





Pertussis Surveillance 2013-2017

Rhode Island Department of Health

Division of Preparedness, Response, Infectious
Disease and Emergency Medical Services

Center for Acute Infectious Disease Epidemiology



About Pertussis

- Pertussis, or whooping cough, is a respiratory illness caused by the bacteria *Bordetella pertussis*.
- Symptoms of pertussis include a persistent cough, coughing fits, vomiting after coughing, and a cough that makes a “[whoop](#)” sound.
- Pertussis is spread person-to-person by respiratory secretions from coughing or sneezing in close proximity.
- Babies under 1 year of age are at higher risk of infection from pertussis because they are too young to receive vaccine. If they contract pertussis, they are at higher risk of complications from infection.
- Pertussis is a vaccine-preventable disease, although immunity can wane with time. Vaccination of pregnant women is especially important to protect newborn infants.

Data Overview, Pertussis



- In 2017, there were 84 cases of pertussis in RI, with a rate of 7.9 cases per 100,000 population.
- The highest rate of pertussis cases in RI occurred in the adolescent age group of 10-19 year-olds, with 37.9 cases per 100,000 population. Of the 84 cases of pertussis in 2017, 64 occurred in children 19 years of age and younger (76% of cases).
- Pertussis in RI largely occurs in vaccinated individuals. Of the 63 cases in children between 1 and 19 years of age, 59 had received 4 or more doses of vaccine (94%). The vaccination recommendations for pertussis can be found [here](#).
- In 2017, there were 9 outbreaks of pertussis in RI. Of the 84 total cases of pertussis, 27 (32%) were associated with outbreaks (2 or more cases of pertussis clustered in place and time). This represents a decrease from 2016 in total number of outbreaks and percentage of cases associated with outbreaks. In 2016, there were 12 outbreaks of pertussis, and 52 out of 91 cases were associated with these outbreaks (57% of cases).
- Of the 9 outbreaks that occurred in 2017, 7 took place in school settings, 1 was at a day camp, and 1 was in a university setting. The number of pertussis cases associated with each outbreak ranged from 2-6.

