PROFILES OF SELECTED NOTIFIABLE DISEASES

BOTULISM

Number of infant cases in 2013:	*5*	*Rate in 2013*:*	*0.04*
Number of infant cases in 2012:	*4*	*Rate in 2012*:*	*0.03*
Number of foodborne cases in 2013:	*0*	*Rate in 2013†:*	*0.00*
Number of foodborne cases in 2012:	*2*	*Rate in 2012†:*	*0.02*

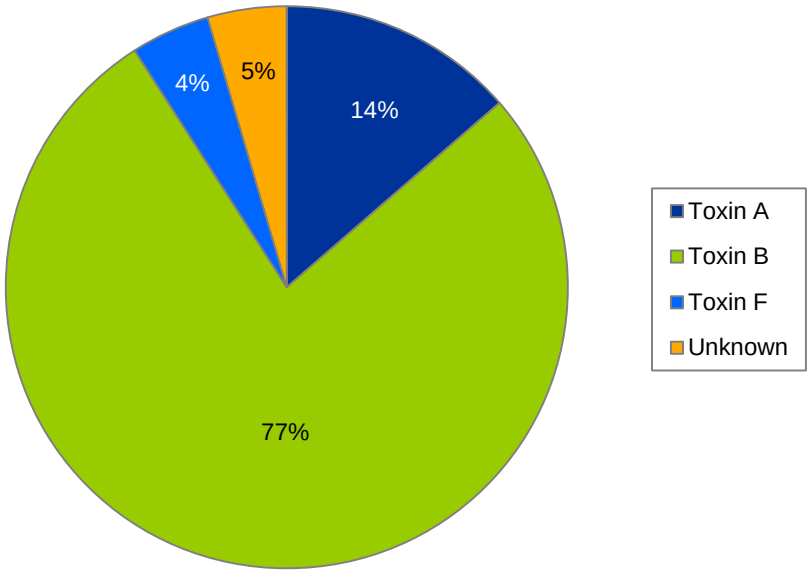
* Rates are based on the U.S. Census births reported for Ohio and are per 1,000 population.
† Rates are based on the U.S. Census 2012 and 2013 estimates and are per 100,000 population.

Botulism is a rare but serious paralytic illness caused by a nerve toxin that is produced by the bacterium *Clostridium botulinum* and sometimes by strains of *Clostridium butyricum* and *Clostridium baratii*. There are five main types of botulism. Foodborne botulism is caused by eating foods that contain the botulinum toxin. Wound botulism is caused by toxin produced from a wound infected with *Clostridium botulinum*. Infant botulism is caused by consuming the spores of the botulinum bacteria, which then grow in the intestines and release toxin. Adult intestinal toxemia (adult intestinal colonization) botulism is a very rare kind of botulism that occurs among adults by the same route as infant botulism. Lastly, iatrogenic botulism can occur from accidental overdose of botulinum toxin. All forms of botulism can be fatal and are considered medical emergencies. Foodborne botulism is a public health emergency because many people could be poisoned by eating the same contaminated food.

Four cases of foodborne botulism have been investigated between 2009 and 2013. Two cases were directly linked to a specific food. One case consumed improperly stored potato soup, and the other case consumed home canned green beans.

Figure 1 demonstrates the botulism toxin type in botulism infections in Ohio over the past five years. Infant botulism, botulism in children under the age of 1 year, constitutes 94 percent (16 out of 17 cases) of botulism toxin type B. Foodborne botulism cases were caused by toxin type A (3 cases) and toxin type F (1 case) over the last 5 years.

Figure 1: Botulism by Toxin Type, Ohio, 2009-2013



Source of disease data: Ohio Disease Reporting System.

LYME DISEASE

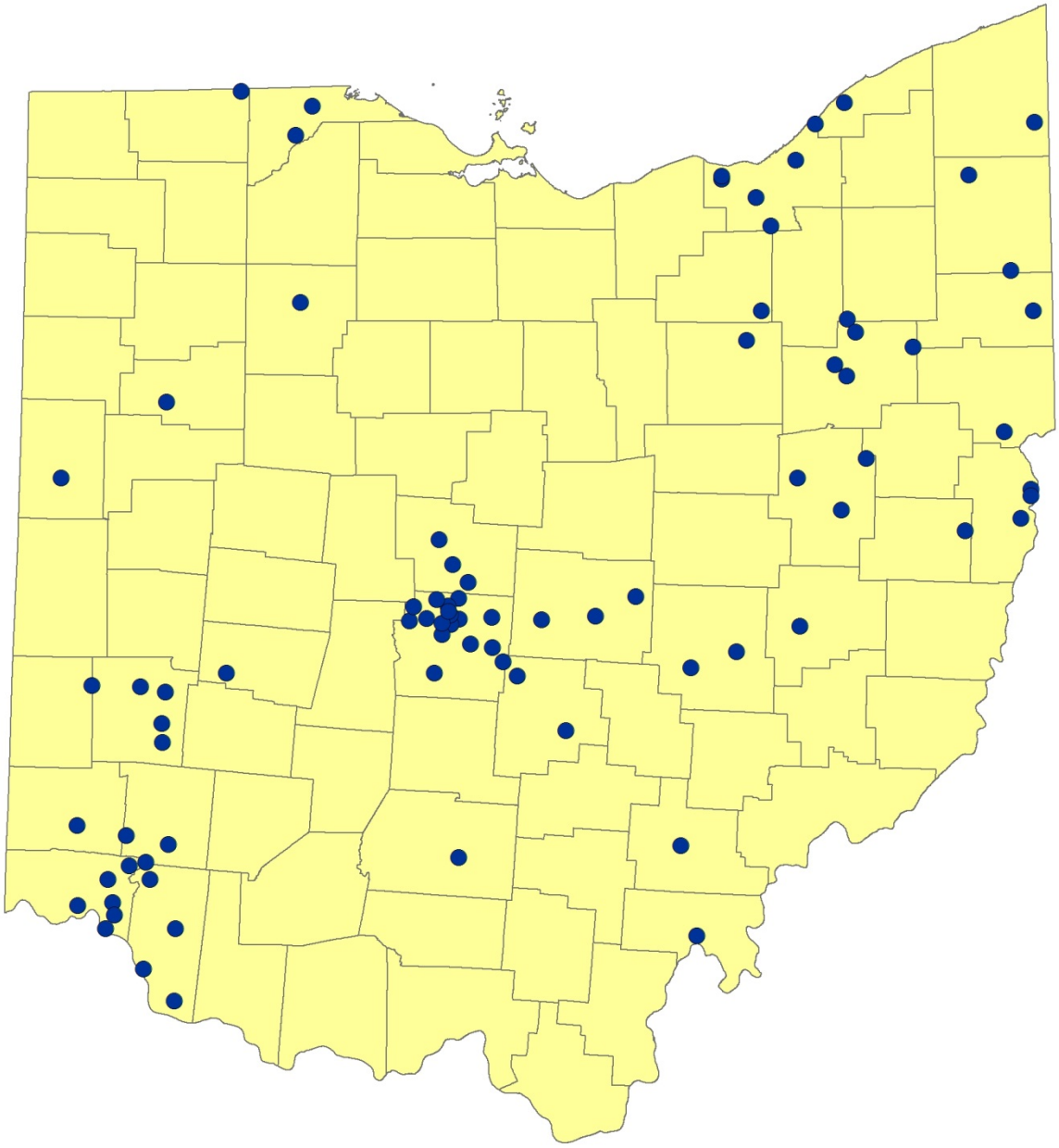
Number of cases in 2013:	*83*	*Rate in 2013:*	*0.7*
Number of cases in 2012:	*63*	*Rate in 2012:*	*0.5*

