



# Tennessee Diabetes Action Report February 2023

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## ***Executive Summary***

In July 2015, under the mandate of TCA 68-1-502, the Tennessee General Assembly directed the Bureau of TennCare, the Department of Health (TDH), and the Department of Finance and Administration to jointly submit a report to the Health Committee of the House of Representatives and the Health and Welfare Committee of the Senate by February 15 of each odd-numbered year. This report contains a description of the financial impact and reach of diabetes of all types across Tennessee, an assessment of the benefits of implemented programs and activities aimed at controlling diabetes and preventing the disease, a description of the level of coordination existing between the reporting agencies, and an action plan for battling diabetes. Likewise, the Tennessee General Assembly directed the agencies to collaborate to identify goals and key performance indicators while also developing individual agency plans to reduce the incidence of diabetes, improve diabetes care, and reduce negative health outcomes associated with diabetes.

In Tennessee, 14.1%, or more than 970,000 adults, have a diagnosis of diabetes. These statistics rank the State 46th in diabetes prevalence according to the 2021 America's Health Ranking's Annual Report.

The state of Tennessee is diligently working toward a culture of health through statewide, regional, county, community, and individual initiatives. These efforts include a focus on strategies around increasing physical activity, access to healthy nutrition and clean potable water, decreasing tobacco use and exposure, and increasing consistent access to quality preventive and clinical care.

The data for this report was compiled from state and national sources, including the Behavioral Risk Factor Surveillance System (BRFSS), Youth Risk Behavior Survey (YRBS), National Health Interview Survey (NHIS), Tennessee Vital Statistics Systems, Pregnancy Risk Assessment System (PRAMS), Healthcare Effectiveness Data and Information Set (HEDIS) and HRSA Health Center Program Grantee Data. Also, the Bureau of TennCare and the Department of Finance and Administration provided data on Tennessee's Medicaid program and state group insurance program populations, respectively.

The final report reflects work by all three authoring agencies. This report in response to the Tennessee General Assembly is an overview of the state of diabetes in Tennessee and the work specific to diabetes in all three agencies, per the request of the Tennessee General Assembly.

The authors are grateful for the ongoing work and partnerships of other state agencies, individuals, community organizations, industry, health systems, providers, and academic institutions in their significant contributions to preventing and mitigating the impact of diabetes in Tennessee. This report is not intended to catalog those many efforts, nor is it intended to provide clinical guidelines.

## ***Recommendations***

The following are recommended actionable items for consideration by the General Assembly of Tennessee:

1. Increase **access to healthy food and beverage options** where people work, learn, live, play, and worship, via partnerships with seniors' farmer's markets and the WIC (Women, Infants, and Children) program, emphasizing healthier choices that may reduce the likelihood of developing diabetes.
2. **Increase access to safe and affordable active living** with Project Diabetes and the TN State Parks by: developing interventions targeting the built environment (defined as the man-made structures, facilities, and features in an environment where people live, e.g., greenways, parks, and sidewalks); pursuing policies that reduce barriers to physical activity with a particular focus on children; and multi-faceted approaches to encourage walking and cycling to school, healthier commuting, and physically active leisure activities.
3. Using the monthly TDH Health Disparities Task Force meetings on chronic disease, **increase partner involvement in policy, system, and environmental (PSE) change strategies** that pertain to diabetes (i.e., continue to support Project Diabetes, built environment funding, and other state Health Promotion strategies).
4. Develop opportunities with the TDH Office of Primary Prevention to pursue environmental interventions targeting the built environment, **policies that reduce barriers to physical activity** (i.e., transportation policies to increase space for recreational activity), and engage in multi-faceted approaches to encourage walking and cycling to school, healthier commuting, and physically active leisure activities.
5. Support investment in analytics, interoperability, and measurement opportunities particularly as they relate to population healthcare management and chronic disease prevention and long-term treatment strategies.
6. Support a statewide **"Health in All Policies" (HiAP)** approach to funding and infrastructure planning that ensures consideration is given to the health impact of all policy development and implementation. This approach should include sectors such as transportation, education, and environment.
7. In conjunction with TennCare and managed care insurance organizations, evaluate public and private insurance payment models to determine effectiveness in cost-savings and clinical quality improvement for diabetes prevention and management.
8. Ensure all populations at high risk for diabetes have **access to lifestyle modification programs** such as the Diabetes Prevention Program including expansion of reimbursement mechanisms.
9. Ensure all people with diabetes have **access to self-management education** from a Diabetes Education Program (Diabetes Self-Management and Chronic Disease Self-Management Education programs).

## Background

Chronic diseases, including Type 2 diabetes, are largely preventable. However, the solutions are not simple or quick. Diabetes and other chronic disease conditions are impacted by the places, spaces, and relationships that shape individual, family, and community-level choices. These can challenge health daily. Several contributors to chronic diseases include physical inactivity, excessive caloric intake, tobacco and nicotine addiction, and substance misuse, particularly opioid abuse. Taken together, these drive the leading causes of death in Tennessee and across the nation. Years of life, as well as their quality and productivity, are being lost. The approaches outlined in this report build off the [State Health Plan](#).

*Leading causes of death in Tennessee: physical inactivity, excessive caloric intake, tobacco and nicotine addiction and substance misuse.*

Historically, the medical care model focused on the individual, emphasizing diagnosis, treatment, and patient care. The public health model focuses on populations, emphasizing prevention and health promotion for the whole community. Health, as defined by World Health Organization (WHO), is a "state of complete physical, mental, and social well-being, and not merely the absence of disease or infirmity." A key goal of public health is to "promote physical and mental health, and prevent disease, injury, and disability." The population health model focuses on reducing the need for medical treatment by preventing disease in the first place.

## **The Vision** Healthy People, Healthy Communities, Healthy Tennessee

Establishing the focus and importance of primary prevention and early intervention is a priority of TDH. TDH has partnered with established and evolving chronic disease prevention programs to promote use of upstream strategies, including policy, system, and environmental changes (PSE), addressing social determinants of health and "Health in All Policy" (HiAP) efforts when planning programmatic strategies. In recent years, the Department has made it a priority to align program work plans across funding streams, including federal and state dollars supporting preventive health, chronic disease prevention, maternal and child health, and WIC. The goal has been to increase the use of evidence-based public health strategies, while focusing limited resources on upstream approaches aimed at increasing program reach and influencing long-term outcomes to reduce chronic disease prevalence.

## Goals:

**TDH:** Protect, promote, and improve the health and prosperity of people in Tennessee.

**TennCare:** Improve lives through high-quality, cost-effective care with the vision for a Healthier Tennessee.

**Finance and Administration:** Deliver comprehensive, affordable, dependable, and sustainable benefits with a vision to have healthy members and peace of mind.

## Burden and Magnitude

Diabetes is a condition that impairs the way the body processes sugar, which leads to elevated blood sugar levels. There are several types of diabetes. **Table 1** shows the types of diabetes, clinical description, and the estimated prevalence among total cases of diabetes. Possible complications include heart disease, kidney disease, blindness, ulcers, poor wound healing, nerve damage, amputations, coma, stroke, other serious medical conditions, and death.

**Table 1: Types of Diabetes and Clinical Description**

Type	Clinical Description	Prevalence
Type 1 diabetes	insulin-dependent diabetes mellitus (IDDM) or juvenile-onset diabetes	About 5% to 10% of all diagnosed cases of diabetes
Type 2 diabetes	non-insulin dependent diabetes mellitus (NIDDM)	About 90% to 95% of all diagnosed cases of diabetes
Gestational diabetes	affects only pregnant women and can increase short- and long-term health risks for mother and child	2% to 10% of all pregnancies
Other specific types of diabetes	resulting from specific genetic syndromes, surgery, drugs, malnutrition, infections, and other illnesses	Accounts for 1% to 5% of all diagnosed cases of diabetes

