Greenville-Pickens Area
Transportation Study

HORIZON 2050 LONG RANGE TRANSPORTATION PLAN

OCTOBER 2026



CHAPTER 5
Current System Performance

CHAPTER 5: CURRENT SYSTEM PERFORMANCE

Understanding current system performance is a critical step in developing the *Horizon 2050 LRTP.* This section provides a snapshot of how the existing multimodal transportation system is functioning today across the GPATS area. It establishes a baseline against which future needs, trends, and investments can be evaluated.

Transportation Network

The GPATS transportation network consists of an interconnected system of roadways, transit services, bicycle and pedestrian facilities, freight corridors, and supporting infrastructure that collectively serve the region's mobility needs. The roadway system includes approximately 309 centerline miles, spanning interstates, principal arterials, minor arterials, collectors, and local roads. Key facilities such as I-85, I-385, US 25, and US 29 serve as regional mobility spines, accommodating both passenger and freight travel.

FUNCTIONAL CLASSIFICATION	DESCRIPTION
Interstates	Designed to provide high mobility across regions of the country.
Principal Arterials	Designed to provide high mobility to major metropolitan areas, provide intra-area travel, and allow for mobility to adjacent land uses.
Minor Arterials	Designed for moderate length trips, serve geographies smaller than principal arterials, and provide direct connections to the higher arterial system.
Major/Minor Collectors	Designed to collect traffic from local roads and deliver it to the nearest arterial. Collectors do not accommodate long-distance travel. Collector roads outside urban areas are further classified into "major collector" and "minor collector" designations.
Local Roads	Designed to provide access to neighborhoods, farms, residences, businesses and abutting properties in an area.

Table 6 | Functional Classifications (SC Roadway Design Manual, 2021)

The National Highway System (NHS) is a network of roadways designated by the Federal Highway Administration as critical to the nation's economy, mobility, and defense. Within the GPATS region, the NHS includes Interstate facilities and other principal arterial roadways that provide regional and interstate connectivity, facilitate freight movement, and connect major activity centers. These corridors carry a significant share of passenger and commercial traffic and are essential to supporting economic development, emergency response, and access to key destinations. Because of their importance, NHS routes are subject to federal performance monitoring requirements and are eligible for specialized federal funding programs that support the preservation and improvement of critical transportation infrastructure.

Traffic demand across the network continues to reflect the region's growth patterns, with higher volumes concentrated in urbanized areas and along major commuting corridors. Current Annual Average Daily Traffic (AADT) volumes range up to 142,800 with the highest volumes observed along I-85. This pattern highlights the importance of maintaining capacity and reliability along critical corridors.

DRAFT

In addition to roadway infrastructure, the multimodal network includes 204 miles of bicycle facilities, 1,119 miles of sidewalks and shared-use paths, and transit services operated by Greenlink covering almost 3,000 daily fixed route revenue miles.[2] The network's overall connectivity varies by geography, with more robust multimodal options in urban centers and more limited access in rural areas.

Overall, the GPATS transportation network remains heavily oriented around the interstate and arterial roadway system, reflecting the region's historic growth and travel patterns. Interstate facilities comprise approximately 126 of the network's 309 centerline miles, underscoring the critical role of I-85 and I-385 in supporting regional mobility, commuting, and freight movement. While the region has expanded its multimodal infrastructure through investments in bicycle, pedestrian, and transit facilities, travel demand remains concentrated along major highway corridors, indicating a continued reliance on automobile travel for most trips.

FACILITY TYPE	EXTENT
Roadway Centerline	183 Miles
Interstate	126 Miles
Bicycle Facilities	204 Miles
Sidewalk & Shared Use Path	1,119 Miles
Transit Routes	12 Routes

Table 7 | Transportation Network Inventory (SCDOT Road Data)

DRAFT

[2] City of Greenville. Quantity of Service. 2026. https://www.greenvillesc.gov/2722/Quantity-of-Service

