





Haemophilus Influenzae Invasive Disease Surveillance 2012-2016

Rhode Island Department of Health

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

Center for Acute Infectious Disease Epidemiology

About *Haemophilus Influenzae* Invasive Disease



- *Haemophilus influenzae* bacteria, often called *H. Flu*, can cause many different kinds of infections. When the bacteria invade parts of the body that are normally free from germs, like spinal fluid or blood, this is known as "invasive disease." Invasive disease is usually severe and can sometimes result in death. Only invasive *Haemophilus influenzae* disease is reportable in Rhode Island.
- *H. Flu* is spread through respiratory droplets (coughing or sneezing). Many people carry *Haemophilus influenzae* bacteria in their noses and throats but are not ill.
- Invasive *H. Flu* disease can cause different symptoms depending on which part of the body is infected. The most common types of illness are pneumonia (lung infection), bacteremia (bloodstream infection) and meningitis (infection of the meninges, the membrane that covers the brain and spinal cord).
- Children less than five years of age, adults 65 and older, American Indians, Alaska Natives, and individuals with immunosuppressive conditions are at the highest risk for developing invasive *H. Flu* disease.
- *H. Flu* invasive disease is severe and typically requires hospitalization and antibiotic treatment.
- There are several serotypes of *Haemophilus influenzae*. Serotype b is the only serotype that is vaccine-preventable.



Data Overview, *Haemophilus Influenzae* “*H. Flu*” Invasive Disease

- In 2016, there were 25 cases of *H. Flu* invasive disease in Rhode Island with a rate of 2.4 cases per 100,000 population
- *H. Flu* invasive disease has increased slightly over the last four years in Rhode Island.
- The highest burden of disease in 2016 was among the oldest age group, with those ≥ 80 years of age having the highest rate of 13.6 cases per 100,000 population.
- From 2012 to 2016, most of the *H. Flu* cases in Rhode Island were “nontypeable” (63%).

Reported Cases of *Haemophilus Influenzae* Invasive Disease, Rhode Island, 2012-2016

