



Leptospirosis Surveillance Summary Rhode Island 2003-2022

Leptospirosis Overview

- Leptospirosis is a bacterial infection that affects humans and animals. It is spread through contact with the urine or bodily fluids of infected animals or contact with water or soil that has been contaminated by the urine or bodily fluids of an infected animal (e.g., during recreational activities).
- Animals commonly infected with leptospirosis include rodents and dogs.
- Both temperature and precipitation are thought to impact leptospirosis transmission, with cases peaking in the late summer/fall and after flooding. Outbreaks of leptospirosis tend to occur after periods of heavy rain or flooding in endemic areas.

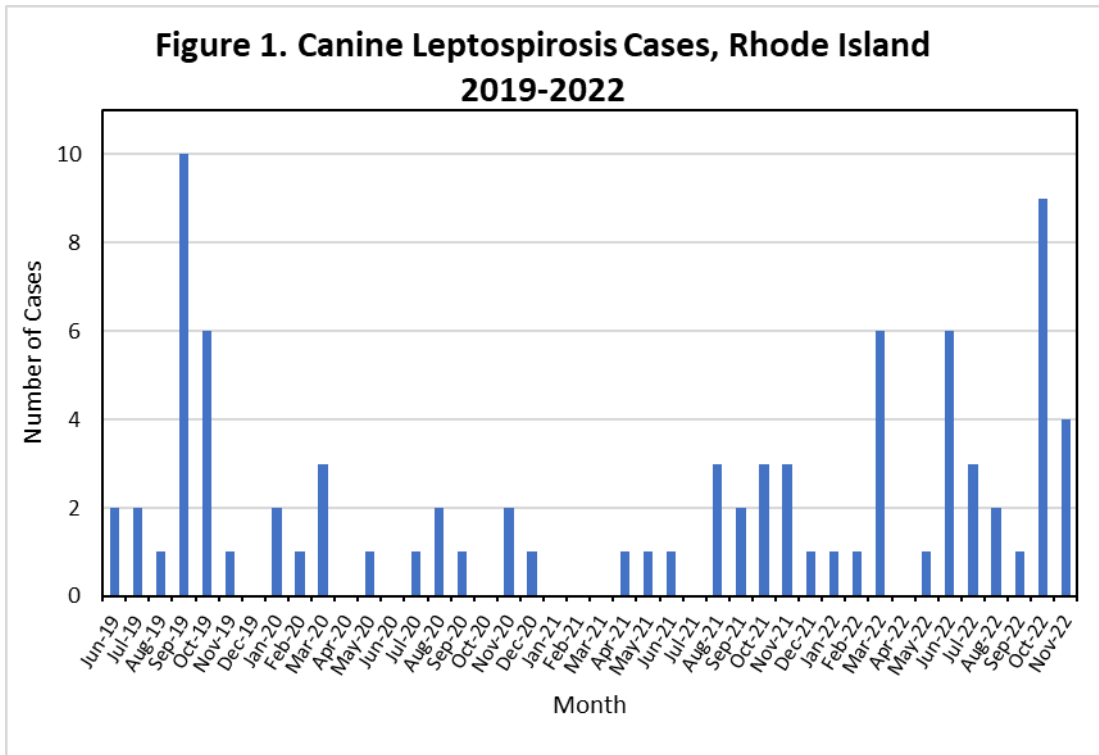
Leptospirosis Surveillance in Rhode Island

- Canine leptospirosis is immediately reportable to the State Veterinarian in Rhode Island. The Rhode Island Department of Health (RIDOH) follows up with owners of infected dogs to guide the prevention of animal to human transmission.
- Human leptospirosis cases are reportable to RIDOH (within 4 days of diagnosis).
- While zoonotic transmission from dogs is uncommon, it is possible, and precautions must be taken by owners of infected dogs to prevent exposure.
- Canine leptospirosis data provide valuable insights into the prevalence and transmission of the bacteria in our communities.
- Canine leptospirosis cases are likely under-reported, and historical data is limited.