* Rates are based on the 2012 and 2013 U.S. Census estimates and are per 100,000 population.

Lyme disease is caused by the bacterium *Borrelia burgdorferi* and is transmitted to humans through the bite of infected blacklegged ticks, species *Ixodes scapularis*.[1] Typical symptoms include fever, headache, fatigue and a characteristic skin rash called erythema migrans (the "bull's-eye" rash). If left untreated, infection can spread to the joints, heart and nervous system. Most cases of Lyme disease can be treated successfully with a few weeks of antibiotics. Steps to prevent Lyme disease include using insect repellent, removing ticks promptly, reducing tick habitat through landscape modification and appropriately using of acaricides.

Figure 2 displays the county of residence for Ohio cases diagnosed with Lyme disease in 2013. Many of Ohio's cases are still acquired out of state. However, at the end of 2013, the vector was found in at least 58 of Ohio's 88 counties.

Figure 2: Lyme Disease Incidence, Ohio, 2013



Source of disease data: Ohio Disease Reporting System.

SALMONELLOSIS

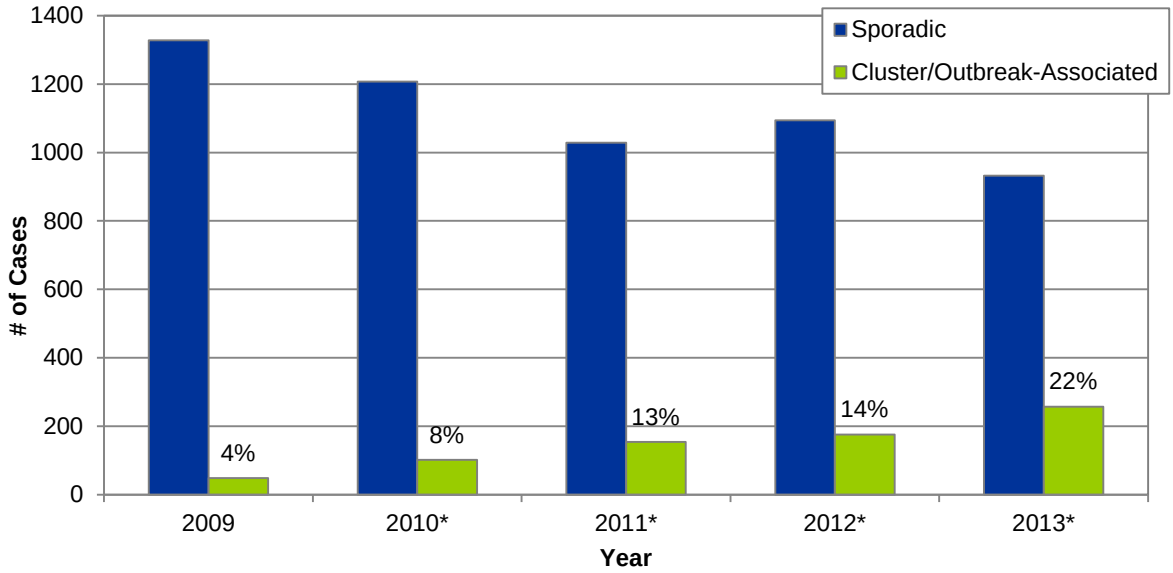
Number of cases in 2013:	*1,190*	*Rate in 2013:*	*10.3*
Number of cases in 2012:	*1,270*	*Rate in 2012:*	*11.0*

* Rates are based on the 2012 and 213 U.S. Census estimates and are per 100,000 population.

Salmonellosis is an infection with *Salmonella* bacteria often resulting in gastrointestinal illness, but it can also cause sepsis and other localized infections. Approximately 1,300 cases of salmonellosis are reported each year in Ohio. Most cases are not recognized as part of clusters or outbreaks. In 2010, the Ohio Department of Health (ODH) received additional funding from the Centers for Disease Control and Prevention (CDC) to enhance outbreak detection and response to infections of *Salmonella*, Shiga toxin-producing *Escherichia coli* and *Listeria monocytogenes*. This funding has allowed the ODH Laboratory to perform serotyping and pulsed field gel electrophoresis (PFGE) analysis on all *Salmonella* isolates in Ohio. PFGE analysis detects cases with the same genetic fingerprint of *Salmonella* to look for common exposures, which helps identify unrecognized outbreaks. This funding has also enabled the hiring of student interviewers to conduct rapid centralized interviews of cases for local health jurisdictions using a standardized questionnaire. Centralized interviewing by student interviewers began in 2012 with 18 local health jurisdictions covering more than 3.5 million Ohioans (31 percent of Ohio's total population). By the end of 2013, 54 additional jurisdictions opted for centralized interviewing by student interviewers for a total of 72 jurisdictions participating, covering more than 7 million Ohioans (64 percent of Ohio's total population).

The proportion of salmonellosis cases linked to a known cluster or outbreak significantly increased from 4 percent in 2009 to 22 percent in 2013 ($p < 0.0001$) (Figure 3). This steady increase began in 2010 when the additional CDC funding was available to enhance the detection and response to outbreaks. The increase from 14 percent in 2012 to 22 percent in 2013 was also significant ($p < 0.0001$) when the number of jurisdictions participating in central interviewing also substantially increased.

