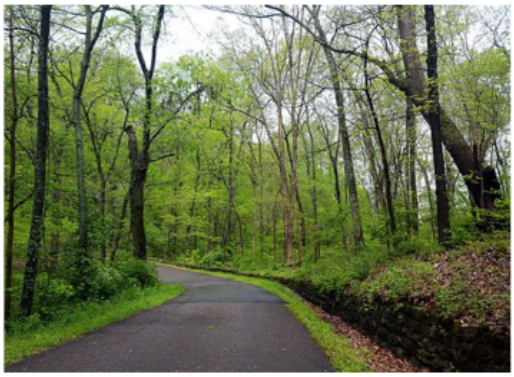


VUMC Community Health Needs Assessment

November 2019

VANDERBILT UNIVERSITY MEDICAL CENTER

Joint Community Health Needs Assessment for Vanderbilt University Hospitals & Vanderbilt Stallworth Rehabilitation Hospital

Table of Contents

Figures and Tables

Executive Summary

Introduction

Non-profit hospital organizations such as VUMC are required to complete a Community Health Needs Assessment (CHNA) and an accompanying Implementation Strategy every three years as mandated by the 2010 Patient Protection and Affordable Care Act. The CHNA process is designed to identify key health needs and assets through systematic, comprehensive data collection in target communities.

VUMC conducts the CHNA in three Tennessee counties where a large number of VUMC's patients live—Davidson, Rutherford, and Williamson counties. These counties are diverse in socio-economic status, race and ethnicity, health risks and health outcomes. The CHNA sought to better understand community concerns related to health and health care, the social, environmental and behavioral factors that impact health, the greatest needs and assets in communities, and strategies for improving community health and well-being. VUMC's CHNA report outlines the needs assessment process, shares the results and describes how needs were prioritized by the community. The accompanying Implementation Strategy (IS) outlines the programs and resources committed to address these prioritized needs.

Collaborations

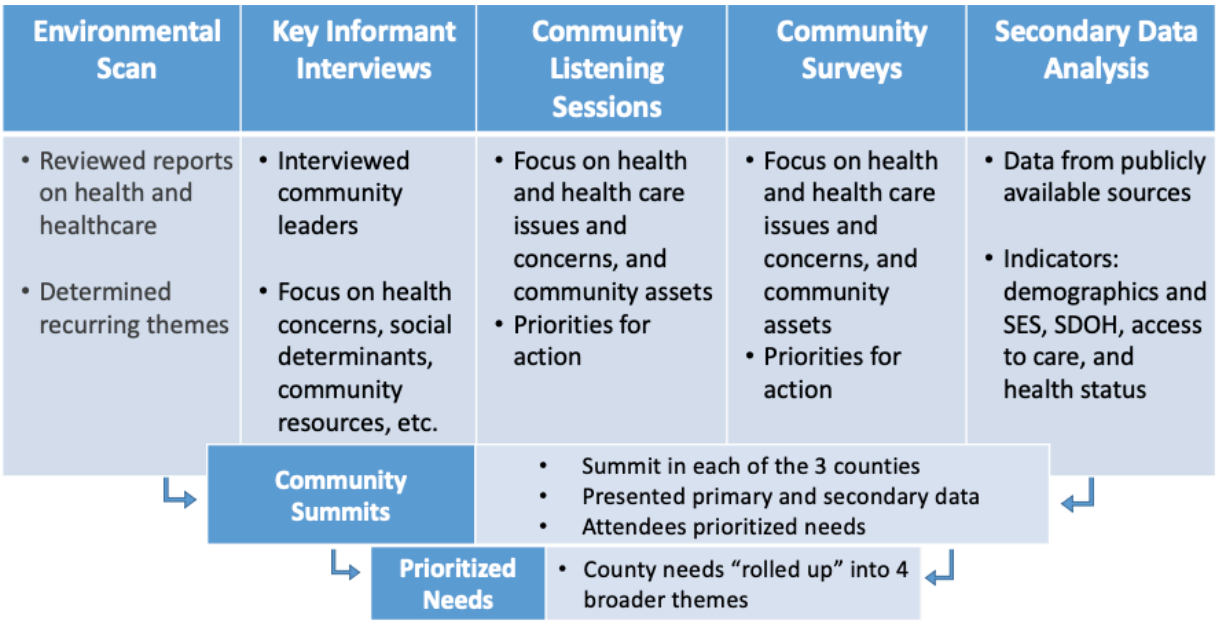
VUMC collaborates with a number of organizations to complete the CHNA. In Davidson and Rutherford Counties, VUMC collaborates with Ascension Saint Thomas Health, a local non-profit hospital system. Additional collaborators in each county include health departments, government agencies, non-profit organizations, universities, and others. In addition, over forty community stakeholders played an advisory role in the CHNA.

Methodology

The CHNA approach relies on secondary data and primary data from community stakeholders and members. VUMC and its collaborators benefitted from the input of over 2700 individuals, each sharing their time, perspectives, and experience in helping VUMC to identify significant health needs in the community.

Over 2700 individual voices shaped the CHNA

The assessment methods include: 1) an environmental scan of 32 community reports; 2) 68 key informant interviews with community leaders; 3) 13 community listening sessions; and 4) community surveys with 2,511 respondents. We also conducted an in-depth review of secondary data using indicators recommended by the Centers for Disease Control, other national public health institutions, and community advisory groups. These efforts culminated in three summits – one in each county - to solicit community input in identifying and prioritizing health needs. A summary of methods and the overall assessment process are described in the table below.



Summary Findings

The secondary data review of indicators from local, state, and national sources provides a comprehensive view of the overall health in each county. The review helped identify trends, disparities, and other changes in health outcomes and determinants. There were common themes across counties but also county specific differences that could reflect varying demographics and availability of resources that support health. Some findings that were of greatest concern across all three communities include rates of poverty, the rates of uninsured adults, increased housing costs, increased numbers of drug overdose deaths, and a high percentage of adults and children who are obese.

As noted above, the CHNA process also involved data gathering from over 2700 individuals, through a combination of interviews, surveys and listening sessions. Themes that were consistent across counties include housing costs, a need for coordination of community programs, challenges in health care access and impacts of violence, crime, and substance abuse. The figure below provides a summary of key themes.

	**Environmental Scan** • Housing • Transportation • Financial Security • Coordination of Community Programs		**Key Informant Interviews** • Health Care Access • Housing • Mental Health / Substance Abuse • Coordination
	**Community Listening Sessions** • Housing • Violence • Health Care Access • Education		**Community Surveys** • Housing and Gentrification • Crime • Substance Abuse • Stress • Violence

Prioritized Needs

The assessment findings suggest that while these communities are rich with resources for some, many still face daily challenges meeting basic needs. There are disparities in outcomes and opportunity depending on place, race/ethnicity and other factors. There are differences in outcomes for indicators such as infant mortality, chronic disease, and life expectancy.

Each county's community summit yielded its own set of prioritized needs with commonalities across counties. These needs were grouped into four overarching categories to serve as VUMC's prioritized health needs: **Access to Resources and Services, Mental Health and Substance Abuse, Basic Needs and Social Determinants, Prevention and Education.**

Summary of VUMC's Prioritized Needs

Mental Health / Substance Abuse

Mental health and substance abuse were seen as primary topics of concern in the needs prioritization process. This priority encompasses a vast array of concerns including the lack of treatment availability for mental health and substance abuse, a need for more prevention and education efforts to reduce stigma and addressing adverse childhood experiences and toxic stress. In addition, the assessment and summits revealed the desire from the community to see more models that integrate mental and physical health care.

Access to Resources and Services

Access to resources and services was defined by summit participants as both physical and mental health care services as well as community social services and resources. Summit participants described a need to increase awareness about available resources and to enhance collaboration and coordination of organizations and services to ease navigation for community members.

Basic Needs and Social Determinants of Health

Recognizing the role of social determinants of health and the notion that where we "live, work, and play" has a major influence on health outcomes, "Basic Needs" was a common theme throughout the needs assessment process. Summit participants described a need to influence factors that impact health such as housing, transportation, healthy food, education, economic opportunity, and safety.

Prevention and Education

Prevention strategies and education help ensure that community members have the knowledge, tools, and resources for health and well-being. Residents of the counties prioritized the need to improve health education, as well as the need to incorporate greater preventative measures to improve health behaviors (i.e. nutrition, physical activity, stress reduction) and prevent disease such as obesity, addiction, heart disease, and cancer.

Plans for Next Steps: VUMC's Implementation Strategy

The final steps in the assessment process are to adopt the needs identified by the community and to develop a plan to address the needs identified. As far as adoption, VUMC's Community Health Improvement Working Group, a group of program managers and directors who interface with the community, and VUMC's CHNA/IS Advisory Committee, a group of senior leaders responsible for high-level guidance on the CHNA/IS, both recommended that VUMC adopt all of the prioritized needs.

These needs then guided development of VUMC's Implementation Strategy. Examples of programs described in the IS include the Clinic at Mercury Courts and Shade Tree Clinic, clinics which provide care to uninsured and vulnerable populations, Project SEARCH which provides employment opportunities at VUMC to individuals living with disabilities and a Street Medicine program which provides comprehensive psychiatric services and basic medical care to people experiencing homelessness. The IS also outlines VUMC collaborations with a number of community organizations focused on issues ranging from perinatal care, stroke, mental health and substance abuse and cancer prevention and education. Two grants programs at VUMC address community health, one by supporting community partners to develop innovative initiatives to address the prioritized needs that emerged from the CHNA and the other by supporting community and academic research partnerships.

The IS also describes VUMC's plan to develop Health Equity Impact Plans for each prioritized need. Development of these plans will engage health systems leaders, faculty, staff, learners and community partners to develop objectives, strategies and specific measures that are tied back to the anticipated impacts in the IS. Some of the anticipated impacts described in the IS include increased awareness of community resources, expanded community collaboration to address behavioral health issues for youth, increased capacity of small nonprofit organizations who are advancing health equity and expanded community health education and prevention efforts focused on chronic disease management for vulnerable populations.

Introduction

Vanderbilt University Medical Center ("VUMC") is located in Nashville, Tennessee, and chiefly serves Tennessee, northern Alabama, and southern Kentucky. Although licensed as Vanderbilt University Hospitals under a single hospital facility license, VUMC owns and operates three separate hospitals: The Vanderbilt University Adult Hospital ("VUAH"), Monroe Carell Jr. Children's Hospital at Vanderbilt ("the Children's Hospital") and the Vanderbilt Psychiatric Hospital ("VPH"). As part of a joint venture with Encompass Health Corporation, VUMC also owns 50% of Vanderbilt Stallworth Rehabilitation Hospital ("Stallworth"). The licensed hospital facilities of Vanderbilt University Hospitals and Stallworth are collectively referred to as "VUMC" for purposes of this Community Health Needs Assessment and Implementation Strategy ("CHNA"/IS).

The 2019 (FY 20)[1] VUMC CHNA is a joint CHNA that covers the licensed hospital facilities of Vanderbilt University Hospitals and Stallworth. The CHNA serves as a health profile for the community in which VUMC patients live. The CHNA describes significant health needs identified in collaboration with the community, as well as gaps between current and desired health status, and broad multi-sectorial perspectives on health and health care – with a focus on the underserved, low-income and minority populations.

Description of Hospitals

Annually, the VUMC hospitals have roughly 64,000 discharges and 2.2 million outpatient visits. In FY2018, VUMC provided $711 million in charity care and community benefits.

VUMC is a comprehensive 1,091-bed healthcare facility dedicated to patient care, research, and post-graduate medical education. Its reputation for excellence in each of these areas has made VUMC a major patient referral center for the Mid-South.

Vanderbilt University Adult Hospital ("VUAH")

Each year, people throughout Tennessee and the Southeast choose VUMC for their health care needs, not only because of its excellence in clinical care and medical science, but also because the faculty and staff are dedicated to treating patients with dignity and compassion. VUMC's mission is to lead in improving the healthcare and overall health of individuals and communities, combining its transformative learning programs and compelling discoveries to provide distinctive personalized care.

There are several VUAH programs unique to Tennessee or the region, which include:

- Level 1 Trauma Center – the only one in Middle Tennessee;
- Dedicated burn center – the only one in the region;

[1]This CHNA and accompanying IS was adopted on November 6th, 2019 during VUMC's FY 2020, which is tax year 2019 per Form 990, Return of Organization Exempt from Income Tax. To be consistent with CHNA/ IS reporting on Form 990, Schedule H, these documents are referred to herein as the "2019 CHNA" and "2019 IS."

- Vanderbilt-Ingram Cancer Center - the only National Cancer Institute designated Comprehensive Cancer Center in Tennessee that conducts research and cares for children and adults;
- Traumatic brain injury rehabilitation – the only Joint Commission accredited program of its kind in the region;
- LifeFlight - an integrated air and ground emergency patient transport system;
- Tennessee Poison Control;
- Comprehensive solid organ transplant center – one of the largest programs in the US and the only one located within VUMC's primary service area

In FY2019, VUAH had more than 45,000 discharges, performed more than 40,000 surgeries and treated more than 67,000 patients in its Adult Emergency Department. VUAH's outpatient clinics performed more than 1.7 million ambulatory visits. No person, adult or child, who has an emergency medical condition is denied care on the basis of limited ability to pay.

Monroe Carell Jr. Children's Hospital ("Children's Hospital")

The Children's Hospital is nationally recognized as a leading provider of pediatric health care services. Providing the highest level of pediatric care, the Children's Hospital is a top-level teaching and research facility, yet the hospital also treats and helps prevent all health issues that affect children including simple colds and broken bones. The Children's Hospital operates the region's only Level 1 Pediatric Trauma Unit and the region's only neonatal intensive care unit with the highest Level IV state and national ranking.

The Children's Hospital is dedicated to serving the children of Middle Tennessee and beyond. Annually, the Children's Hospital has more than 16,000 patient discharges, performs more than 17,500 surgeries and sees more than 360,000 outpatient clinic visits. No child who has [an emergency medical condition] is denied care on the basis of limited ability to pay.

Vanderbilt Psychiatric Hospital ("VPH")

VPH provides an age-appropriate, restorative environment for mental health care. In addition to adult care, VPH is the only inpatient mental health provider for young children (ages 4-12) in Middle Tennessee and offers highly specialized services for children and teens (ages 13-17). VPH serves patients with many conditions, including depressive disorders, anxiety disorders, adjustment disorders, post-traumatic stress disorder (PTSD), bipolar affective disorder, attention deficit/hyperactivity disorder, schizophrenia and psychotic disorders. VPH has approximately 3,300 annual discharges and its clinics provide care through approximately 37,000 annual mental health visits. In addition to clinics on the main campus, Vanderbilt Behavioral Health– the programmatic umbrella for much of VUMC's work on mental illness and substance abuse - collaborates with approximately 34 Davidson County schools to provide counseling services and provides mental health services to youth who are in state custody or at risk of a custodial situation.

Vanderbilt Stallworth Rehabilitation Hospital ("Stallworth")

Stallworth is an 80-bed inpatient rehabilitation hospital that offers comprehensive inpatient rehabilitation services designed to return patients to leading active and independent lives. Stallworth opened in November of 1993 and is a 50/50 joint venture between VUMC and Encompass Health,

one of the nation's leading rehabilitation services providers. Annually, Stallworth has approximately 1,300 patient discharges.

In addition to caring for general rehabilitation conditions including orthopedic, pulmonary and cardiovascular, Stallworth has specialized inpatient programs for stroke, brain injury, spinal cord injury, amputations, hip fractures and neurological conditions. Not only has Stallworth achieved Center of Excellence status within the Encompass Health network of hospitals, the hospital has achieved Joint Commission disease-specific certification for stroke, spinal cord injury, and traumatic brain injury rehabilitation programs and was the first and only rehabilitation center to achieve the spinal cord certification in the state. The largest number of patient discharges from Stallworth comes from Davidson and Williamson Counties.

For the purposes of this report, all four hospitals – Vanderbilt University Adult Hospital, Monroe Carell Jr. Children's Hospital, Vanderbilt Psychiatric Hospital, and Vanderbilt Stallworth Rehabilitation Hospital – will be referred to as "VUMC."

Background

As part of the 2010 Patient Protection and Affordable Care Act, non-profit hospital organizations such as VUMC are required to complete a Community Health Needs Assessment and an accompanying Implementation Strategy every three years.

On April 29, 2016, certain healthcare assets and operations of Vanderbilt University ("VU"), including the four hospitals – VUAH, the Children's Hospital, VPH, and (50% ownership of) Stallworth were transferred from The Vanderbilt University ("VU") to Vanderbilt University Medical Center, a newly formed not-for-profit corporation. The 2016 CHNA was therefore Vanderbilt University Medical Center's first CHNA as a newly-formed entity legally independent of VU. However, the hospital facilities included in VUMC's 2016 and 2019 CHNA were previously included in VU's 2013 CHNA ("VU 2013 CHNA/IS"), which included VUAH, the Children's Hospital and VHP. Therefore, this report makes reference to the VU 2013 CHNA/IS and the 2016 VUMC CHNA/IS.

As with the VU 2013 CHNA and VUMC's 2016 CHNA, Vanderbilt's Institute for Medicine and Public Health (now a part of VUMC) conducted a process that incorporated the collection and analysis of a broad range of primary and secondary data. In an effort to maximize VUMC's ability to impact the needs prioritized through the CHNA process, and after careful consideration by VUMC's leadership, the number of counties considered in the assessment was narrowed from four (in 2013) to three (for 2016 and 2019). Primary data collection included face-to-face interviews and community listening sessions with a range of community members across the three counties. There was an extensive review of publicly available data on health, including health determinants and health outcomes. In addition, VUMC and Stallworth solicited feedback on the VU 2013 CHNA/IS and the VUMC 2016 CHNA/IS via the Community Health Improvement Website and the Stallworth website, respectively. At the time of writing this report, no written feedback had been submitted for VUMC or Stallworth.

VUMC's 2019 CHNA and IS are available at the Vanderbilt Community Health Improvement Website where public comment on the CHNA/IS can also be provided. Copies of each previous CHNA/IS report are available as well. The portal for comments is regularly monitored so comments can be addressed. Any comments provided will be reviewed by VUMC's CHNA/IS Advisory Committee which consists of VUMC and Stallworth senior leaders. Comments will also be taken into account during the next CHNA/IS cycle.

VUMC Community

VUMC serves individuals and communities across the southeast and from around the world. However, a large number of VUMC's patients live in three counties in middle Tennessee: Davidson County, Rutherford County, and Williamson County (see **Table 1** below). Based on discharge data from VUMC hospitals, for the purposes of this needs assessment, VUMC will focus on the community located in this geographic area as the community served.

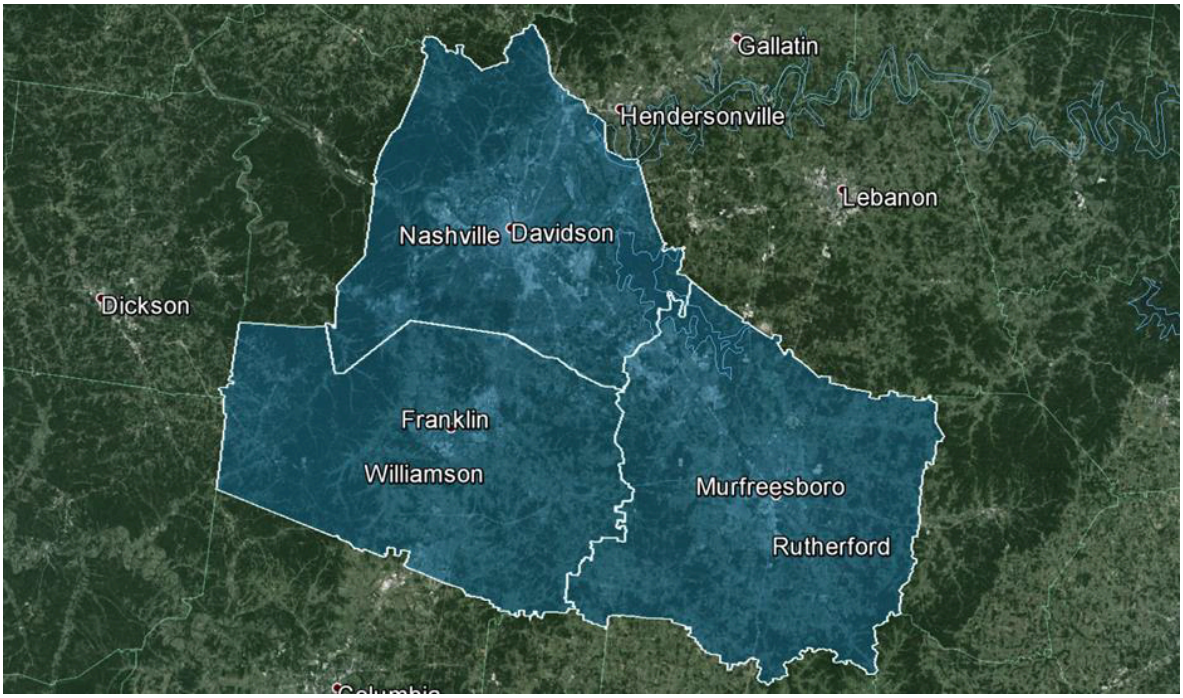


Figure 1. VUMC's "community" for the purposes of this assessment

Davidson County is home to Nashville and has a population of around 691,000 individuals. Rutherford County, containing Murfreesboro, is home to around 317,000 individuals. Williamson County, including its largest city of Franklin, is home to around 226,000 individuals. Within each of these three very distinct counties, there are a number of communities that are racially, linguistically, economically, and socially diverse.

Table 1. Discharges from VUMC Hospitals in FY19

Discharges from VUMC Hospitals (FY-2019)									
	Adult Hospital		Children's Hospital		Psychiatric Hospital		Stallworth Hospital		TOTAL (all hospitals)
TOTAL (all counties)	44,715		16,158		3,279		1,328		65,480
Davidson	12,032	27%	4,820	30%	1,340	41%	445	33%	18,637
Rutherford	2,476	6%	1,331	8%	222	7%	79	6%	4,108
Williamson	2,483	6%	877	5%	209	6%	73	5%	3,642
Source: EPSI for Adult, Children's, and Psychiatric Hospitals; Stallworth Rehabilitation Hospital									

Collaborations

In Davidson and Rutherford Counties, VUMC collaborated on the 2019 CHNA with Ascension Saint Thomas Health, another local non-profit hospital system. Saint Thomas Health (STH) is a family of Middle Tennessee hospitals and physician practices united by the mission of providing spiritually centered, holistic care that sustains and improves community health. Saint Thomas Health is a part of Ascension Health and runs nine hospitals across Middle Tennessee. Collaboration included nearly every component of the planning and data collection process including interviews, listening sessions, and community surveys; secondary data collection; and community summits in both Davidson and Rutherford Counties. VUMC also established Community Advisory Groups in each of Davidson, Rutherford and Williamson Counties to provide feedback and guidance throughout the assessment.

In Davidson County, VUMC and STH also worked with the Metro Public Health Department, Matthew Walker Comprehensive Health Center, ConnectUS Health, Metro Social Services, and Metro Arts Commission to design and implement the assessment. In addition, the Community Input Committee and the Community Health Status Committee provided guidance throughout the data collection and needs prioritization process by offering feedback on instruments, populations to include, and listening session locations.

In Rutherford County, VUMC and STH collaborated with the Rutherford County Health Department. The Rutherford County Health Department and staff were critical in identifying interview participants, as well as recruiting participants and securing space for listening sessions. In addition, the Rutherford County Health Department joined in the planning and implementation of the community summit in Rutherford County. The Circle of Engagement (COE) in Rutherford County was a group of leaders that provided guidance throughout planning the assessment, data collection, and needs prioritization.

In Williamson County, VUMC worked with the Williamson County Health Department. The Williamson County Health Department and staff assisted in identifying interview participants as well as recruiting participants and securing space for listening sessions. In addition, they helped plan and implement the Williamson County Community Health Summit. The Community Health

Assessment Advisory Council (CHAAC) provided guidance in Williamson County for assessment design, data collection, and needs prioritization.

As leaders with strong impact in the community, these collaborators served as key drivers for participation in the assessment.

Purpose / Objective

As required under applicable Federal law and regulations, this report aims to do the following:

1. Describe the community served by the hospital facility and its demographics, while providing a comprehensive assessment of health needs by considering input from across the community (including those with special expertise in public health) as well as publicly available secondary data. Special attention was given to the needs of underserved populations such as those in poverty, minority populations, and those without health insurance.
2. The Vanderbilt University Medical Center Board of Directors adopted the report in November 2019 and it has been made widely available to the public via VUMC's Community Health Improvement Platform and at the hospital facility. The Stallworth Board of Directors adopted the report in December 2019 and it has been made widely available to the public via Stallworth's website and at the hospital facility. This report is used to guide VUMC's community health improvement efforts in the communities served.

Determinants of Health

Individual and population health are determined by many factors, the majority of which are outside of health care delivery; social and economic factors contribute 40%, health behaviors 30%, genetics 10%, the physical environment 10% and clinical care 10%, according to the Center for Health and Learning (CHL), an outgrowth of an initiative by the Center for Disease Control and Prevention's (CDC) Division of Adolescent and School Health. According to the CDC, poverty limits access to healthy foods and safe neighborhoods, while higher educational attainment is a predictor of better health. Differences in health and health outcomes are striking in communities with poor social determinants of health such as unstable housing, low income levels, unsafe neighborhoods, or substandard education.

As a result, the 2019 CHNA reveals factors that span across multiple sectors of the economy and confirms that achieving individual and community health will require a collaborative and comprehensive approach, well beyond the boundaries of a hospital and its clinics. To that end, VUMC has collaborated with local health departments, as well as Saint Thomas Health, for the 2019 CHNA and will work with and encourage other sectors of the local community to work toward achieving better health for all.

Health Equity

In recent years, both public agencies and private, community-based organizations have increasingly focused on the concept of health equity. The Health Equity Workgroup of Healthy Nashville describes health equity as "both the absence of systematic obstacles and the creation of opportunities for all to be healthy." Health equity is one of the central goals of the CDC's National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP), and the CDC defines health inequities as "differences in length of life; quality of life; rates of disease, disability, and death; severity of disease; and access to treatment." This report seeks to utilize a health equity lens across a range of health topics.

Health equity is impacted by a variety of factors that support health including: affordable, safe, and stable housing; safe places to play and exercise; economic security and financial resources; ending discrimination based on race, gender, religion, or other factors; access to affordable and healthy food; livelihood security and employment opportunity; educational opportunities; English language proficiency; and access to safe and affordable transportation.

A health equity lens was applied throughout the CHNA process with a strategic focus on low-income, minority, and vulnerable populations. "Health equity buckets" (as described in more detail below) were utilized in the data collection methodology, and data were gathered in multiple languages. In each county, there was also an effort to include populations outside of the urban core, particularly as gentrification pushes residents from the urban core out to more distant areas of the counties.

Methodology

Input from persons representing the broad interests of the community, including those with expertise in public health, was obtained through face-to-face interviews, community listening sessions, and community surveys. VUMC and collaborators also conducted a comprehensive review of relevant secondary data. In addition, VUMC continuously solicits written feedback on the most recent CHNA/IS on the VUMC Community Health Improvement website.

Environmental Scan

An environmental scan was conducted in each county to examine existing reports relevant to community health and identify strengths, assets, and areas of improvement regarding the health and healthcare in the community. Criteria for inclusion in the review were that reports were released within the last five years and geographically focused on Davidson, Rutherford, or Williamson County.

To ensure that the populations and communities at higher risk for adverse health outcomes were included, the review used "healthy equity buckets" as outlined in the Mobilizing for Action through Planning and Partnerships ("MAPP") handbook published by the National Association of County and City Health Officials ("NACCHO"). Some of the health equity buckets considered include: economic security and financial resources, livelihood security and employment opportunity, school readiness and educational attainment, environmental quality, adequate, affordable and safe housing, and community safety. Additionally, there was a focus on social

networks, sense of community, diversity and inclusion and civic involvement, especially in the immigrant and refugee population communities.

For each report included in the review, the target geography and populations were identified, and the health topics discussed were summarized to provide an overview of the existing themes. In Davidson County, a total of 20 reports that were published between 2015-2018 were examined. In Rutherford County, five existing reports from 2015-2017 were reviewed. Finally, six existing reports from 2016-2018 were reviewed in Williamson County.

Secondary Data Analysis

To describe the health status of those in the community, VUMC considered indicators from the CDC's "Community Health Assessment for Population Health Improvement: Resource of Most Frequently Recommended Health Outcomes and Determinants", the Catholic Health Association and community advisory groups in each county. Categories included "Demographics and Socioeconomic Status," "Social Determinants of Health Inequities," "Access to Health Care," and "Health Status" (including morbidity/mortality, birth outcomes, behavioral risk factors, environmental factors, infectious disease, and mental & social health). Data were drawn from publicly available sources including the US Census Bureau, the Tennessee Department of Health, the CDC, and others. In addition, VUMC's 2016 CHNA and other available needs assessments for each county, such as those from Saint Thomas Health, Metro Social Services, and the Metro Public Health Department were reviewed. The data and sources used in this report are listed in full in the appendices. County data were compared to state and national averages, and when possible, the goals articulated by Healthy People 2020. Healthy People 2020 is a program of the US Department of Health and Human Services which provides science-based, 10-year national objectives for improving the health of all Americans.

Community Surveys

Community surveys were distributed electronically throughout the three counties to identify the needs and health status of the community. In Davidson County, the survey consisted of four open-ended questions as well as close-ended questions to gather demographic information from respondents. The questions utilized were adapted from the Kansas Health Institute and the Mobilizing for Action through Planning and Partnership (MAPP) process and focused on community assets, issues/concerns, and future goals for the community. For Spanish speakers, the survey was translated into Spanish, converted into an electronic survey using REDCap, a secure web application for building and managing online surveys and databases which was developed by Vanderbilt University, and piloted for accuracy and timing. The survey was distributed to networks of the health department, health system, and community collaborators. The survey yielded a total of 277 responses from the community. The qualitative data were analyzed by a team of four reviewers and the demographic data were analyzed in Excel.

In Rutherford and Williamson County, the survey consisted of 63 open-ended and close-ended questions that focused on community assets, issues and concerns, and future goals for the community. Questions were created using the domains of the needs prioritized in 2016 and with feedback from the CHAAC in Williamson and the COE in Rutherford. Many of the questions were adapted from the Behavioral Risk Factor Surveillance System (BRFSS). The survey was piloted to test for timing and accuracy and translated into Spanish for Spanish speakers. The survey was distributed through the health system networks, community networks, and schools. The data were

entered in REDCap and exported into Excel for analysis. Thematic analysis was conducted for the open-ended questions using a team of four reviewers. A total of 1027 people answered the survey in Rutherford County, and 1207 people answered the survey in Williamson County. The community survey can be found through the link provided on the Community Health Improvement website.

Community Listening Sessions

To understand community members' opinions of health needs and assets within counties, thirteen listening sessions were held across the community. The community listening session guide can be found through the link on the Community Health Improvement website. VUMC and Saint Thomas Health provided gift cards to listening session participants.

The moderator's guide for the listening sessions covered topics such as community assets and issues, health and healthcare issues, priority actions, and barriers to addressing issues. A brief self-administered survey was used to obtain participant demographic information. Thematic analysis of listening session data was done using a team of four reviewers from Saint Thomas Health and VUMC. The survey data were entered into REDCap and exported into Microsoft Excel for analysis.

In Davidson County, six community listening sessions were held with sessions at Hadley, Park, Hartman Park, Elizabeth Park Senior Center, Building Lives Foundation, Outreach Base, and Salahadeen Center. The total number of participants for the listening sessions was 68. The participants completed a demographic survey in order to provide insight into the composition of each group, but all responses during the conversation were kept anonymous. The main topics explored in these sessions included quality of life, community assets, obstacles or challenges, and priorities for the future.

In Rutherford County, four community listening sessions were held, with a total of 60 participants. VUMC and STH collaborated with the Rutherford County Health Department and other community stakeholders on recruitment of participants. Listening sessions were held at the Rutherford County Health Department, Journey Home, and First Baptist Church (2).

In Williamson County, three community listening sessions were held in collaboration with the Williamson County Health Department. One listening session was held at the Williamson County Health Department with recruitment by Better Options TN. Additional listening sessions were held at Mercy Clinic and Fairview Branch of Williamson County Public Library. A total of 25 participants participated in the three sessions. The topics for each session included community assets, issues and concerns, barriers to addressing these issues.

Key Informant Interviews

In collaboration with Saint Thomas Health and the Community Advisory Groups, VUMC identified leaders from public health, government, education, the faith community, private foundations, community organizations, and academia, among others as interviewees. Interviewees were selected based on their understanding of the broad interests of the community and underserved populations. Interviewees were health department directors from the community served, community physicians, public health researchers, and community-based organizations that have special knowledge and expertise in public health. In all, 68 community leaders were interviewed, all of which have knowledge and experience to represent the underserved, low-income, and minority populations.

A total of 23 interviews were conducted in Davidson County and 26 in Rutherford County with Saint Thomas Health, VUMC staff, and student collaborators. In Williamson County, 19 interviews were conducted by VUMC staff and a student collaborator. The interview protocol included open-ended questions, which focused on health concerns, social determinants of health, healthcare issues, and community resources. In each county, interviewees were identified in collaboration with local health departments and Community Advisory Groups. Interview data were entered into REDCap by VUMC and Saint Thomas Health staff, as well as graduate students from the graduate public health programs at Vanderbilt University's Institute for Medicine and Public Health. Thematic analyses were conducted by reviewers from VUMC, Saint Thomas Health, and the county health departments. The interview guide can be found through the link provided on the Community Health Improvement website.

Identifying and Prioritizing Needs: Overview

Community Summits

Primary and secondary data were collected in the Summer and Fall of 2018, culminating in three community summits held in the fall and winter of 2018 and 2019. Results of the community interviews, community listening sessions, community surveys, and secondary data analysis were presented in the community health summits – one in each of Davidson, Rutherford, and Williamson counties. Among the summit invitees were listening session and interview participants, community members with expertise in public health or working with vulnerable populations, and leadership from VUMC and VUMC's collaborators. Each summit was facilitated jointly by groups from VUMC, Saint Thomas Health, and county health department team members.

The purpose of the summits was to solicit input and take into account the broad interests of the community in identifying and prioritizing the community's health needs. After being presented with the primary and secondary data, summit participants provided input into prioritizing the most important health needs within the community through a prioritization process facilitated by the summit hosts. Attendees individually selected their top health issues and then discussed these needs with their tablemates. The table participants consolidated the individual needs into three or four health need buckets. These buckets were then entered into REDCap and all participants voted on the top three priorities using REDCap. The health needs with the greatest number of votes were selected as the identified health needs.

Following the prioritization of needs, participants in each county provided further insight regarding each prioritized need by working in groups to answer the following questions; "Who is already working on this issue?"; "What are potential goals related to the issue?"; "After three years, what does success look like regarding this issues?"; and "Which population(s) are most affected by this need or problem?"

While many overlapping themes were highlighted throughout each county summit, each county summit ultimately yielded its own respective set of prioritized needs. Because of this, Davidson, Williamson, and Rutherford counties have their own county-specific report written within this larger VUMC report. For VUMC's purposes, each county's needs were grouped into four overarching categories of needs for VUMC to address.

VUMC Community Health Needs

The four health needs prioritized by VUMC are:

- **Mental Health and Substance Abuse**
- **Access to Resources and Services**
- **Basic Needs and Social Determinants of Health**
- **Prevention and Education**

Table 2 illustrates how the county-specific priorities were grouped into broader categories that yielded the VUMC community health needs.

Table 2. Summary of Community Health Needs by County

VUMC Institutional Needs	Rutherford Summit	Davidson Summit	Williamson Summit
Mental Health and Substance Abuse	Mental Health / Substance Abuse	Mental Health and Toxic Stress	Mental Health and Suicide Prevention / Substance Abuse
Access to Resources and Services	Enhance Resources and Services	Access and Coordination of Resources	Resource Availability
		Access and Affordability of Healthcare	
Basic Needs and Social Determinants	Access to Basic Needs including Housing	Addressing Basic Needs and Social Determinants	Affordable Housing
Prevention and Education	Nutrition and Obesity		Health Education and Prevention

Following the Summits, VUMC consulted the "Community Health Improvement Working Group", a group of internal program managers and directors who interface with the community to review the needs the community prioritized. The Working Group was tasked with making a recommendation to VUMC's CHNA/IS Advisory Committee--a group of senior leaders responsible for high-level guidance on the CHNA/IS--on the needs that VUMC should adopt. The Working Group considered criteria such as the scope, severity, and the ability of VUMC to impact an issue and recommended that VUMC adopt all four identified needs. Prioritized needs are considered of equal importance and are not listed in this report in a particular order. The Advisory Committee chose to adopt all four identified needs and these needs guided development of VUMC's Implementation Strategy. The CHNA / IS were adopted by the Board of Directors of Vanderbilt Stallworth Rehabilitation Hospital in December 2019 and by the Vanderbilt University Medical Center Board of Directors in November 2019.

The data that were presented at the county summits where the community health needs were identified and prioritized by the community is presented in the next section for Davidson, Rutherford and Williamson Counties.

Limitations and Information Gaps

The objective of the CHNA was to provide a comprehensive assessment of the health needs of Davidson, Rutherford, and Williamson counties. Some limitations of the assessment are outlined below.

- *Secondary data limitations*: The assessment took into consideration many factors affecting health, including the social determinants of health: however, not all health and health related measures available through secondary data were reviewed due to the broad focus of the assessment. In some cases, comparable benchmarking was not available and there were differences in measurement/variable definitions between data sources. There was also variability in data sources.
- *Interview/Listening Session limitations*: Every effort was made to include representation from many sectors of the community. However, listening sessions and interviews were conducted with a convenience sample of participants from the community.
- *Online community survey limitations*: The survey was created to obtain input from members of the community who represent underserved, minority and/or vulnerable populations. However, survey responses were gathered from a convenience sample of respondents from the community.

2019

Davidson County

COMMUNITY HEALTH NEEDS ASSESSMENT

DAVIDSON COUNTY, TENNESSEE

2019

Introduction

Davidson County Collaborations

In Davidson County, VUMC worked with Saint Thomas Health (STH) and the Metro Public Health Department to design, direct and conduct the CHNA. VUMC and STH participated in the CHNA process on behalf of their non-profit hospitals and health systems.

The collaborating organizations used the MAPP (Mobilizing for Action through Planning and Partnerships) process to guide the Davidson County CHNA. MAPP is a community-wide strategic planning process for improving public and community health; this framework helps communities prioritize public health issues, identify resources for addressing them, and act to improve conditions that support healthy living. The process encompasses four separate assessments that measure the health of the community: Community Health Status, Community Themes and Strengths, Local Public Health System, and Forces of Change. The Community Health Status and Community Themes and Strengths report are presented below. The Local Public Health System Assessment and Forces of Change reports are supplemental to this CHNA and can be found on the VUMC Community Health Improvement website.

The collaborating organizations worked with other community stakeholders to design, direct and conduct the assessments of the communities served. Using MAPP, the collaborating organizations also worked with other community organizations, known as the "Core Team", to better understand the current health needs of Davidson County. These organizations include ConnectUs Health, Matthew Walker Comprehensive Health Center, Metro Arts, Metro Public Health Department, Metro Social Services, Saint Thomas Health.

Environmental Scan Results

Introduction

This environmental scan is a summary of health and health-related studies that provide information, data, and common themes presented in various reports published about Davidson County, TN. The purpose of the review is to examine existing data relevant to community health and identify strengths, assets, and areas of improvement regarding the health and healthcare in the community. When examining these reports, it is important to understand the underlying and systematic barriers affecting the health outcome of the populations of focus. This review uses "health equity buckets," as defined by NACCHO's MAPP Handbook, to ensure that the populations and communities at higher risk for adverse health outcomes are included in this review process. Some of the major health equity buckets that were considered in the various reports include: economic security and financial resources; livelihood security and employment opportunity; school readiness and educational attainment; environmental quality; adequate, affordable and safe housing; and community safety. Additionally, there was a focus on social networks, sense of community, diversity and inclusion and civic involvement, especially in the immigrant and refugee population communities. With Davidson County encompassing the metropolitan Nashville area, it is important to understand the vast number of different neighborhoods and communities as well as populations. There was a focus on the following communities amongst the reports reviewed: Bellevue,

Bordeaux, Bellshire, Bells Bend, East Nashville, East Germantown, Edgehill, Edmonson Pike, Goodlettsville, Green Hills, Hadley Park, Madison, North Nashville, Pruitt, Sylvan Park, Watkins Park, Downtown Nashville, Whites Creek, Wedgewood, Hermitage Ridge, and Scottsboro. Additionally, these populations were specifically mentioned in many of the reports: Spanish and Arabic speakers, immigrant and refugee populations, low-income, and minority populations.

Major Themes

Major themes that emerged for Davidson are growth, housing/transportation, cultural competency, and social determinants of health. They are described in more detail below:

Growth: Davidson County is one of the most populous counties in Tennessee and encompasses the metropolitan Nashville area. Nashville is a city that is constantly growing and is one of the fastest growing cities, with just under 100 people moving in every day according to Census estimates. Because of this, there are many community health concerns that are associated with that level of growth and change. One of the biggest themes gathered from these reports focuses on the growth of Nashville and how that is impacting the cost of living, education, job availability, workforce development, land development, and infrastructure.

Housing and Transportation: There is currently a housing demand in Davidson County, which has created a cost of living problem for many Davidson County residents, forcing many people who work in Davidson County to live in a neighboring county. This, in turn, affects transit and transportation. There is a big need for more walkways and bike paths connecting neighboring communities as well as public transportation that is easily accessible and seamless. To continue to attract jobs and more residents, Davidson County must be able to care for its current residents by creating an affordable and livable community.

Cultural Competency: Another major theme addressed was the large immigrant and refugee population that lives in Davidson County, particularly in the Nolensville Pike area. The data regarding this theme emphasized a need for more cultural and ethnic understanding among residents. Understanding cultural and ethnic norms of other neighborhoods and populations allows for a better sense of community. It also helps combat issues such as language barriers, which affect the daily lives of immigrants in many ways. A strong community fosters prosperity and growth and there must be more knowledge and awareness of these communities to ensure all residents have an equal opportunity to health and health care.

Social Determinants of Health: The last major theme addressed from these reports was social determinants of health, which includes poverty, education (or lack thereof), access to parks and recreational/outdoor activities, health disparities, and violent crime. The Centers for Disease Control and Prevention (CDC) defines social determinants of health as conditions in the places where people live, learn, work, and play that affect a wide range of health risks and outcomes. The environmental scan found that minorities, low-income residents, and immigrants are most affected by a lack of societal resources in their communities. Understanding the need for improvement of the community resources mentioned above helps to ensure all people can lead health lives.

Conclusion

Due to the dynamics of Davidson County, there are many moving parts and issues to focus on in the community. However, there are numerous resources in the county that are available to help address many of the pressing needs of this community. By understanding these main points of concern in Davidson County, resources can be deployed to these communities to improve the health of all county residents.

Secondary Data

Demographics and Socioeconomics

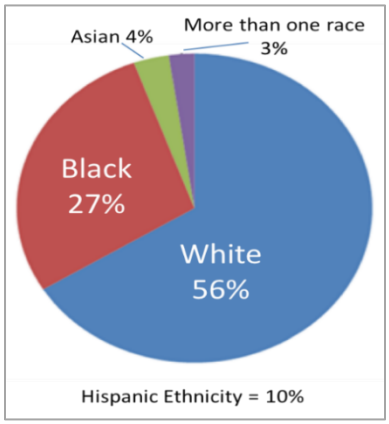


Figure 2. Davidson County Demographics, US Census Bureau (2017)

As of 2017, Davidson County was home to approximately 691,000 individuals. It is a young county with a median age of 34, compared to the state (38) and nation (37). Seniors (persons aged 65+) consist of 11.9% of the population. Davidson County is more racially and ethnically diverse than both the state and nation with just over half (56%) identified as White, 27% identified as African-American or Black, 4% as Asian, and 3% as "more than one race." There is a high percentage of residents who are Hispanic (10%). In Davidson County, 15.7% speak a language other than English at home. This is higher compared to the state (7%), but is lower when compared to the nation (21.3%).[2]

Davidson County is experiencing rapid growth with a 10.3% increase in population between 2010 and 2017. This is two times faster than the growth rate in the state. There is an estimated 15% increase in population and a 22% increase in jobs between 2015 and 2025.[3]

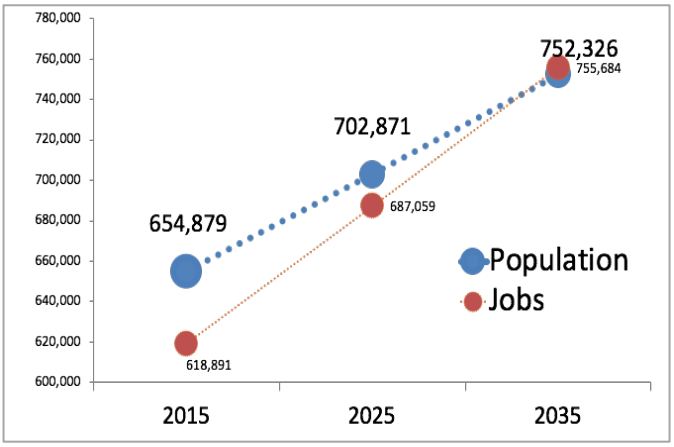


Figure 3. Population and job growth projection for Davidson County 2015-2035, Nashville Metro Planning Organization (2019)

[2] U.S. Census Bureau. (2017). *Quickfacts, American Community Survey*. Retrieved from https://www.census.gov/quickfacts/fact/table/davidsoncountytennessee,US/PST045218

[3] Nashville Metro Planning Organization. (2019). *Growth Trends & Forecasts Regional Profile*. Retrieved from http:/www.nashvillempo.org/growth/

About 12% (84,672) of residents in Davidson County are foreign-born, a 2% increase from 2007. Foreign-born is someone born outside of their country of residence. Foreign-born can be non-citizens, naturalized citizens of the country in which they live, or citizens by descent, typically through a parent. **Figure 4** shows that the largest portion of these residents are from Latin America (43%) followed by Asia (30%), and Africa (19%). Of these foreign-born residents, 16.7% speak a language other than English at home and 8.8% reported speaking English less than very well.

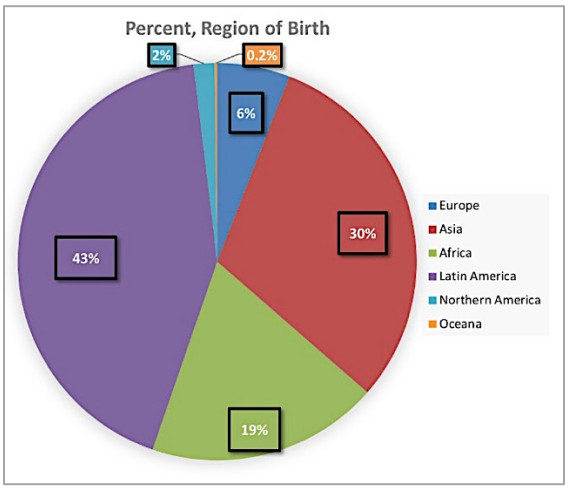


Figure 4. Foreign-born region of birth, US Census Bureau (2018)

Poverty

Poverty is one of the most critical indicators of future health and well-being according to leading health agencies such as the World Health Organization (WHO). Poverty creates barriers to resource access, including health services, healthy food, and other necessities that contribute to health status. Federal Poverty Level (FPL) is a measure of income used to determine poverty status.

In 2018, the FPL was set at $12,140 for an individual and $25,100 for a family of four. 16.9% of Davidson County residents live in poverty; higher than both the state (16.7%) and the nation (14.6%). Poverty is more prevalent in some geographic areas of the county as seen in **Figure 5**, indicating areas with highest rates of poverty (~78.7%).

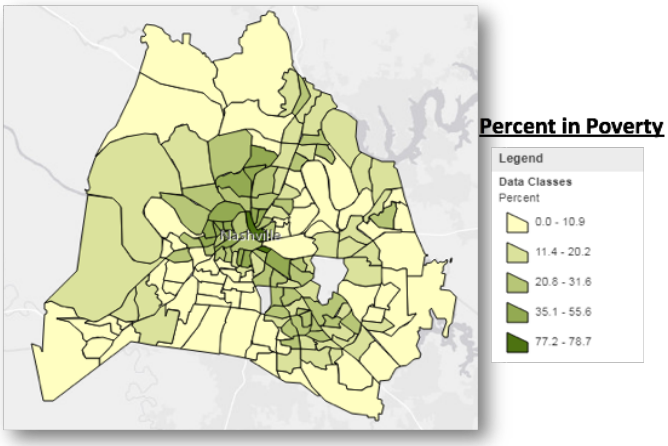


Figure 5. Davidson county percent in poverty, US Census Bureau (2017)

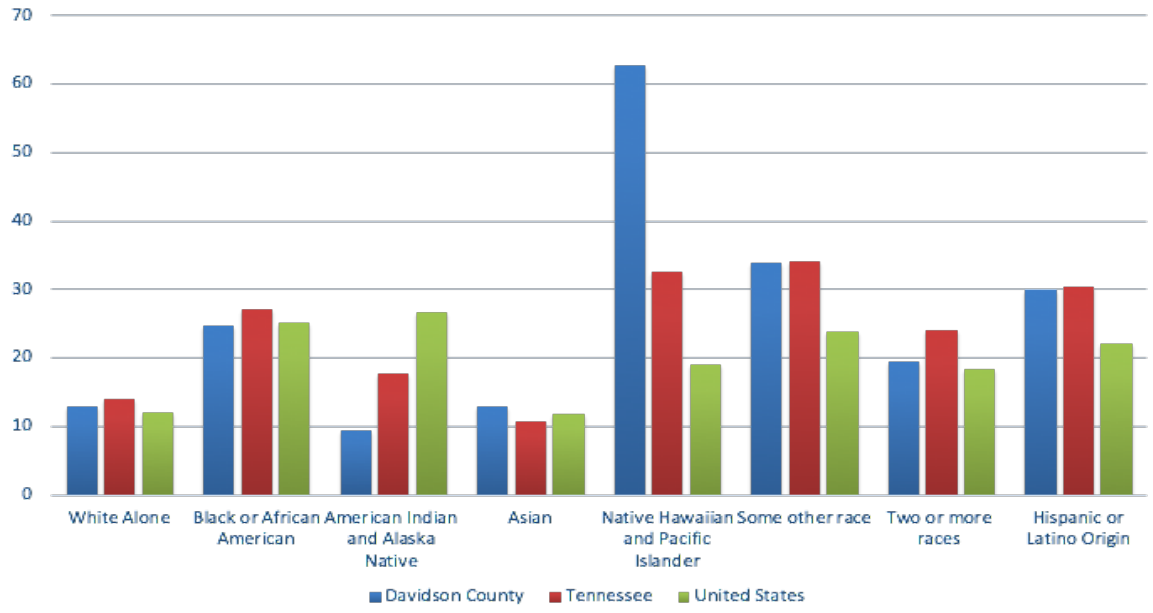


Figure 6. Poverty by race, US Census Bureau (2018)

Figure 6 demonstrates how poverty can vary by race**.** Native Hawaiian and Pacific Islanders (62.7%) have the highest percent of poverty in Davidson County, followed by residents who identify as some other race (24%) and Hispanic or Latino Origin (29.9%) In Tennessee, individuals who identify as some other race have the highest percent of poverty (34.2%) followed by Native Hawaiian and Pacific Islanders (32.7%). In the nation, American Indian and Alaska Natives have the highest percent of poverty (26.8%) followed by Black or African Americans (25.2%).[4]

The challenges of poverty also extend to children, as **Figure 7** illustrates the 27.75% of Davidson County children living in poverty. This equates to more than 37,000 impoverished children in Davidson County. Davidson County has more children living in poverty when compared to the state (24.25%) and the nation (20.31%).[5]

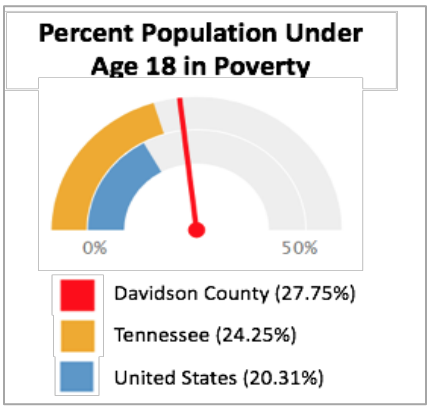


Figure 7. Children in poverty, Community Commons (2018)

Education

Educational attainment is linked with improved health behaviors, longer life, and improved health outcomes. County Health Rankings states "better educated individuals live longer, healthier lives than those with less education, and their children are more likely to thrive."

[4] U.S. Census Bureau. (2018). *Poverty Status in the Past 12 Months*. Retrieved from American Community Survey:https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_17_5YR_S1701&prodType=table

[5] Community Commons. (2018). *Children in Poverty*. Retrieved from www.communitycommons.org

In Davidson County, 12% of the population over the age of 25 does not have a high school diploma. This percent is lower than the state (13.5%) and higher than the nation (12.7%). These rates also vary by geography and race, which is shown in **Figure 8**. In Davidson County, 9.77% of white individuals do not have a high school diploma compared to 14.4% of African Americans. 39.1% of residents in the County have a bachelor's degree or higher. This is a 2% increase since 2015 and 10% higher than the percent of the State's residents that hold a bachelor's degree (26.1%).[6]

Additionally, 80.1% of high school students in Davidson County graduated on time in 2017, which is lower than the state (89.1%) and the nation (84%).[7] **Figure 9** shows that the 2017 county rate decreased 1.5% from 2015; while state and national rates continue to increase.

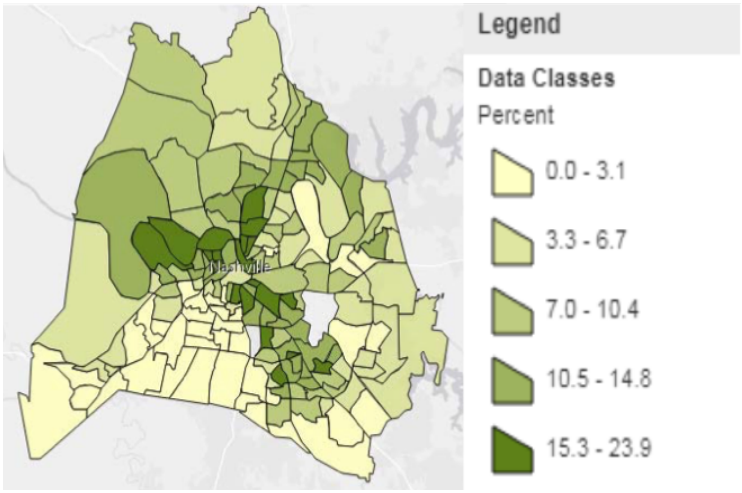


Figure 8. Percent without a high school diploma by geographic area, US Census Bureau (2018)

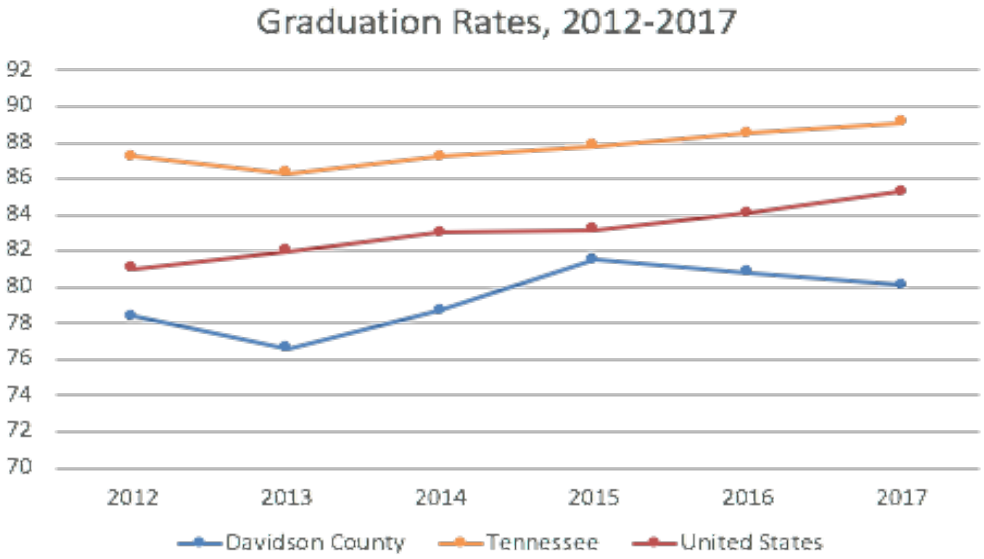


Figure 9. Graduation rates, National State Center for Education Statistics (2018)

[6] U.S. Census Bureau. (2018). *Educational Attainment*. Retrieved from American Community Survey: https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_17_5YR_S1501&prodType=table

[7] The Annie E. Casey Foundation . (2017). *Graduation Rates*. Retrieved from KIDS COUNT: https://datacenter.kidscount.org/data/tables/8738-high-school-graduation

Employment

97% of Davidson County is employed. There are approximately 619,000 jobs offered within the county; however, many enter and leave Davidson County each day, ~240,000 commuting in and ~91,000 commuting out (**Figure 10**).[8]

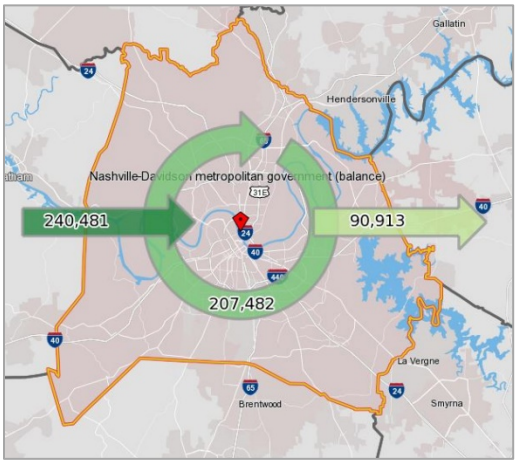


Figure 10. Davidson OnTheMap, US Census Bureau (2018)

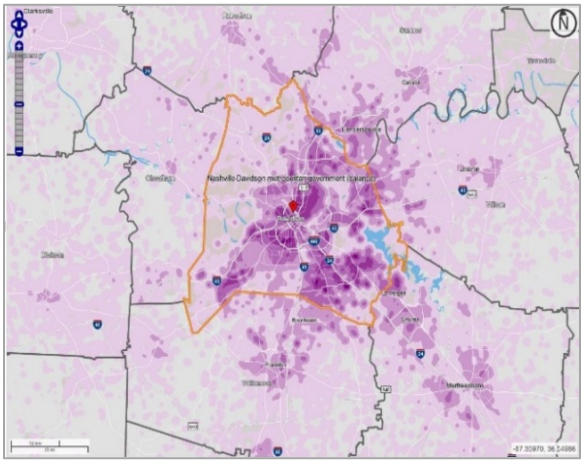


Figure 11. Employment Forecast, Nashville Metro Planning Organization (2018)

Figure 11 depicts where these jobs are located and where commuters travel for work. The darker purple highlights areas with the highest concentration of jobs in the region, with Davidson County being outlined in orange. [9] Davidson County continues to experience job growth and low unemployment (2.6%) relative to the state (3.5%) and the nation (4.2%).[10]

[8] U.S.Census Bureau. (2018). *OnTheMap (Employment)*. Retrieved from Center for Economic Studies: http://onthemap.ces.census.gov/

[9] Nashville Metro Planning Organization. (n.d.). *Population & Employment Forecast for the Nashville Area*. Retrieved from http://www.nashvillempo.org/growth/

[10] U.S. Census Bureau. (2018). *Poverty Status in the Past 12 Months*. Retrieved from American Community Survey: https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_17_5YR_S1701&prodType=table

Health Status

Life Expectancy

Life expectancy is defined as the average length a person is expected to live. This remains a good indicator of a population's longevity and overall health status. Davidson County's estimated life expectancy is 77.3 years which is higher than the state (76.4). Life expectancy also varies by gender, race, and location. For instance, the female life expectancy is 80.1 years, compared to the male life expectancy of 74.3 years.

