

LYME DISEASE IN NEVADA, 2003-2012

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Edition 1.0



Photo: Centers for Disease Control and Prevention/ James Gathany; William Nicholson



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Purpose

The purpose of this report is to provide a general overview of the incidence and recent trends of Lyme disease among Nevada residents. The report also includes Healthy People 2010 objectives, Healthy People 2020 objectives, and Nevada data collected from cases of Lyme disease from 2003 to 2012. Lyme disease is listed as one of Nevada's reportable diseases pursuant to [NRS 441A](#) (1). Lyme disease reporting is further regulated by [NAC 441A.595](#) (2).

Lyme Disease

Lyme disease is caused by the bacterium *Borrelia burgdorferi*, which is transmitted to humans through the bite of a blacklegged tick infected with the bacterium. Ticks are relatives of spiders that live in wooded areas, brushy fields, and around houses, and they pass on infections from one host to the next while feeding off of their host's blood. Lyme disease is transmitted by the blacklegged tick (or deer tick, *Ixodes scapularis*) in the northeastern, mid-Atlantic, and north-central United States, and by the western blacklegged tick (*Ixodes pacificus*) along the Pacific coast. Although dogs and cats can get Lyme disease, there is no evidence that Lyme disease is transmitted between humans and animals. There is also no evidence Lyme disease can be spread person-to-person (3).

Lyme disease is the most commonly reported vector-borne illness in the United States, and in 2012, it was the 7th most common, nationally notifiable disease. Approximately 30,000 cases of Lyme disease are reported to the Centers for Disease Control and Prevention (CDC) annually. In 2012, 95% of cases were reported from 13 states: Connecticut, Delaware, Maine, Maryland, Massachusetts, Minnesota, New Hampshire, New Jersey, New York, Pennsylvania, Vermont, Virginia, and Wisconsin. It is important to note that *Borrelia burgdorferi* is maintained by wild rodent and other small mammal reservoirs and is not transmitted everywhere that the blacklegged tick lives, such as in the southern U.S.. Cases are sometimes diagnosed and reported in areas where Lyme disease is not expected, but these cases are almost always travel-related (3).

Ticks are often found in hard-to-see areas such as the groin, armpits, and scalp. The tick usually has to be attached for at least 36-48 hours before *Borrelia burgdorferi* can be transmitted. Most humans are infected by immature ticks, nymphs, which are about the size of a poppy seed and feed during the spring and summer months. Adult ticks, which are about the size of a sesame seed, are active during the cooler months of the year, and are larger and are more likely to be seen and removed before the bacterium is transmitted (3).

Patients with Lyme disease may exhibit fever, headache, fatigue, muscle and joint aches, swollen lymph nodes, and a red, expanding skin rash. Parts of the rash may clear as it expands, resulting in a bulls eye-like appearance. Diagnosis of Lyme disease is based on these symptoms and the possibility of exposure to infected blacklegged ticks. If used correctly and performed with validated methods, blood samples may be collected for laboratory testing (3).

Most cases of Lyme disease can be successfully treated with antibiotics over a few weeks. If left untreated, the infection can spread to the joints, the heart, and the nervous system, causing facial or Bell's palsy (loss of muscle tone on the face), arthritis, heart palpitations and dizziness due to changes in heartbeat, and severe headaches and neck stiffness due to meningitis (inflammation of the spinal cord). If acquired during pregnancy, Lyme disease may infect the placenta and possibly result in stillbirth, but when the mother receives appropriate antibiotic treatment, no negative effects on the fetus have been found (3).

Infection with Lyme disease can be prevented by avoiding wooded and bushy areas with high grass and leaf litter, wearing insect repellent, applying pesticides, reducing tick habitats around the home, and removing ticks promptly after coming indoors by bathing, examining gear and pets, and tumbling clothes in a dryer on high heat. The Lyme disease vaccine was discontinued in 2002 due to insufficient demand, and the protection afforded by this vaccine diminishes over time, so individuals who received the vaccine may be no longer protected against Lyme disease (3).

