

DATA AND TREND ANALYSIS

# Infectious Disease



*The increase in life expectancy during the 20th century is largely associated with reductions in infectious disease mortality, due in part to widespread efforts at immunization. However, infectious diseases remain a major cause of illness, disability and death. Surveillance and intervention programs can also help stop the spread of infectious disease; examples include post-exposure prophylaxis and non-pharmaceutical interventions such as “cover your cough” campaigns.*

## DESCRIPTION

Antibiotics are powerful tools for fighting bacterial illnesses, such as strep throat, but they do not work for viral illnesses like the common cold or flu.<sup>1</sup> Antibiotic resistance is a critical public health issue. Since the 1940s, antibiotics have greatly reduced illness and death from infectious diseases. However, these drugs have been used so widely and for so long that the infectious organisms the antibiotics are designed to kill have adapted to them, making the drugs less effective. Antibiotic resistance is an ever-growing problem in Minnesota, as it is in the rest of the world. Inappropriate use of antibiotics and environmental changes multiply the potential for worldwide epidemics of all types of infectious diseases.<sup>2</sup>

## HOW WE ARE DOING

In 2013, the Centers for Disease Control and Prevention (CDC) published a report outlining the top 18 drug-resistant threats to the U.S. These threats were categorized as: 1) urgent, 2) serious, or 3) concerning. In general, threats assigned to the urgent and serious categories require more monitoring and prevention activities, whereas threats in the concerning category require less.<sup>2</sup> The following describes a selection of drug-resistant threats in Minnesota and Ramsey County.

Carbapenem-resistant Enterobacteriaceae (CRE) and quinolone-resistant Neisseria Gonorrhoeae (QRNG) are both in the “urgent” category. CRE cause a variety of infections including pneumonia, bloodstream, wound and urinary tract infections. CRE have become resistant to all or nearly all the antibiotics we have today. Almost half of hospital patients who get bloodstream infections from CRE bacteria die.<sup>2</sup> In 2016, 19 CRE isolates were identified in Minnesota residents; 47 percent (or nine patients) were residents of Ramsey or Hennepin County.<sup>3</sup>

The emergence of QRNG in recent years has become a particular concern.<sup>4</sup> Due to the high prevalence of QRNG in Minnesota, quinolones are no longer recommended for the treatment of gonococcal infections. Gonorrhea rates are highest in the cities of Minneapolis and Saint Paul, with the incidence in Saint Paul at 271 per 100,000 – 3.9 times higher than the rate in the suburban metropolitan area, and 6.9 times higher than the rate in Greater Minnesota.<sup>5</sup>

Two “serious” threats include Methicillin-resistant Staphylococcus aureus (MRSA) and Streptococcus pneumoniae Invasive Disease. An increasing number of patients are being seen with skin infections caused by Staphylococcus aureus bacteria that are resistant to many antibiotics. Rates of MRSA have dropped in Ramsey County since 2007 when the rate was 20.9 per 100,000 people, with a rate of 11.6 in 2016. Despite this general decline, there were 21 deaths from MRSA in 2016 in Hennepin and Ramsey counties; 12 of which were in people 70 years of age or older.<sup>6</sup>

(continued on next page)

## Information to note

- Antibiotics prescribed for acute respiratory infections in kids younger than 15 years of age account for 58% of all antibiotics prescribed.
- The rate of MRSA in Ramsey and Hennepin County has dropped from a high of 20.9 per 100,000 in 2007 to 11.6 in 2016.

<sup>1</sup> About Antimicrobial Use and Resistance. Minnesota Department of Health. <http://www.health.state.mn.us/divs/idepc/dtopics/antibioticresistance/basics/basics.html>. Accessed March 7, 2018.

<sup>2</sup> Antibiotic / Antimicrobial Resistance. Centers for Disease Control and Prevention. <https://www.cdc.gov/drugresistance/>. Accessed March 5, 2018.

<sup>3</sup> Carbapenem-resistant Enterobacteriaceae, 2016. Minnesota Department of Health. <http://www.health.state.mn.us/divs/idepc/newsletters/dcn/sum16/cre.html>. Accessed February 27, 2018.

<sup>4</sup> Annual Summary of Communicable Diseases Reported to the Minnesota Department of Health, 2016. Minnesota Department of Health. <http://www.health.state.mn.us/divs/idepc/newsletters/dcn/sum16/2016dcn.pdf>. Accessed February 27, 2018.

<sup>5</sup> Sexually Transmitted Diseases, 2016. Minnesota Department of Health. <http://www.health.state.mn.us/divs/idepc/newsletters/dcn/sum16/std.html#gonorrhea>. Accessed August 6, 2018.

<sup>6</sup> Invasive Bacterial Disease Surveillance Report, 2016. Minnesota Department of Health. <http://www.health.state.mn.us/divs/idepc/dtopics/invbacterial/invbacrpt16.pdf>. Accessed February 7, 2018.

Pneumococcal disease is an infection caused by a type of bacteria called *Streptococcus pneumoniae*. It can cause pneumonia, bloodstream infections, and meningitis. In 2016, 485 (8.8 per 100,000) cases of invasive pneumococcal disease were reported across Minnesota. Pneumonia occurred most frequently (48% of infections), followed by bacteremia without another focus of infection (30%), septic shock (9%), and meningitis (6%). Forty-seven (10%) individuals died.<sup>7</sup>

## DISPARITIES

Antibiotics prescribed for acute respiratory infections in kids younger than 15 years of age account for 58% of all antibiotics prescribed, yet most of these acute respiratory infections do not require antibiotic treatment.<sup>1</sup>

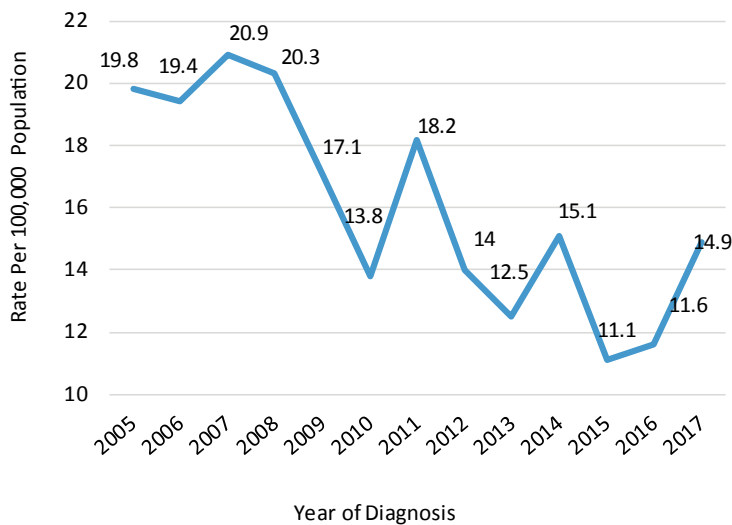
## RISK FACTORS

Many infections are acquired through exposure at hospitals and healthcare facilities. Bacteria can be spread from patient to patient on unclean hands or through unclean equipment.<sup>8</sup>

## WHAT RAMSEY COUNTY GOVERNMENT IS DOING

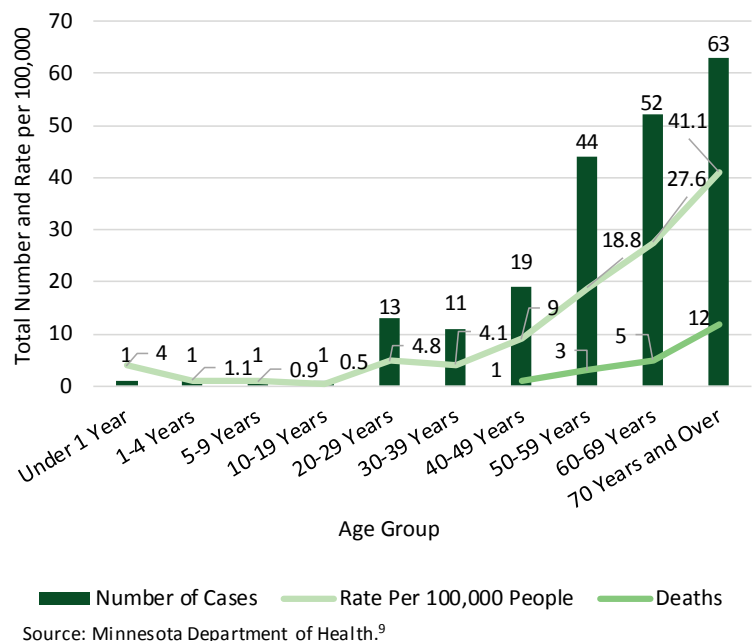
Surveillance of antibiotic-resistant infections is conducted by the Minnesota Department of Health (MDH), not counties. This surveillance facilitates the timely identification of people in need of immediate treatment. In 2015, MDH partnered with the Minnesota Department of Agriculture (MDA), Board of Animal Health (BAH), Minnesota Pollution Control Agency (MPCA), and partners in industry, academia, and professional associations and boards to establish a steering committee focused on promoting judicious antibiotic use in Minnesota.

Rate of Invasive MRSA Disease, Ramsey and Hennepin Counties 2005 - 2016



Source: Minnesota Department of Health.<sup>9</sup>

Invasive MRSA Disease by Age Group Ramsey and Hennepin Counties, 2016



Source: Minnesota Department of Health.<sup>9</sup>

<sup>7</sup> *Streptococcus pneumoniae* Invasive Disease, 2016. Minnesota Department of Health. <http://www.health.state.mn.us/divs/idepc/newsletters/dcn/sum16/spneumo.html>. Accessed February 27, 2018.