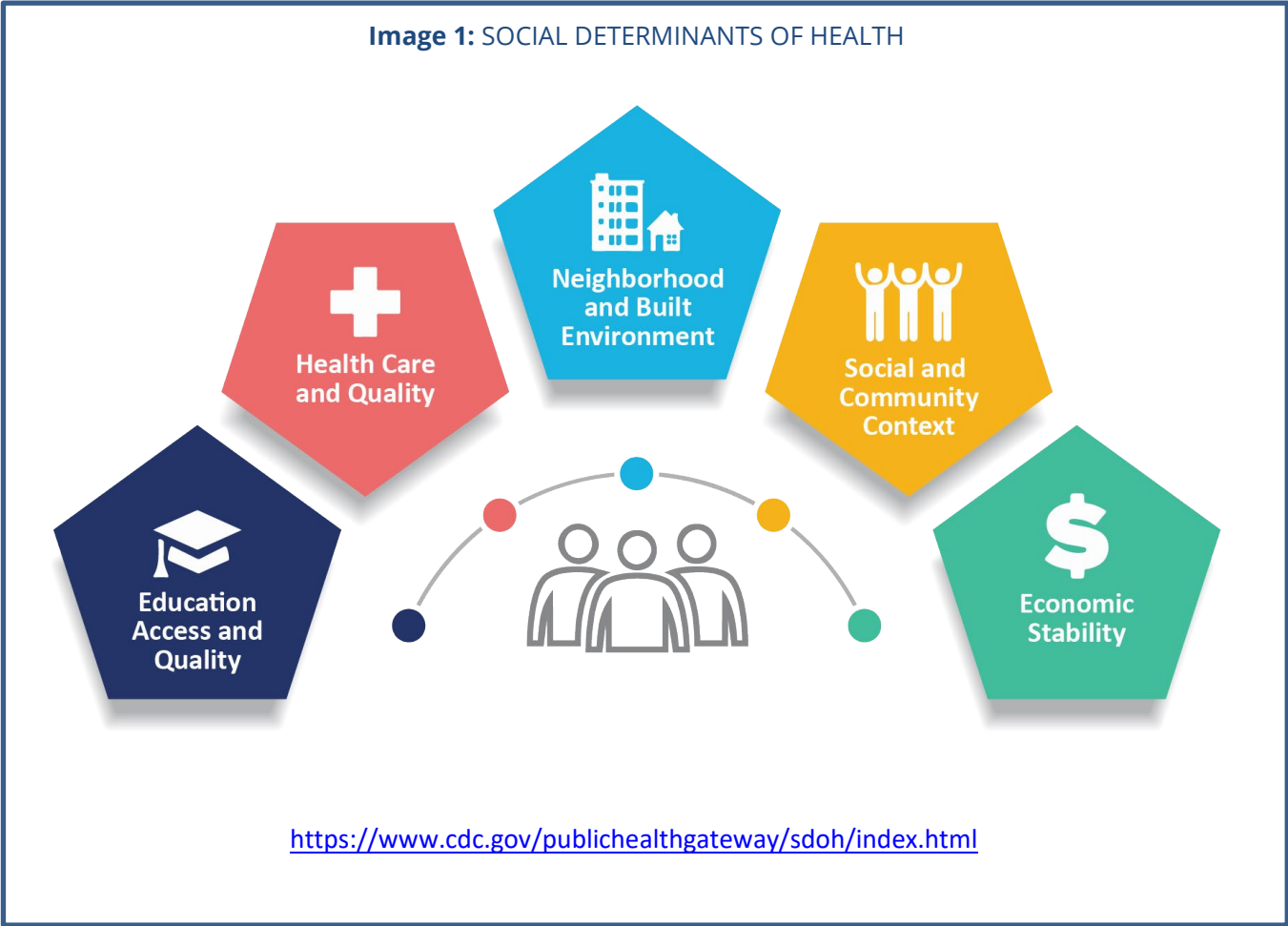
Source: CDC National Diabetes Statistics Report, 2022

## Diabetes and Prediabetes Prevalence

According to the 2022 National Diabetes Statistics Report, 37.3 million people of all ages, or one in ten people in the United States have diabetes. It is estimated that there are 8.5 million adults with undiagnosed diabetes in the US. This number represents 2.8% of all US adults and 21.4% of all US adults with diabetes. And another 96 million are living with prediabetes, which is approximately one in three people. Pre-diabetes is a chronic condition of mildly elevated blood

sugar that puts individuals at high risk for developing diabetes in the future. Many who have prediabetes are unaware of the presence of the condition. In Tennessee, 14.1%, or more than 710,000 adults, have been diagnosed with diabetes and 9.9% reported being told that they had prediabetes. Considering the number of adults with undiagnosed diabetes in the US, the prevalence of diabetes in TN is most likely underestimated.

Diabetes risk is often affected by social determinants of health (SDOH), like access to quality food and safe outdoor spaces. **Image 1** shows the various SDOHs, or the conditions in environments where people are born, live, learn, work, play, worship, and age. According to Healthy People 2030, these are the factors that “affect a wide range of health, functioning, and quality of life outcomes and risks”. These SDOH can be addressed by a “Health in All Policies” (HiAP) approach, defined as a collaboration, integration, and implementation of health considerations into policymaking across sectors to improve the health of all communities and people.





**Table 2** describes the prevalence of diabetes and prediabetes by various demographic groups: sex, race/ethnicity, age, education, and income. This data comes from the 2021 Behavioral Risk Factor Surveillance Survey (BRFSS), an annual survey of Tennessee adults that provides information regarding health-related risk behaviors, chronic health conditions, and use of preventive services.

Females have a higher prevalence of diabetes than males (14.3% vs 13.6%). Non-Hispanic Blacks have significantly higher prevalence of diabetes than Whites (17.5% vs 13.8%). Diabetes prevalence also progresses with age; older Tennesseans are significantly more likely to have diabetes compared to younger age groups. For example, almost 27.4% of adults ≥ 65 years were diagnosed with diabetes, which is over four times higher than those aged 44 years or younger.

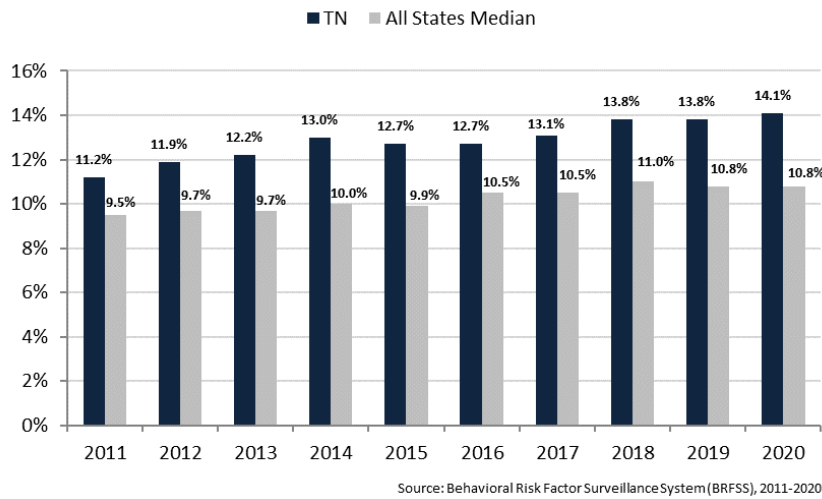
Socioeconomic factors, like education and income, are associated with the risk of developing diabetes, as is evident throughout years of BRFSS data. In 2021, adults with less than a high school education (no diploma or G.E.D.) were more than twice as likely to have diabetes as those with a college degree. Furthermore, Tennessee adults earning less than \$25,000 per year have greater than a twofold prevalence of diabetes compared to those earning over \$75,000.

**Table 2:** Self-Reported Prevalence in Diabetes and Prediabetes in TN by Demographic Group

Demographic Group	Diabetes Prevalence (%) 2021	Prediabetes Prevalence (%) 2019
<b>Total</b>	<b>14.0</b>	<b>9.9</b>
<b>Sex</b>		
Male	13.6	9.2
Female	14.3	10.5
<b>Race/Ethnicity</b>		
White/Non-Hisp.	13.9	9.7
Black or Afri. Am./Non-Hisp.	17.5	11.9
Other Race/Non-Hisp.	8.3	4.3
Multi-Racial/Non-Hisp.	15.3	9.0
Hispanic	7.9	-
<b>Age</b>		
18-24	0.7	4.5
25-34	2.9	5.8
35-44	5.6	7.7
45-54	13.9	12.4
55-64	24.8	14.8
65+	27.4	12.9
<b>Education</b>		
Less than H.S.	23.8	9.3
H.S. or G.E.D.	15.3	11.7
Some Post-H.S.	12.8	10.5
College Graduate	9.2	7.0
<b>Income</b>		
Less than \$15,000	24.3	15.4
\$15,000-24,999	24.4	12.5
\$25,000-34,999	17.0	# 2.9
\$35,000-49,999	13.5	13.0
\$50,000-74,999	11.6	9.5
\$75,000+	8.4	5.9

Source: Tennessee Behavioral Risk Factor Surveillance Survey 2021

**Figure 1: Prevalence of Adults with Diagnosed Diabetes**

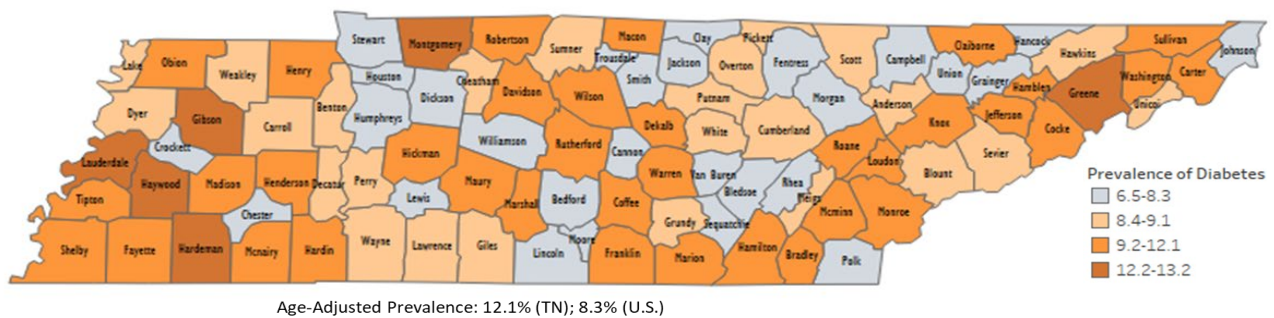


The prevalence of diabetes in Tennessee and across the US has risen steadily over the past decade. However, Tennessee’s rate has increased more than that of the rest of the nation. **Figure 1** displays the prevalence of adults with diagnosed diabetes in Tennessee and U.S between 2011 and 2020.

