

## Tickborne Diseases in Nassau County, 2014 – 2023

Tickborne diseases are illnesses caused by various pathogens, such as bacteria, viruses, or parasites that are transmitted to humans and animals through the bite of infected ticks. Tickborne diseases vary in severity and symptoms depending on the specific pathogen involved. Commonly reported tickborne diseases include Lyme disease, anaplasmosis, babesiosis, Rocky Mountain spotted fever, ehrlichiosis, and rarely Powassan virus disease (Centers for Disease Control and Prevention [CDC], 2022). In New York State, *both probable and confirmed cases are reportable and reflected in this report.*

### Lyme Disease, 2012 - 2021

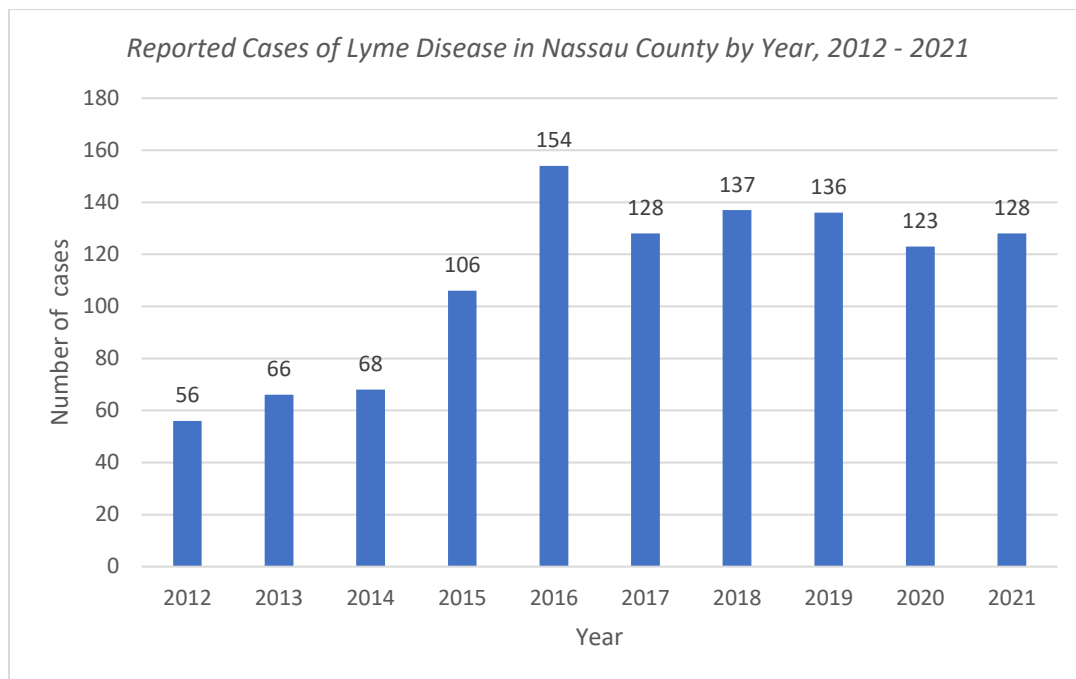
Lyme disease was listed as a nationally notifiable vector-borne disease in the United States in 1991, geographically occurring mostly in the North-East, Mid-Atlantic, and upper Mid-West regions (Schwartz et al., 2017). Lyme disease is transmitted to humans through the bites of Blacklegged ticks (Deer ticks) that are infected with the bacterium, *Borrelia burgdorferi* and infrequently, *Borrelia mayonii*. Blacklegged ticks are known to be prevalent in Long Island, New York, and surrounding states. The New York State Bureau of Communicable Disease Control, as of September 2022 reported an average of 9.7 cases rate of Lyme disease/100,000 population in Nassau County from 2018 - 2020. Nonetheless, no cases of person-to-person transmission of the disease have been reported.

The disease symptoms include fever, tiredness, headache, and skin rash (Erythema migrans) known as Bullseye or Target-shaped rash usually seen within the site of the tick's bite. Symptoms can appear as early as 3 days to 30 days after the bite of the tick. Although, Lyme disease is a rare cause of death, if left untreated, it may affect the joints, heart, and nervous system. (CDC, 2022; NYSDOH, 2023). People of any age can get infected with Lyme disease but people who engage more with outdoor activities are more at risk.

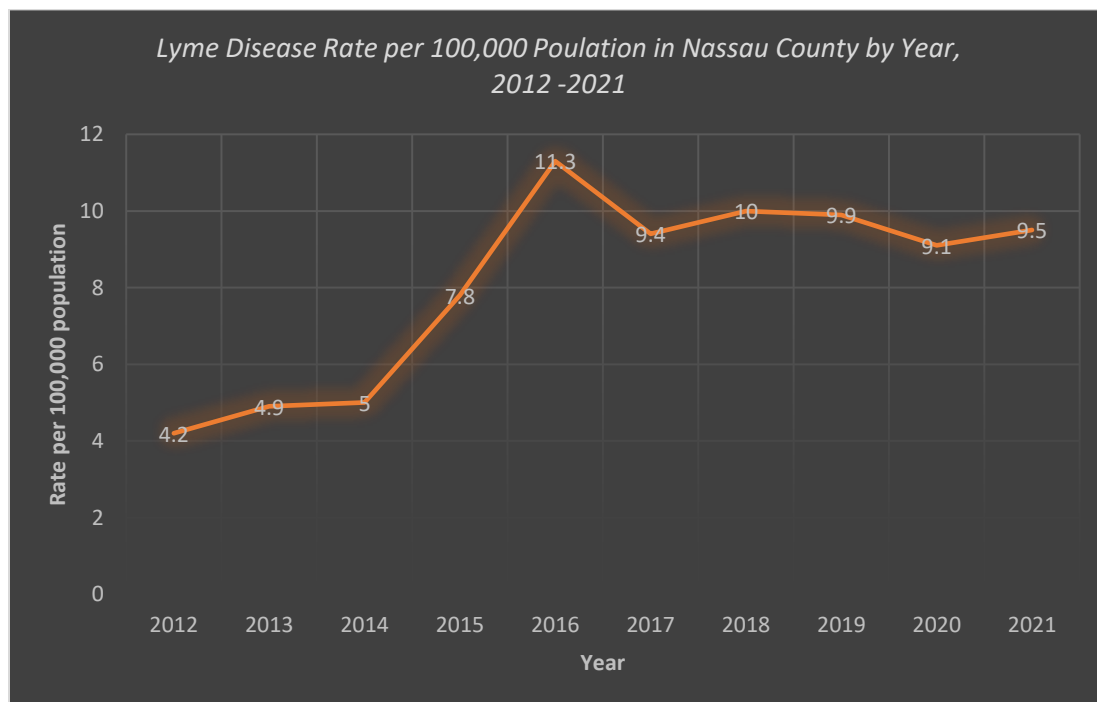
Tick protective behaviors such as the use of tick repellents, preventing tick bites, checking for ticks and removing them, and testing for disease and treatments are effective in the control of disease transmission in the population.



**Figure 1**



**Figure 2**



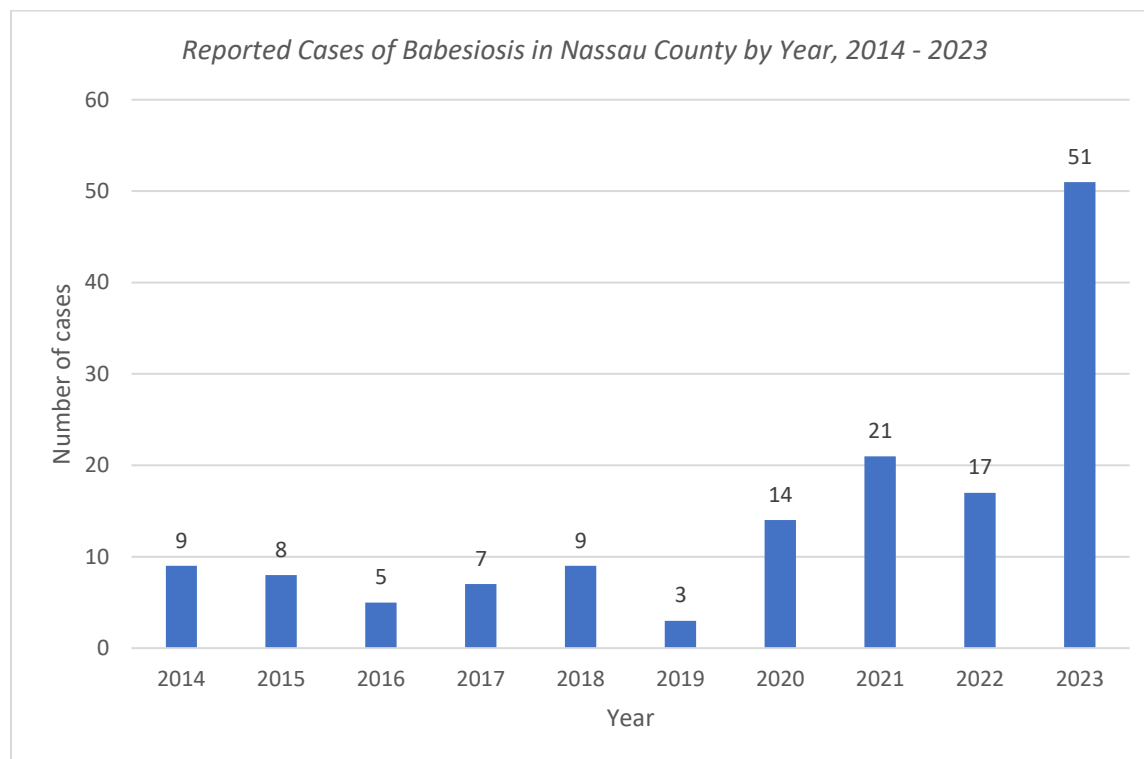
New York State Department of Health. (2024). *Lyme disease: Reported cases by disease and County*. [Communicable Disease Annual Reports and Related Information \(ny.gov\)](https://www.health.ny.gov/diseases/communicable/lyme_disease/reports)



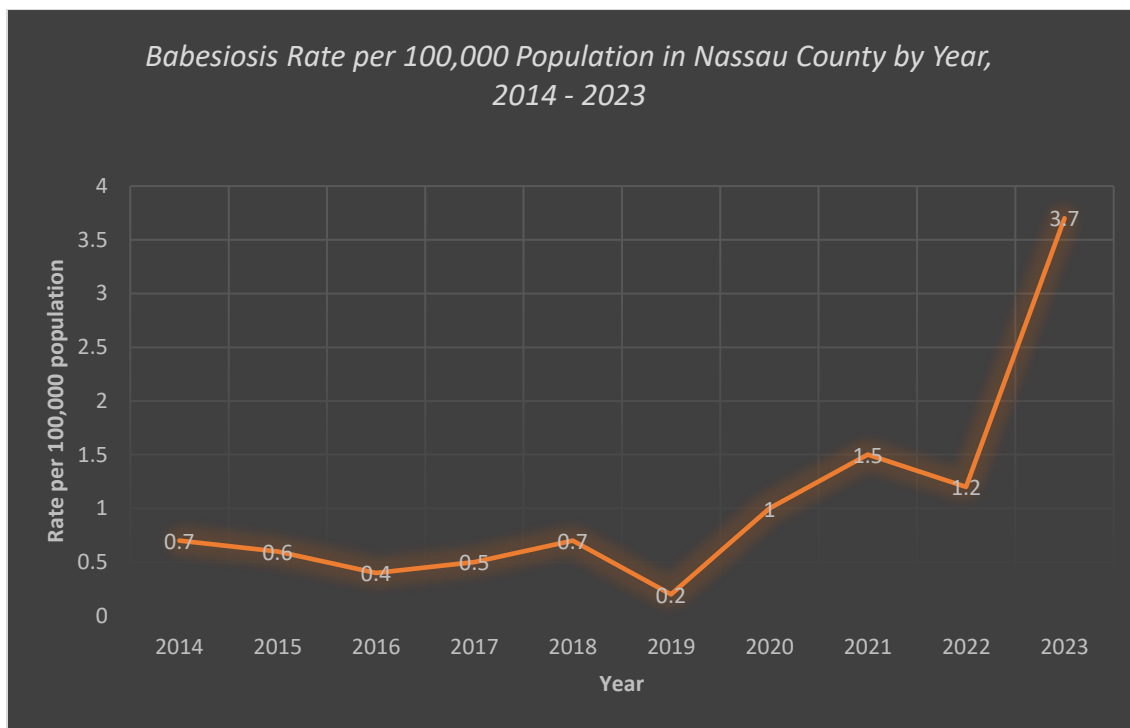
### Babesiosis, 2014 -2023

Babesiosis is a rare disease condition caused by a microscopic parasite – *Babesia microti* that infects the red blood cells, and is spread by black-legged tick species, *Ixodes scapularis*. This vector is endemic in the Northeast and Upper Midwest regions of the United States. Most infections are asymptomatic but non-specific flu-like symptoms such as fever, chills, sweats, headaches, body aches, loss of appetite, nausea or fatigue may occur in infected individuals after an incubation period of 1 to 4 weeks. It is treatable and is diagnosed through blood tests. Persons suffering from Babesiosis could be co-infected with Lyme and cases are preventable through the same protective behavior as listed for Lyme disease. If untreated for several weeks to several months, Babesiosis may lead to hemolytic anemia. Anyone can be infected with Babesiosis but the elderly and people with immunosuppression are more at risk.