In Davidson County, African Americans have a life expectancy of 73.5 years while Whites have a life expectancy of 78 years. **Figure 12** highlights the differences in life expectancy by census tracts within the county. The darkest areas have the highest life expectancy of 81-87 years, while the lighter gray areas show the lowest life expectancy with 66-71 years. This is a 15-year difference for residents who live only a few miles apart. These variations are often caused by differences in public health infrastructure, access to medical care, and the social determinants of health.[11]

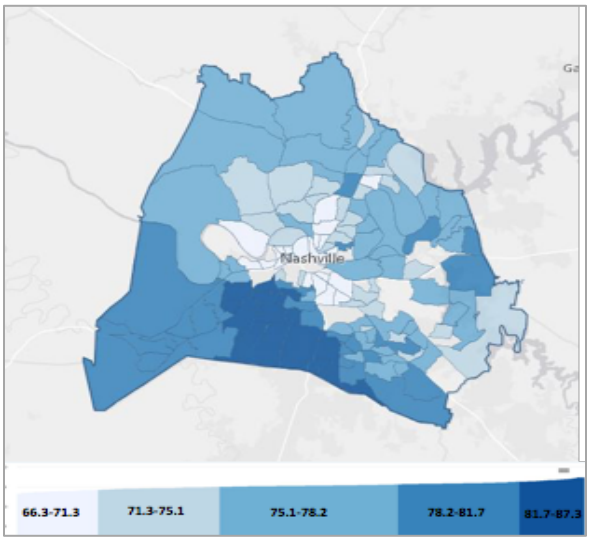


Figure 12. Davidson County Life Expectancy, Healthy Nashville (2018)

Social Determinants of Health

According to the World Health Organization, the circumstances "in which we are born, grow, live, work, and age" are called Social Determinants of Health, and these are related to the "distribution of money, power, and resources" within a community. These indicators are mostly responsible for health inequities – the unfair and avoidable differences in health status seen within a community. In addition to factors like education, social determinants can encompass the social environment, the physical environment, resources available in communities, economic opportunity, food access, and more."[12]

Housing

There are 273,497 occupied housing units in Davidson County, with the average household size being 2.47 persons for owners and 2.32 persons for renters. Both are lower than the state household averages (2.57 persons for owners, 2.45 persons for renters), as well the nation (2.7 persons for owners and 2.52 persons for renters).[13] County-wide, 81.3% of residents have lived in the same house for a year, compared to 85.4% in the nation and 85.2% in the state. This indicator

[11] Healthy Nashville. (2019). *Life Expectancy*. Retrieved from http://www.healthynashville.org/indicators/index/view?indicatorId=8195&localeTypeId=4

[12] World Health Organization. (n.d.). *Social Determinants of Health*. Retrieved from https://www.who.int/social_determinants/sdh_definition/en/

[13] U.S. Census Bureau. (2018). *Selected Housing Characteristics*. Retrieved from American Community Survey 5-year estimates: https://factfinder.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t#none

helps describe "residential stability and the effects of migration" within a community.[14]Poor quality housing can contribute to the risk of injury and to other illness due to poor maintenance, leaks, toxic factors in the environment (such as lead), increased risk of infestation and contagious disease through overcrowding, and psychological distress. Furthermore, a shortage of affordable housing can put families under intense stress.

The Robert Wood Johnson Foundation states, "The lack of affordable housing affects families' ability to meet other essential expenses, placing many under tremendous financial strain. High housing-related costs place a particular economic burden on low-income families, forcing trade-offs between food, heating and other basic needs. One study found that low-income people with difficulty paying rent, mortgage or utility bills were less likely to have a usual source of medical care and more likely to postpone treatment and use the emergency room for treatment. Another study showed that children in areas with higher rates of unaffordable housing tended to have worse health, more behavioral problems and lower school performance."[15]

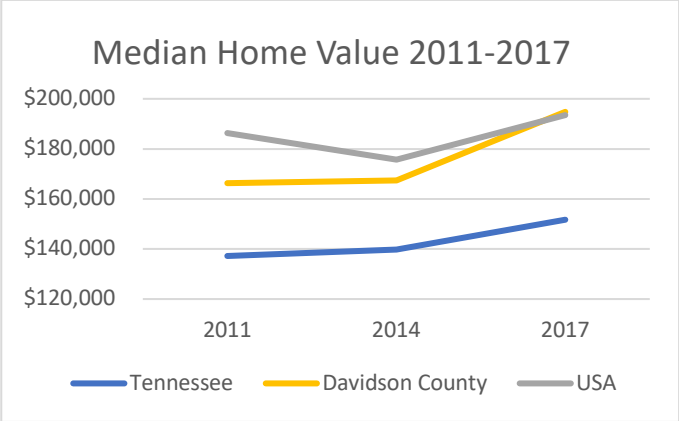


Figure 13. Median Home Value, US Census Bureau (2018)

Figure 13 shows that for the six-year period between 2011 and 2017, median home values in Tennessee increased by about 10.5%. There was a 3.9% increase in the nation and a 17.1% increase in Davidson County. This jump in average value went from $166,300 to $194,800, which is just above the national median home value of $193,500. [16] According to the U.S. Department of

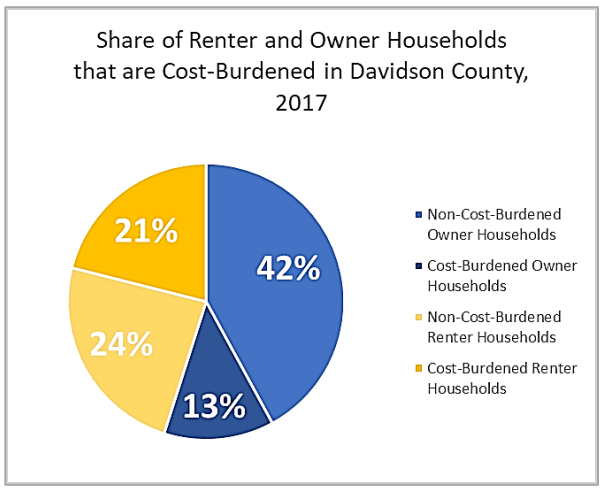


Figure 15. Cost-Burdened Renters & Owners, US Census Bureau (2018)

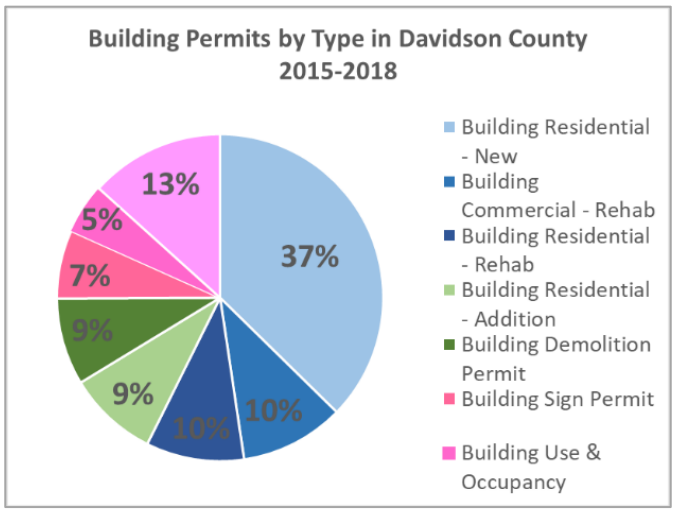


Figure 14. Davidson County Building Permits, Metro Govenrment (2018)

[14] U.S. Census Bureau. (n.d.). *Why We Ask: Residence One Year Ago*. Retrieved from https://www.census.gov/acs/www/about/why-we-ask-each-question/migration/

[15] Robert Wood Johnson Foundation. (2011). *Housing and Health.* Retrieved from https://www.rwjf.org/en/library/research/2011/05/housing-and-health.html

[16] U.S. Census Bureau. (2018). *Median Home Value (Dollars)*. Retrieved from American Community Survey 1-year estimates: https://factfinder.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t#none

Housing and Urban Development, families who pay more than 30 percent of their income for housing are considered cost burdened and may have difficulty affording necessities such as food, clothing, transportation and medical care.[17] **Figure 14** shows the share of homeowners versus renters in Davidson County. Of the 273,497 occupied housing units in the county as of 2017, 54.4% were owner-occupied and 45.6% were renter-occupied.13% of homeowners are cost-burdened, while this is the case for 21% of renters. Between renters and owners, 34% of Davidson households overall are considered cost-burdened.[18]

Figure 15 chart shows the number and types of building permits the county issued over the three-year period between 2015 and 2018. The largest share, at around 37%, is for new residential buildings (13,231), speaking to the demand for housing the county has experienced in recent years.[19]

Homelessness

The demand for more housing has exacerbated the homeless situation in Davidson county, forcing more low-income residents to the periphery or out of the county entirely with lower access to jobs, transportation, and services in the urban core. The 2018 Point-in-Time homeless count, which took place January 25-26, 2018, counted 2,298 individuals who are homeless in Davidson County, including those both sheltered (1,682) and unsheltered (616).[20]

The Point-in-Time count is one measure of homelessness, but it does not count those who meet the broadest definition of homelessness, which includes those who are doubled up with friends or family, couch surfing, living in motels, or who are in jails or hospitals but were homeless prior to admission, making this a low estimate by many counts.[21] The various definitions of homelessness are described in **Figure 16.**

There may also be school students not included in this number who meet the definition of homeless. Homeless youth is defined as youth who 'lack a fixed, regular, and nighttime residence' or an 'individual who has a primary nighttime residence that is:
a) a supervised or publicly operated shelter designed to provide temporary living accommodations;
b) an institution that provides a temporary residence for individuals intended to be institutionalized including welfare hotels, congregate shelters, and transitional housing for the mentally ill;
c) a public or private place not designed for, or ordinarily used as, a regular sleeping accommodation for human beings.'

This definition includes both youth who are unaccompanied by families and those who are homeless with their families."[22]

---

[17] U.S. Department of Housing and Urban Development. (n.d.). *Affordable Housing*. Retrieved from https://www.hud.gov/program_offices/comm_planning/affordablehousing/
[18] U.S. Census Bureau. (2018). *Selected Housing Characteristics*. Retrieved from American Community Survey 5-year estimates: https://factfinder.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t#none
[19] Metropolitan Government of Nashville and Davidson County. (2018). *Building Permits by Type* . Retrieved from https://data.nashville.gov/Licenses-Permits/Building-Permits-by-Permit-Type-Chart-/utk7-s5qk
[20] Metropolitan Development and Housing Agency. (2018). *TN CoC 2018 Point-in-Time Count Data*. Retrieved from http://www.nashville-mdha.org/wp-content/uploads/2016/09/2018-PIT-Release-Data-Sheet_Final_04.20.2018.pdf
[21] Metropolitan Development and Housing Agency. (2018). *Results of 2018 Point in Time (PIT) Count Released*. Retrieved from http://www.nashville-mdha.org/2018/04/18/results-of-2018-point-in-time-pit-count-released-2/
[22] Youth.Gov. (n.d.). *Federal Defintions, Homelessness*. Retrieved from Youth.Gov: http://youth.gov/youth-topics/runaway-and-homeless-youth/federal-definitions

Figure 16. Nashville MDHA (2018)

Transportation

The built environment and modes of transportation have a tremendous effect on people's health. A robust transit system ensures people can easily access essential services they need to support health, such as groceries, employment opportunities, and medical offices. Active transit, such as walking, biking, and taking public transportation, encourages movement and physical activity. Public transportation helps reduce traffic while also improving air quality with an overall decreased number of cars on the road. Better transit options can also alleviate the burden of long solo commutes to work, and reduced commutes can offer people more social and family time. Finally, well-designed transit options can support equity by bringing more options within reach of vulnerable populations.[23]

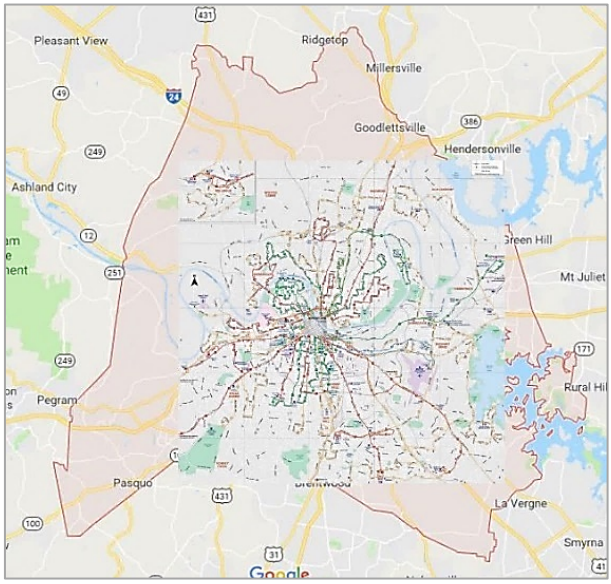


Figure 17. Bus Routes in Davidson County, WeGo Public Transit (n.d.)

[23] Centers for Disease Control & Prevention. (2014). *Transportation and Health*. Retrieved from https://www.cdc.gov/healthyplaces/healthtopics/transportation/default.htm

Davidson County is served by the *WeGo* Public Transit service, whose low-cost fares and multiple routes make it a primary means of transportation for many. These routes are concentrated in the urban core, meaning those on the periphery of the county have little to no access to public transit. This contributes to a car-dependent culture in Davidson County. **Figure 17** is adapted from *WeGo* bus routes.

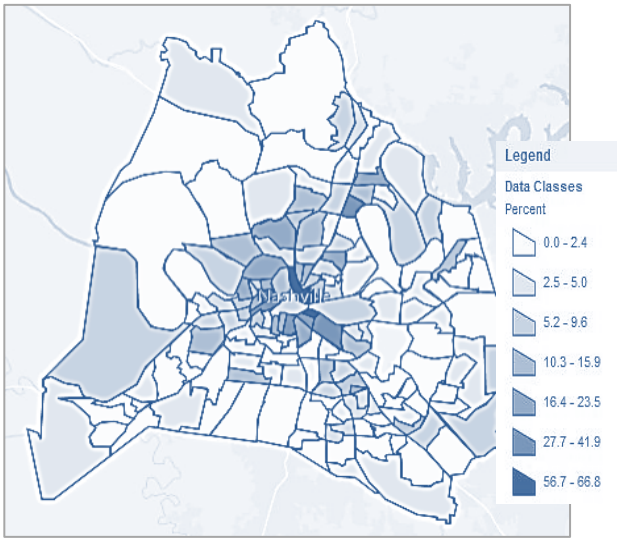


Figure 18. Households without a vehicle, US Census Bureau (2018)

On average, 6.8% of occupied housing units (or 18,672 units) have no personal vehicle available to them. **Figure 18** shows the areas most concentrated by households without vehicles. On the periphery of the county, there are census tracts with approximately 16% of households have no vehicle or public transit access.[24]In Davidson County, 80% of workers drive alone to work[25] while 2.2% take public transit and another 2.2% walk or bike to work.[26]

Across Tennessee, 4.5% of trips taken by bike or foot are 10 minutes or longer, indicating sustained exercise. This puts Tennessee in the 5th percentile nationwide for active transit that represents sustained exercise indicating lower health performance.[27]

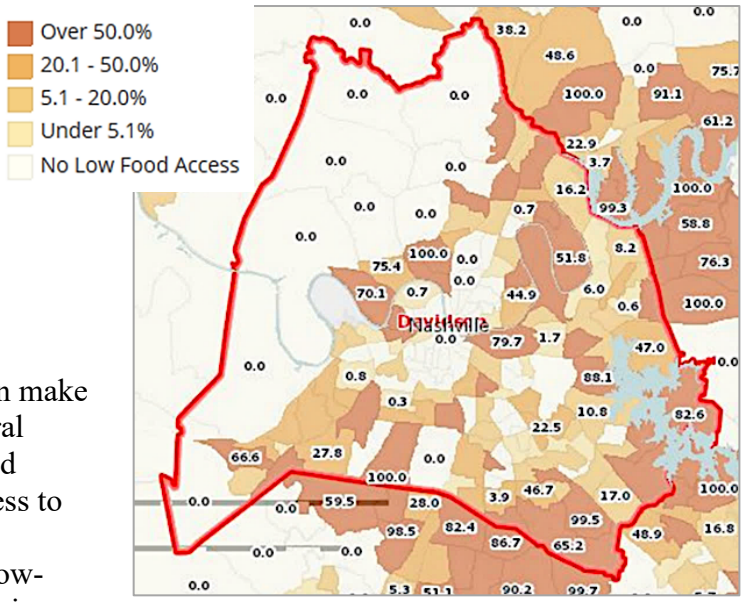


Figure 19. Food Access by Census Tract, US Dept. of Agriculture Economic Research (2017)

Food Access

The built environment and access to transportation also affect the choices people can make regarding what they eat. Lower-income and rural neighborhoods are often saturated with fast food restaurants and are considered to have low access to groceries or fresh produce options.[28]

Overall, 19.5% of Davidson County's low-income population face low food access, which is defined as "living more than ½ mile from the nearest

[24] U.S. Census Bureau. (2018). *Selected Housing Characteristics*. Retrieved from American Community Survey 5-year estimates: https://factfinder.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t#none
[25] University of Wisconsin Population Health Institute. (2018). *Driving alone to work*. Retrieved from County Health Rankings: http://www.countyhealthrankings.org/app/tennessee/2018/measure/factors/67/map
[26] U.S. Census Bureau. (2018). *Commuting Characteristics by Sex*. Retrieved from American Community Survey 5-year Estimates: https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml#none
[27] U.S. Department of Transportation . (n.d.). *Transportation and Health Indicators*. Retrieved from https://www.transportation.gov/transportation-health-tool/indicators
[28] Robert Wood Johnson Foundation. (n.d.). *Healthy Food Access*. Retrieved from https://www.rwjf.org/en/library/collections/healthy-food-access.html

supermarket, supercenter, or large grocery store".[29] **Figure 19** shows where in the county people face food insecurity. The shading indicates the percentage of low-income residents in each census tract that have low access to healthy foods. In some geographies, up to 100% of the low-income population struggles to access fresh food.[30]

When looking at the prevalence of fast food restaurants, Davidson County exceeds both the state and the nation with a rate of 108.83 fast food establishments per 100,000 people as of 2016.[31] **Figure 20** shows this rate has risen steadily over the last several years. Studies have shown that an area with a high number of fast food options typically results in increased rates of obesity and diabetes reported in the county.[32]

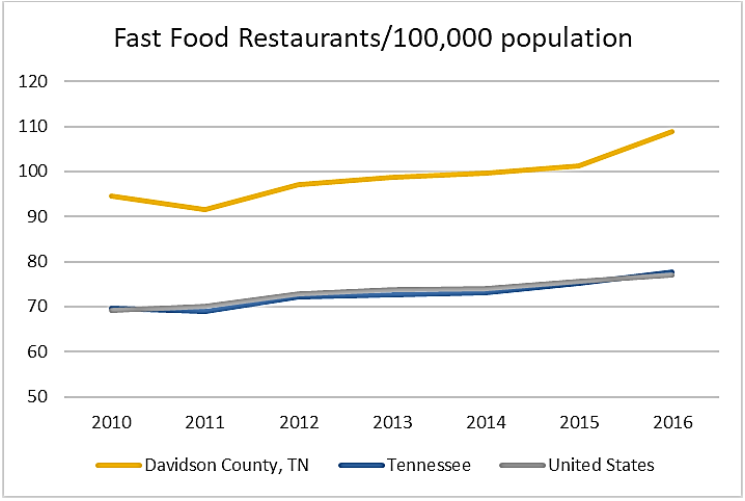


Figure 20. Fast Food Restaurants per 100,000 Population, Community Commons (2019)

Built Environment and Parks Access

The built environment also has a tremendous impact on health behavior. Having access to parks, sidewalks, and green spaces provides residents with the opportunity to exercise and be active. In fact, the National Recreation and Park Association reports, "The availability of parks and recreation resources and easy, safe access to them is a promising avenue to encourage increased levels of physical activity in all people." However, this report also notes that several factors influence park usage, including easy access, as the proximity encourages residents to actually utilize the space. Disparities in park distribution and location creates a disparity in physical activity. For

[29] Community Commons. (2018). *Food Access – Low Income & Low Food Access*. Retrieved from https://www.communitycommons.org/board/chna
[30] United States Department of Agriculture Economic Research Service. (2017). *Food Environment Atlas*. Retrieved from https://www.ers.usda.gov/data-products/food-environment-atlas/
[31] Community Commons. (2016). *Fast Food Restaurants, Rate per 100,000 population by year, 2010-2016*. Retrieved from www.communitycommons.org
[32] Office of Disease Prevention and Health Promotion. (2019). *Access to Foods that Support Healthy Eating Patterns*. Retrieved from https://www.healthypeople.gov/2020/topics-objectives/topic/social-determinants-health/interventions-resources

instance, there typically tend to be fewer parks and recreational areas in low-income and minority areas. Additionally, the quality of the park impacts the levels of physical activity, as well.

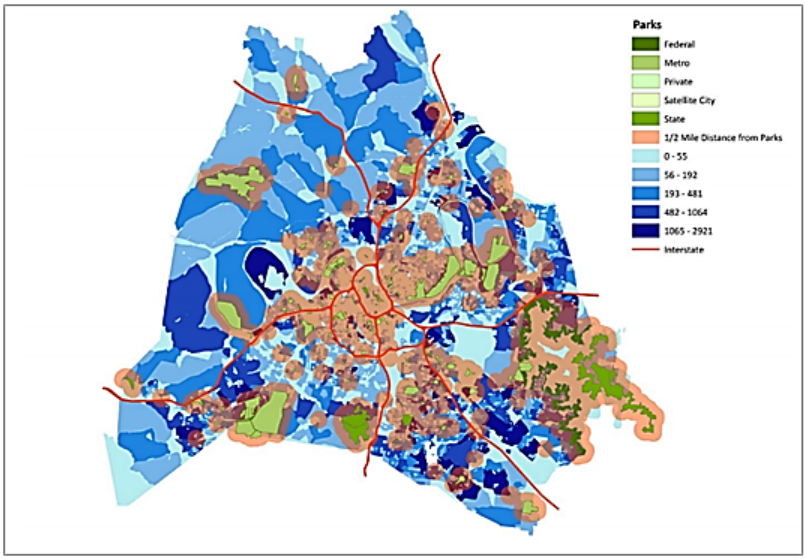


Figure 21. Nashville Parks, Metro Government of Nashville & Davidson County (2018)

According to Davidson County's Metro Parks Department, "there are over 12,000 acres of open space, including 108 Parks and 19 Greenways" in the county as of 2018. **Figure 21** illustrates where parks and green spaces are located throughout the county. When this map was made in 2014, roughly 40% of Davidson County's census block groups lived within ½ mile of a park, which is indicated by the orange-shaded area on the map. Metro Parks' goal is to have every Davidson county resident living within ½ mile of a park.[33]

Violence

Community Commons states "violent crime includes homicide, rape, robbery, and aggravated assault." Safety is a social determinant that often creates inequities in health outcomes. Indicators to measure these inequities include reduced life expectancy, gun violence, residual trauma from violence, or decreased physical activity due to safety.[34]

Davidson County has a much higher rate of violent crime than both the state and the nation at 1,104 violent crime offenses reported by law enforcement per 100,000 residents.[35] This is outlined in **Figure 22**.

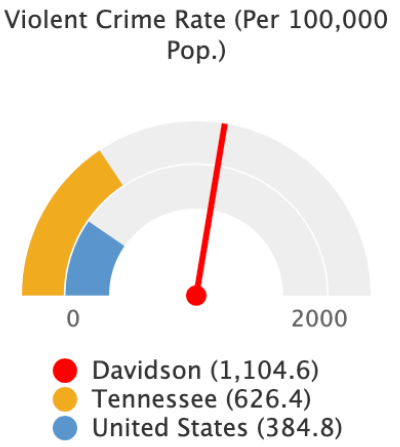


Figure 22. Violent Crime Rate Per 100,000 Population, Community Commons (2019)

[33] Metro Government of Nashville & Davidson County. (2018). *Nashville's Parks*. Retrieved from https://www.nashville.gov/Parks-and-Recreation/Parks.aspx

[34] Office of Disease Prevention and Health Promotion. (2018). *Crime and Violence*. Retrieved from https://www.healthypeople.gov/2020/topics-objectives/topic/social-determinants-health/interventions-resources/crime-and-violence

[35] Community Commons. (2019). *Violent Crime Rate Per 100,000 Population*. Retrieved from https://assessment.communitycommons.org/CHNA/report?page=3&id=408&reporttype=libraryCHNA

Child Abuse & Neglect

Research has shown that child abuse and neglect have long-term ramifications, affecting a child's physical, psychological, and behavioral development into adulthood.[36] Substantiated child abuse and neglect cases in Davidson county per 1,000 children have declined significantly over the last several years. In 2008, there were 7.3 cases per 1,000 children reported in Davidson County. This decreased to 4.1 per 1,000 children in 2017, similar to Tennessee's rate of 4.7 per 1,000.[37]

Seniors

The Tennessee Commission on Aging and Disability projected that the senior population in Davidson County would increase 39% between 2019 and 2030. This means that agencies serving this population will need to strategically build capacity and resources to meet a growing demand for their services over time. This includes in-home support, nutrition assistance, and transportation to help ensure this aging population can enjoy the highest possible quality of life into older adulthood.[38]

Access to Health Care

Access to appropriate healthcare is one of the factors that affect health outcomes. According to Healthy People 2020, "Access to comprehensive, quality health care services is important for promoting and maintaining health, preventing and managing disease, reducing unnecessary disability and premature death, and achieving health equity for all Americans."[39]

Insurance Coverage – Adults

Most people enter the healthcare system through insurance coverage. Though uninsured rates are at historic lows, there are still populations with no access to insurance. This is largely due to cost and other restrictions – for instance, immigrant eligibility or income qualifications. Populations most at risk for not having insurance are low-income adults and minority populations. Lack of insurance can be a major deterrent in seeking necessary care. For this reason, insurance rates can serve as a proxy for improved health outcomes in general.[40]

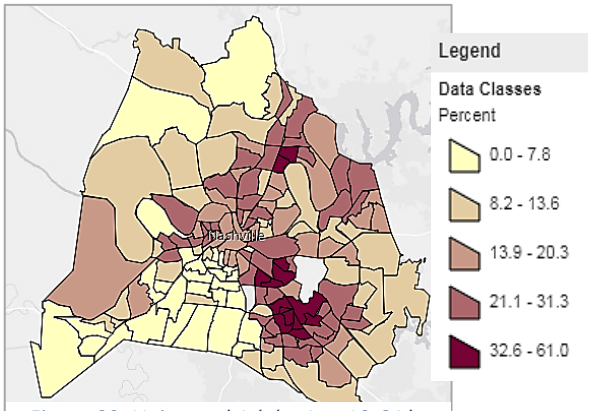


Figure 23. Uninsured Adults Age 19-64 by Census Tract, U.S. Census Bureau (2017)

[36] Children's Bureau. (n.d.). *Child Abuse & Neglect*. Retrieved from https://www.acf.hhs.gov/cb
[37] The Annie E. Casey Foundation. (n.d.). *National Indicators*. Retrieved from Kids Count Data Center: https://datacenter.kidscount.org/data#USA/1/0/char/0
[38] Tennessee Commission on Aging and Disability. (2017). *Tennessee State Plan on Aging October 1, 2017-September 31, 2021*. Retrieved from https://www.tn.gov/content/dam/tn/aging/documents/TN_State_Plan_on_Aging_2017-2021.pdf
[39] Office of Disease Prevention and Health Promotion. (2014). *Access to Health Services*. Retrieved from https://www.healthypeople.gov/2020/topics-objectives/topic/Access-to-Health-Services
[40] Henry J. Kaiser Family Foundation. (n.d.). *Key Facts about Health Insurance and the Uninsured amidst Changes to the Affordable Care Act*. Retrieved from The Uninsured and the ACA: https://www.kff.org/uninsured/report/the-uninsured

The age group with the highest uninsured rates nationwide is working age adults between 19 and 64.[41] In Davidson County, 17.8% of working-age adults are uninsured. This is higher than both the state (15.9%) and national (14.8%) rates of uninsured. **Figure 23** shows where in Davidson County uninsured adults reside by census tract, with the darkest tracts having rates of between 24.3%-28.2% uninsured.[42]

Figure 24 displays the racial disparities in insurance coverage throughout Davidson County. It has been reported that 40.2% of Hispanic or Latino residents do not have health insurance, while non-Hispanic white individuals only have a 9.4% overall rate of uninsured individuals. Whites and African-Americans have the lowest uninsured rates in the county, while those of Asian origin, of mixed race, and other groups have far higher rates.[43]

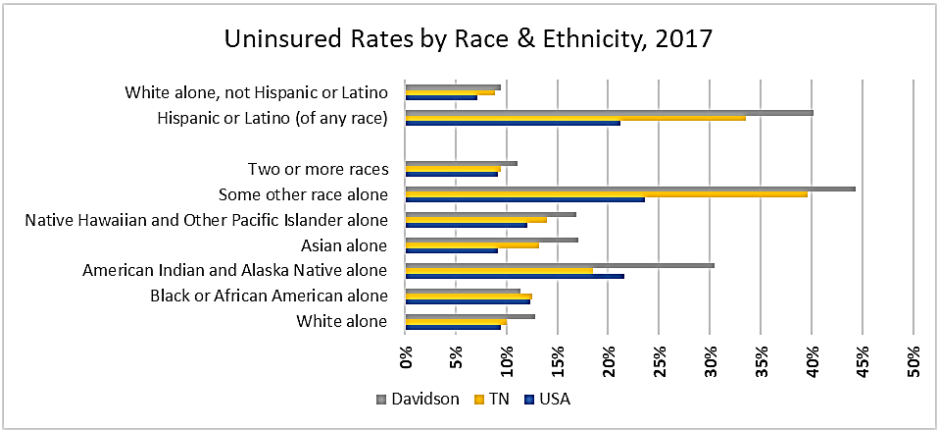


Figure 24. Uninsured Rates by Race, U.S. Census Bureau (2017)

Insurance Coverage – Children

Children's uninsured rates are at an all-time low nationally. In **Figure 25**, the orange and dark blue bars represent children with private an public insurance/Medicaid, and the light blue bars represent children with no insurance. In all instances, children with no insurance are significantly less likely to have access to a primary source of care, to receive a well-child checkup, or to receive a specialist visit.[44]

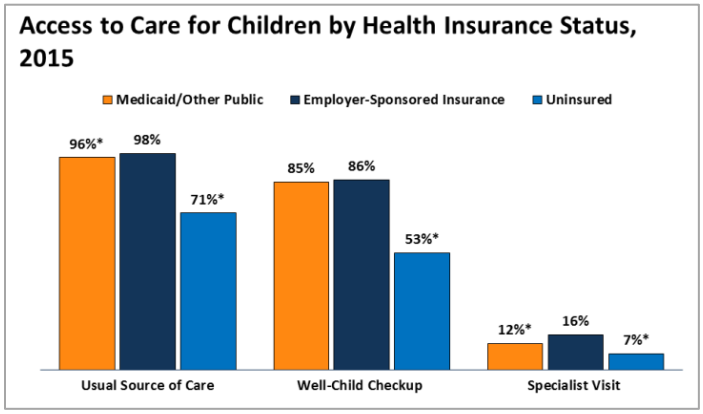


Figure 25. Access to Care by Insurance Status for Children, Kaiser Family Foundation (2017)

In Davidson County, 6.9% of children under 19 years of age are

[41] U.S. Census Bureau. (2017). *Quickfacts, American Community Survey*. Retrieved from https://www.census.gov/quickfacts/fact/table/davidsoncountytennessee,US/PST045218
[42] U.S. Census Bureau. (n.d.). *Selected Characteristics of Health Insurance Coverage in the United States*. Retrieved from 7 American Community Survey 5-Year Estimates: https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml
[43] U.S. Census Bureau. (n.d.). *Selected Characteristics of Health Insurance Coverage in the United States*. Retrieved from 7 American Community Survey 5-Year Estimates: https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml
[44] Henry J. Kaiser Family Foundation. (2017). *Key Issues in Children's Health Coverage*. Retrieved from https://www.kff.org/medicaid/issue-brief/key-issues-in-childrens-health-coverage/

uninsured. This is higher than both the state rate (4.8%) and the national rate (5.7%). **Figure 26** shows where in the county these children reside, with the darkest census tracts having between 33.7% and 44.3% of children without insurance.[45]

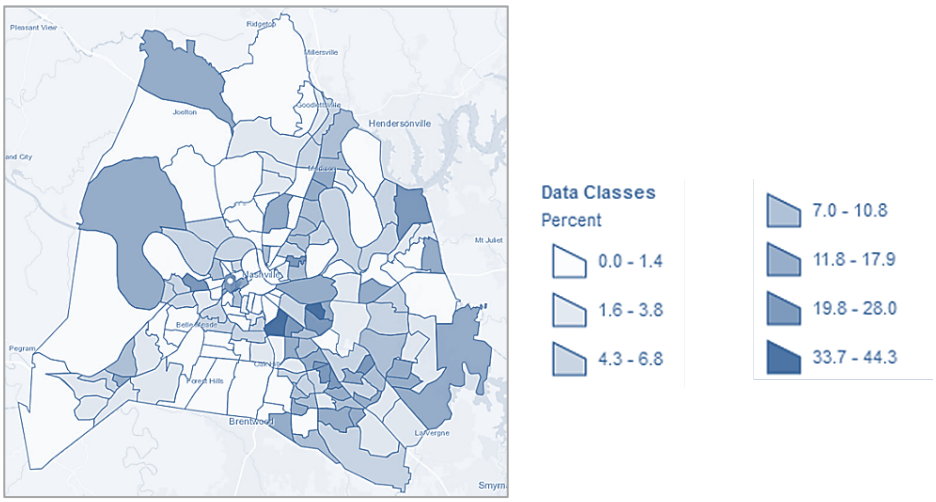


Figure 26. Uninsured by Census Tract of population under age 19, US Census Bureau (2017)

Provider Availability

Access to care is not entirely dependent on insurance coverage, as the availability of providers in an area is also extremely impactful. Having a sufficient supply of primary care providers available to residents often determines whether patients receive appropriate care. As shown in **Table 3,** there is 1 primary care provider for every 1,088 residents in Davidson County. This is more favorable than the state ratio over all (1:1,382), and slightly less favorable than the ratio of the top 10% of counties nationwide (1: 1,030).[46]Similarly, access to dental care is a crucial factor in health, and a shortage of providers continues to affect much of the nation's health. Davidson County does better than the state (1:1,892) with 1 provider for every 1,324 citizens, yet still falls behind the top 10% of counties (1: 1,280).[47]

Davidson County has one mental health provider per 359 residents. Mental health providers include psychiatrists, psychologists, licensed clinical social workers, counselors, marriage and family therapists, or mental health providers treating alcohol/substance abuse. Davidson's rate is more favorable than the state (1:742), but slightly less favorable than the top 10% of counties (1:330).[48]

[45] U.S. Census Bureau. (2017). *Quickfacts, American Community Survey*. Retrieved from https://www.census.gov/quickfacts/fact/table/davidsoncountytennessee,US/PST045218

[46] University of Wisconsin Population Health Institute. (2018). *Learn More About Primary Care Physicians*. Retrieved from County Health Rankings: http://www.countyhealthrankings.org/learn/explore-health-rankings/what-and-why-we-rank/health-factors/clinical-care/acc

[47] University of Wisconsin Population Health Institute. (2018). *Dentists*. Retrieved from County Health Rankings: http://www.countyhealthrankings.org/app/tennessee/2018/measure/factors/88/map

[48] University of Wisconsin Population Health Institute. (2018). *Mental Health Providers*. Retrieved from County Health Rankings: http://www.countyhealthrankings.org/app/tennessee/2018/measure/factors/62/map

Table 3. Provider Ratios, County Health Rankings (2018)

	Primary Care Providers	Dentists	Mental Health Providers
	1:1088	1:1324	1:359
	1:1382	1:1892	1:742
Top 10% of counties in the US 	1:1030	1:1280	1:330

When looking at access to care by race, disparities are prevalent. **Figure 27** shows Tennesseans who needed to see a doctor in the past year but could not due to cost. Roughly 18% of Hispanic respondents have reported needing to see a doctor, but not being able to due to cost. This is compared to 20% of African-Americans and 13% of white respondents.[49]

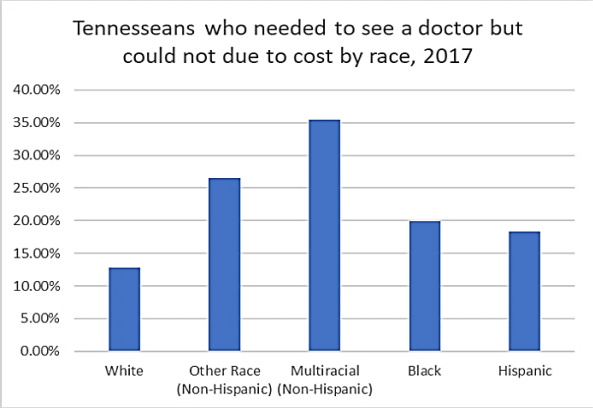


Figure 27. Tennesseans who could not afford to see a doctor, TN Dept of Health (2017)

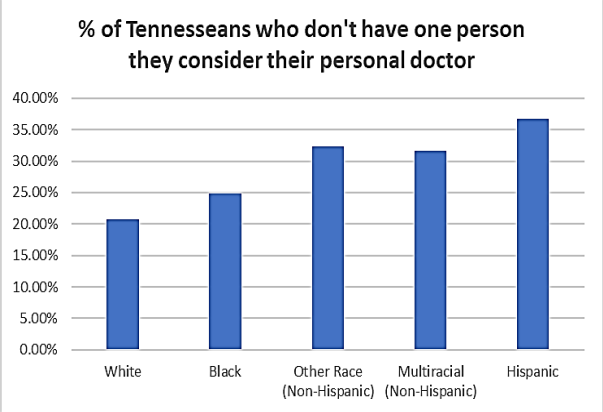


Figure 28. Lack of PCP by Race, TN Dept. of Health (2017)

Access to a consistent primary care physician is crucial to preventative care. **Figure 28** outlines the lack of primary care providers by race. In Tennessee, ~21% of White and 25% of Black residents don't have anyone they consider to be their personal health care provider. This number is highest for Hispanic residents with 37% of this population indicating that they don't have one personal doctor.[50]

[49] Tennessee State Department of Health. (2017). *Behavioral Risk Factor Surveillance System Tennessee Core Questions Data Report*. Retrieved from https://www.tn.gov/content/dam/tn/health/documents/brfss/2017_Core_Sections.pdf

[50] Tennessee State Department of Health. (2017). *Behavioral Risk Factor Surveillance System Tennessee Core Questions Data Report*. Retrieved from https://www.tn.gov/content/dam/tn/health/documents/brfss/2017_Core_Sections.pdf

Behavioral Risk Factors

There are several behavioral factors that influence health outcomes. In Tennessee, this category encompasses what the TN State Health Department calls "The Big 4": physical inactivity, excessive caloric intake, tobacco and nicotine addiction, and other substance use disorders. Together, these 4 categories of behaviors drive the top 10 causes of death in our state.[51]

Obesity and Physical Activity –Adult

One's level of physical activity and eating habits directly contribute to the development of obesity. Other contributing factors include food access, the surrounding built environment, education level, and access to physical activity opportunities. The impacts of obesity in adulthood include higher risk for developing hypertension, diabetes, high cholesterol, heart disease, stroke, depression, or anxiety.[52] Centers for Disease Control and Prevention defines adult obesity as the percentage of the adult population (age 20 and older) that reports a body mass index (BMI) greater than or equal to 30. Overweight is defined as having a BMI between 25-30.[53]

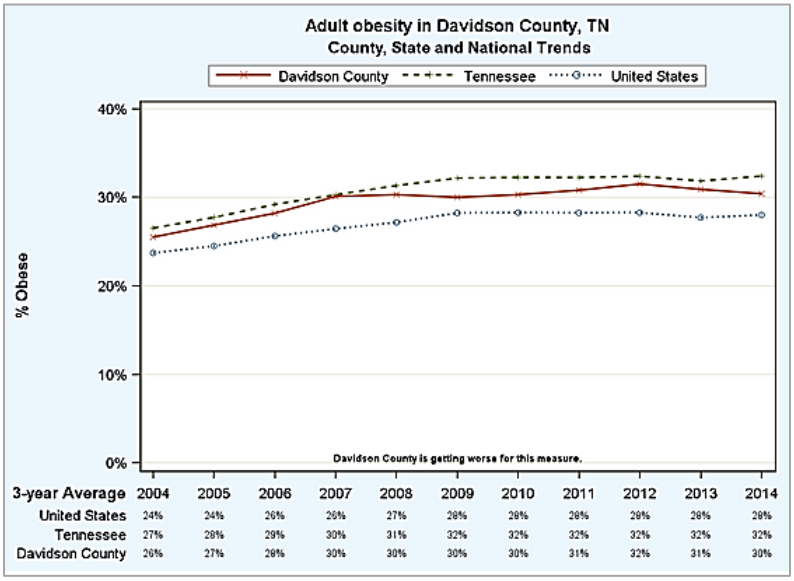


Figure 29. Adults Obese over Time, County Health Rankings (2018)

Figure 29 shows over the last 10+ years, obesity rates in the United States have risen steadily. Davidson County's percentage of obese adults has remained higher than the nation, but lower than the state. Both Tennessee and Davidson County have historically been above the national obesity rate for adults.[54]

Additionally, the 2017 Behavioral Risk Factor Surveillance System Survey indicated that 26% of Davidson adults above the age of 20 reported not having any physical activity or exercise outside of their regular jobs in the previous 30-day period. Across Tennessee, this rate is 30.6%.[55]

---

[51] Dreyzhner, J. (2017). *The Big 4: Using Primary Prevention to Drive Population Health*. Retrieved from Journal of Public Health Management & Practice: https://www.nursingcenter.com/journalarticle?Article_ID=38917

[52] Centers for Disease Control and Prevention. (2017). *Defining Adult Overweight and Obesity*. Retrieved from https://www.cdc.gov/obesity/adult/defining.html

[53] Centers for Disease Control and Prevention. (2017). *Defining Adult Overweight and Obesity*. Retrieved from https://www.cdc.gov/obesity/adult/defining.html

[54] University of Wisconsin Population Health Institute. (2018). *Obesity Rates*. Retrieved from County Health Rankings: http://www.countyhealthrankings.org/app/tennessee/2018/measure/factors/11/data

[55] Tennessee State Department of Health. (2017). *Behavioral Risk Factor Surveillance System Tennessee Core Questions Data Report*. Retrieved from https://www.tn.gov/content/dam/tn/health/documents/brfss/2017_Core_Sections.pdf

Obesity and Physical Activity – Youth

Lack of physical activity and consumption of high-calorie, low-nutrient food and beverages can lead to childhood obesity. Childhood obesity is related to several adverse physical and psychosocial problems in childhood and beyond. Obesity often coincides with other health issues such as hypertension, higher cholesterol, risk of type 2 diabetes, respiratory issues, and joint problems. It is also linked to psychological and emotional problems like anxiety, depression, and low self-esteem. Developing these conditions at a young age often causes them to become more severe in adulthood.[56]

The Centers for Disease Control and Prevention defines a child as overweight as if they have a BMI in the 85th-94th percentile of children of their same age and sex. Childhood obesity is defined as a BMI in the 95th percentile and above. [57]Tennessee has the second-highest rate of obesity in the nation among high school students at 20.5%, while the nationwide rate is14.8%.[58] **Figure 30** compares the state rate to Davidson County,[59] with roughly 36% of public-school students deemed as overweight or obese in 2017.

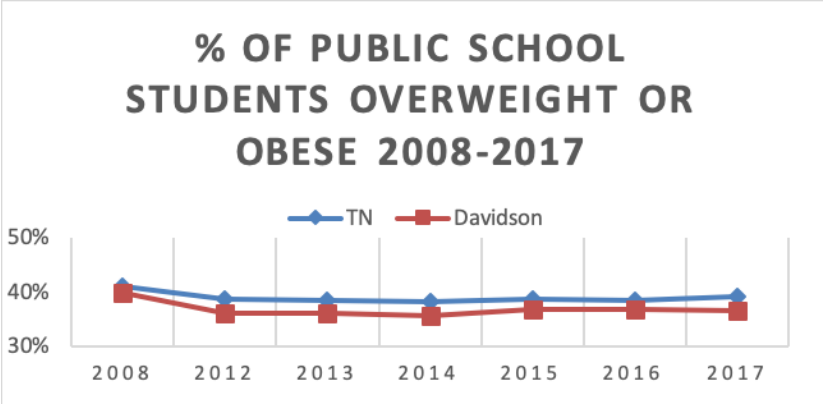


Figure 30. Student Obesity rate over Time, BRFSS (2018)

According to the Youth Risk Behavior Survey in Tennessee, more than half of children (56%) did not receive the recommended amount of physical activity weekly (at least 60 minutes per day on 5 or more days). Furthermore, 16.8% of Tennessee high school youth did not participate in 60 minutes of physical activity on at least one day of the week.[60]

---

[56] Centers for Disease Control and Prevention. (2016). *Childhood Obesity Causes & Consequences*. Retrieved from https://www.cdc.gov/obesity/childhood/causes.html
[57] Centers for Disease Control and Prevention. (2018). *Defining Childhood Obesity*. Retrieved from https://www.cdc.gov/obesity/childhood/defining.html
[58] Centers for Disease Control and Prevention. (2017). *Adult Obesity Causes & Consequences*. Retrieved from https://www.cdc.gov/obesity/adult/causes.html
[59] The Annie E. Casey Foundation. (n.d.). *National Indicators*. Retrieved from Kids Count Data Center: https://datacenter.kidscount.org/data#USA/1/0/char/0
[60] Centers for Disease Control and Prevention. (2017). *Adolescent and School Health – Nutrition, Physical Activity, & Obesity Data & Statistics*. Retrieved from https://www.cdc.gov/healthyyouth/data/topics/npao.htm

Recreation Opportunities

Opportunities to exercise and be physically active are important in maintaining a healthy weight and staying fit through all stages of life. According to Community Commons, "A community's health is affected by the physical environment. A safe, clean environment that provides access to healthy food and recreational opportunities is important to maintaining and improving community health […] This indicator is relevant because easy access to recreation and fitness facilities encourages physical activity and other healthy behaviors." Recreation and fitness facilities can include exercise centers, skating rinks, gymnasiums, physical fitness centers, tennis clubs, swimming pools, and others.[61]

Compared to the state and nation, Davidson County has more recreation and fitness facilities available with a rate of 16 recreation facilities per 100,000 persons. Tennessee's rate overall is 9:100,000, and the United States rate is 11: 100,000. **Figure 31** shows where facilities are concentrated by zip code throughout the county.

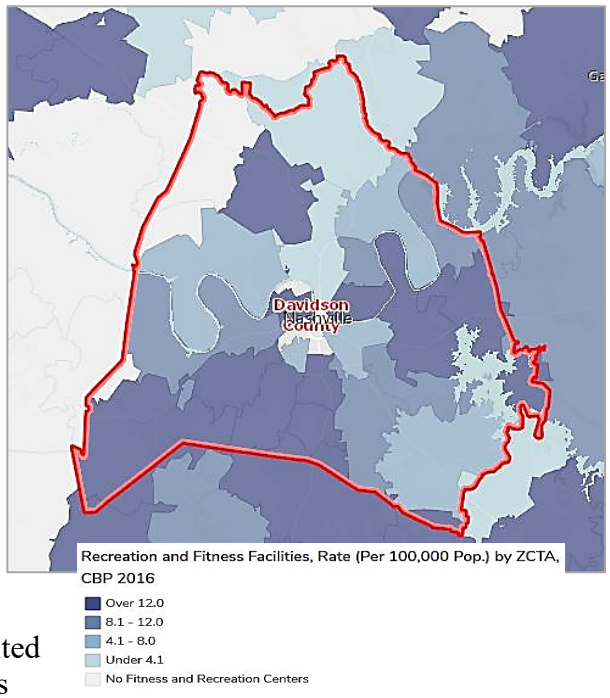


Figure 31. Recreation Facilities per 100,000 pop., Community Commons (2018)

Tobacco Use

Smoking and tobacco use negatively affects almost every part of the body. According to the Centers for Disease Control, "Smoking causes cancer, heart disease, stroke, lung diseases, diabetes, and chronic obstructive pulmonary disease (COPD), which includes emphysema and chronic bronchitis. Smoking also increases risk for tuberculosis, certain eye diseases, and problems of the immune system, including rheumatoid arthritis. Secondhand smoke exposure contributes to approximately 41,000 deaths among nonsmoking adults and 400 deaths in infants each year. Secondhand smoke contributes to stroke, lung cancer, and coronary heart disease."[62]

According to the 2016 Behavioral Risk Factor Surveillance System survey, Tennessee ranks among the

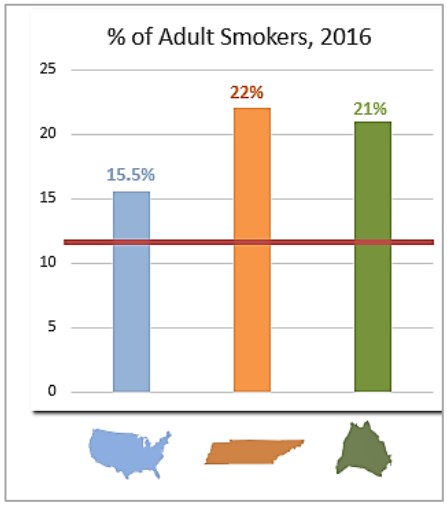


Figure 32. Percent of Adult Smokers, County Health Rankings (2018)

[61] Community Commons. (2018). *Recreation and Fitness Facilities, Rate (Per 100,000 Population)*. Retrieved from https://assessment.communitycommons.org/CHNA/report?page=3&id=408&reporttype=libraryCHNA

[62] Centers for Disease Control and Prevention. (2018). *Smoking & Tobacco Use – Health Effects*. Retrieved from https://www.cdc.gov/tobacco/basic_information/health_effects/index.htm

top states in the nation for smoking rates among adults (**Figure 32**).[63] Nationwide, 15.5% of adults report smoking cigarettes. Tennessee reports this is the case of 22% of adults and Davidson County reports 21%. The darker areas in **Figure 33** indicate higher numbers of adult cigarettes smokers.[64] The Healthy People 2020 nationwide goal of adults smoking cigarettes is 12%.[65]

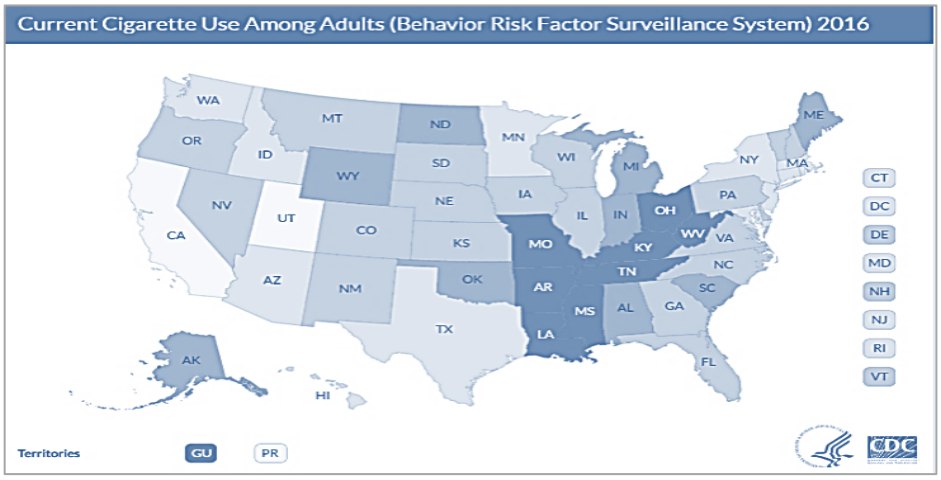


Figure 33. Cigarette Use Among Adults, CDC (2016)

Tobacco Use – Youth

Nationwide, about 20% of youth use any tobacco product, with the highest use being e-cigarettes. About10% have smoked a cigarette before age 13.[66] Local, state and national data are available in **Figure 34**.[67]

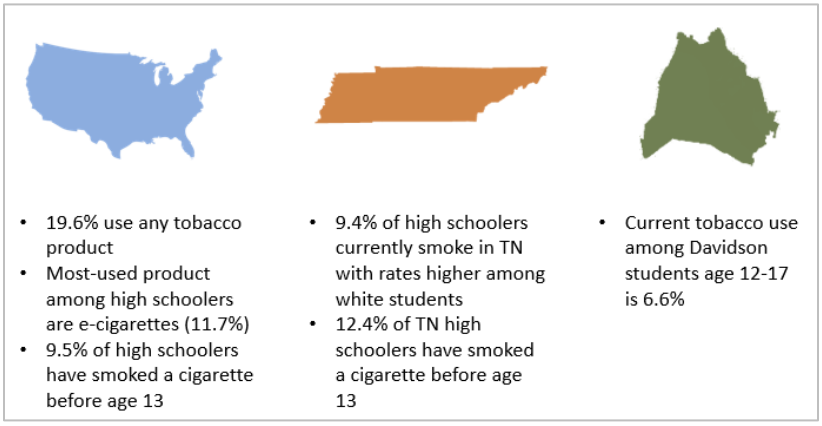


Figure 34. Youth Tobacco Rates, TDMHSAS (2016)

[63] Centers for Disease Control and Prevention. (2018). *Smoking & Tobacco Use – Health Effects*. Retrieved from https://www.cdc.gov/tobacco/basic_information/health_effects/index.htm
[64] University of Wisconsin Population Health Institute. (2018). *Tobacco Use*. Retrieved from County Health Rankings: http://www.countyhealthrankings.org/app/tennessee/2018/measure/factors/49/map
[65] Office of Disease Prevention and Health Promotion. (n.d.). *Tobacco Use*. Retrieved from https://www.healthypeople.gov/2020/topics-objectives/topic/tobacco-use/objectives
[66] Centers for Disease Control and Prevention. (2013). *Youth Behavioral Risk Surveillance System*. Retrieved from http://www.cdc.gov/healthyouth/data/yrbs/index.htm
[67] TN Department of Mental Health and Substance Abuse Service. (2016). *TN Epidemiological Profile of Alcohol and Drug Misuse*. Retrieved from https://www.tn.gov/content/dam/tn/mentalhealth/documents/Tennessee_Epidemiological_Profile_of_Alcohol_and_Drug_Misuse

Alcohol Use

Excessive drinking is defined by the Centers for Disease Control and Prevention as binge drinking, heavy drinking, and any drinking by pregnant women or people younger than age 21.

