

# 2015

## PICTURE OF OUR HEALTH HAMILTON COUNTY, TENNESSEE 2015 COMMUNITY HEALTH PROFILE



Chattanooga-Hamilton County Health Department  
And Regional Health Council

November 2015



# 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

## **Health Department Values:**

Compassion

Integrity

Diversity

Excellence

Respect

## **Core Functions of the Health Department:**

Prevention

Education

Promotion

Policy Development

Assurance

Outreach

Protection

Assessment and Planning

Monitoring/Surveillance

Regulatory Compliance

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# Chattanooga-Hamilton County Regional Health Council

## **Regional Health Council Mission:**

To serve as the lead community-based organization designated by the Tennessee Department of Health to be responsible for community health assessment, regional health planning, and the provision of input regarding funding decisions for health and health-related initiatives which result in the improvement of community health.

Its members are appointed by the County Mayor and the Hamilton County Board of Commissioners. Its membership reflects representation from a variety of areas including medicine, social services, government, education, local business, non-profit organizations, community advocates, health insurance, mental health, and others.

## **Regional Health Council Vision:**

Every person will have the opportunity to experience optimal health as a result of renewing our commitment to redesign our community, one person, one neighborhood, one institution, and one system at a time through the cooperation of all people.

## **Regional Health Council Values:**

Spiritual Well-Being	Emotional and Physical Well-Being
Strong Families and Neighborhoods	Educational Opportunities and Achievements
Economic Prosperity	Safe and Healthy Environment with
Cultural Diversity and Inclusiveness	Supportive Institutions

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## Acknowledgements

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This report was published under the leadership of Chris Anderson, Chair of the Regional Health Council. The primary author of this report is Ione Farrar, program manager in Assessment and Planning at the Chattanooga-Hamilton County Health Department.

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November 4, 2015

Dear Colleague,

I am pleased to present the *Picture of Health for Hamilton County 2015*. This report documents selected health status indicators to monitor progress toward achieving *Healthy People 2020* goals. These objectives challenge us to take steps to increase the span and quality of life, reduce health disparities, and ensure access to preventive health services for all residents. This report was last published in 2010.

The report documents our progress in the areas of chronic disease, reducing motor vehicle accident mortality and infant mortality, reducing teen child-bearing, and improving infant health. It also documents ongoing public health challenges, including access to mental and behavioral health services, promoting healthy aging, reducing obesity, preventing and managing chronic diseases, and reducing health disparities. Hamilton County is fortunate to have a strong and active Regional Health Council that shares our commitment to prioritize health needs, recommend policy changes, and develop partnerships to foster collaborations to address our community's needs.

I believe this report is an important tool to evaluate the health of Hamilton County residents and to guide our efforts in health promotion and preventive services.

Also, I want to thank all of our partners, especially our Regional Health Council, for their hard work and contributions to the work of prevention. Through their support we continue to make progress in ensuring the health of our community.

Sincerely,

A handwritten signature in black ink that reads "Becky Barnes". The signature is fluid and cursive.

Becky Barnes  
Administrator

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## Introduction

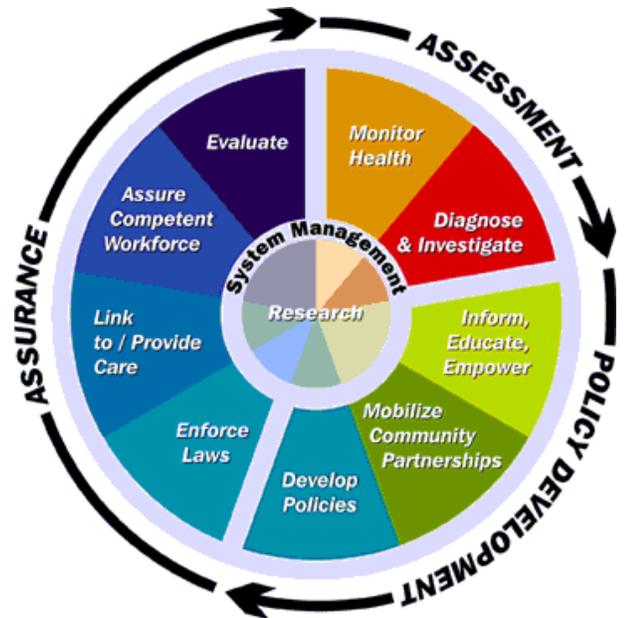
The 2015 Picture of Health for Hamilton County, Tennessee report is a collection of public health data used to provide a broad overview of the health of Hamilton County residents. The data used in this report comes from a variety of public health data systems, including U.S. Census, vital records, cancer registry, hospitalizations, reportable infectious diseases, and surveys such as the Behavioral Risk Factor Surveillance Survey (BRFSS), and the Youth Risk Behavior Survey (YRBS).

Hamilton County data will be compared to selected *Healthy People 2020* objectives to track local progress towards achieving health-related goals. *Healthy People 2020* is a comprehensive set of disease prevention and health promotion objectives for improving the health of Americans. *Healthy People 2020* establishes benchmarks for the next decade of health and monitors progress over time. *Healthy People 2020* is a project of the U.S. Department of Health and Human Services. Created by scientists both inside and outside of government, the objectives identify a wide range of public health priorities and specific, measurable objectives.<sup>i</sup>

## Core Principles of Public Health

Since 1921, the Chattanooga-Hamilton County Health Department has been providing public health services to residents of Hamilton County. Public health is the science of protecting and improving the health of communities. The ten Essential Public Health Services provide a fundamental guiding framework that describes public health activities and responsibilities of local public health systems<sup>ii</sup>:

1. **Monitor** health status to identify community health problems.
2. **Diagnose and investigate** health problems and health hazards in the community.
3. **Inform, educate, and empower** people about health issues.
4. **Mobilize** community partnerships to identify and solve health problems.
5. **Develop policies and plans** that support individual and community health efforts.
6. **Enforce** laws and regulations that protect health and ensure safety.
7. **Link** people to needed personal health services and assure the provision of health care when otherwise unavailable.
8. **Assure** a competent public health and personal healthcare workforce.
9. **Evaluate** effectiveness, accessibility, and quality of personal and population-based health services.
10. **Research** for new insights and innovative solutions to health problems.



The assessment of Hamilton County's health provided in this document is one of three major steps in public health, with policy development and assurance to follow.

**Table 1. Summary of Health Trends**

<b>Mortality Rates by Cause of Death</b>			
<b>3-Yr. Age Adjusted, 2000-2013</b>			
<b>IMPROVING</b>		<b>WORSENING</b>	
Heart Disease		Alzheimer's Disease	
Cancer		All Accidents	
Chronic Lower Respiratory Disease		Accidental Poisonings	
Stroke		Accidental Falls	
Motor Vehicle Accident		Suicide	
<b>Other Health Indicators</b>			
<b>IMPROVING</b>		<b>WORSENING</b>	
Teen Birth Rate (10-17) (2006-2013)		A&D Treatment Admissions* (2012-2014)	
Pregnancy Smoking % (2009 - 2013)			
Pre-term Births % (2002-2013)			
Infant Mortality 3-Yr. Rate (2000-2013)			
Black Infant Mortality 3-Yr. Rate (2002-2012)		Publicly funded treatment admissions	

## Key Data Findings

*Healthy People 2020* has established a subset of 26 indicators organized under twelve topics chosen to communicate major health concerns on a national level. The indicators were selected by *Healthy People 2020* on the basis of their ability to motivate action, the availability of data to measure progress, and their importance as public health issues. Each topic has one or more objectives from *Healthy People 2020* to measure progress. The *Healthy People 2020* Leading Health Indicator topic areas are:

- Access to Health Services
- Clinical Prevention Services
- Environmental Quality
- Injury and Violence
- Maternal, Infant, and Child Health
- Mental Health
- Nutrition, Physical Activity, and Obesity
- Oral Health
- Reproductive and Sexual Health
- Social Determinants
- Substance Abuse
- Tobacco

Based on the Leading Health Indicators, key findings from this report are detailed below.

### Overall Health

- Hamilton County life expectancy increased from 76 years in 1999 to 77.4 years in 2013. The life expectancy of African Americans in Hamilton County is 73.4 years, which is 4.5 years less than the average life expectancy for whites in Hamilton County (77.9 years).
- While heart disease and cancer continue to be the major causes of death in Hamilton County, age-adjusted mortality rates for these diseases have decreased significantly in recent years. Based on three-year rolling averages, age-adjusted mortality rates have decreased by 32% for heart disease (from 261.3 to 177.1 per 100,000) and by 20% for cancer (from 214.4 to 172.3 per 100,000) between 2000 and 2013.

### Access to Healthcare

- According to the U.S. Census Bureau, almost 44,000 (15.4%) of Hamilton County residents under age 65 did not have health insurance in 2013. Among working age adults (ages 18 to 64), 18.9% did not have health insurance. Residents under age 65 living at or below 138% of poverty were more likely to be uninsured (26.8%) than those living between 138% and 400% of poverty (16.5%). Note that these figures pre-date the 2014 implementation of individual mandate provisions of the Affordable Care Act.

## **Clinical Preventative Services**

- In 2014, 64.8% of children under age two had completed all of a series of seven vaccinations against 11 communicable diseases, according to state estimates. Sixty percent of residents ages 65 and older had received an influenza vaccine.

## **Environmental Quality**

- In 2013 and 2014, there were no days with an Air Quality Index (AQI) in the unhealthy range. The AQI reached “unhealthy for sensitive groups” an average of 5.6 days per year from 2010-2012.

## **Injury and Violence**

- Deaths from unintentional injuries increased by 29.5% between 2000 and 2013 based on three-year age-adjusted mortality rates.
- Unintentional injury deaths include deaths due to poisonings, motor vehicle accidents, and falls. Historically, motor vehicle accidents have been the leading cause of unintentional injury deaths; however, three-year age-adjusted poisoning mortality rates have increased by 185.4% between 2000 and 2013 (from 5.3 to 15.4 per 100,000), surpassing motor vehicle accident deaths in 2007. The increase in poisoning deaths is linked to an increase in drug abuse: of the 75 poisoning deaths in Hamilton County in 2012, 66 (88%) were due to drug overdose.
- Age-adjusted deaths due to motor vehicle accidents decreased by 22% between 2000 and 2013 (from 15.3 to 11.9 per 100,000). While motor vehicle crash deaths are down, motor vehicle crash rates are up. Between 2008 and 2013, motor vehicle crash rates rose from 36.8 to 51 crashes per 1,000 licensed drivers. The data suggests that distracted driving contributed to the rise in crashes: crashes attributed to distracted driving doubled (from 1.7 to 3.6 per 1,000 licensed drivers) while alcohol-related and injury crashes remained stable.
- Unintentional falls are the leading cause of injury visits to the emergency department (ED). In 2012, Hamilton County residents had 10,638 ED visits due to falls, more than double the total number of ED visits for motor vehicle accidents, poisonings, firearms, fires, and drowning combined.
- Although relatively small in number, three-year age-adjusted mortality rates due to accidental falls have increased by 84.6% between 2000 and 2013 (from 3.9 to 7.2 per 100,000). This is attributed to rise in the aging population. Of the 26 unintentional fall deaths in 2012, nineteen (73%) were aged 65 and older, including 11 (42%) aged 85 and older.

## **Maternal, Infant, and Child Health**

- Infant mortality rates in Hamilton County are improving. Based on three-year rolling rates, infant mortality decreased by 29.2% from 2000 to 2013, from 10.6 per 1,000 births to 7.5 per 1,000 births.

- In the past several years, Hamilton County infant mortality rates have been higher than state rates and were the second highest rates among the four largest Tennessee metropolitan counties, after Shelby County. In 2013, Hamilton County's infant mortality rate (6.7 per 1,000 births) was just under the Tennessee rate (6.8 per 1,000 births) and below both Shelby (9.7 per 1,000 births) and Davidson (7.7 per 1,000 births) Counties.

### **Mental Health**

- There were 157 deaths by suicide in Hamilton County between 2011 and 2013, and the age-adjusted incidence rate was 14.4 per 100,000. White males are at the highest risk. Of the 157 suicides over the three year period, 119 (76%) were committed by white males. Three-year age-adjusted suicide rates increased by 27.3% between 2000 and 2013 (from 11.3 to 14.4 per 100,000).

### **Nutrition, Physical Activity, and Obesity**

- Two out of every three adults (66%) in Hamilton County have are either overweight or obese, based on self-reported height and weight. Hamilton County's overweight/obesity prevalence is similar to the state (67%) and to the nation (64%)
- More than a quarter of high school students (27%) in Hamilton County are either overweight or obese, based on self-reported height and weight. Hamilton County's adolescent overweight/obesity prevalence is similar to the nation (28%) and lower than the state (33%).
- Almost two out of every three adults (31%) in Hamilton County are sedentary, lower than the state rate (34%) but higher than the national rate (25%).
- The majority of high school students in Hamilton County fail to meet recommended guidelines for physical activity. Three out of four (75%) do not get the recommended sixty minutes of daily physical activity, which was similar to state (75%) and national (73%) data for 2009. More than one in four high school students (26%) used a computer or played computer games outside of school (for non-school work) for three or more hours per day.
- Adult diabetes prevalence in Hamilton County has increased by 25% since 2004.

### **Reproductive and Sexual Health**

- Teen birth rates have decreased by 61.7% since 2007 in Hamilton County. There are consistent racial disparities between African Americans and whites, although that gap has narrowed in recent years as rates have decreased for both African Americans and whites. Compared to the peak in 2006, teen birth rates in Hamilton County have decreased by 69% among African Americans (from 27.3 to 8.5 per 1,000) and by 49.2% among whites (from 10.3 to 5.2 per 1,000).
- Sexually transmitted disease (STD) rates in Hamilton County (including chlamydia, gonorrhea, and primary and secondary syphilis) are higher than state and national rates. In 2013, there

were 734.2 new STD cases per 100,000 Hamilton County residents, compared to 586.7 per 100,000 Tennessee residents and 558.2 per 100,000 U.S. residents.

### **Social Determinants**

- The cohort graduation rate is the percent of public school students who receive a regular diploma within four years of entering high school. In Hamilton County the graduation rate was 83% for the 2013-2014 school year. The Tennessee Department of Education's statewide goal is 90% graduation by 2020.
- Health disparities between African Americans and whites in Hamilton County continue. Life expectancy for African Americans born in 2013 is 73.4 years, which is 4.5 years shorter than for whites (77.9 years). There are racial disparities in mortality rates by the causes of death as well. Among chronic diseases, age-adjusted mortality rates were significantly higher among African Americans for the following: nephritis (3.6 times higher), diabetes (2.7 times higher), stroke (32% higher), and heart disease (19% higher). Mortality rates for all cancers are 16% higher for African Americans than whites, but for prostate cancer, black men experience a mortality rate which is double that of white men (51 vs. 26.3 per 100,000). The mortality rate for breast cancer is 74% higher for black women than white women (33 vs. 19 per 100,000).
- There are racial disparities in maternal and infant health as well. African American babies are about 2.4 times more likely to die before their first birthday than white babies (13.4 vs. 5.6). Low birthweight (less than 5.5 pounds) and preterm birth (born before 37 weeks gestation) are among the leading causes of infant mortality. In 2013, the prevalence of low birthweight among African American babies were more than double the prevalence among white babies (16.2% vs. 7.7%), and preterm births were 51% higher for African Americans than for whites (16.3% vs. 10.8%).
- Although health disparities between African Americans and whites in Hamilton County persist, gaps have narrowed in several areas. The gap in life expectancy was 6.2 years in 2007, compared to 4.5 years in 2013. The gap in heart disease mortality narrowed from 61% in 2006-2008 (316.7 vs. 196.1 per 100,000) to a 16% difference in 2011-2013 (201.7 vs. 173.4 per 100,000). The disparity in infant mortality has narrowed from almost four times higher for African Americans than whites in 2002-04 (20.2 vs. 5.4) to about two and a half times higher for African Americans in 2011-2013 (13.4 vs. 5.6). The teen birth rate gap shrunk from 165% higher among African Americans than whites in 2006 (27.3 vs. 10.3 per 1,000 females age 10 to 17), to a 65% higher in 2013 (8.5 vs. 5.2 per 1,000). The infant mortality rate gap shrunk from being almost four times higher among African Americans than whites in 2002-2004 (20.2 vs. 5.4 per 1,000 births) to almost two and a half times higher in 2011-2013 (13.4 vs. 5.6).

### **Substance Abuse**

- The prevalence of alcohol binge drinking among adults in both Hamilton County and Tennessee is 10%, substantially lower than the national prevalence of 17%.
- The prevalence of binge drinking among high school students in Hamilton County was 18%, compared to 19% in Tennessee and 22% nationwide.
- In 2012, there were 2,916 Emergency Department (ED) visits and 1,391 hospital admissions for alcohol-related disorders among Hamilton County residents. Drug-related disorders accounted for 3,538 ED visits and 1,288 admissions. In addition, 66 Hamilton County residents died from a drug overdose in 2012.

### **Tobacco Use**

- In Hamilton County, the prevalence of cigarette smoking is 23% among adults and 17% among high school students.

**Table 2. Leading Health Indicators**

Leading Health Indicators	Hamilton County	TN	U.S.
<b>Access to Healthcare</b>			
Persons with health insurance (< 65)	85%	84%	85%
Adults with usual healthcare provider	78%	78%	77%
<b>Clinical Preventative Services</b>			
Children under 2 fully immunized	65%	73%	70%
Influenza vaccine, adults 65+	60%	70%	61%
<b>Environmental Quality</b>			
Unhealthy Air Days (AQI>100) 2013-2014	0	n/a	n/a
<b>Injury &amp; Violence</b>			
Motor vehicle crash death rate per 100,000 (age-adjusted)	11.9	15.1	10.9
Homicide death rate per 100,000 (age-adjusted)	8.3	6.9	5.2
<b>Maternal, Infant, and Child Health</b>			
Infant mortality rate per 1,000	6.7	6.8	6.0
Percentage preterm live births	12.1%	11.0%	11.6%
<b>Mental Health</b>			
Suicide rate per 100,000 (age-adjusted)	14.4	14.5	12.6
<b>Nutrition, Physical Activity, and Obesity</b>			
Overweight or obese, adults	66%	67%	65%
Physical inactivity, adults	31%	34%	25%
5 + daily servings fruits/vegetables, adults	13%	9%	n/a
Obese, adolescents	12%	15%	15%
Insufficient aerobic activity, adolescents	75%	75%	73%
5 + daily servings fruits/vegetables, adolescents	20%	22%	n/a
<b>Oral Health</b>			
Dentists: population per dentist	1464:1	2035:1	1392:1
<b>Reproductive and Sexual Health</b>			
Teen birth rate per 1,000 (10-17)	5.7	5.7	4.7
Sexually transmitted diseases rate/100,000 (primary/secondary syphilis, gonorrhea, chlamydia)	734.2	586.7	569.2
<b>Social Determinants</b>			
High school graduation rate (cohort rate)	83%	87%	81%
<b>Tobacco and Alcohol Use</b>			
Current smokers, adults	23%	24%	20%
Current smokers, adolescents	17%	18%	18%
Binge drinkers past month, adults	10%	10%	17%
Binge drinker past month, adolescents	18%	19%	22%

Sources: U.S. Census, 2011-2013 Behavioral Risk Factor Surveillance Survey, 2011 Youth Risk Behavior Survey, Tennessee Department of Health, Tennessee Department of Safety, Tennessee Department of Education, CDC

## Demographics and Social Determinants of Health

Population characteristics can help describe communities and provide a context for trends in health outcomes. The 2009-2013 U.S. American Community Survey (United States Census Bureau) estimated Hamilton County's population at approximately 340,973 an increase of 10.7% since 2000 (Table 3).

Social determinants of health, such as educational attainment and poverty, have a substantial impact on a broad range of behavioral risks and health outcomes. The percentage of all Hamilton County residents living below the poverty level increased from 12.1% in 2000 to 16.6% in 2013. Among county residents under the age of 18, poverty levels increased from 17% to 25.3%.

**Table 3. Demographic Quick Facts**

	Hamilton County 2000	Hamilton County 2009-2013	Tennessee 2009-2013	United States 2009-2013
<b>Population</b>	307,896	340,973	6,402,387	311,536,594
<i>Population under 5 years</i>	6.0%	6.0%	6.3%	6.4%
<i>Population under 18 years</i>	23.2%	21.4%	23.3%	23.7%
<i>Population 65 years and older</i>	13.8%	15.0%	13.9%	13.4%
<i>Median Age</i>	37.4	39.3	38.2	37.3
<i>Persons under age 65 living with a disability</i>	n/a*	10.3%	11.1%	8.4%
<i>Language other than English spoken at home</i>	5.1%	6.7%	6.6%	20.7%
<b>Race</b>				
<i>White</i>	76.3%	74.9%	78.2%	74.0%
<i>African American/Black</i>	20.1%	20.1%	16.8%	12.6%
<i>Asian</i>	1.3%	2.0%	1.5%	4.9%
<i>American Indian/Alaska Native</i>	0.3%	0.2%	0.3%	0.8%
<i>Some other race</i>	0.9%	1.4%	1.5%	4.9%
<i>Two or more races</i>	1.1%	1.4%	1.7%	2.8%
<b>Ethnicity</b>				
<i>Hispanic/Latino</i>	1.8%	4.6%	4.7%	16.6%
<b>Education, persons 25+</b>				
<i>Less than high school</i>	19.3%	13.7%	15.7%	13.9%
<i>High School graduate or higher</i>	80.7%	86.2%	84.4%	86.3%
<i>Bachelor's degree or higher</i>	23.9%	27.2%	23.8%	28.8%
<b>Economic Indicators</b>				
<i>Unemployed (% of civilian labor force)</i>	3.5%	9.5%	10.1%	9.7%
<i>Median household income</i>	\$38,930**	\$46,702	\$44,298	\$53,046
<i>Persons living below poverty</i>	12.1%	16.6%	17.6%	15.4%
<i>Children (18 or under) living below poverty</i>	17.0%	25.3%	25.3%	21.6%
<i>Home ownership rate</i>	64.5%	64.9%	67.8%	64.9%

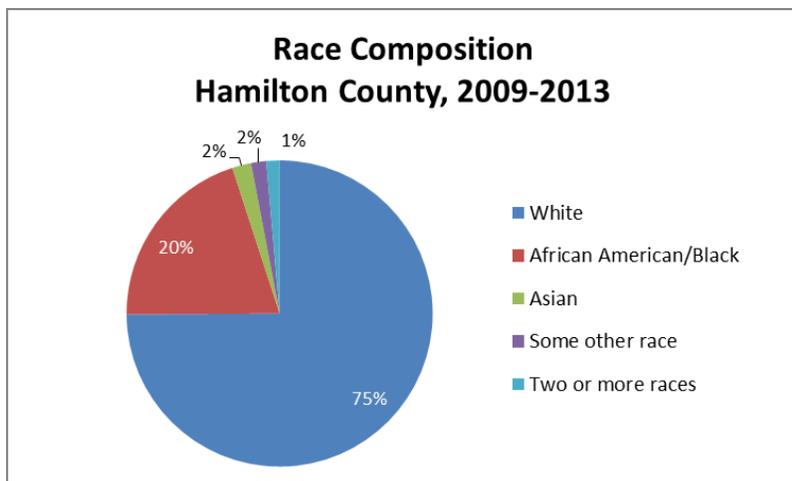
Sources: U.S. Census Bureau: 2000 Census and 2009-2013 American Community Survey

\* The U.S. Census Bureau used a different measure for reported disability the 2000 Census.

\*\*Adjusted for inflation, the 2000 median household income for Hamilton County equals \$54,436 in 2013 dollars.

## Race and Ethnicity

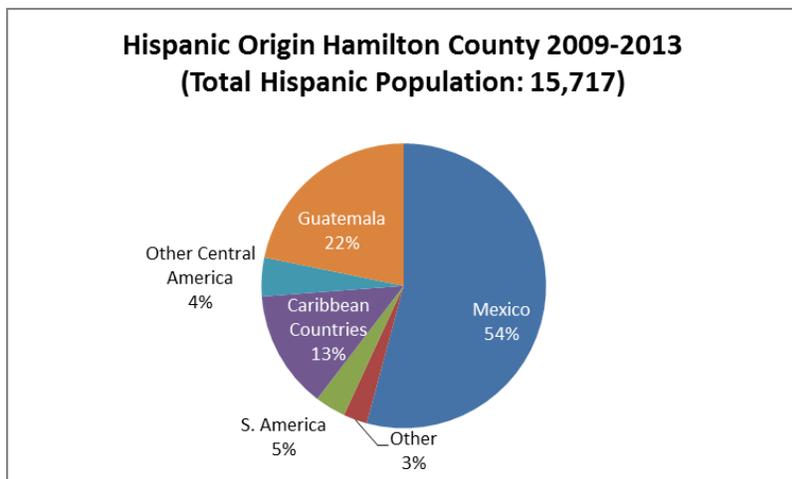
Socioeconomic and cultural differences among racial and ethnic groups across the United States will likely also influence future patterns of disease, disability, and health care use.<sup>iii</sup>



The majority of Hamilton County residents are white (74.9%), followed by African American or black (20.1%), Asian (2.0%), two or more races (1.4%), (0.6%), or some other race (1.6%), according to 2009-2013 American Community Survey (Figure 1).<sup>1</sup>

Figure 1 Source: 2009-2013 American Community Survey

The Hispanic/Latino (an ethnic category and not reported as race) population has grown significantly over the past twelve years. The 2009-2013 American Community Survey estimates and Census 2000 suggest an increase in the number of Hispanics in the county from 5,481 (1.8% of total population) to 15,717 (4.6% of the total population).



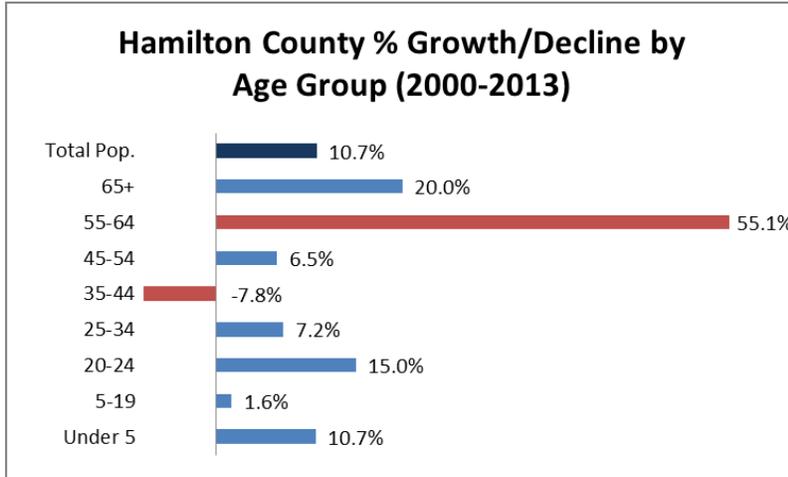
Over half (54.2%) of Latinos in Hamilton County self-identify as being of Mexican origin. Guatemalans, the second largest Hispanic origin group, make-up 21.8% of the County's Hispanic population (Figure 2). Nationwide, almost two-thirds (64.5%) of the Hispanic population identify as being of Mexican origin, while only 2.3% self-identify as Guatemalan.

Figure 2 Source: 2009-2013 American Community Survey

<sup>1</sup> The American Indian/Alaska Native population (0.2%) was combined with "some other race" for this chart.

