

THINKTENNESSEE

State of Our State: Transportation and Mobility

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Executive Summary

Tennessee is a vibrant and growing state, topping 7 million people for the first time in 2022. With this growth, we face the double challenge of funding an efficient transportation system for an increasing population and providing safe and accessible transportation options for all Tennesseans. Tennesseans are driving more than ever, and our current transportation funding sources are not generating sufficient revenue to keep pace with this growth or to expand available transportation options.[1] Additional funding — and prioritizing investments to improve multimodal options — will help bridge this gap and improve health, safety, and financial security for Tennessee families.

Fortunately, there are two major opportunities for Tennessee to invest in our transportation infrastructure. In November 2022, Governor Bill Lee introduced TDOT's Build With Us initiative and the subsequent Transportation Modernization Act was enacted by the Tennessee General Assembly in 2023.[2] In addition, Congress funded historic levels of infrastructure investment through the Infrastructure Investment and Jobs Act (IIJA) in November 2021 and the Inflation Reduction Act in 2022. It is estimated that Tennessee will receive at least \$7.1 billion in formula funding from the IIJA over five years, with the potential for additional funding through a growing number of competitive grants.[3]

Together, these two opportunities provide a once-in-a-generation opportunity to rethink how we design and build transportation infrastructure to achieve better outcomes for Tennesseans. To help make the most of these opportunities and build the Tennessee of the future, this report compiles data on the current state of Tennessee's transportation infrastructure and its impact on Tennesseans. Comparing Tennessee to other states, we highlight the most urgent transportation needs and recommend evidence-based policies that can address them.[4]

Key Takeaways



1. Tennessee has one of the highest per capita vehicle miles traveled (VMT) in the country.



2. Tennessee spends less than most other states on transportation infrastructure per capita and less on transportation options other than driving.



3. None of Tennessee's major cities have dedicated funding for transit. Nashville and Memphis are two of the largest metro areas nationwide without dedicated funding.



4. Tennesseans have few transportation options other than driving.



5. The lack of transportation options is leading to negative outcomes for Tennesseans.

Key Takeaways

1. Tennessee has one of the highest per capita vehicle miles traveled (VMT) in the country. Over the last 75 years, Tennessee has invested heavily in road and highway infrastructure and underinvested in sidewalk networks and transit systems. Tennessee has over 96,000 miles of roads, over 6.5% of which were built since 2005; Tennessee ranked 14th nationally in the growth rate of road miles in this period.[5] As a result, vehicle miles traveled (VMT) on Tennessee roads is increasing — since 2005, VMT has increased 16.8% in the state. **In 2021, Tennessee ranked 8th nationally in per capita vehicle miles traveled.**[6]

2. Tennessee spends less than most other states on transportation infrastructure per capita and less on transportation options other than driving.

- ▶ Tennessee spends less on transportation per capita than most states. Tennessee uses a flat-rate gas tax to fund transportation and does not use debt financing for projects, relying on a pay-as-you-go funding model. As a result, Tennessee has both the second-lowest state and local road spending per capita in the nation, as well as the second-lowest state and local road spending per VMT in the nation.[7]
- ▶ At all levels of government — federal, state, and local — Tennessee spends even fewer dollars on multimodal transportation options. Tennessee receives almost \$120 million less than other states from FTA formula and discretionary funding sources to finance transit improvements. Tennessee contributes 9% fewer dollars to its transit agencies than other states.

3. None of Tennessee's major cities have dedicated funding for transit. Nashville and Memphis are two of the four largest metro regions in the country without dedicated funding. Forty-six of the 50 largest metro areas nationwide have dedicated funding for their transit agencies, the majority of which, 39, utilize some form of sales tax, generating an average of almost \$394 million in revenue. Orlando, Nashville, Memphis, and Hartford are the four largest metro areas lacking dedicated transit funding nationwide. [8]

4. Tennesseans have few transportation options other than driving. Nationally, Tennessee ranks 39th in transit performance [9], 22nd in bike friendliness [10], and is tied with Alaska and Alabama for lowest walkability in urban areas [11]. Because Tennessee invests less than other states in transit, walking, and biking infrastructure, Tennessee has one of the highest drive-alone commute rates — 11th highest in the nation — while ranking 42nd for transit commuting, 48th for bike commuting, and 49th for commuting on foot.[12]

5. The lack of transportation options is leading to negative outcomes for Tennesseans.

- ▶ First, it is unsafe — traffic fatalities have increased 29.9% from 937 in 2011 to 1,217 in 2020. It is particularly unsafe for road users who are not in a vehicle — traffic fatalities for pedestrians and cyclists increased 115.9% to a total of 190 per year in 2020.[13]
- ▶ Second, it is harmful to our health. Too much driving and long commutes lead to a lack of physical activity and increased stress levels, causing negative health outcomes like obesity and heart disease.[14] In addition, driving generates greater air pollution, contributing to a higher prevalence of asthma and other respiratory illnesses.[15]
- ▶ Third, it is unaffordable — owning and operating a car now costs an average of \$13,974 each year.[16] Overall in Tennessee, transportation costs are estimated to be 32% of a moderate-income family's income — making Tennessee 43rd in the nation for transportation costs relative to household income.[17]

Policy Recommendations

Tennessee's current transportation infrastructure leaves many people and opportunities behind. With newly available funding, Tennessee has the opportunity to make transportation safer, more accessible, and more affordable throughout the state.

1. Prioritize Health, Safety, and Equity in Transportation Investments

Our transportation systems are meant to connect us — to each other and to opportunities — and to improve our quality of life by providing safe and efficient access to all the resources that we need. Too often, investments are overly focused on addressing congestion and under-focused on health, safety, and access to opportunity.

Tennessee's transportation investments can prioritize the outcomes that matter most to Tennesseans.

- ▶ **Prioritize the safety of all road users in the funding, planning, and engineering decisions for both existing and future infrastructure.** Creating a safe transportation system for all users, including those walking, biking, or rolling, can decrease fatalities on Tennessee roads.
- ▶ **Optimize access to opportunities.** Focusing on access to jobs and economic opportunity within a certain timeframe (such as a 30-minute commute) can ensure that transportation investments support better economic outcomes for Tennessee families.
- ▶ **Prioritize equity in transportation decisions by meaningfully engaging with communities.** Prioritizing and institutionalizing robust community engagement processes as part of transportation planning and implementation will ensure that the needs of all community members are met through an equitable, safe, accessible transportation system.

2. Maximize the Capacity of Our Existing Assets

To relieve congestion, increase accessibility, and enhance economic development, Tennessee can maximize the capacity of existing infrastructure and invest more in multimodal transportation options.

- ▶ **Expand TDOT's *Fix it First* program to include strategies for optimizing capacity, such as technology and demand management.** In addition to maintenance, the *Fix it First* policy can prioritize programs such as TDOT's SmartWay and transportation-demand management programs that help maximize capacity of our existing roads. Regularly assessing whether infrastructure has outlived its useful lifespan can also help avoid maintenance and upkeep on outdated, obsolete assets.
- ▶ **Prioritize transportation modes that move more people.** TDOT has identified \$3.185 billion in transit and multimodal transportation needs in recent urban congestion studies. Funding and prioritizing projects that optimize space and resources as TDOT implements the Transportation Modernization Act will help maximize the capacity of our transportation assets.[18]

- ▶ **Maintain and promote land-use policies that support multimodal transportation.** State and local planning officials should consider dedicating right-of-way for multimodal transportation in new developments, and local officials should consider reforming zoning policies to prioritize higher density transit-ready developments, where appropriate.

3. Consider Additional Revenue Sources Beyond the Gas Tax

Tennessee has outgrown its current transportation financing model and new mechanisms are needed to meet demand for infrastructure improvements.

- ▶ **Explore a mileage-based user fee as an alternative long-term funding source.** The gas tax is no longer an adequate funding source due to the increasing fuel efficiency of vehicles and because the revenue generated by the static tax rate is not keeping pace with inflation. A mileage-based user fee could provide a more stable revenue source for transportation investments.
- ▶ **Aggressively pursue federal funding opportunities for transportation infrastructure.** Tennessee receives lower rates of federal funding for multimodal transportation than other states. Cities need to better understand the obstacles in place for receiving more federal funding and take the necessary actions, such as restructuring transportation departments, empowering transportation champions, identifying more local and state matching dollars, and updating mobility masterplans, for more successful funding applications.
- ▶ **Adopt dedicated funding for transit and multimodal transportation infrastructure in major metropolitan areas, particularly Nashville and Memphis.** Orlando, Nashville, Memphis, and Hartford are the four largest major metro areas that have not yet adopted dedicated funding for transit. Thirty-nine of the 46 major metro areas with dedicated funding utilize a sales tax ranging from 0.375% to 2%, which can generate an average of almost \$394 million in annual revenue.[19] Establishing new, dedicated funding would increase available money to fund multimodal projects and transit service needed in Tennessee.

Transportation in Tennessee: An Overview

Tennessee is a vibrant and growing state. According to the United States Census Bureau, the state's population increased by 564,784 between 2010 and 2020, an 8.9% growth rate.[20] In just one year, from 2021 to 2022, Tennessee's population grew by 82,988, a 1.2% growth rate, representing the 7th largest growth rate in the nation, the largest single year population increase since 2007, and the first time in Tennessee's history that our state's population surpassed 7 million residents.[21]

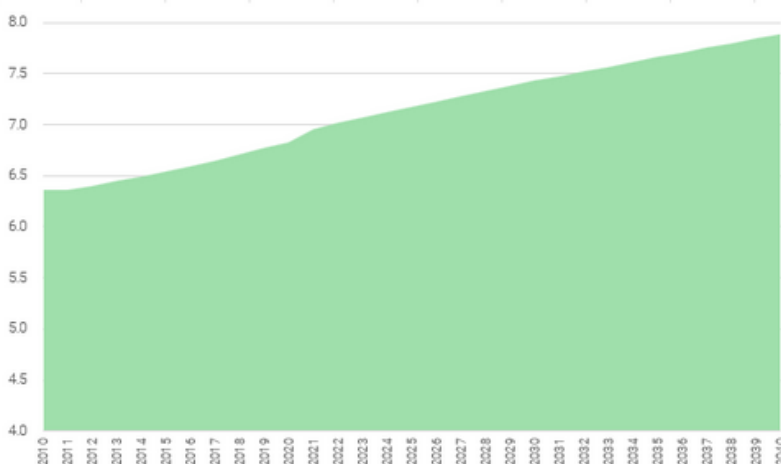
The Boyd Center for Business and Economic Research estimates that Tennessee's population is expected to add an additional 989,976 residents by 2040 – an increase of 14.4% by 2040, and reach 8 million by 2043.[22]

This population growth comes alongside remarkable economic expansion, including increasing commercial activity, employment opportunities, and GDP growth. Tennessee experienced an 8.6% increase in real GDP growth between 2020 and 2021, ranking 1st in the nation. Tennessee's unemployment rate (ranked 24th in the nation in 2022) has returned to pre-pandemic levels at 3.5% and new businesses growth is at 1.1%, ranking 20th in the nation. Tennessee has had the 4th highest private employment growth over the last five years in the Southeast.[23] Unlike most other states, Tennessee's job growth is also projected to remain positive, averaging at 1% through 2023 and 2024, in the natural resources, construction, trade, transportation, utilities, hospitality, retail, and professional services job sectors.[24]

As our economy and population continue to grow, so too will congestion on Tennessee's roads. The Tennessee Department of Transportation (TDOT) estimates that by 2045 statewide commute times will increase by 60% and intercity travel times between major Tennessee cities will increase by up to one hour.[25] Congestion, however, isn't the only issue facing Tennesseans, and the infrastructure investment decisions we make as a state over the next 10 to 15 years will determine our ability to improve health, equity, and quality of life outcomes for all Tennessee residents.

Figure 1. Tennessee's population is expected to reach 7.9 million by 2040.

TN Population Projection in Millions, 2010-2040



Our Transportation Infrastructure System

Tennessee's Roads and Bridges Are in Good Shape, But VMT is Growing

Tennessee has an extensive road network and has increased its road mileage significantly since 2005. Tennessee has 96,319 miles of public roads – ranking 14th nationally in road miles per land area and 29th in road miles per capita.[26] From 2005 to 2021, Tennessee increased its road mileage by over 5,800 miles – an increase of 6.5% compared to 4.8% nationally. Tennessee ranked 14th nationally in road mileage growth over this time period.[27]

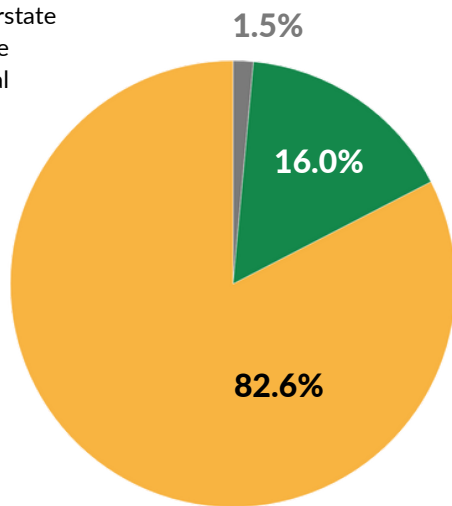
Interstates and state roads represent a small portion of Tennessee's road miles but carry the majority of daily traffic. Interstates represent just 1.2% of Tennessee's roads but carry 29.8% of the state's daily vehicle miles traveled (VMT).[28] State and other roads represent 16.0% of Tennessee's roads and carry 51.0% of VMT, while local roads, which represent 82.6% of Tennessee's roads, carry 17.3% of VMT.[29]

Figure 2. Tennessee interstates and state roads carry most of the daily traffic.

