



INFECTIOUS DISEASES AMONG CHILDREN

FRANKLIN COUNTY, 2011-2015

INFECTIOUS DISEASE REPORTING

In Ohio, more than 80 infectious diseases are required by law to be reported to local and state public health agencies. These diseases have the potential to cause serious illness, missed time from school or work, hospitalization and even death. During 2011-2015, 4,800 cases of infectious disease were reported among children less than 18 years old living in Franklin County, excluding reports of sexually-transmitted infections.

REPORT FOCUS

This report summarizes cases of enteric and vaccine-preventable diseases among children in Franklin County during 2011-2015. These infectious disease subtypes were chosen due to their high burden among children in Franklin County.

For each disease subtype, this report provides data regarding:

- Disease incidence among children
- Outbreaks
- Hospitalizations
- Time trends for selected diseases
- Demographics

Throughout this report, the term “children” refers to individuals less than 18 years old.

DISEASE PREVENTION

Many diseases in this report can be avoided through simple actions, such as handwashing or vaccination.

For information on preventing infectious diseases among children, please see:



Enteric Diseases
Columbus.gov/Enteric-Resources



Vaccine-Preventable
Diseases
Columbus.gov/Vax-Resources

ENTERIC DISEASES

Enteric diseases affect the gastrointestinal tract and often involve symptoms such as nausea, vomiting and diarrhea. These diseases occur when bacteria, viruses or parasites enter the body, typically through the mouth.

BURDEN AMONG CHILDREN

More than half (55%) of all enteric disease cases in Franklin County occurred among children, although children make up only 24% of the Franklin County population (Table 1, Figure 1).

Among children in Franklin County, 2,155 enteric disease cases were reported during 2011-2015 for an average annual rate of 150.2 cases per 100,000 population less than 18 years old (Table 1).

OUTBREAKS

60% of enteric disease cases among children in Franklin County were associated with an outbreak, including 88% of shigellosis cases (Table 1). A large shigellosis outbreak occurred in Franklin County during 2012-2013.

HOSPITALIZATIONS

Among children in Franklin County, 5% of enteric disease cases were hospitalized. Hospitalization rates varied by disease from 1% of giardiasis cases to 100% of amebiasis, hemolytic uremic syndrome and listeriosis cases (Table 1).

MOST COMMON DISEASES

Among children in Franklin County, shigellosis was the most commonly reported enteric disease, followed by salmonellosis and giardiasis (Table 1). From 2006 to 2015, the shigellosis rate showed dramatic variations, while the salmonellosis rate remained relatively steady. The giardiasis rate decreased annually from 2010 through 2015 (Figure 2).

TABLE 1: ENTERIC DISEASES AMONG CHILDREN

Cases, Rates and Characteristics of Reportable Enteric Diseases among Children Living in Franklin County, 2011-2015

Disease	Cases	Rate ¹	% Outbreak-Associated	% Hospitalized	% of All Cases that Occurred among Children
Enteric Diseases	2,155	150.2	60%	5%	55%
Amebiasis	1	0.1	0%	100%	6%
Campylobacteriosis	153	10.7	8%	5%	29%
Cryptosporidiosis	120	8.4	25%	7%	56%
Escherichia coli O157:H7 and Shiga toxin-producing E. coli (STEC) infection	117	8.2	40%	12%	56%
Giardiasis	190	13.2	6%	1%	44%
Hepatitis A	5	0.3	0%	20%	15%
Hemolytic uremic syndrome (HUS)	5	0.3	40%	100%	71%
Listeriosis	3	0.2	0%	100%	19%
Salmonellosis	250	17.4	27%	13%	36%
Shigellosis	1,284	89.5	88%	2%	75%
Typhoid fever	7	0.5	0%	86%	58%
Yersiniosis	20	1.4	0%	15%	67%