Summary

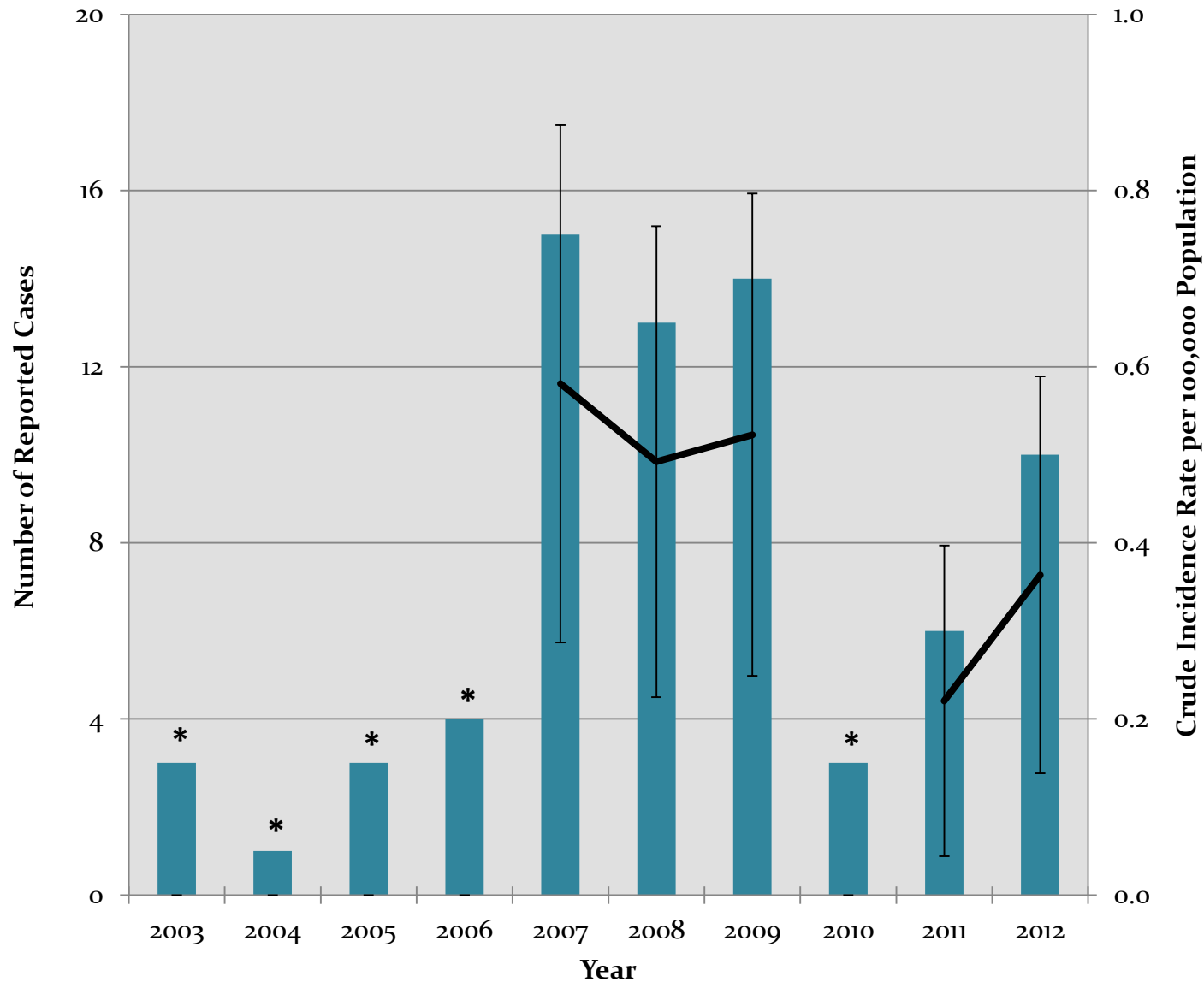
From 2003 to 2012, the annual number of reported cases of Lyme disease among Nevada residents ranged from a low of 1 case in 2004 to a high of 15 cases in 2007. Over the ten years, a total of 72 cases were reported. The highest annual crude incidence rate of Lyme disease was 0.6 cases per 100,000 population in 2007. Rates were not calculated for 2003, 2004, 2005, 2006, and 2010 due to low case counts. There was no significant difference between the crude incidence rates of 2007, 2008, 2009, 2011, and 2012. The crude incidence rate from 2003 to 2012 was 0.3 cases per 100,000 population. There are no Healthy People 2010 or Healthy People 2020 objectives for Lyme disease.