Tennessee’s rate is consistently higher than the national level. Based on 2020 BRFSS data, Tennessee ranks 46<sup>th</sup> in diabetes prevalence. The prevalence of diabetes varies across the state. Urban counties generally have lower rates of diabetes, followed by suburban counties. Rural counties often have the highest prevalence of diabetes. **Figure 2** displays a map of county-specific age-adjusted prevalence of diabetes. Only 28 of 95 counties in Tennessee have three-year estimates that are lower than the national median for diabetes.

*Sixty-seven counties in Tennessee have three-year estimates higher than the national median for diabetes.*

**Figure 2: Age-Adjusted Prevalence of Adults with Diagnosed Diabetes by County, Tennessee, 2018-2020**



**Source:** Centers for Disease Control and Prevention. Division of Diabetes Translation. [US Diabetes Surveillance System](https://gis.cdc.gov/grasp/diabetes/DiabetesAtlas.html#). (https://gis.cdc.gov/grasp/diabetes/DiabetesAtlas.html#)

## Diabetes Incidence

Tennessee’s diabetes incidence rate, the frequency at which new cases of diabetes are identified, appears to have increased in recent years, although the differences are not statistically significant. When investigating county-specific rates of diabetes incidence, the corresponding map mirrors the prevalence map in **Figure 2**.

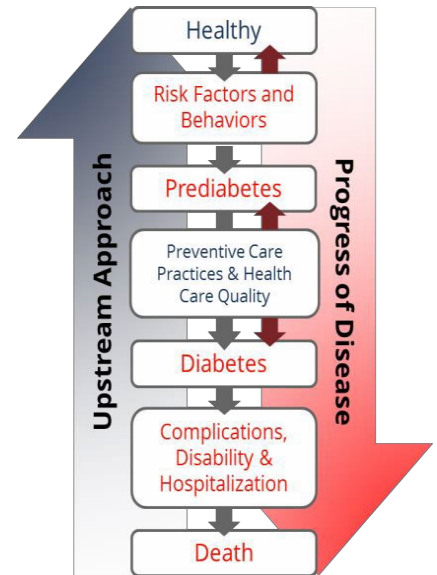
## Risk Factors & Complications

Type 2 diabetes is a progressive disease, advancing from the combination of non-modifiable and modifiable risk factors to early signs of disease and, eventually, to diabetes and its complications. Each step adds to the severity of illness, required medical interventions, and cost to the patient and health care system.

**Figure 3** shows how diabetes may progress into complications and death. It also shows how risk factors, health behaviors, preventive care, care management, and health care quality influence outcomes.

**Table 3** provides a list of risk factors for type 2 diabetes. Type 2 diabetes accounts for 90-95% of all people with diabetes. Although some risk factors cannot be changed, modifiable risk factors provide significant opportunities to reduce the risk of developing diabetes or the worsening of its complications.

**Figure 3: Progression of Type 2 Diabetes**



**Table 3: Risk Factors for Type 2 Diabetes**

Modifiable	Non-Modifiable	Social-Environmental
Weight Gain	Age	Educational Attainment
Overweight or Obesity	Ethnicity	Income Level
Sedentary Lifestyle	Gender	Geography
Tobacco Use	Family History	
High Blood Pressure	History of Gestational Diabetes	
High Cholesterol	Polycystic Ovarian Syndrome (PCOS)	

Source: National Institutes of Health (NIH) and Centers for Disease Control and Prevention (CDC)

Tennessee adults with diabetes are significantly more likely to be overweight or obese, be physically inactive or sedentary, and to have been diagnosed with high blood pressure and/or high cholesterol. **Table 4** demonstrates how Tennessee compares to other states in “upstream” behaviors known to contribute to and complicate diabetes prognosis. According to 2019 BRFSS data, Tennessee ranks in the bottom quartile of states in adult fruit consumption, physical inactivity, tobacco use, hypertension, and high cholesterol. Tennessee ranks 45<sup>th</sup> in the U.S. for obesity (adults with a BMI of 30 or higher).

**Table 4: Modifiable Risk Factors for Type 2 Diabetes and Associated Prevalence Measures among Tennessee Adults**

Risk Factor	BRFSS Indicator	TN	U.S. Rank*	Among TN adults with diabetes
Nutrition	Adults consuming <1 fruit per day	43.0%	34th	41.5%
	Adults consuming <1 vegetable per day	19.0%	14th	22.3%
Obesity	Percentage of adults with BMI of 30.0 or higher	36.5%	45th	61.7%
Sedentary Lifestyle (Physical Inactivity)	Percentage of adults who reported no physical activity or exercise other than their regular job in the past 30 days	30.1%	39th	47.1%
Tobacco Use	Percentage of adults who are smokers	19.9%	42nd	17.6%
High Blood Pressure	Percentage of adults who reported being told by a health professional that they have high blood pressure	39.3%	43rd	79.9%
High Cholesterol	Percentage of adults who reported having their cholesterol checked and were told by a health professional that it was high	36.2%	41st	68.3%

Note: \* U.S. rank is based on the age-adjusted prevalence.

Source: Tennessee Behavioral Risk Factor Surveillance Survey (BRFSS), 2019

Tennessee’s youth are also at high risk (**Table 5**). According to the 2019 Youth Risk Behavior Survey (YRBS), which gathers health behavior data from high school students, **Tennessee youth are more likely to be obese and use tobacco than youth surveyed in most other states.** Tennessee high schoolers are also less likely to consume adequate amounts of fruits and vegetables. Fortunately, **Tennessee is outperforming many states with regards to its level of daily physical activity among youth.**

*Children who are obese are more likely to carry chronic conditions into adulthood, including high blood pressure and high cholesterol, which are risk factors for cardiovascular disease.*

**Table 5: Modifiable Risk Factors for Type 2 Diabetes and Associated Prevalence Measures among Tennessee Youth**

Risk Factor	YRBS Indicator	TN	U.S. Rank* (# of participating states)
Nutrition	Did not eat fruit or drink 100% fruit juices (during the 7 days before the survey)	11.1%	39th (42)
	Did not eat vegetables (during the 7 days before the survey)	11.0%	28th (36)
Obesity	BMI >= 95th percentile based on sex- and age- specific CDC growth charts	20.9%	41st (44)
Sedentary Lifestyle (Physical Inactivity)	Were not physically active for a total of at least 60 minutes on at least one day (during the 7 days before the survey)	19.1%	30th (44)
Tobacco Use	Used cigarettes, smokeless tobacco, cigars, or electronic vapor products on at least one day during the 30 days before the survey	27.9%	19th (35)

Note: \* U.S. rank is based on the age-adjusted prevalence.

Source: Tennessee Youth Risk Behavior Surveillance System (YRBSS), 2019

## Preventive Care Practices

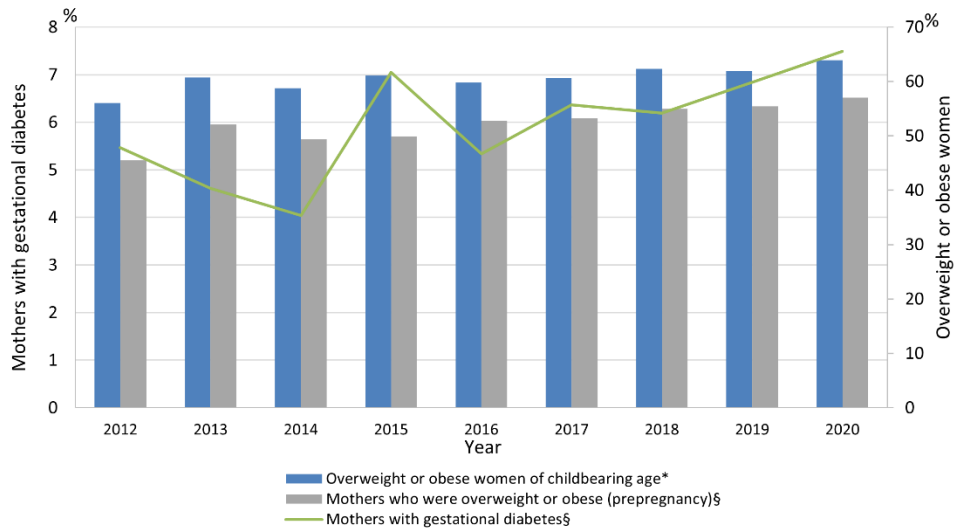
Managing diabetes requires access to health care services, coordinated efforts by health care providers, and engaged community and family systems. Specific recommendations for people with diabetes can be found in the annual publication of the American Diabetes Association’s [Standards of Medical Care in Diabetes](#). These treatments range from being physically active and making healthy food choices to routine health care visits and vaccinations.

Unfortunately, many Tennessee adults with diabetes do not receive the recommended care. Since 2004, Tennessee adults are less likely to visit a health professional for diabetic care, including annual foot and eye exams, than adults nationally. They are also less likely to monitor blood sugar, receive an influenza vaccination, or attend a diabetes self-management class.