<sup>8</sup> Infections Acquired in the Hospital. Minnesota Hospital Quality Report. <http://www.mnhospitalquality.org/#/consumer/hospitals/infographic/15>. Accessed February 7, 2018.

<sup>9</sup> Source: Invasive Bacterial Disease Surveillance Report, 2016. Minnesota Department of Health Web site. [http://www.health.state.mn.us/divs/idepc/dtopics/inv\\_bacterial/inv\\_bacprt15.pdf](http://www.health.state.mn.us/divs/idepc/dtopics/inv_bacterial/inv_bacprt15.pdf). Accessed November 8, 2017.

## DESCRIPTION

Foodborne illness is caused by eating foods or beverages contaminated by disease-causing microbes or pathogens. There are many types of foodborne illness. Most are infections caused by a variety of bacteria, viruses and parasites. Disease can be caused by poisonings from harmful toxins or chemicals in contaminated food. Illness can also be caused by: consuming recreational or drinking water, having contact with animals or their environment, or be spread person-to-person.<sup>1</sup>

## HOW ARE WE DOING

In 2016 in Ramsey County, there were 123 infections of Giardia, 83 of Salmonella, 66 of Campylobacter and 64 of Shigella. These microbes were responsible for the majority of foodborne illness in the county. Between 2013 and 2016 Shigella-related outbreaks increased from 16 diagnoses, to 64. Ramsey County's campylobacteriosis cases made up 14.2 percent of the metro area total and 6.3 percent of the Minnesota total. For salmonellosis, Ramsey County cases made up 17.4 percent of the metro total, and 9.6 percent of the Minnesota total.<sup>2</sup>

## BENCHMARK INDICATOR

Healthy People 2020 Benchmark: Reduce infections caused by key pathogens transmitted through food.

U.S. Targets:

- Salmonellosis: 11.4 per 100,000 population
- Campylobacteriosis: 8.5 per 100,000 population
- Shigellosis: 0.6 per 100,000 population

## DISPARITIES

Analyses of reported cases have found increased rates of some foodborne illnesses among minority racial/ethnic populations. In some cases (listeriosis, yersiniosis) increased rates are due to unique food consumption patterns, in other cases (salmonellosis, shigellosis, campylobacteriosis) it is unclear why this health disparity exists.<sup>3</sup>

## RISK FACTORS

Foods commonly associated with foodborne illness include:<sup>1</sup>

- Raw foods with animal origins such as: raw meat or poultry, raw eggs, raw shellfish and unpasteurized milk.
- Fruits and vegetables grown with manure or unclean water.
- Raw sprouts because their growing environments are often ideal for microbes.
- Unpasteurized fruit juices and cider.
- Improperly prepared food and food touched by someone who is/was recently ill can also spread disease.

## WHAT RAMSEY COUNTY GOVERNMENT IS DOING

Environmental Health staff work with food businesses to ensure food safety in restaurants, cafes, and other food and beverage establishments. Services include food manager certification, food and beverage business licensing and inspection, and consulting with businesses to maintain food safety through a variety of circumstances. Ramsey County environmental health staff provide these services for suburban Ramsey County; the Minnesota Department of Health provides these services for the City of Saint Paul.

## Information to note

- Giardia was the top cause of foodborne illness in Ramsey County in 2016.
- The foodborne illness with the most growth between 2013 and 2016 in Ramsey County was shigellosis; going from 16 in 2013, to 64 diagnoses in 2016

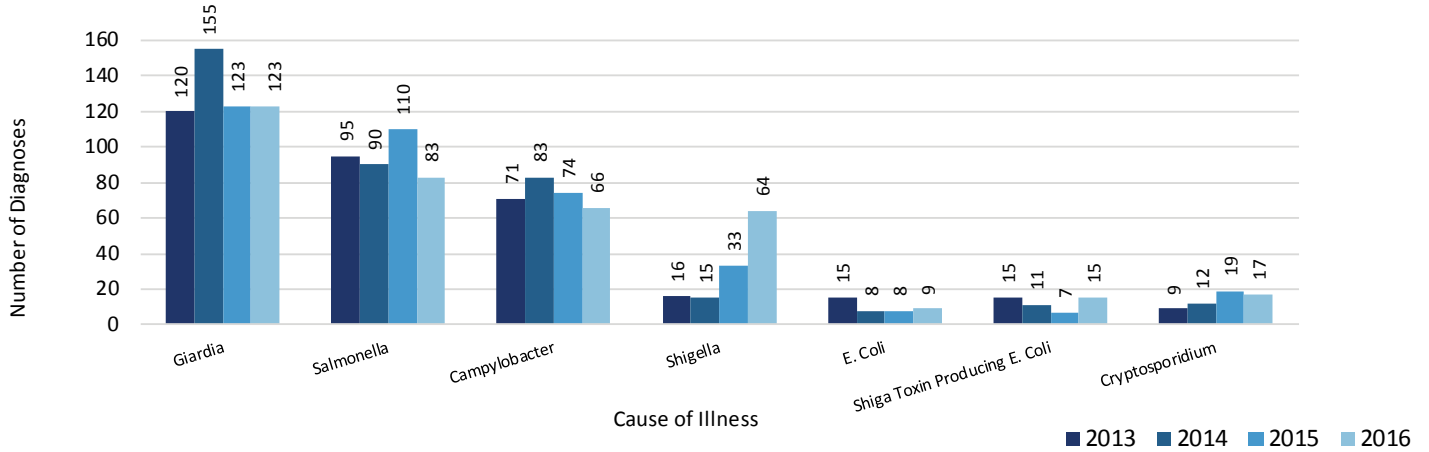
<sup>1</sup> Causes and Symptoms of Foodborne Illness. Minnesota Department of Health Web site. <http://www.health.state.mn.us/divs/idepc/dtopics/foodborne/basics.html#foods>. Accessed October 12, 2017.

<sup>2</sup> Minnesota Department of Health Infectious Disease Surveillance. Minnesota Department of Health Web site. <http://www.health.state.mn.us/divs/istm/medss/>. Accessed September 14, 2017.

<sup>3</sup> Foodborne illness incidence rates and food safety risks for populations of low socioeconomic status and minority race/ethnicity: a review of the literature. PubMed. <https://www.ncbi.nlm.nih.gov/pubmed/23955239>. Accessed October 30, 2017.

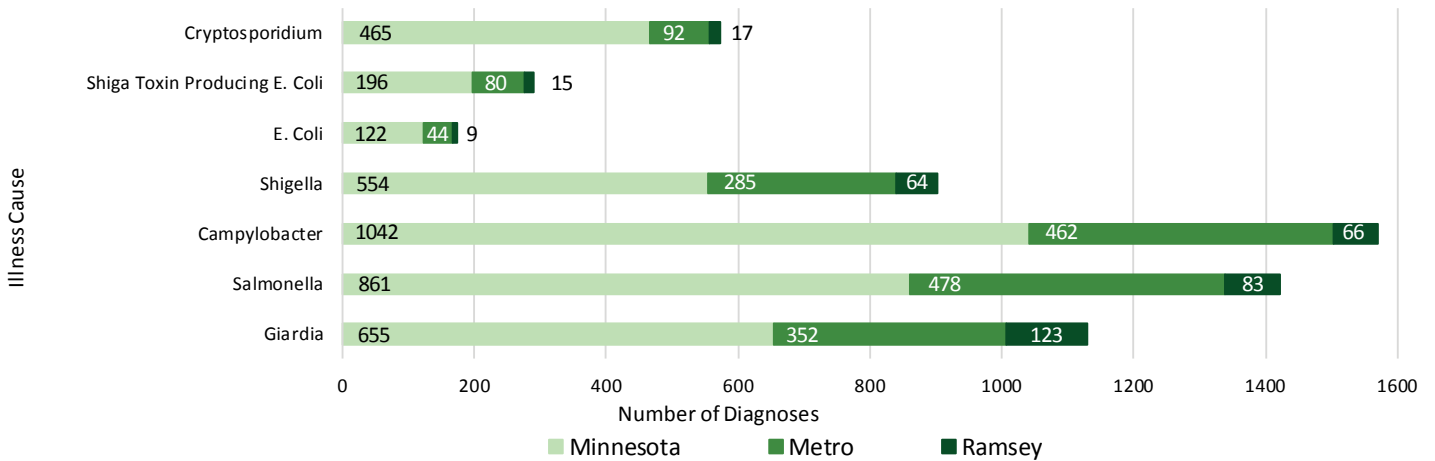
In suburban Ramsey County the Section assures compliance with regulations by food service and retail food establishments, public swimming pools, manufactured home parks, lodging facilities and youth camps, non-community public water supplies, and the Freedom to Breathe Act.

Diagnosed Foodborne Illness, Ramsey County, 2013-2016



Source: Minnesota Department of Health Infectious Disease Surveillance. Minnesota Department of Health Web site.<sup>4</sup>

Diagnosed Foodborne Illnesses, 2016



Source: Minnesota Department of Health Infectious Disease Surveillance. Minnesota Department of Health Web site.<sup>4</sup>

<sup>4</sup>Minnesota Department of Health Infectious Disease Surveillance. Minnesota Department of Health Web site. <http://www.health.state.mn.us/divs/istm/medss/>. Accessed September 14, 2017.