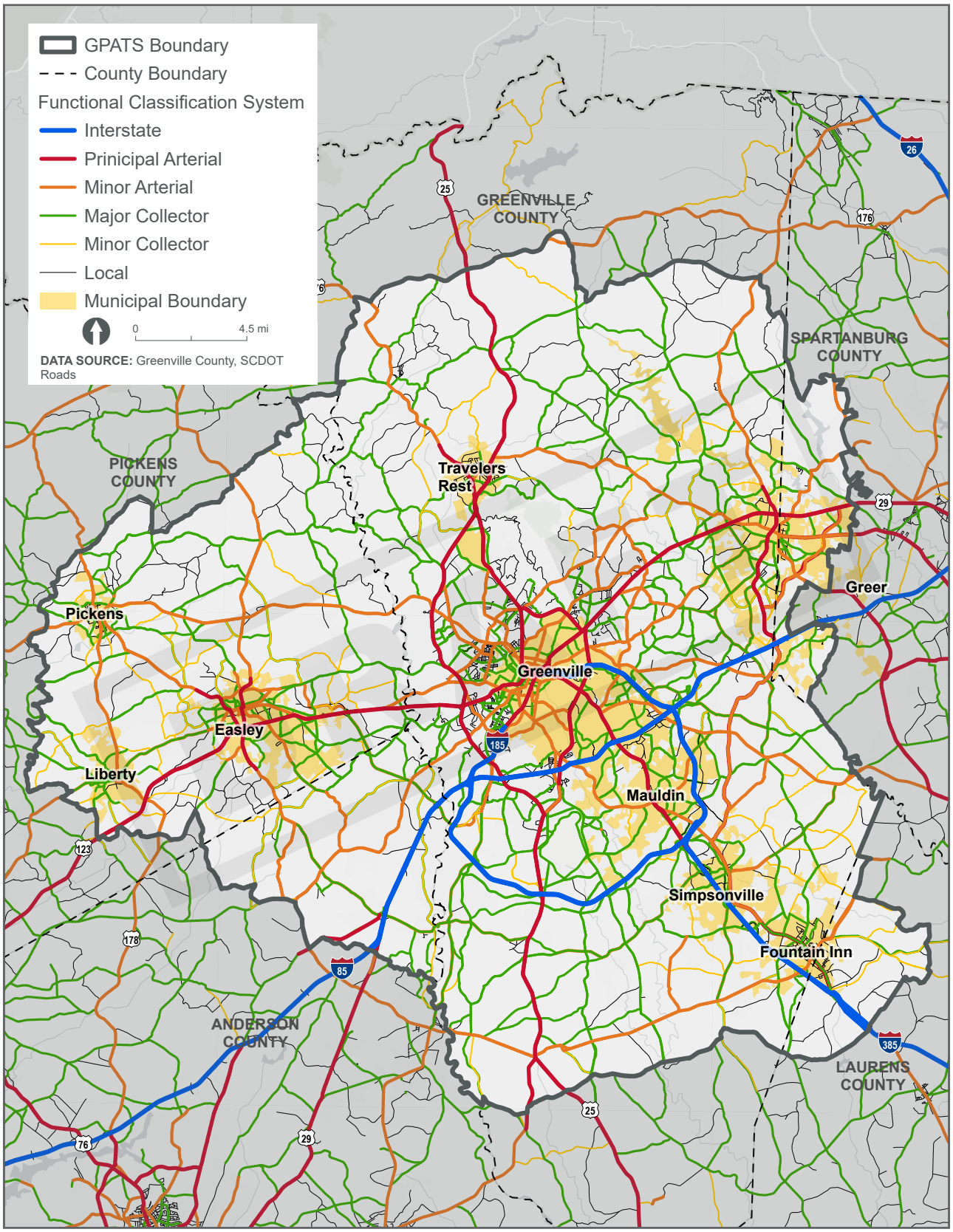


Figure 11 | GPATS Network Functional Classification

BIKE & PEDESTRIAN

Bicycle and pedestrian infrastructure in the region include sidewalk networks, on-street bicycle lanes, greenways, and shared-use trails designed to improve safety and provide alternatives to automobile travel. Many of these facilities are concentrated in urban areas such as Greenville, Travelers Rest, Easley, and Pickens where higher population densities support walking and cycling. Trails and multi-use paths often connect residential neighborhoods with parks, schools, and downtown areas. Some corridors include wide shared-use paths that accommodate both cyclists and pedestrians, while others provide striped or protected bicycle lanes along major streets.

In addition to building new infrastructure, GPATS works with local governments to conduct planning studies and develop bicycle and pedestrian master plans for individual communities. These plans identify gaps in existing networks and recommend improvements such as safer intersections, improved crosswalks, and better connectivity between neighborhoods and activity centers.

Overall, bicycle and pedestrian facilities in the GPATS region are still developing but are becoming a larger focus of regional transportation planning. The region's continued growth, increasing travel demand, and reliance on single-occupancy vehicle travel highlight the need for a more balanced transportation system that provides safe and convenient travel options for people of all ages and abilities. Investments in bicycle and pedestrian infrastructure can help reduce pressure on congested roadways, support first- and last-mile connections to transit, and create more livable and vibrant communities. As communities throughout the region continue to expand, establishing a connected active transportation network will be critical to meeting future mobility needs, improving safety outcomes, and providing residents with additional transportation choices beyond the automobile.