Canine Leptospirosis in Rhode Island, 2003-2022

- While infection can be mild or even subclinical in some dogs, in others it can be fatal. Even those who recover may suffer from permanent kidney and liver damage.
- 131 cases of canine leptospirosis were reported in Rhode Island from 2003-2022, although data before 2019 are sporadic and under-reporting continues to be an issue. RIDEM was made aware of 18 of these cases via a veterinary clinic newsletter which did not disclose individual case information (e.g., outcome, vaccination status).
- Nearly 80% of infected dogs for whom outcomes are known either died after illness onset or were euthanized.
- 85 cases of canine leptospirosis were reported in Rhode Island from 2019-2022.
- Canine leptospirosis cases peaked in fall 2019 and fall 2022. See Figure 1 below.

It is unclear how pandemic-related changes in human behavior may have impacted leptospirosis transmission and/or detection in 2020 and 2021.



Canine Leptospirosis Vaccination

- Although canine leptospirosis vaccination does not protect against all serovars, it can prevent infection. Both the American Veterinary Medical Association (AVMA) and American Animal Hospital Association (AAHA) recommend considering annual leptospirosis vaccination for at-risk dogs, such as those who may be exposed to rivers and streams or who may come into contact with rodents or other dogs.
- Many dogs diagnosed with leptospirosis in Rhode Island – including most of those infected between 2019 and 2022 – were not vaccinated against leptospirosis. See Figures 2 and 3.

Figure 2. Percentage of Canine Leptospirosis Cases by Vaccination Status, 2003-2022

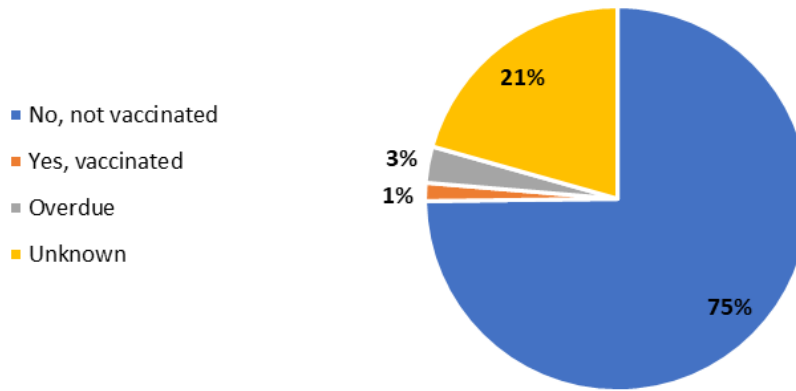
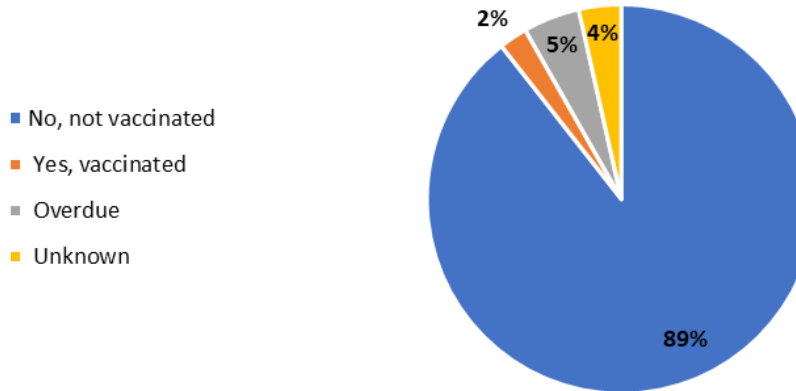