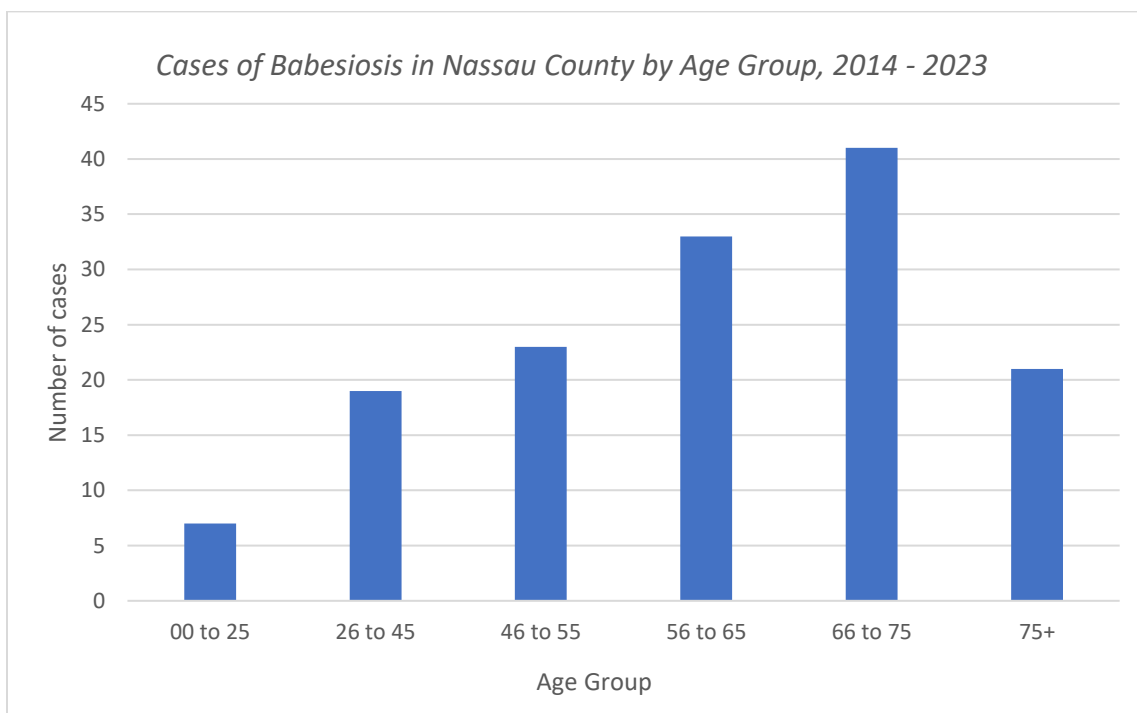
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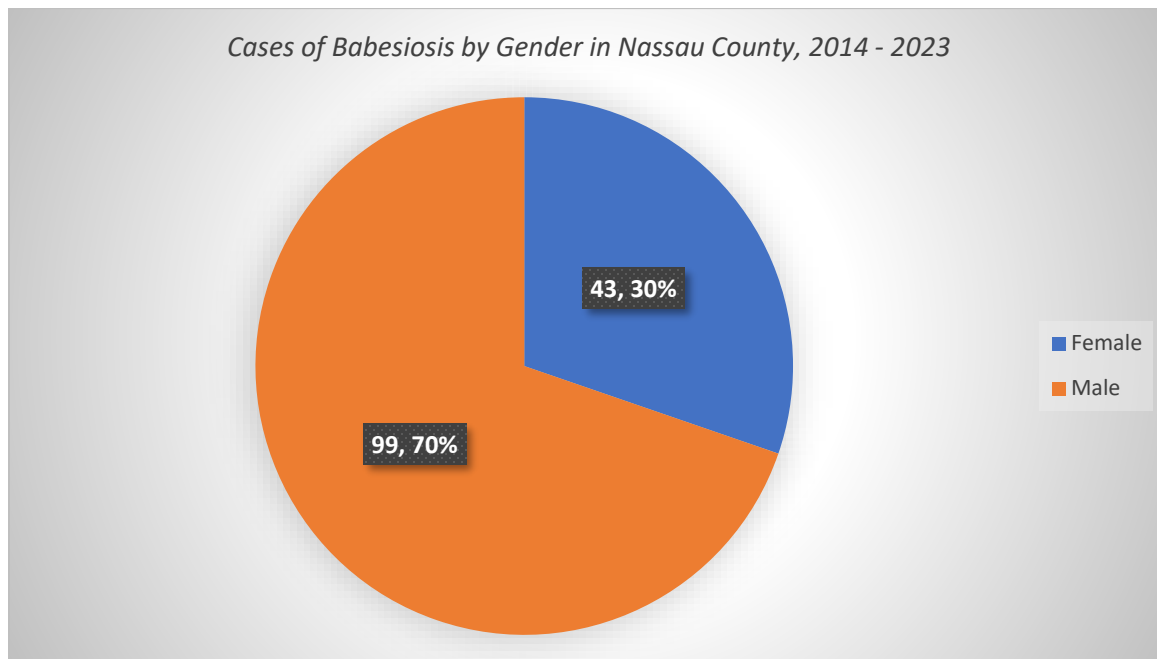
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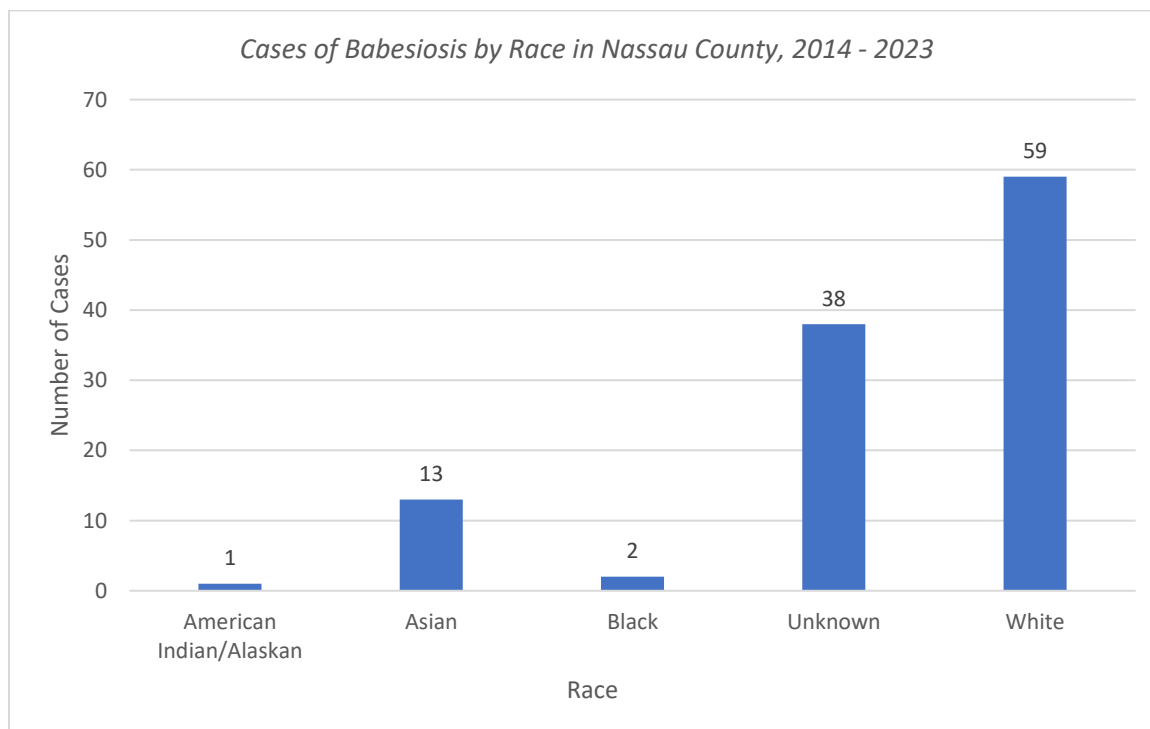
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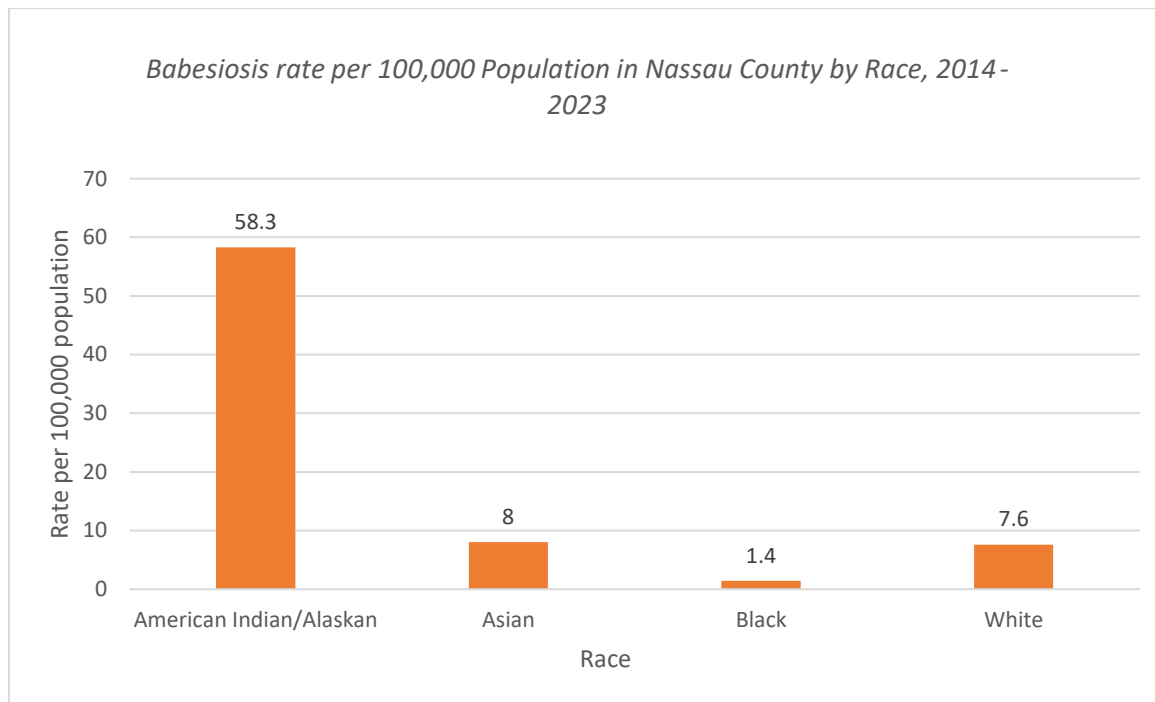
**Figure 6**



