

PICTURE OF OUR HEALTH

2019

Hamilton County Community Health Profile



Chattanooga-Hamilton County Health Department

Chattanooga-Hamilton County Health Department

Health Department Mission:

To do all we can to assure a healthy community

Health Department Vision:

Healthy people in Healthy Communities

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A sincere thanks to members of the Health Department staff who contributed to the development and review of content and data in this report: Becky Barnes, Dr. Valerie Boaz, Carleena Angwin, Tom Bodkin, Paula Collier, Cathy Cowart, Bonnie Deakins, Angie Gonzales, Diana Kreider, Sabrina Novak, William Ulmer, Lisa Vincent, and Dan Walker.

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Donna Roddy, Blue Cross/Blue Shield of Tennessee (retired)

We would also like to thank the Office of Policy and Management and the STD/HIV/Viral Hepatitis Program of the Tennessee Department of Health for their help with acquiring data.

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COUNTY MAYOR



REBEKAH T. BARNES, R.N.
ADMINISTRATOR

VALERIE A. BOAZ, M.D.
HEALTH OFFICER

HAMILTON COUNTY, TENNESSEE
CHATTANOOGA—HAMILTON COUNTY HEALTH DEPARTMENT

February 27, 2019

Dear Colleague,

I am pleased to present the **2019 Picture of Our Health** community health profile. The report is a broad picture of the health of Hamilton County residents compiled from local, state, and federal data sources. This report is a useful tool to evaluate the health of our community and to guide our efforts in targeting prevention initiatives, improving health care, and influencing public policy. It shows us what is working well and where we need to focus our efforts.

This report documents over 100 health status indicators of Hamilton County residents, including but not limited to, leading causes of death, infant and maternal health, injury and violence, substance abuse, and environmental health. This report was last published in 2015.

Hamilton County is fortunate to have a strong and active Regional Health Council that shares the Health Department's commitment to prioritize health needs, recommend policy changes, and develop partnerships to foster collaborations to address our community's needs.

I would also like to thank all of our community partners for their hard work and contributions to the work of prevention. Through their support, we continue to make progress in assuring the health of our community.

Sincerely,

A handwritten signature in cursive script that reads "Becky Barnes".

Becky Barnes
Administrator



February 2019

Dear Colleague:

The Regional Health Council is delighted to convey the **2019 Picture of Our Health** community health profile. The Council is honored to play a role in developing this report and then identifying key health priorities and strategies to improve the health and well-being of our community.

The Council serves as an advisory body to the Chattanooga-Hamilton County Health Department, and serves as the lead community-based organization on important matters relating to the health of the residents of Hamilton County. Appointed by the County Mayor and county commissioners, the Council includes 25 members representing every sector of Hamilton County.

The periodic **Picture of Our Health** profiles guide our work as we monitor the health status of residents and recommend strategies to improve community health. Over the next few months, the Council will use this report to identify health priorities and work to engage the community around these issues.

On behalf of the Regional Health Council, I want to thank Mayor Jim Coppinger, members of the Hamilton County Commission, and the Chattanooga-Hamilton County Health Department for giving us the opportunity to be deeply engaged in the work to improve the health of our community.

Sincerely,

A handwritten signature in blue ink that reads "Rae Young Bond".

Rae Young Bond
Chair, Regional Health Council
CEO, Chattanooga-Hamilton County Medical Society

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Introduction



Introduction

The 2019 Picture of Health for Hamilton County, Tennessee is a collection of health status indicators used to provide a broad overview of the health of Hamilton County residents. It provides a resource for local community members and community-based organizations as they make plans to improve population health. The data used in this report come from a variety of public sources and presents, where available, comparable data for Tennessee and the United States.

Health Indicators

A health indicator is a numeric measure of the public health status of a population or health system. Indicators are powerful tools for monitoring and communicating critical information about population health. They are useful to support planning — identifying priorities or targeting resources, for example — and for tracking progress towards broad community objectives. They help to engage partners into civic and collaborative action by helping to build awareness of problems and trends. In addition, health indicators help inform policy and policy makers and can help promote accountability among governmental and non-governmental agencies.

The 2019 Picture of Health includes indicators measuring health outcomes, which describes the population health status of Hamilton County and factors that have the potential to influence health outcomes, such as social factors, health care access, health behaviors, and the physical environment. The data used in this report comes from a variety of public health data systems, including the vital records, cancer registry, hospitalizations, reportable infectious diseases, and surveys such as the Behavioral Risk Factor Surveillance Survey and the Youth Risk Behavior Survey.

Most health statistics presented in this report are based on county of residence, rather than county of occurrence. For example, Hamilton County birth rates reflect babies born to mothers who are Hamilton County residents, even if she delivers outside of the county. Law enforcement and crash statistics presented in this report are based on where the event took place (county of occurrence) as reported by the responding law enforcement agency.

United States data in this report refers to the 50 states plus Washington D.C.

The Importance of Indicators

“Indicators are like gauges. They help us understand the status or condition of something. Indicators research helps us understand the scope and magnitude of problems, resources needed to fix problems, and whether we are making progress toward solving them.”

– 2017 National Autism Indicators Report

Major Findings



Bright Spots



91% of Hamilton County residents had health insurance in 2017.

The insured population has grown since passage of the Affordable Care Act in 2010, when 86% of residents had coverage.



Opioid prescriptions dropped 15% over the last 3 years. There were 348,813

opioid prescriptions written for Hamilton County residents in 2017, down from 413,651 in 2015. The decrease corresponds to tighter restrictions on prescription opioids at the state and federal level.



34% decrease in teen birth rates from 2010 to 2016.

In 2016, there were 23 births for every 1,000 females age 15-19, or 253 babies born to females in that age group. Births to teens ages 15-19 accounted for 6% of all births in 2016. The teen birth rate is down 34% from 2010, when it was 35 per 1,000.



33% drop in pregnancy smoking rates in 2016 compared to 2010. Ten percent

of Hamilton County women giving birth in 2016 smoked cigarettes during pregnancy, compared to 15% in 2010.



Areas of Concern



32,303 Hamilton County residents remained uninsured in 2017. Most of

the uninsured were working adults in low-income families.



Opioid overdoses, both fatal and non-fatal, continue to rise. Although

prescribing is down, the opioid prescribing rate is 63% higher than the national rate. Further, as the prescription opioid supply dwindles, many are turning to street drugs. Illicitly produced fentanyl is escalating the opioid crisis.



75% higher violent crime rate than the U.S. in 2016. A total of 2,413 violent

crimes were reported to the County's eight municipal law enforcement agencies, or 675 violent crimes per 100,000 county residents. By comparison, the 2016 national violent crime rate was 386 per 100,000.

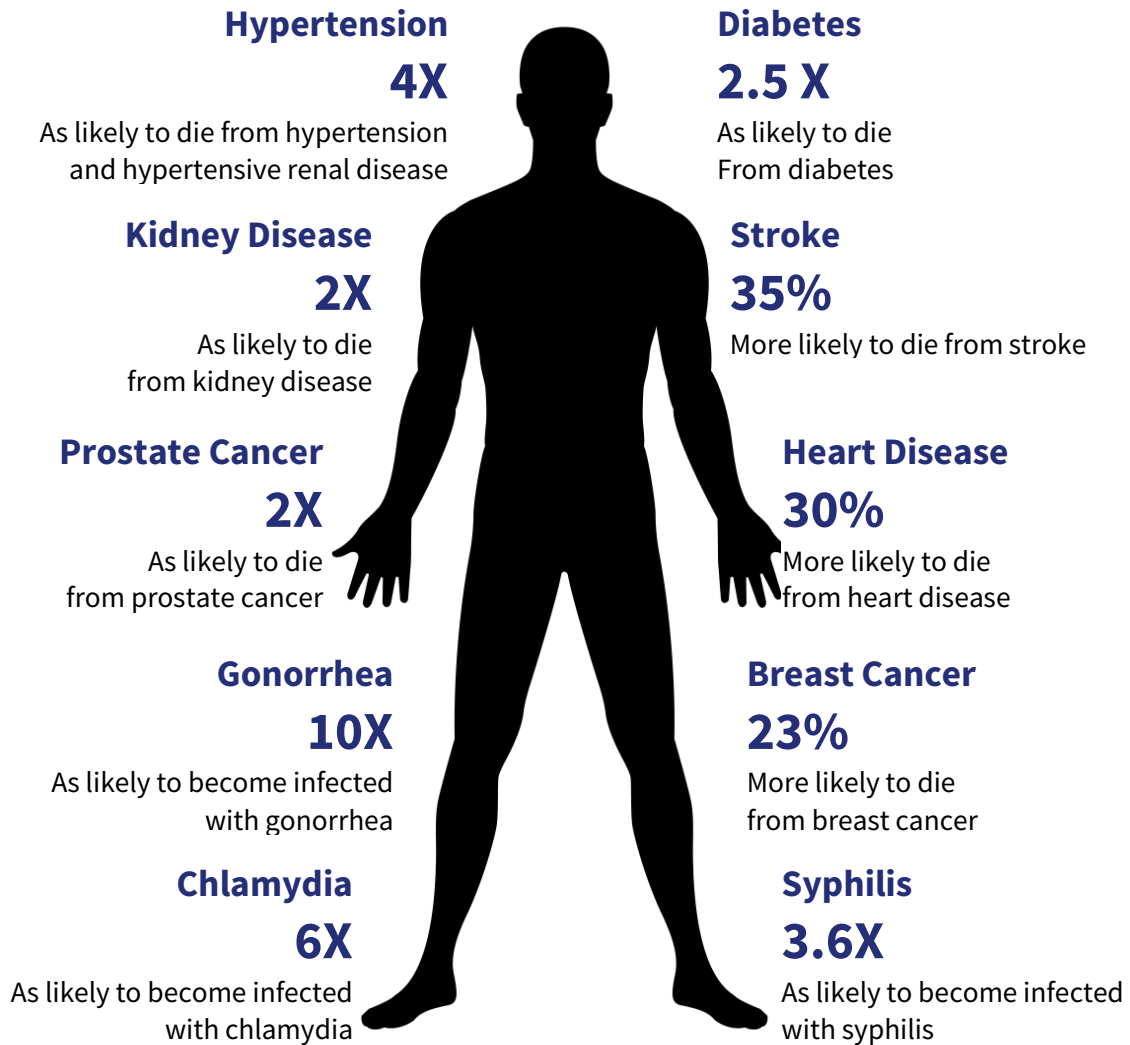


STD rates are on the rise—up 42% for gonorrhea and 164% for syphilis from

2013 to 2017. The 2017 gonorrhea rate in Hamilton County's was significantly higher than the national rate (257 versus 185 per 100,000).

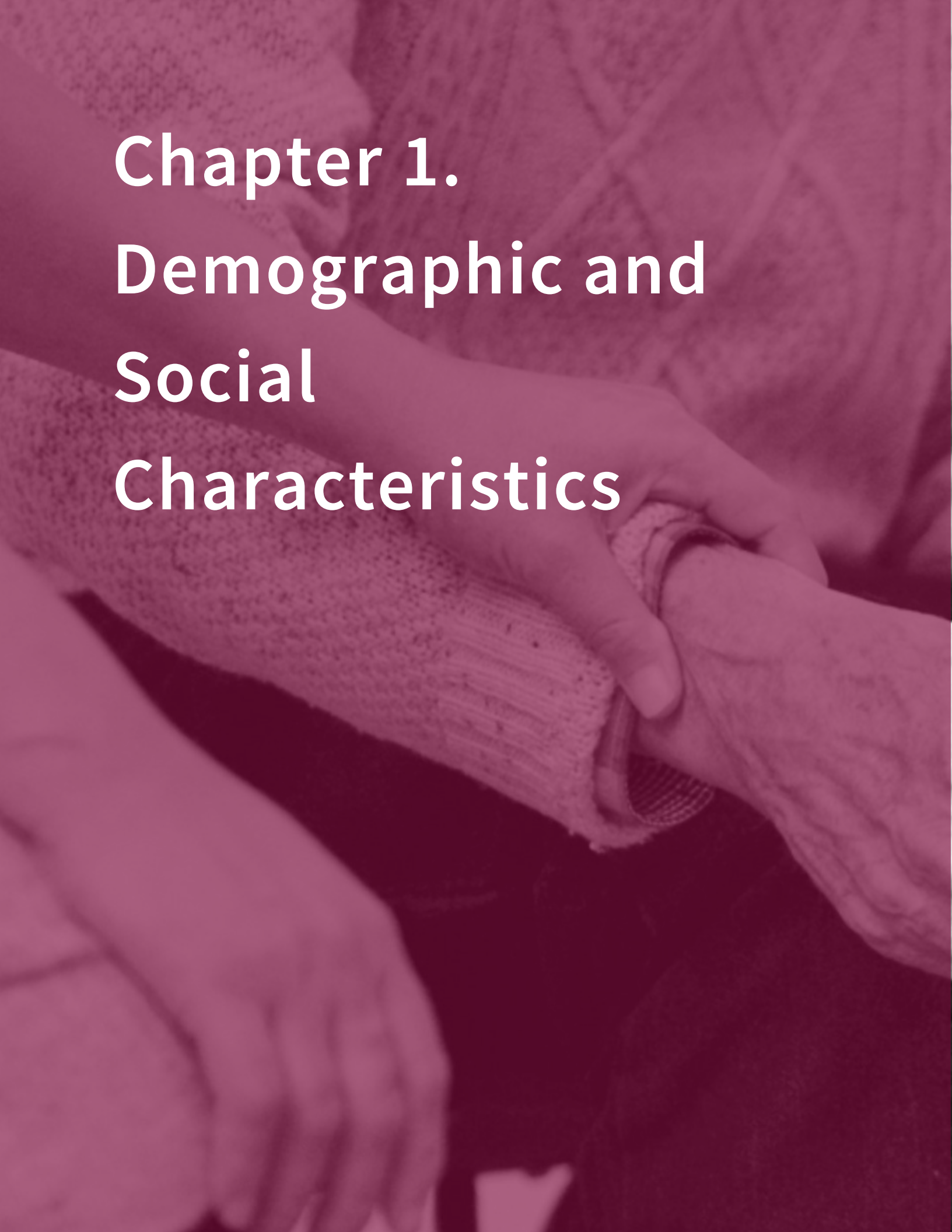
Health Disparities: Blacks Compared to Whites

Blacks in Hamilton County are more likely than Whites to die or get sick from certain health conditions. Common health disparities in Hamilton County are detailed below.



Black Health Disparities: Infant and Maternal Health

Infant Mortality	Low Birth Weight	Preterm Birth	Delayed Prenatal Care	Teen Birth Rate
2.6 X	2.4 X	80%	34%	45%
As likely to die as an infant	As likely to have low birth weight	More likely to be born preterm	More likely to have no prenatal care in the 1 st trimester	More likely to have a teen birth



Chapter 1. Demographic and Social Characteristics

Population Characteristics

Population characteristics can help describe communities and provide a context for trends in health outcomes. The 2012–2016 American Community Survey (ACS; United States Census Bureau) estimated Hamilton County’s population at 351,305, an increase of 4.4% since the 2010 Census, when the population was 336,463. The table below highlights demographic data from the 2012–2016 ACS, with comparisons to the state and nation.



	Hamilton County	Tennessee	United States
Population	351,305	6,548,009	318,558,162
Population under 18 years	21%	23%	23%
Population 65 years and older	16%	15%	15%
Median Age	39.3	38.5	37.7
Language other than English at home	6%	7%	21%
Race			
White	75%	78%	73%
African American/Black	20%	17%	13%
Asian	2%	2%	5%
Some other race	1%	2%	6%
Two or more races	2%	2%	3%
Ethnicity			
Hispanic/Latino	5%	5%	17%
Educational Attainment, age 25+			
Less than high school graduate	12%	14%	13%
High school graduate or GED	27%	33%	28%
Some college no degree	23%	21%	21%
Associate’s degree	8%	7%	8%
Bachelor’s degree or higher	30%	25%	30%
Economic Indicators			
Unemployment rate (2017)	3.6%	3.7%	4.4%
Median household income	\$49,434	\$45,574	\$55,322
Persons living below poverty	15%	17%	15%
Child poverty (under age 18)	22%	25%	21%
Home ownership rate	65%	66%	64%

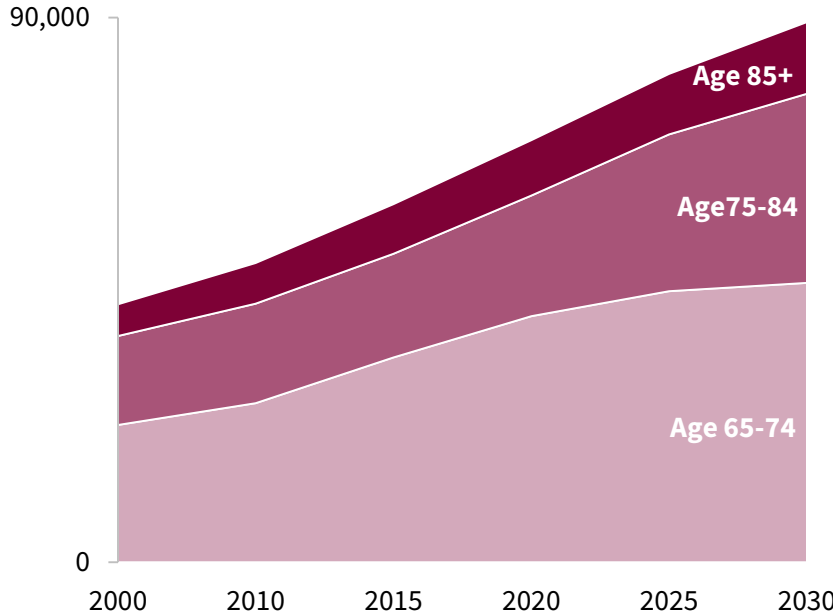
Sources: 2012–2016 American Community Survey 5-year estimates, Bureau of Labor Statistics

Senior Population

Changes in the nation’s demographics, which are moving towards an older and more racially and ethnically diverse population, will influence efforts to improve American’s health in the 21st century.

Senior Population Trends and Projections for Hamilton County

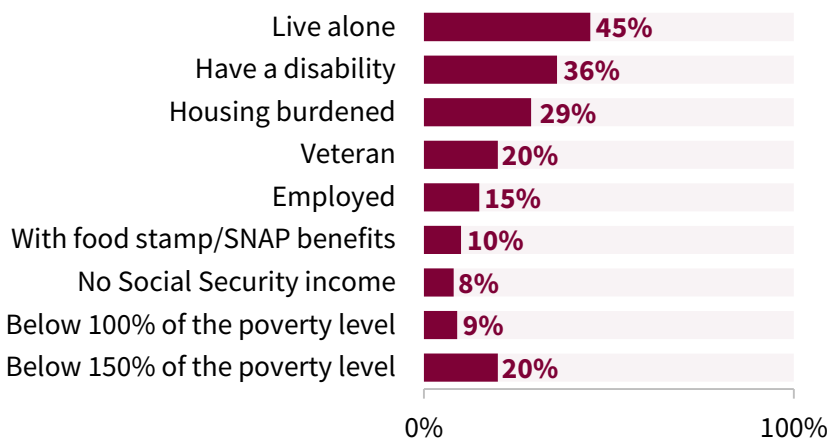
The first Baby Boomers turned 65 in 2011 and by 2030, all baby boomers will be older than 65. In Hamilton County, the population of persons 65 and older was 42,609 (14% of the population) in 2000 and is projected to be 89,283 (22% of the population) by 2030. With an aging population and a longer life expectancy, there will be public health challenges due to the increase in chronic diseases and conditions associated with aging.



Source: University of Tennessee Center for Business and Economic Research and U.S. Census Bureau

Characteristics of Seniors in Hamilton County, 2016

As of 2016, there were an estimated 56,196 individuals over the age of 65 in Hamilton County. Of these 56,196 individuals, 45% live alone. Three out of ten seniors spend more than 30% of their income on housing and are considered housing burdened.



Source: 2012–2016 American Community Survey

Race/Ethnicity

The U.S. Census Bureau considers race and ethnicity to be two separate and distinct concepts.

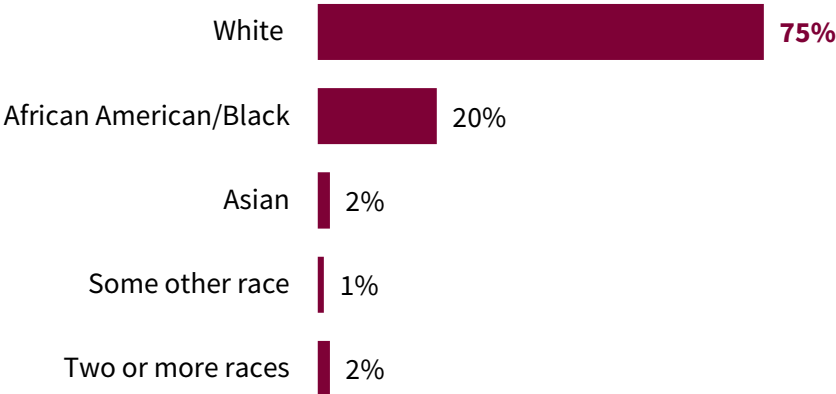
Race The Census Bureau defines race as a person’s self-identification with one or more social groups. An individual can report as White, Black or African American, Asian, American Indian and Alaska Native, Native Hawaiian and Other Pacific Islander, or some other race. Survey respondents may report multiple races.

Ethnicity Ethnicity determines whether a person is of Hispanic origin or not. For this reason, ethnicity is broken out in two categories, Hispanic or Latino and Not Hispanic or Latino. Hispanics may report as any race.

In Hamilton County, 6% of the population does not speak English in the home, compared to 21% nationwide. Other languages spoken at home include Spanish (3.5% population), other Indo-European languages (1.3%), and Asian or Pacific Islander languages (1.3%).

Racial Composition of Hamilton County

In Hamilton County, 97% of residents are either White or African American.



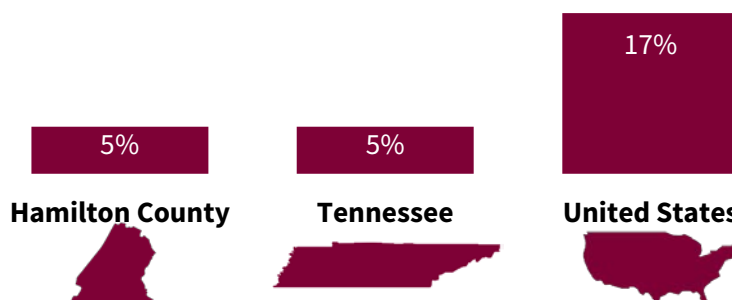
Source: 2012–2016 American Community Survey

Hispanic Population

The Hispanic population in Hamilton County has grown steadily over the past decade, from 12,978 in 2010 (3.9% of the population) to 17,813 (5% of the population) in 2017, according to the 2012-2016 American Community Survey. Hispanic students make up a larger proportion of Hamilton County public school students —13% of Hamilton County public school students were Hispanic during the 2017-2018 school year.

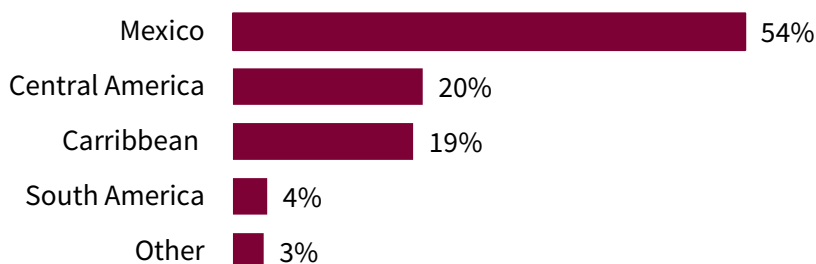
Hispanic Population

Nationwide, the proportion of the population who are of Hispanic origin is three times that of Hamilton County and Tennessee.



Hispanic Origin

Over half of the Hamilton County Hispanic population are of Mexican origin. Twenty percent are from Central America, primarily Guatemala (16%).



13% of Hamilton County school students are Hispanic.

Sources: 2012–2016 American Community Survey and Tennessee Department of Education

Educational Attainment

Educational attainment is one of the best socioeconomic indicators for good health. Higher educational attainment is associated with having a livable-wage job, having access to higher quality health care, and living a healthy lifestyle. Studies have found relationships between level of education and various health risk factors, including smoking, drinking, diet and exercise, illegal drug use, household safety, use of preventative medical care, and care for hypertension and diabetes. People who are better educated have lower morbidity and mortality rates and generally have better physical and mental health.ⁱ

Educational Attainment for Persons Age 25 and Older

Educational attainment refers to the highest level of education that an individual has completed. The U.S. Census Bureau reports the educational attainment for persons age 25 and over. Overall in Hamilton County, educational attainment of a high school diploma or greater has increased from 81% in 2000 to 88% in 2016.

Educational attainment and poverty rates are inversely related. Among persons ages 25 and older in Hamilton County, 30% of those without a high school diploma live in poverty, compared to 4% of those with a bachelor’s degree or more education.

Educational Attainment in Hamilton County by Race/Ethnicity

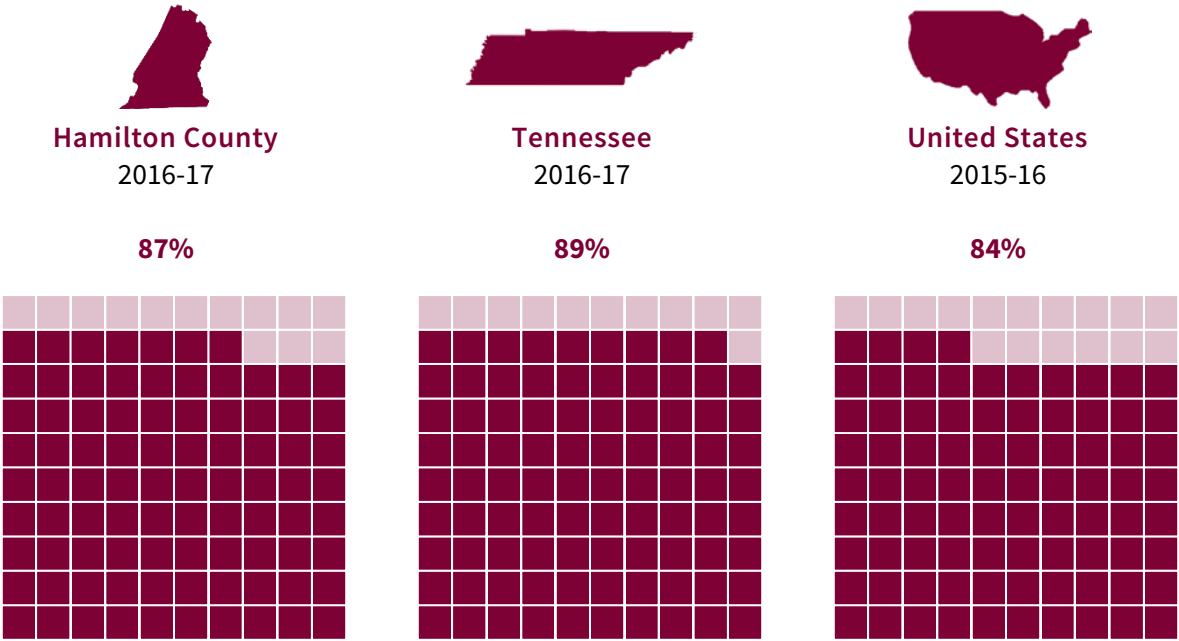
Educational Attainment (Age 25+)	Hamilton County	White	Black	Asian	Hispanic
Less than high school graduate	12%	10%	18%	15%	43%
High school graduate or higher	88%	90%	82%	85%	57%
Bachelor’s degree or higher	33%	33%	15%	50%	17%

Source: 2012–2016 American Community Survey

High School Graduation Rate

The high school graduation rate measures the percentage of public school students who graduated from high school within four years and a summer out of those students who entered the ninth grade four years earlier. The 2017–18 graduation rate for Hamilton County was 86.6%. The state graduation rate of 89.1% is the highest on record for Tennessee.

High School Graduation Rates



Source: Tennessee Department of Education and National Center for Education Statistics

Poverty

Poverty data used in this report comes from the U.S. Census Bureau, 2012–2016 American Community Survey, which measures poverty using the federal poverty thresholds. The U.S. Department of Health and Human Services issues poverty guidelines as a simplification of the poverty thresholds for use for administrative purposes—for instance, determining financial eligibility for certain federal programs. Programs using the guidelines (or percentage of the guidelines, such as 150% or 185%) in determining eligibility include Head Start; Supplemental Nutrition Assistance Program (SNAP); the National School Lunch Program; Women, Infants, and Children (WIC) program; and the Children’s Health Insurance Program.

Federal Poverty Level (FPL) Guidelines for 2018

Number in Household	Below 100% of Poverty Level	Below 150% of Poverty Level	Below 185% of Poverty Level
1	\$12,140	\$18,210	\$22,459
2	\$16,460	\$24,690	\$30,451
3	\$20,780	\$31,170	\$38,443
4	\$25,100	\$37,650	\$46,435
5	\$29,420	\$44,130	\$54,427
6	\$33,740	\$50,610	\$62,419
7	\$38,060	\$57,090	\$70,411
8	\$42,380	\$63,570	\$78,403

For each additional person, add \$4,320

Source: U.S. Department of Health and Human Services

Many programs use a percentage multiple of poverty guidelines to set eligibility criteria

Listed below are the percentages of Hamilton County residents living below various poverty thresholds.

Below 100% of poverty level	15%
Below 150% of poverty level	25%
Below 185% of poverty level	32%
Below 200% of poverty level	34%

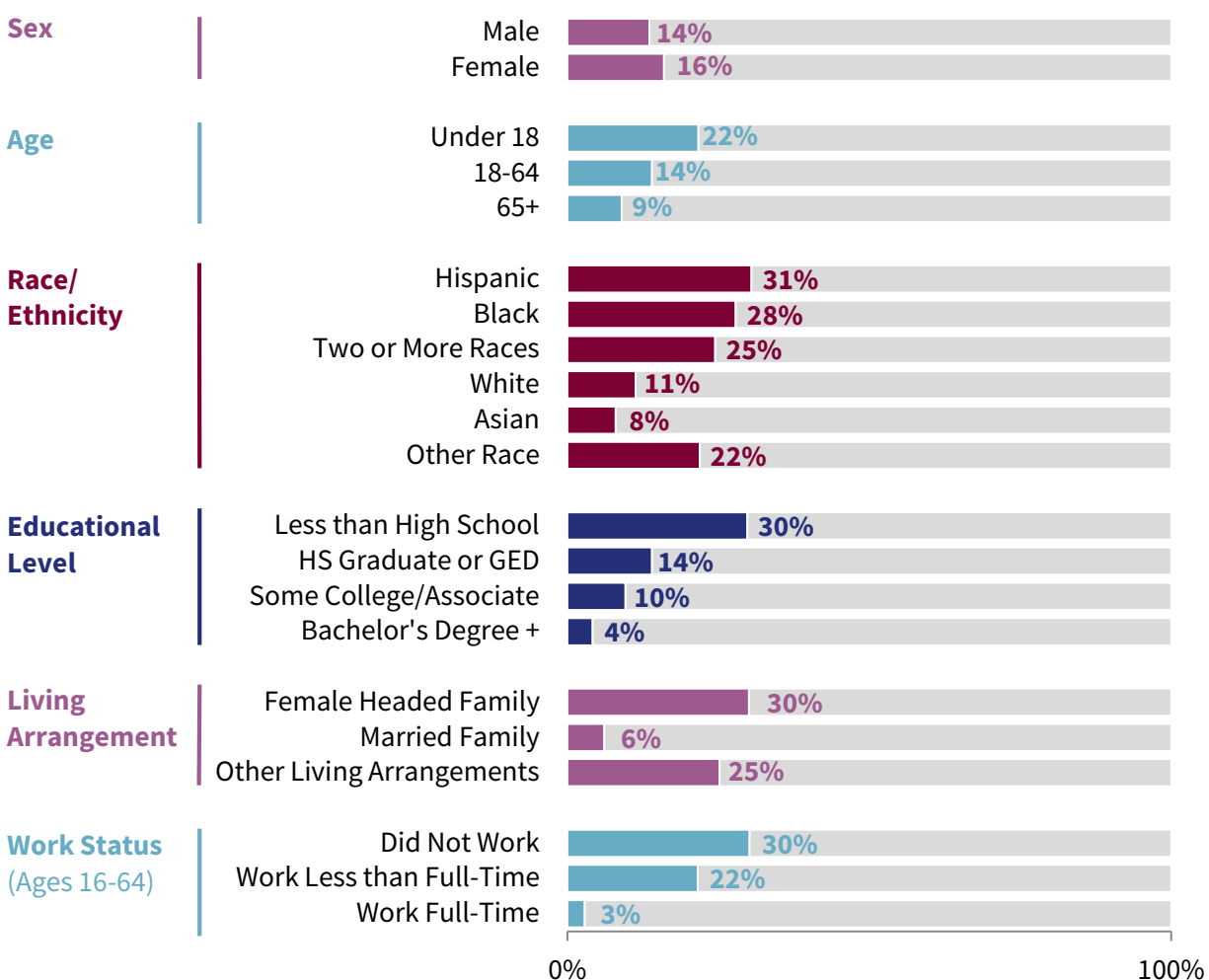
Source: 2012–2016 American Community Survey

Poverty Rates

An estimated 15% of Hamilton County residents, 22% of children under the age of 18, and 9% of seniors lived below the poverty threshold in 2016.