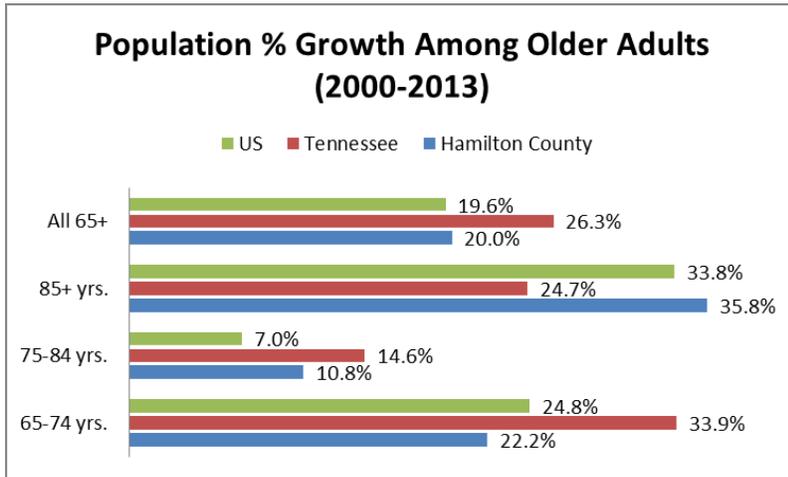
## An Aging Population

The first Baby Boomers turned 65 in 2011 and the over-65 population is expected to double by 2050.<sup>iv</sup> The rapidly increasing number of older adults will place new demands on the provision of health care and aging-related services. Figure 3 illustrates the percentage change in the Hamilton County population by age group from 2000 to 2013.



While the overall Hamilton County population increased by 11%, the 55 to 64 population grew by 55.1% and the 65 and over population grew by 20%, in contrast to a 7.8% decrease in 35 to 44 year old residents.

Figure 3 Source: U.S. Census Bureau 2000 Census and 2009-2013 American Community Survey



Overall, local growth in residents 65 and older (20%) mirrors the national rate (19.6%) and lags the Tennessee rate (26.3%). Among the oldest residents, 85 and older, local and national growth (35.8% and 33.8%, respectively) far outpaces the state (24.7%) (Figure 4).

Figure 4 Source: U.S. Census Bureau- 2000 Census and 2009-2013 American Community Survey

## Educational Attainment

Educational Attainment is considered one of the best socioeconomic indicators for good health.<sup>v</sup> Higher educational attainment is associated with being employed with a livable-wage job, having access to high quality health care, and living a healthy lifestyle.

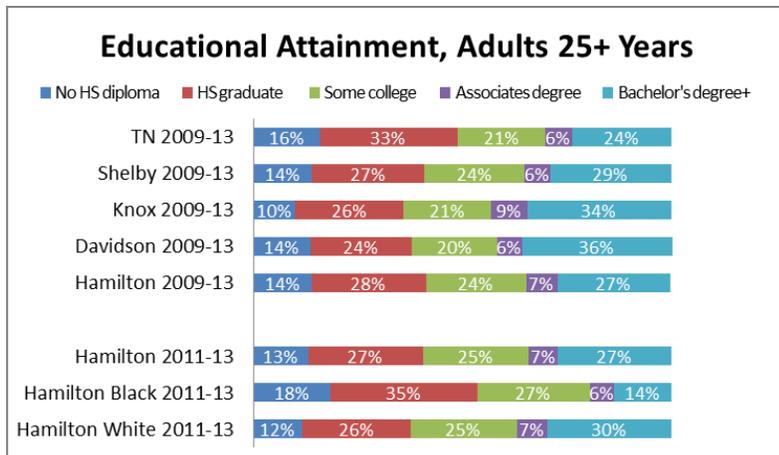


Figure 5 Source: 2009-2013 American Community Survey

Overall in Hamilton County, educational attainment of a high school diploma or greater has increased from 81% in 2000 to 86% in 2009-13. In the 2009-2013 American Community Survey, 14% of Hamilton County adults ages 25 and older did not have a high school diploma or GED, compared to 16% in Tennessee. Among black adults, 18% did not have a high school diploma, compared to 12% of white adults.

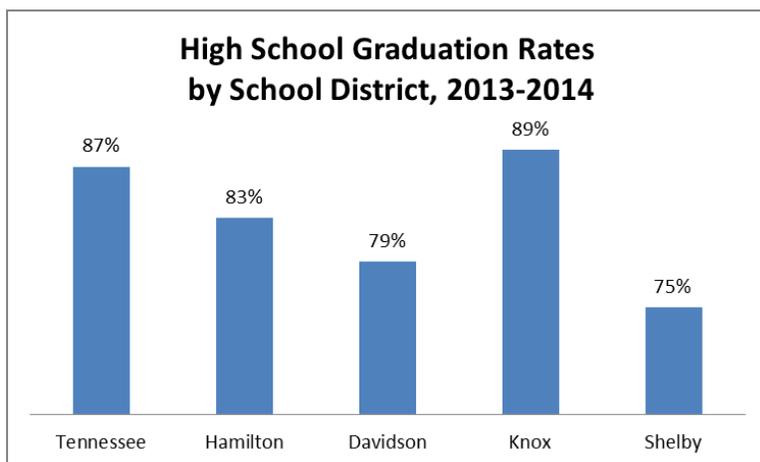


Figure 6 Source: Tennessee Department of Education

The graduation rate measures the percentage of students who graduated from high school within four years and a summer out of those students that entered the ninth grade four years earlier. Graduation rates as reported in the Tennessee Department of Education Report Card for the 2013-2014 school year for public schools in the four largest metropolitan counties in Tennessee are depicted in Figure 6.

The statewide goal is 90 percent graduation by the Class of 2020.<sup>vi</sup>

## Poverty

Poverty data used in the report comes from the U.S. Census Bureau, which measures poverty using the federal poverty thresholds. The U.S. Department of Health and Human Services issues poverty thresholds that vary by household size and composition. The same thresholds are used throughout the contiguous United States and are updated annually. Programs using the guidelines (or percentage of the guidelines, such as 185% or 250%) in determining eligibility include: Head Start, TennCare (Medicaid), Community Health Centers, National School Lunch Program, the Low Income Home Energy Assistance

Program (LIHEAP), Women Infants and Children (WIC) program, the Children’s Health Insurance Program (CHIP), Family Planning, and Supplemental Nutrition Assistance Program (SNAP).

**Table 4. 2015 HHS Poverty Guidelines**

Persons in Family or Household	48 U.S. State & D.C. Gross Yearly Income	Gross Monthly Income	Approximate Hourly Income
1	\$11,770	\$981	\$5.61
2	\$15,930	\$1,328	\$7.56
3	\$20,090	\$1,674	\$9.51
4	\$24,250	\$2,021	\$11.47
5	\$28,410	\$2,368	\$13.42
6	\$32,580	\$2,715	\$15.37
7	\$36,730	\$3,061	\$17.32
8	40,090	\$3,341	\$19.27
<b>For each additional person, add:</b>	\$4,160	\$347	\$1.95

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

From 2000 to 2009-2013, the percent of Hamilton County residents living below the federal poverty thresholds increased from 12.1% to 15.3%. Poverty indicators can include the percent of persons enrolled in the Supplementary Food Assistance Program (SNAP); persons enrolled in TennCare, children under age six in the WIC (Women, Infants and Children) program, and free/reduced lunch participation.

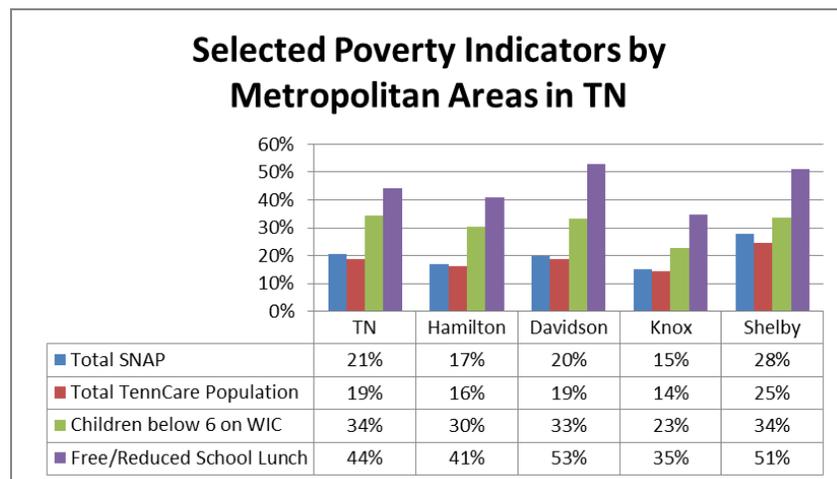


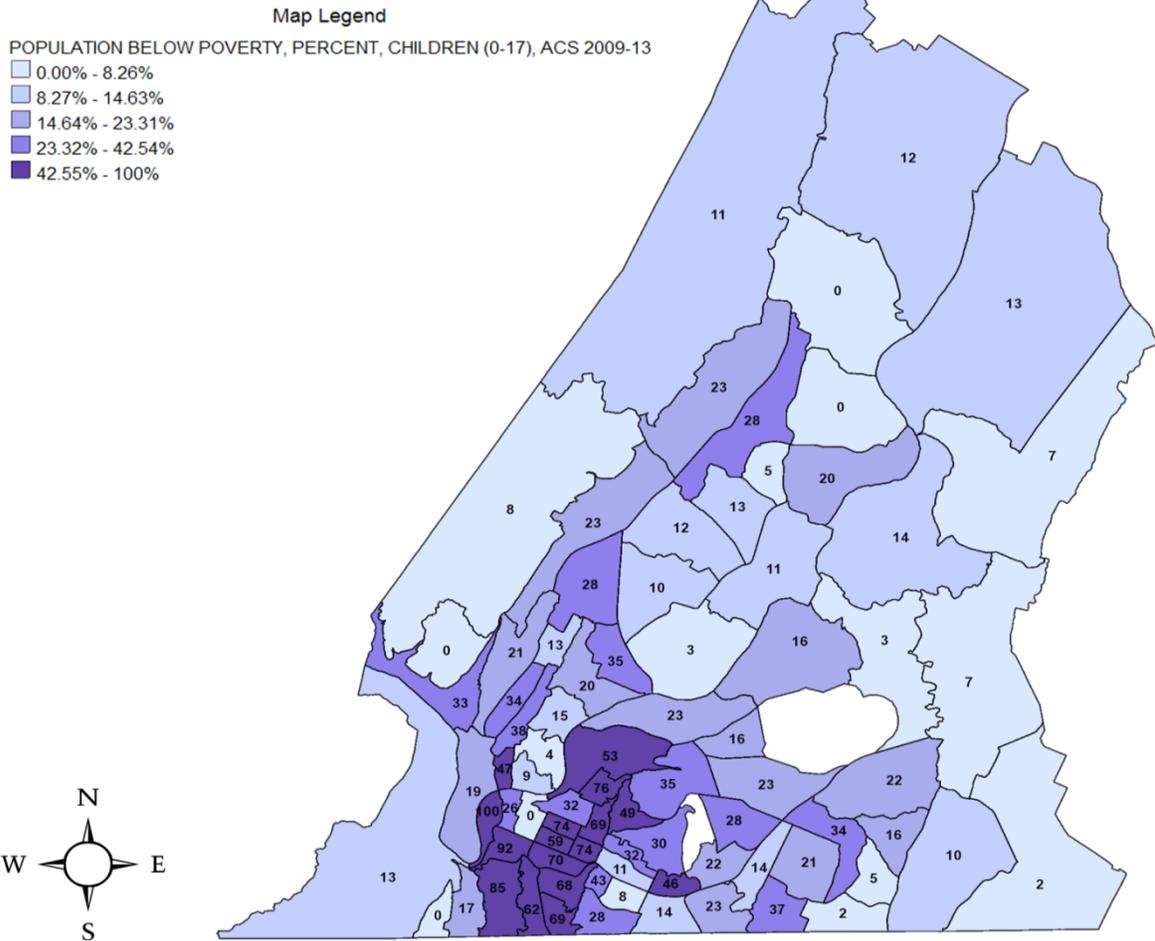
Figure 7 Source: TN Kids Count, 2013

One in four children under the age of 18 live in poverty in Hamilton County, according to the 2009-2013 American Community Survey. The census tracts with the highest percentages of children under the age

of 18 living in poverty were located in the Southside, Westside, East Chattanooga, Highway 58, and Brainerd communities (Map 1).

**Map 1**

### Children Under Age 18 in Poverty by Census Tract, Hamilton County, TN 2009-2013 ACS



Numbers within the census tracts represent the percentage of children living in households with annual income below the poverty threshold.

## General Health Status and Quality of Life

Life expectancy at birth is the average number of years a person born in 2013 would live if the current age specific death rates remained unchanged over that person’s lifetime. Hamilton County residents are expected to live an average of 77.4 years, an increase of 0.2 years from 2007 (77.2 years). The life expectancy of African Americans in Hamilton County is 73.4 years, which is 4.5 years less than the average life expectancy of whites in Hamilton County (77.9 years).

**Table 5. General Health Status Indicators of Hamilton County and other Metropolitan Counties**

	Hamilton	Tennessee	U.S.	Davidson	Knox	Shelby
<b>Death Rate*</b>	799.2	1178.6	731.9	828.3	833	870.2
<b>Life Expectancy (2013)</b>	77.4	76.4	78.8	77.0	77.4	75.6

\* 2011-2013 Age-adjusted mortality per 100,000 population. U.S. mortality rate is for 2013.  
Source: Tennessee Department of Health, Division of Policy, Planning and Assessment, CDC

## Defining Quality of Life

Quality of life (QOL) is a term that refers to the “overall sense of well-being when applied to an individual” and a “supportive environment when applied to a community.”<sup>vii</sup>

### Overall Well Being

Two QOL measures from the BRFSS that refer to an “overall sense of well-being” are overall health status and disability status. An estimated 21% of Hamilton County adults rated their own health as “fair” or “poor” and 23% indicated they were limited in activities because of physical, mental, or emotional problems. These findings parallel state data. Local and state residents were more likely to report fair or poor health and activity limitations than the national median.

**Table 6. Self-Reported Health Status 2011-2013 BRFSS**

	Hamilton County	Tennessee	U.S. Median
<b>Fair or poor health</b>	21%	22%	17%
<b>Limited in any way because of physical, mental, or emotional problems</b>	23%	25%	21%

Sources: 2011-2013 BRFSS, Tennessee Department of Health, Division of Health Statistics, CDC

### Supportive Environment

A 2010 survey of 1,000 Hamilton County adults provides some insight as to the relative importance of factors which help create a “supportive environment when applied to a community.” The Ochs Center for Metropolitan Studies State of the Chattanooga Region Survey asked 1,000 local residents to rate the importance of 13 factors in determining their quality of life in the Chattanooga Area. Of the 13 factors, “safety from crime” and “quality health care and hospitals,” were the most important, with 9 out of ten respondents rating each as “very important.” The survey also points to the importance of quality

schools, good jobs, clean air and streets, strong neighborhoods, a strong religious community, parks and recreational opportunities, and other factors as detailed below.<sup>viii</sup>

**Table 7. Determining Quality of Life: Percent Rating “Very Important” in Determining Quality of Life in the Chattanooga Area**

	<b>“Very Important”</b>
Safety from crime	91%
Quality health care and hospitals	90%
Quality schools	83%
Availability of jobs that pay a living wage	83%
Clean air	82%
Clean streets and neighborhoods	80%
Affordability of housing	75%
A place where people of all backgrounds are welcome	70%
A strong religious community	63%
A strong sense of community	61%
Parks and other outdoor recreational opportunities	59%
Short commuting time	44%
Arts and cultural opportunities	42%

Source: Ochs Center for Metropolitan Studies, 2010 State of the Chattanooga Region Survey

### *Importance of Health Issues*

In 2013, the Community Health Services Division of the Chattanooga-Hamilton County Health Department conducted a Health and Wellness Survey of 1,661 area residents. The survey was administered online and paper copies were available at community health clinics in Hamilton County. In the survey, respondents reviewed a list of 12 health problems and selected the three that they believed were the most important health problems facing Hamilton County.<sup>ix</sup>

- Of the twelve health issues listed, obesity was perceived as the biggest health problem facing Hamilton County overall. Over half of respondents (55%) selected obesity among the top public health problems, with violent crime (39%), and drug abuse (38%) rounding out the top three.
- Health priorities shifted when comparing by race/ethnicity. Among white respondents, obesity (61%), drug abuse (42%), and violent crime (30%) were most often selected among the top three public health issues. While obesity ranked in the top three among black respondents (40%), violent crime ranked higher (45%). Approximately one-third of black respondents also believed STDs (36%), teenage pregnancy (33%), drug abuse (31%), and diabetes (31%) were among the top local public health problems. Among Latinos, the top ranking health issues were obesity (49%), drug abuse (41%), violent crime (29%), and STDs (29%).

**Table 8. Perceived Top Health Problems in Hamilton County**

	(% Ranking Among Top 3)			
	All	White	Black	Latino
<b>Obesity</b>	55%	61%	40%	49%
<b>Violent crime</b>	39%	36%	45%	29%
<b>Drug abuse</b>	38%	42%	31%	41%
<b>Heart disease and stroke</b>	28%	30%	25%	16%
<b>Diabetes</b>	25%	23%	29%	21%
<b>Teenage pregnancy</b>	24%	21%	33%	24%
<b>Tobacco use</b>	22%	23%	19%	28%
<b>Cancer</b>	21%	21%	20%	16%
<b>STDs</b>	17%	10%	36%	29%
<b>Respiratory Disease</b>	12%	13%	9%	15%
<b>Aging problems</b>	7%	8%	2%	9%
<b>Infant mortality</b>	6%	7%	4%	13%

Source: Chattanooga-Hamilton County Health Department, Hamilton County Health and Wellness Survey (2013)

## Access to Health Care and Coverage

### Health Insurance Status

Access to health care coverage encourages individuals to seek and obtain continuous and preventative health care. Persons without health coverage are less likely to seek timely medical care and are more likely to have hospitalizations and emergency department visits.<sup>x</sup>

According to the U.S. Census Bureau, almost 44,000 (15%) of Hamilton County residents under age 65 did not have health insurance in 2013. Note that these figures pre-date the implementation of the mandatory coverage provision of the Affordable Care Act. Among working age adults (ages 18 to 64), 19% did not have health insurance. Residents under age 65 living at or below 138% of poverty were more likely to be uninsured (27%) than those living between 138% and 400% of poverty (17%).<sup>xi</sup>

**Table 9. The Uninsured – As a Share of the Non-elderly Population and by Poverty Levels, 2013**

	Hamilton County		Tennessee
	Number Uninsured	% Uninsured	% Uninsured
<b>Age Group</b>			
Under 65 Years	43,983	15.4%	16.2%
18-64 Years	40,309	18.9%	20.1%
Under 19 Years	4,117	5.4%	6.0%
<b>Poverty Status</b>			
<= 138% FPL	19,579	26.8%	27.1%
<=200% FPL	27,209	26.1%	26.0%
138% to 400% FPL	19,753	16.5%	16.4%

Source: U.S. Census Bureau, 2013 Small Area Health Insurance Estimates

## Medicare and TennCare

Medicare is the program run by the federal government that provides health insurance for people 65 years of age and older, certain disabled people, and people with kidney failure. TennCare is the State of Tennessee’s Medicaid program and serves primarily low-income children, parents, pregnant women, and elderly and disabled adults. More than one-third (35.7%) of Hamilton County residents receive health care coverage from either Medicare or TennCare.

**Table 10. Current Medicaid (TennCare) and Medicare Enrollment in Hamilton County**

	Enrollment	% Population	Enrollment % Change from 2008	U.S. % Change in Enrollment from 2008
<b>Medicare (2012)</b>	<b>66,765</b>	<b>19.3%</b>	<b>+ 21.2%</b>	<b>+ 12.5%</b>
--- Aged (65+)	52,928	15.3%	+ 17.6%	+ 10.8%
--- Disabled	13,837	4.0%	+ 37.3%	+ 19.9%
<b>TennCare (2014)</b>	<b>57,297</b>	<b>16.4%</b>	<b>+ 5.5%</b>	<b>+ 37.9%</b>
--- Age Birth-18	32,119	9.2%	+15.6%	n/a
---Age 20+	25,178	7.2%	- 23.1%	n/a

Sources: Bureau of TennCare and Centers for Medicaid and Medicare Services, TN Dept of Health, U.S. Census

## Enrollment Trends

### TennCare

In Hamilton County, 57,297 Hamilton County residents, 16% of the population, were enrolled in TennCare as of April 2014. Over the past six years, TennCare enrollment in Hamilton County increased by 5.5% overall, primarily among children. Enrollment among children under age 18 increased by 16% while enrollment among residents age 19 and older decreased by 23% over 2008 levels.

By comparison, Medicaid enrollment nationwide increased by 37.9% between 2008 and 2014. Tennessee is one of 21 states that did not expand Medicaid coverage under the Affordable Care Act, which would have extended Medicaid coverage to all individuals under 138% of the federal poverty level.<sup>xii</sup> In April 2014, the Centers for Medicaid and Medicare Services (CMS) reported over 6 million new Medicaid and Children’s Health Insurance Program (CHIP) enrollees over the pre-ACA July-September reporting period. In addition, CMS reported a 15.3% increase in enrollment over the baseline period among states that adopted and implemented the Medicaid expansion, compared to a 3.3% increase among states that had not, to date, implemented the Medicaid expansion.<sup>xiii</sup>

During the 2015 Legislative Session, the Tennessee State Legislature rejected Governor Haslam’s proposal to expand Medicaid coverage in Tennessee through a program known as Insure Tennessee. The Tennessee Health Care Coalition, an advocacy group, estimated that Insure Tennessee could have covered as many as 18,873 Hamilton County residents.<sup>xiv</sup>

### Medicare

In 2012, the most recently available year for county-level data, 66,765 Hamilton County residents (19.3% of the population) were enrolled in Medicare. Medicare enrollees included 52,928 (15.3% of the

population) who were eligible based on age (65 and older) and 13,837 (4% of the population) who were eligible due to disability.

Since 2008, Medicare enrollment in Hamilton County increased by 21.2% overall. Enrollment of older adults, up 17.6%, reflects the increasingly aging population. However, the numbers of individuals under age 65 with Medicare disability coverage increased by 37.3%. While Medicare disability enrollment increased nationwide, Hamilton County’s growth far outpaced the national rate (37.3% vs. 19.9%).

Growth in Medicare disability enrollment may reflect changes to the TennCare program in 2005. In an effort to control escalating state costs of the TennCare program in its then-current form, most of the adults in the expansion population were removed from TennCare. Statewide, this affected 170,000 individuals, many of whom had multiple chronic conditions and may have subsequently qualified for Medicare disability coverage.

### 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 2015 County Health Rankings, Hamilton County has 366 primary care physicians (one per 944 residents), 241 licensed dentists (one per 1,447 residents), and 585 mental health providers (one per 596 residents). 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. The County Health Rankings set national benchmarks based on counties in the 90<sup>th</sup> percentile. (Only ten percent of counties are better.) Hamilton County rated better than the national benchmark counties for primary care physicians (fewer residents per provider), but worse for dentists and mental health providers (more residents per provider).

**Table 11. Health Care Providers in Hamilton County, Tennessee**

	Number Hamilton County	Ratio Hamilton County	Ratio Tennessee	Ratio National Benchmark†
<b>Primary Care Physicians</b>	366	944:1	1388:1	1045:1
<b>Dentists</b>	241	1447:1	1996:1	1377:1
<b>Mental Health Providers</b>	585	596:1	786:1	386:1

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

Primary care physicians include non-federal practicing physicians specializing in general practice, family practice, internal medicine, and pediatrics. Mental health providers include psychiatrists, psychologists, licensed clinical social workers, counselors, and advanced practice nurses specializing in mental health care.

Source: 2015 County Health Rankings

## Hospitals in Hamilton County

Thirteen hospitals are located in Hamilton County, including seven general medical and surgical hospitals, two chemical dependency/psychiatric hospitals, and three long-term care hospitals. In total these hospitals provide 1,667 staffed hospital beds or 4.9 beds per 1,000 Hamilton County residents. Among general medical and surgical hospitals, there are 1,235 staffed hospital beds or 3.7 per 1,000 Hamilton County residents.

**Table 12. Staffed Hospital Beds in Hamilton County Tennessee**

	<b>Staffed Beds</b>
<b>General Medical and Surgical Hospitals</b>	
CHI Memorial Hospital	336
CHI Memorial Hospital Hixson	69
Erlanger East	37
Erlanger Medical Center	491
Erlanger North	12
Parkridge East Hospital	113
Parkridge Medical Center, Inc.	177
<b>Total staffed general medical and surgical beds</b>	<b>1,235</b>
<b>Staffed beds per 1,000 population</b>	<b>3.7</b>
<b>Psychiatric/Chemical Dependency Hospitals</b>	
Moccasin Bend Mental Health Institute	150
Parkridge Valley Hospital	140
<b>Total staffed psychiatric /chemical dependency</b>	<b>290</b>
<b>Other Long-term Care Hospitals</b>	
HealthSouth Chattanooga Rehabilitation Hospital	50
Kindred Hospital - Chattanooga	44
Siskin Hospital for Physical Rehabilitation	48
<b>Total other long-term care hospitals</b>	<b>142</b>
<b>Total Staffed Beds – all hospital types</b>	<b>1,667</b>
<b>Staffed beds per 1,000 population</b>	<b>4.9</b>
Source: Tennessee Department of Health, 2012 Tennessee Joint Annual Report of Hospitals	

## Health Care Utilization Adults

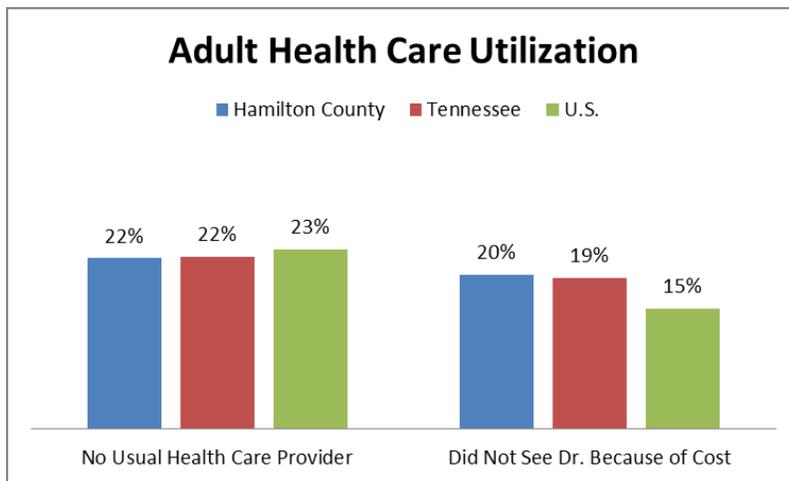
The leading causes of hospitalizations come from the Tennessee Department of Health's Hospital Discharge Data System. Hospitalizations are the number of discharges from the short term hospitals by first listed diagnosis. Newborns and childbirths were excluded. Overall, there were 31,470 inpatient discharges among Hamilton County residents in 2012. Approximately 56.4% of those hospitalizations

were paid by Medicare and 10.2% by TennCare. Private insurance made up 25.6% of the total, while 6.5% were self-paid hospitalizations and 0.7% was “free care.” The leading causes of short –term hospitalizations in Hamilton County during 2012 are listed in Table 13.