- Binge drinking is defined as consuming:
  - For women: 4 or more drinks during a single occasion
  - For men, 5 or more drinks during a single occasion
- Heavy drinking is defined as consuming:
  - For women, 8 or more drinks per week
  - For men, 15 or more drinks per week

In the short term, health consequences of excessive drinking include susceptibility to injuries, accidents, violence, and poor decisions about sexual behaviors that can lead to poor health outcomes. Over the long term, excessive drinking can lead to the development of chronic diseases like hypertension and heart disease, liver disease, certain cancers, and anxiety or depression. Avoiding excessive drinking can help reduce likelihood of developing these conditions.[68]

According to the 2016 Behavioral Risk Factor Surveillance System survey, 18% of adults in Davidson County reported drinking excessively in the last 30 days. This is lower than the national rate of 27%, but higher than the state rate of 14%. 29% of driving deaths in Davidson County involved alcohol impairment[69] and alcohol abuse accounted for 45% of admissions to substance abuse treatment services.[70] These numbers are grouped in **Table 4** below.

Table 4. Alcohol Use, TN Epidemiological Profile of Alcohol and Drug Misuse and Abuse, TDMHSAS (2016)

			
Excessive Drinking	**27%**	**14%**	**18%**
Alcohol-impaired driving deaths	**28%**	**28%**	**29%**
Alcohol dependence	**7%**	**5.8%**	**7%**
% of admissions to treatment for alcohol abuse	**34%**	**42%**	**45%**

[68] Centers for Disease Control and Prevention. (2018). *Alcohol and Public Health – Fact Sheets – Alcohol Use and Your Health*. Retrieved from https://www.cdc.gov/alcohol/fact-sheets/alcohol-use.htm

[69] University of Wisconsin Population Health Institute. (2018). *Excessive Drinking*. Retrieved from County Health Rankings: http://www.countyhealthrankings.org/app/tennessee/2018/measure/factors/49/map

[70] TN Department of Mental Health and Substance Abuse Services. (2017). *TN Behavioral Health County and Region Services Data Book*. Retrieved from https://www.tn.gov/content/dam/tn/mentalhealth/documents/DPRF_BH_county_region_service_data_book_9-2017_

Drug Use

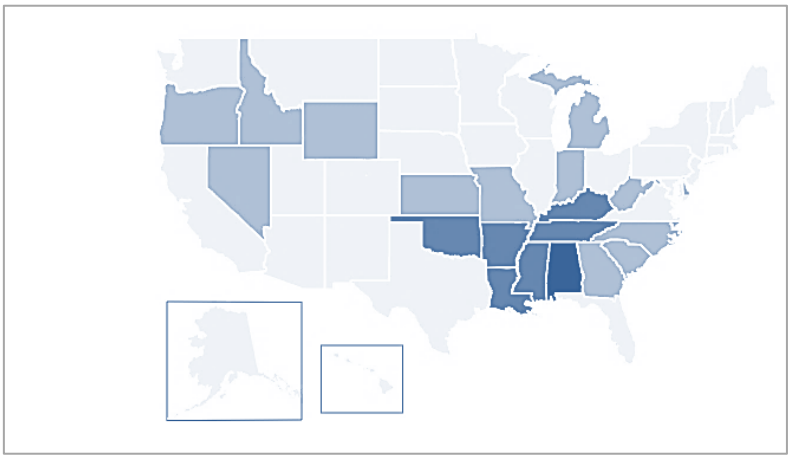


Figure 35. Opioid Prescribing Rate, CDC (2017)

Death due to drug overdose is on the rise in the US, according to the Centers for Disease Control and Prevention. Currently, around two-thirds of drug overdose deaths involve an opioid, including prescription drugs like Oxycodone and Hydrocodone, synthetic opiates like Fentanyl, and heroin. In 2017, 47,000 people in the US died from an opioid overdose. This in a nearly 6-fold increase since 1999.[71]

Tennessee has been at the forefront of the opioid crisis as one of the states with the highest rates of opioid prescriptions, ranking third behind Alabama and Arkansas for the number of prescriptions written for every 100 residents (**Figure 35**). In 2017, there were 94.4 opioid prescriptions written for every 100 Tennesseans (Alabama and Arkansas had 107.2 :100 and 105.4:100, respectively).[72]

Figure 36 shows that prescribing rates have trended downward over the last 8 years. In Davidson County, the rate of opiate prescriptions/100 people is 73.7, which is lower than the state overall (94.4:100) but still higher than the national rate of 58.7:100.[73]

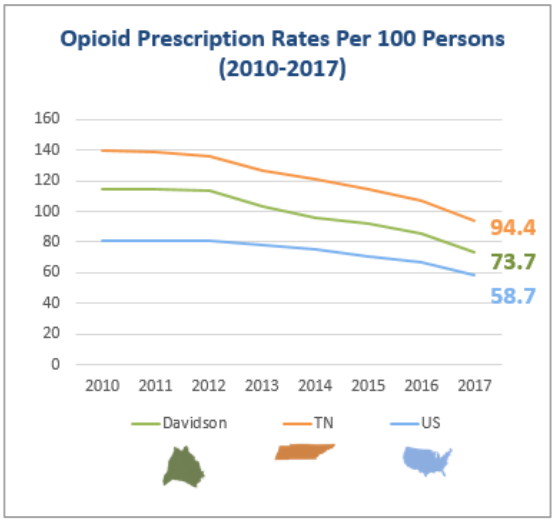


Figure 36. Opioid Prescribing Rate per 100 persons over time, CDC (2017)

In 2017, there were 1,776 drug overdose deaths in Tennessee. Of these, 1,268, or 71%, were due to opioids. This table shows Davidson County's drug overdose deaths from the last several years. In 2017, Davidson had 236 total drug overdose deaths. The blue portion of the bars (dark and light combined) represents all opioid deaths, showing that 184 of those 236 overdose deaths, or 78%, in 2017 were due to opioids such as hydrocodone, oxycodone, opium, and morphine. The dark portion of the bar represents heroin overdose deaths. The use of heroin, an illegal opioid, is on the rise, as opioid prescriptions have begun to be more tightly restricted. Of the 184 opioid deaths in 2017, 77 represented a heroin overdose.[74] **Figure 37** demonstrates the increase in heroin overdose deaths over the last 5 years.

---

[71] Centers for Disease Control and Prevention. (2017). *Overview of the Drug Overdose Epidemic: Behind the Number*. Retrieved from https://www.cdc.gov/drugoverdose/data/index.html

[72] Centers for Disease Control and Prevention. (2017). *U.S. County Prescribing Rate Maps*. Retrieved from Drug Overdose: https://www.cdc.gov/drugoverdose/maps/rxrate-maps.html

[73] Centers for Disease Control and Prevention. (2017). *U.S. County Prescribing Rate Maps*. Retrieved from Drug Overdose: https://www.cdc.gov/drugoverdose/maps/rxrate-maps.html

[74] Tennessee Department of Health. (2017). *Tennessee Drug Overdose Data Dashboard*. Retrieved from https://www.tn.gov/health/health-program-areas/pdo/pdo/data-dashboard.html

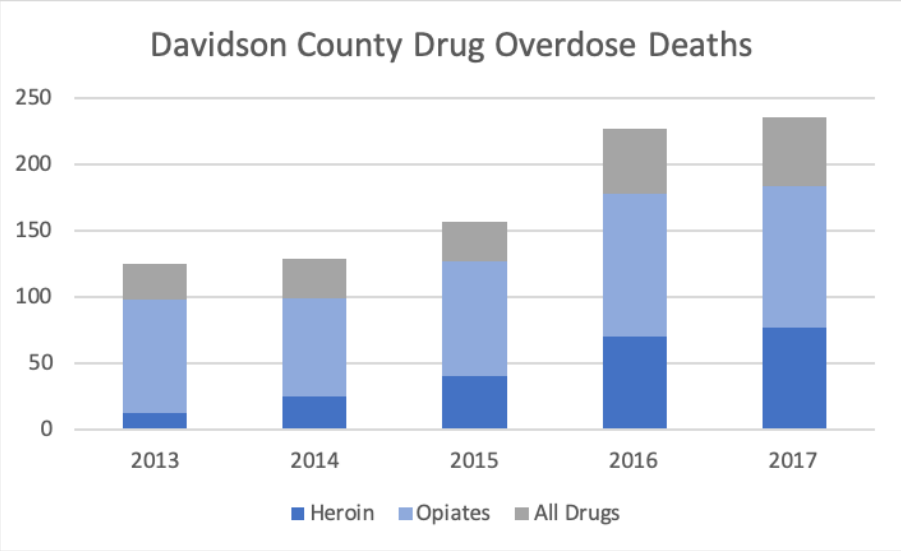


Figure 37. Davidson County Drug Overdose Deaths, TN Dept. of Health (2017)

Figure 38 displays the reasons people in Davidson county sought treatment for substance abuse from the TN Department of Mental Health and Substance Abuse Services (TDMHSAS) between 2014 and 2016. These numbers represent duplicated admissions, so a single individual might have been admitted more than one time to several levels of care or had several admissions during the fiscal year.

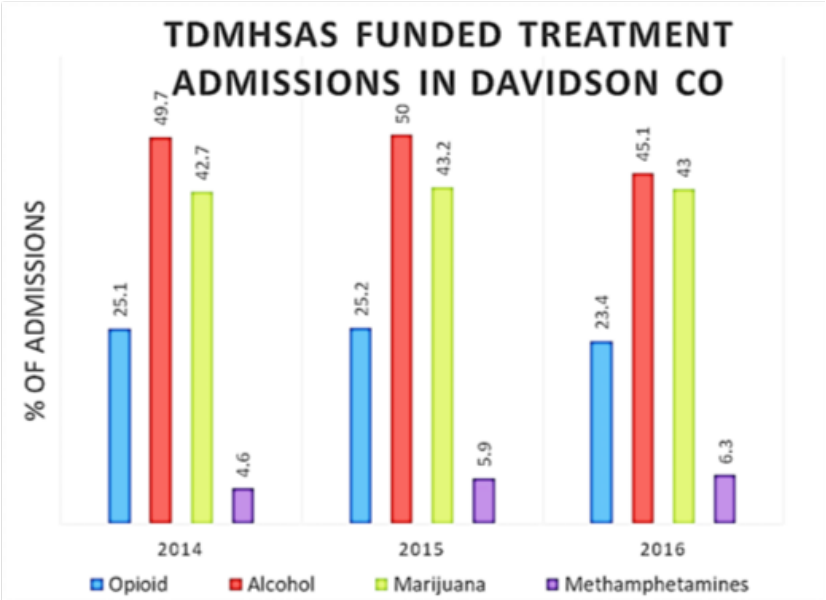


Figure 38. Treatment Admissions in Davidson Co, TDMHSAS (2017)

Admission rates for the listed substances have remained relatively consistent, with alcohol (red bars) admission rates declining from 49.7% to 45.1% and methamphetamine (purple bars) slightly rising from 4.6% to 6.3%.

43.7% of admissions were to outpatient rehabilitation programs, while 56.3% were to an inpatient program. These programs include freestanding residential detoxification programs (25.9%), Intensive Outpatient Programs (23% statewide), and short term (<30 days) residential services (23.2%).[75]

[75] TN Department of Mental Health and Substance Abuse Services. (2017). *TN Behavioral Health County and Region Services Data Book*. Retrieved from https://www.tn.gov/content/dam/tn/mentalhealth/documents/DPRF_BH_county_region_service_data_book_9-2017_

Morbidity and Mortality

The World Health Organization reports that the global burden of disease has shifted over the last century from infectious disease to chronic disease. **Figure 39** shows the top five leading causes of death in the United States from 1900-2016. In the early 1900s, the leading causes of death in the US were infectious diseases such as influenza/pneumonia, tuberculosis, diarrhea/enteritis/ulceration of the intestines, but also included heart disease and stroke. More than a century later, the leading causes of death have shifted to chronic diseases such as heart disease and various cancers.[76]

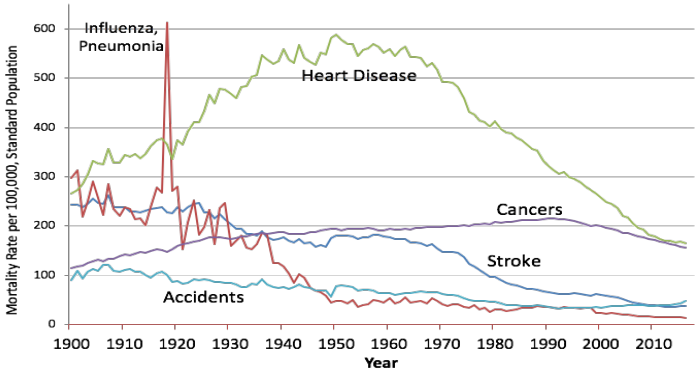


Figure 39. Burden of Disease in the United States 1900 - 2016, CDC (2016)

As shown in **Figure 40**, the leading causes of death in Davidson County are consistent with the trends at the state and national levels. In 2016, 42% of the deaths were from heart disease (22%) and cancer (20%). Other leading causes include accidents (9%), lung disease (6%), stroke (5%), diabetes (3%), suicide (2%), influenza/pneumonia (2%), liver disease (2%), and assault (1%). In all, these 10 leading causes of death comprise 71.9% of all deaths in Davidson County.[77]

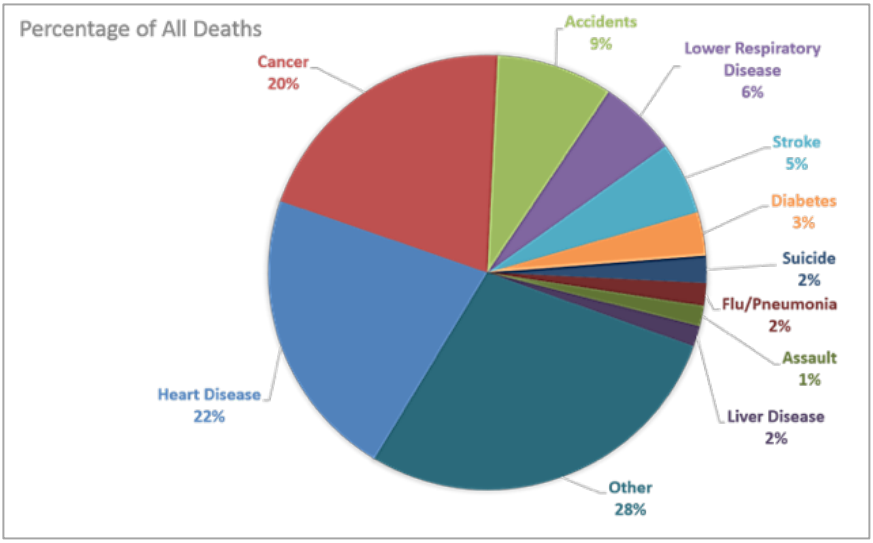


Figure 40. Deaths in Davidson County, CDC (2018)

Chronic Diseases

According to the CDC, diabetes is the seventh leading cause of death in the United States. The number of people diagnosed with diabetes has tripled in the last 20 years affecting more than 25 million people. In Davidson County, 10.4% of adults have been diagnosed with diabetes which is lower than the state (13%) and similar to the nation (10.5%).[78]

[76] Centers for Disease Control and Prevention. (2018). *National Vital Statistics System: Mortality Tables*. Retrieved from https://www.cdc.gov/nchs/nvss/mortality_tables.htm
[77] Centers for Disease Control and Prevention. (2018). *National Vital Statistics System: Mortality Tables*. Retrieved from https://www.cdc.gov/nchs/nvss/mortality_tables.htm
[78] Centers for Disease Control and Prevention. (n.d.). *Diabetes*. Retrieved from https://www.cdc.gov/diabetes/basics/diabetes.html

In 2013, more than 360,000 national deaths noted hypertension (high blood pressure) as a primary or contributing cause of death. Hypertension can increase risks of other health conditions such as heart attacks, strokes, heart failure, and kidney disease.[79]

In Davidson County, 32.9% of adults have been diagnosed with high blood pressure, a rate that is lower than the state (38.7%) and the nation (42.2%). Healthy People 2020 has established a goal to reduce the number of adults diagnosed with high blood pressure to 26.9%. High cholesterol, a major risk factor for heart disease, affects one in six adults. In Davidson County, 35.6% of adults report having high cholesterol. This is lower than the state (36%) but higher than the nation (33%).[80]

Assault

Firearm deaths are often "more common in communities than on the battlefield" and while public acts of terror draw the most attention, more firearm deaths are "homicides and suicides that occur behind closed doors," according to the Stanford University School of Medicine.[81] Tennessee ranks 12th overall for rate of firearm deaths, with 14.7 per 100,000 annually. In 2014, there were nearly 1,000 firearm deaths in Tennessee. In 2016, the homicide mortality rate among teens and young adults in Davidson County was 26.5 deaths per 100,000. This rate is 50.6% higher than the rate for the state (17.6) and is more than double the rate for the nation (11.9).[82]These numbers are displayed in **Figure 41.**

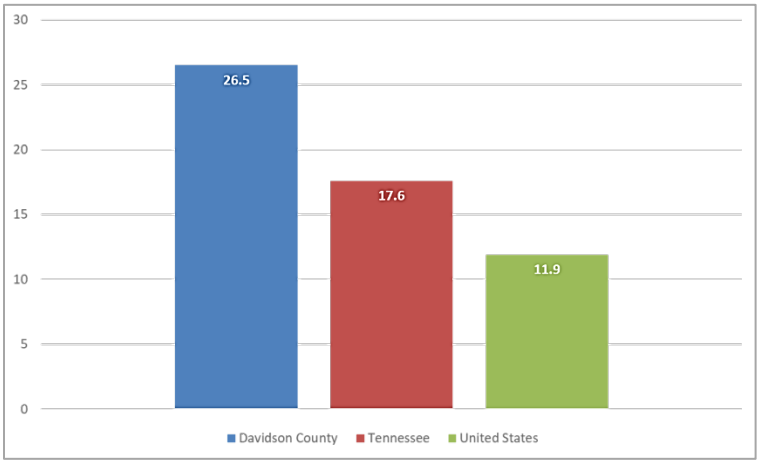


Figure 41. Firearm Deaths, CDC (2018)

The leading cause of death for African Americans between 15-34 years old is homicide with 91% committed with a firearm. The issue is linked to mental health as a substantial portion of firearm deaths in the nation, between 1999-2017, 58.5% of firearm fatalities were suicide.[83]

Figure 42 illustrates the mortality rate for Davidson County residents from homicide and suicide throughout most of their adult lives. The homicide death rate is the greatest among African American individuals ages 15-34 and the suicide death rate is the greatest among white

[79] Centers for Disease Control and Prevention. (n.d.). *Blood Pressure*. Retrieved from https://www.cdc.gov/bloodpressure/facts.htm
[80] Centers for Disease Control and Prevention. (n.d.). *Blood Pressure*. Retrieved from https://www.cdc.gov/bloodpressure/facts.htm
[81] Stanford University. (n.d.). *Gun violence and suicide by firearm is a public health epidemic*. Retrieved from https://fsi.stanford.edu/news/gun-violence-and-suicide-firearm-public-health-epidemic
[82] Centers for Disease Control and Prevention. (2018). *National Vital Statistics System: Mortality Tables*. Retrieved from https://www.cdc.gov/nchs/nvss/mortality_tables.htm
[83] Centers for Disease Control and Prevention. (2018). *National Vital Statistics System: Mortality Tables*. Retrieved from https://www.cdc.gov/nchs/nvss/mortality_tables.htm

individuals aged 45-64. This figure also shows that the homicide rates tend to decrease as individuals age, while rates of suicide typically increase with age in white individuals.[84]

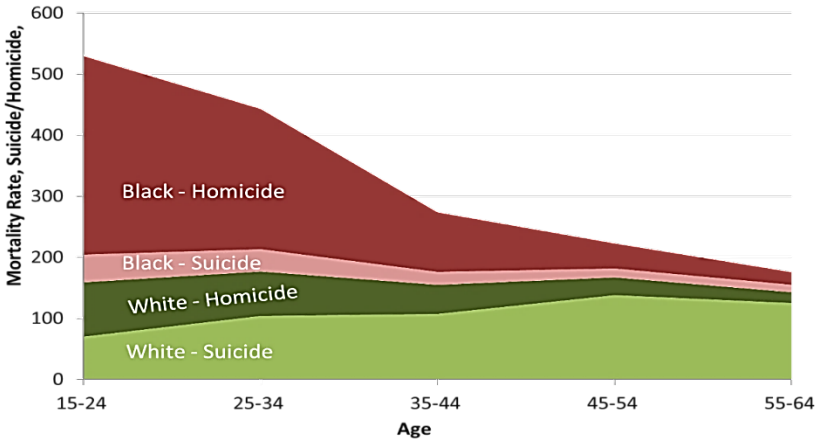


Figure 42. Firearm deaths by race and age, CDC (2018)

Maternal and Child Health

An important indicator to consider when assessing the health of a community is the overall health of the mothers and children. Infant mortality is a particularly important health indicator to examine because it also provides information about the health status of women, the quality and access to medical care, the quality of prenatal care, and the socioeconomic conditions in the community.

The infant mortality rate in Davidson County in 2017 was 7.0 deaths per 1,000 live births **(Figure 43).** This rate is lower than the state (7.4: 1,000) but is 21% higher than the nation (5.8: 1,000), and 17% higher than the Healthy People 2020 goal (6: 1,000).[85]

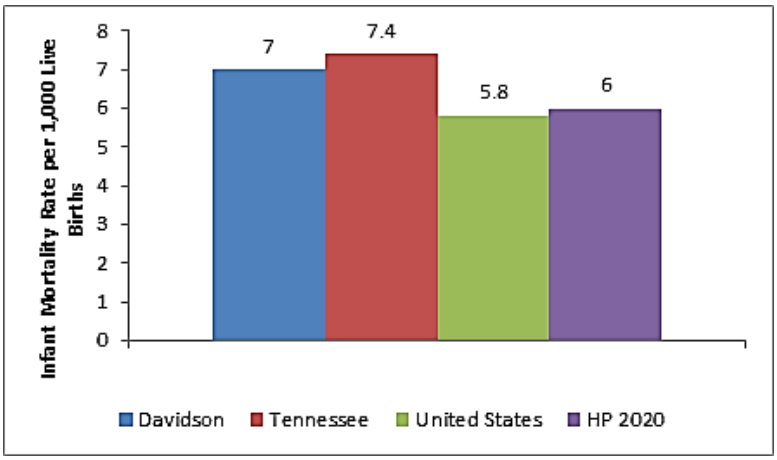


Figure 43. Infant Mortality Rates, Annie E. Casey Foundation (n.d.)

Birth weight is one of strongest predictors of survival for infants. The risk of death is higher among infants born too soon and/or too small. These infants experience higher risks of long-term neurological issues such as cerebral palsy and seizure disorders, developmental delays, and perinatal infections. Low

[84] Centers for Disease Control and Prevention. (2018). *National Vital Statistics System: Mortality Tables*. Retrieved from https://www.cdc.gov/nchs/nvss/mortality_tables.htm

[85] Healthy Nashville. (2016). *Infant Mortality Rate*. Retrieved from http://www.healthynashville.org/index.php?module=indicators&controller=index&action=view&indicatorId=289&localeId=2498

birth weight, (5 lbs., 8 oz.), and very low birth (3 lbs., 4 oz.) are major contributors to infant mortality.[86]

In 2017, 9.2% of infants were born with a low birth weight in Davidson County, while 1.6% of infants were delivered with a very low birth weight. The prevalence of low birth weight is the same as that for the state (9.1%), and 11% higher than the nation (8.3%).[87]

The burden of most health outcomes is not evenly distributed in Davidson County. **Figure 44** displays the persistent disparity between African Americans and Whites for both low birth weight and infant mortality. Among African American women, 14.4% of infants are born with low birth weight compared to 7% of white women. The prevalence of very low birth weight is also higher among African American women, and the infant mortality rate among African American infants is 3.1 times higher than the rate for Whites.[88]

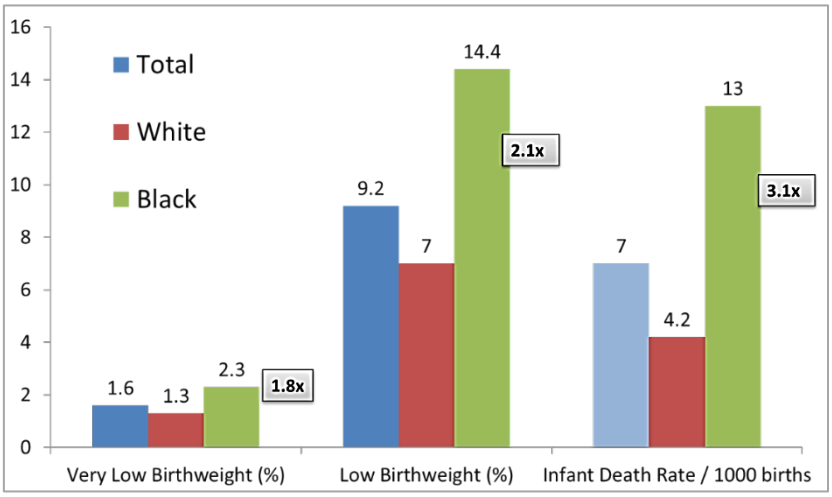


Figure 44. Birth outcomes by race, Healthy Nashville (2017)

The health of an infant is greatly influenced by the health of the mother before, during, and after pregnancy. Preventing poor birth outcomes begins with improving the health of the mother prior to pregnancy. In 2016, 28.6% of Davidson County mothers had at least one medical risk factor during pregnancy such as diabetes, hypertension, a previous preterm birth, or a previous poor pregnancy outcome. Additionally, 48.4% of mothers were overweight or obese prior to pregnancy.[89]

Disparities persist in these indicators. 36% of Non-Hispanic African American mothers experienced at least one medical risk factor during pregnancy compared 25.1% of Non-Hispanic white mothers. In 2016, 38.6% of Non-Hispanic white mothers were overweight or obese prior to pregnancy compared to 64.5% of Non-Hispanic African American mothers.[90]

---

[86] Healty Nashville. (2017). *Babies with Low Birth Weight*. Retrieved from http://www.healthynashville.org/indicators/index/view?indicatorId=172&localeId=2498

[87] Healthy Nashville. (2017). *Babies with Very Low Birth Weight*. Retrieved from http://www.healthynashville.org/index.php?module=indicators&controller=index&action=view&indicatorId=173&localeId=2498

[88] Healthy Nashville. (2017). *Infant Mortality Rate*. Retrieved from http://www.healthynashville.org/index.php?module=indicators&controller=index&action=view&indicatorId=289&localeId=2498

[89] Annie E. Casey Foundation. (2016). *Maternal Risk Factors*. Retrieved from KIDS COUNT Data Center: https://datacenter.kidscount.org

[90] Annie E. Casey Foundation. (2016). *Maternal Risk Factors*. Retrieved from KIDS COUNT Data Center: https://datacenter.kidscount.org

A multitude of studies demonstrate the ill effects of maternal smoking on the growth and health of a developing fetus. Maternal smoking has been linked to infertility, preterm birth, low birth weight, and long-term tissue damage in the lungs and brain. **Figure 45** displays the percentage of women who smoked during pregnancy in 2016 in Davidson County was 6.5%. This percentage is considerably lower than the rate for the state (13.4%), and slightly lower than the rate for the nation (7.2%). Of note, for the state and nation more White than African American mothers smoked during pregnancy. This trend is reversed for Davidson County. In 2016, 6.5% of White mothers smoked during pregnancy compared to 7.7% of African American mothers.[91]

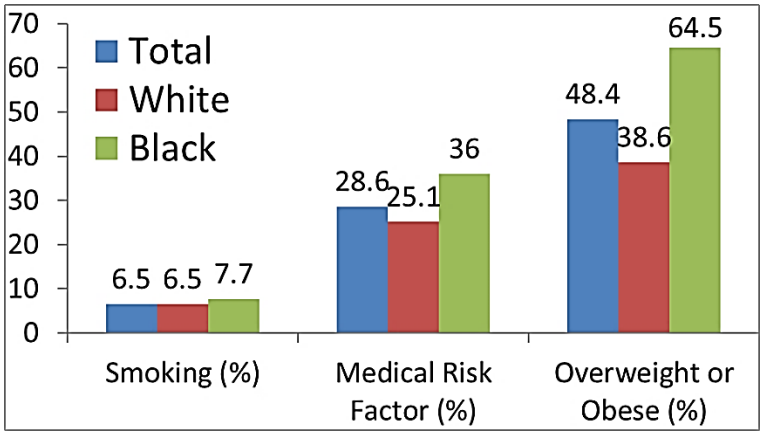


Figure 45. Maternal risk factors by race, Annie E. Casey Foundation (2016)

Prenatal care forms the cornerstone of the healthcare system for pregnant women. In addition to helping women manage chronic health issues and providing education on nutrition-related and behavioral risk factors, adequate prenatal care can also detect problems with the health of the mother and the fetus early in the pregnancy, when treatment might be most effective in preventing poor birth outcomes. Adequacy of prenatal care is a composite measure that evaluates both the timing of when prenatal care began and the number of visits. In 2016, 60.8% of mothers in Davidson County received adequate or more than adequate prenatal care, an estimate that is considerably lower than that of the state at 74.2%, and the nation (75.6%). Davidson County is 21.6% under the Healthy People 2020 objective of 77.6%.[92]

When we examine the data by race, the percentage of adequate prenatal care for Non-Hispanic White women (67.3%) is higher than that for Non-Hispanic African American women (60.0%) in Davidson County. The percentage of Non-Hispanic African American women in Davidson County receiving at least adequate prenatal care (60.0%) is lower than that for the nation (66.4%). The percentage of Non-Hispanic white women in Davidson County receiving at least adequate prenatal

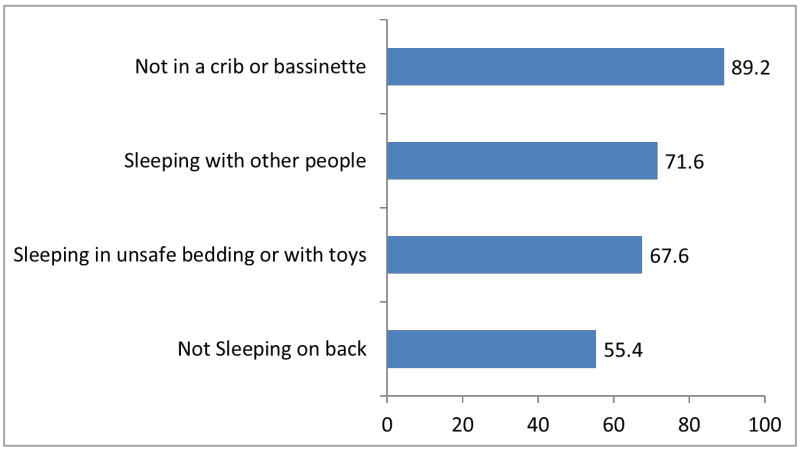


Figure 46. Factors involved in sleep-related infant deaths, Healthy Nashville (2017)

[91] Annie E. Casey Foundation. (2016). *Maternal Risk Factors*. Retrieved from KIDS COUNT Data Center: https://datacenter.kidscount.org

[92] Centers for Disease Control and Prevention. (2016). *Timing and Adequacy of Prenatal care in the United States*. Retrieved from National Vital Statistics Report, Vol. 67, Number 3: https://www.cdc.gov/nchs/data/nvsr/nvsr67/nvsr67_03.pdf

care considerably lower than that for the nation, with Davidson County being 67.3% and the nation being 80.5%.[93]

Not all of the contributors to infant mortality in Davidson County are related to medical conditions. For example, 25% of infant deaths are attributable to sleep-related causes. The American Academy of Pediatrics advocates for the ABC's (alone, back, crib) of safe sleep. Specifically, infants should sleep alone, on their back and in a crib that is free from loose bedding, bumper pads, and toys. Reference **Figure 46** for the percent of factors involved in sleep-related infant deaths.

Another factor to consider when examining maternal and child health is teen pregnancy. Teen pregnancy and childbearing have substantial social and economic costs as well as long-term impacts on teen parents and their children. According to the CDC, teen pregnancy and childbirth were associated with increased health care and foster care costs, increased incarceration rates among children of teen parents, and lower educational attainment and income among teen mothers.[94] Since 2008, teen pregnancy rates in Davidson County have declined 71%, and have also declined 63% statewide. In 2017, the rate of pregnancy among teen women aged 15 to 17 years was 14.7 per 1,000 females of the same age group, which is higher than the rate for the state (12.4).[95]

Mental Health

In 2016, Davidson County adults reported having 4.4 poor mental health days in the last 30 days. These data are in line with the number of days reported by Tennessee adults but higher than the nation's average of 3.7 days. Poor mental health days are trending upward in Davidson County and Tennessee.[96]

Davidson County reported child abuse cases have gone up slightly between 2013 and 2017 from 3.6% to 4.1% but remain lower than the state rate of 4.9%. The substantiated child abuse cases have trended down from 2014-2017 from 4.2% to 4.1% and also remain lower than the state rate of 5.4%.[97]

---

[93] Healthy Nashville. (2011). *Mothers who Received Early Prenatal Care*. Retrieved from http://www.healthynashville.org/indicators/index/view?indicatorId

[94] Centers for Disease Control and Prevention. (n.d.). *Reproductive Health: Teen Pregnancy*. Retrieved from https://www.cdc.gov/teenpregnancy/index.htm

[95] Annie E. Casey Foundation. (n.d.). *Teen Pregnancy*. Retrieved from KIDS COUNT Data Center: https://datacenter.kidscount.org;

[96] University of Wisconsin Population Health Institute. (2018). *Poor Mental Health Days*. Retrieved from County Health Rankings: http://www.countyhealthrankings.org/app/tennessee/2018/rankings/Davidson/county/outcomes/overall/snapshot

[97] Annie E. Casey Foundation. (2018). *Substantiated Child Abuse Cases*. Retrieved from KIDS COUNT Data Center: https://datacenter.kidscount.org/

ACEs (Adverse Childhood Experiences)

Emerging research on adverse childhood experiences (ACEs), or traumas sustained by children before the age of 18, indicates that these events have a lifelong impact on a person's health and socioeconomic outcomes. ACEs range from divorce/separation, the incarceration of a parent, or physical violence and neglect. A high ACE score is a strong predictor of health problems in adulthood **(Figure 47).** Regarding the original ACE study, which brought the impact of these childhood traumas to the forefront, the Substance Abuse and Mental Health Services Administration states, "As researchers followed participants over time, they discovered that a person's cumulative ACEs score has a strong, graded relationship to numerous health, social, and behavioral problems throughout their lifespan, including substance use disorders." [98]

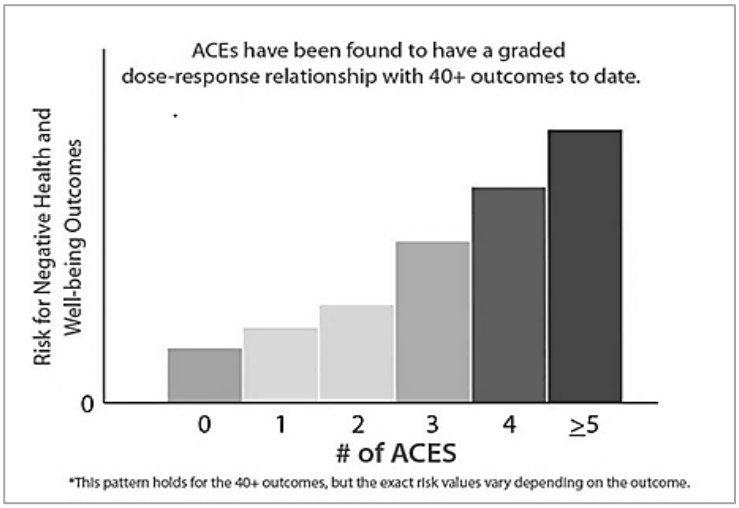


Figure 47. Correlation of ACE Score and Life Outcomes, US Dept of Substance Abuse & Mental Health Services (2016)

Tennesseans fall in the highest quartile nationwide in terms of the prevalence of these childhood traumas.[99] There is no county level data but some nonprofit and health organizations in Davidson County are starting to screen for ACEs as a part of their intake process, and an ACEs Collective Impact initiative in Davidson County is beginning to address the challenges presented by ACEs.

Table 5. Tennessee adults with ACES

2015		2016	
# ACEs	% TN	# ACEs	% TN
0	48%	0	39%
1	20%	1	22%
2	11%	2	12.2%
3	7%	3	9.3%
4 (or more)	14%	4 (or more)	17.5%

ACEs contribute to health outcomes in adults. ACEs include three categories of adverse experience: child abuse, neglect, and family dysfunction. **Table 5** displays the 2015-2016 Tennessee ACE data, with the number of adults with ACEs having increased from 39% to 48% in one year.

[98] U.S. Department of Substance Abuse and Mental Health Services . (2018). *Adverse Childhood Experiences*. Retrieved from https://www.samhsa.gov/capt/practicing-effective-prevention/prevention-behavioral

[99] Child Trends. (2014). *Research Brief: Adverse Childhood Experiences: National and State-Level Prevalence*. Retrieved from https://www.childtrends.org/wp-content/uploads/2014/07/Brief-adverse-childhood-experiences_FINAL.pdf

Linkages between mental and physical health have been firmly proven. Evidence shows correlation between mental disorders and chronic diseases such as diabetes, cancer, cardiovascular disease, and obesity. Evidence also exists to show similar relations to the risk factors for chronic disease including physical activity, smoking, excessive drinking, and insufficient sleep.

Sexually Transmitted Diseases

There are more sexually transmitted diseases reported in Davidson County than any other sub-category of communicable disease. In 2018, 7,775 cases were reported, 42.9% of which were female chlamydial infections. Disparities exist across sex, race, and location. The spatial distribution of STD cases shows clustering by ZIP code with many cases in Southeast Davidson County and North Davidson County areas (**Figure 48**). Our surveillance also indicates that Davidson County has been following the same increasing national trends since the early 2000s.

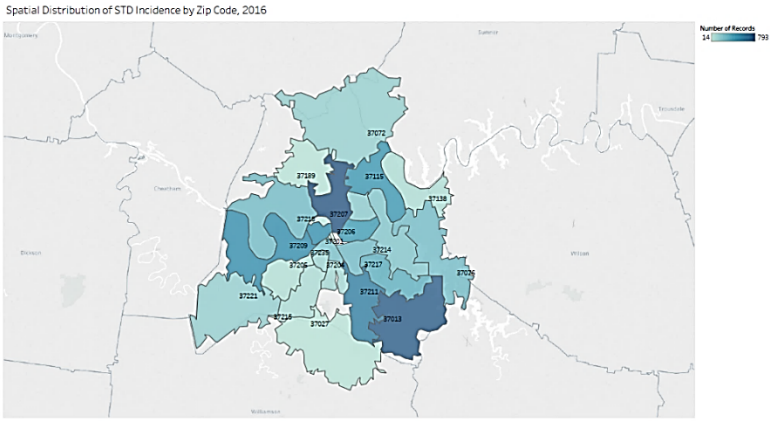


Figure 48. Spatial distribution of STD incidence by ZIP Code, 2016 – Davidson County, MPHD (2018)

Chlamydia

Chlamydia is the most commonly reported STD in the county and has one of the highest incidence rates of all the notifiable diseases, with rates over 600 cases per 100,000 people since 2013 (**Figure 49**). This is higher than the state and the nation (528.8: 100,000). Chlamydia disproportionately affects younger females, with incidence rates in Davidson County for women aged 15-24 years consistently over 4,000 per 100,000 people from 2012 to 2016. This is particularly problematic as the infection can lead to pelvic inflammatory disease (PID) and infertility in young women. Infants can contract chlamydial conjunctivitis, trachoma, and pneumonia. The disease burden is even higher for young, black females as they have accounted for 51%-59% of chlamydia cases during that same time period. Fortunately, cases of

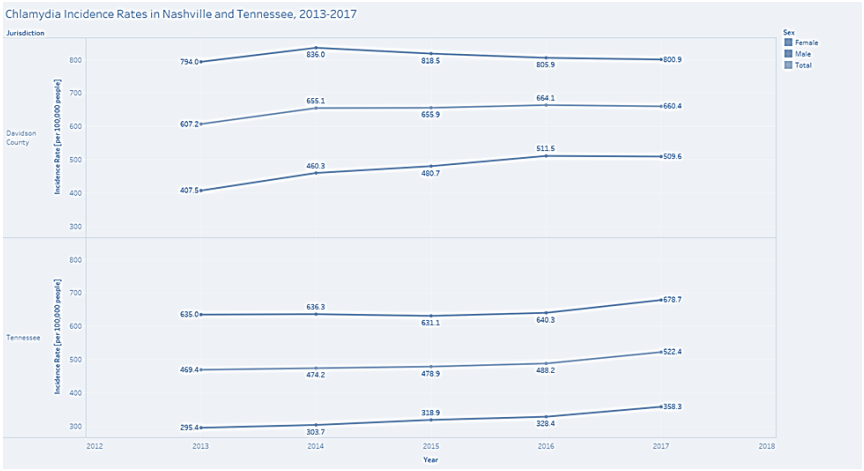


Figure 49. Chlamydia incidence rates in Davidson County and Tennessee, 2013-2017, MPHD (2018)

chlamydia have high rates of treatment within 14 days of diagnosis, with 89% of females and 91% of males receiving treatment in that timeframe, and 95% or more treated within 30 days.[100]

Gonorrhea

These infections are often asymptomatic in females and symptomatic in males. Despite the lack of symptoms, gonococcal infections can cause PID in females leading to ectopic pregnancy and tubal scarring. Generally, gonorrhea infections have increased locally, statewide, and nationally since 2010. Davidson County's case rate was nearly 1.3 to 1.8 times higher than that of the state from 2013 to 2017 (**Figure 50**). Between 2012 and 2017, over 70% of gonorrhea cases reported in Davidson County were among African Americans. In Davidson County and the state, rates of gonorrhea are higher in the male population; young African American men who have sex with men (MSM) account for many of these cases.

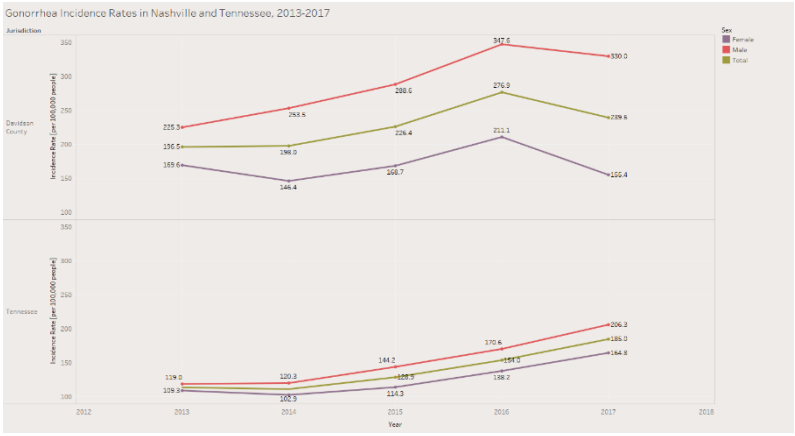


Figure 50. Gonorrhea incidence rates in Davidson County and Tennessee, 2013-2017, MPHD (2017)

Additional concerns with gonorrhea infections include increasing prevalence in antimicrobial-resistant strains, underscoring the need for diligent and complete treatment of gonococcal infections. Local STD Programs aim to either treat or verify correct treatment of at least 90% of gonorrhea infections within 30 days of diagnosis. In 2018, 84% of females and 93% of males were treated within 14 days and 90% of females and 95% of males were treated within 30 days of diagnosis.[101]

Syphilis

Syphilis is the least commonly reported STD in Davidson County. Incidence rates from 2013 to 2017 were higher than the state and higher among males than females. Locally, there has been a relatively stable trend in syphilis disease incidence rates from 2014-2017 for males, and a notable decrease for females between 2016 and 2017. In addition, over 55% of cases in 2018 were black or African American.

Nationally, men who have sex with men (MSM) account for a high proportion of cases, and there is also a high infection rate among those with HIV.[102]

---

[100] Metro Public Health Department. (2017). *Chlamydia Incidence Rates in Nashville and Tennessee, 2013-2017*. Retrieved from Patient Reporting Investigating Surveillance Manager (PRISM).: https://prism.health.tn.gov/prism/Home.aspx

[101] Metro Public Health Department. (2017). *Gonorrhea Incidence Rates in Nashville and Tennessee, 2013-2017*. Retrieved from Patient Reporting Investigating Surveillance Manager (PRISM).: https://prism.health.tn.gov/prism/Home.aspx

[102] Centers for Disease Control and Prevention. (n.d.). *Primary and Secondary Syphilis — Reported Cases by Sex, Sexual Behavior, and HIV Statu*. Retrieved from https://www.cdc.gov/std/stats17/Syphilis.htm

HIV

The HIV epidemic emerged in the early 1980s and new HIV diagnoses in Davidson County increased each year until peaking in the mid-90s. (**Figure 51**). Coinciding with the introduction of antiretroviral therapy (ART) for HIV treatment in 1996, new diagnoses began to steadily decline, as did deaths among people living with HIV (PLWH) as PLWH began to live longer, healthier lives.[103]

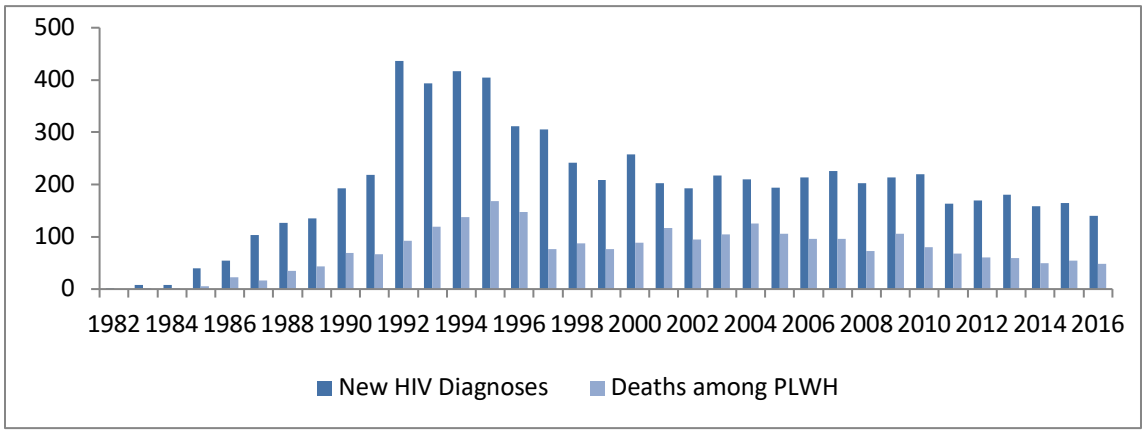


Figure 51. Number of new HIV diagnoses and deaths among people living with HIV (PLWH), 1982-2016 – Davidson County, MPHD (2017)

Certain subpopulations continue to be disproportionately affected by HIV in Davidson County. Over the past ten years, transmission of HIV among gay, bisexual, and other MSM has persisted (**Figure 52**). While new diagnoses among people who inject drugs (PWID) declined during this period, primarily attributed to national harm reduction efforts, PWID remain a priority population for prevention in the context of a burgeoning opioid epidemic and vulnerability for rapid transmission of HIV due to injection drug use.

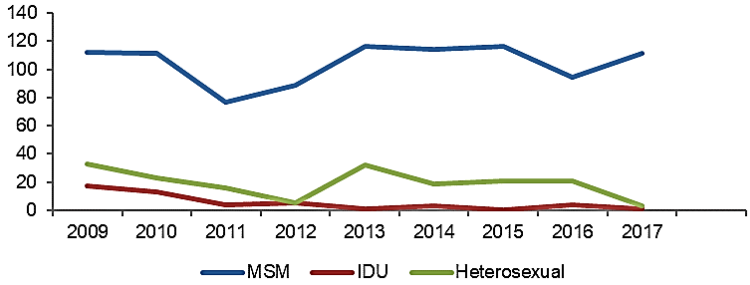


Figure 52. Number of new HIV diagnoses by transmission category, 2008-2017 – Davidson County, MPHD (2017)

By the end of 2017, there were 4,103 people living with diagnosed HIV in Nashville specifically, the majority (78%) of whom were male. Racial disparities are encountered in the HIV population (**Figure 53**); despite accounting for only 27% of the Nashville population, non-Hispanic blacks represent 54% of PLWH.[104]

[103] Metro Public Health Department. (2018). Number of New HIV Diagnoses and Deaths among People Living with HIV (PLWH)-Nashville, 1982-2016. *Ryan White Part A Nashville Transitional Grant* . Retrieved from Metro Public Health Department. (2018). [Figure 1. Number of New HIV Diagnoses and Deaths among People Living with HIV (PLWH)-Nashville, 1982-2016]. Ryan White Part A Nashville Transitional Grant Area 2018 Needs Assessment. Nashville, TN: US.

[104] Metro Public Health Department. (2018). Number of New HIV Diagnoses and Deaths among People Living with HIV (PLWH)-Nashville, 1982-2016. *Ryan White Part A Nashville Transitional Grant* . Retrieved from Metro Public Health Department. (2018). [Figure 1. Number of New HIV Diagnoses and Deaths among People Living with HIV

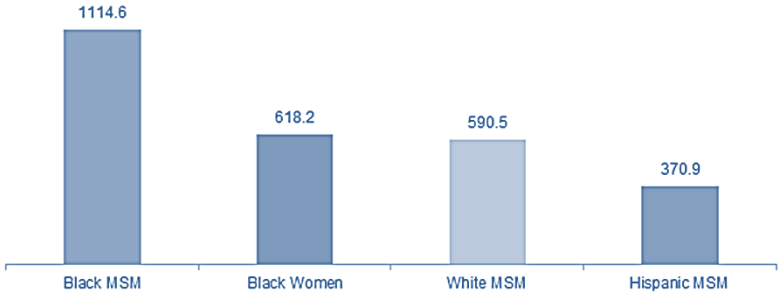


Figure 53. Rates of PLWH by race and sex, MPHD (2018)

In 2017, there were 146 new HIV diagnoses in Davidson County; 11% of recently diagnosed individuals were classified as stage 3 (AIDS) either at diagnosis or within 12 months. Over the last five years, new HIV diagnoses have decreased by 18%. In 2017, the rate was 21.1. Compared to state and national levels, the incidence rate in Davidson County has remained consistently higher than rates observed across Tennessee and the nation (**Figure 54**).

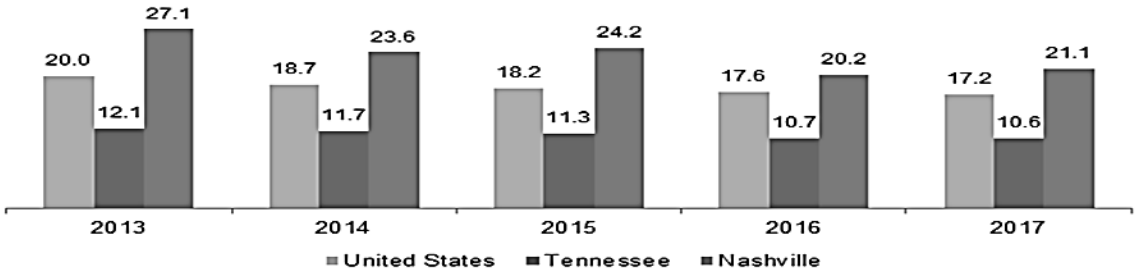


Figure 54. Rate of new HIV diagnoses 2013-2017, MPHD (2018)

HIV Continuum of Care

To achieve optimal health outcomes for PLWH, it is vital that people are identified soon after being infected with HIV and are linked to HIV medical care immediately. The importance of initiating such a rapid response upon initial HIV infection is compounded by the number of PLWH who are unaware of their disease and, as a result, are not receiving regular care and being prescribed antiretroviral therapy. To assess certain indicators of the National HIV/AIDS Strategy (NHAS), the CDC follows the HIV Care Continuum. This continuum is defined as a series of steps an individual goes through upon receiving an HIV diagnosis until achieving viral suppression through successful treatment with HIV medications.

In 2016, 44% of persons newly diagnosed with HIV were linked to care within 30 days, below the NHAS goal of 85%. Similarly, the percentage of PLWH retained in care by the end of 2016 (51%) was lower than the 90% NHAS goal. In addition, among those PLWH who were

(PLWH)-Nashville, 1982-2016]. Ryan White Part A Nashville Transitional Grant Area 2018 Needs Assessment. Nashville, TN: US.

retained in care, 67% were virally suppressed (**Figure 55**) compared to the NHAS goal of 80%.[105]

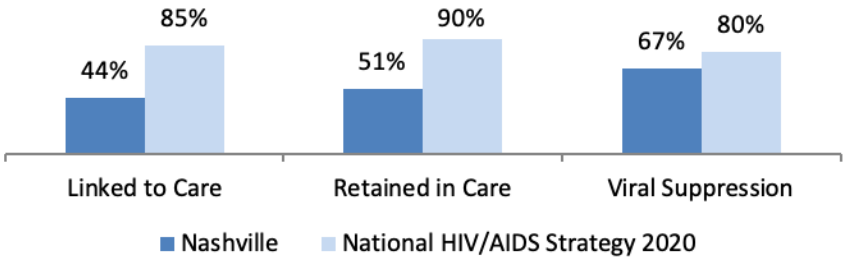


Figure 55. HIV Continuum of Care, Nashville, MPHD (2018)

Tuberculosis

Tuberculosis (TB) is often thought of as a disease that burdens the developing world, but the United States still reports cases of TB in both native-born residents and immigrant populations. TB is a bacterial disease that can colonize any part of the body except teeth, hair, and fingernails. TB disease is the often communicable, symptomatic form of TB, and TB infection (TBI) is the noncommunicable, asymptomatic form.

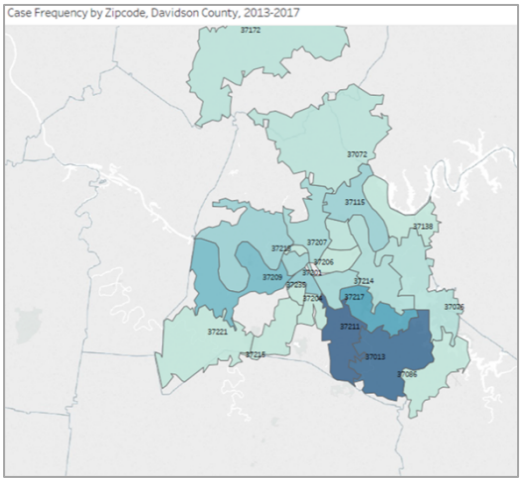


Figure 56. TB Case frequency by zip code 2013-2017, MPDH (2018)

Davidson County's rates of TB are higher than the state, where a downward trend in incidence rates has occurred since 2014, compared to the generally stable rates in the state as a whole. When stratified by race or ethnicity, disparities in TB incidence are clear. From 2013-2017, incidence rates among Asians were between three and ten times the total rate of TB disease in Davidson County. Incidence rates in the African American population were between 1.5 and 2 times the total rate, while incidence rates among Hispanics were sporadically above and below the total incidence rate for Davidson.

Cases of TB in Davidson County are also spatially clustered. This closely follows the demographics of the city; many immigrants and refugees resettle in South Davidson County, so it is unsurprising that many cases reside in the area given the disparity in incidence rates by race as well as the immigration status of local cases (**Figure 56**). It is estimated that only 37% of African -American TBI patients completed treatment compared to an estimated 54% of white patients.

[105] Metro Public Health Department. (2018). Number of New HIV Diagnoses and Deaths among People Living with HIV (PLWH)-Nashville, 1982-2016. *Ryan White Part A Nashville Transitional Grant* . Retrieved from Metro Public Health Department. (2018). [Figure 1. Number of New HIV Diagnoses and Deaths among People Living with HIV (PLWH)-Nashville, 1982-2016]. Ryan White Part A Nashville Transitional Grant Area 2018 Needs Assessment. Nashville, TN: US.

Primary Data Results

Davidson County Community Survey Themes

The survey was distributed by the health system, community, and public health networks. This survey used a combination of open and closed-ended questions to gather participant demographics and their stance on what the community needs most.

A total of 277 responses were gathered from the community survey with all respondents living in Davidson County The demographics included the following: 79% female, 21% male, 48% between the ages of 40 and 64, 36% between the ages of 26 and 39, 81% white, and 15% African American. Additionally, 24 of total responses were from the survey distributed in Spanish; an additional 4% of the respondents from the English survey identified as Latino/a, Hispanic or Spanish. Respondents were asked four open-ended questions about assets, concerns, and priorities for the future. The survey questions and themes are described in the section below.

The first question asked respondents to share "what they love about their neighborhood" and their thoughts regarding the community's assets and strengths. "Location, access, and proximity to services" was the largest re-occurring theme as many respondents noted the convenience of the neighborhood to local amenities, parks, roads, and highways. Another theme yielded from these questions was the "sense of community and character." Respondents often mentioned specific physical characteristics of their neighborhood that made it unique, as well as the value of knowing and trusting their neighbors. Diversity in neighborhoods was also mentioned as a sub-theme. The final theme that arose from this question was "green and open spaces" with several respondents noting the importance of having parks, greenways, sidewalks, or other open spaces nearby.