Poverty rates varied significantly by race, educational attainment, and household type. Asian residents had the lowest poverty rate among racial groups (8%). Hispanics had the highest poverty rate (31%), followed by Blacks (28%) and persons of two or more races (25%). Poverty rates were inversely related to educational attainment — the poverty rate among college graduates was 4% compared to 30% among those without a high school degree or its equivalent. Among family households, married-couple families had lower poverty rates (6%) than female-headed families with no husband present (30%).

Selected Characteristics of People Living Below 100% Federal Poverty Level in Hamilton County





Source: 2012–2016 American Community Survey

Childhood Poverty

More than one in five children (22%) in Hamilton County lives below the poverty threshold, according to the 2012–2016 American Community Survey.

Childhood poverty indicators can include the percent of children enrolled in the Food Stamps/Supplemental Nutrition Assistance Program (SNAP), infants and children enrolled in the WIC (Women, Infants, and Children) program, and children under age 21 enrolled in TennCare.

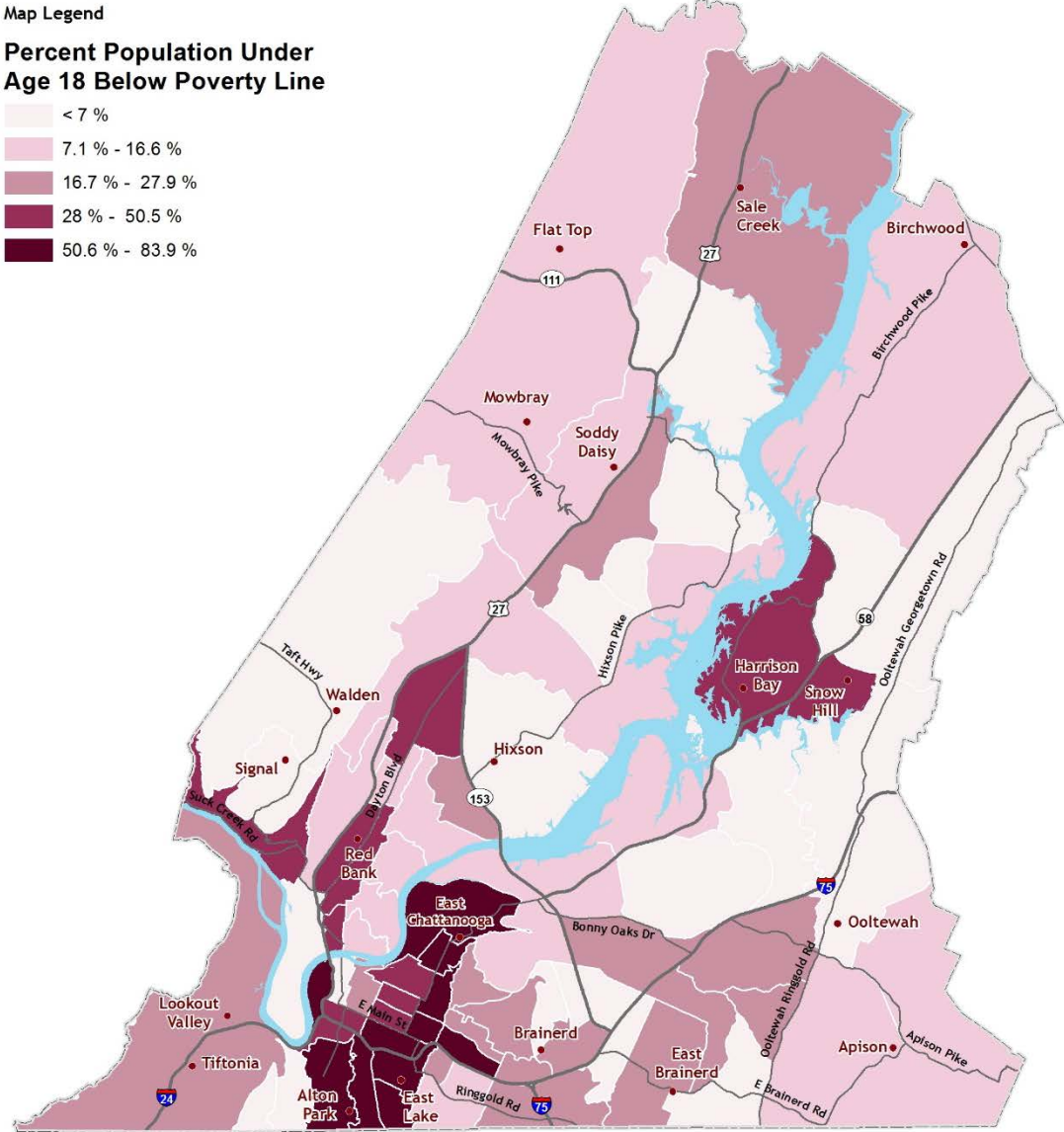


	Hamilton County	Tennessee
Children receiving SNAP	15%	32%
Infants and children receiving WIC	30%	34%
Youth enrolled in TennCare/Medicaid	44%	49%

Sources: 2018 Kids Count Data and Bureau of TennCare

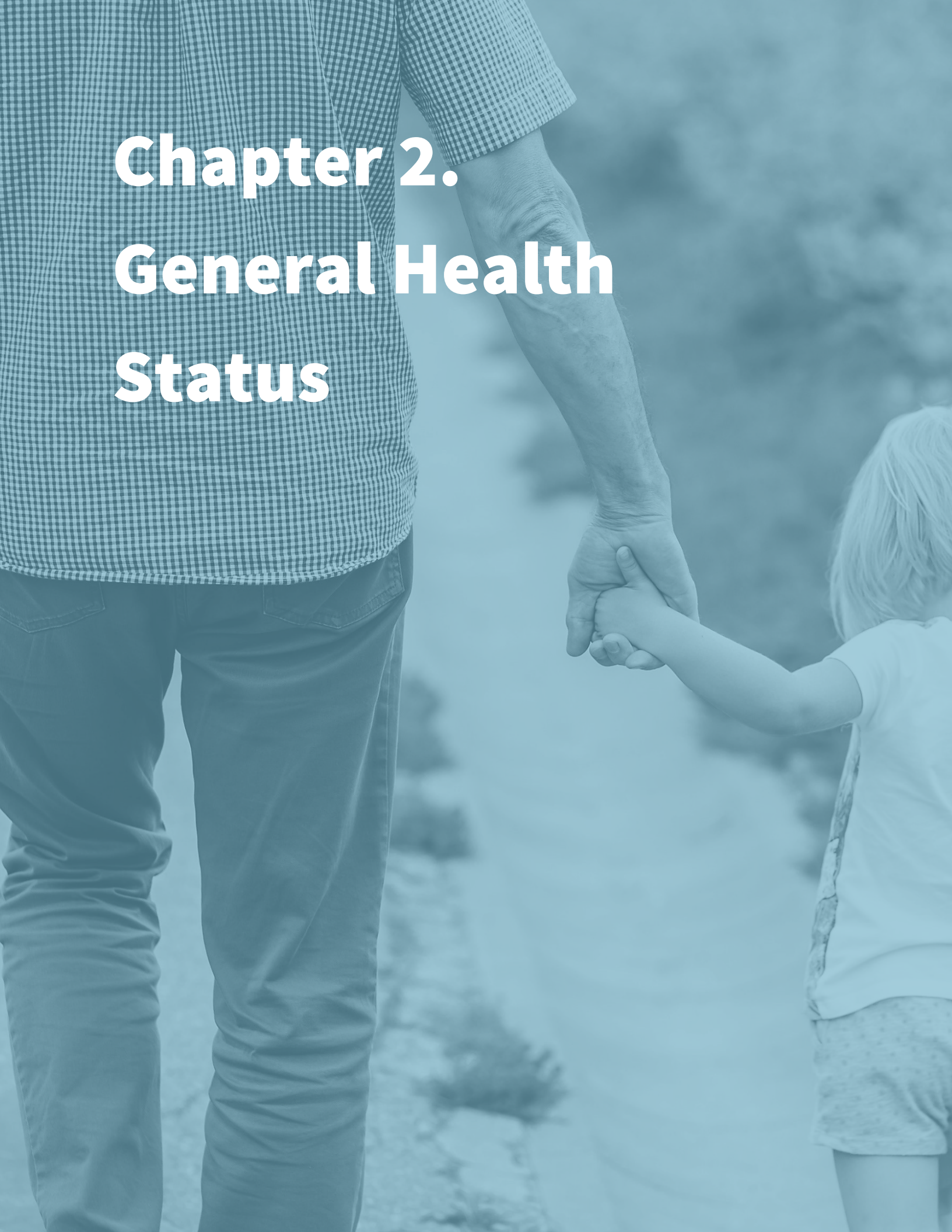
Childhood Poverty by Census Tract

American Community Survey 2012–2016 Estimates



Map prepared by Hamilton County GIS

This map illustrates concentrations of childhood poverty by Hamilton County census tract. Areas of higher childhood poverty rates include, but are not limited to, the Southside, Westside, East Chattanooga, Red Bank, Suck Creek, part of Hixson, and Harrison Bay/Snow Hill communities.



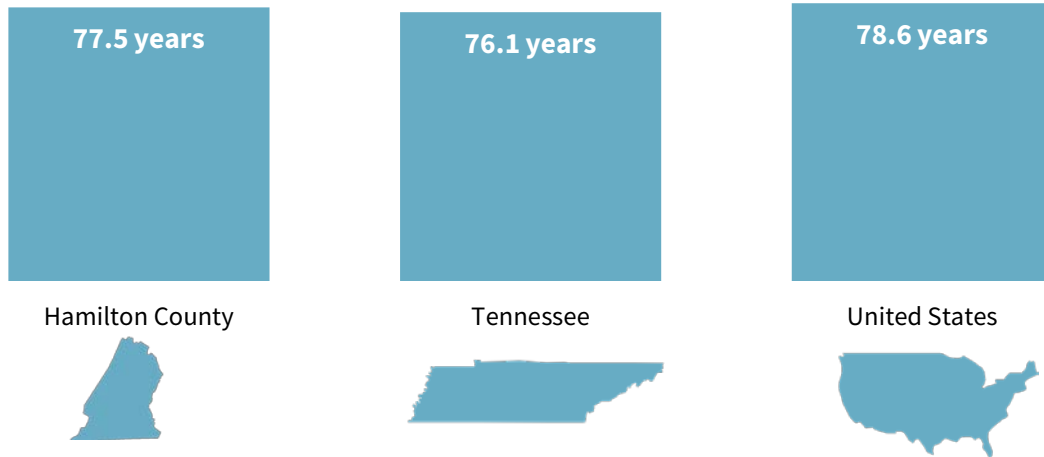
Chapter 2.

General Health

Status

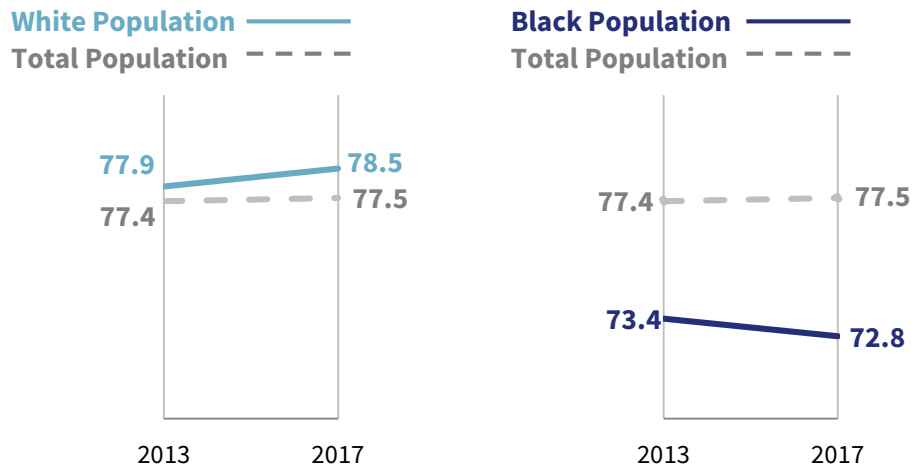
Length of Life

Life expectancy at birth is the average number of years a person born in 2016 would live if the current age-specific death rates remained unchanged over that person's lifetime.



Life Expectancy in Hamilton County


Overall life expectancy in Hamilton County has increased slightly, from 77.4 years in 2013 to 77.5 years in 2017. However, life expectancy decreased for African Americans and increased for Whites, widening the disparity gap.



Quality of Life

The County Health Rankings releases an annual report that compiles health measures for nearly every county in the nation and ranks them within states. The rankings are compiled using county-level measures from a variety of national and state data sources. It includes three self-reported quality of life measures: fair or poor overall health, average number of poor physical health days in the past month, and the average number of poor mental health days within the past month.

According to the 2018 County Health Rankings, 17% of Hamilton County adults report they are in fair or poor health. On average, Hamilton County adults experience an average of 4.2 poor physical health days per month, and 4.4 mental poor mental health days per month. Compared to the U.S. overall, Hamilton County residents are more likely to report fair or poor health and experience more unhealthy physical and mental health days.



	Hamilton County	Tennessee	United States
Fair or poor health	17%	19%	16%
Poor physical health days past month	4.2	4.4	3.7
Poor mental health days past month	4.4	4.5	3.8

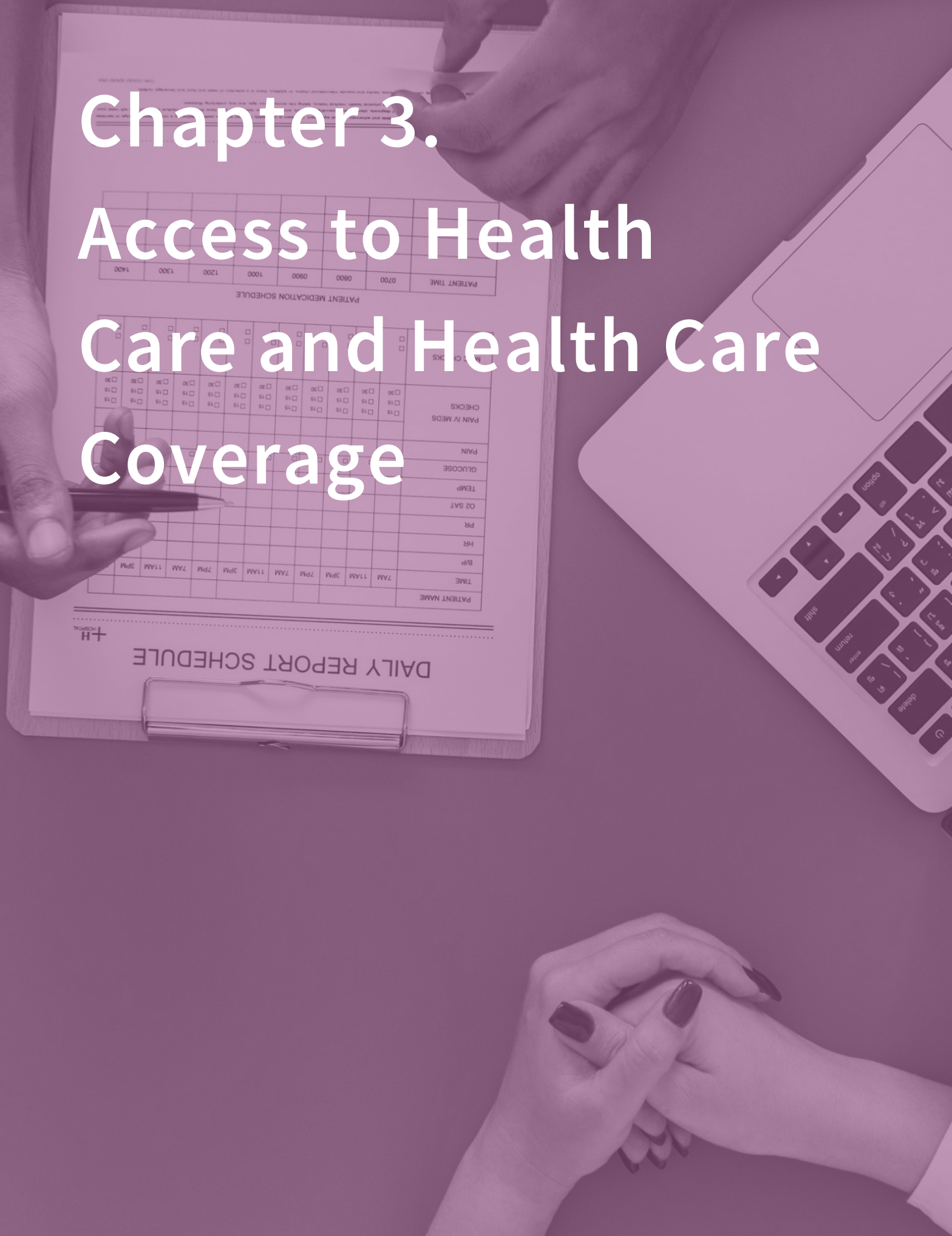
Source: County 2018 Health Rankings (2016 data)

Chapter 3.

Access to Health

Care and Health Care

Coverage

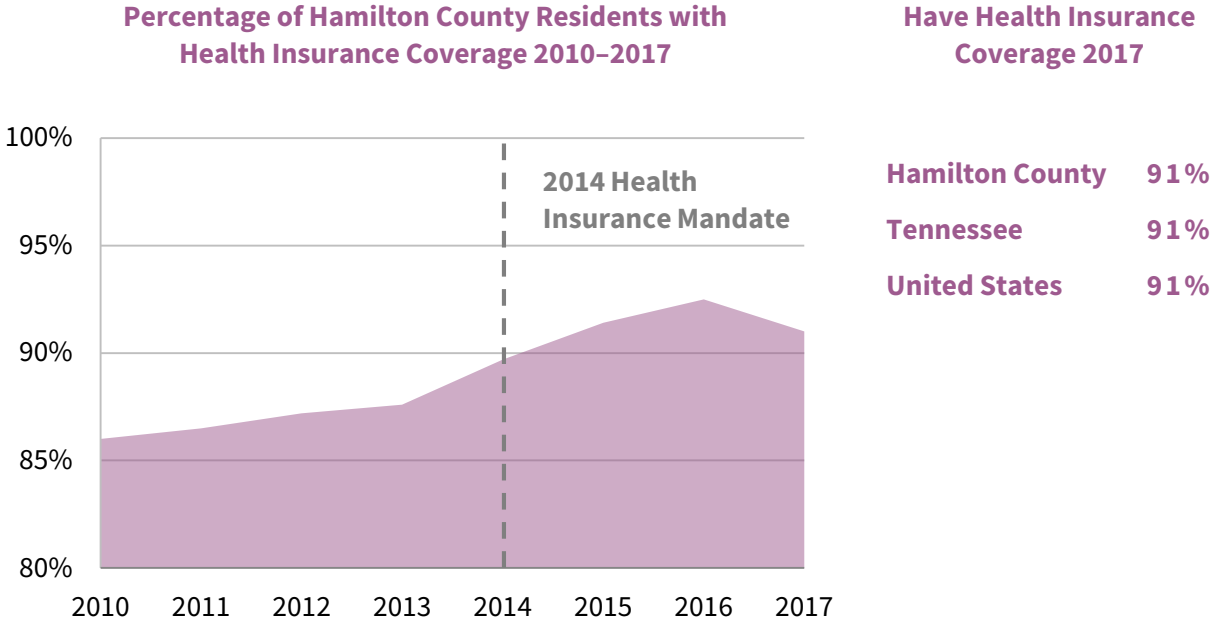


Health Insurance Coverage

People with Health Insurance in Hamilton County

Access to quality health care services is important for promoting and maintaining health, preventing and managing disease, and reducing unnecessary disability and premature death. One barrier for access to quality health care services is lack of health insurance coverage. Persons without coverage are less likely to seek timely medical care and more likely to visit the emergency department or be hospitalized for preventable health problems.

According to the U.S. Census Bureau, an estimated 91% of Hamilton County residents had health care coverage in 2017.¹ The number of insured Hamilton County residents has increased since passage of the Affordable Care Act in 2010, accelerating after 2014 when all citizens were required to have coverage or face income tax penalties. Congress revoked the health insurance mandate effective January 2019 and many anticipate that coverage rates will drop.

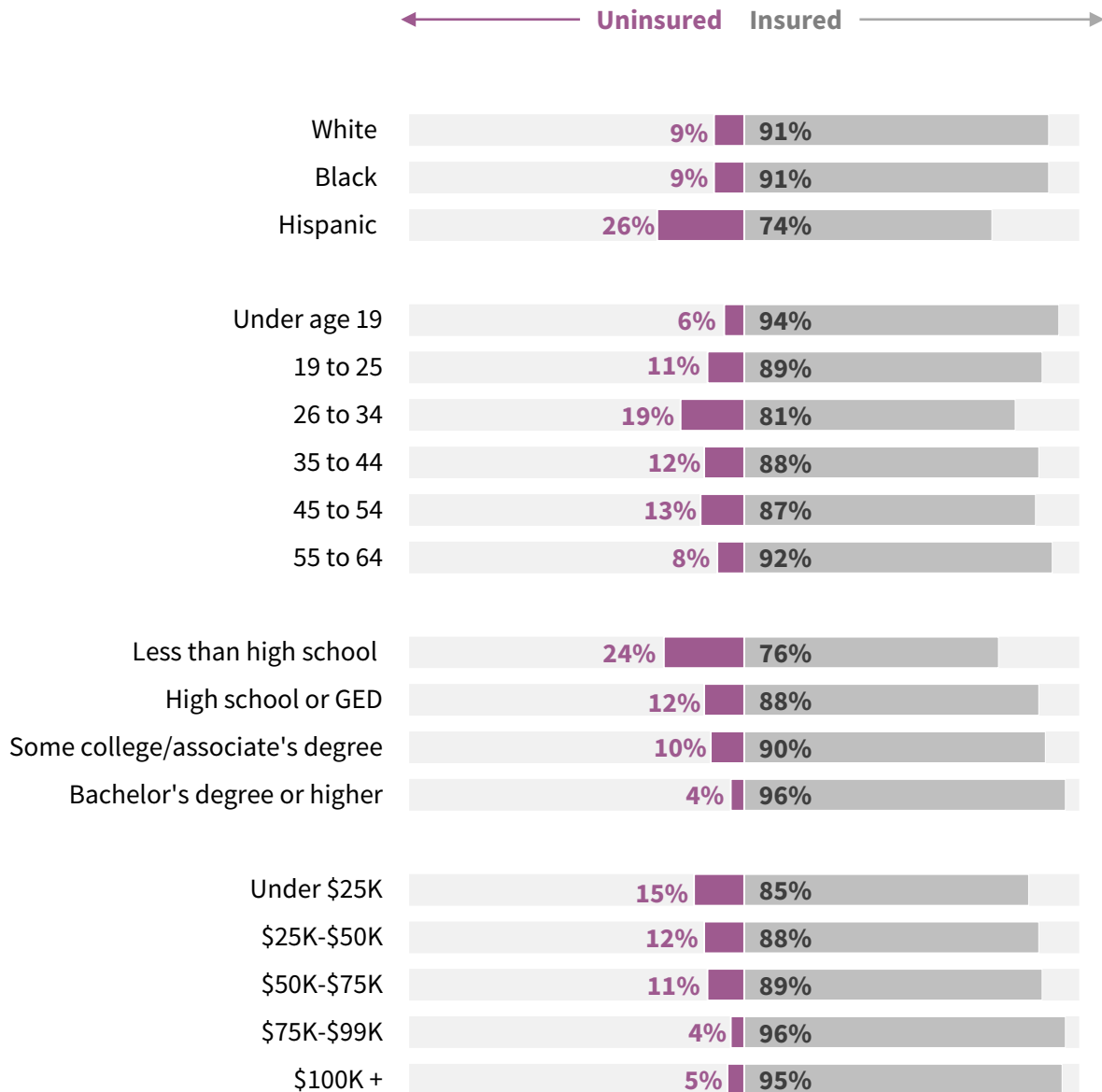


Source: 2017 American Community Survey 1-year estimates

¹ Recent 2017 Census estimates show a small, but statistically insignificant, decrease in health insurance coverage in Hamilton County, from 92.5% in 2016 to 91% in 2017.

People without Health Insurance in Hamilton County

According to the 2017 American Community Survey, an estimated 32,303 Hamilton County residents (9% of the population) did not have health insurance. The uninsured rate varies by ethnicity, age, educational attainment, and income. This graph displays the proportion of people who were uninsured and insured across various racial, ethnic, age, educational, and income groups. For example, nine percent of White residents in Hamilton County were uninsured while 91 percent are insured.

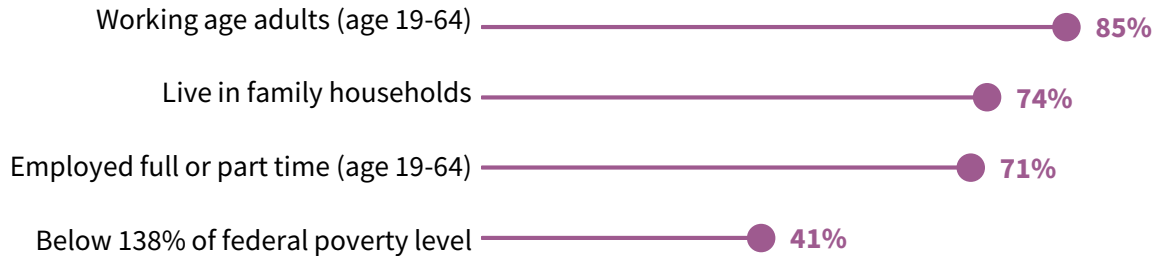


Source: 2017 American Community Survey 1-year estimates

Socio-economic Characteristics of the Uninsured

Most of the uninsured in Hamilton County were working adults in low-income families.

Of the estimated 32,303 Hamilton County residents who were uninsured in 2017:



The TennCare Coverage Gap

The coverage gap refers to the group of uninsured in states that opted out of Medicaid expansion under the Affordable Care Act who are ineligible for both TennCare and for premium assistance. An estimated 163,000 Tennesseans fell into the coverage gap in 2016.ⁱⁱ

The Affordable Care Act provided federal funding to states that expanded their Medicaid program to cover adults with household income up to 138% of the federal poverty program. Tennessee opted out of expanding its Medicaid program, known as TennCare. Without expansion, TennCare eligibility is limited to low-income children, pregnant women, parents of minor children, the elderly, and people with disabilities. Most low-income adults who do not have minor children are ineligible.

In addition, childless adults under the 100% poverty threshold (\$25,100 for a family of four in 2018) do not qualify for cost sharing or financial assistance under the Affordable Care Act, leaving them with unaffordable options. In 2018, the average monthly premium for unsubsidized enrollees in Hamilton County was \$674, compared to \$26 for subsidized enrollees.ⁱⁱⁱ

In 2017, of the estimated 32,303 uninsured Hamilton County residents, 13,183 (41%) had household incomes below the 138% poverty threshold and could potentially be eligible for TennCare if Tennessee expanded coverage.

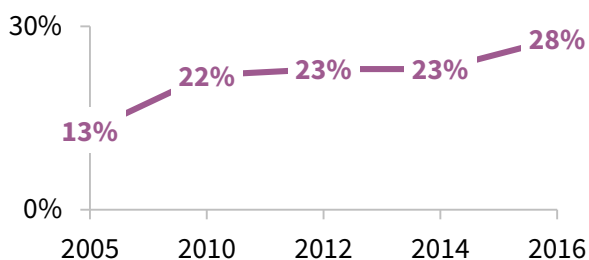
Underinsured

Another measure of health care coverage is being underinsured. Being underinsured means that a person has health insurance but faces high deductibles and high out-of-pocket expenses relative to their income. For example, according to the healthcare.gov premium calculator for 2019 health insurance plans, a Hamilton County family of four with an annual household income of \$102,000 can purchase a silver-level policy with a \$5,000 deductible for \$1,706 a month. The annual cost of health insurance for this family, excluding co-payments, would be \$25,473 (25% of their family income). The out-of-pocket maximum for this policy is \$15,400. The same policy for a family making \$65,000 is eligible for premium assistance, reducing the monthly premium to \$505; however, they also have a \$5,000 deductible and \$15,400 out-of-pocket maximum. Their annual premium and deductible would total \$12,822 (17% of their family income).

The number of underinsured in the United States grew sharply in 2016, according to research by The Commonwealth Fund. Overall, 28% of insured adults were underinsured in 2016, compared to 23% in 2015. People with all types of health insurance were underinsured. For example, 44% of Marketplace enrollees and 24% people with employer plans were underinsured in 2016. Of the underinsured, 52% had problems paying their medical bills and 45% went without needed health care due to costs.² The study did not include state or county-level estimates.^{iv}

Underinsured Rates for Working Age Adults in the United States

Underinsured Rate Increased Sharply in 2016



Underinsured in 2016

Overall	28%
With Marketplace plan	44%
With Employer plan	24%
Had medical bill problems	52%
Went without needed healthcare	45%

Source: The Commonwealth Institute

² The Commonwealth Fund defines underinsured as insured all year but have out-of-pocket costs either 1) total 10% or more of household income, 2) equaled 5% or more if low income (<200% of poverty); or deductibles equaled 5% or more of income.

Health Care Providers

The County Health Rankings includes measures of the ratio of the county population to the number of providers for three types of health care professionals: primary care physicians, dentists, and mental health providers.

According to the 2018 County Health Rankings, Hamilton County has 389 primary care physicians (one per 910 residents), 254 licensed dentists (one per 1,410 residents), 645 mental health providers (one per 550 residents), and 544 other primary care practitioners including nurse practitioners, physician assistants, (one per 652 residents). The County Health Rankings set national benchmarks based on the 90th percentile (only ten percent of counties are better.) Hamilton County rated better than the benchmark counties (fewer residents per provider) for primary care physicians, but worse (more residents pre provider) for dentists and mental health providers. On a per-resident basis, Hamilton County has a greater supply of these health care providers than the state as a whole, which reflects Hamilton County’s status as a center for health care in the region.

Health Care Providers in Hamilton County and Comparative Resident to Provider Ratios

Provider Type (data year)	Number Hamilton County	Hamilton Ratio	Tennessee Ratio	US Top Performers [†]
Primary care physicians (2015)	389	910:1	1,380:1	1,030:1
Dentists (2016)	254	1,410:1	1,890:1	1,280:1
Mental health providers (2017)	645	550:1	740:1	330:1
Other primary care providers (2017)	544	652:1	849:1	N/A

[†] 90th percentile. Only 10% of counties are better.

Primary care physicians: general practice, family medicine, internal medicine, and pediatrics.
 Other primary care providers: nurse practitioners, physician assistants, and clinical nurse specialists.