**Table 13. Leading Causes of Hospitalizations in Hamilton County, 2012\***

	Number	Rate per 1,000
<b>All Causes</b>	31,470	91.1
<b>Diseases of the Digestive System</b>	3,669	10.6
<b>Injury and Poisoning</b>	3,343	9.7
<b>Diseases of the Respiratory System</b>	3,085	8.9
<b>Musculoskeletal/ Tissue Disease</b>	2,437	7.1
<b>Heart Disease</b>	2,223	6.4

\*Excludes psychiatric, rehabilitation, and long-term acute care hospitals; Excludes newborns and childbirths  
Source: TN Department of Health



According to 2011-2013 Behavioral Risk Factor Surveillance System (BRFSS), 22% of Hamilton County adults self-report that they do not have at least one person who they think of as their personal doctor or health care provider and 20% of adults reported they were unable to see a doctor in the past 12 months due to cost.

**Figure 8 Source: 2011-13 BRFSS, TN Department of Health; 2012 BRFSS, CDC**

## Infant and Maternal Health

### Births and Birth Rates

Tracking trends in births helps support effective social planning and allocation of resources across generations, and tracking age-specific and race/ethnicity specific trends provides information on the divergent needs of different population groups.<sup>xv</sup>

In 2013, there were 4,170 resident births in Hamilton County, compared to 4,332 in 2007, the peak year for resident births since 2002. The birth rate (number of births per 1,000 population) in 2013 was 12.0 per 1,000, a decrease of 13% from the 2007 peak. The primary payment source for births in 2013 was private insurance (47.4%), followed by Medicaid/TennCare (43.3%), CoverTN (5.4%), and self-pay (3.1%).

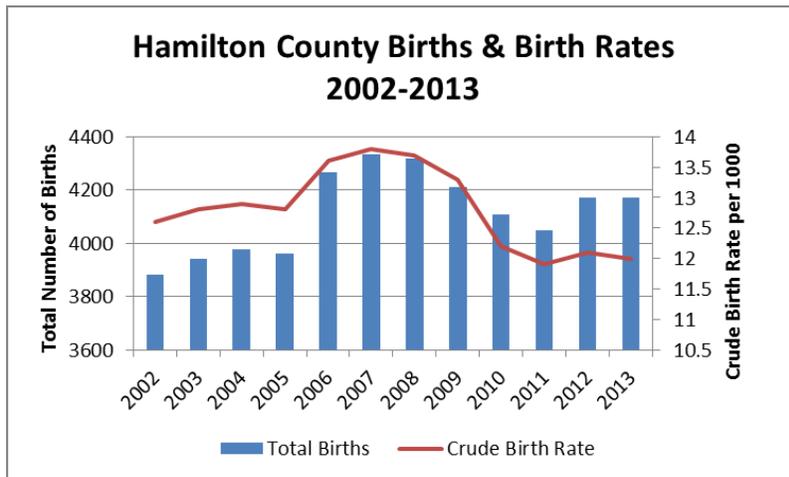


Figure 8 Source: Tennessee Department of Health, Division of Policy, Planning, and Assessment

### Births by Race/Ethnicity

Between 2008 and 2012, 73% of resident births in Hamilton County were to white mothers and 23% to African Americans. Births to Hispanic mothers, who can be any race, comprised 11% of births during this time period.

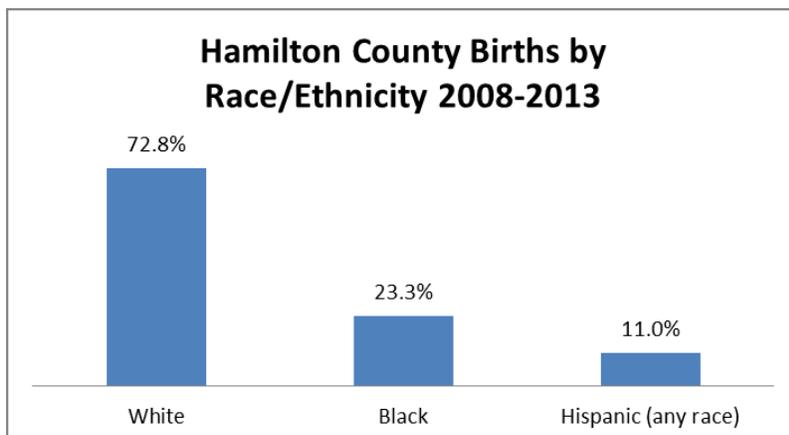


Figure 9 Source: Tennessee Department of Health, Division of Policy, Planning, and Assessment

## Teen Births

In 2013, there were 5.7 births for every 1,000 females ages 10 to 17 in Hamilton County, or 94 births to females in this age group. This represents the lowest rate in the eleven year period 2002-2012 and is 61.7% lower than the 2006 rate of 14.9, when there were 230 teen births. Statewide, the 2013 teen birth rate was 5.7 per 1,000 females ages 10 to 17.

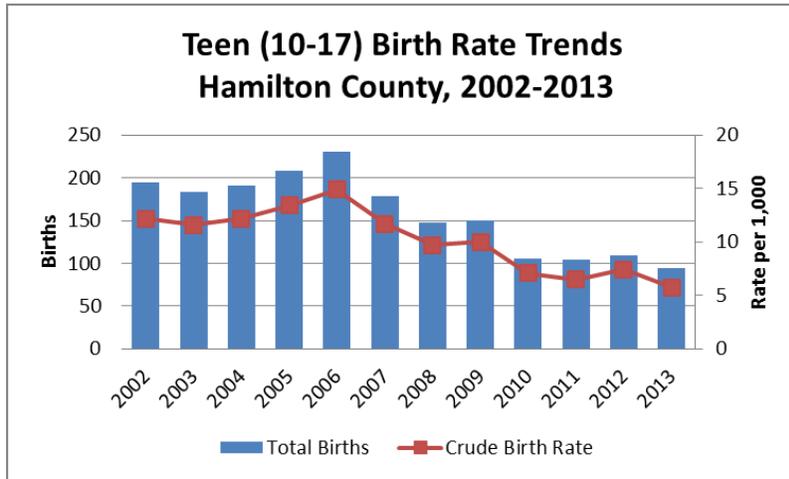


Figure 10 Source: Tennessee Department of Health, Division of Policy, Planning and Assessment

In Hamilton County, there is a consistent racial disparity for teen births, with birth rates among African Americans as much as triple that of whites in the mid-2000s. However, the gap has become much narrower in recent years as rates have decreased for both African Americans and white teens. Compared to the peak in 2006, teen birth rates in Hamilton County decreased by 69% among African Americans (from 27.3 to 8.5 per 1,000) and by 49.2% among whites (from 10.3 to 5.2 per 1,000)

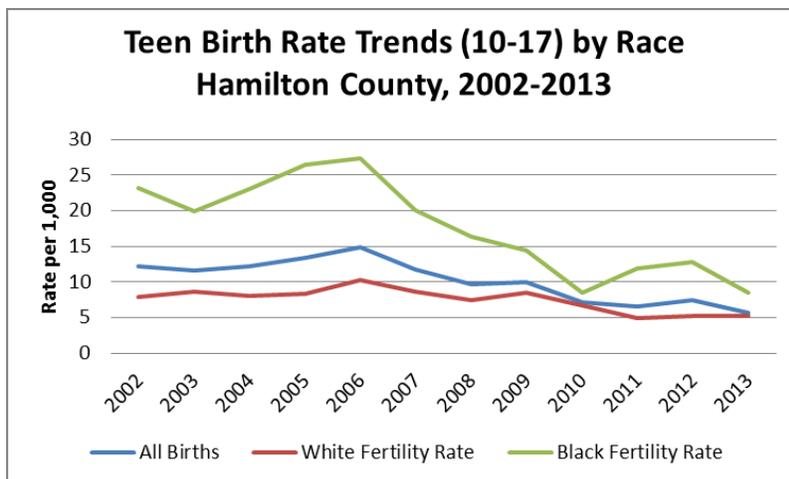


Figure 11 Source: Tennessee Department of Health, Division of Policy, Planning and Assessment

## Delayed or No Prenatal Care

It is very important that a woman get early and regular prenatal care. Mothers who do not receive prenatal care are three times more likely to give birth to a low birthweight baby (less than 5.5 pounds), and their baby is five times more likely to die before its first birthday.<sup>xvi</sup> 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 for their newborn, the benefits of breastfeeding, as well as illness and injury prevention.

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.<sup>xvii</sup>

- From 2008 to 2013 in Hamilton County, 231 residents received no prenatal care during their pregnancy (1% of births).
- In 2013, the percentage of births with delayed or no prenatal care was 33.2%, a decrease of 6.6 percentage points compared to 2009 (39.8%).
- The percentage of births with delayed or no prenatal care is consistently higher among African Americans than among whites, and in 2013 was 38.3% and 31.3%, respectively.
- The *Healthy People 2020* objective is to reduce the percentage of mothers with no prenatal care in the first trimester to 22.1%.

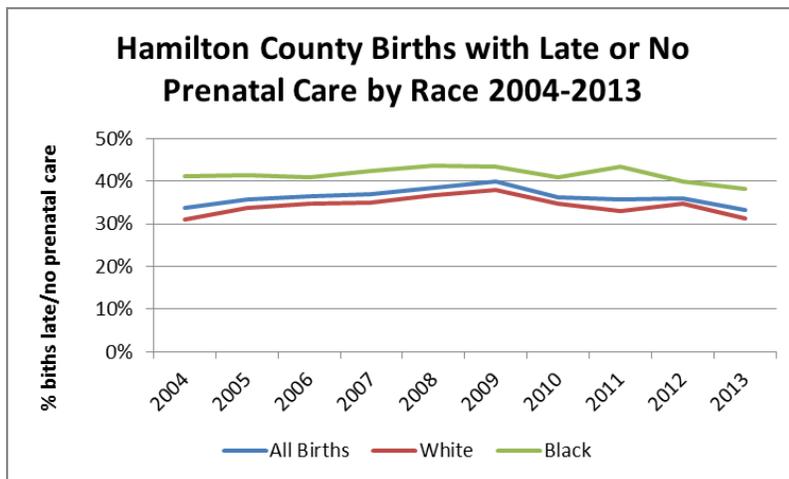


Figure 12 Source: Tennessee Department of Health, Division of Policy, Planning and Assessment

## Smoking during Pregnancy

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. Quitting smoking

before or during pregnancy can reduce the risk of poor pregnancy outcomes.<sup>xviii</sup> Maternal smoking during pregnancy is recorded on the birth certificate.

- In 2013, 13% of women who gave birth in Hamilton County reported smoking at some time during their pregnancy. Among white mothers, 13% reported smoking, while 11% of black mothers reported doing so.
- These figures represent statistically significant decreases over 2009 pregnancy smoking, when 16% of all mothers, 16% of white mothers, and 17% of black mothers reported smoking during pregnancy.
- Statewide, 16% of women reported smoking during pregnancy in 2013.
- Nationwide, 8.5% of women reported smoking during pregnancy in 2013.<sup>xix</sup>
- The *Healthy People 2020* goal is to reduce pregnancy smoking to 1.4% by 2020.

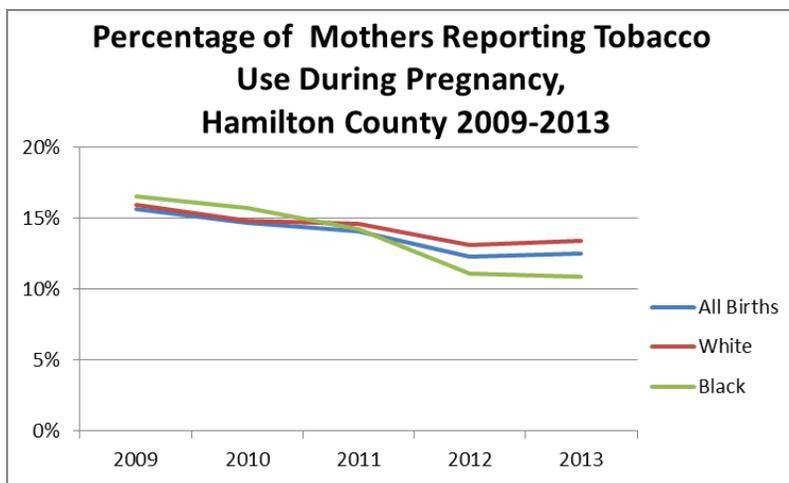


Figure 13 Source: Tennessee Department of Health, Division of Policy, Planning and Assessment

## Preterm Births

Preterm births are defined as births before 37 weeks gestation. 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, preterm-related causes of death together accounted for 35% of all infant deaths in 2009. Preterm births costs the national health care system more than \$26.2 billion per year, including direct medical costs for infant and mother, early intervention and special education services, and lost work and pay for individuals born prematurely.<sup>xx</sup>

- In 2013, 12.1% of all babies born in Hamilton County were preterm. Overall, preterm births have declined steadily since 2002, when 17.3% of births were preterm.
- In 2013, the rate of preterm births was significantly higher among African Americans (16.3%) than whites (10.8%).
- Statewide, 11% of babies born in 2013 were preterm.
- Nationwide, 11.4% of babies born in 2013 were born preterm.<sup>xxi</sup>

- The *Healthy People 2020* goal is to reduce the percentage of babies born preterm to 11.4%.

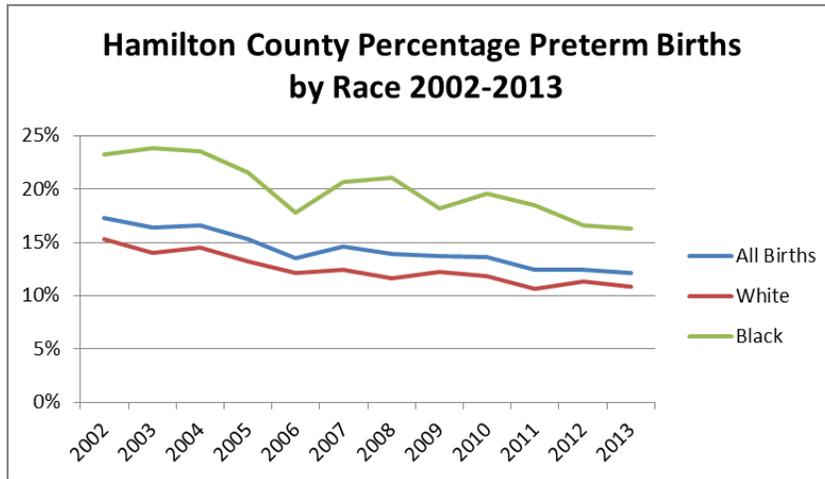


Figure 14 Source: Tennessee Department of Health, Division of Policy, Planning and Assessment

## Low Birthweight

Infants who weigh less than 5.5 pounds (or 2,500 grams) 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 being born prematurely (before 37 weeks gestation) and fetal growth restriction (full term but underweight).

A 2007 study published in *Pediatrics* found that low birthweight/premature infants accounted for 8% of all infant hospital stays but 47% of all infant costs. In contrast, uncomplicated newborns accounted for 42% of infant stays but only 10% of all infant costs.<sup>xxii</sup>

- In Hamilton County, 9.7% of Hamilton County babies had LBW in 2013.
- In Hamilton County, the percentage of low birthweight births among African Americans is more than double (16.2%) the percentage of low birthweight births for whites (7.7%).
- Statewide, 9.1% of babies born in 2013 had LBW.
- In 2013, Hamilton County had the second highest percentage of LBW (9.7%) of the four largest counties in Tennessee (second to Shelby County at 11.7%).
- Nationwide, 8% of babies born in 2013 had LBW.<sup>xxiii</sup>
- The *Healthy People 2020* goal is to reduce the proportion of low birthweight to 7.8%.

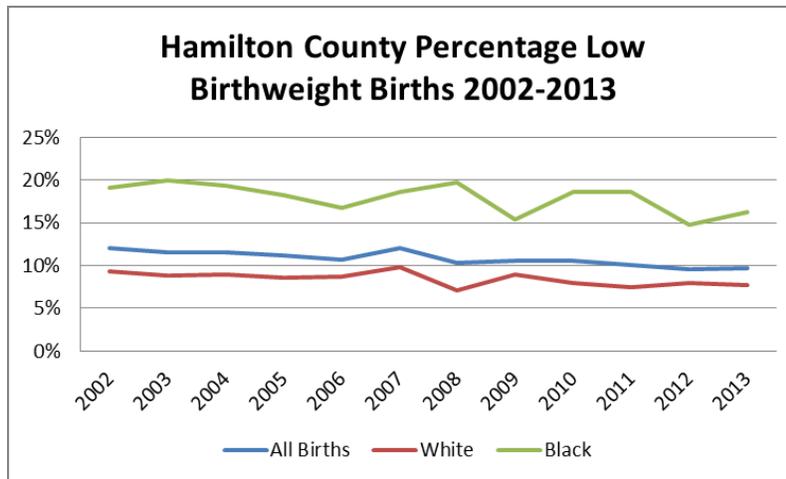


Figure 15 Source: Tennessee Department of Health, Division of Policy, Planning and Assessment

## 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 leading causes of infant death in Tennessee are short gestation and low birthweight, congenital defects, accidents, and sudden infant death syndrome.<sup>xxiv</sup>

- Between 2008 and 2013, a total of 208 babies in Hamilton County died before their first birthday, or 8.3 deaths per 1,000 live births. In 2013, twenty-eight babies died before their first birthday, or 6.7 per 1,000 births.
- Based on three-year rolling rates, infant mortality decreased by 29.2% from 2000 to 2013, from 10.6 per 1,000 births to 7.5 per 1,000 births.<sup>2</sup>
- Among African Americans in Hamilton County, the highest three-year infant mortality rate during this time period was 20.2 per 1,000 births in 2002-2004. The rate has since decreased by 33.7% and was 13.4 per 1,000 births in 2011-2013.
- Among whites in Hamilton County, the three-year rolling infant mortality rate decreased by 32.1%, from 7.4 per 1,000 births (2000-2002) to 5.6 per 1,000 births (2011-2013).
- Historically, infant mortality rates have been higher for African Americans than whites, reaching almost four times higher during 2002-2004 (20.2 vs. 5.4). The disparity still exists, but has

<sup>2</sup> When the numbers used to calculate rates are extremely small, large swings can occur in single year rates which do not reflect real changes, particularly when comparing sub-populations. Three-year infant mortality rates were computed to smooth out the volatility in the annual rates.

narrowed to almost two and a half times higher for African Americans than whites during 2011-2013 (13.4 vs. 5.6) (Figure 16).<sup>xxv</sup>

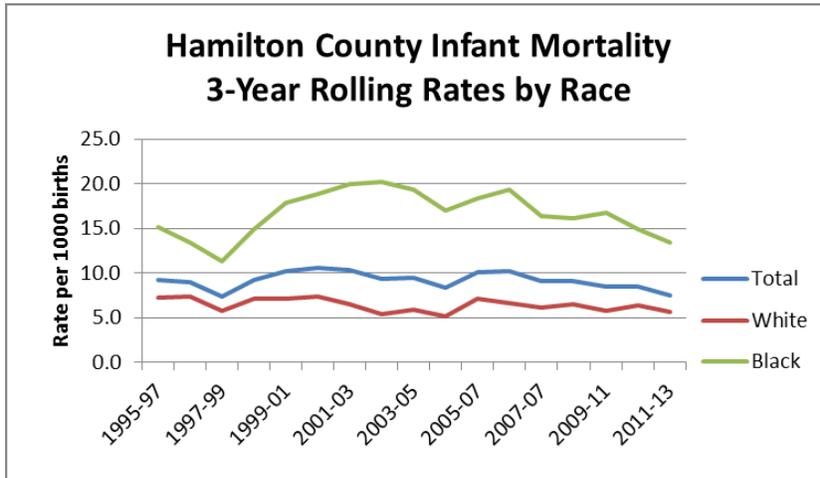


Figure 16 Source: Tennessee Department of Health, Division of Policy, Planning and Assessment

### National and Tennessee Metro Comparison

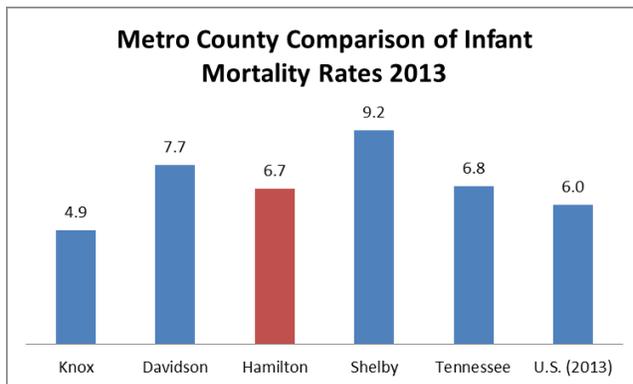


Figure 17 Source: Tennessee Department of Health, Division of Policy, Planning and Assessment and CDC

- Statewide, the 2013 infant mortality rate was 6.8 per 1,000 births
- The infant mortality rate in Hamilton County was higher than in Knox County (4.9) but lower than in Davidson County (7.7) and Shelby County (9.2).
- The U.S. infant mortality rate was 6.0 deaths per 1,000 live births in 2013, which meets the Healthy People 2020

### Summary of Birth Outcomes

The following table summarizes Hamilton County birth outcomes by race and ethnicity from 2003 to 2013.<sup>3</sup> Combining birth data in five-year increments allows us to compute rates for Hispanic births. The 2010 Community Health Data Profile for Hamilton County included birth summary data for 2003-2007. The number of Hispanic/Latino births increased by 31.8% from the first 5-year period (2003-2007) to the second 5-year period (2008-2012). The overall infant mortality rate for African Americans has decreased 21.8%. The percentage of births to teens has decreased by 39.6% overall and by 45.9% among African Americans.

<sup>3</sup> Combining birth data in five-year increments allows us to report Hispanic data. The percentage change is based on comparison of 2008-2012 data to the 2003-2007 data presented in the 2010 Community Health profile.

**Table 14: Summary of Hamilton County Birth Outcomes**

	2003-2007	2008-2012	Percentage Change	2013
<b>Total Births and Percentage of Total</b>				
<i>Hamilton County</i>	20,482	20,853	+ 1.8%	4,170
<i>White</i>	14,828 (72.4%)	15,191 (72.8%)	+ 2.4%	3,030 (72.7%)
<i>Black/AA</i>	5,166 (25.2%)	4,996 (24.0%)	- 3.3%	1,026 (24.6%)
<i>Hispanic/Latino Ethnicity</i>	1,769 (8.6%)	2,332 (11.1%)	+ 31.8%	421 (10.1%)
<b>Infant Mortality Rate (IMR) per 1,000</b>				
<i>Hamilton County</i>	9.9	8.6	- 13.1%	6.7
<i>White</i>	6.2	6.3	+ 1.6%	5.3
<i>Black/AA</i>	19.7	15.4	- 21.8%	11.7
<i>Hispanic/Latino Ethnicity</i>	8.5	8.6	+ 1.1%	†
<b>Percentage Low Birthweight Births</b>				
<i>Hamilton County</i>	11.4%	10.2%	- 10.5%	9.7%
<i>White</i>	9.0%	7.9%	- 12.2%	7.7%
<i>Black/AA</i>	18.5%	17.4%	- 5.9%	16.2%
<i>Hispanic/Latino Ethnicity</i>	7.6%	7.8%	+ 2.6%	8.1%
<b>Percentage Teen Births (10-17)</b>				
<i>Hamilton County</i>	4.8%	2.9%	- 39.6%	2.3%
<i>White</i>	3.2%	2.3%	- 28.1%	1.9%
<i>Black/AA</i>	9.8%	5.3%	- 45.9%	3.4%
<i>Hispanic/Latino Ethnicity</i>	6.3%	3.8%	- 39.7%	2.8%
Source: TN Department of Health *Hispanic/Latino ethnicity are small numbers and subject to unstable rates † There were too few cases to calculate a rate.				

## Death, Illness, and Injury

### Death (Mortality)

In 2013, a total of 3,396 Hamilton County residents died. Of those deaths, persons over 85 years of age accounted for 30%, followed by the 75 to 84 age group (24%), the 65 to 74 age group (19%), and the 55 to 64 age group (14%). Figure 18 details age-specific deaths by age group and race. The percentage of infant deaths (under one year of age) are twice as high among African Americans in Hamilton County compared to their white peers, and deaths among African Americans are also higher than the county and white race for all age groups below 75 to 84.

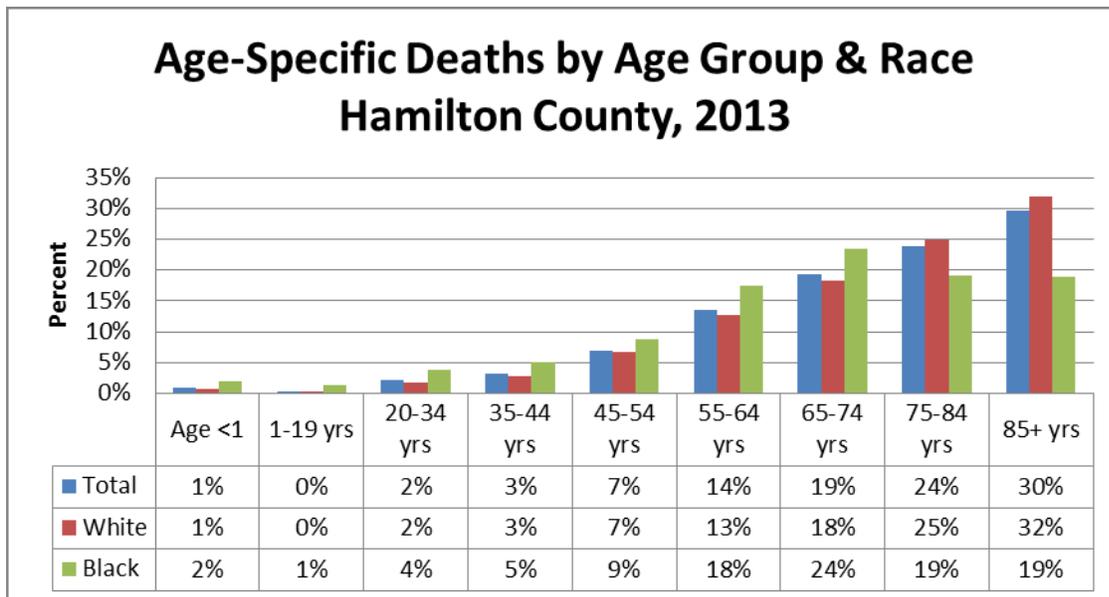


Figure 18 Source: Tennessee Department of Health, Division of Policy, Planning and Assessment

### Leading Causes of Death

As life expectancy has increased over the past hundred years, the leading causes of death have shifted from infectious diseases to chronic diseases associated with living longer. From 2011-2013, chronic diseases were responsible for over two-thirds of death in Hamilton County, most often from heart disease (22.8%) or cancer (21.9%). Other chronic illnesses among the leading causes of death are chronic lower respiratory disease (CLRD, 6.5%), stroke (5.4%), Alzheimer's disease (5.1%), diabetes (3.5%), nephritis (1.5%), and liver disease (1.3%) (Figure 19).