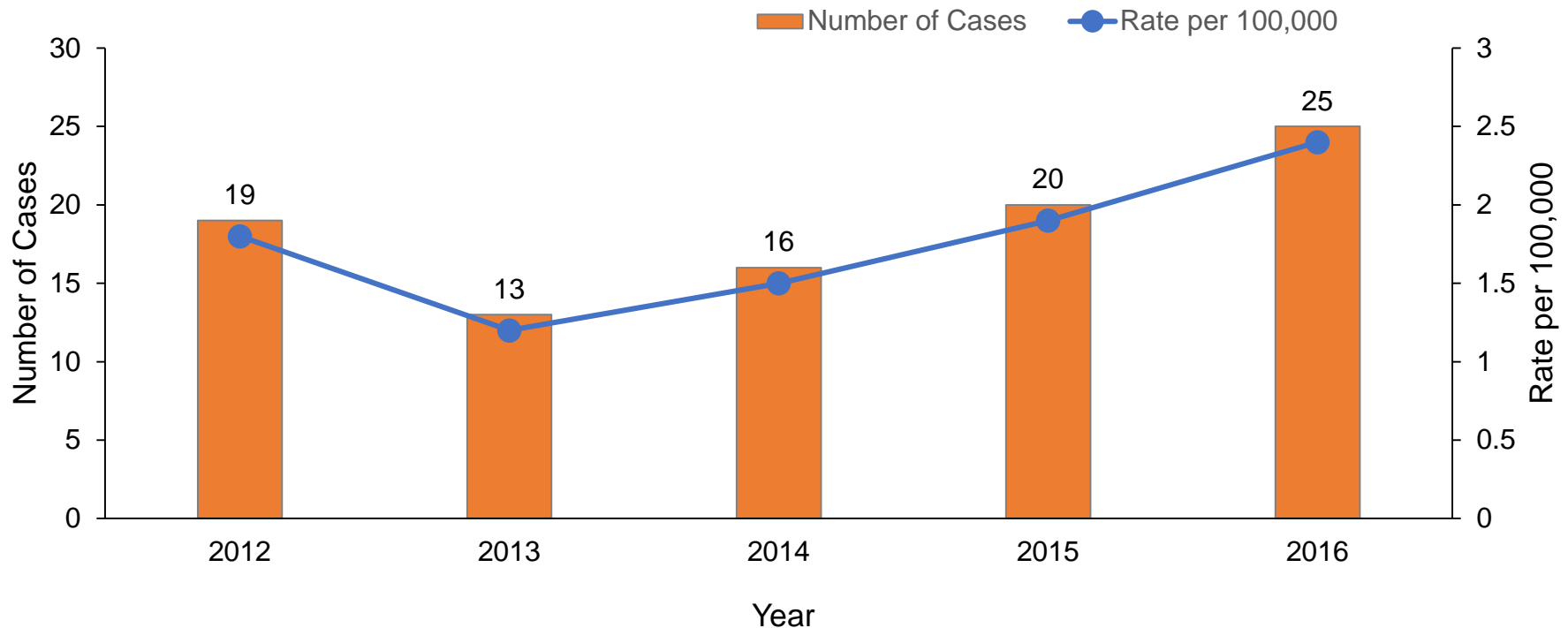


Figure 1: *Haemophilus influenzae* invasive disease is not common in Rhode Island. In 2016, there were 25 cases with a rate of 2.4 cases per 100,000 population. Invasive *H. flu* infections have increased slightly each year in Rhode Island since 2013.

Rate of *Haemophilus Influenzae* Invasive Disease, Age Group, Rhode Island, 2016

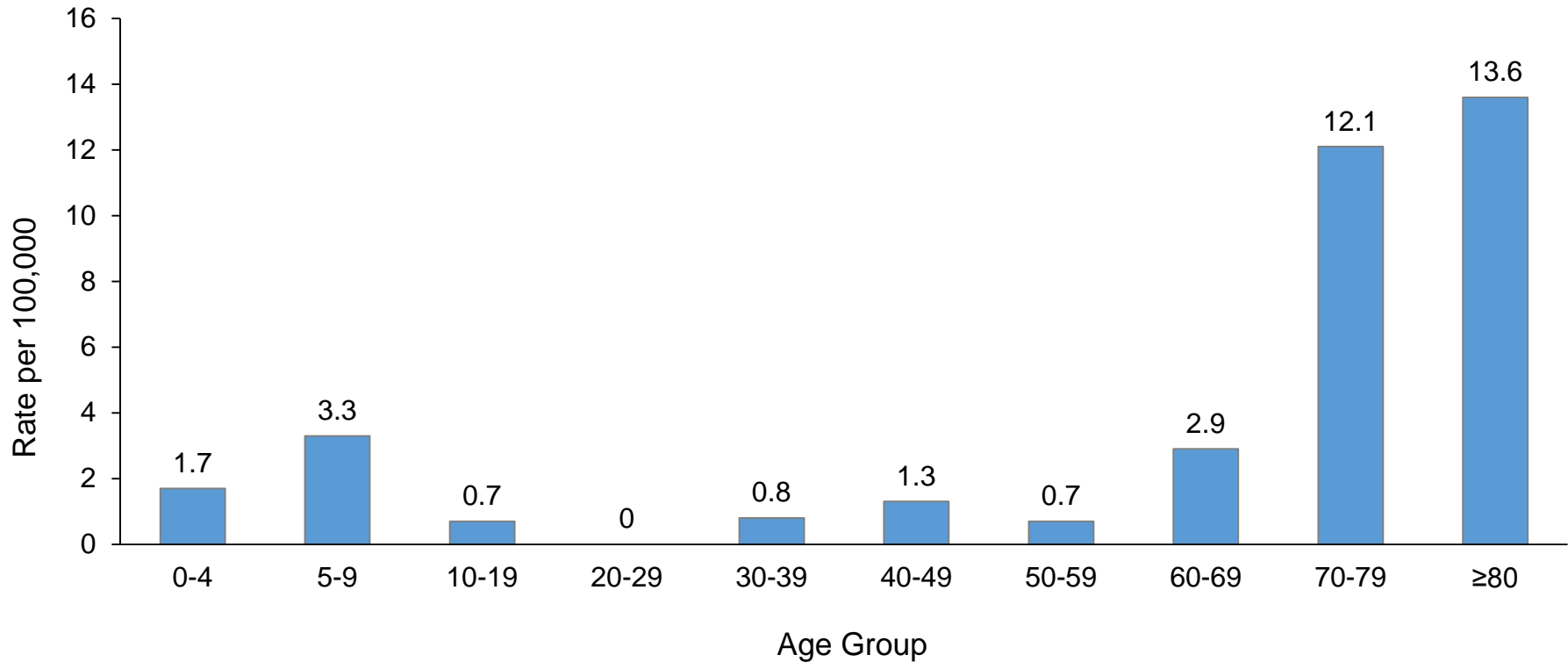


Figure 2: In 2016, those 80 years of age and older had the highest incidence rate of *H. Flu* with 13.6 cases per 100,000 population. In 2016, 68% of all cases were 60 years of age or older. This mirrors the national trend in which the highest rate of disease occurs in those 65 and older and those less than 5 years of age.