**Figure 7**



**Figure 8**



**Figure 9**

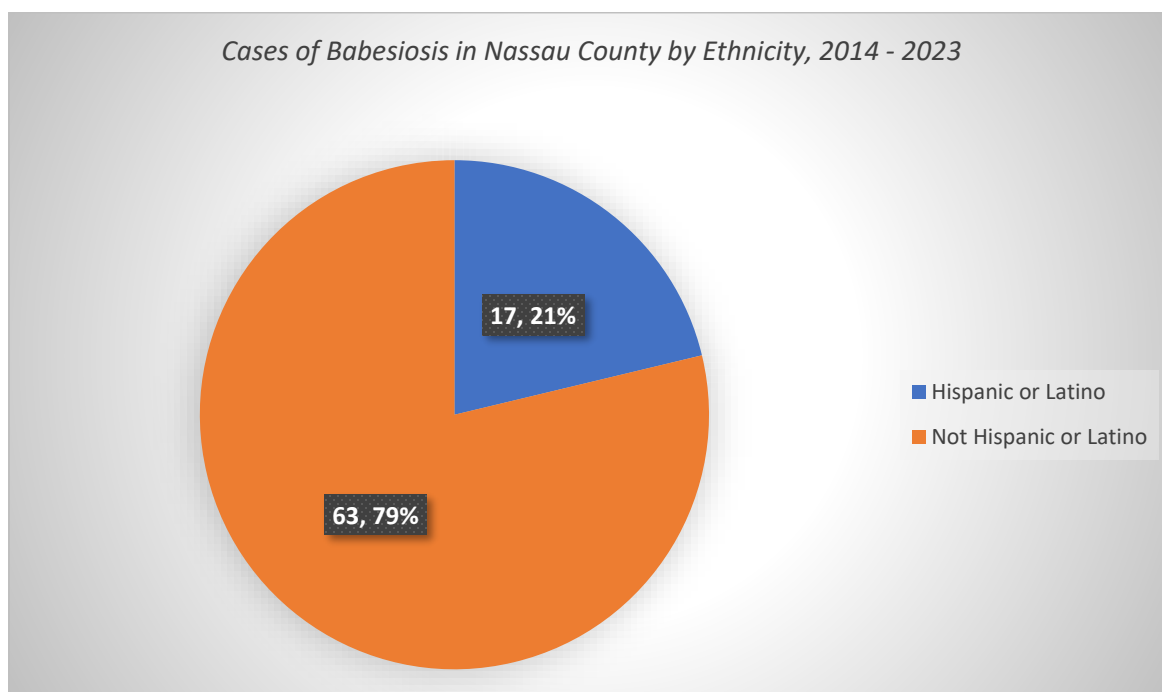


Figure 10

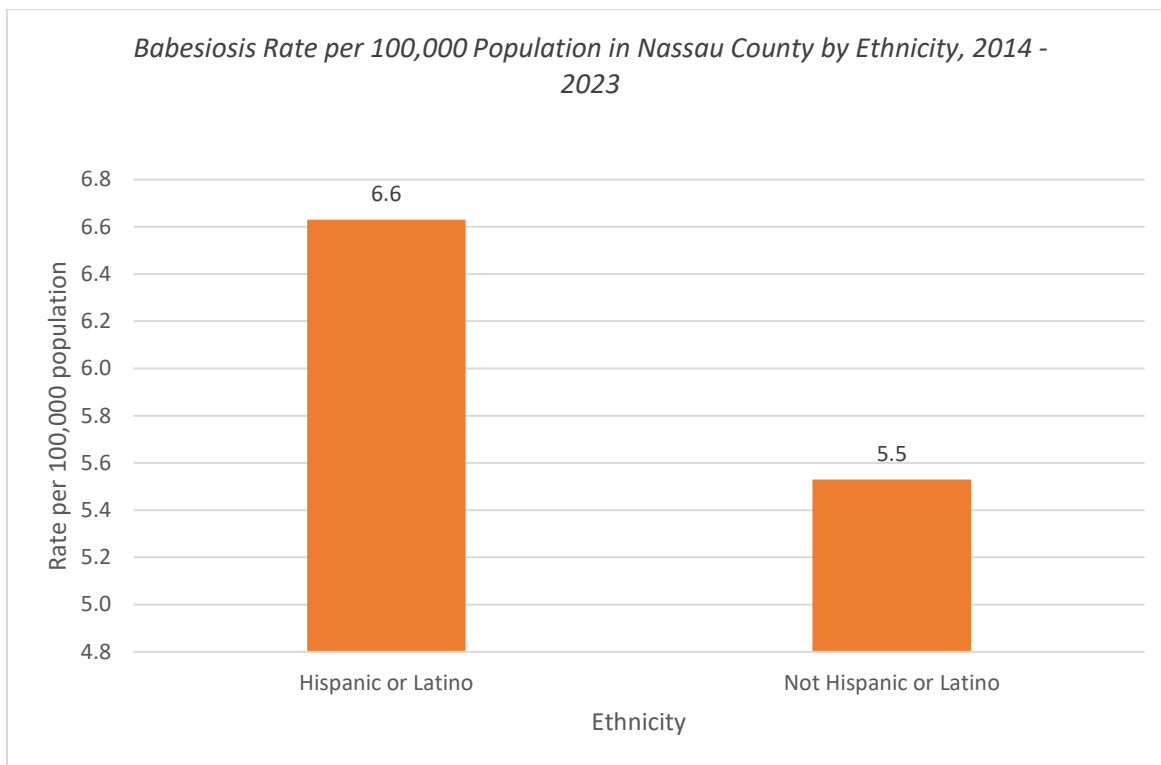
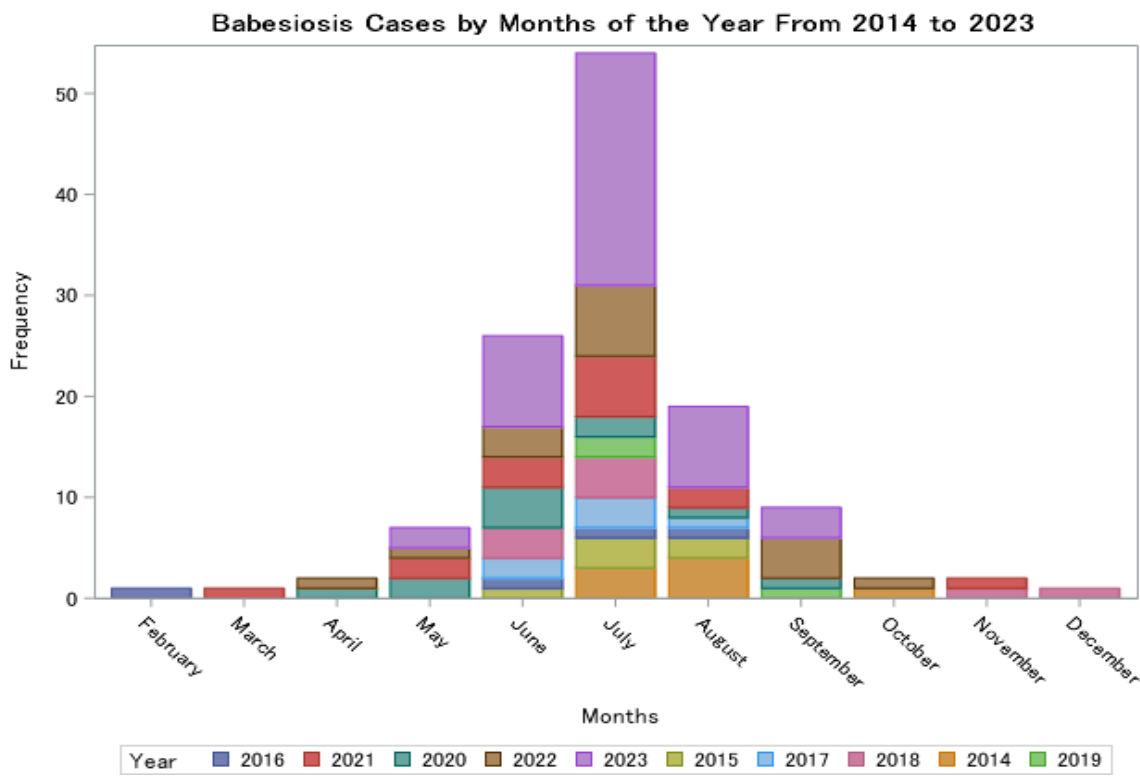


Figure 11







### Ehrlichiosis, 2014 -2023

In the United States, Ehrlichiosis is caused by 3 different species of bacteria – Ehrlichia chaffeensis, E. ewingii, and E. muris transmitted through the bite of infected ticks including the LoneStar tick and the black-legged tick (Deer tick). Vectors are primarily found in the southern central and eastern United States. The condition manifests from 1 – 2 weeks after infection. Typical symptoms are fever, chills, headache, muscle aches, rash, confusion and sometimes stomach upset. There is an available treatment when diagnosed but the late stage can lead to organ failure, respiratory failure, meningoenephalitis, or death. People of any age can be infected but severe cases are seen among older individuals and the immunocompromised.

**Figure 13**

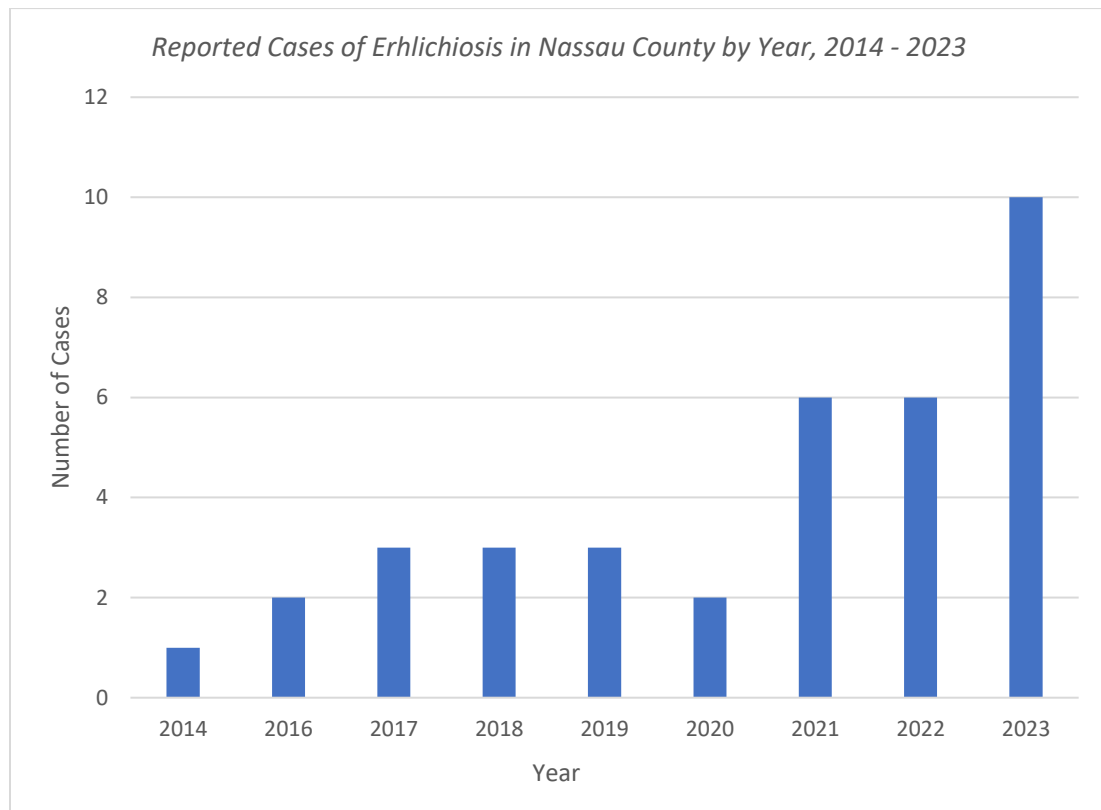


Figure 14

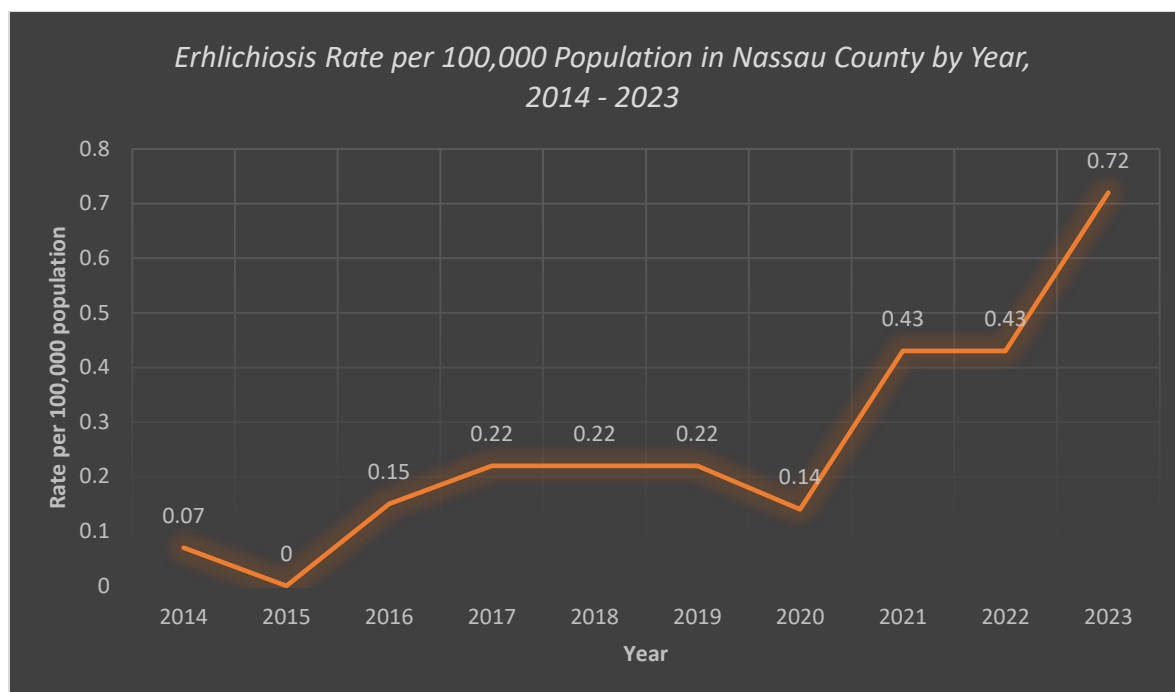
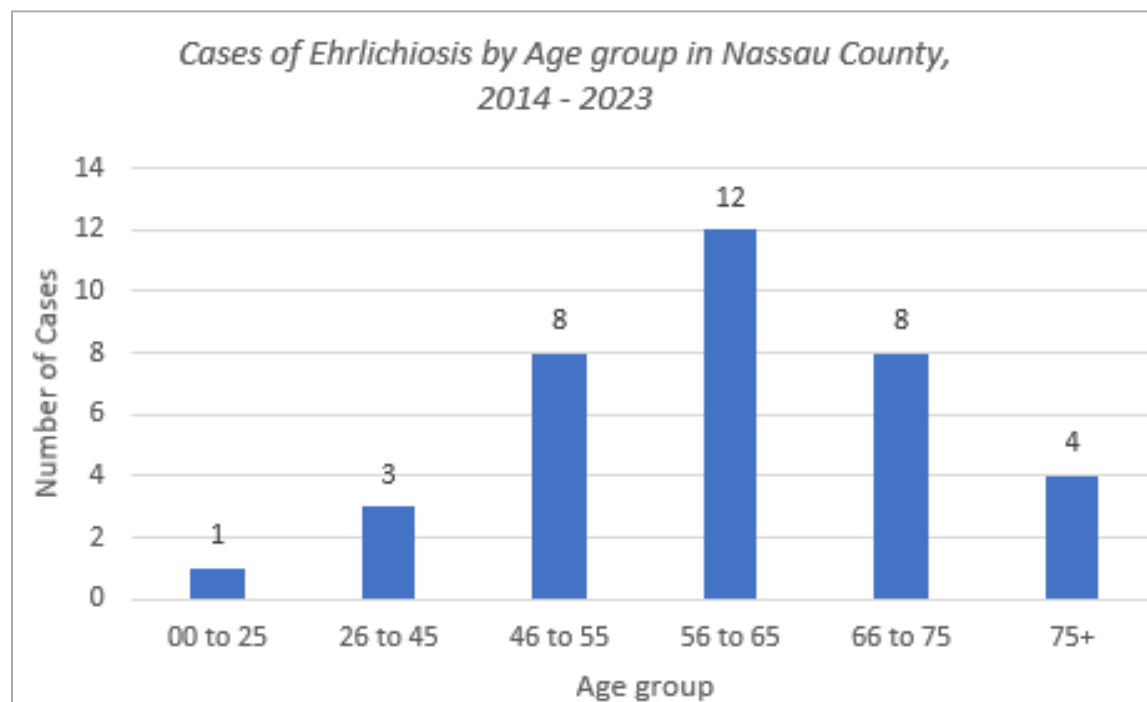
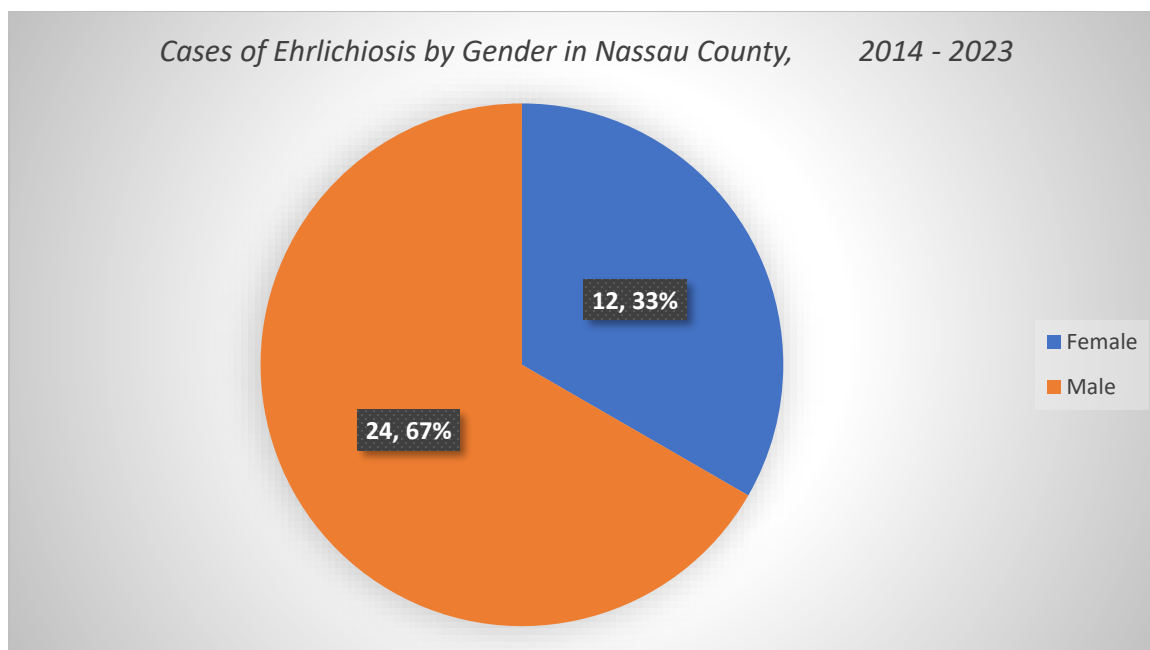