DRAFT

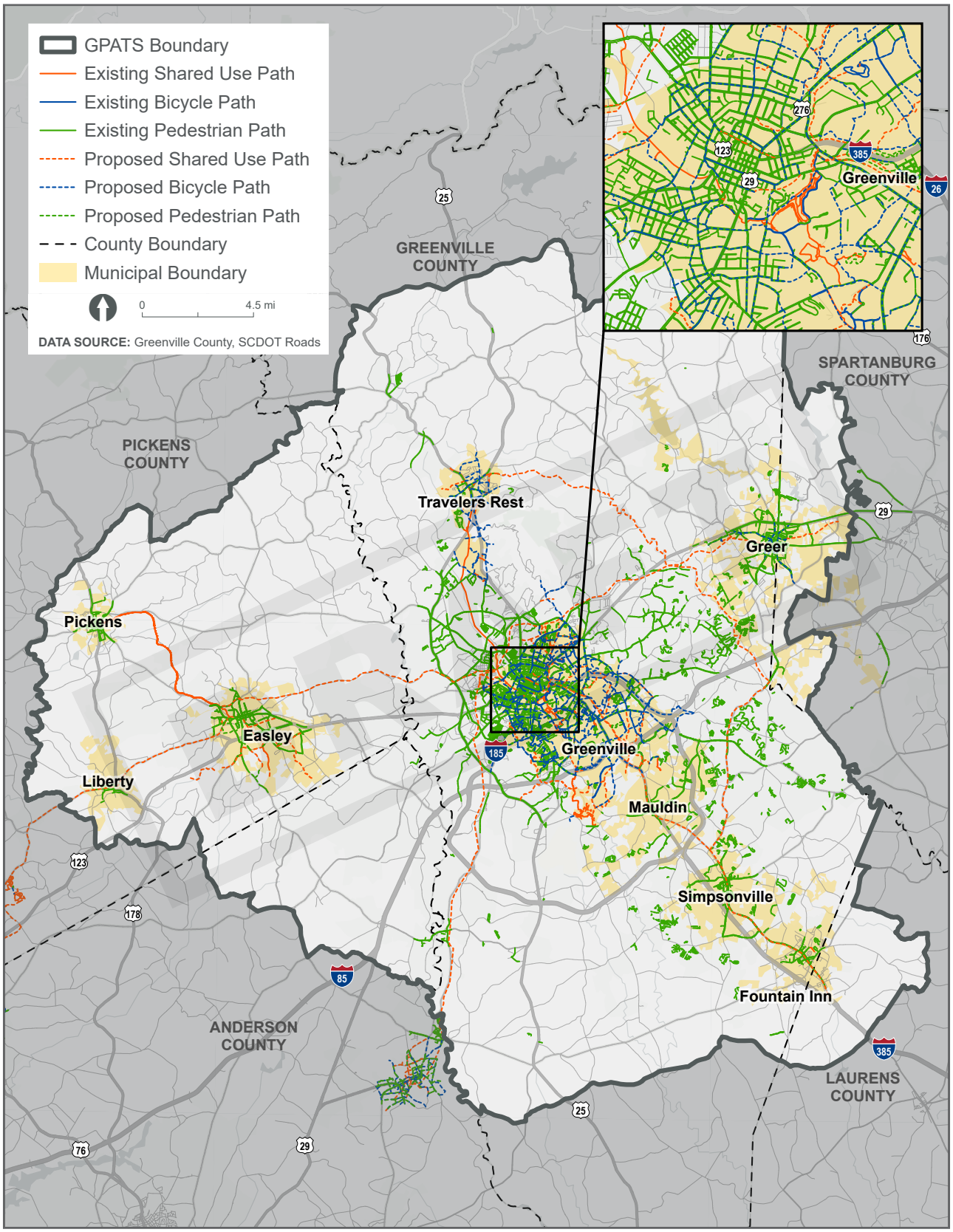


Figure 12 | Existing and Proposed Bicycle & Pedestrian Projects within GPATS Study Area

PUBLIC TRANSPORTATION

Public transportation is expanding in the GPATS region. It currently operates as a local bus service, with service between Greenville-Spartanburg International Airport (GSP) Airport and downtown Greenville scheduled to begin in 2028.

The primary transit provider in the GPATS area is the Greenville Transit Authority (GTA), commonly known as Greenlink, which operates a network of fixed-route buses and accompanying paratransit service throughout much of the City of Greenville and into Greenville County and the Golden Strip. Buses typically radiate from a central hub in downtown Greenville, connecting residential neighborhoods to employment centers, shopping areas, and medical facilities. Two additional transfer stops are located at Haywood Mall and in Mauldin to support transfers from the connector routes to main routes leading to downtown. Service operates Monday to Saturday from 5:30 a.m. to 10:30 p.m., with buses arriving every 60 to 70 minutes. Six routes operate every 30 to 35 minutes during peak hours, with two additional routes added in 2027. While service is not currently offered on Sundays, Greenlink continues to evaluate future opportunities based on community demand.

Although not within the GPATS region, Clemson Area Transit (CATbus) and Clemson University (Tiger Transit) operate near the region. Clemson's Tiger Transit links the university, City of Clemson, and City of Easley to the City of Greenville. CATbus provides bus service linking the City of Clemson, nearby towns, and Clemson University. CATbus was in the GPATS study area until 2023, when, in response to the 2020 census, it became part of the Anderson-Clemson Area Transportation Study (ACATS), previously known as Anderson Area Transportation Study (ANATS). CATbus will remain in the GPATS TIP until all previously programmed GPATS funding is fully spent, at which time it will no longer receive funding from GPATS.

The existing transit network provides an important mobility option for residents, students, older adults, and individuals who may not have access to a personal vehicle. Greenlink is working to reduce the region's reliance on automobile travel by improving service frequencies during peak travel times and expanding geographic coverage, as stated in the Greenlink 2026 Transit Development Plan. The integration of modern technology — such as accurate GPS bus tracking, digital arrival-time displays at stops, and transit signal priority within the City of Greenville — strengthens service reliability, improves communication with riders, and enhances on-time performance across the system. As these tools expand in Greenville County and other municipalities, they will help build a more dependable system, increase public trust, and encourage greater transit use. Investment in public transportation is needed to accommodate future travel demand driven by strong population growth, increasing employment concentrations, and high automobile dependence.

Looking forward, enhancing public transportation will play an important role in providing additional travel choices, improving access to jobs and services, and reducing congestion on key commuter corridors. Opportunities may include expanding service coverage, increasing service frequency on high-demand routes, offering varied service options such as Park-N-Rides, improving connections between residential areas and major employment centers, and strengthening links among transit, walking, and bicycling networks. As the Upstate continues to grow and diversify, investments in transit will help support a more balanced and resilient transportation system while improving mobility for both existing and future residents.