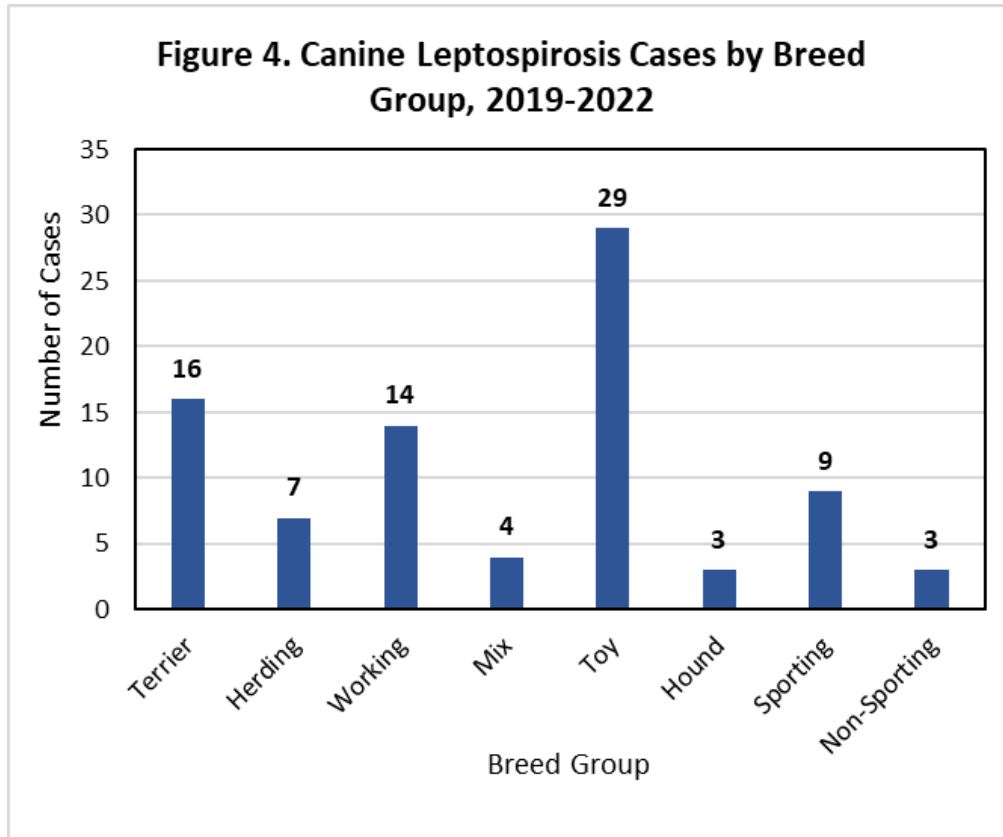
Figure 3. Percentage of Canine Leptospirosis Cases by Vaccination Status, 2019-2022



- There is some concern about adverse reactions to the leptospirosis vaccine within the veterinary community, particularly among smaller and younger dogs. However, studies suggest adverse events (AEs) from modern leptospirosis vaccines are rare and the vaccines are safe for most dogs.
- Steps can be taken to prevent adverse reactions to leptospirosis vaccination among dogs at a higher risk for AEs, for instance, waiting to vaccinate until a dog is at least 12 weeks of age, and limiting the number of vaccinations given during a single visit.



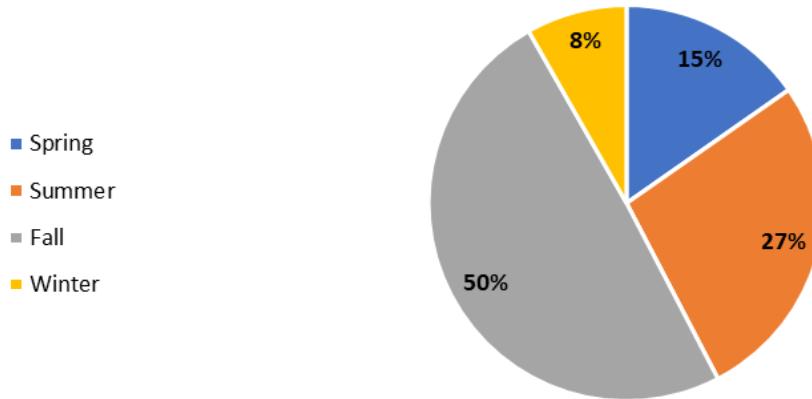
- Many infected dogs were toy breeds, consistent with recent literature suggesting a higher risk of leptospirosis diagnosis among this group, possibly due to lower vaccination coverage. See Figure 4 below. More information regarding breed group classification can be found [HERE](#).



