

2023 ANNUAL SUMMARY OF COMMUNICABLE DISEASES

Tuscarawas County, Ohio



Public Health
Prevent. Promote. Protect.

**Tuscarawas County
Health Department**

2023 ANNUAL SUMMARY OF COMMUNICABLE DISEASES

Tuscarawas County, Ohio

Published:

March 12, 2024

Compiled and Prepared By:

Tuscarawas County Health Department

897 East Iron Ave.

Dover, OH 44622

Telephone: 330-343-5555

Fax: 330-343-1601

Website: www.tchdnow.org

Natasha Yonley, MPH, CPH, CHES

Director of Prevention Services/Consulting Epidemiologist

Tuscarawas County Health Department

Erica Schreckengost

Epidemiologist I

Tuscarawas County Health Department

Table of Contents

PERSONNEL	4
INTRODUCTION.....	4
OHIO REPORTABLE DISEASES¹	6
KEY FINDINGS	7
COUNTS AND RATE OF CONFIRMED COMMUNICABLE DISEASE.....	9
Enteric Reportable Diseases	9
Reportable Hepatitis	9
Reportable Sexually Transmitted Infections	9
Reportable Vaccine-Preventable Diseases	10
Reportable Vector-borne and Zoonotic Diseases	10
Other Reportable Diseases	10
Reportable Communicable Disease by Month	11
INFECTIOUS DISEASE OUTBREAKS IN TUSCARAWAS COUNTY	12
TIMELINESS OF DISEASE REPORTING.....	13
DISEASE SPOTLIGHT: Pertussis (Whooping Cough)	14
DISEASE SPOTLIGHT: Campylobacteriosis.....	16
COVID-19 PANDEMIC DATA.....	17
PREVENTION¹⁴	20
VACCINES.....	21
BASIC INFORMATION ON REPORTABLE COMMUNICABLE DISEASES	22
NOTES	25
REFERENCES.....	27

DESCRIPTION OF DEPARTMENTS

Tuscarawas County is represented by both a city health department and a general health district. The New Philadelphia City Health Department (NPCHD) is responsible for communicable disease investigation and control for cases residing within the city limits of New Philadelphia. The Tuscarawas County General Health District, dba Tuscarawas County Health Department (TCHD), is responsible for disease investigation and control for all cases outside the City of New Philadelphia but inside the Tuscarawas County lines. This also includes the municipalities of Dover and Uhrichsville.

PERSONNEL

Staff at both agencies work on routine surveillance and outbreak investigations. The key personnel at both agencies responsible for routine communicable disease surveillance, prevention, and control include:

- Chelsea Martin, BSN, RN, Clinical Coordinator, Tuscarawas County Health Department
- Valerie Wallace, BSN, RN, Public Health Nurse, Tuscarawas County Health Department
- Amy Kaser, RN, Director of Nursing, Tuscarawas County Health Department
- Katie Seward, MPH, CHES, Health Commissioner, Tuscarawas County Health Department
- Natasha Yonley, MPH, CPH, CHES, Epidemiologist/Director of Prevention Services, Tuscarawas County Health Department
- Erica Schreckengost, Epidemiologist, Tuscarawas County Health Department
- Nichole Bache, RN, Director of Nursing, New Philadelphia City Health Department
- Vickie Ionno, RN, Health Commissioner, New Philadelphia City Health Department
- Maegan Cummings, RN, New Philadelphia City Health Department

INTRODUCTION

This report summarizes communicable diseases reported to the Tuscarawas County Health Department (TCHD) and the New Philadelphia City Health Department (NPCHD), described collectively throughout this report as “Tuscarawas County”, in 2023. Communicable diseases (also called “infectious diseases”) are illnesses caused by bacteria, viruses, and parasites (also called “microorganisms”), and are transmitted from one infected person or animal to another. The route of transmission varies by disease; however, it may include contact with contaminated objects, direct contact with contaminated body fluids (e.g., blood) or respiratory secretions, the bite of an animal or vector (e.g., insect) carrying the microorganism, inhalation of contaminated airborne particles, or ingestion of contaminated food or water. The Annual Summary of Communicable Diseases 2023 includes cases of reportable diseases that were reported among residents of Tuscarawas County, reported to public health, and found to meet the public health surveillance definition of a confirmed, probable, or suspected case. This data does not represent all cases of reportable infectious disease that occurred in the community, as individuals may not seek medical care for mild or asymptomatic infections, or laboratory confirmation tests are not always conducted. Data contained in this summary is considered provisional.

Ohio Administrative Code 3701-3-02 reads, “cases and suspected cases of selected infectious diseases are required to be reported to Ohio and local public health agencies.” TCHD and NPCHD report, track, and investigate infectious disease cases through the Ohio Disease Reporting System (ODRS). Many diseases must also be reported by the Ohio Department of Health (ODH) to the Centers for Disease Control and Prevention (CDC) as part of national public health surveillance of infectious diseases. Please note that data in tables 2a-2f are grouped by *type* of disease. Only **Confirmed** cases will be reported for communicable disease except for Lyme Disease and Covid-19. Since not all laboratory testing is completed to confirm a case of Lyme Disease, many are left as suspected cases. In tables 2a-2f, only the diseases that were reported in Tuscarawas County were counted; you may reference all reportable diseases on page 6 of this report – Know Your ABCS: A Quick Guide to Reportable Infectious Diseases in Ohio. All data provided is accurate as of January 5th, 2024; as cases are finalized, results may fluctuate.

This document is intended to be a resource for individuals and public health partners concerned about infectious diseases in Tuscarawas County. Further information on communicable diseases may be obtained by contacting the Tuscarawas County Health Department or New Philadelphia City Health Department directly.

METHODOLOGY

All communicable disease data is obtained from the Ohio Disease Reporting System (ODRS) and is collected from both Tuscarawas County and New Philadelphia City Health Departments. The data is then put into an excel document for the calculation of the case rate per 100,000 population. The number of confirmed cases is calculated against the current population estimate and then multiplied by 100,000. This then shows, based on the number of confirmed cases in the population, what we could expect to see. To ensure that cases remain unidentified, case counts are combined for both jurisdictions and reported as a total number for the entire county.

OHIO REPORTABLE DISEASES¹

Know Your ABCs: A Quick Guide to Reportable Infectious Diseases in Ohio

From the Ohio Administrative Code Chapter 3701-3; Effective August 1, 2019

Class A:

Diseases of major public health concern because of the severity of disease or potential for epidemic spread – report immediately via telephone upon recognition that a case, a suspected case, or a positive laboratory result exists.

- Anthrax
- Botulism, foodborne
- Cholera
- Diphtheria
- Influenza A – novel virus infection
- Measles
- Meningococcal disease
- Middle East Respiratory Syndrome (MERS)
- Plague
- Rabies, human
- Rubella (not congenital)
- Severe acute respiratory syndrome (SARS)
- Smallpox
- Tularemia
- Viral hemorrhagic fever (VHF), including Ebola virus disease, Lassa fever, Marburg hemorrhagic fever, and Crimean-Congo hemorrhagic fever

Any unexpected pattern of cases, suspected cases, deaths or increased incidence of any other disease of major public health concern, because of the severity of disease or potential for epidemic spread, which may indicate a newly recognized infectious agent, outbreak, epidemic, related public health hazard or act of bioterrorism.

Class B:

Disease of public health concern needing timely response because of potential for epidemic spread – report by the end of the next business day after the existence of a case, a suspected case, or a positive laboratory result is known.

- Amebiasis
- Arboviral neuroinvasive and non-neuroinvasive disease:
 - Chikungunya virus infection
 - Eastern equine encephalitis virus disease
 - LaCrosse virus disease (other California serogroup virus disease)
 - Powassan virus disease
 - St. Louis encephalitis virus disease
 - West Nile virus infection
 - Western equine encephalitis virus disease
 - Yellow fever
 - Zika virus infection
 - Other arthropod-borne diseases
- Babesiosis
- Botulism
 - infant
 - wound
- Brucellosis
- Campylobacteriosis
- *Candida auris*
- Carbapenemase-producing carbapenem-resistant Enterobacteriaceae (CP-CRE)
 - CP-CRE *Enterobacter* spp.
 - CP-CRE *Escherichia coli*
 - CP-CRE *Klebsiella* spp.
 - CP-CRE other
- Chancroid
- *Chlamydia trachomatis* infections
- Coccidioidomycosis
- Creutzfeldt-Jakob disease (CJD)
- Cryptosporidiosis
- Cyclosporiasis
- Dengue
- *E. coli* O157:H7 and Shiga toxin-producing *E. coli* (STEC)
- Ehrlichiosis/anaplasmosis
- Giardiasis
- Gonorrhea (*Neisseria gonorrhoeae*)
- *Haemophilus influenzae* (invasive disease)
- Hantavirus
- Hemolytic uremic syndrome (HUS)
- Hepatitis A
- Hepatitis B (non-perinatal)
- Hepatitis B (perinatal)
- Hepatitis C (non-perinatal)
- Hepatitis C (perinatal)
- Hepatitis D (delta hepatitis)
- Hepatitis E
- Influenza-associated hospitalization
- Influenza-associated pediatric mortality
- Legionnaires' disease
- Leprosy (Hansen disease)
- Leptospirosis
- Listeriosis
- Lyme disease
- Malaria
- Meningitis:
 - Aseptic (viral)
 - Bacterial
- Mumps
- Pertussis
- Poliomyelitis (including vaccine-associated cases)
- Psittacosis
- Q fever
- Rubella (congenital)
- *Salmonella* Paratyphi infection
- *Salmonella* Typhi infection (typhoid fever)
- Salmonellosis
- Shigellosis
- Spotted Fever Rickettsiosis, including Rocky Mountain spotted fever (RMSF)
- *Staphylococcus aureus*, with resistance or intermediate resistance to vancomycin (VRSA, VISA)
- Streptococcal disease, group A, invasive (IGAS)
- Streptococcal disease, group B, in newborn
- Streptococcal toxic shock syndrome (STSS)
- *Streptococcus pneumoniae*, invasive disease (ISP)
- Syphilis
- Tetanus
- Toxic shock syndrome (TSS)
- Trichinellosis
- Tuberculosis (TB), including multi-drug resistant tuberculosis (MDR-TB)
- Varicella
- Vibriosis
- Yersiniosis

