Commonwealth of Massachusetts
Department of Public Health

Helping People Lead Healthy Lives In Healthy Communities

Update: Tick-borne Disease Surveillance in Massachusetts

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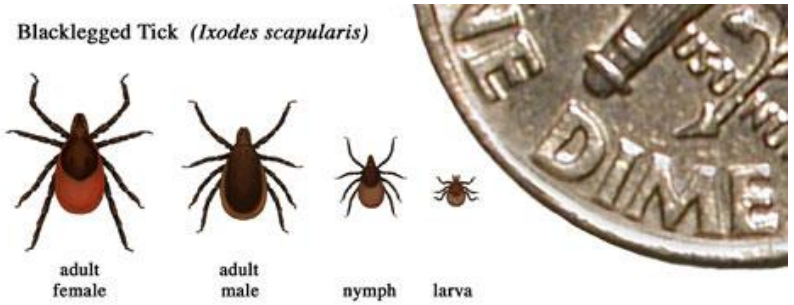
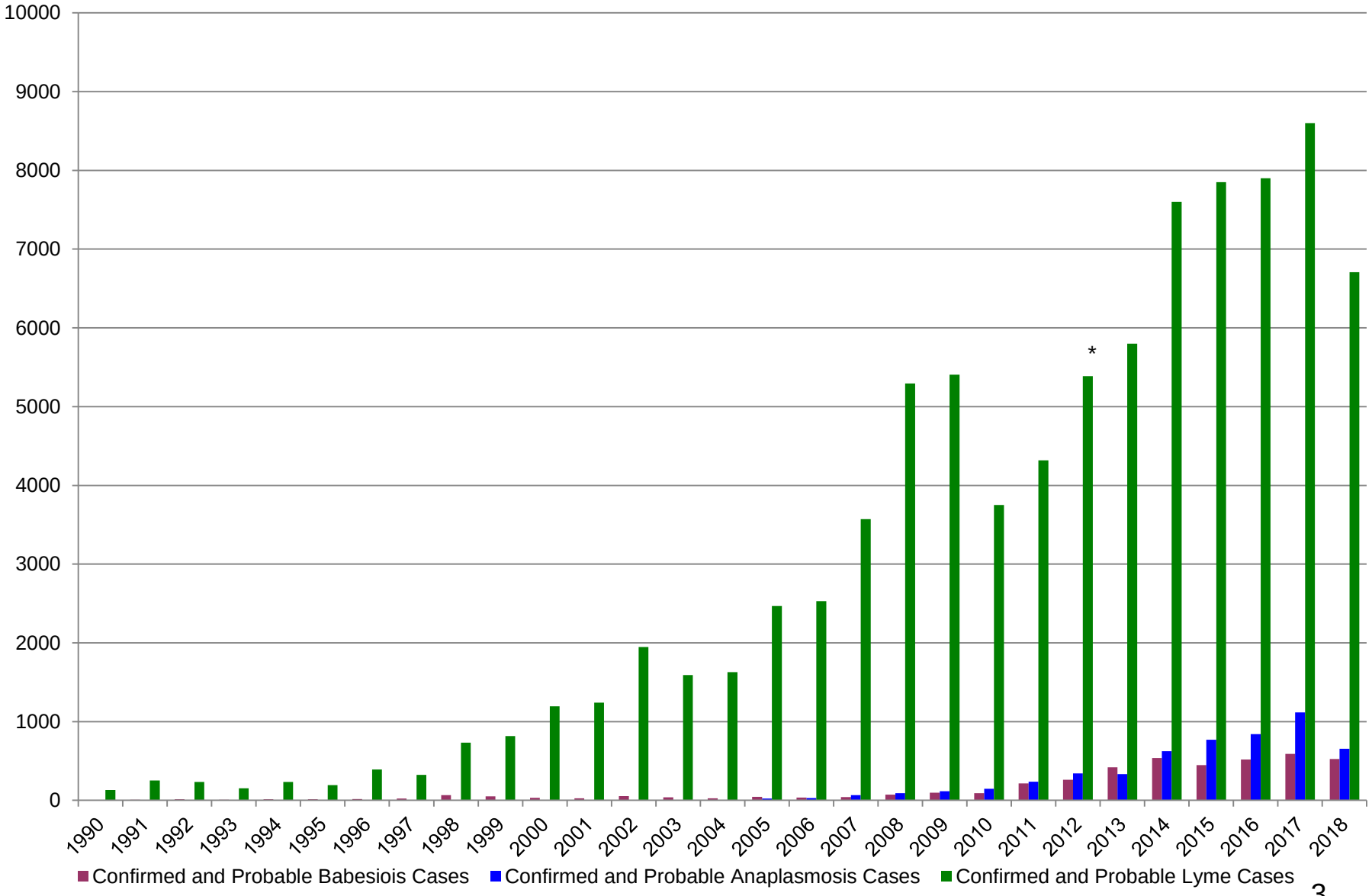
Tick-borne DiseasesTransmitted by *Ixodes scapularis*

- Lyme Disease (*Borrelia burgodorferi*)
  - Early and late manifestations, persistent symptoms in some
- Babesiosis (*Babesia microti*)
  - Red blood cell parasite: fever, chills, anemia
- Anaplasmosis (*Anaplasma phagocytophilum*)
  - Bacteria that invades white blood cells: fever, headache, muscle aches, chills, sweating, nausea, and vomiting
- *Borrelia miyamotoi*
  - Newly recognized bacteria as a human pathogen, relapsing fever
- Powassan/Deer Tick Virus
  - Flavivirus related to WNV