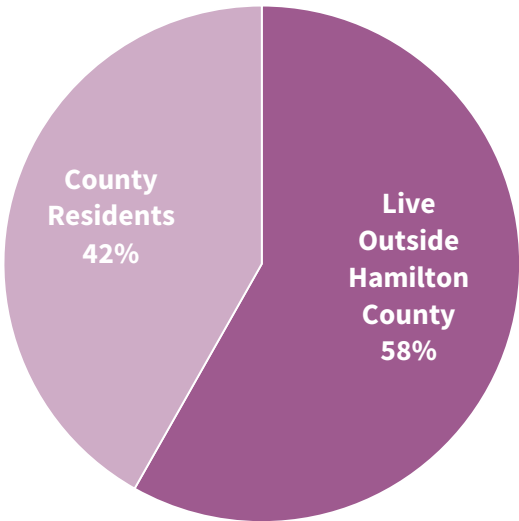
Source: 2018 County Health Rankings

Hospitals in Hamilton County

Hamilton County serves as the center for health care in the region. Of the 73,266 admissions to the seven general medical and surgical hospitals in 2016, only 42% were to Hamilton County residents. Patients who lived outside of Hamilton County resided in other Tennessee Counties (25%), in Georgia (25%), in Alabama (3%), and in all other states (2%).

Three Hamilton County hospitals offer labor and delivery services. The closest hospitals with labor and delivery services outside of Hamilton County are located in Cleveland Tennessee and Dalton Georgia. In 2016, of the 7,550 deliveries in a Hamilton County birthing facility, 45% were to mothers who lived outside of Hamilton County.

2016 Hamilton County Hospital Admissions by Patient Residence



More than half of the 73,266 admissions to Hamilton County hospitals in 2016 were to patients who lived outside of the county.

Source: 2016 Joint Annual Report for Hospitals, Tennessee Department of Health

Fourteen hospitals are located in Hamilton County, including seven general medical and surgical hospitals, four chemical dependency/psychiatric hospitals, and three long-term care hospitals. In total, these hospitals provide 1,800 staffed hospital beds, or 5.1 beds per 1,000 Hamilton County residents. Among general medical and surgical hospitals, there are 1,225 staffed hospital beds, or 3.5 beds per 1,000 Hamilton County residents.

Staffed Hospital Beds in Hamilton County Tennessee

General Medical and Surgical Hospitals	Number of Staffed Hospital Beds
CHI Memorial Hospital	336
CHI Memorial Hospital Hixson	69
Erlanger East	37
Erlanger Medical Center	491
Erlanger North	12
Parkridge East	114
Parkridge Medical Center	166
Total staffed general medical and surgical beds	1,225
Staffed beds per 1,000 population	3.5

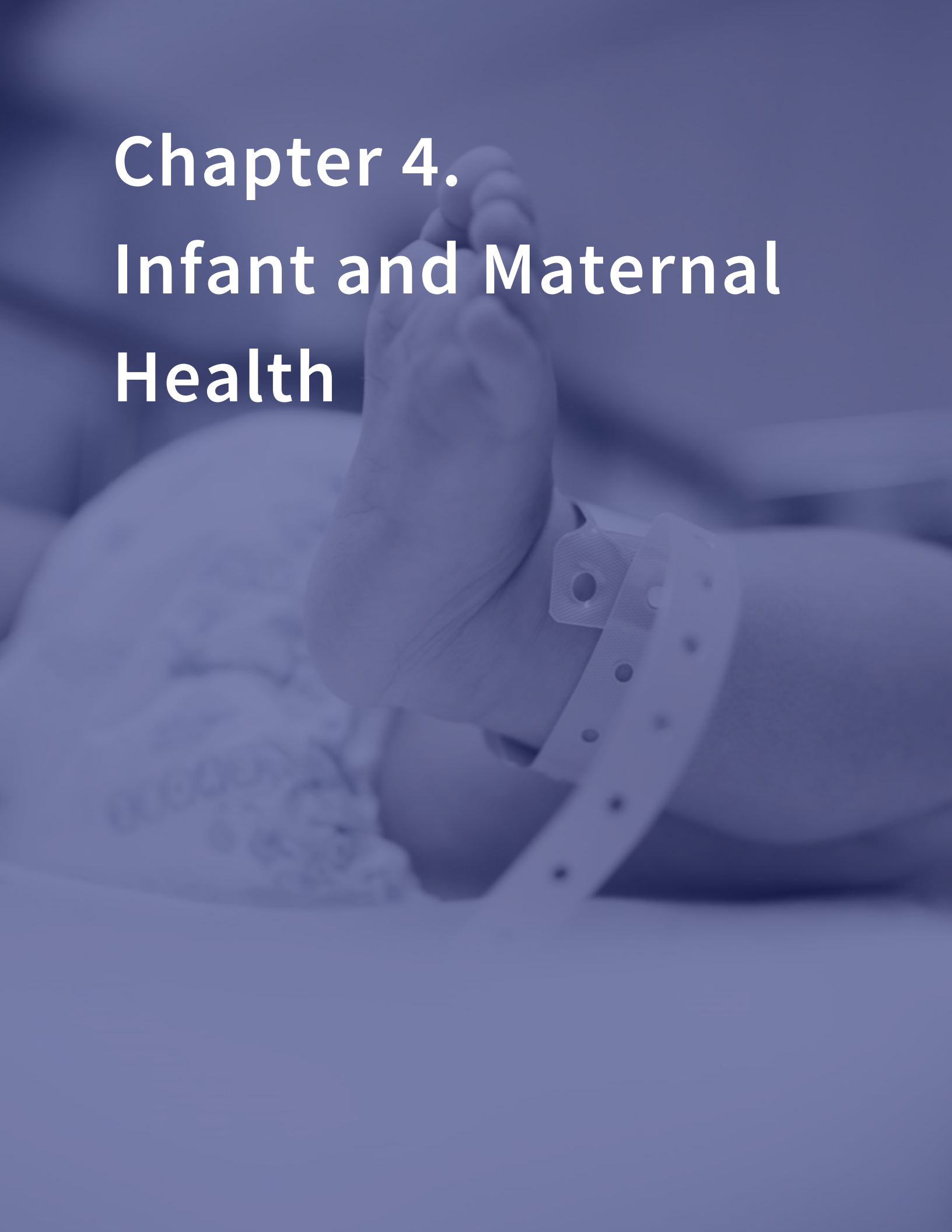
Psychiatric/Chemical Dependency Hospitals

Erlanger Behavioral Health Hospital	88
Moccasin Bend Mental Health Institute	150
Parkridge Valley Adult and Senior Services	64
Parkridge Valley Child and Adolescent Hospital	108
Total staffed psychiatric/chemical dependency	410
Staffed beds per 1,000 population	1.2

Other Long-term Care Hospitals

HealthSouth Chattanooga Rehabilitation Hospital	50
Kindred Hospital-Chattanooga	35
Siskin Hospital for Physical Rehabilitation	68
Total other long-term care hospitals	153
Staffed beds per 1,000 population	0.4

Source: 2016 Joint Annual Report of Hospitals, Tennessee Department of Health



Chapter 4. Infant and Maternal Health

Infant and Maternal Health

2016 Maternal and Child Health Indicators Summary



Hamilton County

Tennessee

United States

	Hamilton County	Tennessee	United States
Birth rate (per 1,000)	12	12	12
Teen birth rate (per 1,000 females age 15-19)	23	28	20
No prenatal care first trimester	38%	39%	23%
Pregnancy smoking	10%	13%	7%
Preterm births	12%	11%	10%
Low birth weight	10%	9%	8%
Infant mortality (per 1,000 births)	7.7	7.4	5.9

Sources: Tennessee Department of Health, Office of Policy & Data Management and Centers for Disease Control, National Center for Vital Statistics^v

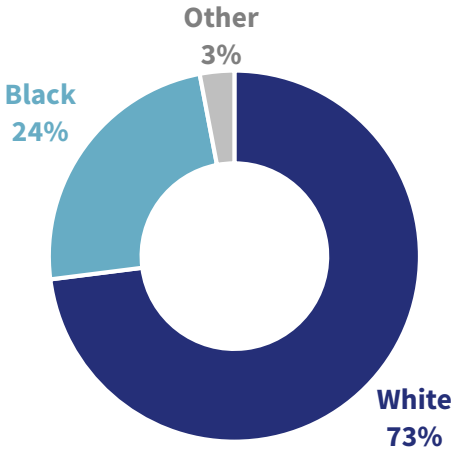
Birth and Birth Rates

Monitoring birth trends helps support effective social planning and allocation of resources across generations, and monitoring age-specific and race/ethnicity specific trends provides information on the divergent needs of different populations.^{vi}

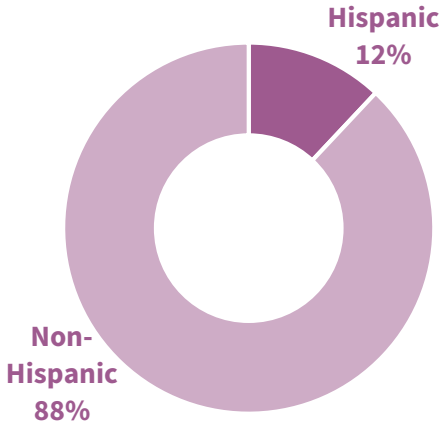
In 2016, there were 4,288 resident births in Hamilton County. Of those, 73% were born to White mothers and 24% to African American mothers. Births to Hispanic mothers, who can be any race, comprised 12% of births. The primary payment sources for Hamilton County births were Medicaid/TennCare (48%) and private insurance (46%). Other sources of payment included self-pay (3%), Champus/Tricare (1%), and other/unknown (3%).

The 4,288 births in Hamilton County translate to a birth rate of 12 per 1,000 residents, similar to state and national birth rates.

Percentage of Births by Race



Percentage of Births by Ethnicity



Primary Payment Source for Hamilton County Births, 2016



Source: Tennessee Department of Health

Teen Births

In 2016, there were 23 births for every 1,000 females ages 15 to 19, or 253 births to females in this age group. By comparison, the teen birth rate in 2010 was 35.3 per 1,000 in 2010 (407 births), a 34% decline. Statewide, the 2016 teen birth rate was 28 per 1,000 females 15-19. The 2016 national teen birth rate (20.3 per 1,000) is an all-time low, according to the Centers for Disease Control.^{vii}

Hamilton County Teen Birth Rates by Race and Ethnicity

While there have been consistent racial and ethnic disparities in teen birth rates over the years, the disparities gap has narrowed in recent years.

White Teen Birth Rate

Teen birth rates among Whites decreased by 34% from 2010 to 2016. In 2016, the teen birth rate among Whites was 22 per 1,000 females ages 15 to 19, compared to 32 in 2010. The white teen birth rate is similar to the countywide rate.

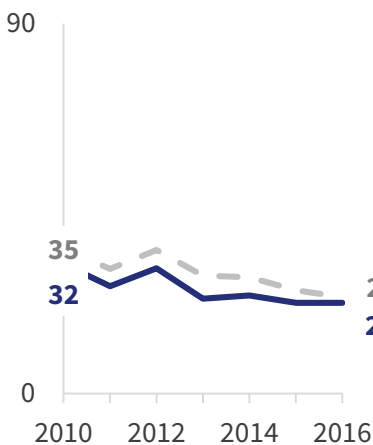
Black Teen Birth Rate

Teen birth rates among Blacks decreased by 38% from 2010 to 2016. In 2016, the teen birth rate among Blacks was 32 per 1,000 females ages 15 to 19, compared to 52 in 2010. The 2016, Black teen birth rate was 39% higher than the countywide rate.

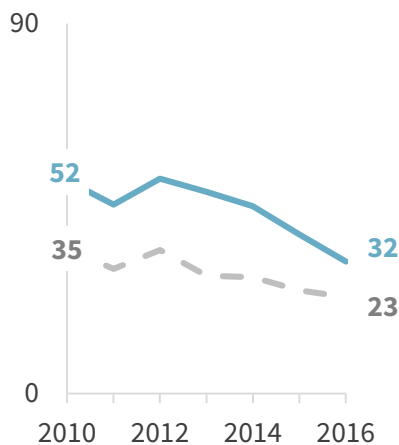
Hispanic Teen Birth Rate³

The teen birth rate among Hispanics decreased by 34% from 2010 to 2016. In 2016, the teen birth rate among Hispanics was 55 per 1,000 females ages 15 to 19 in 2016, compared to 83 in 2010. In 2016, the Hispanic teen birth rate was 58% higher than the countywide rate.

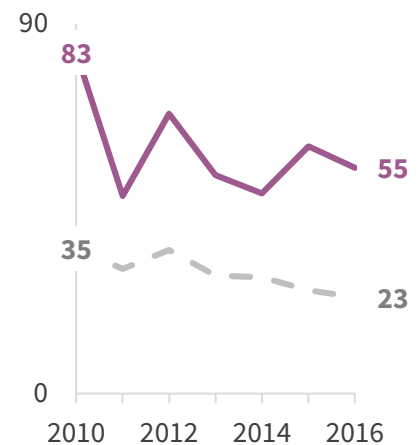
White teen births ———
All teen births - - - -



Black teen births ———
All teen births - - - -



Hispanic teen births ———
All teen births - - - -



³ When the sample size used to calculate rates is extremely small, large swings can occur in single-year rates that do not reflect real changes, particularly when comparing subpopulations, in this case Hispanic females ages 15–19.

Delayed or No Prenatal Care

Delayed or no prenatal care is defined as the percentage of mothers who began prenatal care after the first trimester or received no prenatal care at all.⁴ It is very important that a woman get early and regular prenatal care. Prenatal care provides opportunities for health care providers to educate mothers on important health behaviors such as diet and nutrition, exercise, immunizations, weight gain, and abstention from tobacco, drugs, and alcohol. Prenatal care can also help parents learn about nutrition, the benefits of breastfeeding, as well as illness and injury prevention.^{viii}

Delayed or No Prenatal Care in Hamilton County

Almost 4 in 10 (38%) Hamilton County birth mothers did not receive prenatal care in her first trimester in 2016. This rate has been consistent over the past seven years and is similar to the Tennessee rate (39%). By comparison, 23% of birth mothers nationwide did not have first trimester prenatal care.

White Prenatal Care

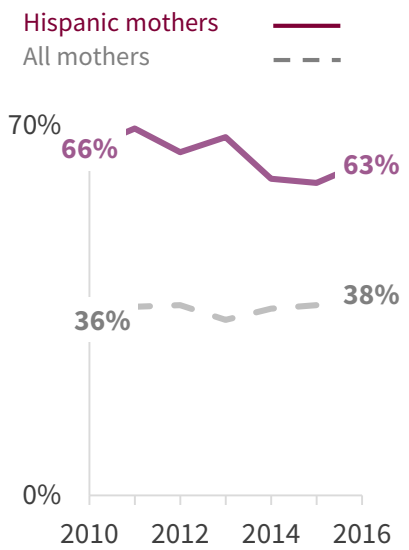
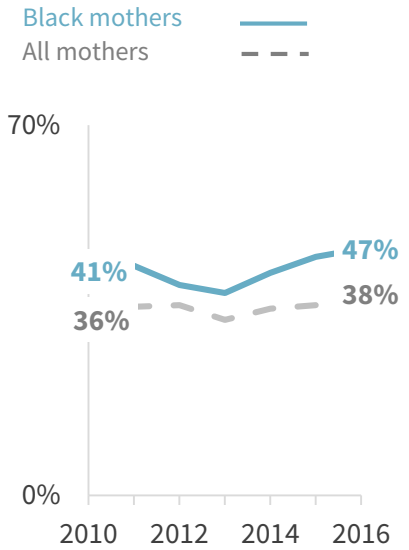
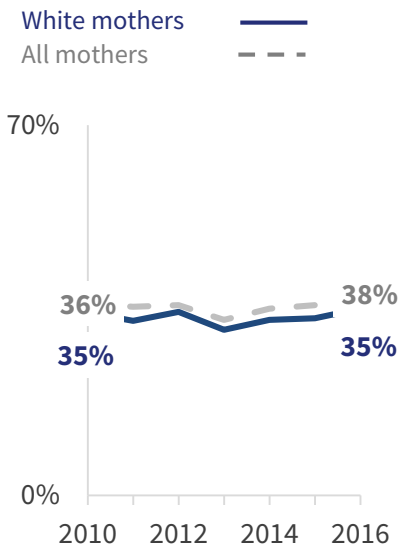
In 2016, 35% of White birth mothers in Hamilton County did not receive prenatal care in the first trimester, compared to 38% of mothers countywide.

Black Prenatal Care

In 2016, almost half (47%) of Black birth mothers in Hamilton County did not receive prenatal care in the first trimester, compared to 38% countywide.

Hispanic Prenatal Care

In 2016, 63% of Hispanic birth mothers in Hamilton County did not receive prenatal care in the first trimester, compared to 38% of mothers countywide.



⁴ The percentage of birth with delayed or no prenatal care also includes births when the date of the first prenatal care visits was reported unknown.

Pregnancy Smoking

Smoking during pregnancy is one of the most common preventable causes of pregnancy complications, illness, and death among infants. Smoking during pregnancy is associated with higher risks of preterm birth, low birth weight, cleft palate or cleft lip, and sudden infant death syndrome (SIDS). Quitting smoking before or during pregnancy can reduce the risk of poor pregnancy outcomes.^{ix} Maternal smoking during pregnancy is recorded on the birth certificate.

Pregnancy Smoking in Hamilton County

In 2016, 10% of women who gave birth in Hamilton County reported smoking at some time during their pregnancy. This figure is a substantial decrease over 2010 pregnancy smoking, when 15% of mothers reported doing so.

In 2016, the pregnancy smoking rates were 13% in Tennessee and 7% nationwide.

White Pregnancy Smoking

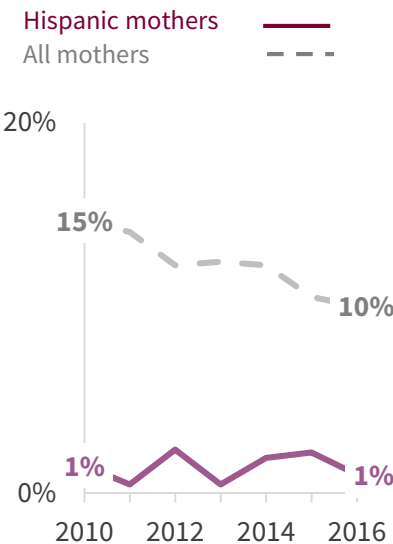
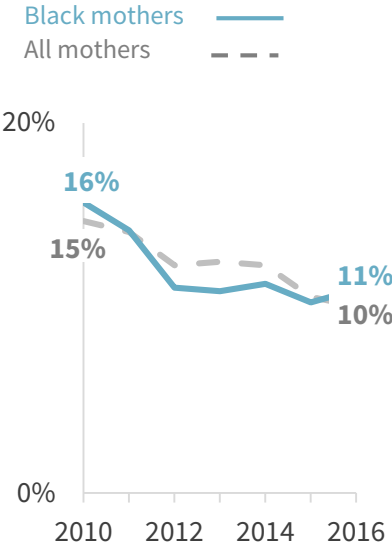
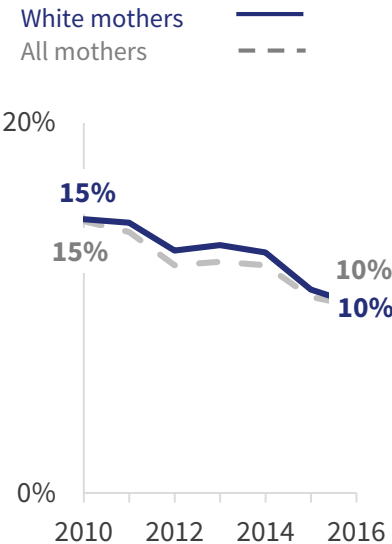
In 2016, 10% of White birth mothers in Hamilton County smoked at some time during their pregnancy, compared to 15% in 2010.

Black Pregnancy Smoking

In 2016, 11% of Black birth mothers in Hamilton County smoked at some time during their pregnancy, compared to 16% in 2010.

Hispanic Pregnancy Smoking

Very few Hispanic mothers smoke during pregnancy. From 2010 through 2016, smoking rates among Hispanic birth ranged from 0% to 2%.



Preterm Births

A baby is considered preterm if born before 37 weeks of pregnancy are completed. As with low birthweight, preterm babies have increased risks for serious health problems as newborns, including breathing problems, feeding difficulties, cerebral palsy, developmental delay, vision problems, and hearing impairment. Nationwide, disorders related to short gestation and low birth weight accounted for 17% of all infant deaths in 2015, according to the Centers for Disease Control.

The annual society economic cost (medical, educational, and lost productivity) associated with preterm birth was at least \$26.2 billion. During that same year the average first year medical costs, including both inpatient and outpatient care were about 10 times greater for preterm (\$32,325) than for term infants (\$3,325).^x

Preterm Births in Hamilton County

In 2016 in Hamilton County, 12% of all infants were born preterm, compared to 11% in Tennessee and 10% nationwide.

White Preterm Births

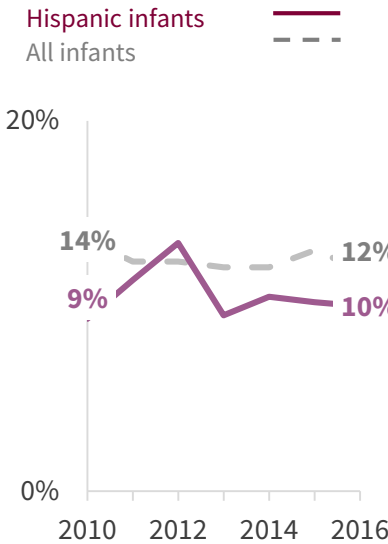
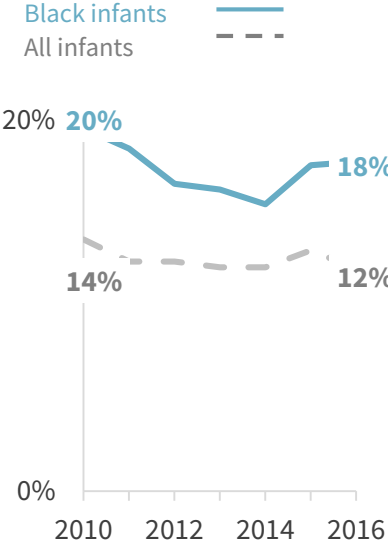
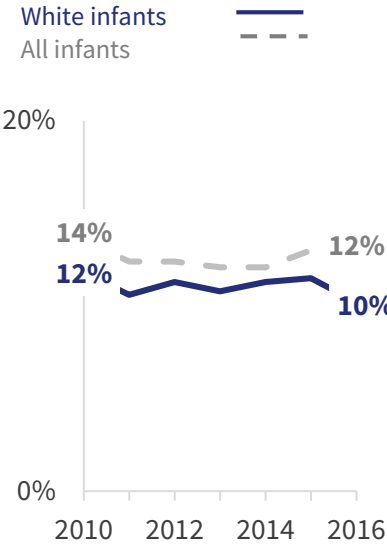
In 2016, 10% of babies born to White mothers were preterm, compared to 12% countywide.

Black Preterm Births

In 2016, 18% of babies born to Black mothers were preterm, compared to 12% countywide.

Hispanic Preterm Births

In 2016, 10% of babies born to Hispanic mothers were preterm, compared to 12% countywide.



Low Birth Weight

Infants weighing less than 5.5 pounds (or 2,500 grams) at birth are considered low birthweight (LBW). Babies with LBW are at increased risk for serious health problems as newborns, lasting disabilities, and infant death. The leading causes of LBW are premature birth (less than 37 weeks gestation) and fetal growth restriction (full term but underweight).

A report from the Agency for Healthcare Research and Quality (AHRQ) found that low birthweight/premature infants born in 2011 accounted for 6% of all infant hospital stays but 51% of all infant costs. The average hospital stay for a low birth weight infant was 17.7 days for a newborn compared to 3.4 days for all newborns. The smallest infants (weighing less than 3.3 pounds) had the longest hospital stays—42.6 days on average— and incurred the highest hospital costs (\$76,700).^{xi}

Low Birth Weight in Hamilton County

In 2016 in Hamilton County, 10% of all infants had low birth weight, compared to 9% in Tennessee and 8% nationwide.

White Low Birth Weight

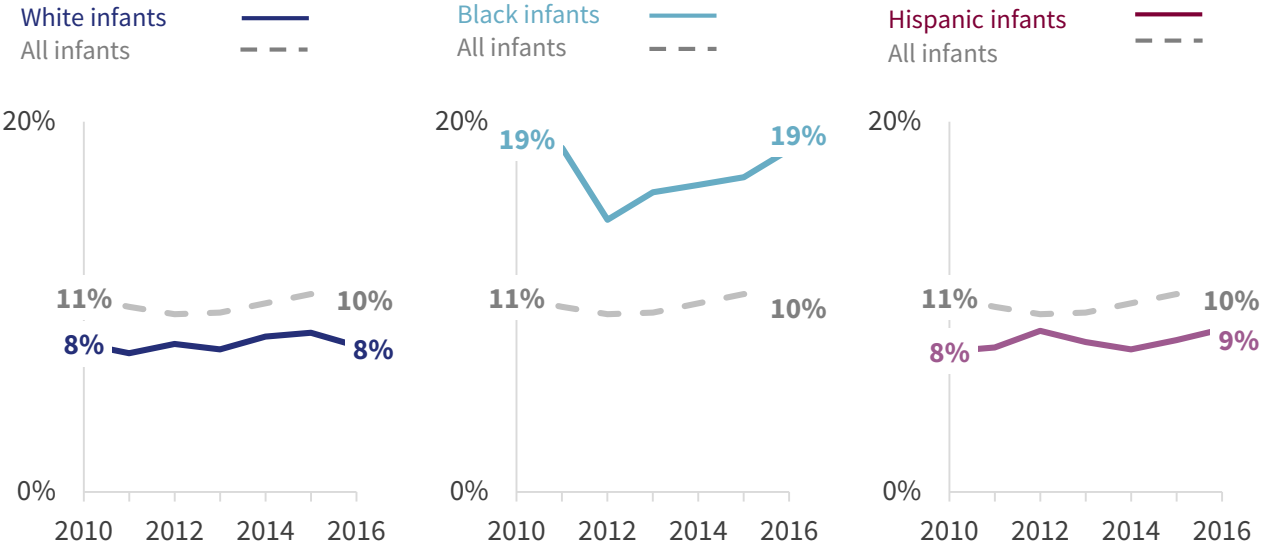
In 2016, 8% of babies born to White mothers had low birthweight, compared to 10% countywide.

Black Low Birth Weight

In 2016, 19% of babies born to Black mothers had low birthweight, compared to 10% countywide.

Hispanic Low Birth Weight

In 2016, 9% of babies born to Hispanic mothers had low birthweight, compared to 10% countywide.



Infant Mortality

Infant mortality (the death of a child during the first year of life) is an important health measure that not only reflects the current health status of a community or population, but also is a measure of the overall social development of a community, including maternal care, quality of and access to care, socioeconomic conditions, and public health interventions. The infant mortality rate is the number of deaths under one year of age per 1,000 live births. According to the CDC, the most common reasons babies die within the first year of life are birth defects, preterm birth, low birth weight, pregnancy complications, Sudden Unexplained Infant Deaths (SUID), and injuries.

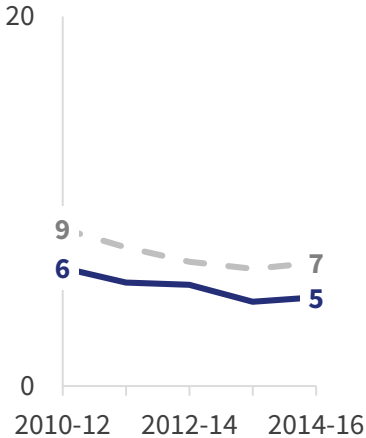
Infant Mortality Rates in Hamilton County

In 2016 in Hamilton County, thirty-three babies died before their first birthday or 7.7 per 1,000 births. By comparison, the 2016 infant mortality rate was 7.4 per 1,000 in Tennessee and 5.9 per 1,000 nationwide. The following race and ethnic comparisons use 3-year rolling rates, which smooth the volatility created by small numbers. Based on 3-year rates, infant mortality rates fell from 8.5 in 2010 to 6.9 in the most recent three-year period.⁵

White Infant Mortality

The 2014–2016 White infant mortality rate was 5 per 1,000 births, compared to 7 per 1,000 births countywide.

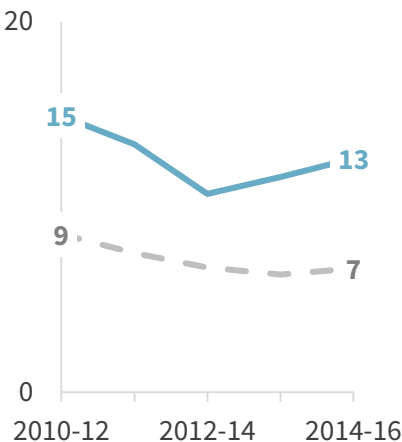
White infants ———
All infants - - - -



Black Infant Mortality

The 2014–2016 Black infant mortality rate was 13 per 1,000 births, compared to 7 per 1,000 births countywide.

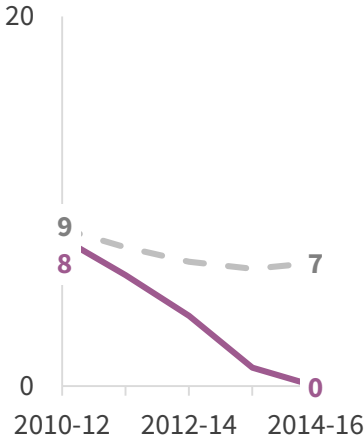
Black infants ———
All infants - - - -



Hispanic Infant Mortality

The 2014–2016 Hispanic infant mortality rate was 0 per 1,000 births, compared to 7 per 1,000 births countywide.

Hispanic infants ———
All infants - - - -



⁵ When the numbers used to calculate rates are extremely small, large swings can occur in single-year rates that do not reflect real changes, particularly when comparing subpopulations.

Summary of Maternal and Child Health Indicators by Race and Ethnicity

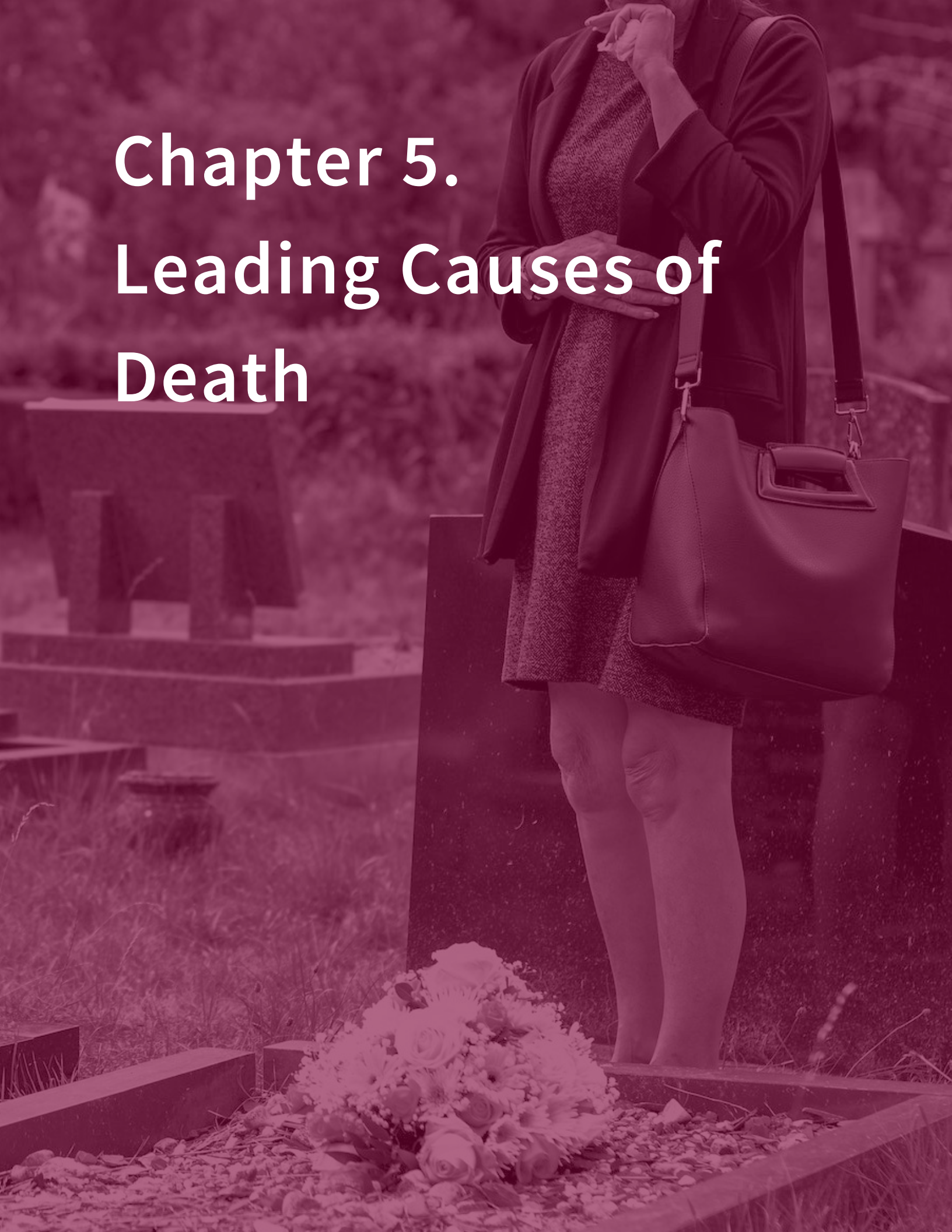
The following table summarizes Hamilton County birth risk factors and outcomes by race and ethnicity for 2016.