Class C:

Report an outbreak, unusual incident or epidemic of other diseases (e.g. histoplasmosis, pediculosis, scabies, staphylococcal infections) by the end of the next business day.

Outbreaks:

- Community
- Foodborne
- Healthcare-associated
- Institutional
- Waterborne
- Zoonotic

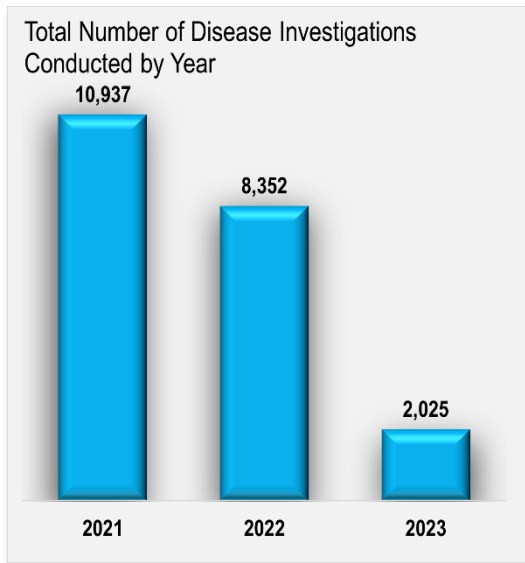
NOTE:

Cases of AIDS (acquired immune deficiency syndrome), AIDS-related conditions, HIV (human immunodeficiency virus) infection, perinatal exposure to HIV, all CD4 T-lymphocyte counts and all tests used to diagnose HIV must be reported on forms and in a manner prescribed by the Director.



Department
of Health

KEY FINDINGS



In 2023, there were 2,025 disease investigations completed by the New Philadelphia City Health Department (NPCHD) and the Tuscarawas County Health Department (TCHD). This represents a 75.6% decrease from 2022 to 2023. The decrease in communicable disease was most likely due to decreased self-reporting of COVID-19 cases.

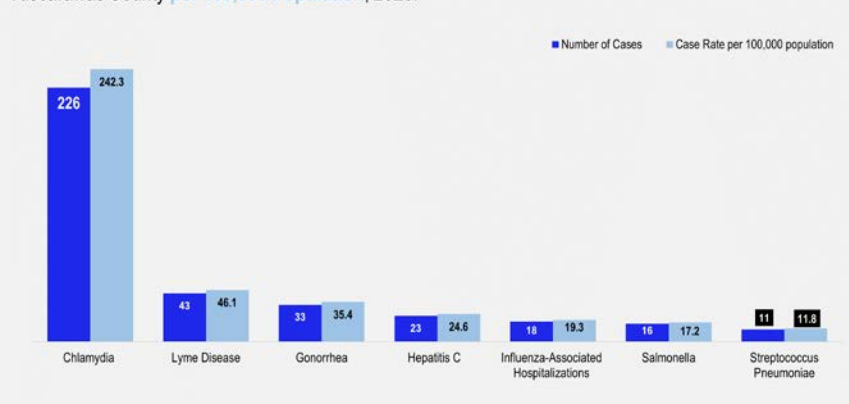
The chart to the left shows all confirmed, probable, and suspected cases that were reported among Tuscarawas County Residents.

Numbers are subject to change due to delayed laboratory reporting or jurisdictional changes after diagnosis.

Most Reported Confirmed Diseases [Ten (10) or more cases], (excluding COVID-19), All Ages, Tuscarawas County, 2023

Reportable Disease	Number of Cases	Case Rate per 100,000 population	Healthy People 2030
Chlamydia	226	242.3	
Lyme Disease	43	46.1	
Gonorrhea	33	35.4	
Hepatitis C (acute and chronic)	23	24.6	1.0
Influenza-Associated Hospitalizations	18	19.3	
Salmonella	16	17.2	11.5
Streptococcus Pneumoniae	11	11.8	

Number of Confirmed Disease Cases [Ten or More] (Excluding Covid-19), All Ages, Tuscarawas County per 100,000 Population, 2023.



DEMOGRAPHIC PROFILE OF TUSCARAWAS COUNTY

Tuscarawas County Population, 2023

- The demographic profile of Tuscarawas County is described in the following tables.
- Tuscarawas County is served by two local health departments:
 - New Philadelphia City Health Department serves a population of 17,288*.
 - Tuscarawas County Health Department serves a population of 75,448*.

*According to data taken from Ohio Department of Health's Profile and Performance database

Table 1a: Tuscarawas County Population by Gender, 2020²

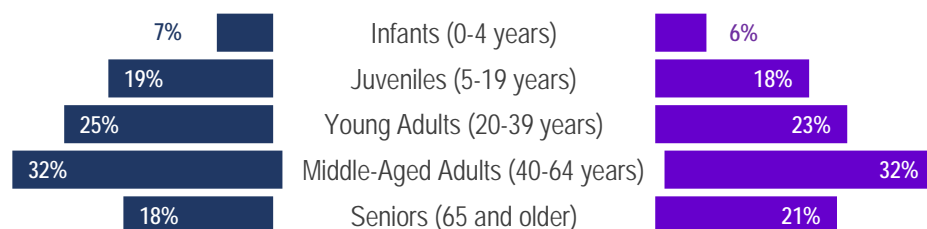
<i>Gender</i>	2020	
	Population	Percent (%)
<i>Male</i>	45,753	49.8
<i>Female</i>	46,184	50.2
<i>Total</i>	91,937	100

Table 1b: Tuscarawas County Population by Race and Ethnicity, 2020³

<i>Race</i>	2020	
	Population	Percent (%)
<i>White</i>	85,679	91.9
<i>Black or African American</i>	724	0.8
<i>American Indian and Alaska Native</i>	967	1.0
<i>Asian Alone</i>	306	0.3
<i>Native Hawaiian and Other Pacific Islander</i>	29	<0.1
<i>Other race</i>	1,727	1.9
<i>Two or More Races</i>	3,831	4.1
<i>Total</i>	93,263	100

Table 1c: Tuscarawas County Population by Age Group, 2021²

Half of Tuscarawas County **male** and **female** residents are over the age of 40.



COUNTS AND RATE OF CONFIRMED COMMUNICABLE DISEASE

Table 2a: Counts and Rate of Enteric Reportable Diseases among Tuscarawas County Residents, by Jurisdiction, 2021-2023

† = Rate per 100,000 population *= reporting time to local health department (A= immediately, B=by end of next business day)

Enteric Diseases						
Tuscarawas County (Entire County)						Healthy People
Disease Name	Class*	2022		2023		2030
		# of Cases	Case Rate†	# of Cases	Case Rate†	Target
Campylobacteriosis	B	2	2.1	4	4.3	10.9
Cryptosporidiosis	B	4	4.3	2	2.1	-
<i>E. coli</i>	B	0	0	2	2.1	3.7
Giardiasis	B	4	4.3	1	1.1	-
Hepatitis A	B	0	0	0	0	0.4
Salmonellosis	B	12	12.9	16	17.2	11.5
Shigellosis	B	0	0	1	1.1	-
Yersiniosis	B	3	3.2	1	1.1	-
Listeriosis	B	0	0	1	1.1	0.22

Table 2b: Counts and Rate of Reportable Hepatitis among Tuscarawas County Residents, by Jurisdiction, 2022-2023

† = Rate per 100,000 population *= reporting time to local health department (A= immediately, B=by end of next business day)

Hepatitis						
Tuscarawas County (Entire County)						Healthy People
Disease Name	Class*	2022		2023		2030
		# of Cases	Case Rate†	# of Cases	Case Rate†	Target
Hepatitis B, non-perinatal (acute and chronic)	B	2	2.1	1	1.1	0.1
Hepatitis C (acute and chronic)	B	21	22.5	23	24.7	0.1

Table 2c: Counts and Rate of Reportable Sexually Transmitted Infections among Tuscarawas County Residents, by Jurisdiction, 2022-2023