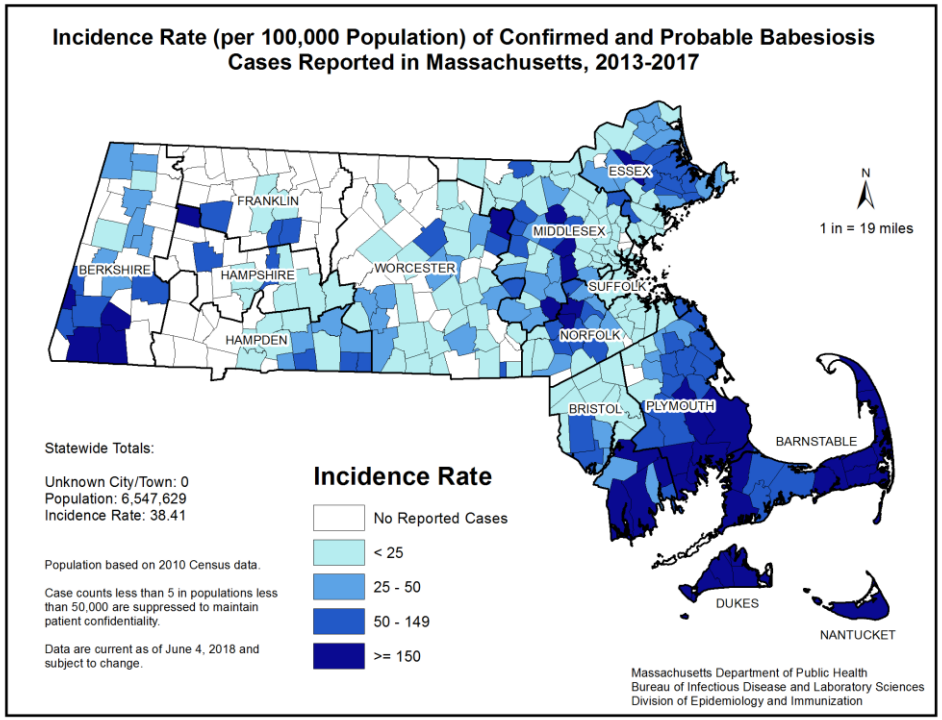


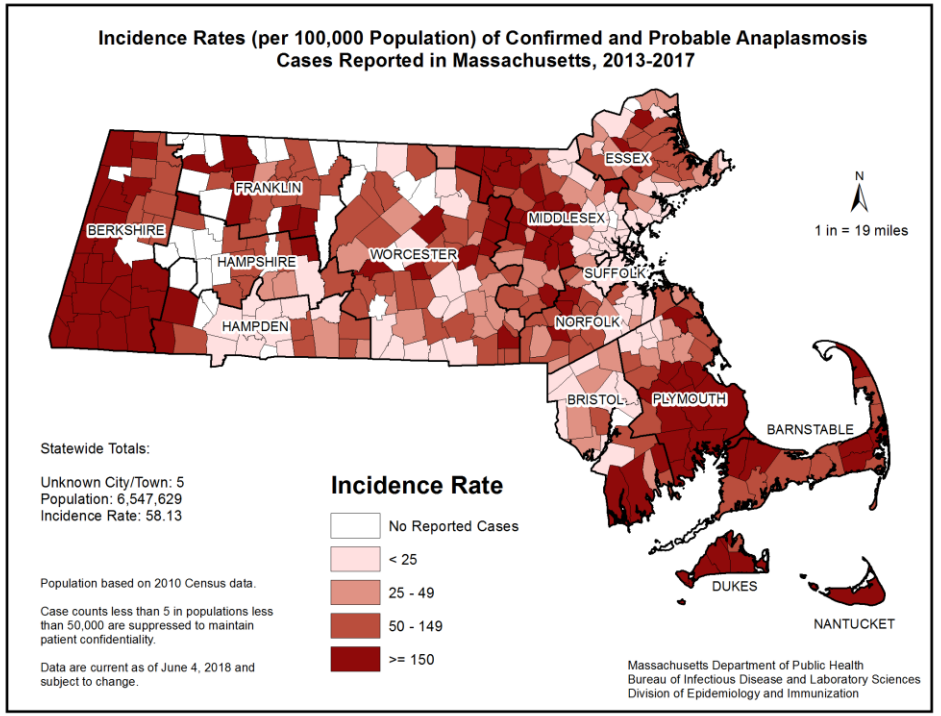
Cases of Lyme Disease, Anaplasmosis and Babesiosis by Year, Reported to MDPH, 1990-2018



