





# **Lyme 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 Lyme Disease

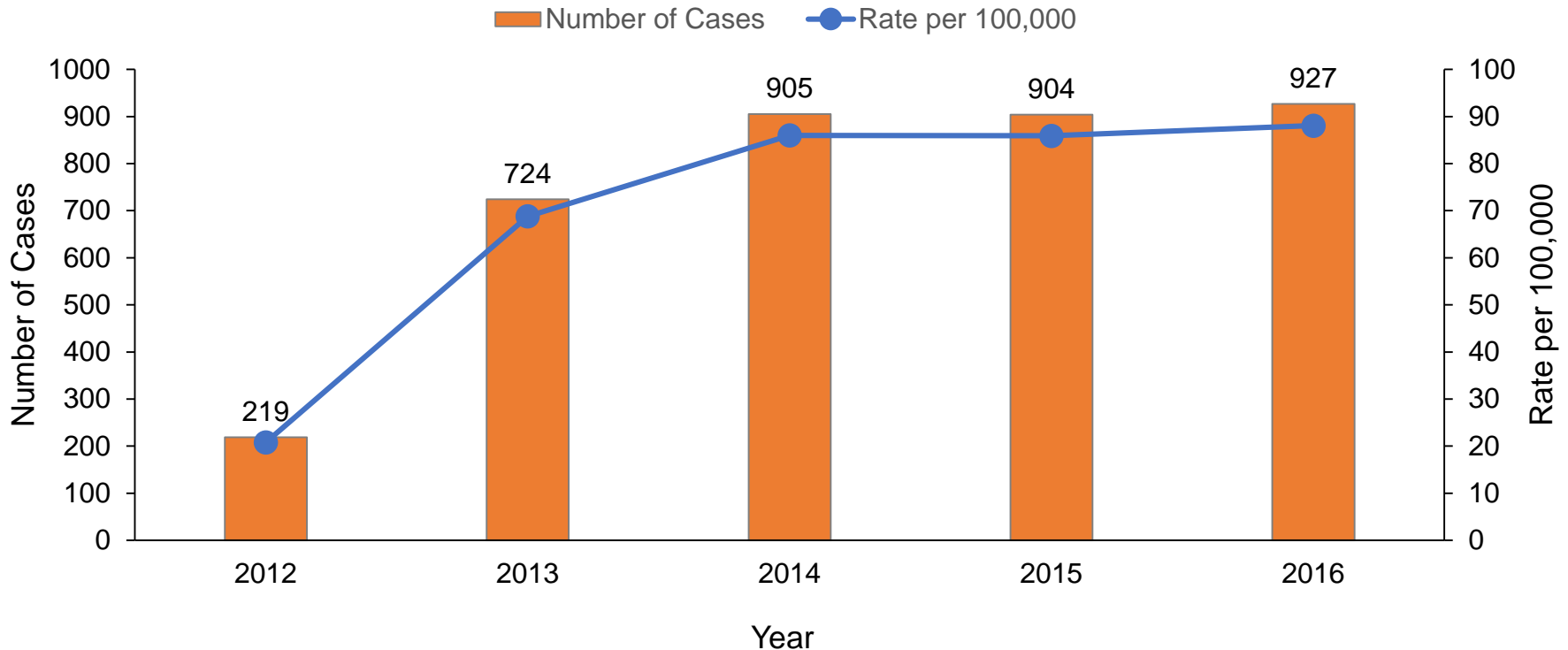
- Lyme disease is a tickborne bacterial disease, causing symptoms such as fever, headache, fatigue, and a characteristic bullseye rash. Late symptoms can include arthritis, neurological problems, and heart disease. Lyme disease can be successfully treated with a course of antibiotics.
- Lyme disease is most commonly transmitted in upper Midwest and Northeast states, in wooded or grassy areas, and during warm months.



