





# ***Haemophilus Influenzae Invasive Disease Surveillance 2011-2015***

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



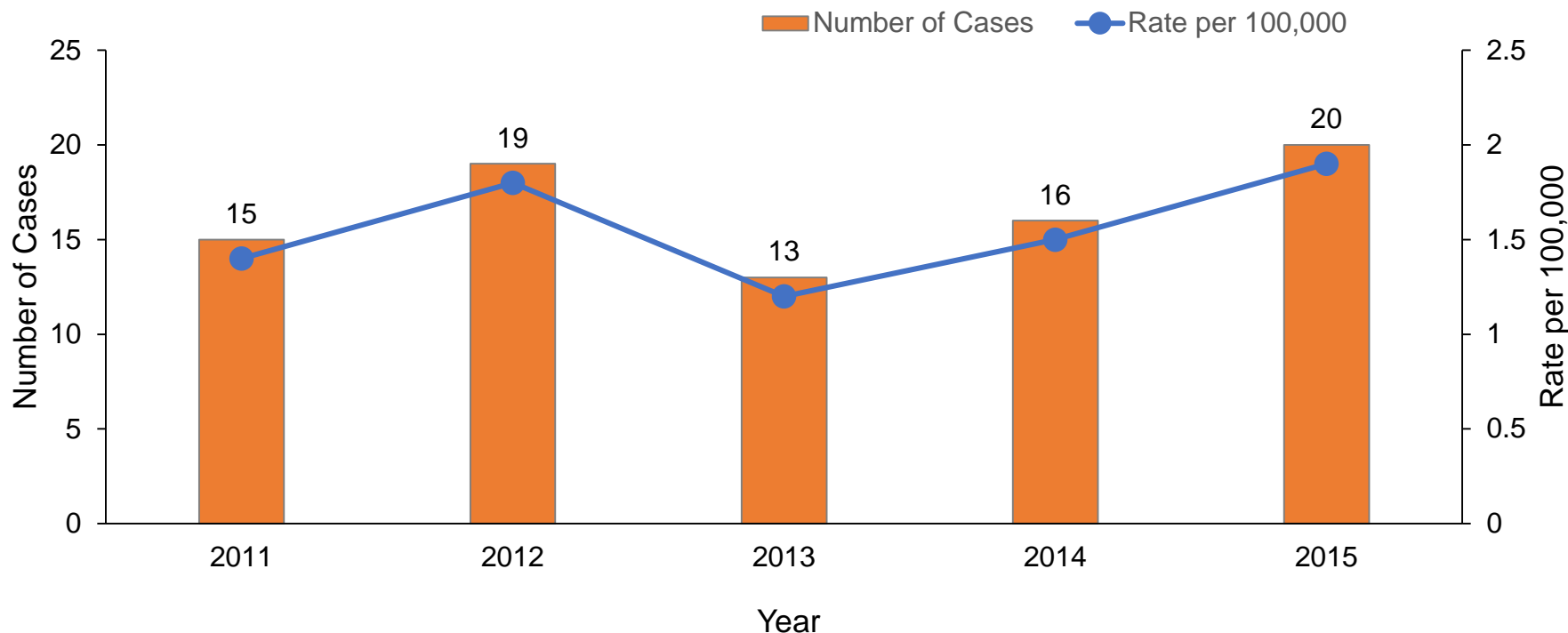
- *Haemophilus influenzae* bacteria, often called *H. Flu*, can cause many different kinds of infections. When the bacteria invade parts of the body that are normally free from germs, such as spinal fluid or blood, this is known as "invasive disease." Invasive disease is usually severe and can sometimes 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 under five years of age, adults 65 year of age 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 (HiB) is the only serotype that is vaccine-preventable.