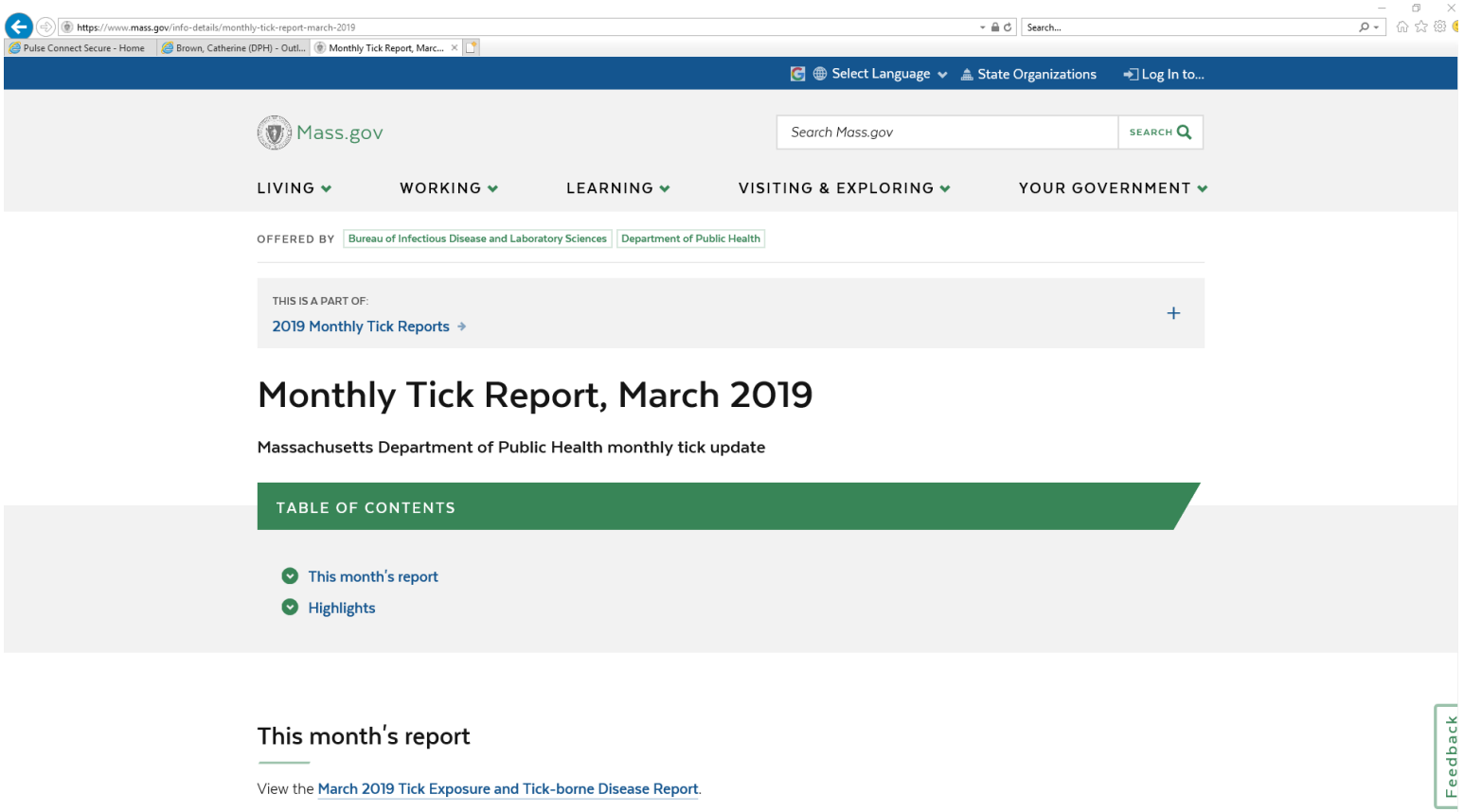
*2013: Change to laboratory only reporting for Lyme disease