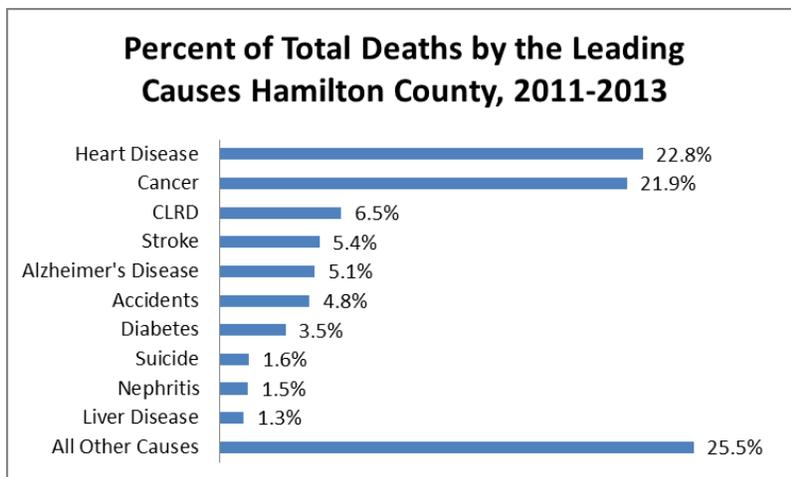


Figure 19 Source: Tennessee Department of Health, Division of Policy, Planning and Assessment

Table 15 summarizes age-adjusted mortality rates for the leading causes of death in comparison to Tennessee and the United States. Hamilton County age-adjusted mortality rates are higher than national rates for nine out of ten leading causes of death (all but nephritis). Hamilton County mortality rates are lower than statewide rates for all but two causes of death (Alzheimer’s disease and diabetes).

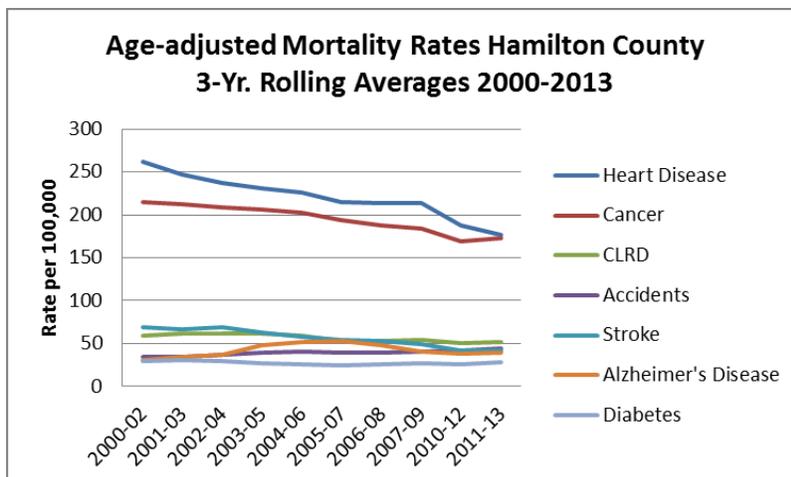
Table 15. Leading Causes of Death: Age-adjusted deaths per 100,000

Rank	Cause of Death	Hamilton County 2011-2013	Tennessee 2011-2013	United States 2013
1	Heart Disease	177.1	202.7	169.8
2	Cancer	172.3	186.2	163.2
3	Chronic Lower Respiratory Disease	51.3	52.3	42.1
4	Accidents/Unintentional Injuries	44.3	51.3	39.4
5	Stroke	42.1	44.7	36.2
6	Alzheimer’s Disease	39.6	37.4	23.5
7	Diabetes	28.0	25.1	21.2
8	Suicide	14.4	14.5	12.6
9	Nephritis	12.0	13.3	13.2
10	Liver Disease	10.7	12.9	10.2

Sources: Tennessee Department of Health, Division of Policy, Planning and Assessment and National Vital Statistics Reports, Volume 64, Number 2, CDC.

### Mortality Rate Trends

In examining trends for the top seven causes of death in Hamilton County, death rates for heart disease, cancer, chronic lower respiratory disease, stroke, and diabetes have decreased since 2000, while death rates for Alzheimer’s disease and accidents have increased.



**% Change 2000-2013**

Heart Disease	- 32%
Cancer	- 20%
CLRD	- 14%
Accidents	+ 29%
Stroke	-39%
Alzheimer's Disease	+ 29%
Diabetes	- 4%

Figure 20 Source: Tennessee Department of Health, Division of Policy, Planning and Assessment

### Differences by Race

There are some marked differences in the death rates of African Americans and whites in Hamilton County. Table 16 details age-adjusted mortality rates for the leading causes of death by race. Note that nine out of ten leading causes are common to both African Americans and whites. However, suicide is 8<sup>th</sup> leading cause of death for whites and not among the top ten for African Americans, while homicide is the 9<sup>th</sup> leading cause of death among African Americans but not among the top ten for whites.

Among the notable differences, death rates among African Americans were significantly higher than among whites for the following causes:

- Homicide:** 8.2 times higher among African Americans than whites
- Nephritis:** 3.6 times higher among African Americans than whites
- Diabetes:** 2.7 times higher among African Americans than whites
- Stroke:** 32% higher among African Americans than whites
- Heart disease:** 19% higher among African Americans than whites
- Cancer:** 16% higher among African Americans than whites

Death rates among whites were significantly higher than among African Americans for the following causes:

- Suicide:** 3.4 times higher among whites than African Americans
- Accidents:** 46% higher among whites than African Americans
- Chronic lower respiratory disease:** 40% higher among whites than African Americans
- Liver disease:** 23% higher among whites than African Americans

African American and white death rates from Alzheimer's disease were similar.

**Table 16. Ten Leading Causes of Death in Hamilton County by Race**  
**Age-adjusted Rates per 100,000 Population 2011-2013**

	White		Black	
	Rate	Rank	Rate	Rank
Heart Disease	173.4	1 <sup>st</sup>	207.1	1 <sup>st</sup>
Cancer	170.1	2 <sup>nd</sup>	198.0	2 <sup>nd</sup>
Chronic Lower Respiratory Disease	54.4	3 <sup>rd</sup>	38.8	6 <sup>th</sup>
Accidents	48.6	4 <sup>th</sup>	33.2	7 <sup>th</sup>
Stroke	40.0	5 <sup>th</sup>	52.7	4 <sup>th</sup>
Alzheimer's Disease	39.9	6 <sup>th</sup>	41.8	5 <sup>th</sup>
Diabetes	22.5	7 <sup>th</sup>	60.9	3 <sup>rd</sup>
Suicide	17.1	8 <sup>th</sup>	5.1	*
Liver Disease	11.3	9 <sup>th</sup>	9.2	10 <sup>th</sup>
Nephritis (Kidney Disease)	8.9	10 <sup>th</sup>	31.7	8 <sup>th</sup>
Homicide	3.3	*	27.1	10 <sup>th</sup>

\*Not among top ten for that race.  
Source: Tennessee Department of Health, Division of Policy, Planning and Assessment

### Differences by Sex

Table 17 details age-adjusted mortality rates for the ten leading causes of death by sex. Mortality rates are higher among men than women for all leading causes of death except Alzheimer's disease, where rates were 43% higher among women. Among the notable differences, age-adjusted mortality rates among males were significantly higher than among females for the following causes:

- Suicide:** 5.2 times higher among males than females
- Homicide:** 3.2 times higher among males than females
- Accidents:** 85% higher among males than females
- Liver disease:** 74% higher among males than females
- Heart disease:** 59% higher among males than females
- Cancer:** 51% higher among males than females
- Nephritis (Kidney Disease):** 49% higher among males than females
- Chronic Lower Respiratory Disease:** 29% higher among males than females

**Table 17. Ten Leading Causes of Death in Hamilton County by Sex**  
**Age-adjusted rates per 100,000 population 2011-2013**

	Male		Female	
	Rate	Rank	Rate	Rank
Heart Disease	224.8	1 <sup>st</sup>	141.5	2 <sup>nd</sup>
Cancer	216.9	2 <sup>nd</sup>	143.9	1 <sup>st</sup>
Chronic Lower Respiratory Disease	60.0	3 <sup>rd</sup>	46.5	3 <sup>rd</sup>
Accidents	58.4	4 <sup>th</sup>	31.6	6 <sup>th</sup>
Stroke	43.9	5 <sup>th</sup>	39.7	5 <sup>th</sup>
Alzheimer's Disease	30.7	6 <sup>th</sup>	44.0	4 <sup>th</sup>
Diabetes	30.2	7 <sup>th</sup>	25.5	7 <sup>th</sup>
Suicide	25.4	8 <sup>th</sup>	4.9	10 <sup>th</sup>
Liver Disease	13.6	9 <sup>th</sup>	7.8	9 <sup>th</sup>
Nephritis (Kidney Disease)	14.9	10 <sup>th</sup>	10.0	8 <sup>th</sup>

Source: Tennessee Department of Health, Division of Policy, Planning and Assessment

## Chronic Diseases

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. Nationwide, 86% of our health care dollars goes to treatment of chronic diseases. Chronic diseases are generally characterized by multiple risk factors, long development period, prolonged course of illness, and increased onset with age. Although chronic diseases are among the most common and costly health problems, they are also among the most preventable. Adopting healthy lifestyle habits such as eating nutritious foods, engaging in physical activity, and avoiding tobacco use can prevent or control the devastating effects of these diseases.<sup>xxvi</sup>

## Heart Disease and Stroke

### Heart Disease

Cardiovascular or heart disease includes specific heart conditions, including coronary heart disease which can lead to heart attacks. Heart disease is the leading cause of death in the U.S. and is a major cause of disability. The mortality rate of heart disease in the U.S. was 169.8 in 2013. Tennessee ranked seventh in the nation for deaths from heart disease in 2013.

According to 2011-2013 Behavioral Risk Factor Surveillance Survey (BRFSS) data, 5% of Hamilton County adults have ever been told by a health care practitioner that they have had a heart attack, compared to 6% in Tennessee and 4% nationwide. Similarly, 6% of adults in both Hamilton County and Tennessee had ever been diagnosed with angina or coronary heart disease, compared to 4% nationwide.

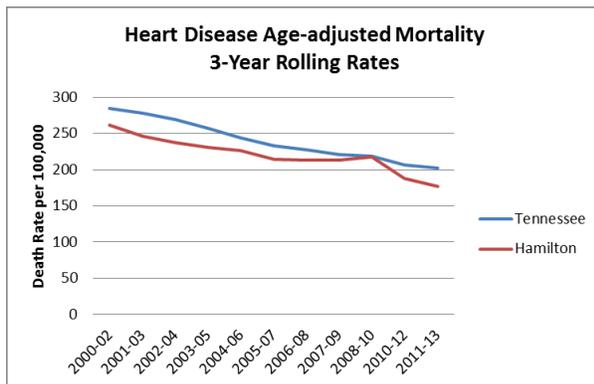


Figure 21 Tennessee Department of Health, Division of Policy, Planning and Assessment

### Trends

*Three-year age-adjusted mortality rates for heart disease have decreased by 32% between 2000 and 2013 (from 26.1 to 177.1 per 100,000)*

*Heart disease mortality rates have been lower than state rates except for 2008-2010, when they were equal.*

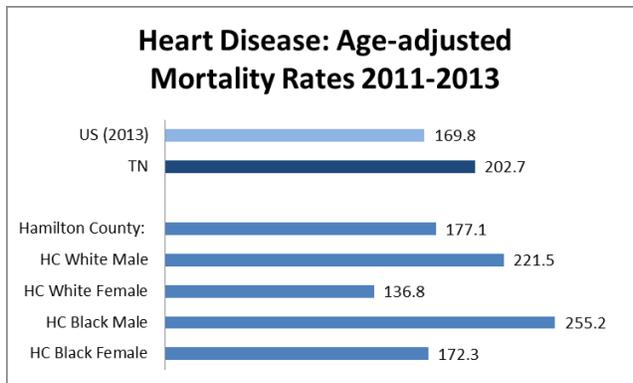


Figure 22 Tennessee Department of Health, Division of Policy, Planning and Assessment

- In Hamilton County, heart disease is the leading cause of death for men and women, responsible for 23% of deaths and over 2,200 hospitalizations.
- The 2011-2013 age-adjusted mortality rate for heart disease in Hamilton County was 177.1 per 100,000 population.
- Males have higher mortality rates than females regardless of race. Black males had the highest mortality rate among four gender-race groups while white females had the lowest.

### Stroke

Stroke is the 5th leading cause of death in the U.S. and in Hamilton County. The mortality rate from stroke in the U.S. was 36.2 in 2013. Tennessee ranked sixth in the nation for deaths from stroke in 2013. The *Healthy People 2020* objective is to reduce the stroke rate to 45.5 deaths per 100,000. According to 2011-2013 BRFSS data, 4% of Hamilton County adults have ever been told by a health care practitioner that they have had a stroke, compared to 4% in Tennessee and 3% nationwide.

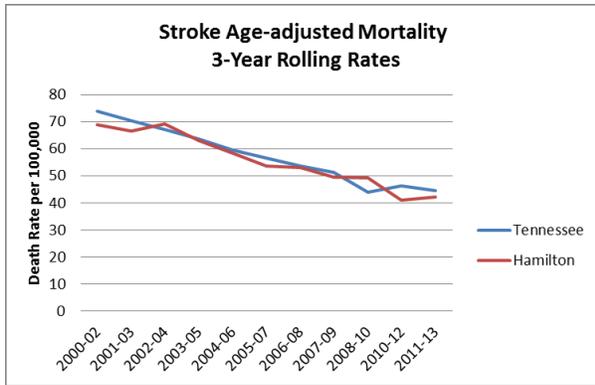


Figure 23 Tennessee Department of Health, Division of Policy, Planning and Assessment

**Trends**

Three-year age-adjusted stroke mortality decreased by 39% between 2000 and 2013 (from 68.9 to 42.1 per 100,000).

Stroke mortality rates in Hamilton County track closely with state rates.

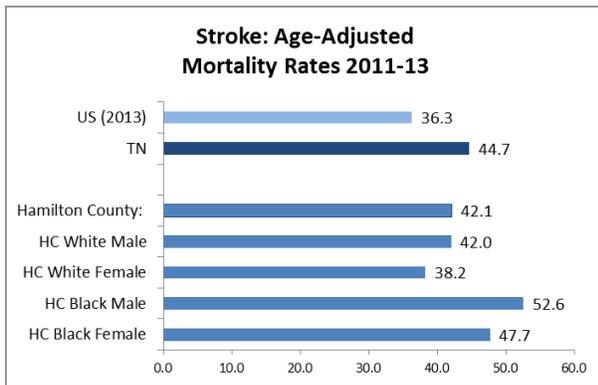


Figure 24 Source: Tennessee Department of Health, Division of Policy, Planning and Assessment

- In Hamilton County, stroke is responsible for responsible for 5% of deaths.
- The 2011-2013 age-adjusted mortality rate for stroke in Hamilton County was 42.1 per 100,000 population.
- Males have higher mortality rates than females regardless of race. Black males had the highest mortality rate among four gender-race groups while white females had the lowest.

**Cancer**

Cancer is the second leading cause of death for residents of Hamilton County, responsible for 22% of all deaths. The 2011-2013 age-adjusted mortality rate for cancer in Hamilton County was 172.3 per 100,000 population, which was 7.5% lower than the state rate and 5.5% higher than the 2013 U.S. rate of 163.2 per 100,000. Tennessee ranked 7<sup>th</sup> in the nation for deaths due to cancer in 2013. The *Healthy People 2020* objective is to reduce the age-adjusted mortality rate for all cancers to 161.4 per 100,000

According to 2011-2013 BRFSS data, 7% of Hamilton County adults have ever been told by a health care practitioner they had cancer other than skin cancer, which mirrors state and national rates (7%).

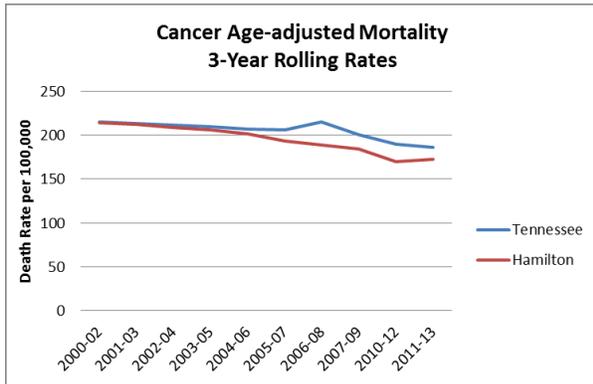


Figure 25 Tennessee Department of Health, Division of Policy, Planning and Assessment

**Trends**

*In Hamilton County, three-year age-adjusted mortality rates for all cancers decreased by 19.6% between 2000 and 2013, from 214.4 to 172.3 per 100,000.*

*Cancer mortality rates in Hamilton County mirrored the state rates from 2000 and 2006, and have since run approximately 10% below state rates.*

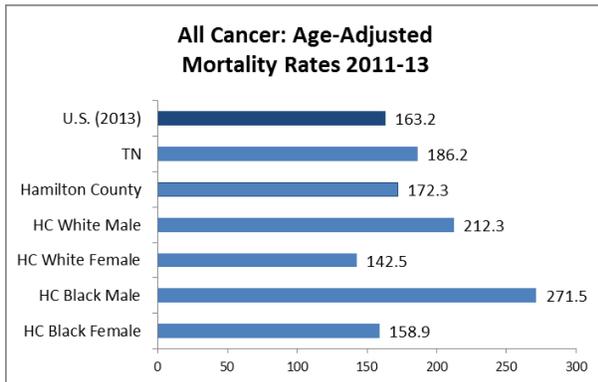


Figure 26 Source: Tennessee Department of Health, Division of Policy, Planning and Assessment

- In Hamilton County, deaths from all cancers comprise 22% of all deaths.
- The 2011-2013 age-adjusted mortality rate for all cancers was 172.3 per 100,000.
- Males have higher mortality rates than females regardless of race. Black males had the highest mortality rate among four gender-race groups while white females had the lowest.

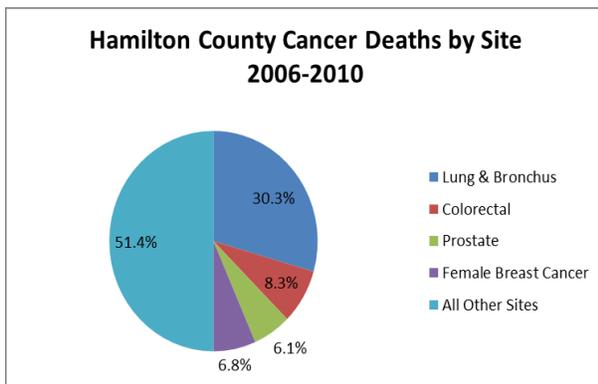


Figure 27 Source: Tennessee Department of Health, Division of Policy, Planning and Assessment

**Cancer by Site**

Lung, colon, breast, and prostate cancer account for almost half of the cancer deaths in Hamilton County.

### Lung and Bronchus Cancer

Lung cancer is the leading cause of cancer death in Tennessee. According to the Tennessee Cancer Registry, there are nearly 5,500 new cases of lung cancer and over 4,300 lung cancer deaths in Tennessee. Tennessee had the third highest incidence rate and the 7<sup>th</sup> highest mortality rate in the U.S. in 2013. The *Healthy People 2020* objective is to reduce the lung cancer mortality rate to 45.5 deaths per 100,000.

Risk factors for lung cancer primarily include tobacco, radon, and asbestos. In Tennessee, 76% of lung cancers were diagnosed at advanced stages.<sup>xxvii</sup>

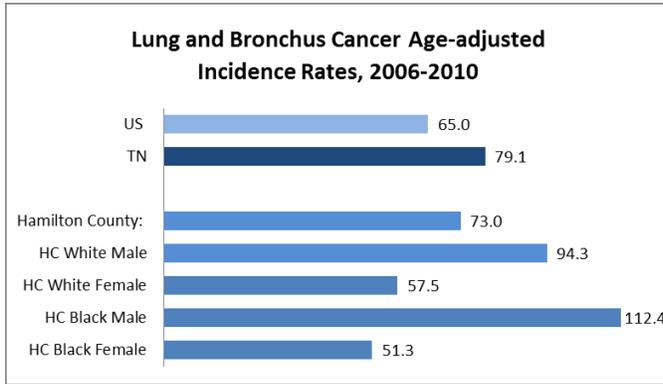


Figure 28 Source: Tennessee Department of Health, Cancer in Tennessee 2006-2010; National Cancer Institute

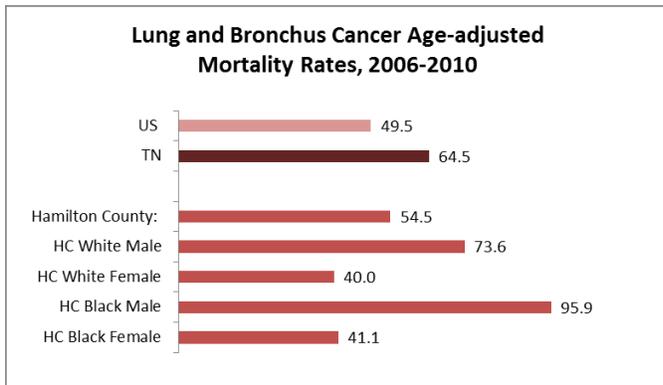


Figure 29 Source: Tennessee Department of Health, Cancer in Tennessee 2006-2010; National Cancer Institute

- There were 1,427 cases of newly diagnosed lung cancer cases between 2006 and 2010 in Hamilton County, and the age-adjusted incidence rate was 73 per 100,000. The age-adjusted lung cancer incidence rate was lower than the state and higher than the nation.

- During the same time period, 1,041 Hamilton County residents died from lung cancer, and the age-adjusted mortality rate was 54.5 per 100,000. The age-adjusted lung cancer mortality rate was lower than the state and higher than the nation.

- Males had higher incidence and mortality from lung cancer than females. Black males had higher incidence and mortality rates than white males. Among women, there was little difference in incidence and mortality rates by race.

## Colorectal Cancer

Colorectal cancer is the third most common cancer found in men and women in the U.S. According to the Tennessee Cancer Registry, there are more than 3,000 new colorectal cancer cases and almost 1,200 deaths each year in Tennessee. Tennessee had the 20<sup>th</sup> highest incidence rate and the 9<sup>th</sup> highest mortality rate in the U.S. for colorectal cancer in 2010.

Mortality rates from colorectal cancer in Tennessee have generally been decreasing over the five year period, which is largely attributed to colorectal cancer screening techniques. The *Healthy People 2020* objective is to reduce the colorectal cancer mortality rate to 14.5 deaths per 100,000.

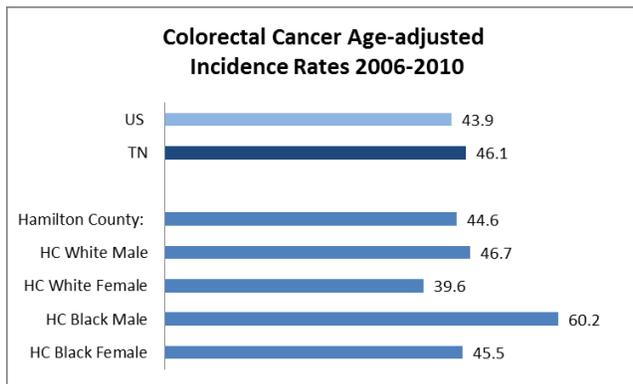


Figure 30 Source: Tennessee Department of Health, Cancer in Tennessee 2006-2010; National Cancer Institute

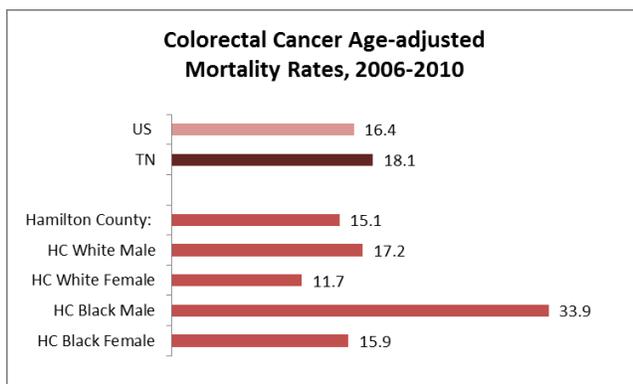


Figure 31 Source: Tennessee Department of Health, Cancer in Tennessee 2006-2010; National Cancer Institute

- In Hamilton County, a total of 858 new colorectal cancer cases were diagnosed from 2006 to 2010, and the age-adjusted incidence rate was 44.6 per 100,000.
- During the same time period, 284 Hamilton County residents died from colorectal cancer, giving an age-adjusted mortality rate of 15.1 per 100,000.
- Incidence and mortality rates were similar to state and national rates.
- In Hamilton County, the colorectal cancer mortality rate among black men is approximately double the rates for black women and white men and triple the rate for white women.

### Prostate Cancer

Prostate cancer is the most common cancer among men in Tennessee.<sup>xxviii</sup> Approximately 4,500 new prostate cancer cases and 600 prostate cancer deaths were reported to the Tennessee Cancer Registry from 2006 and 2010. Tennessee had the 18<sup>th</sup> highest incidence rate and the 15<sup>th</sup> highest mortality rate in the U.S. in 2010. The *Healthy People 2020* objective is to reduce the prostate cancer mortality rate to 21.8 per 100,000.

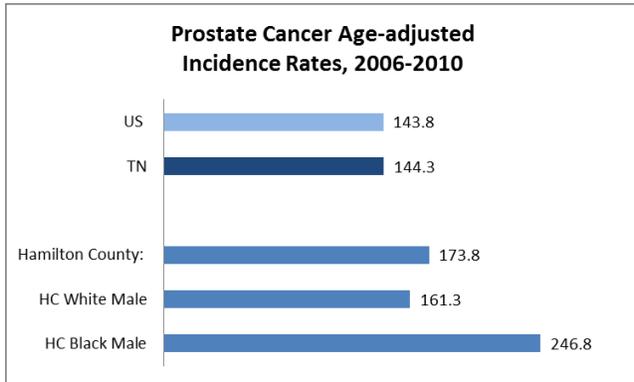


Figure 32 Source: Tennessee Department of Health, Cancer in Tennessee 2006-2010; National Cancer Institute

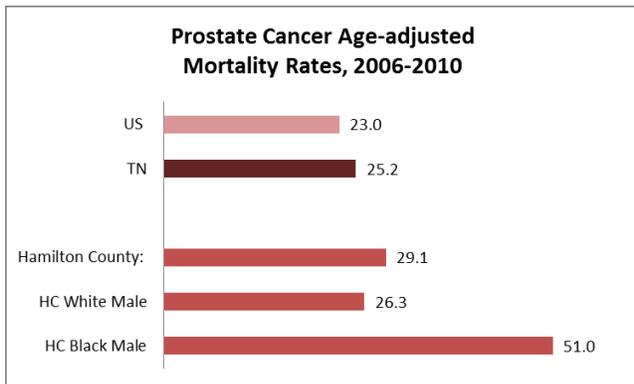


Figure 33 Source: Tennessee Department of Health, Cancer in Tennessee 2006-2010; National Cancer Institute

- In Hamilton County, a total of 1,533 new prostate cancer cases were diagnosed from 2006 to 2010, and the age-adjusted incidence rate was 173.8 per 100,000.
- During the same time period, 210 Hamilton County men died from prostate cancer, giving an age-adjusted mortality rate of 29.1 per 100,000.
- Prostate cancer incidence and mortality rates in Hamilton County are significantly higher than statewide rates.
- Black males are disproportionately affected by prostate cancer than white males; black men experience a mortality rate that is double that for white men.