The next question of the survey asked, "what keeps you up at night?" with a probe statement asking respondents to share the top concern in the community. The largest re-occurring theme was "crime, violence, and safety concerns." 250 respondents answered this question, and this topic was mentioned by more than half of these respondents as their top concern. The next theme was "affordability, displacement, and related social issues." This included gentrification and being "priced out" of neighborhoods as a concern among many. While housing affordability was predominantly mentioned, other concerns about affordability were mentioned as well – such as costs of childcare. Finally, the last theme for top concerns in the community was "traffic problems and lack of public transportation."

When asked "What do you hope for future generations?" respondents were encouraged to share what they would like to see the community focus on in the future. The most common theme was "caring, connectedness, and civility" where many respondents mentioned working together with a spirit of acceptance and togetherness in order to solve larger social ills. Community engagement and equity among neighbors were notable sub-themes here. Another topic that was mentioned for this question was "alternative transit, traffic concerns and walkability." Infrastructure concerns regarding transportation came up again in this question. Many respondents mentioned that this issue is something that hasn't been tackled by the community yet. The third re-occurring theme for this question was "green space and parks." As noted in other questions, respondents feel that having parks, greenways, etc. is important so a growing concern is that of a need to maintain the green space and not over-develop available open spaces.

The final question of the survey asked participants to share any additional thoughts that had not been discussed in the previous questions. The largest theme that resulted from this question were issues with managing city growth and concerns about preserving community character with a large number of respondents acknowledging Nashville's growth and continuing sprawl, but worry about who is benefitting and about the city's character, history, and charm. Another theme was centered around concerns of public transportation and a need for more buses, bikeways, greenways, and sidewalks. Finally, a large theme that arose from this portion of the survey was "advancing health equity and being more inclusive as a city." This theme was driven by community members' concerns about race and the effects of racism on health.

Cross-cutting themes across all questions included the following.

1. Many respondents felt that the aging population is overlooked in Davidson County and are more at-risk to some community issues due to fixed outcomes.

2. Quality public education was also commonly mentioned, as respondents discussed the many difficult situations that young families face when they are zoned for a poor performing school. Many people mentioned that public schools need more our community's attention.

3. Finally, many conversations discussed the importance of equity. Respondents alluded to the idea that some residents are achieving success in Davidson County at the expense of others.

Davidson County Community Listening Session Themes

In Davidson County, six listening sessions were conducted to identify the first-hand opinions of community members. The goal was to understand individuals' viewpoints on issues facing their community, what health and healthcare barriers exist, and what resources are available or absent. Listening sessions were moderated by the Needs Assessment collaborators and held at six locations around Davidson County including Hadley Park, Hartman Park, Elizabeth Park Senior Center, Building Lives Foundation, Outreach Base, and Salahadeen Center. The participants completed a demographic survey in order to provide insight into the composition of each group, but all responses during the conversation were kept anonymous. The main topics explored in these sessions included quality of life, community assets, obstacles or challenges, and priorities for the future. A team of four reviewers then conducted a thematic analysis of the responses.

Each session had twelve to fifteen individuals in attendance yielding a total of 58 participants. The majority of participants were female, 27% were Hispanic or Latino, and 41% were African American. Nearly half of participants spoke a language other than English in the home, and most individuals completed some college, have a college degree, or have a graduate degree. 41% of participants were uninsured or enrolled in Medicaid or Medicare.

Participants were first asked how they would define "quality of life" to which the main responses were access to resources, self-sufficiency, access to affordable health care, having a liveable wage and financial stability, and presence of strong social networks. Self-sufficiency referred to the ability to meet basic needs and included indicators such as safe living conditions, food security, reliable transportation, affordable and stable housing, and mobility for seniors.

Quality of Life	
Recent Changes	**Area for Improvements**
• Population Growth • Education • Local government • Traffic • Safety	• Employment / Training • Access to affordable care • Basic Needs • Education • Safety • Resources • Social Networks / Social Support

Figure 57. Quality of Life Themes from CHNA Listening Sessions (2018)

Community members were then asked, "What are the top three things you believe would improve quality of life in your community?" The top responses were employment opportunities including more quality jobs with higher wages, improved access to resources, affordable housing, reliable transportation access, education reform, and neighborhood safety with increased police presence. Access to resources included both increased knowledge of resource availability and resources that cater to special populations such as seniors.

When asked what changes people noticed in quality of life for Davidson County, participants noted population growth with implications of gentrification and widening disparities, an outdated local government not representative of the population being served, and children not receiving proper public education. Many of these themes were raised throughout all three quality of life questions. However, at the Salahadeen Center, participants also mentioned the positive changes in quality of life such as improved housing options, more children in college, more quality jobs, and increased diversity in schools and hospitals.

Participants were then asked their community's strongest assets, to which the primary responses were a strong community dynamic, resource availability including the community centers and the faith community, built environment with parks and universities, and the cultural diversity. The main obstacles and challenges in the community were noted as health inequity, healthcare access, population growth, resource access, and living and working conditions.

The final question raised to participants was, "if you had a magic wand, what top initiatives would you implement in your community?" The top responses were increased healthcare access for all, education, community leadership, housing, training/skill development, accessible resources, and prevention. Many respondents also wanted to see more emphasis on "the Village" and wanted people to "love each other."

In conclusion, the main themes discussed at the Davidson County listening sessions were focused on training and employment opportunities, housing, safety, resources, community cohesion, education, population growth, and equity.

Davidson County Interview Themes

Community representatives and leaders, who represented a broad interest of the community, were identified by Saint Thomas Health, Vanderbilt University Medical Center, the Metro Public Health Department, and Community Input Committee. Diverse interviewees included those with professional experience and/or the ability to represent populations which are

medically underserved, low-income, minority and/or with chronic disease needs. Community representatives and leaders also included those with special knowledge of and/or expertise in public health. Interviewees also represented areas of healthcare services, law enforcement, education, non-profit agencies, faith communities, government representatives, safety net service providers, economic and workforce development, mental/behavioral health services, housing and homelessness, and other interest groups working with vulnerable populations.

The interviews were conducted by representatives from Saint Thomas Health and Vanderbilt University Medical Center using a standardized interview instrument. Questions focused on community assets, issues/concerns, obstacles to addressing concerns, and priorities. The instrument consisted of five (5) open-ended questions and allowed for additional comments at the end. Analyses were performed by the collaborating organizations.

Twenty-three total interviews were conducted. When asked about the community's strongest assets, interviewees highlighted Davidson County's community as having high resiliency and diversity, as well as individual neighborhoods (ex. East Nashville, Bordeaux, etc.) displaying strong community involvement. Another theme that arose from this question was healthcare, as there are ample access points for high quality healthcare and safety net clinics. The next theme that was re-occurring throughout many of the interviews was "resources/collaborative work," suggesting that Davidson County has strong resources and multiple areas of collaborative work being done around important issues. Other identified assets include the built environment and mental health resources.

Interviewees were then asked to describe the top three issues that they see as a concern in the community. The largest theme yielded from this question was issues faced by vulnerable populations including refugees, the homeless, the impoverished, and the LGBTQ community. Another concern noted by many interviewees were challenges resulting from the rapid growth in the county, particularly with gentrification, transportation, housing, jobs, and crime. Finally, interviewees expressed concern regarding issues with care coordination related to policy, gaps in collaboration, lack of knowledge related to available resources, and access to care. Other identified issues/concerns included mental health/substance abuse, including the need for increased access for children. Additionally, interviewees highlighted problems with the job market, the unemployment rate, and the rise in homelessness.

The next question asked interviewees to share the top three issues specific to health or healthcare in their community. The most common response was related to insurance coverage and affordability of healthcare. Issues of concern included lack of Medicaid expansion, increases in the uninsured and underinsured population, and the overall affordability of both insurance and healthcare services. The second common theme reported for this question was health equity, with a specific emphasis on the health equity of vulnerable populations, such as refugees and the impoverished. Interviewees also emphasized gender and racial disparities. Finally, the last theme resulting from this question was the issue of overall lifestyle and behavior change issues – many interviewees mentioned issues such as chronic disease, nutrition, physical fitness, mental health, and substance abuse having a negative impact on the health of the community. Other concerns mentioned related to health and healthcare include transportation, built environment, decreased access to resources, trust, and education.

When asked "What do you think are the obstacles or challenges to addressing these issues?" the most common response from interviewees was related to financial issues such as lack of insurance, availability of government and private dollars, overall funding opportunities. The second most common theme was community disconnect relating to underlying politics, poor

communication, lack of collaboration, and lack of trust in the community. The last theme that arose from this question is health literacy. Interviewees specifically noted gaps in education, awareness, cultural and language barriers, access issues, and ease of navigation as obstacles to addressing these concerns. Other obstacles mentioned were political regulations and allocation of resources.

The final question asked during the interview was "If you had a magic wand, what top initiatives would you implement in your community in the next three years?" Interviewees stated a number of different visionary ideas, but the most common theme among responses was "collaboration and coordination" including centralizing resources, communication and awareness of available resources, and a helpful tool to ease resource navigation for all. Access to healthcare was the next theme, specifically related to insurance access and mental health services. Finally, a large number of interviewees noted that they would improve social determinants – including housing, transportation, and food access – for all, and specifically the vulnerable populations.

Many of the topics reported above had cross-cutting themes throughout all of the interviews. One of these cross-cutting themes was the cultural and linguistic challenges with the immigrant and refugee populations. Many interviewees noted that there needs to be more consistency, resources options, acceptance, and integration of these populations. Another cross-cutting theme was, as has been mentioned in previous questions, the concern for vulnerable populations. There are gaps in healthcare and resources in certain populations and a lack of personalized attention to these groups. The populations that need the most often have the least assistance. And finally, several interviews mentioned regional issues as part of their concerns such as a need for increased public transportation, housing, and healthcare options that are connected throughout the region.

Identifying and Prioritizing Needs

Davidson County Community Summit

Results of the environmental scan, community interviews, community listening sessions and secondary data analyses were presented on January 11, 2019 at the West End Community Church. There were 159 total participants at the summit, including many who participated in interviews and community listening sessions, as well as community members with expertise in public health or experience with medically under-served, minority, or low-income populations. The purpose of the summit was to solicit input and consider the broad interests of the community in identifying and prioritizing the community's health needs. In Davidson County, the Summit was facilitated jointly by VUMC, Saint Thomas Health, and the Metro Public Health Department.

After presenting primary and secondary data on community health issues and needs, summit attendees provided input into prioritizing the most important health needs within the community. Attendees individually selected health issues and needs and then discussed these in group discussions guided by a facilitator. Each group consolidated the needs into three health needs which were entered for each group into REDCap. All participants voted on their top three priorities via the voting system (REDCap). The five health needs with the greatest number of votes were selected as the identified health needs for Davidson County.

Summary of Prioritized Needs: Davidson County

The prioritized needs for Davidson County are:

- Access and Coordination of Resources
- Addressing Basic Needs and Social Determinants
- Mental Health and Toxic Stress
- Access and Affordability of Healthcare

Access and Coordination of Resources

Prioritizing coordination of resources between many different service providers was a necessity to many community members throughout the needs prioritization process. “Access and Coordination of Resources” encapsulated many different types of services and resources throughout the community, not just health related. Some examples of the types of services that participants suggested should be coordinated include but are not limited to social services (SNAP), clinic services, housing assistance, and mental health services.

Needs prioritization efforts at the summit revealed what success looks like in three years for this need, as well as the organizations that need to be involved in creating changes. Some of the examples of what success looks like include: have a map or outline of what organizations are available and what services they provide, mobile application for phones that lists healthcare and mental health resources, 10% reduction in housing burden for renters, and government involvement in all aspects that affect health.

Addressing Basic Needs and Social Determinants

The need to address social determinants and better meet the basic health needs of populations in Davidson County was one of the largest issues revealed through the assessment. "Addressing Basic needs and Social Determinants", as described by summit attendees, encompasses many different things, including access to food, transportation, housing, and education. Failing to meet basic needs increases the risk of developing chronic diseases and other poor health outcomes. Primary and secondary data analyses revealed the importance and need to address the lack of access to basic needs across Davidson County.

Summit attendees described organizations that need to be involved in order to successfully address this problem. Success includes decreasing the poverty rate, increasing graduation rates, supporting and funding grassroots organizations who are making efforts to increase access to healthy foods and increased affordable housing availability and access.

Mental Health and Toxic Stress

Mental health and toxic stress were cited as major issues throughout the needs assessment process. Primary and secondary data analyses indicated a need for mental health services, decreasing stigma surrounding mental health, and education, prevention, and treatment of toxic stress, primarily adverse childhood experiences (ACEs).

Prioritization efforts at the summit revealed the most prominent areas of focus in this category, including increasing access to mental/behavioral health services, addressing adverse childhood experiences in the community, and decreasing violence and increasing safety in communities. Furthermore, it was noted that there is a need for ensuring that behavioral health

services are cost-effective, as well as seeing an increase in the integration of mental health services in primary care. In the needs prioritization process, when individuals were asked, "What does success after 3 years look like?" participants discussed decreased mental health stigma, expanded trauma-informed care, resilience among children in the community, and greater integration of behavioral and mental health services. Participants stressed the need for collaboration between many different entities for success to occur.

Access and Affordability of Healthcare

Access and affordability of healthcare was a major issue, highlighted throughout the needs assessment process. This includes insurance coverage, affordability of coverage, and access to specialty providers.

Prioritization efforts at the summit revealed what success would look like in three years, as well as the organizations that need to be involved to successfully address this problem. Some of the measurable outcomes for success in three years included being at or below the national average for uninsured rates, expanding Medicaid in the state of Tennessee to increase insurance coverage, as well as ensuring that access and affordability be approached with an equity lens to ensure efforts include and benefit vulnerable and underserved populations.

Cross-Cutting: Health Equity

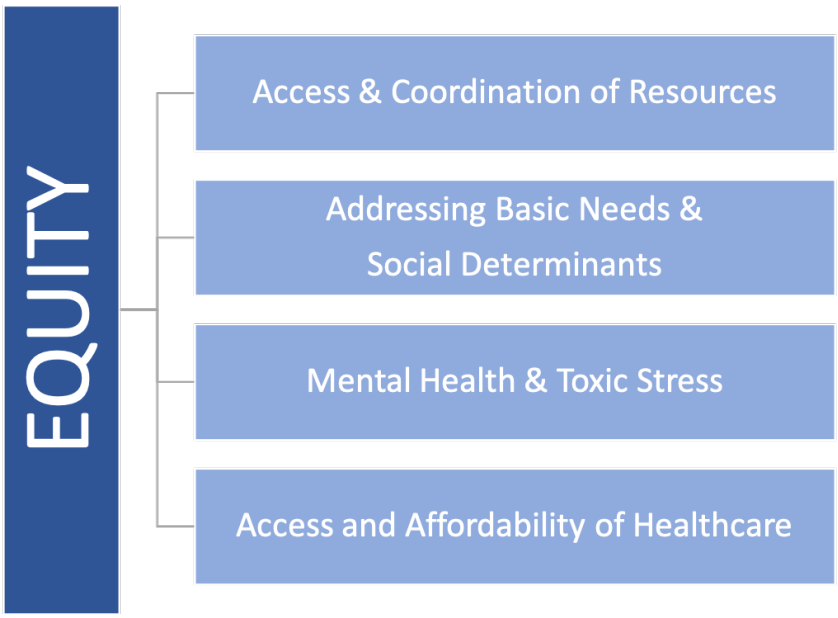
The need for an equitable approach to addressing proposed health needs emerged as an issue throughout both quantitative and qualitative assessments, and among 2019 Healthy Nashville Summit attendees. The Metro Public Health Department's 2015 Health Equity and Recommendations report define health equity as:

"[…] the societal and systematic understanding and appreciation of differences among individuals and populations; where everyone is valued and has the opportunity to achieve optimal health and well-being."

Understanding this definition, and continuing to understand complex social determinants of health, requires a systems approach to future health programming and interventions. This will require expanding our knowledge about what creates health, including examining policy change, finances, evidence-based programs that lead to data-driven action, community resources, and collaborative community organizations. Additionally, some groups are more susceptible to social disadvantages that lead to health inequities; special attention will need to be paid to:

- *Children, youth, or the elderly;*
- *People with disabilities;*
- *Ethnic or racial minorities;*
- *People experiencing homelessness;*
- *People who speak limited English;*
- *Low-income people and families;*
- *Religious and faith communities;*
- *Women; and*
- *People who are lesbian, gay, bisexual, or transgender.*

The success in the above health needs areas (access and coordination of resources, addressing basic needs and social determinants, mental health and toxic stress, and access and affordability of health care) will require a health equity lens that places strategic focus on vulnerable populations as well as deep understanding of the complexity of health disparities. In doing so, health leaders will need to commit to individual, organizational and community capacity-building activities and actions that will lead to more equitable outcomes.



2019

Rutherford County

COMMUNITY HEALTH NEEDS ASSESSMENT

RUTHERFORD COUNTY, TENNESSEE

2019

Introduction

Rutherford County Collaborations

In Rutherford County, VUMC collaborated on the CHNA with Saint Thomas Health (STH), another local non-profit hospital system. Our collaboration included nearly every component of the planning and data collection process including interviews, listening sessions, and community surveys; secondary data collection; and the community summit for Rutherford County.

VUMC also collaboated with the Rutherford County Health Department for the CHNA. The Rutherford County Health Department and staff were critical in identifying interview participants as well as recruiting participants and securing space for listening sessions. In addition, the Rutherford County Health Department joined in the planning and implementation of the community summit in Rutherford County.

The Circle of Engagement (COE) was a group of leaders in Rutherford County that guided the CHNA process and had a strong impact on the community. The COE provided guidance to the core planning team throughout planning the assessment, data collection, and needs prioritization for the 2019 Community Health Needs Assessment in Rutherford County. The COE met every other month throughout the Needs Assessment process, and this group also aided in community mobilization to help drive assessment participation and build relationships. VUMC collaborated with the Rutherford County Health Department and Saint Thomas Health on facilitating the COE.

Environmental Scan Results

Introduction

This environmental scan is a summary of health and health-related studies that provide information, data, and common themes presented in various reports published about Rutherford County, TN. The purpose of the review is to examine existing data relevant to community health and identify strengths, assets, and areas of improvement regarding the health and healthcare in the community.

The reports included in the Rutherford County review included the Community Health Improvement Plan for 2016-19, the Consolidated Plan 2015-20 and its corresponding Action Plan for 2017-18, Murfreesboro 2035, A Strategic Framework for Ending Involuntary Homelessness in Rutherford County, Drive your County to the Top Ten, and Rutherford County Health Watch.

When examining these reports, it is important to understand the underlying and systematic barriers affecting the health outcomes of the populations of focus. This review uses "health equity buckets," as defined by NACCHO's MAPP Handbook, to ensure that the populations and communities at higher risk for adverse health outcomes are a focus for this review process. Some of the health equity buckets that were considered in the various reports include: economic security and financial resources, livelihood security and employment opportunity, adequate, affordable and safe housing, environmental quality, and availability and utilization of medical care.

Major Themes

Rutherford County is one of the most populous counties in Tennessee and encompasses the City of Murfreesboro, as well as other small cities, towns, and unincorporated communities. Rutherford County is less than 30 miles south of Davidson County and the metropolitan Nashville area. Murfreesboro and all of Rutherford County is continuing to grow in population and becoming a major hub for economic and social growth. However, these changes and opportunities invite challenges and obstacles that must be addressed.

One of the top themes addressed in various reports regarding Rutherford County was affordable housing and homelessness. Due to the constant growth, the demand for affordable single-family housing is rising every day with an unmatched supply. Many families and young adults are unable to find affordable housing or housing that meets their financial needs. Additionally, many adults living in Rutherford county are cost-burdened, meaning at least 30% of their income is spent on housing. These difficult living conditions make homelessness a reality for some. There is also a burden and concern for Veterans and those living with disabilities to find affordable and accessible housing to meet their needs.

The second top theme addressed was social determinants of health, which included poverty, education (or lack thereof), access to parks and recreation/outdoor activities, health disparities, and violent crime. The Centers for Disease Control and Prevention (CDC) defines social determinants of health as conditions in the places where people live, learn, work, and play that affect a wide range of health risks and outcomes. The environmental scan found that single mother families, Veterans, minorities, and those living with disabilities are most affected by a lack of societal resources in their communities. Understanding the need for improvement of the community resources mentioned above helps to ensure that all people can lead healthy lives.

The third and last main theme gathered from this review was wellness and disease prevention, which included a focus on high obesity rates, heart disease, physical inactivity, and diabetes management. Many of these health problems are affecting all residents in Rutherford County and are easily preventable. However, some groups are more equipped to take preventative measures. Having things like parks and recreation centers allows for easy exercise opportunities. Additionally, sidewalks, public transportation, and safety can all help to ensure that someone is willing and able to walk or run in their own neighborhood. Many of the at-risk groups mentioned above (single-mother families, Veterans, minorities, and those living with disabilities) are at an equally high risk of getting one of these preventative diseases.

Conclusion

Overall, Rutherford County is one of the healthiest counties in the state of Tennessee. However, there are still many community health issues that need to be addressed to improve health outcomes for everyone in the county. By focusing on the top themes mentioned above: affordable housing and homelessness, social determinants of health, and wellness and disease prevention, we can begin to address the major health concerns in the county.

Secondary Data Results

Demographics and Socioeconomics

Rutherford County is home to approximately 317,157 individuals as of 2017. Compared to the state (38) and the nation (37), it is a relatively young county with a median age of 33 and seniors making up 10.1% of the population. Similar to national and statewide statistics, Rutherford County is growing in racial and ethnic diversity; however, about 79% are white. The county also has a relatively low percentage of residents who are Hispanic (7.6%). Rutherford county also reports that 10.1% of households speak a language other than English compared to 21.3% of national households. Veterans make up almost 9% percent of the population in Rutherford County which is slightly higher than that of the USA (8.0%). Additionally, 10% of the population has reported having a disability. This percentage is lower than what is reported for the state (15.4%) and the nation (12.5%). [106]

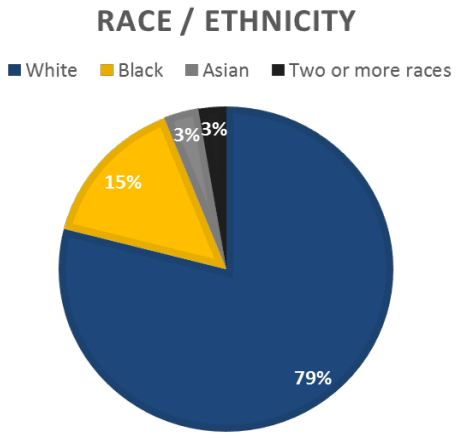


Figure 58. Demographics of Rutherford County, US Census Bureau (2018)

Projected Population and Job Growth

Rutherford County is experiencing rapid growth with a 21% increase in population between 2010 and 2017 **(Figure 59).** This is almost three times faster than the state as a whole. The Nashville Metro Planning Organization estimated a 42% increase in population and a 46% increase in jobs between 2015 and 2035.[107] Of note, the unemployment rate in Rutherford County is 2.6% which is lower than both the state (3.5%) and national rates (4.2%). [108]

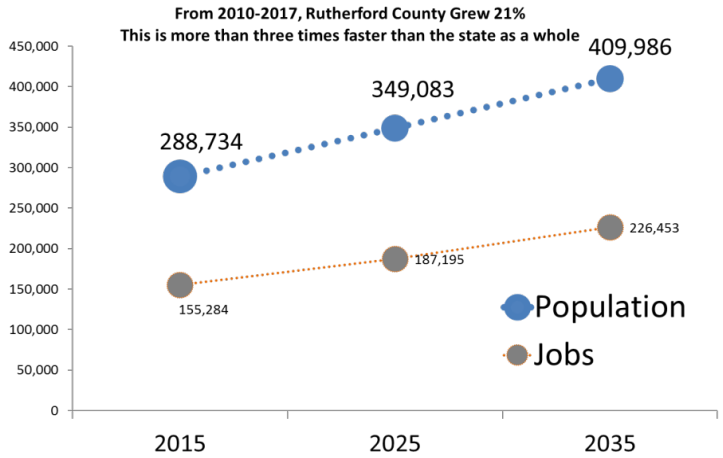


Figure 59. Rutherford County Growth Forecasts 2015 - 2035, Nashville Metro Planning Organization (2019)

[106] US Census Bureau. (2018). *QuickFacts, 2017 American Community Survey*. Retrieved from https://www.census.gov/quickfacts/fact/table/rutherfordcountytennessee,US/PST045217
[107] Nashville Metro Planning Organization. (2019). *Growth Trends & Forecasts Regional Profile.* Retrieved May 2018 from http://www.nashvillempo.org/growth/
[108] US Census Bureau. (2018). *QuickFacts, 2017 American Community Survey*. Retrieved from https://www.census.gov/quickfacts/fact/table/rutherfordcountytennessee,US/PST045217

Poverty

Poverty is one of the most critical indicators of future health and well-being according to leading health agencies such as the World health Organization (WHO). Poverty creates barriers to accessing resources including health services, healthy food, and other necessities that contribute to health status.

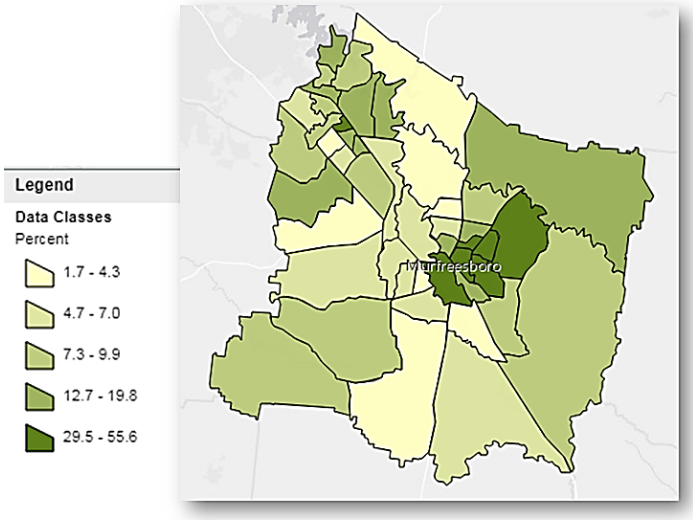


Figure 60. Distribution of poverty in Rutherford County, US Census Bureau (2018)

The Federal Poverty Level is a measure of income used to determine poverty status. In 2018, the Federal Poverty Level was $12,140 for an individual and $25,100 for a family of four. In Rutherford County, 11.8% of residents live in poverty. While this is much lower than both the state (16.7%) and the nation (14.6%), this is still a significant number. Poverty levels are higher in some geographic areas of Rutherford County as seen in **Figure 60**, a map from the US Census Bureau where the darkest green indicates areas with the highest rates of poverty (up to 55.6%).

The prevalence of poverty also varies by race. In Rutherford County, individuals who identify as "some other race" have the highest percentage of individuals experiencing poverty (22.8%) and African Americans have the second highest percentage (19%). **Figure 61** denotes the percentage of each race that is below the Federal Poverty Level and illustrates that the rates in Rutherford County are similar to that of the State and the Nation as a whole. In Tennessee, individuals that identify as "some other race" have the highest percent of population in poverty (34.2%). Native Hawaiian/Pacific Islanders are ranked second highest with 32.7% living in poverty.[109]

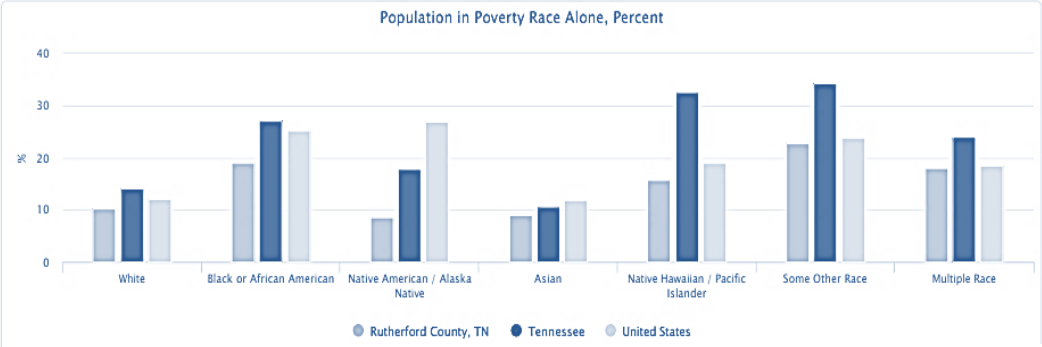


Figure 61. Population in poverty by race in Rutherford County, US Census Bureau (2018)

[109] US Census Bureau. (2018). *Poverty Status in the Past 12 Months, 2017 American Community Survey*. Retrieved from https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_17_5YR_S1701&prodType=table

The challenges of poverty are not only an issue for many of the adults in Rutherford County. Unfortunately, many of our children also experience these stressors, with almost 15% currently living in poverty. This equates to more than 10,000 children in Rutherford County. This is an improvement from the CHNA report in 2016 (17.7%). Additionally, Rutherford County has less children living in poverty when compared to the state (24.25%) and the nation (20.31%).[110]

Education

The residents in Rutherford County have overall success in attaining the traditional levels of education. However, educational attainment differs for many minority populations. Educational attainment is linked with improved health behaviors, longer life, and positive health outcomes. County Health Rankings says "better educated individuals live longer, healthier lives than those with less education, and their children are more likely to thrive."

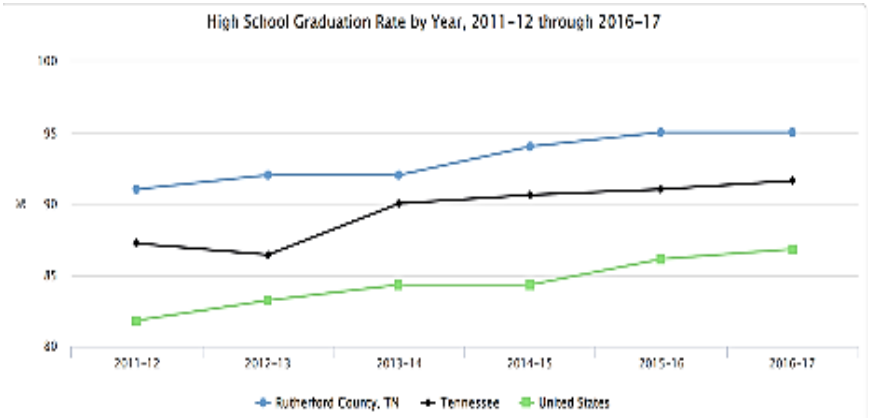


Figure 62. High school graduation rates 2011-2017, Annie E. Casey Foundation (2017)

In Rutherford County, 9.15% of residents over the age of 25 do not have a high school diploma (or equivalency) or higher which equates to almost 17,000 people. However, this is still lower than both the state (13.5%) and the nation (12.7%). As with poverty and other SDOH, the rates for lacking a high school diploma also vary by geography and by race. In Rutherford County, 8.4% of whites do not have a high school diploma compared to 10.6% of African Americans. [111]

The rate of graduation serves as an indicator for increasing the percent of the population with a high school diploma. In **Figure 62**, the Tennessee Department of Education and Kids Count note that 95.3% of students graduated on time between 2016 and 2018 in Rutherford County, which is better than the state (89.1%) and the nation (84%). There are increasing trends in the number of people graduating on time as these graduation rates have increased about 4-5% at the county, state, and national levels since 2011. [112]

---

[110] Community Commons. (2019). *Poverty-Children Below 100% FPL.* Retrieved in May 2018 from https://assessment.communitycommons.org/board/chna?page=3&id=408&reporttype=libraryCHNA

[111] The Annie E. Casey Foundation KIDS COUNT. (2017). *Graduation Rates.* Retrieved from http://www.datacenter.aecf.org

[112] National State Center for Education Statistics. (2018). *Graduation Rates.* Retrieved from http://nces.ed.gov/ccd/tables/ACGR_2010-11_to_2012-13.asp

Employment

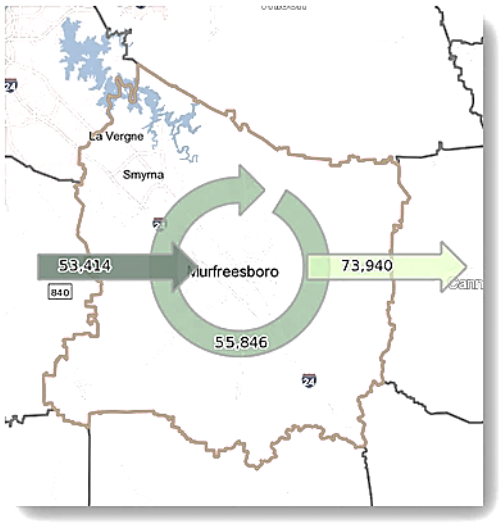


Figure 63. Residents that commuting in and out of Rutherford Country for work, US Census Bureau (2018)

Opportunities for quality employment can help ensure financial stability that impacts the ability to live in healthy neighborhoods, purchase healthy food, and access other factors that support health.

In Rutherford County, there is a high percentage of the community that is employed. In fact, the unemployment rate is only 2.5%, which is lower than both the state (3.3%) and the nation (4%). However, many residents work in surrounding counties. **Figure 63** from the US Census Bureau estimates the number of residents that commute in and out of the city each day.[113] There are about 53,000 coming in and almost 74,000 going out daily. The number of residents that are commuting out of the county daily make up about 57% of the workforce. While many residents do stay within the County lines for work, many residents work in Davidson, Williamson, Cannon, and other counties, with some traveling as far as Montgomery County (Clarksville, TN).[114]

Senior Population

The Tennessee Commission on Aging and Disability projected in 2017 that the senior population in Rutherford County would increase 125% between 2017 and 2030. This means that agencies serving this population will need to strategically build capacity and resources to meet a growing demand for their services over time—including in-home support, nutrition, transportation, and others—to ensure this population can enjoy the highest possible quality of life into older adulthood.[115]

The projected growth in the senior population is illustrated in **Figure 64,** showing the percent increase in Tennessee and Rutherford County between 2017 and 2030.

---

[113] Nashville Metro Planning Organization. (n.d.) *Population & Employment Forecast for the Nashville Area MPO.* Retrieved from http://www.nashvillempo.org/growth/

[114] U.S Census Bureau, Center for Economic Studies. (2018) *OnTheMap (Employment).* Retrieved on November 12, 2018 from http://onthemap.ces.census.gov/

[115] Tennessee Commission on Aging and Disability. (2017). *Tennessee State Plan on Aging October 1, 2017-September 31, 2021.* Retrieved from https://www.tn.gov/content/dam/tn/aging/documents/TN_State_Plan_on_Aging_2017-2021.pdf

Figure 64. Forecasted grown of senior population in Tennessee and Rutherford County, TN Commission on Aging and Disability (2017)

Social Determinants of Health

Our health is shaped by factors such as income and education. According to the World Health Organization, the circumstances "in which we are born, grow, live, work, and age" are called Social Determinants of Health, and these are related to the "distribution of money, power, and resources" within a community. "The social determinants of health are mostly responsible for health inequities – the unfair and avoidable differences in health status seen" within a community. In addition to factors like education, social determinants can encompass the social environment, the physical environment, resources available in communities, economic opportunity, food access, and more.[116]

Housing

According to the American Community Survey 2013-2017 5-year estimates, there are 106,673 occupied housing units in Rutherford County, and average household size is 2.82 persons for owners and 2.62 persons for renters, which is higher than both the state (2.57 persons for owners, 2.45 persons for renters) and the nation (2.7 persons for owners and 2.52 persons for renters).[117] County-wide, 82.6% of residents live in the same house as one year ago, compared to 85.4% in the nation and the 85.2% in the state.[118] This indicator helps describe "residential stability and the effects of migration" within a community.[119]

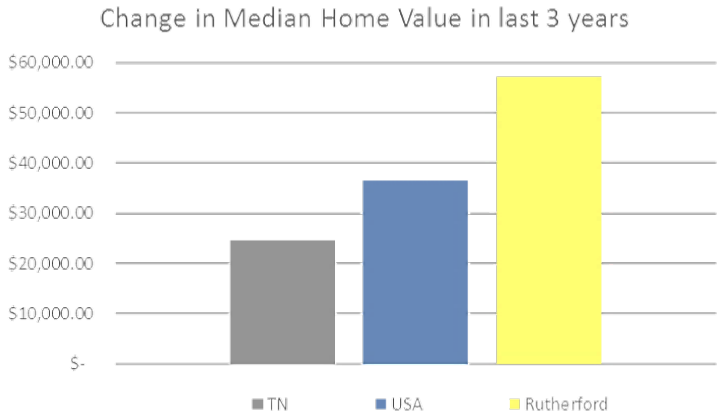


Figure 65. Comparison in changes in median home value, US Census Bureau (2018)

[116] World Health Organization. (n.d.). *Social Determinants of Health.* Retrieved from https://www.who.int/social_determinants/sdh_definition/en/
[117] U.S. Census Bureau. (2019). *Selected Housing Characteristics, 2017 American Community Survey 5-year estimates.* Retrieved from https://factfinder.census.gov/
[118] U.S. Census Bureau. (2019). *Population 60 Years and Over in the United States 2013-2017 ACS 5-Year Estimates.* Retrieved from https://factfinder.census.gov/
[119] U.S. Census Bureau. (n.d.). *Why We Ask: Residence One Year Ago.* Retrieved February 12, 2019 from https://www.census.gov/acs/www/about/why-we-ask-each-question/migration/

The availability of safe and affordable housing stock has a direct bearing on health. Poor quality housing can contribute to the risk of injury and to other illnesses through poor maintenance, leaks, toxic factors in the environment (such as lead), increased risk of infectious/contagious disease through overcrowding, and psychological distress.[120]

Furthermore, a shortage of affordable housing can put families under intense stress. According to the Robert Wood Johnson Foundation: "The lack of affordable housing affects families' ability to meet other essential expenses, placing many under tremendous financial strain. High housing-related costs place a particular economic burden on low-income families, forcing trade-offs between food, heating and other basic needs. One study found that low-income people with difficulty paying rent, mortgage or utility bills were less likely to have a usual source of medical care and more likely to postpone treatment and use the emergency room for treatment. Another study showed that children in areas with higher rates of unaffordable housing tended to have worse health, more behavioral problems and lower school performance."[121]

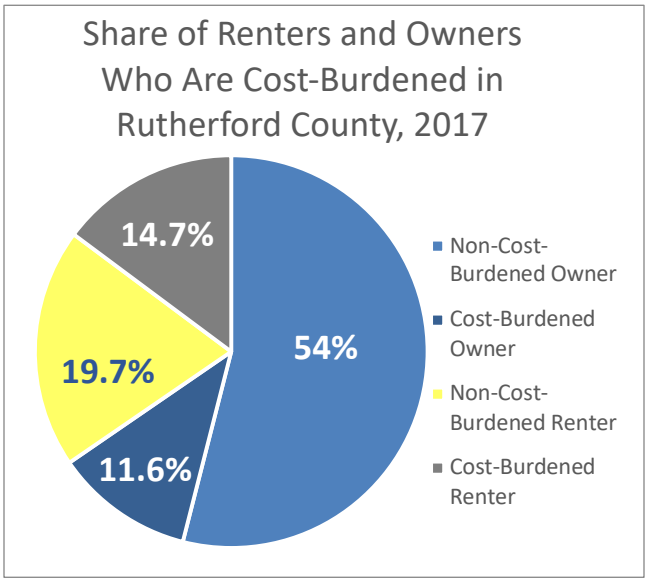


Figure 66. Share of renters and owners who are cost-burdened in Rutherford County, US Census Bureau (2018)

Through the course of the Community Health Needs Assessment process, Rutherford County residents repeatedly voiced concern about the challenges of a growing population and its implications for housing in Rutherford County. Data on housing value bear out this concern. According to the American Community Survey 2014 and 2017 1-year Estimates **(Figure 65),** over the three-year period between 2014-2017, median home values in Tennessee increased by about $24,000; in the USA, median home values increased by about $36,000; and in Rutherford County, median home values increased by $57,000. This is more than double the rate of increase of home values in Tennessee.[122]

There is concern over the number of cost-burdened households, which are defined as households that spend more than 30% of their annual income on housing costs. According to the City of Murfreesboro Consolidated Plan from 2015-2020, cost-burden "is the housing characteristic linked most closely with instability and the risk of homelessness".[123] According to the U.S. Department of Housing and Urban Development, "Families who pay more than 30 percent of their income for housing are considered cost burdened and may have difficulty affording necessities such as food, clothing, transportation and medical care".[124]

---

[120] Robert Wood Johnson Foundation. (2011). *Housing and Health.* Retrieved from https://www.rwjf.org/en/library/research/2011/05/housing-and-health.html

[121] Robert Wood Johnson Foundation. (2011). *Housing and Health.* Retrieved from https://www.rwjf.org/en/library/research/2011/05/housing-and-health.html

[122] US Census Bureau. (2018). *Median Value (Dollars), 2011, 2014, 2017 American Community Survey 1-year estimates*. Retrieved from https://factfinder.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t#none

[123] City of Murfreesboro Community Development Department. (2015). *City of Murfreesboro Consolidated Plan 2015-2020.* Retrieved from http://www.murfreesborotn.gov/DocumentCenter/View/2278/2015-2020-Consolidated-Plan?bidId=

[124] U.S. Department of Housing and Urban Development. (n.d.) *Affordable Housing.* Retrieved February 11, 2019 from https://www.hud.gov/program_offices/comm_planning/affordablehousing/

The chart above **(Figure 66)** shows the share of homeowners versus renters in Rutherford County. Of the 106,673 occupied housing units in the county in 2017, 65.6% were owner-occupied (both blue segments combined) and 34.4% were renter-occupied (the yellow and gray segments combined). The gray segment shows the share of renters who were cost burdened (43% of renter households, or 14.7% of households overall), and the darker blue segment shows the share of homeowners who were cost-burdened (17.5% of homeowner households, or 11.6% of households overall). Between renters and owners, 26.3% of Rutherford households overall are cost-burdened.[125]

Homelessness

Many in Rutherford County have expressed worry that a growing population and rising home costs have put many on the brink of homelessness. Point-in-Time count is the annual one-night tally of those in shelters and those who are unsheltered throughout the county. The 2018 Point-in-Time Count indicated that 283 individuals in Rutherford County were experiencing homelessness (City of Murfreesboro, 2018). This is thirty-three fewer than at the same time in 2017, though many believe this is a low estimate of the total homeless population.[126]

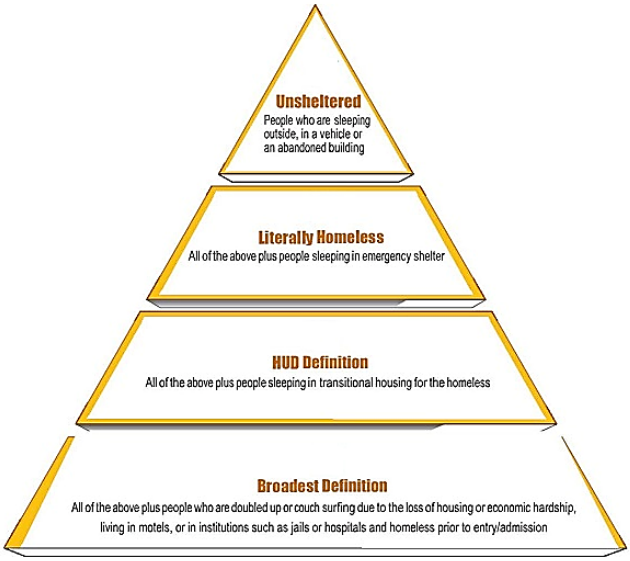


Figure 67. Varying definitions of homelessness, Nashville Metropolitan Development and Housing Agency (2018)

While the Point-in-Time count identifies those who are in shelters and unsheltered, many argue that this is the narrowest definition of homelessness as it does not include those who are doubled up with friends or family/couch surfing, those staying in motels, or those in other institutions **(Figure 67).**[127]

Meanwhile, the Murfreesboro City and Rutherford County school systems estimate that 1,480 students met the definition of homeless in the 2017-2018 school year as specified by the U.S. Department of Education (D. Garrett, personal communication, December 4, 2018). "The U.S. Department of Education defines homeless youth as youth who 'lack a fixed, regular, and nighttime residence' or an 'individual who has a primary nighttime residence that is: a) a supervised or publicly operated shelter designed to provide temporary living accommodations; b) an institution that provides a temporary residence for individuals intended to be institutionalized including welfare hotels, congregate shelters, and transitional housing for the mentally ill; or c) a public or private place not designed for, or ordinarily used as, a regular sleeping accommodation

[125] U.S. Census Bureau. (2018). *Selected Housing Characteristics, 2017 American Community Survey 5-year estimates*. Retrieved from https://factfinder.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t#none
[126] National Homeless Information Project. (2017). *Point-In-Time Count Homeless Estimates: Comparison between 2016 and 2017.* Retrieved from http://www.nhipdata.org/local/upload/file/2016-2017%20coc%20pit%20comparison.pdf
[127] Nashville Metropolitan Development and Housing Agency. (2018). *Results of 2018 Point in Time (PIT) Count Released.* Retrieved from http://www.nashville-mdha.org/wp-content/uploads/2016/09/PIT-COUNT-Press-Release-04172018.pdf

for human beings.' This definition includes both youth who are unaccompanied by families and those who are homeless with their families."[128]

Transportation

The built environment and transportation options affect people's health and their ability to make healthy choices. A robust transit system ensures people can easily access essential resources and services needed to support health. Public transportation can also help to improve air quality by taking individual cars off the roads and can help reduce stress due to traffic. In addition to this, better transit options can alleviate the burden of long solo commutes to work. Finally, well-designed transit options can also support health equity by bringing transportation options within reach of vulnerable populations.[129]

Rutherford County is served by the Rover bus service, whose low-cost fares and multiple routes serve as a primary means of transportation for many. However, Rover routes are concentrated in the urban Murfreesboro core, meaning those on the periphery of the county have no access to public transit, making much of Rutherford County car-dependent. Refer to **Figure 68**[130] to see the Rover bus routes.

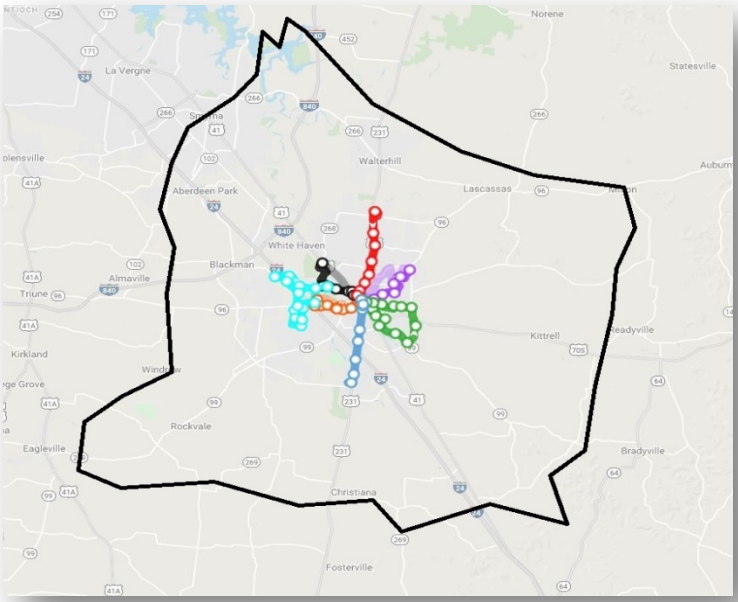


Figure 68. Rover bus routes in Rutherford County, City of Murfreesboro (n.d.)

[128] Youth.gov. (n.d.) *Federal Definitions.* Retrieved from http://youth.gov/youth-topics/runaway-and-homeless-youth/federal-definitions

[129] Centers for Disease Control & Prevention. (2014). *Transportation and Health.* Retrieved February 12, 2019 from https://www.cdc.gov/healthyplaces/healthtopics/transportation/default.htm

[130] City of Murfreesboro. (n.d.). *Rover Route Map.* Retrieved November 12, 2018 from: http://63.137.71.220/RouteMap/Index

Figure 69 shows the percentage of households in each census tract in Rutherford County with no vehicles available. According to American Community Survey 2017 5-year estimates, the darkest census tracts constitute 12.4%-17.2% of households with no vehicle available, and large census tracts on the edges of the county, outside of the reach of the Rover routes, have between 5.4%-9.3% of households with no vehicle available.[131]

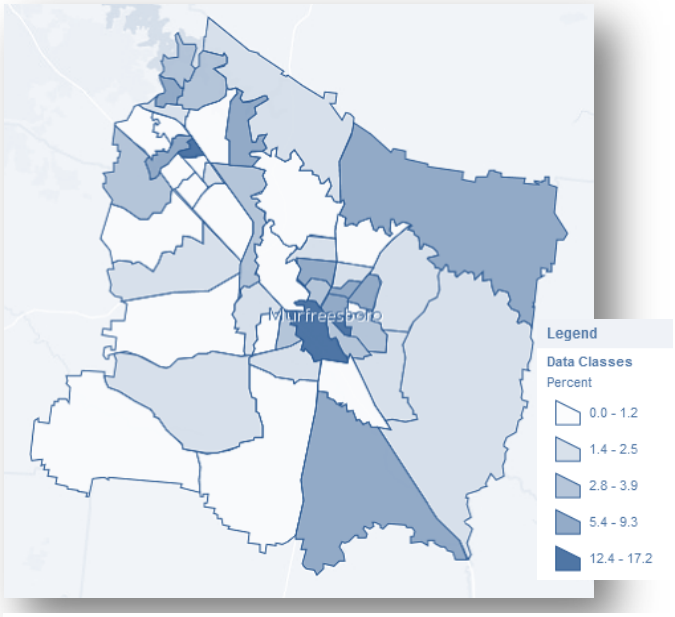


Figure 69. Percentages of households without a vehicle by census tract, US Census Bureau (2018)

Rutherford County residents spend significant time sitting in the car, with 85% of workers driving alone to work[132] and less than 2% walking, biking, or taking public transit to get to their jobs.[133] In fact, according to the US Department of Transportation, across Tennessee, only 4.5% of walking and biking trips are at least 10 minutes long, indicating some kind of sustained exercise. This puts Tennessee in the 5th percentile nationwide for active transit that represents sustained exercise indicating lower health performance.[134]

Mean travel time to work in Rutherford County is 28.1 minutes[135] and 42% of workers who commute alone drive more than 30 minutes to work. According to County Health Rankings, this measure "is an indicator of community design and infrastructure that discourages active commuting and social interactions".[136]

---

[131] US Census Bureau. (2019). *Selected Housing Characteristics, 2017 American Community Survey 5-year estimates.* Retrieved from https://factfinder.census.gov/

[132] University of Wisconsin Population Health Institute. (2018). *2018 County Health Rankings.* Retrieved from http://www.countyhealthrankings.org/app/tennessee/2018/rankings/rutherford/county/outcomes/overall/snapshot

[133] Community Commons. (2018). *Percent of workers who walk or bike to work, 2016 American Community Survey 5-year estimates.* Retrieved June 1, 2018 from https://assessment.communitycommons.org/CHNA/report?page=3&id=408&reporttype=libraryCHNA

[134] U.S. Department of Transportation (n.d.) *Transportation and Health Indicators.* Retrieved June 1, 2018 from https://www.transportation.gov/transportation-health-tool/indicators

[135] US Census Bureau. (2017). *Workers Commuting by Public Transportation, 2016 American Community Survey 5-year estimates.* Retrieved from https://factfinder.census.gov/

[136] University of Wisconsin Population Health Institute. (2018). *2018 County Health Rankings.* Retrieved from http://www.countyhealthrankings.org/learn/explore-health-rankings/what-and-why-we-rank/health-factors/physical-environment/housing-transit/long-commute-driving-alone

Food Access

The built environment and access to transportation also affect the choices people can make regarding what they eat. Lower-income and rural neighborhoods are often awash in fast food and other unhealthy options while facing low access to groceries and other markets that carry fresh produce and other options that support healthy choices.[137]

Overall, 28.6% of Rutherford County's low-income population also face low food access, "defined as living more than ½ mile from the nearest supermarket, supercenter, or large grocery store".[138] **Figure 70** illustrates census tracts in Rutherford County where these low-income, low food access households are concentrated, with the darkest colors representing areas with over 50% of low-income residents facing low food access.[139]

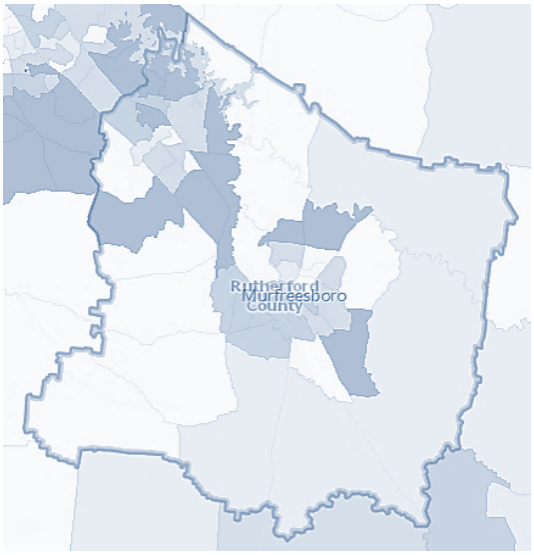


Figure 70. Low food access by census tract in Rutherford County, Community Commons (2018)

However, in terms of access to fast food, Rutherford County outstrips both the state and the nation with a rate of 91.01 fast food establishments per 100,000 people.[140] This rate has risen steadily over the last several years. Studies have shown that an environment rich in fast food options is linked to a higher likelihood of obesity and diabetes for residents and students who live and study nearby.[141]

Again, it is clear that pockets of need are geographically concentrated within the county, suggesting that place matters in terms of residents' ability to make healthy choices. **Figure 71** outlines the fast food restaurant abundance.

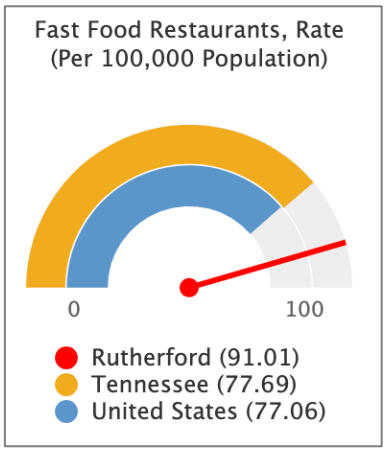


Figure 71. Fast food restaurants per 100,000 population, Community Commons (2019)

[137] Robert Wood Johnson Foundation. (n.d.) *Healthy Food Access.* Retrieved February 12, 2019 from https://www.rwjf.org/en/library/collections/healthy-food-access.html
[138] Community Commons. (2018). *Food Access – Low Income & Low Food Access*. Retrieved February 12, 2019 from https://www.communitycommons.org/board/chna
[139] Community Commons. (2018). *Food Access – Low Income & Low Food Access*. Retrieved February 12, 2019 from https://www.communitycommons.org/board/chna
[140] Community Commons. (2018). *Food Access – Low Income & Low Food Access*. Retrieved February 12, 2019 from https://www.communitycommons.org/board/chna
[141] Office of Disease Prevention and Health Promotion. (2019). *Access to Foods that Support Healthy Eating Patterns*. Retrieved February 20, 2019 from

Violence

Community Commons states that "Violent crime includes homicide, rape, robbery, and aggravated assault".[142] Safety is a social determinant that affects inequities in health outcomes.[143]

Figure 72 shows that Rutherford County has a higher rate of violent crime than the nation, but lower than Tennessee overall at 436.8 violent crime offenses reported by law enforcement per100,000 residents.[144]

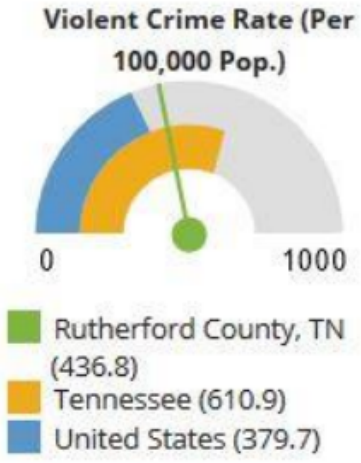


Figure 72. Violent crime rate per 100,000, Community Commons (2019)

Research has shown that child abuse and neglect have long-term ramifications, affecting a child's physical, psychological, and behavioral development into adulthood and creating lasting impacts throughout society.[145] Rates of substantiated child abuse and neglect cases in Rutherford County have remained consistent over the last several years, hovering between 3.2 and 3.9 cases per 1,000 children in Rutherford County per year. This is lower than the state rate of 4.9 cases per 1,000 children.[146]

Emerging research on ACEs, or traumas sustained by children before the age of 18, indicates the lifelong impact of these events on a person's health and socioeconomic outcomes. ACEs range from divorce/separation to incarceration of a parent to mental illness in the home to physical violence and neglect. A high ACE score is a strong predictor of health problems in adulthood. Regarding the original ACE study, which brought the impact of these childhood traumas to the forefront, the Substance Abuse and Mental Health Services Administration states, "As researchers followed participants over time, they discovered that a person's cumulative ACEs score has a strong, graded relationship to numerous health,

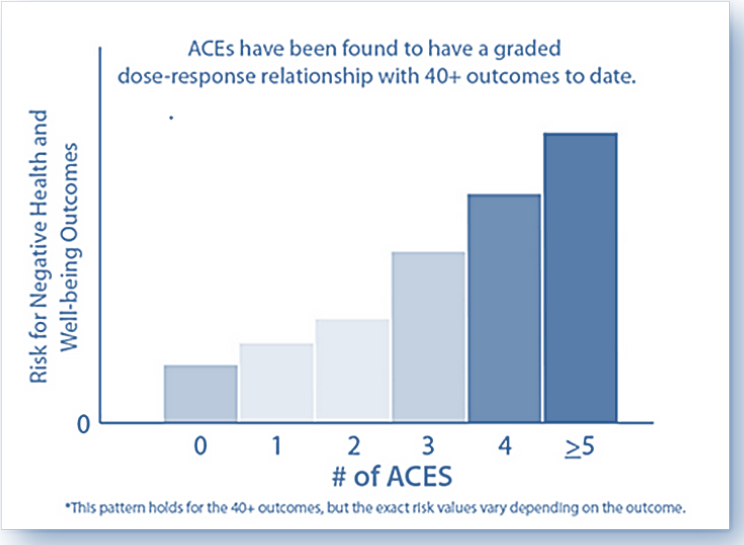


Figure 73. Correlation of ACE score and life outcomes, CDC (2016)

[142] Community Commons. (2018). *Violent Crime Rate Per 100,000 Population.* Retrieved November 12, 2018 from https://assessment.communitycommons.org/CHNA/report?page=3&id=408&reporttype=libraryCHNA
[143] Office of Disease Prevention and Health Promotion. (2019). *Crime and Violence.* Retrieved November 12, 2018 from https://www.healthypeople.gov/2020/topics-objectives/topic/social-determinants-health/interventions-resources/crime-and-violence
[144] Community Commons. (2018). *Violent Crime Rate Per 100,000 Population.* Retrieved November 12, 2018 from https://assessment.communitycommons.org/CHNA/report?page=3&id=408&reporttype=libraryCHNA
[145] U.S. Department of Health & Human Services, Administration for Children & Families, Children's Bureau. (n.d.) *Long-Term Consequences of Child Abuse and Neglect.* Retrieved February 25, 2019 from https://www.childwelfare.gov/topics/can/impact/long-term-consequences-of-child-abuse-and-neglect/
[146] The Annie E. Casey Foundation Kids Count Data Center. (2018). *KIDS COUNT National Indicators.* Retrieved May 1, 2018 from https://datacenter.kidscount.org/data#USA/1/0/char/0

social, and behavioral problems throughout their lifespan, including substance use disorders".[147]

Figure 73[148], from the CDC, represents state level ACE data. There is not yet county-level data on ACEs for Rutherford County, but it has been determined that Tennesseans fall in the highest quartile nationwide in prevalence of many childhood traumas.[149] Some nonprofit and health organizations in Rutherford County are starting to screen for ACEs as a part of their intake process, and there is hope that there will be county-level data on them in the near future.