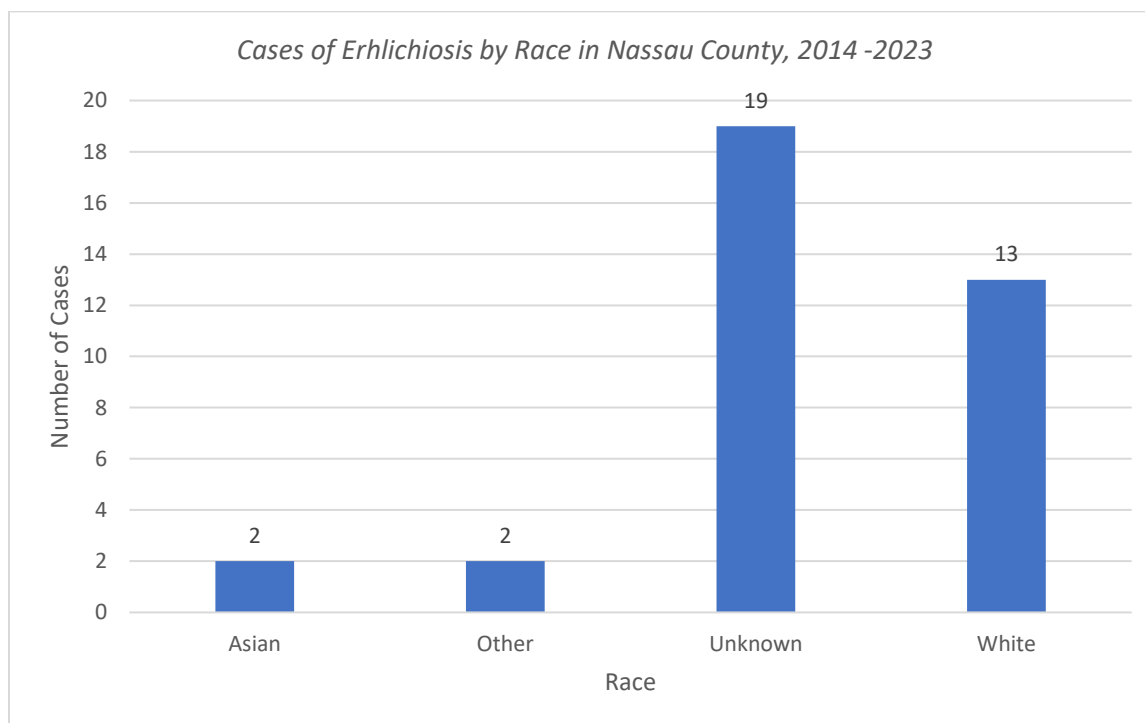
Figure 15



**Figure 16**



**Figure 17**



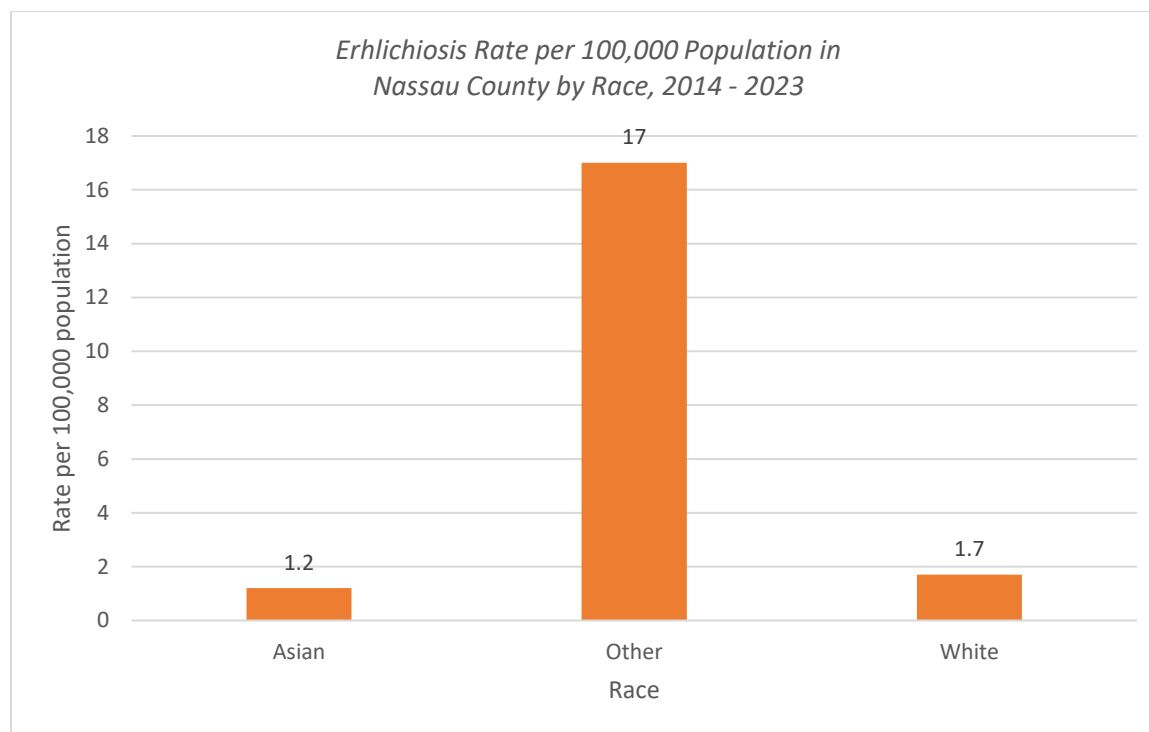
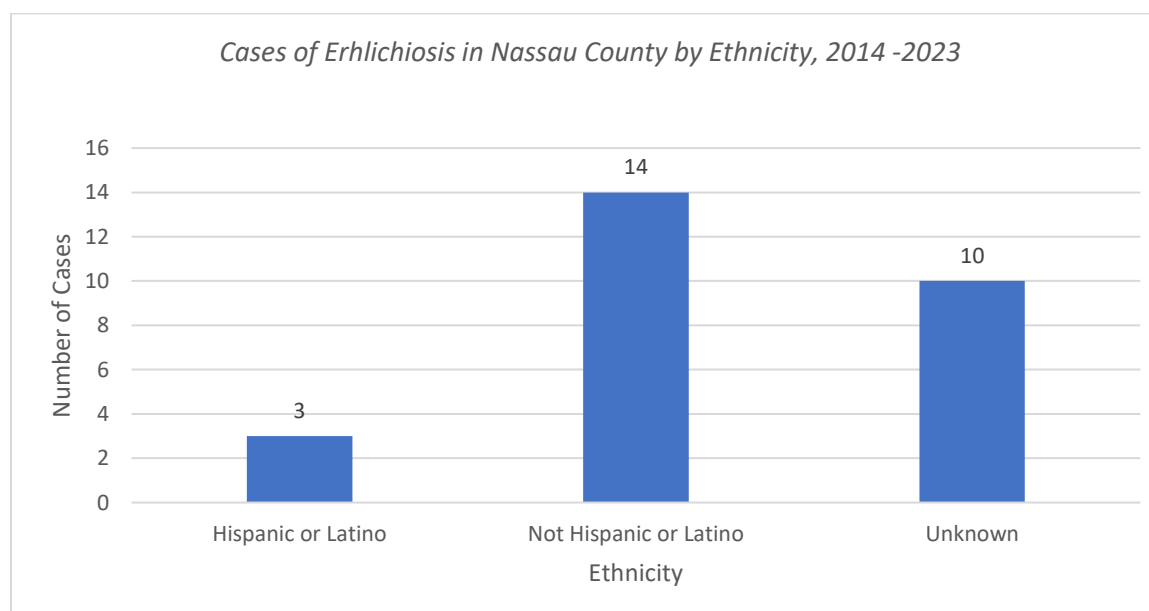
**Figure 18****Figure 19**

Figure 20

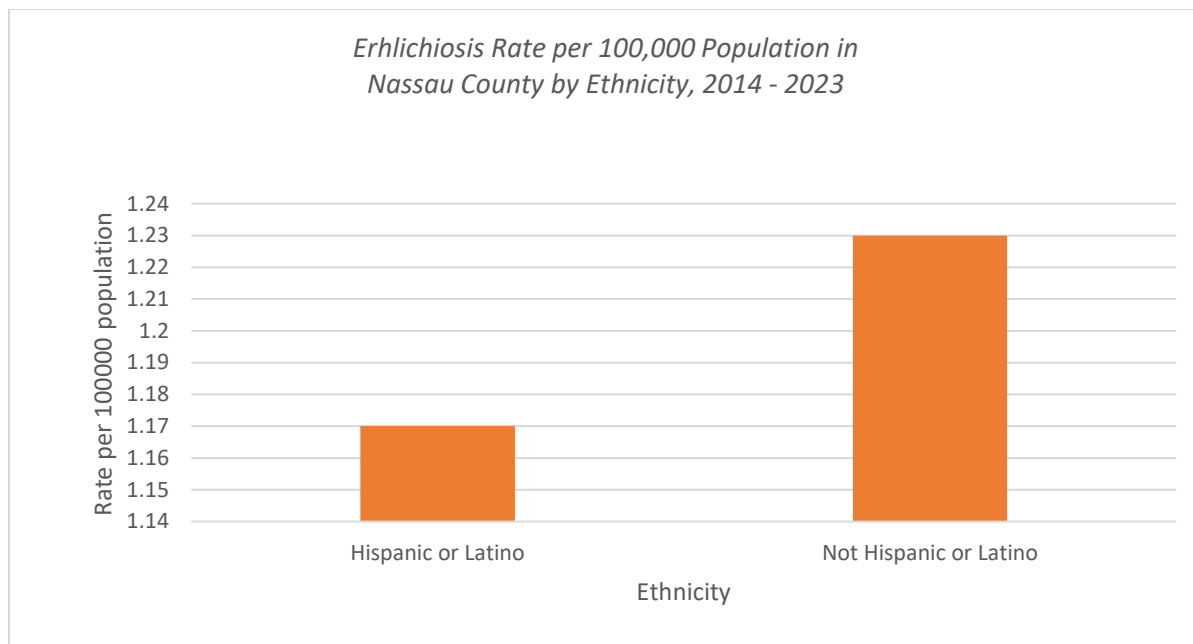
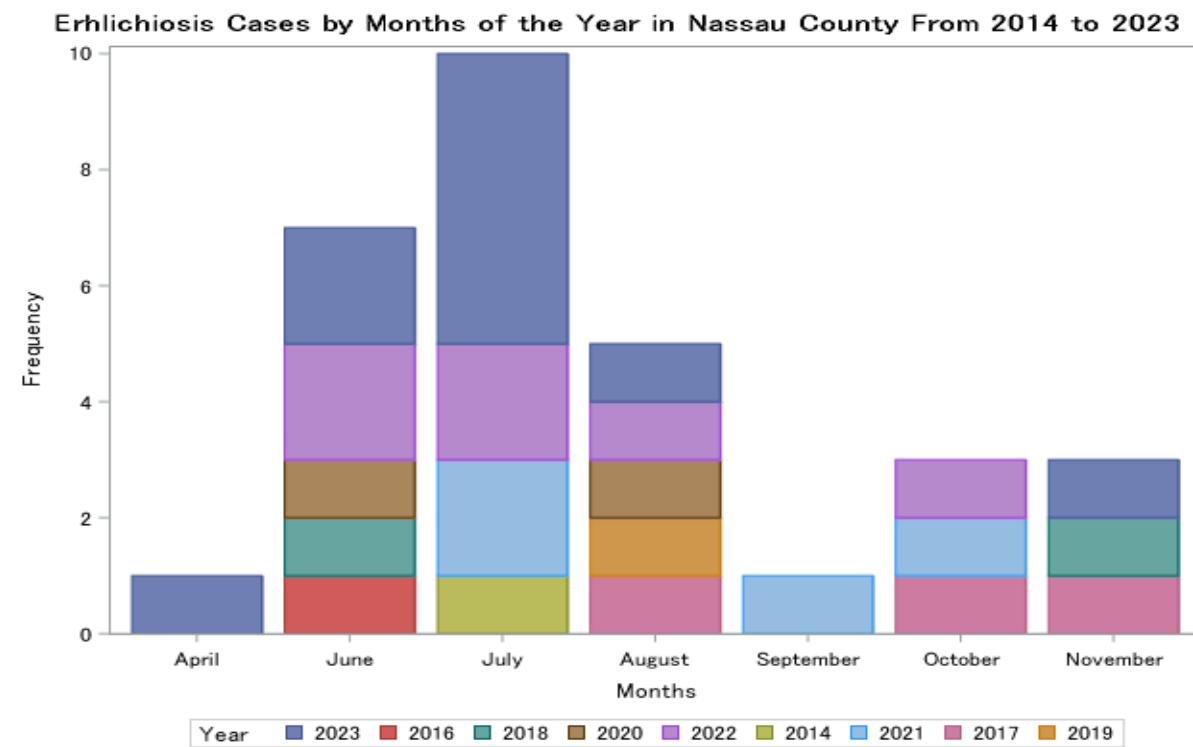
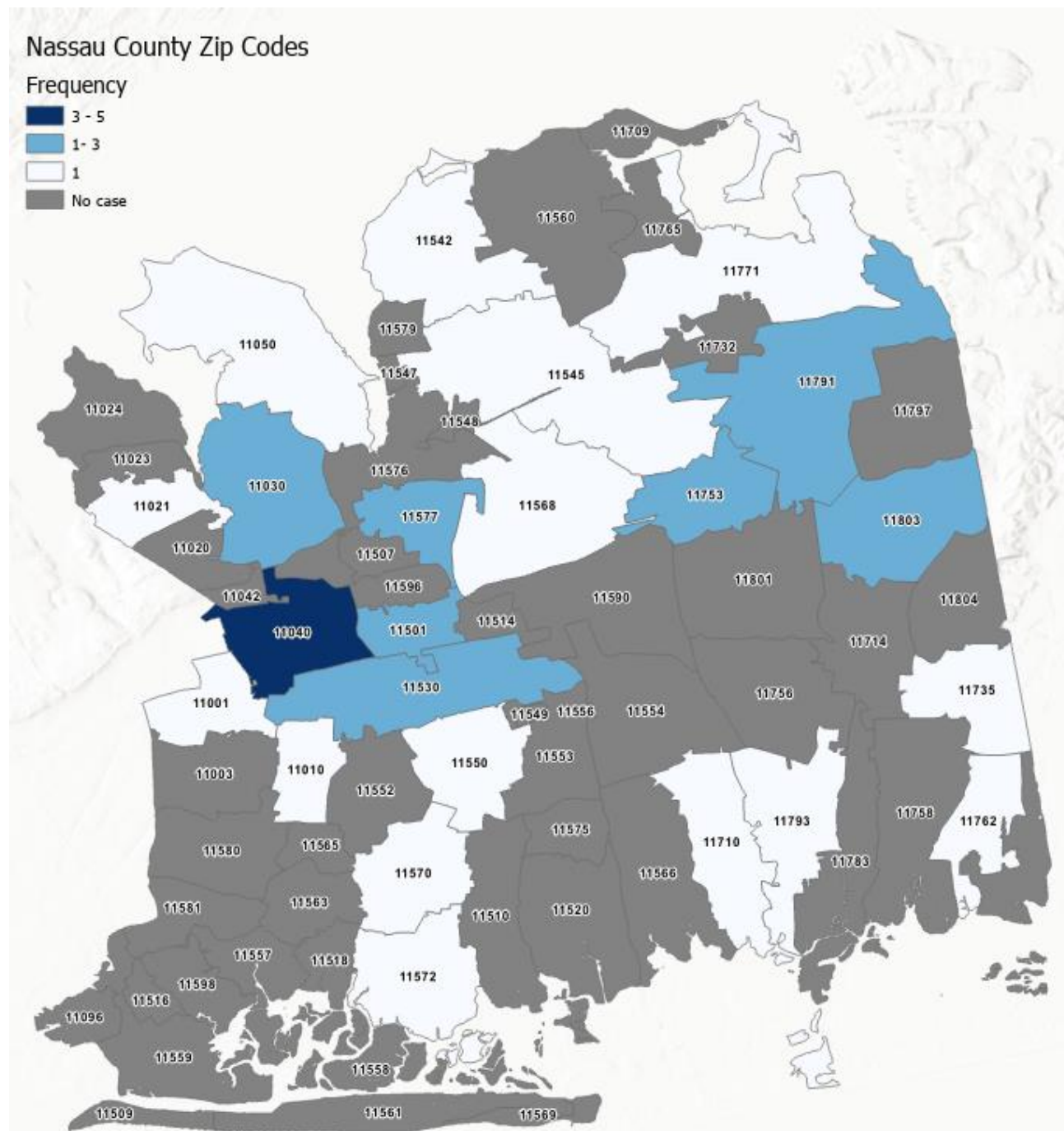