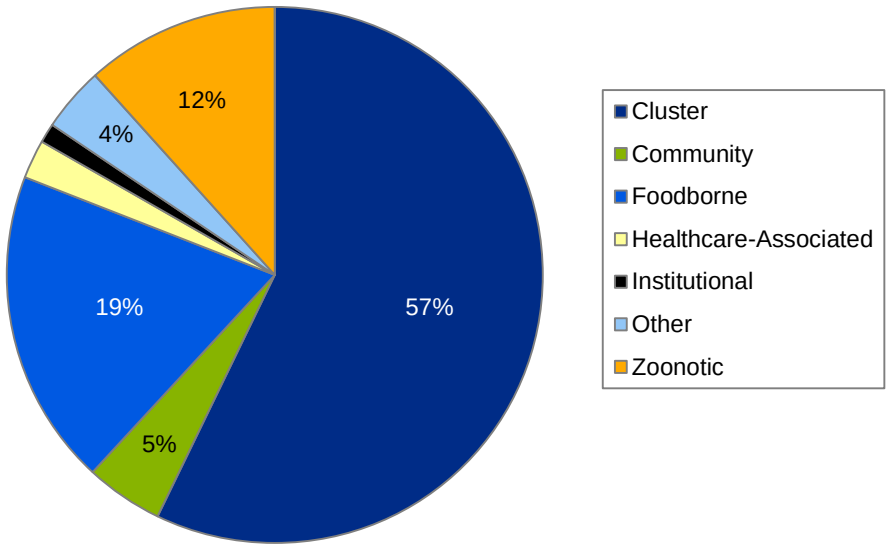
Figure 3: Salmonellosis by Cluster/Outbreak Status, Ohio, 2009-2013



* Additional funding available to enhance outbreak detection and response.
Source of disease data: Ohio Disease Reporting System.

During 2013, 257 cases were linked to 76 clusters and outbreaks. The majority of those cases (57 percent) were linked to clusters where no source was identified followed by foodborne outbreaks, zoonotic outbreaks, community outbreaks, other outbreaks (not in Ohio's jurisdiction), healthcare-associated outbreaks and institutional outbreaks (see Figure 4). Foodborne outbreak vehicles included: chicken, chicken and noodles, cucumbers, ground beef, prime rib with au jus, steak, tahini paste, turkey dressing and unknown food items. Animal sources implicated in the zoonotic outbreaks included: baby poultry (chicks and ducklings), hedgehogs, a puppy, snakes and feeder rodents and small turtles.

Figure 4: Salmonellosis Linked to Clusters/Outbreaks by Type, Ohio, 2013



Source of disease data: Ohio Disease Reporting System.

STREPTOCOCCAL DISEASE, GROUP B, IN NEWBORN

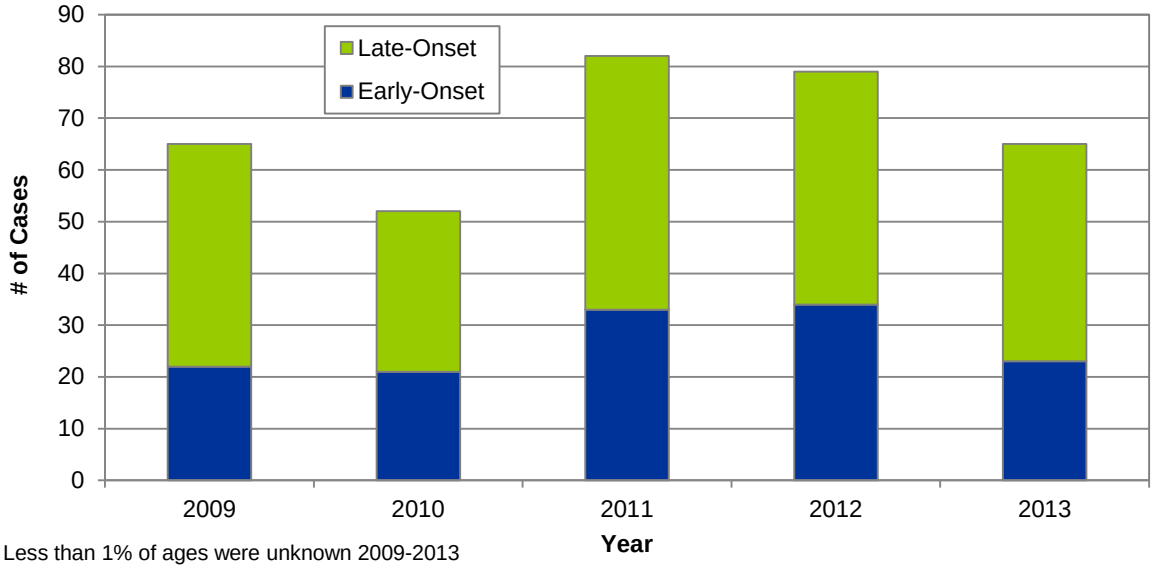
Number of cases in 2013:	*65*	*Rate in 2013:*	*0.5*
Number of cases in 2012:	*79*	*Rate in 2012:*	*0.6*

* Rates are based on the U.S. Census births for Ohio and are per 1,000 population.

Group B *Streptococcus* is a type of bacteria commonly found in the digestive tract and birth canal of pregnant women. Group B streptococci can cause systemic and focal infections in infants from birth until three months of age. Disease in young infants is categorized on the basis of chronologic age at onset. Early-onset disease usually occurs within the first 24 hours of life (range: 0-6 days). Late-onset disease occurs between seven days to three months of age.

Figure 5 demonstrates the burden of Group B streptococcal infections in Ohio newborns over the past five years by onset type. Over the past five years, higher incidence of infection was observed among infants older than six days of age than infants six days old or less.

Figure 5: Group B Streptococcal Disease in Newborns by Onset Type, Ohio, 2009-2013

