





Anaplasmosis and Ehrlichiosis 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 Anaplasmosis and Ehrlichiosis

- Anaplasmosis and ehrlichiosis are tickborne, bacterial diseases that typically cause fever, headache, fatigue, and muscle aches 1-2 weeks following a tick bite.
- The geographical distribution of these diseases corresponds with the geographical distribution of Lyme disease, with infections most common in the upper Midwest and Northeast states.
- Co-infections are possible, as the ticks that carry these diseases can also carry Lyme disease and babesiosis.



Data Overview, Anaplasmosis and Ehrlichiosis

- In 2016, there were 192 cases of anaplasmosis and ehrlichiosis in Rhode Island, with an incidence rate of 18.2 cases per 100,000 people.
- Anaplasmosis and ehrlichiosis occur consistently at the highest rate in Washington County.
- Nearly half (45%) of anaplasmosis and ehrlichiosis in 2016 occurred in June and July, which is consistent with national patterns of the diseases.
- Although it appears that the incidence of these diseases has been steadily increasing in the last five years, the increase is likely attributable to enhancements in the tickborne disease surveillance system.

Reported Cases of Anaplasmosis and Ehrlichiosis, Rhode Island, 2012-2016

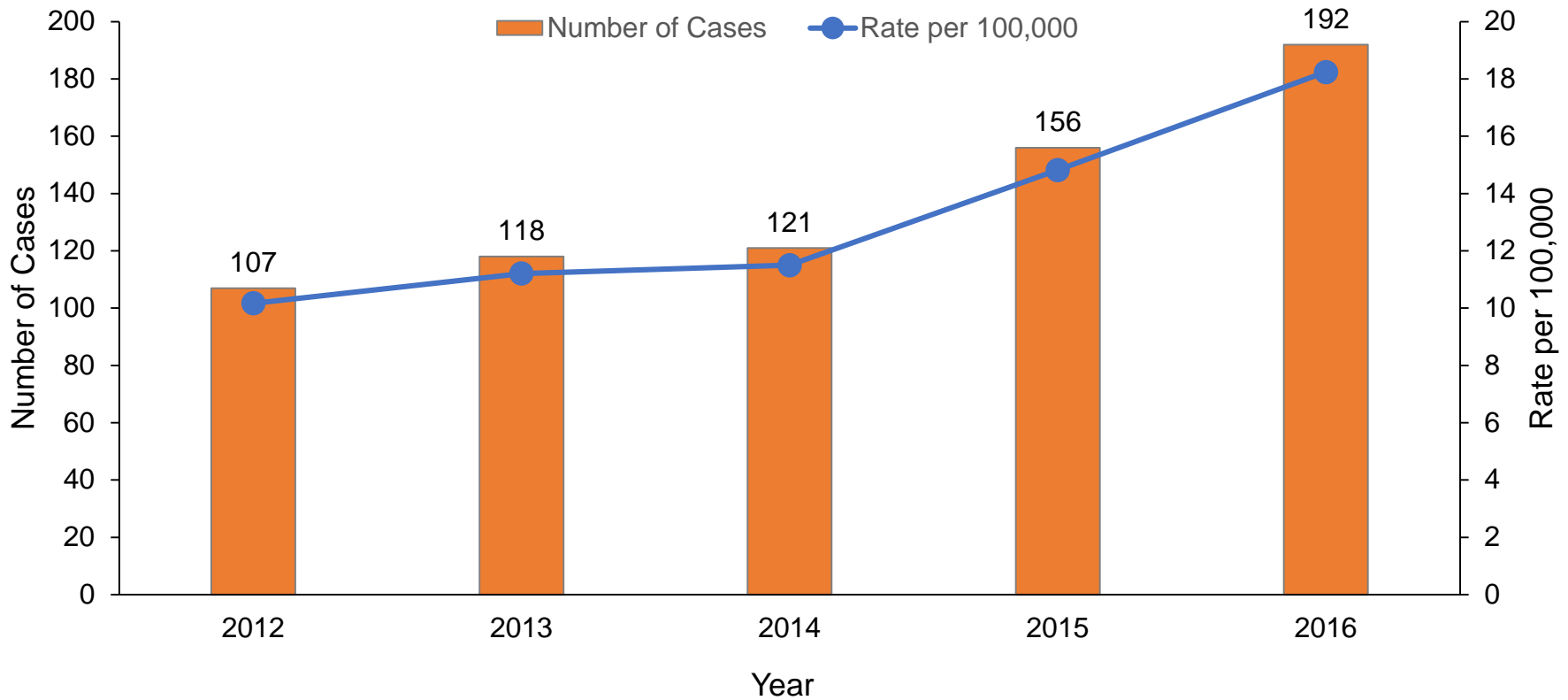


Figure 1: In 2016, Rhode Island had 192 cases of anaplasmosis and ehrlichiosis, with an incidence rate of 18.2 cases per 100,000 people. Although it appears that the incidence of these diseases has been steadily increasing in the last five years, the increase is likely attributable to enhancements in the tickborne disease surveillance system.