Figure 21



**Figure 22**

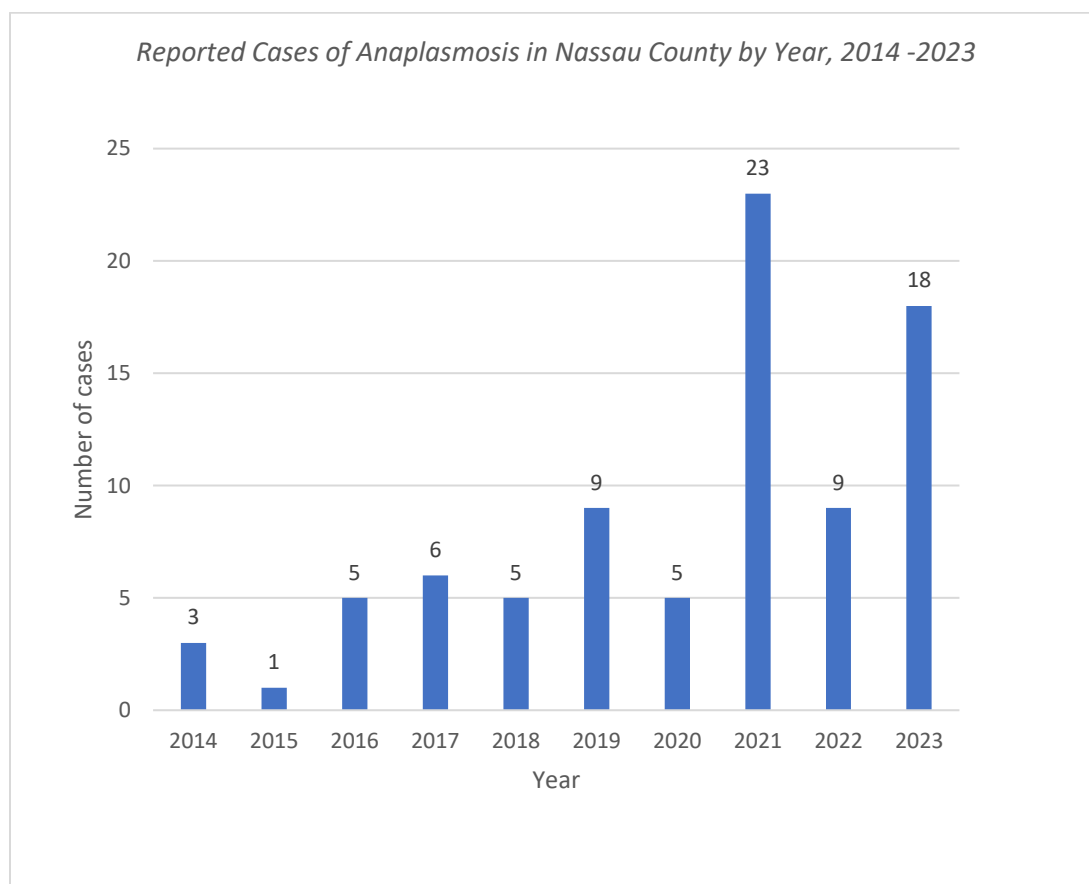
*Cumulative Cases of Ehrlichiosis by Zip code in Nassau County, 2014 -2023*



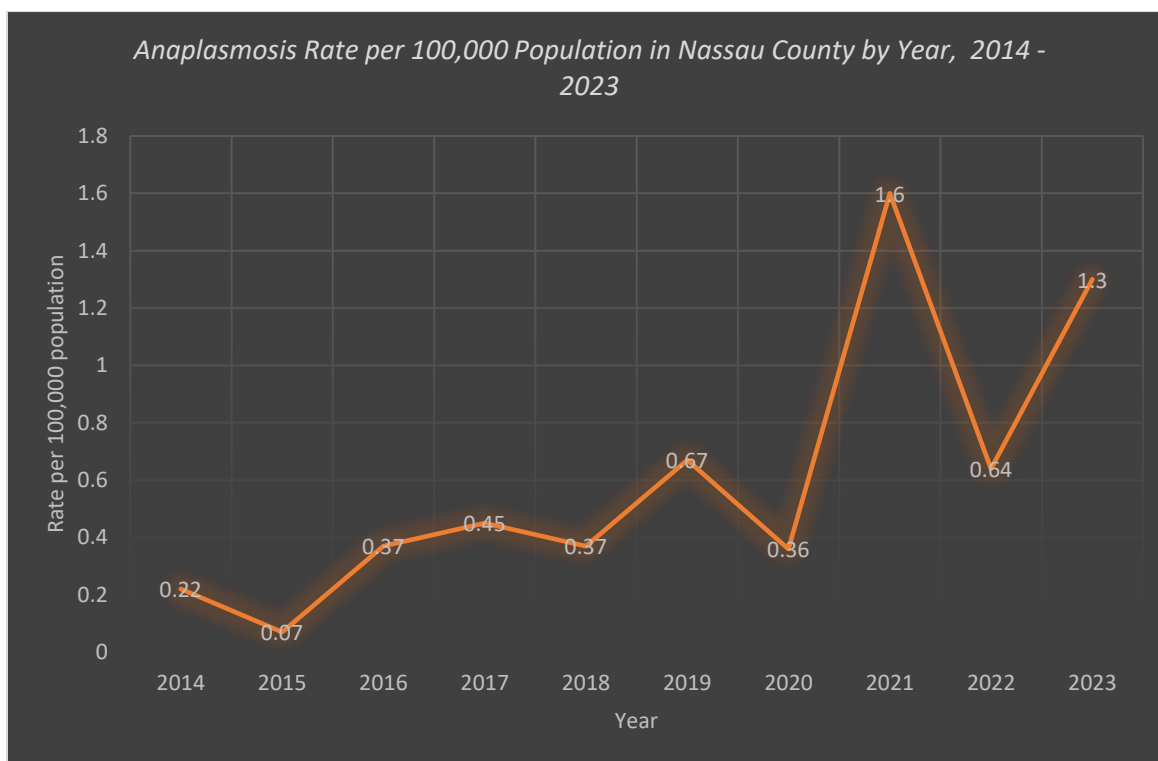
### Anaplasmosis, 2014 -2023

Anaplasmosis is a tickborne bacterial disease caused by *Anaplasma phagocytophilia* that is spread by the bite of infected deer ticks that are most frequently reported in the upper midwestern and northern United States. Most cases have been reported in Long Island and in the Hudson Valley (NYSDOH,2016). Effective treatment with the recommended antibiotics is available once the diagnosis is made, usually by antigen-antibody test, and blood test microscopy.