Incidence Rates for Babesiosis and Anaplasmosis in MA 2013-2017



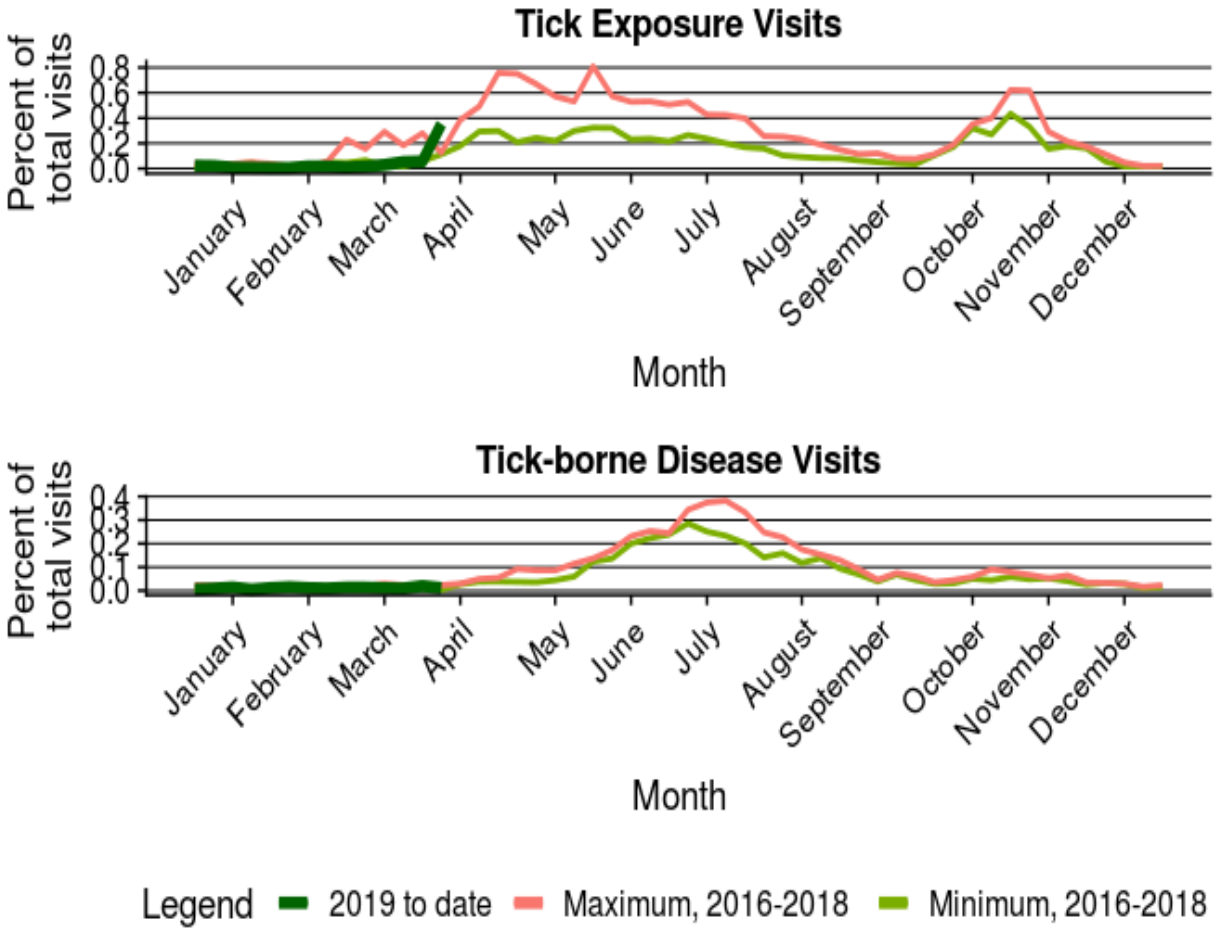


New Monthly Tick Report

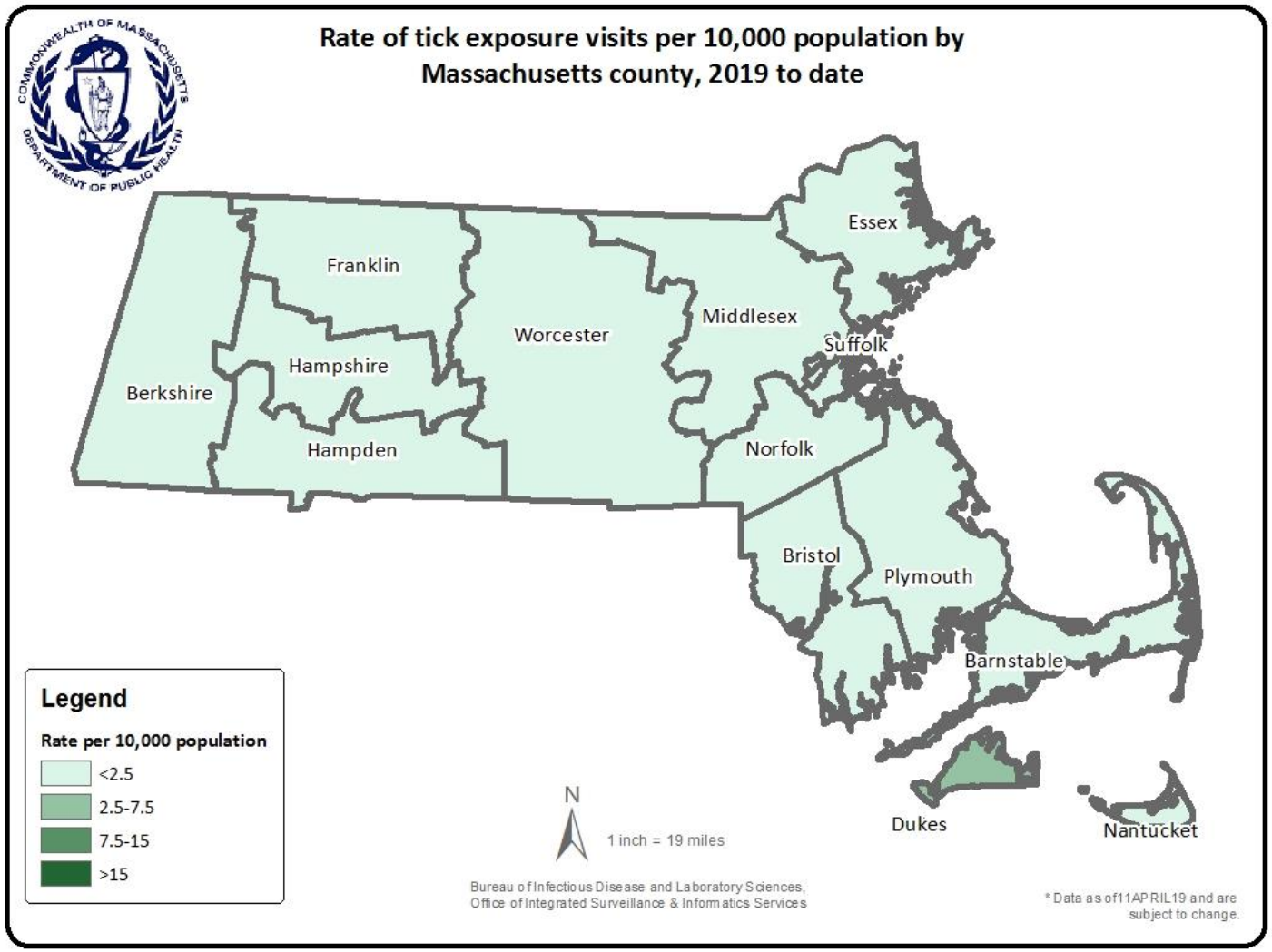