Access to Health Care

Access to appropriate healthcare is a critical piece in the puzzle of factors that affect health outcomes. According to Healthy People 2020, "Access to comprehensive, quality health care services is important for promoting and maintaining health, preventing and managing disease, reducing unnecessary disability and premature death, and achieving health equity for all Americans".[150]

Insurance Coverage – Adults

For most people, the way they gain entry to the healthcare system is through insurance coverage.[151] Though uninsured rates are at historic lows, there are still populations with no access to insurance. This is largely due to cost and to other restrictions – for instance, immigrant eligibility restrictions or income restrictions. Populations most at risk for not having insurance are low-income adults and people of color. Lack of insurance can be a major deterrent in seeking necessary care, and when care is postponed, conditions can go undetected or untreated, and outcomes can be severe. For this reason, we can look at insurance rates as a proxy for health outcomes in general.[152] The age group with the highest uninsured rates nationwide is working-age adults between 19 and 64, which is likely due to the public insurance

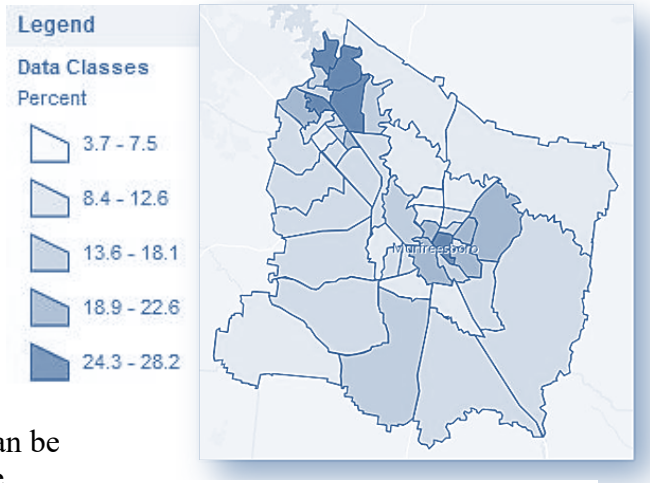


Figure 74. Percent of population age 19-64 that is uninsured by census tract, US Census Bureau (2017)

[147] U.S. Department of Health & Human Services Substance Abuse and Mental Health Services Administration. (2018). *Adverse Childhood Experiences.* Retrieved February 26, 2019 from https://www.samhsa.gov/capt/practicing-effective-prevention/prevention-behavioral-health/adverse-childhood-experiences

[148] Centers for Disease Control and Prevention. (2016). *About Adverse Childhood Experiences.* Retrieved February 26, 2019 from https://www.cdc.gov/violenceprevention/childabuseandneglect/acestudy/aboutace.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fviolenceprevention%2Facestudy%2Fabout_ace.html

[149] Child Trends. (2014). *Research Brief: Adverse Childhood Experiences: National and State-Level Prevalence.* Retrieved from https://www.childtrends.org/wp-content/uploads/2014/07/Brief-adverse-childhood-experiences_FINAL.pdf

[150] Office of Disease Prevention and Health Promotion. (2014). *Access to Health Services.* Retrieved November 15, 2018 from https://www.healthypeople.gov/2020/topics-objectives/topic/Access-to-Health-Services

[151] Office of Disease Prevention and Health Promotion. (2014). *Access to Health Services.* Retrieved November 15, 2018 from https://www.healthypeople.gov/2020/topics-objectives/topic/Access-to-Health-Services

[152] Henry J. Kaiser Family Foundation. (2019). *The Uninsured and the ACA: A Primer - Key Facts about Health Insurance and the Uninsured amidst Changes to the Affordable Care Act.* Retrieved January 9, 2019 from https://www.kff.org/uninsured/report/the-uninsured-a-primer-key-facts-about-health-insurance-and-the-uninsured-under-the-affordable-care-act/

options available for low-income children and those over 65.[153] In Rutherford County, 13.4% of working-age adults age 19-64 are uninsured. This is lower than both the state (15.9%) and national (14.8%) rates of uninsured. **Figure 74** shows where in Rutherford County these uninsured adults 19-64 reside by census tract, with the darkest tracts having rates of 24.3%-28.2% uninsured.[154]

Racial disparities in insurance coverage are present in Rutherford County. According to the 2017 American Community Survey 5-year estimates, in Rutherford County, 33.7% of Hispanic or Latino residents lack insurance, while whites of non-Hispanic origin are uninsured at a rate of 7.4% overall. **Figure 75** below outlines these racial disparities.[155]

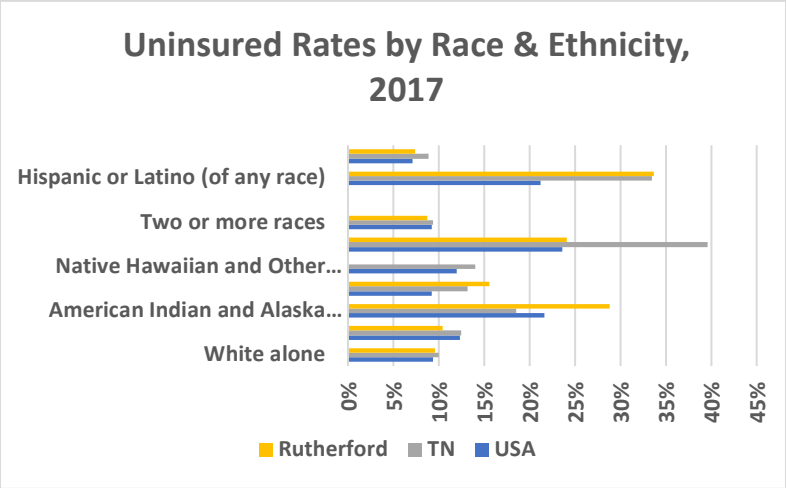


Figure 75. Uninsured rates by race and ethnicity, US Census Bureau (2017)

Insurance Coverage – Children

Children's uninsured rates are also at an all-time low nationally. Access to insurance is crucial in getting kids the care they need that can set them up for good health later in life, as well as for better academic and economic outcomes. Insurance coverage affects the care children receive. In the graph below, the orange and dark blue bars represent children with private and public insurance/Medicaid, and the light blue bars represent children with no insurance. In all instances, children with no insurance are significantly less likely to have access to a usual source of care, to receive a well-child checkup, or to receive a specialist visit.[156] **Figure 76**, from the Kaiser Family Foundation represents the likelihood of a child receiving care depending on their insurance status.

[153] U.S. Census Bureau. (2017). *Selected Characteristics of Health Insurance Coverage in the United States, 2013-2017 American Community Survey 5-Year Estimates*. Retrieved from https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml
[154] U.S. Census Bureau. (2017). *Health Insurance Coverage in the United States: 2017 – Current Population Reports.* Retrieved from https://www.census.gov/content/dam/Census/library/publications/2018/demo/p60-264.pdf
[155] U.S. Census Bureau. (2017). *Selected Characteristics of Health Insurance Coverage in the United States, 2013-2017 American Community Survey 5-Year Estimates*. Retrieved from https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml
[156] Henry J. Kaiser Family Foundation. (2017). *Key Issues in Children's Health Coverage.* Retrieved January 9, 2019 from https://www.kff.org/medicaid/issue-brief/key-issues-in-childrens-health-coverage/

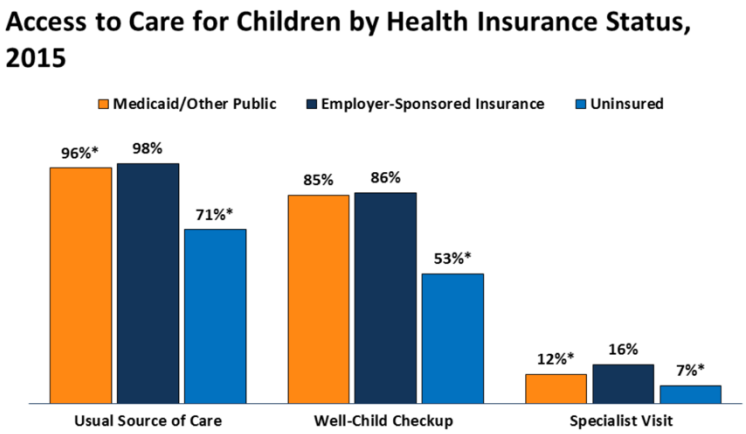


Figure 76. Access to care for children by insurance status, Kaiser Family Foundation (2017)

In Rutherford County, 5.5% of children under 19 years of age are uninsured. This is higher than the state rate overall (4.8%) and slightly lower than the national rate (5.7%). **Figure 77** shows where these children reside in the county, with the darkest census tracts representing areas where 18.3% to 29.2% of children do not have insurance.[157]

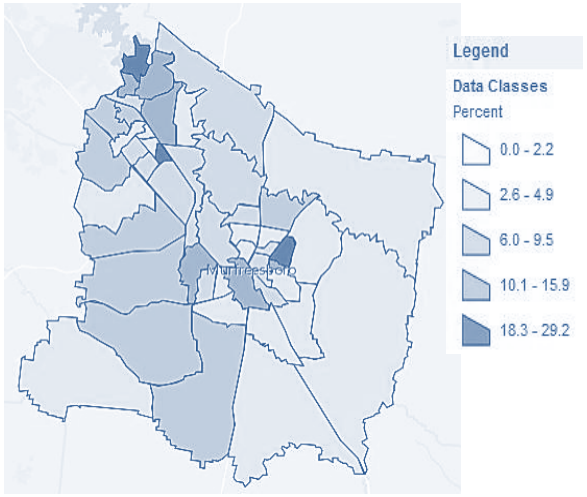


Figure 77. Percentage of uninsured of population under age 19 by census tract, US Census Bureau (2017)

Provider Ratios

Access to care depends not only on insurance coverage, but on the availability of providers nearby. In Rutherford County, there is one primary care provider for every 2,300 residents. This is less favorable than the state ratio over all (1 primary care provider for every 1,380 residents), and the ratio of the top 10% of counties nationwide (1 provider for every 1,030 residents).[158]

Similarly, access to dental care is a crucial factor in health, and shortage of providers continues to affect much of the nation. Rutherford County does better than the state overall (1: 1,892) with 1 provider for every 1,860 citizens but is still short of the rate in the top 10% of counties, which is one dental provider for every 1,280 residents.[159]

Finally, access to mental healthcare has grown in demand, and Rutherford County has one mental health provider (defined as psychiatrists, psychologists, licensed clinical social workers, counselors, marriage and family therapists, mental health providers that treat alcohol and other drug abuse, and advanced practice nurses specializing in mental health care) for every

[157] U.S. Census Bureau. (2017). *Selected Characteristics of Health Insurance Coverage in the United States, 2013-2017 American Community Survey 5-Year Estimates*. Retrieved from https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml
[158] University of Wisconsin Population Health Institute. (2018). *Primary care physicians.* Retrieved from http://www.countyhealthrankings.org/app/tennessee/2018/measure/factors/4/map
[159] University of Wisconsin Population Health Institute. (2018). *Dentists.* Retrieved from http://www.countyhealthrankings.org/app/tennessee/2018/measure/factors/88/map

1,269 residents. **Table 6** below shows how Rutherford continues to fall behind both the state (1:742) and the top 10% of counties, which have a ratio of 1 provider for every 330 citizens.[160]

Table 6. Provider Ratios, County Health Reports (2018)

	Primary Care Providers	Dentists	Mental Health Providers
	**1:2300**	**1:1860**	**1:1270**
	**1:1382**	**1:1892**	**1:742**
Top 10% of counties in the US 	**1:1030**	**1:1280**	**1:330**

There are racial disparities across Tennessee in the way people are able to access the care they need. This chart based on data from the 2017 BRFSS shows Tennesseans who needed to see a doctor in the past year but could not due to cost. Roughly 18% of Hispanic respondents needed to see a doctor but couldn't due to cost, while nearly 20% of black and 13% of white Tennesseans weren't able to see a doctor due to cost. However, those of other races or of mixed race couldn't see a doctor due to cost at much higher rates (26.5% and 35.5% respectively).[161]

Access to a consistent primary care physician is a crucial piece of preventive care. In Tennessee, about 21% of white and 25% of black residents don't have anyone they consider to be their personal health care provider. For individuals who identify as Hispanic, 37% of this population feels that they don't have one person who is their doctor.[162]

Health Status

Morbidity/Mortality

The World Health Organization reports that the global burden of disease has shifted over the last century from infectious disease to chronic disease. The same is true for the trends of disease that we see in the United States.

[160] University of Wisconsin Population Health Institute. (2018). *Mental health providers.* Retrieved from http://www.countyhealthrankings.org/app/tennessee/2018/measure/factors/62/map

[161] Tennessee State Department of Health. (2017). *Behavioral Risk Factor Surveillance System Tennessee Core Questions Data Report.* Retrieved from https://www.tn.gov/content/dam/tn/health/documents/brfss/2017_Core_Sections.pdf

[162] Tennessee State Department of Health. (2017). *Behavioral Risk Factor Surveillance System Tennessee Core Questions Data Report.* Retrieved from https://www.tn.gov/content/dam/tn/health/documents/brfss/2017_Core_Sections.pdf

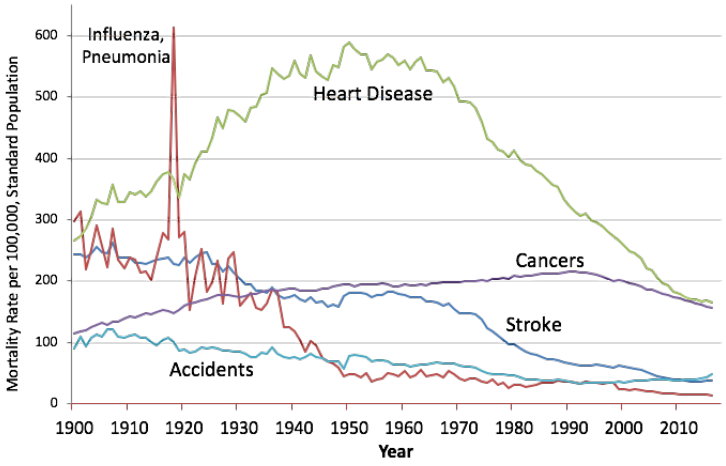


Figure 78. Top five leading causes of death in the US 1900-2016, CDC (2018)

Figure 78 shows the top five leading causes of death in the United States from 1900-2016. In the early 1900's, the leading causes of death in the U.S. were infectious diseases such as Influenza/Pneumonia, Tuberculosis, and Diarrhea/Enteritis/Ulcerative Colitis. More than a century later, the leading causes of death have shifted to be more chronic diseases such as Heart Disease and various Cancers. These data illustrate how the conditions in which we live, work, and play impact how we are affected by disease. [163]

The leading causes of death in Rutherford County are consistent with the state and national trends. Between the years of 2014-2016, there were about 5,500 deaths in Rutherford County for which we have data (**Figure 79**). Cancer (23%) and Health Disease (22%) make up, by far, the largest portion of deaths with 45%. Other leading causes include Lung Disease (6%), Accidents (6%), Stroke (5%), Diabetes (3%), Flu/Pneumonia (3%), Suicide (2%), and Liver Disease (2%). Overall, these 10 leading causes of death makeup more than three quarters (78%) of deaths in Rutherford County. The other category, though large, represents any causes of death outside of these leading causes.

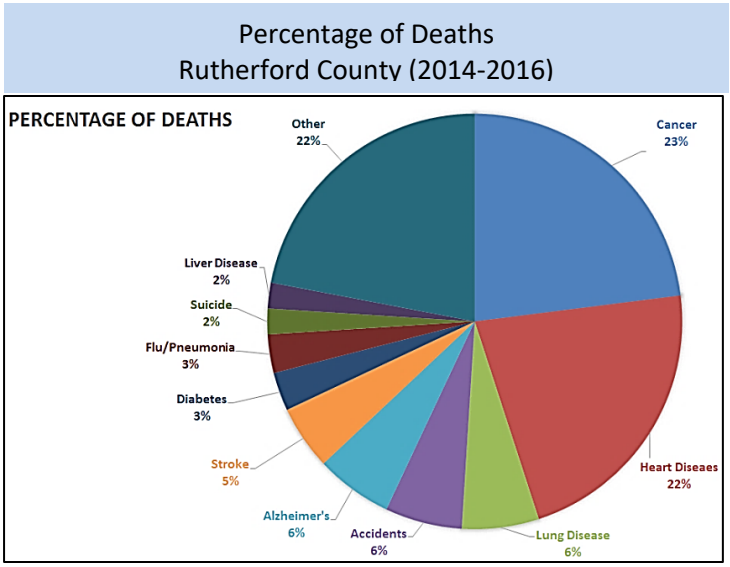


Figure 79. Percentage of deaths in Rutherford County 2014-2016, CDC Wonder (2018)

Birth Outcomes

Infant Mortality

Infant mortality in the United States continues to be an important health issue, even though it has been on the decline over the last century. However, the Rutherford County infant

[163] Centers for Disease Control and Prevention: CDC Wonder. (2018). *CDC Wonder.*

mortality rate of 6.3 deaths per 1,000 live births has been on the rise.[164] In 2015, the rate was 4.8 deaths per 1,000 live births.[165] During this time, the racial disparity in infant mortality has also continued to widen, with African American babies dying at almost 2.5 times the rate of white babies. This racial disparity also exists in the United States with a rate of 13.9 deaths per 1,000 live births for African Americans and 4.6 deaths per 1,000 live births for whites.[166] While Rutherford County does worse than the United States overall in infant mortality rates, it continues to be better than the state of Tennessee. **Figure 80** depicts the racial disparity that exists for infant mortality rates across Rutherford County, Tennessee, and the United States.[167]

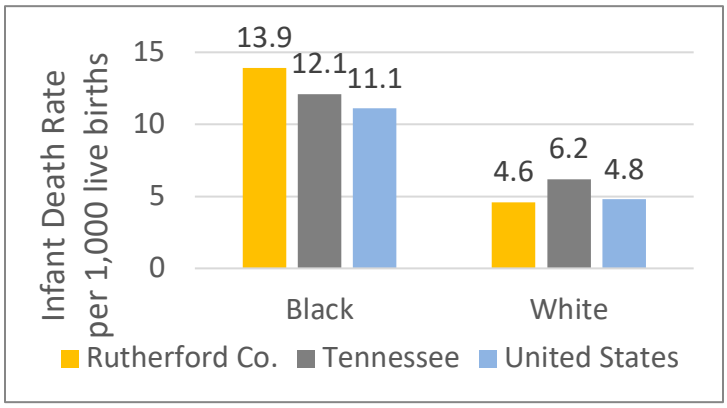


Figure 80. Infant Death Rates per 1,000 live births by race, Kids Count Data Center (2018) & TN Dept of Health (2017)

Teen Pregnancy

Teen pregnancy increases the risks of many different factors of pregnancy. Some of the increased risks associated with teen pregnancy include low birth weight, higher infant mortality rates, and premature births.[168] Since 2007, teen pregnancy rates in Rutherford County and across the state of Tennessee have been on a sharp decline. Rutherford County has seen a 66% decline in rates, while Tennessee as a whole has seen a 59% decline.[169] Rutherford County's teen pregnancy rate of 9.7 per 1,000 is lower than Tennessee's rate of 13.7 per 1,000.[170]

---

[164] Centers for Disease Control/National Center for Health Statistics. (2017). *Infant Health*. Retrieved from https://www.cdc.gov/nchs/fastats/infant-health.htm
Kids Count Data Center. (2018). *Infant mortality by race in the United States.* Retrieved from https://datacenter.kidscount.org/data/tables/21-infant-mortality-by-race#detailed/1/any/false/870,573,869,36,868,867,133,38,35,18/10,11,9,12,1,13/285,284
[165] TN Dept of Health. (2017). *Number of Infant Deaths with Rates per 1,000 births, by race of mother.* Retrieved from https://www.tn.gov/content/dam/tn/health/documents/TN_Infant_Mortality_Rates_-_2016.pdf
[166] TN Dept of Health. (2017). *Number of Infant Deaths with Rates per 1,000 births, by race of mother.* Retrieved from https://www.tn.gov/content/dam/tn/health/documents/TN_Infant_Mortality_Rates_-_2016.pdf
[167] TN Dept of Health. (2017). *Number of Infant Deaths with Rates per 1,000 births, by race of mother.* Retrieved from https://www.tn.gov/content/dam/tn/health/documents/TN_Infant_Mortality_Rates_-_2016.pdf
[168] KIDS Count Data Center. (2017). *Teen Pregnancy in Tennessee.* Retrieved from https://datacenter.kidscount.org/data/tables/3000-teen-pregnancy#detailed/2/any/false/871,870,573,869,36,868,867,133,38,35/any/10133,13266
[169] KIDS Count Data Center. (2017). *Teen Pregnancy in Tennessee.* Retrieved from https://datacenter.kidscount.org/data/tables/3000-teen-pregnancy#detailed/2/any/false/871,870,573,869,36,868,867,133,38,35/any/10133,13266
[170] KIDS Count Data Center. (2017). *Teen Pregnancy in Tennessee.* Retrieved from https://datacenter.kidscount.org/data/tables/3000-teen-pregnancy#detailed/2/any/false/871,870,573,869,36,868,867,133,38,35/any/10133,13266

Behavioral Risk Factors

Multiple behavioral factors have a large influence on our health outcomes. This category encompasses what the TN State Health Department calls "The Big 4": physical inactivity, excessive caloric intake, tobacco and nicotine addiction, and other substance use disorders. Together, these 4 categories of behaviors drive the top 10 causes of death in the state.[171]

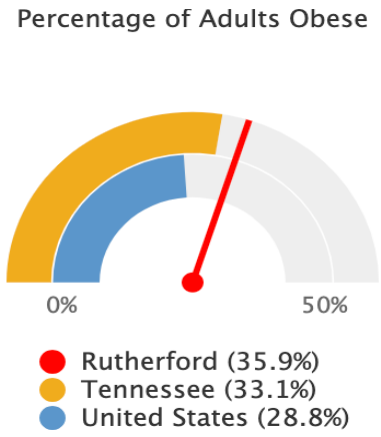


Figure 81. Percentage of adults that are obese, CDC (2017)

Obesity and Physical Activity – Adult

Behaviors that affect the likelihood of adult obesity include physical activity and eating patterns. Other contributing factors to the risk of obesity include the food and built environment, education, and access to opportunities for physical activity. The impacts of obesity in adulthood include higher risk for poor physical outcomes such as hypertension, diabetes, high cholesterol, heart disease, and stroke, as well as emotional and psychological consequences such as depression/anxiety and lower quality of life).[172] The percentage of obese adults in Rutherford is compared to the state and national rates in **Figure 81.**

The CDC defines Adult Obesity as the percentage of the adult population (age 20 and older) that reports a body mass index (BMI) greater than or equal to 30, while overweight is defined as a BMI between 25 and 30.[173]

Figure 82 represents Rutherford obesity rates compared to the state and nation in 2018.[174] Over the last 10+ years, Rutherford's percentage of obese adults has been similar to the state. Both Tennessee and Rutherford County have historically been above the national obesity rate for adults, which in 2015 was 28%.[175]

Additionally, in the 2017 Behavioral Risk Factor Surveillance System Survey, 30.6% of Tennessee

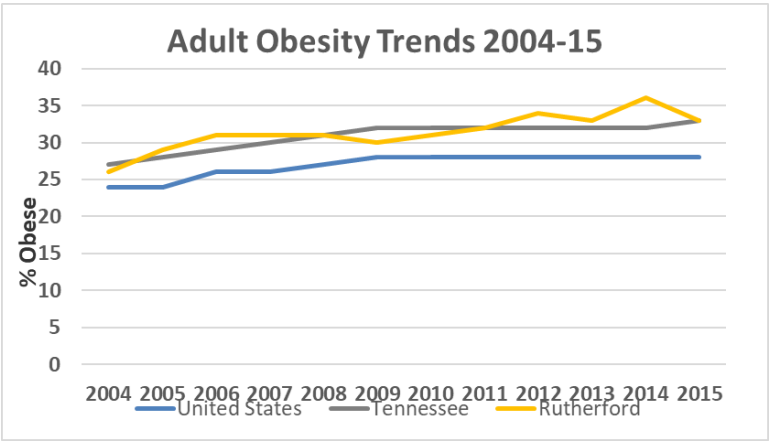


Figure 82. Obesity trends in adults 2004-2015, County Health Rankings (2018)

---

[171] Dreyzhner, J. (2017). The Big 4: Using Primary Prevention to Drive Population Health. *Journal of Public Health Management & Practice, 23* (January/February 2017 Number 1), pp.1-2. Retrieved from https://www.nursingcenter.com/journalarticle?Article_ID=3891768&Journal_ID=420959&Issue_ID=3891767

[172] Centers for Disease Control and Prevention. (2017). *Adult Obesity Causes & Consequences.* Retrieved February 26, 2019 from https://www.cdc.gov/obesity/adult/causes.html

[173] Centers for Disease Control and Prevention. (2017). *Defining Adult Overweight and Obesity.* Retrieved February 26, 2019 from https://www.cdc.gov/obesity/adult/defining.html

[174] Community Commons. (2018). *Percentage of Adults Obese.* Retrieved November 12, 2018 from https://assessment.communitycommons.org/CHNA/report?page=3&id=408&reporttype=libraryCHNA

[175] University of Wisconsin Population Health Institute. (2018). *2018 County Health Rankings.* Retrieved from http://www.countyhealthrankings.org/app/tennessee/2018/measure/factors/11/data

adults reported not receiving any physical activity or exercise outside of their regular jobs in the previous 30-day period.[176]

Obesity and Physical Activity – Youth

Lack of physical activity and consumption of "high-calorie, low-nutrient food and beverages" can lead to childhood obesity (Centers for Disease Control and Prevention, 2016). Childhood obesity is related to a number of adverse physical and psychosocial problems in childhood and beyond. Not only is it correlated with hypertension, higher cholesterol, greater risk of type 2 diabetes, breathing issues, and joint problems for children, it is also linked to psychological and emotional problems like anxiety, depression, and low self-esteem. It is likely that these conditions will become more severe in adulthood.[177]

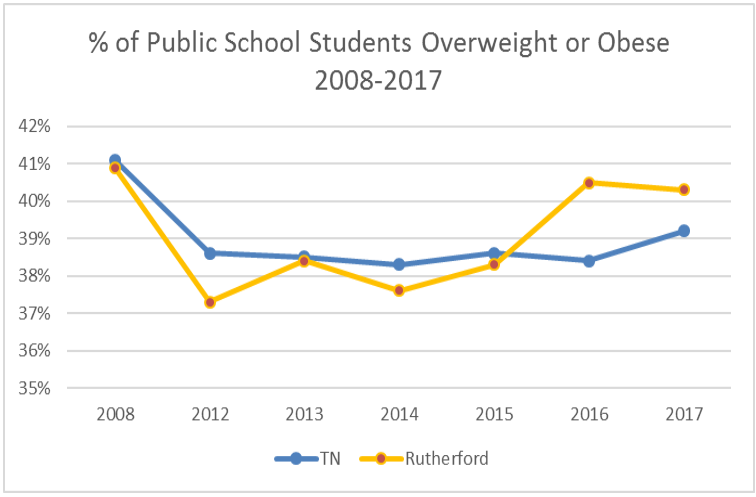


Figure 83. Rutherford County student obesity trends, CDC (2017)

The Centers for Disease Control and Prevention define childhood overweight as having a BMI in the 85th-94th percentile among children of the same age and sex. Childhood obesity is defined as a BMI in the 95th percentile and above.[178] Tennessee has the second-highest rate of obesity in the nation among high school students at 20.5% compared to a nationwide rate of 14.8%[179], while in Rutherford County, roughly 40% of public school students are overweight or obese, and this rate has been on the rise over the last several years.[180]

Figure 83 outlines the percent of public-school students in Tennessee and Rutherford County that are deemed overweight or obese. According to the Youth Risk Behavior Survey, more than half of Tennessee's children (56%) did not receive the recommended amount of physical activity weekly (at least 60 minutes per day on 5 or more days). Furthermore, 16.8% of Tennessee high school youth did not participate in 60 minutes of physical activity on at least one day of the week.[181]

---

[176] Tennessee Department of Health. (2017). *Behavioral Risk Factor Surveillance System: Tennessee Calculated Variable Data Report.* Retrieved from https://www.tn.gov/content/dam/tn/health/documents/brfss/2017_Calculated_Variables.pdf

[177] Centers for Disease Control and Prevention. (2016). *Childhood Obesity Causes & Consequences.* Retrieved February 26, 2019 from https://www.cdc.gov/obesity/childhood/causes.html

[178] Centers for Disease Control and Prevention. (2018). *Defining Childhood Obesity.* Retrieved February 26, 2019 from https://www.cdc.gov/obesity/childhood/defining.html

[179] Centers for Disease Control and Prevention. (2017). *Adolescent and School Health – Nutrition, Physical Activity, & Obesity Data & Statistics.* Retrieved on July 8, 2018 from https://www.cdc.gov/healthyyouth/data/topics/npao.htm

[180] The Annie E. Casey Foundation Kids Count Data Center. (2019). *Public School Students Measured as Overweight or Obese.* Retrieved July 6, 2018 from https://datacenter.kidscount.org/data/tables/8705-public-school-students-measured-as-overweight-or-obese?loc=44&loct=5#detailed/5/6420-6514/false/871,870,573,869,36,868,35/any/17473

[181] Centers for Disease Control and Prevention. (2017). *Adolescent and School Health – Nutrition, Physical Activity, & Obesity Data & Statistics.* Retrieved on July 8, 2018 from https://www.cdc.gov/healthyyouth/data/topics/npao.htm

Recreation Opportunities

Opportunities to exercise and be physically active are important in maintaining a healthy weight and staying fit through all stages of life. According to Community Commons, "A community's health…is affected by the physical environment. A safe, clean environment that provides access to healthy food and recreational opportunities is important to maintaining and improving community health…This indicator is relevant because easy access to recreation and fitness facilities encourages physical activity and other healthy behaviors".[182] Recreation and fitness facilities can include exercise centers, skating rinks, gymnasiums, physical fitness centers, tennis clubs, and swimming pools, among others.

Figure 84 compares the state and nation to Rutherford County and shows that Rutherford has fewer recreation and fitness facilities with a rate of 6 recreation facilities per 100,000 persons.[183]

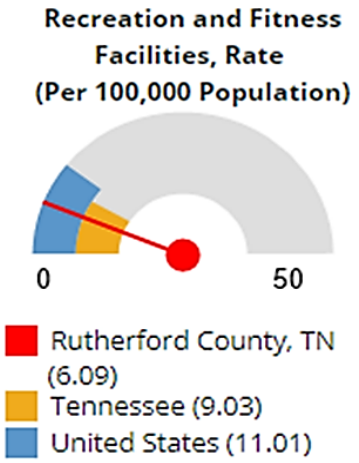


Figure 84. Recreation and fitness facilities per 100,000, Community Commons (2018)

Tobacco Use

Smoking and tobacco use are health behaviors which affect almost every part of the body negatively. According to the Centers for Disease Control and Prevention, "Smoking causes cancer, heart disease, stroke, lung diseases, diabetes, and chronic obstructive pulmonary disease (COPD), which includes emphysema and chronic bronchitis. Smoking also increases risk for tuberculosis, certain eye diseases, and problems of the immune system, including rheumatoid arthritis. Secondhand smoke exposure contributes to approximately 41,000 deaths among nonsmoking adults and 400 deaths in infants each year. Secondhand smoke causes stroke, lung cancer, and coronary heart disease in adults. Children who are exposed to secondhand smoke are at increased risk for sudden infant death syndrome, acute respiratory infections, middle ear disease, more severe asthma, respiratory symptoms, and slowed lung growth".[184]

Unfortunately, according to the 2016 Behavioral Risk Factor Surveillance System survey, Tennessee ranks among the top states in the nation for smoking rates among adults **(Figure 85).**[185] While nationwide, 15.5% of adults report smoking cigarettes, in Tennessee, this is 22%, and in Rutherford County, 20% of adults report smoking cigarettes.[186] **Figure 86** shows both the

---

[182] Community Commons. (2018). *Recreation and Fitness Facilities, Rate (Per 100,000 Population).* Retrieved November 12, 2018 from

[183] Community Commons. (2018). *Recreation and Fitness Facilities, Rate (Per 100,000 Population).* Retrieved November 12, 2018 from https://assessment.communitycommons.org/CHNA/report?page=3&id=408&reporttype=libraryCHNA

[184] Centers for Disease Control and Prevention. (2018). *Smoking & Tobacco Use – Health Effects.* Retrieved February 27, 2019 from https://www.cdc.gov/tobacco/basic_information/health_effects/index.htm

[185] Centers for Disease Control and Prevention. (2018). *Current Cigarette Smoking Among Adults in the United States.* Retrieved November 15, 2018 from https://www.cdc.gov/tobacco/data_statistics/fact_sheets/adult_data/cig_smoking/index.htm

[186] University of Wisconsin Population Health Institute. (2018). *2018 County Health Rankings.* Retrieved from http://www.countyhealthrankings.org/app/tennessee/2018/rankings/rutherford/county/outcomes/overall/snapshot

state of Tennessee and Rutherford County have a long way to go in meeting the Healthy People 2020 nationwide goal of 12% of adults smoking.[187]

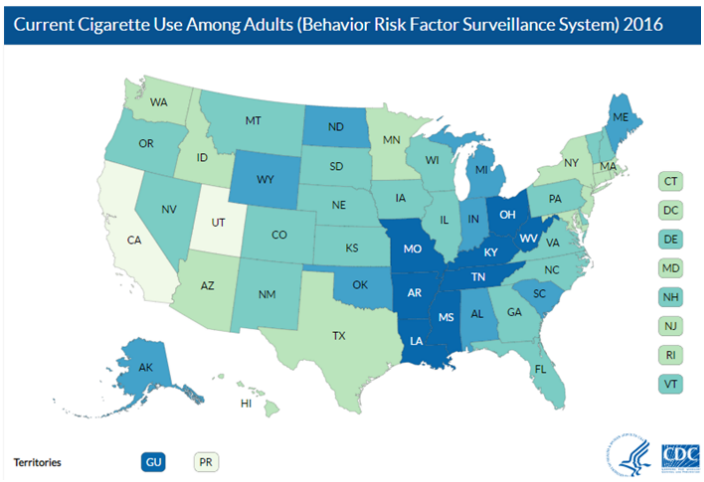


Figure 85. Cigarette use among adults, BRFSS (2016)

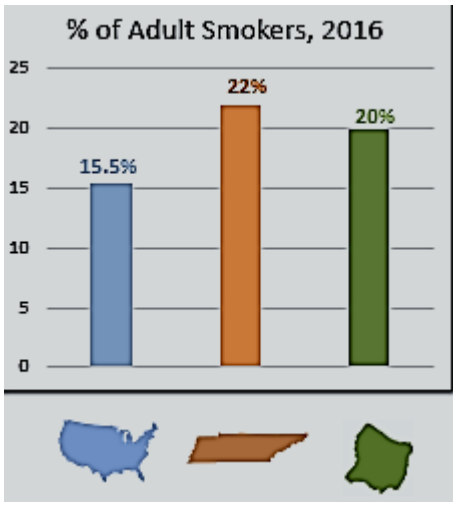


Figure 86. Percentage of adult smokers, County Health Rankings (2018)

Substance Use

Alcohol Abuse

According to the Centers for Disease Control and Prevention, "Excessive drinking includes binge drinking, heavy drinking, and any drinking by pregnant women or people younger than age 21.

- Binge drinking, the most common form of excessive drinking, is defined as consuming
  - For women, 4 or more drinks during a single occasion.
  - For men, 5 or more drinks during a single occasion.
- Heavy drinking is defined as consuming
  - For women, 8 or more drinks per week.
  - For men, 15 or more drinks per week".[188]

The health consequences of excessive drinking include, in the short term, susceptibility to injuries, accidents, violence, and poor decisions about sexual behaviors that can lead to poor health outcomes. Over the long term, excessive drinking can lead to the development of chronic diseases like hypertension and heart disease, liver disease, certain cancers, and anxiety or depression. Avoiding excessive drinking can help reduce likelihood of developing these conditions.[189]

According to the 2016 Behavioral Risk Factor Surveillance System survey, 18% of adults in Rutherford County reported drinking excessively in the last 30 days **(Table 7).** This is lower

[187] Office of Disease Prevention and Health Promotion. (2019). *Tobacco Use.* Retrieved June 1, 2018 from https://www.healthypeople.gov/2020/topics-objectives/topic/tobacco-use/objectives
[188] Centers for Disease Control and Prevention. (2018). *Alcohol and Public Health – Fact Sheets – Alcohol Use and Your Health.* Retrieved February 27, 2019 from https://www.cdc.gov/alcohol/fact-sheets/alcohol-use.htm
[189] Centers for Disease Control and Prevention. (2018). *Alcohol and Public Health – Fact Sheets – Alcohol Use and Your Health.* Retrieved February 27, 2019 from https://www.cdc.gov/alcohol/fact-sheets/alcohol-use.htm

than the national rate of 27%, though higher than the state rate of 14%.[190] In Rutherford County, 25% of driving deaths involved alcohol impairment[191], and in 48% of admissions to substance abuse treatment services in Rutherford County, alcohol was named as the substance of abuse.[192]

Table 7. Alcohol Use, BRFSS (2018)

Excessive Drinking	**27%**	**14%**	**18%**
Alcohol-impaired driving deaths	**28%**	**28%**	**25%**
% of admissions to treatment for alcohol abuse	**34%**	**42%**	**48%**

Drug Abuse

Death due to drug overdose is on the rise in the US, according to the Centers for Disease Control and Prevention. Currently, around two-thirds of drug overdose deaths involve an opioid, including prescription drugs like Oxycodone and Hydrocodone, synthetic opiates like Fentanyl, and heroin. In 2017, 47,000 people in the US died from an opioid overdose. This is a nearly 6-fold increase since 1999.[193]

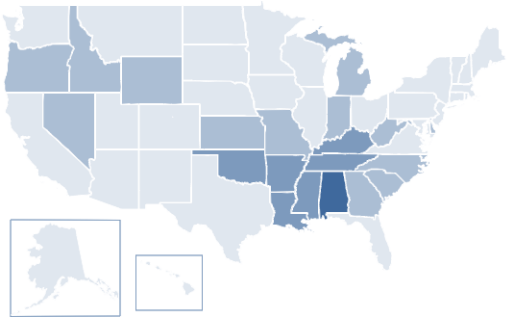


Figure 87. Prescribing rates map, CDC (2017)

[190] University of Wisconsin Population Health Institute. (2018). *2018 County Health Rankings, Excessive Drinking.* Retrieved from http://www.countyhealthrankings.org/app/tennessee/2018/measure/factors/49/map

[191] : University of Wisconsin Population Health Institute. (2018). *2018 County Health Rankings, Excessive Drinking.* Retrieved from http://www.countyhealthrankings.org/app/tennessee/2018/measure/factors/134/map

[192] The TN Department of Mental Health and Substance Abuse Services. (2017). *2017 TN Behavioral Health County and Region Services Data Book.* Retrieved from https://www.tn.gov/content/dam/tn/mentalhealth/documents/DPRF_BH_county_region_service_data_book_9-2017_FINAL.pdf

[193] Centers for Disease Control and Prevention. (2018). *Overview of the Drug Overdose Epidemic: Behind the Numbers.* Retrieved February 27, 2019 from https://www.cdc.gov/drugoverdose/data/index.html

Tennessee has been at the forefront of the opioid crisis as one of the states with the highest rates of opioid prescriptions, ranking third behind Alabama and Arkansas for the number of prescriptions written for every 100 residents. In 2017, there were 94.4 opioid prescriptions written for every 100 Tennesseans (Alabama and Arkansas had 107.2 and 105.4 respectively).[194] **Figure 87** shows the states with the highest opioid prescription rates as darker colors.

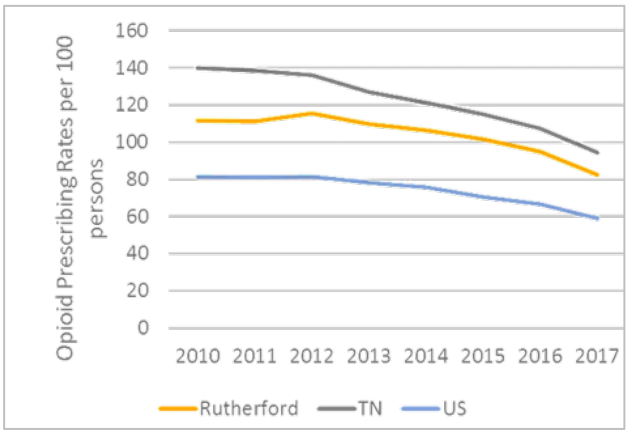


Figure 88. Opioid prescribing rates per 100 persons, CDC (2017)

Prescription rates have trended downward over the last 8 years, and in Rutherford County, the rate of opiate prescriptions per 100 people is 82.8, which is lower than the state overall (94.4) but still higher than the national rate of 58.7.[195] **Figure 88** illustrates these rates per 100 people.

In 2017, there were 12,680 opioid-related deaths in Tennessee. **Figure 89** shows Rutherford County's drug overdose deaths between 2013-2017. In 2017, Rutherford had 65 total drug overdose deaths. The blue portion of the bars (dark and light combined) represents all opioid deaths, showing that 48 of those 65 overdose deaths in 2017 were opioids such as hydrocodone, oxycodone, opium, and morphine. The dark portion of the bar represents heroin overdose deaths. Heroin is an illegal opioid whose use in on the rise, especially as opioid prescriptions have begun to be been more tightly restricted. Of the 48 opioid deaths in 2017, 18 represented a heroin overdose. Note the steady increase in heroin overdose deaths over the last 5 years.[196]

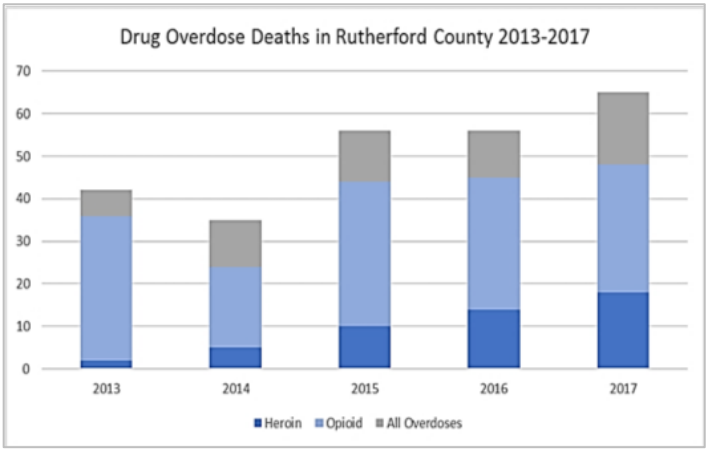


Figure 89. Drug overdose deaths in Rutherford County, TN Dept of Health (2017)

[194] Centers for Disease Control and Prevention. (2017). *U.S. County Prescribing Rate Maps.* Retrieved from https://www.cdc.gov/drugoverdose/maps/rxrate-maps.html
[195] Centers for Disease Control and Prevention. (2017). *U.S. County Prescribing Rate Maps.* Retrieved from https://www.cdc.gov/drugoverdose/maps/rxrate-maps.html
[196] Tennessee Department of Health. (2017). *Tennessee Drug Overdose Data Dashboard.* Retrieved on November 15, 2018 from https://www.tn.gov/health/health-program-areas/pdo/pdo/data-dashboard.html

Figure 90 displays the reasons people in Rutherford county sought treatment for substance abuse over 2014-2016 from the TN Department of Mental Health and Substance Abuse Services. These numbers represent duplicated admissions, so a single individual might have been admitted more than one time to several levels of care or have had several admissions during the fiscal year. From year to year, while alcohol and marijuana (yellow and gray bars) declined, opioids (dark blue bars) and methamphetamines (light blue) continued to rise. From 2015 to 2016, opioid admissions rose from 40% to 47%.

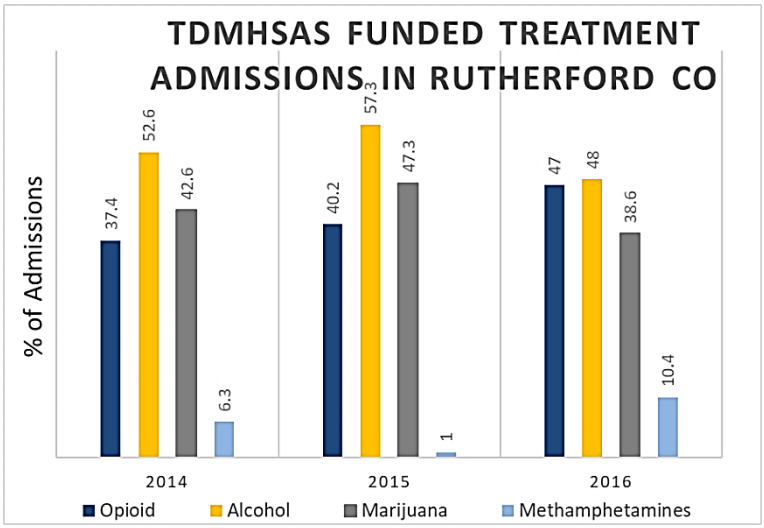


Figure 90. Reasons people sought treatment for substance abuse, TN Dept of Mental Health and Substance Abuse Services (2017)

Outpatient rehabilitation programs accounted for 43.7% of admissions statewide, while 56.3% were to some kind of inpatient program. The biggest groups of these were to freestanding residential detoxification programs (25.9%), Intensive Outpatient Programs (23% statewide), and short term (<30 days) residential services (23.2%).[197]

Mental and Emotional Health

Mental Health

According to the CDC, "Mental health includes our emotional, psychological, and social well-being. It affects how we think, feel, and act. It also helps determine how we handle stress, relate to others, and make healthy choices. Mental health is important at every stage of life, from childhood and adolescence through adulthood." Mental health is as important as physical health to overall wellbeing. Poor mental health conditions, like depression, can lead to poor physical health outcomes.[198]

The Behavioral Risk Factor Surveillance System survey in Rutherford County showed residents having self-reported a monthly average of 4.2 poor mental health days. These estimates are in response to the question: "Thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health not good?" Looking at poor mental health days per month can help to shed light on the quality of life in an area. Though this number has been steadily increasing since 2011, Rutherford County ranks in the top 3 for fewest poor mental health days throughout Tennessee. Overall, Tennesseans experience 4.5 poor mental health days monthly and Americans experience 3.7 days.[199]

---

[197] The Tennessee Department of Mental Health and Substance Abuse Services. (2017). Retrieved from https://www.tn.gov/content/dam/tn/mentalhealth/documents/DPRF_BH_county_region_service_data_book_9-2017_FINAL.pdf

[198] Centers for Disease Control and Prevention. (2018). *Learn About Mental Health.* Retrieved February 27, 2019 from https://www.cdc.gov/mentalhealth/learn/index.htm

[199] University of Wisconsin Population Health Institute. (2018). *Poor Mental Health Days.* Retrieved from http://www.countyhealthrankings.org/app/tennessee/2018/rankings/rutherford/county/outcomes/overall/snapshot

As mentioned in the *Access to Healthcare* section, provider ratios speak to the number of healthcare providers there are available for members of a given community. In the case of mental healthcare, mental health providers include psychiatrists, psychologists, licensed clinical social workers, counselors, marriage and family therapists, mental health providers treating substance abuse, and advanced practice nurses specializing in mental health care.[200]

Over the last several years in Rutherford County, mental health has emerged as a top as area of need in the community, and the data bear out this community concern over the shortage of mental health providers. Nationwide, there are 529 citizens for each mental health provider. In Tennessee overall, there are 740 citizens for each provider. But in Rutherford County, there are 1,270 citizens per provider[201].

Mental health also includes having adequate social support. In Rutherford County, 13.4% of people report that they feel that they have a lack of social or emotional support all or most of the time.

Furthermore, 1.52% of those in Rutherford live in a linguistically isolated household, meaning that no one over the age of 14 in the household speaks English very well. This linguistic barrier limits access to necessary services and the ability to seek healthcare. **Figure 91** shows where those households are concentrated. In the darkest tracts, 5.5 to 7.2% of households would be considered linguistically isolated.[202] Another source of social support is the faith community. There are 10 faith congregations per 10,000 people in Rutherford County.[203] Statewide, Tennessee has 18 congregations per 10,000 people, which is the 9th highest in the nation.[204]

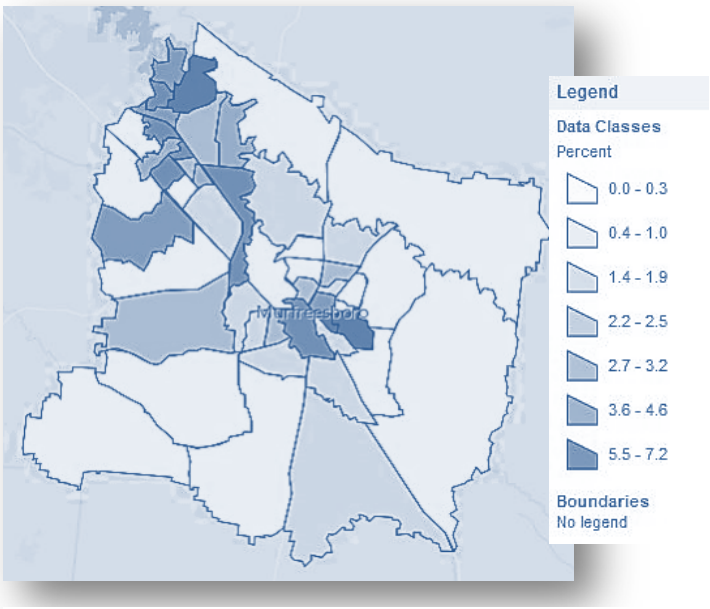


Figure 91. Concentration of linguistically isolated households in Rutherford County, CDC (2016)

[200] University of Wisconsin Population Health Institute. (2018). *Mental Health Providers.* Retrieved from http://www.countyhealthrankings.org/app/tennessee/2018/measure/factors/62/description
[201] University of Wisconsin Population Health Institute. (2018). *Rutherford County Snapshot.* Retrieved from http://www.countyhealthrankings.org/app/tennessee/2018/rankings/rutherford/county/outcomes/overall/snapshot
[202] US Census Bureau. (2016). *% in Limited English-Speaking Households, 2016 ACS 5-year Estimates.* Retrieved from https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml#none
[203] The Association of Religious Data Archives. (2010). *U.S. Religion Census: Religious Congregations and Membership Study, 2010 (County File).* Retrieved from http://www.thearda.com/Archive/Files/Descriptions/RCMSCY10.asp
[204] Stebbins, S. (2018, March 18) The most religious counties of every state in the U.S. *USA Today*. Retrieved from https://www.usatoday.com/story/news/2018/03/13/most-religious-counties-every-state-u-s/421946002/

Primary Data Results

Rutherford County Community Survey Results

In Rutherford County, an electronic community survey was distributed to focus on the health status and needs of Rutherford residents.

The community survey was an electronic 63-item survey of open and closed-ended questions. The questions were created under domains based on the 2016 prioritized needs and considered feedback from the Circle of Engagement (COE). Many of the questions were adapted from the Behavioral Risk Factor Surveillance System (BRFSS) and other validated sources. After development of the questions, the survey was translated into Spanish and piloted for timing and accuracy. The survey was then distributed to the health system networks, schools, and other community networks.

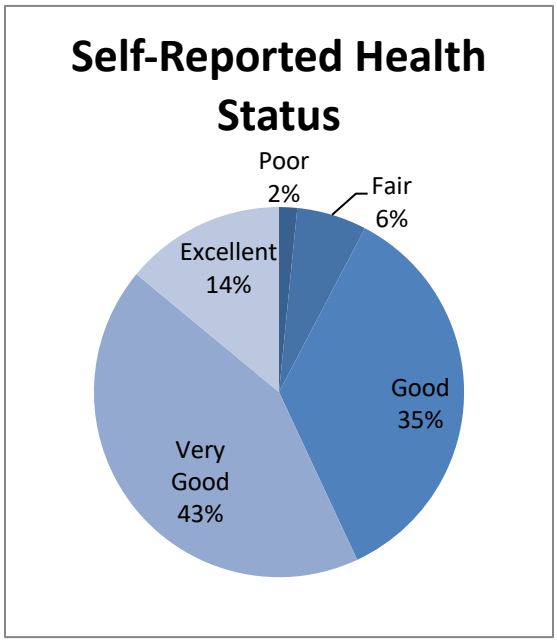


Figure 92. Self-reported health status of Rutherford County survey respondents

The majority of respondents were female between the ages of 36 and 55. Most individuals (77%) were college graduates or higher and 15% were Veterans or lived with a Veteran. Most respondents were employed (84%), and about half of individuals had a household income of more than $75,000.

When asked about their general health, about half of respondents noted their health to be "very good" (43%) or "excellent" (14%), and 8% described their health as "poor" or "fair" **(Figure 92).** A majority of individuals have exercised in the previous month (81%) or seen a doctor in the last year (86%). About 7.5% of respondents currently use tobacco or e-cigarettes.

The next question asked how often individuals have been stressed in the last two weeks, to which about half of responses were "none" (17%) or "a little" (39%). Around a third of individuals noted they have been stressed some of the time (30%) within the last two weeks, and 14% answered they have been stressed most of the time or all of the time. Participants were then asked how many days have been spent feeling sad, blue, or depressed within the last 30 days. The majority of respondents answered 0-2 days (66%), while 19% of people reported feeling sad for 3-6 days. Only 15% reported feeling sad 7-30 days total. About half of respondents had a child under the age of 18 in the house, and most individuals had one child (42%) or two children (41%) in the house. Nearly all respondents reported that they are *always* able to take their children to a doctor when needed.

In Rutherford County, there are enough resources and education surrounding…		
Topic	**Agree/ Strongly Agree**	**Don't Know**
Child Abuse & Neglect Prevention	**18%**	**57%**
Safe Car Seat Use	**42%**	**47%**
Safe Sleep Practice Education	**34%**	**58%**
Safe Seatbelt Use (9-14)	**41%**	**45%**
Teen Driver Safety	**41%**	**42%**
Prevention of Falls (0-5)	**23%**	**65%**

Table 8. Availability/need of resources in Rutherford County

Respondents were then asked about adequate resources and education surrounding a variety of areas involving children's safety, to which the most prominent answer for every question was "don't know." When asked if enough is being done to prevent child abuse and neglect, 18% agreed and 25% disagreed while 57% did not know. The next question asked if there are enough resources and education surrounding safe car seat use, to which 42% agreed or strongly agreed and 47% did not know. When asked about safe sleep practice education for infants, 34% agreed there were resources and 58% did not know. The next question asked about safe seatbelt use for children ages 9-14 to which 41% agreed and 45% did not know. Respondents were then asked about education surrounding driver safety for teens older than 15, and 41% agreed there were resources while 42% did not know. The last related question asked if there are resources surrounding home safety related to the prevention of falls for children ages 0-5, to which 23% agreed and 65% did not know. These percentages can be found above in **Table 8.**

Participants were then asked about their primary source of health care coverage, to which most people said employer or union. 16% of respondents said there was a time in the past 12 months that they needed to see a doctor but were unable to because of cost. When asked why people did not receive necessary medical care in the last 12 months, 13% of people cited appointment schedules as a barrier and 10% said the hours were not convenient. Respondents were then asked about dental care, which included dentists, orthodontists, oral surgeons, and other specialties, and 75% of individuals noted it has been a year since they last visited a dentist for any reason. About a third of individuals responded they are somewhat satisfied with the general health care they receive, and about two thirds noted they are very satisfied.