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

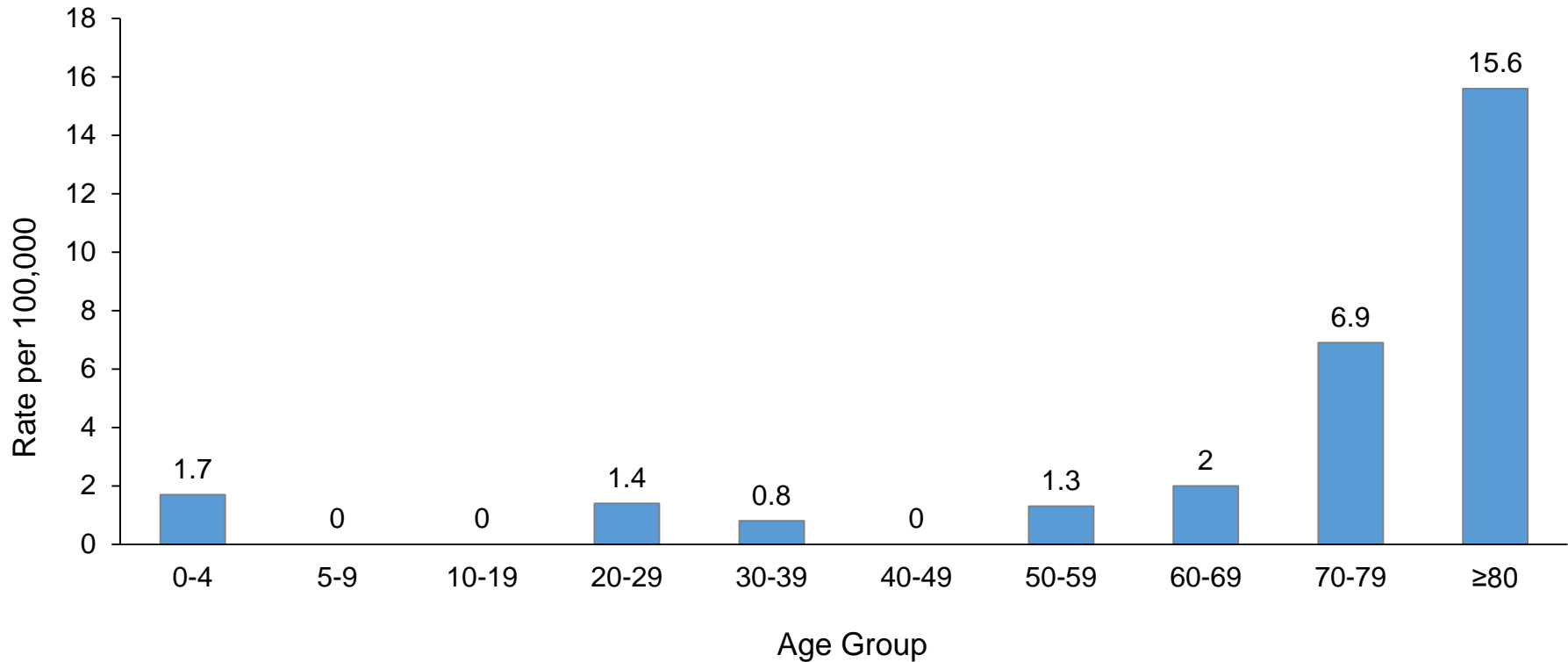
- In 2015, there were 20 cases of *H. Flu* invasive disease reports in Rhode Island with a rate of 1.9 cases per 100,000 population.
- *H. Flu* invasive disease has increased slightly over the last three years in Rhode Island.
- The highest burden of disease in 2015 was among the oldest age group, with those  $\geq 80$  years of age having a rate of 15.6 cases per 100,000 population.
- The 5-year average incidence rates of disease are similar in females and males (1.7 cases per 100,000 population in females, and 1.5 cases per 100,000 population in males).
- From 2011 to 2015, most of the *H. Flu* cases in RI were “nontypeable” (54%).