## Diabetes and Pregnancy

Over 60% of Tennessee women of childbearing age are overweight or obese, and the percentage of mothers who were overweight or obese at the time they became pregnant has steadily increased from 49% in 2012 to 57.0% in 2020 (**Figure 4**). This has important implications for maternal and child health. Women whose weight gain during pregnancy is more than recommended may experience adverse maternal outcomes, which include increased risk for developing gestational diabetes, postpartum weight retention, and subsequent maternal obesity.

**Figure 4: Characteristics of Overweight or Obese among Women of Childbearing Age and Pre-pregnancy Gestational Diabetes**



Source: \* Tennessee Behavior Risk Factor Surveillance System (BRFSS), 2012-2019

§ Tennessee Birth Data 2012-2020

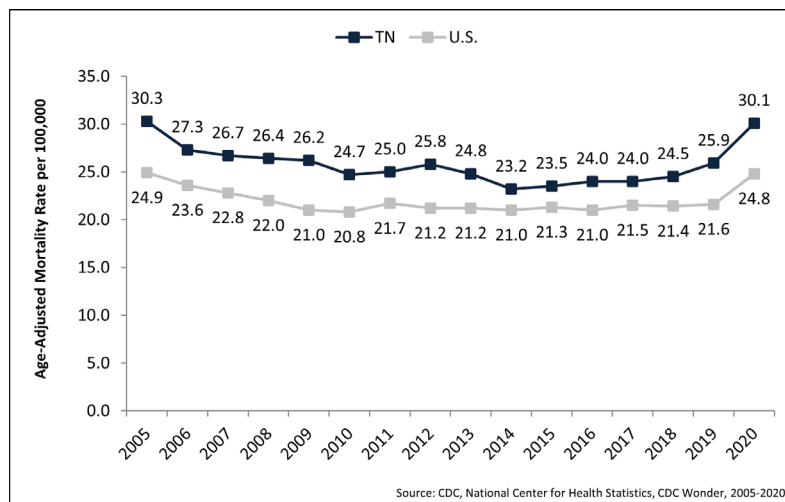
## Gestational Diabetes

Diabetes can complicate pregnancy for both mother and the developing baby. Three types of diabetes can impact pregnancy: Type 1 and Type 2 diabetes, mentioned in **Table 1**, and gestational diabetes. Gestational diabetes is a type of diabetes that develops during pregnancy. About 7.5% of pregnant individuals develop gestational diabetes. Hispanic women are more likely than white non-Hispanics to have gestational diabetes. In 2020, 7.5% of Hispanic mothers developed gestational diabetes, while around 6.6% of non-Hispanic mothers did. Elevated blood sugar during pregnancy can lead to health problems for both a pregnant woman and her baby. Women that develop gestational diabetes are at increased risk of developing type 2 diabetes later in life. Infants born to individuals with elevated blood sugar tend to be larger which may result in serious birth complications for both the mother and infant and the necessity of a cesarean section delivery. Infants born to women with diabetes and uncontrolled blood sugar during pregnancy are also at higher risk for birth defects. In infants, elevated sugar during pregnancy can lead to respiratory distress, low blood sugar after birth, and long-term risk of obesity and diabetes themselves.

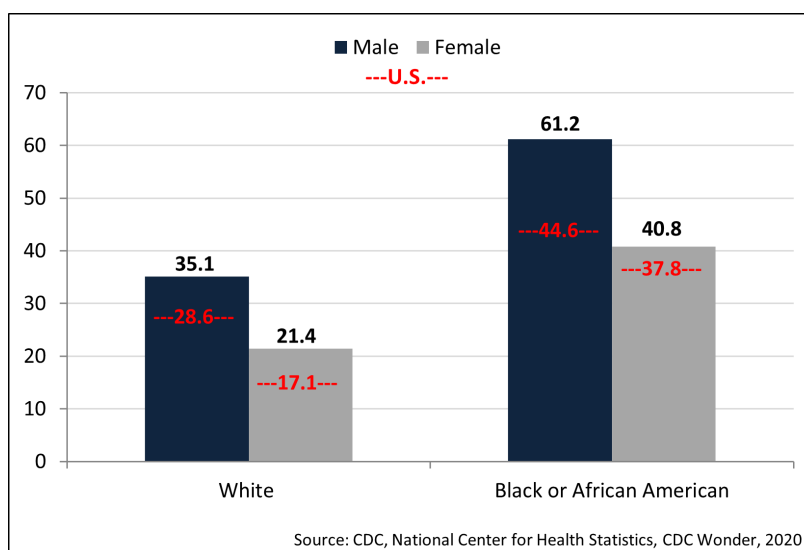
## Morbidity and Mortality

Diabetes is the 7<sup>th</sup> leading cause of death in Tennessee. The age-adjusted death rate from diabetes rose from 1990 to 2004, and then experienced a slight decline from 2005 to 2015. From 2016 to 2020, the death rate from diabetes has been steadily rising again. Diabetes claims the lives of approximately 1,700 Tennesseans each year. Despite declines in the overall death rate, there are significant differences in the impact on Tennessee’s various demographic groups. Males are more likely to die from diabetes than females, and Black Tennesseans are at a substantially higher risk than whites.

**Figure 5: Diabetes Deaths, Age-Adjusted Mortality Rate Per 100,000**



**Figure 6: Diabetes Deaths, Age-adjusted Mortality Rates by Race and Gender in TN vs. US**

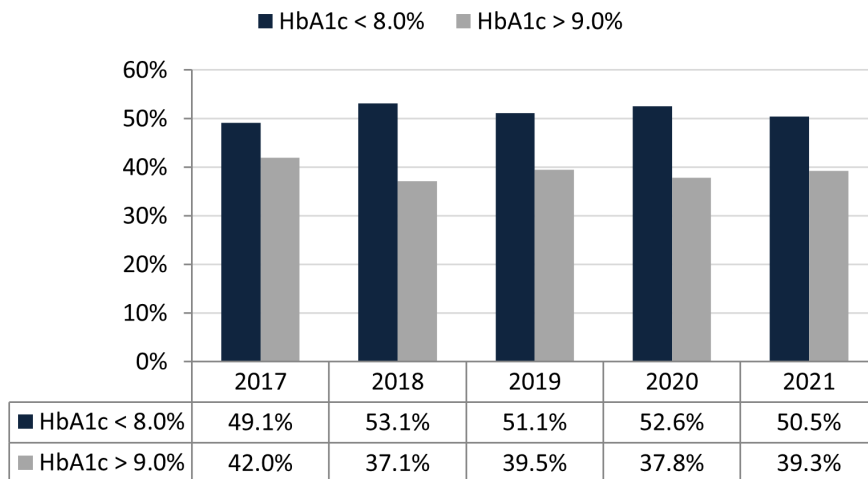


## Diabetes and Health Care Quality

### HEDIS/CAHPS Report

Medicaid managed care organizations (MCOs) are required to report Healthcare Effectiveness Data and Information Set (HEDIS) measures as a part of accreditation mandates in Tennessee. These measures allow for comparisons to national benchmarks and between Tennessee’s MCOs, as well as tracking over time. Within HEDIS, there are specific measures associated with comprehensive diabetes care, including hemoglobin A1c (HbA1c) to measure control of diabetes, retinal exams and blood pressure control, and testing for impairment of kidney function. In 2021, HbA1c control (<7%) was retired from this HEDIS measure. The five-year trend in HbA1c control among TN MCOs is reflected in **Figure 7**. This trend shows a slight decrease in HbA1c above 9.0% and a slight increase in HbA1c below 8.0%, indicating an overall improvement of diabetes control during the reporting period.

**Figure 7: Comprehensive Diabetes Care**  
HbA1c Control among Tennessee Medicaid Managed Care Organizations (2017-2021)



Source: Annual HEDIS/CAHPS Report 2021

Over the past six years, Tennessee MCOs reported moderate increases in HbA1c testing and medical attention toward vision screenings. HbA1c testing has increased from 82.6% in 2016 to 85.7% in 2020, and the performance of annual retinal exams has increased from 42.8% in 2016 to 51.3% in 2021. It should be noted there was a decrease from 51.3% in 2020 to 47.8% in 2021 for annual retinal exam performance. Between 2016-2020, the percentage of patients with controlled HbA1c (<7%) remained relatively stable. Kidney health evaluations increased from 26.7% in 2020 to 27.7% in 2021.



## Financial Burden of Diabetes

### Sum of Costs

According to the American Diabetes Association (ADA), average medical expenditures among people with diagnosed diabetes were 2.3 times higher than what expenditures would be in the absence of diabetes. The total costs of diagnosed diabetes in the United States in 2017 were \$327 billion, a 26% increase from the previous estimate of \$245 billion in 2012. This included direct medical costs of \$237 billion and a reduction in productivity of \$90 billion. According to CDC Chronic Disease Cost Calculator cost projections, **the total estimated public and private insurance cost of diagnosed diabetes in Tennessee in 2017 was \$6.6 billion.**

### TennCare

TennCare provides medical coverage for eligible low-income residents in Tennessee. According to TennCare data, the total cost of diabetes-related medical claims was \$330 million in 2021. **Table 6** demonstrates that the medical cost paid per recipient with diabetes in TennCare has increased over the past five years. Furthermore, costs are increasing rapidly for members less than 21 years of age with diabetes.

Additionally, the TennCare population with prediabetes presents an opportunity to prevent disease and reduce costs. Shifting this population towards improved health would significantly reduce care-related costs.