¹Average annual rate per 100,000 population <18 years old

FIGURE 1: CASES AND POPULATION BY AGE GROUP; FRANKLIN COUNTY, 2011-2015

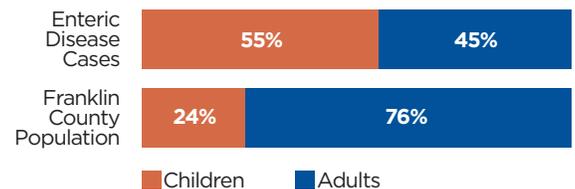
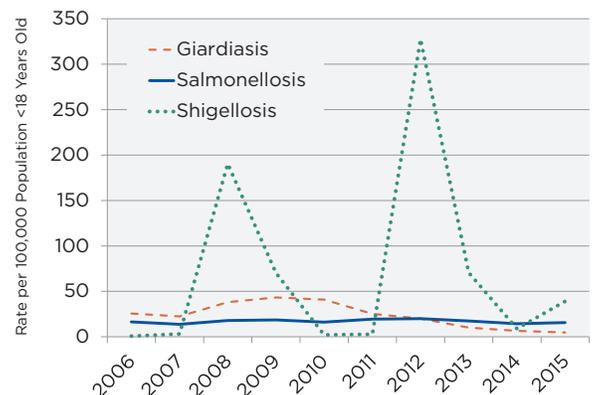


FIGURE 2: RATES OF 3 MOST COMMON ENTERIC DISEASES²

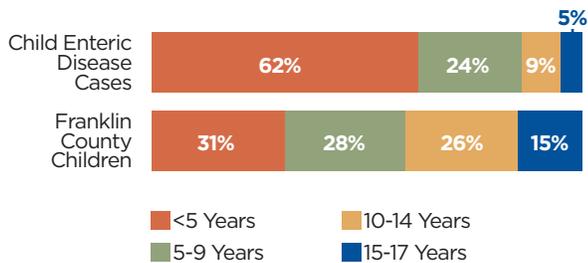


²Among children in Franklin County, 2006-2015

AGE

More enteric disease cases were reported among children in younger age groups. 62% of enteric disease cases were less than 5 years old, although children less than 5 years old make up only 31% of the child population in Franklin County (Figure 3).

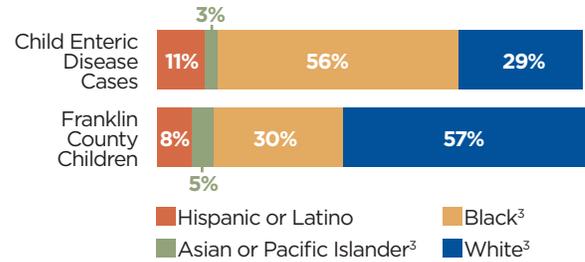
FIGURE 3: CHILD CASES AND POPULATION BY AGE GROUP; FRANKLIN COUNTY, 2011-2015



RACE & ETHNICITY

More enteric disease cases were reported among non-Hispanic Black children. 56% of enteric disease cases were non-Hispanic Black, although non-Hispanic Blacks make up only 30% of the child population in Franklin County (Figure 4).