Miles and VMT by Functional Class, 2021 (TDOT)

Road Miles

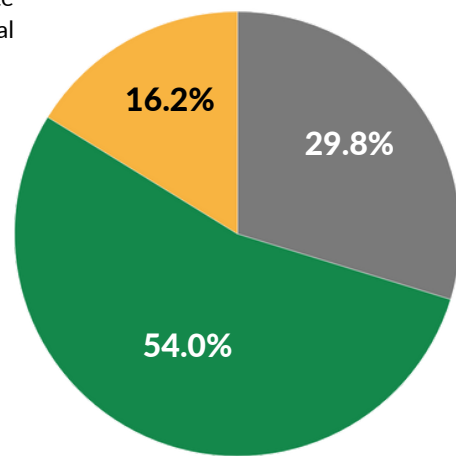
■ Interstate
■ State
■ Local



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VMT

■ Interstate
■ State
■ Local

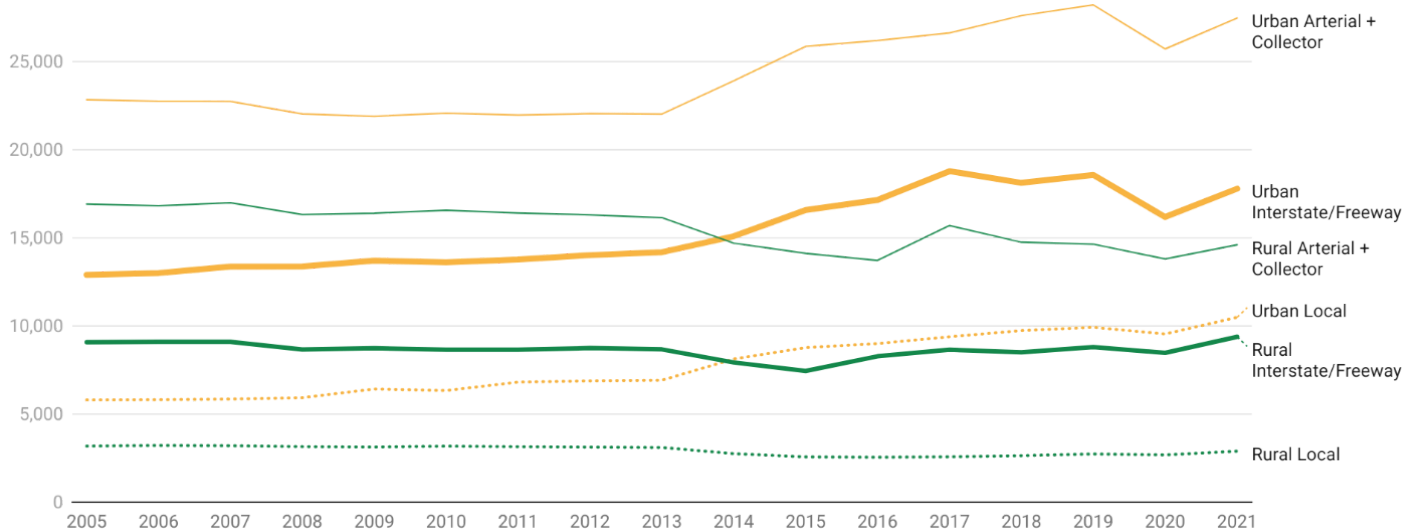


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Urban areas account for only about one-third of the roads in Tennessee, but over two-thirds of vehicle miles traveled.[30] Since 2005, overall VMT on rural roads has decreased by 7.8% while VMT on urban roads has increased 34.2%. On rural roads, the largest decrease was on arterials and local roads, while rural interstate VMT increased by 3.4%. In urban areas, VMT on local roads increased 80.8% since 2005, and VMT on urban interstates increased 37.8%.[31] While some of the rural VMT decrease is due to the reclassification of rural roads to urban, the decrease in rural VMT is outpacing the decrease in rural road miles.

Figure 3. VMT is growing significantly in urban areas and decreasing in rural areas.

VMT by Functional Class, 2005 to 2021 (TDOT)



Tennessee's roads are in good condition. Tennessee has the country's highest percentage of smooth roads at 75.6% and the 9th-least road rutting (10.5%).[32] However, Tennessee only reports pavement conditions on a subset of state-operated roads, which themselves comprise about 15% of the state's total roads.[33] Tennessee utilizes a "fix-it-first" policy which prioritizes maintaining existing road assets in good repair rather than adding projects to the roadway network, contributing to Tennessee's high percentage of smooth roads.[34] Dedicating funds for repairing roads as a matter of first priority, however, complicates Tennessee's ability to invest in new strategies or alternative modes of mobility such as transit, as aging infrastructure requires increasing amounts of resources to maintain.

Tennessee's 2022 Infrastructure Report Card

Graded by the American Society for Civil Engineers



Roads **B**



Bridges **C**

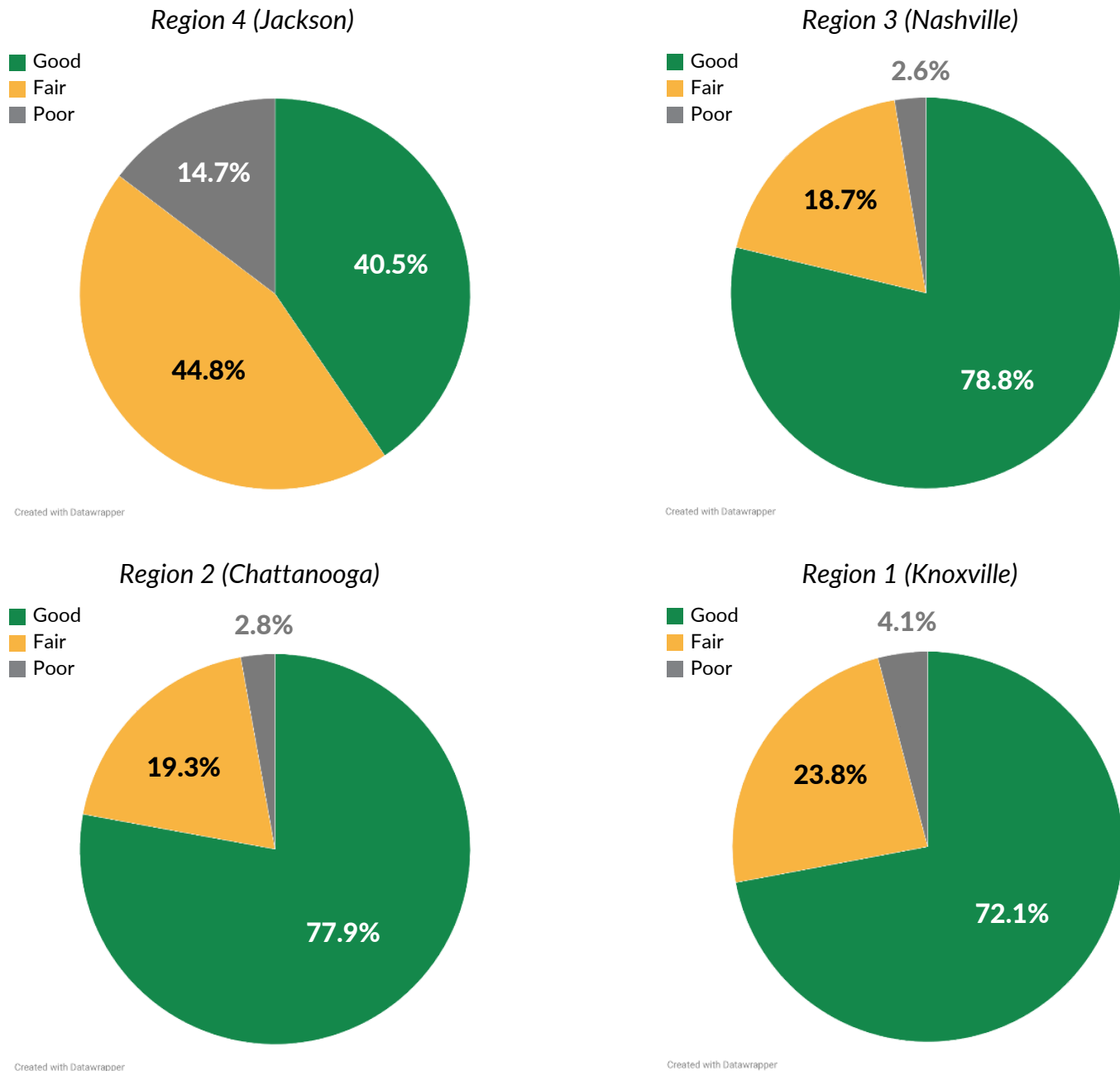


Transit **D+**

While roads are in good condition overall, there is variability in road condition geographically. In Tennessee, 67.3% of roads are in good condition, ranging from a high of 78.7% in Region 3 to a low of 40.5% in Region 4. Region 4's roads are in noticeably worse condition compared to the rest of the state: 44.8% of roads are in fair condition and 14.7% of roads are in poor condition, compared to an average of 20.5% in fair condition and 3.1% in poor condition in the other three regions.[35]

Figure 4. Road condition varies significantly by region — Region 4 has a significantly higher portion of roads in fair or poor condition.

Pavement Roughness by Administrative Region, 2021-2022 (TDOT)

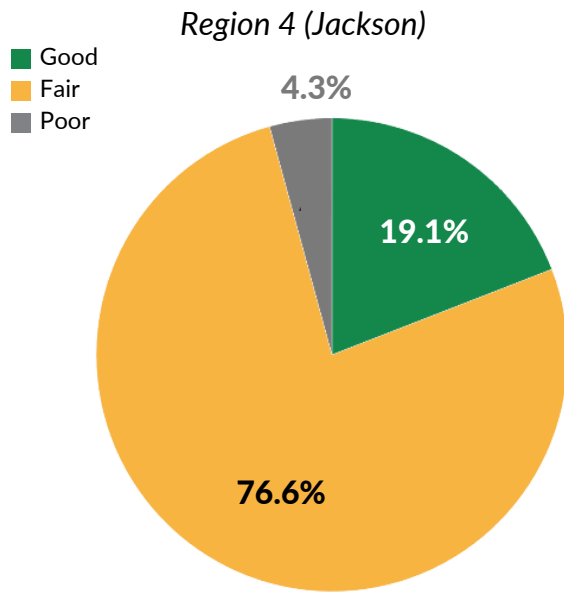


Tennessee roads also include critical bridges throughout the state which require ongoing inspections, maintenance, and repair. Tennessee has over 20,000 bridges — the majority (57%) are owned and maintained by local governments, 41% are owned and maintained by the state, and the remainder (2%) are owned and maintained by federal agencies.[36]

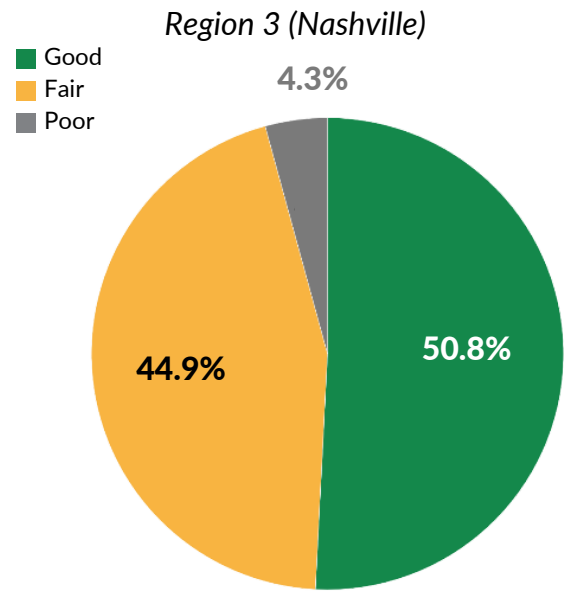
Overall, Tennessee's bridges are in decent condition. Statewide, 95.6% of bridges are in fair or good condition and only 4.4% of Tennessee bridges are structurally deficient,[37] ranking 12th in the nation. [38] Region 1 in East Tennessee has the highest proportion of bridges in critical or poor condition (5.5%) compared to 3.8 to 4.3% in other regions.[39] Region 4 in West Tennessee has the highest proportion of bridges in fair condition (76.6%), compared to 33.0% to 56.2% in other regions.[40]

Figure 5. Bridge condition varies significantly by region.