Washoe County Health District had a significantly higher age-adjusted incidence rate (0.7 cases per 100,000 population) compared to Southern Nevada Health District and the overall age-adjusted rate for the entire state (0.2 and 0.3 cases per 100,000 population, respectively). There were no other significant differences between other health districts.

Infection from Lyme disease is most common during the warmer months (April through September) (3). Between 2008 and 2012 (years for which monthly data is available), Lyme disease followed this pattern with the number of reported cases typically peaking between July and October. The number of reported cases ranged between 0 and 4 cases per month, depending on the year.

From 2003 to 2012, adults aged 25-39 years and 40-64 years had the highest total case counts for Lyme disease (21 and 31 cases, respectively), but there were no significant differences in crude incidence rates for Lyme disease between age groups. Over the ten years, there were no reported cases for infants under 1 year of age; rates for infants and children less than 5 years of age and adults 65 years and older were not calculated due to low case counts.

Figure 1. Number of Reported Cases and Crude Incidence Rates of Lyme Disease in Nevada: 2003-2012



■ Number of Cases — Incidence Rate

* Rates not presented due to low case counts.

The crude incidence rate in Nevada from 2003 to 2012 was 0.3 cases per 100,000 population.

Figure 2. Age-Adjusted Incidence Rates of Lyme Disease in Nevada and Nevada Health Districts: 2003-2012

