
RHODE ISLAND
DEPARTMENT OF HEALTH

Salmonella 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 Salmonella

- Salmonella is a bacterial infection that causes diarrhea, fever, and abdominal cramps 12-72 hours following infection.
- Salmonella is transmitted through the fecal-oral route, and infection can be caused by consumption of contaminated food or the handling of infected animals such as reptiles, amphibians, and poultry. Human-to-human transmission is also possible through the fecal-oral route.
- Most cases of salmonella resolve in 4-7 days without treatment.
- The elderly, infants, and those with compromised immune systems are at higher risk for severe illness.
- Salmonella infections can be prevented by cooking poultry, ground beef, and eggs thoroughly, and by avoiding cross-contamination between raw meat/eggs and cooked foods.
- Washing hands after contact with reptiles and birds can prevent human infection, as many of these animals carry Salmonella in their gastrointestinal tracts.

Data Overview, Salmonella

- In 2015, there were 144 cases of salmonella infection in RI, with a rate of 13.7 cases per 100,000 population.

- Rates of Salmonella have remained fairly stable over time in Rhode Island.

- In 2015, there was an outbreak of salmonella among participants in a mud volleyball tournament at a university. This outbreak caused increased rates of salmonella infection in individuals 20-29 years of age and in individuals living in Bristol County.

