





Shiga Toxin-Producing E. coli (STEC) 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 STEC

- Shiga-toxin E. coli (STEC) is an infection caused by certain strains of E. coli bacteria that produce a toxin.
- STEC can be contracted through the fecal-oral route, through ingesting contaminated food or water, and through contact with animals.
- Symptoms of STEC often include severe stomach cramps, diarrhea (often bloody), and vomiting. If there is fever, it usually is not very high (less than 101°F).
- Symptoms begin 1-10 days (typically 3-4 days) after exposure, and most people feel better within 5-7 days. Some infections are very mild, but others are severe or even life-threatening.
- There are approximately 265,000 cases of STEC infections each year in the United States.



Data Overview, STEC

- In 2015, there were 9 cases of STEC reported in Rhode Island for a rate of 0.9 cases per 100,000 people.
- The rate of STEC in 2015 was higher than rates reported during 2011-2014, however rates of STEC in Rhode Island have been below the national average during all of these years.
- Consistent with national-level data, the highest rate of STEC was observed among children <5 years old, and reports of STEC peaked during the summer and early fall months.
- Rhode Island has low case counts of STEC infection. In order to ensure patient privacy, data from 2011-2015 have been combined or averaged for analysis by age group, sex, county, and month of infection.

Reported Cases of STEC, Rhode Island, 2011-2015

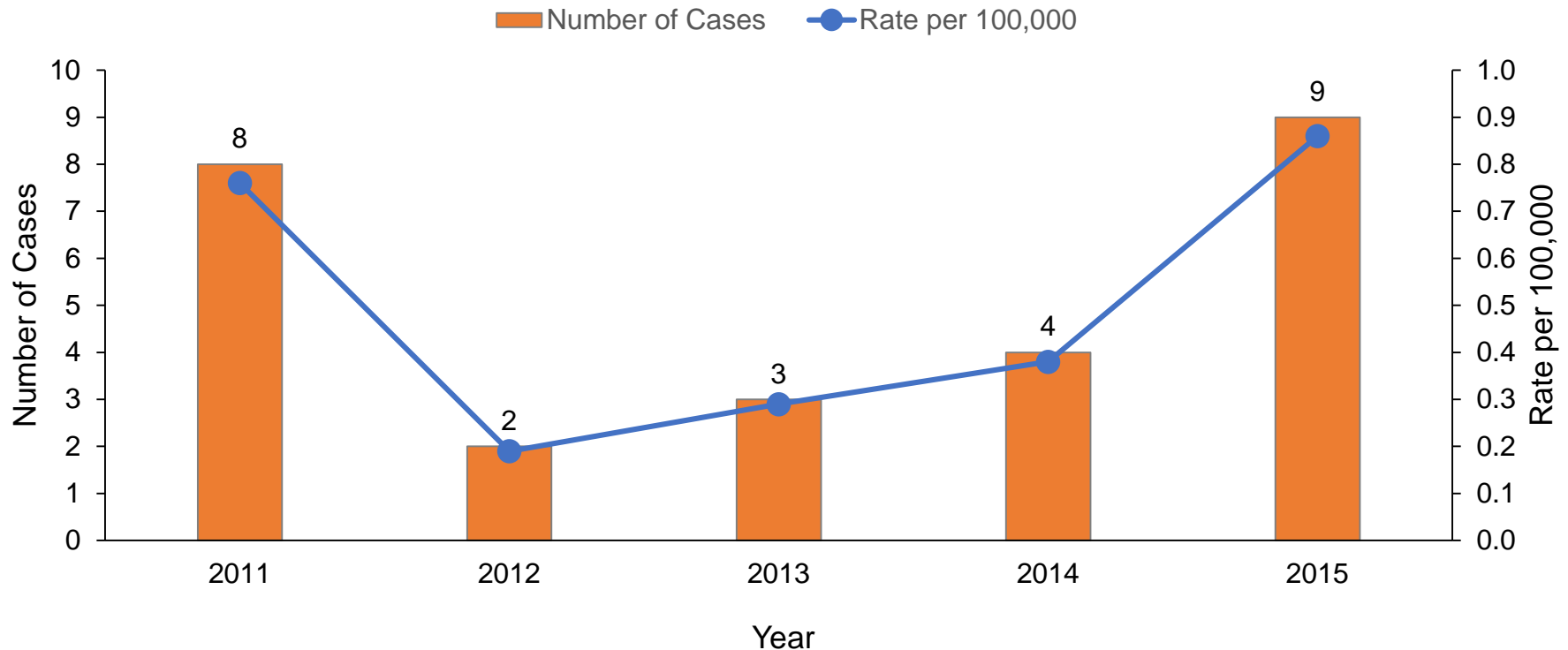


Figure 1: The rate of STEC reported in Rhode Island in 2015 was higher than rates reported in the 4 prior years and much higher compared to 2012-2014 rates. However, from 2011 through 2015, Rhode Island's incidence rate of STEC was below the national incidence rate. Over these years, the rate of STEC ranged from 2.0-2.6 cases per 100,000 people nationally, while Rhode Island's rate has ranged from 0.2-0.9 cases per 100,000 people.