## DESCRIPTION

Human immunodeficiency virus (HIV) is a virus spread through certain body fluids that attacks the body's immune system. Acquired immunodeficiency virus (AIDS) refers to a set of symptoms and illnesses that occur at the very final stage of HIV. Over time, HIV destroys so many cells, specifically CD4 (T cells) that the body can no longer fight off infection and disease. HIV is spread most often through sexual contact; contaminated needles or syringes shared by drug use; infected blood or blood products; and from infected women to their babies at birth or through breastfeeding. Opportunistic infections or cancers take advantage of a very weak immune system and signal that the person has AIDS. No effective cure currently exists, but with proper medical care, HIV can be controlled.<sup>1</sup>

## HOW WE ARE DOING

In 2016, Ramsey County's HIV diagnoses made up 14 percent of the state total and 16.6 percent of the metro total. HIV diagnoses between 2013 and 2016 averaged 31.5 cases annually in Ramsey County. HIV diagnoses have fluctuated during this time period, hitting a high in 2014 with 39 diagnoses. AIDS diagnoses have also fluctuated during this time, averaging 21.5 cases annually. In 2016, Ramsey county total AIDS diagnoses made up 20.4 percent of the metro total and 16 percent of the state total.<sup>2</sup>

## BENCHMARK INDICATOR

Healthy People 2020: Reduce the number of new HIV diagnoses.

U.S. Target: Ten percent reduction for each year 2014-2017, and 15 percent reduction for each year 2018-2020.<sup>3</sup>

## DISPARITIES

In 2015, most people living with HIV or AIDS in Minnesota were male (76 percent), white (50 percent), and over the age of 45 (58 percent). African-American people are affected disproportionately in Minnesota.<sup>4</sup>

## RISK FACTORS

HIV in Minnesota is primarily driven by sexual exposure. For males, sexual contact with other men is the primary mode of exposure. For females, most cases are due to heterosexual contact.<sup>4</sup> When a person is infected, the following body fluids have been proven to spread HIV: blood, semen, vaginal fluid and breast milk.<sup>5</sup>

## WHAT RAMSEY COUNTY GOVERNMENT IS DOING

Recently, Saint Paul – Ramsey County Public Health's Clinic 555 made HIV prevention, outreach, diagnostic and referral services a priority. Some of these improvements include integrating a new laboratory test that detects HIV sooner and adding additional HIV prevention services including pre-exposure prophylaxis (PrEP) and post-exposure prophylaxis (PEP). If these treatments are followed correctly, they can decrease the chances of contracting HIV among high-risk clients. In 2018, Saint Paul – Ramsey County Public Health received funding from the Minnesota Department of Health to target residents who are at higher risk for contracting HIV, including: injection drug users, African-American men, African-born women and Latino men who have sex with men.

## Information to note

- African-American residents are affected disproportionately with HIV.
- HIV and AIDS diagnoses among Ramsey County residents make up about 16% of cases in Minnesota.
- Ramsey County is not meeting the Healthy People 2020 target of a 10% reduction in new HIV diagnoses.

<sup>1</sup> What Are HIV and AIDS? HIV.Gov. <https://www.hiv.gov/hiv-basics/overview/about-hiv-and-aids/what-are-hiv-and-aids>. Accessed June 2018.

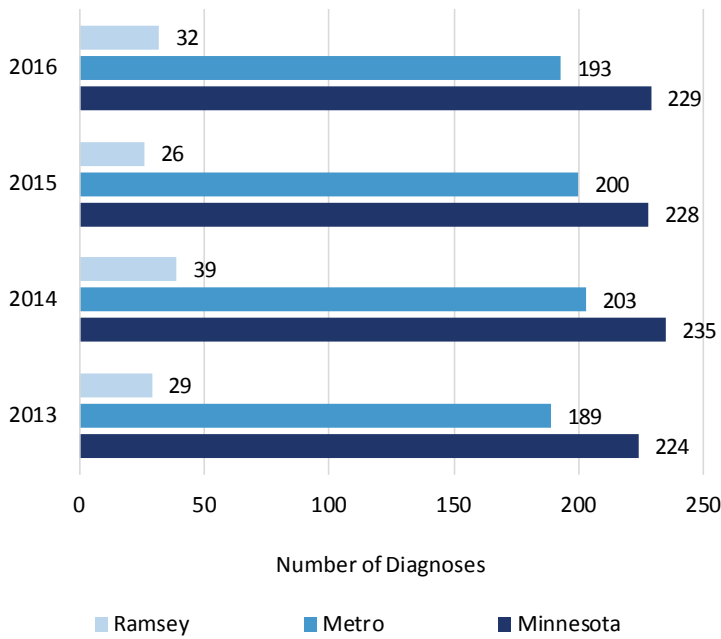
<sup>2</sup> Data and Statistics. Minnesota Department of Health. <http://www.health.state.mn.us/macros/topics/stats.html>. Accessed June 2018.

<sup>3</sup> Reduce new HIV Infection. Healthy People 2020. [https://www.healthypeople.gov/node/4607/data\\_details](https://www.healthypeople.gov/node/4607/data_details). Accessed June 2018.

<sup>4</sup> Minnesota HIV/AIDS Epidemiologic Profile. Minnesota Department of Health. <http://docplayer.net/21274337-Minnesota-hiv-aids-epidemiologic-profile.html>. Accessed June 2018.

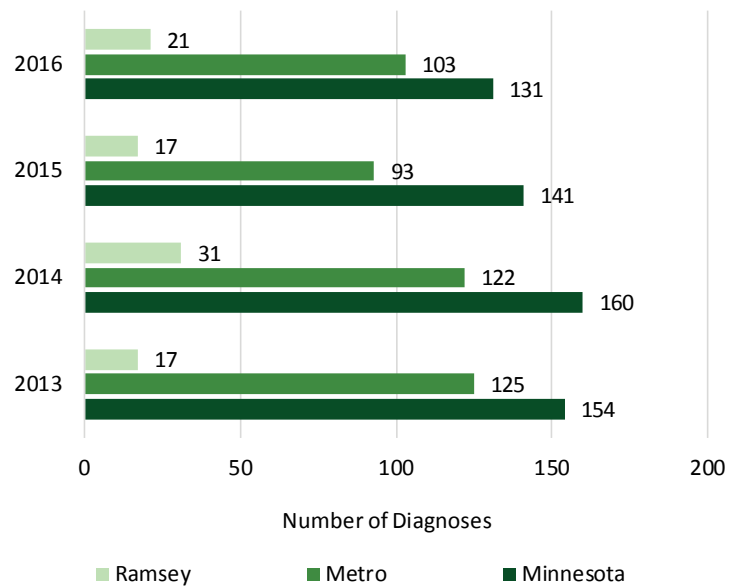
<sup>5</sup> Human Immunodeficiency Virus (HIV)/Acquired Immunodeficiency Syndrome (AIDS). Minnesota Department of Health. <http://www.health.state.mn.us/hiv>. Accessed October 16, 2017.

### Total Number of HIV Diagnoses by Year



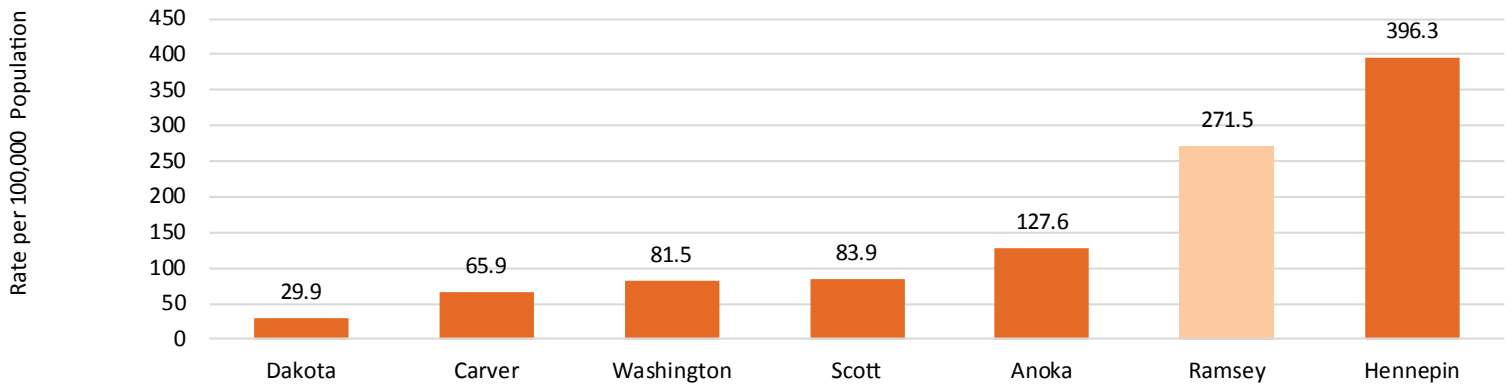
Source: Minnesota Department of Health.<sup>6</sup>

### Total Number of AIDS Diagnoses by Year



Source: Minnesota Department of Health.<sup>6</sup>

### Residents Living with HIV and AIDS, 7-County Metro, 2016



Source: Minnesota Department of Health.<sup>6</sup>

<sup>6</sup> Data and Statistics. Minnesota Department of Health Web site. <http://www.health.state.mn.us/macros/topics/stats.html>. Accessed June 2018.