Reported Cases of Salmonella, Rhode Island, 2011-2015

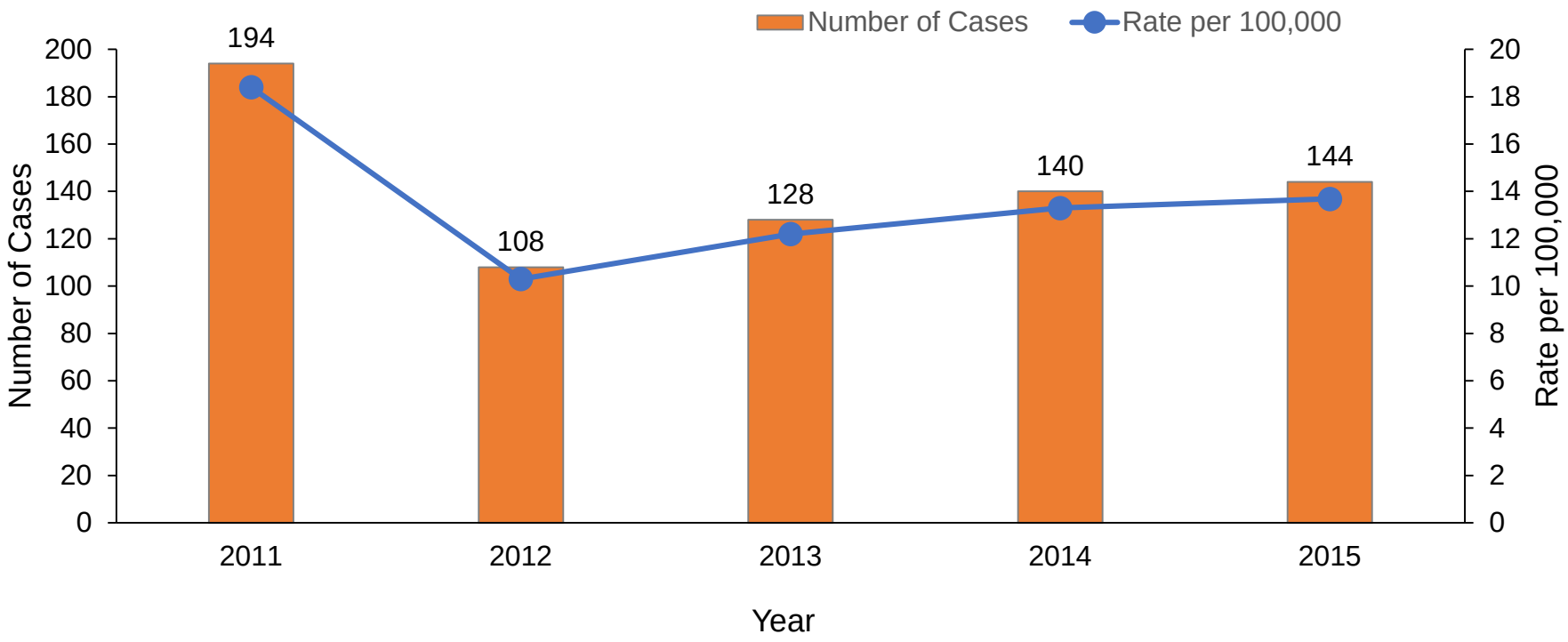

Figure 1: In 2015, there were 144 cases of salmonella infection in RI, with a rate of 13.7 cases per 100,000 population. Salmonella in Rhode Island has remained fairly stable over time, with a peak in 2011 due to an 83-person outbreak associated with zeppoles.

Rate of Salmonella, by Age Group, Rhode Island, 2015

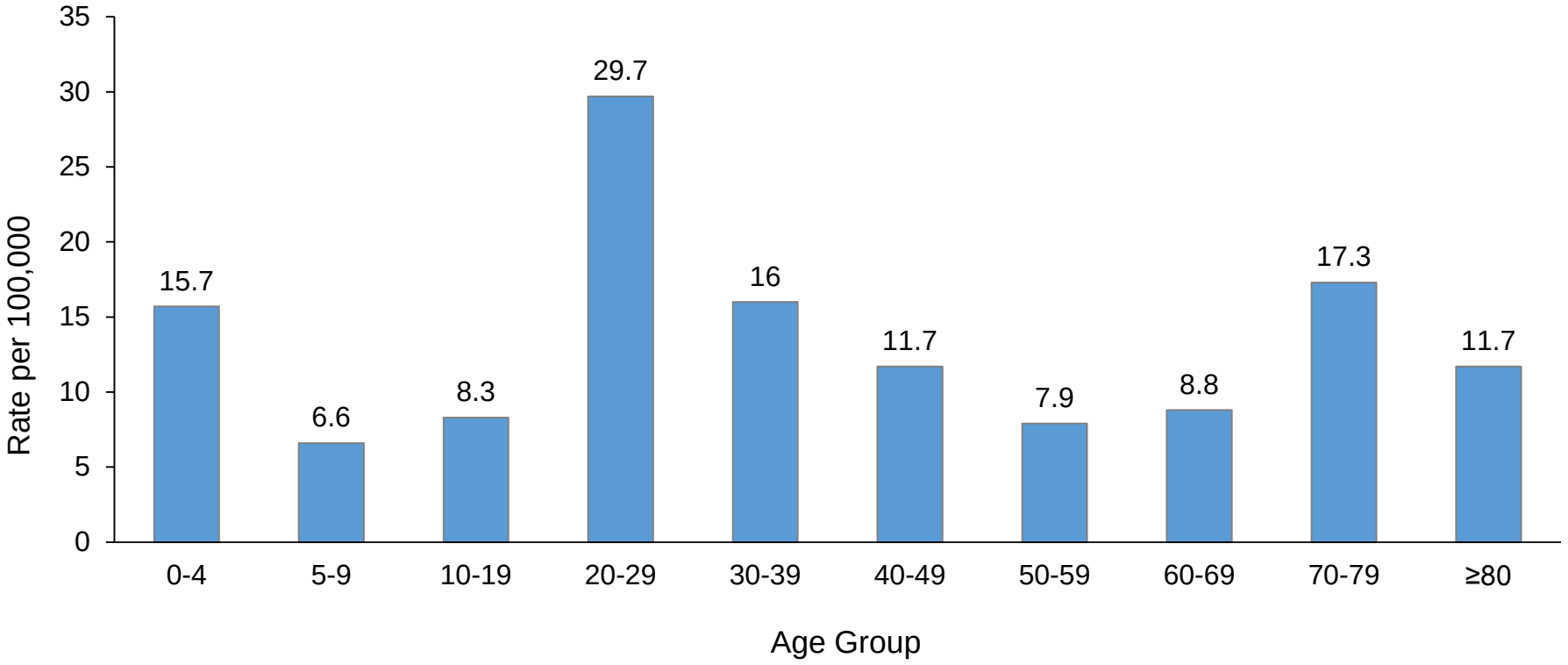

Figure 2: Typically, children under the age of five have the highest rates of salmonella both nationally and in Rhode Island. However, in 2015 in Rhode Island, young adults between 20 and 29 years of age had the highest rates of salmonella at 29.7 cases per 100,000 population. Of the 44 cases of salmonella in this age group, 19 cases were associated with a mud volleyball tournament at a university. This outbreak among college-aged individuals increased the rate of salmonella in this age group in 2015.