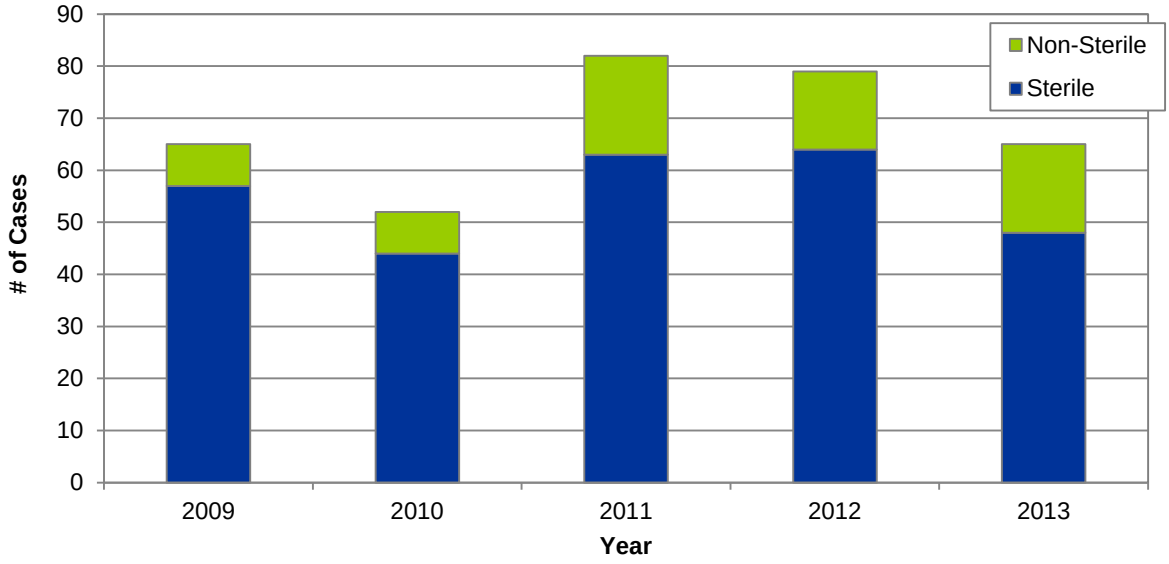


Less than 1% of ages were unknown 2009-2013
Source of disease data: Ohio Disease Reporting System.

Early-onset infections of Group B streptococcal infections may present as signs of systemic infection, respiratory distress, apnea, shock, pneumonia and, less often, meningitis. Late-onset infections commonly manifest as occult bacteremia or meningitis; other focal infections, such as osteomyelitis, septic arthritis, adenitis and cellulitis can occur.

Figure 6 demonstrates the number of cases occurring in sterile sites (blood or cerebrospinal fluid) and non-sterile sites. Over the last five years, 39 percent of cases occurred in infants less than seven days old. Group B *Streptococcus* was isolated from a normally sterile site in 82 percent of early-onset cases. Infections in infants less than seven days old usually occur during the intrapartum period or during delivery. Infection in infants greater than six days of age is through person-to-person contact.

Figure 6: Group B Streptococcal Disease in Newborns by Specimen Type, Ohio, 2009-2013



Source of disease data: Ohio Disease Reporting System.

WATERBORNE DISEASES

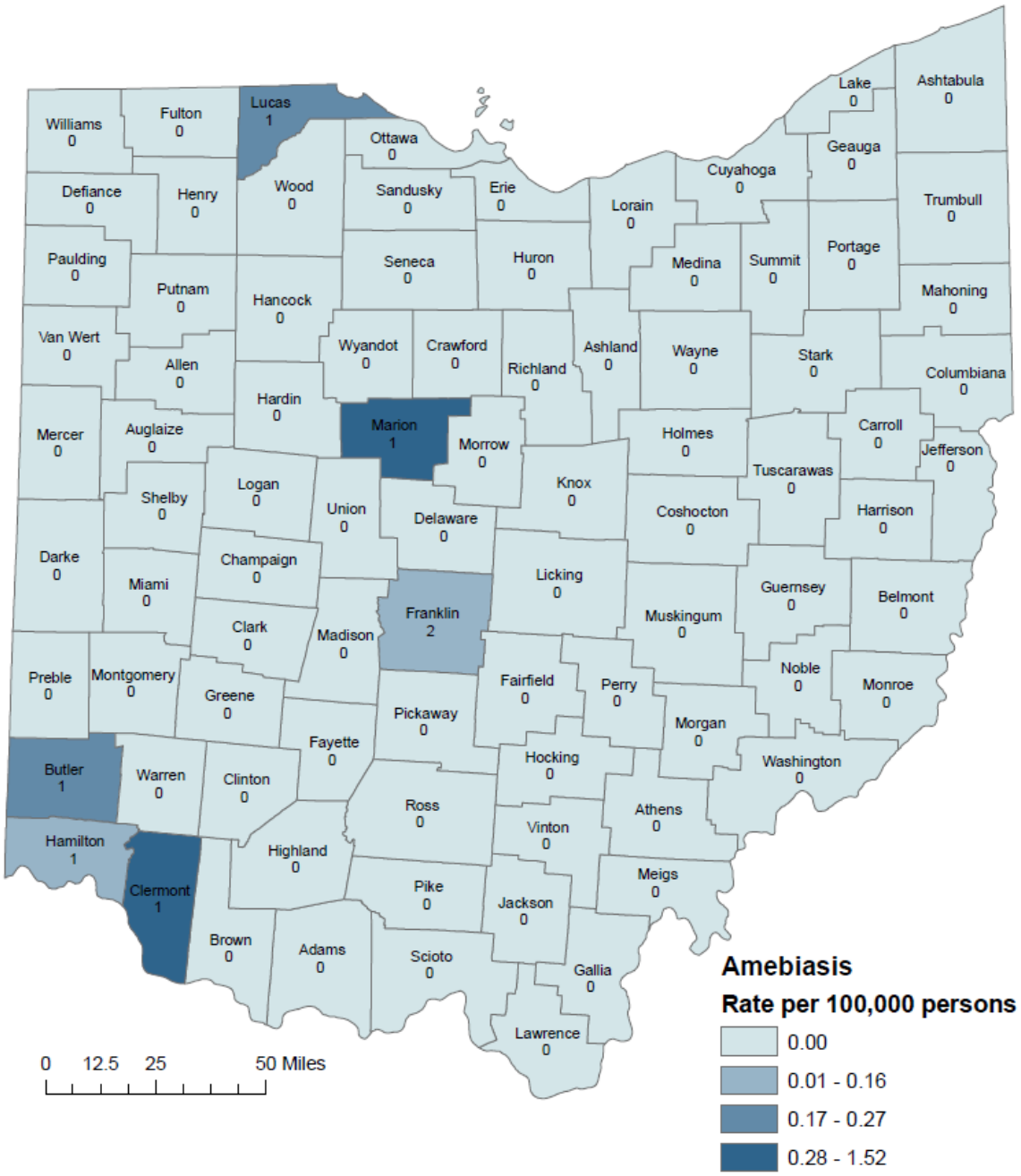
Number of amebiasis cases in 2013:	*7*	*Rate of amebiasis in 2013:*	*0.1*
Number of amebiasis cases in 2012:	*11*	*Rate of amebiasis in 2012:*	*0.1*
Number of cryptosporidiosis cases in 2013:	*367*	*Rate of cryptosporidiosis in 2013:*	*3.2*
Number of cryptosporidiosis cases in 2012:	*550*	*Rate of cryptosporidiosis in 2012:*	*4.8*
Number of cyclosporiasis cases in 2013:	*7*	*Rate of cyclosporiasis in 2013:*	*0.1*
Number of cyclosporiasis cases in 2012:	*0*	*Rate of cyclosporiasis in 2012:*	*0.0*
Number of giardiasis cases in 2013:	*505*	*Rate of giardiasis in 2013:*	*4.4*
Number of giardiasis cases in 2012:	*571*	*Rate of giardiasis in 2012:*	*4.9*
Number of legionellosis cases in 2013:	*496*	*Rate of legionellosis in 2013:*	*4.3*
Number of legionellosis cases in 2012:	*288*	*Rate of legionellosis in 2012:*	*2.5*
Number of vibriosis cases in 2013:	*11*	*Rate of vibriosis in 2013:*	*0.1*
Number of vibriosis cases in 2012:	*11*	*Rate of vibriosis in 2012:*	*0.1*