## DESCRIPTION

While it is important for people of all ages to receive recommended vaccines, it is especially important for children, because diseases that can be prevented by vaccines are often more serious in children. Vaccinating children not only protects a child from disease, but it also protects the community by reducing the spread of a disease outbreak. When all vaccine-eligible children are fully immunized, it helps protect those who can't be vaccinated or are too young to receive vaccine.<sup>1</sup>

## HOW WE ARE DOING

In 2016 in Minnesota, 60.1 percent of children ages 24-35 months were up-to-date on recommended vaccines, which compares to Ramsey County's rate of 54.2 percent. These rates do not meet the Healthy People target of 80 percent. When looking at specific vaccine types, the Varicella (chickenpox) vaccination has the highest percentage (80 percent) of children who received it on time, while the Hepatitis A vaccination was the lowest at 35 percent. The most common reasons for a child being counted as "not up to date" on vaccinations were: the child received all vaccinations but not by 24 months (10 percent), or the child was still due for immunizations (34 percent).<sup>2</sup> Compared to other metro counties, Ramsey's percentage for children getting the full-series of immunizations on the recommended schedule was the third lowest in the seven-county metro area.<sup>3</sup>

## BENCHMARK INDICATOR

Healthy People 2020<sup>4</sup>: Increase the percentage of children aged 19 to 35 months who receive the recommended doses of DTaP, polio, MMR, Hib, hepatitis B, varicella and pneumococcal conjugate vaccine (PCV).

U.S. Target: 80 Percent of children aged 19 to 35 months.

## DISPARITIES

Minnesota children with at least one foreign-born parent were less likely to be up to date on recommended immunizations at ages 2, 6, 18, and 36 months than were children with two U.S.-born parents. Vaccination coverage at age 36 months varied by mother's region of origin, ranging from 77.5 percent among children born to mothers from Central and South America and the Caribbean to 44.2 percent among children born to mothers from Somalia.<sup>5</sup>

## RISK FACTORS

In very special situations, children shouldn't be vaccinated. For example, some vaccines shouldn't be given to children who have certain types of cancer or certain diseases, or who are taking drugs that lower the body's ability to resist infection.<sup>6</sup>

## WHAT RAMSEY COUNTY GOVERNMENT IS DOING

Saint Paul – Ramsey County Public Health encourages childhood and adult immunizations as the most effective means to decrease the prevalence and spread of vaccine-preventable diseases. Public Health offers appointment based immunization clinics at 555 Cedar Street on three days each week. While people are encouraged to obtain their immunizations at their medical home, public health immunizations are available for people who do not have

## Information to note

- Ramsey County children are less likely than other Minnesota children to be up to date on their immunizations.
- Minnesota children with at least one foreign-born parent were less likely to be up to date on recommended immunizations at ages 2, 6, 18, and 36 months than were children with two U.S.-born parents.

<sup>1</sup> Immunizations. Minnesota Department of Health. <https://data.web.health.state.mn.us/immunization>. Accessed July 2018.

<sup>2</sup> ImmuLink. Hennepin County Public Health. <http://www.hennepin.us/residents/health-medical/clinics-services#get-immunizations>. Accessed July 2018.

<sup>3</sup> Childhood immunizations (2017). Minnesota Department of Health. <https://apps.health.state.mn.us/mndata/webmap/immunizations.html>. Accessed July 2018.

<sup>4</sup> Immunization and Infectious Diseases. Healthy People 2020. <https://www.healthypeople.gov/2020/topics-objectives/topic/immunization-and-infectious-diseases/objectives>. Accessed July 2018.

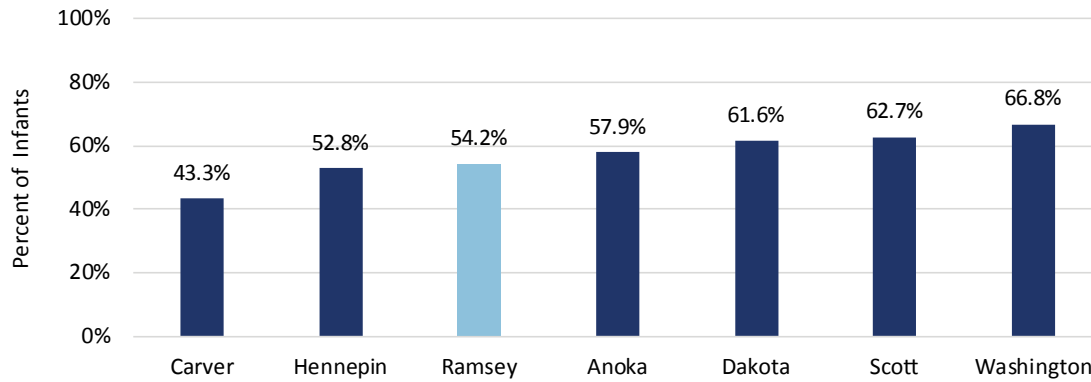
<sup>5</sup> Leads M, Halstead Muscoplat M. Timeliness of receipt of early childhood vaccinations among children of immigrants — Minnesota, 2016. *MMWR Morb Mortal Wkly Rep* 2017;66:1125–1129. [https://www.cdc.gov/mmwr/volumes/66/wr/mm6642a1.htm?s\\_cid=mm6642a1\\_w](https://www.cdc.gov/mmwr/volumes/66/wr/mm6642a1.htm?s_cid=mm6642a1_w). Published July 2018. Accessed July 2018.

<sup>6</sup> Childhood vaccines: what they are and why your child needs them. Familydoctor.Org. <https://familydoctor.org/childhood-vaccines-what-they-are-and-why-your-child-needs-them/>. Accessed July 2018.



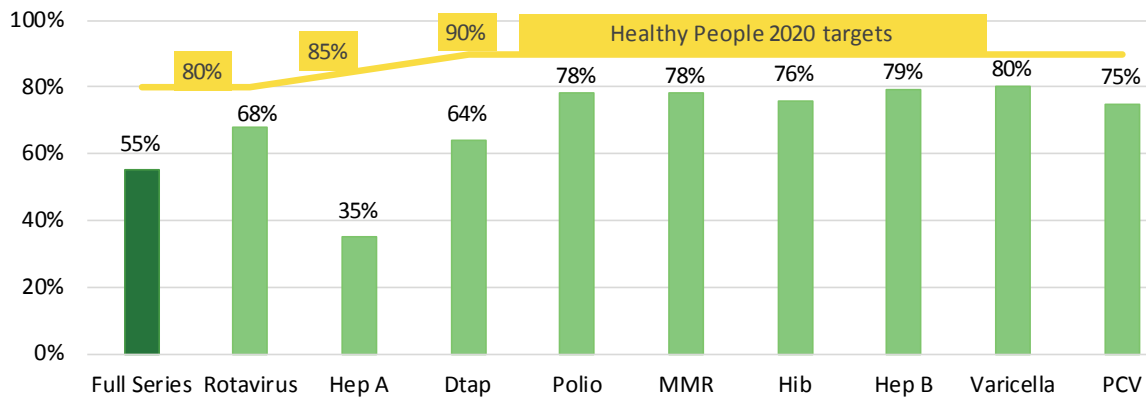
a medical home or are unable to access services in a timely manner. Additionally, Ramsey County provides funding to five Ramsey County community clinics to help off-set the cost of services, including immunizations, provided to uninsured and underinsured clients. Saint Paul – Ramsey County Public Health maintains a disease surveillance role, monitoring the prevalence of vaccine-preventable disease in Ramsey County.

Up-to-Date on Full-Series Vaccinations,  
Infants Aged 24-35 Months, Metro Counties, 2016



Source: Childhood Immunizations. Minnesota Department of Public Health.<sup>7</sup>

Up-to-Date on Immunizations, Children at 2 Years, Ramsey County, 2017



Source: ImmuLink. Hennepin County Public Health.<sup>8</sup>

<sup>7</sup> Childhood Immunizations. Minnesota Department of Public Health Web site. <https://apps.health.state.mn.us/mndata/webmap/immunizations.html>. Accessed July 2018.

<sup>8</sup> ImmuLink. Hennepin County Public Health. <http://www.hennepin.us/residents/health-medical/clinics-services#get-immunizations>. Accessed July 2018.

## DESCRIPTION

Pertussis, or whooping cough, is a disease that affects the lungs. Pertussis bacteria are spread from person to person through the air. A person with pertussis develops a severe cough that usually lasts four to six weeks or longer. Pertussis in infants is often severe, and they are more likely than older children or adults to develop complications. The disease can lead to bacterial pneumonia, and in rare circumstances, seizures, brain inflammation and even death.<sup>1</sup>

## HOW WE ARE DOING

The number of reported cases of pertussis in Minnesota increased by 150 between 2013 and 2016.<sup>2</sup> In 2016, there were 61 reported cases in Ramsey County, about double that of 2015. The number of pertussis diagnoses in 2016 in Ramsey County made up 6 percent of the state total, and 11.7 percent of the seven-county metro area total. As of Oct. 20, 2017, there have been 41 reported cases in 2017.<sup>3</sup> In 2016, the most common age group to be affected were those 19 years and older, followed by 13 to 18 years old. Overall, there was a decrease in diagnoses for all age groups between 2013 and 2017.<sup>4</sup> Ramsey County has met the Healthy People 2020 objective for infants under one year but did not achieve the 40 percent reduction in adolescent cases in 2016.