Rate of *Haemophilus Influenzae* Invasive Disease, Sex and Year, Rhode Island, 2012-2016

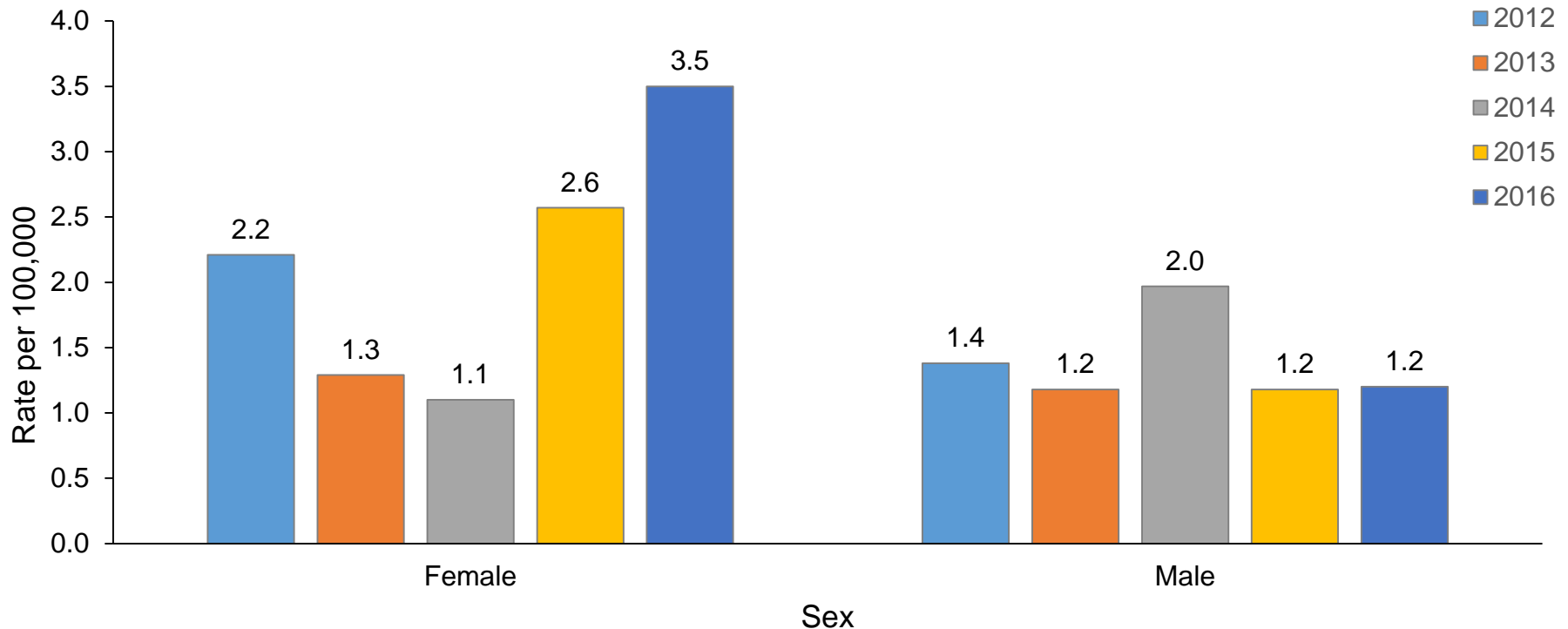


Figure 3: Over the last five years, the incidence rate of *H. flu* infection was slightly higher in females than in males. In 2016, the rate of *H. flu* infection among females was nearly three times the rate of *H. flu* infection in males.