# Data Overview, Lyme Disease

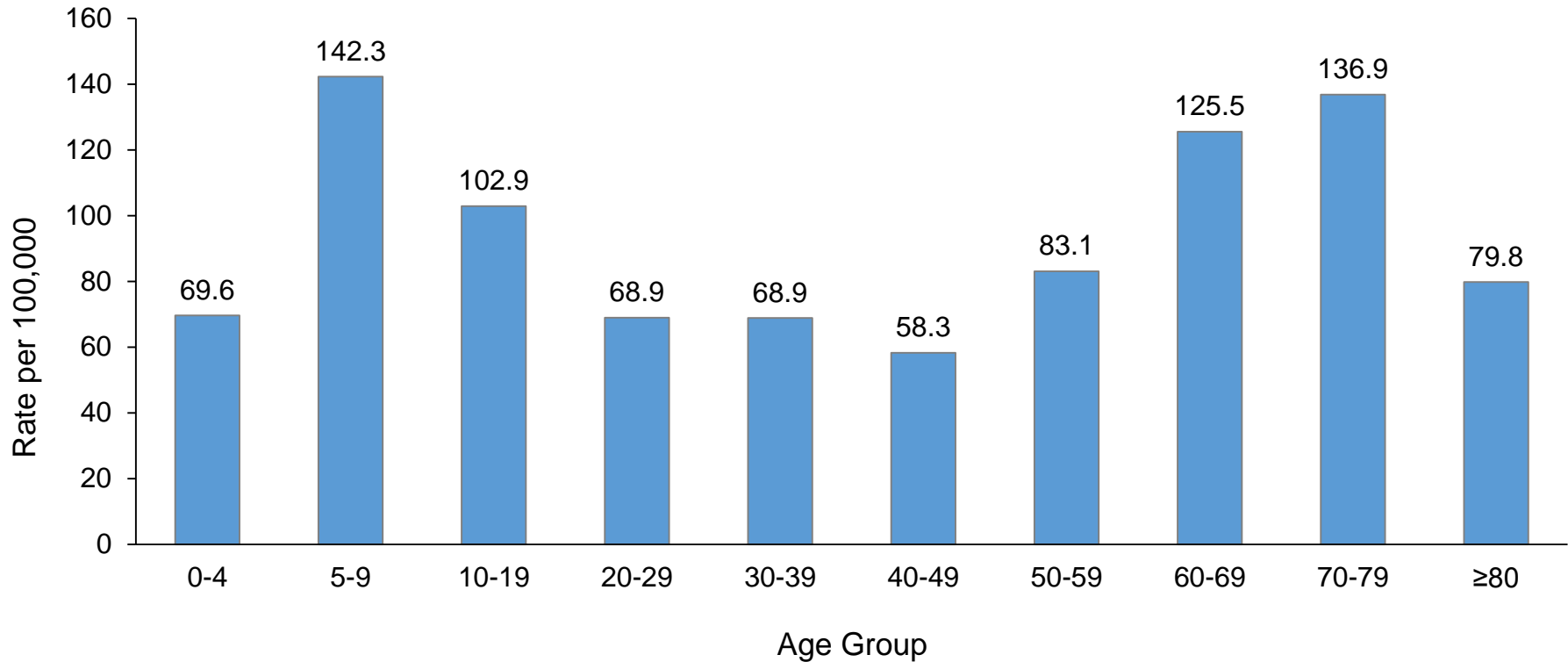
- In 2016, Rhode Island had 927 cases of Lyme disease, with an incidence rate of 88 cases per 100,000 people.
- In 2015, Rhode Island was the state with the fourth highest rate of Lyme disease in the country.
- In 2013, Rhode Island enhanced its Lyme disease surveillance system, so the dramatic increase in reported disease is due to increased surveillance rather than increased illness.
- Washington County consistently has the highest rate of Lyme disease in Rhode Island with a rate of 181.1 cases per 100,000 people in 2016.