## BENCHMARK INDICATOR

Healthy People 2020:

- 1) Reduce cases of pertussis among children under 1 year of age  
U.S. Target: 10 percent reduction
- 2) Reduce cases of pertussis among adolescents aged 11 to 18 years  
U.S. Target: 40 percent reduction

## DISPARITIES

Teens and adults account for more than half of reported pertussis cases. In 2015 the most common age group for pertussis cases reported to the Minnesota Department of Health was among Minnesota teens 13 to 18 years old. Pertussis among school-aged children continues to increase.<sup>1</sup>

## RISK FACTORS

Anyone of any age can get pertussis. Individuals are at higher risk if not fully vaccinated with DTap or Tdap (age determines which vaccine individuals receive).

## WHAT RAMSEY COUNTY GOVERNMENT IS DOING

The Saint Paul- Ramsey County Public Health immunizations clinic offers low cost vaccines for infants, children and adults who are uninsured or whose insurance does not cover shots. The clinic is open Monday through Friday and is located along the Green Line in downtown St. Paul.

The rate of pertussis amongst 13 to 18 year olds could be reduced if adolescents receive the Tdap booster that is recommended at the age of 11 or 12 in Minnesota's Immunization Requirements. Ramsey County Child and Teen Checkups Program does outreach and education to adolescents receiving Medical Assistance about the importance of routine checkups and immunizations until the age of 21. When an individual is diagnosed with (continued on back)

## Information to note

- As of Oct. 20, 2017, there have been 41 reported cases of pertussis in Ramsey County during 2017.
- In 2015, the most common age group for reported pertussis cases in Minnesota was 13 to 18 years old.

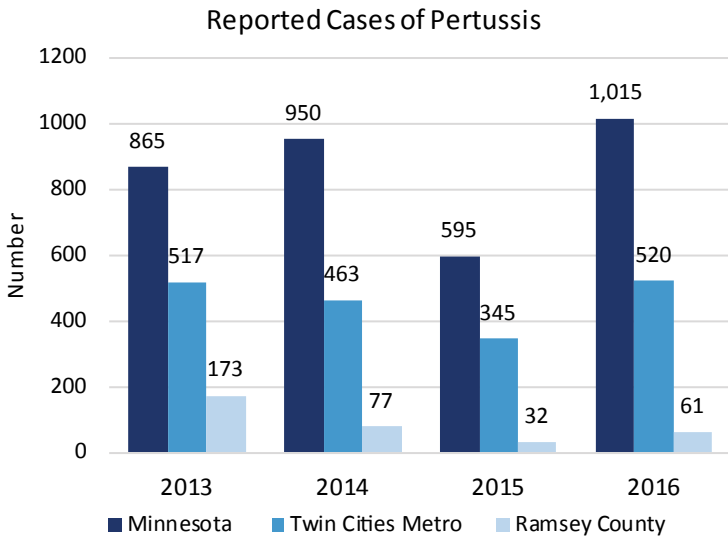
<sup>1</sup>Pertussis (Whooping Cough). Minnesota Department of Health. <http://www.health.state.mn.us/divs/idepc/diseases/pertussis/pfacts.html>. Accessed October 3, 2017.

<sup>2</sup>Infectious Disease Surveillance. Minnesota Department of Health. <http://www.health.state.mn.us/macros/topics/stats.html>. Accessed September 14, 2017.

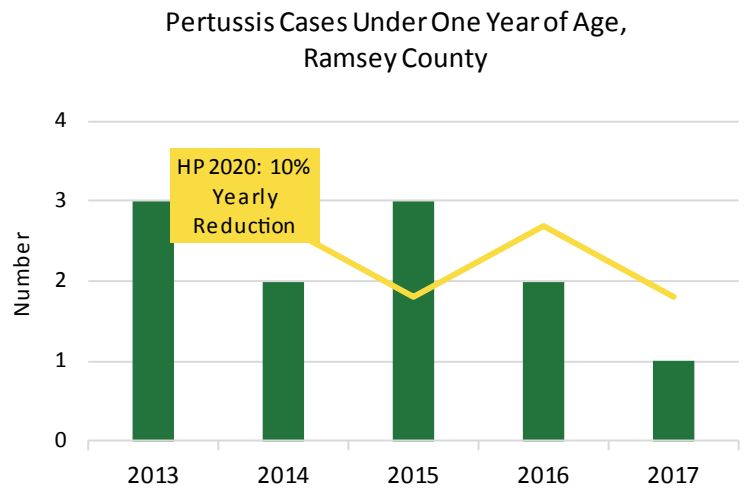
<sup>3</sup>Pertussis Disease Statistics, 2017. Minnesota Department of Health. <http://www.health.state.mn.us/divs/idepc/diseases/pertussis/stats/stats17.html#county>. Accessed October 3, 2017.

<sup>4</sup>Saint Paul-Ramsey County Public Health, Health Protection Division.

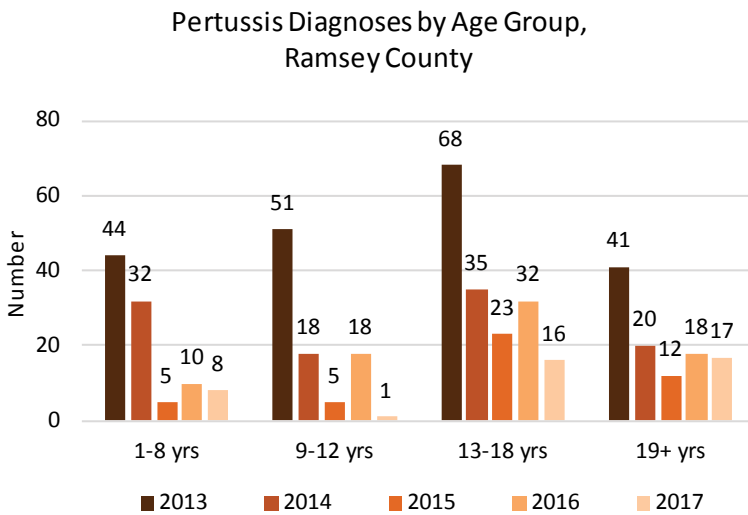
pertussis, epidemiologists at Ramsey County conduct case and contact investigations. Epidemiologists refer contacts to primary care to receive post-exposure prophylaxis and encourage routine immunizations.



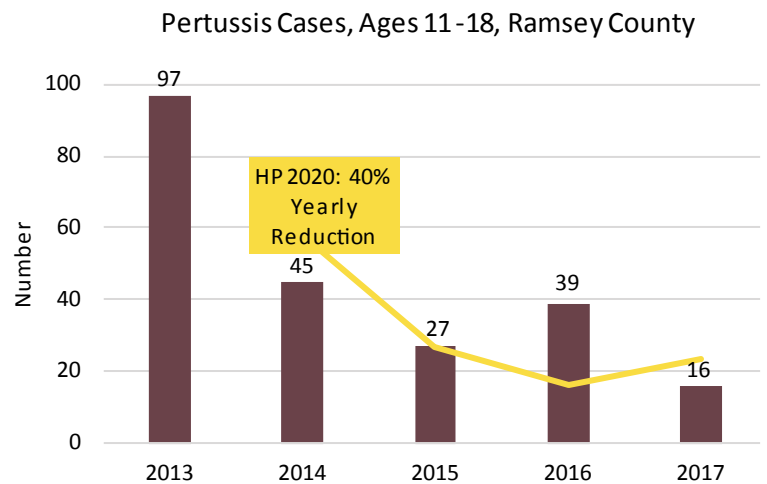
Source: Minnesota Department of Health, Infectious Disease Surveillance.<sup>5</sup>



Source: Saint Paul - Ramsey County Public Health.



Source: Saint Paul-Ramsey County Public Health.



Source: Saint Paul-Ramsey County Public Health.

<sup>5</sup> Minnesota Department of Health Infectious Disease Surveillance. Minnesota Department of Health Web site. <http://www.health.state.mn.us/macros/topics/stats.html>. Accessed September 14, 2017.

# Sexually Transmitted Diseases and Infections

## DESCRIPTION

More than 1 million sexually transmitted diseases (STDs) are acquired every day worldwide.<sup>1</sup> STDs are spread predominantly by sexual contact. More than 30 different bacteria, viruses and parasites are known to be sexually transmitted with eight of these pathogens linked to most STDs. Four of these STDs are curable: chlamydia, gonorrhea, syphilis and trichomoniasis. Another four (hepatitis B, herpes, HIV and human papillomavirus) are incurable but symptoms can be managed with treatment.<sup>1</sup> If left untreated, STDs can cause harmful, often irreversible complications.