When asked about mental health and substance abuse, most people agreed or strongly agreed that drug use and abuse (70%) is a problem in their county. 55% of individuals agreed or

strongly agreed that alcohol abuse is a problem in their county, while 42% of respondents indicated they did not know. The next question asked whether there are accessible, affordable resources in their county for people who want to stop using drugs or alcohol, to which over half of individuals reported they did not know. Additionally, about half of respondents noted they did not know if there are accessible, affordable resources for people who need mental health services. Individuals were then asked if mental illness is a problem in their county, to which 58% agreed or strongly agreed and about 40% did not know.

Respondents were then asked whether they had access to basic needs such as food, clothing, housing, and medication, to which 90% of individuals reported having the ability to meet basic needs for themselves and their families. In response to questions about resource availability in their community, about a third of people agreed there are accessible resources to address transportation and housing, a third disagreed, and a third did not know. Most people agreed there is accessible and affordable healthy food in their county, while about a quarter did not know. Additionally, about a third of individuals agreed there are accessible affordable resources to address problems of domestic violence in their county, while over half of participants did not know. Finally, respondents were asked how safe they consider their neighborhood to be, to which 17% said extremely safe and 78% just said safe.

In addition to these close-ended questions, the survey included four open-ended questions that allowed participants to expand and further elaborate on certain topics. The first question was "What do you think is the most important health issue for children in Rutherford County?" The themes highlighted were lack of nutrition, poor parenting, negative home life, and an overall increase in stress and anxiety. Respondents were also asked to share issues related to health care access, insurance, and health systems. Healthcare affordability and coverage were commonly mentioned, as was the lack of access for healthcare. Other healthcare issues such as accessing healthcare and the lack of healthcare equity were also discussed.

The third open-ended question asked respondents to note important characteristics of a "healthy community for all." Rutherford residents prioritized safety, access to basic resources, clean environment, and a strong sense of community. Finally, respondents were able to wrap up the survey by adding anything that they felt was left out of their previous responses. Better support for youth, mental health services, improved resources, and communication were highlighted.

Rutherford County Community Listening Sessions

In Rutherford County, community listening sessions were conducted to assess the needs of the community with input from community members. These sessions were initiated by Saint Thomas Health, Vanderbilt University Medical Center (VUMC), and the Rutherford County Health Department. The prevalent themes were utilized to inform Rutherford County Health Department's Community Health Improvement Plan (CHIP) in addition to VUMC and Saint Thomas Health's CHNA and Implementation Strategy.

"Within the city, so many properties are being bought up and being replaced with houses that no one can afford"
– Listening Session Attendee

Four listening sessions were held in Rutherford County, planned by the collaborating organizations involved in the assessment. Two sessions were held at First Baptist Church, one was held at Journey Home, and the last was conducted at Rutherford County Health Department. Recruitment was done by Murfreesboro City Schools Community Outreach Department. The moderators guided discussion topics including community assets, issues and concerns, barriers to addressing issues, and priorities. A brief survey was given to obtain demographic information about the participants. Thematic analysis was then conducted by a team of four reviewers.

Table 9. Top community issues in Rutherford County listening sessions

Rutherford County	
Housing & Homelessness	**Vulnerable Populations**
Navigating & Accessing Health Care	**Built Environment & Transportation**
Opportunities for Youth	**Hidden Racism**
Growth	**Childcare Costs**

With a total of 60 participants, the participant pool was primarily female, African American, and spoke English as primary language. 22% of individuals were Hispanic or Latino, and a third were over the age of 65. About a third of participants were uninsured, while another third reported being insured by Medicare or Medicaid programs.

When asked about the community's strongest assets, responses included public services, non-profit organizations, healthy options particularly related to the built environment (e.g., greenways), child friendly programs and community, local community health centers, growth, social networks, and the faith community.

Participants were then asked about the top three community issues, which are discussed in **Table 9.** The primary responses were housing and homelessness, vulnerable populations, healthcare navigation, built environment (e.g., sidewalks), transportation, racism, cost of childcare, growth, and the lack of positive youth opportunities. Vulnerable populations were noted to be older adults, formerly incarcerated, Veterans, people with disabilities, and others.

The next question asked participants about the barriers to addressing these issues in the community, to which the responses were racism, stigma, political climate, lack of civic engagement, accessibility of resources, varying of literacy levels, language barriers, lack of transportation, affordability of housing, and inconsistent and unsustainable solutions to these issues. Responses also included that healthy choices are often not always easily accessible or affordable for all people.

Community members were then asked, "If you had a magic wand, what would be your top initiatives/priorities?" The main responses were to eliminate homelessness, improve housing, address racism, foster self-sufficiency, focus on reproductive health, have more support for vulnerable populations, strengthen families, invest in the youth, improve walkability and traffic, and create more resources for older adults. In addition to addressing racism, respondents also noted a need to address stigma and discrimination. As a summary to much of the listening session discussion, participants reiterated a desire for their community/neighbors to "love each other."

The overall themes that emerged in the Rutherford County listening sessions were housing and homelessness, positive and negative impacts of population growth, resource accessibility and awareness, community cohesion and networks, and racism and stigma.

Rutherford County Key Informant Interview Themes

Community representatives and leaders representing the broad interests of the community were identified by the collaborating organizations to participate in key informant interviews. Diverse interviewees included those with professional experience and/or the ability to represent populations which are medically underserved, low-income, minority and/or with chronic disease needs. Community representatives and leaders also included those with special knowledge and expertise in public health. Interviewees represented areas of healthcare, law enforcement, education, non-profit agencies, faith communities, government representatives, safety net service providers, economic and workforce developers, mental/behavioral health providers, housing and homeless workers, and other interest groups working with vulnerable populations. The interviews were conducted by representatives from Saint Thomas Health, Vanderbilt University Medical Center and graduate students using a standardized interview instrument. Questions focused on community assets, issues/concerns, obstacles to addressing concerns, and priorities. Twenty-six interviews were conducted, consisting of five open-ended questions and time for additional comments at the end. Additional information regarding the interview process and analysis are included in the methodology section of this report.

When asked about the community's strongest assets, interviewees highlighted Rutherford's strong sense of connectedness and social support, the sustained growth that the county has recently endured, and a solid education system. When discussing the top issues present in the community, themes pointed to common repercussions of growth, including decreased affordability of housing, lack of proper infrastructure, increased crime rates, decreased access to resources, and the presence of various health inequities. Next, interviewees were prompted with questions specific to issues in health or health care. Their answers touched on the unaffordability of care, while also emphasizing issues related to accessing specialty services, medication, and insurance coverage. They also expressed concern regarding mental health and substance abuse treatment availability, as well as the need to prioritize positive health behaviors. In order to address these issues, interviewees stated that the community would need to overcome the following obstacles: lack of resources, lack of collaboration, and the challenge of shifting Rutherford's overall culture of health.

Finally, interviewees were given the opportunity to explore the kinds of initiatives that they would choose to implement into their community if given a magic wand. The topics discussed included overall affordable living, an enhanced built environment with more green spaces, and true health equity for all people.

Identifying and Prioritizing Needs

Community Summit

Results of the environmental scan, community survey, listening sessions, key informant interviews, and secondary data review were presented at the Rutherford County Community Health Summit. Summit invitees included many participants from interviews and community listening sessions, as well as community members with expertise in public health and who work with medically underserved, minority, or low-income populations. Leadership from VUMC, Saint Thomas Health, Rutherford County Health Department, and other community stakeholders were also present.

The purpose of the Summit was to solicit input and take into account the broad interests of the community in identifying and prioritizing the community's health needs. The summit was facilitated by VUMC, Saint Thomas Health, and Rutherford County Health Department.

After presenting primary and secondary data gathered during the assessment on a number of issues faced in the community, summit participants had the chance to provide their input into prioritizing the most important health needs in the community. Attendees broke up into groups and discussed the top three health issues that they had individually prioritized. Summit hosts entered the health issues that each group agreed on into a REDCap survey, allowing participants to individually select their top three priorities. and participants voted on their top three priorities.

The voting results are shown here in **Figure 93**. Summit hosts also consulted the Rutherford County Wellness Council for feedback regarding final interpretation of these results.

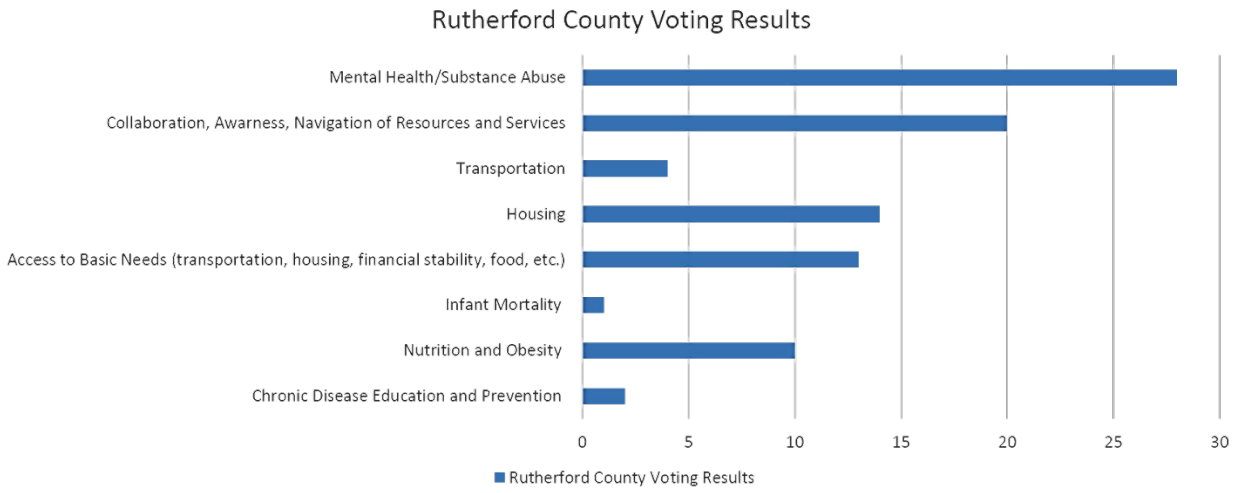


Figure 93. Rutherford County health summit voting results

Summary of Prioritized Needs: Rutherford County

Given the results of the needs prioritization voting described above and the feedback from the Rutherford County Wellness Council, the prioritized needs for Rutherford County are:

- **Mental Health/Substance Abuse**
- **Access to Basic Needs**
    - Concentration on Housing
- **Enhance Resources and Services**
- **Nutrition and Obesity**

Mental Health/Substance Abuse - Summary

Primary and secondary data highlighted the drastic need to address substance abuse and mental health services in Rutherford County. Opioid use and related deaths, lack of mental health care services, and high rates of tobacco use were some of the main topics emphasized when discussing mental health and substance abuse.

Nationally, Rutherford County falls short when it comes to mental health provider access, poor mental health days, and opioid use. Community survey respondents and listening session participants also alluded to the dire need to address these issues. In fact, 70% of survey respondents stated they agree or strongly agree with the statement "Drug use/abuse is a problem in my county." When asked, "What would you say are the top three issues specific to health or health care that you are most concerned about in your community?", mental health and addiction were both common themes.

The needs prioritization process at the Rutherford County summit revealed the most prominent areas of focus in this category, which included the coordination of mental health care among healthcare sectors and social services, increasing substance abuse services and treatment, and making mental health care affordable and accessible to all. Individuals at the summit were asked to name three goals for this priority, which were: (1) Education—increasing the number of people in the workforce and educating community members and state leaders, (2) Preventative programming, and (3) Advocacy with state leaders to increase funding for these issues. Participants stressed the necessity for increased collaboration among different entities in order for success to occur in the next three years.

Access to Basic Needs - Summary

Throughout the needs assessment process, Rutherford County residents also described gaps in access to basic needs. The basic needs that were deemed as non-accessible for certain populations were housing, transportation, and general healthcare services.

Primary data collected through listening sessions and community surveys highlighted the need for affordable housing for vulnerable populations. When asked "What are the top three community issues?" one of the most popular responses was housing and homelessness, with transportation and the built environment to follow. Much of the focus regarding this priority stressed vulnerable populations being the target group for improvement strategies. Secondary data indicators revealed the problematic housing crisis in Rutherford County, pointing to the overall lack of affordable housing. Over the last 3 years, the median home value in Rutherford County has increased by nearly $60,000. The value in Tennessee increased by around $25,000 and approximately $35,000 nationwide. While housing costs have risen, the trend with wages remains consistent. The *American Community Survey* estimated that 45% of renters in the county are cost burdened, with over 30% of their income going towards housing. Furthermore, 316 homeless individuals have been identified through a Point-in-Time count and 1,480 students in the county met the definition of homeless. Rover, the public transportation service in the county, is centralized around Murfreesboro, the hub city in the county, and does not extend far beyond the city lines. It also has hours that are not conducive for many in the workforce that also need transportation to and from work. The lack of food access also poses a significant threat, with 29% of low-income families in Rutherford County having low access to healthy affordable food, but data show that fast food is highly accessible throughout the county.

Discussions at the summit revealed that there should be greater focus on vulnerable populations and that organizations need to better collaborate on solutions to address these issues. Some of the populations most burdened by lack of access to basic needs are unemployed populations, refugees, and minority populations. Summit participants determined the goals for this priority to be: (1) Creating a community resource bank, (2) Increasing access to affordable housing, and (3) Increasing public transportation throughout the entire county with more inclusive hours.

Concentration of Housing

As it has been highlighted, Rutherford County is in need of more affordable housing. This issue was highlighted in both the primary and secondary data analysis.

When asked, "*If you had a magic wand, what top initiatives would you implement in your community in the next three years?"* the most common response was affordable housing. Participants stressed the burden of housing for many people in the community, especially vulnerable populations. As highlighted before, the burden of housing costs is very impactful for both renters and homeowners.

Summit participants focused on a need for greater awareness of the housing issue issues and making it a priority to increase affordable housing units in the county. Populations affected by a lack of affordable housing include those with mental health issues, disabled, seniors, and low to middle class individuals/families. Participant discussions at the summit stressed the need to increase affordable housing, but also supported the idea of affordable housing with supportive services. A large part of the conversation focused on the need for sustainable solutions. In order

for sustainable solutions to be created, collaboration from many existing organizations is essential.

Enhance Resources and Services- Summary

Prioritizing collaboration between many different service providers was seen as a necessity for many community members throughout the needs prioritization process. “Enhance resources and services” includes both the need to improve community awareness and engagement, but also the need to improve community collaborations and simplify the navigation of community resources. This priority emphasizes a need for interdisciplinary teamwork between organizations and the community.

“I answered many of the questions in the survey with ‘I don't know’. I do believe there is information out there for people who need help. I do not believe enough is being done to help people who need help. Many are embarrassed to ask for help. We often think it's the responsibility of the person who needs help to stand up and say something. We have to be more aware of who needs help so that the right information can get into the hands of those who need it (i.e., widows with children, victims of sexual abuse/domestic assault.)”
-Survey Participant

Primary data collection was an area where this priority was highlighted. When asked, "*What do you think are the obstacles or challenges to addressing these issues?”* the most common response was the need for increased collaboration and coordination. Establishing more collaboration between organizations was noted as key to addressing the other priorities highlighted through this process.

Needs prioritization efforts at the summit revealed what success looks like in three years for this need. This discussion highlighted that enhancing resources and services within the community is essential to achieving success in the other priority areas. Participants noted that this priority incites the need to “keep a pulse on all issues that the community faces” and respond accordingly. Participants also mentioned having regular attendance at interdisciplinary, collaborative meetings as an essential component for addressing the largest needs throughout Rutherford County.

Nutrition and Obesity- Summary

Obesity and a lack of nutrition are an ongoing struggle for residents of Rutherford County. Primary and secondary data support the problematic nature of this issue.

Obesity rates are high in Rutherford County, with 33% of Rutherford County residents being reported as obese by the County Health Rankings. This is higher than both the nation and the state of Tennessee. Tennessee ranks second in the nation for number of students in high school who are overweight or obese. In Rutherford County, 40.3% of high school students are either overweight or obese. Furthermore, access to recreation and fitness activities in Rutherford is lacking. When asked, 56% of all high school students across Tennessee were not physically active for more than 60 minutes, 5 days a week. When the community was asked, “*What do you think is the most important health issues for Children in Rutherford County,”* one of the top answers was nutrition. When analyzing the county’s healthy food access, over 29% of low-income population are considered as having low food access. There is a significant number of

fast food restaurants per capita in the county, at 91.1/100,000. Comparatively, Tennessee has 77.69/100,000 and the United States has 77.06/100,000.

During the prioritization process, community members and health officials mentioned that prevention, education and access were the three most important components related to this health need. Individuals in the community need to receive quality education on healthy eating and drinking habits in order to foster behavior change. Furthermore, prevention initiatives were also mentioned – specifically for children and youth – such as encouraging more activity during school hours by adding walkable parks and trails. People lack access to healthy foods, making food access a huge priority in Rutherford County. Schools have the ability to greatly decrease the impact of this by implementing various policies. For example, schools could implement a policy waving the total cost of breakfast and lunch for all low-income students. Creating sustained behavior change requires effort from a variety of stakeholders. This includes policymakers being dedicated to improving access to necessary resources.

2019

Williamson County

COMMUNITY HEALTH NEEDS ASSESSMENT

2019

Introduction

Williamson County Collaborations

In Williamson County, VUMC collaborated with the Williamson County Health Department (WCHD) on the Community Health Needs Assessment (CHNA). The Williamson County Health Department Director and staff were critical in identifying interview participants as well as recruiting participants and securing space for listening sessions. In addition, WCHD joined in the planning and implementation of the community summit in Williamson County.

The Community Health Assessment Advisory Council (CHAAC) is a group of leaders in Williamson County that guided the core planning team throughout the assessment design process, data collection, and needs prioritization for the 2019 CHNA. The CHAAC also aided in community mobilization to help drive participation and build relationships. VUMC and WCHD served as leaders and facilitators of the group which was comprised of community stakeholders.

Environmental Scan Results

Introduction

This environmental scan is a summary of health and health-related studies that provide information, data, and common themes presented in various reports published about Williamson County. The purpose of the review is to examine existing data relevant to community health and identify strengths, assets, and areas of improvement regarding the health and healthcare in the community.

The reports that were assessed for Williamson County included the 2016 Community Health Needs Assessment, Drive your County to the Top Ten, Williamson County Cause of Death Data, Williamson County Trends Report, and PRIDE surveys (middle and high school students). When examining these reports, it is important to understand the underlying and systematic barriers affecting the health outcomes of the populations of focus. This review uses "health equity buckets," as defined by NACCHO's MAPP Handbook, to ensure that the populations and communities at higher risk for adverse health outcomes are included in the review process. Some of the major health equity buckets that were considered in the various reports include: economic security and financial resources, livelihood security and employment opportunity, school readiness and educational attainment, and environmental quality.

Major Themes

Williamson County is in the top ten for most populous counties in Tennessee and includes the cities of Franklin and Brentwood. Williamson County consistently ranks as the number one healthiest county in the state of Tennessee. Additionally, Williamson County residents have the highest median salary. Williamson County is also becoming a major business and economic hub that, along with their many other vast resources, is attracting new residents every day.

One of the main themes gathered from reports in Williamson County was air pollution and particulate matter. This is a problem that is affecting most residents of Williamson County.

In addition to the expansion and growth of the county, many families are financially stable, allowing multiple members in a household to have a car. Few residents of Williamson County carpool to work and many people from neighboring counties commute into the county for work. Transportation and the increase in traffic has created a problem that is affecting the environmental quality and overall quality of life.

Excessive alcohol consumption was identified as a major health problem in Williamson County, with purchasing power to buy alcohol noted as one driver. Many adolescents and teens are able to more easily access their parent's alcohol, making underage drinking a noted theme as well. Additionally, attitudes towards drug use, including alcohol, are becoming increasingly more lenient, making this a potential issue to address in years to come.

Although many Williamson County residents have little to no financial burdens, there are pockets within the county, such as Fairview and parts of Franklin, where many residents are struggling with unaffordable housing and high food insecurity. According to Feeding America, food insecurity is the inability to reliably access sufficient quantities of affordable and nutritional foods. The population most at risk for being financially burdened are vulnerable and minority populations, particularly African-Americans, Hispanics, and those without a high school diploma. Additionally, due to the high volume of new residents in Williamson County, new housing developments are being built, which is gentrifying neighborhoods and forcing residents out of their homes. While Williamson County has many useful resources and most residents are considered financially sound, there are many residents that are unable to afford even the most basic necessities.

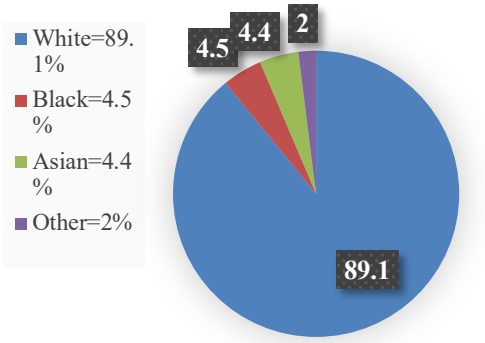
Conclusion

Overall, Williamson County is consistently the healthiest county in the state of Tennessee. However, not all county residents enjoy the same prosperity and health advantages. There are still many community health issues that need to be addressed to improve health outcomes for all residents in the county. By focusing on the top themes mentioned above: transportation and air pollution/particulate matter, excessive drinking, and unaffordable housing and food insecurity, we can begin to address major health concerns in the county.

Secondary Data Results

Demographics and Socioeconomic Status

Williamson County is home to approximately 226,250 people as of 2017. In the seven years prior to 2017, the population in Williamson County grew by nearly 23.5%, while the entire state of Tennessee's population only grew by 5.8%.[205] The projected population of Williamson County by 2025 is approximately 308,000. The current average age of residents of Williamson County is 39 years old, however, seniors (65+) are expected to be the fastest growing age group over the next decade (+50%). While the population is projected to continue growing, the job market is also expected to increase. An estimated 41% increase in population is expected to occur between 2015-2035, while the number of jobs will likely increase by 47% during this same period of time.[206] In Williamson County specifically, many individuals in the county who are older than 25 years old have a bachelor's degree or higher. In fact, Williamson County had the highest percentage of bachelor's degree attainment in the state of Tennessee at 58.1%.[207] In addition, the high school graduation rate in the county, reported as 95.5%, is remarkable compared to the state's rate of 88.5% and the nation's rate of 88.4%.



Percent Hispanic or Latino: 4.8%

Figure 94. Demographics of Williamson County, US Census Bureau (2018)

Notably, Williamson county households are very wealthy, especially when compared to other households statewide. The median household income in Williamson County is $103,543 while for the state of Tennessee as a whole it is $48,708. Poverty rates are very low in the county, with 4.6% of the population living below the federal poverty line. Furthermore, the percent of children living under the federal poverty line is very low at 6.39%, while in Tennessee 25.13% of children are living below the FPL.[208] Racial distributions in Williamson County can be seen in the chart in **Figure 94**.

[205] United States Census Bureau. (2017). *Population and Housing Unit Estimates.* Retrieved from https://www.census.gov/programs-surveys/popest/data/tables.html

[206] Nashville Metro Planning Organization. (2019). *Growth Trends and Forecast.* Retrieved from http://www.nashvillempo.org/growth/

[207] United States Census Bureau. (2018). *QuickFacts Williamson Co. Tennessee.* Retrieved from https://www.census.gov/quickfacts/williamsoncountytennessee

[208] Community Commons. (2018). *Total Number of Children Living in Poverty.* Retrieved from https://www.communitycommons.org/map/

Social Determinants of Health

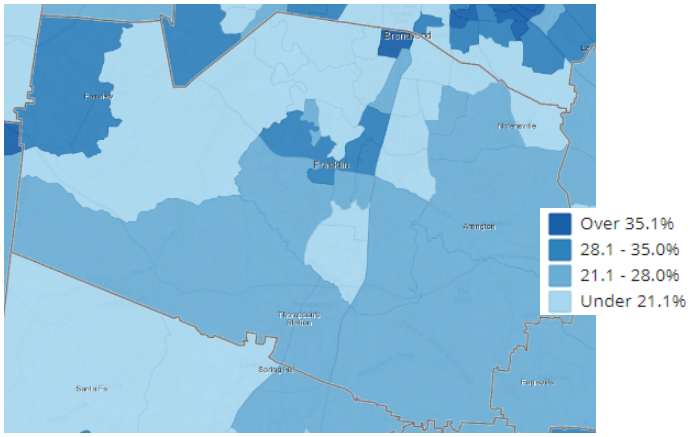


Figure 95. Housing insecurity in Williamson County, CDC (2018)

The circumstances in which we are born, grow, live, work and play are called Social Determinants of Health. These determinants are related to the distribution of money, power and resources within a community. The World Health Organization states that social determinants of health are mostly responsible for health inequities, which are defined as the unfair and avoidable disparities in health statuses that exist within communities. While Williamson County faces low rates of poverty, inequities in health continue to exist in certain geographic pockets.

Housing is a key component that we examine when considering social determinants of health. Overall, housing costs are not a significant burden to the county, but there are large pockets where more than 20% of the population is burdened by the cost of housing. **Figure 95** shows the distribution of the housing cost burden in the county.[209]

Commuting has become an increasing concern across Williamson County. Data highlight the magnitude of commuting that occurs across counties lines each day. For residents of Williamson County, the average commute time is 27.6 minutes. Many people are commuting both to and from Williamson County daily. Most people commute to and from Davidson County, while many commuters also come from Rutherford, Marion, Wilson and even Sumner counties. Several factors within the built environment of Williamson County affect health, including violence in communities, food access, and air quality. While Williamson County ranks better than the state and nation, with 130 violent crimes/100,000 individuals, it does not rank within the top 10% of counties in the United States (62/100,000).[210] Of the 7% of individuals in Williamson County that are food insecure, 12.2% of them are children.[211] Food insecurity includes lack of access to healthy food, which largely contributes to health and wellbeing. Rates of food insecurity are outlined in **Figure 96**.

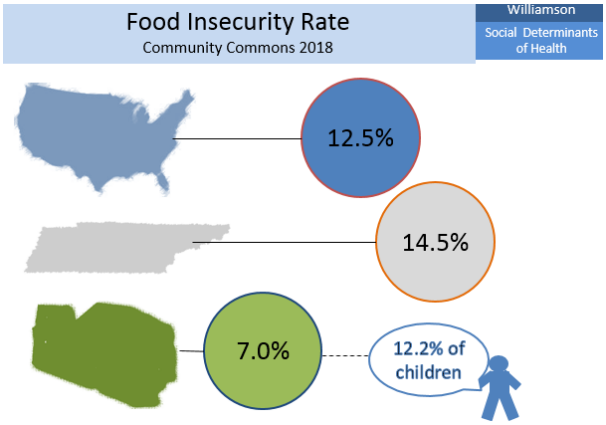


Figure 96. Child Food Insecurity, Feeding America (2018)

---

[209] **Cost burdened can be defined as 30% or more of a monthly household income being spent on housing.**
[210] **Violent crimes can be defined as crimes that involve face-to-face confrontation between the victim and perpetrator, such as homicide, robbery, and aggravated assault.**
University of Wisconsin Population Health Institute. (2018). *County Health Rankings.* Retrieved from http://www.countyhealthrankings.org/app/tennessee/2018/rankings/williamson/county/outcomes/overall/snapshot
[211] Feeding America: Map the Meal Gap. (2018). Child *Food Insecurity in The United States.* Retrieved from http://map.feedingamerica.org/county/2016/child

The quality of air can greatly impact health as well. Williamson County has lower air quality than both the state and nation, with a daily average of 10.2 PM2.5.[212] Williamson County residents suffer from high rates of pediatric and adult asthma, COPD, and lung cancer, which is illustrated in **Table 10**.[213]

Table 10. Estimates of Lung Disease in Williamson County, American Lung Association (2018)

Estimates of Lung Disease Williamson County 2018	
Pediatric Asthma	5,897
Adult Asthma	17,552
COPD	16,276
Lung Cancer	165

Access to Health Care

Most people gain entry to the healthcare system through insurance coverage. Though uninsured rates have reached historic lows in Williamson County and across the nation, it is important to note that there are still plenty of populations that have no access to insurance. This lack of access can be attributed to costs or various other restrictions, such as immigrant eligibility. The populations most at risk for not having insurance are low income adults and minorities. Six percent of Williamson County residents are uninsured, falling right within the top 10% of counties in the United States.[214] However, access to care depends on both insurance status and provider availability. Williamson County ranks much better than the state when it comes to the availability of primary care physicians. In fact, it ranks within the top 10% of all counties.[215] The number of mental health care providers is not among the U.S. top 10%, however.

Table 11. Ratios of providers to population in Williamson County

	Williamson	TN	U.S. Top 10
Primary Care	670 : 1	1,380 : 1	1,030 : 1
Dental Care	1,310 : 1	1,890 : 1	1,280 : 1
Mental Health Care	700 : 1	740 : 1	330 : 1

[212] University of Wisconsin Population Health Institute. (2018). *County Health Rankings.* Retrieved from http://www.countyhealthrankings.org/app/tennessee/2018/rankings/williamson/county/outcomes/overall/snapshot
[213] American Lung Association. (2018). *Tennessee:Williamson.* Retrieved from https://www.lung.org/our-initiatives/healthy-air/sota/city-rankings/states/tennessee/williamson.html
[214] County Health Rankings & Roadmaps. (2018). *Williamson: Health Outcomes.* Retrieved from http://www.countyhealthrankings.org/app/tennessee/2018/rankings/williamson/county/outcomes/overall/snapshot
[215] County Health Rankings & Roadmaps. (2018). *Williamson: Health Outcomes.* Retrieved from http://www.countyhealthrankings.org/app/tennessee/2018/rankings/williamson/county/outcomes/overall/snapshot

Health Status

Morbidity/Mortality

As advances in public health and medicine have continually developed over the last century, the top causes of death have shifted. An array of infectious diseases, such as influenza, pneumonia, and tuberculosis, remained the leading causes of death for much of the early 1900's. However, advances in public health such as vaccination development and implementation eventually allowed rates of chronic illnesses to begin surpassing rates of infectious diseases and the United States began to see a surge in rates of chronic diseases like heart disease, cancer, and stroke.[216] These national trends are consistent with the leading causes of death in Williamson County, shown in **Figure 97**, as cancer and heart disease account for nearly 45% of the percentage of total deaths from 2016. Additional causes of death include Alzheimer's disease (7.8%), Accidents (6.8%), Stroke (5.3%), Lung Disease (4.9%), Suicide (2.4%), Diabetes (2.2%), Influenza (1.9%), and Kidney Disease (1.4%).[217]

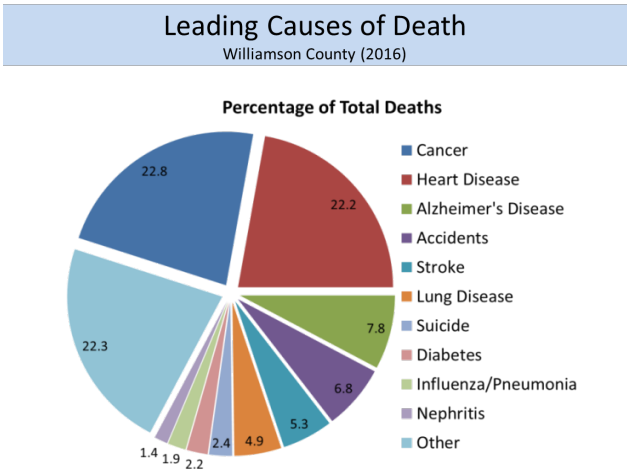


Figure 97. Percentages of deaths in Williamson County, CDC (2018)

[216] Centers for Disease Control and Prevention. (2018). National Vital Statistics System: Mortality Tables. Retrieved November 2018 from https://www.cdc.gov/nchs /nvss/mortality_tables.htm
[217] Centers for Disease Control and Prevention: CDC Wonder. (2018). *CDC Wonder.* Retrieved May 2018 from https://wonder.cdc.gov/

Cancer

As previously mentioned, cancer is the leading cause of death in Williamson County. The death rates of various cancer types between 2011 and 2015 are outlined in **Figure 98,** which compares rates in Williamson County to Tennessee. Breast cancer tops the list of total deaths in both geographical regions, followed by rates of prostate, lung, colorectal, and melanoma cancer. Deaths associated with prostate, breast, and skin cancer are occurring at a much higher rate in Williamson County than the state, yet rates of lung and colorectal cancer are higher in Tennessee. This discrepancy is likely due to the different environmental and societal components that Williamson County residents are exposed to. Along with these geographic inconsistencies, racial and gender disparities are often extremely prominent. In addition to looking at racial and gender discrepancies, it is important to identify which types of cancers are affecting which age groups at higher rates. For example, studies indicate that lung cancer has been the leading cause of cancer deaths in Williamson County for adults aging from 45 to 74.[218] This trend has remained consistent since the late 1990's, suggesting that the majority of Williamson County's residents are not being diagnosed with lung cancer until the disease has progressed into late stages. The CDC, along with many other public health agencies, are making important strides to improve the early detection of cancer and implement community-based interventions to reduce risky health behaviors.

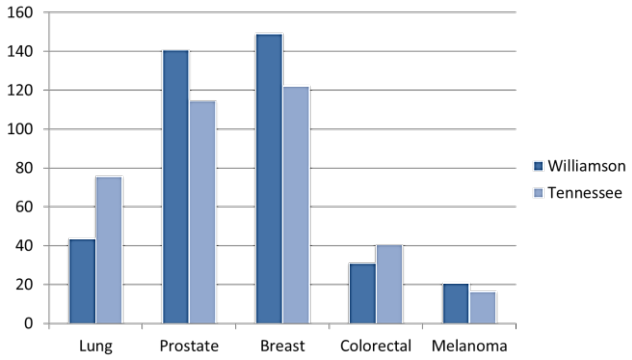


Figure 98. Rates of cancer deaths by diagnosis 2011-2015, CDC (2018)

Heart Disease

According to the CDC, more than 630,000 Americans die each year from heart disease, making it the leading cause of death in both men and women nationwide. In addition to genetic risk factors, unhealthy behavior is most often the culprit for increasing the risk of heart disease.

Despite the general decline in heart disease rates that we have seen over the years, heart disease remains the second leading cause of death in Williamson County. These rates likely allude to the unhealthy lifestyles that many Williamson County residents are living. Heart disease rates in Tennessee have disproportionately affected certain racial demographics at a higher rate for years. **Figure 99**

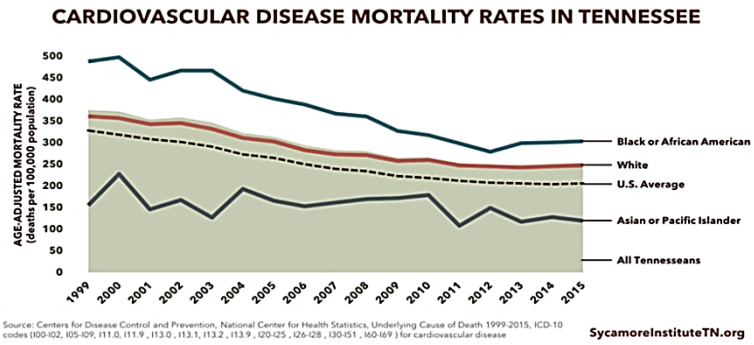


Figure 99. Cardiovascular disease mortality rates in Tennessee by race, Sycamore Institute (2017)

[218] Institute for Health Metrics and Evaluation (IHME), US County Profile: Williamson County, Tennessee. Seattle, WA: IHME, (2016). *IHME.* Retrieved May 2019 from http://www.healthdata.org/sites/default/files/files/county_profiles/US/2015/County_Report_Williamson_County_Tennessee.pdf

shows racial and geographic disparities in deaths from cardiovascular disease in Tennessee. Similar to many other risk indicators, the burden of cardiovascular disease falls heaviest on African American populations.[219] These populations have consistently had the highest rates of heart disease mortality in Tennessee throughout the years. Additionally, the state averages for both white and black populations are higher than the national average. Continuing to employ more prevention-based models of care that reach all ages, races, and genders could have a tremendous impact on decreasing the national, state, and local trends of heart disease.

Alzheimer's Disease

Tennessee has surpassed the national average in Alzheimer's disease death rates. In fact, Tennessee ranks seventh in the United States in total numbers of Alzheimer's deaths. Specific to Williamson County, Alzheimer's disease is noted as the third leading cause of death, with 114 deaths in 2016 alone**.** **Figure 100** compares Tennessee's total Medicaid cost for beneficiaries with Alzheimer's disease to the cost per capita in the United States, Nevada, and North Dakota.[220] This comparison places Tennessee just below the national cost per capita, indicating the rising financial impact of this disease.

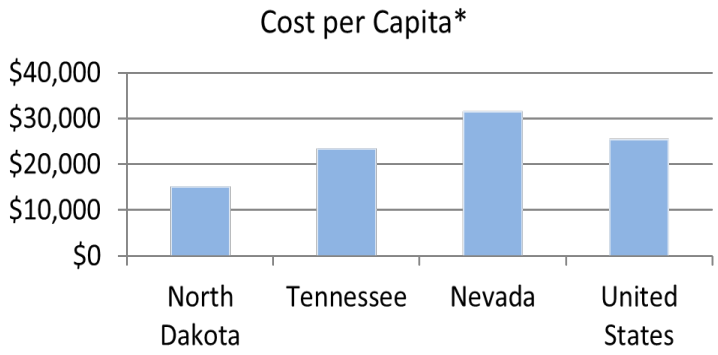


Figure 100. Cost of Alzheimer's disease per capita, Alzheimer's Association (2018)

Unintentional Injuries

Unintentional injuries, or "accidents", have become the third leading cause of death in the United States. This reality calls for a deeper analysis to determine what types of injuries are most commonly resulting in deaths and how to prevent them. The CDC recognizes unintentional poisoning deaths as having resulted in the highest number of accidental deaths in 2016, followed by motor vehicle traffic deaths and deaths from unintentional falls. When looking at motor vehicle traffic deaths in Williamson County, it was noted that alcohol-impaired driving deaths accounted for 23%. The United States unintentional injury death rate in 2018 is 55 per 100,000 people. This number is in between the rates reported in Tennessee

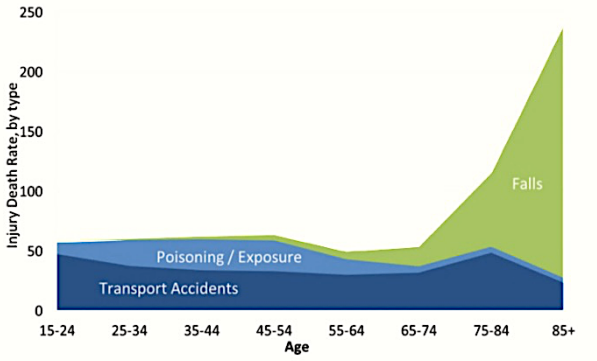


Figure 101. Accidental death rate of Tennessee males by age and type, (2013)

[219] The Sycamore Institute. (2017). *Cardiovascular Disease Mortality Rates in Tennessee by Courtney Melton.* Retrieved from https://www.sycamoreinstitutetn.org/2017/07/11/cardiovascular-disease-mortality-rates-in-tennessee/

[220] Alzheimer's Association. (2018) *2018 Alzheimer's disease facts and figures.* Retrieved from https://www.alzheimersanddementia.com/article/S1552-5260(18)30041-4/fulltext

and Williamson County, with these totals being 83 and 50 per 100,000, respectively.[221] A discrepancy exists among rates of males and females in Williamson County, as males are more than twice as likely as females to die from unintentional injuries, which is similar to national and state data. **Figure 101** shows the injury death rate by age and type in Tennessee males from 2013.

Suicide

Williamson County prioritized the need to improve access to mental health services and treatment, in hopes of decreasing the climbing rates of suicide reported over the last few years. **Figure 102** illustrates the total number of suicide-related deaths from 2015, the rate at which they occurred, and the age groups with the highest amounts of suicide in Tennessee. According to the Tennessee Suicide Prevention Network, white males between the ages of 45 and 64 have the highest suicide rate in Tennessee.[222] Despite the high quality of life that is self-reported in Williamson County, residents still suffer from suicide risk factors, including excessive alcohol use, substance abuse, and mental health issues. While demographic data for suicide in Williamson County are limited, we do know that Williamson County reported 28 suicide deaths in 2018. In addition, law enforcement agencies answered nearly 400 suicide-related phone calls.

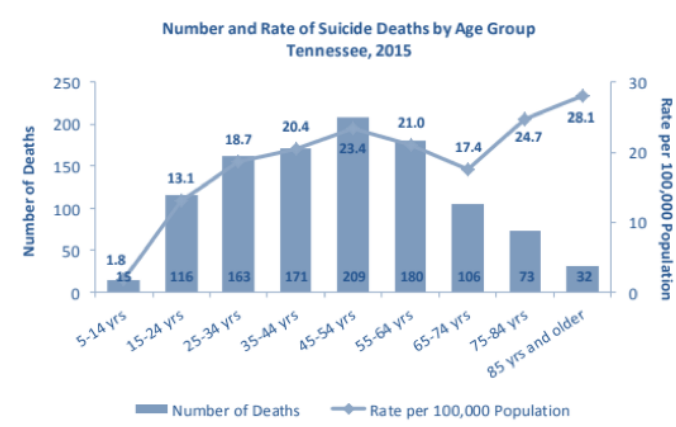


Figure 102. Number and rate of suicide deaths by age group in Tennessee, TN Suicide Prevention Network (2017)

Birth Outcomes

Infant Mortality

Through advances in medicine, rates of infant mortality in the United States have decreased dramatically since 1915. Over the last century, the infant mortality has dropped nearly 95% for both white and African Americans. Though both racial populations have experienced a decrease in rates, racial disparity has continuously existed between the two demographics over the years. In 1915, roughly 1 in every 10 white infants died, with rates for African American infants being twice as

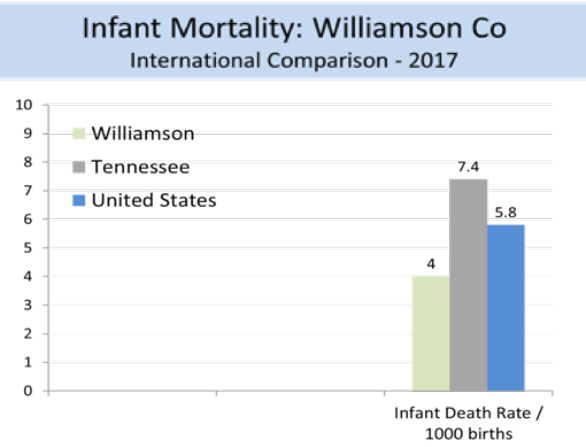


Figure 103. Infant mortality comparison, TN Dept of Health (2017)

[221] County Health Rankings & Roadmaps. (2018). *Williamson: Health Outcomes.* Retrieved from http://www.countyhealthrankings.org/app/tennessee/2018/rankings/williamson/county/outcomes/overall/snapshot
[222] Tennessee Suicide Prevention Network. (2017). *Status of Suicide in Tennessee.* Retrieved from http://tspn.org/wp-content/uploads/2014/01/SOST17-Penultimate.pdf

much. Today, we see nearly 1 in 200 deaths for white babies, yet we are still losing twice as many African American babies nationwide. In fact, the relative disparity in outcomes is higher than it was 100 years ago.[223] Due to the limited data in Williamson County, we do not have county level infant mortality data to illustrate the racial disparity among the county's infant mortality rates. However, enough data exist to analyze how the rates in Williamson County compare to the national and state level numbers. **Figure 103** shows Williamson County having an infant mortality rate of 4 deaths per 1,000 births in 2017. Williamson County's rates are significantly lower than the rates in Tennessee and the United States, calculated at 7.4 and 5.8 deaths per 1,000 births, respectively.[224] Behind birth defects, the leading causes of infant death are low and very-low birth weight. Williamson County is doing relatively well in this category of other birth outcomes as the percent for very low and low birthweight statistics meet the Healthy People 2020 goals of 1.4 and 7.8, respectively. However, a distinct disparity still exists between African American and white babies. For example, African American babies made up 20 percent of all births in 2016, yet accounted for 33% of total infant deaths.

Teen Birth Rates

Improvements in sex education and increased knowledge of preventative birth measures have coincided since the 1990's. Because of this, teen birth rates are declining rapidly in the United States, with the sharpest decline taking place among black and Hispanic females. However, these groups still have higher rates of teen birth when compared to whites and the total population. While teen birth rates in the United States have been declining, Williamson County reports show a large disparity with teens of color having a teen birth rate of 13.3 per 1,000 in 2017 and whites teens having a birth rate of 1.1 per 1,000.[225] **Figure 104** shows rates among African American teens skyrocketing between 2016 and 2017, yet white teens experienced a steady decline. There are a multitude of reasons why this disparity exists, but it is often a result of differing social determinants of health and socioeconomic status.

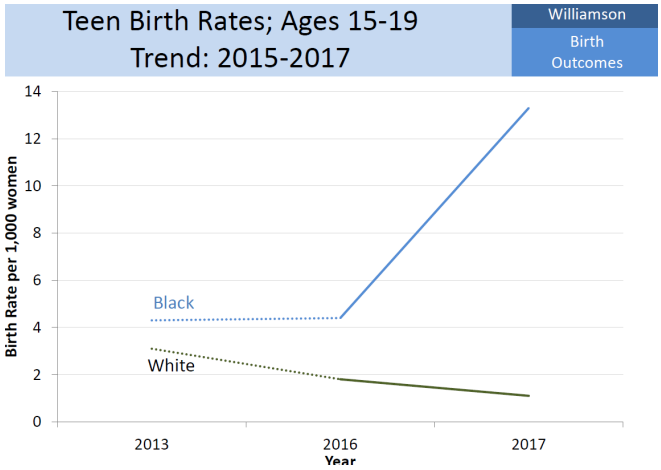


Figure 104. Teen births by race in Williamson Annie E. Casey Foundation KIDS COUNT (2017)

[223] Centers for Disease Control/National Center for Health Statistics. (2017). *Infant Health*. Retrieved from https://www.cdc.gov/nchs/fastats/infant-health.htm
Kids Count Data Center. (2018). *Infant mortality by race in the United States.* Retrieved from https://datacenter.kidscount.org/data/tables/21-infant-mortality-by-race#detailed/1/any/false/870,573,869,36,868,867,133,38,35,18/10,11,9,12,1,13/285,284

[224] TN Dept of Health. (2017). *Number of Infant Deaths with Rates per 1,000 births, by race of mother.* Retrieved from https://www.tn.gov/content/dam/tn/health/documents/TN_Infant_Mortality_Rates_-_2016.pdf
Central Intelligence Agency World Factbook. (n.d.). *Country Comparison: Infant Mortality Rate.* Retrieved from https://www.cia.gov/library/publications/the-world-factbook/rankorder/2091rank.html

[225] Annie E. Casey Foundation KIDS COUNT. (2017). *Teen births by race in Williamson.* Retrieved from https://datacenter.kidscount.org/data/tables/9372-teen-births-by-race?loc=44&loct=5#detailed/5/6513/false/871,870,573/107,133/18496

Preventative Care / Behavioral Risk Factors

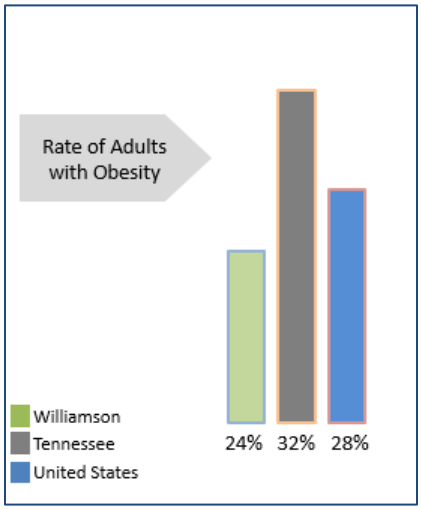


Figure 105. Comparative rates of adults with obesity, County Health Rankings (2018)

The behaviors in which we choose to participate play a large role in our health outcomes and overall health status. It is essential to employ preventative methods in order to reach sustainable health and wellness in our communities. Oftentimes, the "health" of an individual is self-defined and subjective. Williamson County ranks within the top 10% of U.S. counties when it comes to self-reported health, with 12% of adults in the county reporting their health status as "poor" or "fair." [226] Healthy People 2020 determined a goal that only 12% of residents in any area use tobacco products. [227] The prevention of individuals using smoking tobacco is important because of the negative health consequences previously discussed. Unfortunately, in 2016, 15% of adults in Williamson County reported using or smoking tobacco. While this is better than the state and the nation, there is still a lot of work to do in the county to further prevent the use of tobacco products.[228] One of the most problematic and negative health behaviors in Williamson County is the excessive drinking. Approximately 17% of adults in the county report excessively drinking while only 14% of adults in the state of Tennessee report excessive drinking. The state of Tennessee had recommended a reduction in binge drinking in order to curb this disparity in the county.[229]

While obesity continues to be a pressing issue across the state of Tennessee, Williamson County has much lower rates than the state and nation when it comes to this issue, as seen in **Figure 105**. These lower obesity rates could be attributed to the adults in Williamson County generally being much less sedentary than adults across the state, with 20.8% of adults in Williamson County reporting themselves as inactive. The state of Tennessee reports 30.1% of individuals as inactive.

One of the largest preventative measures that society uses today is a vaccination. While vaccination rates are high, there is a large disparity that exists in 24-month vaccinations between white and African American children. 64.8% of African American children in Tennessee received their 24-month vaccinations on time, while 75.1% of white children received theirs on time. [230]

---

[227] Healthy People 2020. (2014). *Tobacco.* Retrieved from https://www.healthypeople.gov/sites/default/files/HP2020_LHI_Tobacco_0.pdf
[228] University of Wisconsin Population Health Institute. (2018). *County Health Rankings.* Retrieved from http://www.countyhealthrankings.org/app/tennessee/2018/rankings/williamson/county/outcomes/overall/snapshot

[229] Tennessee Department of Health. (2015). *Drive Your County to the Top Ten: Accelerating Action Towards Improving County Health.* Retrieved from https://www.tn.gov/content/dam/tn/health/documents/2015_Drive_Your_County_to_the_Top_Ten.pdf
[230] Tennessee Department of Health. (2016). *Results of the 2016 Immunization Status Survey of 24 Month Old Children in Tennessee*. Retrieved from https://www.tn.gov/content/dam/tn/health/documents/ImmunizationSurvey2016.pdf

Mental and Emotional Health

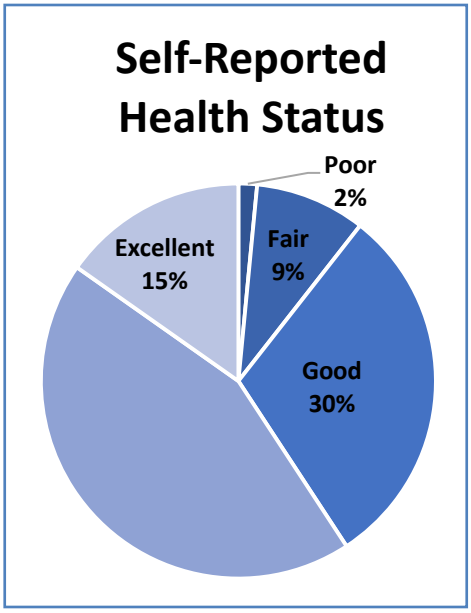


Figure 106. Self-reported health status, Williamson County Community Survey (2018)

"Evidence has shown that mental disorders are strongly related to [chronic diseases] and many risky behaviors that lead to chronic disease such as physical inactivity, smoking, excessive drinking and insufficient sleep." [231] Therefore, the mental health of an individual plays a very crucial role in their health and health outcomes. For this reason, it is important to not only consider the physical health of one, but also their mental and emotional health. Adults in Williamson County report 3.8 days per month of having poor mental health. While reports of poor mental health days are rather low, data highlight the lack of mental health services for those that need it the most. In the state of Tennessee, 56.8% of patients suffering a serious mental illness were not able to access the proper mental health services that they needed.[232] It is important to increase access and affordability of care for these individuals, in order to reduce the number of negative behaviors and outcomes.

[231] Centers for Disease Control Mental Health Basics
[232] Substance Abuse and Mental Health Services Administration. (2015). *Behavioral Health Barometer: Tennessee.* Retrieved from https://www.samhsa.gov/data/sites/default/files/2015_Tennessee_BHBarometer.pdf

Primary Data Results

Williamson County Community Survey Themes

A community survey was distributed throughout Williamson County focused on the health status and needs of Williamson County residents. The overall themes from the survey will inform the Williamson County Health Department's Community Health Improvement Plan (CHIP) as well as VUMC's CHNA and Implementation Strategy.

> "A mismatch between *affluenza* and not enough resources for less affluent children"
> – *Community Survey Respondent*

This survey accumulated over 1,000 responses from Williamson County residents. The majority of respondents were female and retired with an age of 55 or more. Most individuals were college graduates or higher. A quarter were Veterans or lived with a Veteran. The most prevalent zip codes were from Franklin, Brentwood, and Cool Springs, and a third of respondents had a household income of less than $75,000.

When asked about their general health, over half of respondents noted their health to be "very good" (44%) or "excellent" (15%), and 11% described their health as "poor" or "fair". Most individuals have exercised in the previous month (85%) and have seen a doctor in the last year (88%) or two years (95%). Only 5% of respondents currently use tobacco or e-cigarettes.

Participants were asked about experiences of stress in the last two weeks, to which about a third of responses were "none" (29%) or "a little" (33%). About a quarter of individuals noted they have been stressed some of the time (23%) within the last two weeks, and 10% answered they have been stressed most of the time or all of the time. When asked how many days each respondent has felt sad, blue, or depressed within the last 30 days, most respondents answered 0-2 days (72%), while 12% of people reported feeling sad for 7-30 of the last 30 days.

About a quarter of respondents had a child under the age of 18 in the house. Of that number, most individuals had one child (44%) or two children (39%) in the house. Most respondents reported they are *always* able to take their children to a doctor when needed.

When asked how satisfied individuals are with their care, the majority reported being "very satisfied" (72%) or "somewhat satisfied" (26%). Nearly all of respondents were insured with about half using employer-based insurance and a third using Medicare. Additionally, one in eleven people noted they could not see a doctor because of cost at some point in the last year.

Participants were then asked about mental health and substance abuse, to which most people agreed or strongly agreed that mental illness (92%), alcohol abuse (92%), and drug use and abuse (94%) are problems in their county. The next question asked whether there are accessible, affordable resources for people in their county. About half of individuals agreed and half disagreed that there are accessible, affordable resources for people who need mental health services. Additionally, more than half of respondents agreed there are accessible, affordable resources for people who want to stop using drugs or alcohol.

When asked whether individuals have the ability to meet basic needs such as food, clothing, housing, and medication, most individuals recorded having the ability to meet basic needs both for their families (97%) and for themselves (97%). In response to questions about

resources available in their community, most people agreed there are accessible resources to address domestic violence (76%) and accessible, affordable healthy food available to all (68%).

However, most individuals disagreed that there is affordable, accessible housing available in their community (77%). For whether transportation in their county is safe, affordable, and accessible to everyone, half of the respondents agreed and half of them disagreed.

For the open-ended questions, when asked what the most important health issues for children are, the primary concerns included stress and mental health, nutrition, bullying and abuse, and substance abuse. Substance abuse included drugs, tobacco, and e-cigarettes. One respondent noted "a mismatch between *affluenza* and not enough resources for less affluent children." The next question was whether there are other important issues related to healthcare access, insurance, or the health system. The main concerns were cost and access for the uninsured, quality of care, and appointment availability, with one individual stating, "as a woman, not being taken seriously is still a problem." When asked what characteristics make a health community for all, the most prevalent responses were parks and greenspaces, safety, and healthcare. There were many calls to action, and topics to focus on include healthcare and mental health.

In summary, themes in Williamson County from the community survey include mental health, substance abuse, and housing accessibility. The majority of respondents indicated there are accessible resources in Williamson County.

Williamson County Community Listening Session Themes

Listening sessions were conducted in Williamson County in collaboration with the Williamson County Health Department and other community stakeholders. These themes will inform the Community Health Improvement Plan (CHIP) and Implementation Strategy for Williamson County Health Department and VUMC.

Most participants were female and spoke English as their primary language. About half of the 25 total respondents were Hispanic or Latino (44%) and half were white (56%). A majority of individuals were commercially insured and about a third were uninsured.

When asked what the community's strongest assets are, the primary responses included the education system, welcoming attitudes, and faith-based/other community resources. Safety and job opportunities were also mentioned as assets. The next question addressed the biggest concerns about the community, to which the main responses were child development and care, affluenza, teen stress and homelessness, affordable housing, senior care, and an overworked population. Other key concerns include domestic violence, mental health, bullying, and racism. One respondent noted, "There is no time for your kids, much less your health."