Rate of *Haemophilus Influenzae* Invasive Disease, County and Year, Rhode Island, 2012-2016

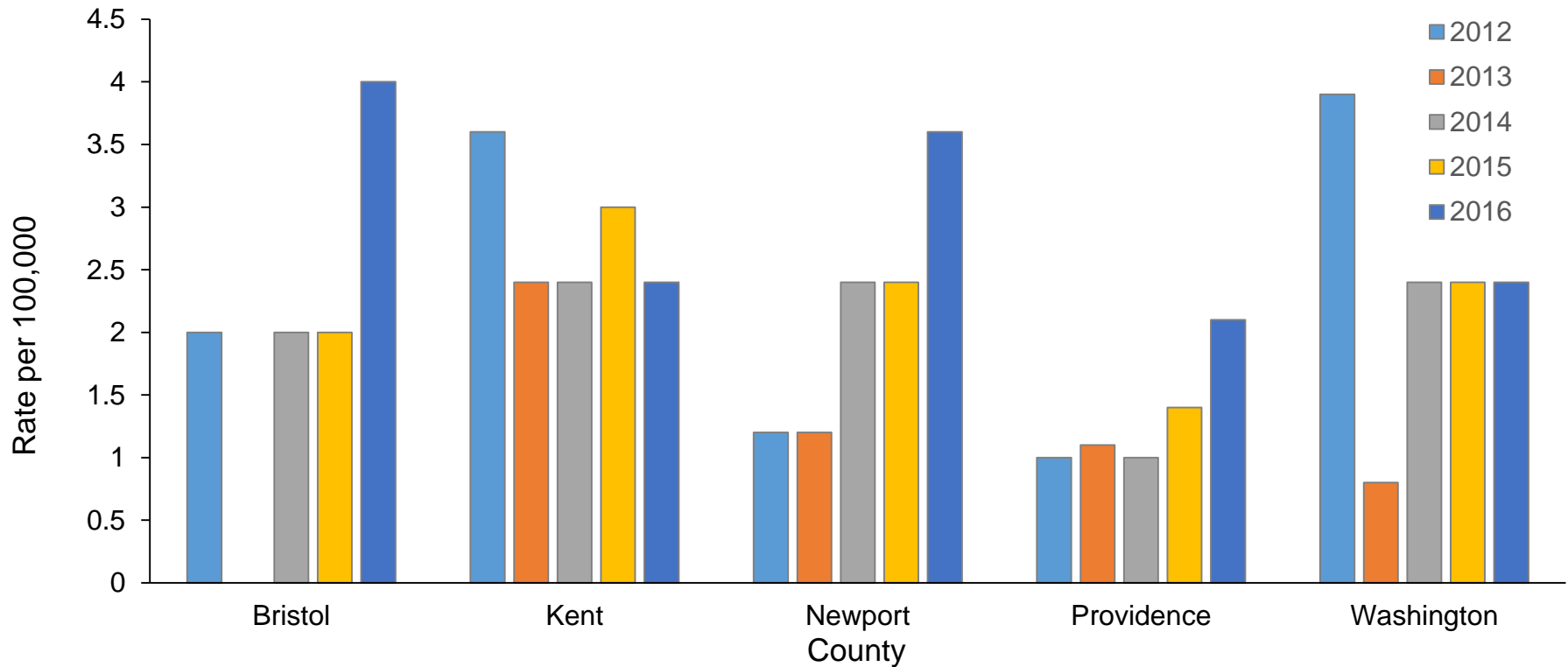


Figure 4: In 2016, the rate of *H. Flu* invasive disease was the highest in Bristol County, with four cases per 100,000 population. Over the last five years, Providence County has had the lowest rates of *H. Flu* invasive disease.

Reported Cases of *Haemophilus Influenzae* Invasive Disease Month and Year, Rhode Island, 2012-2016

