

# **SALMONELLOSIS**

## **IN NEVADA, 2003-2012**

March 2014  
Edition 1.3

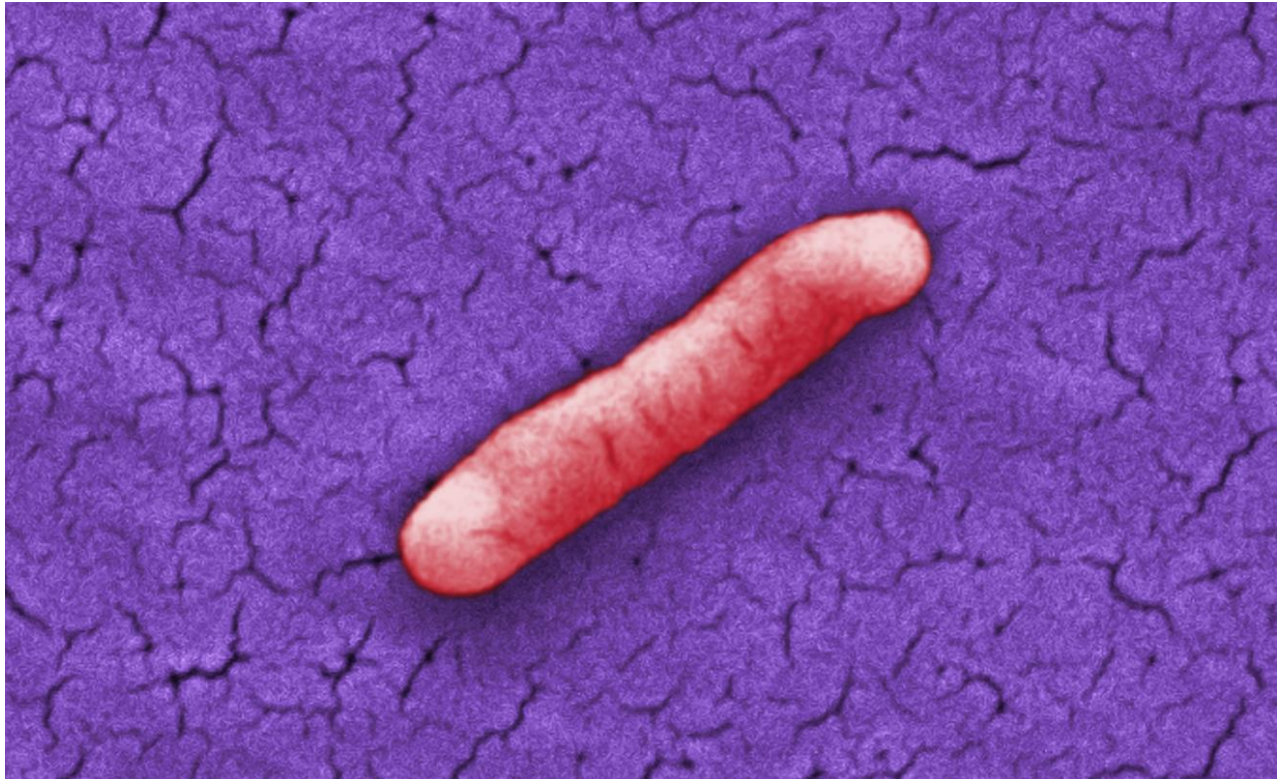


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## Purpose

The purpose of this report is to provide a general overview of the incidence and recent trends of salmonellosis among Nevada residents. The report also includes Healthy People 2010 objectives, Healthy People 2020 objectives, and Nevada data collected from cases of salmonellosis from 2003 to 2012. Salmonellosis is listed as one of Nevada's reportable diseases pursuant to [NRS 441A](#) (1). Salmonellosis reporting is further regulated by [NAC 441A.680](#) (2).

## Salmonellosis

Salmonellosis is an infection with the bacteria *Salmonella*. *Salmonella* is most commonly transmitted when an individual eats food that is contaminated with feces containing the bacteria. Nationally, approximately 42,000 cases of salmonellosis are reported every year; however, the actual number of infections may be 29 or more times greater. It is estimated 400 people die each year due to *Salmonella*. *Salmonella* is present in many animals, animal products, tainted fruits, vegetables, and nuts. *Salmonella* is most commonly found in poultry, beef, eggs, and milk; therefore, extra precautions should be taken when handling or consuming these items (3).

Symptoms of salmonellosis usually appear within 12-72 hours of being exposed, and patients may exhibit diarrhea, fever, abdominal cramps, and vomiting. These symptoms usually last 4 to 7 days, and most people recover on their own without any medical treatment. However, some high risk populations (infants and children, immuno-suppressed individuals, and older adults) may develop severe or life-threatening complications from the disease. These complicated infections occur when the bacteria migrate from the intestines to other vital systems. Individuals with severe complications may exhibit severe dehydration, blood infections when the bacteria enter the blood stream, infections of the bone or bone marrow, a localized infection outside the intestine, or a rare disorder called Reiter's syndrome affecting the joints of the infected (3).

Salmonellosis is diagnosed by testing for the presence of *Salmonella* in a stool sample collected from the patient. Treatment of salmonellosis is generally not recommended for most people when localized in the intestines. However, when the bacteria spread from the digestive tract (indicating a severe infection), antibiotics are typically used to kill the bacteria and control the infection (3).

