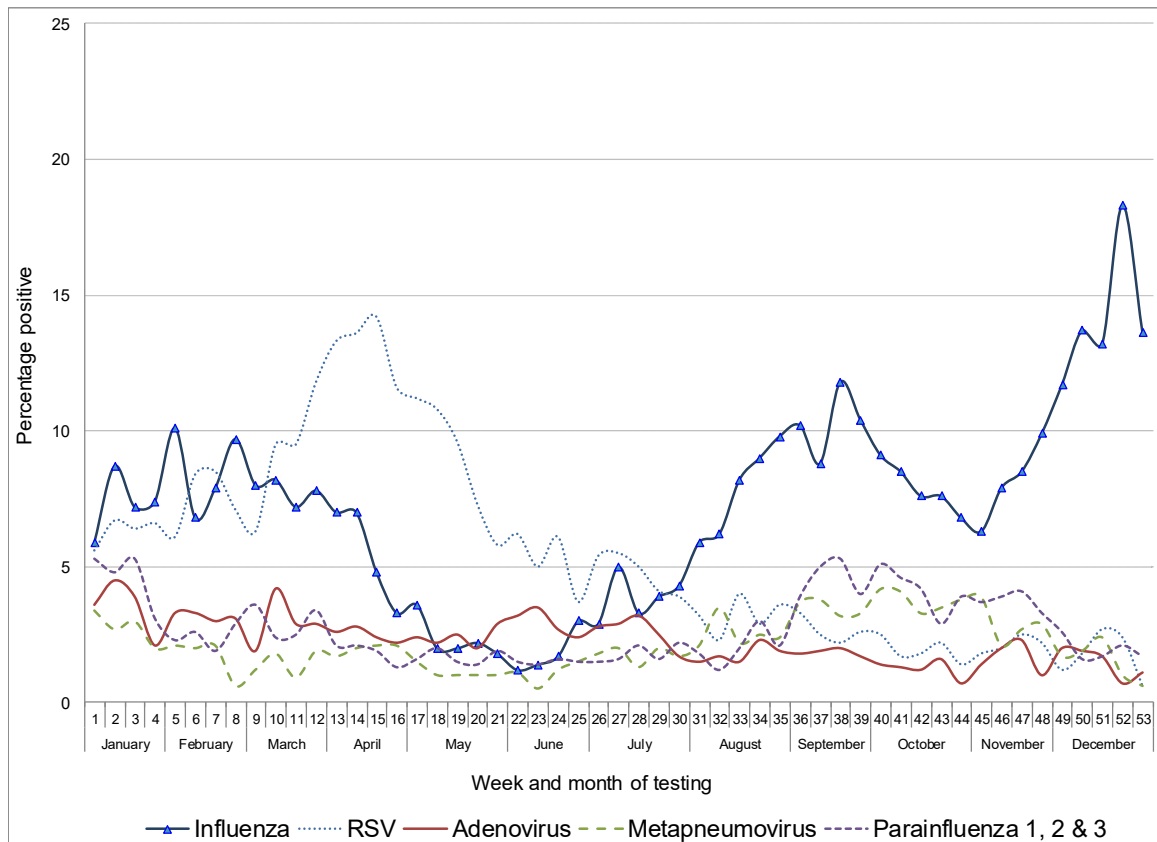


**Figure 2** Queensland regional influenza notifications by week and month of onset, 1 January to 31 December 2018.



**Figure 3** Queensland, 2018 annual influenza notifications by age group, sex, and age group specific notification rates.

- Figure 3 shows the age and sex distribution of notifications.
  - Notifications were higher in females (54.1%) than males (45.9%).
  - Median age was 39 years, with a range of 6 days to 103 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 2018.

- 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.