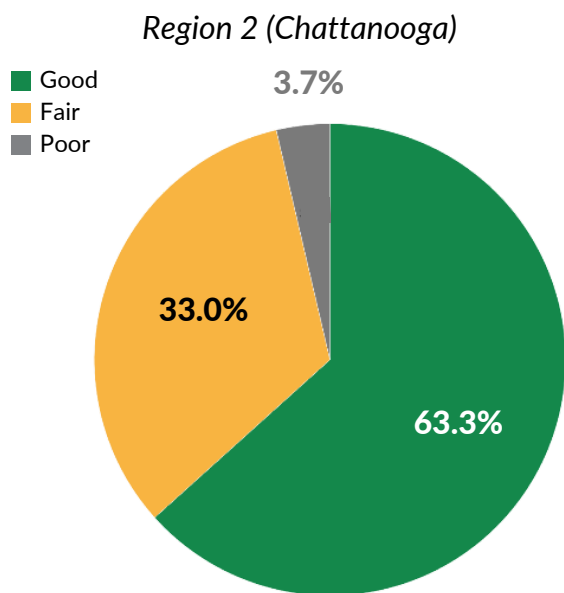
Bridge Condition by Administrative Region (TDOT)



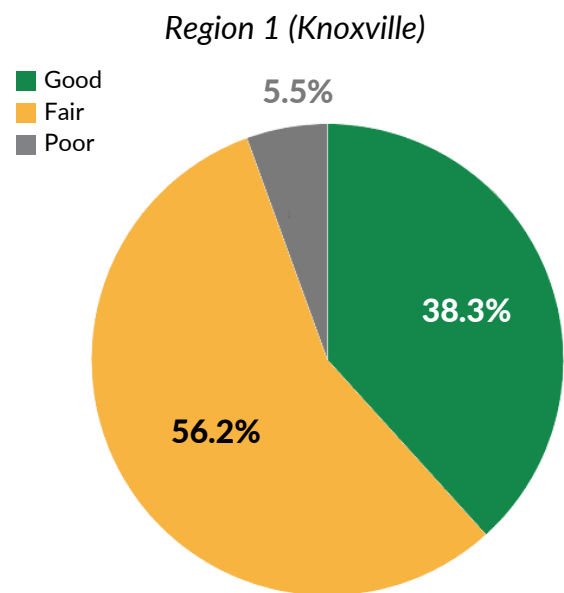
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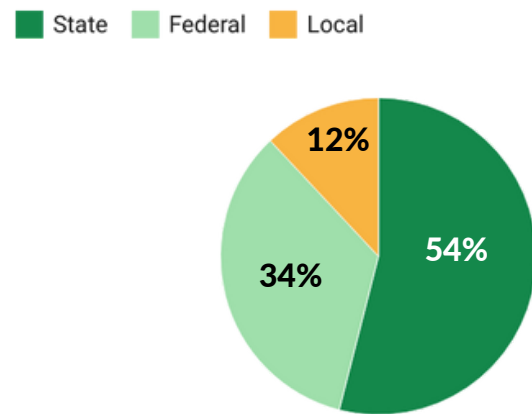
Tennessee's Road Funding Model Isn't Keeping Up

Maintaining Tennessee's network of roads and bridges requires a diverse range of funding from all levels of government generated from a variety of revenue sources. Federal funds, for example, make up a significant portion of state highway funds, and state revenue makes up the majority of local road funding. In 2019, Tennessee's road network received 34% of funding from federal sources, 54% from state sources, and 12% from local sources. This creates a patchwork of shared financial responsibility in which no one level of government can single-handedly address funding shortfalls or gaps.

Federal funding is generated by federal fuel taxes, vehicle fees, and congressional appropriations to the Highway Trust Fund.[41] **Tennessee has paid an estimated \$25 billion into the federal Highway Trust Fund since 1956 and receives \$1.12 in apportionments and allocations for every \$1 Tennesseans pay into it, totaling \$27.1 billion in Highway Trust Fund revenues.[42]** The average Tennessean pays somewhere between \$100 and \$120 annually in federal gas taxes.[43] Federal revenue, however, is restricted to projects on the National Highway System or other primary roads designated as part of the federal-aid system.

While federal funding constituted approximately 34% of total road funding in 2019 for Tennessee, these funds could be used on only 20% of the state's total road mileage.

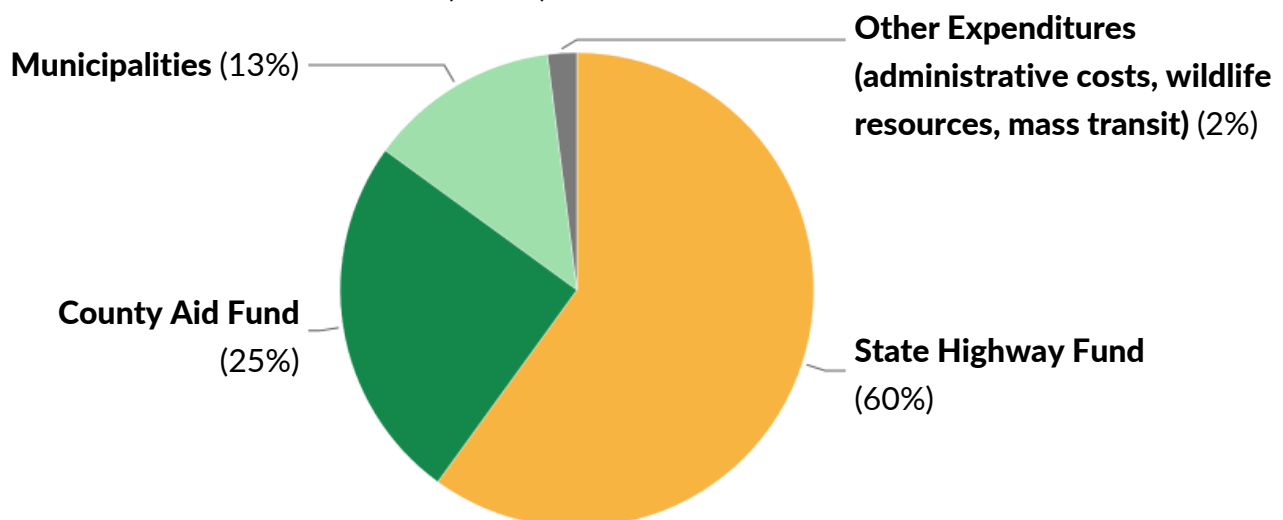
Figure 6. Tennessee's road network is funded by federal, state, and local sources.



Tennessee relies more heavily on highway-user fees such as gas taxes and registration fees to fund transportation infrastructure than any other state.

Figure 7. Tennessee's primary transportation revenue source favors state roads and highways.

Allocation of State Gas Tax Revenues (TDOT)

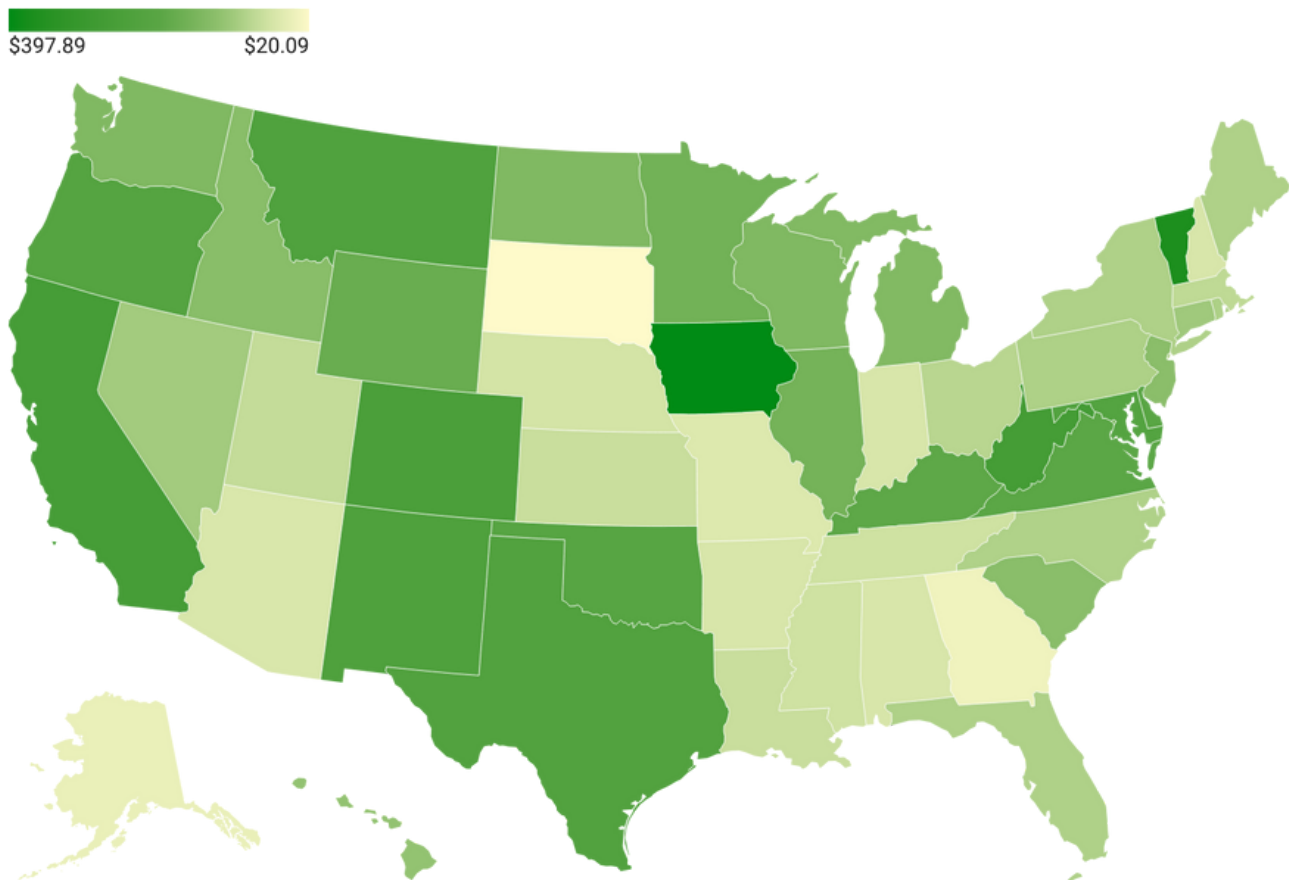


State revenue accounted for 54% of road funding in Tennessee in 2019, with 36% coming from fixed rate per gallon state fuel taxes, 15% from vehicle registration fees, and 3% from other miscellaneous sources. The current state gas tax rate is set at 27.4 cents (\$0.27) per gallon and was last adjusted in 2017 by the IMPROVE Act, collecting \$833.5 million in revenues during FY2020.[44] Revenue from the state gas tax is allocated according to state law, and this formula greatly favors roads and highways.[45] Tennessee's gas tax is four cents lower than the average state fuel tax (\$0.31), but the state's higher than average gasoline consumption typically offsets revenue losses resulting from a lower tax rate. The average Tennessean pays anywhere from \$140 to \$160 annually in state gas taxes. [46]

Vehicle registration fees in Tennessee vary depending on the type of vehicle. Tennessee collected \$327.5 million in vehicle registration and licensure fees in FY2020.[47] An estimated 83% of state registration fee revenue is allocated directly to the state highway fund and is not shared with local governments. The remaining registration fee revenue is allocated to the state's general fund.[48] Cities and counties are, however, authorized to charge additional registration fees to fund infrastructure projects. **Tennessee's state revenue per capita for vehicle registration fees (\$73.95) ranks 40th when compared to all other states, the national average being \$145.45.[49]**

Figure 8. Tennessee is among the bottom 10 states for revenue per capita from vehicle registration fees.

2021 Fee Revenue Per Capita (FHWA and US Census Bureau)



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Tennessee has not utilized general obligation bonds to finance transportation projects since 1977, instead authorizing bonds that go unissued to accelerate delivery.[50][*] Tennessee is one of only five other states who do not use bonds for transportation projects (along with Iowa, Nebraska, South Dakota, and Wyoming), though our population is more than double that of Iowa's and seven times that of Nebraska's.[51] Tennessee instead funds its infrastructure through a "pay-as-you-go" strategy that is reliant on user fees, only utilizing general fund allocations in FY2022 and FY2023. **Funding models reliant on gas tax-based user fees can create inequitable outcomes for non-automobile-oriented infrastructure such as transit or micromobility that are more efficient at moving people from place to place.**[52] Pay-as-you-go policies can also severely limit the initiation of new projects and delay the completion of existing ones, creating hidden costs because of inflation, unrealized economic development, and prolonged public health risks.[53]

The remaining 12% of Tennessee's road funding comes from local sources — 55% of local government road funds are sourced from the state gas tax — and many local governments supplement this shared gas tax revenue with their own funds from direct general fund appropriations or bond issuances. Local dollars drawn from general funds are typically sourced from local option sales taxes, property taxes, wheel taxes, and mineral severance taxes (such as coal), but vary significantly by jurisdiction and fluctuate from year to year.

