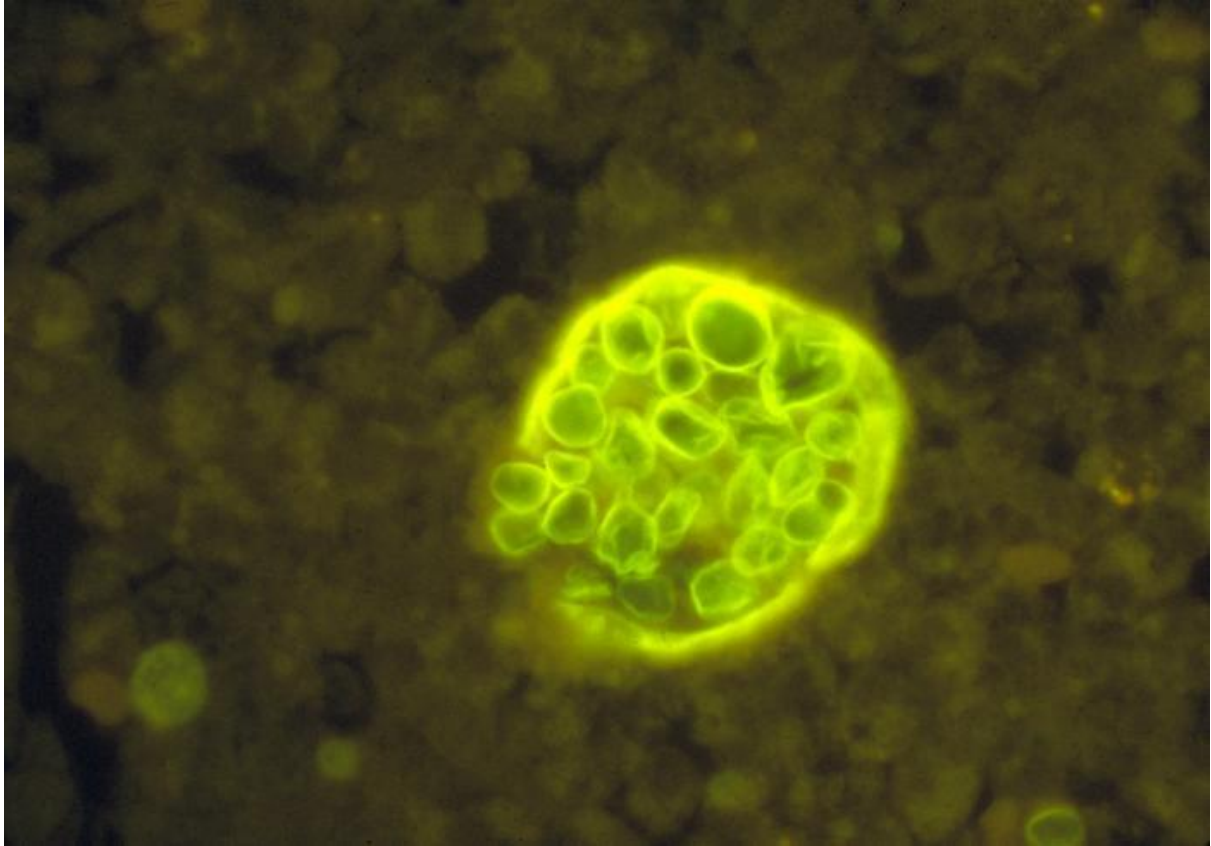


COCCIDIOIDOMYCOSIS IN NEVADA, 2003-2012

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Edition 1.0



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Purpose

The purpose of this report is to provide a general overview of the incidence and recent trends of coccidioidomycosis among Nevada residents. The report also includes Nevada data collected from cases of coccidioidomycosis from 2003 to 2012. Coccidioidomycosis is listed as one of Nevada's reportable diseases pursuant to [NRS 441A](#) (1). Coccidioidomycosis reporting is further regulated by [NAC 441A.500](#) (2).