† = Rate per 100,000 population *= reporting time to local health department (A= immediately, B=by end of next business day)

Sexually Transmitted Diseases (Also can be referred to as Sexually Transmitted Infections/STIs)						
Tuscarawas County (Entire County)						Healthy People
Disease Name	Class*	2022		2023		2030
		# of Cases	Case Rate†	# of Cases	Case Rate†	Target
<i>Chlamydia trachomatis</i> infections	B	205	219.8	226	242.3	-
Gonorrhea (<i>Neisseria gonorrhoeae</i>)	B	42	45.0	33	35.4	-

Table 2d: Counts and Rate of Reportable Vaccine-Preventable Diseases among Tuscarawas County Residents, by Jurisdiction, 2022-2023

† = Rate per 100,000 population *= reporting time to local health department (A= immediately, B=by end of next business day)

Vaccine-Preventable Diseases						
Tuscarawas County (Entire County)						Healthy People
Disease Name	Class*	2022		2023		2030
		# of Cases	Case Rate [†]	# of Cases	Case Rate [†]	Target
<i>Haemophilus influenza</i> , invasive	B	3	3.2	4	4.3	-
Influenza-associated hospitalization	B	92	98.6	18	19.3	-
Pertussis	B	4	4.3	23	24.7	2,387 Cases
Varicella	B	3	3.2	1	1.1	-

Table 2e: Counts and Rate of Reportable Vector-borne and Zoonotic Diseases among Tuscarawas County Residents, by Jurisdiction, 2022-2023

† = Rate per 100,000 population, *= reporting time to local health department (A= immediately, B=by end of next business day)

Vector-borne and Zoonotic Diseases						
Tuscarawas County (Entire County)						Healthy People
Disease Name	Class*	2022		2023		2030
		# of Cases	Case Rate [†]	# of Cases	Case Rate [†]	Target
La Crosse virus	B	1	1.1	1	1.1	-
Lyme disease, confirmed	B	17	18.2	43	46.1	-
Lyme disease, <i>suspect</i>	B	145	155.5	222	238.0	-

Table 2f: Counts and Rate of Other Reportable Diseases (excluding COVID-19) among Tuscarawas County Residents, by Jurisdiction, 2022-2023

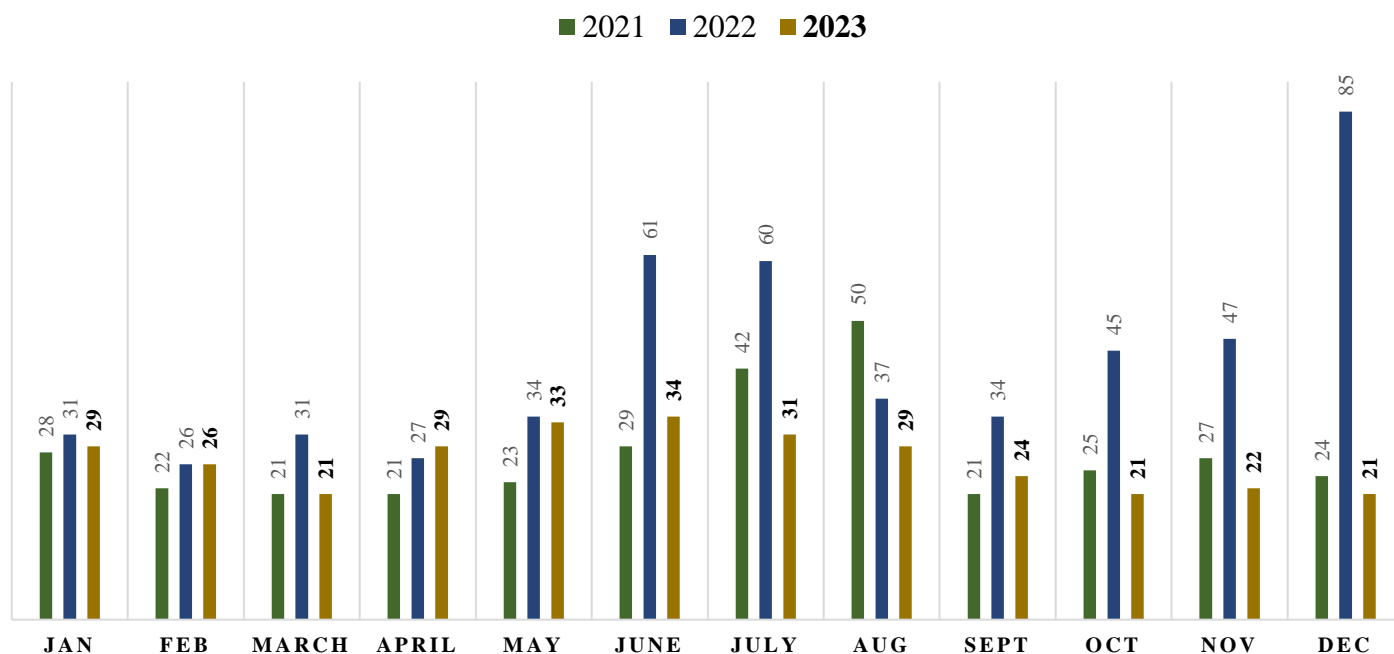
† = Rate per 100,000 population, *= reporting time to local health department (A= immediately, B=by end of next business day)

Other Reportable Diseases						
Tuscarawas County (Entire County)						Healthy People
Disease Name	Class*	2022		2023		2030
		# of Cases	Case Rate [†]	# of Cases	Case Rate [†]	Target
CP-CRE	B	2	2.1	0	0	-
Legionnaires' disease	B	1	1.1	4	4.3	-
Meningitis, aseptic (viral)	B	5	5.4	0	0	-
Streptococcal disease, group A, invasive (IGAS)	B	9	9.7	19	20.4	-
<i>Streptococcus pneumoniae</i> , invasive disease (ISP)	B	13	13.9	11	11.8	-
Tuberculosis (TB), including multi-drug resistant TB (MDR-TB)	B	0	0	2	2.1	-

All COVID-19 data can be found on pages 17-19 of this document.

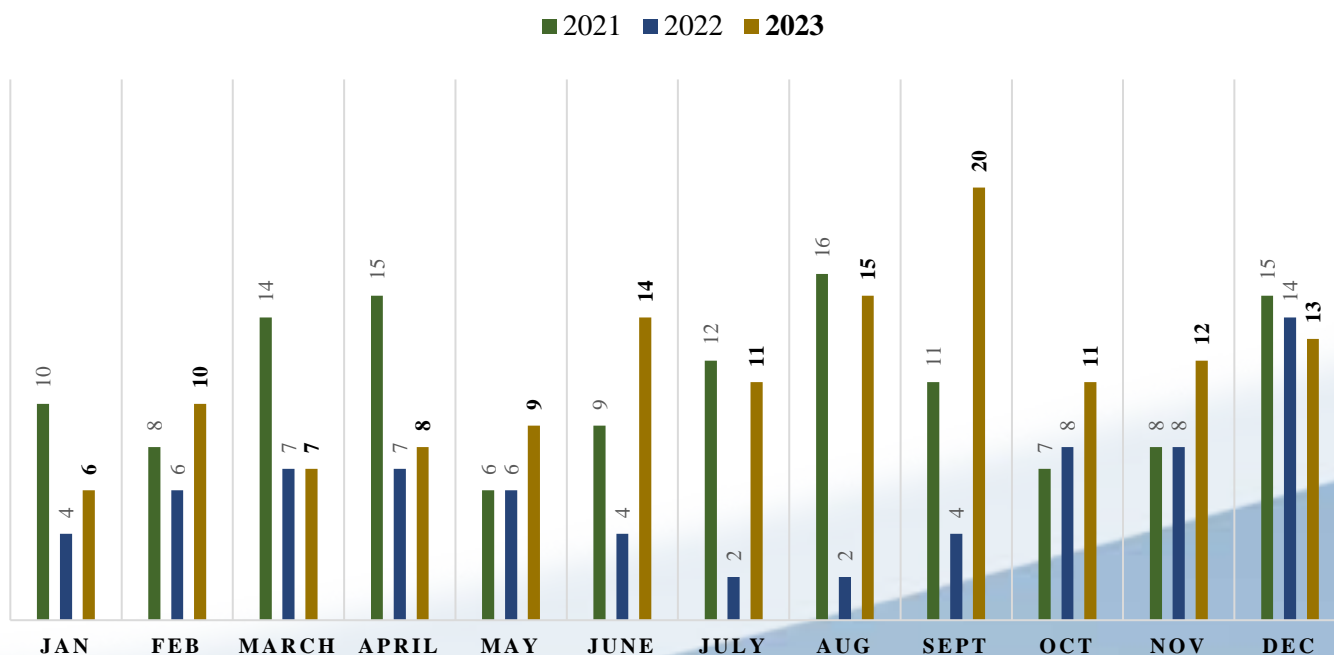
Graph 1: Reportable Communicable Diseases by Month, Tuscarawas County, Ohio, 2021-2023

**TUSCARAWAS COUNTY HEALTH DEPARTMENT,
CONFIRMED, EXCLUDING COVID-19, REPORTABLE
CASES BY MONTH, 2021-2023 COMPARISON**



Graph 2: Reportable Communicable Diseases by Month, New Philadelphia, Ohio, 2021-2023

**NEW PHILADELPHIA CITY HEALTH DEPARTMENT,
CONFIRMED, EXCLUDING COVID-19, REPORTABLE
CASES BY MONTH, 2021-2023 COMPARISON**



INFECTIOUS DISEASE OUTBREAKS IN TUSCARAWAS COUNTY

Table 3: Number of Confirmed Outbreaks Including Covid-19 Reported by Year, Tuscarawas County, 2021-2023

Year:	2021	2022	2023
Cluster	2		
Community	9		1
Foodborne			
Healthcare-Associated	4	3	
Institutional	19	3	
Unspecified (Class A)			
Unusual Incidence			
Waterborne			
Zoonotic			
Other			
Year Total	34	6	1

OUTBREAK DEFINITIONS⁴

Community: Two (2) or more cases of similar illness with a common exposure in the community and not considered a foodborne, waterborne, zoonotic, healthcare-associated, or institutional disease outbreak.