Reported Cases of Pertussis, Rhode Island, 2013-2017

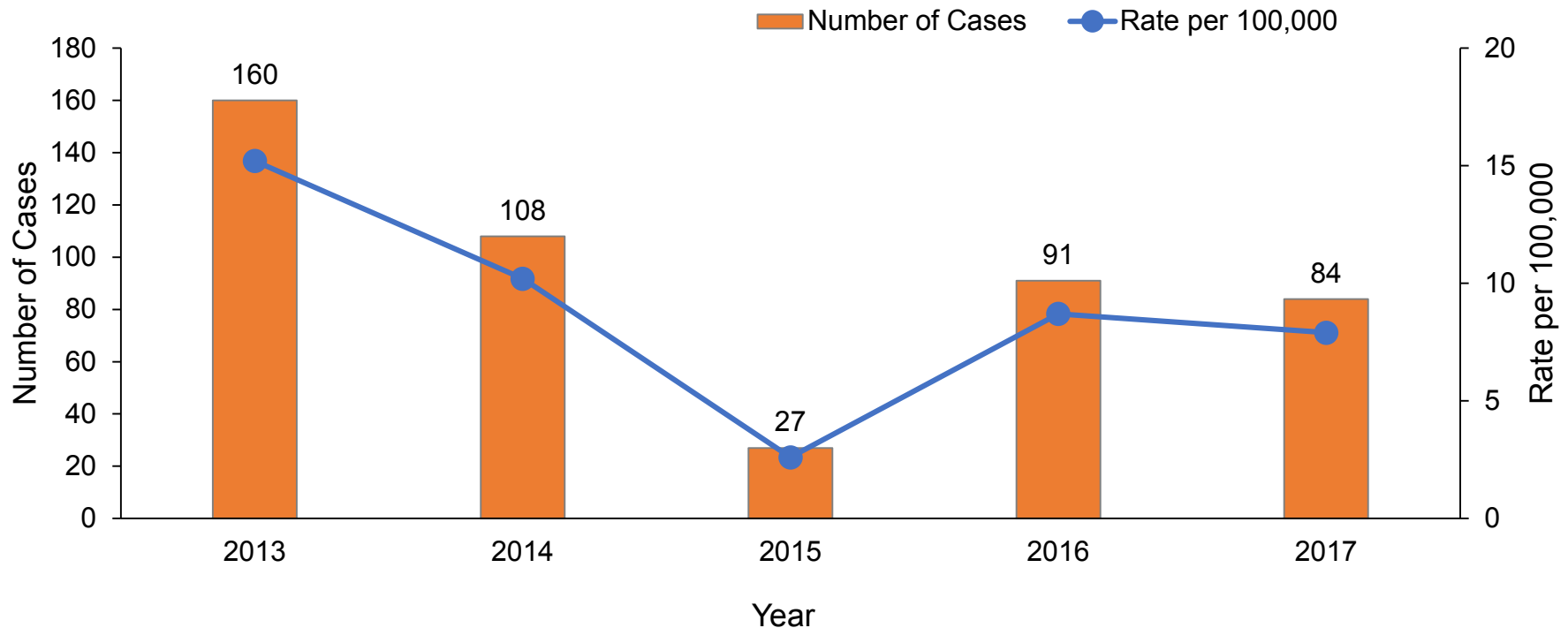


Figure 1: In 2017, there were 84 cases of pertussis in RI, with a rate of 7.9 cases per 100,000 population. Pertussis typically displays a cyclical trend, peaking every 2-5 years.

