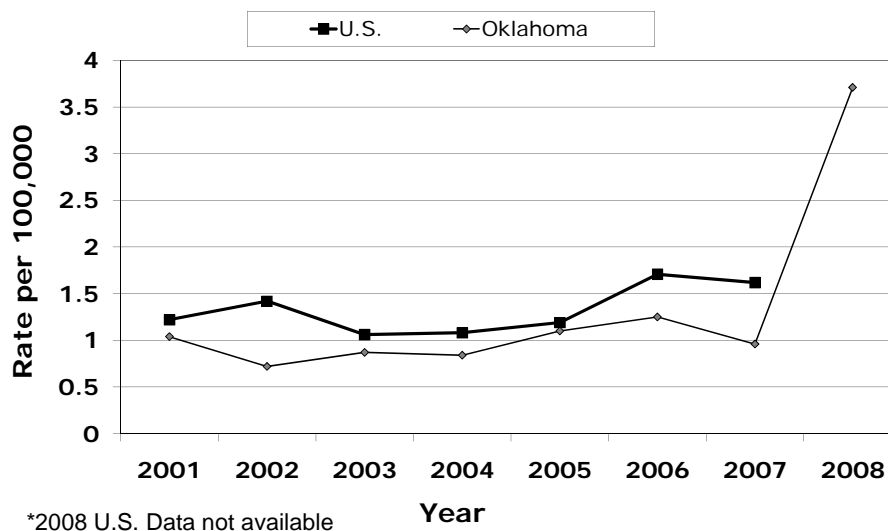


Shiga toxin producing *Escherichia coli* (STEC)

2008 Case Total 135	2008 Rate	3.71 per 100,000
2007 Case Total 33	2007 Rate	0.96 per 100,000

The most common serotype of Shiga toxin producing *E. coli* (STEC) reported nationally continues to be *E. coli* O157:H7. Other less common serotypes are also reportable and the number reported yearly is rising. This increase may be partially due to more widely used laboratory tests that identify other serotypes of STEC beyond O157:H7. One hundred and thirty-five STEC cases were reported in Oklahoma for 2008. This is a 409% increase from the 33 cases reported in 2007. This notable increase can be partially attributed to a large *E. coli* O111 outbreak that occurred in northeastern Oklahoma in August and September of 2008. Eighty-seven of the 135 cases (64.4%) were associated with the *E. coli* O111 outbreak. Without the outbreak-related cases, there was still a 45% increase in STEC cases from 2007. The large outbreak began in late August of 2008 and health alert networks were sent to healthcare providers and laboratories across northeastern Oklahoma to notify them of the outbreak and request that testing for a STEC be considered in a patient presenting with symptoms consistent with a STEC infection. Additionally, multiple labs across the state added the testing capacity for STEC beyond O157:H7. The supplementary laboratory capacity may explain the higher number of reported STEC cases in 2008. The 2008 incidence rate for Oklahoma was 3.71 cases per 100,000 persons.

Shiga toxin producing *E. coli* (STEC) Incidence Rate by Year, Oklahoma and U.S., 2001 – 2008*