> "There is no time for your kids, much less for your health" – *Listening Session Participant*

Participants were then asked to discuss the kinds of obstacles that arise when addressing these issues. The top responses included stigma, awareness of problems and resources, and a lack community involvement in politics. The final question asked, "If you had a magic wand, what

top health initiatives would you implement in your community in the next three years?" The primary responses were women's mental health, domestic violence, technology and education, and addressing language barriers with an emphasis on health literacy.

In summary, the main concerns from the Williamson County listening sessions included women's health and safety, mental health, care for children, affordable housing, and stigma. The welcoming atmosphere in Williamson County was consistently mentioned as an asset to the community.

Williamson County Key Informant Interview Themes

Interviews were conducted in Williamson County with 19 community representatives and leaders particularly who serve low-income, minority or underserved populations. The emphasis of the interviews was on the broad interests of the community. A variety of sectors were represented including public health, government/public sector, health care, education, faith community, private non-profits, academia, and business. Interviews were conducted in pairs with an interviewer and a recorder, and all questions were open-ended. Topics focused on community assets, issues and concerns, obstacles to addressing concerns, and priorities. Data from the interviews were then submitted into REDCap, and teams of two reviewers conducted a thematic analysis. These themes were used to inform the CHIP for Williamson County Health Department and the Implementation Strategy for VUMC.

> "It is easy to get lost in the idea of being highly raised and forget about disadvantaged and marginalized groups" – *Interviewee*

The first question asked the 19 total interviewees about the community's strongest assets. The primary responses were the small-town culture, parks, economy, education, and safety. Participants were also asked about the biggest concerns in their community. The top responses included mental health and substance abuse for adults and teens, affordable housing, and transportation.

When asked about the obstacles to addressing these concerns, interviewees expressed issues with awareness and education, difficulty serving specific sub-populations, and stigma surrounding different cultures.

Interviewees were asked, "If you had a magic wand, what top initiatives would you implement in your community in the next three years?" The main responses were housing, mental health and substance abuse, and resources "for all." One interviewee stated, "Guidance counselors are not mental health counselors, and most kids need someone to talk to."

Overall, Williamson County interview themes related to affordable housing, mental health, and substance abuse. The small-town culture and parks were commonly recognized assets to Williamson County.

Identifying and Prioritizing Needs

Community Summits

Results of the community interviews, community listening sessions, and secondary data analysis were presented at the Williamson County Community Health Summits. Summit invitees included participants in interviews and community listening sessions, as well as community members with expertise in public health or who work with medically under-served, minority, or low-income populations. Leadership from VUMC, Williamson County Health Department, and other community stakeholders were also present.

The purpose of the summits was to solicit input and take into account the broad interests of the community in identifying and prioritizing the community's health needs. The summit was facilitated by VUMC and Williamson County Health Department.

After presenting primary and secondary data gathered during the assessment on a number of issues, summit attendees provided input into prioritizing the most important health needs within the community. Each individual selected between one and three health issues and then discussed these needs with their tablemates. Each group consolidated the needs into three health need buckets. These buckets were then entered into the REDCap system, and all participants voted on their top three priorities via REDCap. The four health needs with the greatest number of votes were selected as the prioritized health needs

Summary of Prioritized Needs: Williamson County

The prioritized needs for Williamson County are:

- **Substance Abuse**
- **Mental Health/Suicide Prevention**
- **Health Education & Prevention/Resource Availability**
- **Affordable Housing**

Substance Abuse - Summary

Williamson County's substance abuse problem is in dire need of being addressed. All methods of data collection highlighted the urgency for Williamson County to address the substance abuse issues that the community is facing. Substance abuse was a prioritized need in the 2016 CHNA and continues to be one of the most important health needs to address in the community. All socioeconomic categories and age groups are affected by substance abuse in this county. Opioid use and related deaths, lack of mental health care services, and high rates of alcohol abuse, binge drinking, and drug use were highlighted as especially problematic.

Primary data collection revealed that 92% of adult respondents agreed or strongly agreed that alcohol abuse is a problem in their county, while 94% of respondents said that drug

State Drinking Recommendation In Williamson County

"Get 77 out of every 100 adults who currently drink in excess to stop drinking more than one(women) or two(men) drinks per day, on average"

-Tennessee Department of Health

use and abuse are a problem in the county. When asked, youth noted drug abuse to be a larger issue than alcohol use in the county. When asked if there were resources in the county for those who wanted to quit using alcohol or drugs, only 63% of respondents thought that the proper resources were available for these individuals. Secondary data show that excessive or binge drinking is very problematic in the county; 17% of adults admit to binge drinking, compared to 14% of adults in Tennessee. This is so problematic that the state has provided a recommendation for the county to help curb the issue, which is outlined in the quote above.

During the prioritization process at the summit, conversations surrounding substance abuse noted the overall issues as being access to treatment, use of tobacco and E-cigarettes, drug abuse, alcohol abuse, excessive drinking, and the lack of education and preventative measures. Participants also highlighted the populations that are most affected by these issues, how to achieve success within the next three years, and who should be involved in the improvement process. As mentioned, this issue affects everyone, from the youth to older adults, as well as other at-risk populations. In three years, participants would like to see a decrease in dependency of substances, increased education to the public about substance use and abuse, and a decrease in drug-related deaths. It was highlighted that there needs to be more education in order to prevent substance abuse and there needs to be increased access to substance abuse treatment.

Mental Health/Suicide Prevention - Summary

Mental Health and Suicide Prevention were highlighted as key issues that residents of Williamson County face, and as an area that should be prioritized. Primary data especially highlighted the need for these issues to be addressed. Notably, this issue was prioritized in Williamson County in 2016, however, community members feel like there is still a lot of work to be done related to the issue.

Multiple data sources highlight the lack of access to mental health services in the county. County Health Rankings data state that for every 700 people in the county, there is one mental health provider. This is far below the top 10% of counties in the United States (330 people per one mental health provider). While not specific to the county data, secondary data show that only 43% of individuals suffering from a serious mental illness were able to receive the proper mental health services in Tennessee. The need for mental health services was also highlighted in interviews with community members when asked what they would do if they had a magic wand. Nearly 50% of survey respondents did not think that there are *accessible, affordable resources for people in the county* who need mental health services. Furthermore, when asked if mental illnesses are a problem in their county, 92% of respondents either agreed or strongly agreed with the statement. Suicide was one of the leading causes of death in Williamson County in 2016, according to the Centers for Disease Control and Prevention.

> ***If you had a magic wand…?***
> Increase mental health resources
> "Guidance counselors are not mental health counselors. Most kids need someone to talk to"

During the prioritization process, summit participants emphasized the importance of educating the community on mental health. They also discussed issues revolving around the access to mental health services, the affordability of services, wellness and prevention, and the

high suicide rates among middle-aged males in Williamson County. In the next three years, participants hope to see an increase in education regarding bullying and the effects of bullying. They also hope to see the addition of a decompression room in schools for kids to go to for alone time, as well as improved education about mental health and signs of suicide ideation.

Health Education & Prevention - Summary

This priority highlights the need to educate the community on the health issues that exist in the county, preventing health-related complications, and increasing resource accessibility for individuals who need them. It was stressed that vulnerable populations in Williamson County often do not have access to the resources and care they need. Other populations that are affected include rural populations, seniors, and young people. However, it is critical that health education and preventative resources and services are utilized by all populations. Summit participants highlighted the need for chronic disease prevention, resource awareness, overall improvement in health education - specifically on stroke, cancer, and heart disease. Some of the goals for the next three years include meeting the healthy people 2020 goals and increasing health literacy. Some additional goals were to create a central resource guide, in addition to increasing the number of transportation options. Some of the organizations that can collaborate on this effort include the American Cancer Society, the health department, WIC clinics, churches, schools, and libraries.

Housing

While Williamson County continues to be one of the wealthiest counties in the nation, housing continues to be an issue for low income and vulnerable populations due to the costly housing market. People are also concerned about the quality and quantity of houses available for new residents.

During interviews with community representatives, one of the largest concerns for the community was housing. Interviewees highlighted the need to create certain zones that are guaranteed to be affordable. 77% of survey respondents disagreed with the statement “There is affordable and accessible housing available in the county.”

During the summit, participants stressed that an increase in housing is a priority. Examples of people most affected by the lack of housing in the county include new residents, low-income individuals and families, and the aging population. When discussing this issue further, participants noted the overall lack of quality housing, issues within the built environment, lack of awareness of the housing issue and how this affects health, and the need to address other health determinants. Over the course of the next three years, Williamson County residents hope to see increased awareness surrounding the great need for housing in the county, construction of more mixed community housing, and the development of an affordable housing plan.

What are your biggest concerns in your community?

"People are concerned about the rising cost of housing. They are concerned about the lack of housing for the growing workforce… and the lack of diverse types of housing, and the ability of people to age in place."

Evaluation & Impact of VUMC 2016 CHNA / IS Programs

Since 2016, VUMC has continued to meet the goals outlined in the VUMC 2016 Community Health Needs Assessment and Implementation Strategy. The goals included advancing and increasing: Access to Care / Coordination of Care, Mental and Emotional Health / Substance Abuse, Social Determinants of Health, and Wellness / Disease Prevention.

Access to Care / Coordination of Care

In addition to the continuation of most programs listed in VUMC'S 2016 Implementation Strategy, VUMC has continued to prioritize access to care and coordination of care in Davidson, Rutherford, and Williamson Counties. Monroe Carell Jr. Children's hospital served 7,292 inpatient and 40,216 outpatient visits from November 2017 to June 2018. These totals contributed to the overall 25,012 inpatient discharges and 261,909 outpatient discharges recorded by VUMC during the same time frame. Additionally, VUMC was responsible for 150 LifeFlight transports and 9,081 VUMC ambulance rides throughout Davidson, Rutherford, and Williamson counties. Davidson County's Clinic at Mercury Courts, a clinic serving uninsured individuals living in public housing, recorded 15,000 total visits in 2018-2019. The Shade Tree Clinic, a free health clinic run by Vanderbilt University School of Medicine students, was the primary medical home to approximately 400 insured, underserved, or homeless patients between 2017-2018. There were nearly 2,500 total visits during this same time frame. As of July 2018, VUMC added 241 unique clinics or services to increase access and better serve the needs of the community. The Vanderbilt Kennedy center received 1,082 Pathfinder-related phone calls. These efforts, along with many others, have enabled VUMC to continue increasing access to quality health care in the community since the publishing of the 2016 VUMC CHNA and IS.

Mental and Emotional Health / Substance Abuse

In addition to the continuation of most programs listed in the VUMC 2016 Implementation Strategy, VUMC has continued to prioritize mental health and substance abuse in Davidson, Rutherford, and Williamson Counties. Between 2018-2019, 24 mental health organizations throughout the three counties were staffed by VU School of Nursing students to provide mental health treatment and services. In the 2018-2019 academic school year, VUMC's School-Based Mental Health Services program provided 27 full time clinicians serving nearly 900 children and families in 34 elementary and middle school sites across Davidson County. Services were also provided to 5 charter schools. In Davidson County, 800+ youth and family therapy or psychiatric evaluations were provided at the Metro Nashville School Behavioral Health Clinics by the Center of Excellence in VUMC's Department of Psychiatry. A total of 1,356 Child and Adolescents Needs and Strengths assessments for DCS were reviewed by Center of Excellence in the VUMC Department of Psychiatry. The VUMC Department of Psychiatry's Center of Excellence conducted 334 specialized, multi-disciplinary case reviews for at-risk youth and families. One of VUMC's successful substance abuse treatment programs, the Inpatient Tobacco Treatment Program, encounters approximately 1,500 unique tobacco users each year, providing evidence-based counseling and personalized recommendations for FDA approved pharmacotherapy. In addition, about 1/3 of these individuals received treatment through the NCI-

sponsored cancer prevention program and another 250 recruited patients entered ongoing clinical trials for smoking cessation.

Social Determinants

In addition to the continuation of most programs listed in VUMC's 2016 Implementation Strategy, VUMC has continued to prioritize social determinants of health in Davidson, Rutherford, and Williamson Counties. VUMC's Street Medicine Program seeks to support and provide necessary mental health, substance abuse, and general healthcare services to the homeless populations in the Davidson County area. This team serves approximately 520-780 homeless individuals annually, as they typically provide care to 10-15 patients every Wednesday. The Clinic at Mercury Courts served 15,000 total visits between 2018 and March of 2019. Additionally, Vanderbilt's Stallworth Rehabilitation Hospital convenes three support groups that meet monthly to assist with navigation and improve patient health literacy. These groups include patient/caregiver support groups for traumatic brain injuries, amputees, spinal cord injuries, ventricular assistance device users, and strokes.

Wellness & Disease Prevention

In addition to the continuation of most programs listed in VUMC's 2016 Implementation Strategy, VUMC has continued to prioritize wellness & disease prevention in Davidson, Rutherford, and Williamson Counties. In order to proactively promote disease prevention, VUMC has held various cancer education forums, as well as several annual cancer screenings. For example, VUMC's annual "Head and Neck Cancer Screening" typically reaches about 100 patients. Similarly, a total of 310 people participated in breast cancer education forums and 245 attended cervical cancer forums. Cancer health fairs and events run by VUMC drew in 6,475 participants. Vanderbilt Corporate Health provided health and wellness information to 53 businesses across the three counties. Flulapalooza, the annual mass influenza vaccination event held at VUMC, administered 13,938 free vaccines in 2017 alone.

Appendices

Appendix A: Acknowledgements

Appendix B: Implementation Strategy Development Process

- VUMC Program for LGBTQ Health
- Stallworth Rehabilitation Hospital

Appendix C: Interviewee Demographics

Appendix D: Community Listening Session Demographics

Appendix E: Healthcare & Community Resources

Appendix F: Secondary Data Table

Appendix A: Acknowledgements

VUMC's 2019 CHNA and IS reports were completed primarily within the Institute for Medicine and Public Health and were made possible with invaluable contributions from those both within VUMC and from other areas of the community.

We would like to acknowledge the expertise provided by Vanderbilt's Community Health Improvement Working Group, and VUMC's CHNA/IS Advisory Committee. VUMC's CHNA / IS Advisory Committee (listed below), is a group of senior leaders responsible for high-level guidance on the CHNA/IS. A special thanks to the VUMC leadership who attended community health summits: Robert Dittus (*Executive Vice President for Public Health and Health Care*), Marilyn Dubree (*Executive Chief Nursing Officer*), Pam Jones (*Sr.Associate Dean, Clinical and Community Partnerships*), Jameson Norton (*Chief Executive Office of Vanderbilt Behavioral Health*), Jeffrey Palmucci (*Chief Executive Officer of Vanderbilt Stallworth Rehabilitation Hospital*) and David Posch (*Executive Vice President for Population Health*). We are deeply appreciative of the Community Health Improvement Working Group (listed below) for their time, perspective, energy, and attention to detail. In addition, we would like to thank Abby Palmer from VUMC Finance for her guidance. We would also like to thank Vanderbilt's Office of Community, Neighborhood, and Government Relations for the work they have done on the "Vanderbilt in Tennessee: County by County" report which provided valuable information for this report.

VUMC's collaborators at Saint Thomas Health were invaluable, and helped to add perspective, experience, and value to both the process and the end product. In particular, we would like to acknowledge the contributions made by Bridget Del Boccio, Liz Malmstrom, and Lindsay Voigt. We hope that the collaboration between the two hospital systems will serve as a springboard for future collaboration and as a model for other hospitals seeking to have a more collaborative process for their CHNAs, Implementation Strategies, and - most importantly – for driving changes in collaborative efforts to improve community health.

Most importantly, this report would not have been impossible without the participation of individuals in the community who took time out of their busy schedules to participate in face-to-face interviews and/or community listening sessions as well as those who responded to the community surveys. Their feedback and expertise helped us understand the challenging and complex issues facing low-income, minority, and under-served populations in the community.

We would also like to thank participants in each of the three community summits, each of whom took several hours of their valuable time to discuss the assessment, to offer their own perspectives on community health and well-being, and to identify the most important health needs within the community.

In **Davidson County**, we would like to acknowledge the contributions of individuals and organizations that supported, advised, and participated in the Community Health Needs Assessment.

- ***Listening Session Host Sites:*** Building Lives Foundation, Elizabeth Park Community Center, Hartmann Park Community Center, Nashville Public Library – Hadley Park Branch, Outreach Base, Salahadeen Center.
- ***Planning Core Team****:* ConnectUs Health, Matthew Walker Comprehensive Health Center, Metro Arts, Metro Public Health Department, Metro Social Services, Saint Thomas Health.

- ***Community Themes and Strengths Assessment:*** Gresham Smith, Healthy Nashville Leadership Council, Meharry Medical College, Metro Arts, Metro Development and Housing Agency, Metro Public Health Department, Nashville Chamber, Tennessee Department of Health, UT College of Social Work, Vanderbilt Ingram Cancer Center.
- ***Community Health Status Assessment:*** Healthy Nashville Leadership Council, Metro Public Health Department, Nashville Chamber of Commerce, Nashville Health, YWCA.
- ***Healthy Nashville Leadership Council (HNLC)***
- ***Metro Public Health Department:*** Amanda Ables, Dr. Samni Areola, Tracy Buck, Justin Gatebuke, Dr. Celia Larson, Tina Lester, Brook McKelvey, Abraham Mukolo, Dr. Bill Paul, Dr. Raquel Qualls-Hampton, Leslie Waller.
- ***Saint Thomas Health:*** Nancy Anness, Lisa Davis, Pamela Hess, Elizabeth Malmstrom, Greg Pope, Amber Sims, Fahad Tahir, Lindsay Voigt, Bridget Del Boccio.

In **Rutherford County**, we would like to recognize the leadership, support, and hospitality that we received from several organizations:

- ***Rutherford County Health Department:*** Director Dana Garret and her staff, particularly LaShan Mathews Dixon and Aubrenie Jones. LaShan and Aubrenie were instrumental in identifying interview participants and facilitating community listening sessions in Rutherford County.
- ***Listening Session Host Sites:*** First Baptist Church, Journey Home, Murfreesboro City Schools, and the Rutherford County Health Department.
- ***Circle of Engagement (COE):*** Middle Tennessee State University, Matthew Walker CHC, Primary Care & Hope Clinic, Veteran's Affairs, Coordinated School Health.
- ***Summit Host Site:*** Patterson Park Community Center.

Lastly, we would like to recognize the leadership and support that we received from our community collaborators in **Williamson County**:

- ***Williamson County Health Department:*** Director Cathy Montgomery, Carolina Tabares, and WCHD staff played an essential role in identifying and recruiting participants for listening sessions and interviews.
- ***Listening Session Host Sites:*** Fairview Library, Mercy Clinic, and Better Options TN
- ***Community Health Assessment Advisory Council (CHAAC):*** Williamson County Mayor's Office, Williamson County Parks & Recreation, UT Extension, Williamson Medical Center, Chamber of Commerce, Mercy Clinic, Anti-Drug Coalition, Veteran's Affairs, Senior Center, Williamson County Sheriff's Department, and Williamson County School District.

The Implementation Strategy Development Process (ISDP) for LGBTQ Health could not have been completed without the hard work of the VUMC Program for LGBTQ Health staff and their summer interns. Program director Del Ray Zimmerman teamed up with Keanan Gottlieb and Shawn Reilley, as well as a talented group of interns to bring this project together. The interns included: Derek Chen from Stanford University, Angie Deng from John Hopkins Nursing School, Reid Gamble from Kansas City University of Medicine, Tyler Hanlyn from University of North Texas, and Andrew Pregnall from Virginia Tech. We would also like to thank the team at the Brain Injury Association of Tennessee, Angela Pearson and Woodrow Lucas, who helped convene a listening session with Stallworth patients.

We would also like to acknowledge the talented group of interns from across multiple academic institutions who supported the CHNA and IS process. Thanks go to the following: Morgan Batey, Rohini Chakravarthy, Carleigh Frazier, Katie Horneffer, Madeline Gordon, Tamee Livermont from Vanderbilt University, Danielle Epps and Mabya Nyannor from Meharry Medical College, Garvita Thareja from Middle Tennessee State University and Chandler Floyd from Harvard University.

VUMC CHNA/IS Advisory Committee
Christine Bradley
Laura Beth Brown
Robert Dittus
Marilynn Dubree
Pam Jones
Jameson Norton
Jeffrey Palmucci
Scott Phillips
David Posch
David Raiford
Margaret Rush
Paul Sternberg
Consuelo Hopkins Wilkins
Megan Youngblood

VUMC Community Health Improvement Working Group
Rhonda Ashley-Dixon
Claudia Barajas
Leah Branam
Jennifer Burdge
Marcia Colone
Janet Cross
Courtney Declercq
Tonya Elkins
Tracy Glascoe
Callie Hanks
Emily Hansen
Charity Ingersoll
Yvonne Joosten
Stacey Kendrick

Christian Ketel
Cari Lambrecht
Melanie Lutenbacher
Meaghan Lynch
Elise McMillan
Heather Misch
Alicia Moorehead
Amy New
Terrell Smith
Purnima Unni
Luis Vega
Anne Washburn
Sarah Williamson
Morgan Wright
Del Ray Zimmerman

Appendix B: Implementation Strategy Development Processes (ISDP)

LGBTQ Health – Implementation Strategy Development Process

This project was completed with VUMC's Program for LGBTQ Health. The project team and report authors are listed below:

Del Ray Zimmerman, Director – *VUMC Program for LGBTQ Health*
Keanan Gottlieb, Research Analyst – *VUMC Program for LGBTQ Health*
Shawn Reilley, "Transgender Buddy Coordinator" – *VUMC Program for LGBTQ Health*
Derek Chen, Intern – *Stanford University*
Angie Deng, Intern – *John Hopkins Nursing School*
Reid Gamble, Intern – *Kansas City University of Medicine*
Tyler Hanlyn, Intern – *University of North Texas*
Andrew Pregnall, Intern – *Virginia Tech*

Introduction

According to the Williams Institute at the University of California, Los Angeles, lesbian, gay, bisexual, transgender, and queer (LGBTQ) individuals comprise approximately 4.5% of the U.S. population.[1] While fewer people actively identify as part of the LGBTQ community, Gallup polling data shows that a wider swath of individuals report same-sex sexual behavior and attraction (up to 11 percent). Additionally, the transgender community is growing rapidly in the wake of greater visibility and changing societal attitudes in recent years.[2,3]

Many health issues stem directly from structural stigmas such as institutional discrimination, laws enacted to abridge the rights of LGBTQ individuals, or the lack of protections preventing people from losing their jobs or homes based on their identity.[4] Because of stigma, sexual and gender minorities are more likely to hide their sexual orientation and/or gender identity. Living with the daily stress of real, perceived, or anticipated threats contributes to the negative mental and physical outcomes that many LGBTQ people experience. Additionally, engaging in risky sexual encounters, unhealthy coping mechanisms, homelessness, and economic hardships often contribute to the poorer health outcomes for LGBTQ people.

Many of these issues faced by the LGBTQ community are even more pronounced in the southeastern portion of the United States, particularly in Tennessee. According to the Human Rights Campaign's 2018 State Equality Index, Tennessee's state policies are the lowest rated for LGBTQ equality. In the period from 2004 to 2018, the Tennessee state legislature proposed 145 adverse bills for LGBTQ equality and passed only five laws advancing LGBTQ civil rights. Policy decisions by the state legislature directly or indirectly carry a negative impact on the lives of LGBTQ individuals. For instance, in 2011, former Tennessee Governor Bill Haslam signed H.B. 600 into law, which precludes municipalities from creating non-discrimination ordinances that surpass state law.[6] This legislation nullified Nashville's non-discrimination ordinances and

allows private businesses across Tennessee to discriminate on the basis of sexual orientation and gender identity.

In the face of challenging state politics, several local organizations and Middle Tennessee municipal governments have made advances to promote LGBTQ equality. Organizations such as the Tennessee Equality Project, the Gay, Lesbian and Straight Education Network of Tennessee (GLSEN), and local PFLAG chapters have centered their missions around promoting the well-being of Tennessee's LGBTQ community. From monitoring LGBTQ-related legislature to advocating for safe schools, these organizations are actively addressing the community's most salient needs. Nashville Pride's recent campaign launch, "Community Visioning Project," strives to create a framework that allows dialogue to help develop a collective vision for the LGBTQ community. Middle Tennessee's municipal governments have also made efforts to address LGBTQ disparities, including Nashville's Mayor signing an executive order in 20XX affirming LGBTQ-owned businesses as a recognized category for Metro Procurement. This executive order makes Nashville the first city in the South to recognize LGBTQ-owned business.[9]

Due to the complex factors affecting the LGBTQ community, we set out to determine the barriers standing between them and health equity. In order to further develop the Implementation Strategy, a team conducted an in-depth analysis that captured the perspectives of the LGBTQ population within the context of the prioritized needs. The document intends to (1) create an atmosphere that's conducive to information sharing; (2) highlight concerns of the most vulnerable LGBTQ subpopulations; and (3) acquire knowledge on populations served by the Vanderbilt Program for LGBTQ Health. In doing so, we hope to provide local institutions such as VUMC, community organizations, and governments with needed information to proactively and efficiently address issues affecting this vulnerable population.

Methodology

This project consisted of three community listening sessions – one listening session for all members of the LGBTQ community aged 18-50, one listening session for all members of the transgender and gender non-conforming community aged 18 and over, and one listening session for all members of the LGBTQ community aged 50 and over.

Recruitment for Listening Sessions: Participants were recruited using two strategies: 1) soliciting participants at the Program for LGBTQ Health's Nashville Pride booth, and 2) advertising through local community organizations. Our promotional materials instructed people interested in participating to call or email the Vanderbilt Program for LGBTQ Health.

Conducting the Listening Sessions: After explaining the purpose of VUMC's Community Health Needs Assessment (CHNA) and the reason for this project, the moderators and co-moderators shared an overview of the four priorities identified through the CHNA. Participants shared feedback regarding the priorities of the general CHNA, such as strategic issues, missing topics/priorities, and actions steps. Participants were also asked to complete an optional demographics questionnaire, which contained ten items: age, county of residence/work, gender identity, sexual orientation, race, ethnicity, highest level of education attained, current employment status, combined annual household income, marital status, and current health insurance status. Notetakers collected key points and quotes from participant responses. The sessions were also recorded to ensure the accuracy of quotes; all recordings were stored on a HIPPA-complaint server and contained no identifying information.

Data Analysis: We used descriptive statistics to define the demographics of our listening session participants. For qualitative data, a team of reviewers conducted a thematic analysis to

identify key themes, subthemes, and participant quotes. During this process, the reviewers considered demographic characteristics of participant responses to understand how age, gender, race/ethnicity, and socioeconomic status may have affected community health needs.

Results – Themes from Listening Session

Our qualitative analysis revealed three major themes within participants responses: issues associated with (1) community solidarity and inclusion, (2) access to community resources and services, and (3) access to quality healthcare, along with several subthemes. Below, we outline the most important needs associated with social determinants of health and healthcare delivery within each of these areas.

Participant Demographics

Thirty-six participants attended our listening sessions. Thirty participants (83%) were from Davidson County, three participants (8%) were from Williamson County, and one participant (3%) was from Rutherford County. Two participants (6%) reported living or working in two counties. Twenty-one people (58%) identified as cisgender, and fifteen (42%) identified as transgender or nonbinary. Most of our participants were 18-39 years of age (72%), identified as white (78%), and identified as some type of sexual minority (94%). Educational attainment was high among our participants, with thirty people (83%) reporting having a college degree or higher. Most participants have never been married (72%) while six were married (17%) and two (6%) were either divorced or widowed. Some participants did not report their marital status. Income was skewed towards lower ranges, with half of participants having a combined household income of less than $49,999. All participants reported having some form of employment. Lastly, most participants (92%) reported having some kind of health insurance.

Community Solidarity and Inclusion

The first major theme to emerge from our listening sessions is a lack of community solidarity, engagement, and inclusion. Although this is the result of many factors, participants highlighted the lack of safe and affirming gathering spaces, such as a community centers tailored to LGBTQ populations. Many of these concerns were expressed by older LGBTQ participants, several of whom shared that they often feel left behind. For instance, one participant shared, “Sometimes the community does not realize there are LGBTQ folks over the age of 50, especially if you are uncoupled.” Like older adults, transgender participants echoed the need for a community center to feel more included.

Participants agreed that thoughtful and strategic actions are needed in order to employ community solidarity and inclusion. Local leaders must consider the best way to create a community center inclusive of all transgender individuals, older LGBTQ individuals, and LGBTQ people of color, all of whom experience distinct health disparities. Additionally, leaders have the platform to sustainably promote the incorporation of LGBTQ populations into the community. Participants also expressed a desire for year-round opportunities to connect with their community in safe spaces, rather than confining LGBTQ recognition to a single “Pride” month. Overall, participants prioritized having permanent physical spaces for LGBTQ members to congregate and foster connectivity year-round. Some even stated that the lack of community spaces contributes to adverse health outcomes.

Along with the need for a centralized gathering space, there was significant discussion about the challenges with events being held at bars and clubs. These spaces are historically

known for providing safe havens to LGBTQ people, and participants suggested that this link between LGBTQ people and bars contributed to higher rates of substance use in the community. Participants expressed that events and spaces would be more inclusive if they were sober, family-friendly, and more affordable. Ultimately, participants believed that the existing social landscape perpetuates isolation and prevents socialization among different groups.

Other issues that were discussed in relation to solidarity and inclusion are related to governmental policies. Exclusionary state and federal policies impact the well-being of LGBTQ community members. Several participants explained that Tennessee's lack of non-discrimination ordinances in the areas of housing, education, employment makes them fearful, especially with job security. Some participants shared that they were afraid to talk about their families at work for fear of being fired, and therefore, remain closeted in their workplace.

You either have to be deadnamed all the time, or go before someone who probably doesn't like you, explain why you want to change your name, and run the risk of being denied

Transgender participants had specific concerns about policy. Participants shared that identification documents can be a barrier to accessing healthcare, financial, and educational resources. The **quote to the right** describes the challenges that many transgender people face if and when they change names. Transgender participants also shared their fears of background checks for adoption as well as the current administration's proposed rule that would eliminate Affordable Care Act nondiscrimination protections for transgender people. The lack of inclusive policies and the sense of community undergirds all other themes outlined in this report and is described in subsequent sections.

Access to Community Resources and Services

The second theme that arose from the listening sessions is related to issues with accessing community resources and services. Much of the discussion focused on three main areas related to access: 1) gaps in available resources/services, 2) methods of disseminating information, and 3) barriers to access.

Gaps in Services

Participants identified key areas where they felt there was a lack of information on resources and services, particularly with regard to information that was specific to Middle Tennessee. First, participants expressed that there was a lack of sexual health and mental health information available to the area's youth, a problem affecting both LGBTQ youth and non-LGBTQ youth. Secondly, participants expressed a clear desire for accessible information on LGBTQ-specific family planning resources. Lastly, participants indicated the need for improved information regarding insurance coverage, as it is often difficult to know how to obtain insurance and what type of coverage to select. Many young people rely on family members for support in navigating the insurance system for them. Several participants noted having lost the support of their family after coming out about their gender or sexual identification and the challenges they faced when selecting coverage without family support. This placed yet another burden on participants seeking healthcare insurance.

Participants also discussed the implications of many community resources being delivered through faith-based institutions, meaning that many were not LGBTQ-inclusive. While some faith-based institutions have served as avenues for obtaining resources for participants,

they noted that the lack of diverse community resources is a barrier for LGBTQ people. In particular, participants asserted that there is a lack of non-faith based substance abuse recovery programs, homeless shelters, and supportive housing in the community.

Dissemination of Information

Participants noted several sources that are used to access information about health and community services and upcoming events. Despite those sources, participants expressed a clear need for greater availability of health information. They also noted a few reasons why information should be disseminated through multiple avenues: (1) not all people are online; (2) not all people are on social media; and (3) not all people with access to the internet have the digital literacy to access the information they need.

Overall, participants expressed both a desire for a centralized clearinghouse of LGBTQ health information and the available resources and services. In addition, they prioritized the need to disseminate information to the LGBTQ community through multiple media. In the figure to the right, one participant shared how other identity-based communities in the region have centralized clearinghouses of information and saw clear benefits.

> *When I moved here — I'm Jewish — and I knew that the Jewish Federation was where I needed to go for everything that I wanted to be involved with in the community, including doctors, counselors, and activities both inside and outside the Jewish community. They are a clearinghouse, but [the model] could be applied to other communities as well.*
>
> - *Listening Session Participant*

Barriers to Access

Another concern that emerged were the barriers to accessing and affording resources and services. While some participants can obtain information on resources available to the LGBTQ community, these resources aren't always accessible to all community members. Major areas of concern included transportation, lack of quality and affordable housing, and limited access for people with disabilities.

Transportation*:* Participants across listening sessions noted that the lack of a public transit system in Middle Tennessee creates barriers to accessing necessary resources. For example, public transportation users shared that the lack of connections between bus lines and public transportation options outside of the city's core makes it difficult to attend appointments or community events. One transgender participant stated having difficulty picking up medications due to the lack of gender-affirming pharmacies along their bus route. Several others agreed that relying on public transportation in Nashville is an obstacle to receiving care. Participants with a vehicle also experience barriers to accessing healthcare resources. Many participants expressed concerns regarding paid parking throughout Nashville, as the expense can be a financial barrier for people trying to access healthcare. This was an issue particularly stated among older LGBTQ members.

Housing: A lack of quality, affordable housing impacts both personal and financial well-being.[10] As Middle Tennessee is experiencing unprecedented growth, participants identified increasing gentrification as a serious issue, especially affecting older people and people in lower socioeconomic classes. Others noted that while there are many organizations that help people experiencing homelessness around the area, their scope of services is often limited, and

information is not easily accessible to those who need it. One participant who works with people experiencing homelessness described the lack of quality public housing in the city as a concern.

While there is a clear need for affordable housing in Nashville, participants also shared that available shelters are primarily offered through faith-based organizations causing them to often not be welcoming to transgender and gender non-conforming people. Participants thus identified the need for resources that are not religiously-affiliated. Finally, another participant who works with the homeless population discussed the impact that public transportation has on the ability to move between homeless shelters. This participant's story highlights how issues of transportation and housing can be intersectional, as they can often result in lack of shelter.

***Disability-Inclusive**:* Older participants identified the lack of infrastructure for individuals with disabilities as another barrier to accessing resources. One participant with limited mobility shared that when she finally found a mental health provider that was both LGBTQ-affirming and covered by her insurance, she could not see the provider because the office was located on the third floor of a building without an elevator. Other senior participants identified that the lack of disability-friendly housing options in Middle Tennessee made it difficult for them to age in place. This concern was compounded by their additional concern that LGBTQ-affirming assisted living facilities were not suited to specific disabilities nor located in proximity to other desired services.

Access to Quality Healthcare

Barriers to Coverage

Participants identified several issues within the existing healthcare system that make healthcare access extremely difficult. The greatest barrier identified by participants was the affordability and inclusivity of health insurance — an issue of particular concern to younger and transgender participants. One community member shared that it is common for transgender individuals to seek jobs specifically based on an employer's ability to provide transgender-inclusive health coverage. Transgender individuals often have limited employment options, as they must carefully consider the healthcare coverage that provided through the employer. This only further exacerbates the systemic employment issues related to workplace discrimination.

Gender and sexual minority participants also had issues with insurance coverage. One community member shared that they paid $7,000 out-of-pocket for an intrauterine insemination because their insurance did not cover any procedures prior to pregnancy. Younger participants — typically with lower incomes — shared that the financial strain of health insurance can be stressful with one participant stating "Is it eating or getting my medication? Is it gas or getting my healthcare covered?"

Even with health insurance, access to healthcare services is not always guaranteed for patients. Again, this issue seems to be more problematic in the transgender community. Within Middle Tennessee, there are very few clinics that offer gender-affirming services. Facilities like the Vanderbilt Clinic for Transgender Health may only see patients with a limited number of insurance plans, in addition to the limited hour and long wait times. This is often a burden to patients seeking care.

Discrimination, Stigma, and Lack of Provider Knowledge

A subtheme related to concerns with access to quality healthcare was the discrimination, prejudice, stigma, and lack of awareness that the LGBTQ community experiences. Micro and

macro-aggressions are seen in the healthcare setting, particularly among older LGBTQ participants, as well as the transgender and gender-nonconforming community. Participants frequently reported the lack of cultural awareness towards LGBTQ individuals that exists among healthcare providers. Participants discussed how providers' often correlate a patient's health problems with their sexuality and/or gender identity, even if they are completely unrelated. Participants also expressed concern that providers discount medical concerns due to their sexuality and/or gender identity. They also described a need for knowledgeable and/or affirming administrative staff.

Older LGBTQ participants had specific concerns about provider training and lack of awareness. They stated there was a desperate need for physicians who are both LGBTQ-affirming and competent treating issues associated with aging, such as rheumatoid arthritis. One older participant shared that "HIV is the least important part of my health," yet providers tend to focus on it. This participant seeks a provider that is competent in addressing both his aging concerns, as well as his HIV-related health issues.

Transgender and gender non-conforming participants also reported having trouble accessing competent and affirming care. Participants noted that transgender and gender non-conforming people often have to be their own healthcare advocate, as many frequently experience unprofessional and inappropriate conduct from providers. One participant made the very bold and telling statement: *"If they wear scrubs or a white coat, they are undertrained to work with transgender people."* One participant recalled an experience after coming out as nonbinary to their longtime physician: "I once had a provider tell me, 'I don't know what it is. I don't know how to treat it. I'm not even going to try. Go find someone else.'" Physicians who are not competent in transgender health are often hesitant or refuse to provide care after a patient discloses their transgender status. There is a difference in a provider that is willing to listen and a provider willing to help with these specific individuals, as one participant stated: *"Just because [providers] say that they are willing to be LGBTQ friendly doesn't mean that they are affirming or even know anything about [transgender health]. Just because they are willing to listen doesn't mean they are willing to help you."*

Pharmacies can also pose an obstacle to receiving care. Transgender participants overwhelmingly highlighted concerns about accessing hormone therapy medications at pharmacies across the city. One participant stated that after seeing an affirming provider, sometimes pharmacies refuse to fill their prescriptions. Additionally, the few pharmacies that are gender-affirming are often in high-demand and struggle to keep prescriptions in stock.

Coordination of Resources

The final sub-theme that resulted from the listening sessions was the lack of coordination and communication between organizations providing resources. This theme emerged in two main contexts: (1) healthcare organizations coordinating with one another (2) healthcare organizations coordinating with social service organizations.

Participants voiced frustration at providers not being able to access information from medical histories within the same medical system as well as across other medical systems. For instance, one participant who has received care from the Vanderbilt Health system for over 30 years voiced frustration at inadequate interdepartmental communication and stated plainly *"I coordinate my own care*."

Participants also noted that it is difficult to coordinate care between mental and physical health providers in Middle Tennessee. One participant who works in the mental health profession

serving "safety net" clients said she often "*need[s] to speak to fourteen people to get one answer"* for her clients. This disorganization affects her clients' wellbeing. Across all three listening sessions, only one participant reported stellar communication between their medical providers.

Several participants also mentioned that local healthcare institutions could make a large difference in promoting health equity by collaborating with organizations impacting the social determinants of health for people in Middle Tennessee. For instance, participants proposed the idea of local hospital systems collaborating with local school systems to teach inclusive, science-based sexual health curriculum to account for the lack of quality sexual education in Middle Tennessee. Participants also saw opportunities for healthcare institutions and housing organizations to connect in order to advance knowledge for LGBTQ-specific information.

> Accessing mental health resources when you're needing [them] is incredibly difficult. I myself am a licensed professional counselor, and I know when I try to find mental health resources for family or friends, it's absolutely impossible to navigate. To try to find a provider who's in-network or to find a provider in the specialty you [need], it's just absolutely impossible, and I'm a mental health professional. So, I can't imagine if you're a person in the midst of a crisis and trying to work on something for a family member or for yourself.

Conclusion

Much of what we have learned through this project aligns with systemic issues that sexual and gender minorities face across the United States. While we were able to highlight issues related to access, limitation of services, and other barriers to care, we found that these community participants struggle because of discrimination and the general lack of support for the LGBTQ community. Without strong solidarity and connectedness, our community members are less able to work together to address systemic issues affecting health outcomes. Our participants stated that stronger bonds, a centralized community space, and intentional programming will lead to better information and resource sharing, and ultimately better health outcomes.

Despite the many problems discussed, we also applaud the resiliency that community members displayed, as well as a sense of hope for a better future. The tenacity demonstrated among our cohort inspires change. As a parting thought, this quote serves as a call to action: *"There are changes coming. Things are getting better. How can we collectively work together, though, and share our experiences and build those relationships to support our local community and then continue to push the health community forward to say, 'This is what we need.' I get excited about these kinds of conversations because this is where the hard work starts, and we really get to roll up our sleeves down the road and say, 'Now what do we do?' That's where the work really starts."*

Stallworth Rehabilitation Hospital – Implementation Strategy Development Process

Introduction

Stallworth was established in November 1993 as a joint venture between Vanderbilt University and Health South Corporation. Since its inception, Stallworth has been a leader in rehabilitation care. It has gone on to earn three disease specific care certifications from the Joint Commission in Stroke Rehabilitation, Spinal Cord Rehabilitation, and Traumatic Brain Injury Rehabilitation. Furthermore, Stallworth was the first hospital in the state to earn the certificate in Spinal Cord Rehabilitation. In total, Stallworth has 20 rehabilitation programs paired with 21 unique technologies focused on the progress of their patients and the outcomes they achieve. Stallworth has 80 beds available to welcome patients mostly from Davidson and Williamson counties. Stallworth is one of only 11 rehabilitation institutions that serve the Nashville metropolitan statistical area (Davidson and touching counties).[233]

Stallworth serves a patient demographic with needs that are unique to the overall patient landscape of Vanderbilt University Medical Center. In order to further develop the Implementation Strategy, the CHNA team conducted an in-depth analysis that captured the perspectives of this population within the context of the prioritized needs. To gain greater insight into the unique needs of Stallworth patients, a listening session was conducted with patients from a traumatic brain injury (TBI) support group. Information gathered from this session was used to help develop the Implementation Strategy.

Methodology

Although there are limited local data sources on this topic, a brief review of secondary data was employed to capture health indicators that summarize the state of health for patients experiencing TBI. In order to gather the first-hand perspective of this population, the team hosted one (1) listening session with a support group for patients and/or caregivers. After explaining the prioritized needs and the purpose of the session, the moderators and co-moderators shared an overview of the four priorities identified through the CHNA. Participants then shared feedback regarding the priorities of the broader CHNA, such as related experiences, missing topics/priorities, and action steps. A team of three reviewers conducted thematic analysis on the findings of the session to determine common themes.

Results

The data collected from the listening session was rich and dense with opportunities for the systems supporting Stallworth patients to stretch to address their needs. Though we only have primary data from one listening session, there were two main themes that particularly resonated with the group. This included access and coordination, as well as community infrastructure. Additionally, secondary data was gathered to better illustrate the TBI patient population.

[233] (TN Department of Health, 2018)

Secondary Data

A traumatic brain injury (TBI) is defined as a "bump, blow, or jolt to the head, or a penetrating head injury that disrupts the normal function of the brain."[234] In 2017, over 7,400 people in Tennessee reported having a TBI. About 10% of reported TBI cases were fatal. TBI cases are most generally adults age 54 and older (57%), male (58%), and white (80%). However, the greatest proportion of TBI cases were in females ages 75-84. The only other age groups where women surpassed the number of men were in age 85+ and age 1-4 years old. Furthermore, the gender difference noted overall varied depending on race as 55% of white patients were male and 69% of black patients were male.[235]

A study of pediatric TBI cases found that 82% of patients sought out care first with a primary care provider. Since this data is based on hospitalizations, it is an underestimation of the full burden of TBIs in the state[236,237].

Of the TBI patients reported, 74% were residents of Tennessee and 60.7% were injured in the state. On average, nonfatal TBI patients stayed in the hospital for 6.4 days, on par with previous years. Once released, most patients (50%) were routinely released to their home. About 30% of those released were discharged to rehabilitation, skilled nursing, or other long-term care facility (this includes hospice home care).[238] It is this population that Stallworth primarily serves.

Access and Coordination - Summary

Participants in the listening session gave feedback on difficulty with access to knowledgeable specialists and programs. "People with unique issues, like brain injuries, […] are all different from each other and need specific things" one person explained. Another participant shared, surprisingly, that "it never occurred to me that neurologists wouldn't know about brain injuries." The delicate differences between patients with a traumatic brain injury and other neurological diseases makes some general programs feel awkward and unfulfilling. One patient explained, disappointedly, being lumped into a stroke group but actually had an aneurism. When there are specialists or programs available some participants found these resources unreachable due to cost or lack of insurance coverage. Patients within the group "know what [they] need and know that it's helpful but it's too expensive without insurance." The cost is not the only difference between the care of insured and uninsured patients. One participant highlighted the juxtaposition of quality when she was insured versus when she was not. "When I did not [have] insurance, I was treated very differently when I did and didn't. I was treated with [the] least care possible when I didn't."

Additionally, one of the most prevalent sub-themes that surfaced during the listening session was a lack of communication and coordination between patients, providers, resources and systems. When asked about access to resources and services one participant emphasized that "not everything is in one place" and that there is a "need [for] better collaboration of care." Furthermore, even participants that worked to have their care within their insurance network explained "even though it's all within [my] insurance network, it's not all within the same health system […] there is no communication among these different health systems." This lack of communication does not stop between providers, as patients, participants felt there were "not

[234] (Centers for Disease Control adn Prevention, Natial Center for Injury Prevention and Control, 2019)
[235] (TN Department of Health Division of Family Health and Wellness, 2019)
[236] (TN Department of Health Division of Family Health and Wellness, 2019)
[237] (Arbogast, et al., 2016)
[238] (TN Department of Health Division of Family Health and Wellness, 2019)

enough ways to find information" and felt the need to get the "low down" on prescriptions from unreputable websites.

Community Infrastructure - Summary

Challenges with access and coordination of care are further exacerbated by the lack of community infrastructure for certain communities. These community level factors, or social determinants of health, are important to developing positive health and well-being. Participants craved support in finding affordable housing for people with disabilities and transportation. Praise for "Murfreesboro changing roadways for buses to get green light first" shows the utilization of public transportation and the geo-diversity of patients that utilize services at Stallworth. In addition to geo-diversity, participants also had various other identifiers highlighting the vast intersectionality of Stallworth patients. Multiple identifiers can add to the layers of care and support that a patient and caregiver needs. Participants shared their experience with having a traumatic brain injury and being transgender, homeless, having asthma, having a disability, or not having insurance. Each of these experiences added additional layers of need and/or barriers to care that could be supported through stronger community infrastructure.

Conclusion

The data gathered from the support group at Stallworth demonstrated a high need for better access and coordination of care, and community infrastructure with specific focus on vulnerable populations. Although this project sought to provide an understanding of how to develop the Implementation Strategy for patients served by Stallworth, a number of limitations impacted the generalizability of this information. First, there was a limited amount of publicly available secondary data to review. Similarly, despite strong effort to include representation from a variety of patients served by Stallworth, the listening session was conducted with a convenience sample of participants. Despite these limitations, these data describe how the experiences of these patients align with the broader categories of needs identified through the CHNA and may be used to inform initiatives, program, and resources development that better support these groups.

Appendix C: Interviewee Demographics

Conducted by: Saint Thomas Health, Metro Nashville Public Health Department/Rutherford County Health Department / Williamson County Health Department, Vanderbilt University Medical Center, and Other Community Organizations

Organization Sector	***Organization***
Latino Community	Davidson County Metro Council
Economic Equality	NOAH
Homelessness	Metro Homelessness Commission
Government	Metropolitan Government
Government	Mayor's Office
Public Health – Higher Education	Meharry Medical College
Government	58th Legislative District
ED – Hospital Case Management	Saint Thomas Health
Hospital/Healthcare	VUMC
Refugee Population	TN Office for Refugees
Safety Net Providers	Safety Net Consortium of Middle TN
Muslim Community	Salahadeen Center of Nashville
Homeless Population	VUMC
Mental Health	Mental Health Cooperative
Transportation	Walk Bike Nashville
Substance Abuse	Sycamore Institute
LGBTQ Community	PFLAG Nashville
Education	Metro Nashville Public Schools
Public Health	Metro Public Health Department
Dental	Interfaith Dental Clinic
Family/Child Services	Family & Children's Services
Dental	Matthew Walker
Hospital	Nashville General Hospital
Faith Based	First Presbyterian
Education	MTSU – Center for Health & Human Services
Healthcare	Saint Thomas – Rutherford ED
Education	Murfreesboro City Schools
Government	Rutherford County – District 13
Large Corporate Employer	Nissan – Diversity and Inclusion Committee
Housing	ATLAS Program
Homelessness	Murfreesboro Cold Patrol
Substance Abuse	Rutherford Opioid Taskforce
Education	MTSU
Faith Based	First Baptist Church
EMS	Rutherford County EMS

Healthcare	St. Louise Clinic
Government	Rutherford County- District 21
Senior Community	Smyrna Senior Center
Substance Abuse	Narcotics Anonymous
Government	Rutherford County Government
Veteran Health	Veteran's Affairs
Homelessness	Journey Home
Healthcare	Primary Care and Hope Clinic of Rutherford County
Dental	Interfaith Dental Clinic
Healthcare	Matthew Walker
Public Health	Rutherford County Health Department
Law Enforcement	Rutherford County Police Department
Government	Fairview Mayor's Office
Education	Williamson County Schools
Non-profit – Public Health	Franklin Tomorrow
Government	Fairview Mayor's Office
Healthcare	Williamson Medical
Education	Franklin Special School District
Library	Williamson County Public Library
Children Health	Coordinated School Health
Youth	Department of Children's Services
Veterans	Veterans' Affairs
Youth - Law Enforcement	Williamson County Juvenile Court
Public Health	Williamson County Health Department
Government	Franklin Mayor's Office
Senior Health	Williamson County Parks & Recreation
Healthcare	Mercy Clinic
Substance Abuse	Anti-Drug Coalition
Housing	Franklin Housing Authority
Basic Needs – Hispanic	Graceworks

Appendix D: Community Listening Sessions

Listening Session Site	*# of Participants*	*County*	*Population Served*
Salahadeen Center	9	Davidson	Muslim youth
Building Lives Foundation	9	Davidson	Veterans
Outreach Base	6	Davidson	People Experiencing Homelessness
Elizabeth Park Senior Center	10	Davidson	Seniors
Hartman Park	14	Davidson	African-American
Hadley Park	16	Davidson	Latino
First Baptist #1	21	Rutherford	African-American Seniors
First Baptist #2	16	Rutherford	African-Americans
Rutherford County Health Department	12	Rutherford	Latino
Journey Home	10	Rutherford	People Experiencing Homelessness
Fairview Branch of the Public Library	4	Williamson	Rural
Mercy Clinic	12	Williamson	Uninsured/underinsured
Williamson County Health Department	9	Williamson	Latino

Appendix E: Healthcare & Community Resources

In addition to the resources listed for each county below, please refer to the resource guides below for Davidson, Rutherford, and Williamson Counties.