Rate of Pertussis, Age Group, Rhode Island, 2017

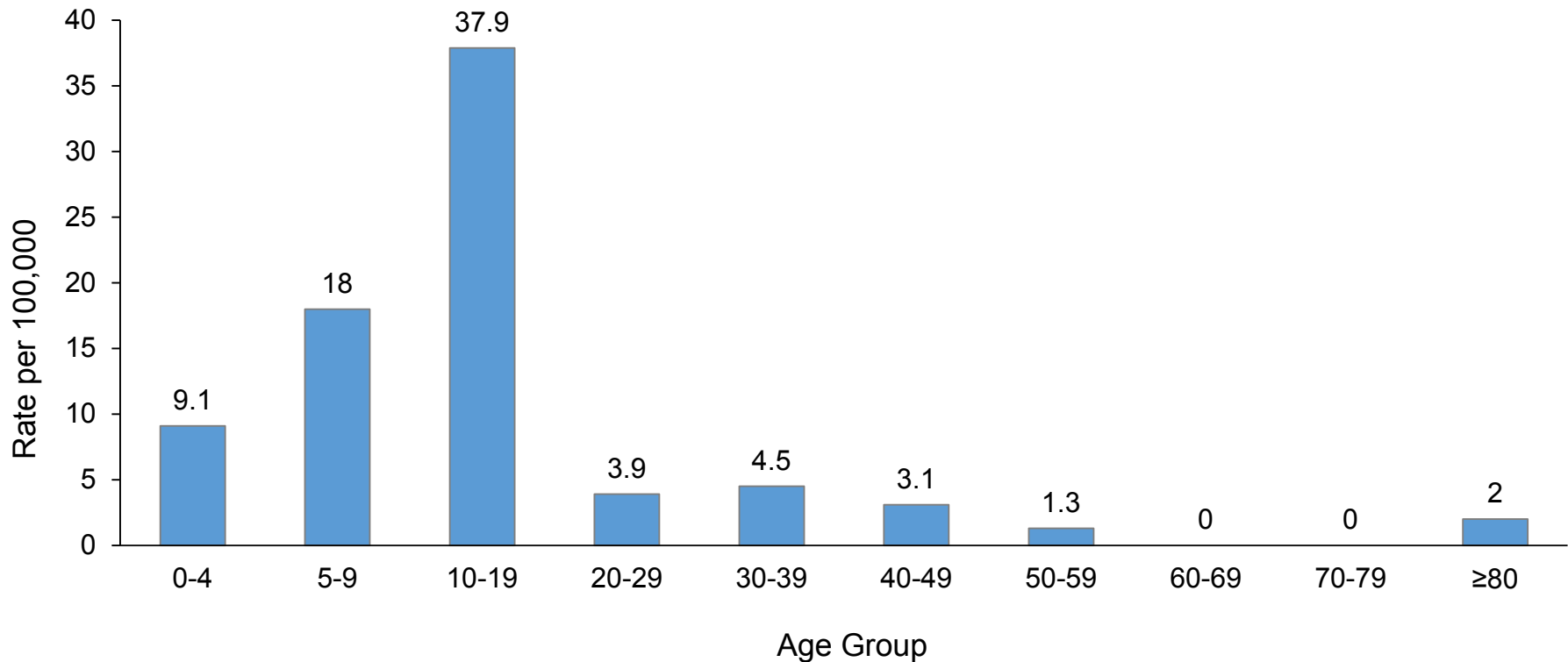


Figure 2: The highest rate of pertussis cases in RI was in the adolescent age group of 10-19 years old, followed by 5-9 year-olds, and 0-4 year-olds. These data follow national trends in which pertussis disproportionately affects the adolescent age group, due to waning immunity.