Coccidioidomycosis

Coccidioidomycosis, also known as Valley Fever, is an illness caused by the fungus *Coccidioides*. The fungus is found in dust and soil in semiarid areas. When contaminated soil and dust are disturbed by humans, animals, or natural disasters, *Coccidioides* spores circulate in the air. When these spores are inhaled, infection of the lungs or other organs can develop. Rarely, spores enter the skin through cuts or abrasions and cause infection. Coccidioidomycosis is not spread from person to person or between humans and animals. *Coccidioides* is endemic to southwestern California, New Mexico, Arizona, Nevada, Texas, Utah, Mexico, and Central and South America and is a common cause of pneumonia in these areas. Of those who live in an endemic area, 30 to 60 percent are exposed to *Coccidioides* at some point in their lives. In 2010, there were over 16,000 reported cases of coccidioidomycosis in the United States; the majority of these cases were located in Arizona and California (3).

Most people exposed to *Coccidioides* have no symptoms or may exhibit very mild flu-like symptoms. However, some people have a more severe infection. People with a more severe infection may exhibit fever, cough, headache, a rash on the upper trunk or extremities, muscle aches, and joint pain in the knees or ankles. Symptoms of advanced disease include skin lesions, chronic pneumonia, meningitis, and bone or joint infection. Generally, symptoms appear 1 to 3 weeks after exposure and have been shown to last for 6 months or longer (3).

Coccidioidomycosis is diagnosed by considering the individual's medical history, evaluating characteristic symptoms, physical examination, and testing for *Coccidioides* which includes performing imaging tests, performing a tissue biopsy, or collecting blood or fluid samples to see if the fungus can be grown from the sample. Treatment for coccidioidomycosis may not be necessary as the body may be able to fight off the infection on its own. However, many healthcare providers still prescribe antifungal medications to prevent a more severe infection from developing. It is important that individuals with severe infections or with weakened immune systems receive treatment as soon as possible, because advanced coccidioidomycosis can be fatal if not treated (3).

Anyone living in or travelling to an endemic area is at risk of getting coccidioidomycosis. The Centers for Disease Control and Prevention (CDC) recommends that individuals living in endemic areas avoid dusty environments if possible. According to CDC, the following groups are at higher risk of severe disease: people of Asian descent, Blacks, pregnant women, and people with weakened immune systems. CDC recommends that individuals who are at severe risk for disease wear an N95 mask when in a dusty environment, avoid activities that require close contact to dust such as yard work or gardening, use air quality improvement measures indoors such as HEPA filters, take prophylactic anti-fungal medication if advised to do so by a healthcare provider, and clean skin injuries well with soap and water after exposure to soil or dust (3).

Summary

From 2003 to 2012, the annual number of reported coccidioidomycosis cases in Nevada ranged from a low of 36 cases in 2003 to a high of 118 cases in 2012. Over the ten years, a total of 710 cases were reported. The annual crude incidence rate of coccidioidomycosis ranged from a low of 1.6 cases per 100,000 population in 2003 to a high of 4.3 cases per 100,000 population in 2012. Between 2008 and 2012, there were steady increases in both the annual number of reported cases and the annual crude incidence rates, and the crude incidence rates in 2011 and 2012 were statistically significantly higher than in 2008 and 2009. The crude incidence rate from 2003 to 2012 was 2.8 cases per 100,000 population. There are no Healthy People 2010 or Healthy People 2020 objectives for coccidioidomycosis.