Rate of Anaplasmosis and Ehrlichiosis, Age Group, Rhode Island, 2016

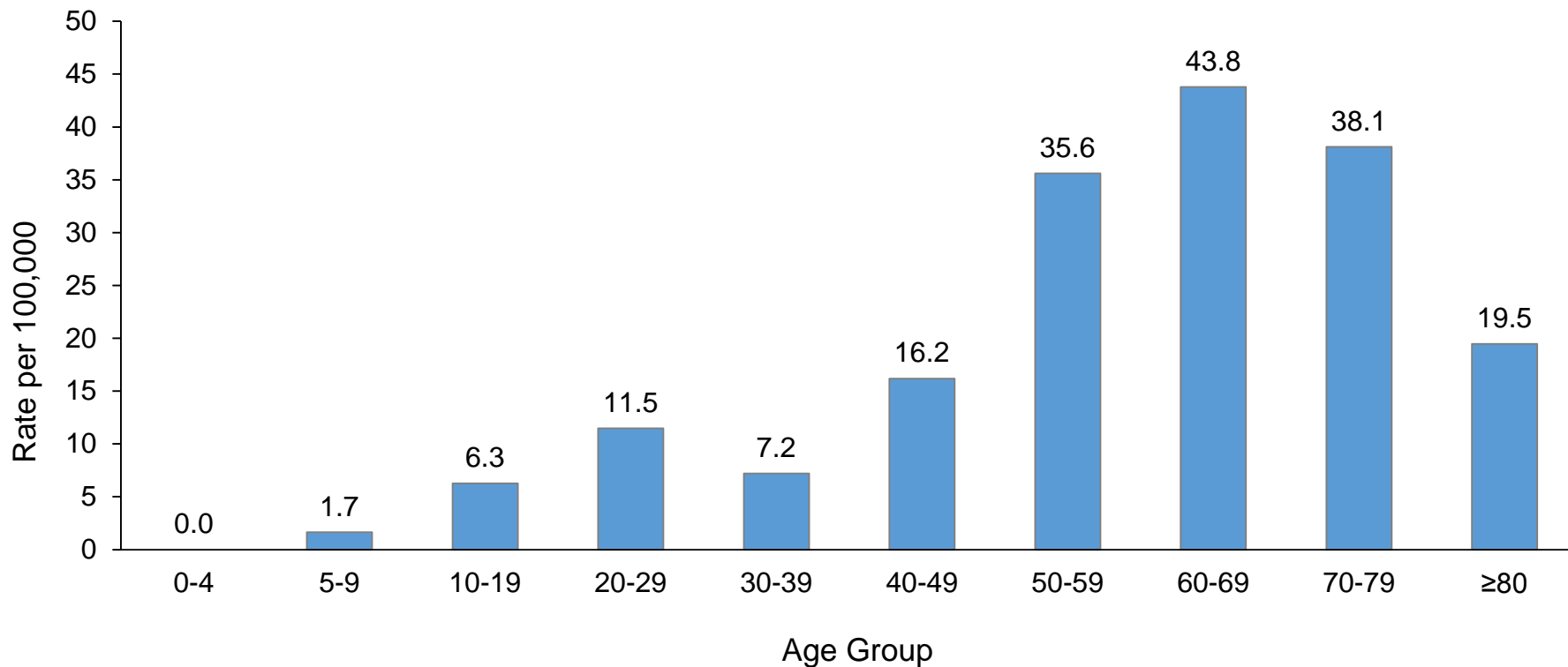


Figure 2: Rates of anaplasmosis and ehrlichiosis generally increased with age. Overall, adults 50 years and older had much higher rates of disease than individuals younger than 50 years old. As anaplasmosis and ehrlichiosis are chronically underreported, it may be that older adults experience worse clinical outcomes than younger individuals, and are therefore more likely to seek medical attention and undergo laboratory testing.