Rate of Salmonella, by Sex and Year, Rhode Island, 2011-2015

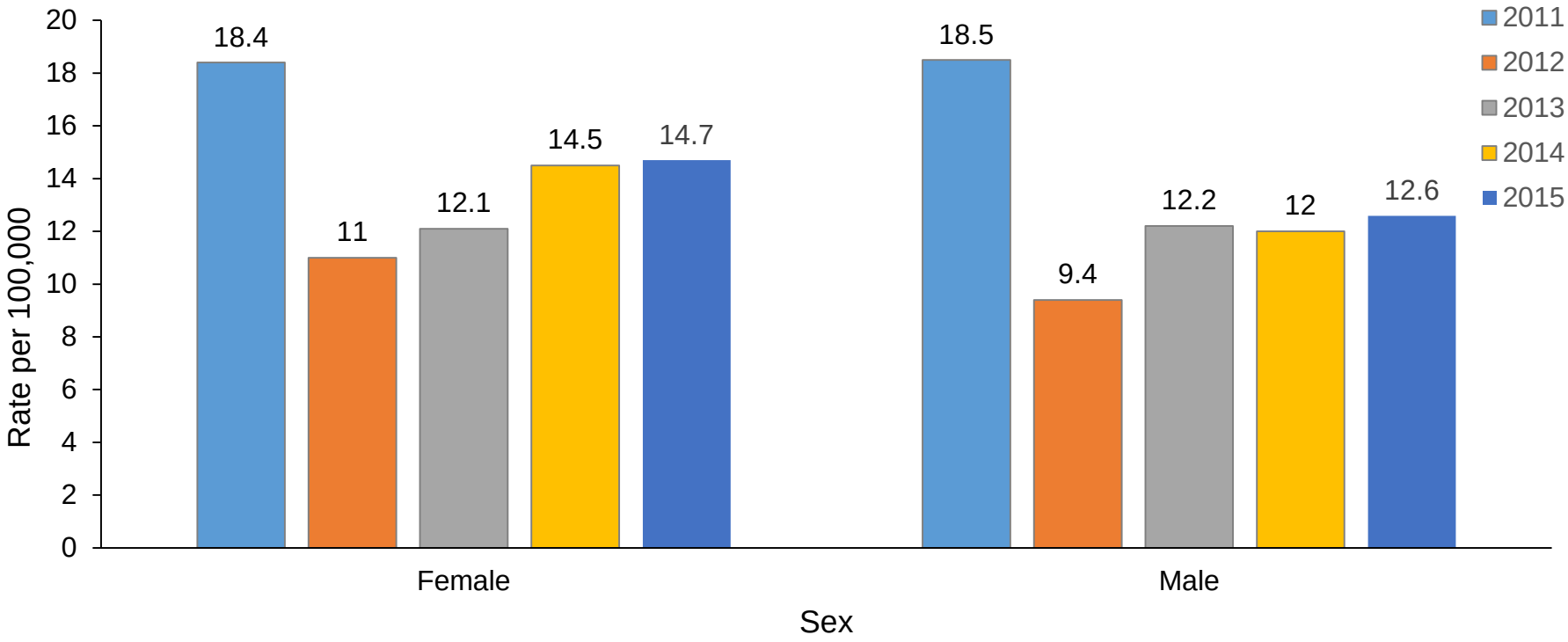

Figure 3: Salmonella was reported in males and females at approximately the same rates over the last five years. In 2015, there were 80 cases in females and 64 cases in males. Nationally, rates of salmonella infection are nearly the same in males and females.