Tennessee has both the second-lowest state and local road spending per capita in the nation, as well as the second-lowest state and local road spending per vehicle miles traveled (VMT) in the nation. [54]

Tennessee's Public Transit Service is Very Limited

Tennessee's public transit lacks the financial support or service levels necessary to be a viable choice for many residents, reinforcing the automobile as the primary mode of transportation.

Transit service in Tennessee is limited, particularly outside of major urban areas. There are 28 transit systems serving Tennessee, including four large urban systems, eight small urban systems, 10 rural systems, and five small local systems.[55]

Tennessee has very low transit service quality compared to other states. Tennessee ranks 39th nationally in the Center for Neighborhood Technology's AllTransit™ Performance Score (CNT), which is based on access to transit, performance of transit, jobs accessible by transit and workers using transit. CNT estimates that only 23% of Tennessee residents live within half-mile of a transit stop.[56]

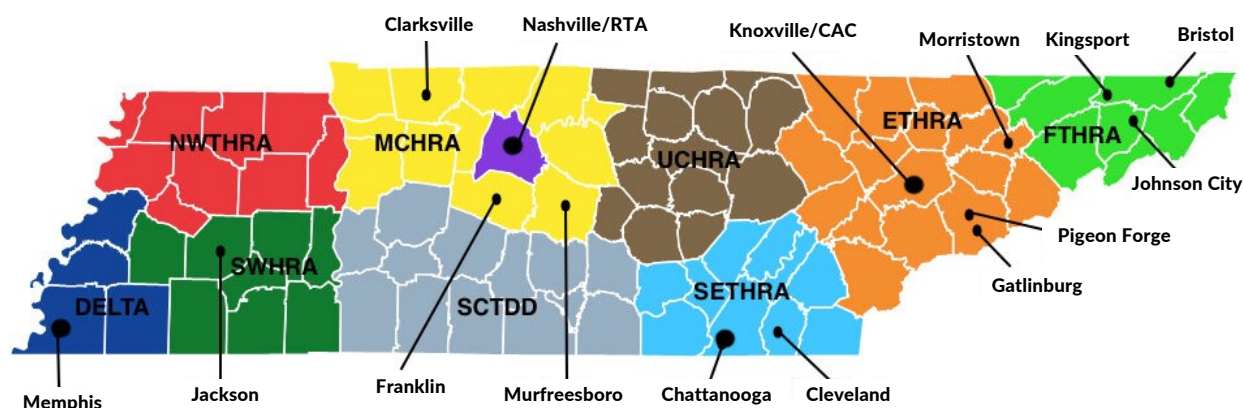
* For further information, see the State of Tennessee's Annual Comprehensive Financial Report for Fiscal Year 2022.

The quality of transit in Tennessee varies significantly by county, with many counties having no access to fixed-route transit. Davidson County has the highest AllTransit™ Performance Score in Tennessee with 3.6 out of 10, but this is far below similarly sized counties across the country, which, on average, have a score of 4.7. The majority of Tennessee counties, 77 of 95, have a transit score of 0 out of 10 due to a lack of fixed-route transit service.[57]

Counties with a Performance Score of zero are typically serviced by rural transit agencies who utilize demand-response or flex-route instead of fixed-route services to provide rural residents transit services. Like all transit agencies, rural transit provides vital access to healthcare, employment, education, food, and community services for children, veterans, people with disabilities, low-income residents, the elderly, and those otherwise unable to own or operate a car.[58] One national survey estimated that nearly 34.1% of small urban and rural transit riders use these services to commute to work, 11.5% to attend school, 17.3% to access shopping/dining venues, 18.0% to engage in social and communal activities, and 8.6% to access medical care.[59]

Figure 9. Most of Tennessee is served by rural transit agencies.

Tennessee Transit Systems (TPTA)



Tennessee counties with the highest transit performance are still underperforming nationally. On average, midsize counties (between 500,000 to 1,000,000 residents) have an AllTransit™ Performance Score of 4.1, higher than Davidson County (3.6) and Shelby County (3.1). Small counties (between 250,000 and 500,000 residents) have an average transit score of 2.7, higher than Knox County (2.1), Hamilton County (1.7), and Rutherford County (1.0).

County Transit Performance

Large County Average	4.1
Davidson (Nashville)	3.6
Shelby (Memphis)	3.1
Small County Average	2.7
Knox (Knoxville)	2.1
Hamilton (Chattanooga)	1.7
Rutherford (Murfreesboro)	1.0

Transit Funding in Tennessee Lacks Strong Local, State, and Federal Support

Tennessee's network of transit agencies relies on a patchwork of federal, state, and local funding sources.

Tennessee's federal transit funding historically trails other states. While Tennessee collected an average of \$86.1 million from the FTA between 2005-2021 in both formula and discretionary grants, the average payment to states was \$206 million during the same period.[60] In FY2020, Tennessee received only 0.86% of FTA's total funding allocations but represented nearly 2.1% of the nation's population.

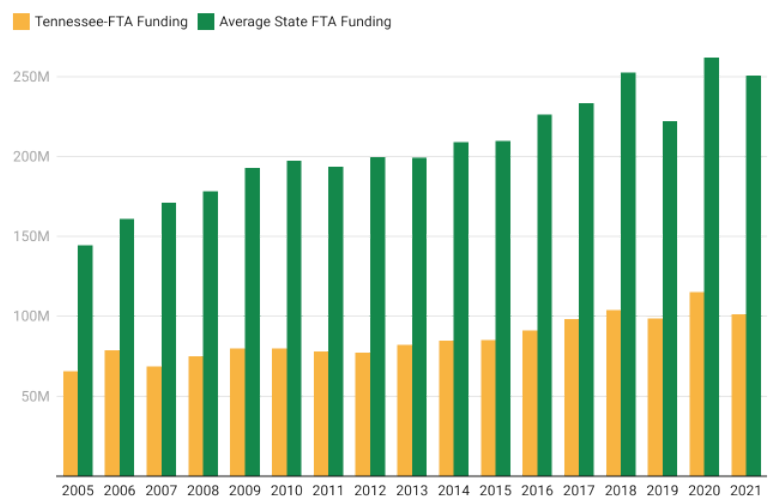
The state's contributions to transit, typically in the form of operating assistance and matching funds for federal grants, are also significantly lower than the national average. In 2020, the state only provided 13% of total transit funding in Tennessee, an estimated \$46 million, compared to the average contribution of 22% among other states. Six of the fifty largest metro areas rely on state funding for a majority of their revenues.[61] Less than 2% of all state gas tax revenues, the primary state user fee for funding transportation, are directly allocated to mass transit.

While counties can use up to 22% of their gas tax allocation from the State Highway Fund for public transit, the extent to which any county utilizes this authority is not publicly tracked by any state or federal agency.[62]

Finally, local governments are also underinvesting in transit service, which almost always comes in the form of general fund allocations. Yet local governments have been constrained in their ability to authorize dedicated local funding for transit that can offset the burden on the general fund. For example, the state legislation authorizing a 1-cent gas tax surcharge for local jurisdictions above a certain population size was implemented in 1998, and the 2017 IMPROVE Act replaced that authorization to include the specific options of a local sales and use tax, business tax, motor vehicle tax, rental car tax, residential development tax, and/or tourist accommodation/hotel occupancy tax. [63]

Figure 10. Tennessee receives less in Federal Transit Administration funding than other states.

FTA Formula and Discretionary Funding (2005-2021)



To date, no local jurisdiction of any level in Tennessee has successfully used such enabling authority to adopt dedicated funding for transit by referendum. The first and only attempt to do so was Nashville's 2018 transit referendum. Local dedicated funding for transit development and maintenance is an essential part of a metro area's ability to provide reliable, quality transit services and helps capitalize on existing dollars by supporting bond financing and generating necessary matching local dollars for state and federal grants. 46 of the 50 largest metro areas nationwide have secured some form of dedicated funding for their transit agencies, of which the most common is a sales tax: 39 of the 46 major metro areas with dedicated funding utilize some form of sales tax ranging from 0.375% to 2%, which generates an average of almost \$394 million in annual revenue. Other common sources of revenue include various forms of property tax, such as property title transfer fees or mortgage recording fees, and vehicle registration or sale fees.

Nashville and Memphis are two of the four largest metro areas nationwide that lack dedicated local transit funding. ThinkTennessee analyzed the transit funding sources for the top 50 major metropolitan regions and identified only four major cities that do not have dedicated funding for transit: Orlando, Nashville, Memphis, and Hartford. Orlando, Florida is the largest city nationwide lacking dedicated funding. In November 2022, Orlando attempted a 1% sales tax referendum to support bus, light rail, road, and multimodal improvements, but it failed. The smallest major city lacking dedicated funding is Hartford, Connecticut, in part because their bus services are owned by the state transportation department.

Figure 11. Tennessee transit agencies lack strong state support and dedicated local revenue compared to other states.

Fiscal Year 2020 Transit Agency Funding Sources (FTA)

	Tennessee		Average State	
Fares and Other Directly Generated	\$ 50,979,746	14%	\$ 239,402,508.04	17%
Taxes and Fees Levied by Transit Agency	\$ 0	0%	\$ 120,684,759.23	9%
Local	\$ 128,780,212	36%	\$ 320,325,117.29	23%
State	\$ 46,548,167	13%	\$ 314,558,715.38	22%
Federal	\$ 133,883,508	37%	\$ 408,610,666.96	29%
Total	\$ 360,191,633	100%	\$ 1,403,581,766.89	100%

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Active Transportation and Micromobility in Tennessee Needs More Investment

Active and micromobility transportation options allow people to travel without a car and rely on specialized infrastructure to improve safety and promote accessibility. Infrastructure such as sidewalks, bike lanes, and greenways provide safer places for people to walk and bike by minimizing interactions with vehicles and increasing comfort levels.

Walkability is low in Tennessee's urban areas. The 33 largest cities in Tennessee have an average Walk Score of 22 out of 100 – ranging from a high of 35 in Memphis to a low of 4 in Brentwood.[64] This Walk Score measures walkability based on the ability to walk to destinations including schools, stores, and parks. Tennessee cities, along with cities in Alaska and Alabama, have the lowest average walkability scores in the nation.

Key Definitions

Active Transportation

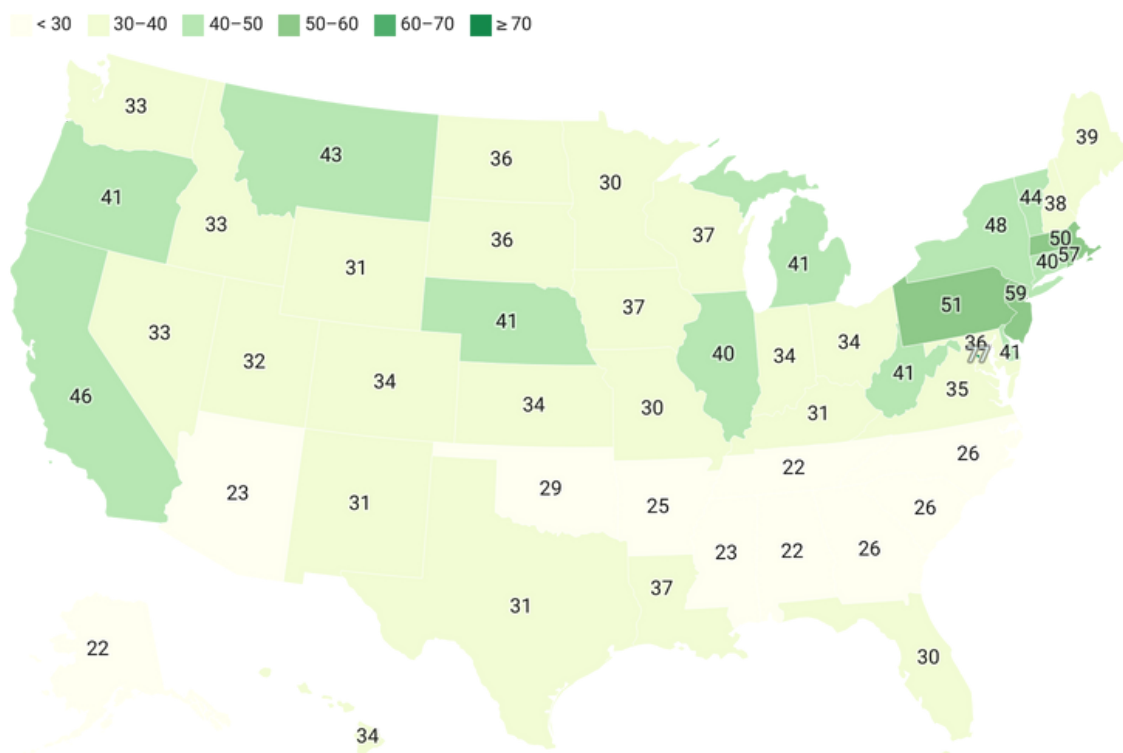
Human-powered movement, including walking and biking. Transit is often included with active transportation because most transit trips begin and/or end with walking.

