



The Distribution and Population Based Predictors of Foodborne Illness Incidence by County in Tennessee, 2015-2017

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INTRODUCTION

Foodborne illness is a leading cause of disease morbidity in the United States where 48 million cases and 3000 deaths are reported annually (1). In Tennessee, there are over 2000 reported foodborne illnesses where salmonellosis, campylobacteriosis, and shigellosis are most common. These diseases primarily cause diarrhea, abdominal cramps, and fevers. Surveillance systems have helped gather information on the incidences. In addition, social determinants have been linked to foodborne illness. Also, public health awareness is a vital prevention strategy, and public health officials have limited resources to educate the public.

Purpose of Study: The purpose of this study is to assess the socio-demographic characteristics of Tennessee counties and foodborne illness incidence association by analyzing existing secondary data to further understanding disease prevention.

METHODS

- Disease incidence and demographic data from secondary sources were extracted for the years 2015, 2016, and 2017.
- A descriptive analysis was performed for all variables and illnesses at the county-level.
- A spatial analysis was conducted using ArcGIS software to help analyze spatial data and to create maps. Choropleth maps were generated for each variable and each foodborne illness for each year.
- County incidence rates and multiple regression analyses were conducted using Stata 14 (College Station, TX, USA)

RESULTS

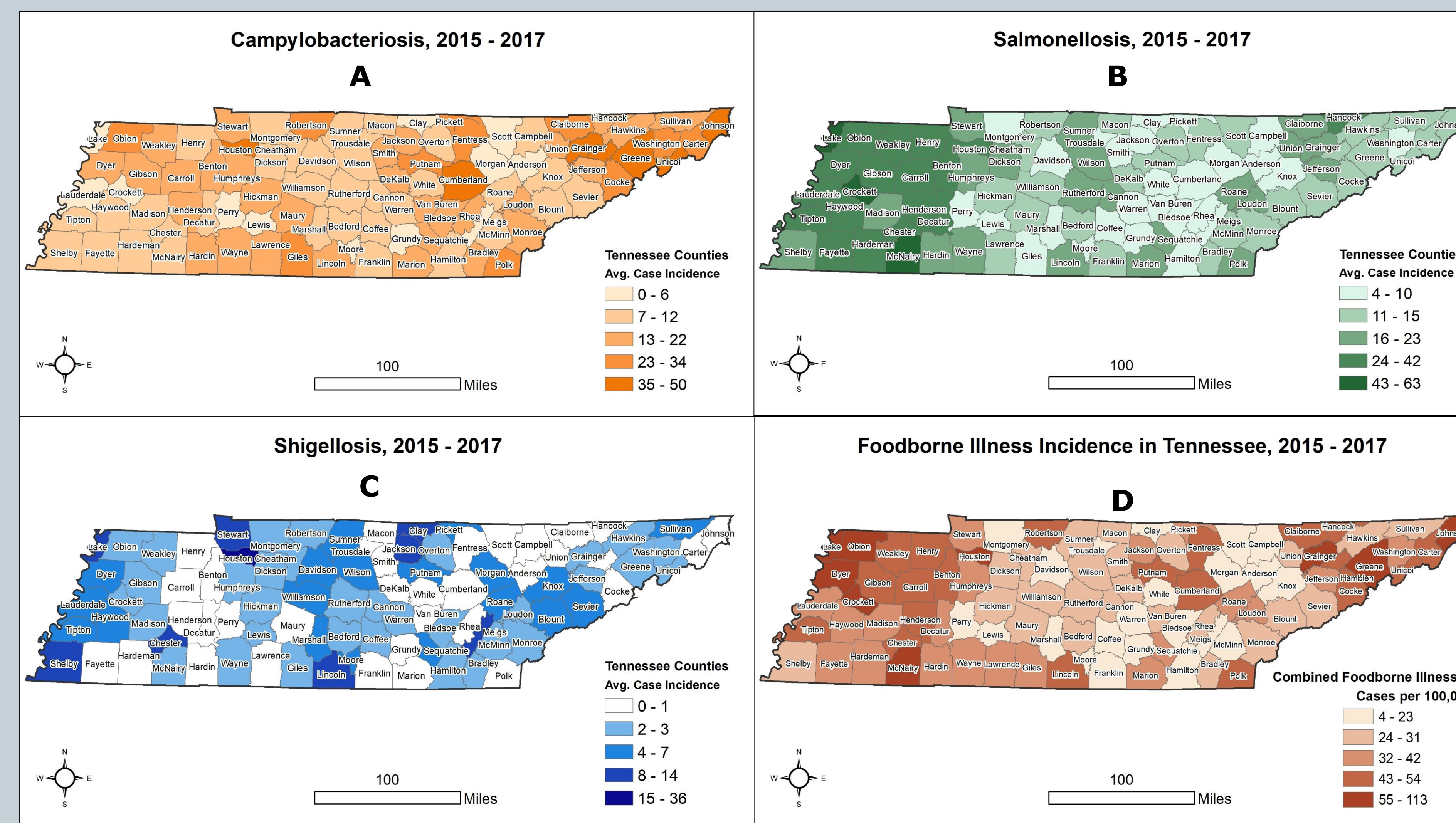


Figure 1. A) Campylobacteriosis incidence per 100,000 by county, 2015-2017. **B)** Salmonellosis incidence per 100,000 by county, 2015-2017. **C)** Shigellosis incidence per 100,000 by county, 2015-2017. **D).** All foodborne illness incidence per 100,000 by county, 2015-2017

Table 1. Multiple linear regression output of socio-demographic predictors and overall foodborne illness incidence. NOTE: * significant at $p < 0.05$

Socio-demographic Variables	Disease Outcomes			
	Campylobacteriosis	Salmonellosis	Shigellosis	Combined
Under 5 years old %	-45.65	-3.01	-2.90*	-10.35*
5-14 years old %	-43.16	5.22*	-4.21	
15-17 years old %	-43.48			
18-64 years old %	-42.32	-4.60*	-1.79*	-3.23*
Over 65 years old %	0.76	0.88		1.66*
% White				
% Black				
% Hispanic				
% Minority		0.36*		0.33
% HS graduation	-0.71			
% Bachelor degree		16.51*		
Median HH income		-0.01*		
% Uninsured		-0.96		
Health care costs			-0.01	
# of PCPs	2.08	-3.56*	0.01*	
Rural			4.72*	
Health Rank	-0.13			

RESULTS (CONTINUED)

Two common foodborne illnesses in Tennessee are unevenly distributed geographically. East Tennessee has the Campylobacteriosis incidence rates, where West Tennessee has the lowest (Fig 1. A). The opposite is true for Salmonellosis, in West Tennessee incidence is highest (Fig 1. B). Shigellosis incidence is homogenously distributed, with no particular region with high or low incidence (Fig 1. C). Socio-demographic factors were associated with Salmonellosis and Shigellosis but not Campylobacteriosis.

CONCLUSIONS

Campylobacteriosis and Salmonellosis are geographically dependent in Tennessee while Campylobacteriosis is not associated with socio-demographic factors. Age, race/ethnicity, education, health insurance, healthcare access, income, and rural status were all associated with Salmonellosis and/or Shigellosis at the county-level.

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REFERENCES

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