Rate of Salmonella, by County and Year, Rhode Island, 2011-2015

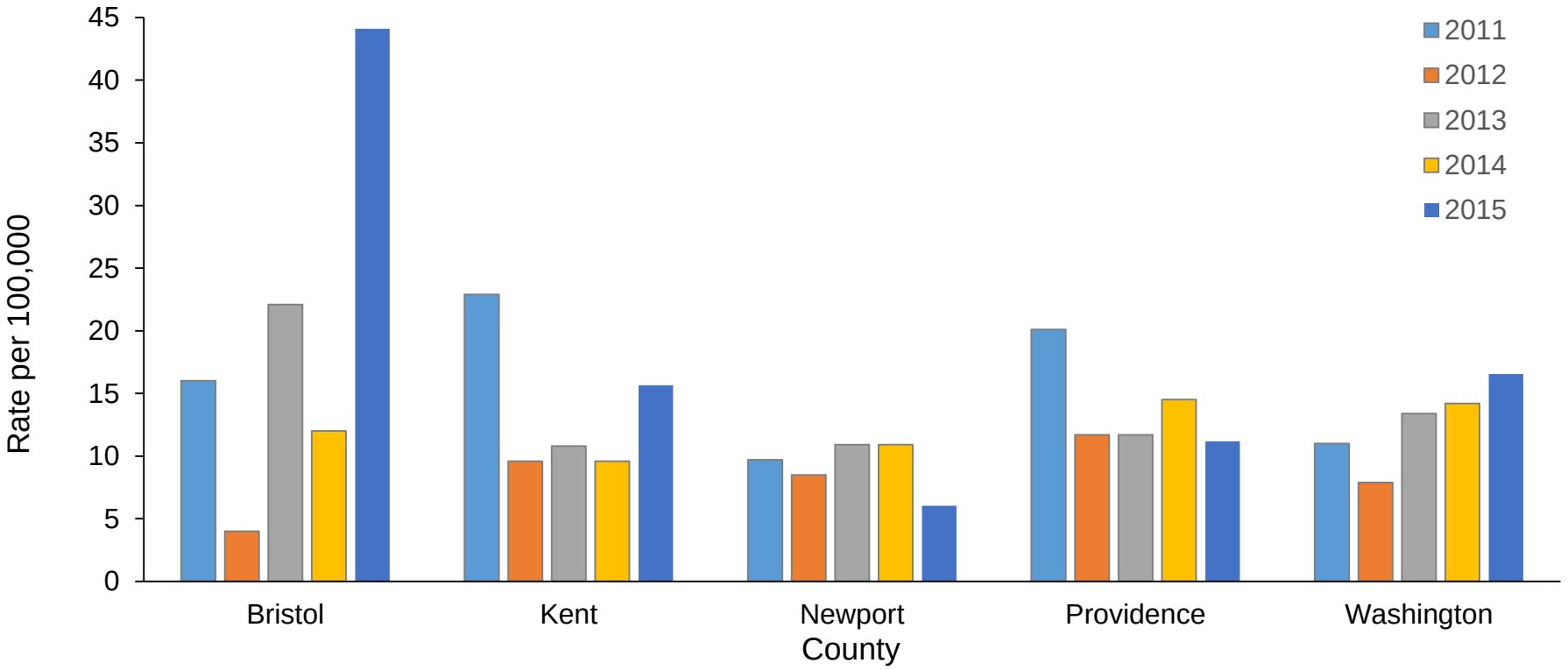

Figure 4: In 2015, Bristol County had the highest rate of salmonella, due to the outbreak at a university in that county. In general, over the last 5 years, salmonella has infected individuals from all five counties in Rhode Island at similar rates.