Summary of 2016 Maternal and Infant Health Indicators by Race and Ethnicity

	Hamilton County	White	Black	Hispanic
Number of births	4,288	3,199	943	521
Delayed or no prenatal care	38%	35%	47%	63%
Pregnancy smoking	10%	10%	11%	1%
Low birth weight	10%	8%	19%	9%
Preterm births	12%	10%	18%	12%
Teen birth rate per 1,000 females (age 15-19)	23	22	32	55
Infant mortality rate per 1,000 births*	7	5	13	0

*Infant mortality figures are based on 3-year rates (2014-2016).

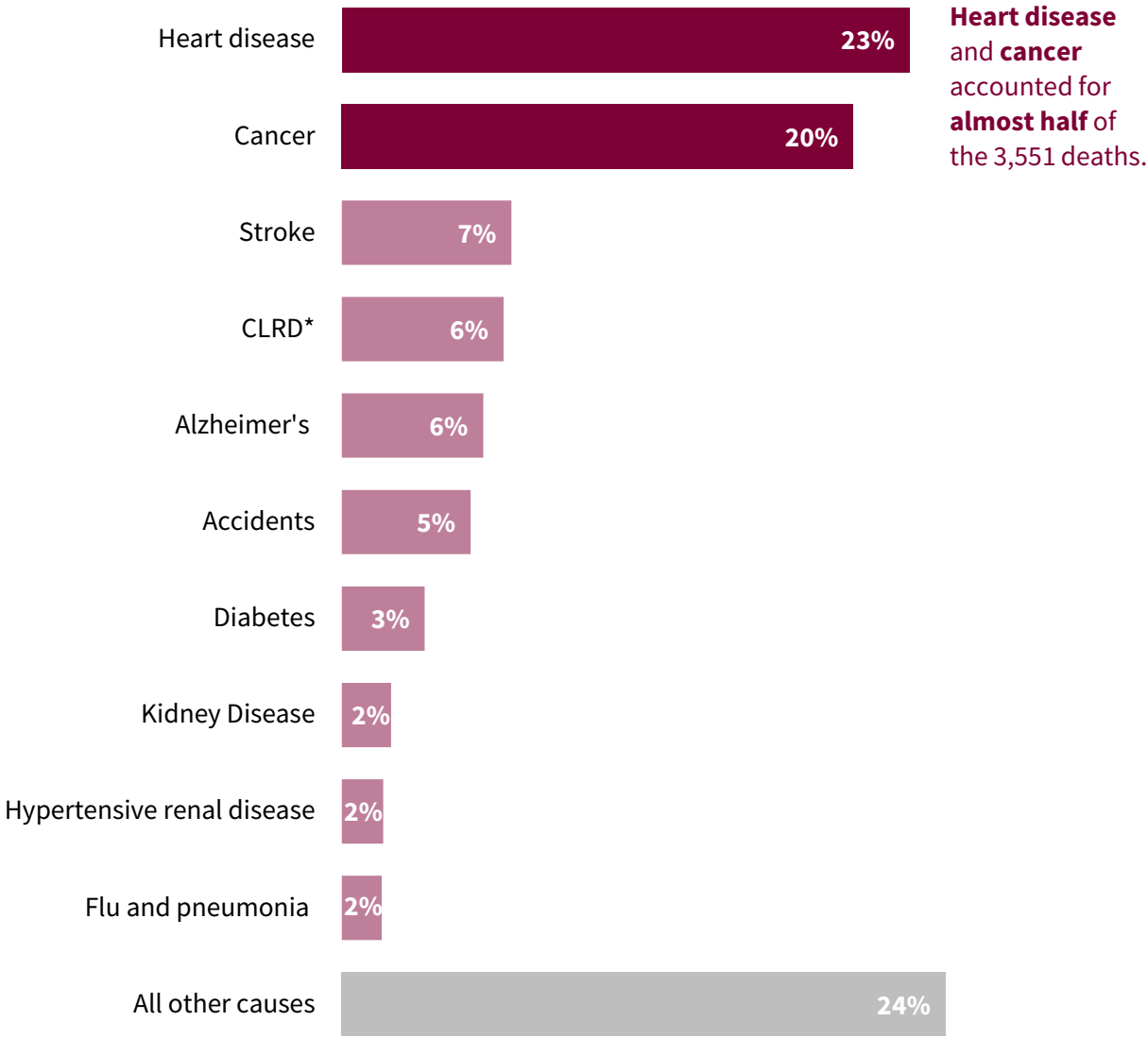
Chapter 5. Leading Causes of Death



Leading Causes of Death

In 2016, 3,551 Hamilton County residents died. Of those deaths, 76% were attributed to one of ten causes. Together, heart disease (23%) and cancer (22%) account for almost half of all deaths.

Leading Causes of Death (as percentage of all deaths) in Hamilton County, 2016



*Chronic lower respiratory disease (CLRD)

Source: Tennessee Department of Health


Age-Adjusted Mortality Rates

The following sections compare mortality rates of different populations, expressed as the age-adjusted number of people who die for every 100,000 people in the population. Age-adjusted statistics more accurately reflect the burden of a disease across the population. It allows for comparisons across different populations (county, state, race, etc.) and controls for age effects when comparing data over time. The most recently available three-year age-adjusted rates (2013–2015) are presented for Hamilton County and Tennessee. Comparative national figures presented are single year rates, as comparable multi-year rates are not available.

State and National Comparisons

The table below compares age-adjusted mortality rates for the leading causes of death in Hamilton County to Tennessee and the U.S. rates. In general, Hamilton County mortality rates are higher than national rates but lower than statewide rates.

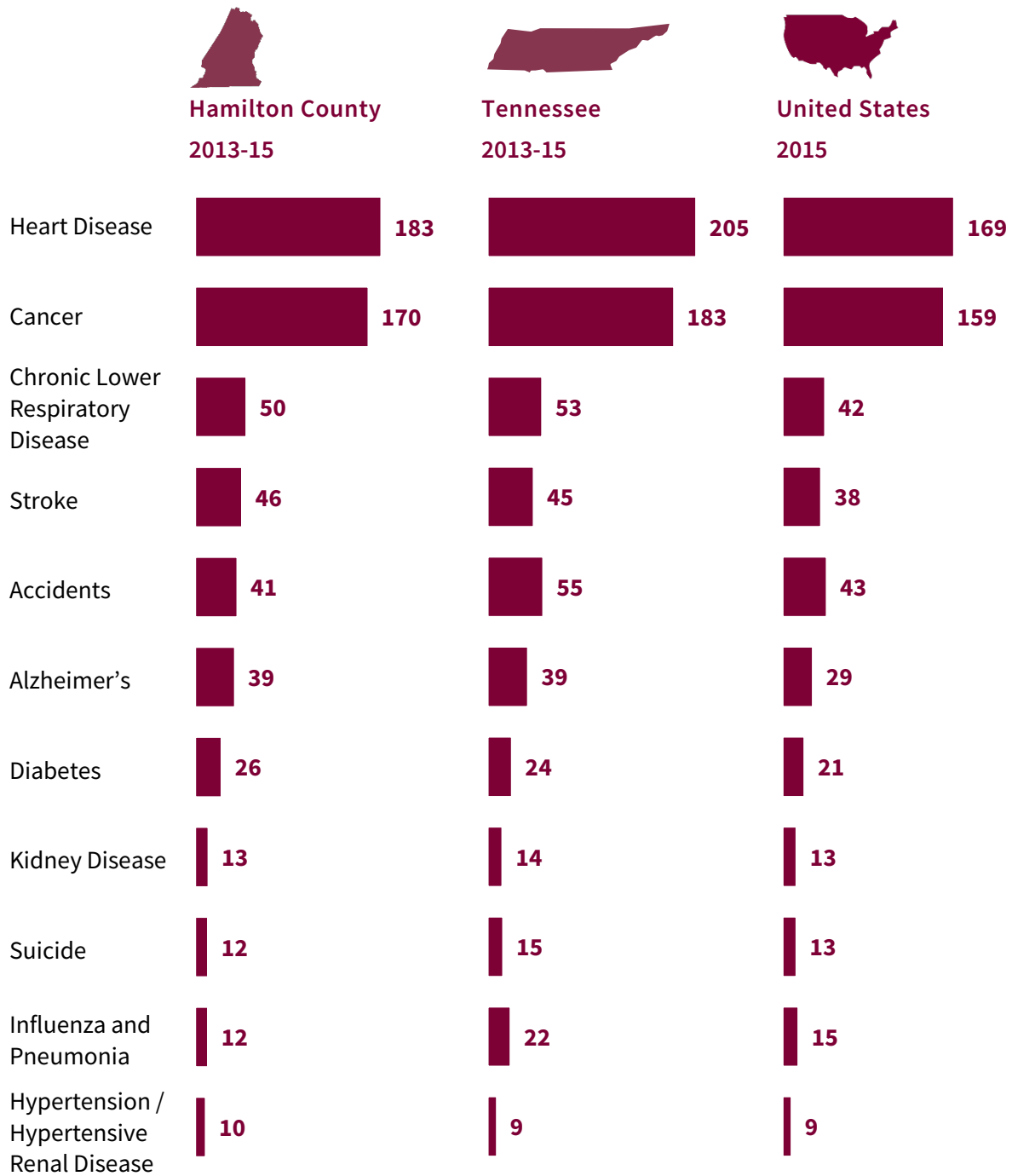
Age-Adjusted Mortality Rates (per 100,000 population) for Leading Causes of Death with State and National Comparisons



	Hamilton County 2013-15	Tennessee 2013-15	United States 2015
Heart disease	183	205	169
Cancer	170	183	159
Chronic lower respiratory disease (CLRD)	50	53	42
Stroke	46	45	38
Accidents	41	55	43
Alzheimer's disease	39	39	29
Diabetes	26	24	21
Kidney disease	13	14	13
Suicide	12	15	13
Influenza and pneumonia	12	22	15
Hypertension and hypertensive renal disease	10	9	9

Source: Tennessee Department of Health and Centers for Disease Control

Age-Adjusted Mortality Rates (per 100,000 population) for Leading Causes of Death for Hamilton County and Tennessee (2013-2015) and U.S. (2015)

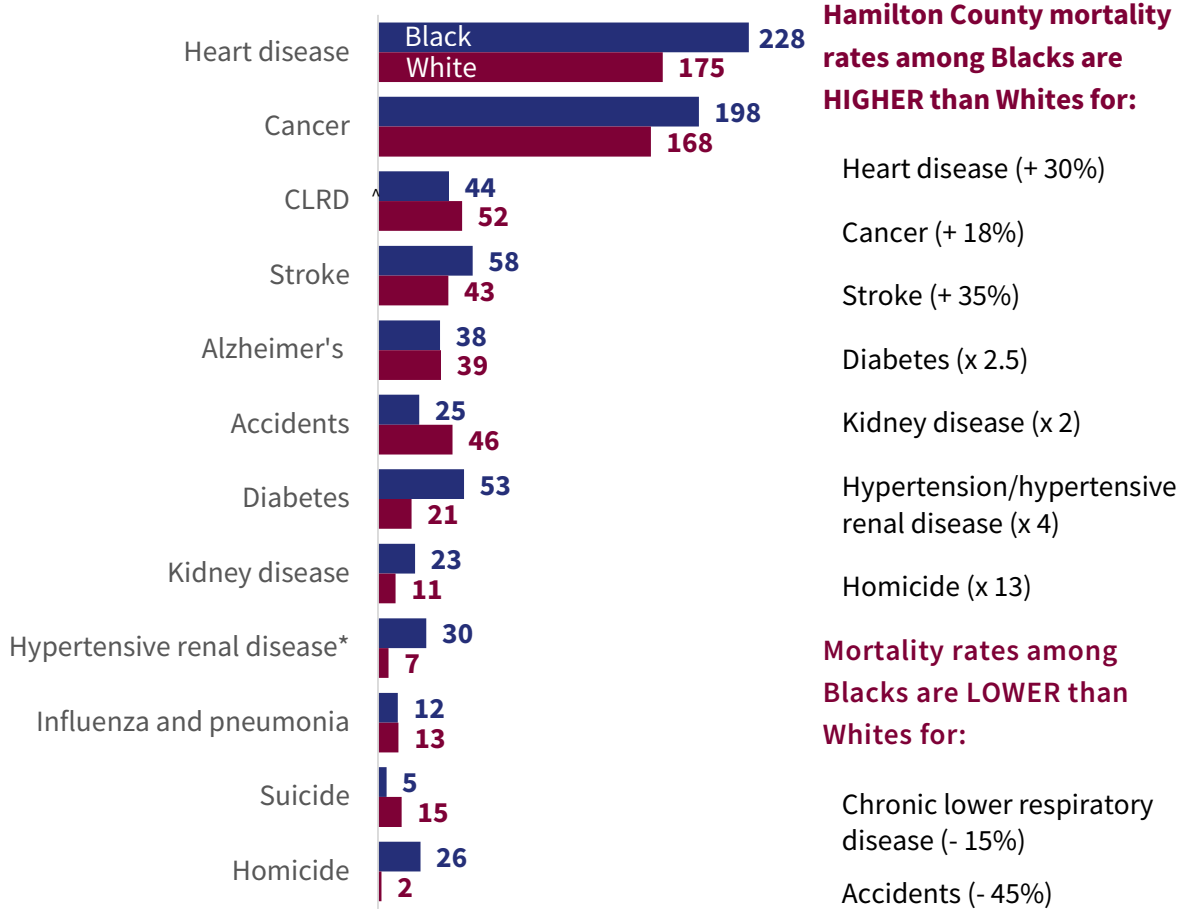


Sources: Tennessee Department of Health and Centers for Disease Control

Leading Causes of Death by Race

When comparing age-adjusted mortality rates for the ten leading causes of death by race, eight are common to both African Americans and Whites, although the rankings may differ. However, homicide is the seventh leading cause of deaths for African Americans and not among the top ten for Whites. Pneumonia and Influenza is the ninth leading cause of deaths for Whites and not among the top ten for African Americans.

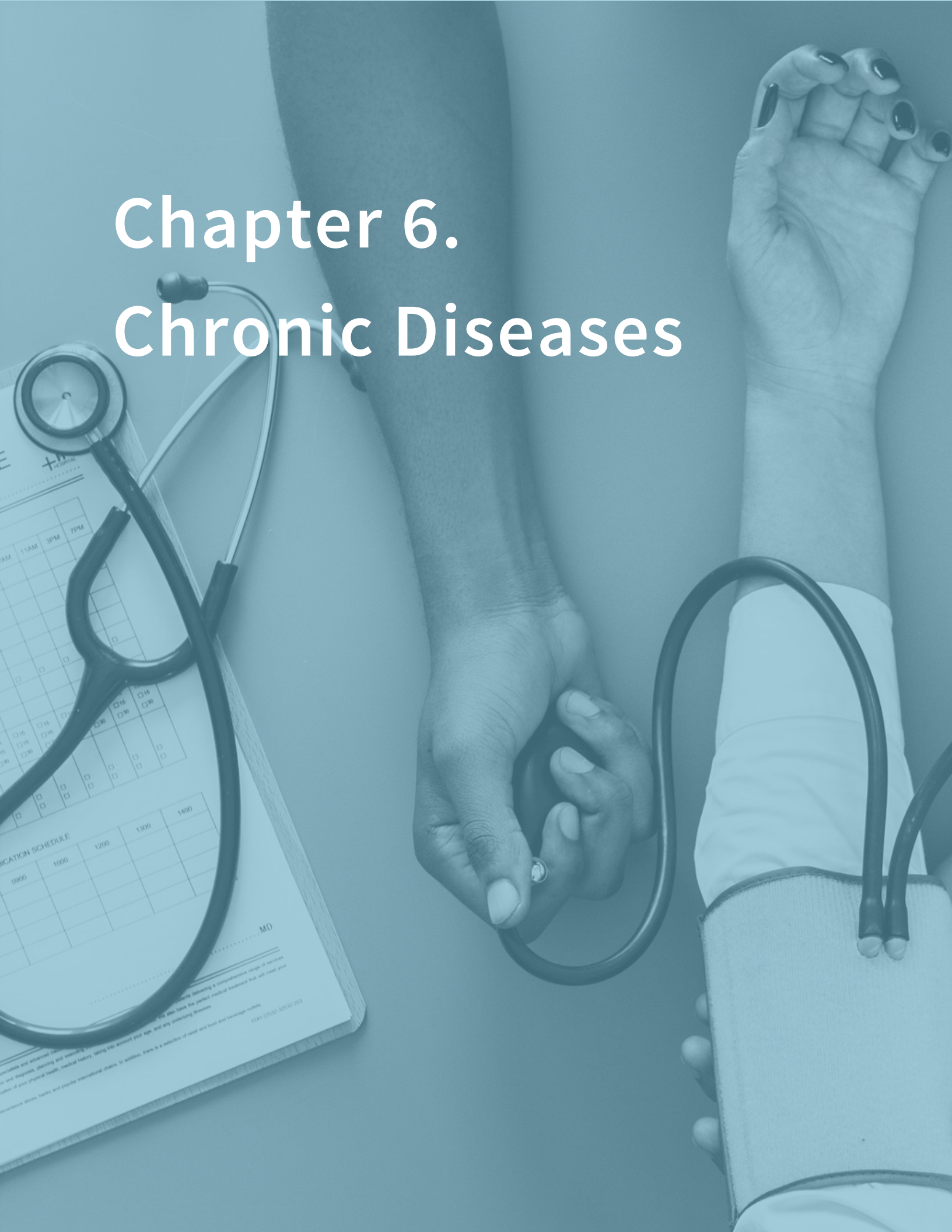
Age-Adjusted Mortality Rates (per 100,000 population) for Leading Causes of Death for Hamilton County by Race (2013-2015)



^CLRD: chronic lower respiratory disease
 * Hypertension and hypertensive renal disease

Source: Tennessee Department of Health

Chapter 6. Chronic Diseases



Chronic Diseases

Chronic diseases are defined broadly as conditions that last 1 year or more and require ongoing medical attention or limit activities of daily living or both. Chronic diseases such as heart disease, cancer, stroke, chronic lower respiratory disease (CLRD), and diabetes are the leading causes of death and disability in the United States. In Hamilton County, eight of the 10 leading causes of death in 2016 were chronic diseases. Two chronic diseases— heart disease and cancer—together accounted for 43% of all deaths.

Chronic diseases affect a disproportionate number of Tennesseans compared to the nation. A 2017 Sycamore Institute study comparing Tennessee and national prevalence rates of three chronic diseases—diabetes, hypertension, and cardiovascular disease—found that these conditions affect an additional 460,000 Tennesseans than if prevalence were the same as the nation, resulting in an excess burden of nearly \$5.3 billion in direct medical care, lost productivity, and premature death.^{xii}

A 2016 Centers for Disease Control report found that up to 43% of premature deaths (before age 80) from each of the five leading US causes are preventable. The analysis looked at the states with the lowest rates of premature deaths by cause and calculated the number of deaths that could be avoided if all states had the death rates equal to the states with the lowest rates. The study showed that if all states had the same mortality rates as the lowest states, it would be possible to prevent:


- 30% of premature deaths from heart disease
- 15% of all cancer deaths
- 36% of deaths from chronic lower respiratory diseases
- 28% of all stroke deaths, and
- 43% of deaths for unintentional injuries^{xiii}

Risk Factors for Chronic Diseases

Modifiable risk factors are largely responsible for many premature deaths and disability. According to the Centers for Disease Control, most chronic diseases are caused by a short list of risk behaviors: tobacco use and exposure to secondhand smoke; poor nutrition, including diets low in fruits and vegetables and high in sodium and saturated fats, lack of physical activity, and excessive alcohol use.

The 2018 County Health Rankings provides county-level estimates for adults for four related risk factors: cigarette smoking, obesity, physical inactivity, and excessive alcohol use. This chapter includes smoking, obesity, and physical activity data. Excessive alcohol use data is included in the Substance Abuse chapter.

Chronic Disease Risk Factors Summary



	Hamilton County	Tennessee	United States
Smoke cigarettes - adults	20%	22%	17%
Smoke cigarettes - youth	N/A	9%	9%
Use vapor products - youth	N/A	12%	13%
Obese -adults	31%	32%	28%
Overweight/obese public school students	33%	39%	N/A
Physical inactivity – adults	28%	30%	23%
Excessive Alcohol Use	14%	14%	18%

Sources: 2018 County Health Rankings, Centers for Disease Control, and Tennessee Coordinated School Health

Cigarette Smoking

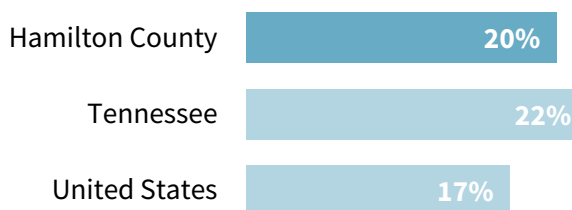
Cigarette smoking is the most preventable cause of premature mortality and morbidity in the United States and Tennessee. Smoking is a major risk factor for lung cancer, stroke, heart disease, and emphysema. Second-hand smoke is associated with increased risk of lung cancer and heart disease in non-smoking adults and causes low birth weight, acute respiratory infections, ear problems, and more frequent and severe asthma attacks in children.^{xiv}

Third-hand smoke is nicotine residue that remains on surfaces including walls, doors, drapery, carpets, clothes, furniture, floors, ceilings, and car interiors. People are exposed to these chemicals by touching contaminated surfaces or breathing in the off-gassing from these surfaces. This residue remains long after the smoke is no longer visible. Human exposure to third-hand smoke has not yet been thoroughly studied. However, researchers believe that infants and children—who crawl and play on the floor and put non-food items in their mouths—are more prone to third-hand smoke exposure risks than are adults.

A 2018 report from the Campaign for Tobacco Free Kids estimates that the state and federal tax burden of Tennessee residents is \$1,020 per household.⁶ When applied at the county level, this translates to \$140 million smoking-related state and federal tax burden for Hamilton County (137,309 households in 2016).^{xv}

Current Cigarette Smoking Among Adults

In 2016, 20% of Hamilton County adults aged 18 years or older currently smoked cigarettes, compared to 22% in Tennessee and 17% nationwide. Tennessee had the 8th highest adult smoking rate among the 50 states in 2016.⁷



Source: 2018 County Health Rankings (2016 data)

⁶ State and federal tax burden equals state residents' federal & state tax payments necessary to cover all state government tobacco-caused costs plus the residents' pro-rated share, based on state populations, of all federal tobacco-caused costs

⁷ Current smokers are defined as persons who reported smoking at least 100 cigarettes during their lifetime and who, at the time they participated in a survey about this topic, reported smoking every day or some days.

Youth Smoking and Electronic Cigarette Use

In 2017, nine percent of high school students in Tennessee and nationwide were current cigarette smokers, a record low. However, more Tennessee teens are vaping (12%) than smoking cigarettes (9%). Moreover, more students have ever tried vaping (40%) than had tried cigarette smoking (32%). These findings are similar to national figures. No local data are available for youth smoking and vapor product use.

Electronic cigarettes (e-cigarettes) are tobacco products that heat liquid nicotine and other chemicals, producing aerosol (not water vapor) similar to cooking spray. E-cigarettes have been available in the United States since about 2009 and have gone from simple designs that mimic regular combustible cigarettes to mods, with large refillable tanks that the user can modify to personalize dose; to JUULs, a USB-like device marketed to youth that contains as much nicotine as a pack of cigarettes. The main difference between regular smoking and “vaping” (aerosolizing) is that vaping does not produce carbon monoxide since the substance is heated rather than burned. (Carbon monoxide displaces oxygen in circulation and contributes to many of the health effects of smoking.)

The main concern with e-cigarettes is the misconception among youth and the public that they are safe. Health officials fear that a generation who would not smoke is quickly becoming addicted to nicotine another way. While there has not been enough time to study the long-term effects of e-cigarettes, research shows that vaping produces metals, which the user then inhales deeply. Vaping also produces second- and third-hand emissions, which affect non-users and air quality.

The CDC recommends tobacco-free school campus policies and tobacco prevention education to help reduce youth tobacco use. The recent adoption of tobacco-free campus policies by the Hamilton County Board of Education, the University of Tennessee of Chattanooga, and Chattanooga State Community College are a step forward. Effective communication and increased tobacco prevention education for youth and school staff and administrators is recommended to support the new policy.

Cigarette Smoking and Vaping among Youth in Tennessee and the United States, 2017

	Currently Use		Ever Tried	
	Cigarettes	E-Cigarettes	Cigarettes	E-Cigarettes
Tennessee	9%	12%	32%	40%
United States	9%	13%	29%	42%

Source: Center for Disease Control (2017 Youth Risk Behavior Survey)

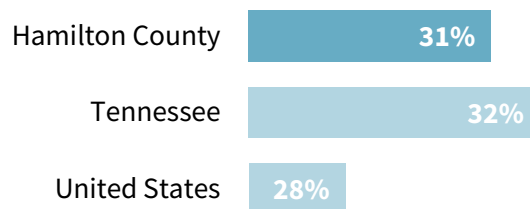
Overweight and Obesity

Having and maintaining a healthy weight is a goal to reduce the burden of chronic illness and loss of quality of life. Overweight and obesity are conditions linked to increased risk for heart disease, stroke, several types of cancer, type 2 diabetes, hypertension, high cholesterol, osteoarthritis, and other chronic conditions. Obesity is implicated in as many as 1 in 5 cancer deaths and is quickly overtaking tobacco as the leading cause of cancer, according to the American Society of Clinical Oncology.^{xvi} The prevalence of obesity continues to increase across the nation. In 2016, the prevalence of obesity exceeded 20% in all 50 states. Obesity rates were highest in the South.^{xvii}

The estimated annual cost of obesity in the United States was \$147 billion in 2008 dollars. Per capital medical spending, was \$1,429 higher for obese individuals than for individuals who were not obese. When applied to the estimated number of obese adults in Hamilton County, this translates to an additional \$122.6 million in annual costs related to direct medical expenses.^{xviii}

Adult Obesity

In 2016, 31% of Hamilton County adults aged 18 years or older were obese, according to self-reported height and weight, compared to 32% in Tennessee and 28% nationwide. Tennessee had the 6th highest obesity rate among the 50 states in 2016.⁸



Overweight and Obesity Among Public School Students

During the 2016-2017 school year, 33% of Hamilton County public school students were overweight or obese, according to height and weight measures collected by Coordinated School Health, compared to 39% statewide.^{xix} There is no comparable national measure.



Sources: 2018 County Health Rankings and Coordinated School Health

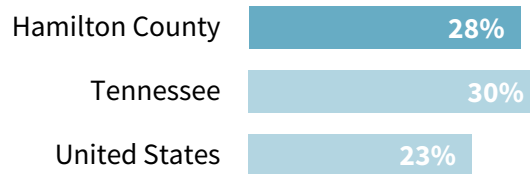
⁸ Overweight and obesity are based on Body Mass Index (BMI). BMI is based on a person's weight in kilograms divided by his or her height in meters squared. Adult Obesity is defined as a body mass index of 30 or greater. Among children, a BMI between the 85th and 94th percentile is defined as overweight and a BMI at the 95th or higher percentile is defined as obese.

Physical Inactivity

Regular physical activity and exercise can help reduce the risk of cardiovascular disease, type 2 diabetes, colon and breast cancers, and osteoporosis. Physical activity strengthens bones and muscles, improves mental health and mood, improves ability to do daily activities, and helps prevent falls among older adults. Despite the proven benefits of physical activity, the CDC reports that more than 50% of American adults do not get enough physical activity to provide health benefits, and one-quarter of adults are not active at all in their leisure time.

No Leisure Time Physical Activity among Adults

In 2016, 28% of Hamilton County adults were not active in their leisure time, compared to 30% in Tennessee and 23% nationwide.



Source: 2018 County Health Rankings (2016 data)

Food Insecurity

Food insecurity is defined as the disruption of food intake or eating patterns because of lack of money and other resources. Lacking constant access to food is related to negative health outcomes such as weight-gain and premature mortality. Food insecurity may be long-term or temporary and is influenced by a number of factors including income, employment, race/ethnicity, and disability.

The food insecurity rate is the percentage of the population who did not have access to a reliable source of food during the past year. Feeding America publishes food insecurity rates for every county and congressional district in the United States. The rates are derived by a two-stage fixed effects model based on information from the Community Population Survey, Bureau of Labor Statistics, and American Community Survey.

In Hamilton County, an estimated 50,180 individuals (14% of the population) were food insecure in 2016.

Food Insecurity, 2016

	Percentage Food Insecure	Estimated Number Food Insecure Individuals
Hamilton County	14%	50,180
Tennessee	15%	967,430
United States	13%	41,204,000

Source: Feeding America, Map the Meal Gap

Asthma

Asthma is a chronic inflammatory disorder of the airways. During an asthma attack, airways become inflamed causing wheezing, breathlessness, chest tightness, and nighttime or early morning coughing. Asthma can be triggered by a variety of environmental causes, including second hand smoke, dust mites, outdoor air pollution, cockroach allergens, pets, and mold. Low-income populations, minorities, and children living in inner cities experience more emergency department visits, hospitalizations, and deaths due to asthma than the general population.^{xx}

According to the Centers for Disease Control, more than 26 million Americans have asthma. Asthma was linked to 3,518 deaths (about 9 per day) in 2016.^{xxi} Asthma costs the U.S. economy more than \$80 million annually in direct medical costs, lost days of work and school, and deaths.^{xxii}

An estimated 31,017 adults and 7,328 children in Hamilton County have asthma, according to American Lung Association.

Among school-aged children, asthma is a leading cause of school absenteeism. During the 2016-2017 school year, 4,475 Hamilton County public school students were identified as having an asthma diagnosis. School officials note that the actual number of students with asthma is probably higher, as some parents and students do not report medical conditions.

In 2016, there were 258 emergency department visits by Hamilton County children under the age of five seeking treatment for asthma, or 15.4 per 1,000 children that age. By comparison, the statewide asthma emergency department visit rate was 13.2 per 1,000.^{xxiii}

Among school-aged children, asthma is a leading cause of school absenteeism.

Asthma in Hamilton County

	Number	Percent
Adult (estimate)	31,017	11%
Pediatric (estimate) ⁹	7,328	9%
Students in Hamilton County Department of Education schools	4,475	10%

Sources: American Lung Association and Hamilton County Department of Education

⁹ American Lung Association, Estimated Prevalence and Incidence of Lung Disease, April 2018. Adult and pediatric figures reflect the estimated prevalence and incidence of asthma and not the actual number. These estimates are based on state or national incidence and prevalence estimates applied to the age-specific population of the county.

Diabetes Prevalence

Diabetes is the eighth leading cause of death in Hamilton County and the seventh leading cause of death in the United States. Diabetes is a serious public health risk because it increases the risk of heart disease and stroke and can cause complications such as kidney failure, blindness, amputations, nerve damage, and premature death. Diabetes is one of the costliest of all chronic diseases. In 2017, diabetes costs the nation an estimated \$327 billion, which includes \$237 billion in direct medical costs and \$90 billion in indirect costs associated with disability, work loss, and premature death. People with diagnosed diabetes incur average medical expenditures of \$16,752 per year, which is approximately 2.3 times higher than people without diabetes.^{xxiv}

In 2013, an estimated 12% (32,394) of Hamilton County residents 20 years and older had ever received a diabetes diagnosis (excluding those who only had diabetes during pregnancy).^{xxv} Tennessee had the fifth highest prevalence rate in 2014 and the 19th highest mortality rate in 2015.^{xxvi}



Diabetes Prevalence in Hamilton County

32,394 Estimated number of Hamilton County residents ages 20 or older who had ever have been diagnosed with diabetes.