5-Year Average Rate of STEC, by Age Group, Rhode Island, 2011-2015

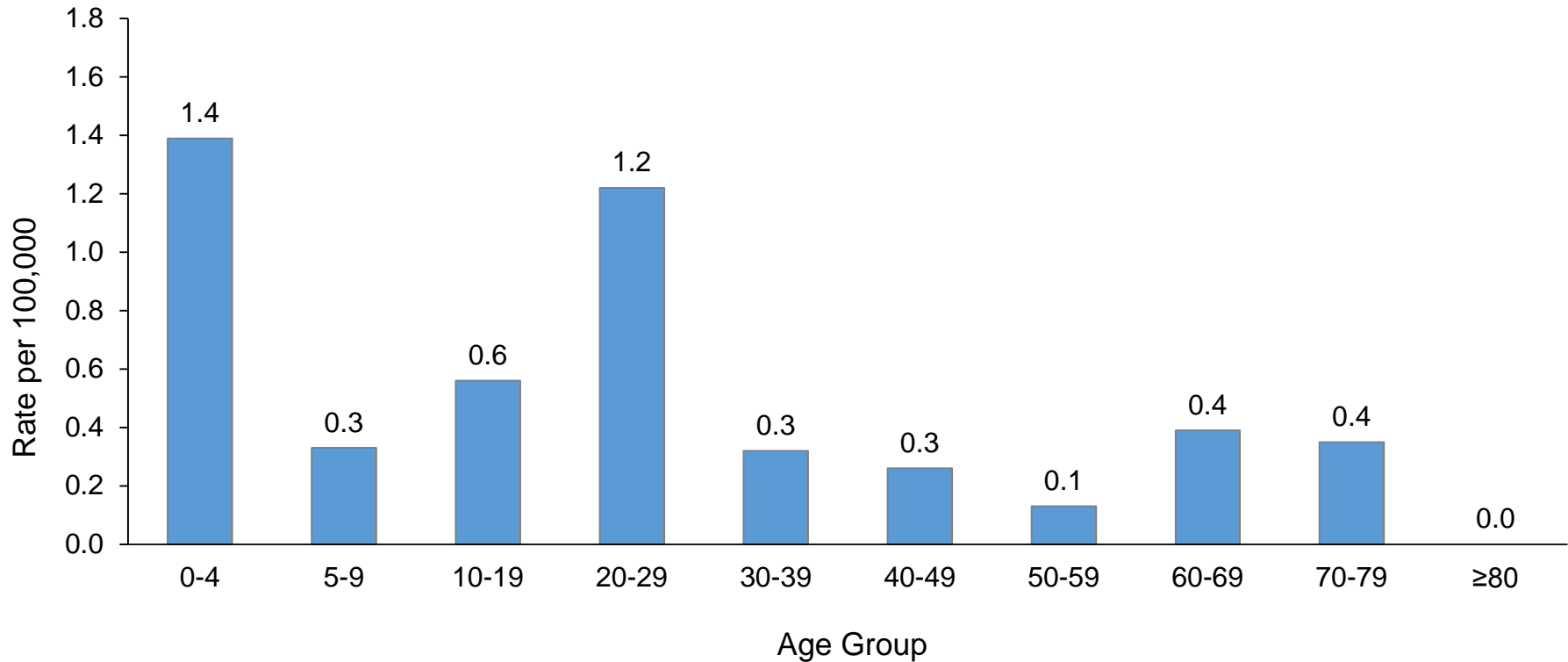


Figure 2: From 2011-2015, the highest incidence rate of STEC in Rhode Island was observed among children less than 5 years old. This age group also had the highest incidence rate nationally in 2015.