# Reported Cases of *Haemophilus Influenzae* Invasive Disease, Rhode Island, 2011-2015



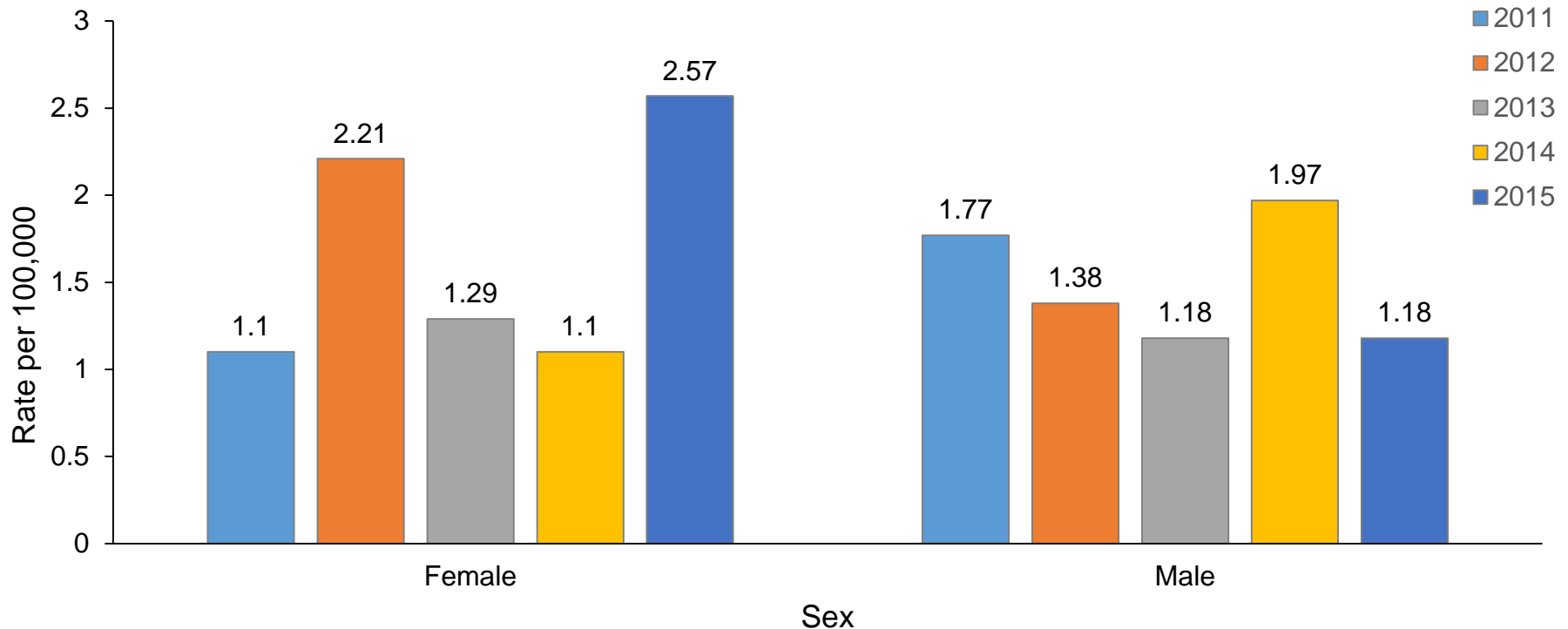
**Figure 1:** *Haemophilus influenzae* invasive disease is not common in RI. In 2015, there were 20 cases with a rate of 1.9 cases per 100,000 population. This is a small increase from 2014 (16 cases).