https://www.mass.gov/report/2019-monthly-tick-reports

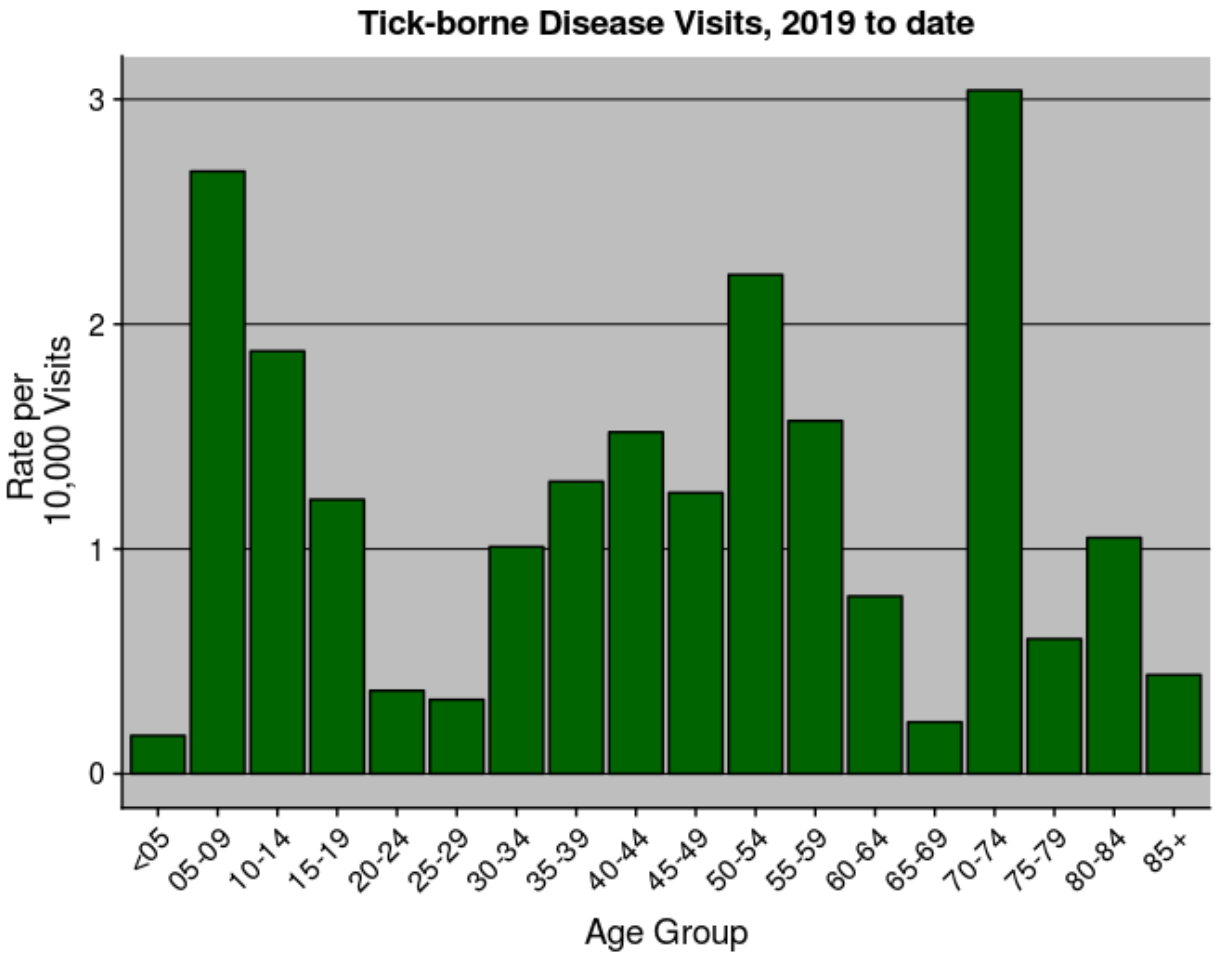
Tick Exposure Syndrome:
Percent of total ED visits captured by MDPH SyS with tick exposure syndrome by week and year