12% of adult population

Deaths from Chronic Diseases and Disparities

The following page details 2013-2015 age-adjusted mortality rates for Hamilton County overall and by race/sex groups for heart disease, stroke, chronic lower respiratory disease, diabetes, kidney disease, and hypertensive renal disease.

Racial disparities in the leading causes of death were presented earlier in this report. These graphs provide further insight by showing sex within race, noted below.

- Blacks had higher mortality rates than Whites for stroke, diabetes, kidney disease, and hypertension/hypertensive renal disease.
- Men had higher mortality rates than women, regardless of race, for heart disease and chronic lower respiratory diseases.
- Black men had the highest mortality rates among race/ sex groups for heart disease, stroke, and diabetes.

Kidney Disease and Hypertensive Renal Disease

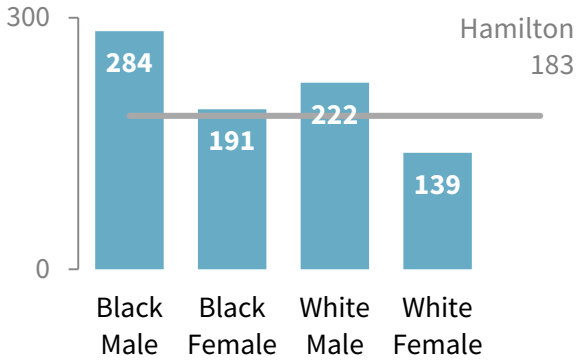
Causes of death are classified by health officials according to the International Classification of Diseases, Tenth Edition (ICD-10). ICD-10 codes for causes of death are described in the Appendix. To clarify any confusion, kidney diseases and hypertensive renal disease are defined below.

Kidney disease includes nephritis, nephrosis, and nephrotic syndrome.

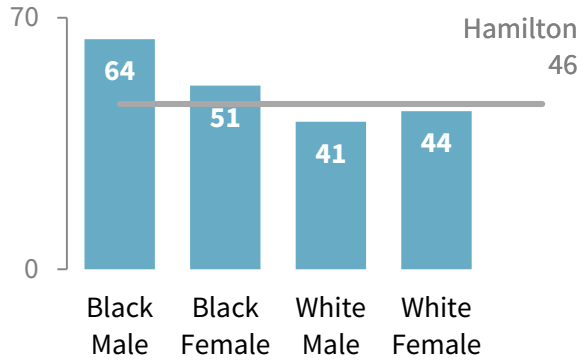
Hypertension and hypertensive renal disease includes primary and secondary hypertension and hypertensive renal disease. Hypertensive renal disease occurs when uncontrolled high blood pressure (hypertension) damages the arteries around the kidneys. These damaged arteries are not able to deliver enough blood to the kidney tissues, resulting in kidney damage or failure.

Hamilton County Age-Adjusted Mortality Rates (per 100,000 population) for Chronic Diseases by Race/Sex, 2013-2015

Heart Disease

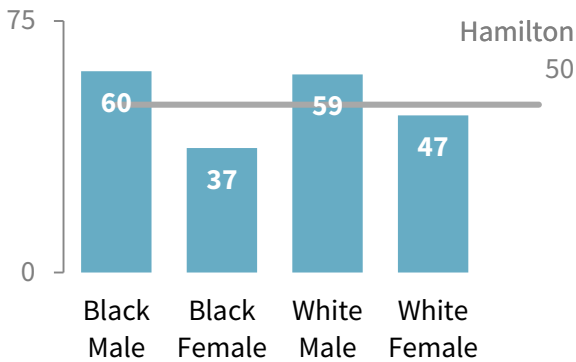


Stroke

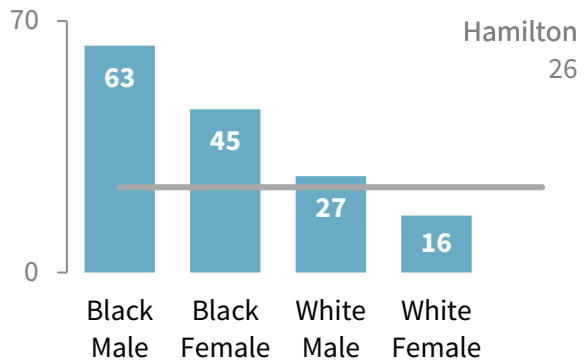


Chronic Lower Respiratory Disease (CLRD)

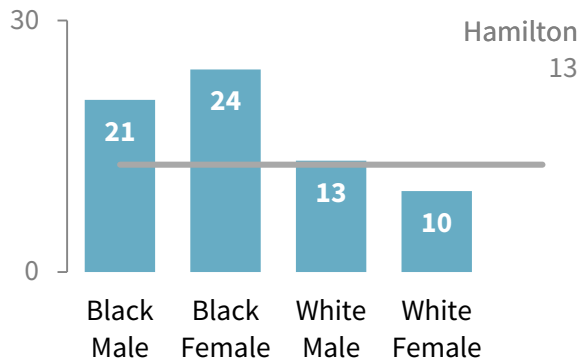
CLRD includes emphysema, asthma, and chronic bronchitis.



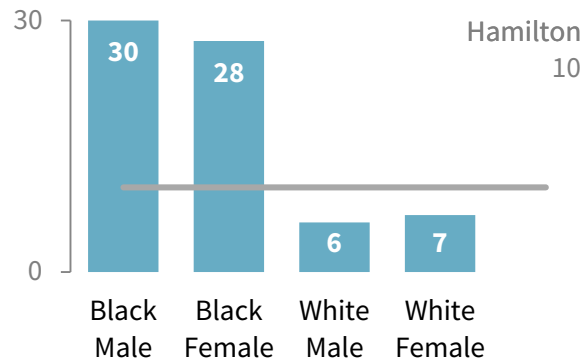
Diabetes



Kidney Disease



Hypertension and Hypertensive Renal Disease

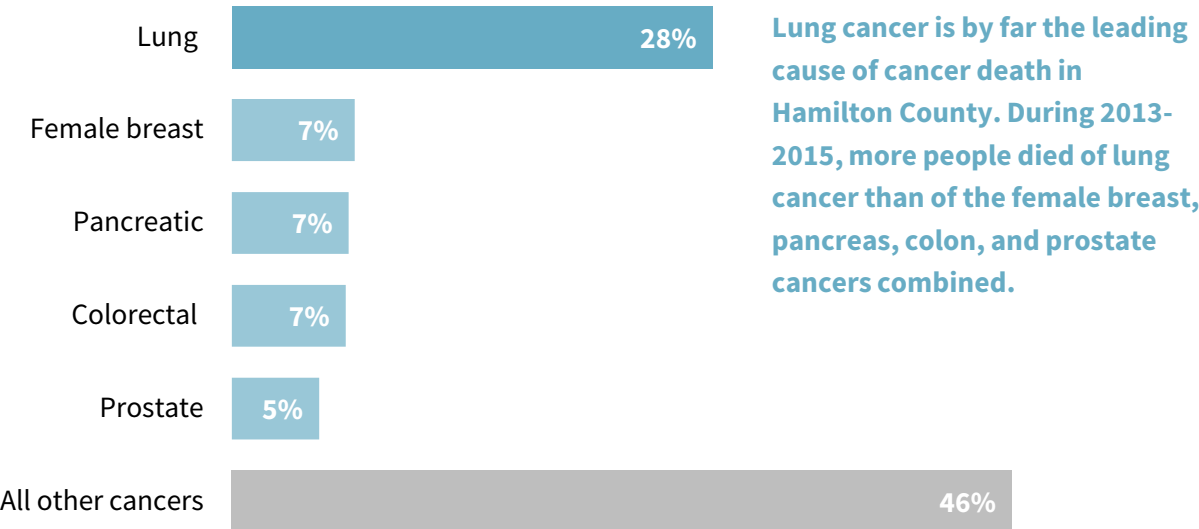


Source: Tennessee Department of Health

Deaths from Cancer

Cancer is the second leading cause of death for residents of Hamilton County, responsible for 20% of all deaths. The 2013-2015 age-adjusted mortality rate for cancer in Hamilton County was 170 per 100,000 people, which was 7% lower than the state rate of 183 per 100,000 and 7% higher than the 2015 U.S. rate of 159 per 100,000. Tennessee had the sixth highest cancer mortality rate in the nation in 2015.^{xxvii}

Leading Causes of Cancer Deaths (as percentage of all cancer deaths) in Hamilton County, 2013-2015



Hamilton County Cancer Mortality Rates by Race and Sex

The following page details Hamilton County 2013-2015 age-adjusted mortality rates by race/sex groups for cancer overall and by cancer site.

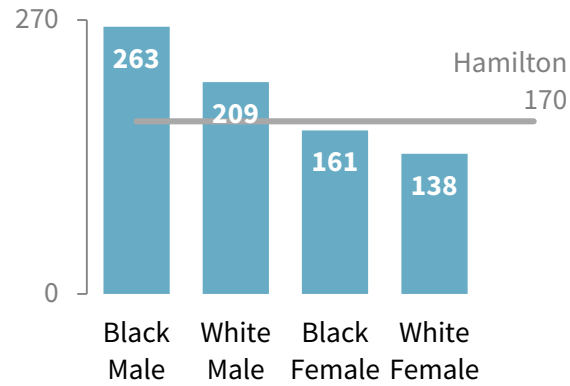
Males had higher mortality rates than females for all cancers, lung cancer, and colon cancer.

Black males had the highest mortality rates among race/sex groups for all cancers, lung cancer, and colon cancer. The prostate cancer mortality rate for Black males was more than twice that of White males.

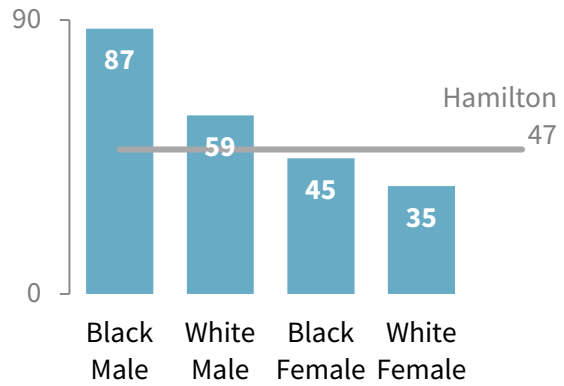
Black males had the highest mortality rates among the race/sex groups for heart disease, stroke, and diabetes

Hamilton County Age-Adjusted Mortality Rates (per 100,000 population) for Cancer by Type and by Race/Sex, 2013-2015

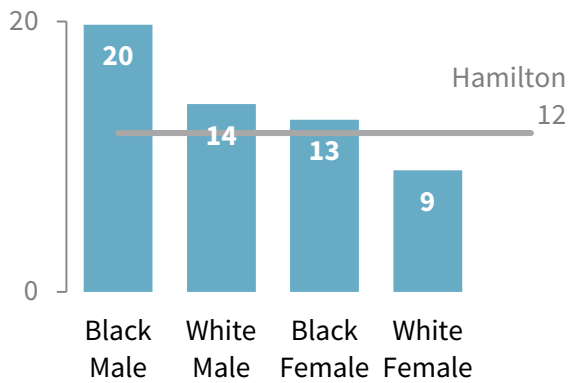
All Cancers



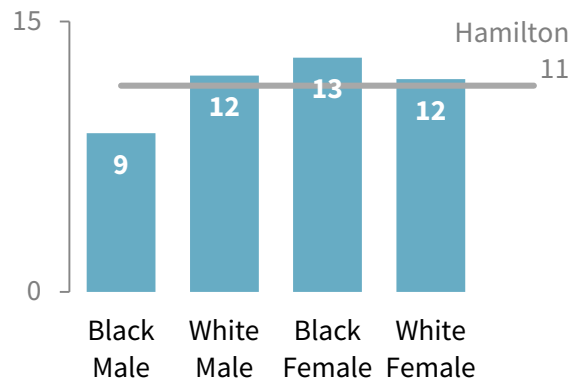
Lung Cancer



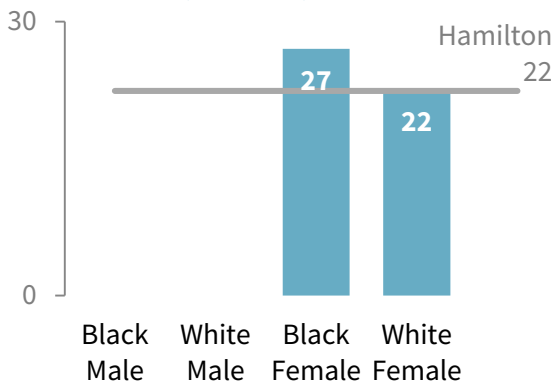
Colon Cancer



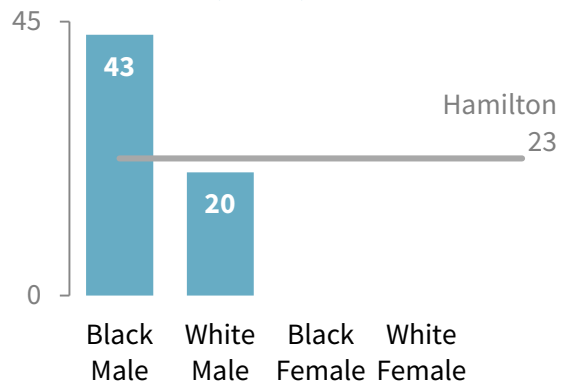
Pancreatic Cancer



Breast Cancer (Females)



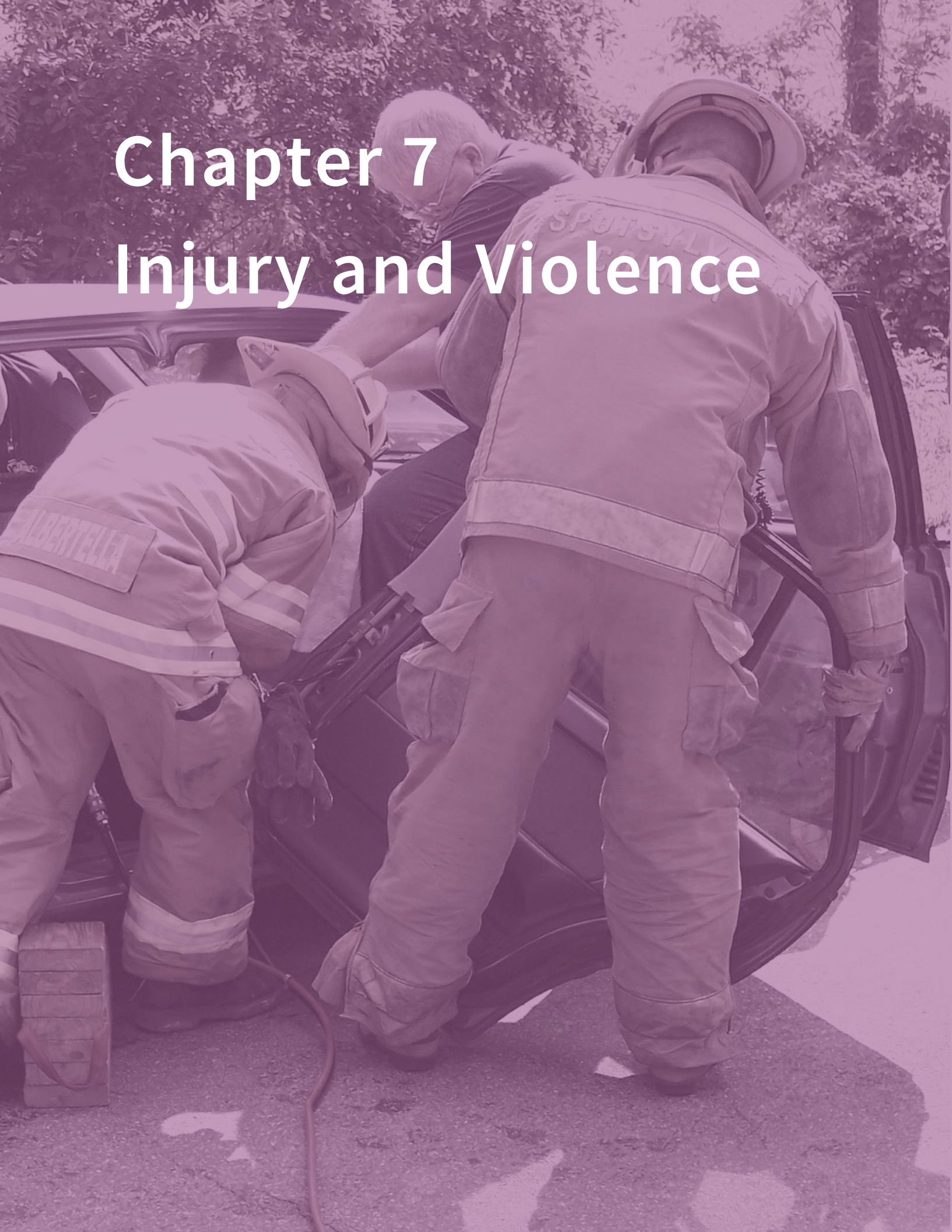
Prostate Cancer (Males)



Source: Tennessee Department of Health

Chapter 7

Injury and Violence

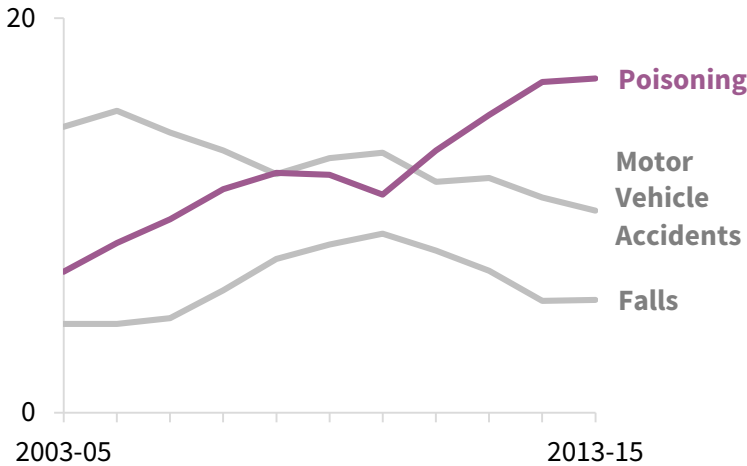


Injury and Violence

Injuries are the leading cause of death for Americans ages 1 to 44, and a leading cause of disability for all ages.

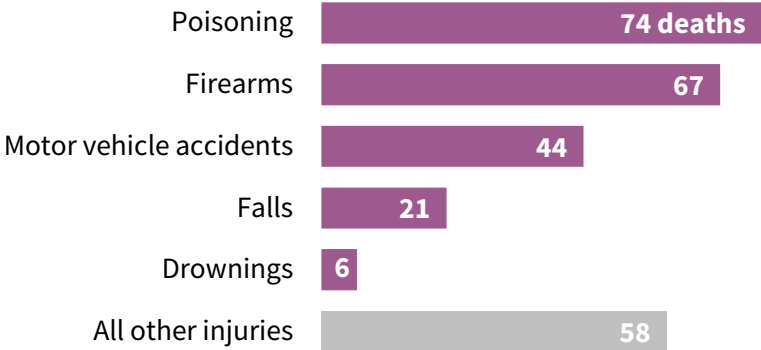
Age-Adjusted Injury Mortality Rates, Hamilton County 2003-2015

Poisoning is the leading cause of injury death in Hamilton County, surpassing motor vehicle accidents in 2010. Poisoning mortality rates more than doubled from 2003 to 2015 (from 7 to 16 deaths per 100,000), primarily due to drug overdoses. (See Chapter 9 Substance Abuse)



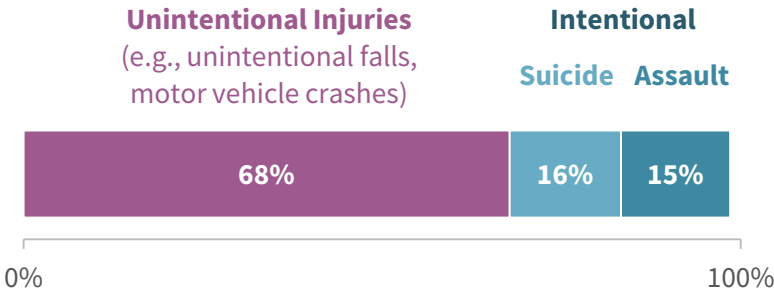
Deaths from Injuries in Hamilton County, 2016

In Hamilton County, injuries were responsible for 270 deaths, 39,583 emergency department visits, and 2,157 hospital stays in 2016.^{xxviii} Of these 270 deaths, 74 were from poisoning, primarily from a drug overdose. (See Chapter 9 Substance Abuse)



Intentional and Unintentional Deaths from Injuries in Hamilton County, 2016

Two-thirds of deaths from injuries are unintentional.



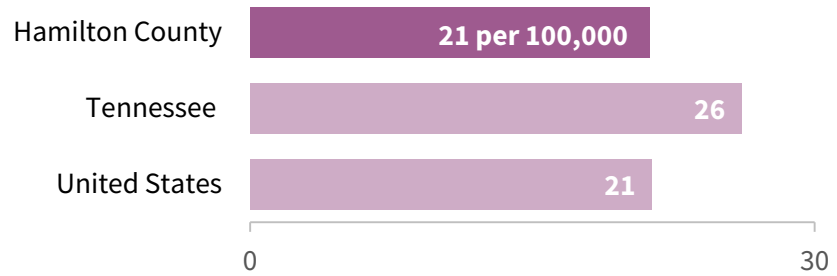
Source: Tennessee Department of Health

Poisoning

Poisoning is the leading cause of fatal injury in Hamilton County in 2016. In 2016, poisoning led to 758 emergency department (ED) visits, 327 hospitalizations, and 74 deaths among Hamilton County residents. Drugs—both prescription and illicit—cause the vast majority of poisoning deaths. (For more information, refer to Chapter 9 Substance Abuse.)

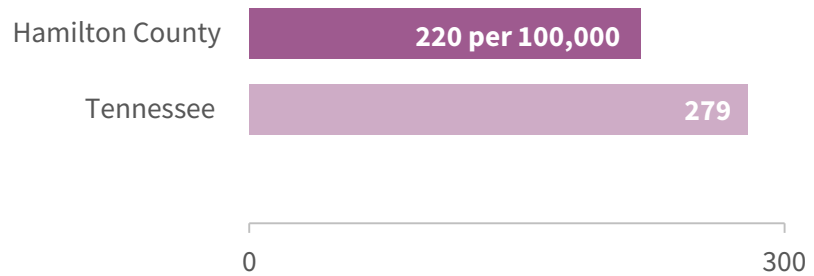
Fatalities

There were 74 poisoning deaths in Hamilton County in 2016 (21 deaths per 100,000 residents). Of those 74 deaths, 69 resulted from a drug overdose.



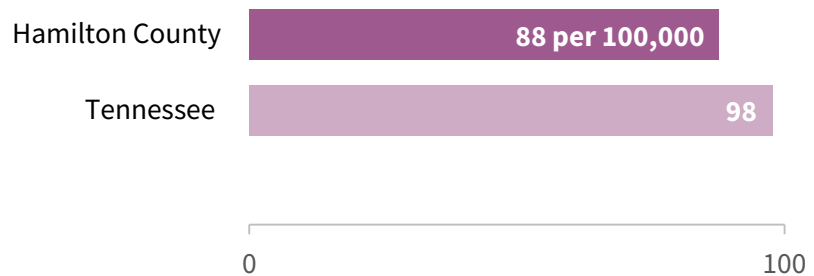
Emergency Department Visits

In 2016, 758 Hamilton County residents visited the emergency department for poisoning (220 visits per 100,000 residents). *



Hospitalizations

In 2016, 327 Hamilton County residents were hospitalized due to poisoning (88 hospitalizations per 100,000 residents).*



*U.S. data not available

Source: Tennessee Department of Health and CDC WISQARS™

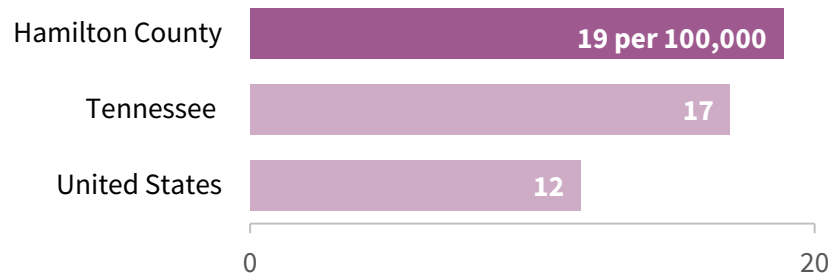
Firearms

Gun violence is a leading contributor to premature death in the United States.^{xxix} Firearm fatalities are a critical public health issue as they are largely preventable. The vast majority of firearm fatalities in the nation are the result of suicides (61%) and homicides (36%).^{xxx}

In Hamilton County in 2016, injuries from firearms led to 165 emergency department (ED) visits, 74 hospitalizations, and 74 deaths among Hamilton County residents. Of the 165 individuals visiting the ED for firearms injuries, 97% were between the age of 15 and 34.

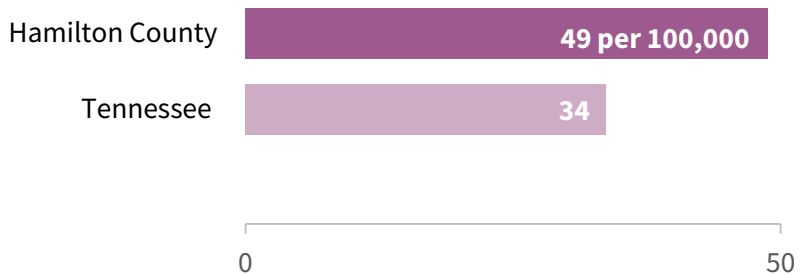
Fatalities

There were 67 fatalities due to firearms in Hamilton County in 2016 (19 fatalities per 100,000 residents).



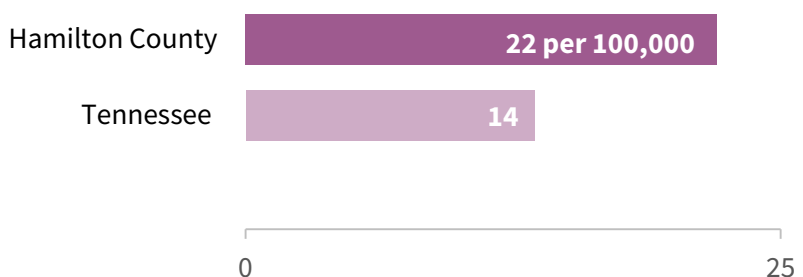
Emergency Department Visits

In 2016, 165 Hamilton County residents visited the ED for a firearms-related injury (49 visits per 100,000 residents).*



Hospitalizations

In 2016, 74 Hamilton County residents were hospitalized due to firearms-related injury (22 hospitalizations per 100,000 residents).*



* U.S. data not available

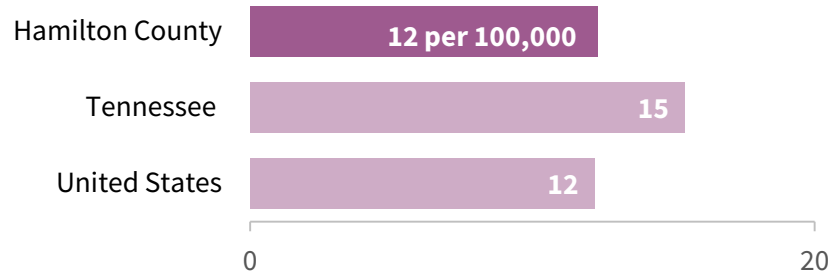
Source: Tennessee Department of Health and CDC WISQARS™

Motor Vehicle Accidents

In 2016, there were 4,203 emergency department visits, 263 hospitalizations, and 44 deaths from motor vehicle accidents in Hamilton County. Motor vehicle accidents were the leading cause of injury hospitalizations for individuals ages 15 to 24.

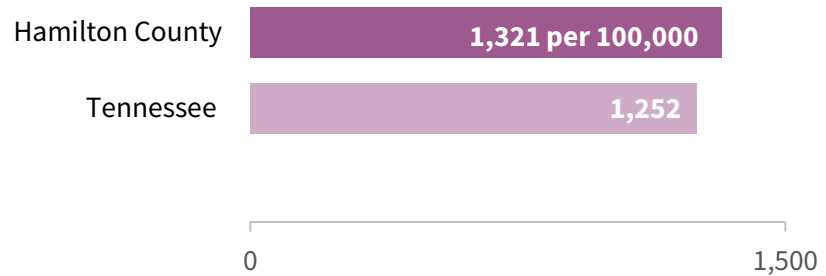
Fatalities

In 2016, there were 44 motor vehicle accident deaths in Hamilton County in 2016 (12 fatalities per 100,000 residents).



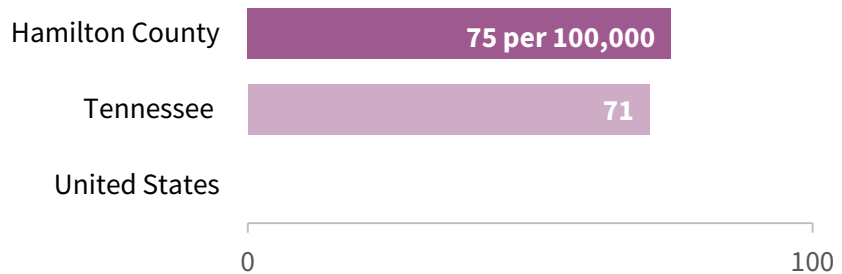
Emergency Department Visits

In 2016, there were 4,590 emergency department visits due to motor vehicle accidents in Hamilton County in 2016 (1,321 visits per 100,000 residents).*



Hospitalizations

In 2016, there were 267 hospitalizations due to motor vehicle accidents in Hamilton County (75 hospitalizations per 100,000 residents).*



* U.S. data not available

Source: Tennessee Department of Health and CDC WISQARS™

Motor Vehicle Accident Factors

Over the past nine years, there have been dramatic increases in the number of motor vehicle accidents involving distracted driving and the number of accidents with incapacitating injuries.¹⁰ **353** After rising for several years, the annual number of alcohol-related accidents has declined.

Number of Motor Vehicle Accidents by Contributing Factor in Hamilton County, 2007-2017

Distracted Driver

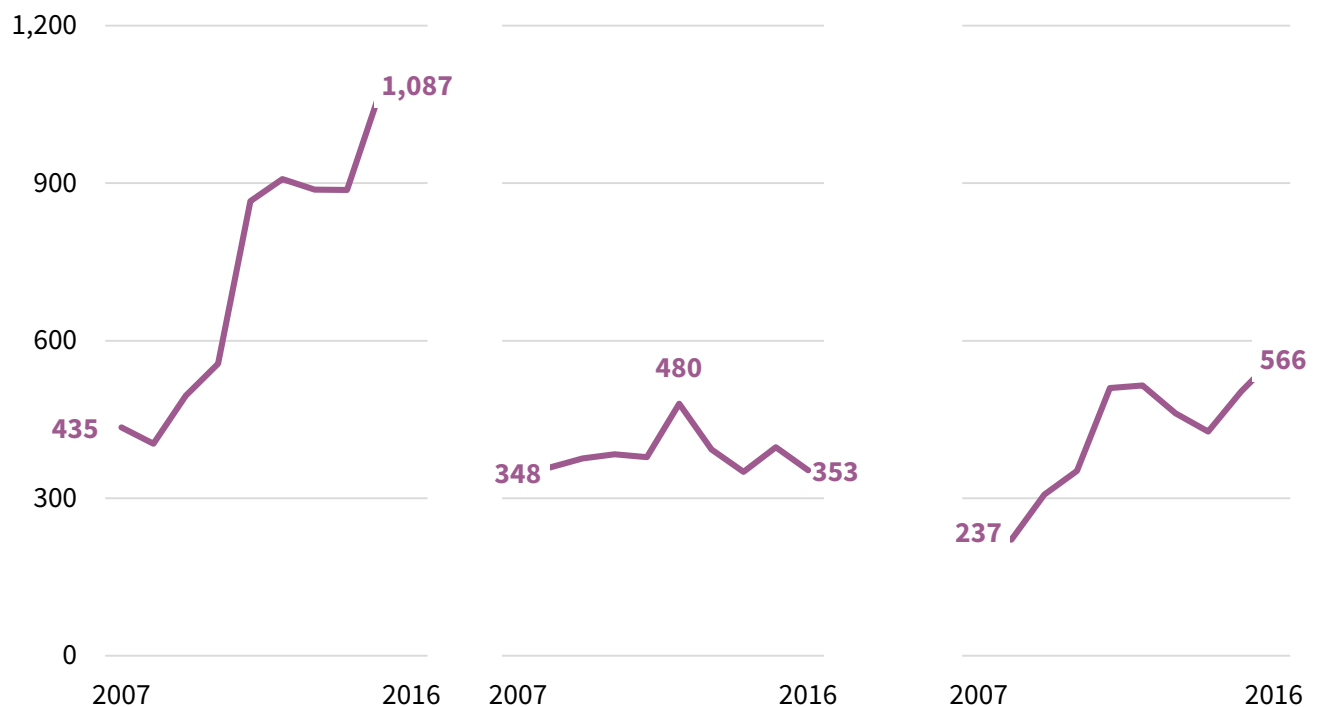
Motor vehicle accidents involving distracted driving doubled over the past decade, from 435 crashes in 2007 to 1,087 crashes in 2016.