Micromobility

Transportation using small, lightweight vehicles such as bicycles, scooters, or one-wheels that are either human or electric-powered.

Figure 12. On average, Tennessee, Alabama, and Alaska have the lowest urban walkability in the nation.

Average Walk Score of Urban Areas by State



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In 2022, Tennessee was 22nd in the national ranking of “Bike Friendliness” by The League of American Bicyclists. The annual ranking is based on (1) infrastructure and funding, (2) education and encouragement, (3) traffic laws and practices, (4) policies and programs, and (5) evaluation and planning.[65] However, more granular analysis of city infrastructure shows Tennessee cities are lagging — in a ranking of bike-friendliness, Memphis ranked 46th and Nashville ranked 47th out of the 50 largest cities.[66]

Shared micromobility services are growing nationally. Bikeshare and scooter share systems were growing rapidly in the United States prior to the COVID-19 pandemic. Docked bikeshare systems, for example, almost doubled from 66 systems in 2015 to 102 systems in 2019. In addition, dockless scooter and bikeshare programs are rapidly increasing since being introduced in 2017 — there are now 35 dockless bikeshare systems and 158 dockless scooter systems in cities across the US.[67] Memphis, Nashville, and Chattanooga have shared docked bikeshare systems and Nashville is piloting a dockless bikeshare program. Memphis, Nashville, and Knoxville have shared scooter programs.[68]

Historically, state funding programs, that are largely reliant on gas taxes, reserve small sums for active transportation and micromobility projects, and funding typically comes from competitive programs and formula funds. This limited funding model forces local governments to prioritize a small number of projects and delay other needed or high-demand projects, generating project backlogs and undermining the quality of infrastructure Tennesseans can access.[69] Due to the diversity of state and local government agency structures, variable general fund allocations, diverse accounting systems, and funding sources, it is difficult to capture the extent of funding for active transportation and micromobility. Many Southern cities, for example, require local property owners to pay for building and maintaining adjacent sidewalks with often lax enforcement, creating an incomplete sidewalk network. Transit agencies and private partners typically offer innovative funding methods that can help expand networks by filling in gaps in the existing network, but again this financing model creates disjointed networks with variable degrees of quality, safety, and accessibility.[70]

Local Partnerships are Crucial to Active Transportation & Micromobility

The **Memphis Medical District Collaborative**, founded in 2016, funds, manages, and maintains buffered bike lanes, protected intersections, and sidewalk networks in surrounding communities and campuses, including the largest Section 8 senior housing facility in Memphis, to facilitate mobility and connectivity in local public life. Funding is sourced from both institutional member dues and philanthropy, and services 2.5 corridor miles of streetscape improvements and 24 intersections.

Source: MMDC Mission Statement



Tennessee's Transportation Infrastructure Means Driving is the Primary Form of Travel

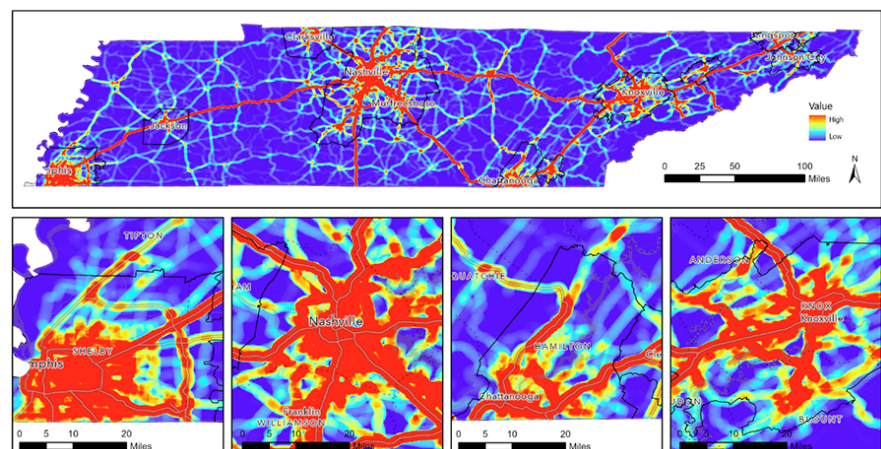
The infrastructure that we build is directly connected to the transportation options available to Tennesseans, and thus the transportation modes that they choose. How we fund and allocate scarce resources across the state and across different types of infrastructure therefore determines whether Tennesseans drive, take transit, walk, or bike. **Tennessee has invested almost exclusively in road and highway infrastructure, so driving is the predominant mode of transport for Tennesseans.** Nearly 9 in 10 adult Tennesseans (4.9 million) are licensed drivers, and there are 5.9 million vehicles registered in the state.[71] Each Tennessean drives an average 42.8 miles per day: the 11th-most of any state.[72]

The types of transportation infrastructure we build strongly influences the demand for that mode of transportation. This pattern is known as induced demand: provide a tangible good at no cost that people value and the demand will outstrip supply.[73] **Induced demand inherently affects all modes of transportation infrastructure, which means that allocating resources more equitably across all modes of transportation can help create more fair and balanced outcomes for all Tennesseans.** Building, expanding, and prioritizing roads will continue to induce more driving. That means adding lanes to a highway will ease congestion in the short term, but those gains will eventually vanish as the road fills with more drivers.[74] Similarly, expanding and prioritizing active transportation infrastructure encourages more people to choose those transportation modes, because they feel safer and more comfortable. A study of 106 cities found that newly built bicycle infrastructure increased cycling between 11% and 48% on average.[75]

TDOT's urban congestion studies project high levels of congestion in major urban areas and along almost all of the state's interstate corridors. To avoid diminishing returns from highway expansion that only temporarily relieves congestion, Tennessee could consider concentrating its road investments on maintenance and optimization, redirecting additional funds to multimodal investments.[76] Such investments in transit and road network optimization are likely to be more productive in facilitating mobility, and more likely to positively contribute to health, safety, and access to opportunity impacts. [77]

Figure 13. Over the next 25 years, congestion will worsen dramatically in Tennessee's urban areas and along all of our interstate corridors.

Urban Congestion Studies (TDOT)



In 2021, 75.8% of Tennessee workers drove alone to work, compared to 67.8% of workers nationally, Tennessee ranked 39th highest in drive alone rates compared to other states.[78] Prior to the COVID-19 pandemic, overall rates of driving in Tennessee decreased slightly, from 83.6% to 82.0% in 2019. From 2019 to 2021, driving alone declined an additional 6.2%. During that time, working from home increased from 3.4% to 14.0%, and commuting by “taxi, motorcycle, or other” increased by 24.5%.[79]

However, driving is not an option for all households. As many as 30% of Tennesseans can’t or don’t drive, including young or elderly people, people with disabilities that prevent them from driving, and people without access to a vehicle.[80] In Tennessee, 5.6% of households - one in twenty households - do not have access to a vehicle.[81] These families rely on transit, walking, biking, and other methods to travel to work, school, medical appointments, and for social activities. It is important to have a transportation system that is accessible and affordable for all Tennesseans.

Figure 14. In urban areas, Tennesseans commute by driving alone more than their peer cities.

Means of Transportation to Work, 2021 (US Census Bureau)

	Drove Alone	Carpooled	Other	Transit	Walk/Bike	Worked from Home
Small Cities						
Chattanooga	75%	8%	1%	0%	2%	14%
Knoxville	79%	6%	1%	0%	1%	13%
Peer Cities	74%	8%	1%	1%	2%	14%
Large Cities						
Memphis	78%	8%	1%	0%	1%	12%
Nashville	69%	7%	1%	1%	1%	21%
Peer Cities	70%	7%	1%	1%	2%	20%
Tennessee	76%	8%	1%	0%	1%	14%
United States	68%	8%	2%	3%	3%	18%

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In urban areas, rates of driving alone are slightly higher than in peer cities.[**] Chattanooga, Knoxville, and Memphis drive-alone rates are higher than their peer cities; only Nashville has drive-alone rates comparable to its peer cities.[82]

Given low investments in transit statewide, transit service is not a viable option for most Tennesseans. If a bus only comes once per hour and only runs 12 hours per day, it is not a viable option for someone with other transportation options. According to USDOT's Transportation and Health Tool, Tennessee ranks 36th in transit ridership per capita.[83] Tennessee also lags in commuters taking transit to work: in 2021, only 0.4% of Tennessee workers commuted by public transit, compared to 2.5% in the US-ranking 42nd nationally.[84]

Tennessee is often thought of as a rural state, but nearly 4.6 of the 6.9 million residents in Tennessee, or 66.2%, live in urban areas, representing the 19th highest urban population nationwide. But even in our urban areas, rates of taking transit to work are lower than expected. Rates of taking transit to work are lower in Chattanooga (0.3%) and Knoxville (0.3%) than their peer cities (0.5%). Rates of commuting by transit are also lower in both Memphis (0.2%) and Nashville (0.6%) than their peer cities (0.8%).[85] The need for transit is not limited to densely populated metro areas. In 38 of Tennessee's 95 counties, a third or more of the population reside in areas with at least 5,000 people. [86] Small-scale towns throughout the country like Park City, Utah and Paris, Texas utilize intercity and intracity fixed-route transit to improve mobility and facilitate economic activities such as tourism and access to jobs.[87] As transit optimization and routing technologies continue to improve, the quality of fixed-route rural transit will increase.

Tennessee also ranks low in commuting by walking and biking. Statewide, only 1.1% of Tennessee commuters walked to work, ranking 49th in the nation. Only 0.1% of commuters biked to work, ranking 48th in the nation. Rates of walking and biking to work are especially low in Memphis (0.9%) and Knoxville (1.0%), which are lower than not just their peer cities, but Tennessee as a whole. Nashville (1.2%) and Chattanooga (1.5%) have comparable or slightly larger shares of active commuters, but still trail their peer cities. [88]

Without adequate infrastructure and improved service levels to support transportation modes other than driving, Tennesseans will continue to see driving as their only viable transportation option.

** Peer cities were selected based on similar population sizes and similar population growth rates between decennial censuses 2010 and 2020. Small peer cities include Columbia, El Paso, Fresno, Greensboro, Harrisburg, Little Rock, Modesto, Portland, Tulsa, and Winston-Salem. Large peer cities include Birmingham, Charlotte, Columbus, Denver, Indianapolis, Louisville, Milwaukee, Raleigh, St. Louis, and San Antonio.

Tennessee's Transportation System Has Significant Impacts on our Communities

Tennessee's reliance on cars for transportation, increasing VMT, and the lack of safe infrastructure for transit, walking, and biking has significant impacts on safety, health, air quality, traffic, and congestion, as well as economic outcomes for families.

Tennesseans' Driving Habits Impact our Health and Safety

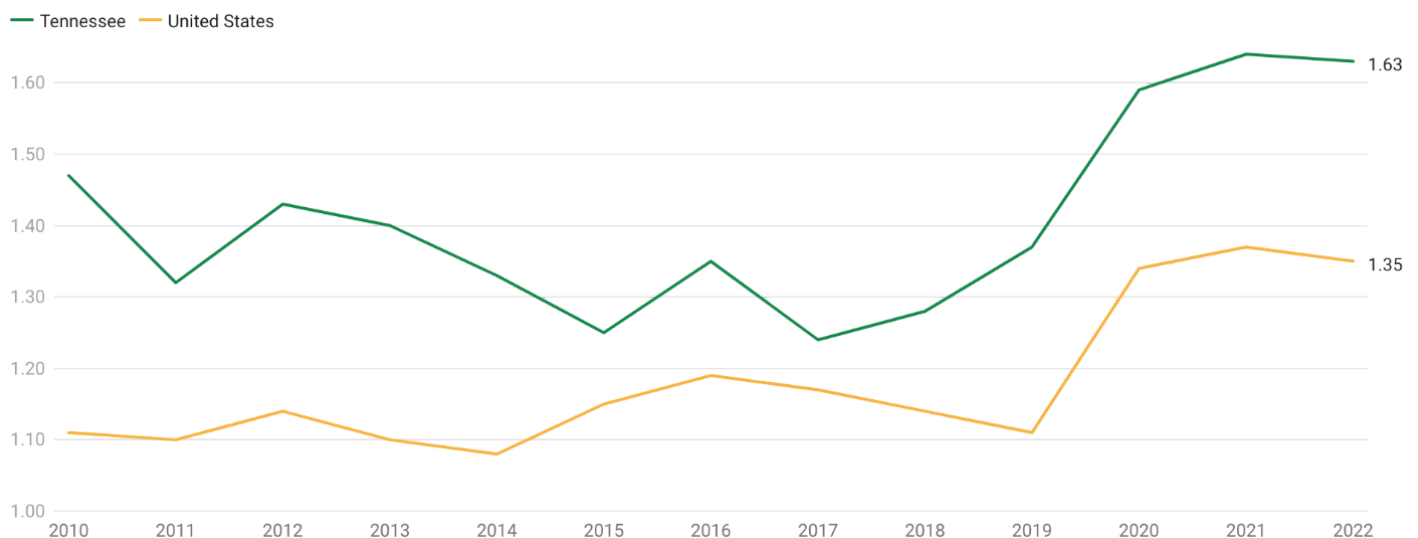
Traffic Fatalities are High and Increasing

Tennessee has one of the highest traffic fatality rates in the nation. In 2022, 1,330 people died on Tennessee roads. In that year, Tennessee had a fatality rate 20% higher than the United States as a whole, the 42nd highest rate per capita in the nation.[89] Tennessee's fatality rate increased from a low of 1.24 in 2017 to a high of 1.63 in 2022, a 31.5% increase in just 5 years.[90] While national increases in traffic fatalities have been tied to COVID-19-related changes in transportation behavior, in Tennessee the increasing fatalities began before the pandemic.