# Rate of *Haemophilus Influenzae* Invasive Disease, Age Group, Rhode Island, 2015



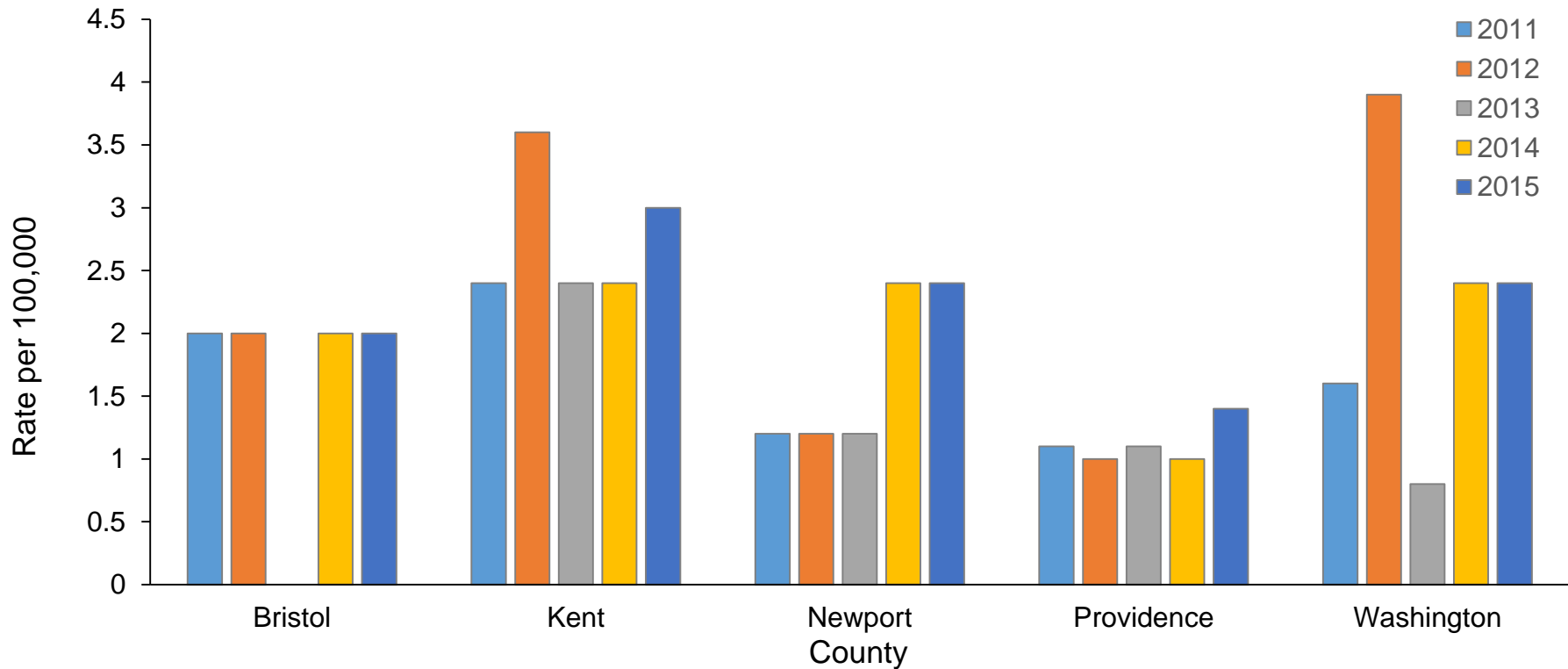
**Figure 2:** In 2015, those 80 years of age and older had the highest incidence rate of *H. Flu* with 15.9 cases per 100,000 population. Seventy percent of all cases in RI in 2015 were 60 years of age or older. This mirrors the national trend in which the highest rate of disease occurs in those  $\geq 65$  years of age and those  $< 5$  years of age.

# Rate of *Haemophilus Influenzae* Invasive Disease, Sex and Year, Rhode Island, 2011-2015



**Figure 3:** The relative incidence rates of reported *H. Flu* infections in males and females appear to differ by sex each year, without a discernable trend. However, the 5-year average incidence rates in males and females from 2011-2015 demonstrate little overall difference by sex — 1.7 cases per 100,000 population in females, and 1.5 cases per 100,000 population in males.