DRAFT

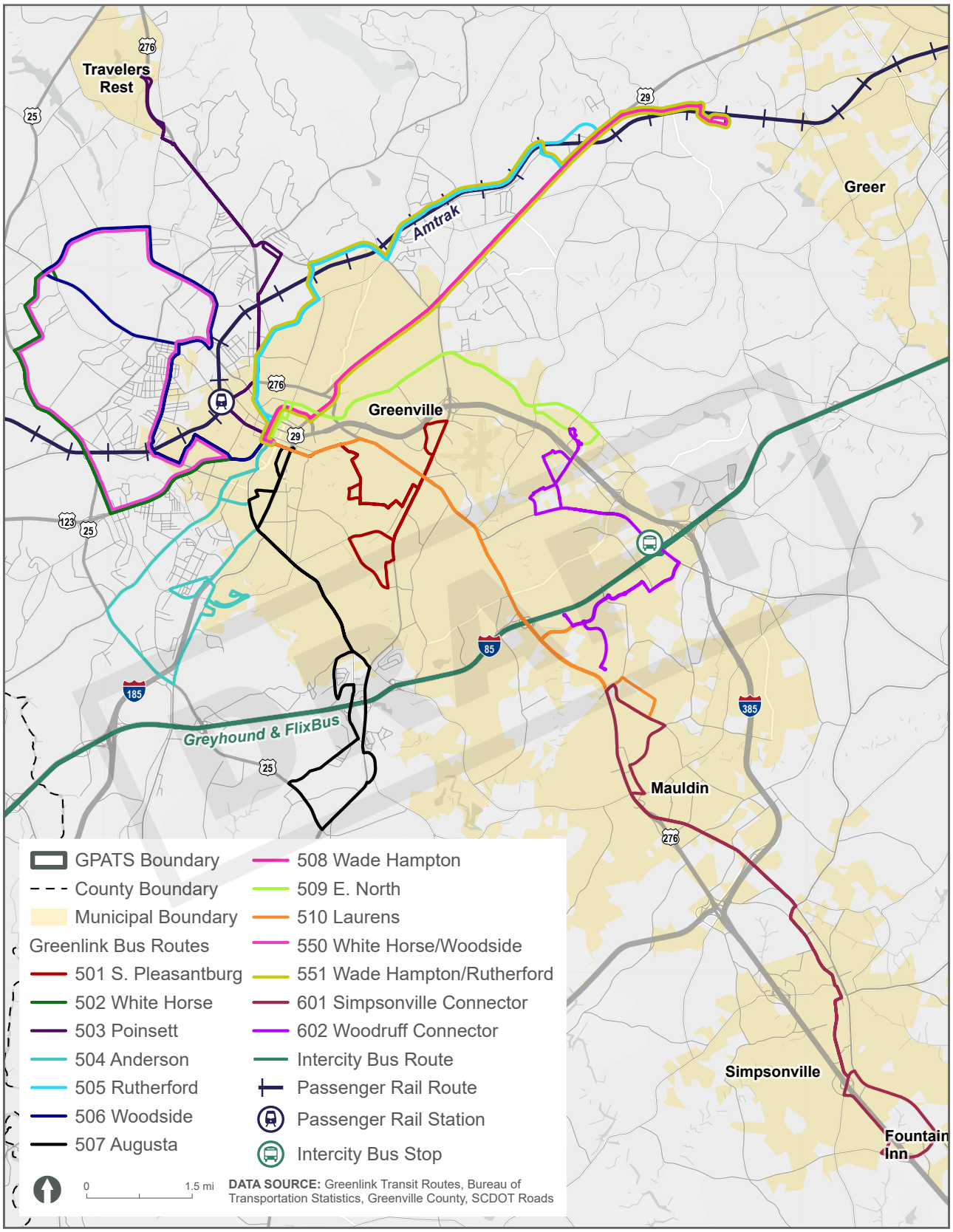


Figure 13 | Greenlink Transit Routes

FREIGHT

Freight transportation is a critical component of the GPATS transportation system and serves as a foundation of the region's economic competitiveness. The movement of goods supports major employment sectors including advanced manufacturing, logistics, warehousing, distribution, and retail trade. The GPATS region benefits from its strategic location within the Upstate of South Carolina, providing access to national markets through an extensive network of highways, rail corridors, airports, and intermodal freight facilities.

The GPATS area is located within the Greenville-Spartanburg Freight Analysis Framework (FAF) district, which encompasses much of the Upstate region. The FAF is used by the US Department of Transportation to analyze freight flows, estimate commodity movements, and forecast future freight demand across all major transportation modes. As a result, the freight system in the GPATS region plays an important role not only in serving local businesses but also in supporting statewide, national, and international supply chains.

Highway Freight Network

Trucking is the dominant mode of freight transportation within the GPATS region. Interstate 85 serves as the region's primary freight corridor and is part of the National Highway Freight Network (NHFN), connecting the Upstate to major markets throughout the Southeast, including Atlanta, Charlotte, and the Port of Charleston. Other important freight routes include I-385, US 25, US 276, and US 29, which provide access to industrial centers, distribution facilities, and regional commercial areas.

The National Highway Freight Network within the GPATS region includes designated Primary Highway Freight System (PHFS) routes, Non-PHFS routes, and Critical Urban Freight Corridors (CUFCs) and Critical Rural Freight Corridors (CRFCs) that provide first- and last-mile connections between freight generators and the broader interstate system. These facilities carry significant volumes of truck traffic and are essential to maintaining efficient freight movement throughout the region. The freight network map illustrates how these corridors connect major employment centers, industrial parks, and freight facilities across Greenville County and the surrounding area.

Rail & Intermodal Freight

Rail freight continues to play an important role in supporting the region's manufacturing and logistics industries. Norfolk Southern operates the primary freight rail corridor through the GPATS region, providing connections to national rail networks and major freight markets. The rail corridor serves several industrial customers and supports the movement of raw materials, finished goods, and bulk commodities.