### Female Breast Cancer

Breast cancer is the most common cancer among women in Tennessee.<sup>xxix</sup> Each year, nearly 4,400 cases of female breast cancer and 871 breast cancer deaths were reported to the Tennessee Cancer Registry. Tennessee had the 34<sup>th</sup> highest incidence rate and the 22<sup>nd</sup> highest mortality rate in the U.S. for female breast cancer in 2010. The *Healthy People 2020* objective is to reduce the female breast cancer mortality rate to 20.7 per 100,000.

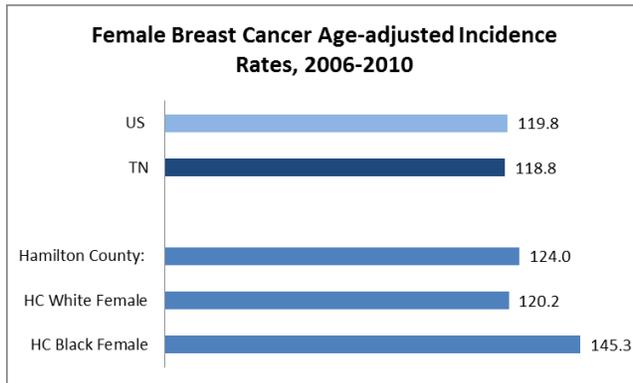


Figure 34 Source: Tennessee Department of Health, Cancer in Tennessee 2006-2010; National Cancer Institute

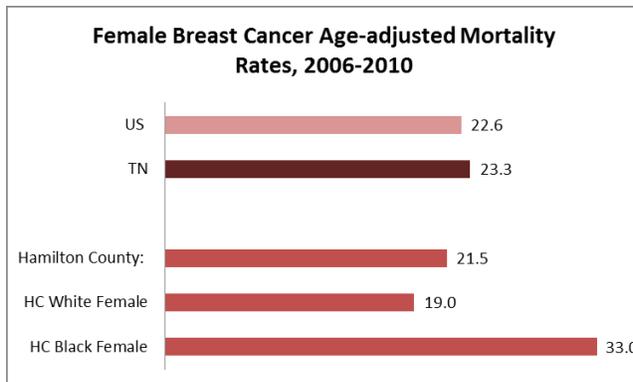
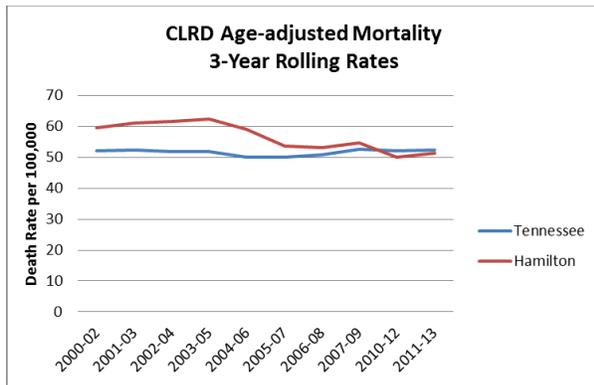


Figure 35 Source: Tennessee Department of Health, Cancer in Tennessee 2006-2010; National Cancer Institute

- In Hamilton County, a total of 1,306 new breast cancer cases were diagnosed from 2006 to 2010, and the age-adjusted incidence rate was 124.0 per 100,000.
- During the same time period, 232 Hamilton County women died from breast cancer, giving an age-adjusted mortality rate of 21.5 per 100,000.
- Incidence and mortality rates were similar to state and national rates.
- Black women are disproportionately affected by breast cancer, compared to white women. Among black women in Hamilton County breast cancer incidence rates were 21% higher and mortality rates were 74% higher than among white women.

## Chronic Lower Respiratory Disease and Asthma

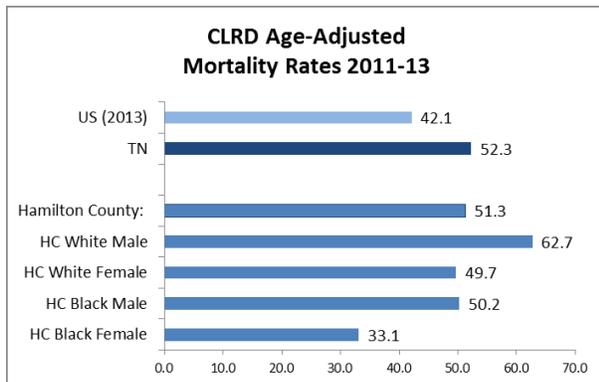
Chronic lower respiratory disease (CLRD) is the 3<sup>rd</sup> leading cause of death in the U.S. and in Hamilton County. CLRD is a group of diseases that causes airflow blockage and breathing-related problems and includes emphysema, chronic bronchitis, and asthma. The mortality rate of CLRD in the U.S. was 42.1 in 2013. Tennessee ranked 10<sup>th</sup> in the nation for deaths from CLRD in 2013.



### Trends:

*Historically, death rates from CLRD have been higher than the state; however, Hamilton County rates started trending down beginning in 2003 and equaled the state rate for 2011-2013.*

Figure 36 Source: Tennessee Department of Health, Office of Policy, Planning and Assessment



- White males had the highest mortality rate among four gender-race groups, while black females had the lowest.
- Cigarette smoking causes almost 8 out of 10 cases of emphysema and chronic bronchitis.<sup>xxx</sup> Age-adjusted mortality rates for CLRD are similar to those for lung cancer, another disease associated with cigarette smoking.

Figure 37 Source: Tennessee Department of Health, Office of Policy, Planning and Assessment

## 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.

The CDC reports that the number of people in the U.S. diagnosed with asthma grew by 4.3 million from 2001 to 2009. The greatest rise in asthma rates was among black children (almost a 50% increase) from 2001 through 2009. Asthma was linked to 3,447 deaths (about 9 per day) in 2007. Asthma costs in the U.S. grew from about \$53 billion in 2002 to about \$56 billion in 2007, about a 6% increase.<sup>xxxii</sup>

## Asthma Prevalence

Asthma prevalence estimates are derived from the Behavior Risk Factor Surveillance System (BRFSS) for the adult population and from the Youth Risk Behavior Survey (YRBS) for the high school student population. Lifetime prevalence of asthma is the percentage of the population who had ever been diagnosed with asthma, and current asthma prevalence is the percentage of the population who had been diagnosed with asthma and had asthma at the time of the survey.

Based on 2011-2013 BRFSS data, the estimated lifetime asthma prevalence among adults was 10% in Hamilton County, compared to 11% statewide and 14% nationwide. The estimated prevalence of current asthma among adults is 6% in Hamilton County, compared to 7% in Tennessee and 9% nationwide (Table 18).

Among school-aged children, asthma is one of the most common causes of school absenteeism. Children with asthma miss 2.5 more days of school than their peers, according to national data.<sup>xxxii</sup> According to the 2011 Youth Risk Behavior Survey (YRBS), the lifetime prevalence of asthma among high school students in Hamilton County was 26%, compared with 21% in Tennessee and 23% nationwide. The prevalence of current asthma among high school students was 14% in Hamilton County, compared with 10% in Tennessee and 12% nationwide.<sup>xxxiii</sup> Within Hamilton County public schools, 3,891 students were identified by their parents as having asthma in the 2014-2015 school year. School officials note that the actual number of students with asthma is probably higher, as some parents do not report medical conditions.

In addition, the Tennessee Department of Health report *Childhood Asthma in Tennessee 2003-2012* detailed the three-year prevalence of asthma among children enrolled in TennCare by the 14 Tennessee Health Department regions. At 21.3%, the childhood asthma prevalence among TennCare enrollees in Hamilton County was the highest of all regions. The prevalence rate for the other Tennessee Health Department regions ranged from 11.6% to 15.7%.<sup>xxxiv</sup>

**Table 18. Asthma Prevalence**

	Hamilton County	TN	U.S.
<b>Adult</b>	<b>2011-2013</b>	<b>2011-2013</b>	<b>2011-2013</b>
--- Ever Diagnosed	10%	11%	14%
--- Current Asthma	6%	7%	9%
<b>Youth, Grades 9-12</b>	<b>2011</b>	<b>2011</b>	<b>2011</b>
--- Ever Diagnosed	26%	21%	23%
--- Current Asthma	14%	10%	12%
<b>TennCare Enrollees (2010-2012)</b>			
--- Prevalence, ages 1-17	21%	14%	n/a

Sources: Centers for Disease Control, TN Department of Health, Division of Planning and Assessment, 2011 Hamilton County YRBS

Asthma Hospitalizations and Emergency Department Visits  
 Asthma hospitalizations and emergency department (ED) visits are considered an indicator for problems accessing primary care, finding affordable medications, correct use of medications, and home treatment equipment. *Healthy People 2020* has established objectives for emergency department visits and hospitalizations for asthma in three age categories: children under 5, ages 5 to 64, and ages 65 and older, as detailed in Table 19.

According to the Tennessee Department of Health Hospital Discharge Data System (HHDDS), 207 Hamilton County residents were hospitalized for asthma in 2012. This translates to an age-adjusted hospitalization rate of 5.7 per 10,000 residents, which was 40% lower than the Tennessee rate of 9.5 per 10,000. Tennessee HHDDS data for 2012 indicates that, 2,159 Hamilton County residents visited ED with a primary diagnosis of asthma. This translates to an age-adjusted ED visit rate of 66.4 per 10,000 residents, which was almost equal to the state rate of 65.6 per 10,000.

**2014 Asthma Capitals:** Every year, the Asthma and Allergy Foundation ranks the nation’s 100 largest cities (as “Capitals”) according to how challenging it is to live there for people who have asthma. Rankings are based on 12 factors associated with asthma prevalence, risk factors for persons with asthma, and medical factors. Chattanooga was ranked sixth, down from 2<sup>nd</sup> in 2013. One other Tennessee city, Memphis made the top ten (second). ([www.asthmacapitals.com](http://www.asthmacapitals.com))

**Table 19. Asthma Inpatient Hospitalization and Emergency Department Visit Rates**

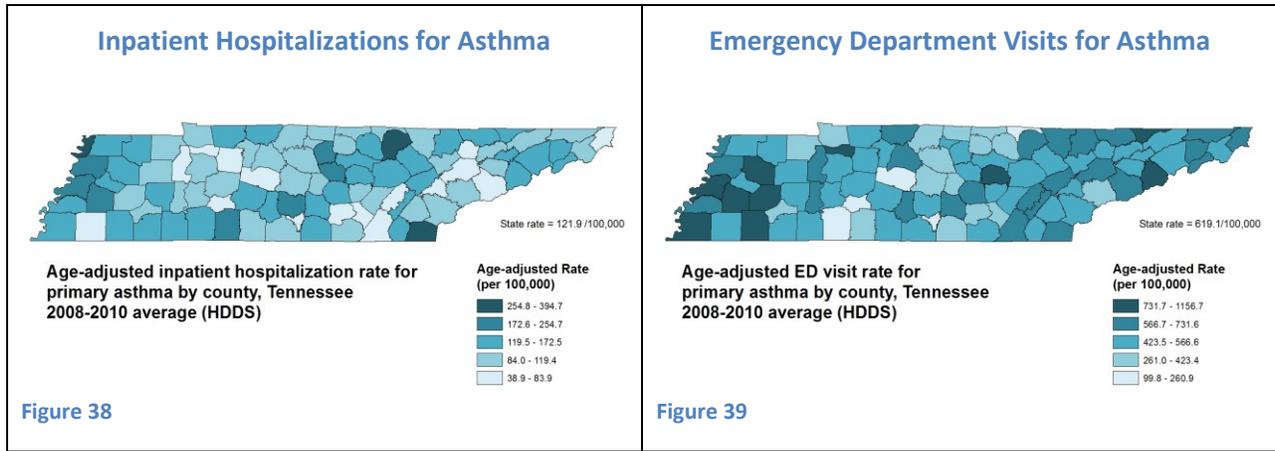
	Hamilton County # 2012	Hamilton County 2012 Rate per 10,000	Tennessee 2012 Rate per 10,000	U.S. Rate per 10,000 †	Healthy People 2020 Rate per 10,000
<b>Inpatient</b>	<b>207</b>	<b>5.7</b>	<b>9.5</b>	<b>15.4</b>	<b>N/A</b>
-- Ages 1-4	11	6.6	22.9	40.6	18.2
-- Ages 5 to 64	149	4.2	6.1	10.5	8.7
-- Ages 65 +	47	1.2	2.1	25.5	20.1
<b>Emergency Dept.</b>	<b>2,159</b>	<b>66.4</b>	<b>65.6</b>	<b>69.7</b>	<b>N/A</b>
-- Ages 1-4	334	119.9	189.4	138.3	95.7
-- Ages 5 to 64	1,667	51.5	51.6	61.8	49.6
-- Ages 65 +	158	3.8	3.5	31.6	13.7

† U.S. data years: Years- Inpatient total (2009), inpatient ages 0-4 (2009), ages 5-64 and 65+ (2010); Emergency Department total (2009), age categories (2008-2010); Note: youngest reported age group U.S (0 to 4), TN (1 to 4).

Rates are age-adjusted rates except for ages 1 to 4 rates, which are crude rates.

Sources: Tennessee Department of Health, Division of Policy, Planning and Assessment (Hospital Discharge Data and Vital Statistics), HealthyPeople.gov, CDC National Hospital Ambulatory Medical Care Survey.

Tennessee Department of Health hospital discharge data consistently show Hamilton County as having among the lowest inpatient hospitalization rates and among the highest emergency department visit rates.<sup>xxxv</sup>



**Table 20. Asthma Inpatient and Emergency Department Visit Rates 2008-2010**

	Hamilton	Tennessee	Davidson	Knox	Shelby
<b>Inpatient Hospitalization Rate</b>	77.8	121.9	113.0	83.9	168.3
<b>Emergency Dept. Visit Rate</b>	676.8	619.1	591.1	595.2	1039.5

Source: Tennessee Department of Health, Division of Policy, Planning and Assessment

### Diabetes

Diabetes is the seventh leading cause of death for both the U.S. and Hamilton County. 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 most costly of all chronic diseases. In 2012, diabetes costs the nation \$176 billion in direct medical costs and \$69 billion in indirect costs associated with disability, work loss, and premature death (total \$245 billion). Average medical expenditures among people with diagnosed diabetes were 2.3 times higher than people without diabetes.<sup>xxxvi</sup>

The prevalence of diabetes has been increasing over the past several years. The increased prevalence of diabetes is linked to rising obesity, a major risk factor for Type 2 diabetes. In 2012, an estimated 589,696 (10.9%) adult Tennessee residents 18 years and older were living with the disease.<sup>xxxvii</sup> Tennessee had the 5<sup>th</sup> highest prevalence rate in 2012 and the 9<sup>th</sup> highest mortality rate in the nation for diabetes in 2013. The mortality rate of diabetes in the U.S. was 21.2 in 2013.<sup>xxxviii</sup>

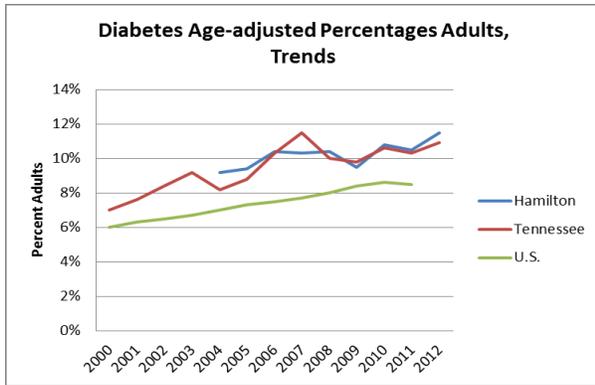


Figure 40 Source: Centers for Disease Control, Diabetes Atlas

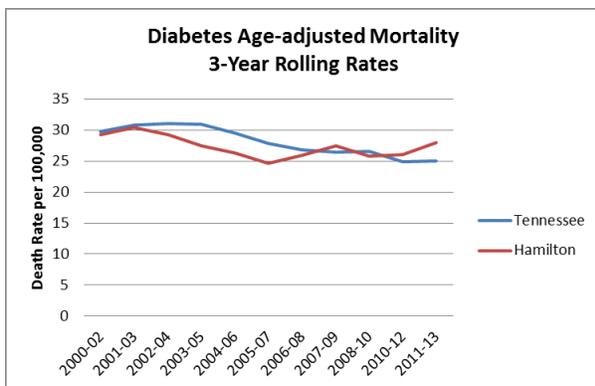


Figure 41 Source: Tennessee Department of Health, Office of Policy, Planning and Assessment

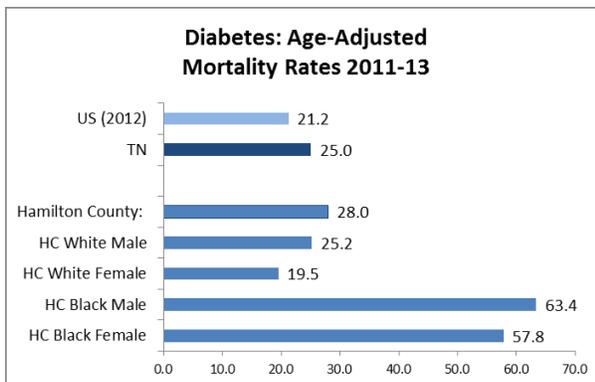


Figure 42 Source: Tennessee Department of Health, Office of Policy, Planning and Assessment

- In Hamilton County, an estimated 33,286 adults (11.5%) were living with diabetes in 2012. The prevalence of diabetes was similar to the state and higher than the 2011 national rate of 8.5%.<sup>xxxix</sup>
- The prevalence of adult diabetes has increased by 25% since 2004 (from 9.2% in 2004 to 11.5% in 2012).
- The 2011-2013 age-adjusted mortality for diabetes in Hamilton County was 28 per 100,000 population. This rate was 11.6% higher than the Tennessee rate and 32.1% higher than the national rate for 2012.
- Blacks are disproportionately affected by diabetes compared to whites. Mortality rate among black men is 2.3 times higher than the Hamilton County rate and three times the national rate. Among black women, diabetes mortality is double the Hamilton County rate and 2.7 times the national rate.

## Risk Factors for Chronic Disease

The Centers of Disease Control reports that up to 39% of premature deaths (before age 80) in the U.S. are preventable, based on a study published in 2014. 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:

- 34% of premature deaths from heart disease
- 21% of all cancer deaths
- 39% of deaths from chronic lower respiratory diseases
- 33% of all stroke deaths, and
- 39% of deaths for unintentional injuries<sup>xi</sup>

The study indicated that modifiable risk factors are largely responsible for many premature deaths. Modifiable risk factors include tobacco use, obesity, poor diet and physical inactivity, hypertension, high cholesterol, lack of seat belt use, and alcohol abuse. The Behavior Risk Factor Surveillance Survey (BRFSS) measures the prevalence of these modifiable risk factors among adults and the Youth Risk Behavior Survey (YRBS) measures the prevalence among high school students.

*The “Big Three” behavioral risk factors influence at least seven of the top ten leading causes of death in Tennessee.*

Cause	Tobacco	Obesity	Physical Activity
Heart Disease	Strong evidence	Suggestive evidence	Suggestive evidence
Cancer	Strong evidence	Suggestive evidence	Suggestive evidence
Chronic Lower Respiratory Disease	Strong evidence	Strong evidence	Strong evidence
Accidents	Suggestive evidence	Suggestive evidence	Suggestive evidence
Stroke	Strong evidence	Strong evidence	Strong evidence
Alzheimer’s Disease	Suggestive evidence	Suggestive evidence	Suggestive evidence
Diabetes	Strong evidence	Strong evidence	Strong evidence
Suicide	Suggestive evidence	Suggestive evidence	Suggestive evidence
Kidney Disease <sup>4</sup>	Strong evidence	Strong evidence	Suggestive evidence
Liver Disease	Strong evidence	Strong evidence	Strong evidence

	Strong evidence
	Suggestive evidence

Source: Tennessee Department of Health, Division of Policy, Planning and Assessment

<sup>4</sup> The two leading causes of kidney failure are diabetes and high blood pressure, according to the National Kidney Foundation.

## Tobacco Use

Tobacco use 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, while smokeless tobacco can increase the risk of oral and esophageal cancers. 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.<sup>xii</sup> Tennessee ranked 5<sup>th</sup> for adult smoking and 11<sup>th</sup> for youth smoking in 2013 (7<sup>th</sup> for youth in 2011).

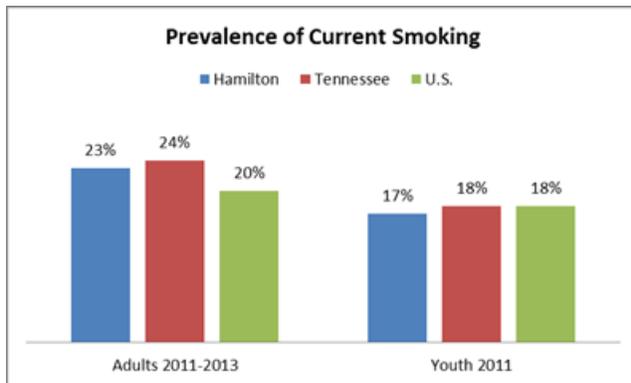


Figure 1 Sources: 2011-2013 BRFSS, 2011 YRBS

- The *Healthy People 2020* objectives are to reduce cigarette smoking to 12% among adults and to 16% among youth.
- Adult smoking rates in both Hamilton County and Tennessee are higher than in the U.S.
- County rates for youth smoking are similar to state and national rates.

Smokeless tobacco causes a number of serious oral health problems, including cancer of the mouth, gums, pharynx, and esophagus, periodontitis, and tooth loss. Use of smokeless tobacco increases the risk for heart disease and stroke and can lead to nicotine addiction. Tennessee ranked 7<sup>th</sup> among teens (2013) and 22<sup>nd</sup> among adults (2012) for smokeless tobacco use.

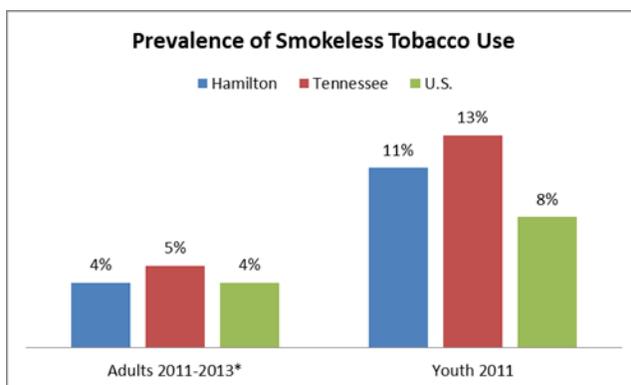


Figure 42 Sources: 2011-2013 BRFSS, 2011 YRBS

\* U.S. Adult is 2012 only

- The *Healthy People 2020* Objectives are to reduce smokeless tobacco use to 0.3% among adults and 8% among youth.
- High school students are two to three times more likely to use smokeless tobacco than adults.
- Among adults, smokeless tobacco use is similar across the county and U.S. and slightly lower than the state.
- Among youth, smokeless tobacco use was higher in Hamilton County and Tennessee than in the U.S.

**Economic Impact** Hamilton County residents' state and federal tax burden from smoking-related government expenditures are estimated at \$148 million annually. A 2015 report from the Campaign for Tobacco Free Kids estimates that the state and federal tax burden of Tennessee residents is \$1,092 per household. When this per household figure is applied at the county level, it translates to a \$148 million state and federal tax burden for smoking-related expenditures in Hamilton County.<sup>xliii</sup>

## 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 have been linked to increased risk for heart disease, stroke, several types of cancer, type 2 diabetes, hypertension, high cholesterol, osteoarthritis, and other chronic conditions. The American Society of Clinical Oncology recently announced that obesity is implicated in as many as 1 in 5 cancer deaths and is quickly overtaking tobacco as the leading cause of cancer.<sup>xliii</sup> The prevalence of obesity continues to increase across the United States. BRFSS data from 2013 indicate that the South had the highest prevalence of obesity (30.2%), followed by the Midwest (30.1%), the Northeast (26.5%), and the West (24.9%). No state had a prevalence of obesity less than 20%.<sup>xliv</sup> Tennessee ranked 4<sup>th</sup> for among adults and 8<sup>th</sup> among youth for obesity in 2011.

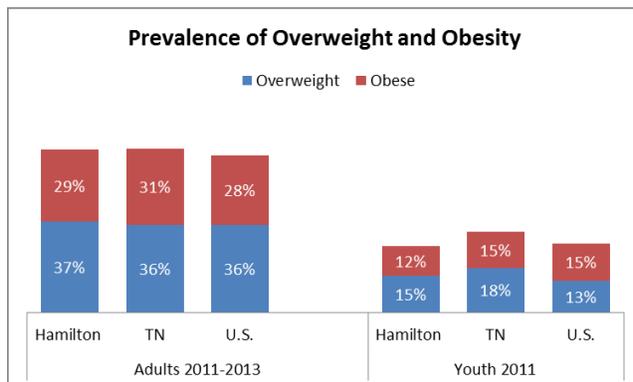
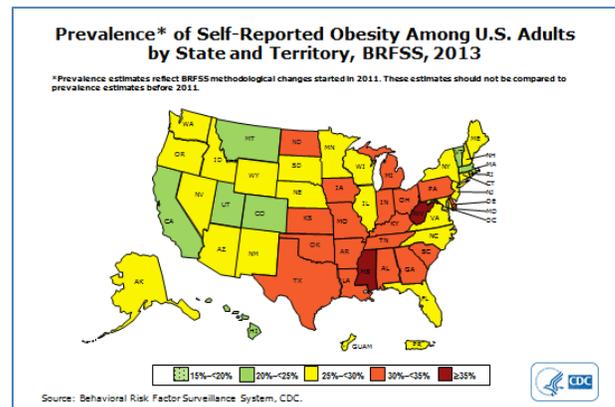


Figure 43 Sources: 2011-2013 BRFSS, 2011 YRBS

- In Hamilton County, 66% of adults were either overweight or obese, according to self-reported height/weight.
- Twenty-seven percent of high school students in Hamilton County were either overweight or obese, according to self-reported height and weight.
- The Healthy People 2020 objective is to reduce the prevalence of obesity to 31% among adults and 16% among children 12

**Economic Impact** A 2012 research report in the Journal of Health Economics found that per capita medical spending was \$2,741 higher for obese individuals than for individuals who were not obese – a 150 percent increase. When applied to the estimated number of obese adults in Hamilton County, this translates to an additional \$205.7 million in annual costs related to direct medical expenses.<sup>xlv</sup>

**Defining Overweight and Obesity**  
**BMI**=Body Mass Index is a relationship between height and weight that is associated with body fat.  
**Overweight:**  
 Adults- BMI of 25 to 29  
 Youth – 85<sup>th</sup> BMI percentile  
**Obese:**  
 Adults- BMI of 30 or more  
 Youth – 95<sup>th</sup> BMI percentile

<sup>5</sup> The *Healthy People 2020* objectives are to reduce obesity to 30.5% among adults ages 20 and older and 16.1% among youth ages 12 to 19. These goals represent a 10% improvement over baseline measures (adults: 33.9%; youth: 17.9%) from the 2005-2008 National Health and Nutrition Examination Survey (NHANES). The NHANES obtains measured weights in examination gowns and heights without shoes. Obesity data in this report are based on self-reported height and weight and not comparable to NHANES data. The most recently available obesity rates from the NHANES (2009-2012) were 35.3% for adults and 16.1% for youth.