5-Year Average Rate of STEC, by Gender, Rhode Island, 2011-2015

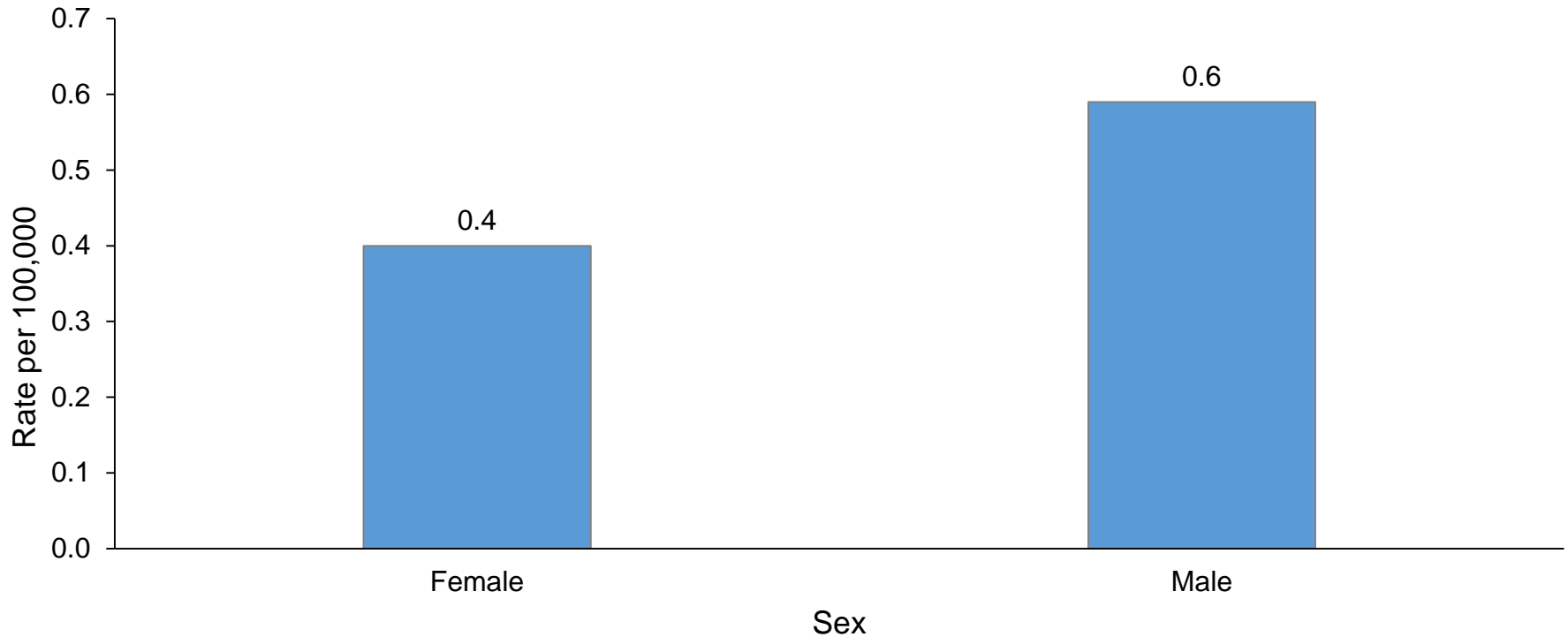


Figure 3. Between 2011-2015, the incidence rate of STEC in Rhode Island was slightly higher for males compared to females. This is in contrast to national-level data where the rate of STEC has been observed to be higher in females compared to males.