**Table 1 Influenza notifications by week of onset, region\* and Hospital and Health Service (HHS), 1 January to 31 December 2018.**

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	0	2	2	0	1	5	3	7	1	1	1	1	1	0	0	1	0	1	2	1	0	0	0	0	0	0
	Cairns and Hinterland	10	11	10	26	17	24	16	10	20	22	16	20	20	32	16	12	15	15	13	12	11	6	5	9	6	7
	North West	0	0	0	0	1	0	1	2	0	1	1	0	0	1	0	0	1	1	0	0	1	0	0	0	0	0
	Townsville	8	13	17	16	14	19	31	26	32	27	37	23	30	14	16	14	13	10	34	23	23	13	20	15	33	43
	Mackay	6	7	6	2	5	7	18	8	18	12	17	18	9	18	16	10	3	9	8	7	3	3	3	2	6	3
Central	Central Queensland	8	17	14	5	15	7	11	5	7	4	5	10	7	8	6	8	11	13	3	7	4	3	3	2	2	7
	Central West	0	1	0	0	1	0	1	0	0	0	0	1	0	0	2	1	0	0	0	0	1	0	0	0	0	0
	Wide Bay	6	9	11	4	8	8	8	8	8	6	9	4	11	13	16	5	3	4	5	5	4	0	3	2	6	7
	Sunshine Coast	21	20	17	21	23	25	32	34	36	31	23	27	28	17	7	14	19	17	7	7	7	6	5	7	14	19
	Metro North	37	66	63	56	58	50	65	64	64	47	62	70	60	33	24	24	32	23	17	15	14	23	17	23	30	48
Southern	Metro South	60	57	55	62	75	65	62	43	54	48	49	62	30	35	31	33	26	18	27	24	24	22	19	28	35	39
	Darling Downs	5	7	16	8	5	5	12	13	7	9	8	6	4	7	7	1	3	5	2	5	6	4	1	2	4	6
	West Moreton	7	7	9	8	5	3	9	7	6	8	6	15	3	2	12	3	6	7	3	4	4	5	8	12	9	6
	South West	1	1	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2
	Gold Coast	30	31	32	33	34	25	40	47	38	30	29	49	36	27	24	29	18	9	7	10	8	9	9	5	11	6
<b>Queensland (Total)</b>	<b>199</b>	<b>249</b>	<b>252</b>	<b>242</b>	<b>262</b>	<b>244</b>	<b>310</b>	<b>274</b>	<b>291</b>	<b>246</b>	<b>263</b>	<b>306</b>	<b>239</b>	<b>207</b>	<b>177</b>	<b>155</b>	<b>150</b>	<b>132</b>	<b>128</b>	<b>120</b>	<b>110</b>	<b>94</b>	<b>93</b>	<b>109</b>	<b>158</b>	<b>193</b>	