- *211: United Way of Metropolitan Nashville - A database of more than 10,000 social, educational and health services*
- *Meharry-Vanderbilt Alliance's Faith & Health Resource Guide*
- *My Healthcare Home*
- *TN Disability Pathfinder*
- *Where to Turn in Nashville*

Davidson County	**Prioritized Health Need: Mental Health and Substance Abuse** *Healthcare Resources:* Centerstone CrossBRIDGE, Inc. Downtown Mission Integrative Life Center The Next Door Mental Health Cooperative Middle Tennessee Mental Health Institute Mirror Lake Recovery Center Nashville Rescue Mission Park Center Renewal House Vanderbilt Behavioral Health *Community Resources:* Alcoholics Anonymous Nashville Alliance on Mental Illness Tennessee Narcotics Anonymous Oasis Center The Tennessee Redline Welcome Home Ministries

	Prioritized Health Need: Access to Resources and Services *Healthcare Resources* Alive Hospice, Inc ConnectUs Health Mary Queen of Angels Faith Family Medical Clinic Hope Clinic for Women Interfaith Dental Clinic Main Street Family Clinic Matthew Walker Comprehensive Health Center Neighborhood Health Siloam Family Health Center Youth Opportunity Center Clinic Lentz Public Health Center East Public Health Center Woodbine Public Health Center
	Prioritized Health Need: Basic Needs *Community Resources* Adventists Community Services Bridge Ministry Community Care Fellowship Hermitage Church of Christ Ladies of Charity Madison Church of Christ Benevolence Center McKendree United Methodist Church Metro Action Commission Nashville Rescue Mission North Nashville Outreach Rooftop Nashville Safe Haven Family Shelter Saint John's West United Methodist Church Samaritan Ministries of Temple Baptist Church Second Harvest Emergency Food Box Program South Nashville WIC Nutrition Center Shower UP TN Dept. of Human Services – Supplemental Nutrition Assistance Program YWCA Domestic Violence Shelter
	Prioritized Health Need: Prevention and Education *Community Resources:* Apprisen Nashville Financial Empowerment Center Quality of Life Learning Center – Salvation Army

Rutherford County	**Prioritized Need: Mental Health and Substance Abuse** *Healthcare Resources:* Insight Counseling Center LifeCare Family Services TVHS PTSD Clinic Volunteer Behavioral Health *Community Resources:* 180 Degrees Ministries A Friend of Bill's Alcoholics Anonymous Al-Anon Branches Counseling Domestic Violence Program Exchange Club Fellowship UMC First Baptist Church of Murfreesboro Guidance Center Lost & Found Narcotics Anonymous Nar-Anon North Boulevard Church of Christ Rutherford Department of Children's Services Spring 2 Life TN Tobacco Quit Line Warrior 180 Foundation
	Prioritized Health Need: Access to Resources and Services *Healthcare Resources:* American Family Care Smyrna Baptist Women's Treatment Center-Murfreesboro, Boulevard Terrace Rehabilitation and Nursing Center CareNow Urgent Care - Murfreesboro Caris Healthcare, LP Child & Youth Clinic Centennial Pediatrics- Smyrna Community Care of Rutherford County Crisis Pregnancy Support Family Health Associates – Murfreesboro Hope Clinic II Interfaith Dental Clinic Matthew Walker, Smyrna Health Center Primary Care & Hope Clinic Rutherford County Health Department Rutherford Interfaith Dental Clinic *Community Resources:* CASA of Rutherford County Community Helpers of Rutherford County

	Child Support Enforcement Office Legal Aid Society Social Security Administration Kymari House Tucker's House United Way of Rutherford
	Prioritized Health Need: Basic Needs *Community Resources:* A Second Look at Consignment All Things Possible Bargain Center American Red Cross Carolyn's Consignment Store Cold Patrol Community Helpers Crisis Intervention Center Goodwill (Murfreesboro and Smyrna) Grace Lutheran Church – *Katie's Garden* Greenhouse Ministries Hope Station Journey Home Day Shelter Last Call 4 Grace LaVergne Food Bank LifePoint Church MCHRA Transportation Nourish Food Bank Once Upon a Child Outreach Thrift Store Murfreesboro Housing Authority Murfreesboro Muslim Youth Rocking Horse Rutherford County Shelter – Salvation Army Rutherford County Food Bank Room in the Inn Salvation Army St. Luke's Catholic Church Food Pantry and Last Resource Stepping Stones Safe Haven, Inc. Victory Christian Center West Main Mission
	Prioritized Health Need: Prevention and Education *Community Resources:* Big Brothers Big Sisters of Middle Tennessee Head Start (Murfreesboro and Smyrna) Murfreesboro City Schools Read to Success Rutherford County School System

Williamson County	**Prioritized Need: Mental Health and Substance Abuse** *Healthcare Resources:* The Guidance Center-Franklin Mercy Behavioral Health Tennessee Association of Alcohol, Drug, and Other Addiction Services *Community Resources:* Erika's Safe Place The Prevention Alliance of Tennessee TN Quitline Tennessee Suicide Prevention Network Williamson County Anti-Drug Coalition Refuge Center for Counseling Williamson County Juvenile Court
	Prioritized Need: Mental Health and Substance Abuse *Healthcare Resources:* The Guidance Center-Franklin Mercy Behavioral Health Tennessee Association of Alcohol, Drug, and Other Addiction Services *Community Resources:* Erika's Safe Place The Prevention Alliance of Tennessee TN Quitline Tennessee Suicide Prevention Network Williamson County Anti-Drug Coalition Refuge Center for Counseling Williamson County Juvenile Court
	Prioritized Health Need: Access to Resources and Services *Healthcare Resources:* Graceworks Health Clinic Mercy Community Healthcare ProHealth Rural Health Services Williamson Medical Center Graceworks Health Clinic, Franklin Clinic *Community Resources:* Williamson County Health Department Workforce Essentials American Job Center
	Prioritized Health Need: Prevention and Education *Community Resources:* Boys and Girls Club of Williamson County STARS-Student Assistance Program D.A.R.E. United Way of Williamson County

Appendix F: Secondary Data Tables

Demographics

Indicator	Davidson	Rutherford	Williamson	TN	USA
DEMOGRAPHICS					
Population					
Land area in square miles, 2017	504.03	619.36	582.60	41,234.90	3,531,905.43
Population 2017 estimate	691,243	317,157	226,257	6,715,984	325,719,178
Percent of State's/Country's Population in County/State	10.29%	4.72%	3.37%	2.06%	
Population density, persons per square mile, 2017	1,243.30	424.00	314.40	153.90	87.40
Population, percent change - April 1, 2010 to July 1, 2017	10.30%	20.80%	23.50%	5.80%	5.5
Population growth special population— elderly 2017-2030 (percent change)	51%	125%	128%	37%	31%
Projected population 2030	783,345	414,119	295,235	7,390,535	373,504,000
Population growth 2017-2030 (percent change)	13%	31%	32%	10%	20%
Population growth 2010-2040 (percent change)	27%	103%	161%	34%	24.10%
Urban-Rural Population mix - Percent Urban	96.59%	82.98%	80.61%	66.39%	80.89%
Urban-Rural mix - Percent Rural	3.41%	17.02%	19.39%	33.61%	19.11%
Gender	**Davidson**	**Rutherford**	**Williamson**	**TN**	**USA**
Female persons, percent, 2013	51.80%	50.80%	51.10%	51.20%	50.8
Special Populations	**Davidson**	**Rutherford**	**Williamson**	**TN**	**USA**
% Veterans (of total population age 18 and older)	**6.4%**	**8.7%**	**6.6%**	**9.0%**	**8.0%**
Population with Any Disability, percent	11.9%	10.1%	7.1%	15.4%	12.5%
Foreign born persons, percent, 2012-2016	12.2%	7.0%	6.8%	4.8%	13.2%
Age	**Davidson**	**Rutherford**	**Williamson**	**TN**	**USA**
Median age, years	34.2	32.9	39	38.5	37.7
Persons under 5 years, percent, 2017	6.9%	6.7%	6.0%	6.1%	6.2%
Persons under 18 years, percent, 2017	21.3%	24.9%	27.6%	22.6%	22.8%
Persons 65 years and over, percent, 2017	11.5%	10.1%	12.5%	15.7%	15.2%
Race/Ethnicity	**Davidson**	**Rutherford**	**Williamson**	**TN**	**USA**

White alone, percent, 2017 (a)	65.2%	78.6%	89.5%	78.7%	76.9%
Black or African American alone, percent, 2017 (a)	28.1%	14.9%	4.4%	17.1%	13.3%
American Indian and Alaska Native alone, percent, 2017 (a)	0.5%	0.5%	0.2%	0.4%	1.3%
Asian alone, percent, 2017 (a)	3.7%	3.4%	4.2%	1.8%	5.7%
Native Hawaiian and Other Pacific Islander alone, %2017 (a)	0.1%	0.1%	0.1%	0.1%	0.2%
Two or More Races, percent, 2017	2.4%	2.6%	1.6%	1.9%	2.6%
Hispanic or Latino, percent, 2017 (b)	10.1%	7.6%	4.6%	5.2%	17.8%
White alone, not Hispanic or Latino, percent, 2017	56.4%	72.1%	85.3%	74.2%	61.3%
Language other than English spoken at home, pct age 5+, 2012-2016	16.4%	10.0%	7.9%	6.8%	21.1%
Educational Attainment	**Davidson**	**Rutherford**	**Williamson**	**TN**	**USA**
Percent Population Age 25+ with No High School Diploma, 2012-2016	12.50%	9.23%	4.42%	14.02%	13.02%
- White	9.77%	8.48%	4.17%	13.11%	11.06%
- Black or African American	14.35%	10.41%	10.64%	16.13%	15.66%
- Native American/Alaska Native	21.54%	33.83%	11.82%	22.20%	20.69%
- Asian	20.39%	16.59%	2.48%	14.89%	13.73%
- Native Hawaiian / Pacific Islander	16.91%	0.00%	0.00%	16.07%	13.61%
- Some Other Race	51.55%	29.17%	4.12%	47.92%	39.83%
- Multiple Race	16.04%	8.23%	6.66%	15.86%	13.31%
Bachelor's degree or higher, percent, 2012-2016	38.2%	30.2%	56.6%	25.4%	30%

Socio-Economic Status

Indicator	Davidson	Rutherford	Williamson	TN	U.S.
Socio-Economic Status					
Income/Poverty					
Median household income, 2012-2016	$50,484	$58,032	$100,140	$46,574	$55,322
Per capita money income in past 12 months (2016 dollars), 2012-2016	$30,595	$26,373	$46,494	$26,019	$29,829
Adults in poverty, count, 2012-2016	114,238	35,764	10,547	1,100,169	46,932,225

Persons below poverty level, percent, 2012-2016	15.1%	10.3%	5.2%	15.8%	12.7%
- White	13.2%	10.6%	4.8%	14.5%	12.4%
- Black	26.3%	20.6%	8.8%	28.1%	27.6%
- Native American	13.8%	23.7%	0.0%	18.5%	27.6%
-Asian	14.3%	15.3%	4.1%	12.5%	12.3%
-Native Hawaiian / Pacific Islander	47.6%	36.0%	0.0%	29.0%	20.1%
- Some other race"	32.2%	21.4%	33.8%	34.6%	25.4%
- "Multiple races"	21.6%	22.0%	6.6%	26.0%	19.3%
- Hispanic / Latino Ethnicity	31.2%	23.9%	24.3%	32.0%	23.4%
Children in Poverty, percent	22%	13%	5%	23%	20%
-- Non-Hispanic White	14.37%	10.05%	4.29%	17.82%	12.72%
- Black	40.60%	28.58%	7.97%	42.36%	37.42%
- Native American	2.72%	46.32%	0.00%	20.76%	35.20%
- Asian	19.01%	24.77%	3.96%	12.49%	12.54%
- Native Hawaiian/Pacific Islander	76.97%	100.00%	0.00%	46.67%	26.76%
- Some other race	49.24%	29.25%	50.56%	47.78%	34.63%
- Multiple Race	23.73%	20.35%	7.68%	29.71%	21.62%
Poverty - Children Below 100% FPL	28.98%	15.74%	6.39%	25.13%	21.17%
Poverty - Children Below 200% FPL	54.74%	39.42%	15.41%	49.36%	43.29%
Children eligible for Free/Reduced Price Lunch, (%)	70.82%	43.62%	13.47%	58.82%	52.61%
Percent of public school student who are economically disadvantaged, 2016-2017	50.6%	21.4%	3.7%	34%	
Households Receiving SNAP Benefits	14.6%	11.4%	3.4%	16.5%	13.05%
Households with Cash Public Assistance Income	4.6%	2.6%	0.9%	2.9%	2.67%
Income inequality: Ratio of household income at the 80th percentile to income at the 20th percentile (the higher the ratio the greater inequality)	4.5	3.8	4.2	4.7	5
Income inequality, County 80th Percentile Income	$100,200	$103,602	$185,604		
Income inequality, County 20th Percentile Income	$22,243	$27,595	$44,463		
Federal Poverty Threshold, Family of 1 (48 contiguous states)					$12,140.00
Federal Poverty Threshold, Family of 4 (48 contiguous states)					$25,100.00
Unemployment	**Davidson**	**Rutherford**	**Williamson**	**TN**	**USA**
Unemployment rate, March 2018	2.60%	2.60%	2.50%	3.50%	4.20%

Number of Jobs, 2015	618,891	155,284	143,628		
Projected Jobs, 2025	687,059	187,195	196,539	3,433,000, by 2024	
Projected Jobs, 2035	755,684	226,453	269,755		
Population, 2015	654,879	288,734	229,052		
Projected Population, 2025	702,871	349,083	308,328		
Projected Population, 2035	752,326	409,986	387,970		
Average annual weekly wage (2017)	$1,116	$921	$1,201	$939	$1,065
Annual establishments (2017)	22,327.00	5,556.00	8,650.00	157,095	9,851,747
U-1 Persons employed 15 weeks or longer, as a % of the civilian labor force (2017-2018)				1.00%	1.40%
U-2 Job losers and persons who completed temporary jobs as a % of the civilian labor force (2017-2018)				1.50%	1.90%
U-3 Total unemployed as a % of the civilian labor force (def'n used for official unemployment rate) (2017-2018)				3.50%	4.00%
U-6 Total unemployed, plus all who want and are available for work but have given up looking, plus involuntary part-time workers (those who want to work full-time but are working <35 hours/week because hours were cut or unable to find full-time job) as a % of civilian labor force (2017-2018)				7.60%	7.80%

Social Determinants of Health

Indicator	Davidson	Rutherford	Williamson	TN	USA
Social Determinants of Health					
Education					
Students in public schools, White, percent	29.3%	62.1%	81.4%	63.4%	
Student in public schools, Black or African American, percent	42.8%	19.5%	5.2%	24.1%	
Students in public schools, Hispanic or Latino, percent	23.2%	13.2%	5.9%	9.7%	
Students in public schools, Asian, percent	4.3%	4.7%	6.8%	2.2%	

Students in public schools, Native American/Alaskan, percent	0.2%	0.3%	0.5%	0.3%	
High School Graduation Rate (NCES), 2008-2009	71.5%	89.3%	99.1%	77.4%	75.5%
High School Graduation Rate, 2013-2014	78.7%	92.5%	94.4%	87.2%	
High School Graduation Rate, 2014-2015	81.6%	93.9%	95.5%	87.8%	
High School Graduation Rate, 2015-2016	81.0%	95.2%	95.5%	88.5%	86.1%
High School Graduation Rate, 2016-2017	80.3%	95.3%	95.6%	89.1%	
High school graduate or higher, percent, 2012-2016	87.5%	90.8%	95.6%	86.0%	87.0%
Event High School Dropouts, 2012	7.3%	2.3%	1.1%	4.3%	3.4%
Event High School Dropouts, 2013	5.6%	1.7%	0.8%	3.4%	4.7%
Event High School Dropouts, 2014	6.0%	1.5%	0.7%	3.4%	5.2%
Event High School Dropouts, 2015	5.1%	1.0%	0.8%	2.5%	
Event High School Dropouts, 2016	4.9%	1.1%	0.4%	2.7%	
College Going Rate among Public High School graduates, Fall 2015	57.8%	63.9%	82.7%	62.5%	
4th grader not proficient in reading, 2014-2015	64.0%	49.1%	23.9%	54%	46%
% of students grades three through 8 that are proficient or above in reading	**Davidson**	**Rutherford**	**Williamson**	**TN**	**USA**
3-8th grade proficient or advance - language, 2015-2016	25.5%	40.8%	66.9%	33.8%	
3-8th grade proficient or advance - language, 2015-2016 Asian	40.10%	44.0%	78.5%	57.6%	
3-8th grade proficient or advance - language, 2015-2016 Black	18.10%	28.0%	46.0%	18.6%	
3-8th grade proficient or advance - language, 2015-2016 Hawaiian or Pacific Islander	27.10%	no data	64.8%	44.2%	
3-8th grade proficient or advance - language, 2015-2016 Hispanic	17.60%	25.8%	54.5%	22.4%	
3-8th grade proficient or advance - language, 2015-2016 White	40.90%	47.8%	67.9%	40.5%	
3-8th grade proficient or advance - math, 2015-2016	27%	46.6%	74.1%	38.0%	
3-8th grade proficient or advance - math, 2015-2016 Asian	46.80%	57.2%	86.4%	68.0%	
3-8th grade proficient or advance - math, 2015-2016 Black	18.30%	30.9%	51.8%	19.9%	
3-8th grade proficient or advance - math, 2015-2016 Hawaiian or Pacific Islander	29.20%	54.3%	66.7%	47.2%	
3-8th grade proficient or advance - math, 2015-2016 Hispanic	22.30%	33.5%	60.1%	27.7%	
3-8th grade proficient or advance - math, 2015-2016 White	42.30%	53.7%	75.2%	45.4%	
Student-to-Teacher Ratio, 2015-2016	16.81	14.84	14.66	14.89	

Adverse Childhood Experiences	Davidson	Rutherford	Williamson	TN	USA
Percent Adults with 0 Adverse Childhood Experiences, 2014				48%	
Percent Adults with 1-2 Adverse Childhood Experiences, 2014				38%	
Percent Adults with 3 or more Adverse Childhood Experiences, 2014				13%	
Two most common ACEs in Tennessee				Economic Hardship, Divorce	
Housing	**Davidson**	**Rutherford**	**Williamson**	**TN**	**USA**
Residential segregation - black/white 2012-2016 (where 0 is complete integration and 100 is complete segregation)	48.75	29.12	30.46	66.97	
Residential segregation - nonwhite/white 2012-2016 (where 0 is complete integration and 100 is complete segregation)	41.99	24.89	26.50	58.69	
Living in same house 1 year & over, percent, 2012-2016	80.9	82.0%	85.3%	84.9%	85.2%
Housing units, 2016	306,393	115,467	78,585	2,919,671	135,697,926
Households, 2012-2016	269,078	103,562	71,043	2,522,204	117,716,237
Owner-occupied housing unit rate, 2012-2016	54.0%	65.4%	80.5%	66.3%	63.6%
Owner occupied Black housholder households, % of Black occupied households (2012-2016)	67.63%	42.2%	59.1%		
Owner occupied Asian housholder households, % of Asian occupied households (2012-2016)	49.65%	69.5%	64.4%		
Owner occupied Hispanic housholder households, % of Hispanic occupied households (2012-2016)	31.92%	46.5%	57.3%		
Owner occupied white housholder households, % of white occupied households (2012-2016)	61.39%	69.9%	82.5%		
Persons per household, 2012-2016	2.40	2.76	2.89	2.54	2.64
Median value of owner-occupied housing units, 2012-2016	$177,700	$164,800	$368,100	$146,000	$184,700
Median household income, 2012-2016	$50,484	$58,032	$100,140	$46,574	$55,322
House value: Income	3.52	2.84	3.68	3.13	3.34
Persons below poverty level, percent, 2012-2016	15.1%	10.3%	5.2%	15.8%	12.7%
Housing Cost Burden (>30% monthly income), 2012-2016	34.1%	28.0%	22.7%	28.7%	32.9%
% of Rental Households that are Cost Burdened, 2012-2016	45.8%	44.2%	41.9%	44.2%	47.3%
Severe Housing Problems, 2010-2014	18%	15%	11%	16%	19%
Overcrowded housing, 2012-2016	2.77%	3.11%	1.14%	2.1%	3.3%
Homelessness (2017)	2,337	316		8,309	554,000
Homelessness (2015)	2,154	289		9123	564,708
Students experiencing homelessness				15404	1,263,323

Residential Segregation Index- black / white dissimilarity where higher values indicate greater segregation	49	29	30	67	
Transportation	**Davidson**	**Rutherford**	**Williamson**	**TN**	**USA**
Mean travel time to work (minutes), workers age 16+, 2012-2016	24.2	28.1	27.6	24.7	26.1
Households with No Vehicles, 2012-2016	7.2%	3.4%	2.3%	6.25%	8.97%
Driving Alone to work, 2012-2016	80%	85%	81%	84%	76%
Long commute - driving alone	33%	42%	45%	34%	35%
Workers Commuting by Public Transportation, 2012-2016	2.18%	0.34%	0.35%	0.78%	5.13%
Workers Communiting by Public Transportation, 2010-2014	2.2%	0.5%	0.1%	0.8%	
Percent of workers who walk or bike to work, 2012-2016	2.23%	1.13%	1.09%	1.49%	3.37%
Mortality - Motor Vehicle Accident, age-adj. rate per 100,000, 2010-2016	10	10	7	15	11
Mortality - Pedistrian Accident, number of pedestrians killed, 2016	17	4	0	97	5,987.00
Miles of sidewalk	1070				
Daily vehicle miles traveled per capita	35.80				
Annual public transit trips per capita (2011)	9.00	2.00		4.40	
Annual public transit trips per capita score/100 (percentile) (urbanized area, 2011)	55.00	7.00		25.00	
Percent of population who commute by private vehicle (for Nashville-Davidson-Murfreesboro-Franklin Metropolitan Statistical Area and State)	92.20%	92.20%	92.20%	93.20%	
Percent of population who commute by public transit (for Nashville-Davidson-Murfreesboro-Franklin Metropolitan Statistical Area and State)	1.10%	1.10%	1.10%	0.80%	
Percent of population who commute by bicycle (for Nashville-Davidson-Murfreesboro-Franklin Metropolitan Statistical Area and State)	0.20%	0.20%	0.20%	0.10%	
Percent of population who commute by walking (for Nashville-Davidson-Murfreesboro-Franklin Metropolitan Statistical Area and State)	1.20%	1.20%	1.20%	1.30%	
Annual rate of DUI/DWI Fatalities per 10,000 residents (2012) (for Nashville-Davidson-Murfreesboro-Franklin Metropolitan Statistical Area and State)	3.1	3.1	3.1	4.60	
Annual rate of DUI/DWI Fatalities per 10,000 residents score/100 (percentile) (for Nashville-	48	48	48	26.00	

Davidson-Murfreesboro-Franklin Metropolitan Statistical Area and State)					
% of income average household spends on housing and transportation combined (for Nashville-Davidson-Murfreesboro-Franklin Metropolitan Statistical Area and State)	49.50%	49.50%	49.50%		
% of income average household spends on housing and transportation combined score/100 (percentile) (for Nashville-Davidson-Murfreesboro-Franklin Metropolitan Statistical Area)	61.00%	61.00%	61.00%		
Road traffic fatalities per 100,000 residents - automobile (5-year avg. data 2008-2012) (for Nashville-Davidson-Murfreesboro-Franklin Metropolitan Statistical Area and State)	11.20	11.20	11.20	14.50	
Annual person miles of travel by private vehicle				31,480.00	
Annual person miles of travel by private vehicle score/100 (percentile)				35.00	
Annual person miles of travel by walking				95.00	
Annual person miles of travel by walking score/100 (percentile)				3.00	
% of foot/bicycle trips that are at least 10 minutes long (sustained exercise)				4.50%	
% of foot/bicycle trips that are at least 10 minutes long (sustained exercise) score/100 (percentile)				5.00	
Seat belt use by drivers and front seat passengers				83.70%	
Seat belt use by drivers and front seat passengers score/100 (percentile)				39.00	
Access to Healthy Food	**Davidson**	**Rutherford**	**Williamson**	**TN**	**U.S.**
Food Environment Index (indicator of access to healthy foods with 0 being the worst and 10 being the best)	7.10	7.80	9.10	6.20	
Food Insecurity Rate, 2014	17.29%	13.52%	8.22%	16.90%	14.91%
Child Food Insecurity, 2014	23.20%	20.80%	17.10%	25.45%	23.49%
% Food insecure children likely ineligible for assistance	30%	37%	65%	31%	21%
Limited Access to Health Foods	7%	8%	3%	8%	6%
Fast food restaurants/1,000 pop. (2014)	0.94	0.70	0.78		
Fast food restaurant growth (% change) 2009-2014	8.89%	18.13%	8.84%		
Expenditures per capita on fast food (2012)	$665.32	$665.32	$665.32	$665.32	
Number of Farmer's Markets (2016)	14.00	4.00	4.00		

Farmers' markets growth (% change 2009-2016)	133.33%	300.00%	300.00%		
Fast Food Restaurant Access, rate per 100,000 pop., 2015	101.33%	80.35%	91.17%	75.12%	74.60%
Fast Food Restaurant Access, rate per 100,000 pop., 2012	97.02%	72.73%	85.16%	72.15%	72.84%
Grocery Store Access, rate per 100,000 pop. 2015	21.06%	12.19%	15.83%	17.41%	21.19%
# of supermarkets and grocery stores per 1,000 population (Grocery Store Density)	0.20	0.12	0.15		
% of people 65+ with low access to a grocery store	2.54%	2.28%	1.71%		
Convenience stores/1,000 population (2014)	0.43	0.35	0.28		
Convenience stores % change 2009-2014	-16.96%	10.32%	-10.56%		
Liquor Store Establishments, Rate per 100,000 Population, 2016	11.49	10.66	13.65	9.71	11.00
Low Income Population with Low food Access, 2010 (%)	8.23%	6.25%	2.81%	24.10%	18.94%
Percent Population in Census Tract with No Food Outlet, Mod. Retail Food Environment Index	0.00%	0.00%	0.00%	0.34%	0.99%
Percent Population in Census Tract with No Healthy Food Outlet, Mod. Retail Food Environment Index	13.29%	14.63%	3.05%	23.74%	18.63%
Percent Population in Census Tract with Low Healthy Food Access, Mod. Retail Food Environment Index	38.83%	33.74%	21.97%	24.77%	30.89%
Percent Population in Census Tract with Moderate Healthy Food Access, Mod. Retail Food Environment Index	46.89%	51.62%	74.99%	48.87%	43.28%
Percent Population in Census Tract with High Healthy Food Access, Mod. Retail Food Environment Index	0.98%	0.00%	0.00%	2.27%	5.02%
Population with Low Food Access, 2015 (%)	21.91%	24.75%	24.73%	27.87%	22.43%
Neighborhood Safety - Crime	**Davidson**	**Rutherford**	**Williamson**	**TN**	**USA**
Substantiated Child abuse/neglect cases, per 1,000 children, 2013	3.8	3.6	0.6	4.9	
Substantiated Child abuse/neglect cases, per 1,000 children, 2014	4.2	3.5	1.4	5.4	
Substantiated Child abuse/neglect cases, per 1,000 children, 2015	4.2	3.9	1.2	5.9	
Substantiated Child abuse/neglect cases, per 1,000 children, 2016	4.3	3.2	0.9	4.6	
Substantiated Child abuse/neglect cases, per 1,000 children, 2017	4.1	3.5	1.1	4.7	

Child Maltreatment / 1000 (2016)				6.3	9.1
Domestic Violence, Rate per 100,000, 2014	1,111	437	130	614	380
Injury deaths, per 100,000, 2012-2016	82	55	50	83	65
Economic Opportunity					
Opportunity Index Score (score/100 where 100 is best) (2017)	48.4	53.2	71.5	48.1	
Access to revolving line of credit (% of population, 2016)				58.30%	
Unbanked Households (2013)				9.70%	
Underbanked Households (2013)				18.70%	
Income inequality (2014) (Ratio of income of top quintile to bottom quintile)				4.97	
Underemployment rate 2017 (TN ranked 25th)				9.40%	
Employed involuntary part time, 2017				102,100	5,300,000

Access to Health Care

Indicator	Davidson	Rutherford	Williamson	TN	USA
ACCESS TO HEALTH CARE					
PCP / Provider Availability					
Primary Care Provider Ratio, (population:provider), 2015	1088:1	2297:1	666:1	1382:1	
Dentists Ratio, (population:provider), 2016	1324:1	1857:1	1312:1	1892:1	
Mental Health Provider Ratio, (population:provider), 2017	359:1	1269:1	700:1	742:1	529 : 1
Population Living in a Health Profesional Shortage Area, Percent, 2016	13.92%	0.00%	0.00%	70.32%	33.13%
Percent Adults who needed to see a doctor but could NOT due to Cost, last 12 mo. TN BRFSS 2016				12.40%	
Less than $15,000				30.80%	
$15,000-$24,999				21.60%	
$25,000-$34,999				12.70%	
$35,000-$49,999				9.20%	
$50,000+				9.60%	
White				11.00%	
Black				14.90%	
Hispanic				23.60%	

Have one person you think of as a personal doctor or health care provider, percent, TN BRFSS 2016 [NO]				22.00%	
White				20.60%	
Black				20.30%	
Hispanic				51.90%	
18-24				38.60%	
25-34				39.50%	
35-44				26.10%	
45-54				18.40%	
55-64				12.00%	
65+				5.90%	
Health Insurance	**Davidson**	**Rutherford**	**Williamson**	**TN**	**USA**
Uninsured adults (>18) 2015	17.17%	13.11%	7.44%	15.00%	
Uninsured children (<18) 2015	4.52%	4.04%	3.13%	4.19%	
Health Insurance Coverage of Total Population, 2013 - Employer	53.70%	61.90%	72.60%	52.20%	54.50%
Health Insurance Coverage of Total Population, 2013 - Medicare	12.40%	10.50%	10.80%	17.10%	15.50%
Health Insurance Coverage of Total Population, 2013 - Medicaid	17.70%	13.00%	5.30%	19.10%	17.80%
Health Insurance Coverage of Total Population, 2013 - Other Private	63.60%	71.50%	86.60%	64.00%	65.20%
Health Insurance Coverage of Total Population, Uninsured 2014 ACS 5-year estimates	16.40%	13.00%	6.00%	13.60%	14.20%
Percent Uninsured, Total civilian noninstitutionalized population. American FactFinder 2011-2013 ACS Health Insurance Status	16.70%	13.90%	6.50%	14.10%	14.80%
Percent Uninsured, age Under 18 years American FactFinder 2011-2013 ACS Health Insurance Status	7.40%	6.10%	3.90%	5.70%	7.30%
Percent Uninsured, age 18-64 yrs American FactFinder 2011-2013 ACS Health Insurance Status	22.10%	18.60%	8.60%	20.30%	20.60%
Percent Uninsured, age 65 years and older American FactFinder 2011-2013 ACS Health Insurance Status	1.30%	1.20%	0.5%	0.5%	1.00%
Percent Uninsured, age 19 to 25 years American FactFinder 2011-2013 ACS Health Insurance Status	23.10%	24.00%	14.40%	25.50%	26.70%
Uninsured Population by Race: Non-Hispanic White	11.80%	11.10%	5.20%	11.80%	10.40%
Uninsured Population by Race: Black or Affrican American	15.30%	11.80%	6.80%	16.30%	17.30%
Uninsured Population by Race: Native American / Alaska Native	39.40%			27.00%	27.30%
Uninsured Population by Race: Asian	19.00%	28.20%	9.00%	18.90%	15.00%

Uninsured Population by Race: Native Hawaiian / Pacific Islander				19.00%	18.20%
Uninsured Population by Race: Non-Hispanic Other	56.90%	20.50%		48.70%	32.50%
Uninsured Population by Race: Non-Hispanic Multiple Race	16.90%	16.20%	13.00%	13.90%	13.90%
Uninsured Population by Ethnicity Alone: Hispanic/Latino	47.20%	41.80%	24.10%	40.30%	29.10%
Public Health Insurance Coverage by Type	**Davidson**	**Rutherford**	**Williamson**	**TN**	**USA**
Employee Share of Insurance Premium (2014) (Note that TN ranks 50th/51 (inc. Washington DC) in terms of what share of ins. premium citizens pay)				32.80%	
Dental Care	**Davidson**	**Rutherford**	**Williamson**	**TN**	**USA**
Visited the dentist or dental clinic for any reason in past year (2016)				59.10%	
<$15,000				36.00%	
$15,000-$24,999				45.70%	
$25,000-$34,999				50.40%	
$35,000-$49,000				59.30%	
$50,000-$74,000				70.20%	
$75,000+				79.00%	
Adults that have had 6+ permanent teeth removed because of tooth decay or gum disease (2016)				11.80%	
<$15,000				22.00%	
$15,000-$24,999				18.20%	
$25,000-$34,999				12.50%	
$35,000-$49,000				10.40%	
$50,000-$74,000				10.70%	
$75,000+				3.00%	
College graduate				4.10%	
H.S. or G.E.D.				13.80%	
Less than H.S.				21.90%	
Adults aged 65+ who have had all their natural teeth extracted, TN BRFSS 2016				21.60%	
Have Not visited a dentist, dental hygienist or dental clinic within the past year, TN BRFSS 2016				59.10%	
Hospitalizations	**Davidson**	**Rutherford**	**Williamson**	**TN**	**USA**
Preventable Hospital Stays, per 1,000 Medicare enrollees	56	67	37	59	
Preventive Care	**Davidson**	**Rutherford**	**Williamson**	**TN**	**USA**
Number of doctor's office visits per 100 persons per year (2014)				353.5	

Number of doctor's office visits per 100 persons per year (2014) - Non-Hispanic white					330.1
Number of doctor's office visits per 100 persons per year (2014) - Non-Hispanic black					203.3
Number of doctor's office visits per 100 persons per year (2014) - Hispanic or Latino					215.20
Number of doctor's office visits per 100 persons per year (2014) - Non-Hispanic Other					177.70
Preventive care visits made to primary care specialists per 100 people per year (2014) - all				84.70	
Preventive care visits made to primary care specialists per 100 persons per year - White (2014)				58.30	
Preventive care visits made to primary care specialists per 100 persons per year - Black (2014)				40.00	
Preventive care visits made to primary care specialists per 100 persons per year - Hispanic or Latino (2014)				46.10	
Women 40+ who have had a mammogram in past 2 years (2016)				71.10%	
Women 50-74 who have had a mammogram in past 2 years (2016)				77.10%	
Women 21-65 who have had a pap test in past 3 years (2016)				20.20%	
Mammography Screening (% of Medicare enrollees ages 67-69 who have had mammogram in last 2 years - 2014) - White	63.00%	67.90%	72.90%	62.90%	
Mammography Screening (% of Medicare enrollees ages 67-69 who have had mammogram in last 2 years - 2014) - Black	62.70%	77.90%	73.90%	61.00%	
Males 40+ who have had PSA test in past 2 years (2016)				56.80%	
Vaccinations	**Davidson**	**Rutherford**	**Williamson**	**TN**	**USA**
During past 12 mths, had a seasonal flu shot or vaccine spray (Adults) 2016				36%	
During past 12 mths, had a seasonal flu shot or vaccine spray (Adults 65 yo +) 2014				56.90%	
Ever had a pneumonia shot (Adult) 2016				34%	
Ever had a pneumonia shot (Adult Age 65+) 2016				74.10%	
24-Month Vaccinations, 7 vaccine series, % complete 2017	80.40%			73.50%	
24-Month Vaccinations,DTaP, % complete 2017	87.50%			81.20%	
24-Month Vaccinations, Poliomyelitis, % complete 2017	93.80%			93.00%	
24-Month Vaccinations, MMR, % complete 2017	92.00%			90.50%	
24-Month Vaccinations, Hepatitis B, % complete 2017	92.90%			93.80%	

24-Month Vaccinations, Hib, % complete 2017	83.00%			79.80%	
24-Month Vaccinations, Varicella, % complete 2017	92.00%			90.70%	
24-Month Vaccinations, Pneumococcus, % complete 2017	86.60%			82.70%	
24-Month Vaccinations, Hepatitis A, % complete 2017	91.10%			89.90%	
24-Month Vaccinations, Influenza, % complete 2017	67.90%			45.90%	
24-Month Vaccinations, Rotavirus, % complete 2017	84.80%			77.30%	

Social Environment

Indicator	Davidson	Rutherford	Williamson	TN	U.S.
Social Environment					
Social / emotional supports					
Linguistically isolated households, % of all households, 2012-2016	4.33%	1.52%	0.9%	1.54%	
Lack of social or emotional support	17.4%	13.4%	16.1%	19%	21%
Social associations, memberships per 10,000 pop., 2015	13.3	7.0	12.9	11.3	9.3
Children in single-parent households, 2012-2016	42%	29%	15%	36%	34%
Faith congregations per 10K People, 2010	12	10	11		
Always				49.40%	
Usually				24.20%	
Sometimes				14.50%	
Rarely				4.90%	
Never				7.10%	
In general, how satisfied are you with your life?					
Very satisfied				42.90%	
Satisfied				49.80%	
Dissatisfied				5.40%	
Very dissatisfied				1.90%	

Health Status

Indicator	Davidson	Rutherford	Williamson	TN	U.S.
Health Status					
Self-reported health status					
% Fair or Poor Health (2014-2016)	17.0%	16%	12%	19%	18.0%
# Days in 30 - Physical Health Not Good (2016)	4.4	4.1	3.5	4.7	3.8
- <$25k				9.4	7.2
- $25k - 49.9k				4.1	4.1
- $50-74.9k				2.6	3.1
- $75k+				2.2	2.2
- Age 18-44				2.7	2.6
- Age 45-64				6.5	4.9
- Age 65+				6	5.2
- Black				4.1	4
- Hispanic				3.6	3.6
- Multiracial				9.5	5.9
- White				4.7	4
- Female				5.1	4.2
- Male				4.2	3.5
- < HS				9.6	6.6
- HS Grad				5.4	4.6
- College Grad				2.5	2.4
Poor mental health days, past 30 days, 2016	4.4	4.2	3.8	4.5	3.8
- <$25k				7.4	5.9
- $25k - 49.9k				4.1	3.6
- $50-74.9k				3.1	2.9
- $75k+				2.4	2.3
- Age 18-44				4.6	4.2
- Age 45-64				5.2	3.9
- Age 65+				2.6	2.4
- Black				4.7	4
- Hispanic				4.2	3.4
- Multiracial				7.7	6.2
- White				4.2	3.8
- Female				5.2	4.3
- Male				3.5	3.1

- < HS				7.6	5.1
- HS Grad				4.1	3.8
- College Grad				2.7	2.5
MORTALITY	**Davidson**	**Rutherford**	**Williamson**	**TN**	**USA**
Life expectancy				76.3	80 (2017)
- male (2014)	74	75.8	80.1	73.5	77.7
- female	77.6	80.2	83.5	79	82.2
# of Deaths, by Cause	**2016**	**2014-2016**	**2012-2016**	**2016**	**2016**
Total	5433	5500	5468	67857	2,744,248
Heart Disease: Diseases of heart (I00-I09,I11,I13,I20-I51)	1180	1234	1215	15429	635,260
Cancer: Malignant neoplasms (C00-C97)	1108	1222	1246	14450	598,038
Accidents: Accidents (unintentional injuries) (V01-X59), Y85-Y86)	468	344	370	4318	161,374
Lung Disease: Chronic lower respiratory diseases (J40-J47)	313	314	267	4238	154,596
Alzheimer's Disease: Alzheimer's disease (G30)	302	318	429	3250	116,103
Stroke: Cerebrovascular diseases (I60-I69)	293	285	288	3508	142,142
Diabetes: Diabetes mellitus (E10-E14)	176	152	119	1883	80,058
Suicide: Intentional self-harm (suicide) (*U03,X60-X84,Y87.0)	110	120	129	1111	44,965
Flu / Pneumonia: Influenza and pneumonia (J09-J18)	91	109	103	1533	51,537
Liver Disease / Cirrhosis: Chronic liver disease and cirrhosis (K70,K73-K74)	83	79	66	960	40,545
Assault (homicide) (*U01-*U02,X85-Y09,Y87.1)	83				
Nephritis ((N00-N07,N17-N19,N25-N27))	74	72	75	1150	50,456
Septicemia (A40-A41)	61				
% of deaths	**2016**	**2014-2016**	**2012-2016**	**2016**	**2016**
Heart Disease: Diseases of heart (I00-I09,I11,I13,I20-I51)	21.7	22.4	22.2	22.7	23.1
Cancer: Malignant neoplasms (C00-C97)	20.4	22.2	22.8	21.3	21.8
Accidents: Accidents (unintentional injuries) (V01-X59), Y85-Y86)	8.6	6.3	6.8	6.4	5.9
Lung Disease: Chronic lower respiratory diseases (J40-J47)	5.8	5.7	4.9	6.2	5.6
Alzheimer's Disease: Alzheimer's disease (G30)	5.6	5.8	7.8	4.8	4.2
Stroke: Cerebrovascular diseases (I60-I69)	5.4	5.2	5.3	5.2	5.2
Diabetes: Diabetes mellitus (E10-E14)	3.2	2.8	2.2	2.8	2.9
Suicide: Intentional self-harm (suicide) (*U03,X60-X84,Y87.0)	2.0	2.2	2.4	1.6	1.6

Flu / Pneumonia: Influenza and pneumonia (J09-J18)	1.7	2.0	1.9	2.3	1.9
Liver Disease / Cirrhosis: Chronic liver disease and cirrhosis (K70,K73-K74)	1.5	1.4	1.2	1.4	1.5
Assault (homicide) (*U01-*U02,X85-Y09,Y87.1)	1.5				
Nephritis ((N00-N07,N17-N19,N25-N27))	1.4	1.3	1.4	1.7	1.8
Septicemia (A40-A41)	1.1	0.0	0.0	0.0	0.0
Age adjusted Death Rate / 100k, by Cause	**2016**	**2014-2016**	**2012-2016**	**2016**	**2016**
Total Death Rate	793.8	614.0	532.0	1020.2	728.8
- Black male					1,081.2
- Black female					734.1
- White male					879.5
- White female					637.2
- Hispanic male					631.8
- Hispanic female					436.4
Heart Disease: Diseases of heart (I00-I09,I11,I13,I20-I51)	172.4	177.5	133	198.8	165.5
Cancer: Malignant neoplasms (C00-C97)	161.9	163.1	125.6	179.9	155.8
Accidents: Accidents (unintentional injuries) (V01-X59), Y85-Y86)	68.6	41.7	40.4	61.1	47.4
Lung Disease: Chronic lower respiratory diseases (J40-J47)	49.7	46.4	30.4	54.7	40.6
Alzheimer's Disease: Alzheimer's disease (G30)	51.1	55.0	49.4	44.2	30.3
Stroke: Cerebrovascular diseases (I60-I69)	47.8	44.2	32.6	46.0	37.3
Diabetes: Diabetes mellitus (E10-E14)	27.1	21.9	12.7	24.0	21.0
Suicide: Intentional self-harm (suicide) (*U03,X60-X84,Y87.0)	15.5	13.5	12.4	16.3	13.5
Flu / Pneumonia: Influenza and pneumonia (J09-J18)	14.8	16.4	11.9	20.1	13.5
Liver Disease / Cirrhosis: Chronic liver disease and cirrhosis (K70,K73-K74)	11.7	9.2	6.3	12.2	10.7
Assault (homicide) (*U01-*U02,X85-Y09,Y87.1)	11.4				
Nephritis ((N00-N07,N17-N19,N25-N27))	11.4	10.5	8.1	14.9	13.1
Septicemia (A40-A41)	9.5	8.0	3.7	11.9	10.7
Years of Potential Life Lost (YPLL)	**2016**	**2016**	**2016**	**2016**	**2016**
Premature Death (YPLL <75)	57,215	20582	8539	613214	22047384
- White YPLL	34499	16414	7691	472,225	16750094
- Black YPLL	21164	3233	574	132,590	4359397
Age Adjusted YPLL / 100k (2014-2016)	7837	6379.0	3800	8,760.0	

- Black	10214	7199	6668		
- Hispanic	4725	3794	2506		
- White	7313	6589	3769		
YPLL Rate / 100k	441.3	368.0	227.9	557.9	
- White rate	446.8	401.6	235.9	578.5	
- Black rate	505.8	293.5	322.6	575.1	
# YPLL from Cancer	9335	4248	2207	116,575	4362037
# YPLL from Heart Disease	8361	3177	987	104582	3225740
# YPLL from Accidents	11709	3674	1796	103857	3901259
# YPLL from Suicide	3517	1280	676	31580	1289181
# YPLL from deaths in Perinatal Period	2682	1192		18725	860014
# YPLL from Homicide	3389	419		22748	795211
# YPLL from Stroke	1420	412	183	16942	543414
# YPLL from Chronic Lung DIsease	1974	643	124	23218	622866
# YPLL from Diabetes	1614	630	135	15878	596730
# YPLL from Liver Disease			152	14342	610807
# YPLL congenital anomalies	1360	409	298		
# YPLL from Septicemia			113		
Years of Potential Life Lost (YPLL), by % of Total YPLL (years reviewed)	**2016**	**2016**	**2016**	**2016**	**2016**
% YPLL from Cancer	16.3	20.6	25.8	19.0	19.8
% YPLL from Heart Disease	14.6	15.4	11.6	17.1	14.6
% YPLL from Accidents	20.5	17.9	21.0	16.9	17.7
% YPLL from Suicide	6.1	6.2	7.9	5.1	5.8
% YPLL from deaths in Perinatal Period	4.7	5.8		3.1	3.9

% YPLL from Homicide	5.9	2.0		3.7	3.6
% YPLL from Stroke	2.5	2.0	2.1	2.8	2.5
% YPLL from Chronic Lung Disease	3.5	3.1	1.5	3.8	2.8
% YPLL from Diabetes	2.8	3.1	1.6	2.6	2.7
% YPLL from Liver Disease			1.8	2.3	2.8
% YPLL from congenital anomalies	2.4	2.0	3.5		
Disability	**2016**	**2016**	**2016**	**2016**	**2016**
Difficulty doing errands alone %	5.2	4.5	3.2	7.3	5.8
Difficulty dressing or bathing %	2.6	2	1.4	3.30	2.70
Difficulty seeing, even w/ glasses %	2.5	1.9	1.1	3.00	2.30
Difficulty concentrating, remembering or making decisions %	5	4.2	2.3	6.30	5.00
Difficulty walking or climbing stairs %	6.9	5.4	3.3	9.10	7.00

Mental Health

Indicator	Davidson	Rutherford	Williamson	TN	U.S.
Mental Health					
Self-Reported Mental Health					
Poor Mental Health Days, last 30 days (2016)	4.4	4.2	3.8	4.5	3.7 (2015)
% for whom mental health days not good, prev 30 (2015)				33.9	34.3
Adults with Mental Illness in the Past Year (2015)				19.90%	18.00%
MH Providers (2017)	360:1	1,270: 1	700 : 1	740:1	529 : 1
Serious Mental Illness in the past year (18+) (2012-2014)	4.40%			5.0% (2016)	3.9% (2015)
Received MH Services (18+)				15.1	
Had serious thoughts of suicide (18+)				4.6	
Major depressive episode (18+)				7.1 (2016)	6.1 (2015)
Frequent Mental Distress (% of adults reporting 14+ days of poor mental health per month)	13%	12%	11%	14%	

TDMHSAS-funded Admissions to substance abuse treatment services (female) (2016)	704			4,944	
TDMHSAS-funded Admissions to substance abuse treatment services (male) (2016)	1106			9,057	
TDMHSAS-funded Admissions to substance abuse treatment services (2016)					
TDMHSAS-funded Admissions to substance abuse treatment services, % Black/African American (2016)	44.60%			20.80%	
TDMHSAS-funded Admissions to substance abuse treatment services, % White (2016)	51.50%			77.10%	
TDMHSAS-funded Admissions to substance abuse treatment services, % of admissions with prescription opioids as a substance of abuse (2016)	23.40%	47.00%	35.60%	41.40%	
TDMHSAS-funded Admissions to mental health services in regional mental health/private psych hospitals - rate/1,000 pop 18+ (2016)	3.3	1.8	0.6	2.3	
TDMHSAS-funded Admissions to mental health services in regional mental health/private psych hospitals - # of admissions (2016)	1778	407	90	12284	
TDMHSAS-funded Admissions to mental health services in regional mental health/private psych hospitals - % female (2016)	30.50%			33.60%	
TDMHSAS-funded Admissions to mental health services in regional mental health/private psych hospitals - % male (2016)	69.50%			66.40%	
TDMHSAS-funded Admissions to mental health services in regional mental health/private psych hospitals - % 18-25 (2016) (dropped for 18-25)	13.80%			16.10%	
TDMHSAS-funded Admissions to mental health services in regional mental health/private psych hospitals - % 26+ (2016) (grew for 26+)	86.20%			83.90%	
TDMHSAS-funded Admissions to mental health services in regional mental health/private psych hospitals - % black/African American (2016) (grew for blacks region 4)	36.30%			23.80%	
TDMHSAS-funded Admissions to mental health services in regional mental health/private psych hospitals - % white (2016)	58.00%			73.40%	
% of TN Behavioral Health Safety Net enrollees who live in region (2016)	10.70%				

Behavioral Health Safety Net enrollees/1,000 individuals 18+ living in poverty (2016)	39.95			38.58 (has also declined steadily from 44.8 over 3 years)	
TDMHSAS-funded Admissions to mental health services in regional mental health/private psych hospitals - rate/1000 pop 18+ (2016)	3.3	1.8	0.6	2.3	
TDMHSAS-funded crisis services face-to-face assessments - rate/1000 pop 17 and under (2016)	7	5.9	2.8	7.38	
TDMHSAS-funded crisis services face-to-face assessments - rate/1000 pop 18+ (2016)	13.05	7.19	2.22	12.29	
Alcohol and drug abuse adolescent residential rehabilitation sites as of 05/15/2017 - # of beds available	36	0	0	333	
Substance abuse adolescent treatment sites in FY2016	2	0	0	15	
Alcohol and drug abuse adult residential rehabilitation sites as of 05/15/2017 - # of beds available	213 (up from 187 in 2014)	53 (up from 8 in 2014)		1305	
Substance abuse addictions recovery program sites in FY2016	27	0	0	84	
Mental Health Residential treatment sites for children / youth as of 05/15/2017 - # of beds available	178 (up from 112 in 2014)	40	0	1540 (up from 1371 in 2014)	
Mental Health Residential treatment sites for adults as of 05/15/2017 - # of beds available	14	0	16	377	
Mental Health Adult supportive residential sites as of 05/15/2017 - # of beds available	121	0	0	651	
Licensed MH Psychosocial rehab program sites as of 05/19/2017 - # of beds available	6	2	0	54	
Opioid prescription rate per 100 population (2006-2017) (note that TN is ranked 3rd for this behind Alabama and Arkansas)	73.7	82.2	50.8	94.4	
Drug overdose deaths per 100,000 population (2010)				16.9	
Drug overdose deaths per 100,000 population (2016)				24.5	
Youth 12-17 who had at least one major depressive episode in last year (2015)				10.90%	11.90%
Youth high school grades 9-12 who reported depression (feeling sad or hopeless almost every day for 2 weeks				28.00%	29.90%

+ in a row) in previous 12 mo. (2015) (TN Ranked 17 of 37)					
Youth high school grades 9-12 who attempted suicide in previous 12 mo. (2015) (TN ranked 22 of 35)				9.90%	8.60%
Youth high school grades 9-12 who were electronically bullied in previous 12 mo. (2015) (TN ranked 17 of 36)				15.30%	15.50%
Youth high school grades 9-12 who were bullied at school in previous 12 mo. (2015) (TN ranked 30 of 35)				24.10%	20.20%
Children 2-17 with a parent reporting doctor told them child has autism, developmental delays, depression, anxiety, ADD/ADHD, or behavioral problems (2012) (TN ranked 43/50)				21.00%	17.00%
Children 2-17 with emotional, developmental, or behavioral problems that received mental health care/counseling of some type in past 12 mo. (2011) (TN ranked 29/50)				60.20%	61.00%
Adults who report being very satisfied with access to mental health services, quality of services, and overall satisfaction (FY12-15)				>90%	
Children who report being very satisfied with participation in treatment, cultural sensitivity, social connectedness, and satisfaction with services (FY12-15)				>90%	

Birth Outcomes

Indicator	Davidson	Rutherford	Williamson	TN	USA
Birth Outcomes					
Infant Mortality					
Infant Mortality Rate (/1000 live births) (2016)	7.3	6.3	4	7.40	5.87
Infant Mortality Rate - Black	12.4	13.9		12.10	11.1
Infant Mortality Rate - White	5.4	4.6	3.4	6.20	4.8
Low Birth Weight	**Davidson**	**Rutherford**	**Williamson**	**TN**	**USA**
Low birth weight, % (2016)	8.2	8.5	6	9.20	8.17
Low birthweight - black	12.2	14.3	7.3	14.40	13.68
Low birthweight - white	6.6	7.4	5.5	7.90	6.67
Very Low birth weight, % (2016)	1.7	1.4	0.7	1.60	1.40

Very Low Birthweight - black	2.7	4	1.2	3.20	2.95
Very Low Birthweight - white	1.3	0.9	0.7	1.20	1.07
Prenatal Care	**Davidson**	**Rutherford**	**Williamson**	**TN**	**USA**
Adequate Prenatal Care, 2016	51	55.6	72.1	52.40	
Adequate Prenatal Care, 2015	49.9	57.4	71.1	55.00	
Adequate Prenatal Care, 2014	54	55.7	78.5	56.60	
Adequate Prenatal Care, 2013	56.5	57.8	79.2	60.00	
Adequate Prenatal Care, 2012	55.4	56.4	73.5	59.10	
Percentage of women who smoked during pregnancy, 2016, All	6.5	9.1	3	13.40	7.20
Percentage of women who smoked during pregnancy, 2016, White	6.5	10	3.1	15.20	10.50
Percentage of women who smoked during pregnancy, 2016, African American	7.7	6.9	6.1	8.00	6.00
Maternal outcomes	**Davidson**	**Rutherford**	**Williamson**	**TN**	**USA**
Maternal mortality (per 100,000 births)				23.30	20.70
Maternal mortality - Black				38.20	47.20
Maternal mortality - White				20.80	18.10
Aged 15-24				8.70	11.00
Aged 25-34				19.20	14.00
Aged 35-44				54.40	38.50
Maternal Depression					
Told by provider had depression before pregnancy (2015)				12.20	
Self-reported postpartum depressive symptoms (2015)				15.40	
Ever Breastfed (2015)	87.7				
Ever Breastfed (2016)				71.10	82.50
Teen Pregnancy	**Davidson**	**Rutherford**	**Williamson**	**TN**	**USA**
Teen Pregnancy, rate/1,000 females age 15-17, 2016	16.2	9.7	2.5	13.7	
Teen Birth, rate/1,000 females age 15-17, 2016	12.6	7.8	2	11.50	
Teen Birth, rate/1,000 females age 15-19, 2006-2012	44.9	35.3	11.6		36.60
Teen Birth, rate/1,000 Black, 2017	13.5	9.8	13.3		
Teen Birth, rate/1,000 White, 2017	10.6	8.1	1.1		
Vaccinations	**Davidson**	**Rutherford**	**Williamson**	**TN**	**USA**
Percent of children complete at 24-months					
DTAP	83.5			83.10	
Polio	93.2			94.40	
MMR	90.3			91.60	
Hib	77.7			94.70	
Hep B	95.1			81.80	
Varicella	89.3			91.10	

Pneumococcus	79.6			84.50	

Child/Adolescent Health

Indicator	Davidson	Rutherford	Williamson	TN	U.S.
Child / Adolescent Health					
Social / emotional supports					
Disconnected Youth (ages 16-24 who are neither working nor in school) 2014	12.92%	10.98%	8.81%	16.76%	
Child Injury / Death	**Davidson**	**Rutherford**	**Williamson**	**TN**	**USA**
Child mortality rate per 100,000 population, age <18, 2014	66.0				
Child mortality rate per 100,000 population by race, age <18, 2014, Black	97.0				
Child mortality rate per 100,000 population by race, age <18, 2014, White	40.0				
Sleep-related deaths rate per 1,000 live births, 2014	1.2				
Fatalities in crashes involving young drivers age 15 to 20, 2016				127	4,853
Child Abuse / Neglect	**Davidson**	**Rutherford**	**Williamson**	**TN**	**USA**
Reported child abuse cases victims younger than 18, 2017, percent of same age population	4.1%	3.5%	1.4%	4.9%	
Youth Risk Behavior Survey	**Davidson**	**Rutherford**	**Williamson**	**TN**	**USA**
High School Youth,Ever tried cigarette smoking				31.6	28.9
High School Youth, Smoked a whole cigarette before age 13 yrs. for first time				12.3	9.5
High School Youth, Currently smoke cigarettes				9.4	8.8
High School Youth, Currently smoke cigarettes, White				11.6	11.1
High School Youth, Currently smoke cigarettes, Black or African American Students				1.9	4.4
High School Youth, Currently smoke cigarettes, Hispanic/Latino				7.4	7
High School Youth, Currently smoked cigarettes frequently				2.8	2.6
High School Youth, were obese				20.5	14.8
High School Youth, were obese, white				20.4	12.5
High School Youth, were obese, black or African American				20.7	18.2

High School Youth, were obese, hispanic/latino`				22	18.2
High School Youth, were overweight				17.5	15.6
High School Youth, did not eat vegetables				10.0	7.2
High School Youth, did not drink milk				30.2	26.7
High School Youth, did not participate in at least 60 min of Physical activity on at least 1 day				16.8	15.4
High School Youth, Were not physically active at least 60 min per day on 5 or more days				55.9	53.5
High School Youth, did not play on at least one sports team				50.8	45.7
Health Insurance	**Davidson**	**Rutherford**	**Williamson**	**TN**	**USA**
Youth on TennCare (2017)	51.3	35.9	11.7	48.5	
Uninsured Children and your under age 19 (2016)	4.9	3.3	2.9	3.7	
Uninsured Children and youth qualify for CHIP or Medicaid (2017)	6.4	5.3	10.5	4.8	
Pediatrician Rate (/10k) (2015)	12.0	4.0	12.0		
Psychiatrist rate (/10k) (2015)	8.4	2.6	6.1		
Psychologist rate (/10k) (2015)	19.5	7.6	9.7		
LSW rate (/10k) (2015)	34.7	11.3	10.1		
Childhood Obesity	**Davidson**	**Rutherford**	**Williamson**	**TN**	**USA**
Public School students measured as overweight or obese	36.6	40.3	23.8	39.2	

Environmental Health

Indicator	**Davidson**	**Rutherford**	**Williamson**	**TN**	**U.S.**
Natural Environment					
Air					
Air Pollution - Particulate Matter, Avg. daily density of fine particulate matter in micrograms per cubic meter, 2012	10.5	10.4	10.2	9.7	8.7

Behavioral Risk Factors

Indicator	Davidson	Rutherford	Williamson	TN	U.S.
Behavioral Risk Factors					
Obesity & Nutrition					
Obese adults (%)	30%	36%	24%	32%	40%
Adults who have a Body Mass Index Greater than 25 (Overweight or Obese), 2016				33.20%	35%
Adults who have a Body Mass Index Greater than 30 (Obese), 2016	30%	36%	24%	34.80%	30%
Access to Exercise Opportunities, 2016	89%	82%	78%	71%	
Leisure Time / Physical Activity					
Adults who reported doing physical activity or exercise during past 30 days other than regular job				71.60%	76.9%
Recreation and fitness facilities - total # of sites in county (2014)	81.00	18.00	38.00		
Recreation and fitness facilities/ 1,000 pop. (2014)	0.12	0.06	0.19		
Percentage of adults age 20 and over reporting no leisure-time physical activity, 2014	26%	29%	21%	30%	
Have you used internet in the past 30 days					
18 - 24				97.20%	
25-34				95.20%	
35-44				91.60%	
45-54				80.70%	
55-64				74.70%	
65+				53.70%	
College graduate				96.20%	
H.S. or G.E.D.				75.70%	
Less than H.S.				47.00%	
Firearms					
Handgun Carry Permits Issued, 2017	11,763	9149	6985	218536	16358844
Handgun Carry Permits Revoked, Suspended, or Denied, 2017	381	261	116	5134	
Firearm Deaths-- all intents, 2016 (per 100,000)	497	149	87	1148	
Firearm Deaths, homicide only, 2016				434	
Firearm deaths, suicide only, 2016				675	

Number of deaths due to firearms per 100,000 population, 2012-2016	15	10	8	16	
Substance Use / Abuse					
Number of drug overdose deaths per 100,000, 2014-2016	512	147	69	22	
Number of TDMHSAS-licensed mental health and substance abuse sites	318	77	46	2671	
Estimates of current ilicit drug use among youth ages 12-17, 2012-2014	7.7%			7.5%	9.3%
Estimates of current ilicit drug use among adults 18+, 2012-2014	7.7%			6.8%	9.6%
Tobacco					
Current smokers, Adult, Percent of Adults Age 18+, 2016	21%	20%	15%	21.9%	15.5%
Current tobacco use among youth ages 12-17, 2012-2014	6.6%			10.0%	7.8%
Percent of Adults Ever Smoking 100 or More Cigarettes, 2011-2012	40.03%	41.12%	40.19%	47.97%	44.16%
Adults Ever Smoking 100 or More Cigarettes, White Non-Hispanic, Percent, 2011-12				50.64%	48.52%
Adults Ever Smoking 100 or More Cigarettes, Black Non-Hispanic, Percent, 2011-12				36.49%	38.34%
Adults Ever Smoking 100 or More Cigarettes, Other Race Non-Hispanic, Percent, 2011-12				44.11%	31.30%
Adults Ever Smoking 100 or More Cigarettes, Hispanic/Latino, Percent, 2011-12				45.36%	34.17%
Smoke Every Day				15.2%	12.4%
College graduate				4.5%	
H.S. or G.E.D.				18.6%	
Less than H.S.				27.5%	
<$15000				27.7%	
$15,000-$24,999				21.0%	
$25,000-$34,999				17.9%	
$35,000-$49,999				12.3%	
$50,000+				9.2%	
Annual deaths from smoking related causes					480,000
Percent Smokers with Quit Attempt in Past 12 Months, 2011-2012.	55.87%	84.15%	36.66%	61.54%	60.02%
Alcohol					
Excessive Drinking	18.0%	18.0%	17.0%	14.0%	26.9%
Alcohol-impaired driving deaths, % of deaths with alchol involvement, 2012-2016	28%	25%	23%	28%	29%
Percent of admissions to substance abuse treatment services with alcohol as substance of abuse, FY 2016	45.1%	48.0%	49.4%	42.1%	34%
Estimates of alcohol dependence or abuse among youth ages 12-17, 2012-2014	2.4%			2.7%	3%

Estimates of alcohol dependence or abuse among adults 18+, 2012-2014	7.1%			5.8%	7%
Binge drinkers, percent, TNBRFSS 2016				13.10%	16.9%
Alcohol-impaired driving deaths, % of death with alcohol involvement, 2009-2013	28%	25%	23%	28%	29%
Opioid Use					
Past year nonmedical use of pain relievers, adults 18+, 2012-2014	4.3%			4.1%	4.2%
Past year nonmedical use of pain relievers, adults 18+, 2008-2010	4.3%			4.6%	4.7%
Percent of admissions to substance abuse treatment services with prescription opioids as substance of abuse, FY 2016	23.4%	47.0%	35.6%	41.4%	34.0%
Percent of drug overdose deaths involving an opioid, 2015	80.9%	78.6%	84%	72%	73.00%
Percent of drug overdose deaths involving heroin, 2015	25.5%	17.9%	16%	15.90%	25.00%