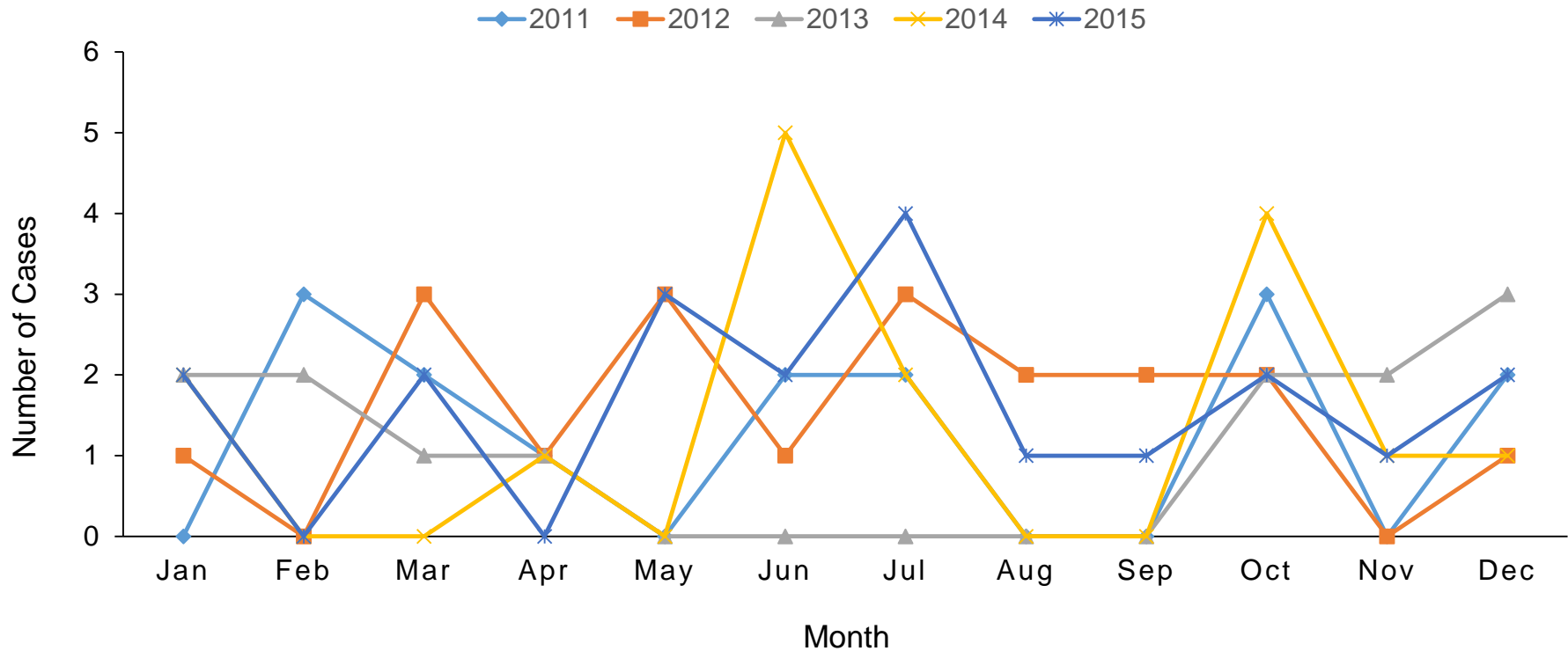
# Rate of *Haemophilus Influenzae* Invasive Disease, County and Year, Rhode Island, 2011-2015



**Figure 4:** In 2015, the rate of *H. Flu* invasive disease was the highest in Kent County, with 3 cases per 100,000 population. The rates of *H. Flu* invasive disease were fairly similar among all 5 Rhode Island counties in 2015.

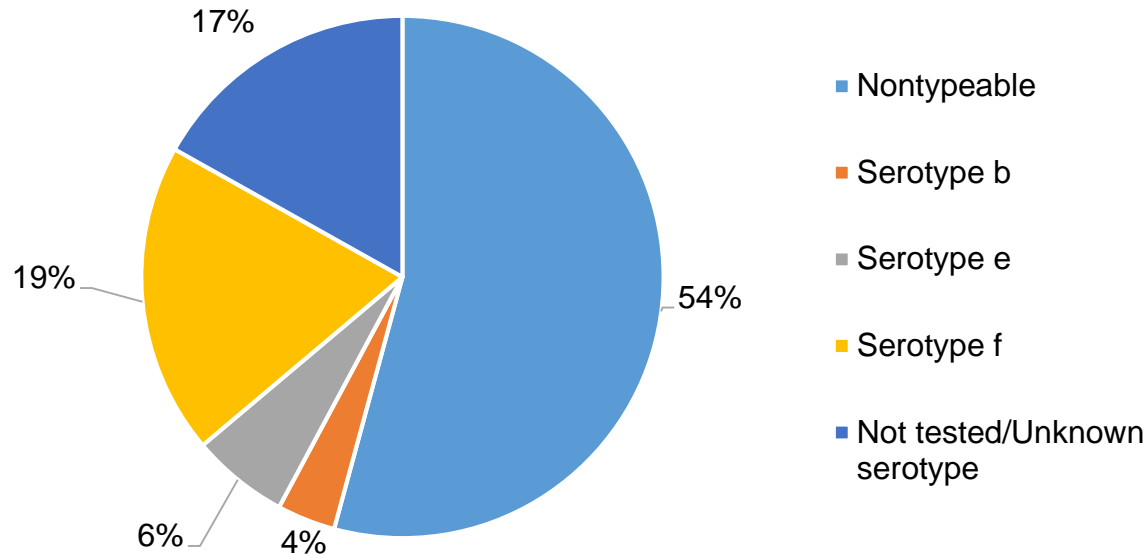


# Reported Cases of *Haemophilus Influenzae* Invasive Disease Month and Year, Rhode Island, 2011-2015



**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, 2011-2015 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 2011 to 2015, most of the cases in RI (54%) were “nontypeable” and only 4% 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, 2011-2015**