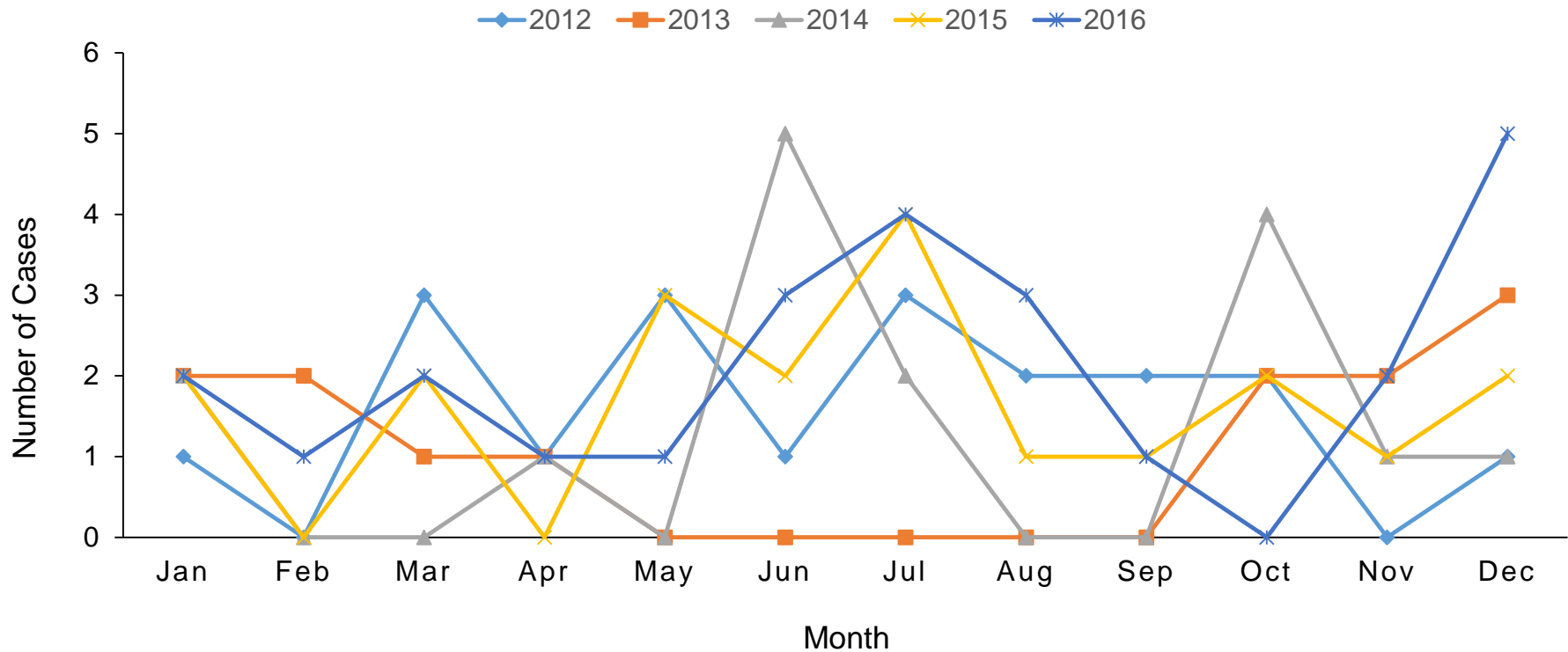


Figure 5: *Haemophilus Influenzae* invasive disease occurs year-round in Rhode Island, with no clear trend in seasonality.

Reported Cases of *Haemophilus Influenzae* Invasive Disease by Serotype, Rhode Island, 2012-2016 Cumulative Cases

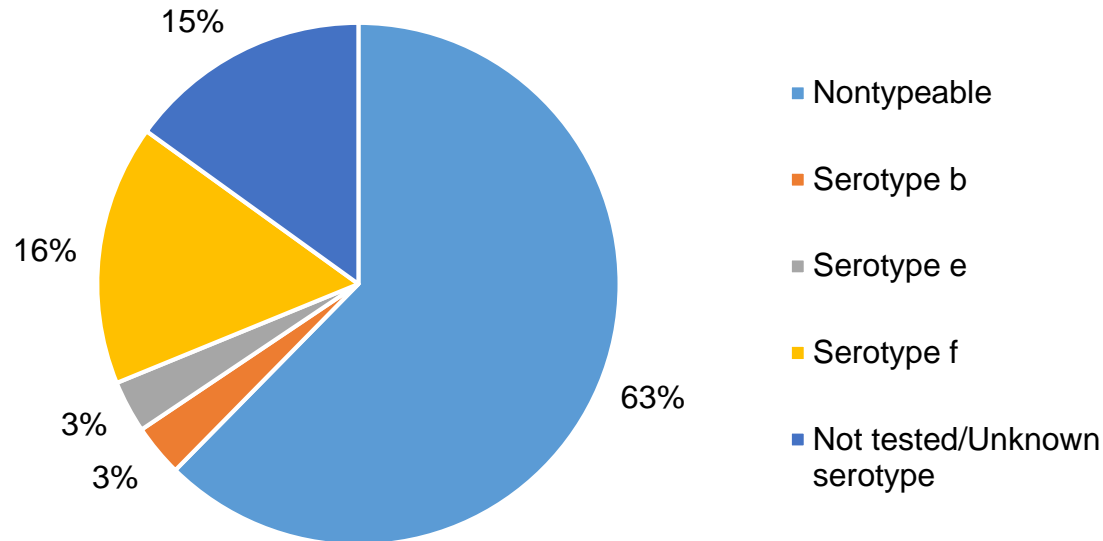


Figure 6: *Haemophilus influenzae* bacteria are classified as either “typeable” or “nontypeable” based on their structure. Of those that are typeable, there are 6 serotypes (letters a-f). Serotype b (more commonly known as “Hib”) is currently the only type of *H. Flu* for which a vaccine exists. From 2012 to 2016, most of the cases in Rhode Island (63%) were “nontypeable” and only 3% were serotype b. This data is similar to the national trend in which nontypeable *H. Flu* is the most common type of infection identified.