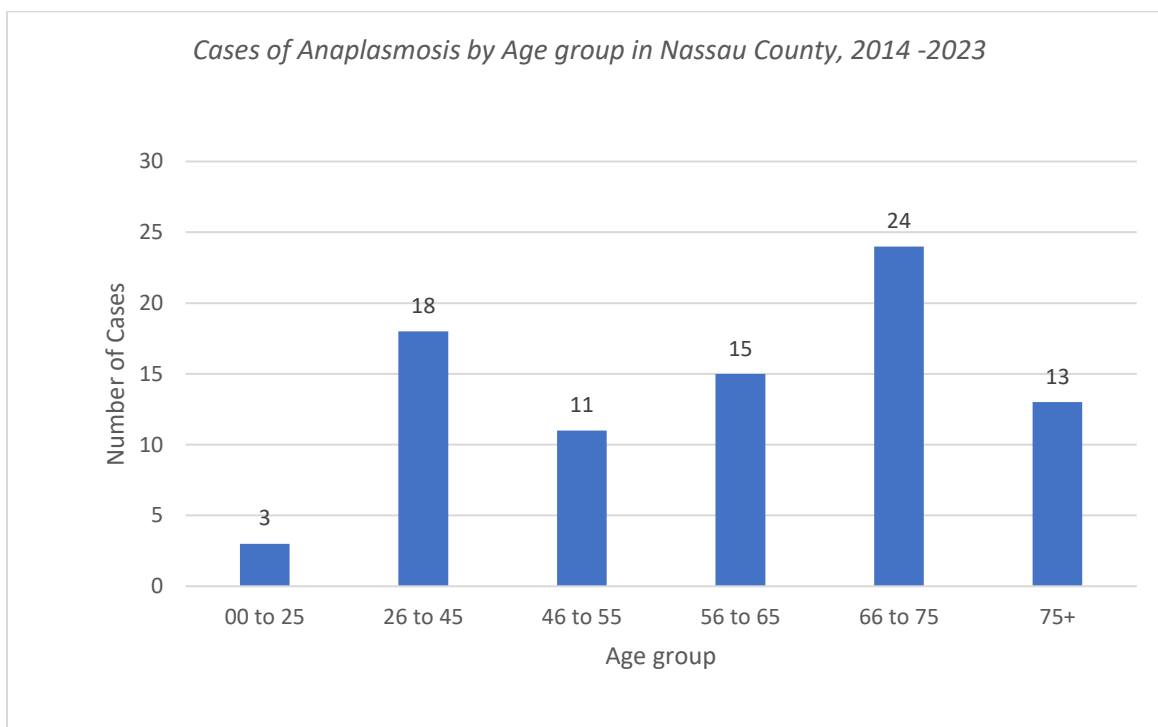
**Figure 23**



**Figure 24**

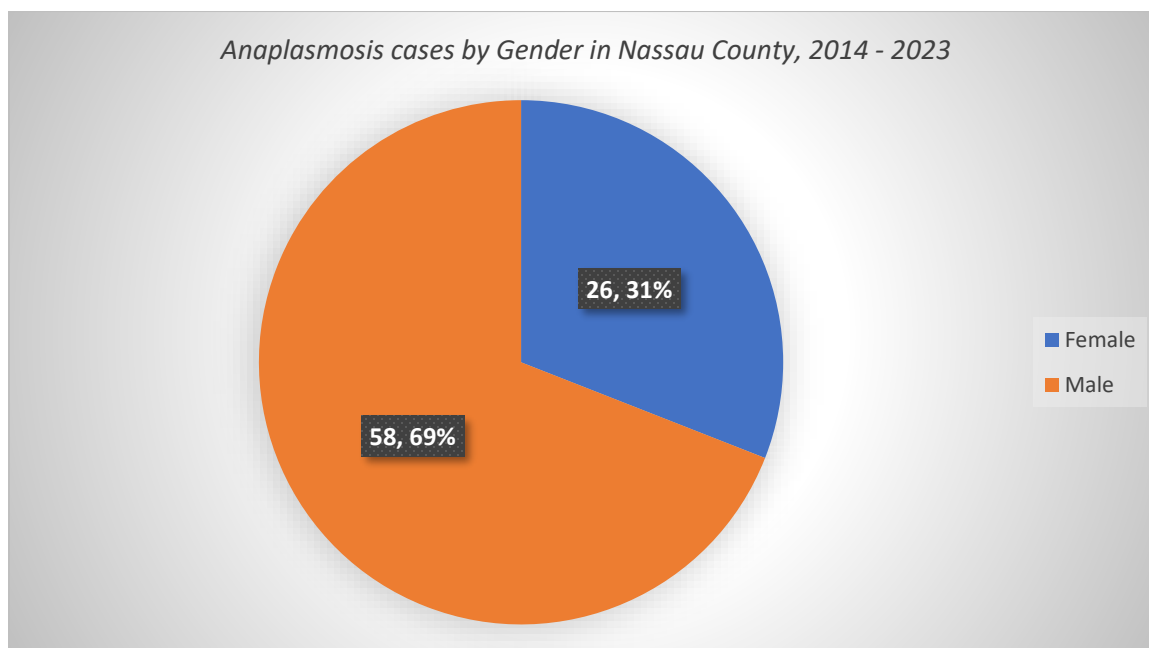


**Figure 25**

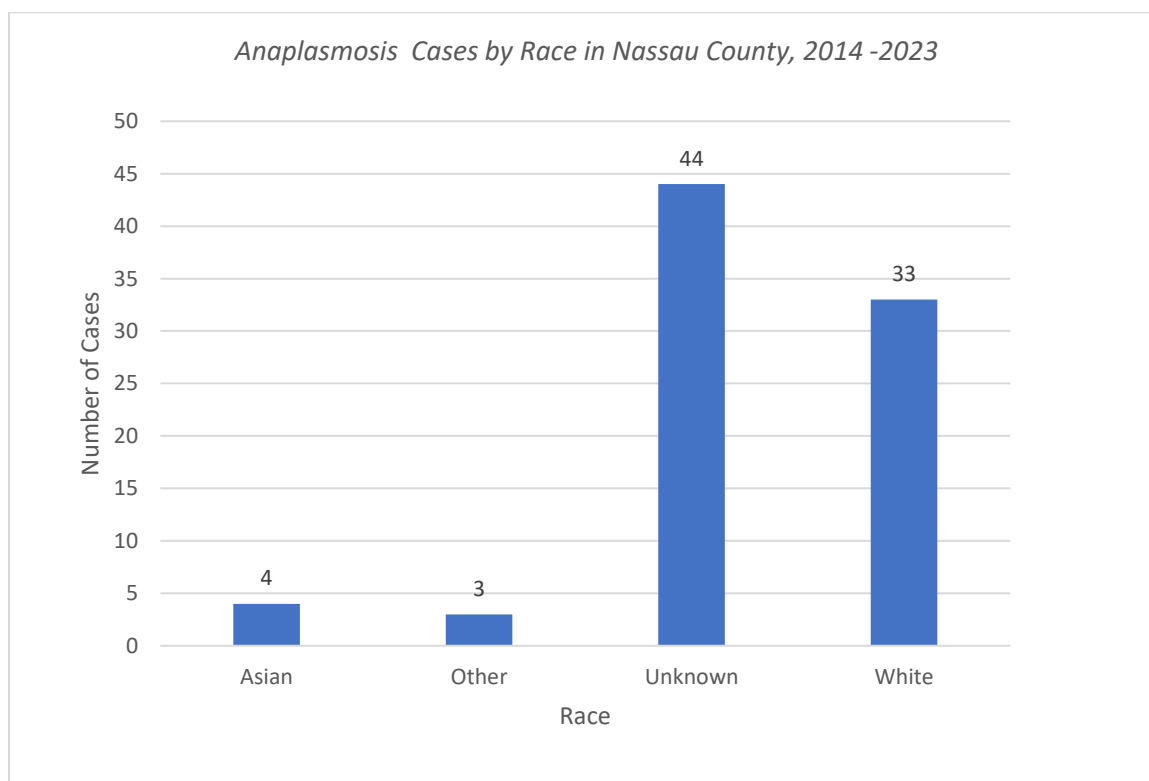


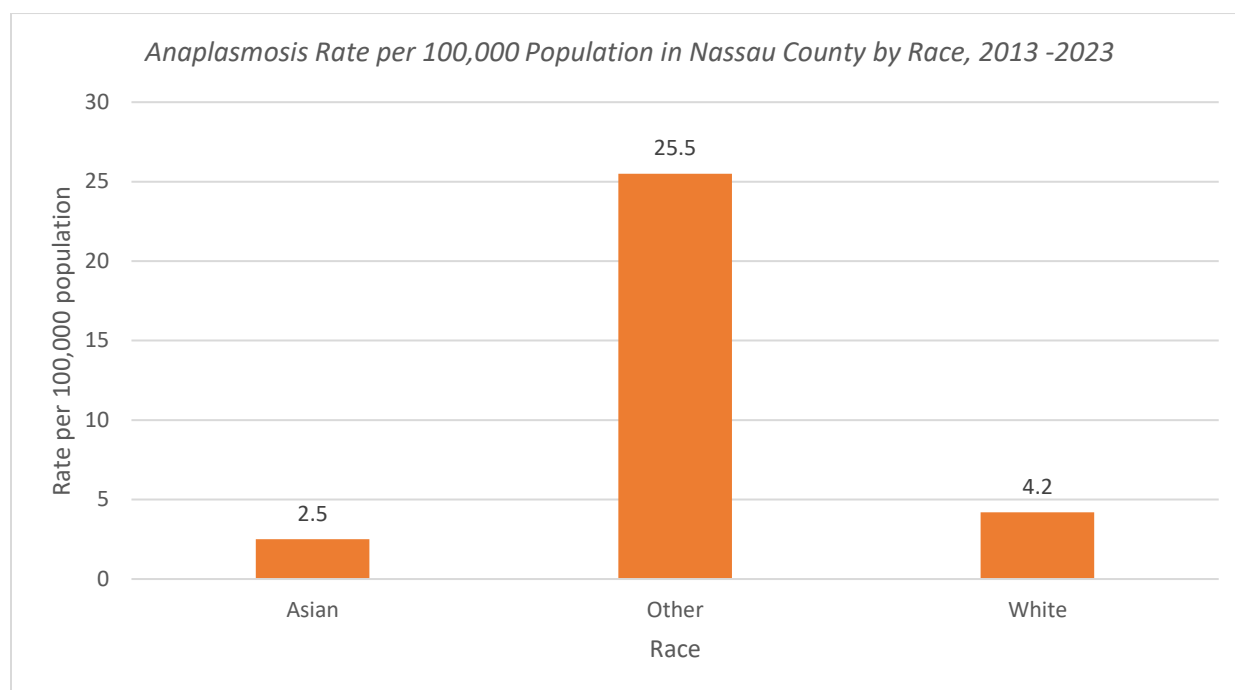
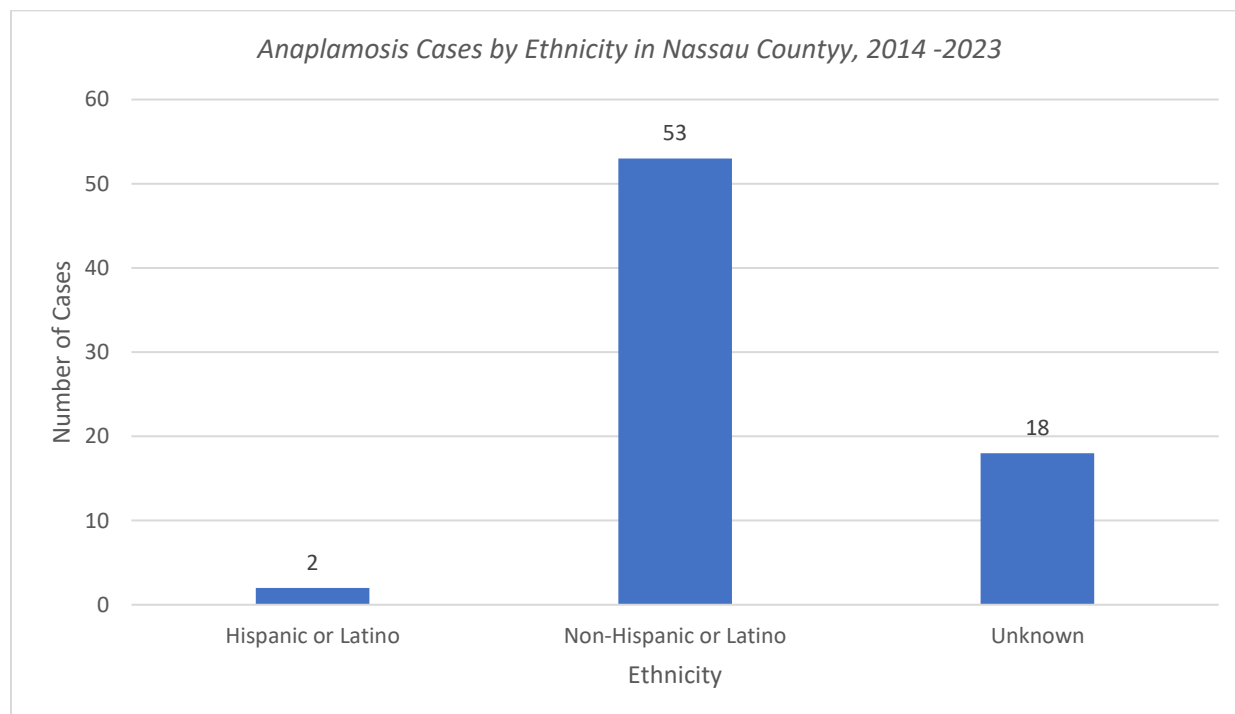


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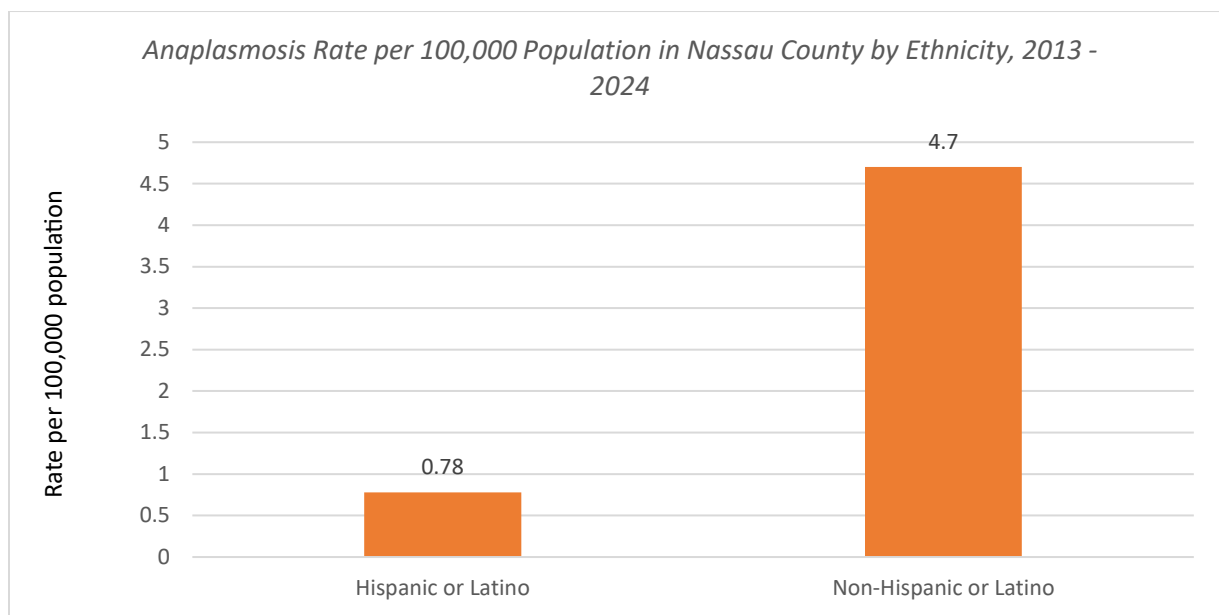