Foodborne: The occurrence of two (2) or more cases of a similar illness resulting from the ingestion of a common food.

Healthcare-Associated: The occurrence of cases of an illness above the expected or baseline level, usually over a given time period, as a result of being in a healthcare facility or receiving healthcare-associated products or procedures. The number of cases indicating the presence of an outbreak will vary per disease agent, size and type of population exposed, previous exposure to the agent, and the time and place of occurrence.

Institutional: Two (2) or more cases of similar illness with a common exposure at an institution (e.g., correctional facility, day care center, group home, school, assisted-living facility) and not considered a foodborne or waterborne disease outbreak.

Unspecified (Class A reporting): Any unexpected pattern of cases, suspected cases, deaths, or increased incidence of any other disease of major public health concern which, because of the severity of disease or potential for epidemic spread, may indicate a newly recognized infectious agent, outbreak, epidemic, related public health hazard, or act of bioterrorism.

Unusual Incidence: Two (2) or more cases of infectious disease that can be connected by person, place, and time, and do not meet the criteria for another type of outbreak.

Waterborne: Waterborne disease outbreaks are divided into two categories, depending on the type of water implicated in the outbreak. Outbreaks associated with water (excluding recreational water) must meet two criteria: first, two or more persons must be epidemiologically linked by location of exposure to water, by time, and characteristics of illness; second, the epidemiologic evidence must implicate water as the probable source of illness. Outbreaks associated with recreational water must also meet two criteria. First, two or more persons must be epidemiologically linked by the location of the exposure to recreational water, time, and illness. Recreational water settings include swimming pools, wading pools, spas, waterslides, interactive fountains, wet decks, and fresh and marine bodies of water. Second, the epidemiologic evidence must implicate water or volatilization of water-associated compounds into the air surrounding an aquatic facility as the probable source of the illness.

Zoonotic: Occurs when two (2) or more cases of similar illness occur after exposure to the same animal or the same or similar species of animals and epidemiologic evidence implicating animals as the probable source of illness.

TIMELINESS OF DISEASE REPORTING

A key part of good public health practice is timeliness of disease reporting.⁵ Time requirements for reporting each reportable disease vary based on the communicability and severity of the disease as to when they should be reported.

Using Ohio Disease Reporting Systems (ODRS), it is possible to query the date when a healthcare provider diagnosed an illness, onset date, and the date when the local health department received notification. Table 4 lists selected diseases and the corresponding median and mean numbers of days between healthcare provider diagnosis and reporting to the local health department. The reporting lag time is the difference between the date a case was reported to the local health department (LHD) and the case's diagnosis date. If the diagnosis date is blank, ODRS is defaulted to the date fields in the following order: lab specimen collection date, lab result date, onset date, date reported to ODH, or created date. For class A diseases (immediately reported), mean and median lag time values should be less than one (1). For class B diseases, the lag time values should be less than two (2).

Table 4: Reporting Lag Time for Selected Reportable Diseases, Tuscarawas County, 2023

Reportable Condition	Reporting Requirement	# of Cases	Mean (Days)	Median (Days)	% of Cases Missing Diagnosis Date
E. coli	By end of next business day	2	1.0	1.0	100.0%
Hepatitis A	By end of next business day	0	N/A	N/A	N/A
Listeriosis	By end of next business day	1	0	0	0%
Measles	Immediately	0	N/A	N/A	N/A
Meningococcal disease - Neisseria meningitidis	Immediately	0	N/A	N/A	N/A
Mumps	By end of next business day	0	N/A	N/A	N/A
Pertussis	By end of next business day	23	2.26	2.0	56.5%
Rubella	By end of next business day	0	N/A	N/A	N/A
Salmonellosis	By end of next business day	16	3.06	2.0	100.0%
Vibrio	By end of next business day	0	N/A	N/A	N/A

In 2023, there were zero (0) reported class A diseases, of the diseases listed above, which must be reported immediately to the local health department. Out of the class B diseases listed above (1) *Salmonellosis* and (2) *Pertussis* did not meet the goal for reporting lag time. Delays in lag time can be attributed to the cases being mailed or faxed and arriving over the weekend or holidays. Also, some cases are sent to other counties, and they then send them to the correct Tuscarawas County jurisdiction.

DISEASE SPOTLIGHT: Pertussis (Whooping Cough)

Table 5: Confirmed Cases of Pertussis in Tuscarawas County

	2022	2023	Healthy People 2030 Target ⁵
Number of Cases	4	23	< 2,387 Cases
Rate (per 100,000 pop.)	4.3	24.7	



Image from:
[Details - Public Health Image Library\(PHIL\)](#)

EPIDEMIOLOGY:^{6,7,8,9,10}

Infectious agents: *Bordetella Pertussis*.

Case Definition: Whooping cough (*pertussis*) is a very contagious respiratory infection that causes a distinctive “whooping” cough. *Pertussis* can cause bouts of repeated, violent coughing that may come and go for weeks or months.

Mode of Transmission: *Pertussis*’s main route of transmission is airborne droplets. When a person with *pertussis* sneezes or coughs, they can release small particles with bacteria in them. When an uninfected person breathes, they will inhale the bacteria.

Incubation Period: The incubation period is generally 5 to 10 days after encountering the bacteria. It can take as long as 3 weeks for symptoms to develop.

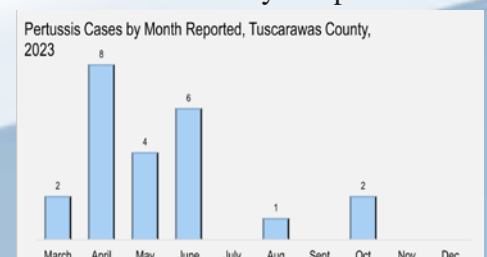
Symptoms: *Pertussis* is most commonly a contagious respiratory illness characterized by a runny or stuffed-up nose; low-grade fever (less than 100.4 degrees F); mild, occasional cough (babies do not do this); apnea (life-threatening pauses in breathing); and cyanosis (turning blue or purple) in babies and young children. In very early stages it presents like a common cold.

Treatment: *Pertussis* is generally treated with oral antibiotics. It is important to receive treatment early before the coughing fits begin. An individual who has pertussis should stay hydrated to avoid the chance of dehydration.

Prevention: The most effective way to prevent *pertussis* is by receiving the vaccine. The two kinds of *pertussis* vaccines that are available within the United States are diphtheria, tetanus, and pertussis (DTaP); or tetanus, diphtheria, and pertussis (Tdap) vaccines. Preventive antibiotics, known as postexposure antimicrobial prophylaxis (PEP), are medicines given to someone who has been exposed to a harmful bacterium to help prevent them from further infection. Finally, good hygiene can help prevent *pertussis*. Make sure to cover your mouth and nose when you cough or sneeze. Always wash your hands often.

Healthy People 2030: Pertussis affects thousands of infants each year. Although anyone can get pertussis, infants are at the highest risk of becoming severely ill or passing away. Healthy People 2030 wants to reduce the number of cases of pertussis to a target value of 2,387 cases. The most recent data from Healthy People 2030 2016-2020 shows their recommended number of cases decreased to 1,859 cases. The Healthy People 2030 target has been met throughout the US, but the baseline number of cases remains at 2,651 cases that occurred among children under 1 year of age during the years of 2014-2018.

Graph 3: Pertussis Cases by Month Reported, Tuscarawas County, 2023.



DISEASE SPOTLIGHT: Pertussis (Whooping Cough)

In 2023, the Western portion of Tuscarawas County was impacted at a higher-than-normal rate of pertussis (whooping cough). The Amish community, who mostly reside in these areas, greatly suffered from pertussis. Due to cultural beliefs, they do not practice modern preventive measures such as immunizations. In 2023, there were nineteen (19) cases of pertussis located within the Amish community of Tuscarawas County.