Alcohol-Related

From 2007 through 2012, the number of alcohol-related motor vehicle crashes increased by 38%. Since 2012, alcohol-related crashes have decreased, with 353 incidents in 2016.

Incapacitating Injury or Fatality

The annual number of motor vehicle accidents involving incapacitating injury increased 2.6-fold from 2007 through 2016.



Source: Tennessee Department of Safety

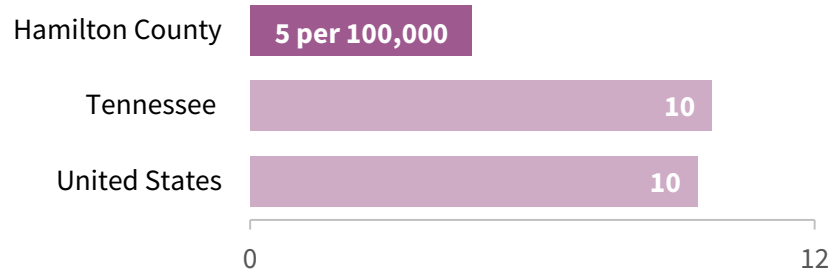
¹⁰ An incapacitating injury is any non-fatal injury with one or more of the following: severe laceration, broken/distorted extremity, crush injury, suspected skull, chest, or abdominal injury other than bruises or minor lacerations, significant burns, unconsciousness when taken from the crash scene, or paralysis.

Falls

Falls are the leading cause of emergency department injury visits, accounting for 11,576 ED visits in 2016, more than twice the number visits for motor vehicle accidents, poisonings, firearms, fires, and drowning, combined. Falls are particularly worrisome for older adults, who are more likely to require hospitalization for their injuries. While individuals 65 and older comprise 28% of ED falls visits, they make up 73% of hospital admissions for falls. Of the 21 people who died from a fall, 18 (86%) were age 75 or older.

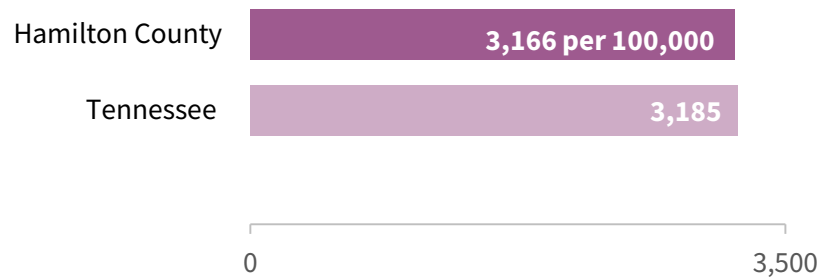
Fatalities

In 2016, there were 21 fatal falls in Hamilton County (4.7 fatalities per 100,000). The age-adjusted rate was half of both the state and national rate.



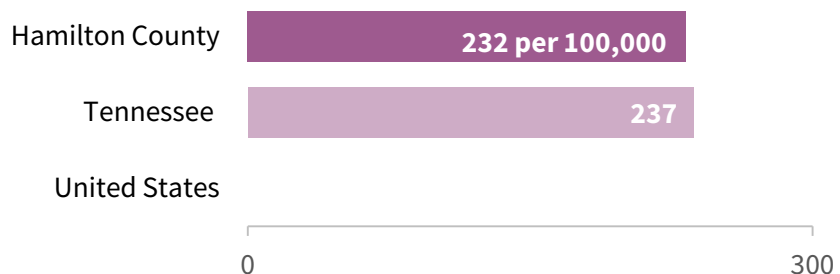
Emergency Department Visits

In 2016, there were 11,576 emergency department visits due to falls in Hamilton County (3,166 visits per 100,000 residents).*



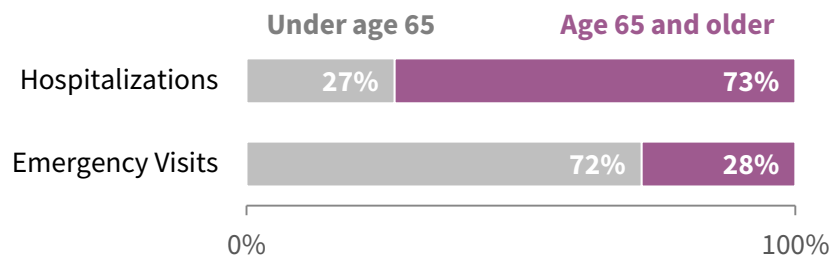
Hospitalizations

In 2016, there were 1,025 hospitalizations due to falls in Hamilton County (232 per 100,000 residents).*



Older Adults (Age 65+)

Older adults in Hamilton County are almost three times more likely to be hospitalized for a fall as younger fall victims.



*U.S. data not available

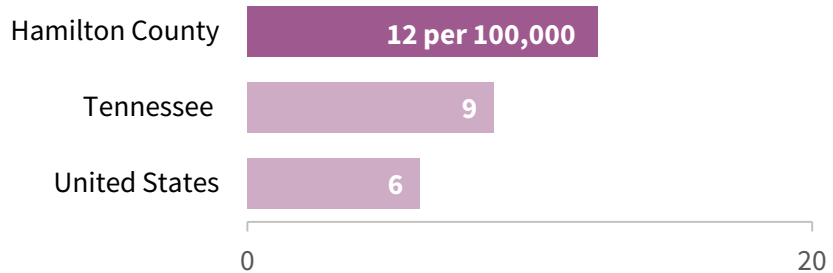
Source: Tennessee Department of Health and CDC WISQARS™

Assault

In 2016, there were 1,519 emergency department (ED) visits, 90 hospitalizations, and 41 deaths from assault (homicide) in Hamilton County. Of the 1,519 individuals visiting the ED for assault, 56% were between the age of 15 and 34.

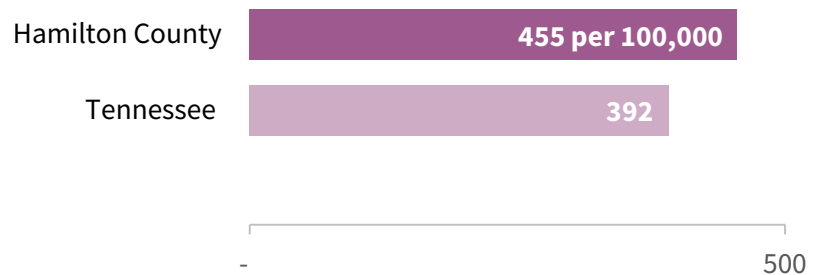
Fatalities (Homicide)

In 2016, there were 41 assault fatalities in Hamilton County (12 homicides per 100,000 people). The homicide rate was double the U.S. rate.



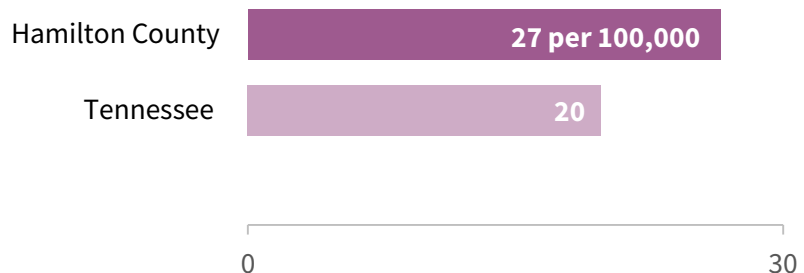
Emergency Department Visits

In 2016, there were 1,519 emergency department visits due to assault in Hamilton County in 2016 (455 per 100,000 persons).*



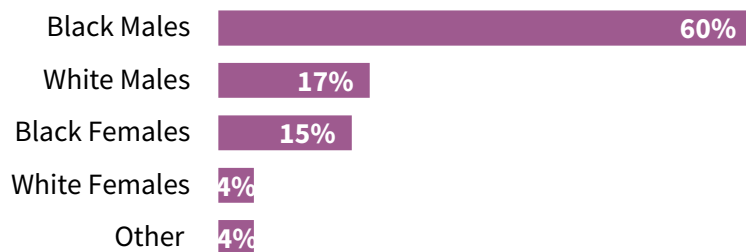
Hospitalizations

In 2016, there were 90 hospitalizations due to assault in Hamilton County in 2016 (27 per 100,000 persons).*



Assault Fatality Victims 2013-2015

Black men were the victims of 60% of the 78 fatal assaults in Hamilton County from 2013 through 2015.



*U.S. data not available

Source: Tennessee Department of Health and CDC WISQARS™

Violent Crime

In a violent crime, a victim is harmed by or threatened with violence. Violent crimes include murder and non-negligent manslaughter, rape, robbery, and aggravated assault. The FBI reports violent crimes in the Universal Crime Report and reports at national, state, and jurisdictional levels.

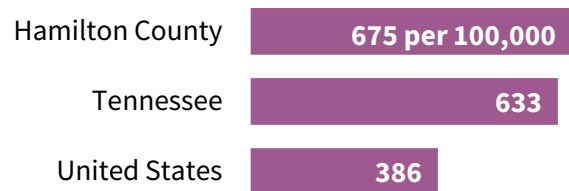
Tennessee had the fifth highest violent crime rate (number of reported instances per 100,000) in the US in 2016, after the District of Columbia, Alaska, New Mexico, and Nevada. The violent crime rate in Hamilton County in 2016 was 7% higher than state rate and 75% higher than the national rate.^{xxxii}

Counting the eight municipal and county law enforcement agencies in Hamilton County, a total of 2,413 reported instances of violent crime in 2016, of which 1,813 (75%) were reported by the Chattanooga Police Department.¹¹ Countywide, aggravated assaults accounted for 74% percent of all violent crimes reported to law enforcement in 2016. Robbery offenses accounted for 7% of violent crime; rape accounted for 6%; and murder accounted for 1%.

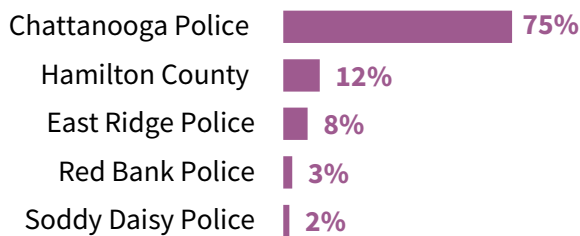
**Number of Violent Crimes Reported
Hamilton County, 2016**

2,413

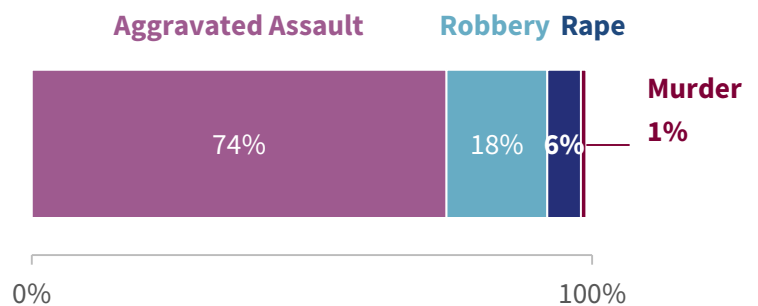
**2016 Violent Crime Rates
(Reported Crimes per 100,000 Residents)**



**2016 Hamilton County Violent Crimes
By Reporting Agency***



**2016 Hamilton County
Violent Crimes by Type of Crime**

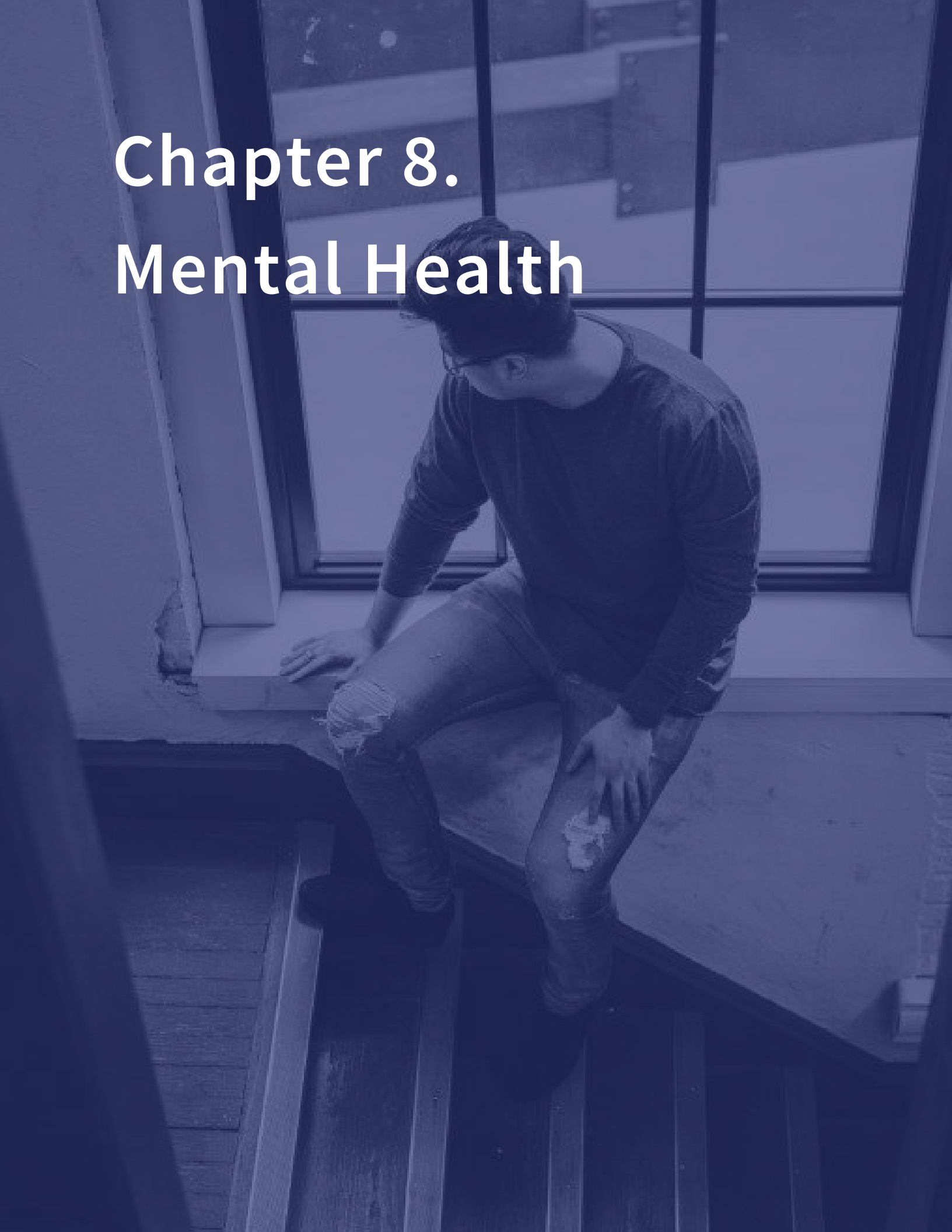


Source: 2016 Universal Crime Report (FBI)

¹¹ Reporting law enforcement agencies: Hamilton County Sheriff, the Chattanooga Police and the Collegedale, East Ridge, Lookout Mountain, Red Bank, Signal Mountain, and Soddy Daisy police departments.

* Other jurisdictions: Collegedale (0.3%), Lookout Mountain (0), Signal Mountain (0).

Chapter 8. Mental Health



Mental Health


Mental health and physical health are closely connected. Mental health plays a major role in people’s ability to maintain good physical health. Mental illnesses, such as depression and anxiety, affect people’s ability to participate in health-promoting behaviors. In turn, problems with physical health, such as chronic diseases, can have a serious impact on mental health and decrease a person’s ability to participate in treatment and recovery.^{xxxii}

Research shows that mental illnesses are common in the United States, affecting tens of millions of people each year. Less than half of people with mental illnesses receive treatment, according to the National Institute of Mental Health. Untreated or inconsistently treated people with mental illness may end up in jail, often for minor crimes. Nationwide, 2 million with mental illness are booked into jails each year, according to the National Alliance on Mental Illness. On any given day in Hamilton County, approximately 40 percent of the roughly 1,500 inmates in the Hamilton County Jail and the Silverdale Correctional facility receive psychotropic medications. Officials believe the actual number of inmates with mental illness is likely higher, considering that some have undiagnosed conditions.

Poor Mental Health Days

Hamilton County adults report an average of 4.5 days of poor mental health per month and 13% report experiencing frequent mental distress, defined as 14 or more days of poor mental health per month.¹²

2016 Age-Adjusted Poor Mental Health Days



	Hamilton County 2016	Tennessee 2016	United States 2016
Poor mental health days (average in past 30 days)	4.5	4.5	3.5
Frequent mental distress (14+ of past 30 days)	13%	13%	12%

Source: 2018 County Health Rankings (2016 data)

¹² These measures are based on responses to the following question from the 2016 Behavioral Risk Factor Surveillance Survey, “Thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health not good?”

Mental Health Crisis Intervention

A mental health crisis is an emergency condition that involves a serious disruption in an individual’s daily functioning. Tennessee Department of Mental Health and Substance Abuse Services (TDMHSUS) Crisis Services Program coordinates mental health crisis services throughout the state.

Crisis Services are available 24 hours a day to respond to children and adults experiencing a mental health crisis. Crisis Services offers information and crisis phone counseling, face-to-face crisis evaluation, triage, and referrals by mobile crisis teams. Crisis Walk-in Centers and Crisis Stabilization Units are available in Chattanooga and Cookeville.

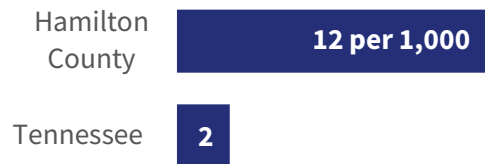
In 2017, there were 4,117 face-to-face assessments for mental health emergencies among Hamilton County residents – 61% by mobile crisis units and 39% at a crisis walk-in center. Expressed as a rate per 1,000 residents, there were 12 face-to-face assessments per 1,000 Hamilton County residents, which is six times larger than the Tennessee rate of two assessments per 1,000.

Face-to-Face Assessments for Mental Health Emergencies, Hamilton County Residents

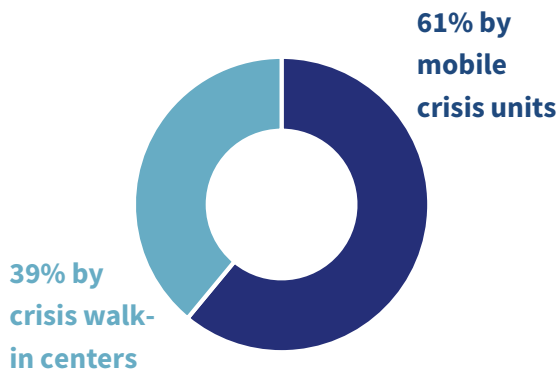
Number of Face-to-Face Crisis Assessments for Hamilton County Residents in 2017

4,117

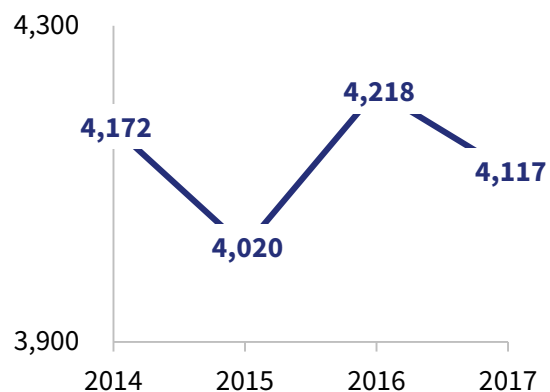
Number of Face-to-Face Assessments per 1,000 Residents



Location of Face-to-Face Assessments



Assessments Conducted Each Year



Source: Tennessee Department of Mental Health and Substance Abuse Services

Suicide

Suicide is a preventable public health problem. The causes are complex and determined by multiple factors. More than half of people who die by suicide did not have a diagnosed mental health condition at the time of death, according to a June 2018 Centers for Disease Control report. Other problems which can contribute to suicide include relationship issues, substance use, physical health, and job, legal, or housing stress.^{xxxiii} Suicide rates increased by 25% nationwide and by 24% in Tennessee from 1999 through 2016.^{xxxiv}

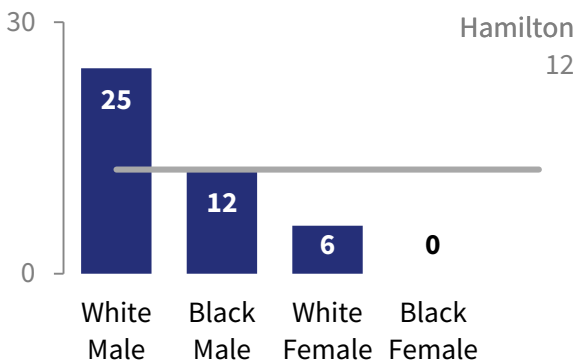
Each day in Tennessee, an average of three people die by suicide. As of 2016, suicide is the second leading cause of death for young people (ages 10-19) in Tennessee, with one person in this age group lost to suicide every week.^{xxxv}

In 2016 in Hamilton County, there were:

- 42 suicide deaths
- 283 emergency department visits for suicide attempt
- 144 hospitalizations for suicide attempt

Source: Tennessee Department of Health, Injury Surveillance System

Hamilton County Age-Adjusted Mortality Rates for Suicide by Race/Sex, 2013-2015

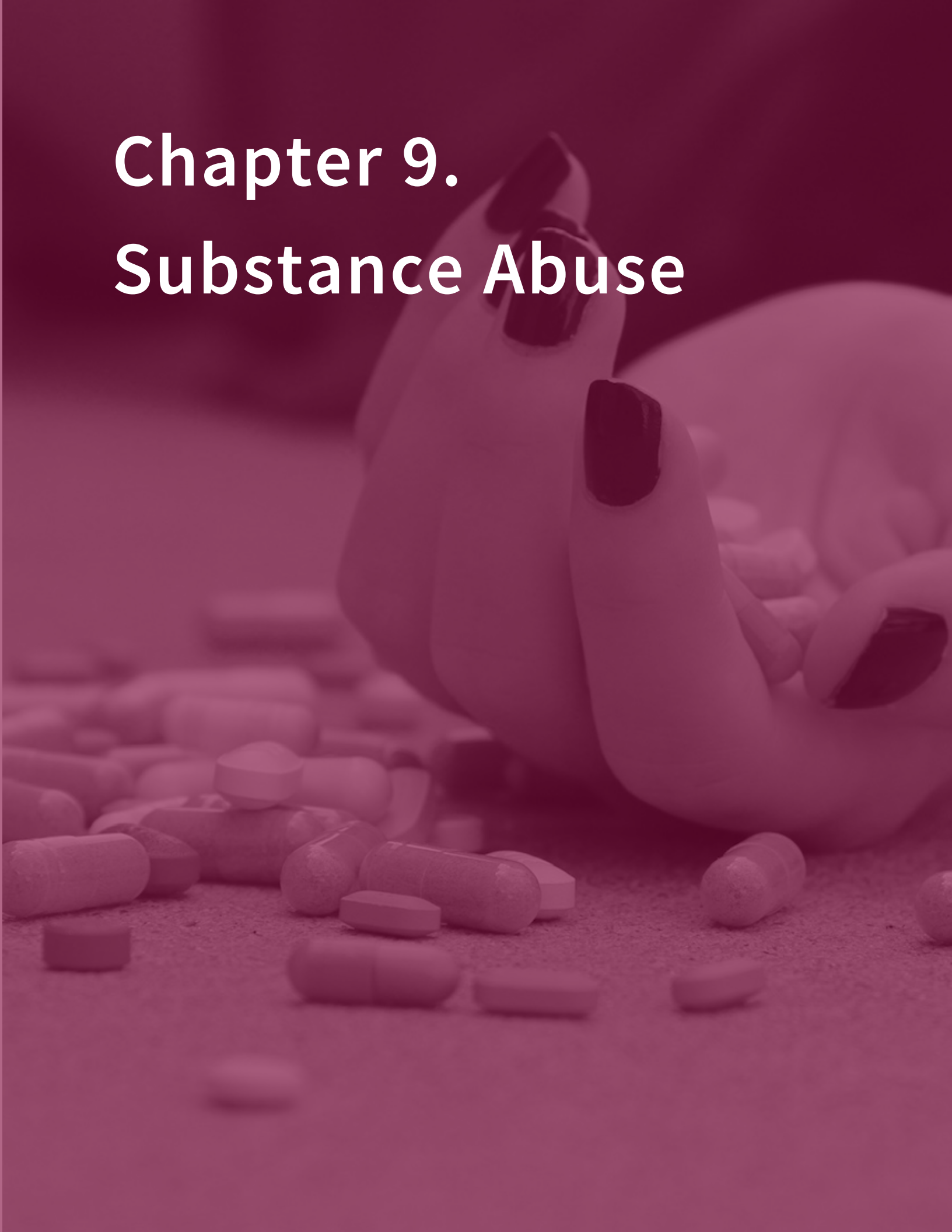


- There were 142 deaths by suicide in Hamilton County from 2013 through 2015, and the age-adjusted mortality rate was 12.4 per 100,000.
- Males have higher suicide rates than females regardless of race.
- White males had the highest suicide rate among four gender-race groups. In fact, of the 142 suicide deaths over the three-year period, 103 (73%) were White males.

Source: Tennessee Department of Health, Health Information Tennessee

Chapter 9.

Substance Abuse



Substance abuse—involving drugs, alcohol, or both—is associated with a range of destructive social conditions, including family disruptions, financial problems, lost productivity, failure in school, injuries, domestic violence, child abuse, and crime.

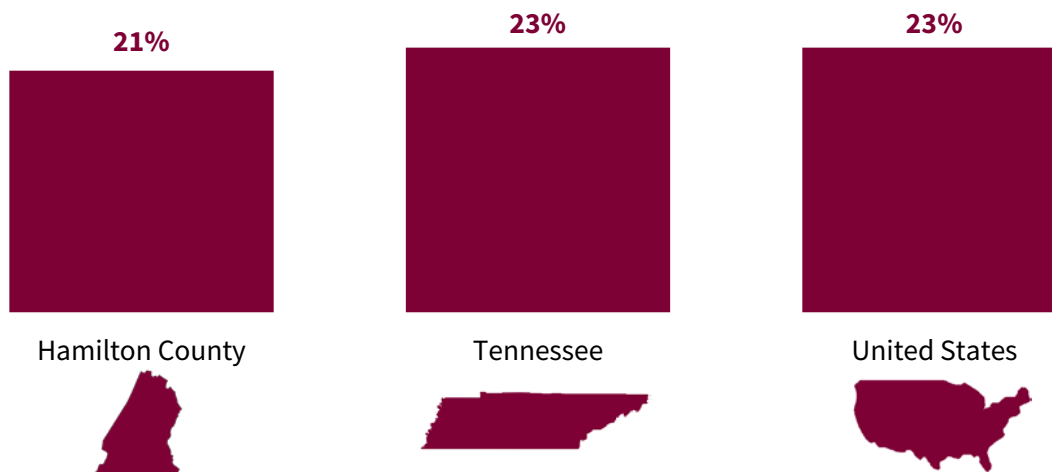
Excessive Alcohol Use

Excessive alcohol use can lead to increased risk of unintentional injuries, violence, or health problems such as fetal alcohol syndrome, cardiovascular and liver disease, cancer, pancreatitis, communicable diseases, and mental health problems. A study published in the Lancet in 2018 found that even moderate amounts of alcohol are more harmful than previously thought, concluding that there is no “safe” level of alcohol consumption.^{xxxvi}

Excessive alcohol use costs Tennessee an estimated \$4.47 billion in 2010 from losses in workplace productivity, health care expenses, and crimes related to excessive drinking. This equates to \$2.25 per drink or \$738 per person. Most of these costs were due to binge drinking.^{xxxvii}

Excessive alcohol use is defined as the percentage of adults who report either binge drinking, defined as consuming 4 (women) or 5 (men) or more drinks in a row within the past 30 days, or heavy drinking, defined as drinking more than one (women) or 2 (men) drinks per day on average. According to the Centers for Disease Control, excessive drinking was responsible for 1 in 10 deaths among working-age adults during the years 2006–2010.^{xxxviii}

Percentage of Adults Reporting Binge or Heavy Drinking



Source: 2018 County Health Rankings (2016 data)

Illicit Drug Abuse

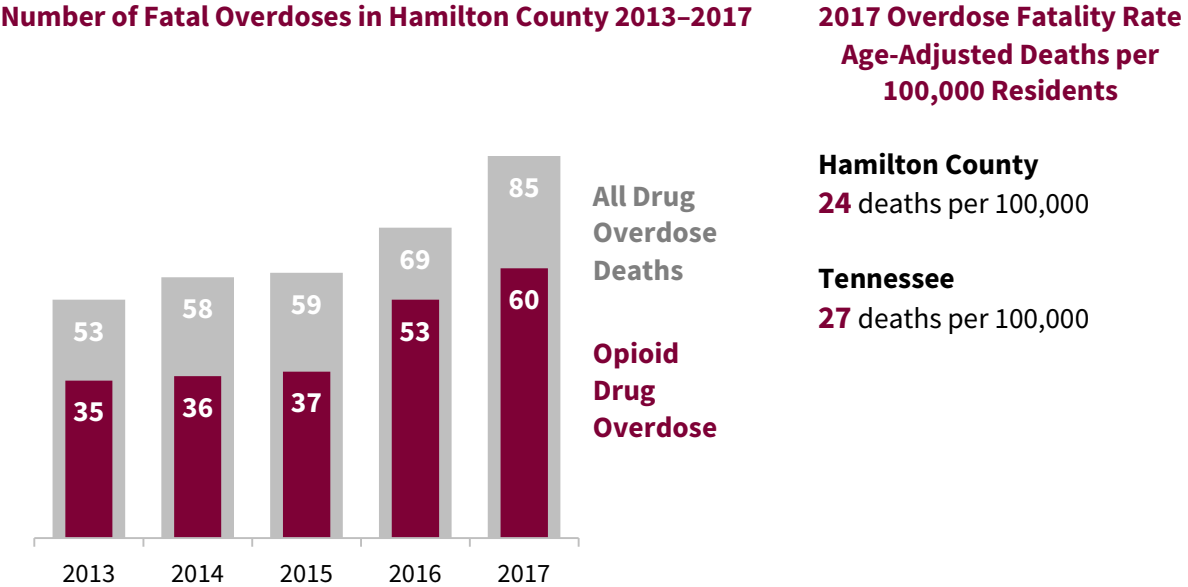
Fatal Drug Overdoses

Nationwide, the CDC reports that deaths from drug overdose more than tripled from 1999 to 2015. In Tennessee, the drug overdose death rate increased by 49% from 2013 through 2017. Opioids—prescription and illicit—are the main driver of overdose deaths. In 2016, opioids were involved in 66% of drug overdose deaths nationwide. Closer to home, opioids were involved in close to three out of four (71%) overdose deaths in both Tennessee and Hamilton County.

Most recently, illicitly produced fentanyl has escalated the opioid crisis. Although fentanyl is a medication prescribed for post-surgical pain and palliative care, most of the fentanyl responsible for the surge in deaths is made in unregulated laboratories, mostly of foreign origin, and imported illegally into this country. This fentanyl is sold through the illegal drug market, often mixed with other illicit substances. In Tennessee, the appearance of fentanyl in drugs associated with overdose deaths increased more than five-fold in recent years, from five percent in 2013 to 22 percent in 2017.^{xxxix} In Hamilton County, fentanyl was associated with 19 deaths (22% of all overdose deaths) in 2017.