Currently, there is no vaccination to prevent salmonellosis (with the exception of the vaccine *Salmonella typhi*, which isn't included among the *Salmonella* species considered in this report). Like almost all other illnesses, public health officials recommend that individuals practice preventive techniques to decrease their chances of contracting the illness. These include washing hands and kitchen surfaces after they have been in contact with raw meat or poultry, washing hands after contact with animals or feces, and avoiding consuming food containing raw eggs or unpasteurized milk. Patients infected with salmonellosis are advised to not prepare food or pour water for others until their diarrhea has resolved; many health departments require infected restaurant employees to show a negative stool test before returning to work. It is also important to cook all poultry, ground beef, and eggs thoroughly to an internal temperature of 165°F and to use a separate cutting board for meats when preparing foods to avoid cross-contamination. Breastfeeding young infants prevents salmonellosis and many other health problems (3).

## Summary

From 2003-2010, the annual number of reported salmonellosis cases in Nevada ranged from a low of 175 cases in 2011 to a high of 307 cases in 2010. Over the ten years, a total of 2,243 cases were reported. The annual crude incidence of salmonellosis ranged from a low of 6.4 cases per 100,000 population in 2011 to a high of 11.3 cases per 100,000 population in 2010, and the crude incidence rates in 2011 and 2012 were statistically significantly lower than in 2006 through 2010. The crude incidence rate from 2003 to 2012 was 8.8 cases per 100,000 population.

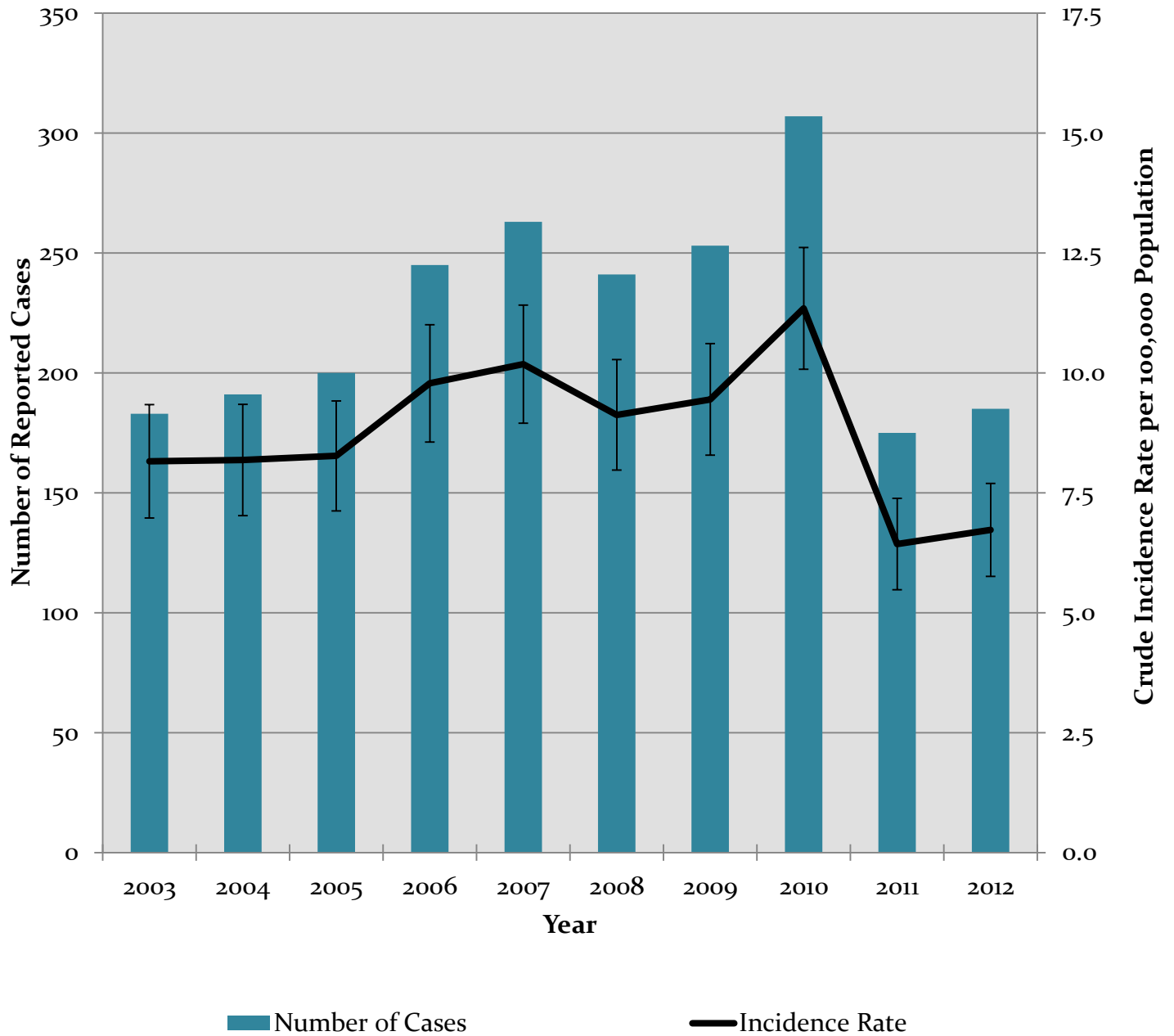
From 2003 to 2010, Nevada's crude incidence rate of laboratory confirmed salmonellosis cases ranged from 7.2 to 10.3 cases per 100,000 population; the rates from 2006 through 2010 were statistically significantly higher than the Healthy People 2010 objective for salmonellosis (objective: not to exceed an incidence rate of 6.8 laboratory confirmed cases per 100,000 population) (4). The Healthy People 2020 objective was raised from the 2010 objective. At the same time, Nevada's crude incidence rates of laboratory confirmed salmonellosis decreased and were significantly lower in 2011 and 2012 than the 2020 objective at 6.1 and 6.3 cases per 100,000 population, respectively (objective: not to exceed an incidence rate of 11.4 laboratory confirmed cases per 100,000 population) (5).