Rate of Pertussis, Sex and Year, Rhode Island, 2013-2017

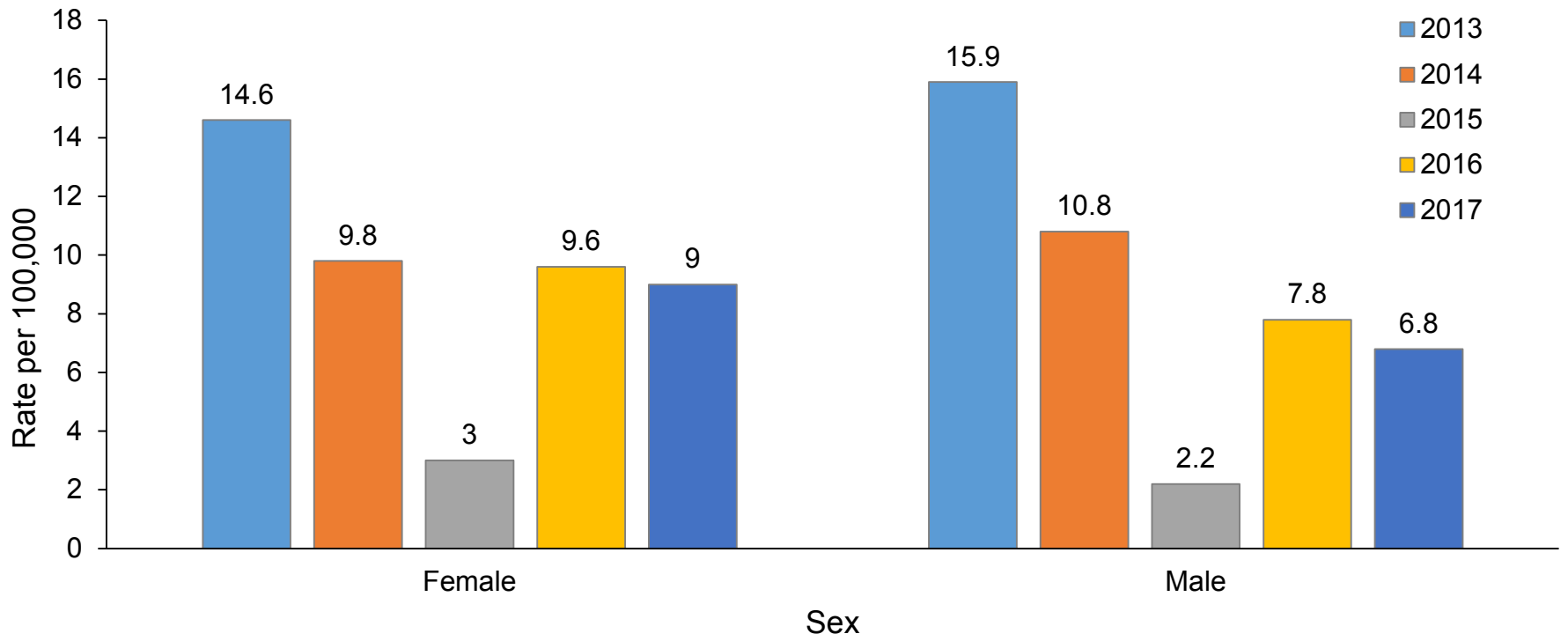


Figure 3: Pertussis was reported in males and females at approximately the same rates over the last five years. In 2017, there were 49 cases in females and 35 cases in males. Nationally, rates of pertussis are nearly the same in males and females.

Rate of Pertussis, County and Year, Rhode Island, 2013-2017

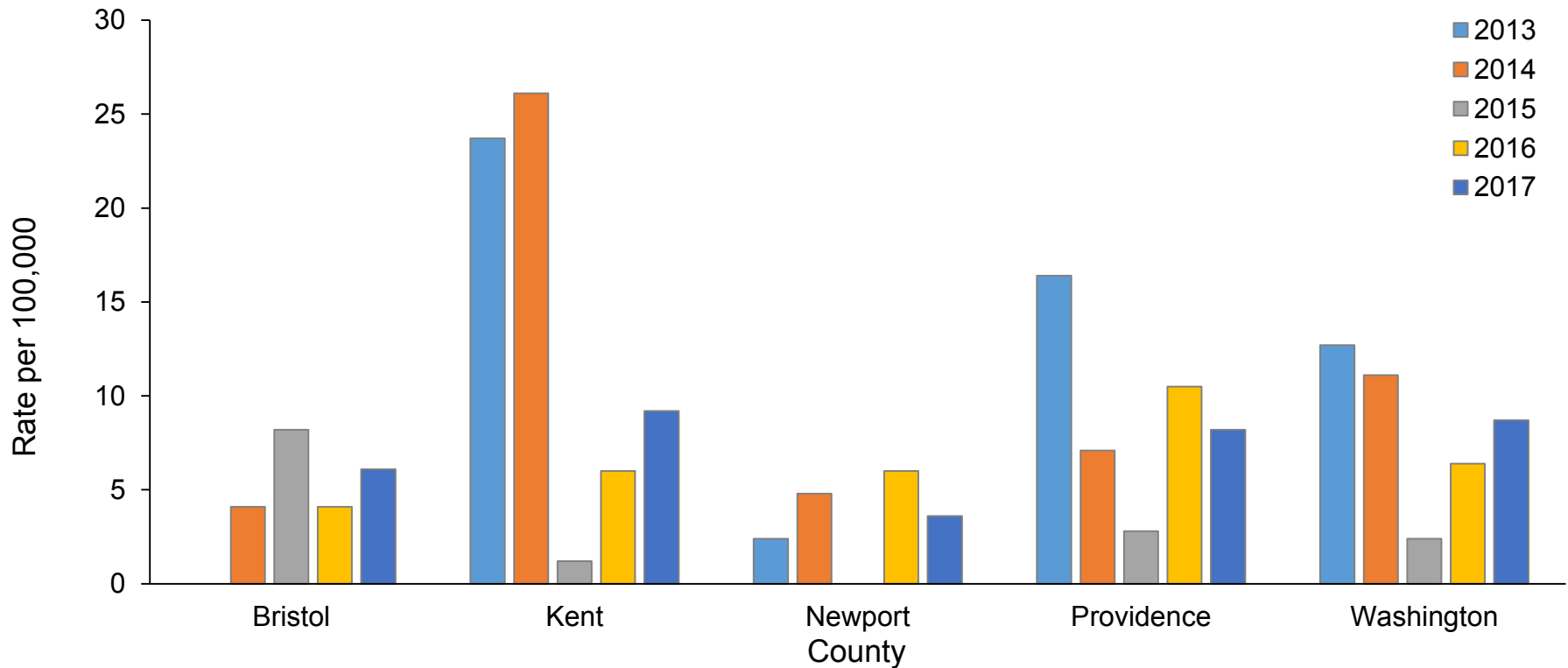


Figure 4: In 2017, the highest rate of pertussis cases occurred in Kent County (9.2 cases per 100,000 population), followed closely by Washington and Providence Counties (8.7 and 8.2 cases per 100,000 population, respectively).