***Haemophilus Influenzae* Invasive Disease Frequency and Rates by Year, Rhode Island, 2012-2016**



Table 1. Frequency by Year

	2012	2013	2014	2015	2016
Number of Cases	19	13	16	20	25

Table 2. Rate by Year

	2012	2013	2014	2015	2016
Rate per 100,000	1.8	1.2	1.5	1.9	2.4

Haemophilus Influenzae Invasive Disease Frequency, Age Group and Year, Rhode Island, 2012-2016



Table 3. Frequency by Age Group and Year

	2012	2013	2014	2015	2016
0-4	0	0	2	1	1
5-9	0	0	0	0	2
10-19	1	0	0	0	1
20-29	0	0	2	2	0
30-39	2	1	0	1	1
40-49	0	1	0	0	2
50-59	2	1	1	2	1
60-69	3	6	3	2	3
70-79	5	2	5	4	7
≥80	6	2	3	8	7
Total	19	13	16	20	25

Haemophilus Influenzae Invasive Disease Rates, Age Group and Year, Rhode Island, 2012-2016



Table 4. Rate by Age Group and Year

	2012	2013	2014	2015	2016
0-4	0	0	3.5	1.7	1.7
5-9	0	0	0	0	3.3
10-19	0.7	0	0	0	0.7
20-29	0	0	1.4	1.4	0.0
30-39	1.6	0.8	0	0.8	0.8
40-49	0	0.7	0	0	1.3
50-59	1.3	0.7	0.7	1.3	0.7
60-69	2.9	5.8	2.9	2.0	2.9
70-79	8.7	3.5	8.7	6.9	12.1
≥80	11.7	3.9	5.8	15.6	13.6

Haemophilus Influenzae Invasive Disease Frequency and Rates, Sex and Year, Rhode Island, 2012-2016



Table 5. Frequency by Sex and Year

	2012	2013	2014	2015	2016
Female	12	7	6	14	19
Male	7	6	10	6	6
Total	19	13	16	20	25

Table 6. Rate by Sex and Year

	2012	2013	2014	2015	2016
Female	2.2	1.3	1.1	2.6	3.5
Male	1.4	1.2	2.0	1.2	1.2

***Haemophilus Influenzae* Invasive Disease Frequency, County and Year, Rhode Island, 2012-2016**



Table 7. Frequency by County and Year

	2012	2013	2014	2015	2016
Bristol	1	0	1	1	2
Kent	6	4	4	5	4
Newport	1	1	2	2	3
Providence	6	7	6	9	13
Washington	5	1	3	3	3
All	19	13	16	20	25

***Haemophilus Influenzae* Invasive Disease Rates by County and Year, Rhode Island, 2012-2016**



Table 8. Rate by County and Year

	2012	2013	2014	2015	2016
Bristol	2.0	0.0	2.0	2.0	4.0
Kent	3.6	2.4	2.4	3.0	2.4
Newport	1.2	1.2	2.4	2.4	3.6
Providence	1.0	1.1	1.0	1.4	2.1
Washington	3.9	0.8	2.4	2.4	2.4

Haemophilus Influenzae Invasive Disease Frequency, Month and Year, Rhode Island, 2012-2016



Table 9. Frequency by Month and Year

	2012	2013	2014	2015	2016
Jan	1	2	2	2	2
Feb	0	2	0	0	1
Mar	3	1	0	2	2
Apr	1	1	1	0	1
May	3	0	0	3	1
Jun	1	0	5	2	3
Jul	3	0	2	4	4
Aug	2	0	0	1	3
Sep	2	0	0	1	1
Oct	2	2	4	2	0
Nov	0	2	1	1	2
Dec	1	3	1	2	5
All	19	13	16	20	25



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. The population denominator is based on 2010 US Census Population.



References

- <https://www.cdc.gov/hi-disease/index.html>
- <https://www.cdc.gov/abcs/reports-findings/surv-reports.html>