* Rates are based on the 2010 U.S. Census count and are per 100,000 population.

The following maps present the incidence of selected illnesses that are commonly waterborne (spread via water sources) for Ohio for 2013. The total counts and rates by county are calculated for six illnesses: amebiasis (Figure 7), cryptosporidiosis (Figure 8), cyclosporiasis (Figure 9), giardiasis (Figure 10), legionellosis (Figure 11) and vibriosis (Figure 12).

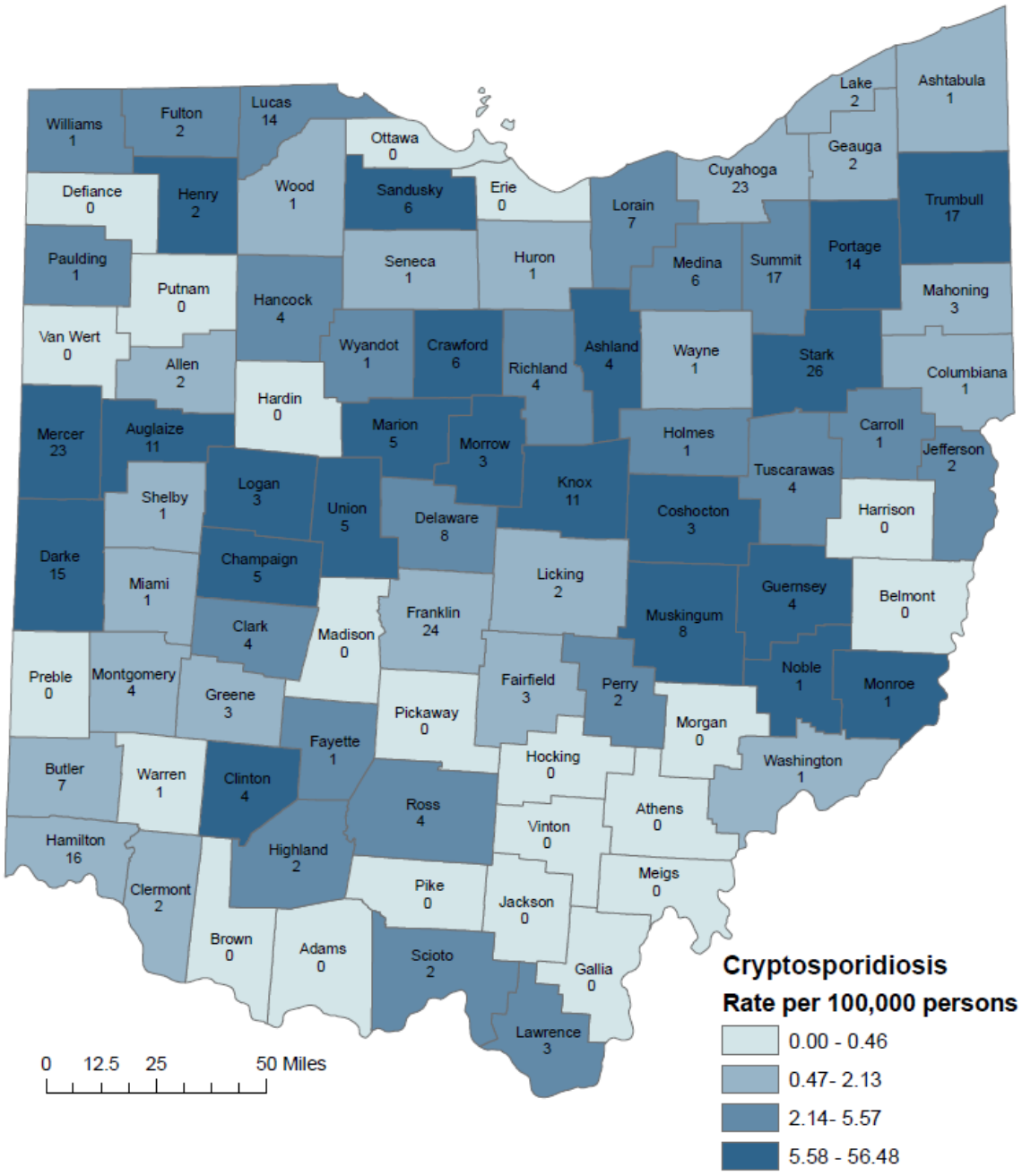
Counts were based on information reported to the Ohio Disease Reporting System (ODRS) for the year 2013. Rates were calculated using census data from the 2010 census of population at the county level. Analysis was conducted using SAS 9.3. Maps were created using ArcMap 10.2.2.