When reviewing the vaccine history for the individuals affected by pertussis in 2023, one (1) individual did not have a vaccination history in impact and one individual had a current DTaP. During the review it was discovered that 21 out of the 23 cases did not have a current DTaP or Tdap vaccine. The individuals only received one vaccine, making them partially vaccinated. According to the Centers for Disease Control and Prevention (CDC) birth through 6 years of age is recommended to receive the vaccine at 2,4, and 6 months, and 15 through 18 months, and at 4 through 6 years old. If older than 6, there is catch-up schedule available on the CDC website. [Birth-18 Years Immunization Schedule – Healthcare Providers | CDC](#)

Table 6: Counts and Rates of Pertussis Cases within Different Subpopulations in Tuscarawas County Residents, by Subpopulation, 2023.

† = Rate per 100,000 population

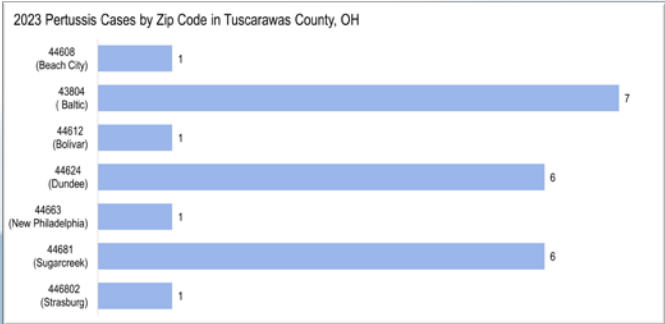
Population Type	2023	
	# of Cases	Case Rate†
Amish Subpopulation	19	20.4
All other populations	4	4.3

Table 7: Average and Median Pertussis Case Rates in Tuscarawas County Residents, by Subpopulation, 2023.

Population Type	2023	
	Average # of Cases	Median # of Cases
Amish Subpopulation	6.3	6
All Other Populations	1.6	1

Based upon and analysis of case data, a higher number of pertussis cases was found within the Amish subpopulation as compared to all other cases found in different subpopulations within Tuscarawas County. This could potentially be caused by lack of vaccinations received within the Amish subpopulations. Healthy People 2030 wants to see an overall pertussis case decrease by the year 2030. There had been a decrease of pertussis cases from 2016-2020 in Tuscarawas County. The increase of pertussis cases is concerning due to seeing a decrease over the past four (4) years. As a community, we can offer outreach, education, and support to the Amish communities either through the Bishops or an Amish Liaison.

Graph 4: Total number of Pertussis cases by Zip Code, Tuscarawas County, 2023.



DISEASE SPOTLIGHT: Campylobacteriosis

Table 8: Confirmed Cases of Campylobacteriosis in Tuscarawas County

	2022	2023	Healthy People 2030 Target ⁵
Number of Cases	2	4	10.9
Rate (per 100,000 pop.)	2.1	4.3	



Image from:
[Details - Public Health Image Library \(PHIL\) \(cdc.gov\)](#)

EPIDEMIOLOGY:^{11,12,13}

Infectious agents: *Campylobacter* serotype jejuni and *Campylobacter* serotype enteritis.

Case Definition: An illness of variable severity commonly manifested by diarrhea (often bloody), abdominal cramps, fever, nausea, and vomiting accompanied by diarrhea.

Mode of Transmission: *Campylobacter*'s main route of transmission is from ingestion of contaminated food or water (via undercooked meat or raw contaminated milk), or it can be transmitted directly (via fecal-oral route) from animals (pets, livestock, shellfish).

Incubation Period: The incubation period is three days, and the disease can range from one to ten days. Symptoms generally occur 2 to 5 days after ingesting the *Campylobacter*.

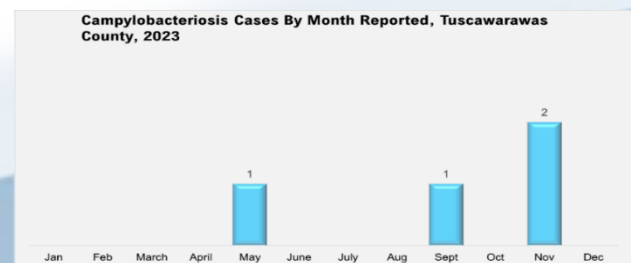
Symptoms: *Campylobacteriosis* is most commonly an acute gastrointestinal illness characterized by diarrhea, abdominal cramps, fever, and sometimes vomiting. Infection may cause complications such as irritable bowel syndrome, temporary paralysis, and arthritis.

Treatment: *Campylobacteriosis* gastrointestinal infections usually resolve in 5 to 7 days and often do not require treatment other than oral fluids. Severe cases may require antibiotic treatment and intravenous fluids.

Prevention: People should not eat raw or undercooked eggs, poultry, or meat. Poultry and meat, including hamburgers, should be well cooked, not pink in the middle. Persons also should not consume raw or unpasteurized milk or other dairy products. Produce should be thoroughly washed before consuming. It is important to know where your drinking water comes from. Have wells and septic tanks tested regularly to make sure no harmful bacteria (such as *Campylobacter*) is present in your water. *Campylobacter* can survive on your hands, so make sure to wash your hands thoroughly and often (especially when dealing with raw poultry and other meat products). Refrain from drinking any water that is untreated such as stream, river, lake, and pond water.

Healthy People 2030: *Campylobacter* affects the population at a case rate of 17.2 per 100,000 population just from the year of 2022. Healthy People 2030 set a target case rate of 10.9 per 100,000 population. The baseline during the years of 2016 to 2018 was 16.2 case rate per 100,000 population.

Graph 5: Campylobacteriosis Cases by Month Reported, Tuscarawas County, 2023.



COVID-19 PANDEMIC DATA

Deaths Associated with Covid-19

Since 2020, the COVID-19 pandemic death total of Tuscarawas County residents is now 561 community lives lost. Death data were obtained from the Ohio Disease Reporting System (ODRS) and are subject to limitations. Deaths that are identified during case or outbreak investigation are entered into ODRS, but cases are not followed to determine if death occurred after the investigation ended.

COVID-19 continued to be the most reported communicable disease from 2020 to 2023. In 2023 Tuscarawas County had 1,588 confirmed cases of Covid-19. Numbers are subject to change due to delayed laboratory reporting or jurisdictional changes after diagnosis. Since the start of the pandemic in 2020, the Tuscarawas County zip codes with the highest number of cases reported were as follows:

Table 9: Total Percentage of COVID-19 cases by Zip Code and Case Rate, Tuscarawas County, 2023*

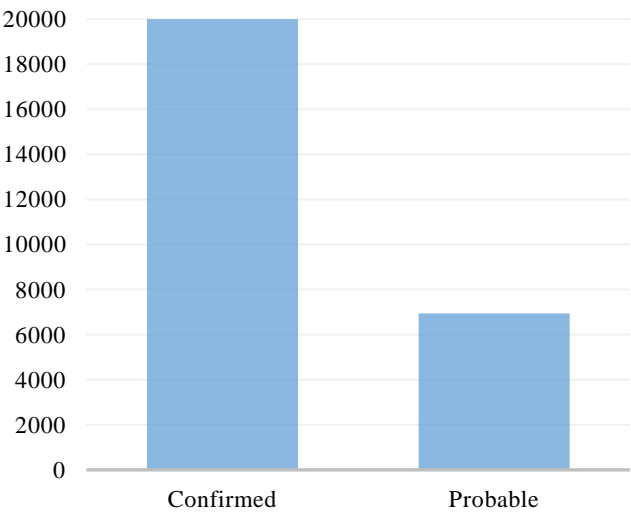
Case rate is per 10,000 population since populations sizes are so small.

Zip Code	Area	% of Total Cases	2023 Case Rates*	% Vaccinated
44663	New Philadelphia	32.04%	77.3	18.8%
44622	Dover	29.02%	70.0	22.1%
43832	Newcomerstown	10.49%	25.3	2.0%
44683	Uhrichsville	10.49%	21.2	2.8%
44612	Bolivar	6.93%	16.7	2.1%
44621	Dennison	4.58%	11.0	2.6%
44680	Strasburg	4.27%	10.3	3.6%
44629	Gnadenhutten	2.40%	5.8	1.7%
43837	Port Washington	2.27%	5.5	0.7%
44656	Mineral City	2.09%	5.0	0.9%
44681	Sugarcreek	1.91%	4.6	1.8%
44624	Dundee	1.24%	3.0	0.4%
43840	Stonecreek	1.20%	2.9	1.1%
44643	Magnolia	1.20%	2.9	0.0%
44682	Tuscarawas	1.11%	2.7	1.4%
44653	Midvale	0.71%	1.7	0.8%
43804	Baltic	0.53%	1.3	0.4%
44675	Sherrodsville	0.49%	1.2	0.3%
All Remaining	Tuscarawas Zip Codes:	0.35%	1.0	34.3%
44608	Beach City	0.31%	0.8	0.5%
44671	Sandyville	0.31%	0.8	0.0%
44678	Somerdale	0.31%	0.8	0.0%
44699	Tippecanoe	0.22%	0.5	0.6%
43749	Kimbolton	0.18%	0.4	0.0%
44697	Zoar	0.13%	0.3	0.1%
43824	Frenso	0.09%	0.2	0.0%
44626	East Sparta	0.09%	0.2	0.0%

The data provided in the graphs below show all cases from January 2020 through December 2023.