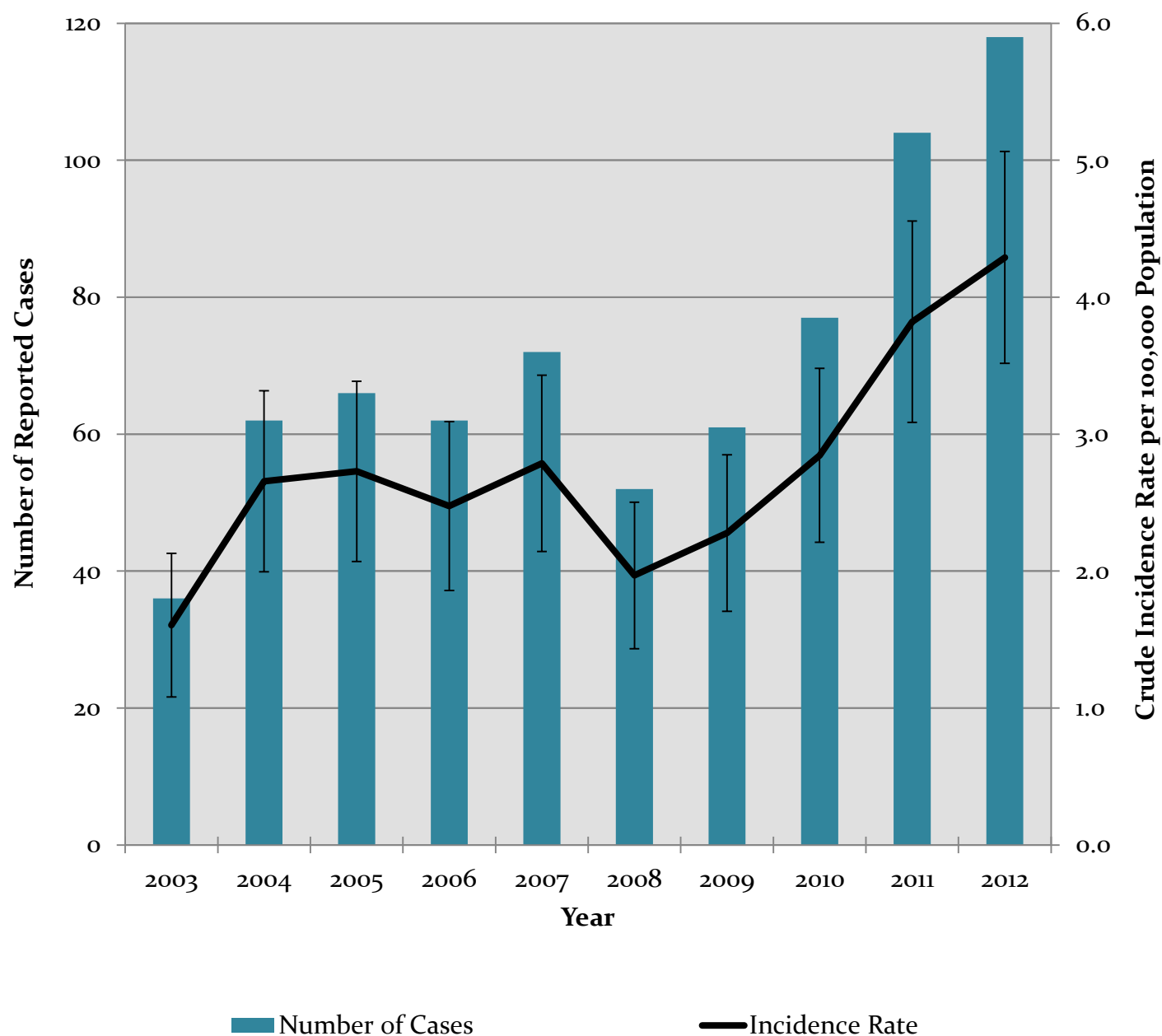
Coccidioidomycosis is endemic to southern Nevada (3); therefore, it is not surprising that Southern Nevada Health District had a significantly higher age-adjusted incidence rate (3.6 cases per 100,000 population) than all other health districts and the overall age-adjusted incidence rate for the entire state (2.7 cases per 100,000 population). Due to the large proportion of cases from southern Nevada increasing the state rate, the age-adjusted incidence rates for the other health districts were all significantly lower than the overall state rate.

Between 2008 and 2012 (years for which monthly data is available), there was no discernable monthly or seasonal trend for reported coccidioidomycosis infections. The number of reported cases ranged between 0 and 14 cases per month, depending on the year.