**Table 6: Average Medical Costs of Diabetic TennCare Recipients**

Age Group	2017	2018	2019	2020	2021	% Increase from 2017 - 2021
< 21 Years	\$2,700	\$3,129	\$3,209	\$3,345	\$3,674	36%
≥ 21 Years	\$1,924	\$2,030	\$2,107	\$2,349	\$2,382	24%

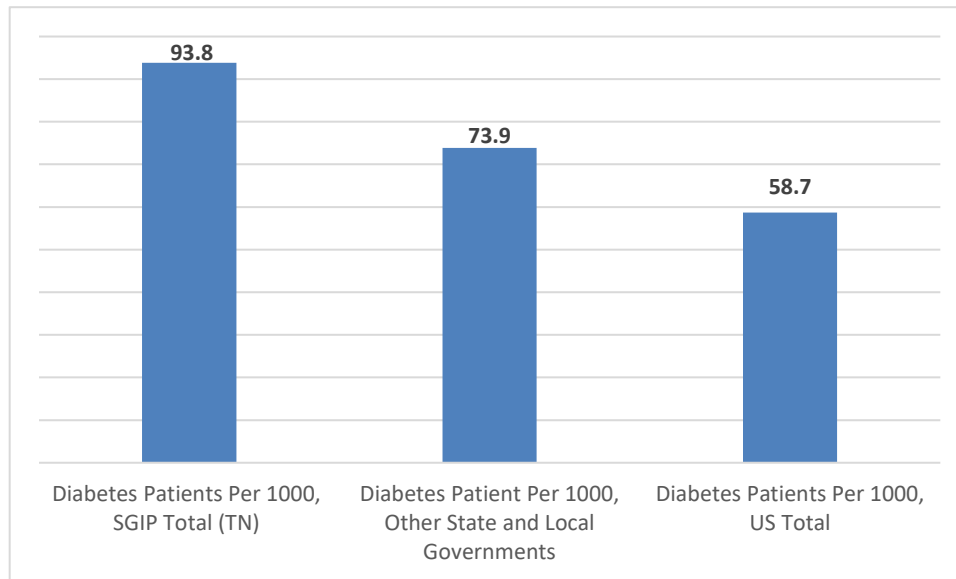
Source: Medicaid Claims Data, Bureau of TennCare

### State Group Insurance Program

The Department of Finance and Administration (F&A) manages insurance coverage for 285,000 state employees, retirees, and their dependents as well as participating local education and local government employees, retirees, and dependents. According to F&A data, the total cost of diabetes-related medical and pharmacy claims was over \$162 million in 2021.

Based on clinical condition (primary diagnosis) data for incurred year during 2021, members aged 18-65 with diabetes cost 1.9 times more than those without diabetes. **If 10% of members without diabetes shifted to members with diabetes, the plan could incur nearly \$100 million dollars more based on current medical costs.**

**Figure 8: Diabetes Burden - State Plan Comparison**

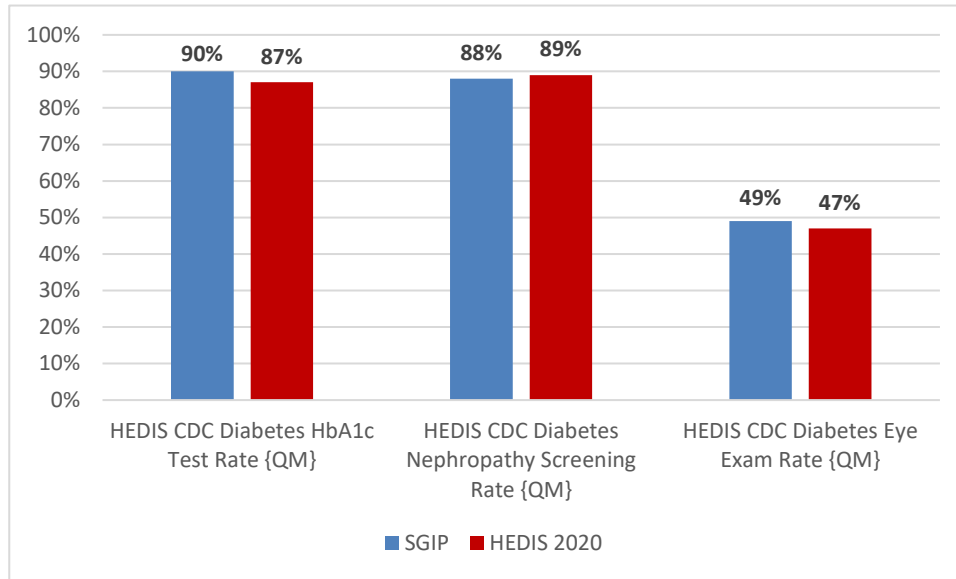


**Source:** Data pulled from IBM database on 05/20/2022 for incurred calendar year 2021; National, state, and local norms measures are based on specific costs and utilization measures (which are based on an average) pulled using IBM's Marketscan Benchmarks. The State Group Insurance Program (SGIP) is the entire plan population for Tennessee. The national, state, and local government plans measure definitions are based on IBM's book of business.

In 2021, the State Group Insurance Program (SGIP) had a high rate of diabetes patients (per 1000) compared to other state and local government and national plans (**Figure 8**). Due to the SGIP's increased burden, the plan incurs nearly \$8.9 million in increased costs compared to national plans and nearly \$5.0 million in additional costs compared to other state and local government plans, based on the average cost per patient.

The cost of regular preventive care is small compared to the costs of the complications caused by diabetes. The American Diabetes Association estimates that, nationally, people diagnosed with diabetes incur medical expenses more than twice that of those without the disease. Additionally, the cost of care for comorbid conditions (such as kidney disease, hypertension, stroke, blindness, heart disease, diseases of the nervous system, etc.) is only intensified by the effect of diabetes.

**Figure 9: Comprehensive Diabetes Care**



According to the National Center for Quality Assurance, appropriate diabetes management and screening, which includes hemoglobin A1c (HbA1c), retinal, and nephropathy screening, are important components in comprehensive diabetes care. The SGIP meets or exceeds the National Commercial PPO HEDIS standards for HbA1c testing and eye exam screening and is only slightly lower for nephropathy screening (**Figure 9**).

### ***Services and Programs Addressing Diabetes in Tennessee***

Many traditional health programs have focused strictly on health education, assuming if people are better informed, they will make better lifestyle choices. In reality, in order to achieve lifestyle change, healthier options need to be practical, affordable, and readily available in the surrounding environment, to help ensure the healthy choice is the easiest choice. Policy, system, and environmental change strategies address these additional factors.

### ***Policy, System, and Environmental Change***

Policy, system and environmental (PSE) changes are strategies that modify the environment to make healthy choices practical and available to all community members, independent of individual resources. Changing laws and shaping physical landscapes (built environment), as well as changing organizational policies, systems and/or environments, can make a significant impact upon large populations.

These changes assist communities in tackling health issues such as obesity, chronic diseases, injury, violence, and substance abuse and promote culture change resulting in improved health, wellness, and safety. **Table 7** gives examples of some of these PSE changes as they relate to diabetes.

*Healthy decisions occur when healthy options are available and routine.*

Where someone lives directly impacts how they live and the quality of their life. Healthy decisions are more likely to be made in an environment where healthy options are consistently available. How someone lives significantly impacts their physical, mental, and spiritual health and wellbeing. PSE changes make healthier choices real, feasible options for every community member by impacting the laws, rules and environments that influence behavior.

**Table 7: Policy, System and Environmental Change**

Setting	Traditional Programs/Events	Policy, System, and Environmental Change (PSE)
School	Celebrate national nutrition month	Use smarter lunchroom design and healthy food placement techniques
Community	Host a community fun run to raise awareness about diabetes	Add sidewalks, crosswalks, bike lanes, and bike racks to make walking and biking safer and more enjoyable
Worksite	Hold health screenings for staff	On-site fitness facilities and workplace policies that promote walking breaks
Hospital	Hold free breastfeeding courses for new moms	Implement the World Health Organization 10 Steps to Successful Breastfeeding and promote a breastfeeding-friendly hospital environment

Source: [http://www.healthpolicyohio.org/wp-content/uploads/2014/02/owpn\\_psec\\_factsheet.pdf](http://www.healthpolicyohio.org/wp-content/uploads/2014/02/owpn_psec_factsheet.pdf)

*\*Adapted from the Ohio Wellness and Prevention Network PSE Fact Sheet*

## Statewide Prevention Initiatives

### Project Diabetes

Project Diabetes is a state-funded initiative administered by the Tennessee Department of Health. Grants are awarded to community partners to fund projects which focus on changes to behaviors and environments that can reduce overweight and obesity which are risk factors for the development of diabetes and other chronic diseases. Grant activities are geared toward prevention strategies that are applied before there is any evidence of disease. Funded projects have a significant focus on increasing access to healthy food and beverage as well as physical activity. <https://www.tn.gov/health/health-program-areas/mch-diabetes/project-diabetes.html>

*Project Diabetes implements policy, systems, and environmental changes through grants for initiatives such as the Rethink Your Drink campaign, where students in more than 44 schools led their peers to sign a pledge to drink fewer sugary beverages and more water.*