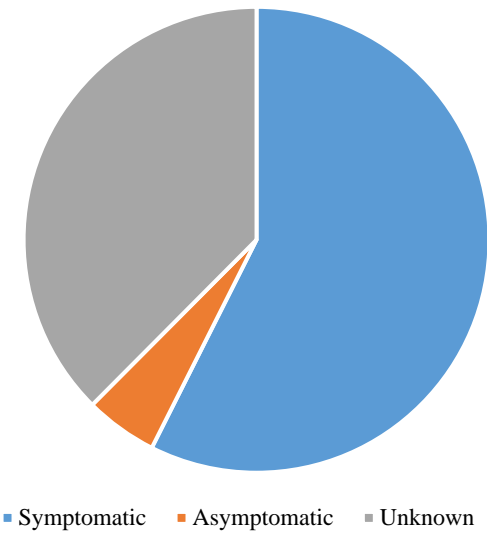
Graph 6: Total COVID-19 Case Status

Case Classification Status, COVID-19 Cases, Tuscarawas County, Ohio
January 2020 through December 2023



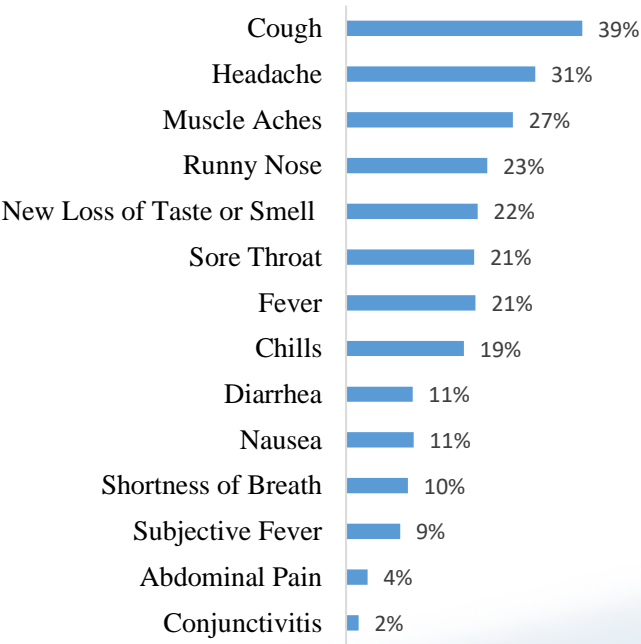
Graph 7: COVID-19 Symptom Status

COVID-19 Symptom Status, Tuscarawas County, Ohio, 2020-2023



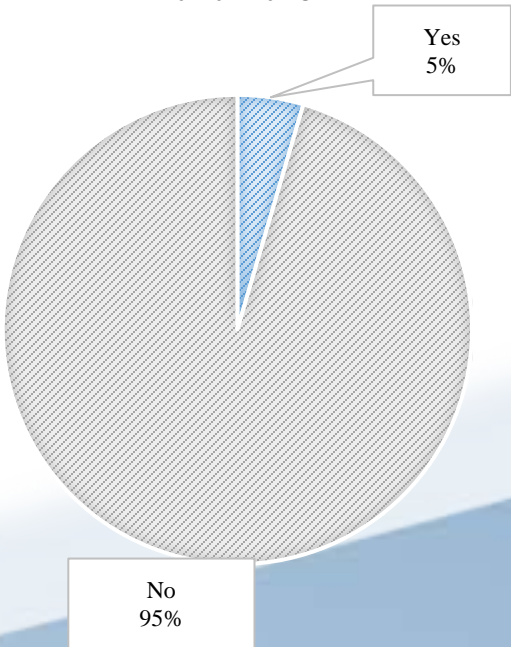
Graph 8: COVID-19 Signs and Symptoms

COVID-19 Signs and Symptoms, Tuscarawas County, Ohio, 2020-2023



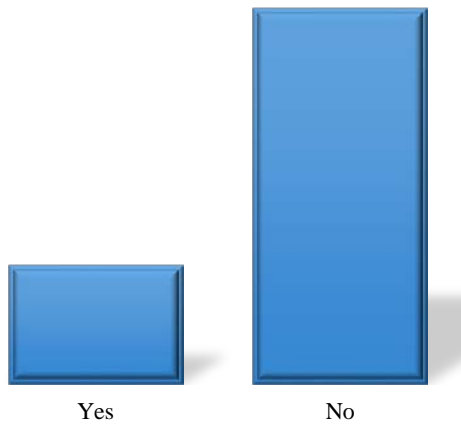
Graph 9: LTC Cases

COVID-19 CASES RESIDING IN LONG TERM CARE FACILITY (LTC), TUSCARAWAS COUNTY, OHIO
2020-2023



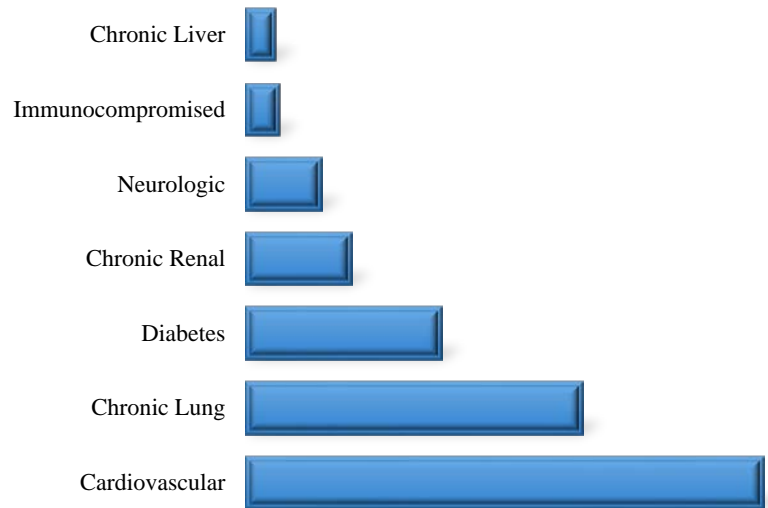
Graph 10: Pre-existing Medical Conditions

COVID-19 Cases, Pre-existing Medical Conditions
Tuscarawas County, Ohio
2020-2023



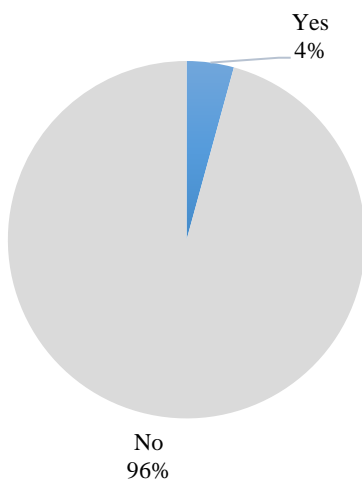
Graph 11: Types of Conditions

COVID-19 Cases, Types Of Pre-existing Medical Condition, Tuscarawas County, Ohio
2020-2023



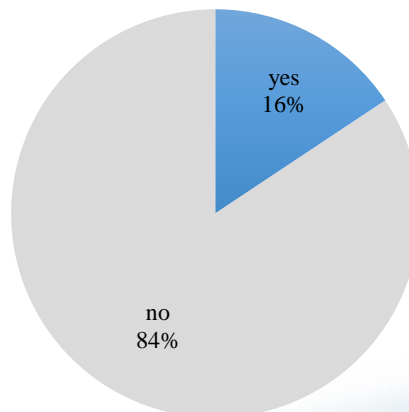
Graph 12: COVID-19 Hospitalized

Hospitalized COVID-19 Cases, Tuscarawas County, Ohio 2020-2023



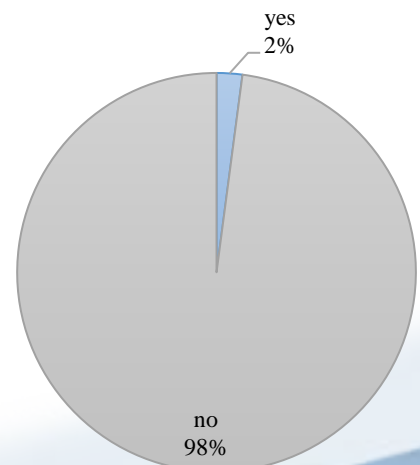
Graph 13: ICU Admission

ICU Admission for Hospitalized COVID-19 Cases, Tuscarawas County, Ohio 2020-2023



Graph 14: COVID-19 Deaths

COVID-19 Cases Deceased, Tuscarawas County, Ohio 2020-2023



PREVENTION¹⁴

There are several ways to protect yourself and others from infectious diseases. Learn, practice, and teach healthy habits.