**Figure 27**



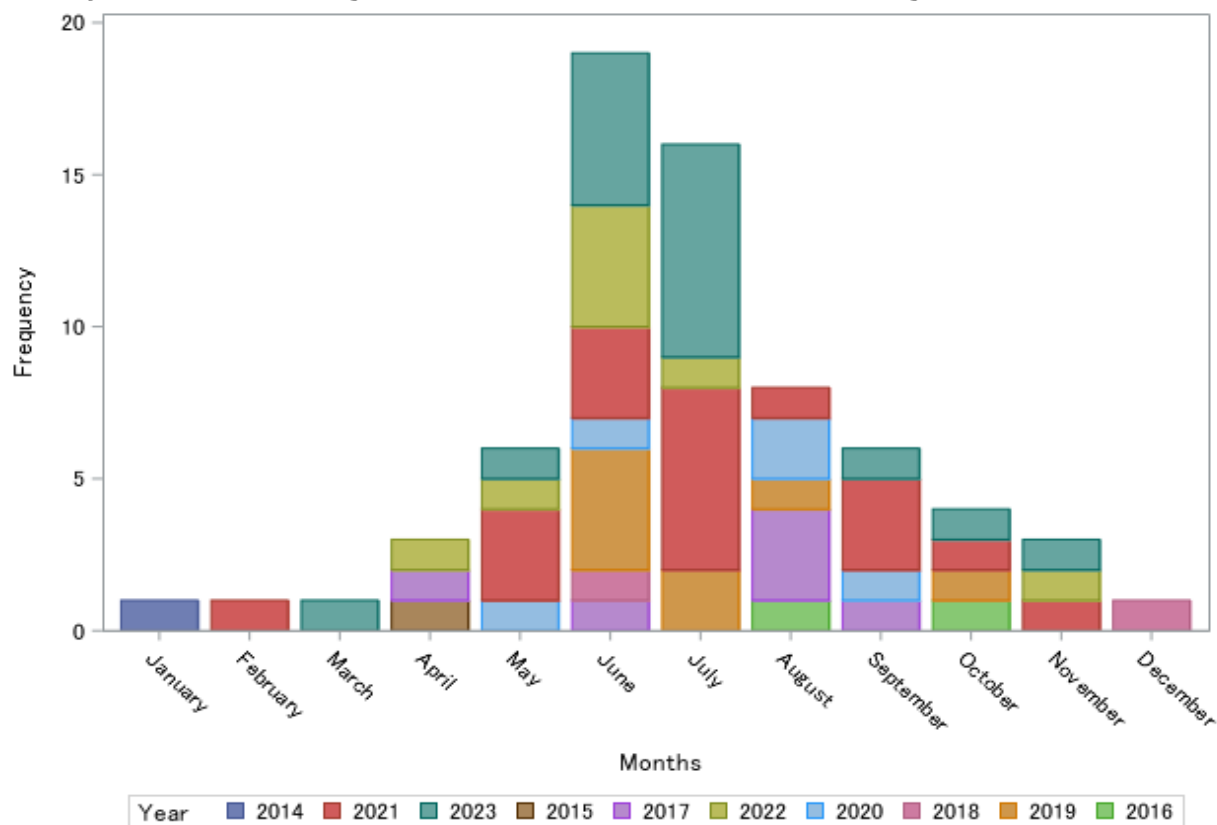
**Figure 28****Figure 29**

**Figure 30**



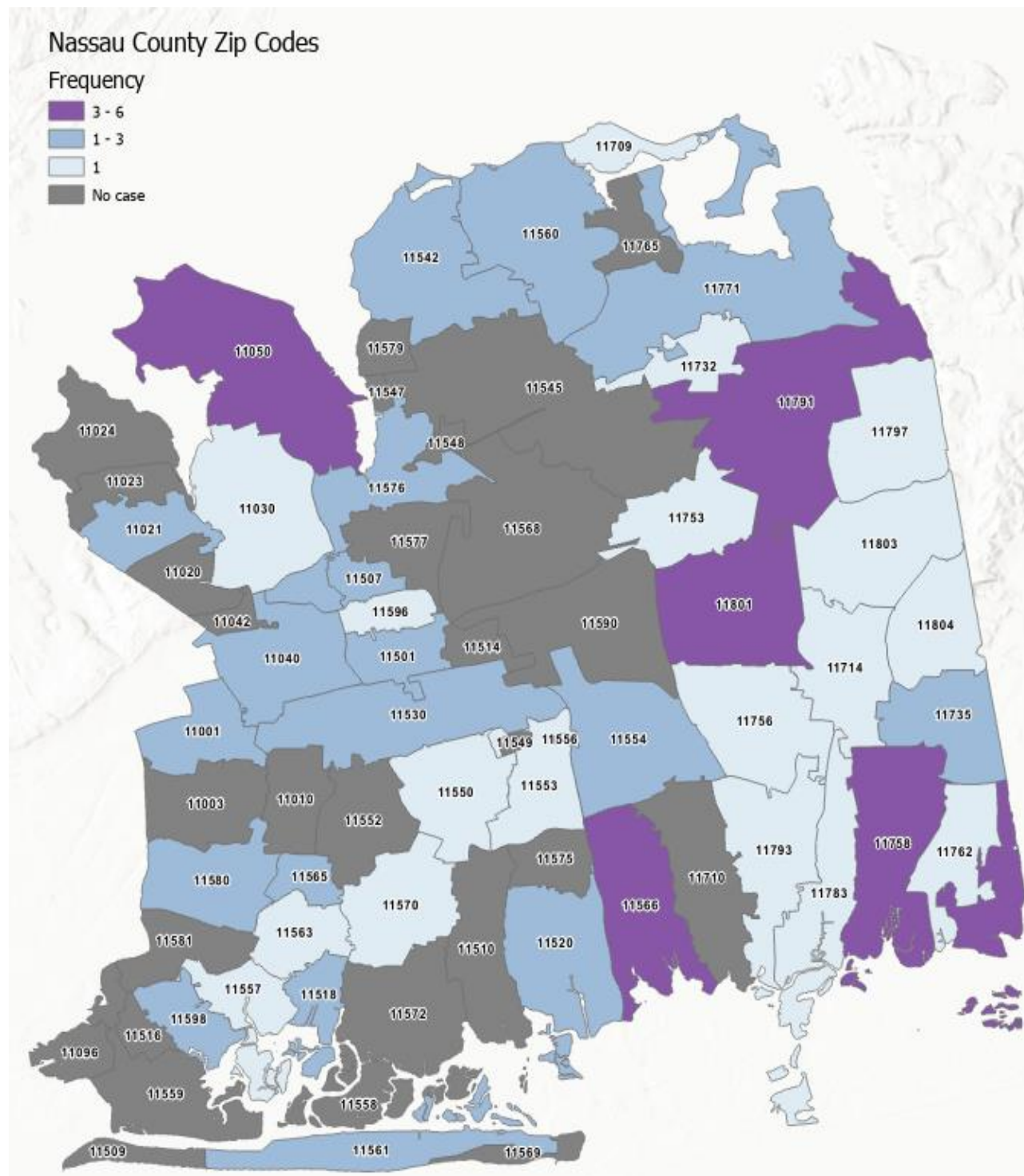
**Figure 31**

**Anaplasmosis Cases by Months of the Year in Nassau County From 2014 to 2023**



**Figure 32**

*Cumulative Cases of Anaplasmosis by Zip code in Nassau County, 2014 -2023*



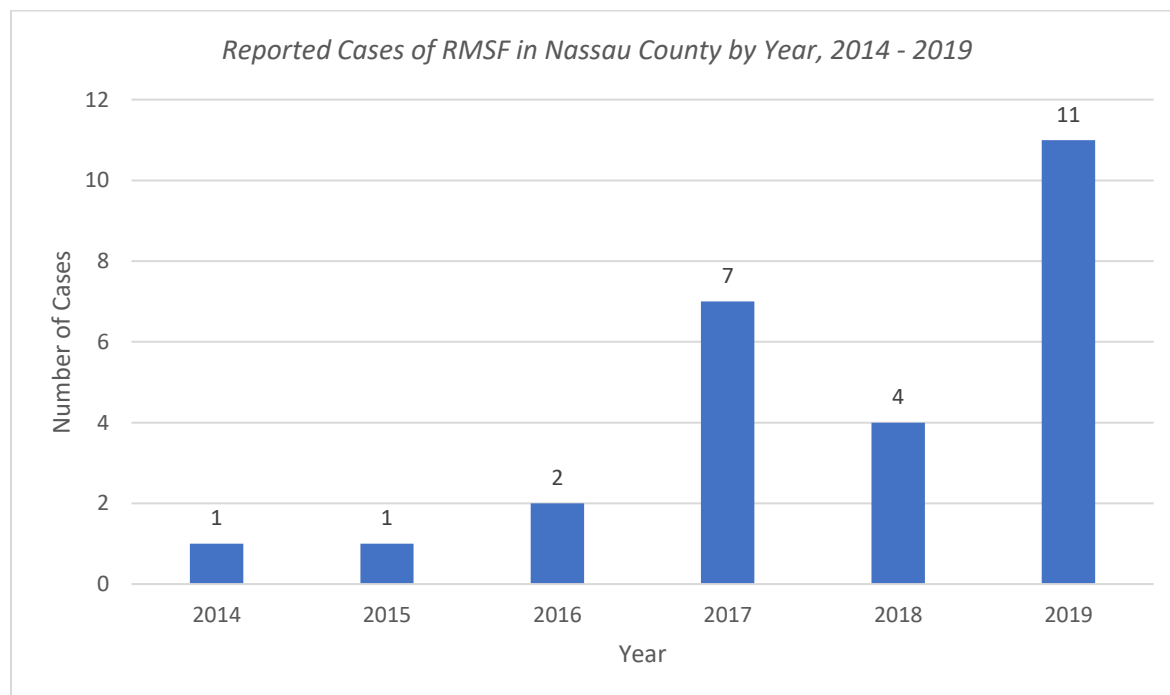
### Rocky Mountain Spotted Fever (RMSF), 2014 -2019

Rocky Mountain spotted fever (RMSF) is caused by the bacterium *Rickettsia rickettsii*. In New York, the American dog tick (*Dermacentor variabilis*) is the most common vector for spreading the disease. The geographical range includes Oklahoma, Arkansas, Tennessee, and Missouri. Brown dog ticks are prevalent vectors for spreading the disease in Arizona and northern Mexico. The early signs of RMSF are non-specific but include fever and headache. Rashes that look like red splotches and some like pinpoint dots appear 2 – 4 days following fever in almost all individuals infected by the disease. Acute infections may destroy the blood supply to the limbs and lead to permanent body damage resulting in loss of limbs such as the arms, toes, or fingers.

Recommended antibiotics are available to intervene in these sequelae in early diagnosis. A high fatality rate is known to occur in children under 10 years, and increased cases are reported in people 40 years and over. Anybody can be infected by the disease but the immunocompromised are at higher risk of the infection. Like other tickborne diseases, RMSF can be prevented by adopting Tick protective behavior.

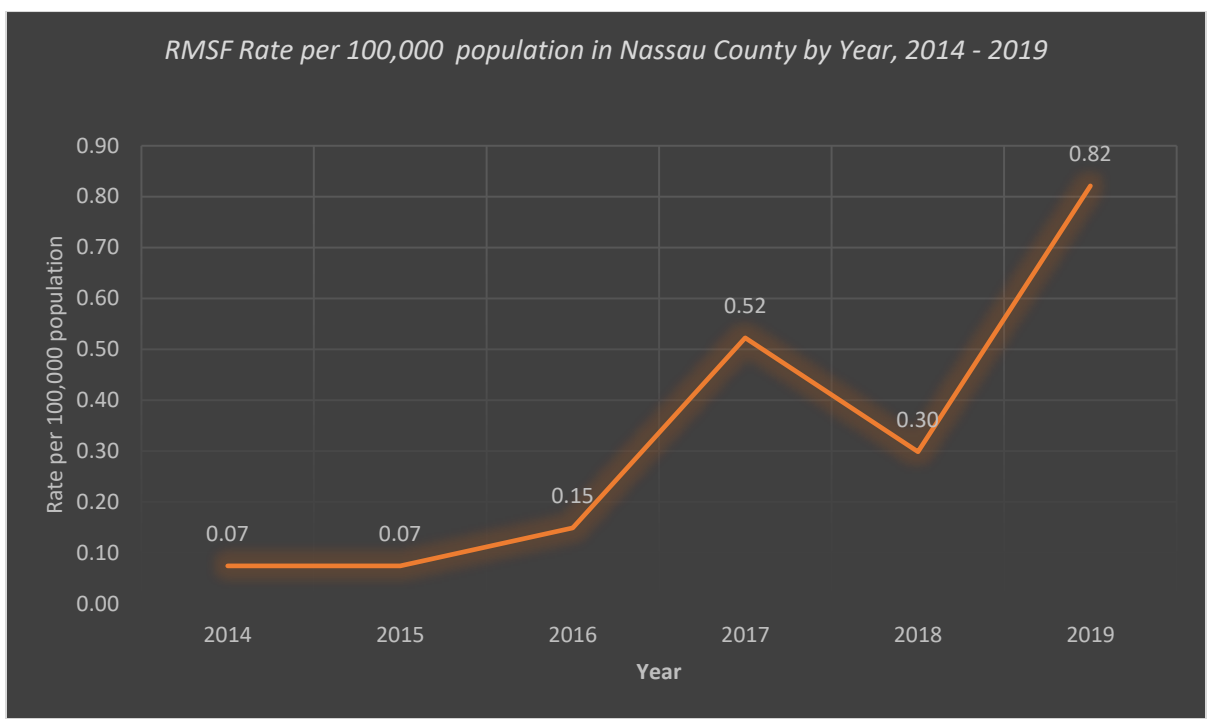
In Nassau County, there have been no reported cases of RMSF for three consecutive years, 2020 to 2023.

**Figure 33**

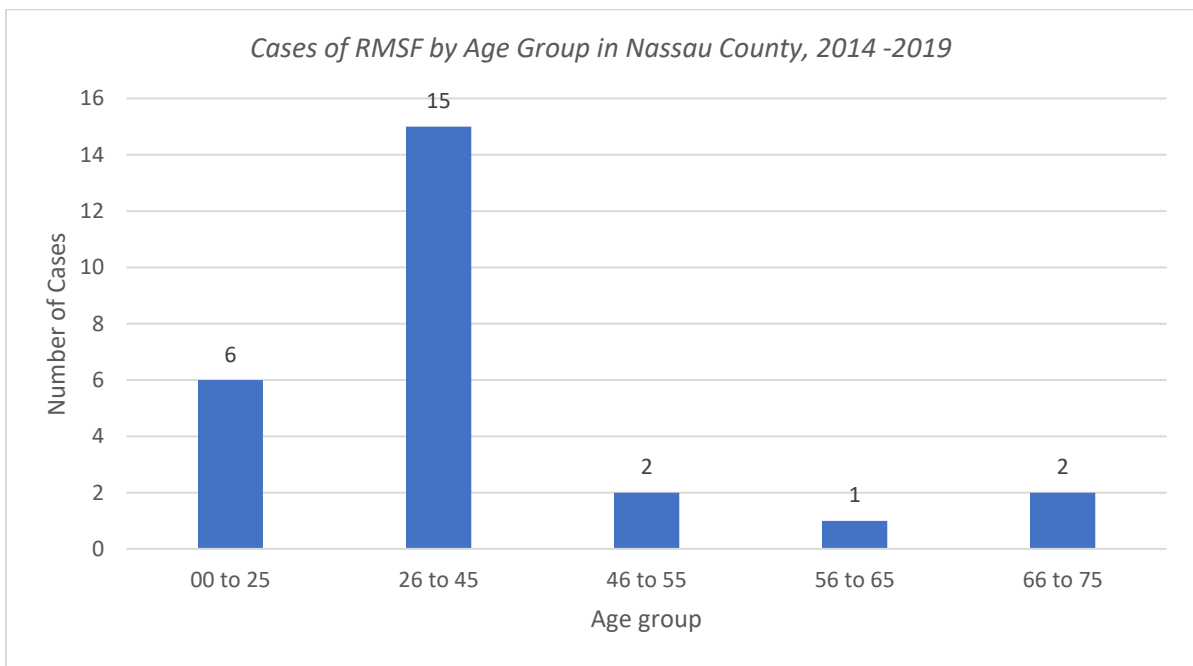


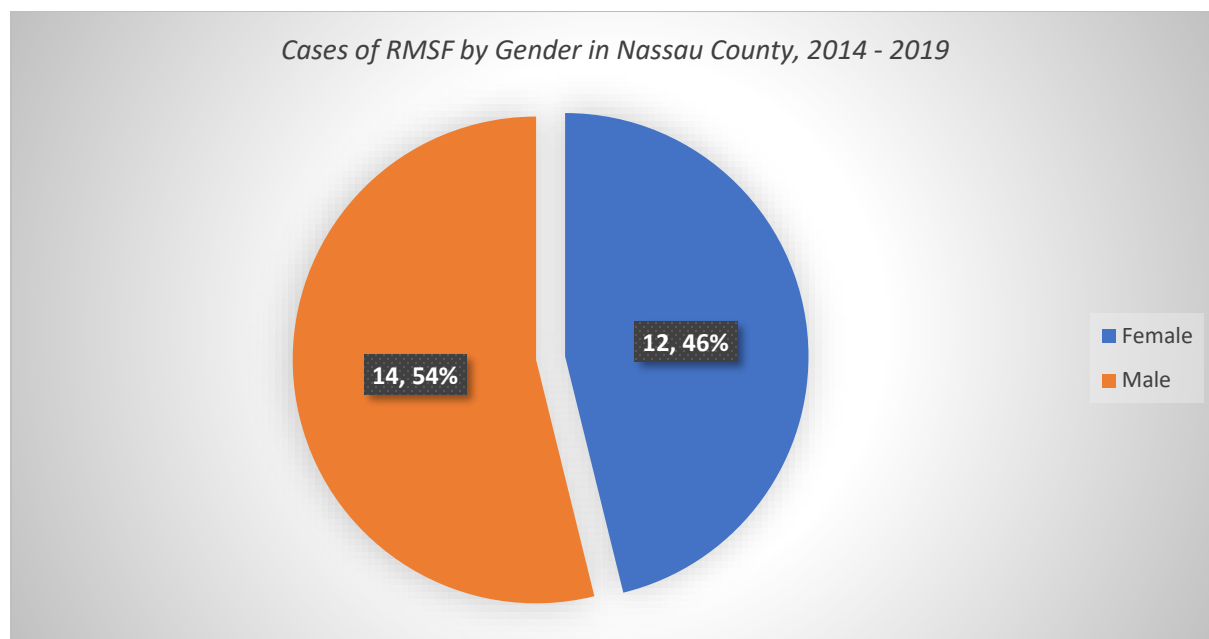
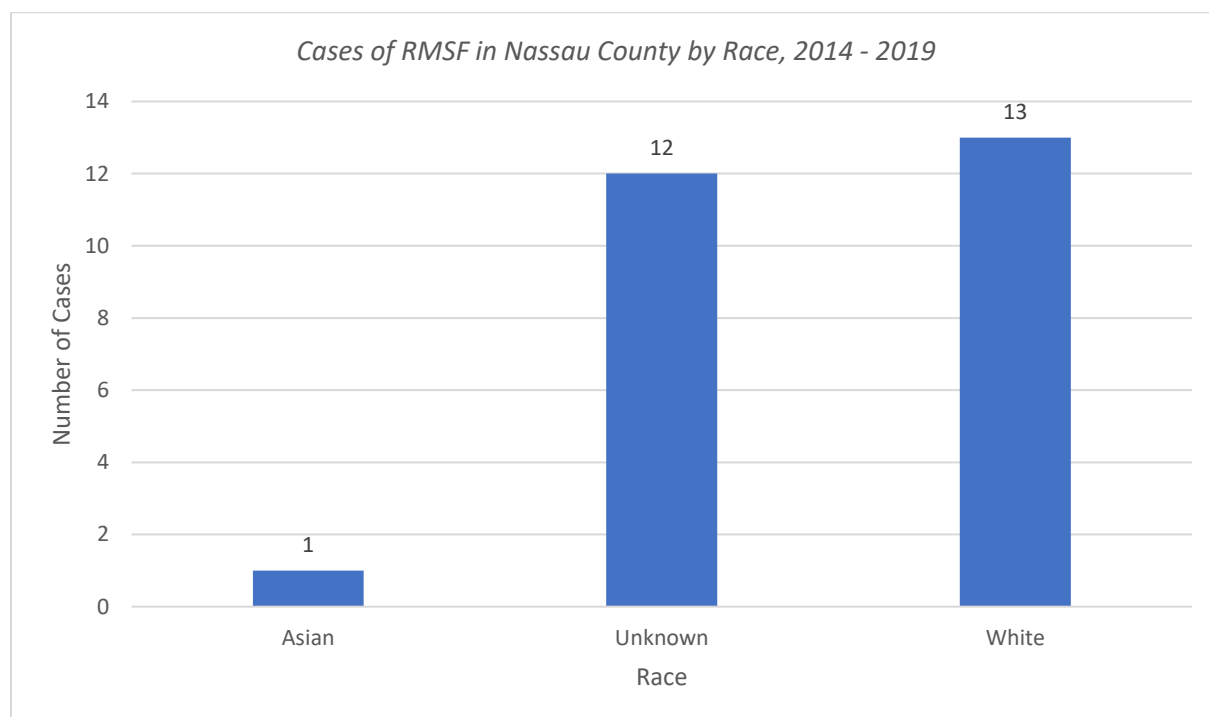
There were no cases (confirmed and probable) reported in the years 2020 – 2023.