Generally, there were no significant differences from 2003 to 2012 between the overall age-adjusted incidence rate for the state and among the health districts. The only significant difference during this time period was in 2007 when Carson City Health and Human Services had a significantly higher age-adjusted incidence rate (18.3 cases per 100,000 population) than the overall state age-adjusted rate and the rate for Southern Nevada Health District (10.1 and 8.7 cases per 100,000 population, respectively).

Like most foodborne diseases, salmonellosis cases typically increase during the summer and decline in fall and winter. Between 2008 and 2012 (years for which monthly data is available), salmonellosis infections followed this pattern with the number of reported cases peaking between June and September. The number of reported cases ranged between 7 and 62 cases per month, depending on the year.

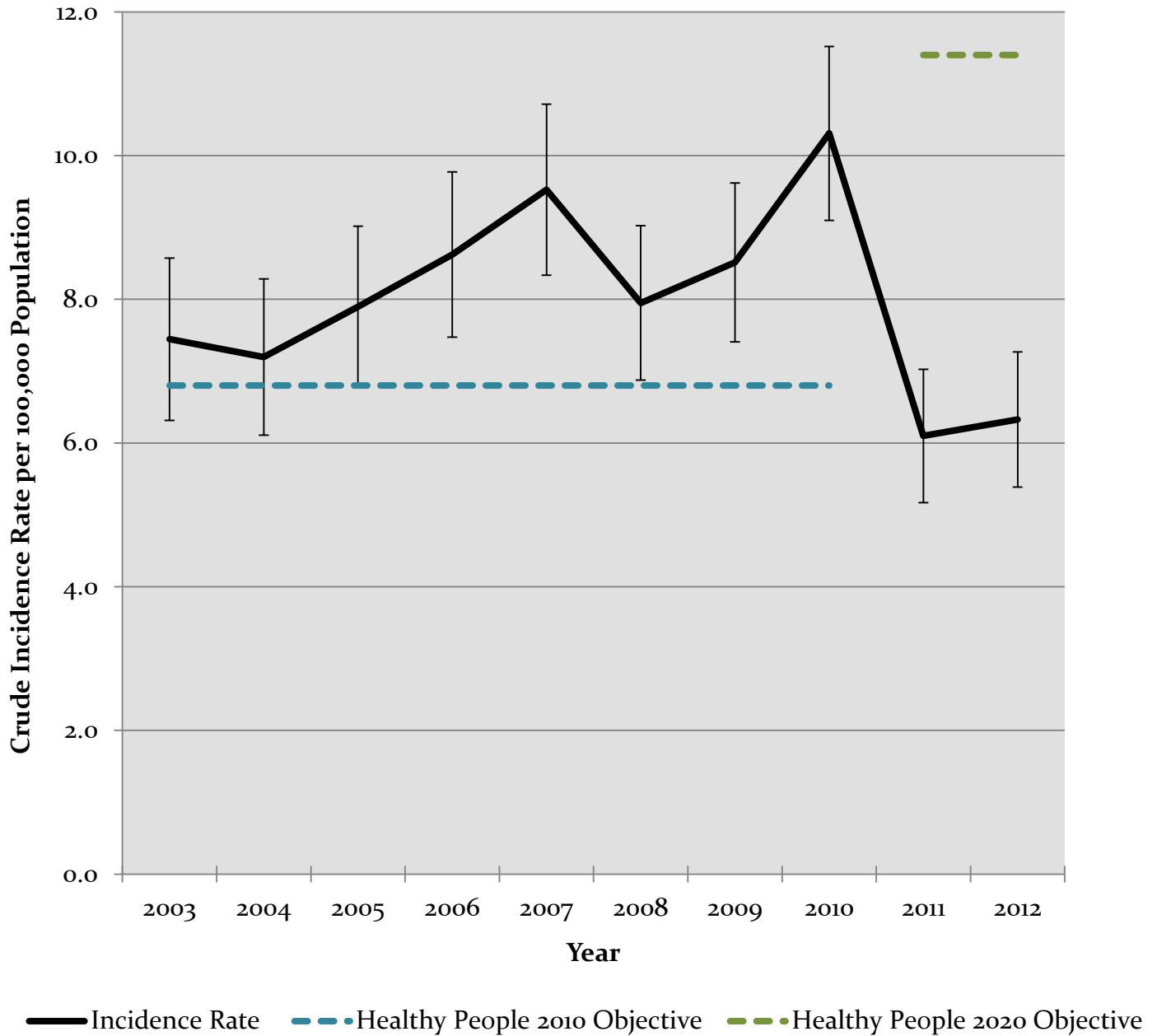
From 2003 to 2012, there were no significant differences in age-adjusted incidence rates between the race/ethnic groups. During the same time period, the highest case count of salmonellosis in Nevada was in persons 40-64 years of age, with 2010 having the largest total number of cases, 73. Nevertheless, during the 10-year time period, infants under 1 year of age and children 1-4 years of age had significantly higher incidence rates compared to the other age groups (59.1 and 23.0 cases per 100,000 population, respectively). The peak age-specific incidence rate for infants under 1 year of age was in 2007 at 77.7 cases per 100,000 population. It is known that populations at higher risk for salmonellosis infection include infants and children and older individuals (3).