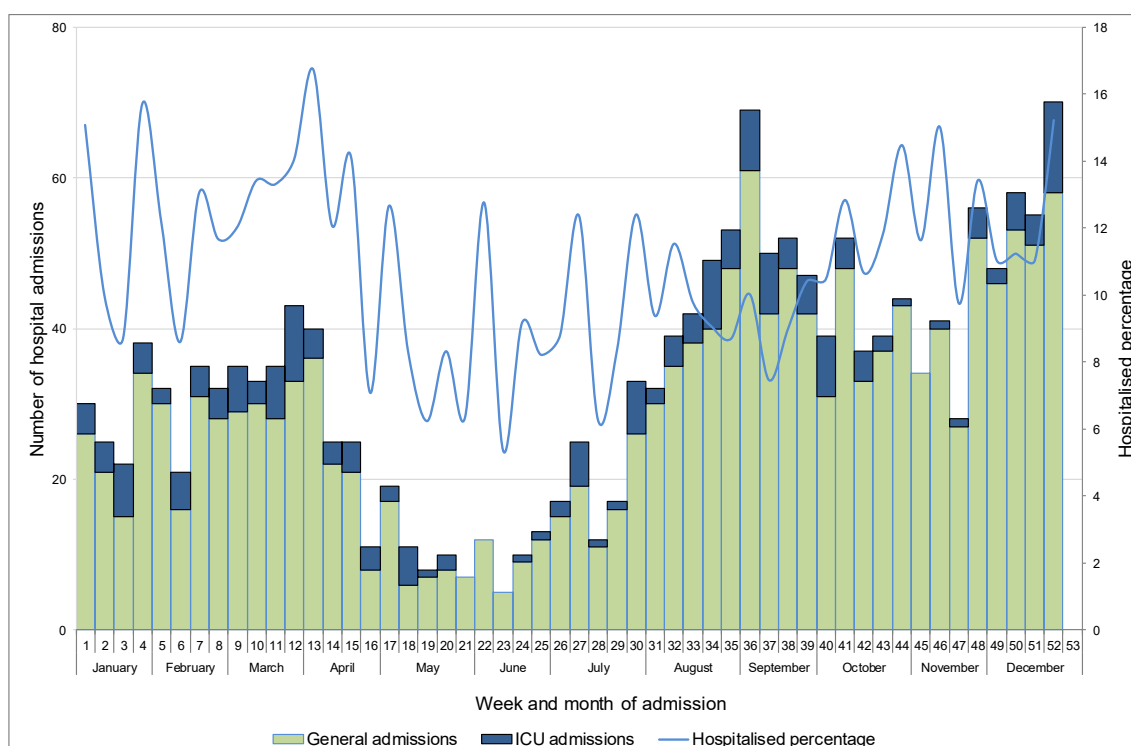
Region	Hospital & Health Service	Week of onset																										YTD Total	
		27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52		53
Tropical	Torres and Cape	2	0	1	1	2	0	2	2	0	0	1	3	0	0	1	0	0	1	5	10	3	1	0	0	1	1	1	<b>68</b>
	Cairns and Hinterland	7	10	12	9	26	25	53	31	30	34	30	17	11	12	14	8	8	10	12	12	11	11	26	33	21	19	4	<b>877</b>
	North West	0	0	0	1	0	1	1	0	0	0	1	0	2	1	0	2	0	0	0	1	0	0	0	0	0	0	1	<b>21</b>
	Townsville	33	39	44	30	48	42	30	34	30	22	15	18	10	5	16	24	25	17	20	37	32	36	17	29	29	31	3	<b>1,280</b>
	Mackay	6	2	5	5	9	5	3	12	20	10	7	7	9	5	4	12	6	6	10	9	5	4	11	16	11	18	1	<b>442</b>
Central	Central Queensland	10	2	7	9	10	23	47	23	40	66	49	51	54	27	27	24	33	42	27	19	11	12	12	21	8	11	1	<b>858</b>
	Central West	0	0	0	0	0	0	1	1	2	1	0	1	1	2	0	0	0	0	0	1	2	1	1	1	0	1	0	<b>23</b>
	Wide Bay	4	5	6	5	4	8	7	11	16	28	19	22	18	20	13	7	8	4	2	3	5	8	6	11	31	36	7	<b>487</b>
	Sunshine Coast	26	19	16	30	25	32	26	51	69	68	93	58	54	55	37	36	38	39	45	45	24	35	35	55	62	56	7	<b>1,620</b>
	Metro North	44	44	37	63	80	80	87	137	146	145	147	156	109	81	80	65	44	39	48	48	58	103	72	119	125	106	21	<b>3,369</b>
Southern	Metro South	44	44	42	60	78	54	67	96	130	149	142	105	85	69	80	90	79	66	70	45	47	75	94	96	82	66	10	<b>3,148</b>
	Darling Downs	3	7	4	12	13	18	26	37	23	41	50	42	37	23	52	18	10	4	8	4	5	5	9	11	2	7	2	<b>631</b>
	West Moreton	10	10	9	22	15	24	39	53	49	41	38	39	28	15	16	9	11	9	7	5	13	13	12	11	10	15	3	<b>700</b>
	South West	1	0	0	0	2	0	0	0	0	1	2	2	3	10	0	1	7	3	2	0	2	2	13	4	0	2	1	<b>69</b>
	Gold Coast	12	9	20	19	29	26	41	53	55	81	74	58	30	48	63	51	61	64	36	35	28	110	127	109	116	91	20	<b>2,092</b>
<b>Queensland (Total)</b>	<b>202</b>	<b>191</b>	<b>203</b>	<b>266</b>	<b>341</b>	<b>338</b>	<b>429</b>	<b>541</b>	<b>609</b>	<b>688</b>	<b>669</b>	<b>578</b>	<b>451</b>	<b>372</b>	<b>405</b>	<b>347</b>	<b>330</b>	<b>304</b>	<b>292</b>	<b>273</b>	<b>245</b>	<b>417</b>	<b>435</b>	<b>516</b>	<b>498</b>	<b>460</b>	<b>82</b>	<b>15,685</b>	