## HOW WE ARE DOING

In Minnesota, the gonorrhea rate increased between 2013-2017 from 73 per 100,000 population to 123 per 100,000 (6,519 cases). This compares to the 2017 Ramsey County rate of 233 per 100,000, which represents 1,184 cases.<sup>2</sup> Rates among adults ages 15-44 have been gradually rising. In 2016, the gonorrhea rate for females was 402 per 100,000 and the rate for young males was 369 per 100,000. This does not meet the Healthy People 2020 goal.<sup>3</sup> The Minnesota chlamydia rate increased between 2013-2017 from 353 per 100,000 population to 444, which represents 23,528 cases. This compares to the 2017 Ramsey County rate of 660 per 100,000, which represents 3,356 cases.<sup>2</sup> The Minnesota rate for syphilis (all stages) increased between 2013-2017 from 10.1 per 100,000 population to 17.6, which represents 934 cases. In 2017, 83 percent of all male cases were among men who have sex with men.<sup>2</sup> In 2016 in Ramsey County, there were 119 syphilis diagnoses: 39 early latent syphilis, 44 late latent, 15 primary and 21 secondary.<sup>3</sup>

Preventing STDs by using safe sex practices is key to slowing the spread of these diseases. According to the 2016 Minnesota Student Survey, when students were asked if they had ever spoken to their sexual partners about safe sex and STD prevention, only 61.2 percent of 11th-graders and 52 percent of 9th-graders in Ramsey County reported having this conversation with every partner. There was also a sizable population that had never talked about protection with their partner: 24.3 percent of sexually-active 11th graders and 35.1 percent of sexually-active 9th graders.<sup>4</sup>

## BENCHMARK INDICATOR

Healthy People 2020<sup>5</sup>: Reduce gonorrhea rates in population aged 15-44 years.

U.S. Targets: Females: 251.9 new cases per 100,000 population. Males: 194.8 new cases per 100,000 population.

## DISPARITIES

Persons of color in Minnesota are disproportionately affected by STDs. When compared with white Minnesotans; the 2017 chlamydia rates for African-Americans (non-Hispanic) were 9.7 times higher; the American Indian rate was 5 times higher; the Asian rate was times higher; and the Hispanic (of any race) rate was 3 times higher. The 2017 gonorrhea rates compared with whites: African-American (non-Hispanic) rate was 20 times higher; American Indian rate was 13 times higher; Asian rate was 2 times higher; and Hispanic (of any race) rate was 3 times higher.<sup>3</sup> STDs also disproportionately affect youth. In 2017, youth (ages 15-24 years) accounted for 62 percent of chlamydia and 45 percent of gonorrhea cases reported.<sup>2</sup>

## Information to note

- The gonorrhea rate for Ramsey County is 233 new cases per 100,000, which is higher than the Minnesota rate of 123 and does not meet the Healthy People 2020 target.
- The chlamydia rate for Ramsey County is 660 new cases per 100,000, which is higher than the Minnesota rate of 444.

<sup>1</sup> Sexually Transmitted Infections (STIs). World Health Organization. <http://www.who.int/mediacentre/factsheets/fs110/en/>. Published August 2016. Accessed July 2018.

<sup>2</sup> Minnesota Department of Health. STD Surveillance Report Data Tables, Minnesota 2017. St. Paul, MN: Minnesota Department of Health; 2018. <http://www.health.state.mn.us/divs/idepc/dtopics/stds/stats/2017/tablestd.pdf>. Published April 24, 2018. Accessed July 2018.

<sup>3</sup> Minnesota Department of Health. Sexually Transmitted Disease (STD) Surveillance Report. <http://www.health.state.mn.us/divs/idepc/dtopics/stds/stats/2017/stdreport.pdf>. Accessed July 2018.

<sup>4</sup> Minnesota Department of Health. Minnesota Student Survey 2016. <http://www.health.state.mn.us/divs/chs/surveys/mss/index.html>. Accessed July 2018.

<sup>5</sup> Sexually Transmitted Diseases. Healthy People 2020. <https://www.healthypeople.gov/2020/topics-objectives/topic/sexually-transmitted-diseases/objectives>. Accessed July 2018.

# Sexually Transmitted Diseases and Infections

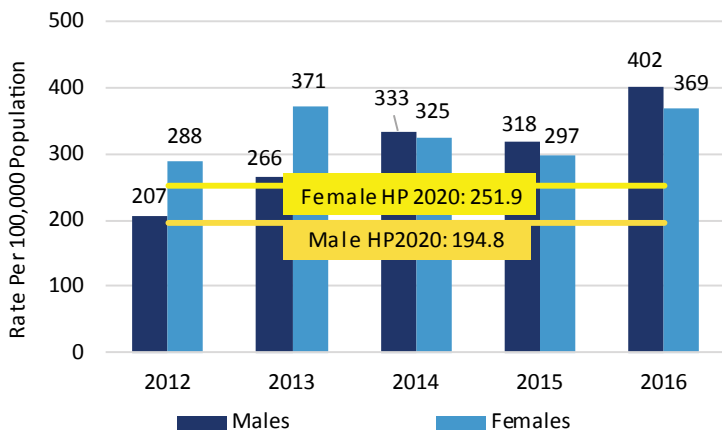
## RISK FACTORS

Risk factors for STDs include unprotected sex and lack of awareness regarding modes of transmission, such as through oral sex.<sup>6</sup> Some STDs can also be spread by non-sexual means through blood or blood products. Many STDs—including chlamydia, gonorrhea, hepatitis B, HIV and syphilis—can also be transmitted from mother to child during pregnancy and childbirth.<sup>7</sup>

## WHAT RAMSEY COUNTY GOVERNMENT IS DOING

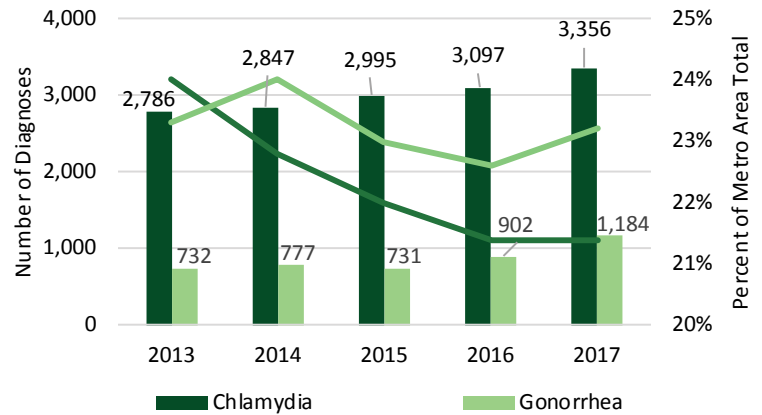
Saint Paul – Ramsey County Public Health provides screening, diagnosis and treatment of sexually transmitted infections (STIs) through Clinic 555 at the 555 Cedar St. location. Services are confidential and the cost is based on a sliding fee based on family size and income. Public Health staff also conduct outreach, screening, diagnosis and treatment in the community to increase accessibility of services. Additionally, Ramsey County provides funding to five Ramsey County community clinics to help offset the cost of services, including screening, diagnosis and treatment for STIs, provided to uninsured and underinsured clients. Saint Paul – Ramsey County Public Health also maintains a disease surveillance role, monitoring the prevalence of STDs/STIs in Ramsey County.

New Diagnoses of Gonorrhea, Ages 15 to 44, Ramsey County



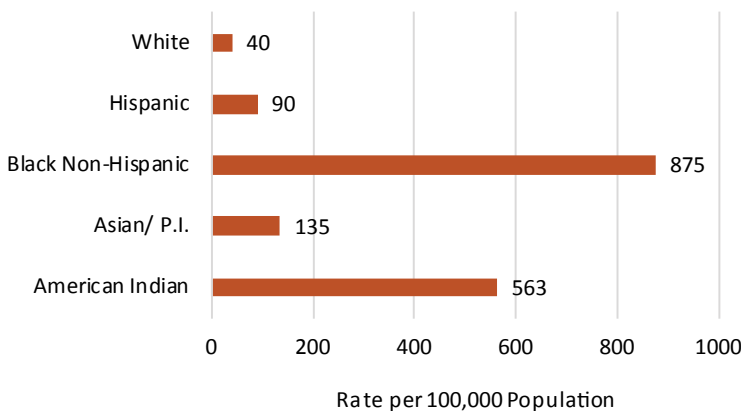
Source: Minnesota Department of Health.<sup>8</sup>

Chlamydia and Gonorrhea Diagnoses, Ramsey County



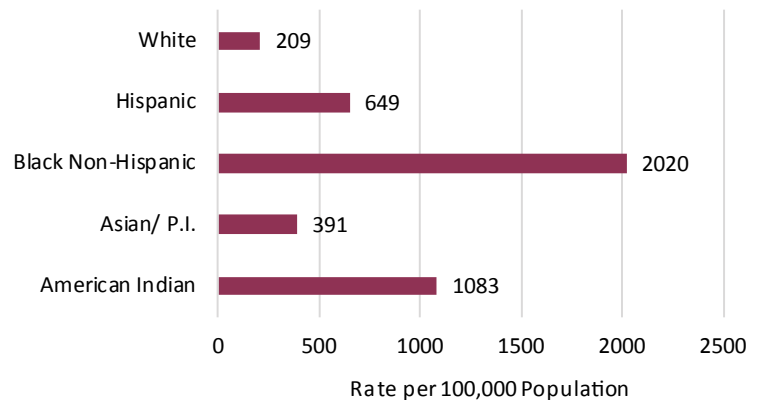
Source: Minnesota Department of Health.<sup>8</sup>

Gonorrhea Rates by Race/Ethnicity, Minnesota, 2017



Source: Minnesota Department of Health.<sup>8</sup>

Chlamydia Rates by Race/Ethnicity, Minnesota, 2017



Source: Minnesota Department of Health.<sup>8</sup>

<sup>6</sup> Sexually Transmitted Diseases (STDs). Centers for Disease Control and Prevention. <https://www.cdc.gov/std/healthcomm/stdfact-stdriskandoralsex.htm>. Updated January 4, 2017. Accessed July 2018.