Reported Cases of Salmonella, by Month and Year, Rhode Island, 2011-2015

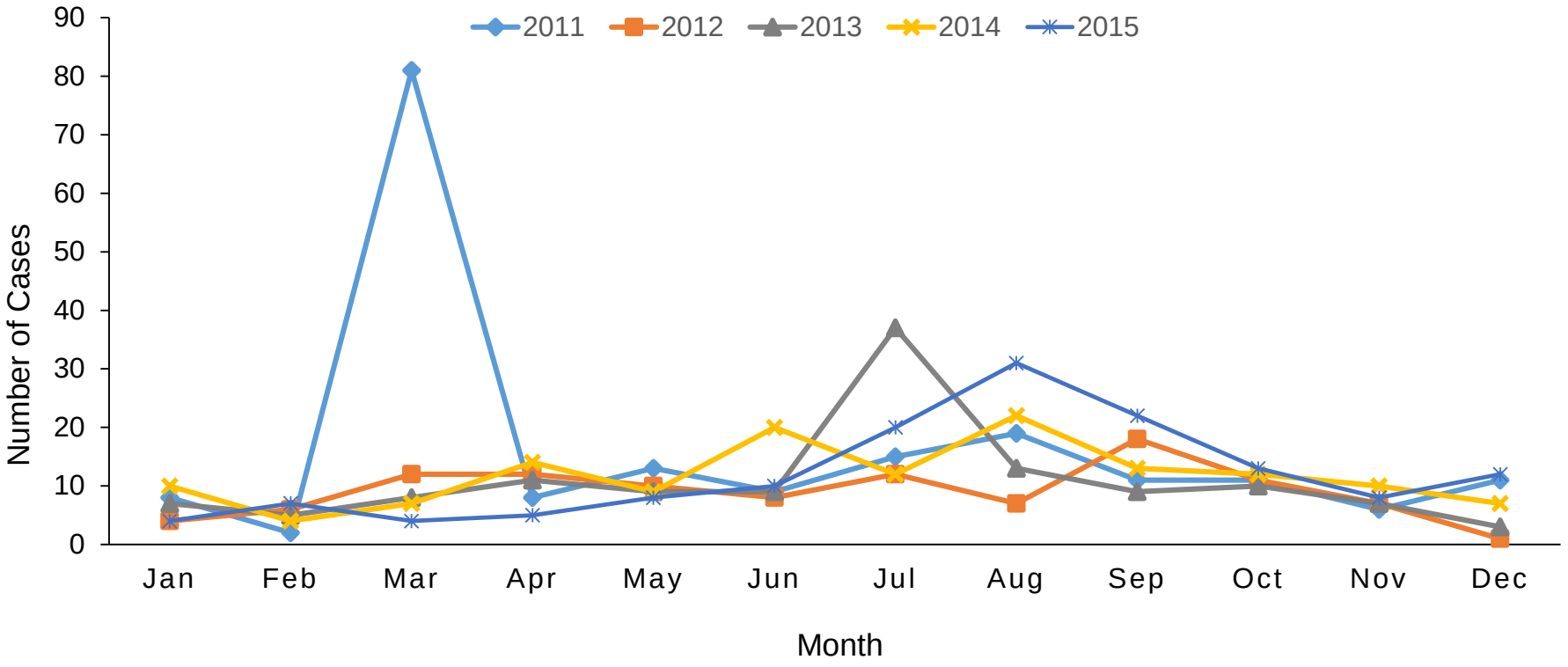

Figure 5: Salmonella infection occurs year-round in Rhode Island, with no clear trend in seasonality. In March 2011, there was an 83-person outbreak of salmonella associated with zeppoles, which accounts for the dramatic peak at that time.

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

Table 1. Frequency by Year					
	2011	**2012**	**2013**	**2014**	**2015**
Number of Cases	194	108	128	140	144

Table 2. Rate by Year					
	2011	**2012**	**2013**	**2014**	**2015**
Rate per 100,000	18.4	10.3	12.2	13.3	13.7

Salmonella Frequency, by Age Group and Year, Rhode Island, 2011-2015

Table 3. Frequency by Age Group and Year					
	2011	**2012**	**2013**	**2014**	**2015**
0-4	16	13	9	20	9
5-9	12	6	7	3	4
10-19	18	11	17	10	12
20-29	16	20	15	26	44
30-39	16	8	17	15	20
40-49	29	13	13	9	18
50-59	20	20	24	23	12
60-69	21	9	9	13	9
70-79	18	2	9	16	10
≥80	28	6	8	5	6
Total	194	108	128	140	144