Map: Cumulative



Age Distribution



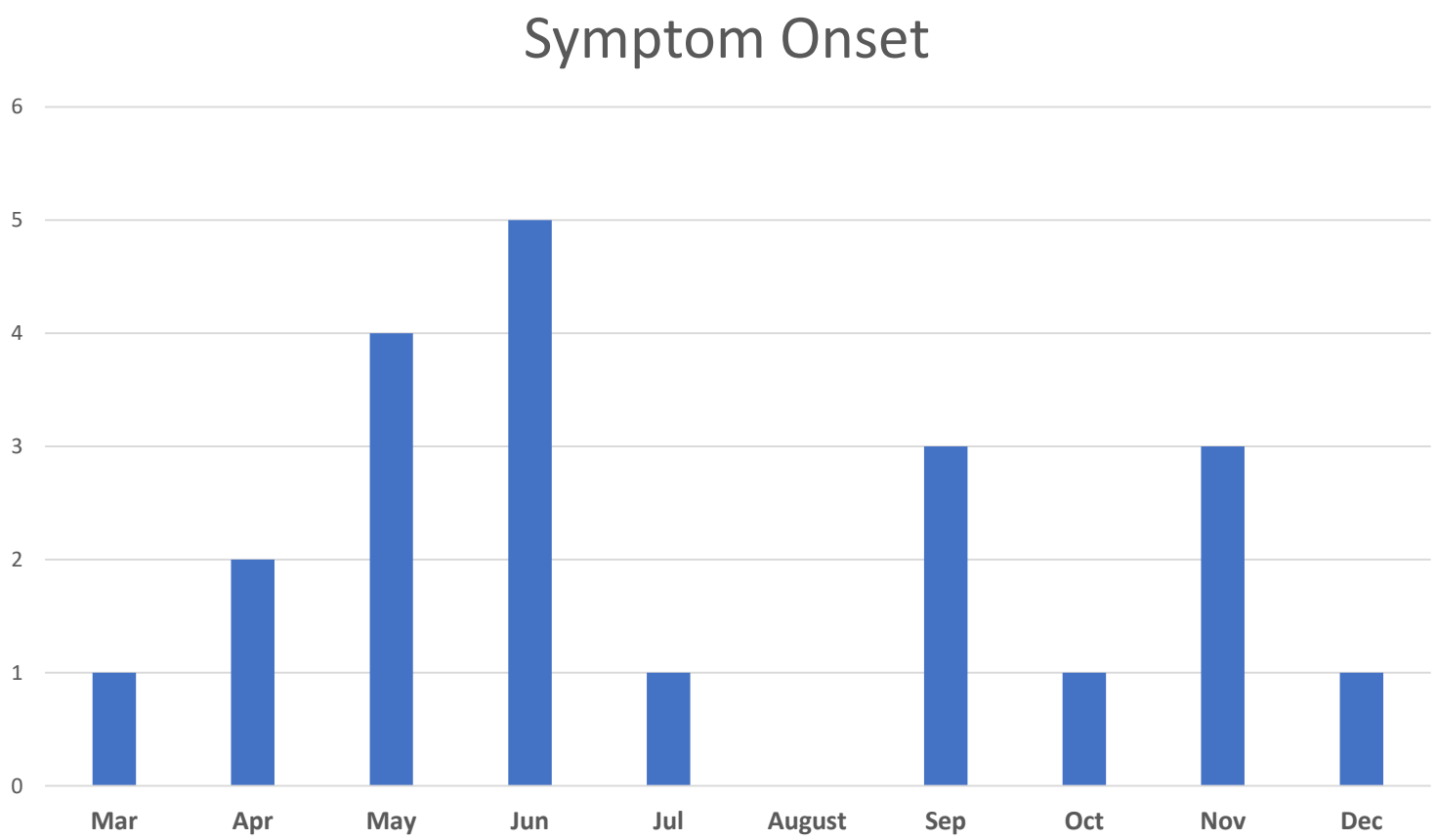
Powassan Virus Massachusetts, 2013-2018

- Made reportable in 2013
  - 2013 – 1 case
  - 2014 – 4 cases
  - 2015 – 3 cases
  - 2016 – 5 cases
  - 2017 – 3 cases
  - 2018 - 5 cases

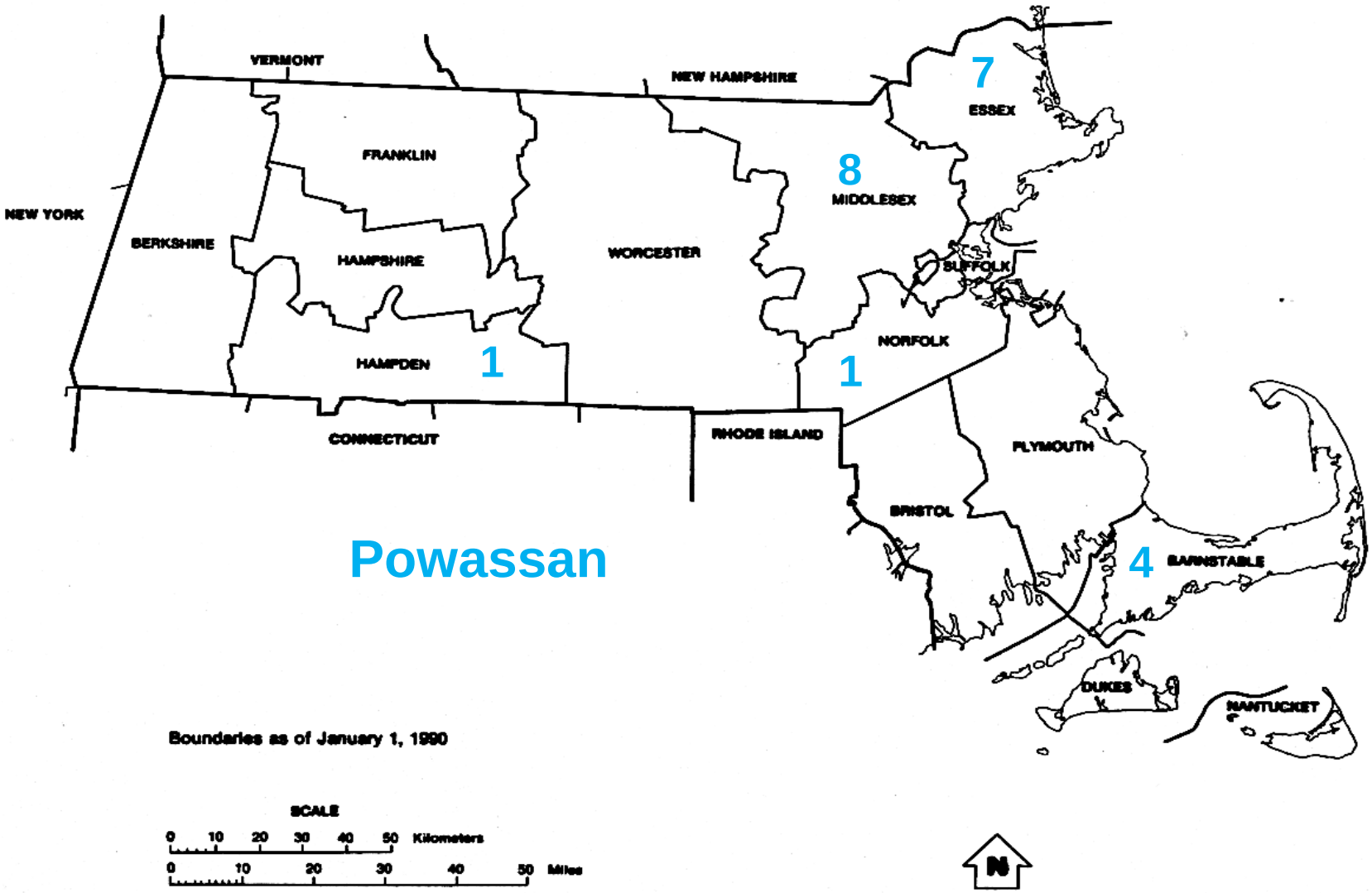
} MA SPHL screening of clinical samples submitted for WNV/EEE testing. Case identification raised provider awareness and increased requests for testing.