FIGURE 4: CHILD CASES AND POPULATION BY RACE AND ETHNICITY; FRANKLIN COUNTY, 2011-2015

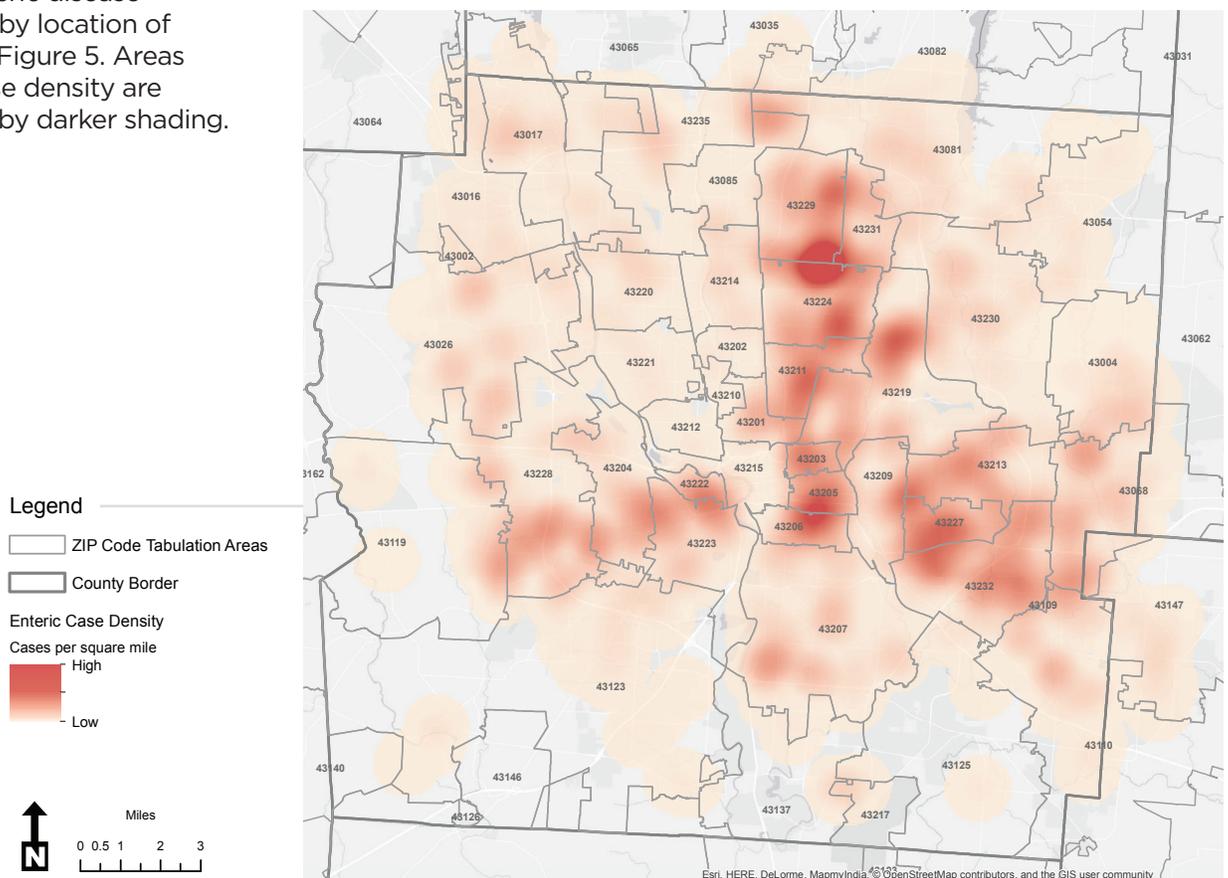


³Non-Hispanic

GEOGRAPHY

Cases of enteric disease are mapped by location of residence in Figure 5. Areas of higher case density are represented by darker shading.

FIGURE 5: ENTERIC DISEASE CASES AMONG CHILDREN, FRANKLIN COUNTY, 2011-2015 (N=2143)



VACCINE-PREVENTABLE DISEASES

In this report, vaccine-preventable diseases include diseases for which a vaccine is routinely recommended during childhood. Diseases listed in this section are caused by bacteria or viruses and many are spread via respiratory droplets. As a result of vaccination efforts, some vaccine-preventable diseases are now rare in Franklin County and the United States.

BURDEN AMONG CHILDREN

Of all vaccine-preventable disease cases reported in Franklin County, 29% occurred among children, which is slightly higher than the proportion of children in the Franklin County population (24%) (Table 2, Figure 6).

Among children in Franklin County, 2,091 vaccine-preventable disease cases were reported during 2011-2015, for an average annual rate of 145.8 cases per 100,000 population less than 18 years old (Table 2).

OUTBREAKS

29% of vaccine-preventable disease cases among children were associated with an outbreak, including 97% of mumps cases (Table 2). A large mumps outbreak occurred in central Ohio in 2014.

HOSPITALIZATIONS

22% of vaccine-preventable disease cases were hospitalized, but rates were as high as 92%⁵ for *Haemophilus influenzae* invasive disease (Table 2).

⁵By definition, 100% of influenza-associated hospitalization cases were hospitalized.

MOST COMMON DISEASES

Among children in Franklin County, pertussis was the most commonly reported vaccine-preventable disease followed by influenza-associated hospitalization and varicella (Table 2). From 2006 to 2015, the pertussis rate fluctuated with a large increase in 2010 due to a community-wide outbreak in Franklin County. The influenza-associated hospitalization rate has also fluctuated since becoming reportable in 2009, while the varicella rate has declined every year since becoming reportable in 2007 (Figure 7).