Figure 7: Count and Rate per 100,000 Persons of Amebiasis by County, Ohio, 2013



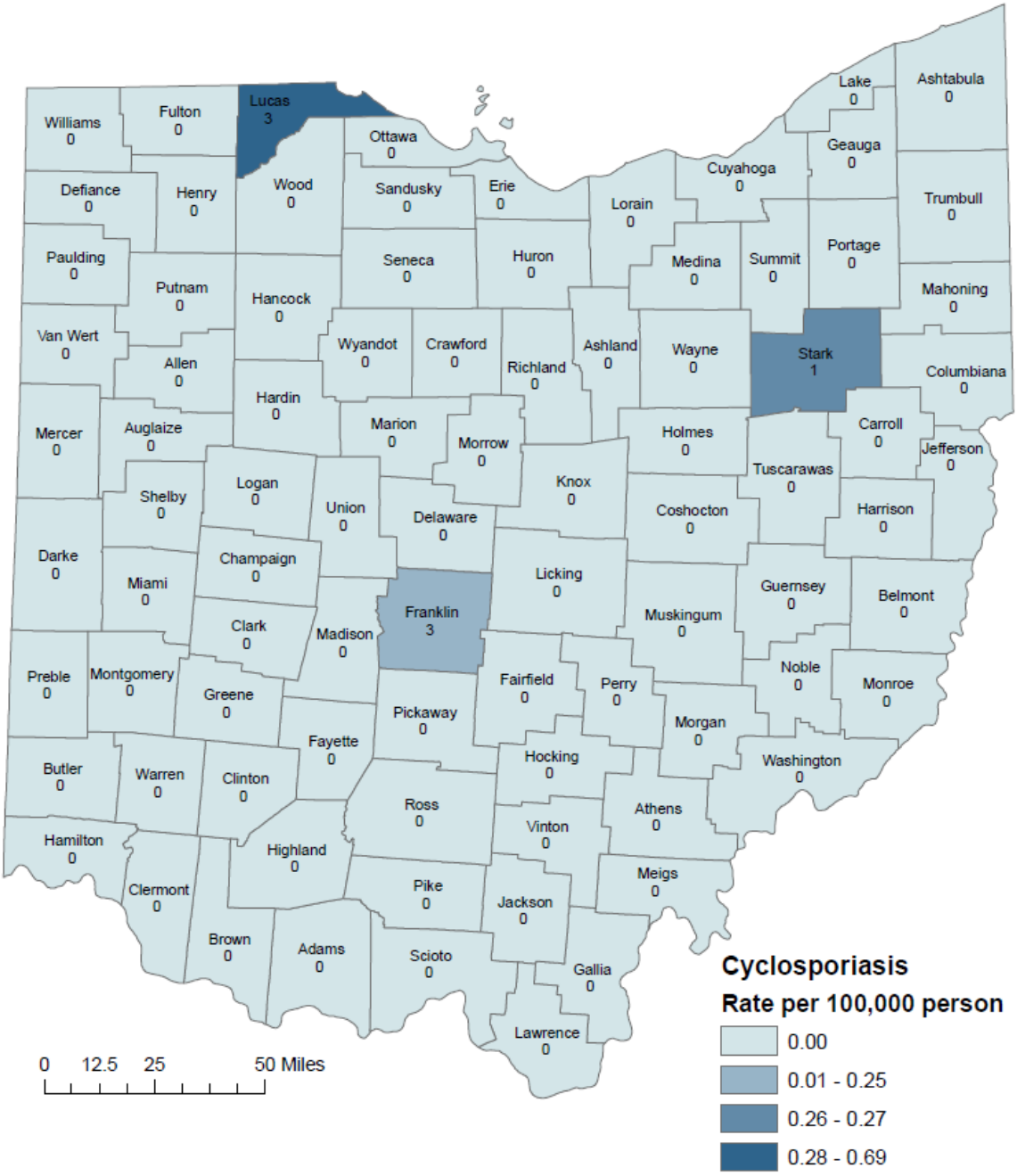
Source of disease data: Ohio Disease Reporting System.

Figure 8: Count and Rate per 100,000 Persons of Cryptosporidiosis by County, Ohio, 2013



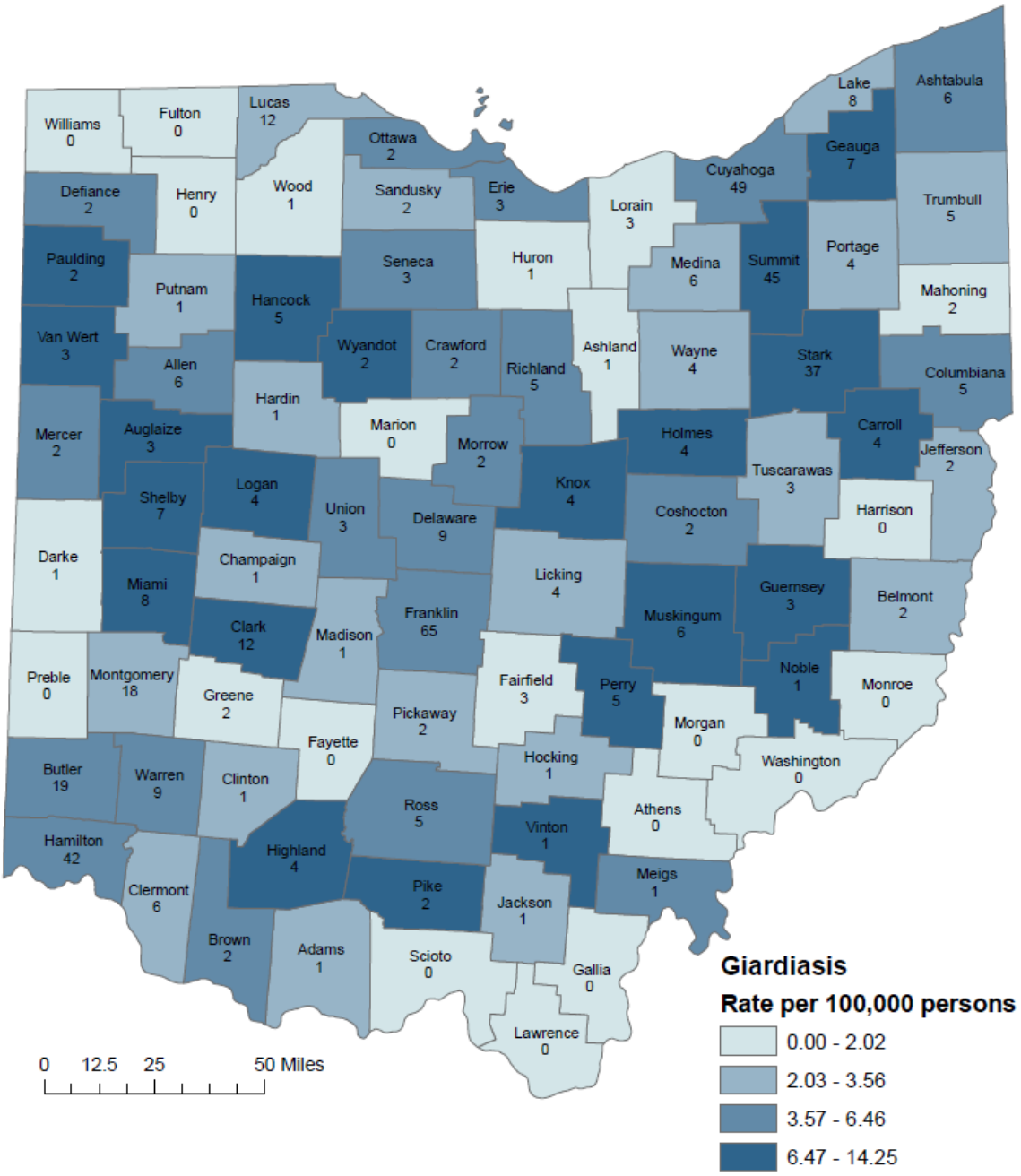
Source of disease data: Ohio Disease Reporting System.