<sup>7</sup> Sexually Transmitted Infections (STIs). World Health Organization. <http://www.who.int/mediacentre/factsheets/fs110/en/>. Published August 2016. Accessed July 2018.

<sup>8</sup> Source: Minnesota Department of Health. STD Surveillance Report Data Tables, Minnesota 2017. St. Paul, MN: Minnesota Department of Health; 2018. <http://www.health.state.mn.us/divs/idepc/dtopics/stds/stats/2017/tablesstd.pdf>. Accessed July 2018.

## DESCRIPTION

Most tick bites do not result in disease, but it is a good idea to recognize and watch for the early symptoms of some of the more commonly encountered tick-borne diseases. Lyme disease and human anaplasmosis (HA) are the two most common tick-borne diseases in Minnesota. Other tick-borne diseases that occur but are less common include: babesiosis, ehrlichiosis, Rocky Mountain Spotted Fever, Powassan virus, tularemia and southern tick-associated rash illness. Incidence of these tick-borne diseases may increase with climate change.<sup>1</sup>

## HOW ARE WE DOING

Lyme disease is the most common tick-borne disease in Minnesota with a rate of 23.6 cases per 100,000 population in 2016, which is based on 1,304 confirmed cases. Minnesota has the 10th highest rate for Lyme disease in the U.S.. Confirmed cases are based on clinical testing results, so numbers likely underrepresent the actual reality. While yearly numbers fluctuate, Lyme disease cases have been increasing since the 1990s. In Ramsey County in 2016, there were 84 confirmed cases of Lyme disease and 39 of human anaplasmosis. This was 6.4 percent of the state total for Lyme disease, and 5.3 percent for HA. The third most common tick transmitted disease was babesiosis. In 2016, there were five cases in Ramsey, 13 in the metro area, and 50 statewide.<sup>2</sup>

Tick transmitted disease rates were recorded from 2007 to 2015 and translated into risk levels by county in Minnesota; of the seven-county metro area, Ramsey County is one of five counties with moderate risk of tick-borne illness. Anoka County and Washington County rank "high risk."<sup>3</sup>

## DISPARITIES

For the tick transmitted disease anaplasmosis, 385 (63 percent) cases reported in 2015 were identified in men. The median age of cases was 58 years (range, 10 to 94 years), 14 years older than the median age of Lyme disease cases.<sup>1</sup>

## RISK FACTORS

Campers, hikers, hunters, farmers and people in outdoor occupations may be at higher risk in the counties known to have blacklegged ticks (deer ticks), including Ramsey County. Some people have been exposed to blacklegged ticks in their yard, especially in yards with a lot of brush and leaf litter or adjacent to woods.<sup>4</sup>

## WHAT RAMSEY COUNTY IS DOING

Ramsey County Parks and Recreation hands out tick information cards to help residents identify tick species, tips for preventing tick bites and how to remove a tick if one does bite. Off leash dog areas in local parks have tick warning and information signs.

Public Health works with partners across Ramsey County to address residents' concerns around tick-borne illness. Staff epidemiologists help community members identify signs and symptoms of Lyme disease and connect them to primary care. Parks and Recreation staff visit parks and other popular community venues to share information about tick-borne illness (in 2016, brochures, tick cards, and posters were shared with 292 venues). In addition, the tick lab at the Metropolitan Mosquito Control District offers free identification of ticks to locals as part of their ongoing Lyme disease surveillance work.

## Information to note

- The rate of Lyme disease in Minnesota has fluctuated over the years, but is increasing. It is the most common tick-borne disease in Minnesota with a rate of 23.6 cases per 100,000 population in 2016.

<sup>1</sup>Tickborne Diseases. Minnesota Department of Health Web site. <http://www.health.state.mn.us/divs/idepc/dtopics/tickborne/index.html>. Accessed September 14, 2017.

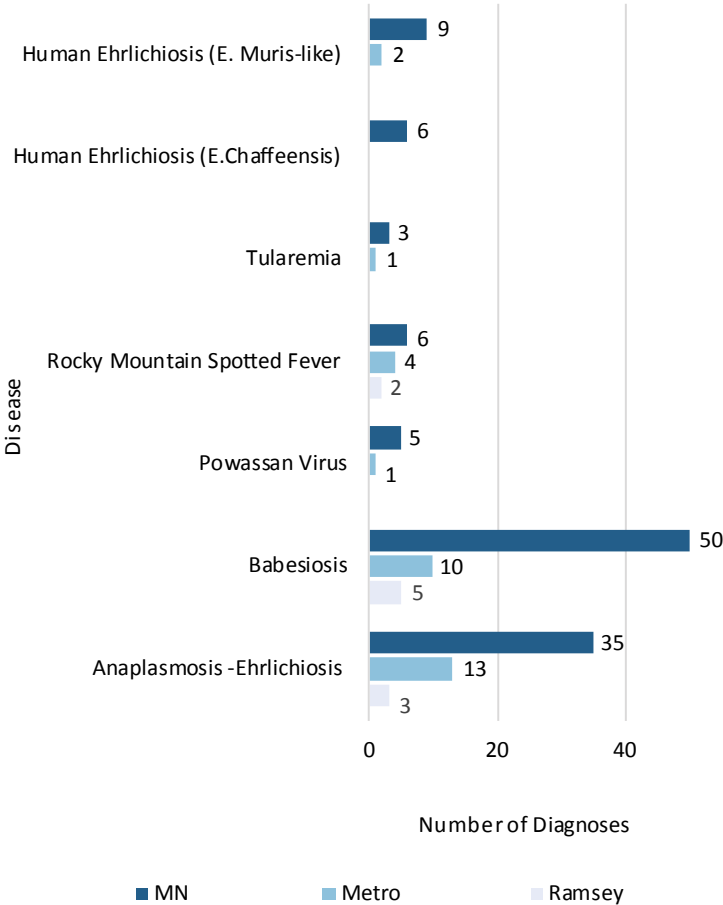
<sup>2</sup>Minnesota Department of Health Infectious Disease Surveillance. Minnesota Department of Health Web site. <http://www.health.state.mn.us/macros/topics/stats.html>. Accessed September 14, 2017.

<sup>3</sup>Tickborne Disease Risk in Minnesota. Minnesota Department of Health Web site. <http://www.health.state.mn.us/divs/idepc/diseases/lyme/highrisk.pdf>. Accessed November 4, 2017.

<sup>4</sup>Preventing Tickborne Disease. Minnesota Department of Health Web site. <http://www.health.state.mn.us/divs/idepc/dtopics/tickborne/prevention.html>. Accessed September 14, 2017.

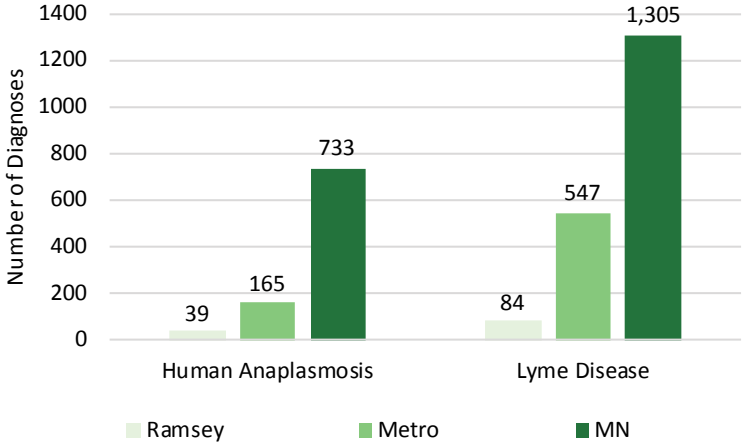
Tick Transmitted Disease figures

Select Tick Transmitted Diseases, Confirmed Cases, 2016



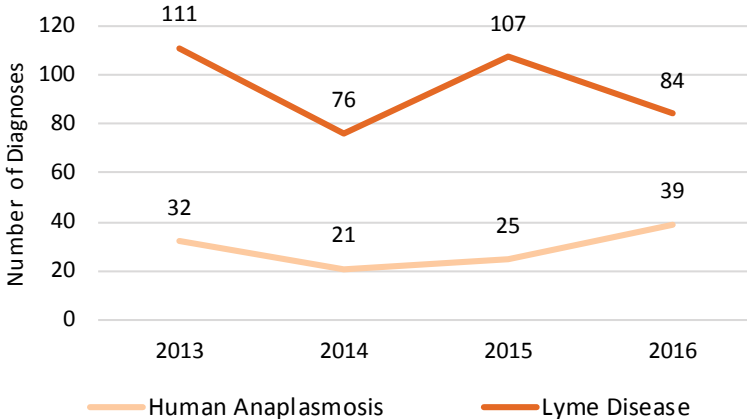
Source: Minnesota Department of Education Web site.<sup>5</sup>

Most Common Tick Transmitted Diseases, Confirmed Cases, 2016



Source: Minnesota Department of Health Web site.<sup>5</sup>

Top Tick Transmitted Diseases, Confirmed Cases, Ramsey County



Source: Minnesota Department of Health Web site.<sup>5</sup>

<sup>5</sup>Source: Minnesota Department of Health Infectious Disease Surveillance. Minnesota Department of Health Web site. <http://www.health.state.mn.us/macros/topics/stats.html>. Accessed September 14, 2017.