5-Year Average Rate of STEC, by County, Rhode Island, 2011-2015

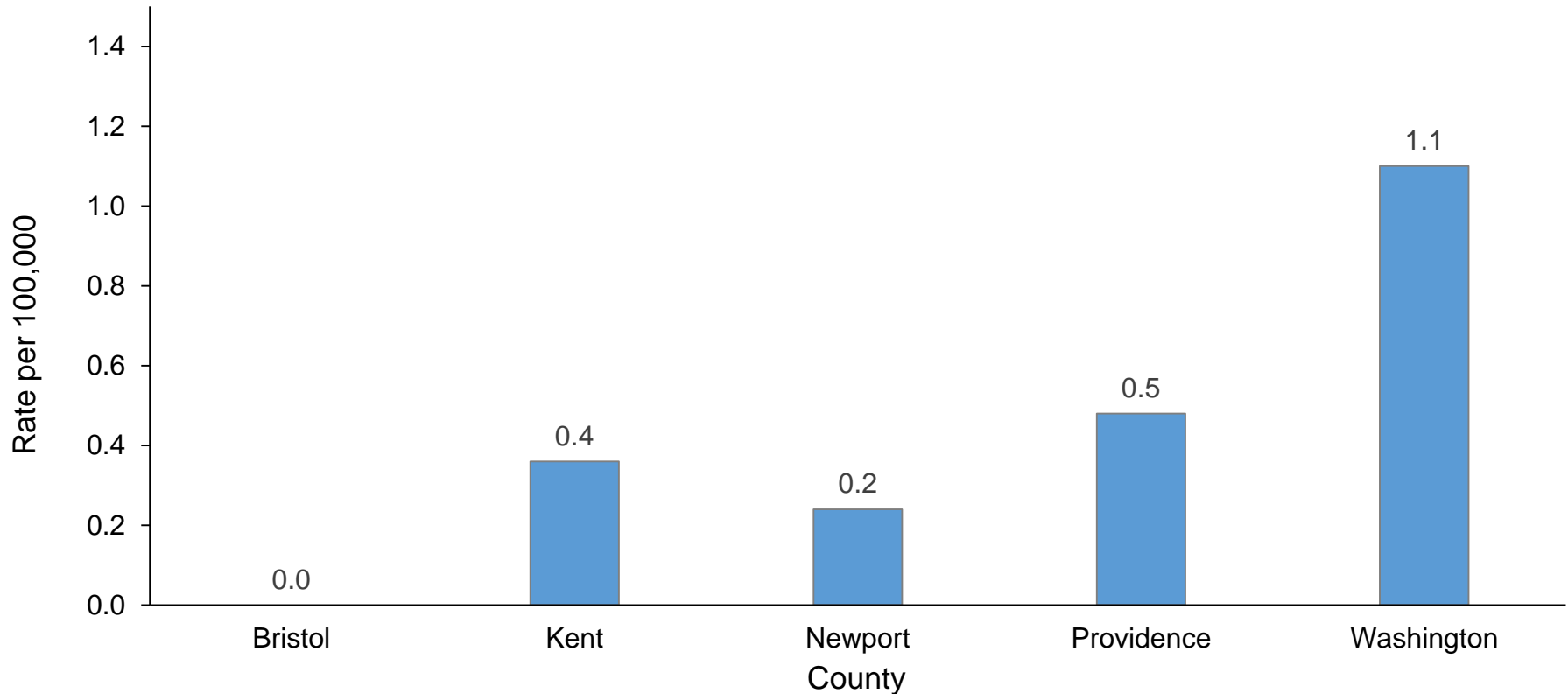


Figure 4: From 2011-2015, Washington County had the highest reported rate of STEC (1.1 cases per 100,000 people), followed by Providence County (0.5 cases per 100,000 people). No cases were reported in Bristol County over this time period.