A key regional freight asset is the South Carolina Inland Port Greer, located just east of the GPATS planning area. The inland port provides a direct rail connection to the Port of Charleston, allowing shippers to transfer containers between rail and truck modes efficiently. This facility has become a major economic driver for the Upstate and has strengthened the region's role as a logistics and distribution hub by expanding access to global markets.

Air Cargo & Freight Support Facilities

The region is also supported by GSP, which serves as a significant air cargo facility for the Upstate. GSP accommodates air freight operations that support advanced manufacturing, automotive production, and time-sensitive shipments. In addition to GSP, several public and private airports located throughout the GPATS region provide access for corporate aviation, specialized freight operations, and business travel.

DRAFT

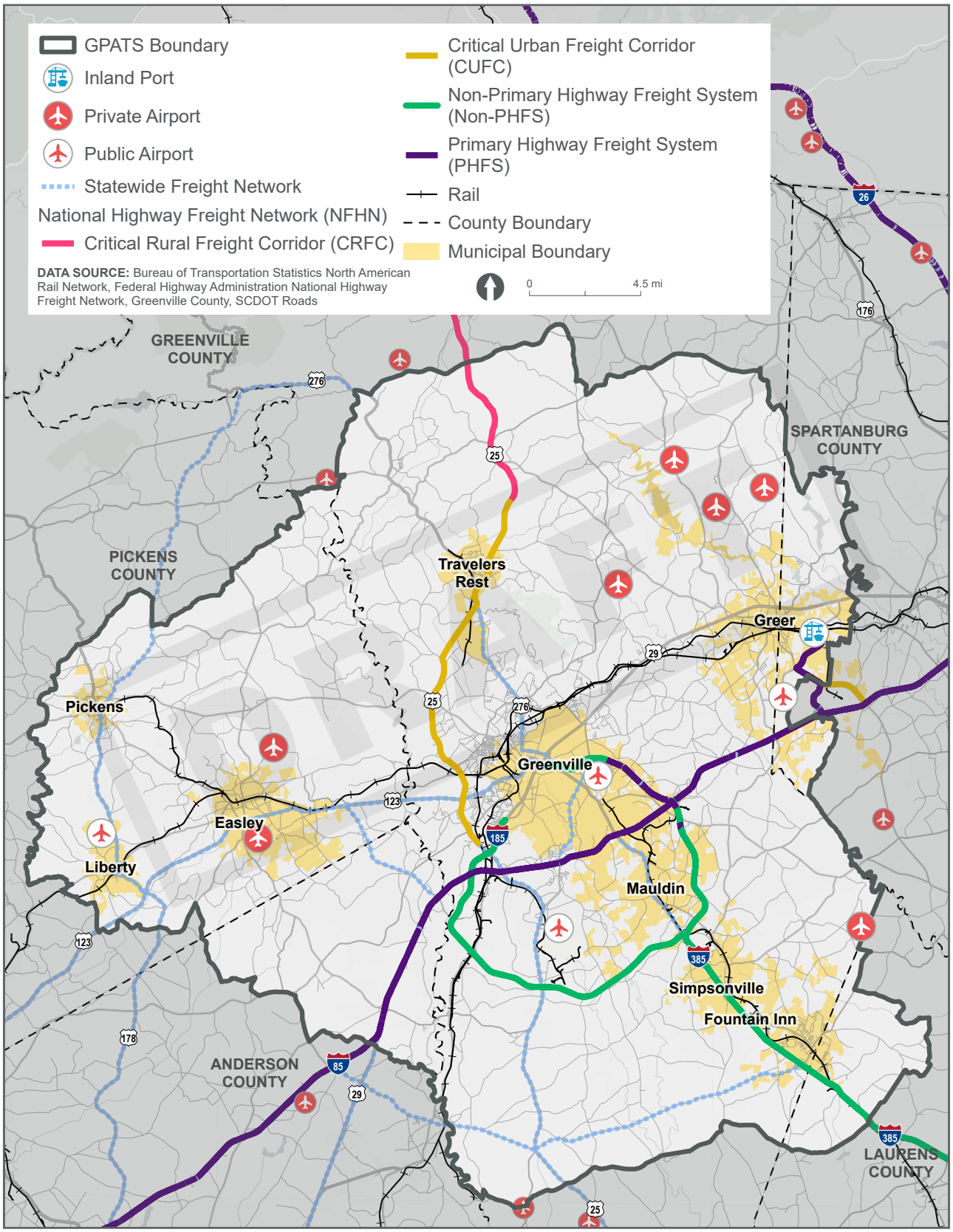


Figure 14 | GPATS Freight Network

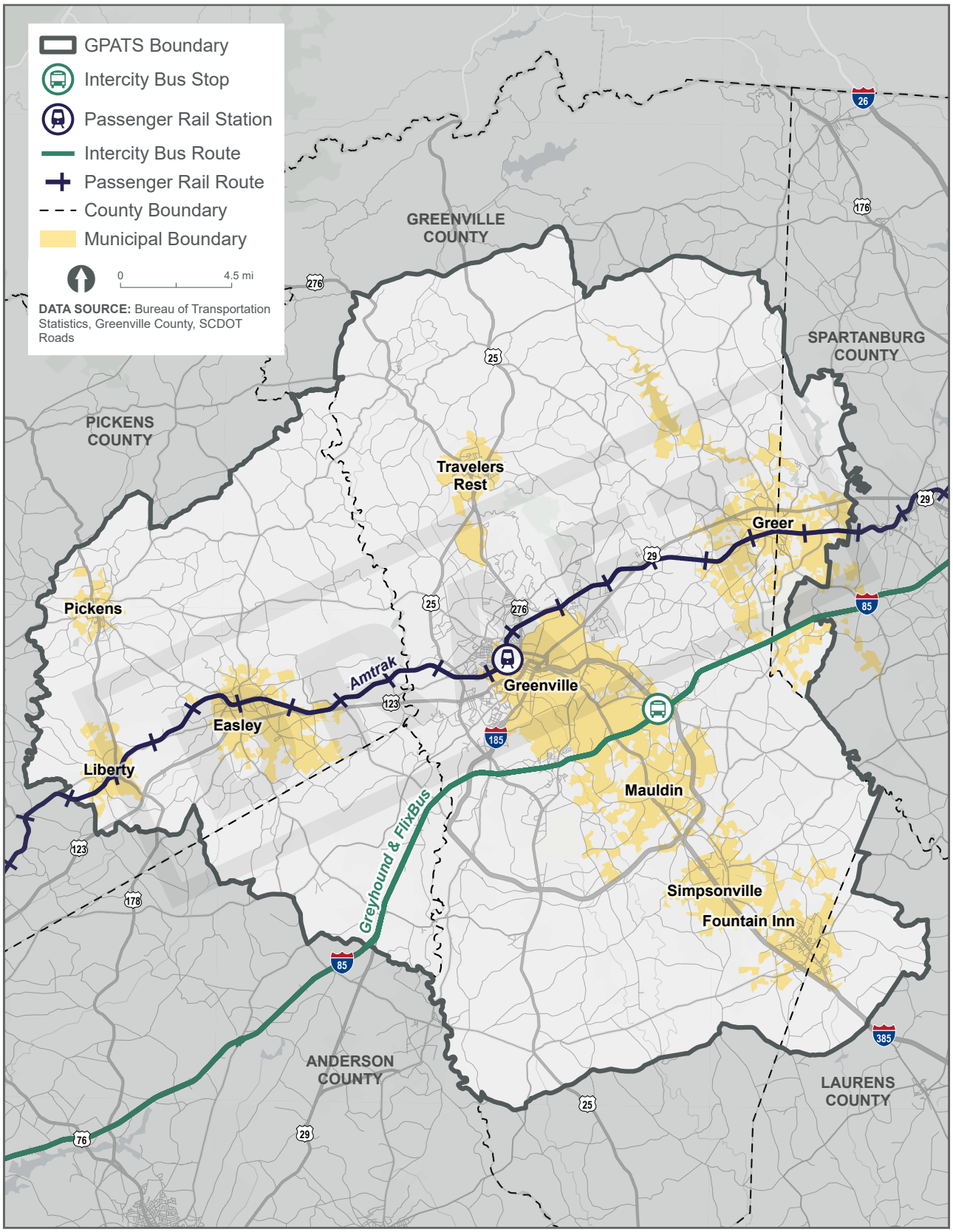


Figure 15 | Interregional Passenger Travel

System Safety

Safety remains a top priority for the GPATS region, with ongoing efforts focused on reducing fatalities and serious injuries for all transportation users. Based on recent data from the South Carolina Department of Public Safety (SCDPS), the region experiences approximately 18,700 crashes annually, including 101 fatalities and 284 serious injuries.

Figure 16 shows annual fatal injuries and suspected serious injuries in the GPATS area from 2020 to 2025, highlighting notable fluctuations over time. Fatal injuries increased from 100 in 2020 to a peak of 122 in 2021, then generally declined, reaching a low of 68 in 2025. In contrast, suspected serious injuries remained consistently higher, peaking at 304 in 2021, dropping to 266 in 2022, and then rising slightly again before settling at 283 in 2025.

Overall, both metrics show a spike in 2021 followed by some variation, but the long-term trend suggests a reduction in fatalities, while serious injuries remain relatively stable with moderate fluctuations.