**Table 1. Frequency by Year**

	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
<b>Number of Cases</b>	15	19	13	16	20

**Table 2. Rate by Year**

	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
<b>Rate per 100,000</b>	1.4	1.8	1.2	1.5	1.9

# *Haemophilus Influenzae* Invasive Disease Frequency, Age Group and Year, Rhode Island, 2011-2015



**Table 3. Frequency by Age Group and Year**

	2011	2012	2013	2014	2015
<b>0-4</b>	0	0	0	2	1
<b>5-9</b>	0	0	0	0	0
<b>10-19</b>	0	1	0	0	0
<b>20-29</b>	1	0	0	2	2
<b>30-39</b>	0	2	1	0	1
<b>40-49</b>	0	0	1	0	0
<b>50-59</b>	1	2	1	1	2
<b>60-69</b>	1	3	6	3	2
<b>70-79</b>	6	5	2	5	4
<b>≥80</b>	6	6	2	3	8
<b>Total</b>	15	19	13	16	20

# ***Haemophilus Influenzae* Invasive Disease Rates, Age Group and Year, Rhode Island, 2011-2015**



**Table 4. Rate by Age Group and Year**

	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
<b>0-4</b>	0	0	0	3.5	1.7
<b>5-9</b>	0	0	0	0	0
<b>10-19</b>	0	0.7	0	0	0
<b>20-29</b>	0.7	0	0	1.4	1.4
<b>30-39</b>	0	1.6	0.8	0	0.8
<b>40-49</b>	0	0	0.7	0	0
<b>50-59</b>	0.7	1.3	0.7	0.7	1.3
<b>60-69</b>	1	2.9	5.8	2.9	2
<b>70-79</b>	10.4	8.7	3.5	8.7	6.9
<b>≥80</b>	11.7	11.7	3.9	5.8	15.6

# *Haemophilus Influenzae* Invasive Disease Frequency and Rates, Sex and Year, Rhode Island, 2011-2015



**Table 5. Frequency by Sex and Year**

	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
<b>Female</b>	6	12	7	6	14
<b>Male</b>	9	7	6	10	6
<b>Total</b>	15	19	13	16	20

**Table 6. Rate by Sex and Year**

	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
<b>Female</b>	1.1	2.2	1.3	1.1	2.6
<b>Male</b>	1.8	1.4	1.2	2.0	1.2

# ***Haemophilus Influenzae* Invasive Disease Frequency, County and Year, Rhode Island, 2011-2015**



**Table 7. Frequency by County and Year**

	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
<b>Bristol</b>	1	1	0	1	1
<b>Kent</b>	4	6	4	4	5
<b>Newport</b>	1	1	1	2	2
<b>Providence</b>	7	6	7	6	9
<b>Washington</b>	2	5	1	3	3
<b>All</b>	15	19	13	16	20

# ***Haemophilus Influenzae* Invasive Disease Rates by County and Year, Rhode Island, 2011-2015**



**Table 8. Rate by County and Year**

	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
<b>Bristol</b>	2.0	2.0	0.0	2.0	2.0
<b>Kent</b>	2.4	3.6	2.4	2.4	3.0
<b>Newport</b>	1.2	1.2	1.2	2.4	2.4
<b>Providence</b>	1.1	1.0	1.1	1.0	1.4
<b>Washington</b>	1.6	3.9	0.8	2.4	2.4



# *Haemophilus Influenzae* Invasive Disease Frequency, Month and Year, Rhode Island, 2011-2015



**Table 9. Frequency by Month and Year**

	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
<b>Jan</b>	0	1	2	2	2
<b>Feb</b>	3	0	2	0	0
<b>Mar</b>	2	3	1	0	2
<b>Apr</b>	1	1	1	1	0
<b>May</b>	0	3	0	0	3
<b>Jun</b>	2	1	0	5	2
<b>Jul</b>	2	3	0	2	4
<b>Aug</b>	0	2	0	0	1
<b>Sep</b>	0	2	0	0	1
<b>Oct</b>	3	2	2	4	2
<b>Nov</b>	0	0	2	1	1
<b>Dec</b>	2	1	3	1	2
<b>All</b>	15	19	13	16	20



# 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>