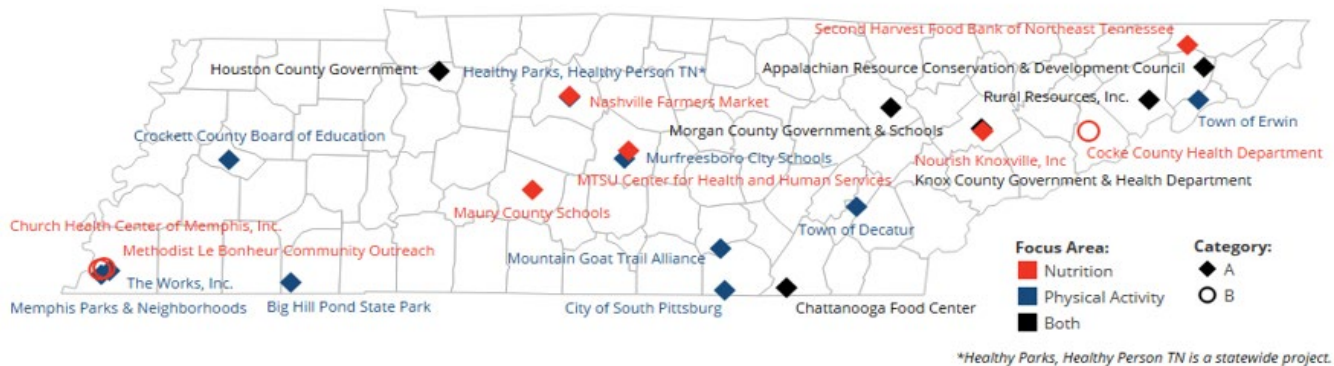
Goals for the 2022-2025 funding cycle are:

- ✓ Creating equitable food and beverage environments that ensure that healthy food and beverage options are the routine, easy choice.
- ✓ Making physical activity an integral and routine part of life for all Tennesseans.

There are two levels of Project Diabetes funding. Category A grants are funded for up to 3 years for a maximum amount of \$150,000 per year. Category B grants are funded for up to 2 years for a maximum amount of \$15,000 per year. Organizations receiving funding for 2022 through 2025 are displayed on the map below. **(Figure 10)**. Some of these organizations include Second Harvest Food Bank of Northeast Tennessee, Memphis Parks Neighborhoods, local school systems, and local health departments.

**Figure 10: Location of Project Diabetes Grantees, 2022-2025**

### 2022-2025 Project Diabetes Grantees



### Built Environment Grants

The TDH Office of Primary Prevention also manages the *Access to Health* built environment grant program. This program aims to increase access to safe and publicly accessible places that provide opportunities for physical activity and social life for a diverse group of users, including those who live, visit, work, play, worship, and learn in the community. Since 2017, four rounds of funding have been awarded.

In 2018 and 2020, a total of \$1.7 million in competitive grants were awarded to 48 grantees across Tennessee, including both government and non-government entities, with a third round of competitive funding launching in 2022. This funding included construction of a playground at a public housing development in Selmer,

Tennessee, where there are 50 family apartments in the development but there are currently no places in the neighborhood for children to safely play. It also aided in the development of a masterplan for an ADA-accessible riverfront greenway in Benton County, Tennessee. The plan will promote access to the river and outdoor recreation opportunities, as well as catalyzing local economic development through new entrepreneurship opportunities. In addition, Coalmont Elementary School in Grundy County, Tennessee, designed and constructed a playground that brought new additions to the schoolyard will provide new opportunities for physical activity, play, and learning for students.

To date, a total of \$4.4 million has been invested in 236 completed projects with 14 others underway. Funded projects include convening, programming, planning, and construction of built environment projects that promote physical activity, including outdoor fitness equipment, greenway and trails construction, bike infrastructure, and creating greenspaces and recreation spaces such as playgrounds and walking tracks. Competitive grant applications receive priority if they are located in economically distressed or at-risk counties. All projects are required address a health disparity, engage local community members, and be accessible to the public at no cost. <https://www.tn.gov/health/health-program-areas/office-of-primary-prevention/redirect-opp/built-environment-and-health/built-environment-grants.html>

### *Preventive Health and Health Services Block Grant*

The Preventive Health Services Block Grant (PHHSBG) focuses on the prevention of cancer, heart disease, diabetes, overweight and obesity in children and adolescents, and rape/sexual assault, as well as promoting healthy weight in adults, providing preventive dental services for children and adolescents, senior falls prevention, providing poison control services, and other community-based primary prevention efforts.

PHHSBG strategies are all aligned with the Healthy People 2030 national objectives and the Tennessee Department of Health's Vital Signs and strategic priorities.

The PHHSBG funding supports the work of health promotion in all 95 counties, including approximately 100 health educators located throughout the state, the poison control hotline, and the rape prevention and assistance hotline. The work of health educator specialists in Tennessee spans the Prevention Institute's Spectrum of Prevention model, which encompasses a range of strategies including strengthening individual knowledge and skills; promoting community and school education; educating health care providers; fostering coalitions and networks; changing organizational practice; and influencing policy.

### *Women, Infants, and Children Program*

The Women, Infants and Children program (WIC) is an evidence-based, federal program designed to provide supplemental food to low-income, pregnant, postpartum, and breastfeeding women, infants, and children until the age of five years. The program provides nutrition education, healthy supplemental foods, breastfeeding promotion and support, and referrals for health care services. Breastfeeding peer counselors and the designated breastfeeding expert are present in every county health department to support

breastfeeding efforts. TDH provided WIC services in 126 locations to approximately 112,000 eligible participants each month FFY2021. As of 2022, has a budget of approximately \$123 million dollars. WIC not only acts as an evidence-based resource for nutrition, breastfeeding counseling, and physical assessment, it also is a source of reinvestment into the local community via participation in the WIC vendor program. A CDC Morbidity and Mortality Weekly Report (MMWR) that was released in 2019 analyzed WIC data from 2010-2016. The study reported a statistically significant decrease in obesity for 2–4-year-old Tennessee WIC enrollees, from 16% to 14.69%.”

### *Maternal and Child Health Funding*

Tennessee Department of Health administers state and federal Maternal and Child Health (MCH)/Title V Block Grant funds throughout the state to promote the health and wellbeing of families. Obesity prevention for children is one of the MCH priority areas, and funding supports wide-ranging efforts including breastfeeding policies in workplaces and hospitals, daycare nutrition education, and physical activity program implementation in schools and workplaces. MCH funds core infrastructure and provides adaptable funding to meet population needs. Specific childhood wellness programs funded by the MCHBG include:

- Gold Sneaker: A childcare center directed initiative to promote physical activity
- TN Breastfeeding Hotline: 24/7 access to International Board-Certified Lactation Consultants (IBCLCs) for anyone in Tennessee seeking breastfeeding support and information

### *State Public Health Actions to Prevent and Control Diabetes, Heart Disease and Stroke (CDC 1815 Funding)*

TDH received funding via the Improving the Health of Americans Through Prevention and Management of Diabetes and Heart Disease and Stroke (CDC 1815) cooperative agreement. The purpose of this funding is to implement and evaluate evidence-based strategies to prevent and manage cardiovascular disease and type 2 diabetes across Tennessee. These funds are directed to populations disproportionately affected by high blood pressure, high cholesterol, type 2 diabetes, and/or prediabetes due to socioeconomic or other factors including, minority status, inadequate access to care, poor quality of care, rural environment, and/or age. TDH and CDC1815 partners provide interventions that are designed to achieve measurable outcomes by reducing risks associated with prediabetes, diabetes, heart disease and stroke among disparate populations and communities. For example, Meharry Medical Center has 1815 funding provided to go towards their electronic medical record to augment referrals and tracking of diabetes prevention programs (DPP). In addition, Memphis Business Group and employers in West TN had DPPs funded for their employees, thus targeting high priority areas

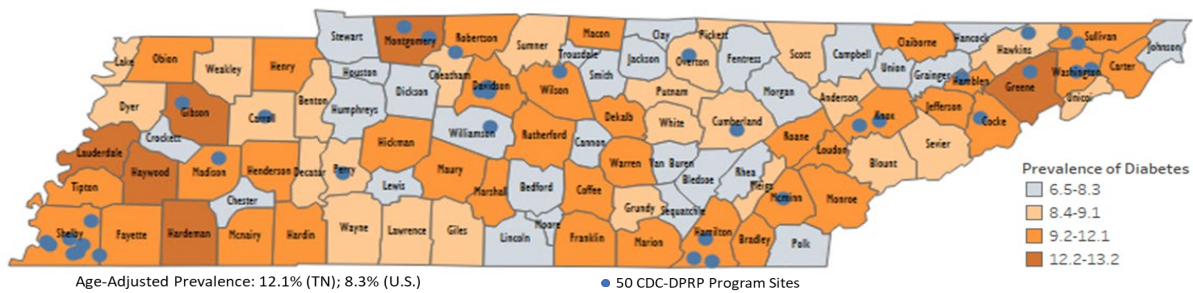
### *Diabetes Prevention Programs (DPP)*

Lifestyle change programs are offered through the Center for Disease Control and Prevention’s National



Diabetes Prevention Program (DPP). DPP is a yearlong lifestyle change program that aids participants in making lasting behavioral changes (decreased processed food and sugary beverage intake, increased plant-based foods, and physical activity) to reduce their risks of developing diabetes. Research shows that DPP helps to reduce risk of developing type 2 diabetes by as much as 58 percent. When TDH began working directly with Tennessee DPP in May of 2015, there were approximately 10 DPP statewide. As of April 2022, there are 50 DPP statewide, with 14 having full CDC-DPP recognition, nine with preliminary CDC-DPP recognition, and 27 with pending CDC-DPP recognition. In March 2020, most DPP in-person events were put on hold due to COVID-19. The Tennessee Diabetes Prevention Regional Coalitions distributed a survey to all current DPPs in July 2020 to determine how COVID-19 impacted their programs. The DPP responses demonstrated the successful transition to providing DPP using telehealth, accommodating up to 20 people per cohort. The use of distance learning and online programs have become the viable option for DPPs to sustain and reach target populations.