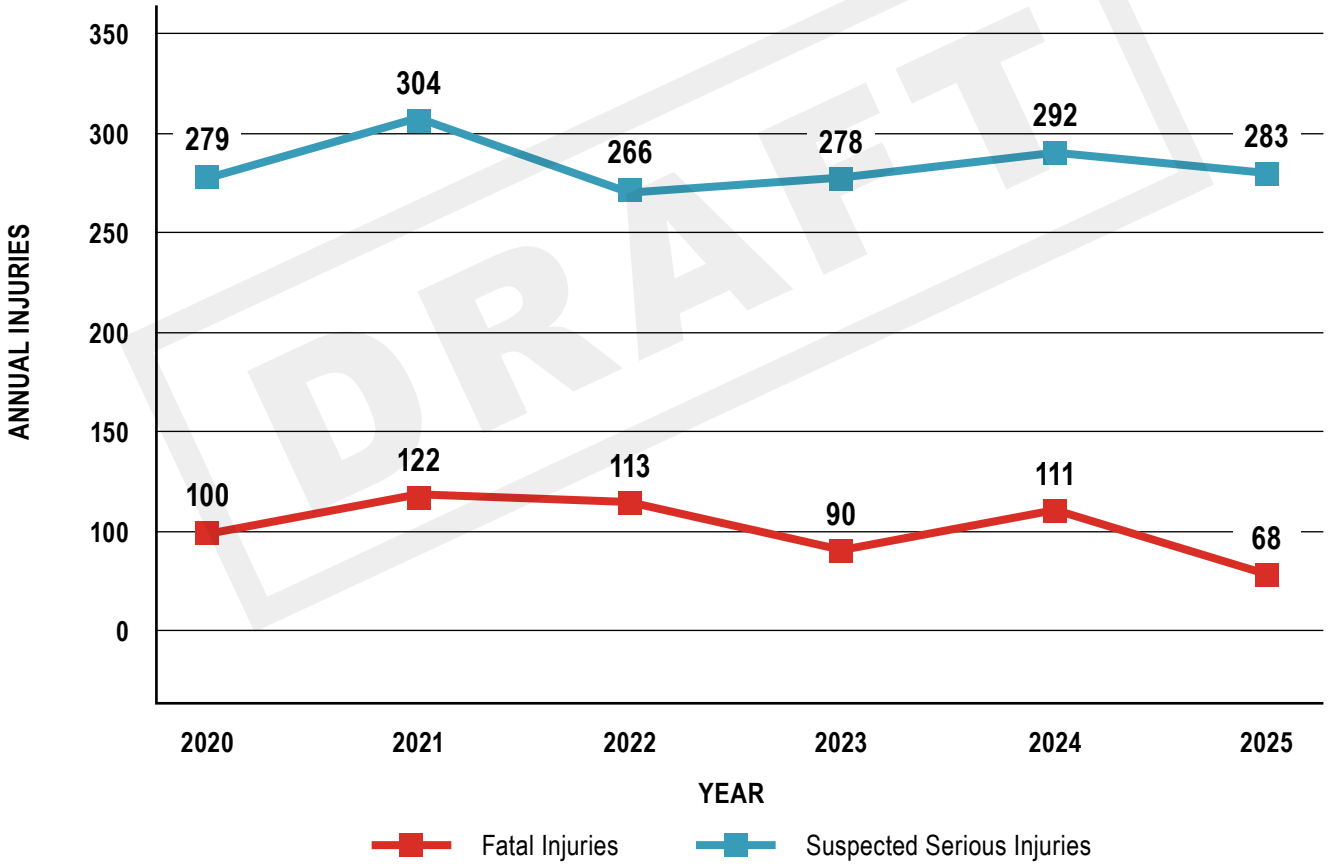


Figure 16 | Annual Fatal & Serious Injuries

Figure 17 illustrates annual non-motorized fatal and suspected serious injuries from 2020 to 2025, showing noticeable fluctuations over time. Fatal injuries increased from 13 in 2020 to a peak of 27 in 2024. Suspected serious injuries followed a somewhat different pattern, decreasing from 28 in 2020 to 20 in 2023 and back up to 31 in 2035. Overall, suspected serious injuries remain consistently higher than fatal injuries across all years.