\*Regions defined here are aggregates of HHS used for surveillance purposes only and are not official geographical areas

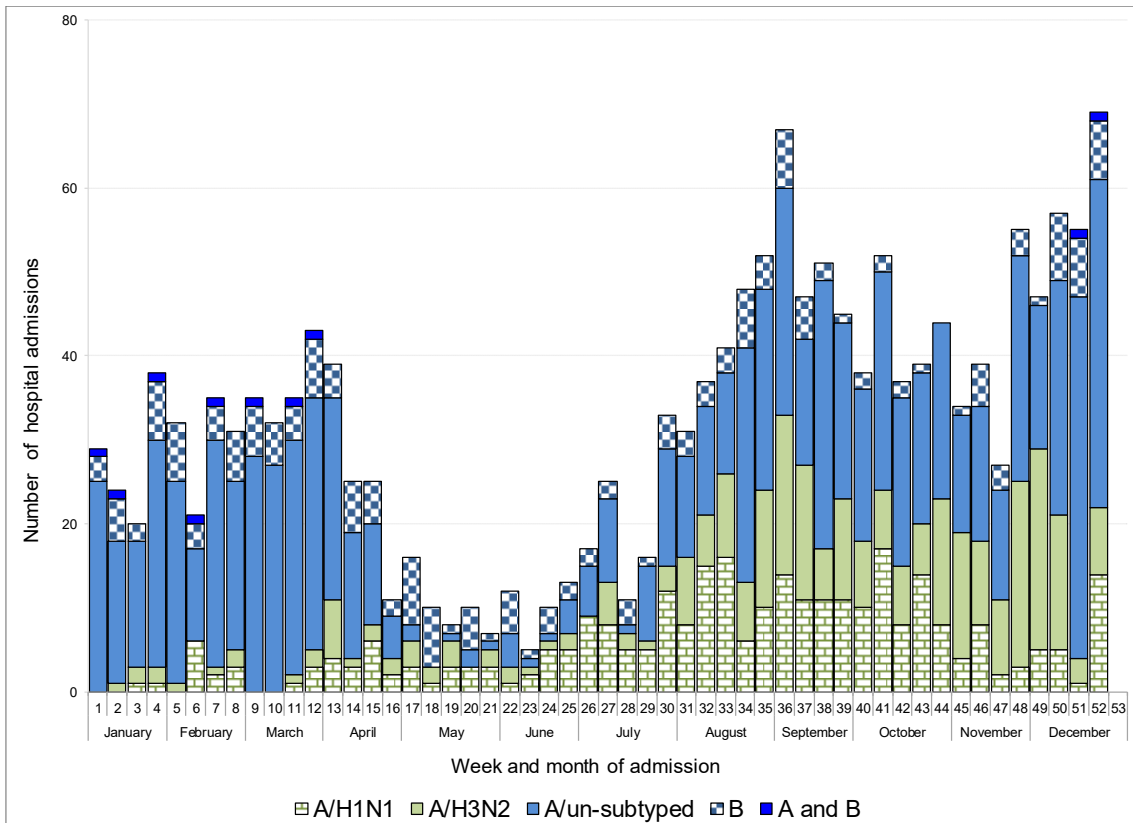
## 2. Influenza hospitalisations (public hospitals)