TABLE 2: VACCINE-PREVENTABLE DISEASES AMONG CHILDREN
Cases, Rates and Characteristics of Reportable Vaccine-Preventable Diseases among Children Living in Franklin County, 2011-2015

Disease	Cases	Rate ⁴	% Outbreak-Associated	% Hospitalized	% of All Cases that Occurred among Children
Vaccine-Preventable Diseases	2,091	145.8	29%	22%	29%
<i>Haemophilus influenzae</i> , invasive disease	12	0.8	0%	92%	21%
Hepatitis A	5	0.3	0%	20%	15%
Hepatitis B, chronic	39	2.7	0%	2%	2%
Influenza-associated hospitalization	358	25.0	1%	100%	16%
Measles	1	0.1	0%	0%	50%
Meningococcal disease (<i>N. meningitidis</i>)	5	0.3	0%	60%	36%
Mumps	63	4.4	97%	2%	15%
Pertussis	1,211	84.4	40%	4%	84%
<i>Streptococcus pneumoniae</i> , invasive disease	77	5.4	0%	53%	12%
Varicella	320	22.3	16%	1%	88%

⁴Average annual rate per 100,000 population <18 years old

FIGURE 6: CASES AND POPULATION BY AGE GROUP; FRANKLIN COUNTY, 2011-2015

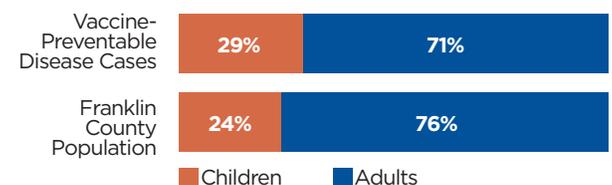
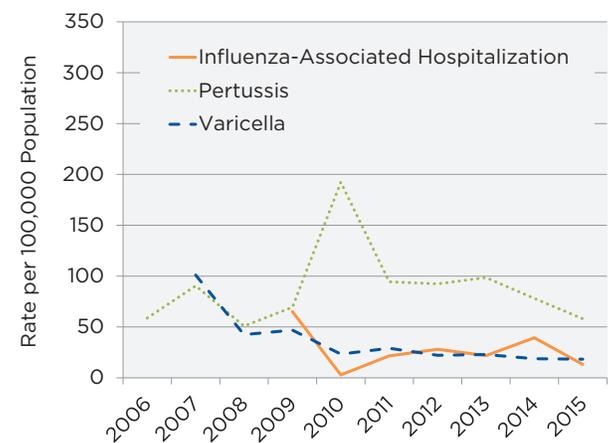


FIGURE 7: RATES OF 3 MOST COMMON VACCINE-PREVENTABLE DISEASES⁶

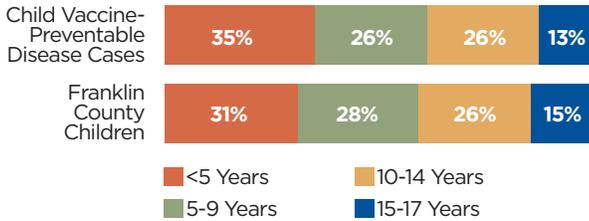


⁶Among children in Franklin County, 2006-2015; Influenza-associated hospitalization reporting began in 2009. Varicella reporting began in 2007.

AGE

The age distribution of child vaccine-preventable disease cases was similar to the age distribution of children in Franklin County. The largest proportion of cases was reported among children less than 5 years old (35%) (Figure 8).

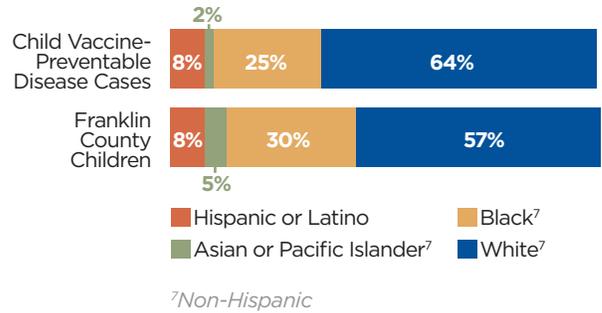
FIGURE 8: CHILD CASES AND POPULATION BY AGE GROUP; FRANKLIN COUNTY, 2011-2015



RACE & ETHNICITY

More vaccine-preventable disease cases were reported among non-Hispanic White children. 64% of vaccine-preventable disease cases were non-Hispanic White, compared to 57% of the child population in Franklin County (Figure 9).