Reported Cases of Pertussis, Month and Year, Rhode Island, 2013-2017

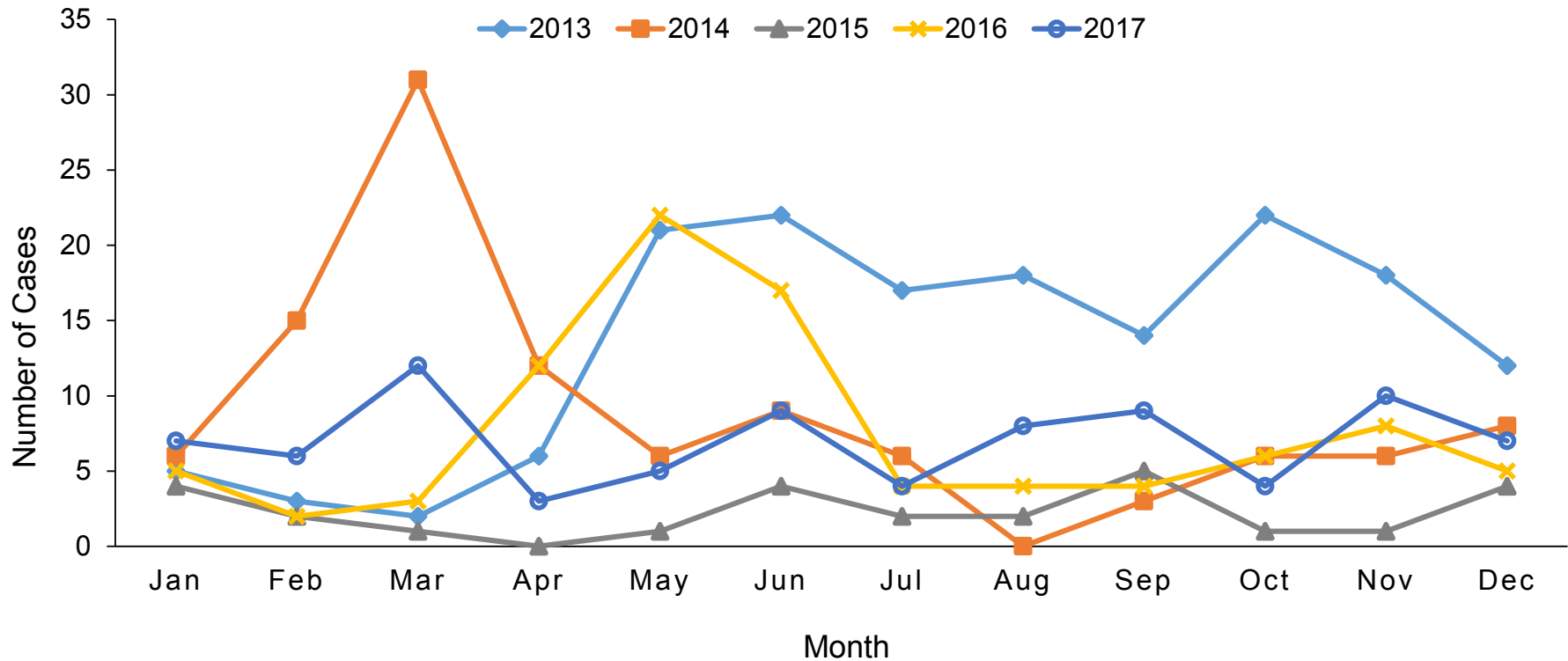


Figure 5: Typically, pertussis does not occur with a seasonal trend. In 2016, a large number of pertussis outbreaks occurred between April and June, and the peak in March 2014 can be attributed in part to a number of school-based outbreaks.