### Public hospital admissions with laboratory confirmed influenza:

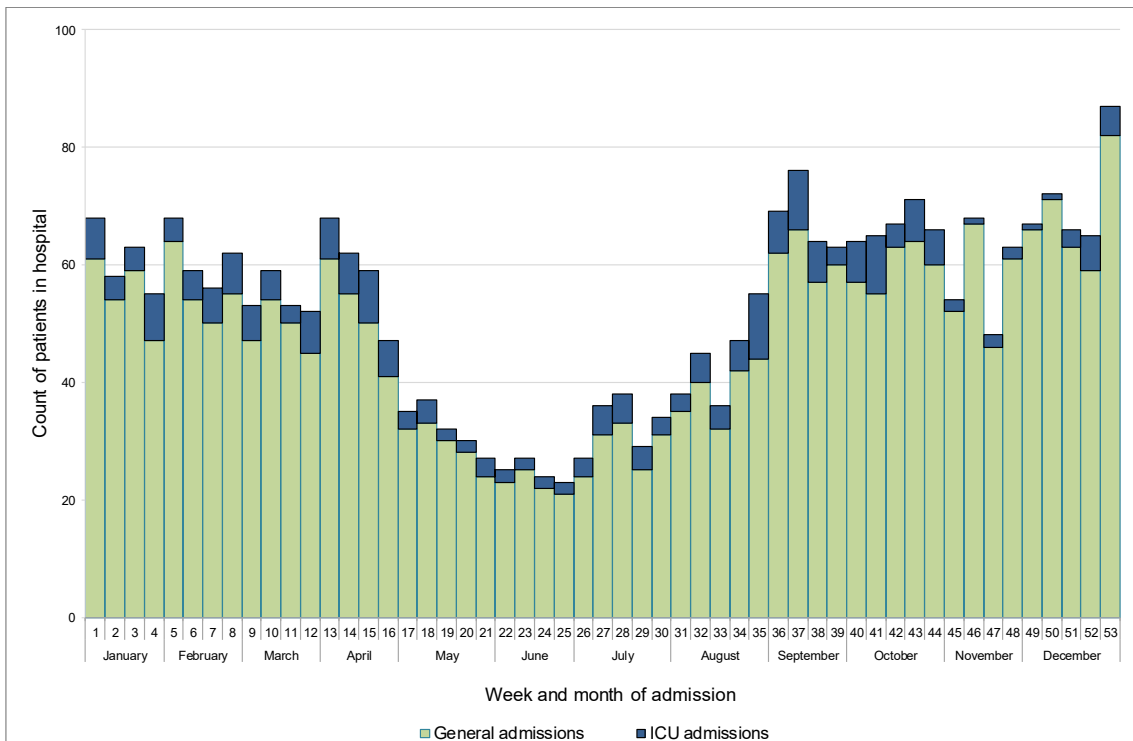
- 1 January to 31 December 2018 there were 1,715 admissions, including 200 to intensive care (Figure 5). These counts include Queensland residents (1,650), interstate residents (34), and overseas visitors (31).
- Peaks in public hospital admissions occurred in week 36 (69 admissions), and week 52 (70 admissions).
- Admissions of Queensland residents by influenza type and subtype are summarised in Figure 6.
- 1,447 (87.7%) of the 1,650 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.



**Figure 5** Laboratory confirmed influenza admissions to Queensland public hospitals (n=1,715) 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 2018.