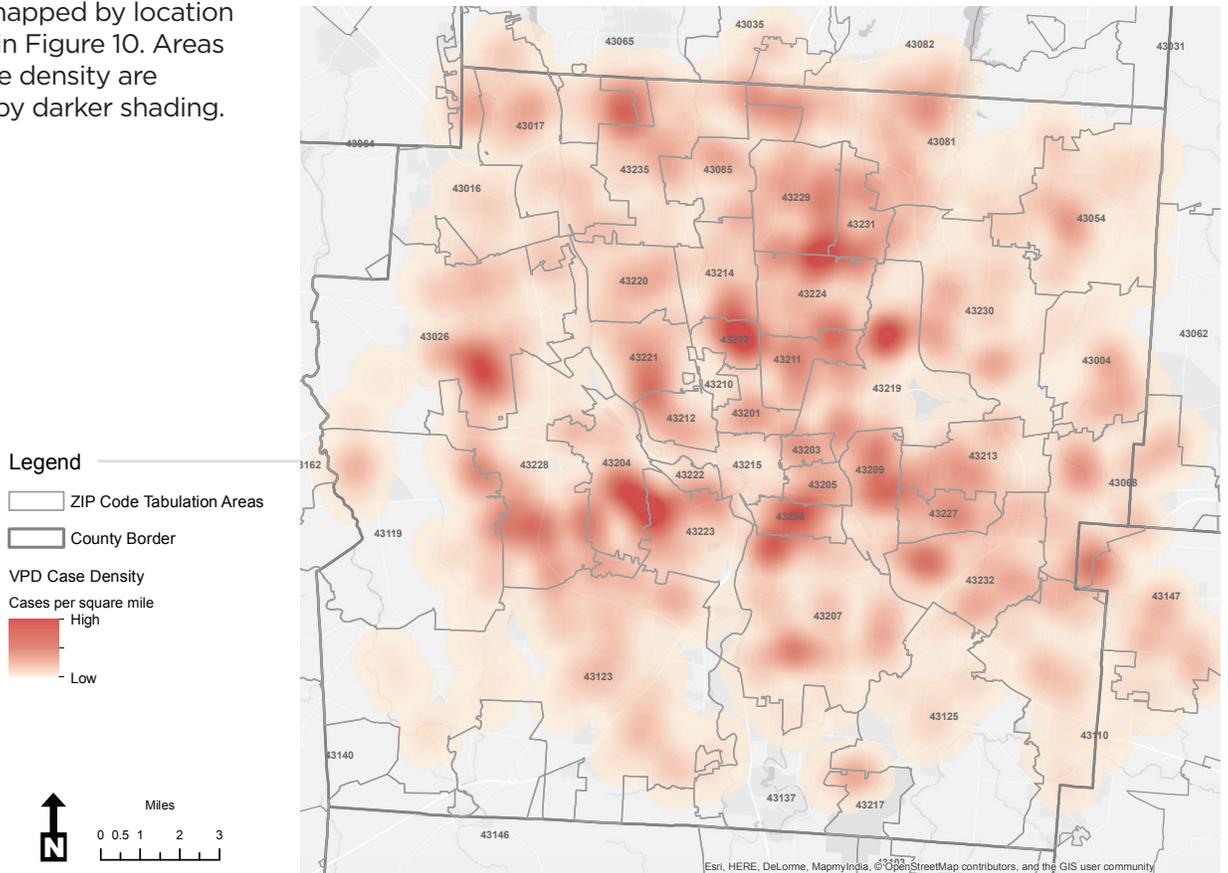
FIGURE 9: CHILD CASES AND POPULATION BY RACE AND ETHNICITY; FRANKLIN COUNTY, 2011-2015



GEOGRAPHY

Cases of vaccine-preventable disease are mapped by location of residence in Figure 10. Areas of higher case density are represented by darker shading.