Rate of Anaplasmosis and Ehrlichiosis, Gender and Year, Rhode Island, 2012-2016

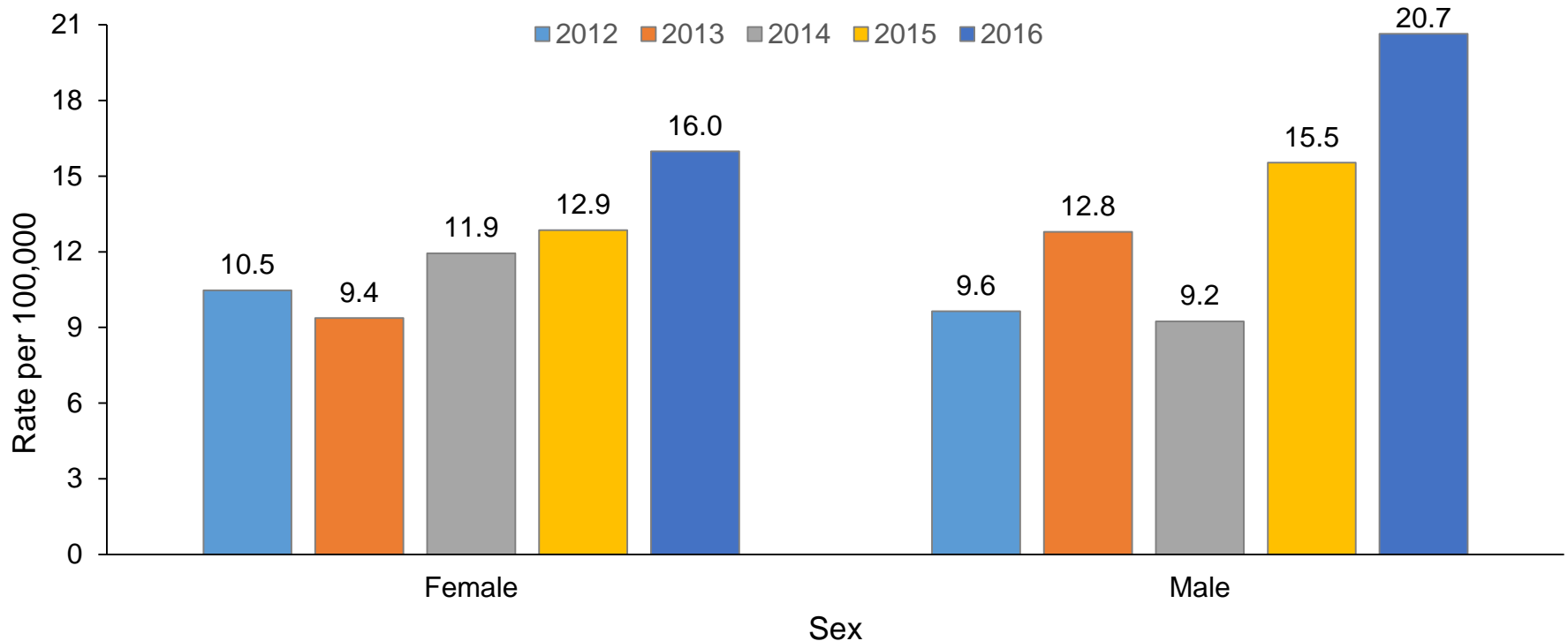


Figure 3: In 2016, the rate of anaplasmosis and ehrlichiosis was observed to be slightly higher in males compared to females. Increasing rates of anaplasmosis and ehrlichiosis have generally been observed over time for both females and males. Despite these increases, within years, rates have been fairly equivalent between males and females.