Overdose Deaths in Hamilton County

In Hamilton County in 2017, there were 85 fatal drug overdoses. Of these 85 deaths, 60 (71%) involved opioids.



Source: Tennessee Drug Overdose Dashboard

Non-Fatal Drug Overdoses

Data from emergency departments (EDs) also reflect a worsening problem with overdoses, particularly from opioids. Data from 16 states participating in the Centers for Disease Control Enhanced State Opioid Overdose Surveillance show that ED visits for suspected opioid overdoses increased 35 percent from July 2016 through September 2017.

In 2016, for every drug overdose death in Hamilton County, 8.5 individuals presented in the emergency department, and 4.4 individuals were hospitalized for a non-fatal overdose. Opioids accounted for almost one in four (23%) of overdose-related emergency department visits and hospitalizations.

Non-fatal Drug Overdoses Emergency Department Visits and Hospital Visits, 2016

	Hamilton County Number	Hamilton County Age-Adjusted Rate per 100,000	Tennessee Age-Adjusted Rate per 100,000
Emergency Department Visits			
All Overdoses	584	169	221
Opioid Overdoses	133	38	44
Hospitalizations			
All Overdoses	306	82	93
Opioid Overdoses	70	18	22

Sources: Tennessee Department of Health, Injury Surveillance System

Opioid Prescribing

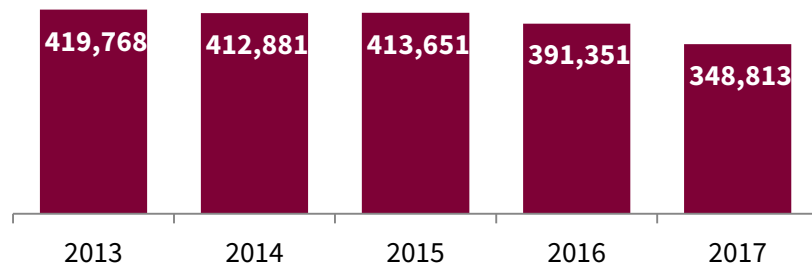
As part of the strategy to reduce prescription drug abuse, the Tennessee Department of Health developed the Controlled Substance Monitoring Database (CSMD), which records prescriptions for controlled substances and enables providers to check a patient’s history of opiate and benzodiazepine use before prescribing pain medications.

The latest Hamilton County numbers for the state’s CSMD show a slowing of opioid prescriptions in Hamilton County. In 2017, the number of opioid prescriptions in Hamilton County totaled 348,813, down 12% from 2016, when there were 391,351 opioid prescriptions.

Although opioid prescribing is decreasing, the Hamilton County prescribing rate (96 opioid prescriptions for every 100 persons) was 63% higher than the national rate (59 per 100 persons). Tennessee’s prescribing rate was even higher — 102 per 100 persons. In 2016, Tennessee had the third highest prescribing rate in the country, after Alabama and Arkansas.

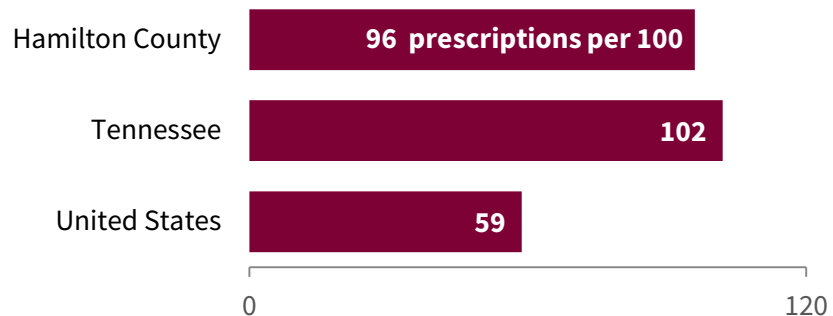
Number of Opioid Prescriptions in Hamilton County

Fewer opioid prescriptions are being written in Hamilton County. There were 348,813 opioid prescriptions reported to the CSMD, down 15% from 2015.



Opioid Prescribing Rates

In 2016, there were 96 opioid prescriptions written for every 100 Hamilton County residents, somewhat lower than the state rate, but 63% higher than the national rate of 59 per 100.



Sources: Tennessee Controlled Substance Monitoring Database and CDC

Neonatal Abstinence Syndrome

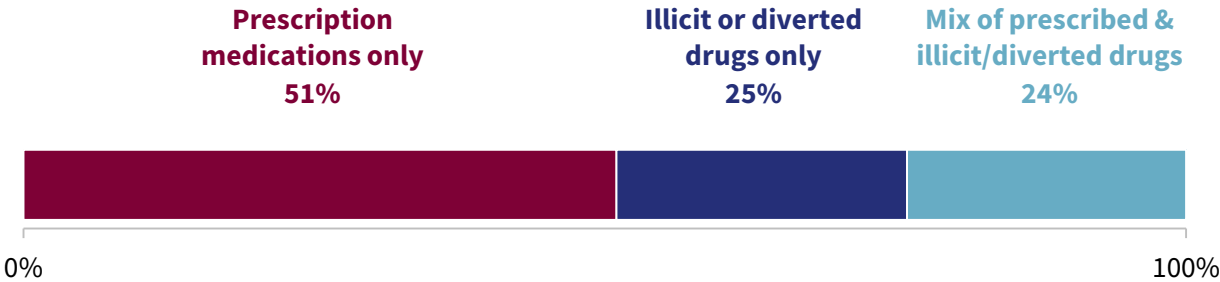
One of the consequences of a rise in substance abuse among women is an increasing number of babies born with Neonatal Abstinence Syndrome (NAS). NAS is a postnatal drug withdrawal syndrome that occurs primarily among opioid-exposed infants shortly after birth. Infants born with NAS can experience painful withdrawal symptoms, including vomiting, excessive sweating, high-pitched crying, tremors, seizures, diarrhea, fever, and sleeping problems. Infants born with NAS have longer hospital stays than other infants. In 2013, hospital charges in Tennessee for newborns with NAS were almost nine times as much as for newborns not experiencing withdrawal (\$62,973 versus \$7,258).^{xi}

Since the early 2000s, Tennessee has experienced a nearly ten-fold rise in the incidence of babies born with NAS, far exceeding the 3-fold nationwide increase. NAS occurs throughout Tennessee, but the majority of cases come from East Tennessee, where opioid drug use is highest. In 2017, reported cases totaled 1,090 statewide (1.4% of births) and 27 in Hamilton County (0.6% of births).

Source of Drugs Used During Pregnancy

Statewide in 2017, the majority of infants with NAS were exposed to medications used to treat substance use disorders (medically assisted treatment, 70%). However, many infants were exposed to multiple substances. The graph below shows the sources of drug exposure in mutually exclusive categories.^{13xi}

Mutually Exclusive Source of Substances Used during Pregnancy, Tennessee 2017



Source: Tennessee Department of Health

Neonatal Abstinence Syndrome 2017

Hamilton County
27 cases
 0.6% of births

Tennessee
1,090 cases
 1.4% of births

¹³ Figures have been rounded to the nearest whole percent; 0.6% of infants had unknown or unreported sources of exposure.

A close-up photograph of a hand holding a glass of water. The water is being poured or held in a way that creates a dynamic splash and bubbles. The entire image has a strong blue color cast. The text is overlaid on the upper left portion of the image.

Chapter 10. Environmental Health

Environmental factors play a central role in human development, health, and disease. The environment, including infectious agents, is one of the primary factors, along with genetic factors, personal behaviors, and social circumstances that affect human health.^{xlii}

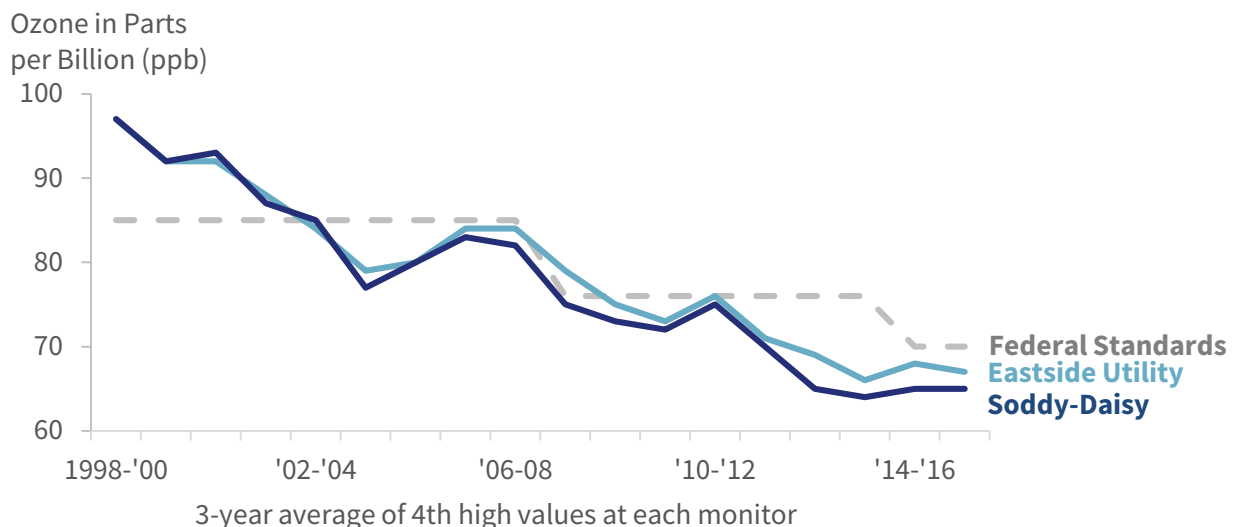
Air Quality

Despite dramatic progress cleaning the air since 1970, air pollution in the United States continues to harm people’s health and the environment. Poor air quality can cause or worsen respiratory diseases such as asthma, lung cancer, chronic obstructive pulmonary disease, as well as cardiovascular damage.^{xliii} Air pollution also reduces visibility, damages crops and buildings, and deposits pollutants on the soil and in bodies of water, affecting the water chemistry and the organisms living there. The Environmental Protection Agency (EPA) regulates nationwide air quality for six pollutants: ground-level ozone, particulate matter, lead (Pb), nitrogen oxides, carbon monoxide, and sulfur dioxide. Hamilton County is required to monitor two of these six pollutants— ozone and particulate pollution.

Ozone Pollution

Ground level ozone is the primary ingredient of smog air pollution and very harmful to breathe. Ozone reacts chemically with lung tissue, and damages crops, trees, and other matter. As outdoor air quality has improved over the years, the EPA has tightened air quality standards for ozone. Chattanooga-Hamilton County has been meeting the ozone standards since 2007-09 and was designated “in attainment” by the EPA for the 2015 standard of 70 parts per billion in January 2018.

8-Hour Ozone Design Values for Chattanooga Area



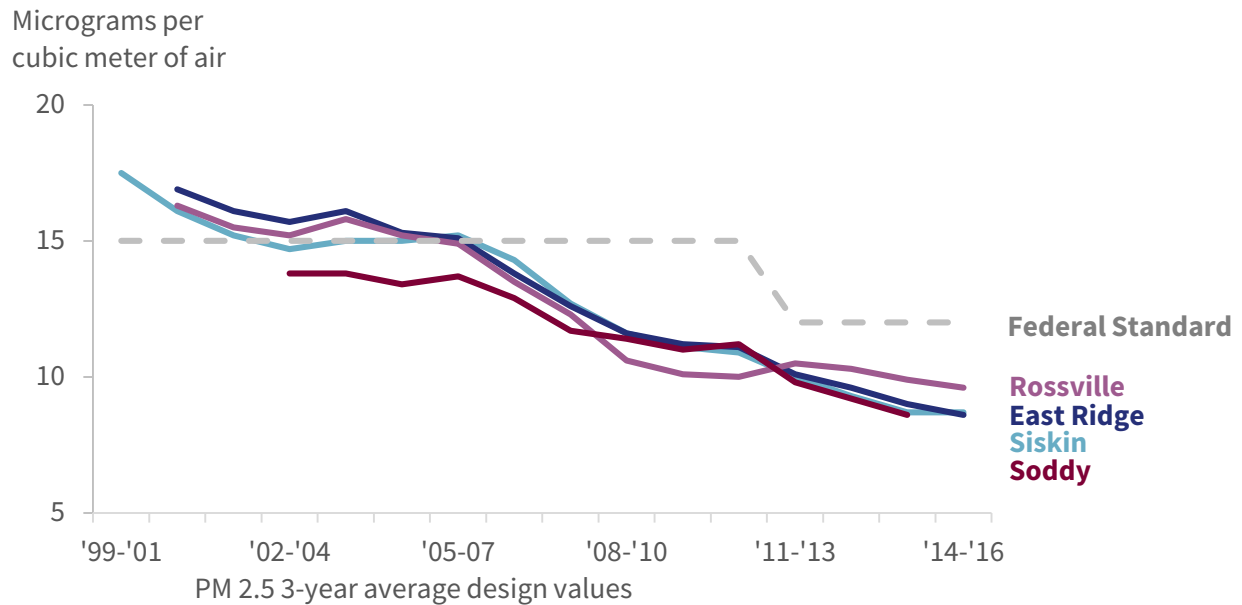
Source: Air Pollution Control Board

Particulate Matter

Particle pollution refers to the amount of particulate matter in the atmosphere, and includes a mixture of solid and liquid droplets. The smaller the particles are the more hazardous to human health. Particles less than 2.5 micrometers (PM_{2.5}) are of particular concern because they can enter the lungs and adversely affect health by causing asthma, lung cancer, or cardiovascular problems.

As outdoor air quality has improved over the years, the EPA has tightened air quality standards for particulate matter. Chattanooga-Hamilton County has been meeting the standards since 2008 and was designated as “in attainment” by the EPA for the 2012 particulate pollution standard of 12 µg/m³ in January 2015.

PM_{2.5} Particulate Design Values for Chattanooga Area



Source: Air Pollution Control Board

Water Quality

Approximately 300 million residents in the U.S. receive their tap water from a public water system, which is monitored and regulated by the EPA. An estimated 10% of Americans get their water from private ground water wells, which are not subject to EPA regulations.

Water Violations

A health-based drinking water violation is given to a community water system for going over a maximum containment level or maximum residual disinfectant level, or for not meeting correct treatment technique requirements, or if the public was not educated on a violation. There were no health-based drinking water violations in any community drinking water systems in Hamilton County in 2016, according to the 2018 County Health Rankings. Statewide, 23 counties reported drinking water violations in 2016. The 23 counties were primarily rural, but also included more populated counties: Knox, Jackson, Rutherford, and Sullivan Counties.



There were no health-based drinking water violations.

Fluoridated Water

The Oral Health Services program of the Tennessee Department of Health, in collaboration with the Tennessee Department of Environment and Conservation, continues an active statewide community water fluoridation program. As of July 2014, 282 public water systems in Tennessee distributed fluoridated water to 5.1 million residents. In Hamilton County, nine out of ten water systems serving county residents provide fluoridated water to its customers. The water system serving Soddy Daisy residents discontinued their fluoridation program in 2016.

9 of 10 water systems provided fluoridated water.



In 2014, the Tennessee Department of Health estimated that 88% of residents who drink water from public water systems in Tennessee are receiving fluoridated water, compared with nearly 75% nationwide.



Lead Poisoning

People can get lead poisoning from eating lead contaminated soil or paint chips containing lead, and by breathing or swallowing lead dust. Lead poisoning is considered the most serious environmental threat to children’s health. Children six years old and younger are at the highest risk. Lead poisoning often occurs with no obvious symptoms and frequently goes unrecognized. Blood lead levels in children as low as 10 micrograms per deciliter (µg/dL) can be associated with reading and learning disabilities, impaired hearing, damaged red blood cell production, hyperactivity, and behavioral problems.

Southside Chattanooga Lead Site

After a local case of lead poisoning in 2011, the EPA, in cooperation with the Tennessee Department of Environment and Conservation and the Department of Health, tested a number of properties in Southside Chattanooga for lead in the soil. Between 2011 and 2017, approximately 500 properties were inspected, and 162 properties were identified as exceeding federal guidelines for lead concentrations in the soil and subsequently remediated. In September 2018, after examining an additional 150 properties, the EPA put the site on the Superfund National Priorities list, making it eligible for long-term, permanent cleanup. The area has been designated as the Southside Chattanooga Lead Site. The site includes residential homes, parks, schools, and playgrounds where foundry waste was once used as fill or topsoil.

Lead Screening

The Tennessee Department of Health monitors lead screenings and conducts required reporting of confirmed elevated lead blood levels in children ages 6 months to 6 years. At the county level, the Chattanooga-Hamilton County Health Department offers care coordination for children identified with elevated blood levels, which can include educational and nutritional counseling, home visits, and referrals to community resources, depending on individual need. Recent efforts by the Chattanooga-Hamilton County Health Department, the City of Chattanooga, the EPA, and community groups to educate the public and health-care providers about lead poisoning may have contributed to the increased numbers of children screened for elevated lead blood levels.

Elevated Lead Blood Levels in Hamilton County

	2014	2015	2016	2017
Number of Children Screened for Elevated Blood Lead Levels	3,058	4,139	4,497	4,412
Confirmed Elevated Blood Lead Levels	12	12	16	22
Referrals to Health Department for Care Coordination	8	18	16	26

Source: Tennessee Department of Health, Tennessee Childhood Lead Poisoning Prevention Program

Rabies

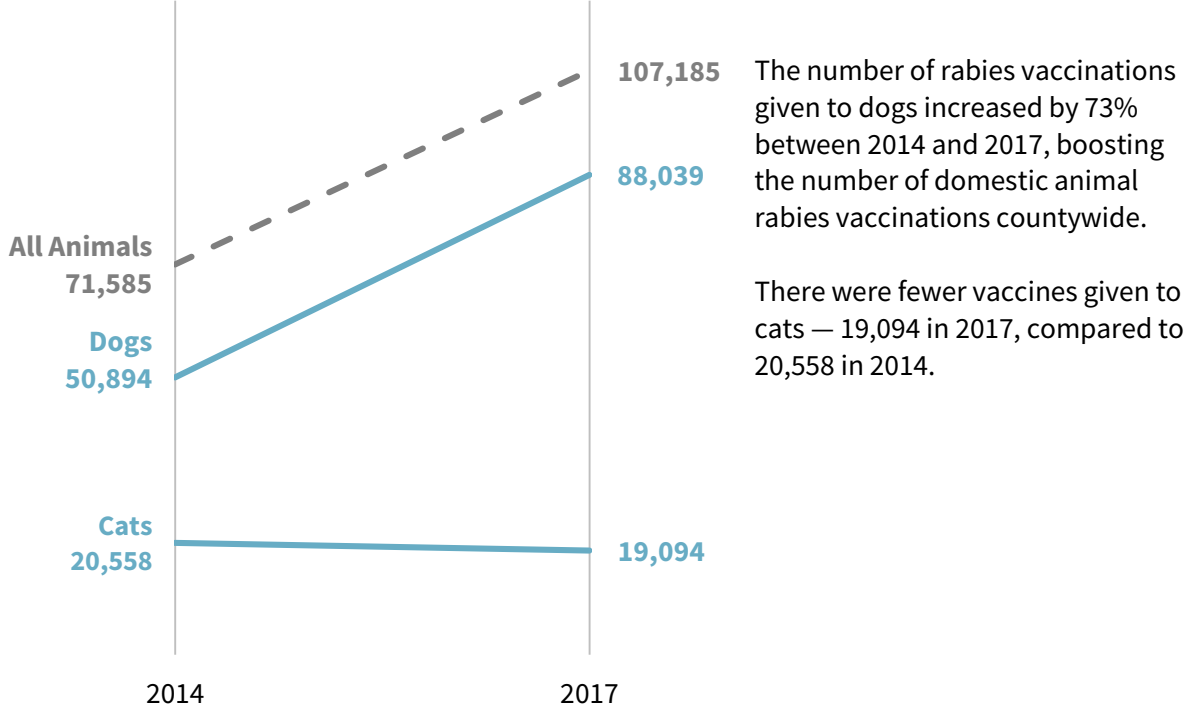
An often forgotten but very serious public health concern is rabies. The disease can be deadly to people and animals.

Both state and local regulations require all dogs and cats to be properly vaccinated against rabies. To provide a convenient opportunity for all pet owners to have their pets vaccinated, the Chattanooga-Hamilton County Health Department in partnership with the Hamilton County Veterinary Medical Association organizes rabies vaccination clinics in April of every year. In recent years, the McCamey Animal Center and the Humane Educational Society of Chattanooga offer regular vaccination clinics with discounted or free rabies vaccinations, boosting the number of vaccines given countywide, particularly to dogs.

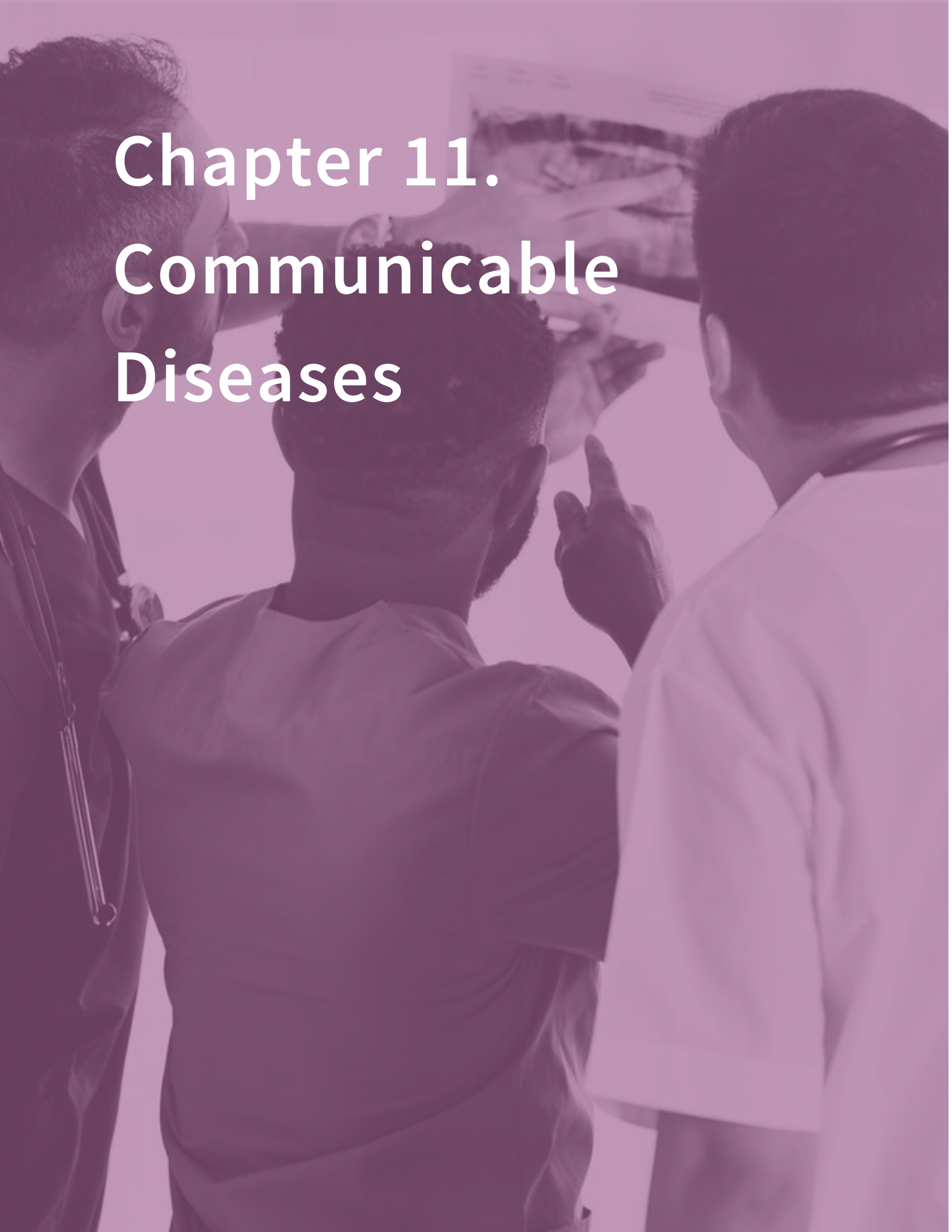
The number of rabies cases in domestic animals has declined dramatically due to mandatory vaccination laws for dogs and cats, according to the Tennessee Department of Health. However, rabies among wildlife (especially skunks, bats and raccoons) has become more prevalent, and the higher the incidence of rabies in wildlife, the greater the risk to domestic animals.

In 2017, the Chattanooga-Hamilton County Health Department investigated 703 animals for possible rabies infection. Of those, three wild animals (two bats and one raccoon) tested positive for rabies.

Reported Animal Rabies Vaccinations in Hamilton County



Source: Chattanooga-Hamilton County Health Department

A photograph of three medical professionals in a meeting, overlaid with a semi-transparent purple filter. One person in the center is pointing at a document held by another person on the right. A third person is visible on the left, also looking towards the document. The text 'Chapter 11. Communicable Diseases' is overlaid in white on the left side of the image.

Chapter 11. Communicable Diseases

The Epidemiology Program at the Chattanooga-Hamilton County Health Department collects and analyzes information on certain communicable diseases for the purposes of determining disease impact, assessing trends in disease occurrence, characterizing affected populations, prioritizing control efforts, and evaluating prevention strategies.

Notifiable Diseases

A notifiable disease is one that is required to be reported to public health authorities. Generally, these are diseases that are infectious from person-to-person or from some agent in the environment to people (for example, mosquitoes or ticks). Tracking these diseases provides an early warning system for the population as a whole. An "outbreak" is a cluster of cases of a disease. Monitoring reportable diseases allows us to determine when an outbreak is occurring.

Following is a list of selected notifiable diseases and the corresponding Hamilton County and Tennessee disease burden for the Centers for Disease Control and Prevention Morbidity and Mortality Weekly Report (MMWR) year 2017. Notifiable sexually transmitted disease data are presented on the following pages.

Select Notifiable Diseases	Hamilton County		Tennessee
	Number of Cases	Rate per 100,000	Rate per 100,000
	2017	2017	2017
Campylobacteriosis	39	10.8	13.8
Cryptosporidiosis	13	3.6	3.2
Ehrlichiosis/Anaplasmosis	5	1.4	1.8
Enterobacteriaceae, Carbapenem-resistant	7	1.9	11.0
Haemophilus influenzae, invasive	5	1.4	2.7
Hepatitis A, acute	0	0.0	0.1
Hepatitis B, acute	7	1.9	5.8
Hepatitis C, acute	6	1.7	3.0
Legionellosis	10	2.8	3.1
Lyme disease	0	0.0	0.6
Pertussis	4	1.1	3.3
Salmonellosis	41	11.3	14.6
STEC (Shiga toxin-producing Escherichia coli)	3	0.8	2.8
Shigellosis	14	3.9	4.6
Spotted Fever Rickettsiosis	21	5.8	11.5
Tuberculosis	7	1.9	2.1

Source: Tennessee Department of Health

Hepatitis A

Since March 2017, CDC's Division of Viral Hepatitis has been assisting several state and local health departments with hepatitis A outbreaks, which have occurred primarily among persons experiencing homelessness, persons who use injection and non-injection drugs, and their close direct contacts. In Tennessee, higher risk populations also include men who have sex with men.

The number of hepatitis A cases in Hamilton County continues to rise. Between May and December 29 of 2018, 72 cases of hepatitis A had been reported to the Chattanooga-Hamilton County Health Department. By comparison, zero to one cases per year are reported in non-outbreak years.

Vaccination is the best way to prevent hepatitis A infection. One dose of hepatitis A vaccine will provide immunity for up to ten years. A two-dose hepatitis A vaccine series is available for adults. Immunity resulting from disease or two-dose vaccination is life-long. Health officials recommend pediatric hepatitis A vaccine for all children and has been required for kindergarten entry in Tennessee since 2011.


Sexually Transmitted Diseases

Sexually Transmitted Diseases (STDs) refer to more than 25 infectious organisms transmitted primarily through sexual activity. STDs can cause reproductive health problems, fetal and perinatal health problems, and cancer. STD prevention as an essential primary care strategy is integral to improving reproductive health.

Nearly 2.3 million cases of chlamydia, gonorrhea, and syphilis were diagnosed in the United States in 2017, according to preliminary data from the Centers for Disease Control. This surpassed the previous record set in 2016 by more than 200,000 cases and marked the fourth consecutive year of sharp increases in these STDs.

The table below summarized the 2017 incidence rates for chlamydia, gonorrhea, and syphilis for Hamilton, Tennessee, and the United States. These figures represent the number of diagnoses per 100,000 people. Incidence of gonorrhea in Hamilton County exceeded the national rate by 47% and the state rate by 39%. Incidence rates for chlamydia and syphilis were similar to the nation and slightly higher than the state.

More detailed information about STDs in Hamilton County is presented on the following pages, including incidence by race/ethnicity. Note that for STDs, data are reported by the following categories: Non-Hispanic White, Non-Hispanic Black, and Hispanic. This is a departure from Census and mortality data presented earlier in the report, where Hispanic ethnicity is reported as its own category separate from race.



	Hamilton County	Tennessee	United States
Incidence Rates (cases per 100,000)	2017	2017	2017
Chlamydia	532	523	529
Gonorrhea	257	185	172
Syphilis (all stages of infection) ¹⁴	29	22	31

Sources: Tennessee Department of Health and Centers for Disease Control (STD Surveillance 2017)

¹⁴ Syphilis (all stages of infection) includes primary & secondary, early latent, late latent, and congenital.

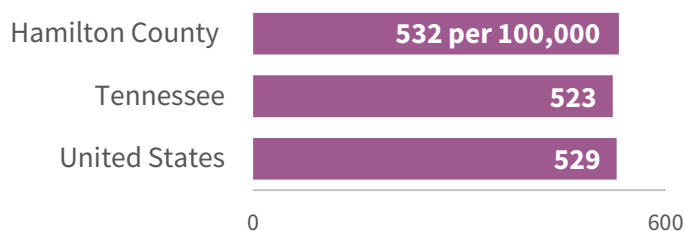
Chlamydia

Chlamydia, caused by infection with *Chlamydia trachomatis*, is the most common notifiable disease in the United States. Chlamydial infections in women are usually asymptomatic.^{xiv} Untreated infection can result in serious, permanent damage to a woman's reproductive system. This can make it difficult or impossible for her to get pregnant later on.

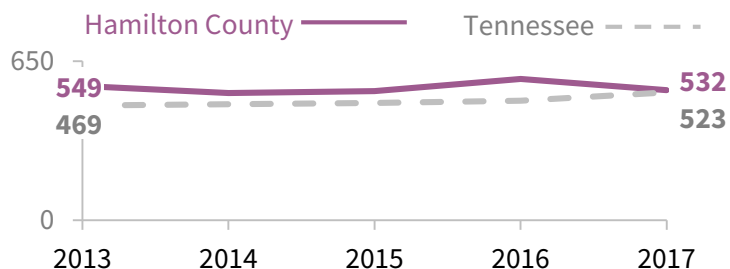
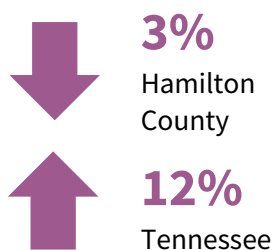
Number of Chlamydia Cases Hamilton County, 2017

1,922

Chlamydia Incidence Rates Cases per 100,000 Residents, 2017



Chlamydia Incidence Rates per 100,000 Hamilton County and Tennessee, 2013-2017



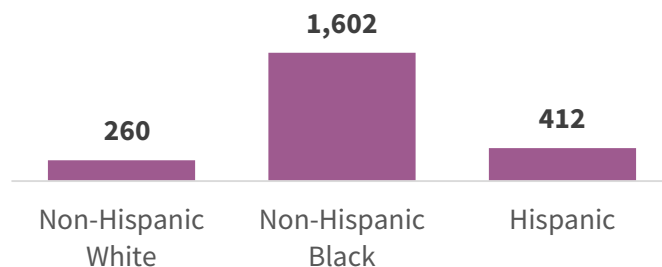
Chlamydia Incidence Rates per 100,000 by Race/Ethnicity Hamilton County, 2017

Non-Hispanic Blacks:

6 X Non-Hispanic Whites

4 X Hispanics

As likely to contract chlamydia



Sources: Tennessee Department of Health and Centers for Disease Control

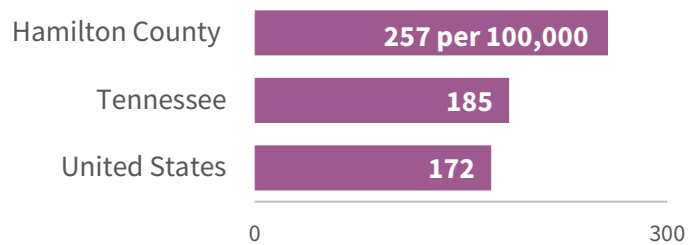
Gonorrhea

Gonorrhea is a sexually transmitted disease caused by infection with the *Neisseria gonorrhoeae* bacterium and is the second most commonly reported notifiable disease in the U.S. Gonorrhea infects the mucous membranes of the reproductive tract, including the cervix, uterus, and fallopian tubes in women, and the urethra in women and men. It can also infect the mucous membranes of the mouth, throat, eyes, and rectum. Gonorrhea is a major cause of pelvic inflammatory disease, which can lead to serious outcomes in women such as tubal infertility or ectopic pregnancy.