Climate and Leptospirosis

- Temperature and precipitation are thought to impact leptospirosis prevalence. In particular, leptospirosis transmission is a concern after flooding.
- There is some concern about how changes in climate patterns may influence leptospirosis transmission.
- Canine leptospirosis trends in Rhode Island are consistent with the seasonality of infections observed in the literature (e.g., peaking in the summer and fall). See Figure 5.

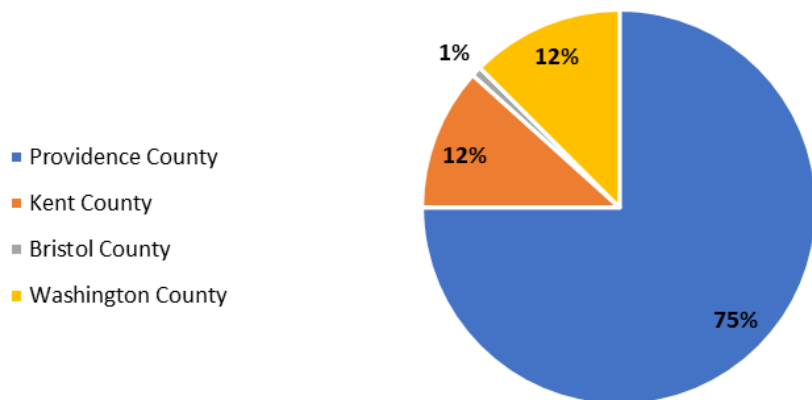
Figure 5. Percentage of Canine Leptospirosis Cases by Season, 2019-2022



Geographic Distribution of Canine Leptospirosis in Rhode Island

- Among dogs diagnosed with leptospirosis in Rhode Island from 2003-2022, most (for which residence was known) resided in Providence County (See Figure 6).
- No canine leptospirosis cases were reported in Newport County from 2003-2022.

Figure 6. Percentage of Canine Leptospirosis Cases by County, 2003-2022





Human Leptospirosis in Rhode Island

- Humans are considered accidental hosts for leptospirosis and may become infected after incidental animal or environmental exposures.
- Most human leptospirosis infections are thought to be asymptomatic, but others can become severe or even fatal and can lead to complications such as kidney failure and aseptic meningitis. Leptospirosis infection can additionally lead to complications such as fetal death among pregnant individuals. Per the Centers for Disease Control and Prevention (CDC), case fatality is approximately 5-15% among patients with severe illness.
- Early treatment may reduce the severity and duration of the disease. CDC recommends initiating antibiotic treatment as soon as possible, without waiting for laboratory results, in patients with a high clinical suspicion of leptospirosis.
- While the incubation period can range from 2 to 30 days, most symptomatic illness occurs 5 to 14 days after exposure.
- A human leptospirosis case is defined using CDC's 2013 case definition, which includes a combination of clinical, laboratory, and epidemiologic criteria. More information can be found [HERE](#).
- 8 human leptospirosis cases were reported in Rhode Island from 2010-2022. All 8 patients survived infection but many (7 out of the 8, or 88%) required hospitalization.
- Among the 8 cases reported from 2010-2022:
 - 38% reported recent international travel.
 - 63% reported recent contact with animals, most commonly rats/mice (50% of cases reported contact with rats/mice).
 - 63% reported recent exposure to water sources or wet soil, most commonly through recreational swimming (38% of cases reported recent swimming)
- Clinical information is known for 6 of the cases reported from 2010-2022. Among these patients:
 - 100% reported fever, myalgia, and gastrointestinal symptoms (nausea/vomiting/diarrhea)
 - Other common symptoms included weakness/fatigue (67%) and headache (67%)
 - The most common complications were thrombocytopenia/low platelet counts (38%) and pulmonary complications (38%)



Resources

Canine:

[Leptospirosis – American Veterinary Medical Association](#)

[Leptospirosis – American Animal Hospital Association](#)

Human:

[Leptospirosis Fact Sheet – CDC](#)

[Leptospirosis Fact Sheet for Clinicians - CDC](#)