Rate of Anaplasmosis and Ehrlichiosis, County and Year, Rhode Island, 2012-2016

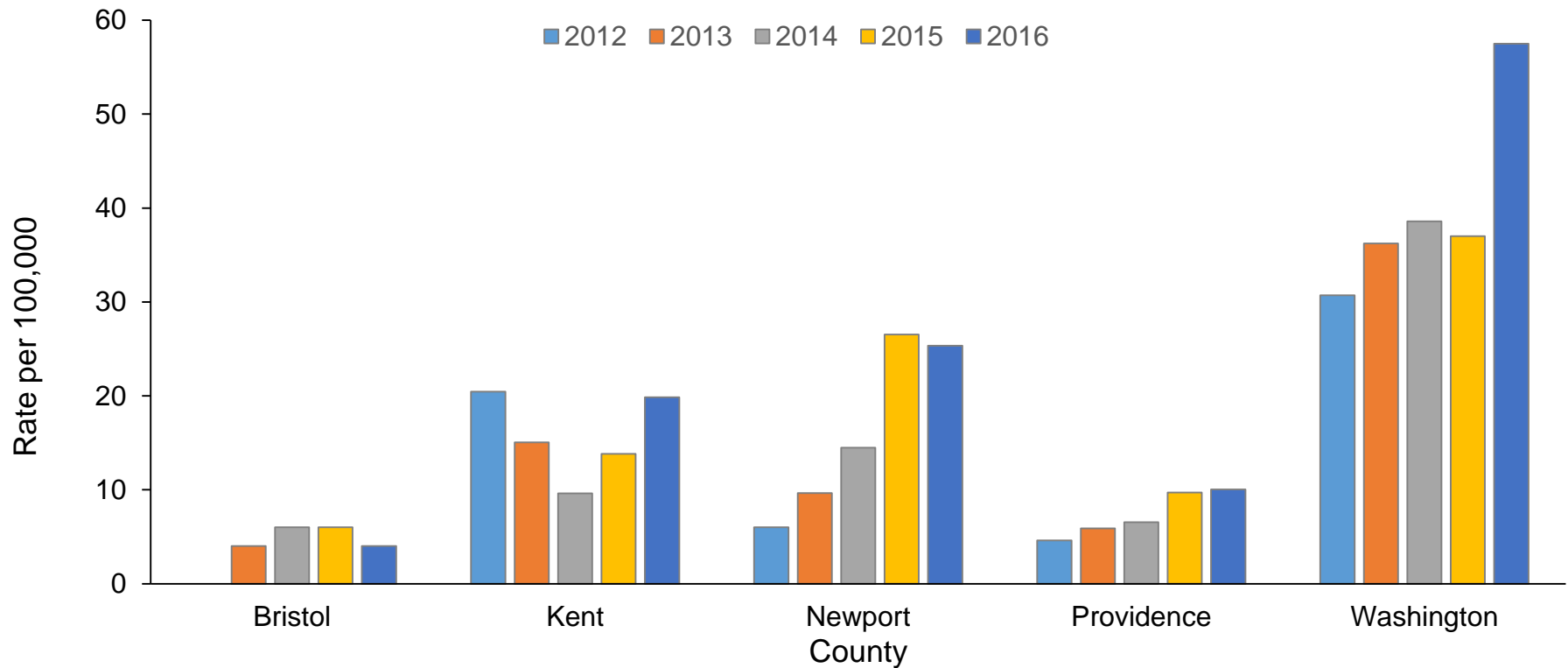


Figure 4: Anaplasmosis and ehrlichiosis consistently occur at much higher rates in Washington County than in other counties in Rhode Island. In 2016, Washington County had 57.5 cases of anaplasmosis and ehrlichiosis per 100,000 people. Much of Washington County is wooded and rural, an ideal habitat for ticks. Newport County had the next highest rate in 2016, with 25.3 cases of disease per 100,000 people.