# Reported Cases of Lyme Disease, Rhode Island, 2012-2016



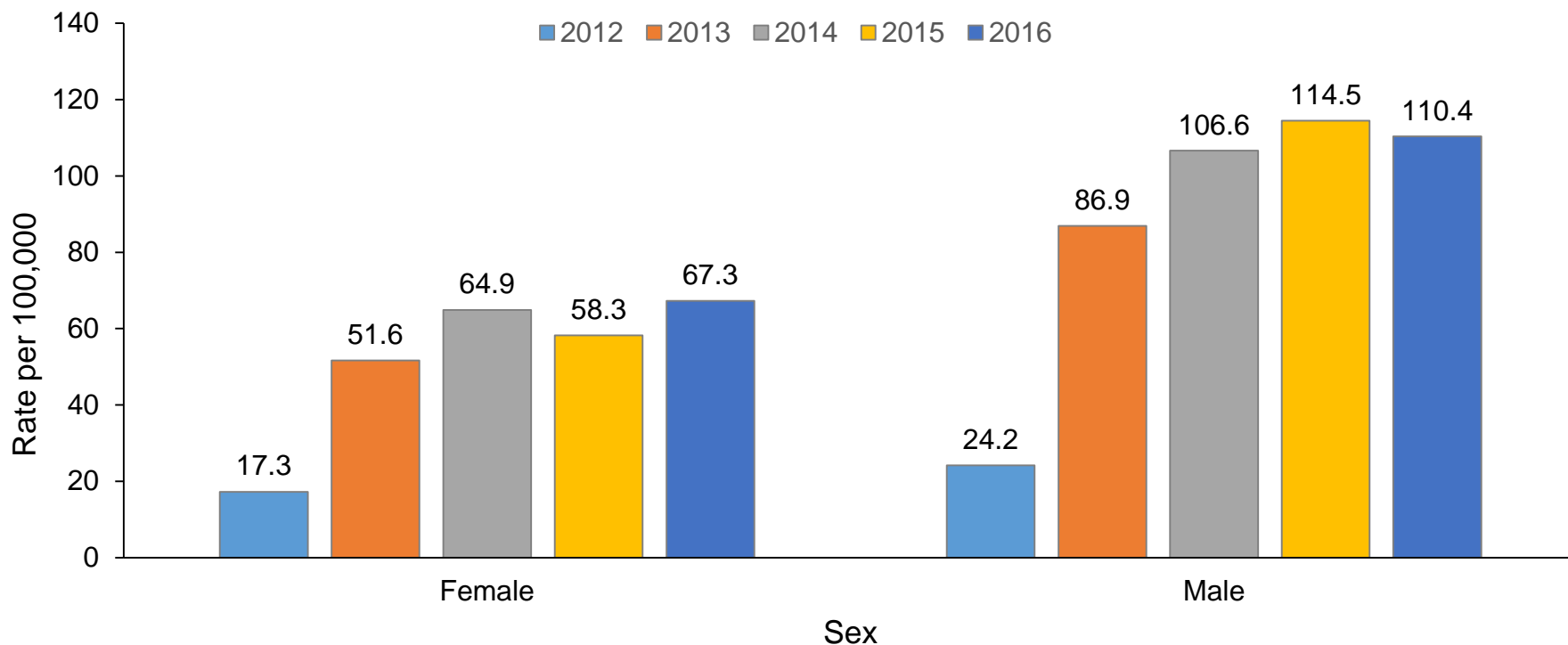
**Figure 1:** In 2016, there were 927 cases of Lyme disease in Rhode Island (rate of 88 cases per 100,000 people), which was fairly consistent with the number of cases observed in 2014 and 2015. Rhode Island's Lyme disease surveillance system was enhanced in 2013 to incorporate active provider follow-up to obtain clinical information. The apparent increase in cases beginning in 2013 is attributable to these changes in surveillance, rather than a true increase in disease. Although underreporting of Lyme disease remains a concern, this enhanced surveillance system may reduce the discrepancy between reported cases and actual burden of disease in Rhode Island.