## Hypertension

Hypertension, often called high blood pressure, is the leading cause of heart disease and stroke. Almost one in three adults in the U.S. (about 67 million) has high blood pressure and over half of them (about 36 million) do not have it under control.<sup>xlvi</sup> (Blood pressure control means having a systolic blood pressure less than 140 mmHg and a diastolic blood pressure less than 90 mmHg, among people with high blood pressure.) In 2013, Tennessee ranked 6<sup>th</sup> for hypertension.

Tennessee in 2013, the prevalence of hypertension was 45% among African American adults and 39% among white adults. The prevalence of hypertension increased with age, increasing from 18% among Tennesseans 25 to 34 years old to 70% among Tennesseans aged 65 and older.<sup>xlvii</sup>

### Hypertension

#### At Risk (prehypertension):

Systolic: 120-139 mmHg  
Diastolic: 80-89 mmHg

#### High:

Systolic: 140 mmHg or higher  
Diastolic: 90 mmHg or higher

#### Desirable:

Systolic: less than 120 mmHg  
Diastolic: less than 80 mmHg

## High Blood Cholesterol

High levels of cholesterol and triglycerides increase the risk of heart disease, the leading cause of death in Hamilton County. A 10% decrease in total blood cholesterol levels can reduce the incidence of heart disease by as much as 30%.<sup>xlviii</sup>

In 2013, Tennessee ranked 21<sup>st</sup> for high cholesterol. Nationwide, the prevalence of high LDL or “bad,” cholesterol among adults aged 40 to 74 decreased from 59% to 27% from the late 1970s through 2007-2010.<sup>xlix</sup>

### High Total Cholesterol

**High:** 240 mg/dl or greater

**Borderline high:** 200-239 mg/dl

**Desirable:** less than 200 mg/dl

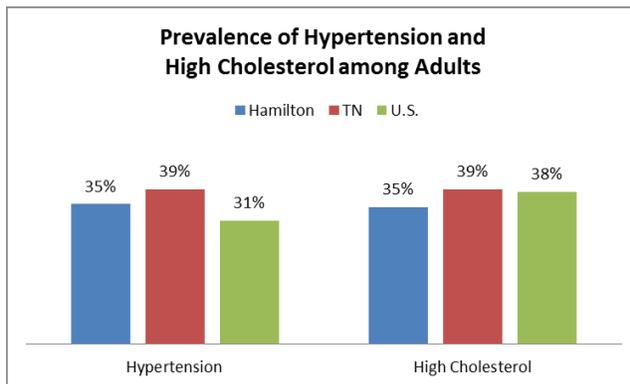


Figure 44 Source: 2011-2013 BRFSS

- The *Healthy People 2020* objectives are to reduce the adult prevalence of hypertension to 27% and high blood cholesterol to 14%.
- In Hamilton County, 35% of adults were told by a health care provider that their blood pressure was high, compared to 39% in Tennessee and 31% nationwide.
- In Hamilton County, 35% of adults who have had their cholesterol checked in the past five years were diagnosed with high cholesterol, compared to 39% in Tennessee and 38% nationwide.

## 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. The CDC recommends adults achieve either a minimum 2 hours and 30 minutes of moderate physical activity every week and muscle strengthening activities 2 or more days a week that work all major muscle groups (legs, hips, back, abdomen, chest, shoulders, and arms). For children and adolescents, the CDC recommends 60 or more minutes of daily physical activity and muscle and strengthening activities at least 3 days per week. 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.

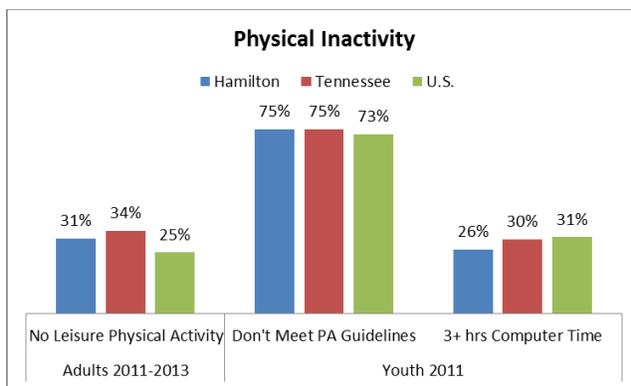


Figure 45 Sources: 2011 BRFSS, 2011 YRBS

- Approximately 31% of Hamilton County adults were inactive in their leisure time in 2011-2013, compared to 34% in Tennessee and 25% nationwide.
- Approximately 3 out of 4 adolescents local, state, and nationwide do not meet physical activity guidelines for youth.
- 26% of Hamilton County high school students have three or more hours a day of screen time outside of school work (computer or video games).
- The *Healthy People 2020* goal is to reduce the proportion of adolescents with three or more hours screen time to 17%.
- The *Healthy People 2020* objective is to reduce the proportion of adults who engage in no leisure-time physical activity to 33%.<sup>6</sup>

<sup>6</sup> Progress towards meeting this *HP2020* objective is tracked through the National Health Interview Survey (NHIS), which is a different survey with different methodology than the BRFSS. The 2013 percentage of U.S. adults with no physical activity in the NHIS was 30.5%. The 2008 national baseline was 36.2%. ([healthypeople.gov](http://healthypeople.gov))

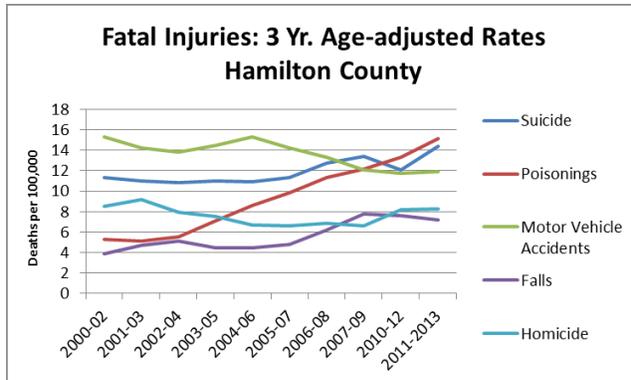
**Table 21. Summary of Chronic Disease Risk Factors**

	Hamilton County	Tennessee	United States
<b>Adult Risk Factors (Year)</b>	<b>2011-2013</b>	<b>2011-2013</b>	<b>2011-2013</b>
Current Smoker	23%	24%	20%
Smokeless Tobacco User	4%	5%	N/A
Overweight or Obese (BMI 25+)	66%	67%	64%
Obese (BMI 30+)	29%	31%	28%
No Leisure Physical Activity	31%	34%	25%
5+ Daily Servings Fruits/Vegetables	13%	9%	N/A
Hypertension	35%	39%	31%
High Blood Cholesterol	35%	39%	38%
Binge Drinker	10%	10%	17%
<b>Youth Risk Factors (Year)</b>	<b>2011</b>	<b>2011</b>	<b>2011</b>
Current Smoker	17%	22%	18%
Smokeless Tobacco User	11%	13%	8%
Overweight or Obese (BMI $\geq$ 85th percentile)	27%	33%	28%
Obese (BMI $\geq$ 95th percentile)	12%	15%	15%
Insufficient Aerobic Physical Activity <sup>§</sup>	75%	75%	73%
Over 2 hrs. non-school related computer/computer games per day	26%	30%	31%
5+ Daily Servings Fruits/Vegetables	20%	22%	
Binge Drinker	18%	19%	22%
Rarely/Never Wear Seatbelt	7%	11%	8%
Rode w/driver under influence	21%	20%	24%
Physical Fight past 12 months	32%	31%	33%

<sup>§</sup>HIP 2020 cholesterol objective is the percentage of all adults 18+, rather than the percentage of those checked.  
<sup>§</sup>State and national data come from the 2009 YRBS due to questionnaire changes in the 2011 state and national surveys for this measure.  
 Sources: Adult Risk Factors - Tennessee Department of Health, Division of Health Statistics. Hamilton County and Tennessee BRFSS data reflect the average over 3 years. U.S. BRFSS data reflect the 3-year average of median percentage (of 50 states plus D.C.) for 2011-2013. (Hypertension and cholesterol figures for U.S. are for 2011-2012.) Youth Risk Factors – Hamilton County 2011 YRBS; CDC - Tennessee and National YRBS, 2011 and 2009<sup>§</sup>.

## 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. Nationwide, injuries were responsible for more than 192,900 deaths, an estimated 31 million emergency department visits, and 2.5 million hospitalizations in 2013.<sup>1</sup> The majority of deaths from injuries in the U.S. are unintentional injuries, such as unintentional falls and motor vehicle crashes. Suicide and homicide are examples of intentional injuries. The majority of deaths from injuries were from poisonings, firearms, motor vehicle crashes, and falls. One of the goals of *Healthy People 2020* is to prevent unintentional injuries and violence, and reduce their consequences.



### Mortality Rates % Difference, 2000-02 to 2011-13:

Poisonings	+ 185.4%
Falls	+ 84.6%
Suicide	+27.3%
Motor Vehicle Accidents	- 22.3%
Homicide	- 2.4%

Figure 46: Source: Tennessee Department of Health, Division of Health Statistics

## Poisonings

In Hamilton County, poisonings were the leading cause of fatal injury in 2011-2013. Three-year age-adjusted poisoning mortality rates have almost tripled over the last 13 years, rising from 5.3 to 15.1 per 100,000 between 2000 and 2013. This reflects national trends and is linked to a rise in prescription drug abuse.

In 2012, there were 749 Emergency Department (ED) visits, 376 hospitalizations, and 75 deaths from poisonings in Hamilton County. Of the 75 poisoning deaths, 66 (88%) were due to drug overdose. Adults aged 45 to 54 experienced the greatest number of overdose deaths (24 or 36.4%), followed by adults aged 35 to 44 (19 or 28.8%).

Table 22. Poisoning Data for 2012

	Hamilton County Number	Hamilton County Age Adj. Rate	Tennessee Age Adj. Rate	US Age Adj. Rate 2011
Emergency Department Visits	749	229.53	305.3	N/A
Hospitalizations	339	98.1	100.5	121.2
Fatalities	75	22.6	18.9	14.6
Fatalities - Overdose	66	19.7	17.0	13.2

Source: Tennessee Department of Health, Division of Health Statistics (Hospital Discharge Data and Vital Statistics)

## Motor Vehicle Crashes

Three year age-adjusted death rates for motor vehicle crashes decreased by 22% in Hamilton County between 2000 and 2013 (from 15.3 to 11.9 deaths per 100,000).

In 2012, there were 4,203 Emergency Department (ED) visits, 263 hospitalizations, and 31 deaths from motor vehicle accidents in Hamilton County. Motor vehicle accidents were the leading cause of injury hospitalizations for individuals ages 15 to 24.

**Table 23. Motor Vehicle Crash Data for 2012**

	Hamilton County Number	Hamilton County Age Adj. Rate	Tennessee Age Adj. Rate	US Age Adj. Rate 2011
<b>Emergency Department Visits</b>	4,203	1,245.1	1,205.6	N/A
<b>Hospitalizations</b>	263	75.5	76.1	N/A
<b>Fatalities</b>	31	8.2	14.0	11.2

Source: Tennessee Department of Health, Division of Health Statistics (Hospital Discharge Data and Vital Statistics)

While overall mortality from automobile accidents has fallen in recent years, the rate of automobile crashes has risen. Tennessee Department of Safety and Homeland Security data suggest that distracted driving, including inattentive drivers and use of personal electronic devices, may have contributed to higher automobile crash rates.<sup>7</sup> Between 2008 and 2013, Hamilton County's overall automobile crash rate increased by 38.5% (from 36.8 to 51 crashes per 1,000 licensed drivers). Over the same time frame, distracted driver crash rates doubled (from 1.7 to 3.6 crashes per 1,000 licensed drivers), while rates of alcohol related crashes and injury crashes remained stable (Figure 47).

<sup>7</sup> The Tennessee Department of Safety and Homeland Security defines distracted driver as inattentive, texting/PDA/blackberry, GPS, cellular in use, computer, fax, printer, on-board navigation system, other electronic device, two way radio, head up display, other-inside vehicle, other-outside vehicle." Crash data excludes parking lot and private property crashes as well as crashes with less than \$400 damage.

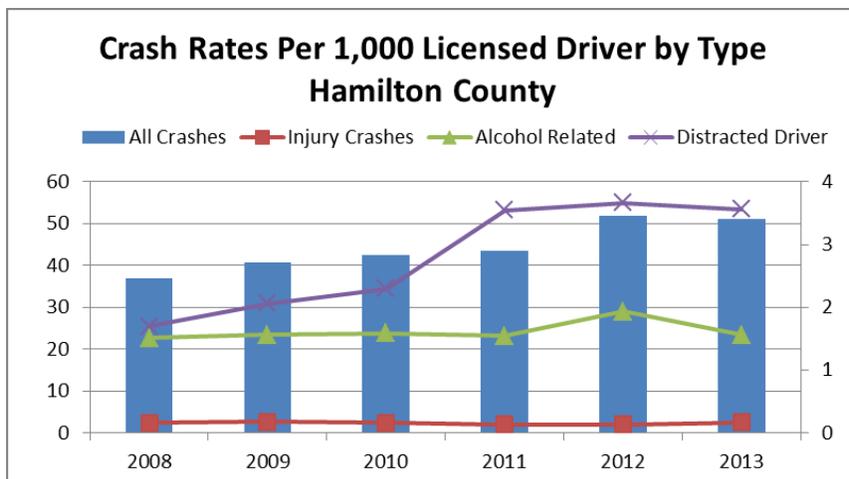


Figure 47 Source: Tennessee Department of Safety and Homeland Security

### Young Drivers

Crash rates among young drivers, ages 15 to 24, increased by 28% from 2008 to 2013 (from 126.8 to 162.6 per 1,000 licensed drivers).

In 2013, young drivers contributed to 5,206 motor vehicle crashes in Hamilton County, which was approximately 41% of all crashes. Hamilton County had the highest young driver crash rate in 2013 of all 95 Tennessee counties. Young driver crash rates for Tennessee’s four largest metro counties in 2013 are detailed below.

**Table 24. 2013 Hamilton County Ranking (of 95 Counties in Tennessee) for Young Driver Crashes**

County	Number Crashes Drivers Aged 15-24	Crash Rate per 1,000 Drivers 15 to 24	State Rank (1=Worst, 95=Best)
Hamilton	5,206	162.6	1
Davidson	7,467	151.9	2
Shelby	12,105	151.8	3
Knox	5,855	138.6	7

Source: Tennessee Department of Safety and Homeland Security

## Unintentional Falls

Three year age-adjusted death rates for unintentional falls have increased by 85% in Hamilton County from 2000 to 2013 (from 3.9 to 7.2 deaths per 100,000). In 2012, there were 10,638 Emergency Department (ED) visits, 986 hospitalizations, and 26 deaths from unintentional falls in Hamilton County.

**Table 25. Unintentional Falls Data for 2012**

	Hamilton County Number	Hamilton County Age Adj. Rate	Tennessee Age Adj. Rate	US Age Adj. Rate 2011
<b>Emergency Department Visits</b>	10,638	3045.37	3305.71	N/A
<b>Hospitalizations</b>	986	240.84	254.52	283.71
<b>Fatalities</b>	26	5.8	8.6	8.0

Source: Tennessee Department of Health, Division of Health Statistics (Hospital Discharge Data and Vital Statistics)

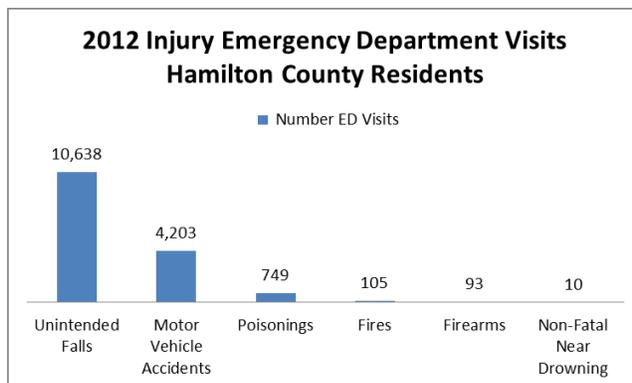


Figure 48 Source: Tennessee Department of Health, Division of Policy, Planning and Assessment

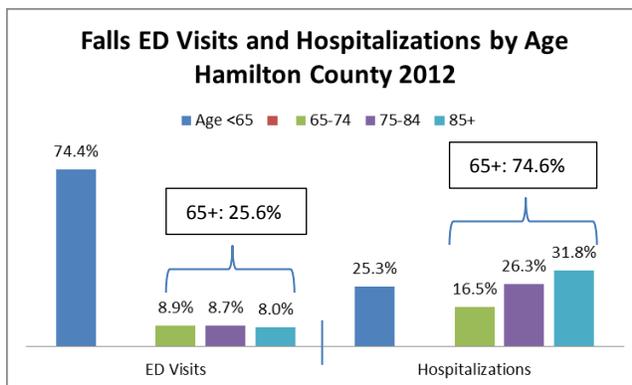


Figure 49 Source: Tennessee Department of Health, Division of Policy, Planning and Assessment

- The leading cause of emergency department injury visits, unintentional falls accounted for more than twice the number of ED visits for motor vehicle accidents, poisonings, firearms, fires, and drowning combined.

- Unintentional falls are particularly worrisome for older adults who are more likely to require hospitalization for their injuries. While individuals 65 and older comprise 26% of ED falls visits, they make up 75% of hospital admissions for falls.
- In 2012, the average charge per hospital admission for a fall was \$38,051. These charges do not include emergency medical services, physician costs, or rehabilitation.

## Assault

After a downward trend from 2001 (9.2 per 100,000) to 2009 (6.6 per 100,000), three year age-adjusted death rates due to assault (homicide) increased to 8.3 per 100,000 by 2013.

In 2012, there were 1,531 Emergency Department (ED) visits, 74 hospitalizations, and 25 deaths from assault in Hamilton County. Of the 1,531 individuals visiting the ED for assault, 61% were between the age of 15 and 34.

**Table 26. Assault Data for 2012**

	Hamilton County Number	Hamilton County Age Adj. Rate	Tennessee Age Adj. Rate	US Age Adj. Rate 2011
Emergency Department Visits	1531	464.4	437.5	N/A
Hospitalizations	74	21.2	21.4	40.6
Fatalities (Homicide)	25	7.7	7.2	5.3

Source: Tennessee Department of Health, Division of Health Statistics (Hospital Discharge Data and Vital Statistics)

## Domestic Violence

Domestic, or partner, violence is defined as “the willful intimidation, physical assault, battery, sexual assault, and/or other abusive behavior perpetrated by an intimate partner against another.”<sup>li</sup> A 2013 report on the impact of domestic violence in the Tennessee economy stated that known domestic violence cases were responsible for over \$886 million in annual service cost and productivity loss.<sup>lii</sup> According to data from the Tennessee Bureau of Investigation annual report in 2013, there were 77,540 reported incidents of domestic violence across the state. In 2013, there were 2,883 reports of domestic violence among 12 reporting jurisdictions in Hamilton County<sup>liii</sup> (Table 27). By comparison, there were 3,409 reports of domestic violence among 12 reporting jurisdictions in Hamilton County in 2008.<sup>liiv</sup>

**Table 27. Domestic Violence Offenses in Hamilton County, 2013**

Offense	Reported
Simple Assault	2,035
Aggravated Assault	663
Intimidation	81
Forcible Rape	27
Stalking	23
Forcible Fondling	22
Kidnapping/Abduction	18
Murder	4
Statutory Rape	4
Forcible Sodomy	2
Sexual Assault w/ Object	2
Incest	2
<b>Total</b>	<b>2,883</b>

Source: Tennessee Bureau of Investigation

## Mental and Behavioral Health

### Mental Health

Poor mental health is a major source of distress, disability, and social burden. In any given year, as many as one in five adults in the United States have a mental disorder.<sup>lv</sup>

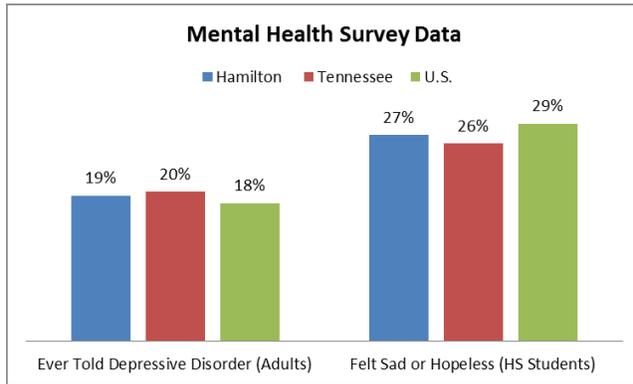


Figure 50 Source: 2011-2013 BRFSS and 2011 YRBS

- In Hamilton County, 19% of adults reported that a healthcare provider had ever told them they had a depressive disorder.
- 27% of Hamilton County high school students reported ever feeling “so sad or hopeless almost every day for two weeks or more in a row that stopped you from doing some usual activities.”

In 2012, there were 2,989 Emergency Department (ED) visits and 627 hospitalizations for mental disorders in Hamilton County. Self-inflicted injuries (including suicide attempts) resulted in 370 trips to the ED, 198 non-fatal hospitalizations, and 49 deaths.

Table 28. Mental Health Hospitalizations in Hamilton County, 2012, Short-term Hospitals Only

	Hamilton County Number	Hamilton County Age Adj. Rate	Tennessee Age Adj. Rate
<b>Mental Disorders</b>			
-Emergency Dept. Visits	2,989	865.0	1199.8
--Hospitalizations	627	181.5	349.6
<b>Suicide Attempt/Self Inflicted</b>			
--Emergency Dept. Visits	370	111.6	132.7
--Hospitalizations	198	58.2	49.3
<b>Suicide Fatalities</b>	49	13.2	14.3

Source: Tennessee Department of Health, Division of Health Statistics (Hospital Discharge Data and Vital Statistics). Mental Disorders include ICD-9 codes 290-319 as the primary diagnosis.

## Suicide

Suicide is a serious public health problem that can have lasting harmful effects on individuals, families, and communities. The 8<sup>th</sup> leading cause of death in Hamilton County, three-year age-adjusted suicide rates have increased by 27.3% since 2000 (from 11.3 to 14.4 per 100,000).

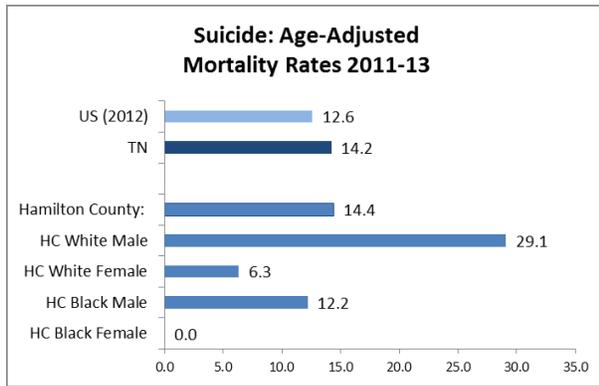


Figure 51 Source: Tennessee Department of Health, Division of Health Statistics

- There were 157 deaths by suicide in Hamilton County between 2011 and 2013, and the age-adjusted mortality rate was 14.4 per 100,000.
- Males have higher mortality rates than females regardless of race.
- White males had the highest mortality rate among four gender-race groups. In fact, of the 157 suicides over the three-year period, 119 (76%) were committed by white males.

## Alcohol and Drug Use

According to the Behavioral Risk Factor Surveillance System, over half of adults in the U.S. report having at least one drink of alcohol within the past 30 days. Although light to moderate alcohol drinking may have beneficial health effects on the heart, heavy or excessive alcohol drinking can lead to increased risk of unintentional injuries or health problems such as liver disease, high blood pressure, or certain forms of cancer.<sup>lvi</sup>

Excessive alcohol consumption cost the nation \$223.5 billion in the United States in 2006 or about \$1.90 per drink. Most of these costs were due to binge drinking, and resulted from losses in workplace productivity, health care expenses, and crimes related to excessive drinking.<sup>lvii</sup>

Binge drinking is defined as consuming 5 or more drinks (for men) or 4 or more drinks (for women) at the same time or within a couple of hours of each other. The *Healthy People 2020* objective is to reduce binge drinking among adults to 24%.<sup>8</sup>

<sup>8</sup> Progress towards meeting this *HP2020* objective is tracked through the National Survey on Drug Use and Health (NSDUH), a different survey and methodology than the BRFSS. According to the 2013 NSDUH, 26.9% of U.S. adults engaged in binge drinking during the past 30 days. The 2008 national baseline was 27.1%. ([healthypeople.gov](http://healthypeople.gov))

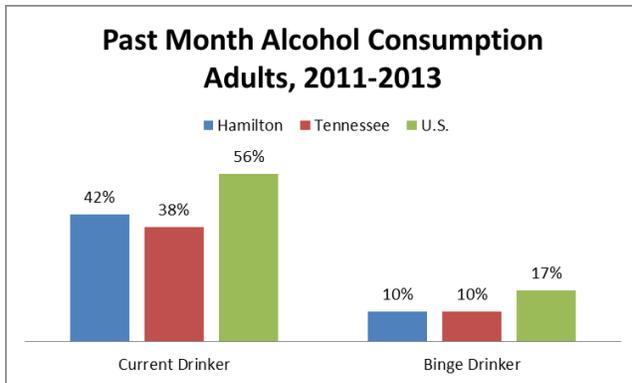


Figure 52 Sources: 2011-2013 BRFSS

- The prevalence of alcohol consumption and binge drinking among adults in Tennessee and Hamilton County is lower than national rates, according to 2011-2013 BRFSS data.
- Approximately four out of ten adults in Hamilton County and in Tennessee have had one or more alcoholic beverages within the past month, compared to 56% of adults nationwide.
- In Hamilton County and in Tennessee, approximately 10% of adults reported binge drinking, compared to 17% of adults nationwide.

### Alcohol and Drug Use among High School Students

The 2011 Hamilton County Youth Risk Behavior Survey found that alcohol is the most commonly used addictive substance: one-third of students consumed an alcoholic beverage within the past month and 18% had engaged in binge drinking. Twenty percent of students had used marijuana.

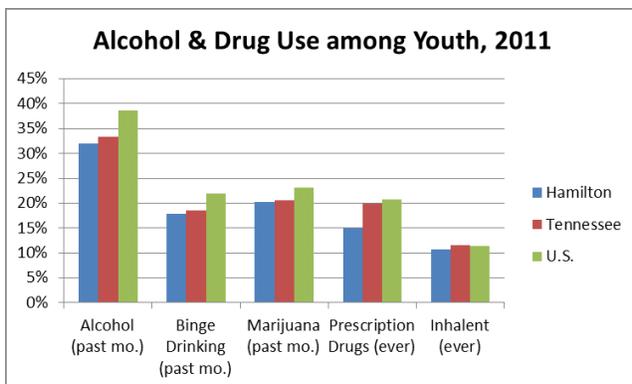


Figure 53 Source: 2011 Youth Risk Behavior Survey

- Approximately one-third of high school students in Hamilton County consumed an alcoholic beverage in the past month and 18% had engaged in binge drinking.
- 20% of local high school students used marijuana in the past month.
- 15% of local high school students had ever used a prescription drug not prescribed to them, and one in ten had ever used inhalants.
- Area students reported less alcohol and drug use than students nationwide.