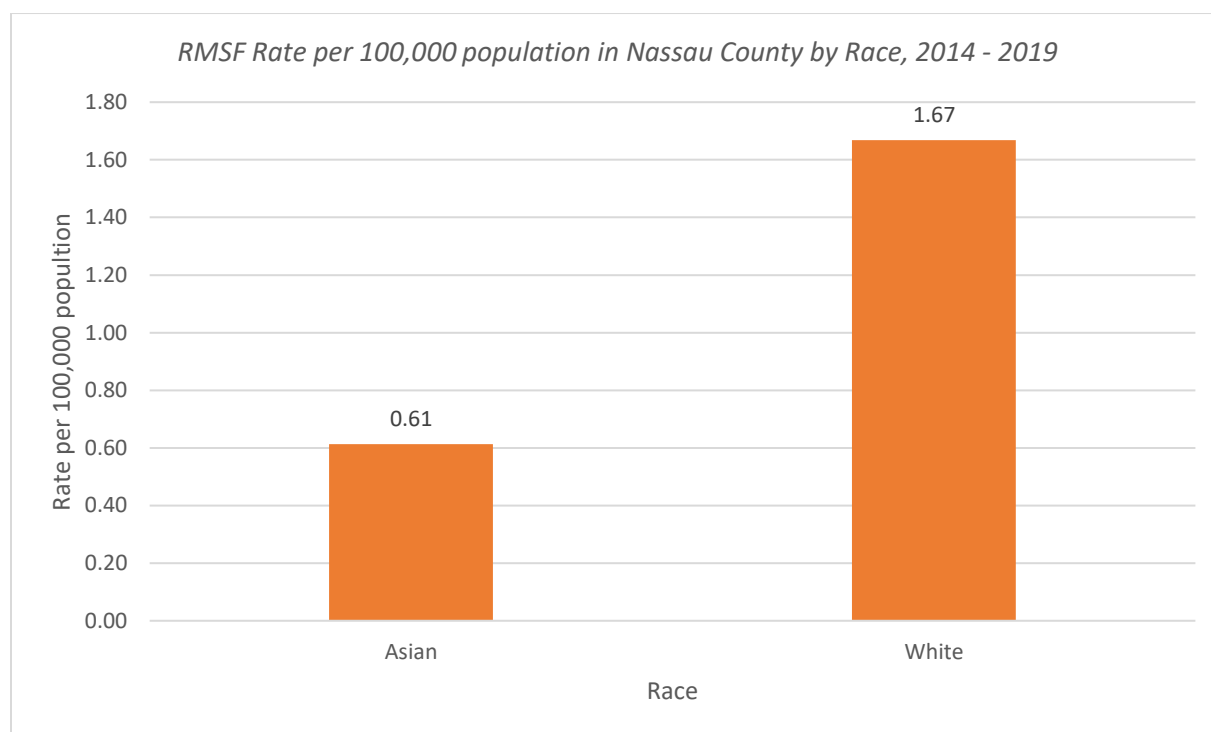
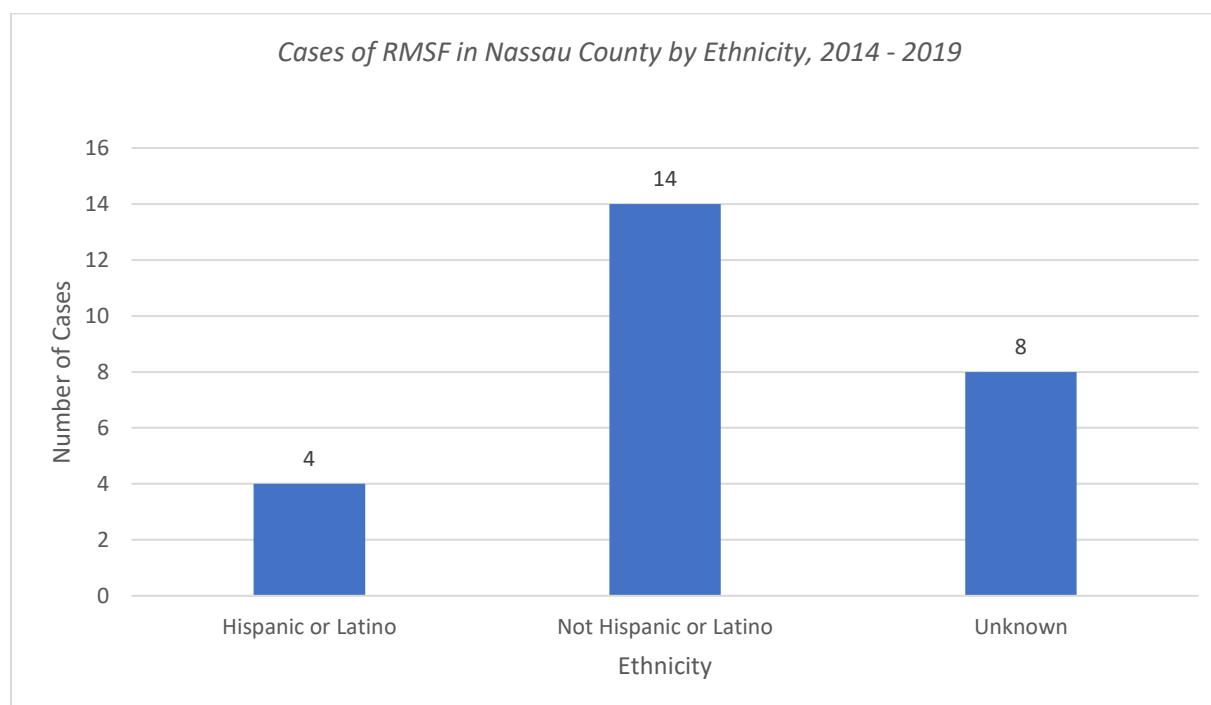
**Figure 34**



**Figure 35**

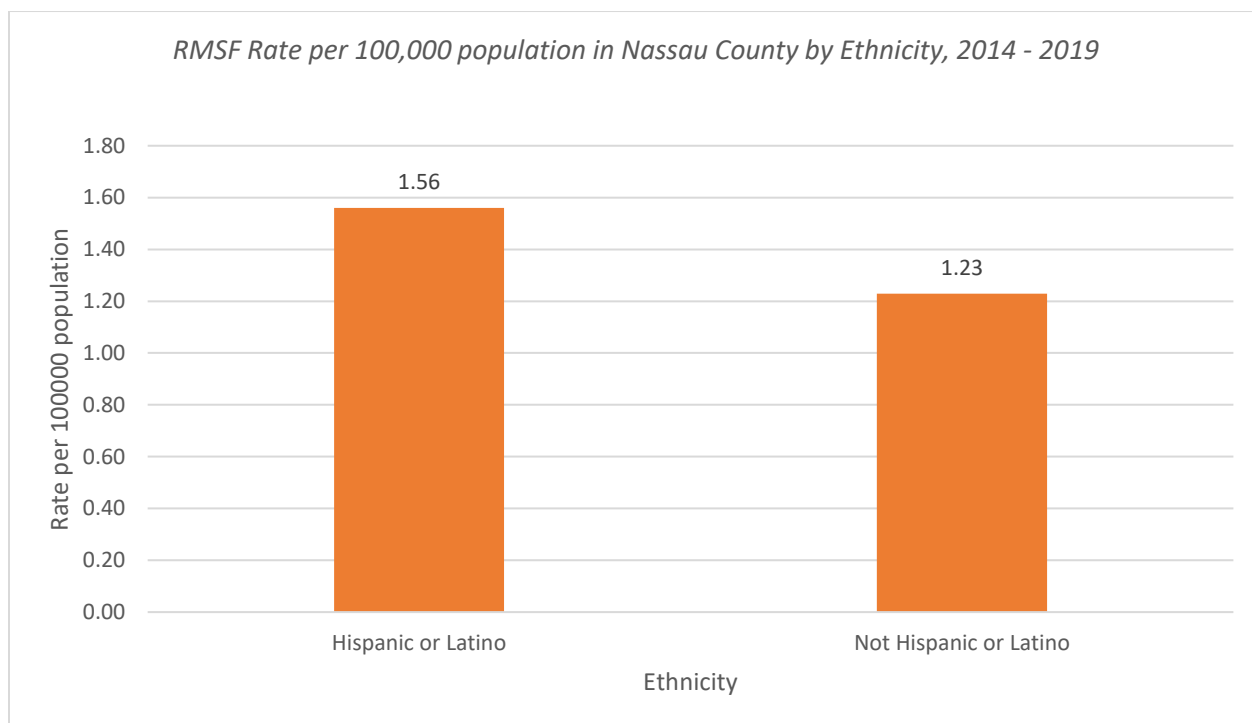


**Figure 36****Figure 37**

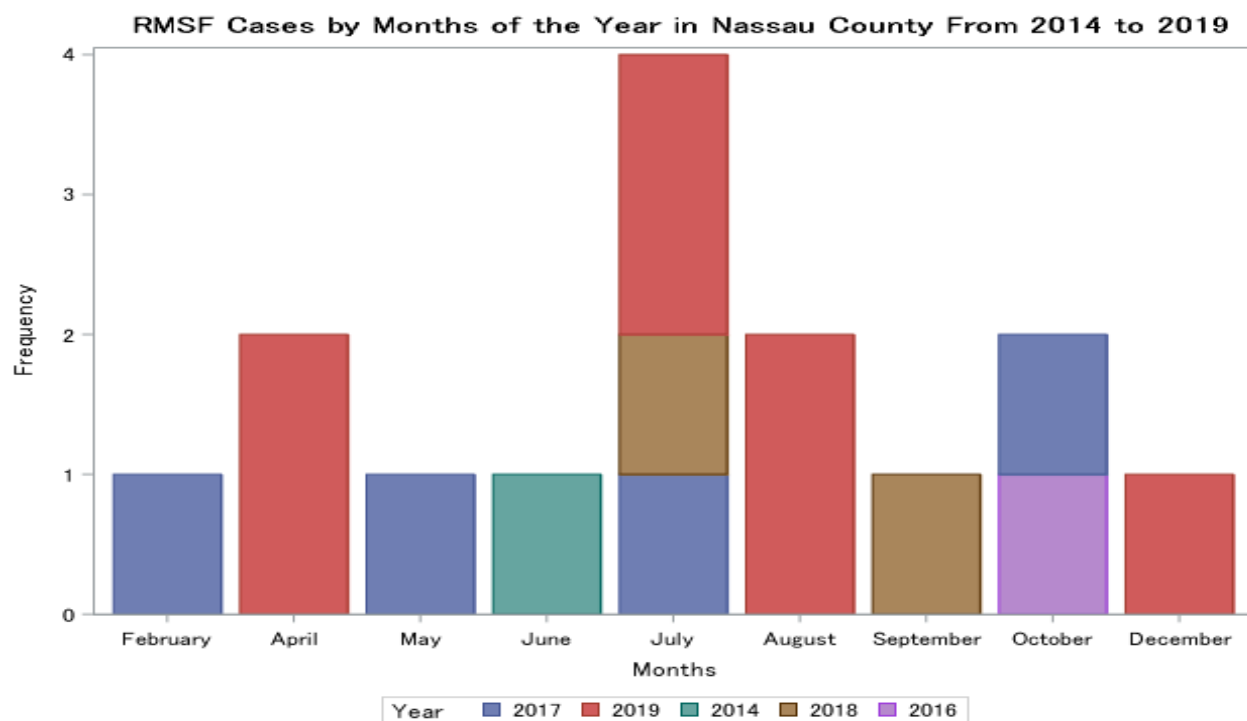
**Figure 38****Figure 39**



**Figure 40**



**Figure 41**





## Sources

Data Source: CDESS. Line Listing, Download and Supplemental

Denominators: [Nassau County, New York - Census Bureau Search](#). 2010 & 2020 Decennial Census of Nassau County Population.

New York State Department of Health. (2015). *Lyme disease: Reported cases by disease and county*. [Communicable Disease Annual Reports and Related Information \(ny.gov\)](#)

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## References

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Schwartz A.M., Hinckley A.F., Mead P.S, Hook S.A., Kugeler, K.J. (2017). Surveillance for Lyme Disease — United States, 2008–2015. *MMWR Surveill Summ* 2017;66(No. SS-22):1–12. <https://www.cdc.gov/mmwr/volumes/66/ss/ss6622a1.htm>.