- All encephalitis/meningoencephalitis
  - At least 3 fatalities
- Male 18/female 3
- Ages 5-82 years (mean 62)

Powassan Virus Disease



Cases by County, 2013-2018



Borrelia miyamotoi

Any acute onset of fever or chills and one or more of the following symptoms or signs:

- headache
- sweats/chills
- myalgia/arthralgia
- malaise/fatigue
- rash
- abdominal cramps, nausea, vomiting, diarrhea dizziness
- confusion/altered mental status
- photophobia
- leukopenia, thrombocytopenia, or elevated amino-transferase levels

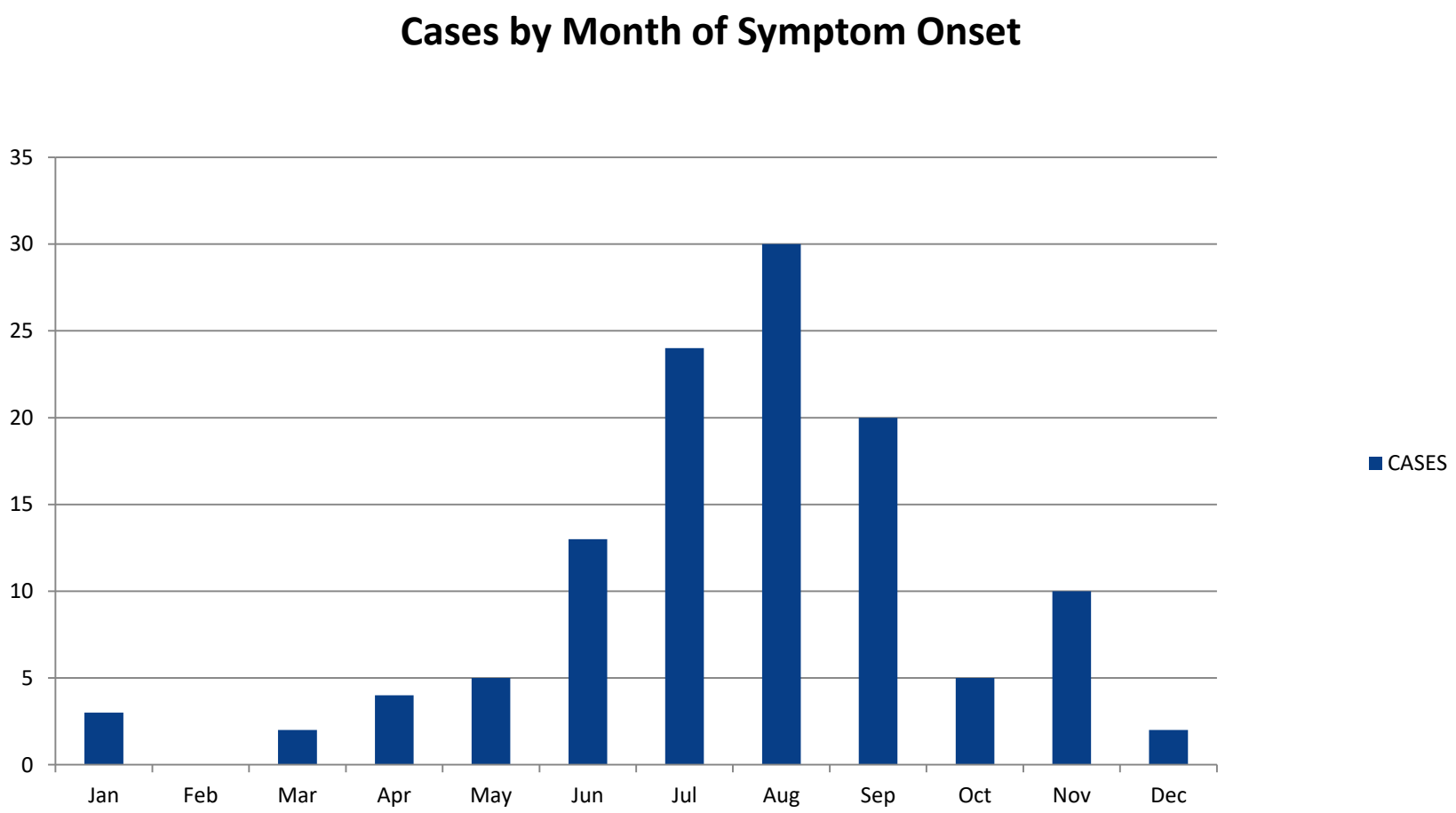
Borrelia miyamotoi