Figure 9: Count and Rate per 100,000 Persons of Cyclosporiasis by County, Ohio, 2013



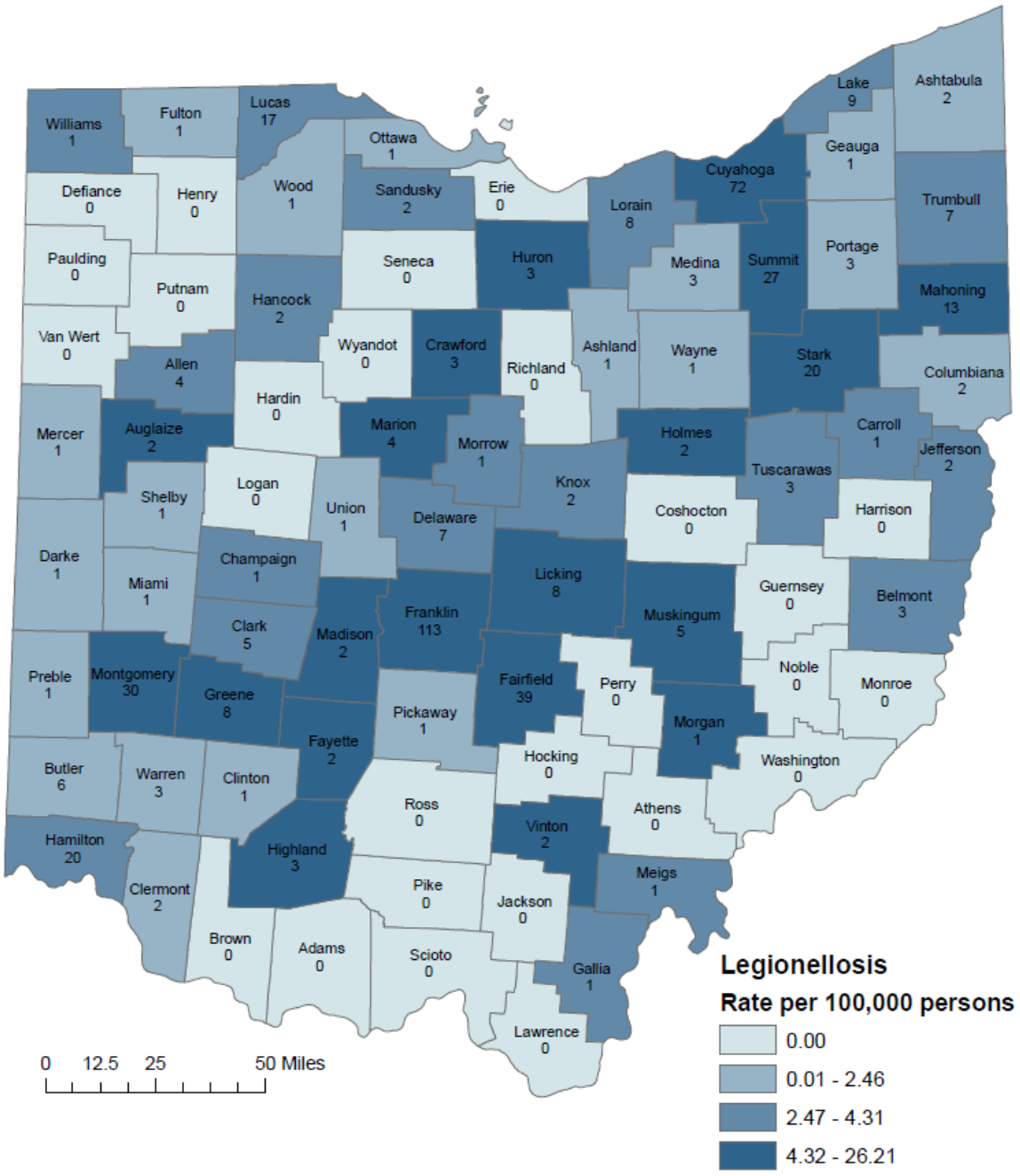
Source of disease data: Ohio Disease Reporting System.

Figure 10: Count and Rate per 100,000 Persons of Giardiasis by County, Ohio, 2013