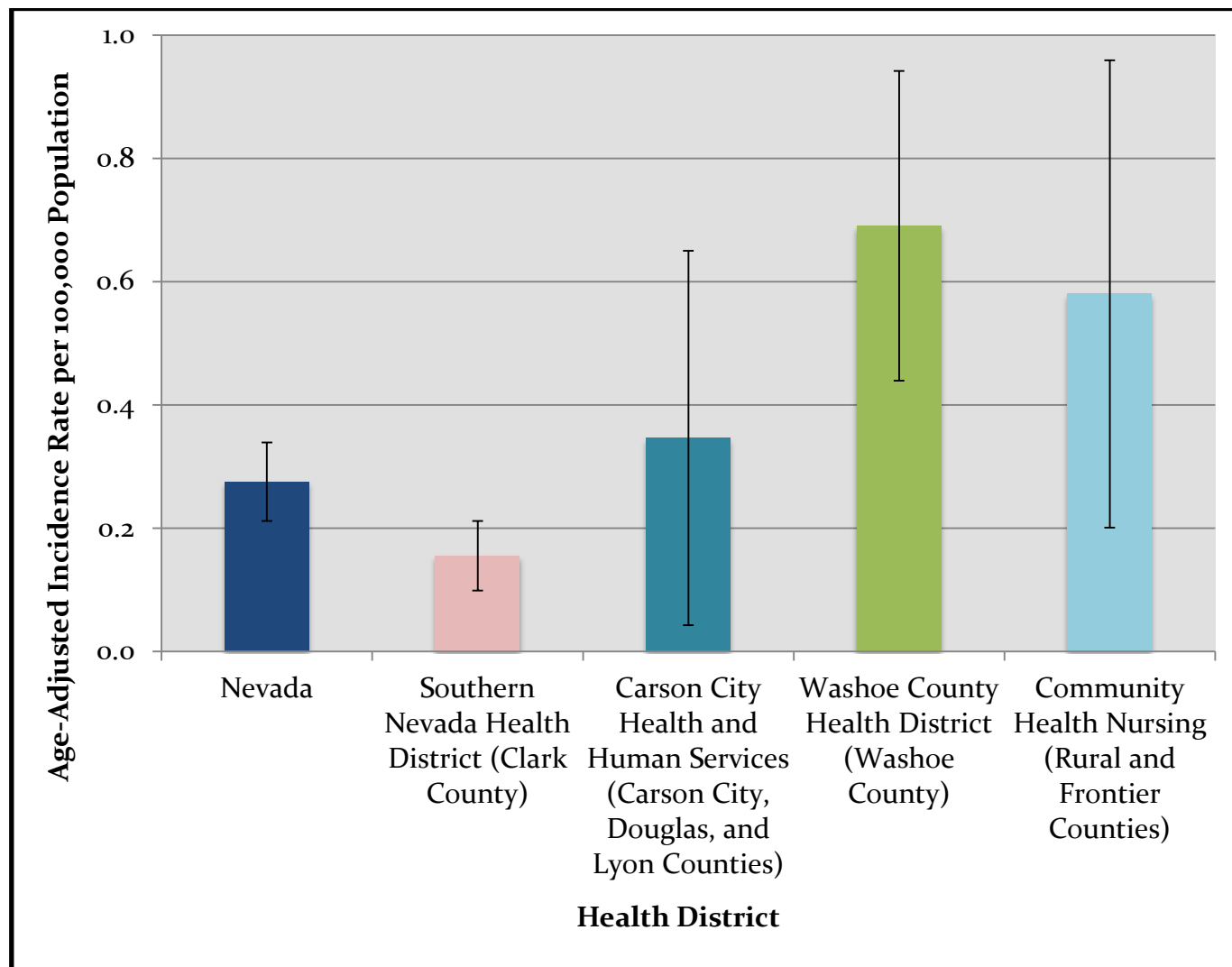


Figure 3. Number of Lyme Disease Cases Reported in Nevada by Month: 2008-2012

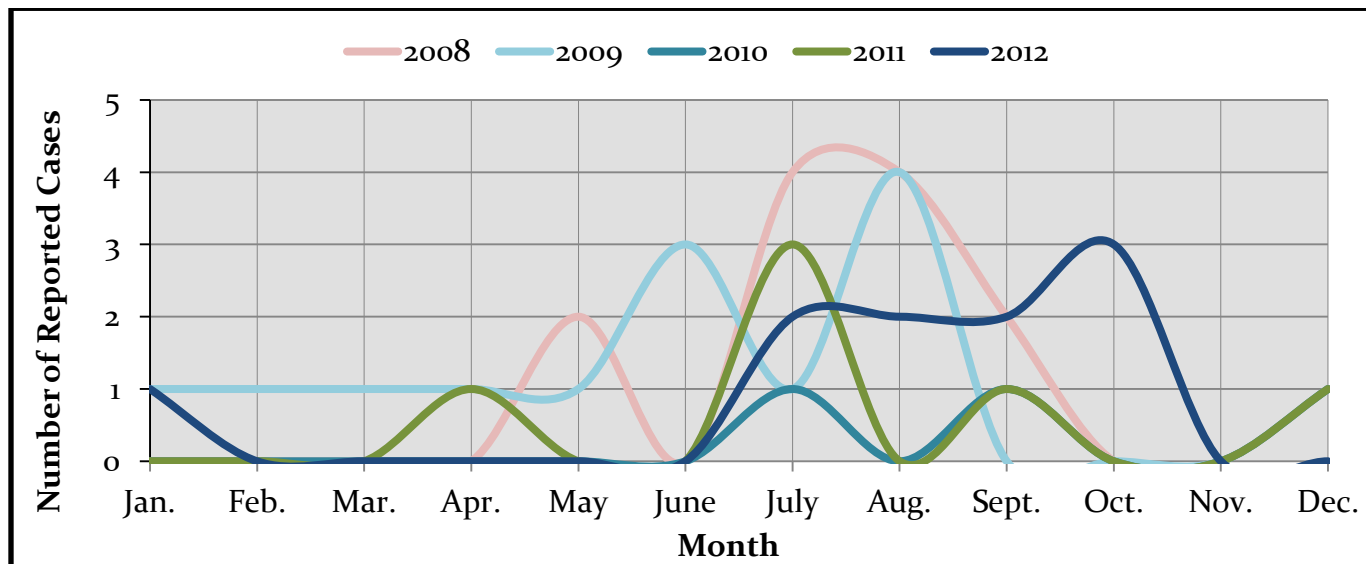
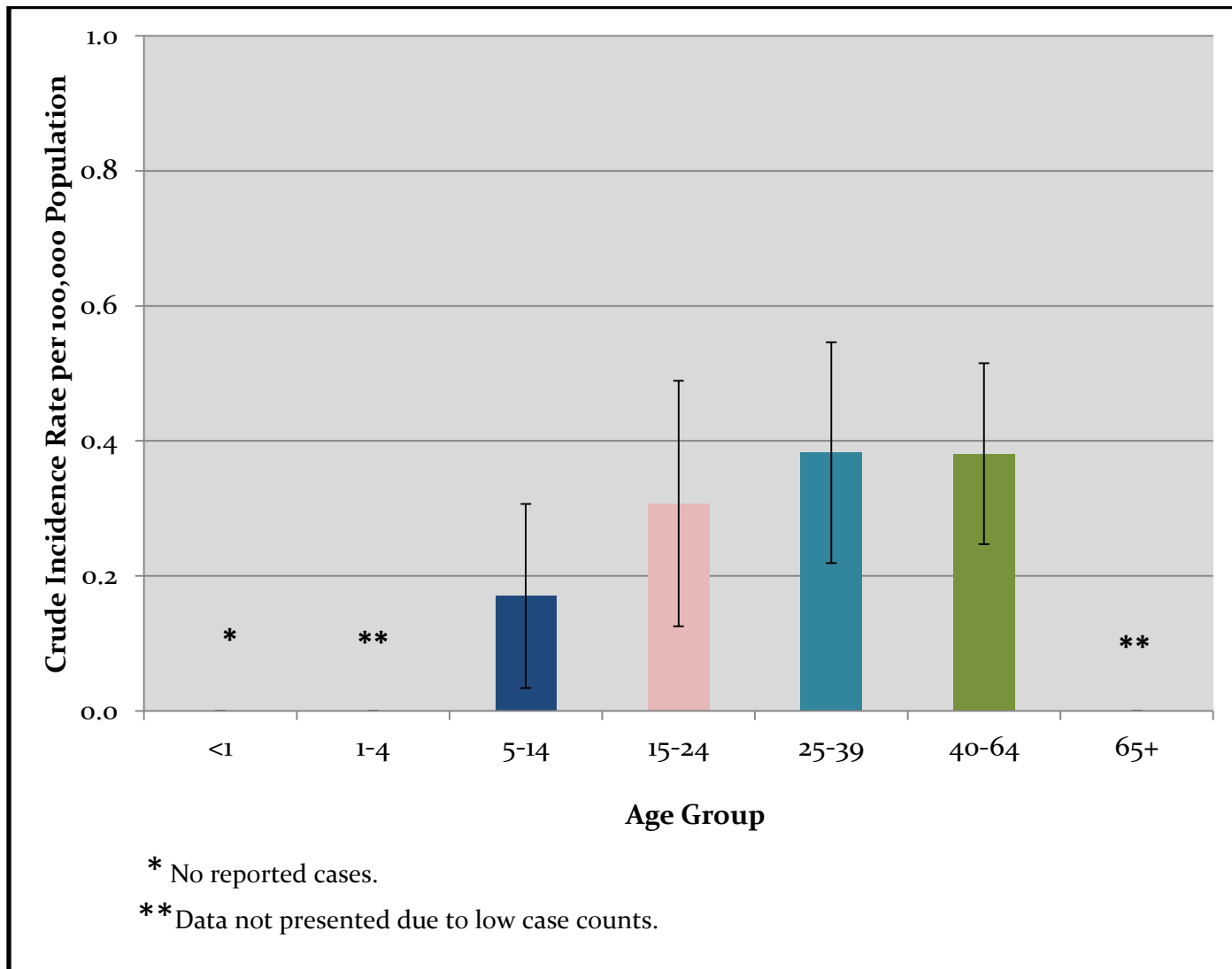


Figure 4. Crude Incidence Rates of Lyme Disease in Nevada by Age Group: 2003-2012



Technical Notes

All Nevada data from 2003 to 2012 came from reported Lyme disease cases among Nevada residents (4, 5). The CDC and the Council of State and Territorial Epidemiologists case definition of Lyme disease encompasses all cases classified as suspected, probable, or confirmed; all cases of Lyme disease used for this report follow this definition (6). Population estimates were obtained from Nevada State Demographer's Office (7). Age-adjusted rates per 100,000 population were calculated using the 2000 U.S. standard population. Cases with unknown ages were excluded from the age-adjusted rate calculations; two such cases had to be excluded. Sufficient case counts were not available to obtain age-adjusted incidence rates for racial/ethnic groups; therefore, racial/ethnic distributions of incidence are not presented in this report. When used for rates, error bars represent 95% confidence intervals. The Keyfitz method was used to calculate confidence intervals of age-adjusted rates (8). Due to their inherent unreliability, rates were not calculated for case counts lower than five.

Sources

1. Nevada Revised Statute (NRS) 441A. <https://leg.state.nv.us/NRS/NRS-441A.html>
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