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

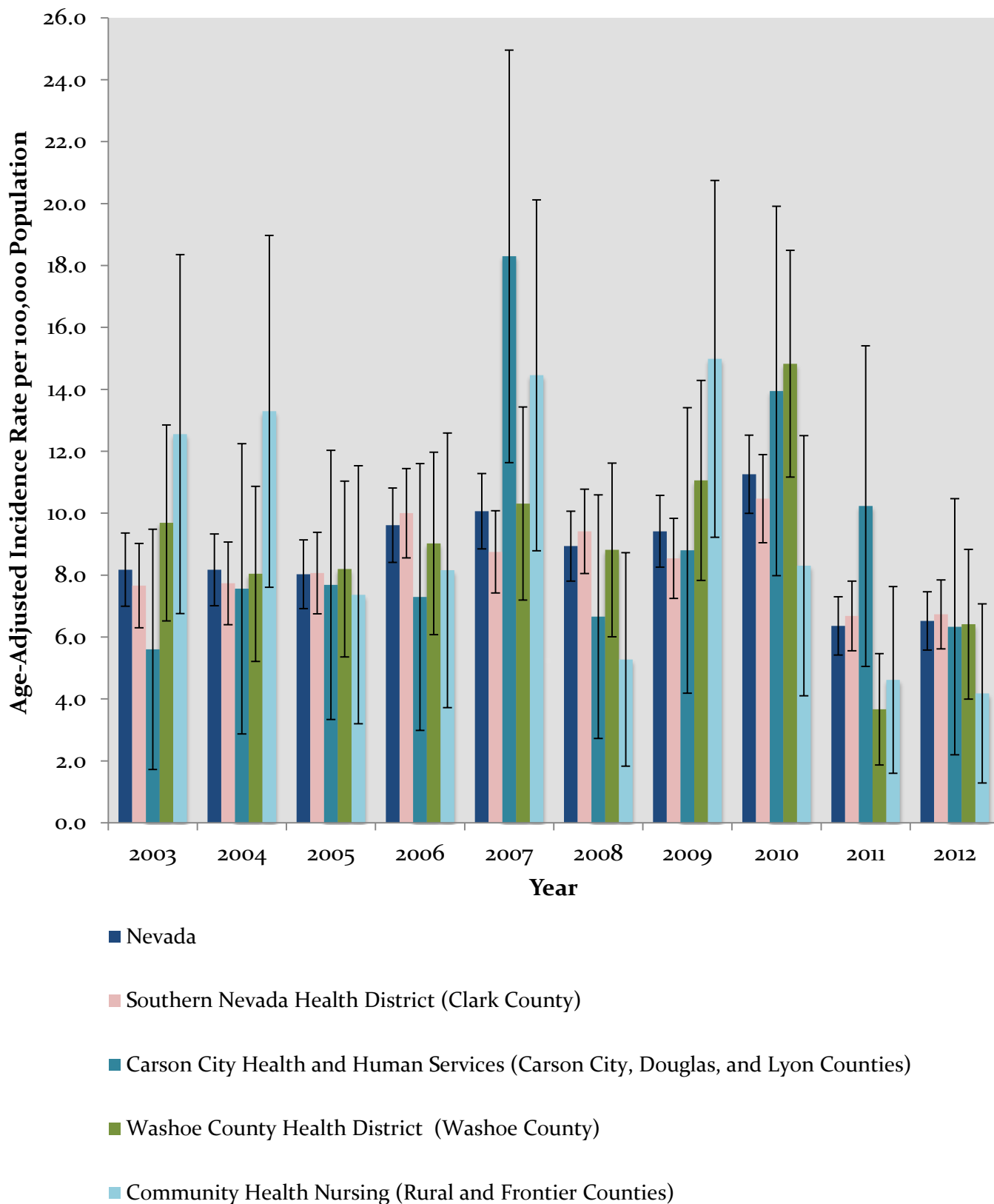


The crude incidence rate in Nevada from 2003 to 2012 was 8.8 cases per 100,000 population.