**Figure 11: CDC Recognized Diabetes Prevention Programs (DPP), TN**



**Source:** Centers for Disease Control and Prevention, Diabetes Prevention Recognition Program, Data access at [https://nccd.cdc.gov/DDT\\_DPRP/Registry.aspx](https://nccd.cdc.gov/DDT_DPRP/Registry.aspx) as of August 22, 2022

### *University of Tennessee (UT) Extension Partnership*

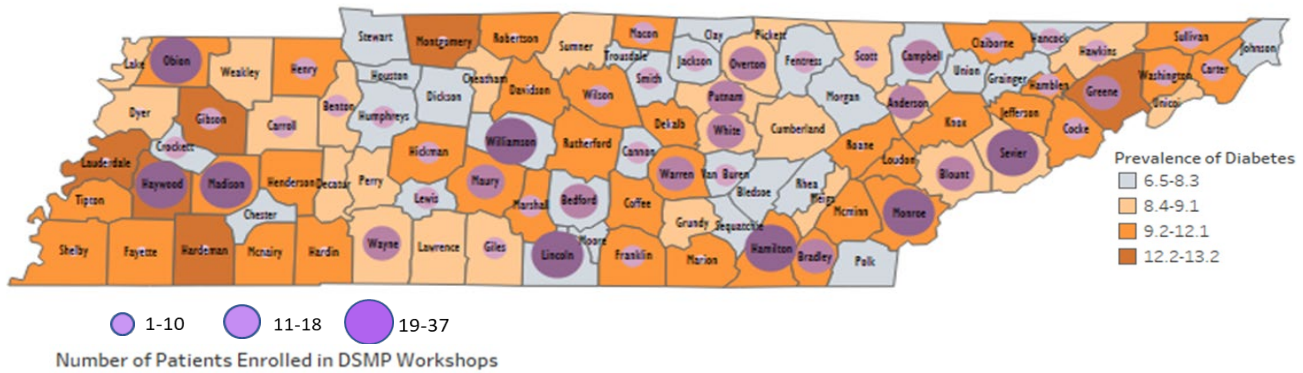
Tennessee Department of Health (TDH) and the University of Tennessee (UT) Extension collaborated to conduct the Self-Management Resource Center (SMRC) program statewide to assist people and their caregivers control symptoms of chronic conditions, better manage their health problems, and lead fuller lives. In Tennessee, 67 of the 95 counties have diabetes rates higher than the national average. Over the years, TDH and UT Extension have been successful in expanding workshops and recruiting new leaders across the state, as the reach of these programs have increased significantly. In Tennessee, 47 of the 95 counties had the Diabetes Self-Management Program (DSMP) represented between 2019 and 2021; as of 2019, at least one trained DSMP leader is represented in all 95 counties.

TDH and UT Extension strive to increase access to the DSMP across the state. They have worked together to promote and train leaders in the program among public health educators, UT Extension agents, and community members statewide.



Between 2019 and 2021, thirty new DSMP leaders were trained to deliver the program and fifty-eight workshops were delivered. During this timeframe, five hundred fifty-one Tennesseans participated in a DSMP workshop.

**Figure 12: Patients Enrolled in DSMP Workshops by County, 2019-2021**



**Source:** Data source: UT-Extension Annual Report, 2019-2021

### *Tennessee Pharmacists Association (TPA) Partnership*

The Tennessee Pharmacy Association (TPA) continues to work with current Association of Diabetes Care & Education Specialists (ADCES), to increase the number of programs offered in high need areas and for high-risk populations, as well as help with additional accreditation assistance. TPA also facilitates pharmacy sites becoming DPP providers. TPA work focuses on joint education between pharmacists and physicians. This multi-disciplinary team approach allows pharmacists to work collaboratively with physicians in managing patients diagnosed with diabetes or at risk of developing diabetes. As pharmacists provide diabetes prevention and management services through a team-based care approach, compensation for providing these services is needed for sustainability. TPA has worked successfully to pass a ‘pharmacists as providers’ law in Tennessee that would require pharmacists to be treated as other providers under managed care organizations (MCOs). TPA provides education to MCOs about this law to promote the inclusion of pharmacists as recognized providers of service. TPA has successfully worked with BlueCross BlueShield of Tennessee to add a category in their plan so that pharmacists can bill for ‘Disease management Services’, which includes diabetes management and support.

## ***Environmental Approaches to Promote Health***

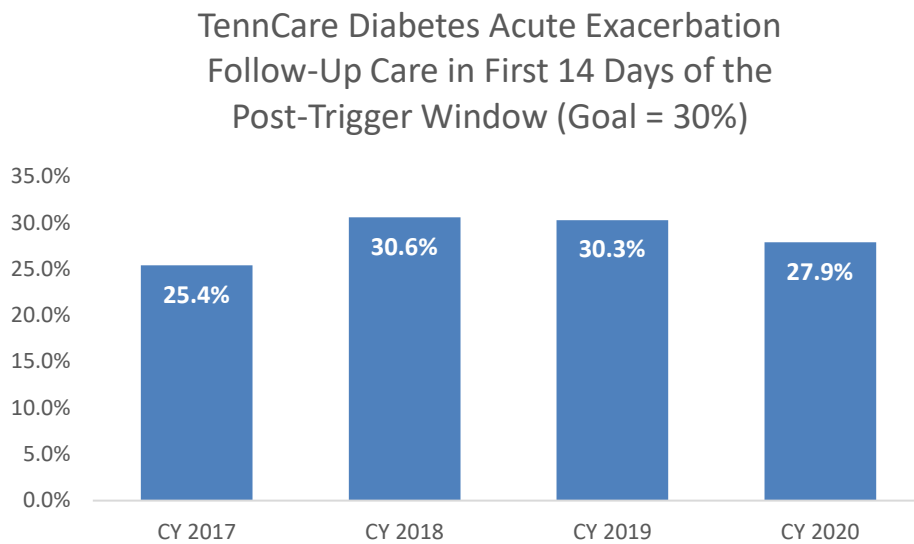
Many of the PSE strategies to combat obesity and prevent diabetes work across the lifespan and incorporate multiple funding sources.

- **Coordinated School Health:** TDH and the Tennessee Department of Education work closely together on school-based strategies through the Coordinated School Health Program (CSH). Founded as a pilot program in 2001, **CSH has a mission to improve student health outcomes and support the connection between health, academic achievement, and lifetime wellness.** The Office of CSH is funded by the CDC and works across domains of physical health, mental health, nutrition, physical activity, and social services to direct students, parents, families, teachers, and schools towards optimal health. According to the 2019-2020 Coordinated School Health BMI Report, there was no statistically significant change in the prevalence of overweight or obesity between the 2018-19 school year (39.5 percent) and the 2019-20 school year (39.7 percent). Using state and federal funding, CSH and TDH partner on strategies to improve healthy food access and physical activity and physical education in schools across the state. In addition to BMI screens, CSH coordinates implementation of hearing and vision testing, dental screening, and emergency preparedness for Tennessee's schools.
- **Gold Sneaker Initiative:** Gold Sneaker encouraged the **adoption of policies on physical activity, nutrition, and tobacco-free campuses in licensed childcare facilities in TN.** Participation in Gold Sneaker is voluntary, and there is no cost for participating licensed childcare providers. Childcare providers that are certified and provided with a complimentary toolkit containing resources that promote physical activity and healthy eating and are offered ongoing technical assistance and optional training opportunities. The Gold Sneaker Initiative resulted in a partnership with the Tennessee Department of Human Services (TDHS) and incorporation of the Gold Sneaker policies into childcare licensing requirements. To date, there are 643 licensed childcare facilities participating in Gold Sneaker. Gold Sneaker has now been incorporated into 3-Star level of the report cards for the one, two-, or three-Star Quality rating for Child Care programs that are accredited by the Department of Human Services.
- **Breastfeeding initiatives:** Recognizing the health benefits to the mother and child and the potential impact of breastfeeding on long-term overweight/obesity risk for children, Title V/Maternal Child Health Block Grant and WIC funding are utilized to support the **Tennessee Breastfeeding Hotline**, one strategy to improve the breastfeeding culture in Tennessee. The Hotline is available 24 hours a day, 7 days a week, and routinely receives more than 415 calls per month. It is staffed by IBCLCs (International Breastfeeding Certified Lactation Consultants) who speak or have access to multiple languages for translation. Additionally, **hospitals in Tennessee continue to implement policies** that support breastfeeding initiation. Health educators across the state partner with businesses to develop supportive breastfeeding environments, and over 1,243 have received a **"Breastfeeding Welcomed Here"** designation. In 2019, the rate of breastfeeding initiation in TN was 80.6%, up 6% from 75.9% in 2015.