1. **Handle & Prepare Food Safely:** Food can carry germs. Wash hands, utensils, and surfaces often when preparing any food, especially raw meat. Always wash fruits and vegetables. Cook and keep food at proper temperatures. Don't leave food out – refrigerate promptly.
2. **Wash Hands Often:** One of the most important healthy habits to prevent the spread of germs is to clean your hands. Our hands can carry germs, so it is important to wash them often, even if they don't look dirty.
3. **Clean & Disinfect Commonly Used Surfaces:** Germs can live on the surface. Cleaning with soap and water is usually enough. However, you should disinfect your bathroom and kitchen regularly. Disinfect other areas if someone in the house is ill. You can use an EPA-certified disinfectant (look for the EPA registration number on the label) or a bleach solution.
4. **Cough and Sneeze into a Tissue or Your Sleeve:** If you are sick, the air that comes out of your mouth when you cough, or sneeze may contain germs. Someone close by can breathe in your air, or touch a surface contaminated with your germs, and become ill. Cough or sneeze into a tissue or your shirt sleeve—not into your hands. Remember to throw away the tissue and wash your hands. You can wear a face mask and consider distancing yourself from others when you are sick with a cough or sneezing illness.
5. **Don't Share Personal Items:** Avoid sharing personal items that can't be disinfected, like toothbrushes and razors, or sharing towels between washes. Needles should never be shared, should only be used once, and then thrown away properly.
6. **Practice Safer Sex:** The only guaranteed method to prevent Sexually Transmitted Infections (STIs) is to abstain from all sexual contact. However, there are effective steps you can take to reduce your risk of STIs. Effective STI prevention begins before any sexual activity. Here are some steps you can take to reduce your STI risk:
 - a. Talk honestly with potential partners about both of your sexual histories.
 - b. Get tested, along with your partner, before having sex.
 - c. Avoid sexual contact when under the influence of alcohol or drugs.
 - d. Consider pre-exposure prophylaxis (PrEP), a medication that someone who is HIV negative can take to reduce their risk of contracting HIV.
 - e. Use barrier methods every time you engage in sexual activity.
7. **Get Vaccinated:** Vaccines can prevent many infectious diseases. You should get some vaccinations in childhood, some as an adult, and some for special situations like pregnancy and travel. Make sure you and your family are up to date on your vaccinations.
8. **Avoid Touching Wild Animals:** You and your pets should avoid touching wild animals which can carry germs that cause infectious diseases. If you are bitten, talk to your doctor. Make sure that your pet's vaccinations are up to date.
9. **Stay Home When Sick:** When you are sick, stay home and rest. You will get well sooner and will not spread germs.

VACCINES

Vaccinations are an important tool to prevent infection and the spread of some diseases. It is important that you and your family are up to date on your immunizations. To view the CDC recommendations for vaccines for those Birth – Age 18, visit: <https://www.cdc.gov/vaccines/schedules/hcp/imz/child-adolescent.html>. A schedule for those over the age of 18 can be viewed at <https://www.cdc.gov/vaccines/schedules/hcp/imz/adult.html>

Table 10: Vaccines administered by TCHD by type and year for 2021-2023:

All vaccine information was obtained from the Ohio Department of Health (ODH) vaccine reporting system, ImpactSIIS.

Vaccine	Protects Against	Number of Recommended Doses	2021	2022	2023
DTap	Diphtheria, tetanus, and whooping cough (pertussis)	5 doses	24	29	32
DTaP-Hep B-IPV	Diphtheria, tetanus, and whooping cough (pertussis), hepatitis B, polio	3 doses	64	61	106
DTap-IPV	Diphtheria, tetanus, and whooping cough (pertussis), polio	Booster only	52	44	46
HPV9	Cervical, vaginal, anal cancers or genital warts caused by certain types of HPV	2 or 3 doses	129	129	189
Hep A; adult	Hepatitis A	2 or 3 doses	2	3	4
Hep A; ped/adol, 2 dose	Hepatitis A	2 doses	82	78	61
Hep A-Hep B	Hepatitis A and B	3 doses	8	16	15
Hep B; ped/adol	Hepatitis B	4 doses	80	57	21
Hep B; adult	Hepatitis B	2 or 3 doses	38	42	60
Hib	Haemophilus influenzae Type B	3 doses	93	81	126
IPV	Polio	4 doses	40	30	23
Influenza	Influenza of seasonal flu	Annually	255	540	501
MMR	Measles, mumps, rubella	2 doses	80	58	67
MMRV	Measles, mumps, rubella, varicella	2 doses	60	44	57
Meningococcal B	Meningitis	2 doses	31	18	90
Meningococcal MCV4O	Meningitis	2 doses	207	167	344
Pneumococcal PCV 13	Pneumonia	4 doses	90	81	125
Td, adult	Tetanus, diphtheria	2 doses	8	31	5
Tdap	Tetanus, diphtheria pertussis	5 doses	230	274	241
Meningococcal MCV4P	Meningitis	2 doses	176	208	0
Pneumococcal Polysaccharide PPV23	Pneumonia	2 doses	7	13	6
Pneumococcal PCV 20	Pneumonia	4 doses			26
Rotavirus	Rotavirus	2 or 3 doses	24	28	39
Varicella	Varicella (chicken pox)	2 doses	97	77	54
Rabies	Rabies	2 doses	3	6	8
COVID-19 mRNA	COVID-19	2 doses + booster	15,454	4,069	1,048
COVID-19 Janssen	COVID-19	1 dose + booster	590	64	4
Novavax	COVID-19	2 doses	-	12	4
Total			17,765	6,260	3,302

BASIC INFORMATION ON REPORTABLE COMMUNICABLE DISEASES

The following gives information on commonly reported communicable diseases in Tuscarawas County. Each of the diseases follows the following format:

Disease Name:

Infectious Agent: what causes the illness

Reservoir: where the disease lives, grows, and multiplies

Mode of Transmission: how the disease is spread

Incubation Period: how long it can be in your body after exposure, prior to seeing signs and symptoms

Prevention Measures: how to eliminate the spread of disease

Campylobacteriosis:

- **Infectious Agent:** *Campylobacter jejuni*, *Campylobacter Coli*.
- **Reservoir:** Poultry, cattle, farm animals. Most raw poultry meat is contaminated.
- **Mode of Transmission:** Ingestion of undercooked poultry, contaminated water or milk from an infected cow, improper hand sanitization after handling farm animals.
- **Incubation Period:** 2–5-day, range 1-10 days.
- **Prevention Measures:** Pasteurize all milk, boil/chlorinate all water. Thoroughly cook meat and sanitize utensils/cutting boards. Implement stringent hand washing practices.

Chlamydia Infection:

- **Infectious Agent:** *Chlamydia trachomatis* (subtypes D-K).
- **Reservoir:** Humans.
- **Mode of Transmission:** Sexual Intercourse.
- **Incubation Period:** 7-14 days or longer.
- **Prevention Measures:** Sex education, condom use, screening of at-risk populations (>25 years old).

Cryptosporidiosis:

- **Infectious Agent:** *Cryptosporidium parvum* – a coccidian protozoan parasite.
- **Reservoir:** Humans, cattle, domesticated animals.
- **Mode of Transmission:** Fecal-oral – including person-to-person, animal-to-person, waterborne and foodborne.
- **Incubation Period:** 7 days, range 1-12 days.
- **Prevention Measures:** Personal hygiene education, sanitary handling of feces, stringent hand washing practices and boiling and filtering water.

Giardiasis:

- **Infectious Agent:** *Giardia lamblia*, *Giardia intestinalis*, *Giardia duodenalis*, a flagellate protozoan parasite.
- **Reservoir:** Humans, possibly Beaver and other domesticated animals.
- **Mode of Transmission:** Fecal-oral, hand-to-mouth transfer. Most common at day care centers. Also, anal intercourse, contamination of foodstuffs and unfiltered stream and lake waters (given human or animal fecal contamination).
- **Incubation Period:** 3 to >25 days, median 7-10 days.
- **Prevention Measures:** Protect public water supplies against contamination, implement emergency boiling procedures, and promote stringent hand washing procedures.

Gonococcal Infection:

- **Infectious Agent:** *Neisseria gonorrhoeae*
- **Reservoir:** Humans.
- **Mode of Transmission:** Sexual Contact
- **Incubation Period:** 2-7 days.
- **Prevention Measures:** Safe sex practices, monogamy or abstinence.

Hepatitis C:

- **Infectious Agent:** Hepatitis C Virus (HCV).
Reservoir: Humans.
- **Mode of Transmission:** Usually by skin puncture (needlestick, cut, abrasion, etc). No evidence for oral route.
- **Incubation Period:** 6-9 weeks. Chronic infections may persist up to 20 years before onset of cirrhosis or hepatoma.
- **Prevention Measures:** Immunization of all children, screening of donated blood products. Safe sex practices and eliminate recreational drug use.

Influenza:

- **Infectious Agent:** Multiple (ex: H1N1, H3N2)
- **Reservoir:** Humans, Birds, Swine.
- **Mode of Transmission:** Airborne spread of droplets or direct contact with mucous membranes of infected individual.
- **Incubation Period:** 1-3 days.
- **Prevention Measures:** Education on sanitization, annual vaccination, universal precautions.

Lyme Disease:

- **Infectious Agent:** *Borrelia burgdorferi*, *Borrelia garinii*, *Borrelia afzelii*
- **Reservoir:** Deer Ticks
- **Mode of Transmission:** Tick bite
- **Incubation Period:** 7-10 days.
- **Prevention Measures:** Education on tick habitat, prevention, and removal. Avoidance of tick infested areas, application of tick repellent and use of long shirts and pants.