Traffic fatalities are reflective of how we prioritize our investments. States that aggressively invest in road safety or transit, like Pennsylvania and Wisconsin, have fewer pedestrian and traffic fatalities.[91] In addition, communities with protected bike infrastructure have fewer fatalities for all road users, including cyclists, pedestrians, and drivers.[92]

Figure 15. Traffic fatality rates in Tennessee are higher than the United States as a whole.

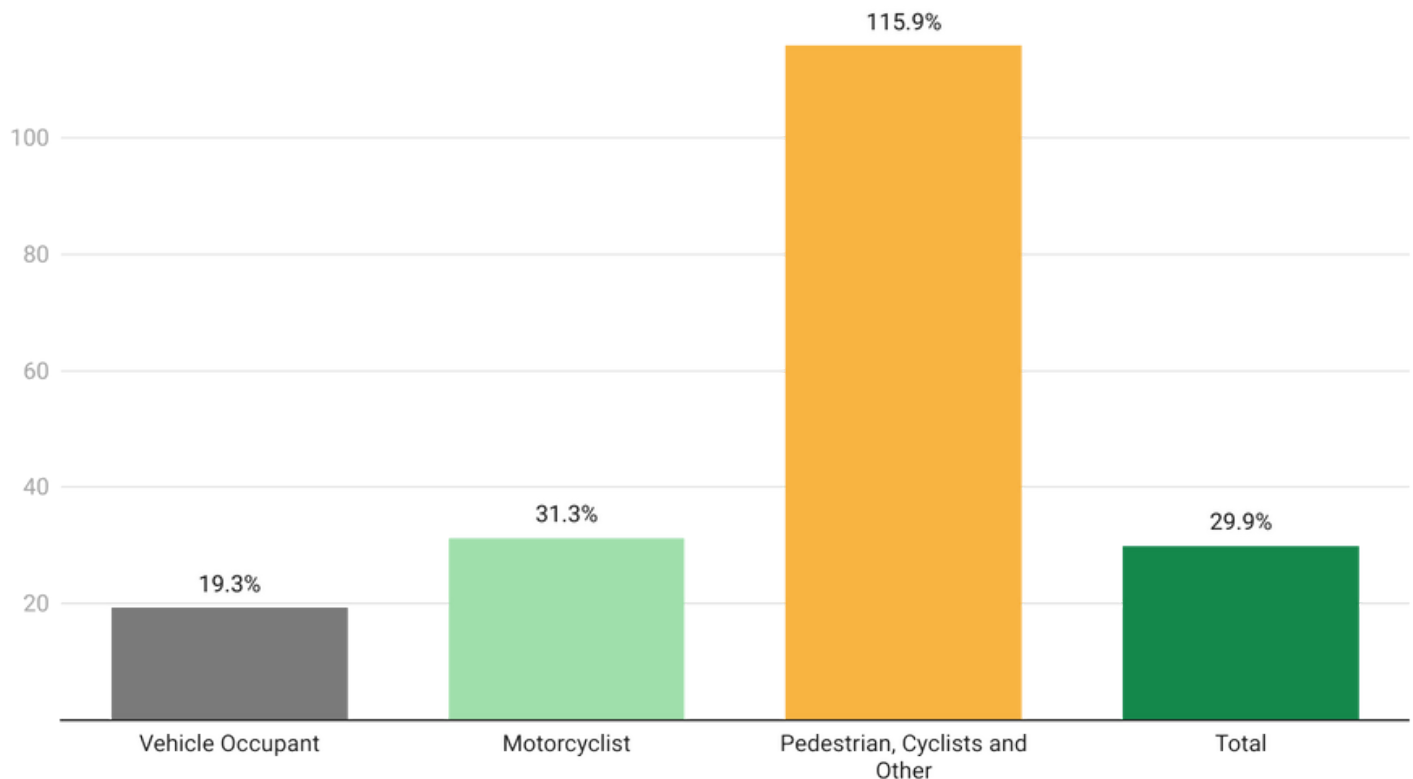
Fatality Rates by State, 2010 to 2022 (NHTSA)



Our roads are getting more dangerous for all road users, but in particular for pedestrians and cyclists. From 2011 to 2020, the number of vehicle occupants killed in traffic crashes each year increased from 801 to 876, an increase of 19.3%. Similarly, motorcyclists killed increased 31.3% over the same period. However, annual fatalities for pedestrians, bicyclists, and other road users increased from 88 in 2011 to 190 in 2022 – an increase of 115.9%, almost 10 times the rate of other road users.[93]

Figure 16. Rates of traffic fatalities are increasing much faster for pedestrians, cyclists, and others.

Fatality Rates by Person Type, 2011 to 2020 (NHTSA)

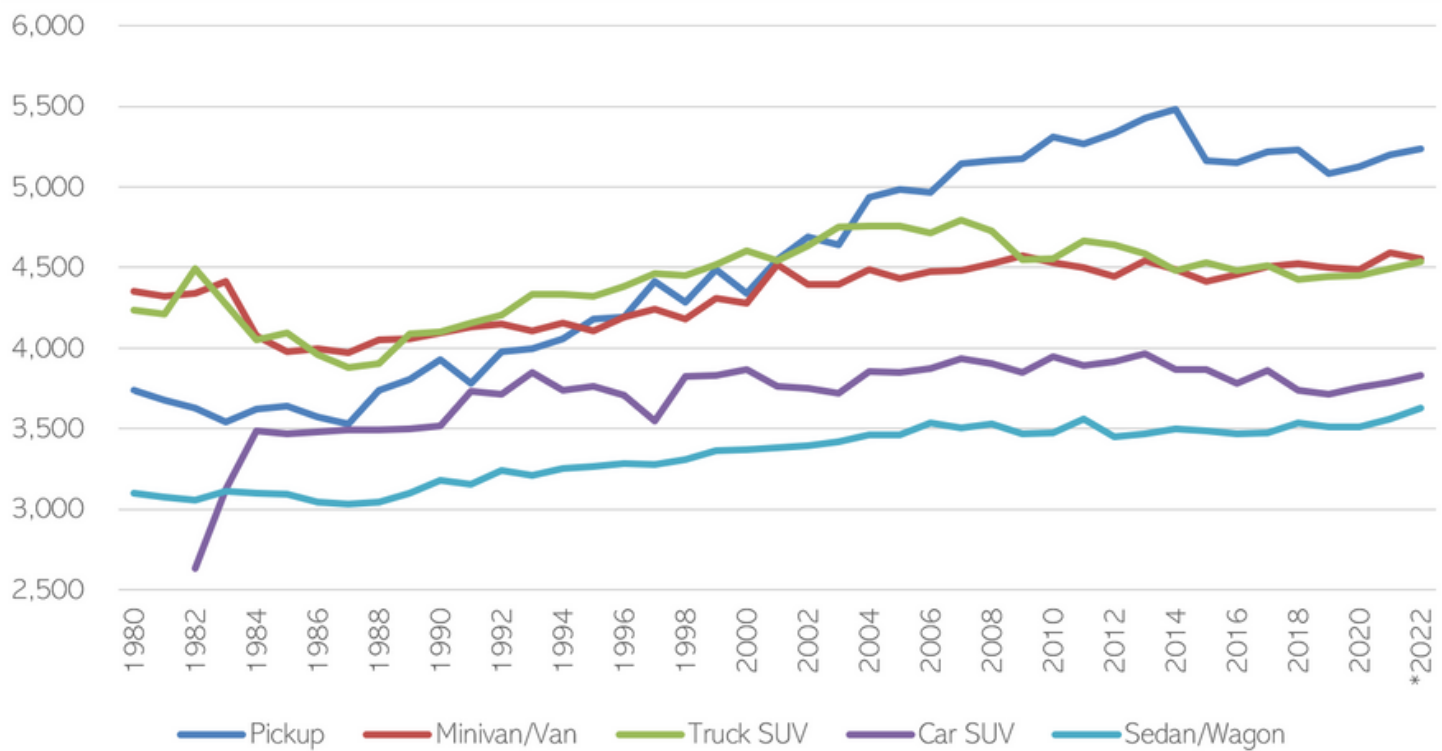


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Nationally, people are buying increasingly larger and heavier vehicles. The national average new vehicle weight has increased by 34.1% since 1980, and in model year 2021 reached the highest point on record at 4,329 pounds.[94] Additionally, people are increasingly purchasing larger vehicle types – in 1981 the heaviest types of cars – pickups, truck SUVs, minivans, and vans – represented 16.5% of vehicles purchased. In 2021, these vehicle types were 62.9% of vehicles purchased.

Figure 17. Average vehicle weight has increased 34.1% since 1980.

Average Vehicle Weight by Type, 1980-2022 (US EPA)



Large vehicles are less safe for road users not in a vehicle. Large vehicles — SUVs, pickup trucks, and vans — are more likely than cars to hit pedestrians when making turns.[95] SUVs are “two to three times more likely than smaller personal vehicles to kill people walking in the event of a crash” and SUVs and trucks are involved in a third of pedestrian injuries and 40 percent of pedestrian deaths.[96]

Too Much Driving Worsens Health Outcomes

Commute mode — driving, transit, or active transportation — and commute time impact health outcomes. Switching from car travel to active travel has been demonstrated to lead to increases in physical and mental health.[97] Across 59 of the largest U.S. cities, each 1% increase in the rate of commuters who bike and/or walk to work coincides with a 0.5% increase in residents who get the recommended daily amount of aerobic activity.

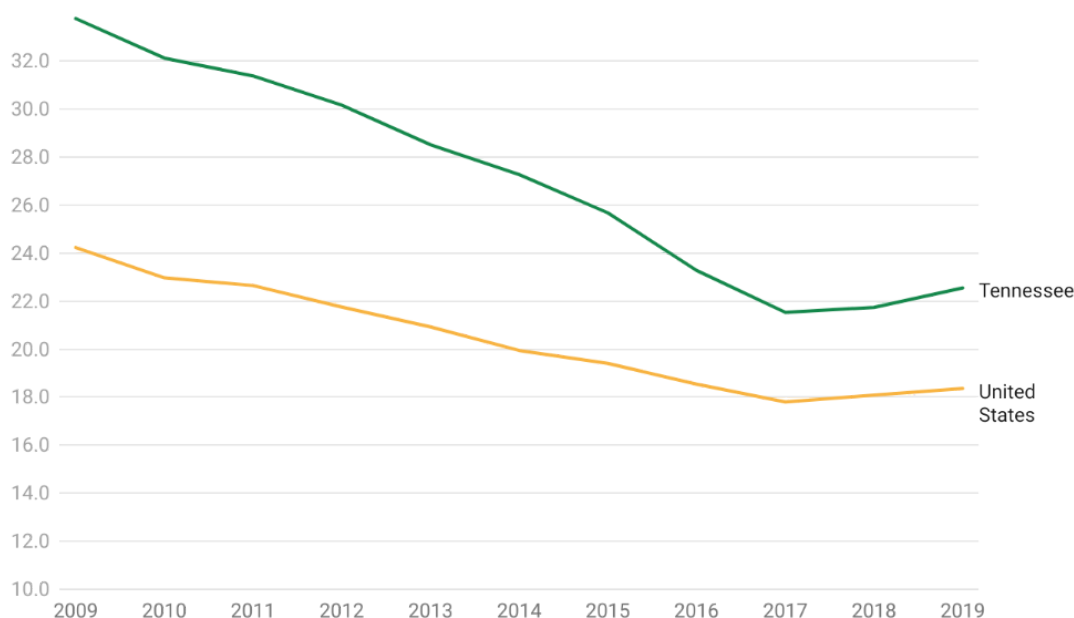
Conversely, higher rates of driving are associated with worse health outcomes, such as obesity, diabetes, and hypertension.[98] Longer commutes have been linked to poor health behaviors like higher rates of smoking, insufficient physical activity, and lack of sleep,[99] and associated with poor health outcomes such as lower cardiorespiratory fitness, increased Body Mass Index (BMI), higher blood pressure, and higher continuous metabolic scores.[100] In Tennessee, the health outcomes most closely associated with a lack of physical activity are extremely poor. Tennessee ranks 39th in adult obesity, 47th in adults with diabetes, and 47th in adults with heart disease.[101]

Driving Contributes to Poor Air Quality

Our commute choices also impact the quality of our air. Driving vehicles with internal combustion engines increases chemicals like carbon monoxide and nitrogen dioxide in the air, as well as particulate matter. These substances not only trigger acute attacks in people with asthma, but also contribute to the development of asthma and respiratory infections, cancer, heart disease, and birth defects.[102] Particulate matter contributes to cardiovascular disease.[103] Nationally, Tennessee ranks 45th in air pollution.[104] In 2019, an estimated 1,517 Tennesseans died due to air pollution, ranking 11th in the nation.