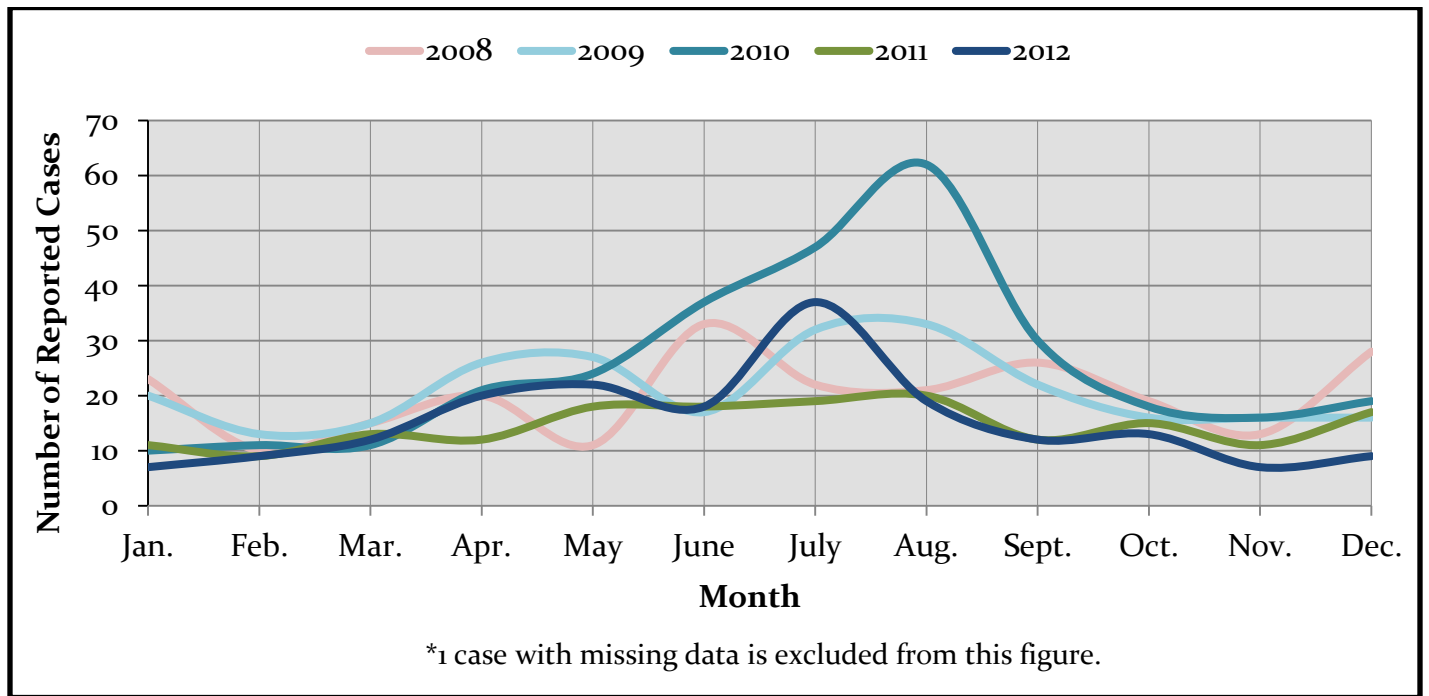
### Figure 2. Crude Incidence Rates of Laboratory Confirmed Salmonellosis Cases in Nevada Compared to Healthy People Objectives: 2003-2012



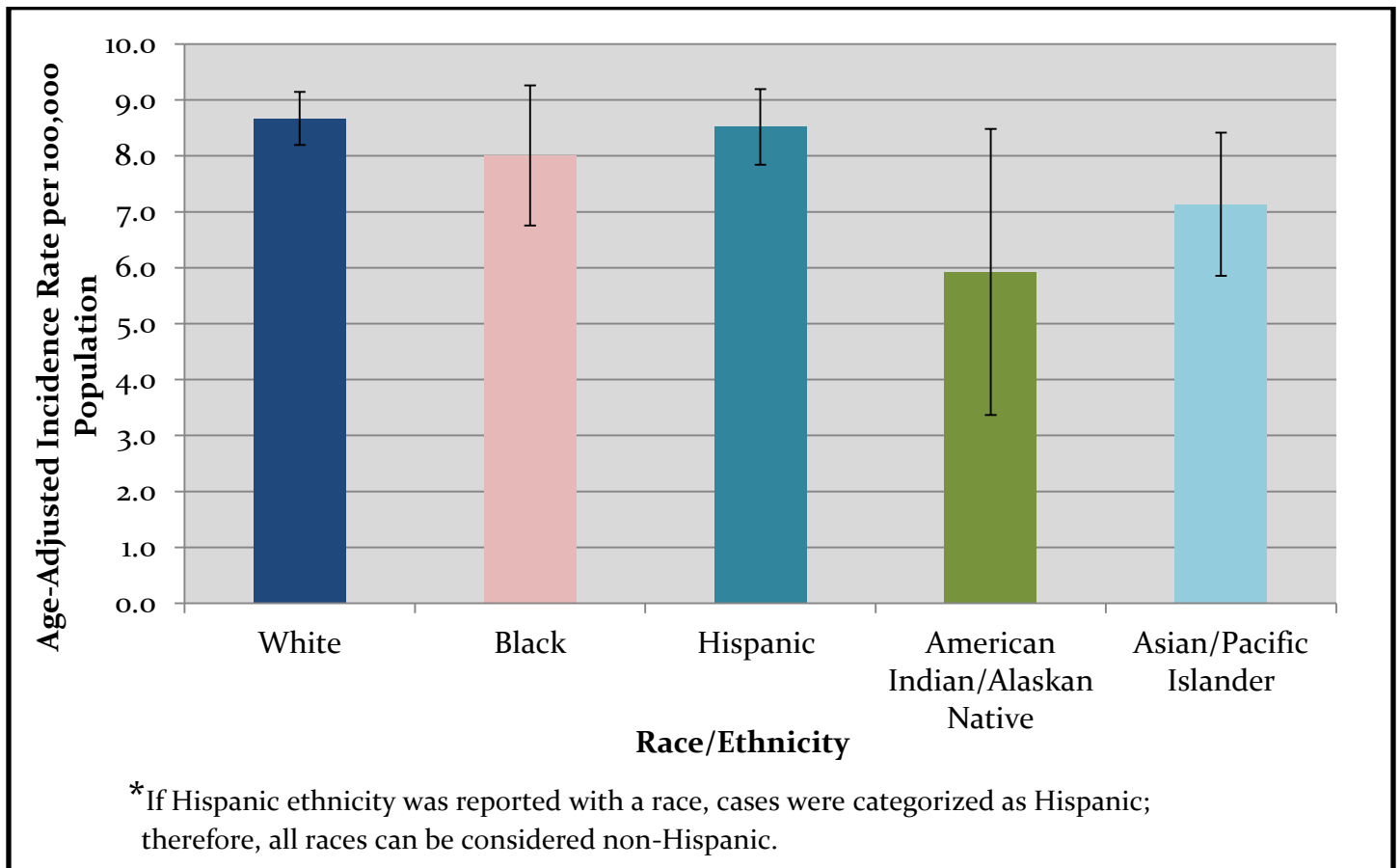
### Figure 3. Age-Adjusted Incidence Rates of Salmonellosis in Nevada and Nevada Health Districts: 2003-2012