Salmonella Rates, by Age Group and Year, Rhode Island, 2011-2015

Table 4. Rate by Age Group and Year					
	2011	**2012**	**2013**	**2014**	**2015**
0-4	27.9	22.6	15.7	34.8	15.7
5-9	19.9	9.9	11.6	5.0	6.6
10-19	12.5	7.7	11.8	7.0	8.3
20-29	10.8	13.5	10.1	17.6	29.7
30-39	12.8	6.4	13.6	12.0	16
40-49	18.8	8.4	8.4	5.8	11.7
50-59	13.2	13.2	15.8	15.2	7.9
60-69	20.4	8.8	8.8	12.7	8.8
70-79	31.2	3.5	15.6	27.7	17.3
≥80	54.5	11.7	15.6	9.7	11.7

Salmonella Frequency and Rates, by Sex and Year, Rhode Island, 2011-2015

Table 5. Frequency by Sex and Year					
	2011	**2012**	**2013**	**2014**	**2015**
Female	100	60	66	79	80
Male	94	48	62	61	64
Total	194	108	128	140	144

Table 6. Rate by Sex and Year					
	2011	**2012**	**2013**	**2014**	**2015**
Female	18.4	11.0	12.1	14.5	14.7
Male	18.5	9.4	12.2	12.0	12.6

Salmonella Frequency, by County and Year, Rhode Island, 2011-2015

Table 7. Frequency by County and Year					
	2011	**2012**	**2013**	**2014**	**2015**
Bristol	8	2	11	6	22
Kent	38	16	18	16	26
Newport	8	7	9	9	5
Providence	126	73	73	91	70
Washington	14	10	17	18	21
All	194	108	128	140	144

Salmonella Rates by County and Year, Rhode Island, 2011-2015

Table 8. Rate by County and Year					
	2011	**2012**	**2013**	**2014**	**2015**
Bristol	16.0	4.0	22.1	12.0	44.1
Kent	22.9	9.6	10.8	9.6	15.7
Newport	9.7	8.5	10.9	10.9	6.0
Providence	20.1	11.7	11.7	14.5	11.2
Washington	11.0	7.9	13.4	14.2	16.5

Salmonella Frequency, by Month and Year, Rhode Island, 2011-2015

Table 9. Frequency by Month and Year					
	2011	**2012**	**2013**	**2014**	**2015**
Jan	8	4	7	10	4
Feb	2	6	5	4	7
Mar	81	12	8	7	4
Apr	8	12	11	14	5
May	13	10	9	9	8
Jun	9	8	9	20	10
Jul	15	12	37	12	20
Aug	19	7	13	22	31
Sep	11	18	9	13	22
Oct	11	11	10	12	13
Nov	6	7	7	10	8
Dec	11	1	3	7	12
All	194	108	128	140	144

Top 6 Salmonella Serotypes, Rhode Island, 2015

Table 10. Salmonella Frequency by Serotype, 2015		
Serotype	**Count**	**Percentage of 2015 Salmonella Isolates (n=109)**
Salmonella Enteritidis	28	26%
Salmonella Typhimurium	23	21%
Salmonella Braenderup	6	6%
Salmonella Oranienburg	6	6%
Salmonella Newport	5	5%
Salmonella Thompson	5	5%

Table 10. By identifying structures on the bacteria's surface, scientists can classify salmonella into serotypes. Serotyping salmonella can help link related cases and identify a source of infection. Salmonella Enteritidis, RI's most frequently identified serotype in 2015, is one of the most common serotypes in the country. It is frequently associated with chickens or eggs but has also been linked to outbreaks involving sprouts and ground beef.

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

- http://www.cdc.gov/salmonella/general/index.html
- http://www.cdc.gov/salmonella/outbreaks.html
- http://www.cdc.gov/salmonella/reportspubs/salmonella-atlas/serotype-snapshots.html
- http://www.cdc.gov/salmonella/reportspubs/salmonella-atlas/serotyping-importance.html
- http://www.cdc.gov/foodnet/PDFs/2012_annual_report_508c.pdf