### Prescription Drug Abuse

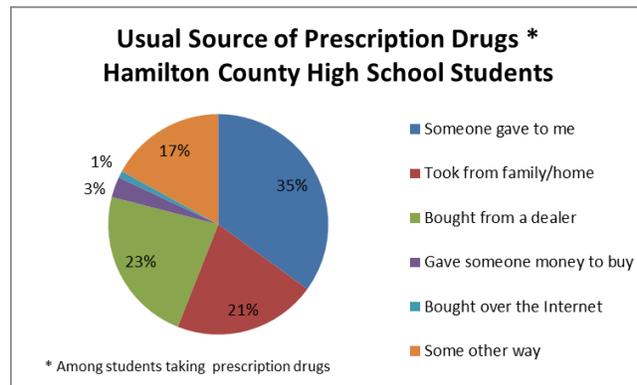
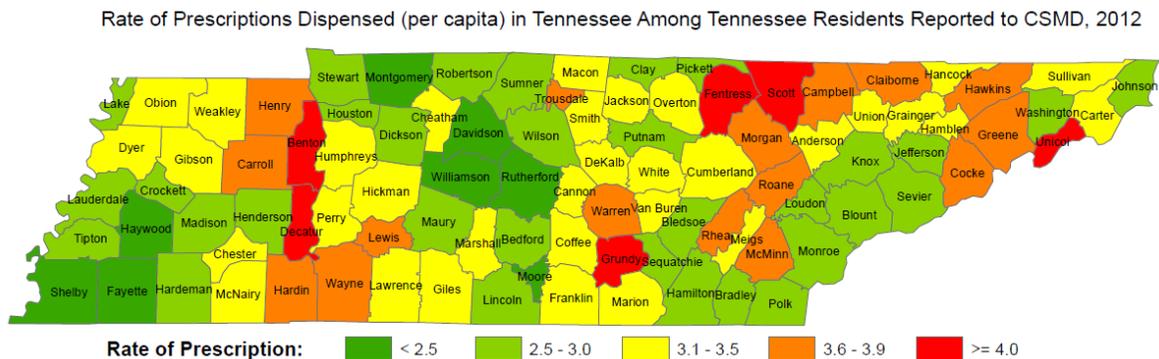
Nationwide, the CDC reports that deaths from drug overdose have been rising steadily over the past two decades. The Tennessee Department of Mental Health and Substance Abuse Services (TDMHSAS) declared prescription drug abuse an epidemic in Tennessee, where the number of drug overdose deaths increased 220% between 1999 (342 deaths) to 2012 (1,094 deaths). Health officials attribute this to an increased use of prescription drugs, which were linked to more than half of the drug overdose deaths in the United States in 2012.

Statewide, the number of prescriptions written increased by 23% from 2010 to 2011, contributing to addiction problems across the state, according to health officials. While some individuals abuse medications which have been prescribed to them, others obtain medications from friends or relatives. In addition, state officials are concerned about illegitimate pain clinics, doctor shopping, and prescription fraud.<sup>lviii</sup>

As part of the strategy to reduce prescription drug abuse in Tennessee, in 2006, the Tennessee Department of Health established a database to monitor the dispensing of Schedule II, III, IV and V controlled substances. The Prescription Safety Act of 2012 enhanced the monitoring capabilities of the database. The bill requires all medical professionals to register with the state’s Controlled Substance Monitoring Database and to check a patient’s history of opiate and benzodiazepine use before prescribing pain medications. Before 2012, state law required prescribers to report data but left checking the database up to each person’s discretion.

Map 2 indicates the rate of controlled substances dispensed across Tennessee counties adjusted by population. The map shows that Hamilton County had a rate of 2.5-3.0 prescriptions dispensed per capita. The counties with the highest rates (>=4.0 per capita) include Unicoi, Scott, Fentress, Benton, Decatur, and nearby Grundy.

**Map 2**



- In Hamilton County, 15% of high school students had used prescription drugs not prescribed for them. These students most often obtained prescription drugs from a friend or family member.
- White students were four times more likely to have used prescription drugs than black students (20% vs. 5%).
- Among all addictive substances students have tried, prescription drugs ranked fourth (15%), after alcohol (63%), cigarettes (43%), and marijuana (37%).

Figure 54 Source: 2011 Hamilton County YRBS

**Alcohol and Drug Related Hospitalizations**

In 2012, there were 2,916 Emergency Department (ED) visits and 1,391 hospital admissions for alcohol-related disorders among Hamilton County residents. Drug-related disorders accounted for 3,538 ED visits and 1,288 admissions. As noted earlier, 66 Hamilton County residents died from a drug overdose in 2012.

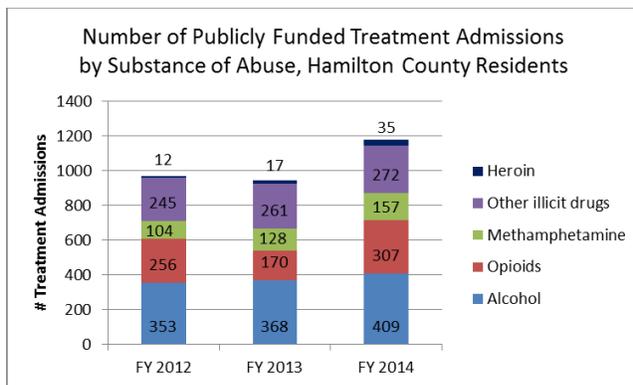
**Table 29: Alcohol and Drug-Related Hospital Visits, Short-term Hospitals Only, 2012**

	Hamilton County Number	Hamilton County Age Adj. Rate	Tennessee Age Adj. Rate
<b>Alcohol-Related</b>			
-Emergency Dept. Visits	2,916	843.9	816.2
--Hospitalizations	1,391	402.5	410.2
<b>Drug-Related</b>			
--Emergency Dept. Visits	3,538	1,023.9	1,098.0
--Hospitalizations	1,288	372.7	502.9

Source: TN Dept. of Health, Division of Health Statistics (Hospital Discharge Data System). Alcohol-related includes ICD-9 codes 291,303,305.0,790.3, and 980, any diagnosis. Drug-related includes ICD-9 codes 292,304,305.2-305.9, 960-977, any diagnosis

### Treatment Admissions

Figure 33 below illustrates the number of publicly funded treatment admissions to Hamilton County residents from 2012 to 2014 by substance of abuse. Individuals may be treated for more than one substance. The number of unique individuals receiving publicly funded treatment services in Hamilton County increased from 668 in 2012, to 692 in 2013, and to 852 in 2014.



**Figure 33 Source: TDMHSAS 2014 Tennessee Behavioral Health County Data Book**

- Over the 3-year period, treatment admissions increased for every recorded substance of abuse. Alcohol was the most commonly abused substance, followed by opioids, methamphetamines, and other drugs.
- The number of treatment admissions for heroin abuse doubled from 2013 (17) to 2014 (35).
- The number of unique individuals receiving publicly funded treatment services increased by 28% between 2012 and 2014 (from 668 to 852).

### 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). Babies with NAS suffer withdrawal symptoms after being exposed to illegal or prescription drugs while in the mother’s womb. Over the past decade, Tennessee has experienced a nearly ten-fold rise in the incidence of babies born with Neonatal Abstinence Syndrome. Infants with Neonatal Abstinence Syndrome stay in the hospital longer than other infants and may have serious medical and social problems. Hospital charges for newborns with NAS in Tennessee average \$62,973, compared to \$7,258 for newborns not experiencing withdrawal. In an analysis of Tennessee infants born in 2012 with TennCare coverage, infants born with Neonatal

Abstinence Syndrome were 14.8 times more likely to be in Department of Children’s Services custody during their first year of life compared with other TennCare infants.<sup>lix</sup>

As of January 2013, Neonatal Abstinence Syndrome is a reportable disease and all cases must be reported to the Tennessee Department of Health at the time of diagnosis. Table 30 shows the number and rate per 1,000 births for reported NAS by Tennessee Health Planning Region for 2014. Map 3 illustrates the locations of the Tennessee Department of Health Planning Regions.

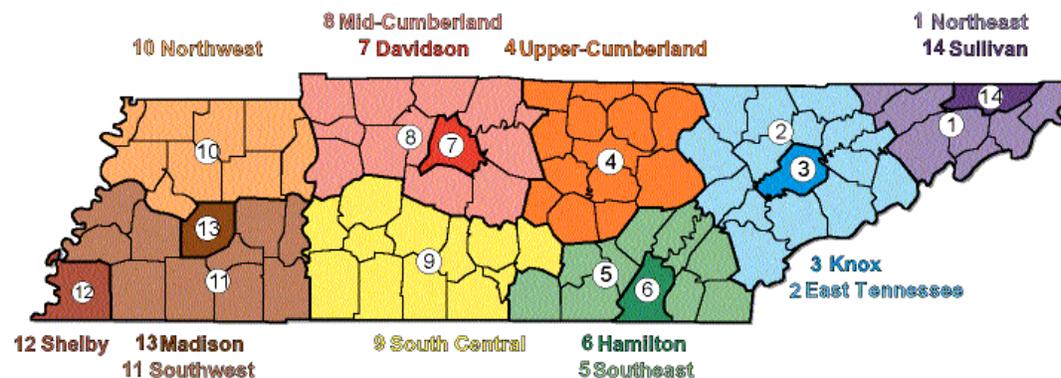
**Table 30. Drug Dependent Newborns (NAS) by TN Department of Health Planning Region, 2014**

Region # (see map)	Region of Maternal Residence	# Cases	Rate per 1,000 Births
14	Sullivan	76	48.4
1	North East	140	42.2
2	East	264	33.9
4	Upper Cumberland	103	27.2
3	Knox	103	20.2
9	South Central	38	8.6
8	Mid-Cumberland	94	6.4
7	Davidson	55	5.6
5	South East	20	5.5
10 & 11	West	28	4.7
6	Hamilton	12	2.9
12	Shelby	37	2.7
13	Jackson/Madison	3	2.4
	Total	973	12.3

Source: TN Department of Health NAS Monthly Update  
Data through 1/2/2015

- The highest rates of NAS occur in Northeast Tennessee (Sullivan County and North East Region), East Tennessee (East Tennessee Region and Knox County), and in the Upper Cumberland Region.
- While the Hamilton County NAS rate is significantly lower than 10 of the 13 regions, the figure refers to Hamilton County resident births only. Hamilton County labor and delivery hospitals have a broad service area (approximately 40% of deliveries are to non-Hamilton County residents) and hospital officials report caring for many more infants with NAS.<sup>1</sup>

**Map 3. Tennessee Department of Health Regions**

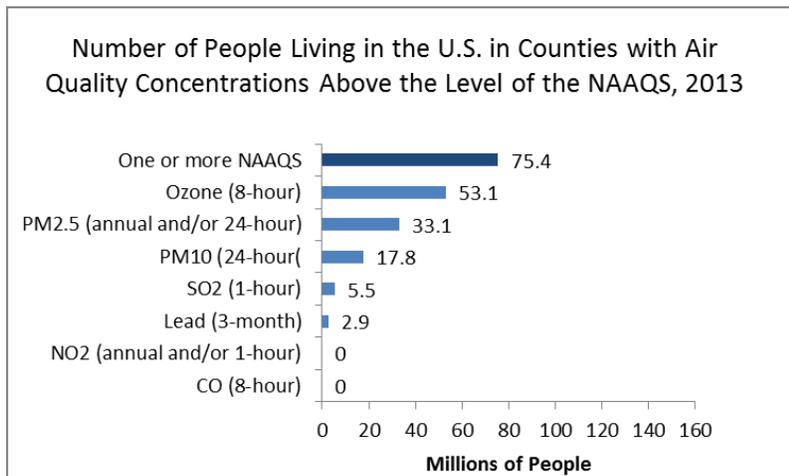


## Environmental Health

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.<sup>lx</sup>

### Air Quality

Poor air quality continues to be a widespread public health and environmental problem in the United States, and can cause respiratory disease development such as asthma, lung cancer, chronic obstructive pulmonary disease, as well as long term damage to cardiovascular systems.<sup>lxi</sup> Air pollution also reduces visibility, damages crops and buildings, and deposits pollutants on the soil and in bodies of water where they affect the chemistry of the water 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. Of the six air pollutants, Hamilton County is only required to monitor ozone and particulate pollution.



### Air Quality in the United States

Although there have been significant air quality improvements nationwide, the EPA reports that approximately 75 million people in the U.S. live in counties that exceeded the national ambient air quality standards (NAAQS) in 2013, with ozone as the primary pollutant.<sup>lxii</sup>

Figure 55 Source: EPA. Multiple years of data are generally used to determine if an area attains the NAAQS. The chart above is for one year only.

### Air Quality in Hamilton County

The Hamilton County Air Pollution Control Bureau (APCB) administers local air pollution control laws that are intended to achieve and maintain levels of air quality as well as protect human health and safety. The APCB maintains seven monitoring sites throughout the county, and reports on the daily air quality using the Air Quality Index, which is a scale designed by the EPA to standardize the method for reporting air quality nationwide.

In Hamilton County, the daily air quality level is determined by either the ozone or the particulate concentration; whichever is higher on that day. The Air Quality Index measures the amount of pollutants in the outdoor air from a score of 0 to 500: good (0-50), moderate (51-100), unhealthy for sensitive people (101-150), unhealthy (151-200), very unhealthy (201-300), and hazardous (301-500).<sup>lxiii</sup> During

2013 and 2014, the APCB observed no days where the AQI was in the unhealthy range. During each the three previous years, the number of days with AQI in the category “unhealthy for sensitive people” ranged from 5 to 7 days, and this was attributed to ozone levels. In 2010, there was 1 day where the AQI was in the category “unhealthy,” due to particulate matter.

**Table 31. Number of Unhealthy Days**

	Unhealthy for Sensitive Groups Number of Days		Unhealthy Number of Days	
	Ozone 8-Hour Average	Particulate 24-Hour PM <sub>2.5</sub>	Ozone 8-Hour Average	Particulate 24-Hour PM <sub>2.5</sub>
2010	7	0	0	*1
2011	5	0	0	0
2012	5	0	0	0
2013	0	0	0	0
2014	0	0	0	0

\*High data due to construction project next to monitoring site  
 Source: Chattanooga-Hamilton County Air Pollution Control Bureau

Outdoor air quality has improved dramatically since the Department of Health, Education and Welfare named Chattanooga as the most polluted city in the nation in 1969. The following charts from the Chattanooga/Hamilton County Air Pollution Control Bureau (APCB) at local monitors show a steady decrease in both ozone and particle pollution. Note that Hamilton County has met particulate pollution standards since 2005-2007 and is in compliance with the new standard of 12 µg/m<sup>3</sup> set in 2013. It has been in compliance with the ozone standard of 75 parts per billion (ppb) since 2007-2009. In December 2014, the EPA proposed a more stringent standard to a range of 65 to 70 ppb, which Hamilton County has already met.<sup>lxiv</sup> The EPA is to finalize the rule by October 1, 2015.

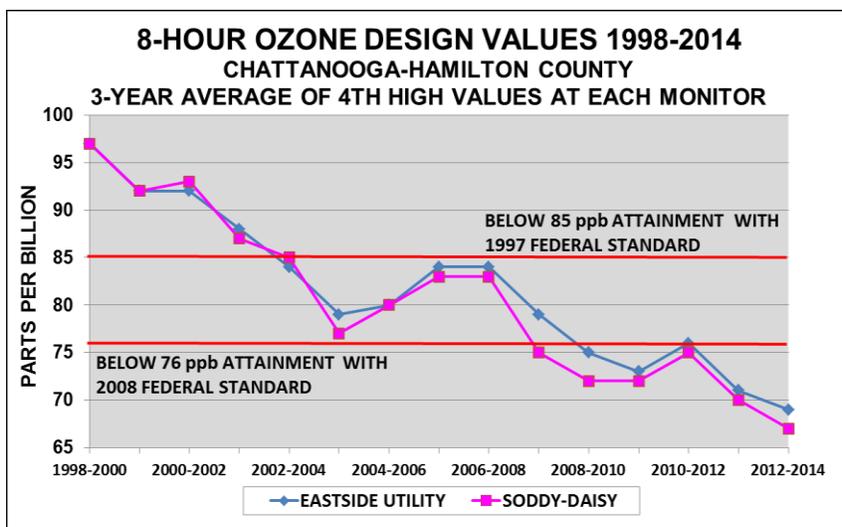


Figure 56 Source: Chattanooga-Hamilton County Air Pollution Control Bureau

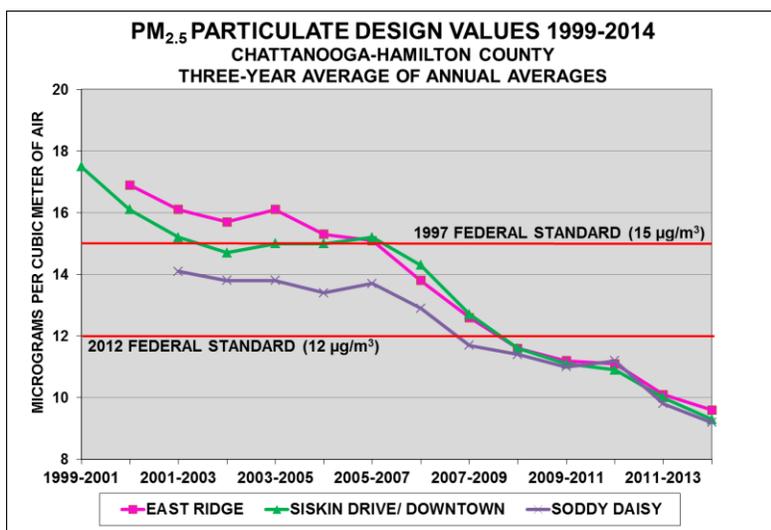


Figure 57 Source: Chattanooga-Hamilton County Air Pollution Control Bureau

## Radon

According to the Environmental Protection Agency (EPA), radon is the number one cause of lung cancer among non-smokers in the nation. Radon is a naturally occurring, invisible, and odorless radioactive gas. Radon disperses in outdoor air, but can reach harmful levels when trapped in buildings such as homes. All buildings are susceptible to high levels of radon, regardless of building materials, or when the building was constructed. The EPA estimates that radon in indoor air causes 20,000 lung cancer deaths each year in the United States.

Hamilton County is categorized in “Zone 2” by the EPA, which is a moderate risk for radon exposure. The Tennessee Department of Environment and Conservation (TDEC) operates a statewide indoor Radon Program as part of the Office of Sustainable Practices. TDEC reported radon lab result testing data from 1986 to March 2009, the most recently available data. A total of 33,360 radon tests were completed in Tennessee, with 973 tests in Hamilton County. The average pCi/L was 2.4, with the maximum reading at 30.7. The average for the state of Tennessee was 4.7. The EPA standard is 4 pCi/L.

## Water Quality

Approximately 319 million residents in the U.S. receive their tap water from a public water system, which is monitored and regulated by the Environmental Protection Agency (EPA). An estimated 15% of Americans get their water from private ground water wells that are not subject to EPA regulations.

The Oral Health Services program of the Tennessee Department of Health, in collaboration with the Tennessee Department of Environment and Conservation, continues 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 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% nationally, exceeding the *Healthy People 2020* objective of 79.6%.<sup>lxv</sup>

In Hamilton County, the following public water systems provide fluoridated water: Eastside Utility District, Grindstone Estates Mobile Home Park, Hixson Utility District, Mowbray Mountain Utility District, Northwest Utility District – Sale Creek, Northwest Utility Water District-Soddy Daisy, Savannah Valley Utility District, Signal Mountain Water System, Tennessee-American Water Company, Union Fork-Bakewell Utility District, and Walden’s Ridge Utility District.

## Lead

Lead poisoning can affect nearly every system in the body. Because lead poisoning often occurs with no obvious symptoms, it frequently goes unrecognized. Lead poisoning can cause behavior and learning problems, lower IQ, hyperactivity, slowed growth, hearing problems, and anemia. In rare cases, ingestion of lead can cause seizures, coma, and even death. Approximately half a million U.S. Children aged 1-5 years have blood lead levels greater than 5 micrograms per deciliter of blood ( $\geq \mu 5 /dL$ ), the level at which the Centers for Disease Control recommends public health actions be initiated. The *Healthy People 2020* objective is to eliminate elevated blood lead levels in children in 2020.

Lead can accumulate in the body, where it is stored in bones along with calcium. During pregnancy, lead is released from bones and is used to help form the bones of the fetus, particularly if a woman does not have enough dietary calcium. Lead can also cross the placental barrier and can result in reduced fetal growth and premature birth. Among adults, lead exposure can lead to hypertension, decreased kidney function, and reproductive problems among men and women.

The Health Department conducts required reporting of confirmed elevated lead blood levels in children ages 6 months to 6 years to the Tennessee Department of Health. In addition, the Health Department provides case management for children identified with elevated lead blood levels, including educational and nutritional counseling. Prior October 2012, children were identified as having a blood lead “level of concern” if the test result was 10 or more micrograms per deciliter of lead in blood ( $\geq \mu 10 /dL$ ). With the new value, more children have been identified as having lead exposure. In Hamilton County there were 14 reported cases of children with elevated lead blood levels in 2013 and 12 in 2014, up from between four and six cases in the previous three years.

**Table 32. Reported Children in Hamilton County with Elevated Lead Blood Levels<sup>†</sup>**

	2010 $\geq \mu 10 /dL$	2011 $\geq 10 \mu /dL$	2012 $\geq 10 \mu /dL$	2013 <sup>†</sup> $\geq 5 \mu /dL$	2014 $\geq 5 \mu /dL$
<b>Cases</b>	5 cases	4 cases	6 cases	14 cases	12 cases
<b>% of State Cases</b>	4.2%	3.8%	5.9%	3.1%	3.0%

<sup>†</sup>In 2013, the threshold for reporting elevated blood levels decreased from  $\geq \mu 10 /dL$  to  $\geq \mu 5 /dL$  .  
Source: Tennessee Department of Health, Tennessee Childhood Lead Poisoning Prevention Program

In 2011, a resident of Chattanooga’s Southside Neighborhood presented to a local hospital with symptoms of lead poisoning. The Tennessee Department of Health requested that the Tennessee Department of Environment and Conservation (TDEC) conduct an investigation to determine the source of lead exposure. The EPA and TDEC conducted soil testing and found elevated lead soil levels at 84

residences, which were subsequently remediated. The actual source of lead was never determined, but is suspected to be associated with historic foundry operations.<sup>lxvi</sup>

## Rabies

Rabies is caused by a virus that affects the nervous system of humans and other mammals, and is primarily transmitted through the bite of a rabid animal. The usual mode of rabies transmission is by the introduction of saliva containing rabies virus into a bite wound. Rabies infects the central nervous system, causing encephalopathy and ultimately death. Over the past century, rabies in the U.S. has changed dramatically, from the majority of cases being reported in domestic animals, to now where more than 90% of cases are reported in wildlife. The majority of rabies cases occur in raccoons, skunks, bats, and foxes. The number of rabies-related human deaths has declined from more than 100 cases annually 100 years ago to one or two per year.

Although human rabies deaths are rare, the estimated public health costs associated with disease, detection, prevention, and control exceed \$300 million annually. These costs include the vaccination of companion animals, animal control programs, maintenance of rabies laboratories, and medical costs, such as those for rabies post exposure prophylaxis (PEP).<sup>lxvii</sup> The tables below summarize animal encounter investigations and animal rabies vaccinations in Hamilton County.

**Table 33. Animal Encounter Investigations by the Chattanooga-Hamilton County Health Department Rabies Control Program**

	2011	2012	2013	2014	
<b>Dog Exposures</b>	752	685	643	687	No animals in Hamilton County have tested positive for rabies since 2012, when the Health Department reported one bat with a positive rabies test.
<b>Cat Exposures</b>	209	159	176	178	
<b>Wildlife Exposures</b>	93	86	96	60	
<b>Other Domestic</b>	3	2	2	2	
<b>Total Investigations</b>	<b>1057</b>	<b>932</b>	<b>917</b>	<b>927</b>	
<b>-- Positive Rabies</b>	4 bats	1 bat	0	0	
Source: Chattanooga-Hamilton County Health Department					

**Table 34. Reported Animal Rabies Vaccinations in Hamilton County**

	2011	2012	2013	2014	
<b>Dog Vaccinations</b>	47,003	48,572	48,960	50,894	In 2014, there were 71,585 reported animal rabies vaccinations in Hamilton County, which was 6,015 more than in 2011 (a 9.2% increase).
<b>Cat Vaccinations</b>	18,342	20,434	20,535	20,558	
<b>Other Domestic</b>	225	186	103	133	
<b>Total Vaccinations</b>	<b>65,570</b>	<b>69,192</b>	<b>69,598</b>	<b>71,585</b>	
Source: Chattanooga-Hamilton County Health Department					

## 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. In Tennessee, four designated categories of communicable diseases are reported to local health departments by all hospitals, physicians, laboratories, and other persons knowing of or suspecting a case in accordance to the regulations of the Tennessee Department of Health. The list of Notifiable Diseases in Tennessee was last revised in 2015 and is included in the appendix to this report. Notable changes to the list in 2014 and 2015 include the following:

- Middle East Respiratory Syndrome (MERS) is newly reportable (2014)
- Reporting and submission of isolates which are non-susceptible to one or more carbapenems (includes intermediate and resistant to any carbapenem) is required for *Escherichia coli*, *Klebsiella* species, and *Enterobacter* species (2014)
- MRSA is no longer reportable statewide to local health departments; it is reportable in the National Healthcare Safety Network (2014)
- Chikungunya virus was made reportable in June 2014
- Diagnostic specimens for Viral Hemorrhagic Fevers (including Ebola Virus Disease) are required to be submitted to the state laboratory (2015)
- Carbapenem-resistant *Pseudomonas* species are newly reportable (for sentinel labs in Davidson County only (2015)

## Reportable Diseases

Tennessee state law requires that categories of communicable diseases are reported to the health department. All hospitals, physicians, laboratories, and other persons knowing of or suspecting a case of these diseases are required to report. For many of these notifiable diseases, a disease-specific investigation is conducted and the information collected is reported to the state. A complete list of reportable diseases and events is located in the appendix to this report.

Below is a list of selected reportable 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 2013. Preliminary reports for 2014 show an increase in Shigella, from six cases in 2013 to 93 cases in 2014.