Figure 18. Pollution-related deaths in Tennessee exceed the national average.

2009-2019 Global Burden of Disease Study (IHME)



One solution to lower emissions from driving is to promote the adoption of electric vehicles. Electric vehicles, including battery powered EVs (BEVs) and plug-in hybrid EVs (PHEVs), accounted for less than 1% of registered vehicles in Tennessee and are estimated to reach only 8.6% of vehicles of 2040. [105] BEV ownership is expected to represent 6.0% of that 8.6%, and PHEVs the other 2.6%. While EV ownership in Tennessee is increasing at an annual growth rate of 1.4%, our adoption rate lags behind other states and would need to nearly double to meet national average forecasts.

Buying electric vehicles can save families anywhere from \$800 to \$1,300 dollars every 15,000 miles, and the total lifetime ownership costs of electric vehicles can be anywhere from 5.0% to 17% cheaper than gas-powered vehicles.[106] Electric vehicles can also provide health benefits and financial savings for local communities by reducing air pollution. A recent study found that for every additional 20 electric or zero-emissions vehicles per 1,000 people, researchers saw a 3.2% drop in the rate of asthma-related ER visits.[107] Widespread adoption of EVs in Tennessee would result in a staggering \$24.9 billion in public health benefits (e.g., fewer premature deaths, asthma attacks, and lost workdays) over the next 30 years.[108]

The improved environmental impacts, lower financial costs, and overall consumer market trends have the potential to drive EV growth in Tennessee, and it is estimated that EVs will become a majority of all passenger vehicles sold in the US as early as 2030.[109]

Tennessee's historic investments in electric vehicle (EV) and battery production alongside our deployment plan for charging infrastructure have prepared us for economic competitiveness, building reliable supply chains, and maintaining energy independence.[110] To achieve the benefits EVs can provide, Tennessee should continue to invest in research and innovation to further develop EV technologies and their integration with existing infrastructure, support consumer adoption and household charging networks, and avoid high registration fees that undermine market demand.[111] Electric vehicles cannot, however, solve our air pollution challenges on their own and would need to coincide with substantial VMT reduction to achieve climate goals. California's Air Resources Board (CARB) adopted new VMT-reduction targets in December 2022, aiming for 25% reduction in 2030 and 30% in 2040.[112] The Rocky Mountain Institute (RMI) estimates that the US needs to reduce VMT by 20% by 2030 to limit warming below 1.5 degrees.[113]

Tennessee's Lack of Transportation Options Imposes Significant Costs on Working Families

Our transportation system is critical for economic growth, but the types of infrastructure we do or do not invest in can impact the financial health of Tennessee families and their access to opportunities.

Economic Impacts

An efficient, safe, and comprehensive transportation infrastructure system is necessary for economic growth; however, congestion can have detrimental impacts on productivity and economic growth. Recent research indicates that traffic congestion can indicate a healthy, growing economy; however, after a threshold of 4.5 minutes of delay per one-way commute, congestion can slow job growth.[114] According to the Reason Foundation, creating free-flow traffic conditions throughout a region could increase productivity by 30%.[115]

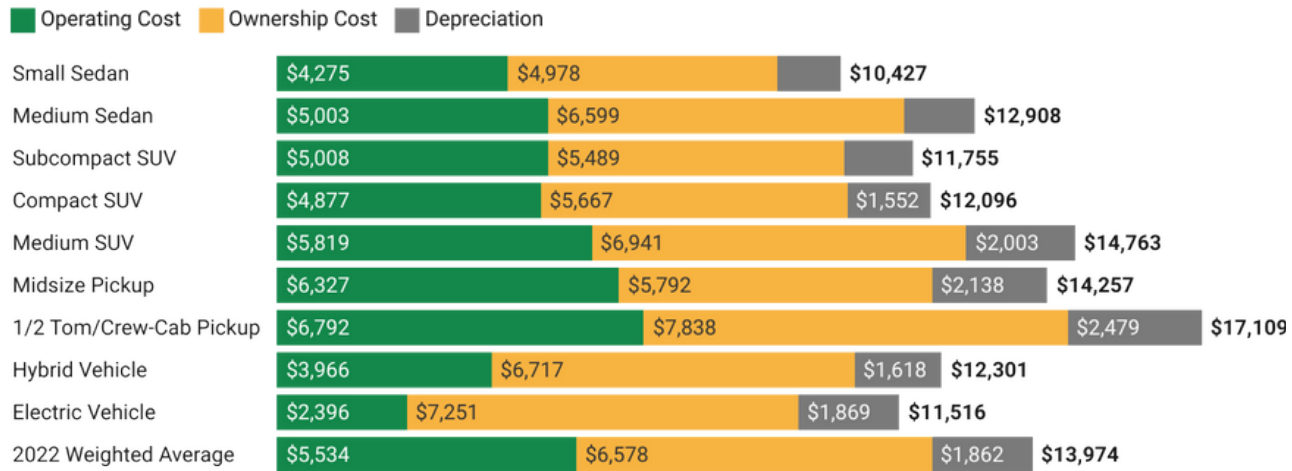
The design, construction, and maintenance of transportation infrastructure in Tennessee supports approximately 72,000 full-time jobs across all sectors of the state economy. Approximately 1.4 million full-time jobs in Tennessee in key industries like tourism, retail sales, agriculture and manufacturing are completely dependent on the state's transportation network.[116]

Financial Impacts

Owning and operating a car is expensive and is particularly burdensome on low-income working families. According to the AAA, average cost of car ownership in 2022 was \$13,974, including ownership, operating, and depreciation costs. Costs range from a low of \$11,755 for a small sedan to a high of \$17,108 for a ½ Ton Crew-Cab pickup. Electric Vehicles (EVs) have lower overall costs due to their lower operating expenses.[117]

Figure 19. On average, annual car ownership costs were \$13,974 in 2022.

Average Car Ownership Cost, 2022 (American Automobile Association)

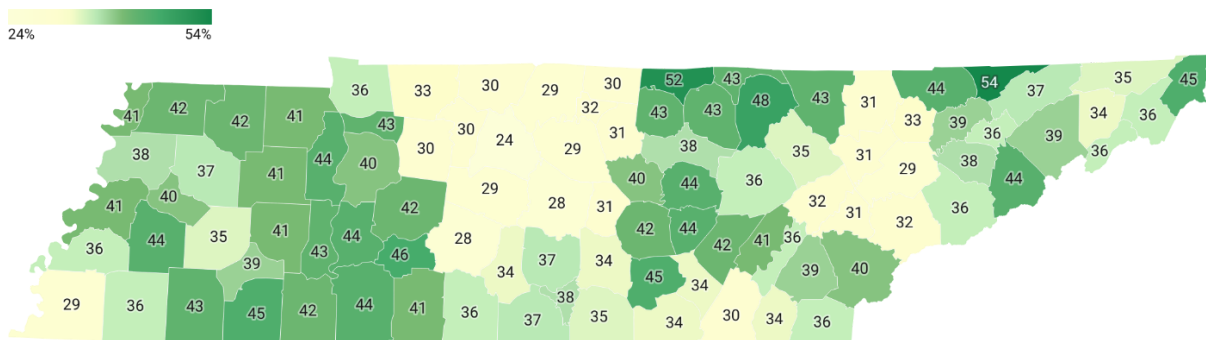


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Transportation costs represent 32% of household income for moderate-income families statewide, giving Tennessee the 43rd highest transportation cost burden nationally.[118] Transportation costs range from a low of 24% of a moderate-income family in Davidson County to a high of 54% of a moderate-income family in Hancock County. Transportation costs are considered affordable when they are less than 15% of a household's income, meaning transportation costs are unaffordable for moderate-income households in all 95 counties in Tennessee.

Figure 20. On average, transportation costs are 32% of a moderate-income family's expenses.

Transportation Costs as a Percentage of Moderate-Income Family Expenses, 2022 (CNT)



Tennessee roads cost each motorist hours in lost time and thousands in extra vehicle costs annually. In the major cities, drivers lose 7 to 41 hours to congestion per year,[119] costing them about \$1,376 to \$2,019 each in lost wages, fuel, crashes, and extra vehicle operating costs.[120] Motor vehicle crashes cost Tennessee an estimated \$1,472 per capita, or \$10 million in 2019. Out-of-pocket payments represented the second largest source of payment for the overall costs of motor vehicle crashes at 23%, the largest being 54% of private insurers.[121]

For families without a vehicle or without the ability to drive, accessing jobs can be difficult. Transit is an especially important tool for workers to access quality jobs. In a 2019 study, Nashville and Memphis ranked 44th and 46th, respectively, out of the largest 50 cities in transit access to jobs.[122] In Tennessee, it is high-income households with the greatest transit access. In Memphis, Nashville, and (to a lesser extent) Knoxville, those with incomes over \$100,000 have better access to transit. In Memphis, the top-earning 1% of residents have 35% of the city's transit connectivity, while the lowest-earning 71% of residents have only 7% of the connectivity.[123]

Access to Opportunity and Upward Mobility

Economic mobility is the ability of a person to change their socio-economic status over their lifetime and is determined by many factors. Transportation can impact economic mobility by providing people with the ability to access educational opportunities, well-paying jobs, and childcare.[124] According to an on-going study conducted at Harvard, "commuting time has emerged as the single strongest factor in the odds of escaping poverty. The longer an average commute in a given county, the worse the chances of low-income families there moving up the ladder." [125] In addition, neighborhood walkability has a sizable positive impact on the ability of a low-income child to earn more than their parents by the time they are in their thirties.[126] Nationally, Tennessee ranks 40th in Economic Opportunity.[127]

Changing Our Outcomes Requires Changing the Way We Fund Transportation

Tennessee's infrastructure needs are increasing, and providing additional modes of transportation would require significant investment. Yet the currently available revenue streams are unable to keep up with both the needs of the existing system and the need to create more diverse, affordable, and efficient transportation options. Rethinking our approach to financing could both improve congestion and provide better health, safety, and economic outcomes for Tennessee families.

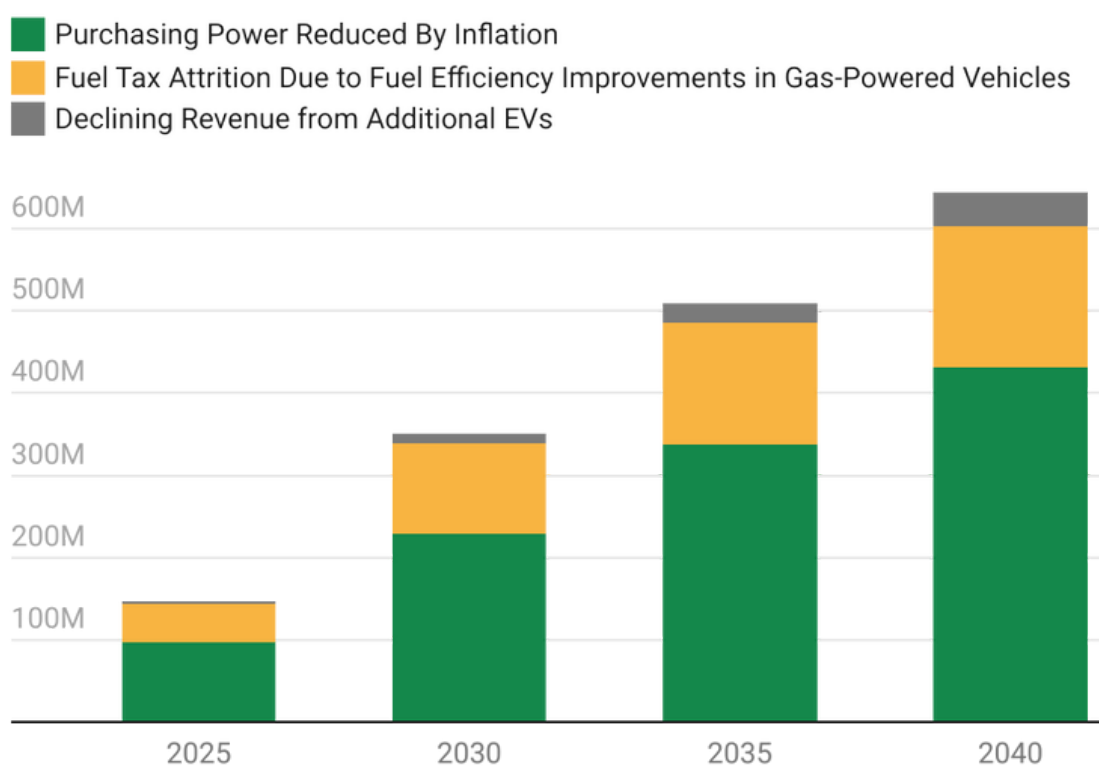
The costs of maintaining and improving Tennessee's current infrastructure are rapidly outgrowing our ability to fund them. TACIR estimates Tennessee would need \$34.7 billion in transportation infrastructure improvements over the next five years.[128] This amount reflects increasing costs and new projects as Tennessee's population grows and existing infrastructure continues to deteriorate.