From 2003 to 2012, a significantly higher age-adjusted incidence rate (6.2 cases per 100,000 population) was observed among Blacks compared to residents of all other race/ethnic groups; however, 290 cases (41% of the total cases reported) were of unknown race/ethnicity, which suggests that race- and ethnicity-specific incidence rates may not be reliable due to incomplete data. Therefore, this statement should be considered with caution until the data for future years is sufficient to support statistically sound conclusions without the potential of bias.

As age increased, the incidence rates for reported coccidioidomycosis infections increased, and the differences between each age group were statistically significant. Pregnant women have a higher risk of severe disease (3), but the highest incidence rate was observed in the 65 years and older age group (6.3 cases per 100,000 population). Rates for infants and children less than 5 years were not calculated due to low case counts.

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



The crude incidence rate in Nevada from 2003 to 2012 was 2.8 cases per 100,000 population.

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

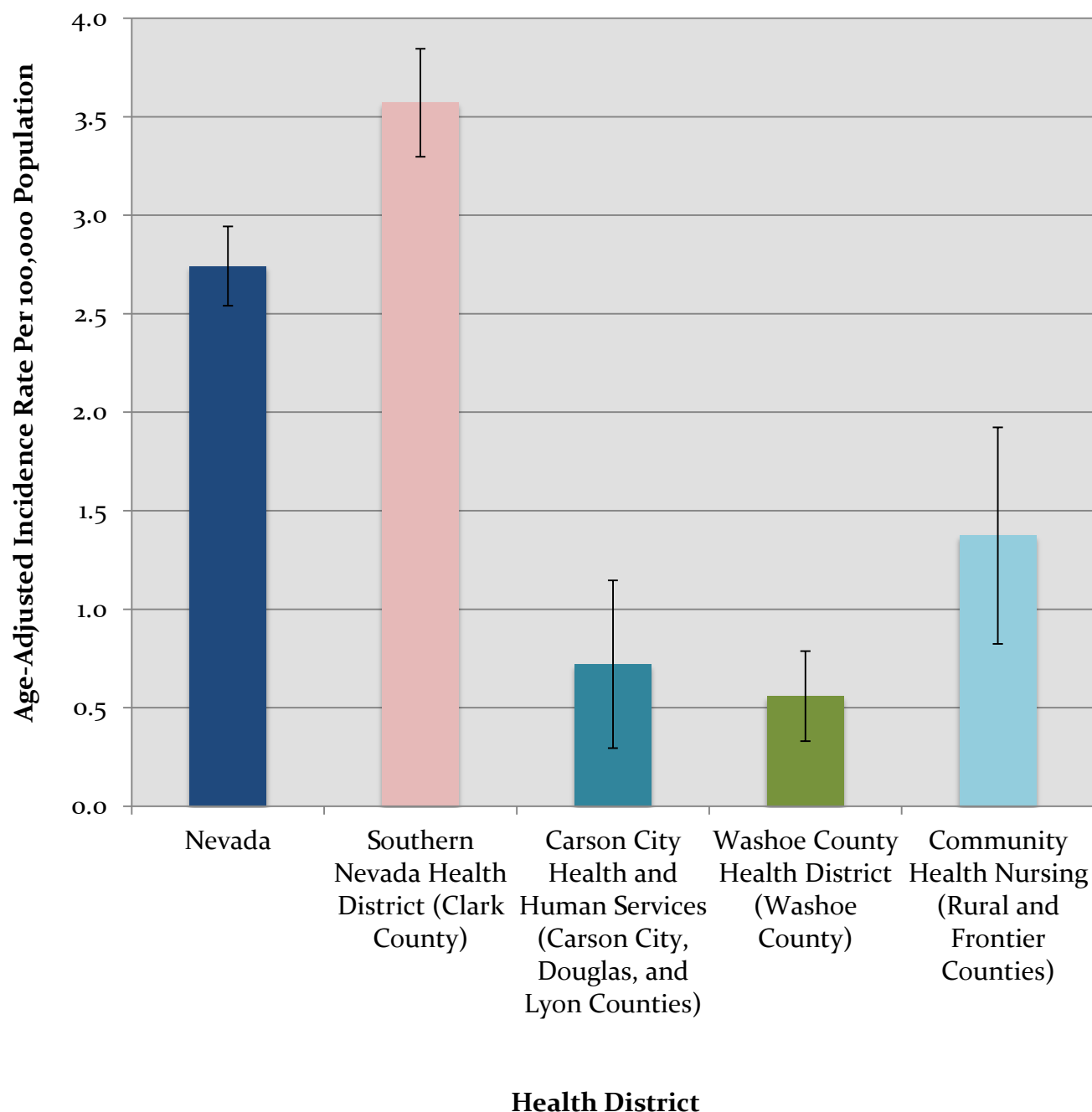


Figure 3. Number of Coccidioidomycosis Cases Reported in Nevada by Month: 2008-2012