## DESCRIPTION

Tuberculosis (TB) is a serious infectious disease caused by a bacterium called *Mycobacterium tuberculosis*. TB is transmitted through the air, but extended close contact with someone with infectious TB is typically required for it to spread. Not everyone infected with the TB bacterium becomes sick. As a result, two TB-related conditions exist: latent TB infection (germs are dormant in the body and do not spread to others) and active TB disease (the infected person feels sick and can spread germs to others). Active TB most often affects the lungs, but can involve any part of the body. In most cases TB is curable, however it can be fatal without proper treatment. Sometimes TB becomes resistant to drugs used to treat it. Multidrug-resistant TB (MDR TB) is resistant to at least two of the most potent drugs used for treatment. This contrasts with “pan-sensitive” TB which is susceptible to all first-line drugs against TB.<sup>1</sup>

## HOW WE ARE DOING

In 2017, there were 38 cases of tuberculosis reported in Ramsey County. This was 29.2 percent of the Metro area total, and 21.3 percent of the Minnesota total. This is an increase of 9 percent for Ramsey County from the previous 5-year average of 35 cases.<sup>2</sup> In Ramsey County, most active TB cases occur in residents born in countries with high TB rates (90 percent of cases in 2017). In the last five years, people with TB in Ramsey County were born in 23 different countries, most from South/Southeast Asia (48 percent) or Africa (41 percent). Ramsey County residents born in the U.S. who have TB often report other risk factors including immune-suppression due to therapies or illnesses, substance abuse, homelessness, or lengthy stays in correctional facilities, nursing homes or other congregate settings.

Beginning in late 2016, an outbreak of MDR TB was identified in Ramsey County. Between 2016 and 2018, Ramsey County identified 18 cases of MDR TB (this compares to seven cases of MDR TB in the entire state from 2010 to 2015). In 2017 there were 7.5 confirmed cases of TB per 100,000 population. Foreign born residents experienced a rate of 44.5 per 100,000 population. Ramsey County does not meet the Healthy People targets related to TB.

## BENCHMARK INDICATOR

Healthy People 2020: Reduce the tuberculosis (TB) case rate for foreign-born persons living in the U.S.

U.S. Target: 14 per 100,000 population

Healthy People 2020: Reduce tuberculosis

U.S. Target: 1.0 new case per 100,000 population<sup>3</sup>

## DISPARITIES

In 2016, foreign born residents in Ramsey County experienced a rate of 44.5 new TB cases per 100,000 population, compared to a rate of 0.4 among U.S. born residents. The MDR TB outbreak in Ramsey County is concentrated in the Hmong community and is specifically affecting the elderly.

## RISK FACTORS

Generally, persons at high risk for developing TB disease fall into two categories: persons who have been recently infected with TB bacteria; and persons with medical conditions that weaken the immune system (such as HIV, diabetes, cancer, kidney disease, children less than 5 years of age).<sup>1</sup>

(continued on back)

## Information to note

- In 2017, there were 38 cases of tuberculosis in Ramsey County, which was 21.3% of all Minnesota cases.
- There is an ongoing outbreak of multidrug-resistant tuberculosis in Ramsey County primarily affecting the Hmong community.

<sup>1</sup>Tuberculosis (TB). Centers for Disease Control and Prevention. <https://www.cdc.gov/tb/default.htm> Accessed April 2018.

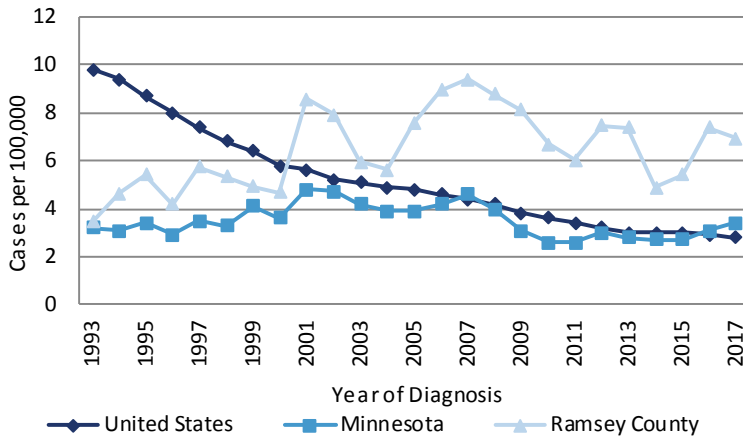
<sup>2</sup>Minnesota Department of Health Infectious Disease Surveillance. Minnesota Department of Health. <http://www.health.state.mn.us/macros/topics/stats.html>. Accessed April 2018.

<sup>3</sup>HealthyPeople 2020. <https://www.healthypeople.gov/2020/topics-objectives>. Accessed April 2018.

## WHAT RAMSEY COUNTY GOVERNMENT IS DOING

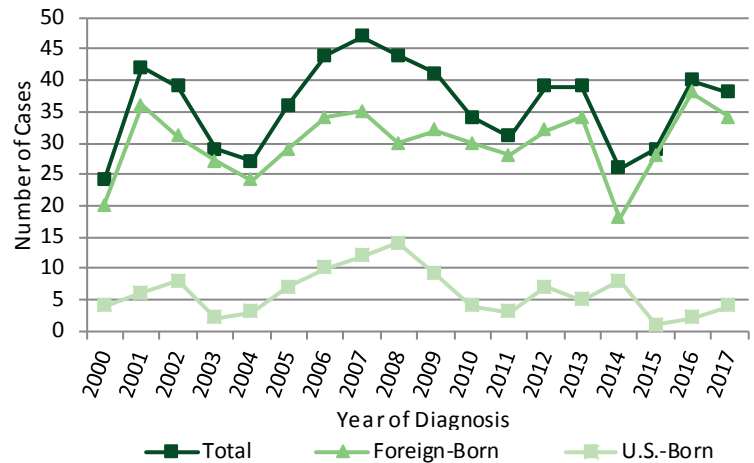
Between 2016 and 2018 Saint Paul- Ramsey County Public Health created six new positions and reallocated funding for sustained community engagement and provider education to address TB prevention and control. Although the MDR TB outbreak occurred in Ramsey County, all local health departments are mandated by law to assure follow-up for active and latent TB cases in their jurisdiction. There is limited outside funding for these prevention and control activities, leaving most counties with smaller budgets to tap during outbreaks. The burden of TB is well-known, but with a sustained investment in this area Ramsey County hopes to prevent future outbreaks.

Tuberculosis Incidence Rates, United States, Minnesota, and Ramsey County 1993-2017



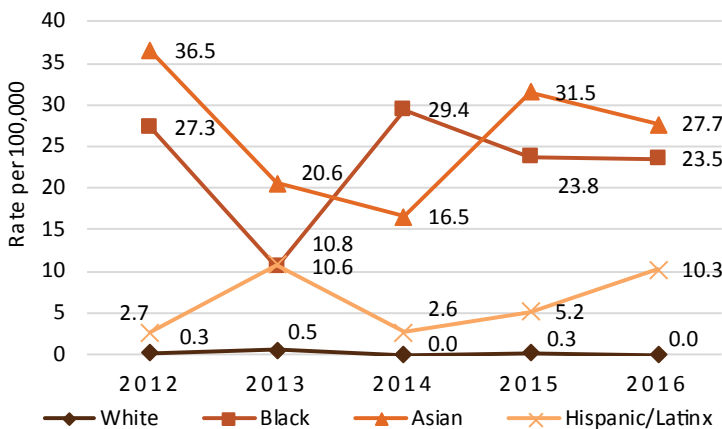
Source: Minnesota Department of Health and Centers for Disease Control.<sup>4</sup>

Tuberculosis Cases by Place of Birth, Ramsey County



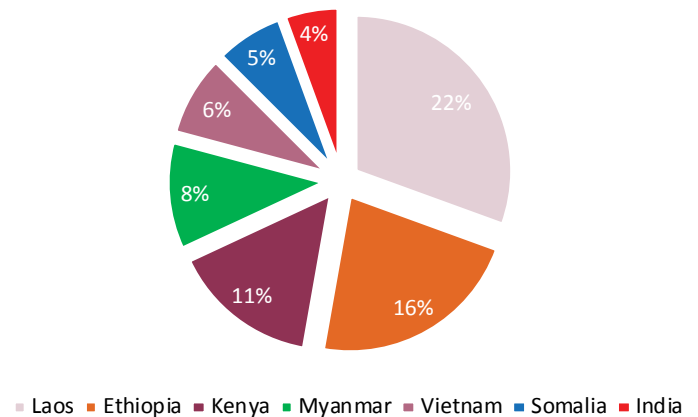
Source: Saint Paul - Ramsey County Public Health.

Tuberculosis Incidence Rates by Race/Ethnicity, Ramsey County, 2012-2016



Source: Saint Paul - Ramsey County Public Health.

Non-U.S. Born Tuberculosis Cases by Country of Birth, Ramsey County, 2013-2017



Source: Saint Paul - Ramsey County Public Health.

<sup>4</sup> Source: rates for MN and US from <http://www.health.state.mn.us/divs/idepc/diseases/tb/stats/index.html> and <https://www.cdc.gov/tb/statistics/tbcases.htm> and [https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS\\_05\\_EST\\_S0101&prodType=table](https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_05_EST_S0101&prodType=table)