# Rate of Lyme Disease, Age Group, Rhode Island, 2016



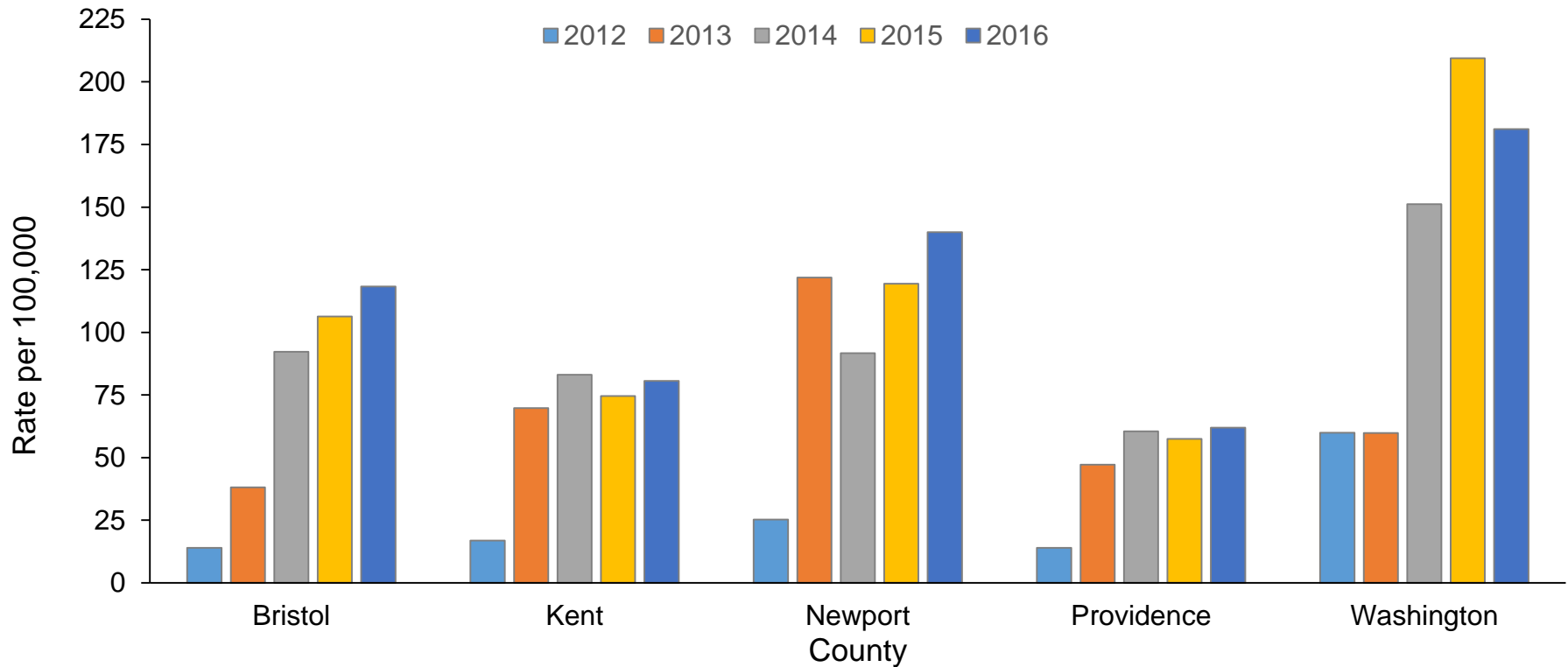
**Figure 2:** In 2016, children 5-9 years old experienced the highest rate of Lyme disease at 142.2 cases per 100,000 people. Adults 70-79 years old and 60-69 years old also had similarly high rates of Lyme disease at 136.9 cases per 100,000 people and 125.5 cases per 100,000 people, respectively.

# Rate of Lyme Disease, Gender and Year, Rhode Island, 2012-2016



**Figure 3:** In 2016, the observed rate of Lyme disease among males (110.4 cases per 100,000 people) was more than 1.5 times higher than the rate among females (67.3 cases per 100,000 people). From 2012 to 2016, Lyme disease was consistently observed at higher rates among males, which is consistent with disparities observed in national level data.

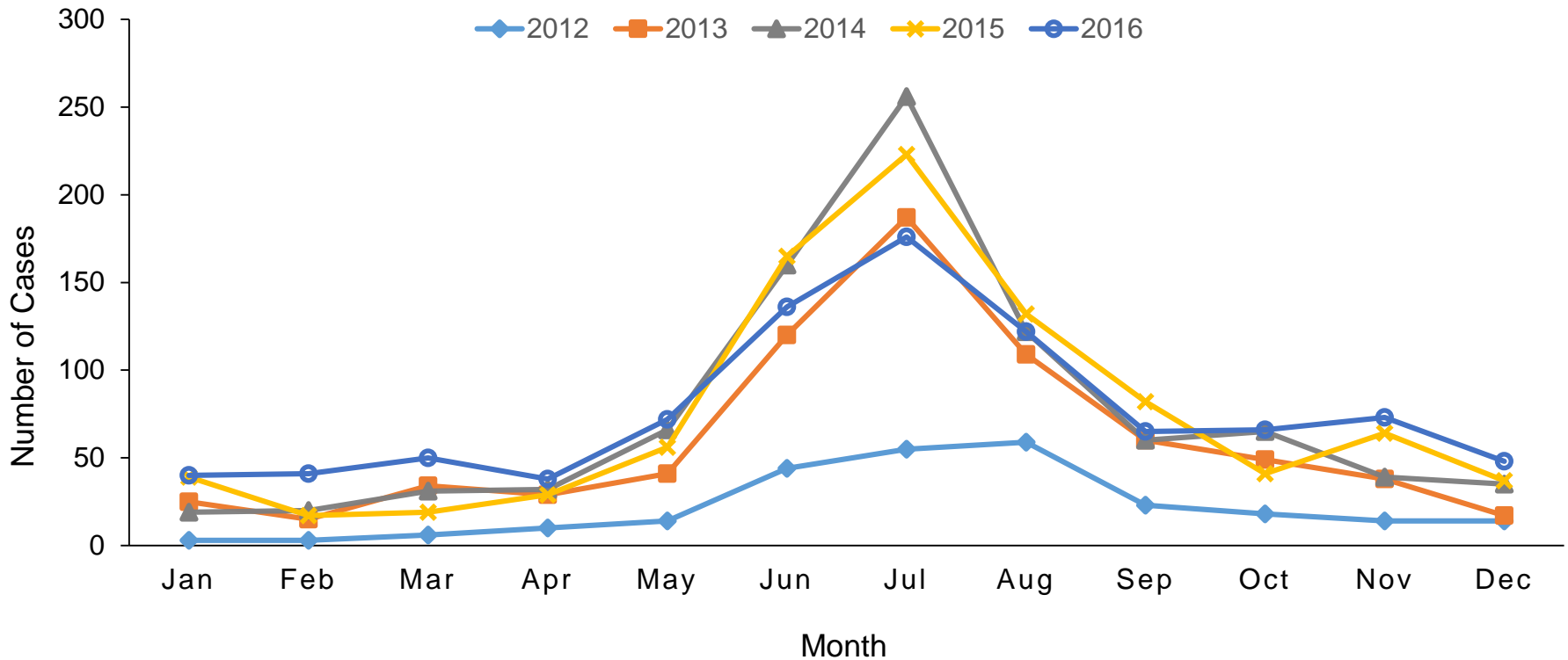
# Rate of Lyme Disease, County and Year, Rhode Island, 2012-2016