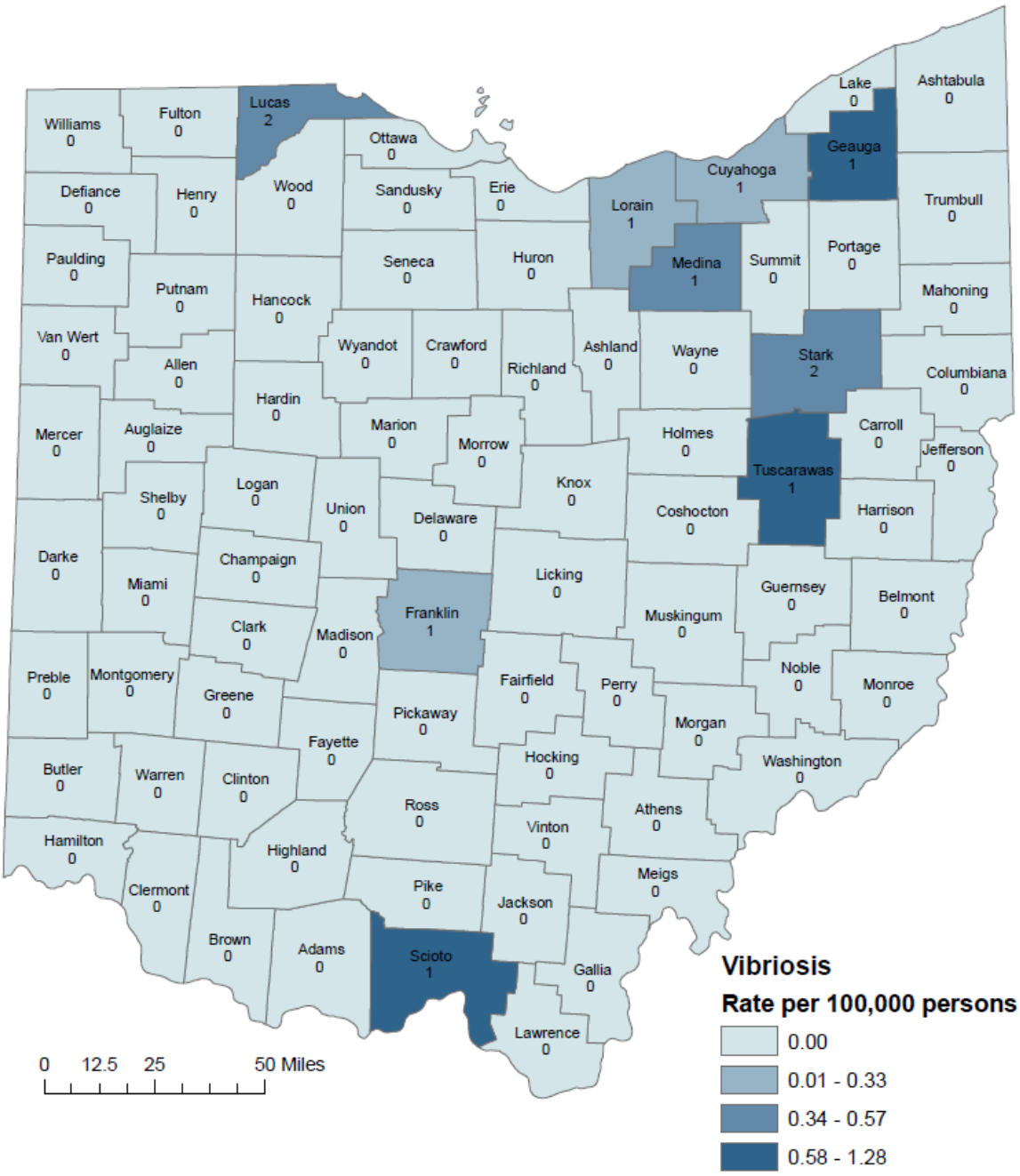
Source of disease data: Ohio Disease Reporting System.

Figure 11: Count and Rate per 100,000 Persons of Legionellosis by County, Ohio, 2013



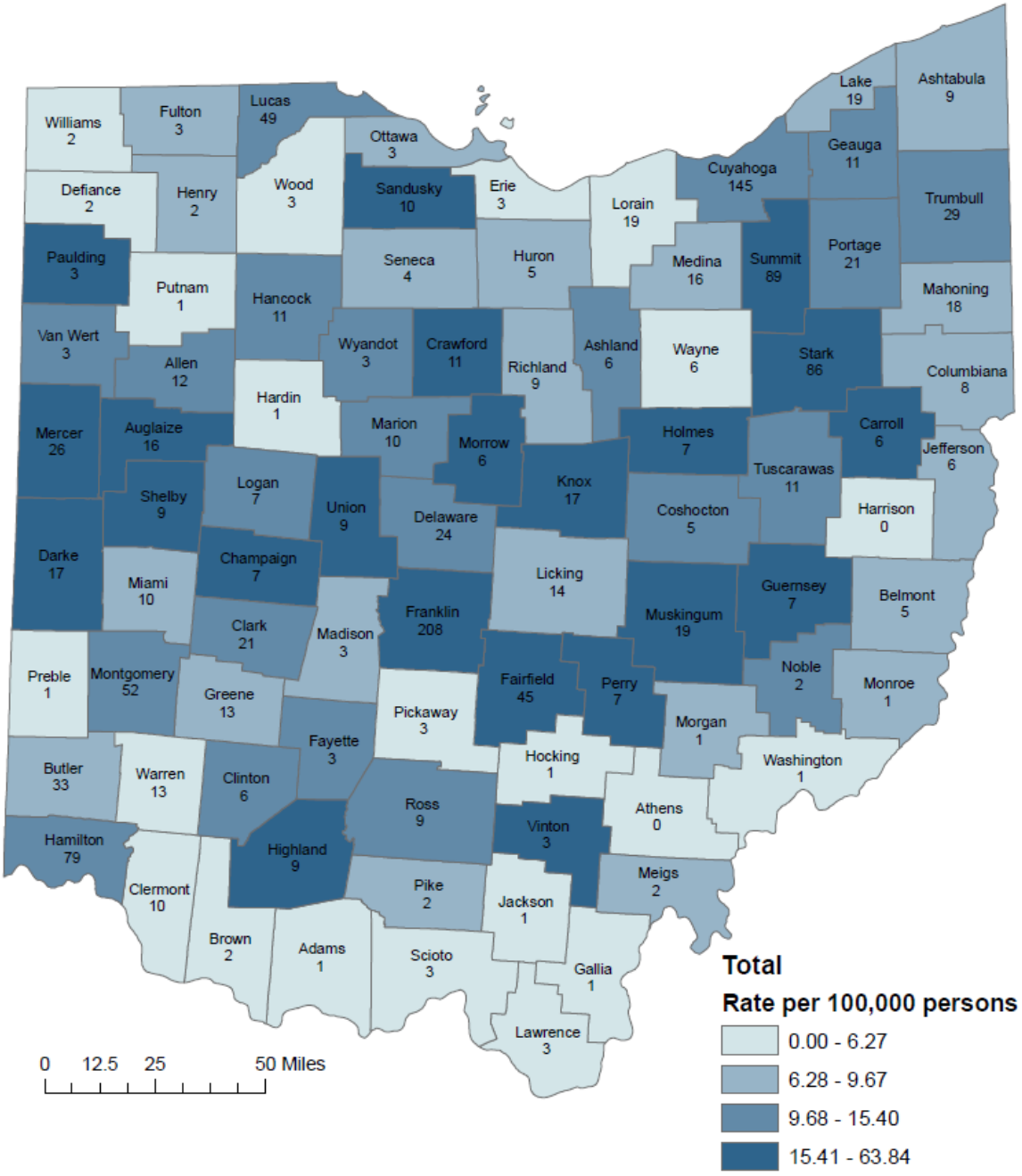
Source of disease data: Ohio Disease Reporting System.

Figure 12: Count and Rate per 100,000 Persons of Vibriosis by County, Ohio, 2013



Source of disease data: Ohio Disease Reporting System.

Figure 13: Count and Rate per 100,000 Persons of Selected Waterborne Diseases* by County, Ohio, 2013



* Selected disease include: amebiasis, cryptosporidiosis, cyclosporiasis, giardiasis, legionellosis and vibriosis.
Source of disease data: Ohio Disease Reporting System.