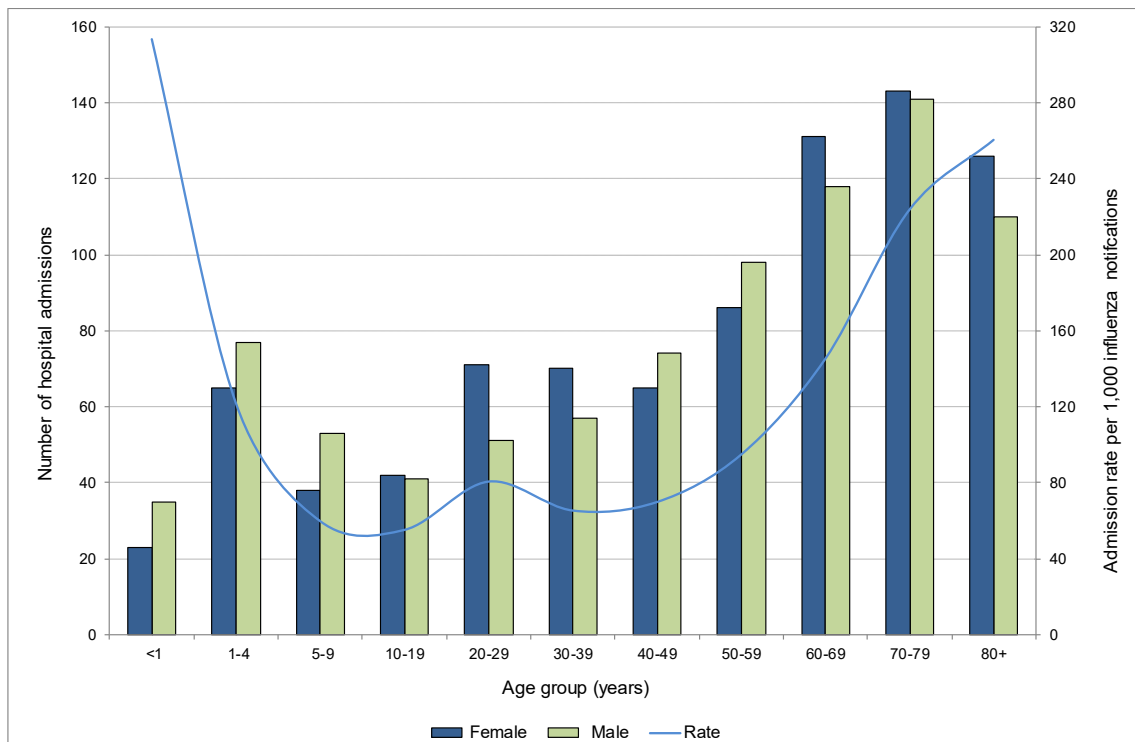
**Figure 6** Laboratory confirmed influenza admissions of Queensland residents to Queensland public hospitals (n=1,650) by week, month, and influenza type/subtype, 1 January to 31 December 2018.



**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 2018.

- Figure 8 shows the 2018 age and sex distribution of hospitalisations.
  - Males (49.9%) and females (50.1%) were hospitalised equally.

- Mean and median ages were 48 and 55 years, respectively, with a range of 6 days to 98 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 2018.

**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 2018.**

Region	Hospital & Health Service	YTD notifications <sup>^</sup>	YTD hospital admissions <sup>*</sup>	YTD percentage of notifications hospitalised
Tropical	Torres and Cape	68	19	27.9%
	Cairns and Hinterland	877	107	12.2%
	North West	21	1	4.8%
	Townsville	1,280	197	15.4%
	Mackay	442	62	14.0%
Central	Central Queensland	858	76	8.9%
	Central West	23	4	17.4%
	Wide Bay	487	97	19.9%
	Sunshine Coast	1,620	142	8.8%
	Metro North	3,369	281	8.3%
Southern	Metro South	3,148	298	9.5%
	Darling Downs	631	47	7.4%
	West Moreton	700	40	5.7%
	South West	69	5	7.2%
	Gold Coast	2,092	305	14.6%
<b>Total</b>		<b>15,685</b>	<b>1,681</b>	<b>10.7%</b>

<sup>^</sup> Includes 75 overseas visitors notified in Queensland

<sup>\*</sup> Includes 31 overseas visitors admitted to Queensland public hospitals