Reported Cases of Anaplasmosis and Ehrlichiosis, Month and Year, Rhode Island, 2012-2016

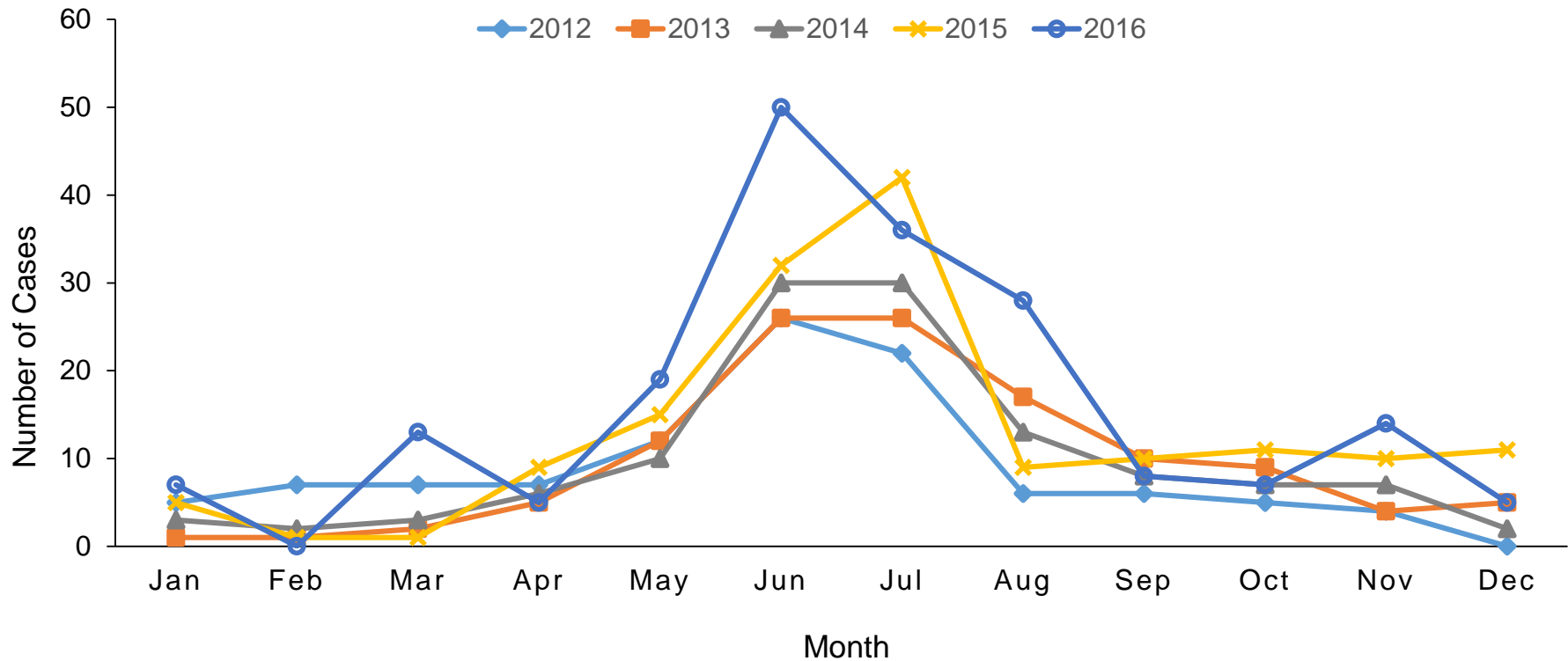


Figure 5: Anaplasmosis and ehrlichiosis can occur at any point in the year but peak in June and July. These months feature an increase in black-legged ticks in the nymphal life stage, when they typically bite humans and transmit disease. In 2016, there were 86 cases of anaplasmosis and ehrlichiosis in June and July, constituting nearly half (45%) of the cases for the entire year.