Cumulative 5-Year Cases of STEC, by Month, Rhode Island, 2011-2015

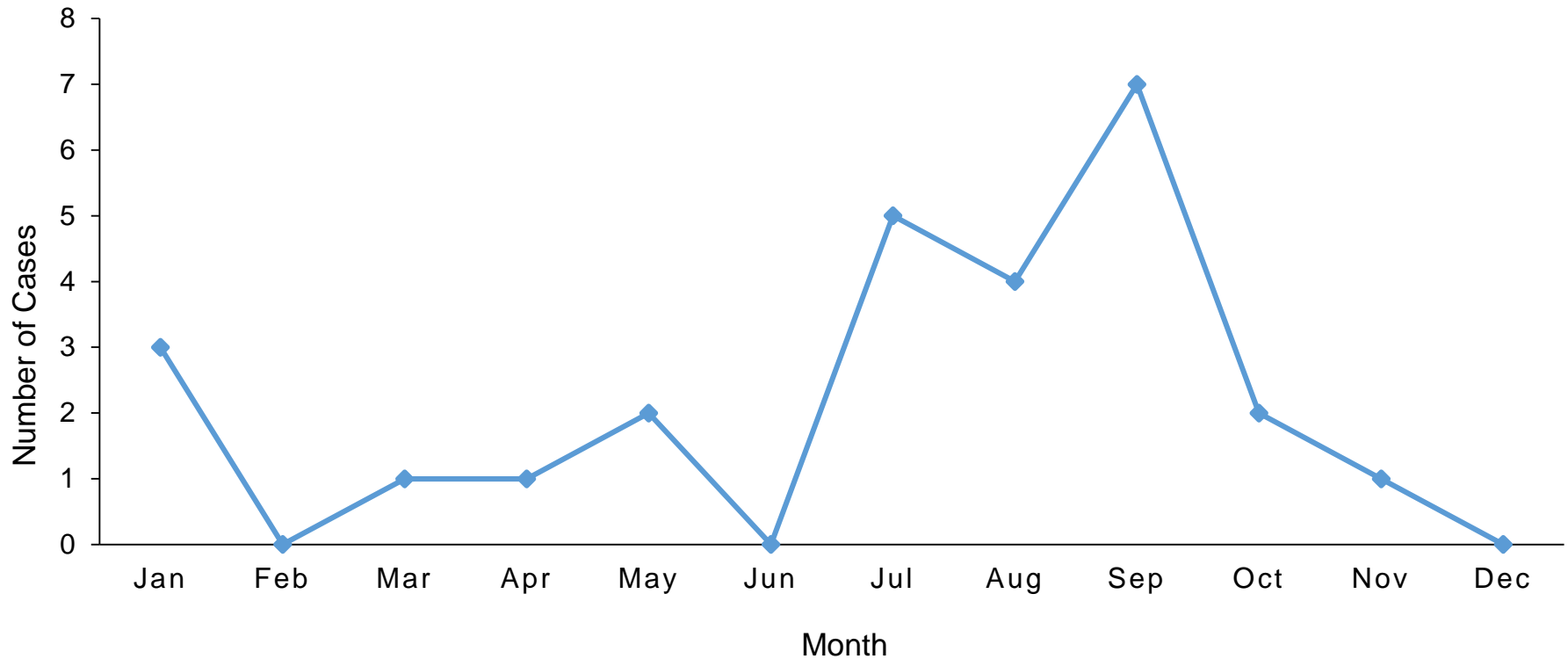


Figure 5: When the five-year period 2011-2015 is analyzed cumulatively, reported STEC cases peak during the summer and early fall. This seasonal trend is also observed nationally.

STEC Frequency and Rates by Year, Rhode Island, 2011-2015



Table 1. Frequency by Year

	2011	2012	2013	2014	2015
Number of Cases	8	2	3	4	9

Table 2. Rate by Year

	2011	2012	2013	2014	2015
Rate per 100,000	0.8	0.2	0.3	0.4	0.9

5-Year Cumulative STEC Frequency, by Age Group, Rhode Island, 2011-2015



Table 3. 5-Year Cumulative Frequency by Age Group

	2011-2015
0-4	4
5-9	1
10-19	4
20-29	9
30-39	2
40-49	2
50-59	1
60-69	2
70-79	1
≥80	0

5-Year Average STEC Rates, by Age Group, Rhode Island, 2011-2015



Table 4. 5-Year Average Rate by Age Group	
	2011-2015
0-4	1.4
5-9	0.3
10-19	0.6
20-29	1.2
30-39	0.3
40-49	0.3
50-59	0.1
60-69	0.4
70-79	0.4
≥80	0.0

5-Year Cumulative STEC Frequency and Average Rates, by Gender, Rhode Island, 2011-2015



Table 5. 5-Year Cumulative Frequency by Sex

	2011-2015
Female	11
Male	15
Total	26

Table 6. 5-Year Average Rate by Sex

	2011-2015
Female	0.4
Male	0.6

5-Year Cumulative STEC Frequency, by County, Rhode Island, 2011-2015



Table 7. 5-Year Cumulative Frequency by County

	2011-2015
Bristol	0
Kent	3
Newport	1
Providence	15
Washington	7
All	26

5-Year Average STEC Rates, by County, Rhode Island, 2011-2015



Table 7. 5-Year Average Rate by County	
	2011-2015
Bristol	0.0
Kent	0.4
Newport	0.2
Providence	0.5
Washington	1.1

5-Year Cumulative STEC Frequency, by Month, Rhode Island, 2011-2015



Table 9. 5-Year Cumulative Frequency by Month

	2011-2015
Jan	3
Feb	0
Mar	1
Apr	1
May	2
Jun	0
Jul	5
Aug	4
Sep	7
Oct	2
Nov	1
Dec	0
All	26

STEC Serotype Frequency, by Year, Rhode Island, 2011-2015



Table 10. Frequency of Serotypes	Year				
	2011	2012	2013	2014	2015
O26	0	1	0	0	3
O45	1	0	0	0	0
O77	0	0	1	0	0
O103	1	0	0	0	1
O111	1	0	0	0	0
O121	0	0	1	0	0
O134	1	0	0	0	0
O157:H7	1	1	1	3	1
O157:NM	0	0	0	0	1
Non O157:H7, Serogroup Unknown	3	0	0	1	2
Unknown	0	0	0	0	1
Total	8	2	3	4	9



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/ecoli/general/index.html>
- <http://www.cdc.gov/foodnet/reports/index.html>