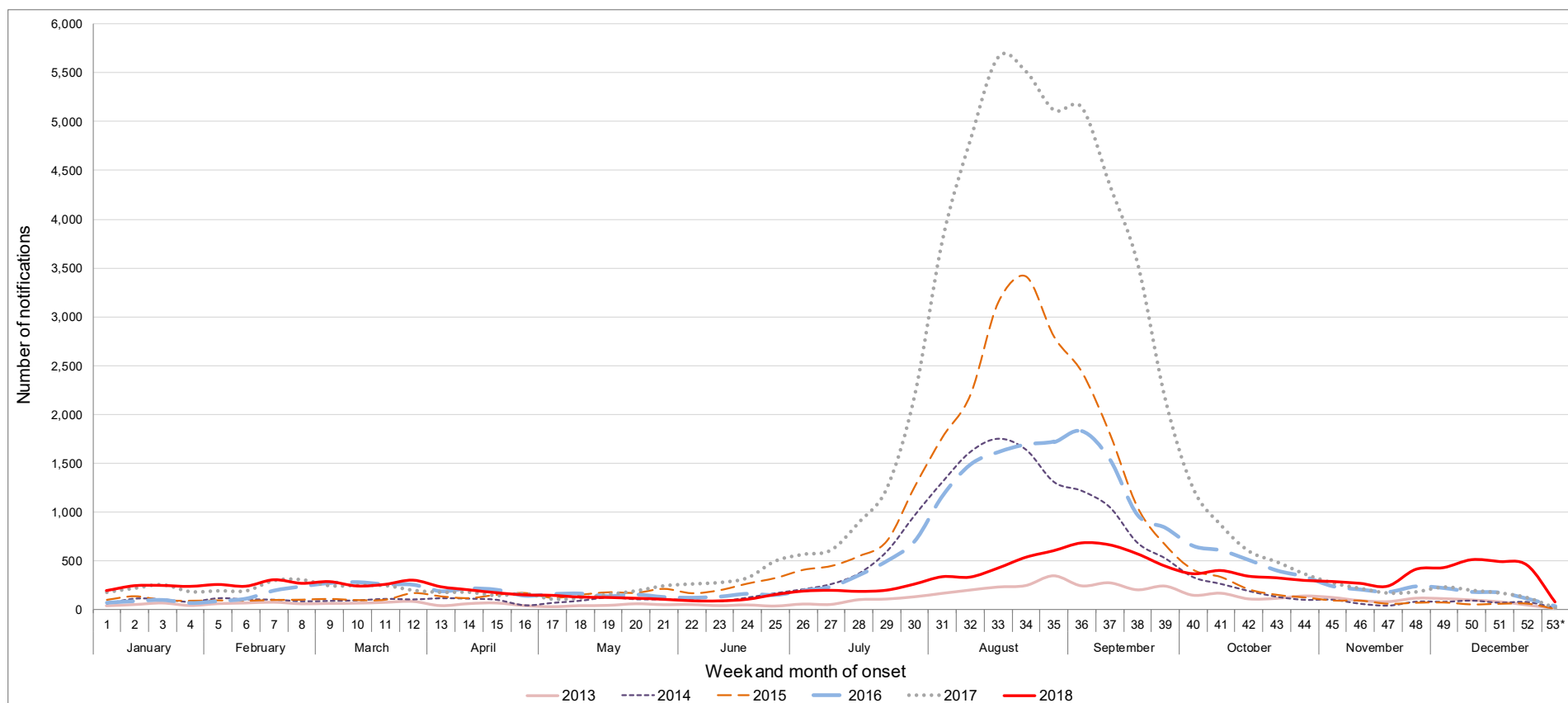
Note: A further 34 interstate residents were admitted to Queensland public hospitals and are not included in the above table. Influenza notifications in Australian residents are reported by the health department in the state or territory of usual residence.