Anaplasmosis and Ehrlichiosis Frequency and Rates by Year, Rhode Island, 2012-2016



Table 1. Frequency by Year

	2012	2013	2014	2015	2016
Number of Cases	107	118	121	156	192

Table 2. Rate by Year

	2012	2013	2014	2015	2016
Rate per 100,000	10.2	11.2	11.5	14.8	18.2

Anaplasmosis and Ehrlichiosis Frequency, Age Group and Year, Rhode Island, 2012-2016



Table 3. Frequency by Age Group and Year

	2012	2013	2014	2015	2016
0-4	1	0	2	0	0
5-9	2	1	1	2	1
10-19	6	5	5	5	9
20-29	11	7	4	14	17
30-39	4	10	9	14	9
40-49	17	15	25	24	25
50-59	21	35	24	20	54
60-69	27	26	22	36	45
70-79	12	12	24	19	22
≥80	6	7	5	22	10
Total	107	118	121	156	192

Anaplasmosis and Ehrlichiosis Rates, Age Group and Year, Rhode Island, 2012-2016



Table 4. Rate by Age Group and Year

	2012	2013	2014	2015	2016
0-4	1.7	0.0	3.5	0.0	0.0
5-9	3.3	1.7	1.7	3.3	1.7
10-19	4.2	3.5	3.5	3.5	6.3
20-29	7.4	4.7	2.7	9.5	11.5
30-39	3.2	8.0	7.2	11.2	7.2
40-49	11.0	9.7	16.2	15.5	16.2
50-59	13.8	23.1	15.8	13.2	35.6
60-69	26.3	25.3	21.4	35.0	43.8
70-79	20.8	20.8	41.6	32.9	38.1
≥80	11.7	13.6	9.7	42.8	19.5

Anaplasmosis and Ehrlichiosis Frequency and Rates, Sex and Year, Rhode Island, 2012-2016



Table 5. Frequency by Sex and Year

	2012	2013	2014	2015	2016
Female	57	51	65	70	87
Male	49	65	47	79	105
Unknown	1	2	9	7	0
Total	107	118	121	156	192

Table 6. Rate by Sex and Year

	2012	2013	2014	2015	2016
Female	10.5	9.4	11.9	12.9	16.0
Male	9.6	12.8	9.2	15.5	20.7

Anaplasmosis and Ehrlichiosis Frequency, County and Year, Rhode Island, 2012-2016



Table 7. Frequency by County and Year

	2012	2013	2014	2015	2016
Bristol	0	2	3	3	2
Kent	34	25	16	23	33
Newport	5	8	12	22	21
Providence	29	37	41	61	63
Washington	39	46	49	47	73
All	107	118	121	156	192

Anaplasmosis and Ehrlichiosis Rates by County and Year, Rhode Island, 2012-2016



Table 8. Rate by County and Year

	2012	2013	2014	2015	2016
Bristol	0.0	4.0	6.0	6.0	4.0
Kent	20.5	15.1	9.6	13.8	19.9
Newport	6.0	9.7	14.5	26.5	25.3
Providence	4.6	5.9	6.5	9.7	10.1
Washington	30.7	36.2	38.6	37.0	57.5

Anaplasmosis and Ehrlichiosis Frequency, Month and Year, Rhode Island, 2012-2016



Table 9. Frequency by Month and Year

	2012	2013	2014	2015	2016
Jan	5	0	3	5	7
Feb	7	1	2	1	0
Mar	7	2	3	1	13
Apr	7	5	6	9	5
May	12	12	10	15	19
Jun	26	26	30	32	50
Jul	22	26	30	42	36
Aug	6	17	13	9	28
Sep	6	10	8	10	8
Oct	5	9	7	11	7
Nov	4	4	7	10	14
Dec	0	5	2	11	5
All	107	118	121	156	192



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/anaplasmosis/>
- <https://www.cdc.gov/ehrlichiosis/>