**Figure 4. Number of Salmonellosis Cases\* Reported in Nevada by Month: 2008-2012**



**Figure 5. Age-Adjusted Incidence Rates of Salmonellosis in Nevada by Race/Ethnicity\*: 2003-2012**



# Figures 6A-G. Number of Reported Cases and Crude Incidence Rates of Salmonellosis in Nevada by Age Group: 2003-2012

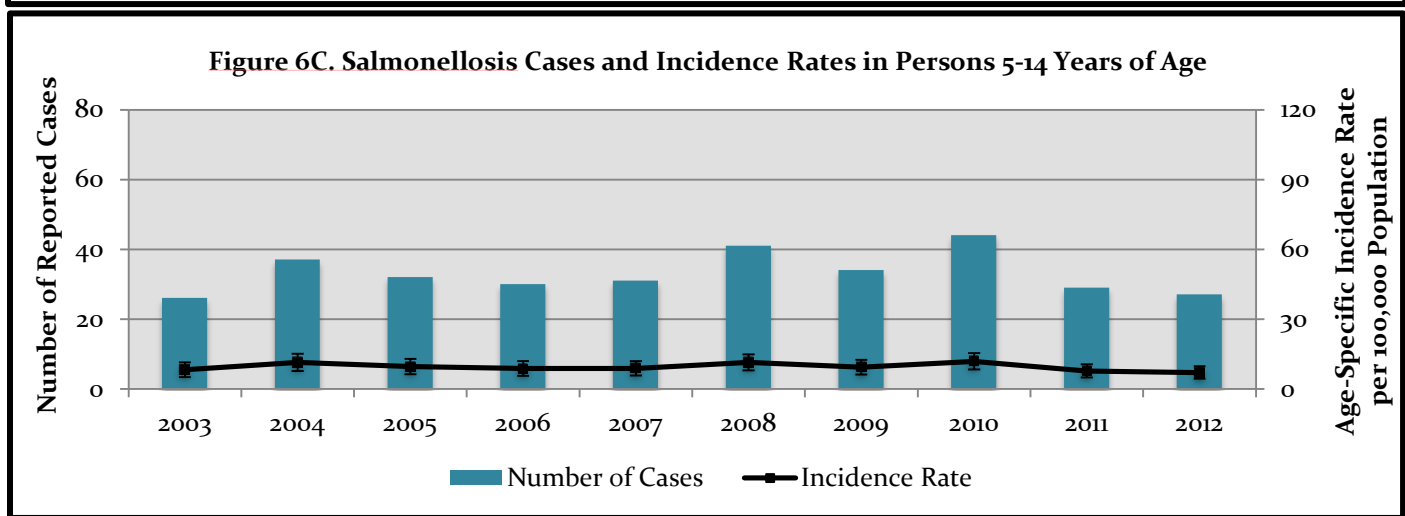
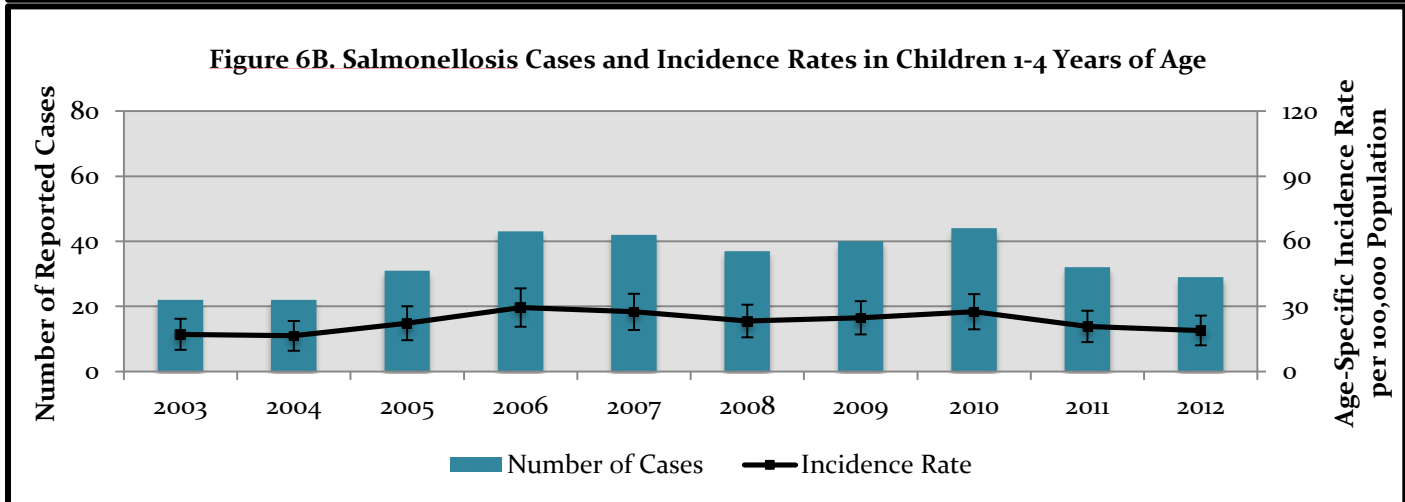
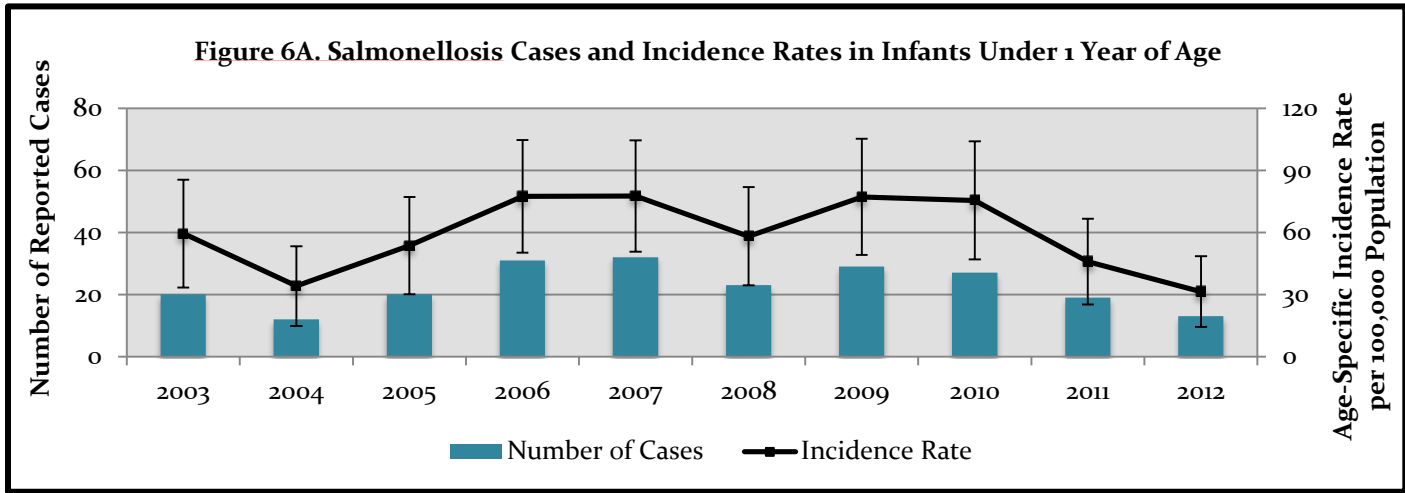