Tennessee's gas tax revenue is declining and is estimated to provide \$350 million less revenue by 2030 than anticipated. Higher costs of labor, materials, and overall market inflation are reducing the purchasing power of Tennessee's static gas tax and registration fee revenue, representing 65% of the overall revenue gap. The National Highway Construction Cost Index compiled by the FHWA estimates that overall roadway construction costs have increased almost 50% between 2020 and 2022.[129] Additionally, the average new vehicle fuel economy has increased 32% since 2004 and is expected to reach 27 miles per gallon by 2030, decreasing state gas tax revenues by \$110 million.[130]

Increasing electrification of passenger vehicle fleets will further negatively impact the revenues generated from gas taxes. While new electric vehicle registration fees can slightly offset this loss, Tennessee's existing gas tax-based user fee model will be increasingly incompatible with the changing transportation economy.

Figure 21. Tennessee's gas tax will lose greater amounts of revenue from inflation and fuel efficiency.

Factors Affecting the State Gas Tax Revenue, 2022 (TACIR)



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New investment strategies from the federal level can change funding patterns but will rely on the state to maximize benefits. The 2021 Infrastructure Investment and Jobs (IIJA) Act replaced the 2015 FAST Act as the federal funding and authorization bill for surface transportation from 2021 to 2026. This transformational investment is significantly larger than its predecessor the FAST Act, with funding increases of 90% in highway programs, 79% in public transportation, and 750% in railroad infrastructure funding.

The IIJA creates almost \$200 billion in US Department of Transportation grant programs alone, emphasizing the need for state and local authorities to aggressively seek the funding they need from federal sources.[131] To amplify the impact of the new federal dollars in the coming years, local jurisdictions will require local dedicated funding and state support to secure federal funds, mitigate economic headwinds, agree on regional priorities, and secure access to the workforce needed to expedite project delivery.[132]

Tennessee’s funding strategies are adapting but need broader vision to have real impact. Tennessee’s 2017 IMPROVE Act increased the gas tax for the first time since 1989 and identified more than 960 projects in all 95 counties. But protracted development phases are costing 40% more than is budgeted, and the project backlog is growing quickly.

The 2023 Transportation Modernization Act provided an improved toolkit for project-delivery methods, an inflation-indexed electric vehicle registration fee, and a one-time \$3.3 billion boost from the general fund to help accelerate project timelines. Although these efforts will help to maintain our existing system of infrastructure, they are largely extensions of the status quo that favor outdated legacy projects and an infrastructure system that privileges automobiles at the cost of other modes of transportation.

How local governments choose to spend increasingly tight funds will be a crucial factor. State and local revenues trended down more in 2022 than in any year since 2010, and unpredictable market trends post-pandemic have complicated the ability of local jurisdictions to provide stable funding from traditional sources such as property and sales taxes.[133] The increasing number and funds available from federal grants mean that local leadership is crucial to successful federal investment in Tennessee. While many local officials are prioritizing federal, state, and local infrastructure dollars for maintenance and upgrades, local governments need to make tough, conscious decisions about what projects to pursue rather than simply greenlighting old capital projects and long-standing ideas.[134]

Public-private partnerships can deliver small scale innovative funding mechanisms. Public-private partnerships facilitate private investments in public assets like road infrastructure and mass transit. This approach can also be applied to other infrastructure initiatives like mapping, trip planning, bikeshare applications, and pedestrian safety developments. State and local officials can facilitate partnerships with community stakeholders like hospitals, sports franchises, educational institutions, housing developers, and business parks to develop partnership districts. Such districts could have shared responsibility for sidewalks, bicycle lanes, and safe streets that improve quality of life and facilitate local long-range plans. Because public private partnerships place the responsibility of public goods on private partners, however, Tennessee and local jurisdictions should carefully collaborate on project selection, partner identification, agreement negotiations, and performance monitoring mechanisms to preserve and protect the public.

Taken together, these data show that Tennessee's current transportation infrastructure leaves many people and opportunities behind. Fortunately, there are several evidence-based solutions and funding opportunities available, with great potential for making transportation safer, more accessible, and more affordable throughout the state.

1. Prioritize Health, Safety, Opportunity, and Equity in Transportation Investments

Transportation infrastructure impacts all aspects of the lives of Tennesseans, but too often solutions to transportation issues are defined by their ability to address congestion. Congestion, of course, negatively impacts productivity and quality of life, but transportation investments impact Tennesseans' health and safety, their financial well-being and economic opportunity, and determine the ways in which communities move and connect. Our transportation systems are meant to connect us, to each other, to opportunities, to improve quality of life. Our transportation investments must do a better job in prioritizing the outcomes that matter most to Tennesseans.

- ▶ **A) The safety of all road users must be prioritized in planning and engineering decisions for both existing and future infrastructure.** Recent increases in traffic fatalities, particularly for people outside of vehicles, requires designing roads for all users and utilizing federal, state, and local funding to make street improvements that prioritize safety over vehicle throughput and congestion mitigation.
- ▶ **B) Investments should optimize access to opportunities.** Infrastructure can connect people to their communities, but it can also exacerbate unequal access to opportunities and jobs. Focusing on access to jobs and economic opportunity within a certain timeframe (such as a 30-minute commute), particularly for low-income families or those without access to a vehicle, when developing, scoring, and funding transportation projects can ensure that transportation investments create stronger economic outcomes for Tennessee families.
- ▶ **C) Prioritize equity in transportation decisions by meaningfully engaging with communities.** Historically disinvested communities provide the qualitative data and lived experience necessary to inform and reform transportation policies and the use of multimodal strategies. Meeting in the impacted communities, hosting events in places they regularly gather, and offering ways to provide feedback are meaningful ways to engage communities. Those with lived experience might include people with disabilities, those without vehicle access, older adults, parents, and youth and young adults. Institutionalizing community input through public mobility councils or financing community leadership/liaison positions can further help integrate community input into design, planning, and implementation phases. Transportation planning and implementation can be made more equitable by:

1. developing and enacting strategies with the community in all phases of the process;
2. empowering internal staff to lead equity work and ensuring staff is reflective of the community;
3. collaborating with disinvested communities and community-based organizations; and
4. using quantitative tools to measure the outcomes and impacts of decisions and adjust policies as needed.[135]

2. Maximize Capacity of Our Existing Assets

Traditional methods of improving congestion, such as widening highways, will not be sustainable or effective given Tennessee's growing population, the impact of induced demand, and financing constraints.[136] Maximizing the capacity of our existing infrastructure and investing in non-automobile modes of transportation will help to relieve congestion, increase mobility and accessibility, and enhance economic development.

- ▶ **A) Expand Tennessee's Fix it First program to include strategies for optimizing capacity, such as technology and demand management.** Tennessee should continue to invest in maintaining existing assets in good repair and avoid adding more road miles as much as possible and consider expanding its successful Fix it First program. This can be accomplished by utilizing improving technology and engineering principles, as it has with TDOT's SmartWay program, to retool and redesign existing roads and prioritize implementing transportation demand management solutions that can help maximize the benefits of existing infrastructure. Tennessee should continue to focus on minimizing project costs and avoiding delays through careful oversight. Finally, Fix it First policies are vital to maintaining existing infrastructure systems but can prolong the use of outdated infrastructure that no longer reflects modern traffic patterns or local needs. New criteria should be developed to ensure existing infrastructure does not outlive its intended utility. Similar criterion should be used for evaluating proposed projects awaiting funding, but which may have also outlived the needs they were intended to service.
- ▶ **B) Prioritize space and investments in transportation modes that move more people.** Transit is crucial to increasing the capacity of our existing transportation network, as it is more effective at moving individuals from place to place than any other mode of transportation.[137] State and local officials should drastically increase transit funding in Tennessee by identifying dedicated revenue sources for transit, whether from a local sales tax or a percentage of statewide choice lane revenues, and aggressively seek federal grants to build out, improve, and maintain existing transit capital networks. TDOT has identified \$3.185 billion in transit and multimodal transportation needs in recent urban congestion studies, and these projects should be funded and prioritized as TDOT implements the Transportation Modernization Act.[138]

- ▶ **C) Maintain and promote land use policies that support multimodal transportation.** State and local planning officials should dedicate right-of-way for transit service in new developments and revitalization projects similar to the Nashville East Bank project, the Memphis Riverfront development, and the Ford Blue Oval City. State, local, and federal officials should collaborate to invest in new expansions and service improvements for regional rail lines such as the WeGo Star, the interstate Southeast Corridor passenger rail effort, and the proposed regional rail lines connecting Memphis, Nashville, Chattanooga, and Atlanta.[139] Local officials should reform and adopt zoning policies and utilize regulations to develop higher density communities centered around complete streets principles that combine a variety of housing options with access to transit, sidewalks, and protected bicycle paths so residents can safely and conveniently reach jobs, amenities, services, schools, and recreation.[140]

3. Consider Additional Revenue Sources Beyond the Gas Tax

Tennessee's accelerating economic and population growth linked with our rapidly aging or outdated transportation system will bring new challenges in advancing new projects. Tennessee has outgrown its transportation financing model and will require new philosophies to meet demand and finance needed infrastructure improvements.

- ▶ **A) The gas tax is no longer a viable long-term funding mechanism, and Tennessee should consider a mileage-based user fee.** Tennessee's transportation funding model relies largely on state gas taxes but increasing inflation and fuel efficiency put this revenue stream at risk. Tennessee should reevaluate its funding model by exploring the feasibility of mileage-based user fees to potentially replace the gas-tax long-term. This approach would reduce the impact of market and consumer trends on revenue while still charging motorists in proportion to their road usage. Tennessee is also one of only five states that does not issue bonds to finance transportation projects, and of those five has the highest population by more than 3.8 million. Expanding financing options would allow TDOT to issue bonds strategically to expedite high value projects that maximize outcomes and improve communities.
- ▶ **B) Tennessee should aggressively pursue federal funding opportunities for transportation infrastructure.** Recent federal opportunities, such as the Infrastructure Investment and Jobs Act and the Inflation Reduction Act, contain numerous options for road, transit, and active transportation investments. Tennessee should not leave available transportation dollars on the table for other states to take advantage of and should maximize its share of federal funds by aggressively pursuing competitive grants. TDOT and other state agencies should facilitate technical assistance for local jurisdictions and MPOs/RPOs pursuing competitive grants, especially for smaller jurisdictions who may otherwise lack the necessary staff or support.

- ▶ **C) Tennessee’s major metropolitan areas, particularly Nashville and Memphis, should consider adopting dedicated funding for transit and multimodal transportation infrastructure.** Forty-six of the 50 largest cities nationwide have adopted dedicated funding sources for transit, 39 of which utilize sales taxes, ranging from 0.375% to 2%, which can generate an average of almost \$394 million in annual revenue. As the economic engines of the state, and with Nashville and Memphis representing two of the four largest metros in the nation without dedicated funding, Tennessee’s urban areas should pursue dedicated funding sources for transit and multimodal transportation. Dedicated funding is crucial to maintain quality service, help transportation officials plan long-term investments, and to expand transit services in Tennessee. Furthermore, local investments should prioritize projects that address safety issues and public health benefits and avoid allocating more money than necessary to road expansions.

Conclusion

Tennessee’s current transportation system is primarily designed, built and funded for driving, resulting in very limited transportation options for Tennessee residents and workers. This lack of transportation options has negative impacts on Tennesseans' quality of life, including growing traffic congestion, increasing traffic fatalities, and less healthy and wealthy Tennessee residents. These negative consequences will compound as the state continues to grow. In addition, our transportation revenue, funded through the gas tax, cannot keep up with our transportation needs. Rethinking how we fund our transportation system and creating a more efficient and cost-effective system with more transportation options will not only support the state’s economic health, but also the health and well-being of all Tennesseans.

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Written by:

Matthew Kenny, Policy Associate - Amy Gore, Policy & Research Director

Other Contributing Staff:

Erin Hafkenschiel, President - Ben Gold, former Research Assistant

For further information, email us at info@thinktn.org.