Pertussis:

- **Infectious Agent:** *Bordetella Pertussis*.
- **Reservoir:** Humans.
- **Mode of Transmission:** Airborne, droplets.
- **Incubation Period:** 9-10 days.
- **Prevention Measures:** Pertussis vaccination as part of standard DPT.

Shigellosis:

- **Infectious Agent:** *Shigella dysenteriae*, *S. flexneri*, *S. boydii*, *S. Sonnei*.
- **Reservoir:** Humans, primates.
- **Mode of Transmission:** Direct or indirect fecal-oral contact by infected individual. Most commonly, poor hand washing followed by food preparation. Also, flies may land on an infected latrine and subsequently on an exposed food.
- **Incubation Period:** 1-3 days.
- **Prevention Measures:** Educate on proper hand-washing techniques, implement fly-proof latrines, pasteurize, refrigerate, and thoroughly cook all foods. Enforce quality control measures in food preparation (restaurants and industry).

Varicella (Chickenpox):

- **Infectious Agent:** Human α -Herpesvirus 3 (Varicella-Zoster Virus, VZV).
- **Reservoir:** Humans.
- **Mode of Transmission:** Direct contact, airborne, droplets from spread of vesicle fluid or secretions of the respiratory tract. Indirect contact, surfaces or fabrics contaminated with discharges from vesicles or membranes of the infected.
- **Incubation Period:** 2-3 weeks.
- **Prevention Measures:** Vaccination of children, isolate infected children.

Yersiniosis:

- **Infectious Agent:** *Yersinia pseudotuberculosis*, *Y. enterocolitica*.
- **Reservoir:** Swine, rodents.
- **Mode of Transmission:** Fecal-oral transmission through contaminated food or water. Consumption of raw pork.
- **Incubation Period:** 3-7 days.
- **Prevention Measures:** Prepare foods in a sanitary manner, protect and sanitize the water supply, control the rodent population, wash hands thoroughly after caring for or slaughtering animals.

NOTES

Ohio Administrative Code 3701-3-02, 3701-3-05, and 3701-3-12 require that communicable diseases be reported to local health departments.

Case and Outbreak Classifications

Case and outbreak definitions can be found in the Infectious Disease Control Manual for reporting purposes in the state of Ohio.

Reportable Disease Class Definitions⁴

Reportable diseases in Ohio are grouped into three classes: Class A, Class B, and Class C.

Class A: Diseases are to be reported immediately upon recognition that a case, suspected case, or a positive laboratory result exists. These are of major public health concern because of their ease of transmission and ability for epidemic spread.

Class B: Diseases are to be reported by the end of the next business day after the existence of a case, suspected case, or a positive laboratory result is known. These diseases also have public health concerns needing timely response because of their potential for epidemic spread.

Class C: Diseases are to be reported by the end of the next business day.

Reportable Disease Changes in Ohio in 2023

Additions: None

Case Definition Changes in 2023 for Nationally Notifiable Diseases¹⁵

Changes in 2023:

- Candida Auris, Screening
 - *Candida auris*
 - *Candida aruis*, colonization/screening
 - *Candida auris*, screening/surveillance
- Carboapenemase-Producing Organisms (CPO)
- Carboapenemase-Producing Organisms, Clinical
- Carboapenemase-Producing Organisms, Screening
 - Carbapenemase Producing Carbapenem-Resistant Enterobacteriaceae (CP-CRE)
 - CP-CRE, *Enterobacter spp.*
 - CP-CRE, *Escherichia Coli (E. Coli)*
 - CP-CRE, *Klebsiella spp.*
- Melioidosis
 - Melioidosis, *Burkholderia pseudomallei*

Notes about Reporting Systems^{16,17}

The Ohio Disease Reporting System (ODRS) was developed to make disease reporting timelier and more efficient for disease reporters (i.e. laboratories, physicians, hospitals), and to improve communication about infectious diseases between disease reporters, local departments of health (LHD), and the Ohio Department of Health (ODH). Currently, ODH, LHD, and infection preventionists can enter and update case and laboratory reports in ODRS. The system uses patient address to determine correct jurisdiction in which to send the report for follow-up and investigation. The Ohio ImpactSIIS (Statewide Immunization Information System) is an online tool that keeps track of immunizations and lead test results for Ohio Residents. This is a secure system that keeps track of adult and childhood immunizations; only those who are authorized users may access the data.

HIV/AIDS Data

HIV/AIDS data is sent to Stark County for residents of Tuscarawas County. Looking at the Ohio Department of Health HIV Infections Annual Surveillance statistics Tuscarawas County does not meet the reporting threshold set by the Ohio Department of Health.¹⁸

REFERENCES

1. Ohio Department of Health (ODH). “*Know Your ABCs: A Quick Guide to Reportable Infectious Diseases in Ohio.*” Last Updated: 1 Aug 2019. Last Accessed: February 7, 2024. [Know Your ABCs: A Quick Guide to Reportable Infectious Diseases in Ohio | Ohio Department of Health](#)
2. U.S. Census Bureau. “*Age and Sex.*” American Community Survey, ACS 1-Year Estimates Subject Tables, Table S0101, 2022, [https://data.census.gov/table/ACSST1Y2021.S0101?q=Tuscarawas county ohio](https://data.census.gov/table/ACSST1Y2021.S0101?q=Tuscarawas%20county%20ohio). Accessed on February 6, 2024.
3. United States Census. “*Decennial Census: P1 Race.*” Last revised: 2020. Last Accessed: March 1, 2023. [P1: RACE - Census Bureau Table](#)
4. Ohio Department of Health (ODH). “*Infectious Disease Control Manual.*” Last Updated: 15 Oct 2018. Last Accessed: March 6, 2023. [Infectious Disease Control Manual \(IDCM\) | Ohio Department of Health](#)
5. Jajosky, RA, and Groseclose, SL. “*Evaluation of reporting timeliness of public health surveillance systems for infectious diseases.*” BMC Public Health. 26 Jul 2004. [1471-2458-4-29.pdf \(biomedcentral.com\)](#)
6. Public Health Image Library (PHIL). Pertussis. (2016). Retrieved February 9, 2024, from [Details - Public Health Image Library\(PHIL\) \(cdc.gov\)](#)
7. Healthy People 2030. “*Reduce cases of pertussis among infants-IID-05*” Last Accessed: February 9, 2024. [Reduce cases of pertussis among infants — IID-05 - Healthy People 2030 | health.gov](#)
8. Centers for Disease Control and Prevention. “*Pertussis.*” Last Accessed: February 9, 2024. [About Whooping Cough \(Pertussis\) | CDC](#)
9. Centers for Disease Control and Prevention. “*Whooping Cough (Pertussis) Vaccination.*” Last Accessed: February 9, 2024. [Whooping Cough Vaccination | Pertussis | CDC](#)
10. Cleveland Clinic. “*Whooping Cough (Pertussis).*” Last Accessed: February 9, 2024. [Whooping Cough \(Pertussis\): Causes, Symptoms & Prevention \(clevelandclinic.org\)](#)
11. Centers for Disease Control and Prevention. Pertussis: Summary of Vaccine Recommendations. Last Accessed: March 5, 2024. [Summary of Pertussis Vaccination Recommendations | CDC](#)
12. Healthy People 2030. “*Reduce infections caused by Campylobacter-FS-01*” Last Accessed: January 22, 2024. [Reduce infections caused by Campylobacter — FS-01 - Healthy People 2030 | health.gov](#)
13. Centers for Disease Control and Prevention. *Campylobacter (Campylobacteriosis).* Last Accessed: January 22, 2024. [Campylobacter \(Campylobacteriosis\) | Campylobacter | CDC](#)
14. Public Health Image Library (PHIL). *Campylobacter.* (2016). Retrieved January 22, 2024, from [Details - Public Health Image Library \(PHIL\) \(cdc.gov\)](#)
15. San Francisco Department of Public Health. “*Healthy Habits.*” Last Accessed: March 6, 2023. [Healthy Habits - Disease Prevention and Control, San Francisco Department of Public Health \(sfcdcp.org\)](#)
16. Centers for Disease Control and Prevention. “*National Notifiable Diseases Surveillance System (NNDSS) – Search Results for All Conditions.*” Last Updated: 2022. Last Accessed: March 6, 2023. [Condition Search Results \(cdc.gov\)](#)
17. Ohio Department of Health. “*Ohio Disease Reporting System.*” Last Updated: November 9, 2018. Last Accessed: February 10, 2022. [Ohio Disease Reporting System | Ohio Department of Health](#)
18. Ohio Department of Health. “*ImpactSIIS.*” Last Updated: March 2017. Last Accessed: March 6, 2023. [Layout 1 \(ohiopublichealthreporting.info\)](#)
19. Ohio Department of Health. “*State of Ohio HIV Infections Annual Surveillance Statistics.*” Last Updated: October 21, 2019. Last Accessed: February 10, 2022. [Data and Statistics | Ohio Department of Health](#)