## Division of TennCare

TennCare’s goals to improve diabetes prevention and treatment are integrated into the State payment reform initiatives, including both episodes of care and primary care transformation. Diabetes prevention and treatment are integrated into TennCare’s delivery system transformation initiatives, including both the Episodes of Care and Patient Centered Medical Home (PCMH) programs. The Episodes of Care model seeks to align provider incentives with successfully achieving a patient’s desired outcome during an “episode of care,” a clinical situation with predictable start and end points. The program rewards high-quality, cost-effective care, while reducing duplicative testing and encouraging care coordination. Wave 6 of TennCare episode design included the Acute Diabetes Exacerbation episode.

Results for the 2020 performance year are listed below and also can be found on TennCare’s website: <https://www.tn.gov/content/dam/tn/tenncare/documents2/EpisodesOfCare2020PerformancePeriodResults.pdf>. TDH has participated with TennCare in the episode design process by participating in the Technical Advisory Groups which helped create the episodes.



**Figure 13: TennCare Diabetes Acute Exacerbation Follow-Up Care**

Patient Centered Medical Home (PCMH) is part of TennCare's Primary Care Transformation initiative. PCMH is a comprehensive care delivery model designed to improve the quality of primary care services for TennCare members, the capabilities of and practice standards of primary care providers, and the overall value of health care delivered to the TennCare population.

Tennessee has built on the existing PCMH efforts by providers and payers in the state to create a robust PCMH program that features alignment across payers on critical elements. To date, approximately 37% of TennCare Members (over 550,000) are attributed to one of the 82 PCMH-participating provider

organizations at nearly 500 locations throughout the state. PCMH providers commit to member centered access, team-based care, population health management, care management support, care coordination, performance measurement and quality improvement. Participating providers receive training and technical assistance, quarterly reports with actionable data, and access to the Care Coordination Tool. These providers are compensated with ongoing financial support and an opportunity for an annual outcome payment based on quality and efficiency performance. More information is available here:

<https://www.tn.gov/tenncare/health-care-innovation/primary-care-transformation/patient-centered-medical-homes-pcmh.html>

## ***Tennessee Department of Finance and Administration***

### ***Wellness Program***

Benefits Administration (BA) within Finance and Administration also administers an employee assistance program and integrated chronic care management (CCM) and wellness programs. The wellness program provides a variety of health management and wellness services, using best practices and evidence-based approaches to achieve positive member outcomes. A health assessment plus CCM, including diabetes CCM with coaching support, is available to all members of the State Group Insurance Program. State and Higher Education members also have access to additional wellness resources such as a weight management program and biometric screenings, providing a comprehensive wellness approach.

Members are also eligible to receive Lifestyle Management Coaching, which includes coaching for lifestyle improvement to address behaviors that may contribute to the development of chronic conditions and diseases. The program addresses the whole person in areas related to exercise, nutrition, stress, hypertension, cholesterol, and weight management. CCM Coaching focuses more specifically on five chronic conditions, including diabetes, asthma, chronic obstructive pulmonary disease, coronary artery disease, and congestive heart failure. <https://www.tn.gov/partnersforhealth/other-benefits/wellness-program.html>

### ***Diabetes Prevention Program (DPP)***

The state group health plan offers the DPP at no cost to all adult state group health plan members. Members have access to a virtual program through the member's health carrier (either BlueCross BlueShield of Tennessee or Cigna). [Diabetes Prevention Program \(tn.gov\)](#)

### ***Diabetes Reversal Pilot***

Benefits Administration completed a 12-month diabetes reversal pilot with Virta Health that covered 50 enrolled diabetic patients. Virta is a virtual diabetes reversal clinic focused on eliminating diabetes-specific medications while getting and keeping patients reversed (below 6.5 a1c threshold). This is accomplished through Virta Reverse, a nutritional protocol using a ketogenic diet. Nutritional ketosis can reverse type 2 diabetes by reducing blood sugar (HbA1c), improving insulin sensitivity, and reducing inflammation. The program also includes Continuous

Remote Care, with real-time access to Virta coaches and medical providers. Virta coordinates care with a member's PCP and other providers, providing regular reports on patient progress along with safe medication reductions and biomarker tracking and supervision. Pilot participants achieved positive outcomes with aggregate reductions in A1C, weight, and diabetic prescription use.

### *Patient-Centered Medical Home (PCMH) Initiatives*

Both BCBST and Cigna state health plans have PCMH Initiatives for their clients. Cigna's Collaborative Accountable Care program is a primary care-centric population health, value-based payment program. BCBST's program focuses on improving the health of a population by focusing on high-risk members, those with chronic conditions and those in need of preventative services. There is an emphasis on care coordination, reducing emergency department utilization and improving HEDIS quality metrics.

### ***Collaboration and Coordination between Agencies***

#### *Working for a Healthier Tennessee Initiative*

Working for a Healthier Tennessee" (WFHTN) launched in June 2013. WFHTN builds on the foundation established by the PartNers for Health Wellness and Employee Assistance Programs and expands health and wellness resources to all state employees, regardless of enrollment in medical coverage. WFHTN has three key focus areas: physical activity, healthy eating, and well-being. WFHTN provides guidance and support to all state agencies via their Wellness Coordinators. Wellness Coordinators support wellness councils, voluntarily led by state employees within participating state agencies. Creating an environment that encourages employees to maintain their total health, both physical and emotional, aligns all participants to lead the way to a healthier Tennessee. <https://www.tn.gov/wfhtn>

#### *TN Livability Collaborative*

TDH has also worked closely with local and state agencies to develop sustainable plans for built environment infrastructure and policies to prevent obesity including community walking trails, worksite wellness policies, and joint use facility agreements. TDH also offers funding opportunities for local PSE work and participates in several working groups such as the interagency Tennessee Livability Collaborative.

Tennessee Livability Collaborative, facilitated by the TDH Office of Primary Prevention, is a working group of 21 Tennessee state agencies, departments, commissions, and universities. The group's mission is to improve the prosperity, quality of life and health of Tennesseans through state department collaboration in the areas of policy, funding, and programming. Collectively these agencies work to improve the livability of Tennessee communities, which includes opportunities for education, employment, health, transportation, healthy foods, housing, recreation, and culture. The Collaborative takes a "Health in All Policies" approach to primary prevention, where health-promoting work is integrated into decision-making in non-health sectors. This approach aims to ensure Tennesseans live in health-promoting communities that reduce the incidence of disease, particularly those preventable chronic diseases that account for most of Tennessee's leading causes of death. The Collaborative was convened in 2016 and meets bi-monthly. It is jointly owned by all member agencies and operates as a voluntary initiative, and meetings are designed to facilitate information sharing about current agency initiatives and identify opportunities for interagency collaboration. <https://www.tn.gov/health/health-program-areas/office-of-primary-prevention/redirect-opp/livability-collaborative.html>

## ***Summary and Conclusions***

Diabetes is a largely preventable disease that incurs a large financial burden for the state. While often preventable, social determinants of health can increase one's risk of diabetes. It is imperative that policies, systems, and environment foster diabetes prevention. Long-term planning is key to successful diabetes prevention and reduction of overall diabetes-associated financial burden. Community engagement is critical and must consider factors influencing health, such as poverty, education, employment, race, ethnicity, geography, systemic barriers, and built environment. Type 2 diabetes represents the majority of diabetes cases and is primarily related to modifiable factors such as excess body weight and physical inactivity. Research evidence indicates that more than half of type 2 diabetes cases can be prevented or controlled. Type 2 diabetes is managed with a combination of medications (injectable or oral), healthy eating, increasing physical activity, regular medical and regular preventive care, and disease self-management.

Poorly controlled type 2 diabetes is a risk factor for infections in general, and the mortality rate of many illnesses (including COVID-19 and influenza) appears to be higher in patients with poorly controlled type 2 diabetes. Current evidence shows that patients with type 2

diabetes are more likely to have significant complications, including increased Intensive Care Unit (ICU) admissions, longer hospital stays and increased risk of death. Diabetes not only increases risk of cardiovascular conditions such as heart disease and stroke, it also increases the risk of end-organ damage, particularly to the kidneys and eyes. Diabetes also contributes to undesirable maternal and infant outcomes during and after pregnancy.

Based on current work in Tennessee and supported by evidence-based public health practice, this report recommends interventions aimed at slowing and managing the diabetes epidemic in Tennessee. These interventions include opportunities for individuals and communities to help prevent diabetes, as well as increased access to programs aimed at controlling diabetes to avoid disease progression and resulting complications. There is a focus on policy, system and environmental (PSE) changes/built environment strategies, as well as increased access to screening, prevention, health care and self-management services. The recommendations aim to prevent diabetes, reduce diabetes occurrence, and build a culture of healthy eating and active living for all Tennesseans.





**This report was compiled by the Tennessee Department of Health, Bureau of TennCare and the Department of Finance and Administration in accordance with Tennessee Code Annotated 68-1-2601, 68-1-2602, and 68-1-2603.**