**Number of Gonorrhea Cases
Hamilton County, 2017**

928

**Gonorrhea Incidence Rates
Cases per 100,000 Residents, 2017**



Gonorrhea Incidence Rates per 100,000 Hamilton County and Tennessee, 2013–2017



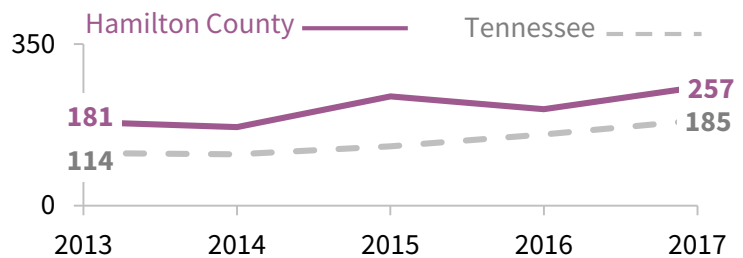
42%

Hamilton
County



62%

Tennessee



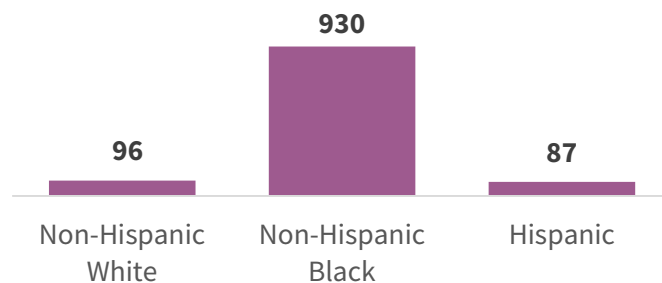
Gonorrhea Incidence Rates per 100,000 by Race/Ethnicity Hamilton County, 2017

Non-Hispanic Blacks:

10 X Non-Hispanic Whites

10 X Hispanics

As likely to contract gonorrhea



Source: Tennessee Department of Health and Centers for Disease Control

Syphilis

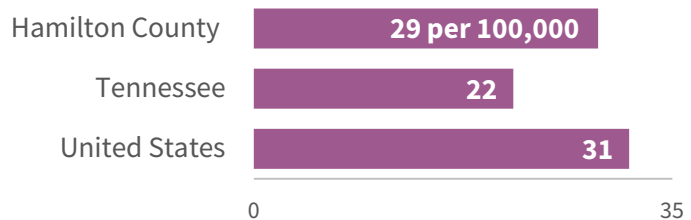
Syphilis, caused by the bacterium *Treponema pallidum*, can cause significant complications if left untreated. Untreated early syphilis in pregnant women results in perinatal death in up to 40% of cases, and if acquired and untreated during the four years preceding pregnancy, may lead to infection of the fetus in 80% of cases.ⁱⁱ

Syphilis is divided into stages (primary, secondary, latent, and tertiary). The figures below are based on the combined total of all stages of syphilis diagnoses.



Number Syphilis Cases (All Stages) Hamilton County, 2017

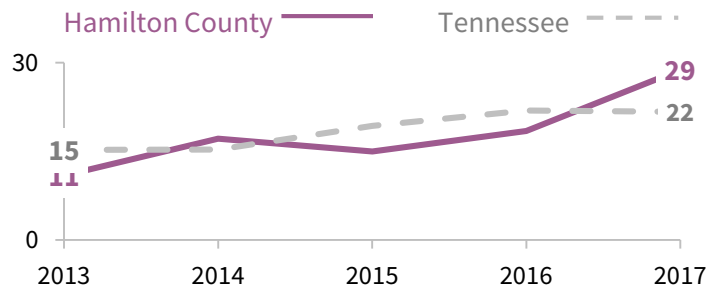
104

Syphilis Incidence Rates (All Stages) Cases per 100,000 Residents, 2017



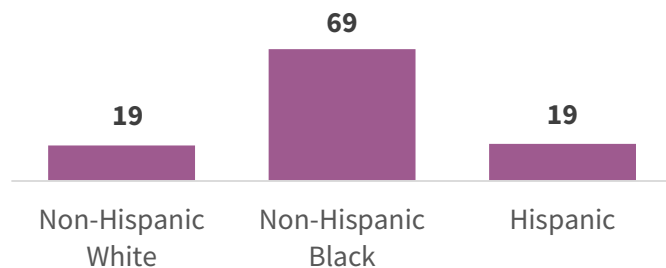
Syphilis Incidence Rates per 100,000 Hamilton County and Tennessee, 2013-2017

 **2.6 X**
Hamilton County
 **47%**
Tennessee



Syphilis Incidence Rates per 100,000 by Race/Ethnicity Hamilton County, 2017

Non-Hispanic Blacks:
3.6 X Non-Hispanic Whites
3.6 X Hispanics
 As likely to contract syphilis



Source: Tennessee Department of Health and Centers for Disease Control

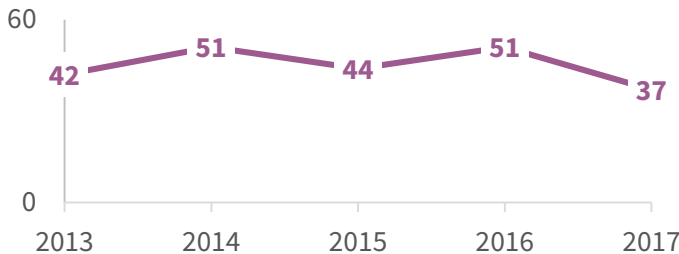
HIV Disease

Human immunodeficiency virus infection and acquired immune deficiency syndrome (HIV/AIDS) is a spectrum of conditions caused by infection with the human immunodeficiency virus (HIV). Once considered a death sentence, thanks to modern medicine and treatment adherence, HIV patients are able to manage this virus more effectively. The Centers for Disease Control and Prevention estimates that about 1.1 million people in the United States were living with HIV at the end of 2015 and that approximately 15% do not know they are infected.^{xlv} The CDC recommends testing everyone between the ages of 13 and 64 at least once as part of routine health care and testing people in high-risk groups more often.

Number New HIV Cases Hamilton County

In 2017, there were 37 new HIV diagnoses in Hamilton County. This includes all people newly diagnosed with HIV, regardless of the stage of the disease (HIV or AIDS).

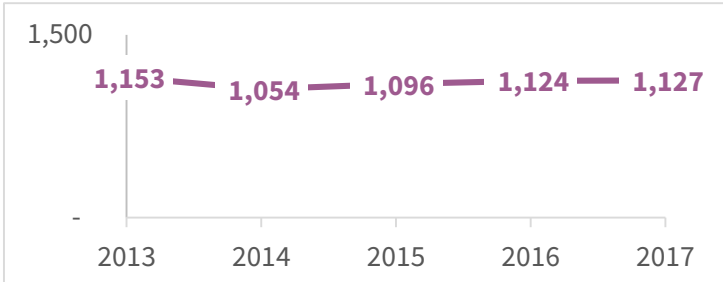
Number of New HIV Cases Hamilton County, 2013-2017



Living with HIV Hamilton County

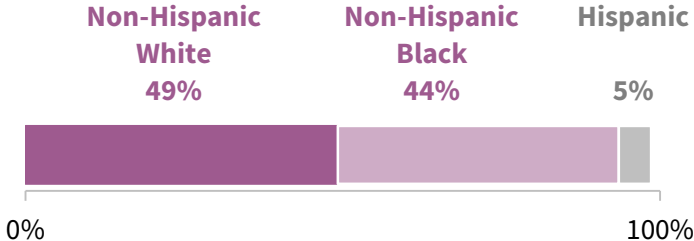
In 2017, there were 1,127 individuals living with HIV disease in Hamilton County.

Number of Individuals Living with HIV Disease in Hamilton County, 2013-2017



Living with HIV in Hamilton County by Race and Ethnicity, 2017

Of the 1,127 individuals living with HIV disease in Hamilton County in 2017, 49% were White (non-Hispanic), 44% were Black (non-Hispanic), and 5% were Hispanic.



Source: Tennessee Department of Health

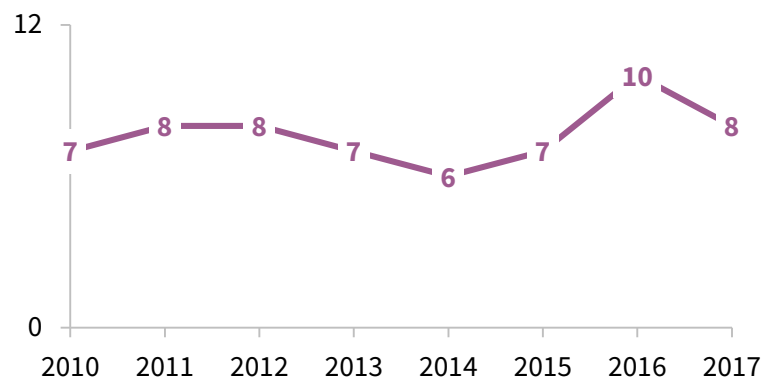
Tuberculosis

Tuberculosis (TB) is caused by a bacterium called *Mycobacterium tuberculosis* that usually attacks the lungs. TB is spread through the air from one person to the other when a person with active TB disease of the lungs or throat coughs, sneezes, speaks, laughs, or sings. One-third of the world's population is infected with TB, resulting in approximately 1.5 million TB-related deaths worldwide.

In 2017, there were 9,105 TB cases (rate of 2.8 cases per 100,000 persons) reported in the U.S., according to the Centers for Disease Control. This is a decrease from the number of cases reported in 2016 and the lowest case count on record in the United States. In 2017, 70% of reported TB cases in the United States occurred among foreign-born persons. The case rate among foreign-born persons (14.7 per 100,000 persons) was approximately 15 times higher than among U.S.-born persons (1.0 per 100,000 persons).

Statewide, there were 128 TB cases (1.9 per 100,000) in 2017. Almost half (48%) of the cases in Tennessee were among foreign-born residents.

Number of New Tuberculosis Cases in Hamilton County, 2010–2017



In Hamilton County, there were eight TB cases in 2017.

Source: Chattanooga-Hamilton County Health Department

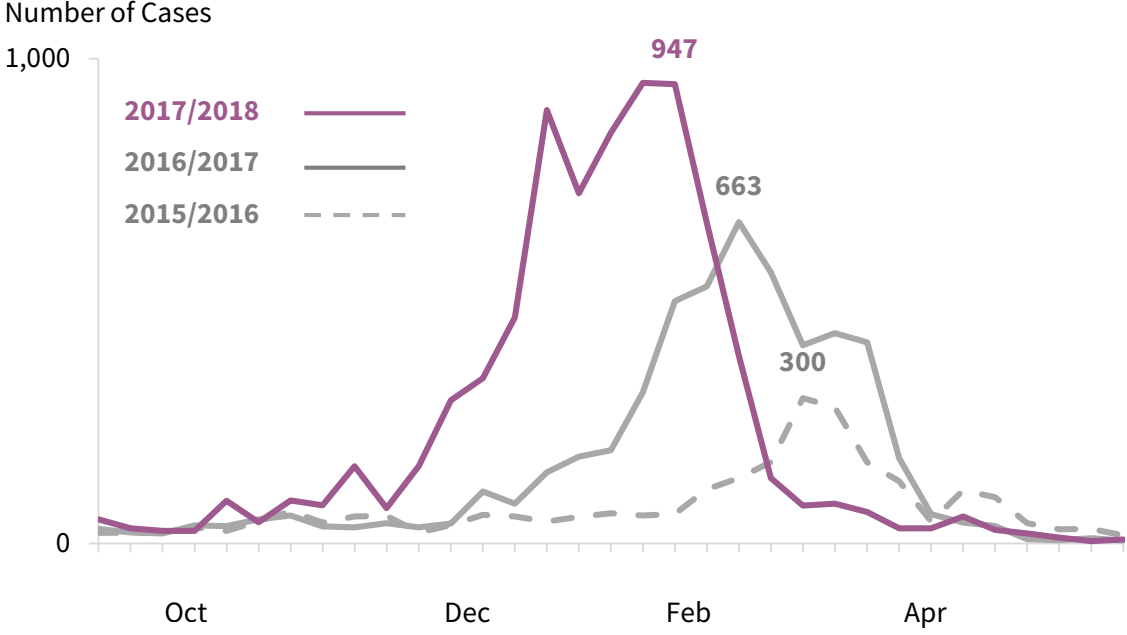
Influenza-Like-Illness

Influenza (flu) is a contagious respiratory illness caused by influenza viruses. It can cause mild to severe illness. Serious outcomes of flu infection can result in hospitalization or death. Tennessee had the third highest death rate from influenza and pneumonia in the nation in 2016.^{xlvi} In 2016, there were 57 deaths in Hamilton County attributed to flu and pneumonia.

The 2017-2018 flu season was very intense. By early February 2018, reported levels of influenza-like-illness across the country were as high as was observed at the peak of the 2009 H1N1 flu pandemic.^{xlvii} In Hamilton County, reports of influenza-like-illness peaked in early February as well, earlier than the previous two influenza seasons.

The Chattanooga-Hamilton County Health Department tracks influenza-like-illness (ILI) in the community as an indicator of the current influenza season. Sentinel providers in Hamilton County are health care providers who volunteer to provide weekly information on how many patients are visiting their practices with ILI, which is defined by the Centers for Disease Control and Prevention as having a fever with a temperature of 100° F or greater and a cough and/or sore throat in the absence of a known cause other than influenza.

Hamilton County Private Provider Influenza-Like Illness* (ILI) Surveillance



Source: Chattanooga/Hamilton County Health Department ILI Surveillance MMWR week 19 ending May 19, 2018

Childhood Immunizations

Immunizations can prevent disability and death from infectious diseases. Immunizations can also help control the spread of disease in communities. Even though most infants and toddlers have received all recommended vaccines by age 2, many under-immunized children remain, leaving the potential for outbreaks of disease.

The Tennessee Department of Health’s annual survey of immunization status of 24-month old children tracks progress towards achieving on-time immunization with each routinely recommended vaccine for that population. The goal for the Tennessee Department of Health’s Immunization Program is for 90% of Tennessee children under age two to have completed the immunization series for each of seven vaccines which protect against the 11 following diseases: diphtheria, tetanus and pertussis (combined as DTaP); polio (IPV); measles, mumps and rubella (combined as MMR); hepatitis B (HBV); Haemophilus influenza type B (Hib); varicella (chicken pox); and pneumococcus (PCV). The Healthy People 2020 goal is to increase the percentage of children aged 19 to 35 months who complete all the recommended doses of all of the following: DTaP, polio, MMR, Hib, hepatitis B, varicella, and PCV to (80%).

2017 Immunization Status of 24-Month-Old Children: Immunizations Complete^{xlviii}



Hamilton County	74%
Tennessee	74%
Tennessee Objective	90%

Appendix



Data Sources and Where to Find Data

Centers for Disease Control and Prevention <http://www.cdc.gov/>

- CDC Sexually Transmitted Diseases Data & Statistics: <https://www.cdc.gov/std/stats/>
- Behavioral Risk Factor Surveillance System: http://www.cdc.gov/brfss/data_tools.htm
- CDC WONDER Data Reports and Systems: <http://wonder.cdc.gov>
- Health, United States: <http://www.cdc.gov/nchs/hus.htm>
- National Center for Health Statistics: <https://www.cdc.gov/nchs/index.htm>
- WISQARS (Web-based Injury Statistics Query and Reporting): <https://www.cdc.gov/injury/wisqars/index.html>
- Youth Risk Behavior Surveillance System: <http://www.cdc.gov/HealthyYouth/yrbs/index.htm>

Hamilton County Government <http://www.hamiltontn.gov/>

- Chattanooga-Hamilton County Air Pollution Control Bureau: <http://apcb.org>
- Chattanooga-Hamilton County Health Department: <http://health.hamiltontn.org/>
- Hamilton County Epidemiology Surveillance Data: <http://health.hamiltontn.org/AllServices/CommunicableDiseases/Epidemiology.aspx>
- Chattanooga-Hamilton County Health Department Community Assessment and Planning (health data): [http://health.hamiltontn.org/DataMedia/CommunityAssessmentPlanning\(HealthData\).aspx](http://health.hamiltontn.org/DataMedia/CommunityAssessmentPlanning(HealthData).aspx)

Tennessee Department of Health <http://tn.gov/health>

- Birth Statistics: <https://www.tn.gov/health/health-program-areas/statistics/health-data/birth-statistics.html>
- Behavioral Risk Factor Surveillance System (Tennessee data): <https://www.tn.gov/health/health-program-areas/statistics/health-data/brfss/brfss/about-brfss.html>
- Cancer Registry <https://www.tn.gov/health/health-program-areas/tcr/tennessee-cancer-registry-data.html>
- Communicable and Environmental Disease Services Weekly and Annual Reports: <https://www.tn.gov/content/tn/health/ceds-weeklyreports.html>
- Death Statistics: <https://www.tn.gov/health/health-program-areas/statistics/health-data/death-statistics.html>
- Health Statistics: <https://www.tn.gov/health/health-program-areas/statistics.html>
- Neonatal Abstinence Syndrome: <https://www.tn.gov/health/nas.html>
- Tennessee Population Projections: <https://www.tn.gov/content/tn/health/health-program-areas/statistics/health-data/population.html>
- Tennessee Drug Overdose Dashboard: <https://www.tn.gov/content/tn/health/health-program-areas/pdo/pdo/data-dashboard.html>

Tennessee Department of Mental Health and Substance Abuse Services

<https://www.tn.gov/content/tn/behavioral-health.html>

- Data, Research, and Planning: <https://www.tn.gov/behavioral-health/research.html>

- County Data Book: <https://www.tn.gov/behavioral-health/research/data--research--and-planning/county-data-book.html>

United States Census Bureau <https://www.census.gov/>

- American Fact Finder: <https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>
- Small Area Health Insurance Estimates (SAHIE): <https://www.census.gov/data/datasets/time-series/demo/sahie.html>

Other

- Annie E. Casey Foundation, Kids Count Data Profiles: <http://datacenter.kidscount.org>
- Chattanooga-Hamilton County Regional Planning Agency: <http://www.chcrpa.org/>
- County Health Rankings: <http://www.countyhealthrankings.org/>
- Feeding America, Map the Meal Gap: <http://map.feedingamerica.org/>
- Kaiser Family Foundation, State Health Facts: <http://www.statehealthfacts.org/>
- Federal Bureau of Investigation, Crime in the United States: <https://ucr.fbi.gov/crime-in-the-u.s>
- Institute for Health Metrics and Evaluation (IHME) <http://www.healthdata.org/data-visualization/gbd-compare>
- March of Dimes Peristats: <http://www.marchofdimes.com/peristats/>
- National Cancer Institute: <https://seer.cancer.gov/faststats/selections.php?series=cancer>
- SAMHSA (Substance Abuse and Mental Health Services Administration): <https://www.samhsa.gov/>
- Tennessee Bureau of Investigation, Tennessee Crime Statistics: <https://www.tn.gov/tbi/crime-issues/crime-issues/crime-statistics.html>
- The Sycamore Institute: <https://www.sycamoreinstitutetn.org/>
- U.S. Department of Health and Human Services, *Healthy People 2020*: <https://www.healthypeople.gov>

Technical Notes and Terms

Age-Adjusted Mortality Rate: Number of deaths per 100,000 age-adjusted population. Most mortality rates in this report are based on three-year rates. Three-year rates are used to smooth out short-term fluctuations, and highlight longer-term trends or cycles.

Age-adjustment: According to the National Center for Health Statistics, “Age-adjustment is used to compare risks of two or more populations at one point in time or one population at two or more points in time. Age-adjusted rates are computed by the direct method by applying age-specific rates in a population of interest to a standardized age distribution, in order to eliminate differences in observed rates that result in age differences in the population. Age-adjusted rates should be viewed as relative indexes rather than actual measures of risk.”

American Community Survey (ACS): An ongoing statistical survey by the U.S. Census Bureau, sent to approximately 250,000 addresses monthly (or 3 million per year). The ACS replaced the long form of the decennial census, which was discontinued with the 2010 Census. The ACS is the largest survey other than the decennial census that the Census Bureau administers.

Behavioral Risk Factor Surveillance System (BRFSS): The Behavioral Risk Factor Surveillance System (BRFSS) is a state-based random digit dial (RDD) telephone survey conducted annually in all states, the District of Columbia, and U.S. territories. Data obtained from the BRFSS are representative of each state’s total non-institutionalized population over 18 years of age and has included more than 400,000 annual respondents with landline telephones or cellphones since 2011. Data are weighted using iterative proportional fitting (also called "raking") methods to reflect population distributions.

In the County Health Rankings, data from the BRFSS are used to measure various health behaviors and health-related quality of life (HRQoL) indicators. Health-related quality of life measures are age-adjusted to the 2000 U.S. standard population.

Prior to the 2016 County Health Rankings, up to seven survey years of landline only BRFSS data were aggregated to produce county estimates. However, even with multiple years of data, these did not provide reliable estimates for all counties, particularly those with smaller respondent samples. **Since the 2016** County Health Rankings, the CDC produces county estimates using single-year BRFSS data and a multilevel modeling approach based on respondent answers and their age, sex and race/ethnicity, combined with county-level poverty and county and state level contextual effects¹.

One limitation of the BRFSS is that all measures are based on self-reported information, which cannot be validated with medical records. Another limitation is that these model-based estimates were created by borrowing information from the entire BRFSS, which may or may not accurately reflect those counties’ local intervention experiences. Additionally, the confidence intervals constructed from these methods appear much smaller than confidence intervals reported for direct survey methods in previous years.

Birth Rate: The ratio of live births in an area to the population of that area, expressed per 1,000 population per year.

Body Mass Index (BMI) = Weight in pounds / 703 (Height in inches)²

County Health Rankings: The County Health Rankings is a collaboration between the Robert Wood Johnson Foundation and the University of Wisconsin Population Health Institute. The annual report compiles health measures for every county in the United States and ranks counties within states and county.

Several of the County Health Ranking indicators in this report come from Behavioral Risk Factor Surveillance System data. These indicators include adult health status, healthy days for mental and physical health, cigarette smoking, physical inactivity, obesity, and excessive alcohol use. Since the 2016 County Health Rankings, the CDC produces county estimates using single-year BRFSS data and a multilevel modeling approach based on respondent answers and their age, sex and race/ethnicity, combined with county-level poverty and county and state level contextual effects¹. To produce estimates for those counties where there was no or limited data, the modeling approach borrowed information from the entire BRFSS sample as well as Census population estimates. CDC used a parametric bootstrapping method to produce standard errors and confidence intervals for those point estimates. This estimation methodology was validated for all U.S. counties, including those with no or small (<50 respondents) samples².

Data Suppression: Diseases or conditions with fewer than five cases in Hamilton County were not presented in responsibility to protect the confidentiality and privacy of the population while also adequately presenting information and data concerning conditions that affect public health.

Hispanic Origin: Hispanic origin refers to persons whose ancestry, national group, lineage, heritage, or country of birth originated from a Spanish speaking country or culture.

Hospital Discharge Data: Quarterly, each hospital licensed by the Tennessee Department of Health is required by law to report selected information on each inpatient discharged during the period for inclusion in the Hospital Discharge Data System. Additionally, data from each emergency room visit and ambulatory surgery performed at the hospital are submitted. Excluded from reporting are federal hospitals and mental health facilities licensed by the Department of Mental Health and Developmental Disabilities. Also excluded, except where specified, are newborn discharge data.

Infant Mortality Rate: Number of infant deaths under one year of age per 1,000 live births. In this report, infant mortality race/ethnicity comparisons are based on *three-year moving averages*. A moving average is commonly used with time-series data to smooth out short-term fluctuations and highlight longer-term trends or cycles.

Low Birthweight: A live birth of an infant of 2,500 grams (5 pounds, 8 ounces).

Teen Birth Rate: The ratio of live births to mothers aged 15-19, expressed per 1,000 population of women aged 15-19 per year.

Youth Risk Behavior Survey (YRBS): The YRBS collects self-reported data on health risk behaviors among students in grades 9-12 that contribute to morbidity and mortality in both adolescence and adulthood. The Centers for Disease Control and Prevention (CDC) has conducted the YRBS biennially since 1991. It works in conjunction with departments of health and education in most states and selected large cities to administer the YRBS to provide results that are valid for the state level and for those cities in which surveys are administered. In addition, the CDC conducts a separate nationwide survey. Survey estimates are not available for Hamilton County.

International Classification of Diseases, Tenth Revision (ICD-10) Codes for Causes of Death

ICD-10 codes are alphanumeric codes used by health care providers, health insurance companies, and public health agencies across the world to represent diagnoses. Every disease, disorder, injury, infection, and symptom has its own ICD-10 code. ICD-10 codes are used for everything from processing health insurance claims to tracking disease epidemics and compiling worldwide mortality statistics. The ICD-10 codes associated with the causes of death included in this report are detailed below.

Cause	ICD-10 Code
Diseases of the heart	I00-I109, I11, I13, I20-51
Malignant neoplasms (cancer)	C00-C97; Lung (Trachea, Bronchus and Lung): C33-34; Breast (female only): C50; Prostate: C61; Colorectal (Colon, Rectum and Anus): C18-C21; Pancreas: C25
Chronic lower respiratory diseases	J40-J47
Cerebrovascular diseases (stroke)	I60-I69
All injuries	U01-U03, V01-Y36, Y85-Y87, Y89
Unintentional injuries	V01-X59, Y85-Y86
Alzheimer's disease	G30
Diabetes mellitus	E10-E14
Nephritis, nephrotic syndrome and Nephrosis (kidney disease)	N00-N07, N17-N19, N25-N27
Intentional self-harm (suicide)	U03, X60-X84, U87.0
Firearms	U01.4, W32-W34, X72-X74, X93-X95, Y22-Y24, Y35.0
Essential hypertension and hypertensive renal disease	I10, I12, I15
Chronic liver disease and cirrhosis (liver disease)	K70, K73-K74
Assault (homicide)	U01-U02, X85-Y09, Y87.0
Poisonings	U01(.6-.7), X40-X49, X60-X69, X85-X90, Y10-Y19, Y35.2
--- Drug poisonings	X40-X44, X60-X64, X85, Y10-Y14
--- Opioid	Must have a drug poisoning code in the underlying cause of death and the presence of one of the following cause codes: T40.0, T40.1, T40.2, T40.3, T40.4, T40.6

Endnotes

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- ⁱⁱ Garfield, Rachel, Damico Anthony, Orgera, Kendal, “The Coverage Gap: Uninsured Poor Adults in States the Do Not Expand Medicaid.” *The Henry J. Kaiser Family Foundation*. June 12, 2018. <https://www.kff.org>.
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- ^v Martin JA, Hamilton BE, Osterman MJK, Driscoll AK, Drake P., “Births: Final Data for 2016,” *National Vital Statistics Reports*. Vol 67., no 1. Hyattsville, MD: National Center for Health Statistics. January 31, 2018. https://www.cdc.gov/nchs/data/nvsr/nvsr67/nvsr67_01.pdf.
- ^{vi} Child Trends Databank, “Fertility and Birth Rates, Indicators of Child and Youth Well-Being.” October 2016. www.childtrends.org.
- ^{vii} CNN, “US teen birth rate drops to all-time low,” June 30, 2017.
- ^{viii} Martin, “Births: Final Data for 2016.”
- ^{ix} Centers for Disease Control and Prevention, “Smoking during Pregnancy,” www.cdc.gov/tobacco/basic_information/health_effects/pregnancy/index.htm.
- ^x March of Dimes Prematurity Campaign, “The Impact of Premature Birth on Society,” www.marchofdimes.org/mission/the-economic-and-societal-costs.aspx.
- ^{xi} Kowlessar Nirajana M., Jiang, H. Joanna, Steiner, Claudia, “Hospital Stays for Newborns, 2011,” Agency for Healthcare Research and Quality, Healthcare Costs and Utilization Project, Statistical Brief #163. www.hcup-us.ahrq.gov/reports/statbriefs/sb163.pdf.
- ^{xii} The Sycamore Institute, “The Economic Impact of Chronic Disease in Tennessee.” November 15, 2017. www.sycamoreinstituten.org/2017/11/15/cost-chronic-disease-tennessee.
- ^{xiii} García MC, Bastian B, Rossen LM, et al. *Potentially Preventable Deaths Among the Five Leading Causes of Death — United States, 2010 and 2014*. *MMWR Morbidity and Mortality Weekly Report*/ 2016;65:1245–1255. DOI: <http://dx.doi.org/10.15585/mmwr.mm6545a1>

^{xiv} U.S. Department of Health and Human Services. *The Health Consequences of Involuntary Exposure to Tobacco Smoke: A Report of the Surgeon General*. Atlanta, GA: Centers for Disease Control and Prevention, Office on Smoking and Health, 2006.
www.surgeongeneral.gov/library/reports/secondhandsmoke/fullreport.pdf.

^{xv} Campaign for Tobacco Free Kids, “The Toll of Tobacco in Tennessee.” April 10, 2018.
www.tobaccofreekids.org/problem/toll-us/tennessee.

^{xvi} Ligibel, Jennifer A., Alfano, Catherine M., et al, “American Society of Clinical Oncology Position Statement on Obesity and Cancer, 2014.” *Journal of Clinical Oncology*. Published online 2014 Oct 1. doi: [10.1200/JCO.2014.58.4680](https://doi.org/10.1200/JCO.2014.58.4680).

^{xvii} Centers for Disease Control and Prevention, “Overweight and Obesity, Adult Obesity Prevalence Maps.” <https://www.cdc.gov/obesity/data/prevalence-maps.html>.

^{xviii} Finkelstein, Eric A, Trogon, Justin G., Cohen, Joel W., and Dietz, William, “Annual Medical Spending Attributable to Obesity: Payer and Service-specific Estimates.” *Journal of Health Affairs*, July 27, 2009. The estimated increased direct medical costs for Hamilton County calculated by multiplying the \$1,429 increase in individual medical costs by 85,817 the estimated number of obese adults in Hamilton County. Source for the estimated number of obese adults: 2018 County Health Rankings for Hamilton County, Tennessee.

^{xix} Tennessee Department of Education, “Tennessee Public Schools: A Summary of Weight Status Data 2016-17.” *Coordinated School Health*, September 2017.
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^{xx} American Lung Association, “Asthma and Children Fact Sheet.” www.lung.org.

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<https://doi.org/10.1513/AnnalsATS.201703-259OC>.

^{xxiii} Tennessee Department of Health Office of Performance Measurement.

^{xxiv} American Diabetes Association, “The Cost of Diabetes.” March 22, 2018.
www.diabetes.org/advocacy/news-events/cost-of-diabetes.html.

^{xxv} Centers for Disease Control and Prevention, “Diabetes Data and Statistics.”
www.cdc.gov/diabetes/data/.

^{xxvi} Centers for Disease Control and Prevention, National Vital Statistics Reports, “Deaths, Final Data for 2013,” www.cdc.gov/nchs/data/nvsr/nvsr64/nvsr64_02.pdf.

^{xxvii} Centers for Disease Control and Prevention, “United States Cancer Statistics: Data Visualizations.” <https://gis.cdc.gov/Cancer/USCS/DataViz.html>.

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