**Figure 4:** Lyme disease is clustered geographically within Rhode Island. Washington County consistently has the majority of disease burden, with a rate of 181.1 cases per 100,000 people reported in 2016. The second highest rate of Lyme disease in 2016 was observed in Newport County, with a rate of 140.0 cases per 100,000 people.



# Reported Cases of Lyme Disease, Month and Year, Rhode Island, 2012-2016



**Figure 5:** Lyme disease can occur at any point in the year, but peaks between June and August, with the most cases in July. Nationally, cases of Lyme disease peak in these months as well. In New England, these are the months when people spend the most time outdoors. In 2016, 434 cases of Lyme disease were observed between June and August, nearly half (47%) of Rhode Island’s cases for the entire year.

# Lyme Disease Frequency and Rates by Year, Rhode Island, 2012-2016



**Table 1. Frequency by Year**

	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>
<b>Number of Cases</b>	219	724	905	904	927

**Table 2. Rate by Year**

	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>
<b>Rate per 100,000</b>	20.8	68.8	86.0	85.9	88.1

# Lyme Disease Frequency, Age Group and Year, Rhode Island, 2012-2016



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

	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>
<b>0-4</b>	12	28	29	40	40
<b>5-9</b>	22	77	89	81	86
<b>10-19</b>	31	104	134	129	148
<b>20-29</b>	19	64	72	79	102
<b>30-39</b>	15	49	65	70	86
<b>40-49</b>	24	90	85	92	90
<b>50-59</b>	40	127	166	142	126
<b>60-69</b>	29	92	134	161	129
<b>70-79</b>	18	57	84	83	79
<b>≥80</b>	9	36	45	27	41
<b>Unknown</b>	0	0	2	0	0
<b>Total</b>	219	724	905	904	927

# Lyme Disease Rates, Age Group and Year, Rhode Island, 2012-2016



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

	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>
<b>0-4</b>	20.9	48.7	50.5	69.6	69.6
<b>5-9</b>	36.4	127.4	147.3	134.0	142.3
<b>10-19</b>	21.6	72.3	93.1	89.7	102.9
<b>20-29</b>	12.8	43.3	48.7	53.4	68.9
<b>30-39</b>	12.0	39.2	52.0	56.1	68.9
<b>40-49</b>	15.5	58.3	55.0	59.6	58.3
<b>50-59</b>	26.4	83.7	109.4	93.6	83.1
<b>60-69</b>	28.2	89.5	130.4	156.7	125.5
<b>70-79</b>	31.2	98.8	145.5	143.8	136.9
<b>≥80</b>	17.5	70.1	87.6	52.6	79.8

# Lyme Disease Frequency and Rates, Gender and Year, Rhode Island, 2012-2016



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

	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>
<b>Female</b>	94	281	353	317	366
<b>Male</b>	123	442	542	582	561
<b>Unknown</b>	2	1	10	5	0
<b>Total</b>	219	724	905	904	927