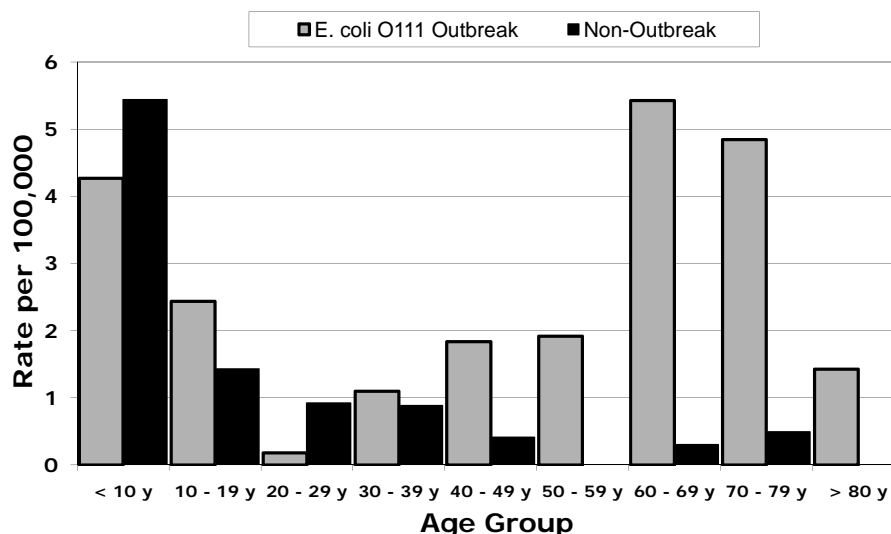


Non-outbreak related STEC cases in 2008 were residents of 26 counties across Oklahoma. Outbreak cases were residents of eleven counties all located in northeast Oklahoma, with the majority (75.9%) from Rogers, Mayes and Tulsa counties. Beyond the outbreak, no other geographic clustering was noted.

Cases ranged from less than one year old to 88 years with a median of 18 years. Fifty-four percent of cases were female. The highest incidence rates occurred in males less than ten years of age with an incidence of 10.23 per 100,000 persons. Females less than ten followed closely behind the males with an incidence of 9.17 per 100,000. When cases were stratified by outbreak association, the incidence rate for cases not associated with the *E. coli* O111 outbreak was highest in children less than ten years and was 3.8 times higher than the incidence for any other age group. For outbreak related cases, incidence rate in children less than ten was still high with a rate of 4.27 cases per

100,000 persons; however, the 60 – 69 and 70 – 79 year age groups had higher rates with 5.43 and 4.85 cases per 100,000, respectively.

Rate of Reported Shiga toxin producing *E. coli* (STEC) Cases by Age Group and Outbreak Association, Oklahoma, 2008



The highest incidence by racial background occurred in the American Indian and Alaska Native population with an incidence of 5.49 cases per 100,000 persons. Incidence for the white population is 3.83 cases per 100,000. Only one case reported race as black or African American corresponding to an incidence rate of 0.34 per 100,000. One case reported race as American Indian or Alaska Native and white. Hispanic ethnicity was reported by three cases corresponding to an incidence of 1.08 per 100,000 as compared to non-Hispanic cases with an incidence of 2.91 per 100,000.

Symptoms included abdominal cramps (87.7%), bloody diarrhea (68.7%), nausea (65.6%), fever (48.4%), and vomiting (44.3%). Fifty-six cases (41.5%) were hospitalized for their illness with the majority of hospitalizations in cases less than 20 years of age (54%) or female (57%). Twenty (14.8%) cases developed hemolytic uremic syndrome (HUS) as a consequence of their illness; of which *E. coli* O157:H7 was isolated in four cases and *E. coli* O111:NM in the other 16.

Of the 135 STEC cases in 2008, 102 were confirmed and the other 33 were epidemiologically linked to a confirmed case. All suspect STEC isolates are required to be forwarded to the OSDH PHL for confirmation. In 2008, 61 (59.8%) of the STEC cases were due to infection with *E. coli* O111:NM. *E. coli* O157:H7 was isolated in 26 cases (25.5%) and eight additional less common serotypes were identified in the remaining confirmed STEC isolates. Nationally, O157:H7 continues to be the most commonly reported serotype.¹

In August of 2008, OSDH was notified of an increase in children being admitted to a northeast Oklahoma hospital with severe hemorrhagic diarrhea. Upon investigation, exposure to a popular buffet style restaurant was noted. Outbreak case definitions were established to identify persons associated with the outbreak. The case definition included categories for confirmed, probable and suspect cases. In all, 341 outbreak cases were identified, of which 70 were hospitalized, and one case died. Only confirmed and probable cases are reported to CDC yearly and referenced in this summary.

¹ Centers for Disease Control and Prevention. [Summary of notifiable diseases—United States, 2007]. Published July 9, 2009 for MMWR 2007;56(No. 53):68.