Figure 6D. Salmonellosis Cases and Incidence Rates in Persons 15-24 Years of Age

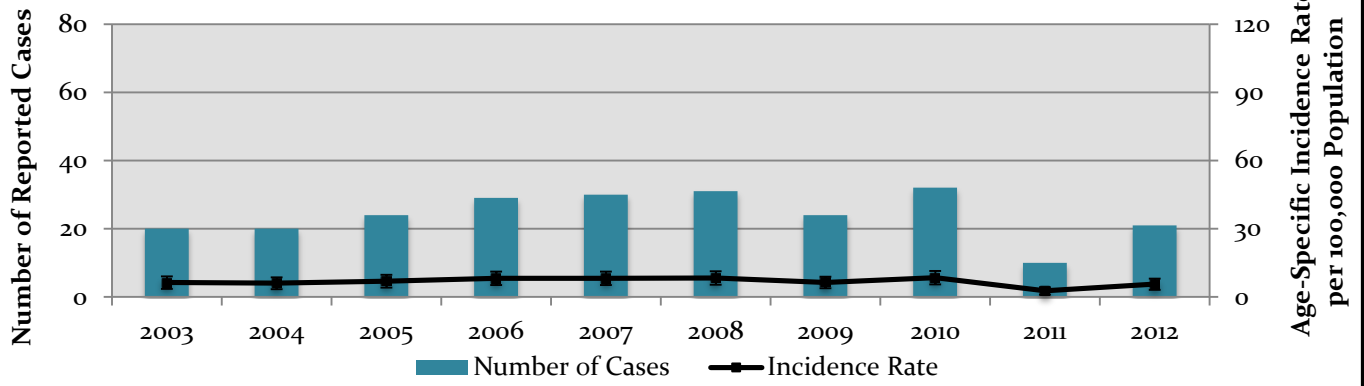


Figure 6E. Salmonellosis Cases and Incidence Rates in Persons 25-39 Years of Age

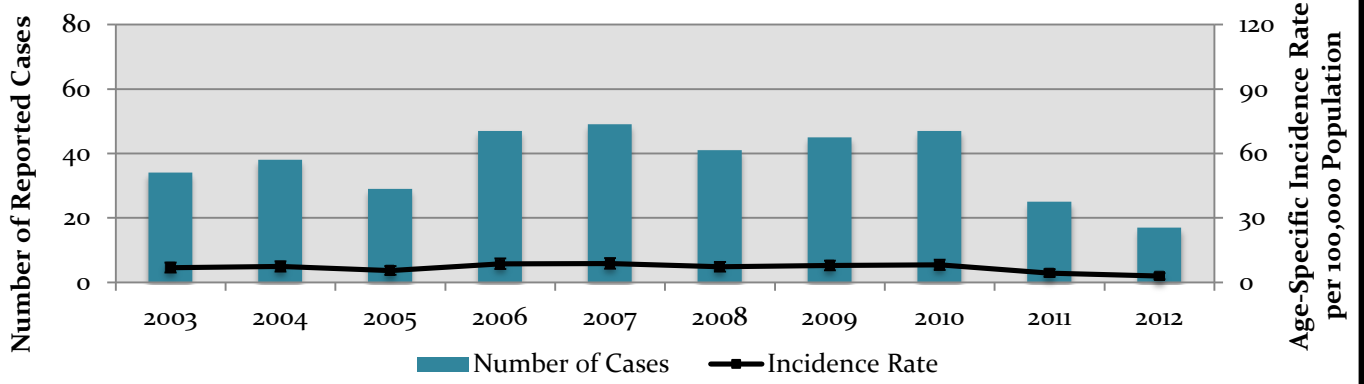


Figure 6F. Salmonellosis Cases and Incidence Rates in Persons 40-64 Years of Age

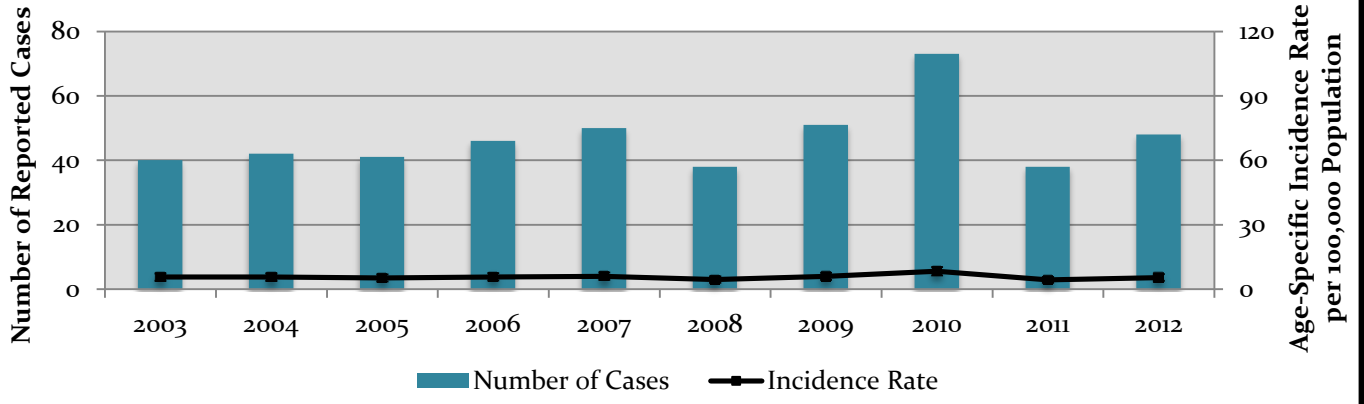
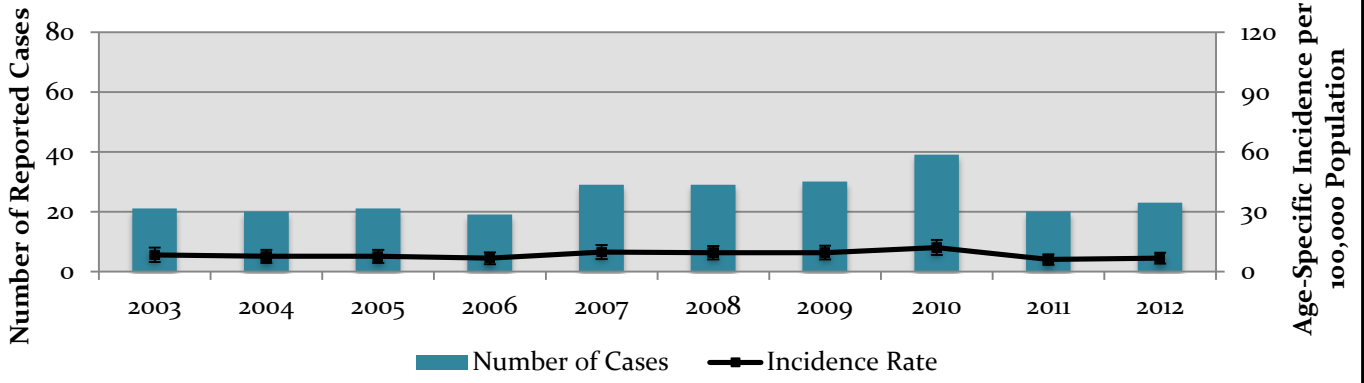


Figure 6G. Salmonellosis Cases and Incidence Rates in Persons 65+ Years of Age



## Technical Notes

All Nevada data from 2003 to 2012 came from reported *Salmonella* infections among Nevada residents (6, 7). The CDC and the Council of State and Territorial Epidemiologists case definition of salmonellosis encompasses all cases classified as suspected, probable, or confirmed; all cases of salmonellosis used for this report follow this definition (8). Population estimates were obtained from Nevada State Demographer's Office (9). 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; 12 such cases had to be excluded. Cases with unknown race/ethnicity (367 cases) were imputed among racial/ethnic groups based upon the distribution of each racial/ethnic group within the general population. Cases with race and ethnicity listed as "other" or those with multiple races were excluded from Figure 5; 37 such cases were excluded. When used for rates, error bars represent 95% confidence intervals. The Keyfitz method was used to calculate confidence intervals of age-adjusted rates (10). Due to their inherent unreliability, rates were not calculated for case counts lower than five.

## Sources

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