## References

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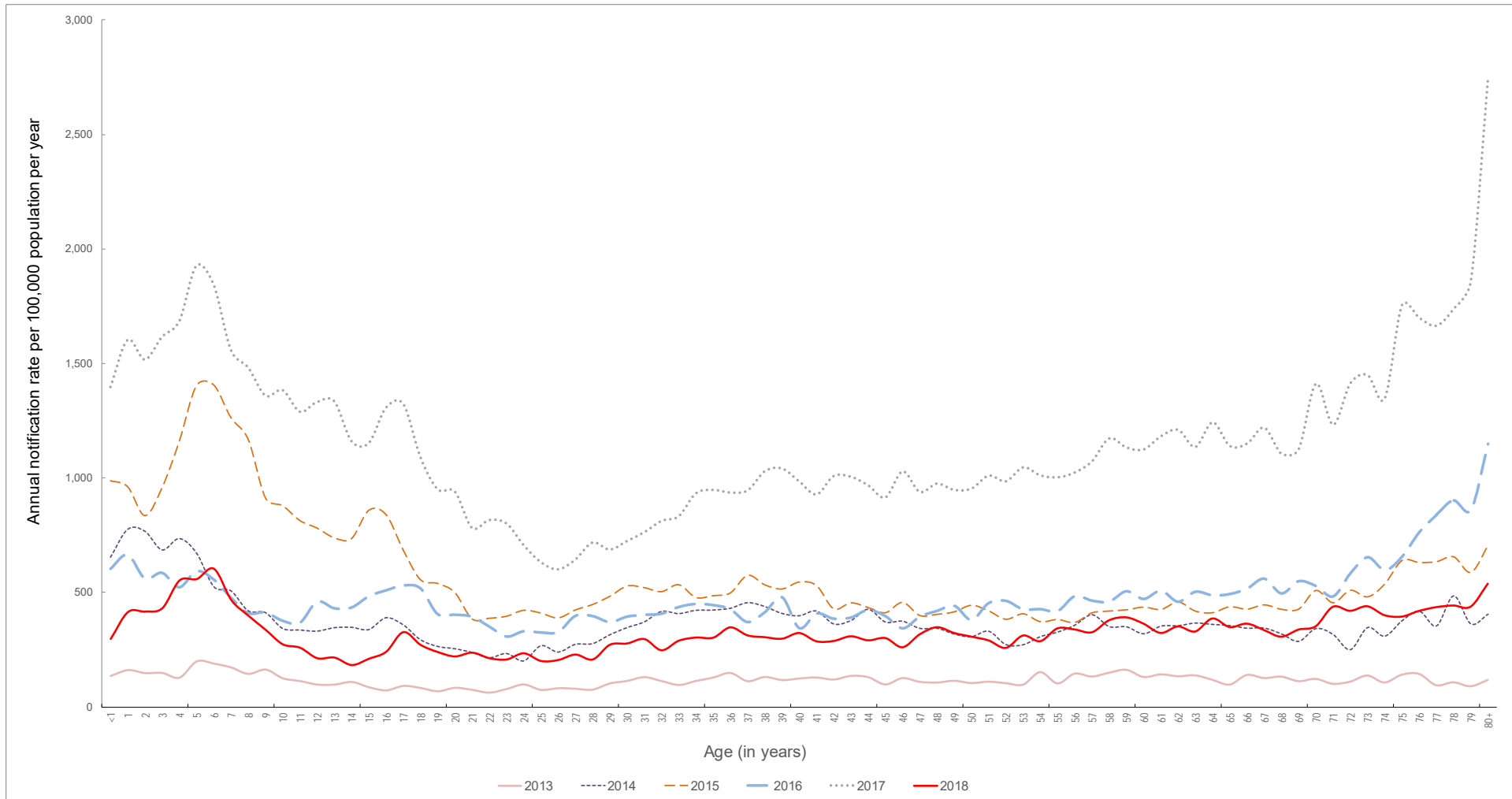
## Appendices

### Appendix 1: Laboratory confirmed influenza notifications in Queensland, by week of onset, 1 January 2013 to 31 December 2018.



\*Week 53 contains only 1 day – 31 December

**Appendix 2: Annual age-specific influenza notification rates in Queensland, 1 January 2013 to 31 December 2018.**





## 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