- Newly reportable, limited data
- Working with other jurisdictions on a descriptive case summary
  - NJ, NYC, NY, ME, MN, WI

Borrelia miyamotoi, 2013-2018

- 217 cases
- 50% male
- Age range: 12-86, median 54 y/o
- At least 14 hospitalizations
  - Average stay = 3 days, range 1-7
  - No fatalities

Symptom Onset



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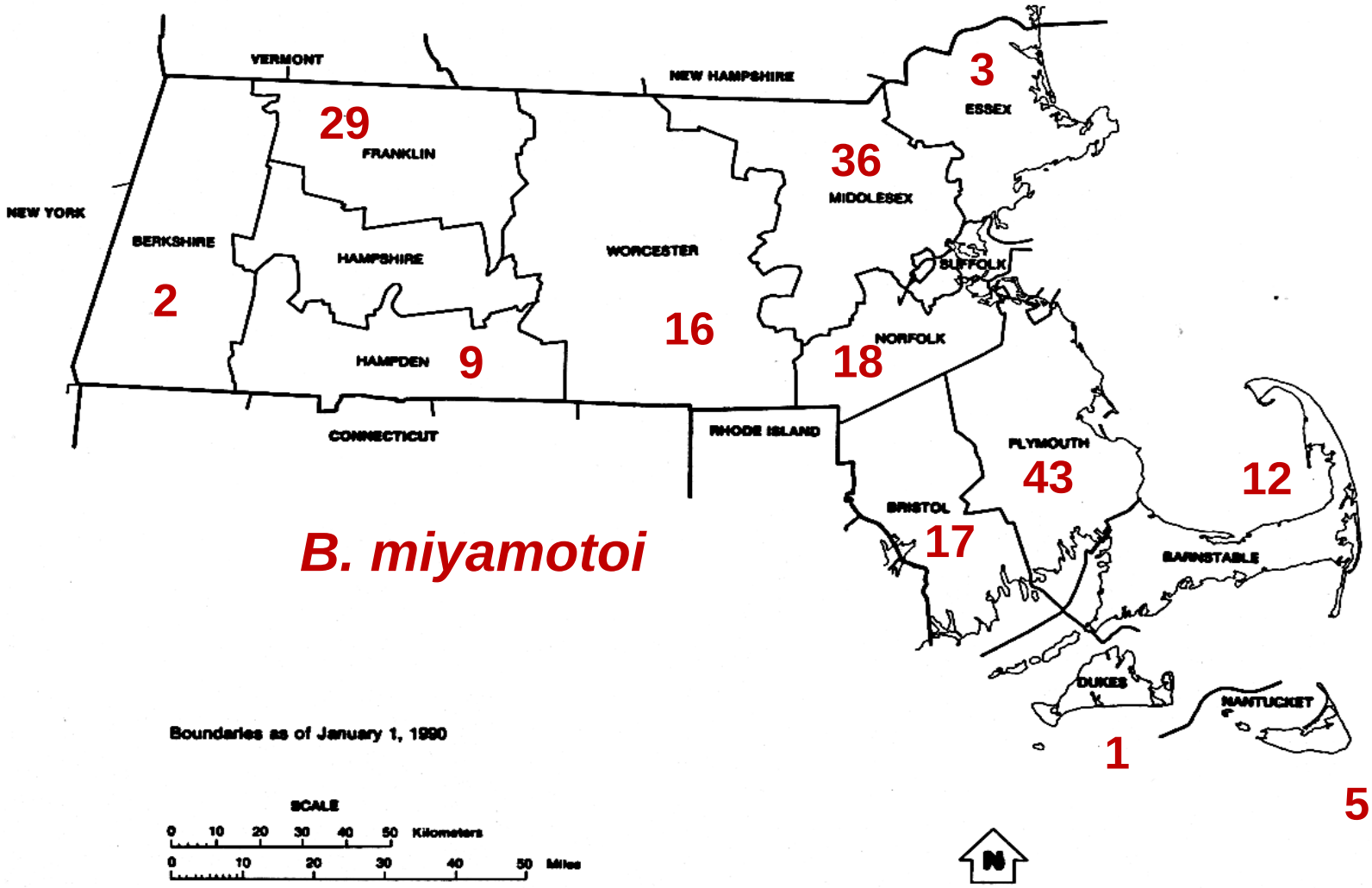

Massachusetts *Ixodes scapularis* Ticks Tested in the Laboratory of Medical Zoology, 2015-2018, Percent Positive by PCR

(N=10,471 ticks tested, except Powassan=2,772)