FIGURE 10: VACCINE-PREVENTABLE DISEASE CASES AMONG CHILDREN, FRANKLIN COUNTY, 2011-2015 (N=2089)

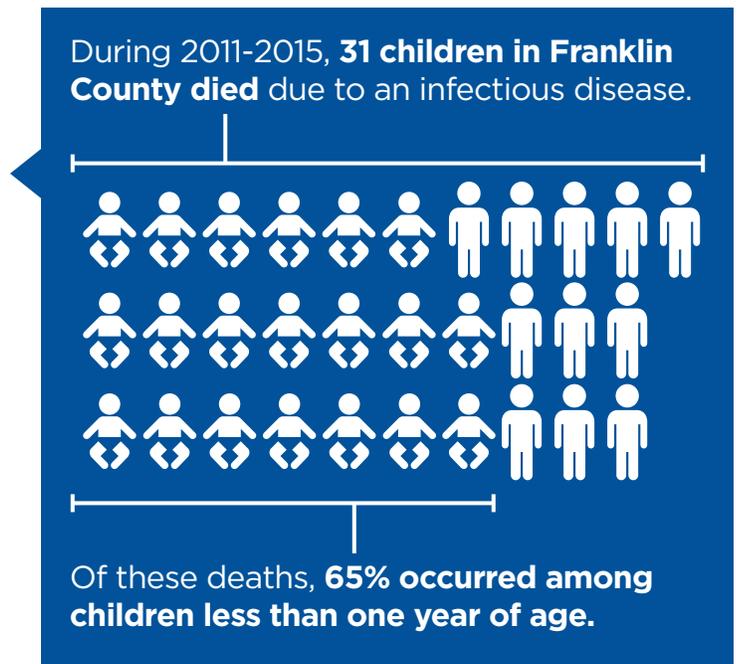


MORTALITY

DEATHS AMONG CHILDREN RELATED TO INFECTIOUS DISEASES

During 2011–2015, 31 children in Franklin County had an infectious disease listed as the underlying cause of death, accounting for 3% of all deaths among Franklin County children during that time period. Of deaths due to infectious diseases, 65% occurred among children less than one year of age. The most common underlying causes related to infectious diseases were:

- Other septicemia (45%),
- Diarrhea and gastroenteritis of presumed infectious origin (26%) and
- Viral infection of unspecified site (10%).



TECHNICAL NOTES

Reportable disease data for Columbus Public Health (CPH) and Franklin County Public Health (FCPH) jurisdictions were downloaded from the Ohio Disease Reporting System (ODRS) and are current as of April 4, 2017. Data in this report include confirmed and probable cases only. Reportable disease and outbreak definitions are located in Section 3 of the Infectious Disease Control Manual published by the Ohio Department of Health: <http://www.odh.ohio.gov/pdf/IDCM/sect3TOC.pdf>.

Mortality data were obtained from the Ohio Department of Health, Office of Vital Statistics.

Population data on age and sex were obtained from 2011–2015 American Community 5-Year Estimates. Population data on race and ethnicity were obtained from the 2011–2015 National Center for Health Statistics Bridged-Race Population Estimates available from CDC WONDER. Population data are for Franklin County; however, some cases resided in parts of neighboring counties that are included in CPH and FCPH jurisdictions.

Data analysis was completed by Columbus Public Health, Office of Epidemiology.

Hospitalization data were obtained from ODRS and may underestimate the true proportion of hospitalizations for a given reportable disease.

Hepatitis A is both an enteric disease and a vaccine-preventable disease and was included in both sections of this report.

In Figures 5 and 10, 12 enteric disease cases and 2 vaccine-preventable disease cases were excluded due to missing residence data.

The following reportable diseases are not included in the tables because no cases were reported among children during 2011–2015:

- Enteric: botulism (foodborne), cholera, cyclosporiasis, hepatitis E, trichinellosis, and vibriosis.
- Vaccine-preventable: diphtheria, influenza-associated pediatric mortality, poliomyelitis, rubella (congenital), rubella (not congenital), and tetanus.

QUESTIONS/COMMENTS

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For information on how to report an infectious disease, please visit <http://idrsinfo.org/index.php>.

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