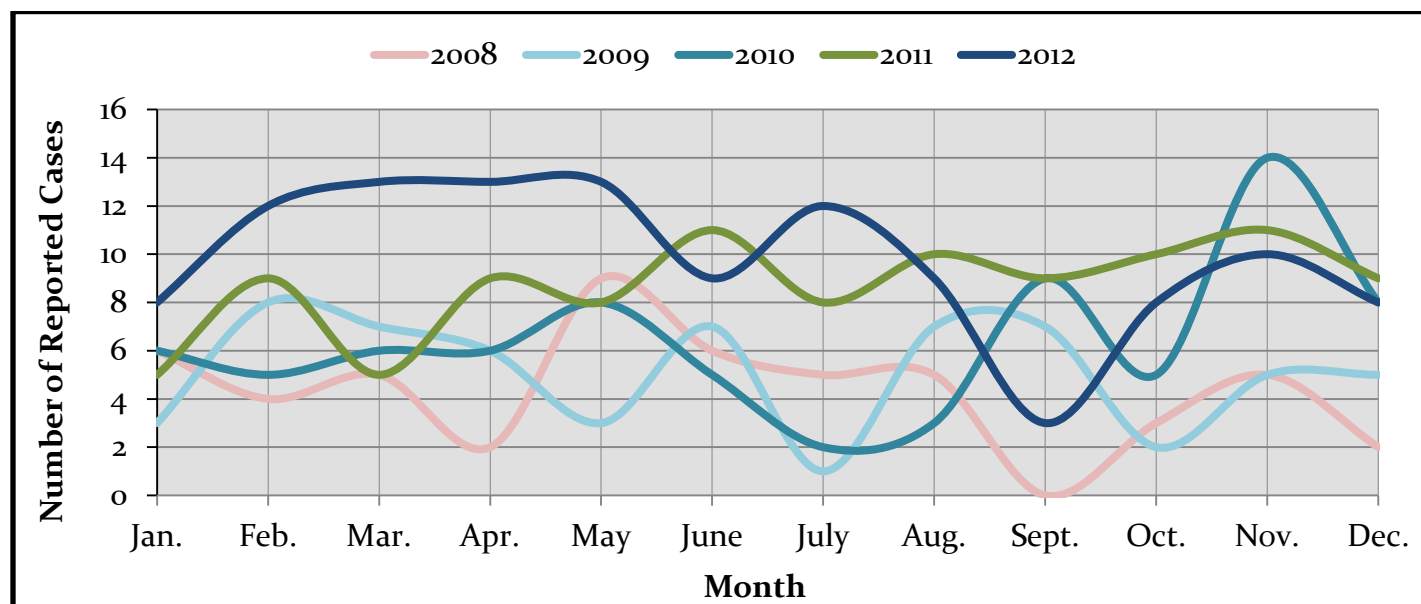
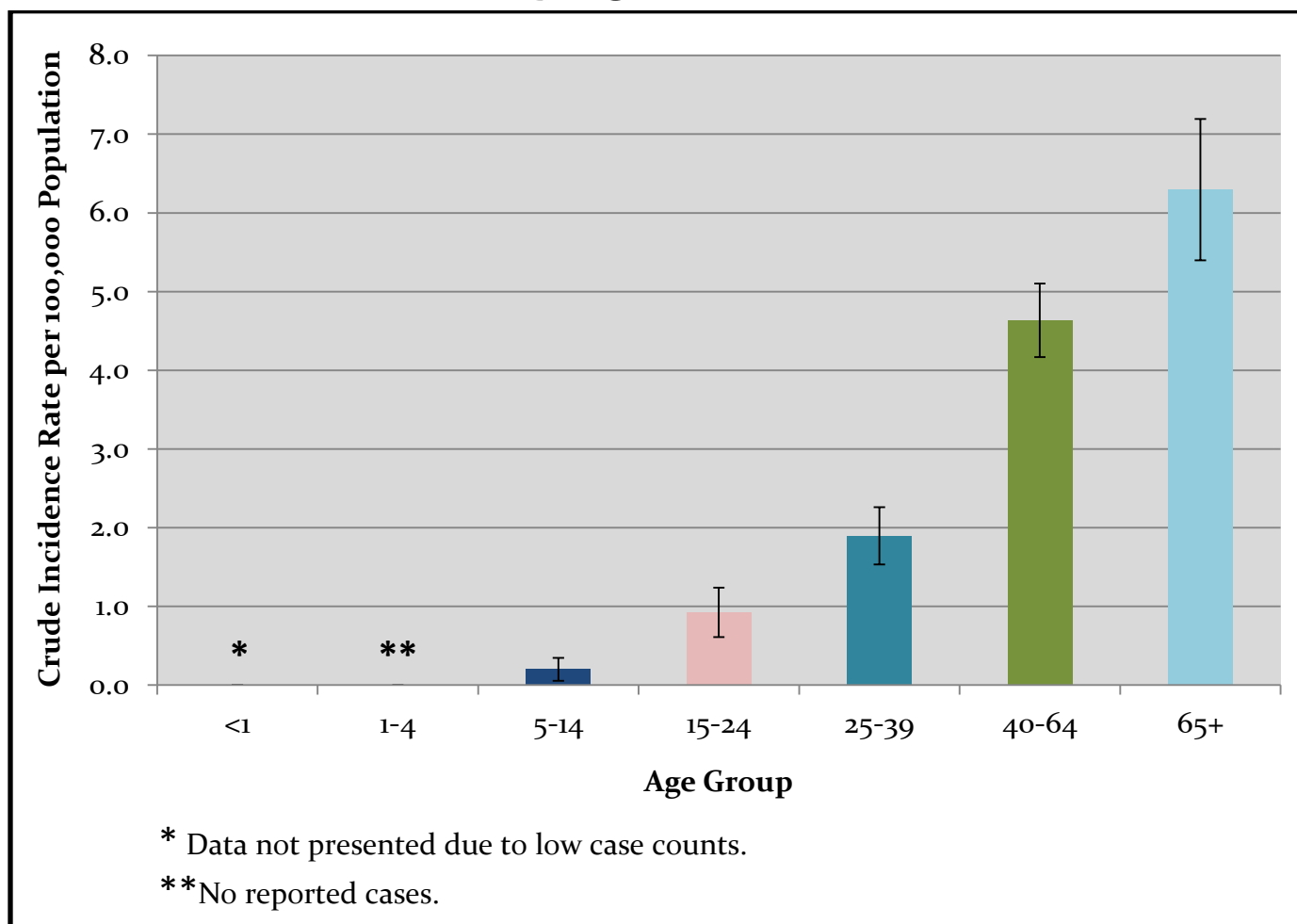


Figure 4. Crude Incidence Rates of Coccidioidomycosis in Nevada by Age Group: 2003-2012



Technical Notes

All Nevada data from 2003 to 2012 came from reported invasive *coccidioidomycosis* infections among Nevada residents (4, 5). The CDC and the Council of State and Territorial Epidemiologists case definition of coccidioidomycosis encompasses all cases classified as confirmed; all cases of coccidioidomycosis 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. Due to the high number of cases of unknown race/ethnicity (290 cases), imputing the unknown cases to produce race/ethnicity-specific incidence rates would risk allowing potential selection bias to distort the measures, resulting in unreliable conclusions; therefore, racial/ethnic break-outs 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

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