Pertussis Frequency and Rates by Year, Rhode Island, 2013-2017



Table 1. Frequency by Year

	2013	2014	2015	2016	2017
Number of Cases	160	108	27	91	84

Table 2. Rate by Year

	2013	2014	2015	2016	2017
Rate per 100,000	15.2	10.2	2.6	8.7	7.9

Pertussis Frequency, Age Group and Year, Rhode Island, 2013-2017



Table 3. Frequency by Age Group and Year

	2013	2014	2015	2016	2017
0-4	30	12	1	4	5
5-9	39	18	4	15	10
10-19	73	68	18	62	50
20-29	5	1	0	2	6
30-39	2	3	1	1	6
40-49	7	1	2	6	4
50-59	1	2	0	1	2
60-69	2	1	1	0	0
70-79	1	1	0	1	0
≥80	0	1	0	0	1
Total	160	108	27	92	84

Pertussis Rates, Age Group and Year, Rhode Island, 2013-2017



Table 4. Rate by Age Group and Year

	2013	2014	2015	2016	2017
0-4	54.6	21.9	1.8	7.3	9.1
5-9	66.3	31.2	7.1	26.8	18
10-19	53.6	50.4	13.4	46.6	37.9
20-29	3.3	0.7	0	1.3	3.9
30-39	1.6	2.4	0.8	0.8	4.5
40-49	4.9	0.7	1.5	4.6	3.1
50-59	0.6	1.3	0	0.7	1.3
60-69	1.8	0.9	0.8	0	0
70-79	1.6	1.6	0	1.5	0
≥80	0	2	0	0	2.0

Pertussis Frequency and Rates, Sex and Year, Rhode Island, 2013-2017



Table 5. Frequency by Sex and Year

	2013	2014	2015	2016	2017
Female	79	53	16	52	49
Male	81	55	11	40	35
Total	160	108	27	92	84

Table 6. Rate by Sex and Year

	2013	2014	2015	2016	2017
Female	14.6	9.8	3.0	9.6	9.0
Male	15.9	10.8	2.2	7.8	6.8

Pertussis Frequency, County and Year, Rhode Island, 2013-2017



Table 7. Frequency by County and Year

	2013	2014	2015	2016	2017
Bristol	0	2	4	2	3
Kent	39	43	2	10	15
Newport	2	4	0	5	3
Providence	103	45	18	67	52
Washington	16	14	3	8	11
All	160	108	27	92	84

Pertussis Rates by County and Year, Rhode Island, 2013-2017



Table 8. Rate by County and Year

	2013	2014	2015	2016	2017
Bristol	0.0	4.1	8.2	4.1	6.1
Kent	23.7	26.1	1.2	6.0	9.2
Newport	2.4	4.8	0.0	6.0	3.6
Providence	16.4	7.1	2.8	10.5	8.2
Washington	12.7	11.1	2.4	6.4	8.7

Pertussis Frequency, Month and Year, Rhode Island, 2013-2017



Table 9. Frequency by Month and Year

	2013	2014	2015	2016	2017
Jan	5	6	4	5	7
Feb	3	15	2	2	6
Mar	2	31	1	3	12
Apr	6	12	0	12	3
May	21	6	1	22	5
Jun	22	9	4	17	9
Jul	17	6	2	4	4
Aug	18	0	2	4	8
Sep	14	3	5	4	9
Oct	22	6	1	6	4
Nov	18	6	1	8	10
Dec	12	8	4	5	7
All	160	108	27	92	84



Notes on Data

- Case counts include patients classified as confirmed and probable cases.
- “Event Date” (used to classify cases by month and year) is generated based on the availability of data in the following order:
 1. Illness onset date
 2. Specimen collection date
 3. Date of report to public health agency
- Rate is calculated per 100,000 population.
- Population denominators are based on the Annual Estimates of the Resident Population: April 1, 2010-July 1, 2017, U.S. Census Bureau.



References

- <https://www.cdc.gov/pertussis/index.html>
- <https://www.cdc.gov/pertussis/vaccines.html>
- <https://www.cdc.gov/pertussis/downloads/pertuss-surv-report-2015-provisional.pdf>
- <http://www.pkids.org/diseases/pertussis.html>