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***An Epidemiological Analysis of Campylobacter Cases: Demographics, Exposures, Seasonality Patterns, and Regional Distribution conducted at the Tennessee Department of Health***



**Introduction:** The Campylobacter bacteria is a leading cause of foodborne illness. This study aimed to analyze the demographics, exposure correlations, seasonality patterns, and regional distribution of Campylobacter cases in Tennessee to inform targeted prevention strategies.

**Methods:** We conducted a retrospective analysis of Campylobacter cases from 2021 to 2023. The demographic data of these cases was summarized, and chi-square tests were performed to identify significant exposure correlations. A multiple linear regression was utilized to examine the relationship between our chosen exposures and hospital utilization while controlling for age, race, and ethnicity. Seasonality patterns were visualized using time series graphs for our overall cases and the specific exposures. The regional distribution of all our cases was visualized and analyzed using a descending bar graph using raw data and data with population rates applied.

**Results:** A total of 3,333 Campylobacter cases between 2021 and 2023 were included in the analysis. The median age of the cases was 40 years, and the majority were male (52.8%) and non-Hispanic white. Significant correlations were found between Campylobacter cases and beef consumption ( $p < 0.05$ ), egg consumption, ( $p < 0.05$ ), exposure to live chickens ( $p < 0.05$ ), as well as several of the other chosen exposures. The multiple linear regression revealed that while controlling for race, ethnicity, age, and all other variables in the regression model, a one-unit increase in live chicken exposure was associated with a 0.926-unit increase in hospital exposure ( $p = 0.005$ ). Overall seasonality showed that Campylobacter cases peak in the summer months. Regionally, cases were distributed fairly across the state with the highest concentration in the Mid-Cumberland region.

**Conclusions:** This study provides valuable insights into the epidemiology of Campylobacter cases within the state of Tennessee, highlighting significant specific exposures and key seasonal and regional patterns in our population. These results can inform targeted interventions and public health messaging to reduce Campylobacter incidence within the state of Tennessee with the potential for region-specific strategies and interventions.