**Table 35. Summary of 2013 Reportable Diseases in Hamilton County**

Reported Disease	Hamilton County		Tennessee
	Cases	Rate/100,000	Rate/100,000
Campylobacteriosis	29	8.317	6.204
Cryptosporidiosis	3	0.860	1.247
Ehrlichiosis/Anaplasmosis	3	0.860	1.478
Enterobacteriaceae, Carbapenem-resistant*	9	2.581	3.140
Group A Streptococcus, invasive	20	5.736	2.509
Group B Streptococcus, invasive	29	8.317	6.158
Guillain-Barre syndrome	3	0.860	0.292
Haemophilus influenzae, invasive	6	1.721	1.601
Hemolytic uremic syndrome	0	0.000	0.262
Hepatitis A, acute	1	0.287	0.323
Hepatitis B, acute	8	2.294	4.249
Hepatitis C, acute	4	1.147	1.663
Legionellosis	5	1.434	1.201
Listeriosis	0	0.000	0.200
Lyme disease	2	0.574	0.354
Malaria	2	0.574	0.308
Mumps	3	0.860	0.108
Neisseria meningitis, invasive	0	0.000	0.108
Pertussis	8	2.294	3.464
Salmonellosis	30	8.604	13.131
Shigellosis	6	1.721	10.499
Spotted Fever Rickettsiosis	11	3.155	8.313
Shiga toxin-producing Escherichia coli (STEC)	3	0.860	2.109
Streptococcus pneumoniae, invasive (IPD)	3	0.860	12.439
Tuberculosis	6	1.721	2.201
Vibriosis	3	0.860	0.185
VRE (Vancomycin-Resistant Enterococcus), invasive	9	2.581	2.786

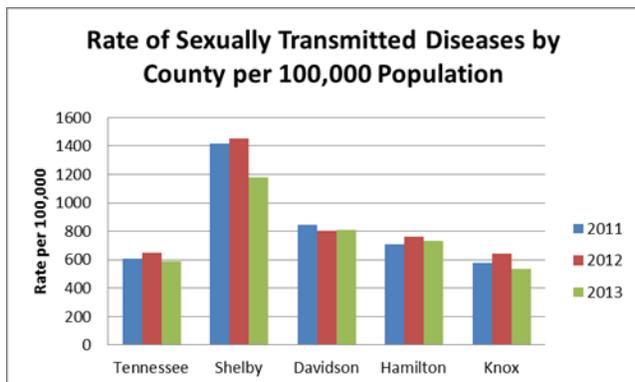
Source: Tennessee Department of Health, Communicable and Environmental Disease Services  
<http://health.state.tn.us/Ceds/WebAim/>

## 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.

A 2013 CDC analysis found over 20 million new sexually transmitted infections were reported annually, costing the health care system approximately \$16 billion in direct medical costs. The analysis included eight common sexually transmitted infections: chlamydia, gonorrhea, hepatitis B virus (HBV), herpes simplex virus type 2 (HSV-2), human immunodeficiency virus (HIV), human papillomavirus (HPV), syphilis, and trichomoniasis.<sup>lxviii</sup>

Data used on STDs is derived from the nationally notifiable diseases Chlamydia, gonorrhea, and syphilis. When compared to the four largest metropolitan areas in Tennessee, Hamilton County has the 3rd highest STD rate in 2013 (Table 36).



**Table 36: Sexually Transmitted Diseases<sup>1</sup> per 100,000 Population**

	2011	2012	2013
U.S.	561.2	569.2	558.2
Tennessee	609.5	649.9	586.7
Shelby	1,420.7	1,456.5	1,182.2
Davidson	844.3	802.6	810.4
Hamilton	709.4	760.0	734.2
Knox	575.6	642.1	536.0

<sup>1</sup>STDs include chlamydia, gonorrhea, and primary and secondary syphilis.

Figure 58 Source: Tennessee Department of Health, Communicable and Environmental Disease Services and Centers for Disease Control

## Chlamydia

*Chlamydia trachomatis* infections are the most commonly reported notifiable disease in the United States. From 2002 through 2013, the rate of Chlamydia infection in the U.S. increased from 289.4 to 446.6 cases per 100,000 population.<sup>lxix</sup>

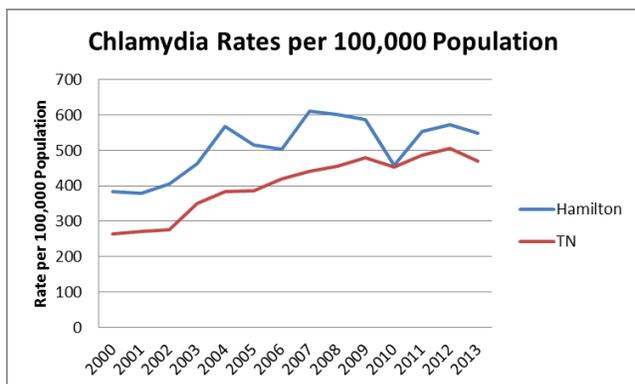
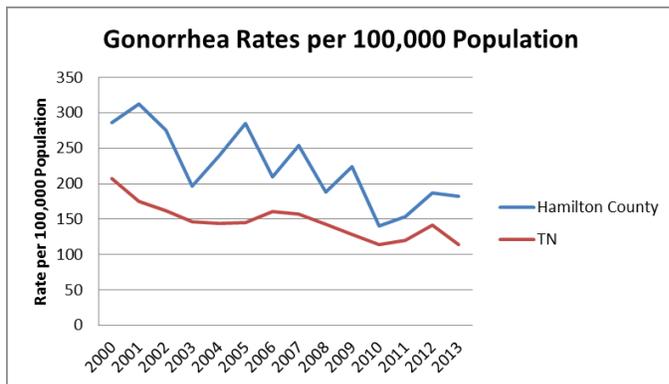


Figure 59 Source: Tennessee Department of Health, Communicable and Environmental Disease Services

- Overall, chlamydia rates in Hamilton County increased by 59.2% from 2000 through 2007 (from 383.6 to 611 cases per 100,000) and started trending down in 2008.
- In 2013, 1,913 individuals in Hamilton County were diagnosed with chlamydia, or 548.7 new diagnoses per 100,000 residents.

## Gonorrhea

Gonorrhea is the second most commonly reported notifiable disease in the U.S. Infections from *Neisseria gonorrhoeae* are a major cause of Pelvic Inflammatory Disease, which can lead to serious outcomes in women such as tubal infertility, ectopic pregnancy, and chronic pelvic pain. From 2002 through 2013, the rate of gonorrhea in the U.S. decreased from 122.0 to 106.1 cases per 100,000 population.<sup>lxx</sup>



- Although gonorrhea rates in Hamilton County swing widely from year to year, the overall trend shows an overall decline from 2000 to 2013 (from 285.8 to 181.5 per 100,000).
- In 2013, 633 individuals in Hamilton County were diagnosed with gonorrhea, or 181.5 new diagnoses per 100,000 residents.

Figure 60 Source: Tennessee Department of Health, Communicable and Environmental Disease Services

## Syphilis

Syphilis, caused by the bacterium *Treponema pallidum*, can cause significant complications if untreated and can facilitate the transmission of HIV. 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.<sup>ii</sup> Although the rate of primary and secondary syphilis in the U.S. decreased 90% from 1990 to 2001, the national rate has since increased annually, and more than doubled between 2002 and 2013 (from 2.4 to 5.5 per 100,000).<sup>lxxi</sup>

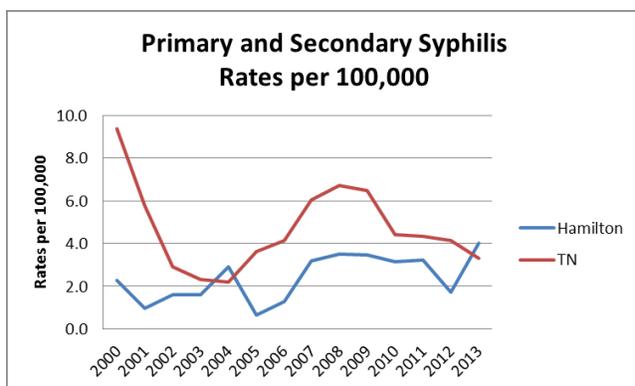


Figure 61 Tennessee Department of Health, Communicable and Environmental Disease Services

- Hamilton County's syphilis rates have been consistently lower than the overall state rates except in 2013, when the Hamilton County rate exceeded the state rate.
- After reaching a low of 0.6 cases per 100,000 residents in 2005, syphilis rates in Hamilton County increased and remained fairly stable through 2011. Infection rates fluctuated in 2012 and 2013.\*
- In 2013, there were 14 new cases of primary and secondary syphilis in Hamilton County, or 4 cases per 100,000 residents.

\* Rates based on fewer than 20 cases are unstable and can cause significant variations as illustrated above for 2012 (6 cases or 1.7 per 100,000) and 2013 (14 cases or 4 per 100,000).

## HIV/AIDS

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). Where it was once considered a death sentence, thanks to modern medicine and treatment adherence, patients are able to manage this virus more effectively. The Centers for Disease Control and Prevention estimates that about 1.2 million people in the United States were living with HIV at the end of 2011 and that approximately 14% do not know they are infected.<sup>lxxii</sup> The CDC recommends that everyone between the ages of 13 and 64 get tested at least once and that people in high-risk groups get tested more often.

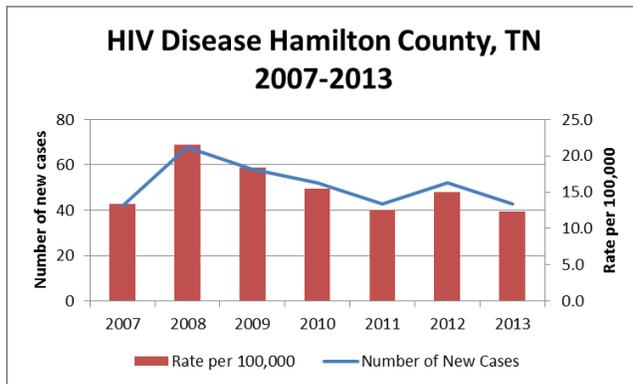


Figure 62 Source: TN Dept. of Health TN-PRISM (Patient Reporting Investigating Surveillance Manager)

- In 2013, there were 43 new HIV/AIDS infections in Hamilton County, or 12.3 per 100,000 residents.
- Cumulatively, there have been 1,616 cases of HIV/AIDS in Hamilton County through 2013.
- In 2013, there were 939 individuals living with HIV disease in Hamilton County.

## Tuberculosis

Tuberculosis (TB) is caused by a bacterium called *Mycobacterium tuberculosis* that usually attacks the lungs. One third of the world's population is infected with TB, resulting in approximately 1.5 million TB-related deaths worldwide. In 2013, there were 9,582 TB cases (rate of 3.0 cases per 100,000 persons) reported in the U.S.

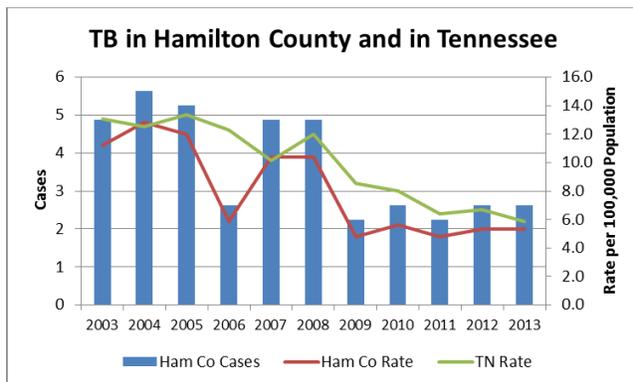
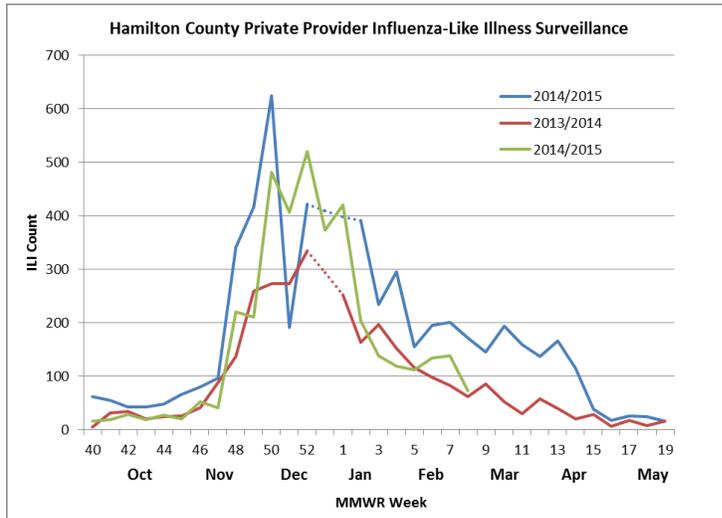


Figure 63 Source: Tennessee Department of Health, Communicable and Environmental Disease Services

- In 2013, there were seven cases of tuberculosis in Hamilton County, or 2.0 per 100,000.
- Over the past ten years, the County's tuberculosis rate has significantly decreased.

## Influenza-Like Illness Activity in Hamilton County

Tennessee was ranked sixth in the nation in 2013 for influenza (flu) and pneumonia deaths.<sup>lxixiii</sup> In 2012, 33 deaths in Hamilton County were attributed to flu and pneumonia. In Hamilton County, 43% of adults surveyed had received the flu vaccine in 2011-2013. Out of adults ages 65 years and older, 60.4% had received the flu vaccine and 64.4% received the pneumonia vaccine.



The 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.

Figure 64 Chattanooga-Hamilton County Health Department

Trends in ILI vary by severity and seasons (Figure 65). The dotted lines represent weeks for which data are missing.

## 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 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%).

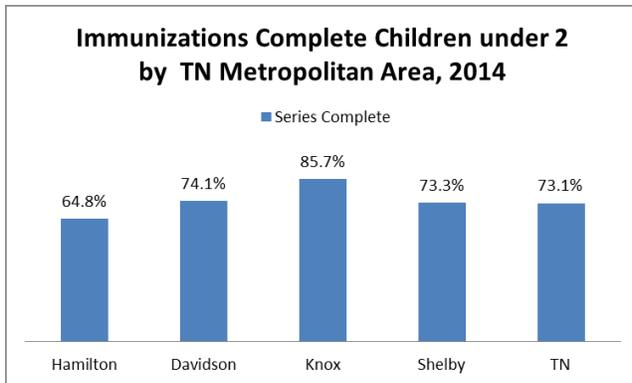


Figure 65 Source: Tennessee Department of Health, Tennessee Immunization Program

- Figure 66 shows the percentage of children with immunizations complete by the four largest metropolitan counties. Statewide, Hamilton County had the lowest immunizations complete estimate (64.8%) of the four largest metro counties; however, of the major metropolitan regions, only Knox County (85.7%) had results which were statistically significantly different than the statewide coverage level of 73.1%.

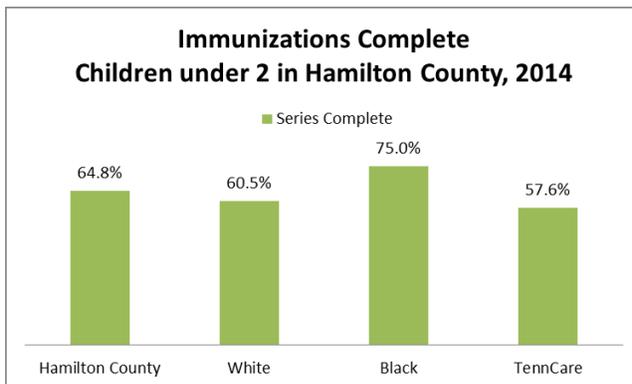


Figure 66 Source: Tennessee Department of Health, Tennessee Immunization Program

- Figure 67 shows the estimated percentages of children in Hamilton County who have completed the immunization series categorized by race and TennCare enrollment. The rate for blacks was higher than the rate for whites, although sample sizes were too small to calculate statistical significance.
- Statewide, the difference of immunizations complete between white and black children was not statistically significant; however, there is a racial disparity in flu immunization, where white children are more likely to receive the flu vaccine than their black peers (54.4% vs. 35.2%).

Vaccines required by Tennessee law for kindergarten enrollment in 2015 include:

- Diphtheria-Tetanus-Pertussis (DTaP, or DT if appropriate) – 4 or 5 doses, one of which must be given on or after the fourth birthday.
- Poliomyelitis (IPV or OPV) – 3 or 4 doses, one of which must be given on or after the 4<sup>th</sup> birthday
- Measles, Mumps, Rubella - 2 doses of each, usually given together as MMR
- Hepatitis B (HBV)- 3 doses
- Varicella - 2 doses or history of disease
- Hepatitis A –total of 2 doses, spaced at least 6 months apart

## Appendices

### Data Sources and Where to Find Data

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

- CDC Homepage: <http://www.cdc.gov/>
- Behavioral Risk Factor Surveillance System: [http://www.cdc.gov/brfss/data\\_tools.htm](http://www.cdc.gov/brfss/data_tools.htm)
- CDC WONDER Data Reports and Systems: <http://wonder.cdc.gov>
- Health, United States: 2014: <http://www.cdc.gov/nchs/hus.htm>
- National Center for Health Statistics: <http://www.cdc.gov/nch>
- 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 GIS, Map Maker: <http://gis.hamiltontn.gov/>
- 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>

- Data Request and Publications: <http://tn.gov/health/section/statistics>
- Data Request Form: <http://www.surveygizmo.com/s3/1879037/DATA-REQUEST-FORM>
- Behavioral Risk Factor Surveillance System (Tennessee and regional data):  
<http://tn.gov/health/topic/statistics-brfss>
- Cancer Registry: [http://tn.gov/assets/entities/health/attachments/Cancer\\_Tennessee\\_2006-2010.pdf](http://tn.gov/assets/entities/health/attachments/Cancer_Tennessee_2006-2010.pdf)
- Communicable and Environmental Disease Services Annual Reports: <http://tn.gov/health/article/cedep-reports>
- Tennessee Population Data 2010-2013: <http://health.state.tn.us/statistics/PdfFiles/PopulationProj2010-2013.pdf>
- Birth Statistics: <http://tn.gov/health/article/statistics-birth>
- Death Statistics: <http://tn.gov/health/article/statistics-death>

#### U.S. Census Bureau <http://www.census.gov/>

- American Fact Finder: [http://factfinder.census.gov/faces/nav/jsf/pages/community\\_facts.xhtml](http://factfinder.census.gov/faces/nav/jsf/pages/community_facts.xhtml)
- Small Area Health Insurance Estimates (SAHIE): <http://www.census.gov/did/www/sahie/>

#### Other

- Annie E. Casey Foundation, Kids Count Data Profiles: <http://www.aecf.org/resources/the-2014-kids-count-data-book/>
- Chattanooga-Hamilton County Regional Planning Agency: <http://www.chcrpa.org/>
- County Health Rankings: <http://www.countyhealthrankings.org/>
- Kaiser Family Foundation, State Health Facts: <http://www.statehealthfacts.org/>
- March of Dimes Peristats: <http://www.marchofdimes.com/peristats/>
- SAMHSA (Substance Abuse and Mental Health Services Administration): <http://www.samhsa.gov/>
- Tennessee Bureau of Investigation, Tennessee Crime Statistics:  
[http://www.tbi.state.tn.us/tn\\_crime\\_stats/stats\\_analys.shtml](http://www.tbi.state.tn.us/tn_crime_stats/stats_analys.shtml)
- U.S. Department of Health and Human Services, *Healthy People 2020*: <http://www.healthypeople.gov/>

## Technical Notes and Terms

**Age-adjusted Mortality Rate:** Number of deaths per 100,000 age-adjusted population. Most mortality measures in this report 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.

**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 BRFSS is an annual, CDC-funded, state-administered, random-digit-dialed telephone survey of the U.S. non-institutionalized population, 18 years of age and older, which gathers self-reported data on certain health conditions and behavioral risk factors. Beginning in 2011, the Centers for Disease Control and Prevention (CDC) made two important changes in the Behavioral Risk Factor Surveillance System (BRFSS) survey. First, they adopted a new statistical method for weighting data (i.e. raking) and second, they began incorporating cell phone users for the first time (cell phones were added to the Tennessee BRFSS in August 2011). These improvements were necessary to ensure that the survey data continue to represent the population in each state and to maintain an accurate picture of behaviors and chronic health conditions in the U.S.

As a result of these changes, 2011 and future BRFSS results cannot be compared to those from earlier years – any shifts in estimates from previous years to 2011 and future estimates may be the result of the new method and not a true change in behaviors.

Although the State releases county-level data for Hamilton County, the relatively small number of respondents (fewer than 500) yields wider confidence intervals, making it difficult to determine if year-to-year differences are statistically significant. In the past, Hamilton County has conducted its own BRFSS, with sufficient sample sizes to report at a county level, but the most recent local survey was 2007. BRFSS data included in this report represent the 3-year average (2011, 2012, and 2013) of the prevalence estimates for each measure. For example, if a measure was 15% in 2011, 28% in 2011, and 20% in 2012, the 2011-2013 estimate is 21% [  $(15\% + 28\% + 20\%) / 3 = 21\%$  ]. For comparative purposes, this methodology was applied to state and national figures as well. National figures reported by the CDC are based on the median percentage among reporting states including the District of Columbia.

**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)<sup>2</sup>

**Data Suppression:** Diseases or conditions with fewer than 5 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.

**Healthy People 2020:** Nationwide health promotion and disease prevention plan that was developed by the U.S. Department of Health and Human Services.

**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 reports by law 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.

**Low Birthweight:** A live birth weighing less than 2,500 grams (5 pounds, 8 ounces).

**Pregnancies:** Pregnancy data comes from the Tennessee Department of Health. This information was based on data extracted from the Certificates of Live Birth, Reports of Fetal Deaths, and Induced Termination of Pregnancy Reports sent to Vital Records of the Tennessee Department of Health. This data covers only events that occurred to Tennessee residents.

**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. In 2011, a YRBS was conducted in Hamilton County with 3,492 students in twenty-five public and private high schools in Hamilton County using adapted CDC protocols. Within this report, state and national comparisons are based on the 2011 YRBS results from the CDC to provide same year comparisons to Hamilton County results. A detailed description of the Hamilton County survey and additional survey results can be found on the Chattanooga-Hamilton County Health Department website ([health.hamiltontn.org](http://health.hamiltontn.org)). State and national YRBS results may be found at [cdc.gov/HealthyYouth/yrbs/index.htm](http://cdc.gov/HealthyYouth/yrbs/index.htm).

## ICD-9 and ICD-10 Codes

<b>E Codes and ICD-9 Codes by Diagnosis for Hospital Data</b>	
Motor Vehicle Crashes	E-codes E810-E829, any code
Suicide Attempt	E-Codes E950-E959, any code
Assault	E-Codes E960-E969, any code
Accidental Falls	E-Codes E880-E888, any code
Firearms Accidents	E-code E922, any code
Poisonings	ICD-9 960-989, primary diagnosis
Alcohol-related	ICD-9 291,303,305.0,790.3, and 980, any diagnosis
Drug-related	ICD-9 292,304,305.2-305.9,960-977, any diagnosis
Mental Disorders	ICD9 209-319, primary diagnosis
Drug and Alcohol Disorders	Either-related, any diagnosis
Asthma	ICD-9 493, primary diagnosis
Diseases of the Digestive System	ICD-9 520-579
Injury and Poisoning	ICD-9 800-999
Diseases of the Respiratory System	ICD-9 460-519
Diseases of the Musculoskeletal System and Connective Tissue	ICD-9 710-739
Heart Disease	ICD-9 391-392.2, 393-398, 402,404,410-416,420-429
<b>ICD-10 Codes for Causes of Death</b>	
Diseases of the Heart	I00-I109, I11, I13,I20-51
Cancer (Malignant Neoplasms)	C00-C97; Lung (Trachea, Bronchus and Lung): C33-34; Breast (female only): C50; Prostate: C61; Colorectal (Colon, Rectum and Anus): C18-C21
Chronic Lower Respiratory Diseases	J40-J47
Stroke (Cerebrovascular Diseases)	I60-I69
Alzheimer's Disease	G30
Diabetes Mellitus	E10-E14
Accidents (Unintentional Injuries)	V01-X59, Y85-Y86
Kidney Disease (Nephritis, Nephrotic Syndrome and Nephrosis)	N00-N07, N17-N19, N25-N27
Suicide (Intentional Self-harm)	U03, X60-X64, Y87.0
Liver Disease (Chronic Liver Disease and Cirrhosis)	K70, K73-K74
Assault (Homicide)	U01.0-U01.3,U01.5,U01.9
Poisonings	X40-X49, X60-X69, X85-X90, Y10-Y19
--- Poisonings – overdose category	X40-X44, X60-X64, X85, Y10-Y14

## Tennessee Department of Health Reportable Diseases and Events

The diseases and conditions below are declared to be communicable and/or dangerous to the public and are to be reported to the local health department by **all** hospitals, physicians, laboratories, and other persons knowing of or suspecting a case in accordance with the provision of the statutes and regulations governing the control of communicable diseases in Tennessee. *Revised 1/2015*

<b>Category 1A:</b> <i>Immediate</i> telephone reporting (24 hrs./ day, 7 days/week)	<b>Category 1B:</b> <i>Immediate</i> telephone reporting (next business day)	<b>Category 2:</b> Requires written report within 1 week	
Anthrax* Botulism: Foodborne, wound* Disease Outbreaks: Food/waterborne, healthcare, other Hantavirus Measles Meningococcal Disease: <i>Neisseria meningitides</i> Middle East Respiratory Syndrome (MERS) Novel Influenza A Pertussis Rabies: Human Ricin Poisoning* Severe Acute Respiratory Syndrome (SARS) Smallpox* Staph Enterotoxin B Pulmonary Poisoning* Viral Hemorrhagic Fever*  * Denotes possible bioterrorism indicator	Brucellosis* Burkholderia species infection Chikungunya Diphtheria Encephalitis: Eastern Equine, Venezuelan Equine Group A & B Strep– invasive Haemophilus Influenzae- invasive Hepatitis A, acute Influenza: pediatric deaths (<18 yrs.) Pregnancy- associated deaths Meningitis, other bacterial Mumps Plague* Polio Prion Disease-variant Creutzfeldt Jakob Q Fever* Rubella & Congenital Rubella Syndrome Salmonella Typhi: Typhoid Fever Staph aureus: Vancomycin non- sensitive Syphilis: Congenital Tuberculosis Francisella species including Tularemia*	Babesiosis Botulism: infant Campylobacteriosis: EIA, PCR & culture + Carbon Monoxide Poisoning Chagas Disease Chancroid Chlamydia Cholera Cryptosporidiosis Cyclosporiasis Dengue Fever Ehrlichiosis Encephalitis: California/LaCrosse, St. Louis, Western Equine Enterobacteriaceae, Carbapenem-resistant Gonorrhea Guillain-Barré Syndrome Hemolytic Uremic Syndrome (HUS) Hepatitis, viral HbsAg + Infant HbsAg + Pregnant Female Hepatitis B, acute Hepatitis C, acute Legionellosis	Leprosy Listeriosis Lyme Disease Malaria Powassan Virus Infection Prion Disease-Creutzfeldt Jakob Psittacosis Rabies: Animal Rocky Mountain Spotted Fever Salmonellosis, other than typhi Shiga-like toxin producing E. coli Shigellosis Streptococcus Pneumoniae- invasive Syphilis: non-congenital Tetanus Toxic Shock Syndrome Trichinosis Vancomycin Resistant Enterococci-invasive Varicella Deaths Vibriosis West Nile Virus Yellow Fever Yersiniosis
<b>Category 3:</b> Requires special confidential reporting to designated health department personnel	<b>Category 4:</b> Laboratories & physicians required to report all test results	<b>Category 5:</b> <b>Healthcare Associated Infections &amp; Healthcare Personnel Influenza Vaccination</b> reported to NHSN by designated healthcare facilities	
Acquired Immunodeficiency Syndrome (AIDS) Human Immunodeficiency Virus (HIV) CD4+ T-cell and HIV-1 Viral Load results from laboratories	All blood lead levels: •Levels > 5µg/dl reported within 1 week •Levels < 5µg/dl reported within 1 month	HAI - Central Line Bloodstream Associated Infections HAI - Clostridium Difficile HAI - MRSA positive blood cultures HAI - Surgical Site Infections  HAI - Dialysis Events HAI - Catheter Associated Urinary Tract Infections Neonatal Abstinence Syndrome (NAS) reported directly to: <a href="http://health.tn.gov/MCH/NAS/index.shtml">http://health.tn.gov/MCH/NAS/index.shtml</a>	

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