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

	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>
<b>Female</b>	17.3	51.6	64.9	58.3	67.3
<b>Male</b>	24.2	86.9	106.6	114.5	110.4

# Lyme Disease Frequency, County and Year, Rhode Island, 2012-2016



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

	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>
<b>Bristol</b>	7	19	46	53	59
<b>Kent</b>	28	116	138	124	134
<b>Newport</b>	21	101	76	99	116
<b>Providence</b>	87	296	379	360	388
<b>Washington</b>	76	192	266	268	230
<b>All</b>	219	724	905	904	927

# Lyme Disease Rates by County and Year, Rhode Island, 2012-2016



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

	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>
<b>Bristol</b>	14.0	38.1	92.2	106.3	118.3
<b>Kent</b>	16.9	69.8	83.1	74.6	80.7
<b>Newport</b>	25.3	121.9	91.7	119.4	140.0
<b>Providence</b>	13.9	47.2	60.5	57.5	61.9
<b>Washington</b>	59.9	151.2	209.5	211.1	181.1

# Lyme Disease Frequency, City and Year, Rhode Island, 2012-2016



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

	2012	2013	2014	2015	2016
<b>Barrington</b>	2	8	13	14	18
<b>Bristol</b>	0	7	22	22	33
<b>Burrillville</b>	4	34	45	43	28
<b>Central Falls</b>	0	2	3	2	8
<b>Charlestown</b>	3	17	26	21	13
<b>Coventry</b>	9	38	43	48	46
<b>Cranston</b>	6	17	27	29	29
<b>Cumberland</b>	11	33	37	33	41
<b>East Greenwich</b>	5	18	23	23	20
<b>East Providence</b>	6	15	20	24	33
<b>Exeter</b>	6	8	22	12	15
<b>Foster</b>	13	33	27	22	25
<b>Glocester</b>	11	14	20	22	19
<b>Hopkinton</b>	1	13	30	27	24
<b>Jamestown</b>	2	12	14	13	15
<b>Johnston</b>	2	12	20	12	13
<b>Lincoln</b>	4	18	23	23	28



# Lyme Disease Frequency, City and Year Continued, Rhode Island, 2012-2016



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

	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>
<b>Little Compton</b>	2	20	10	12	18
<b>Middletown</b>	3	8	7	11	13
<b>Narragansett</b>	7	15	30	21	22
<b>New Shoreham</b>	16	31	2	11	4
<b>Newport</b>	2	13	13	8	10
<b>North Kingstown</b>	10	30	44	53	38
<b>North Providence</b>	1	6	6	11	7
<b>North Smithfield</b>	3	27	25	12	22
<b>Pawtucket</b>	0	7	12	12	19
<b>Portsmouth</b>	4	25	16	15	24
<b>Providence</b>	4	25	44	37	42
<b>Richmond</b>	2	6	10	9	16
<b>Scituate</b>	10	34	37	40	35
<b>Smithfield</b>	5	7	15	20	16
<b>South Kingstown</b>	21	47	60	72	52

# Lyme Disease Frequency, City and Year Continued, Rhode Island, 2012-2016



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

	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>
<b>Tiverton</b>	8	23	16	40	36
<b>Warren</b>	5	4	11	17	8
<b>Warwick</b>	5	29	32	34	47
<b>West Greenwich</b>	6	21	19	9	3
<b>West Warwick</b>	3	10	21	10	18
<b>Westerly</b>	10	25	42	42	46
<b>Woonsocket</b>	7	12	18	18	23
<b>Total</b>	219	724	905	904	927

# Lyme Disease Frequency, Month and Year, Rhode Island, 2012-2016



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

	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>
<b>Jan</b>	3	25	19	39	40
<b>Feb</b>	3	15	20	17	41
<b>Mar</b>	6	34	31	19	50
<b>Apr</b>	10	29	32	29	38
<b>May</b>	14	41	66	56	72
<b>Jun</b>	55	120	160	165	136
<b>Jul</b>	59	187	256	223	176
<b>Aug</b>	23	109	122	132	122
<b>Sep</b>	18	60	60	82	65
<b>Oct</b>	14	49	65	41	66
<b>Nov</b>	14	38	39	64	73
<b>Dec</b>	0	17	35	37	48
<b>All</b>	219	724	905	904	927



# 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/lyme/stats/index.html>
- <https://www.cdc.gov/lyme/index.html>