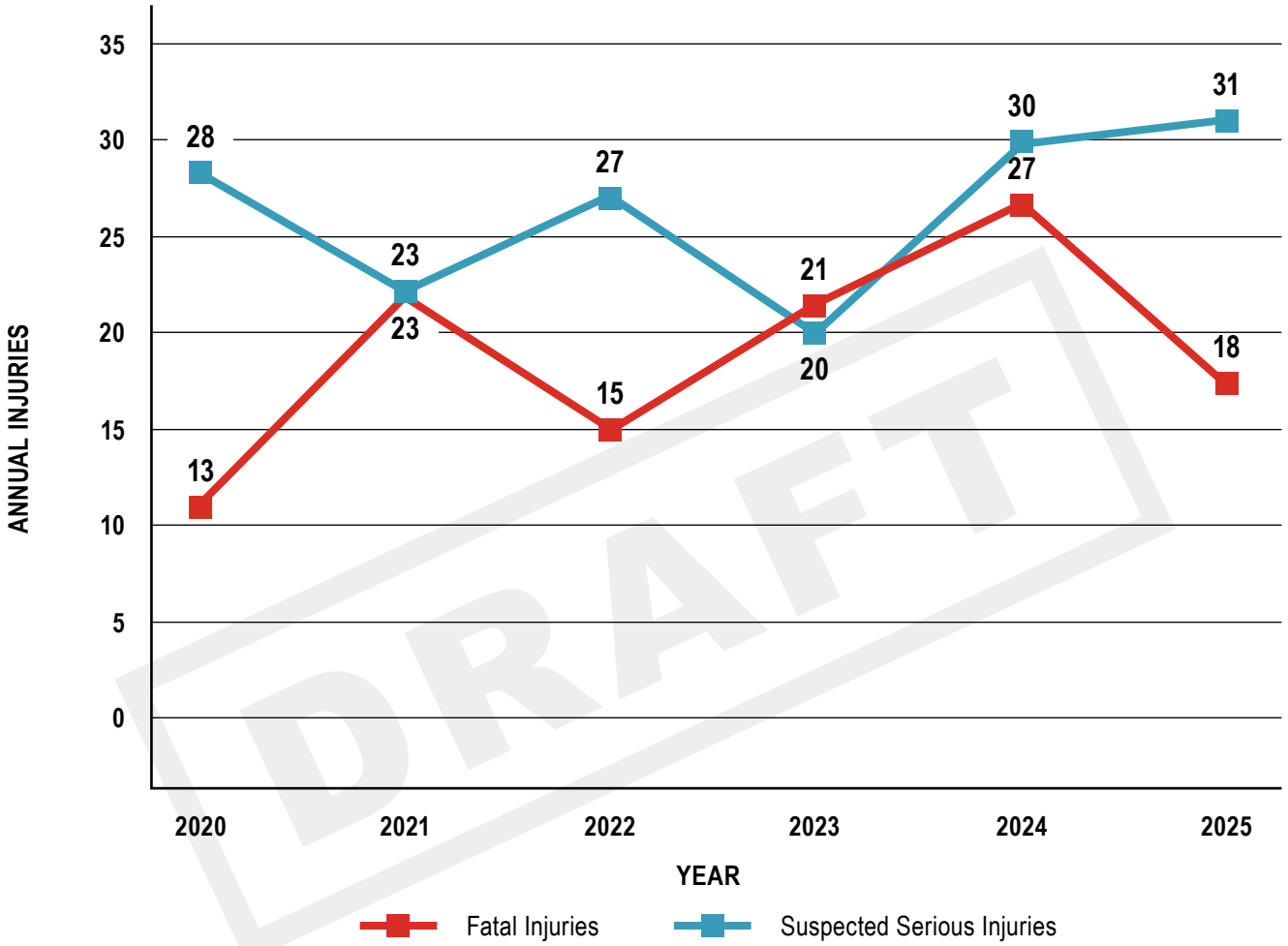


Figure 17 | Annual Non-Motorized Fatal & Serious Injuries

Figure 18 shows the highest crash concentrations clustered in and around central Greenville, particularly along the I-85 corridor and major arterial roadways extending toward Mauldin and Greer. The inset maps reinforce that crashes are heavily concentrated along major intersections and highway interchanges, where there is a dense mix of all crash severities.

Figure 19 focuses only on fatal and serious injury crashes, revealing a more concentrated and targeted pattern. While Greenville remains the primary hotspot, high-severity crashes are more tightly clustered along key corridors such as I-85 and major connecting routes, with fewer dispersed incidents across the broader network. Secondary clusters are visible near Greer, Mauldin, Simpsonville, and Fountain Inn, but they are less extensive than in the full crash dataset.

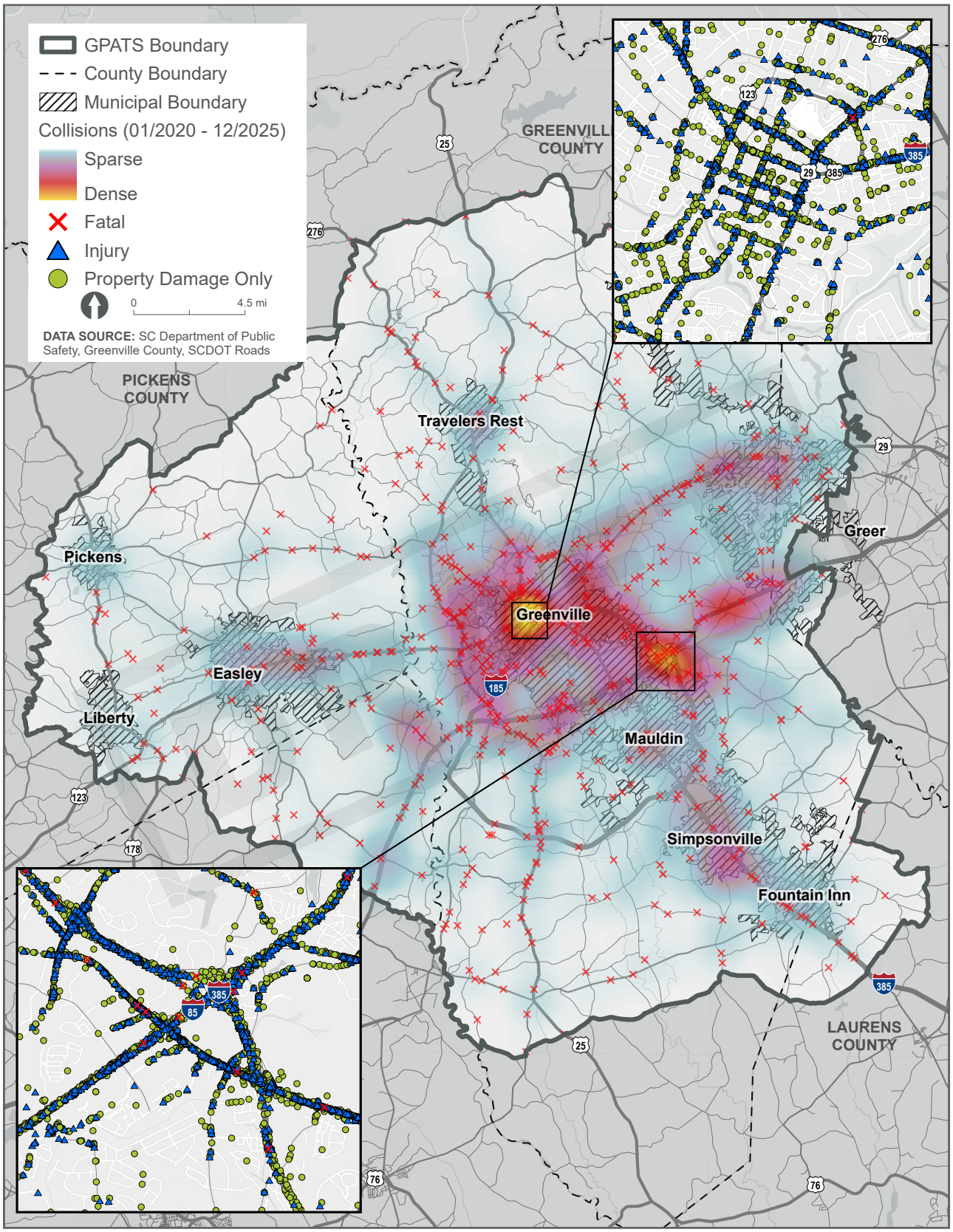


Figure 18 | GPATS Collision Heat Map

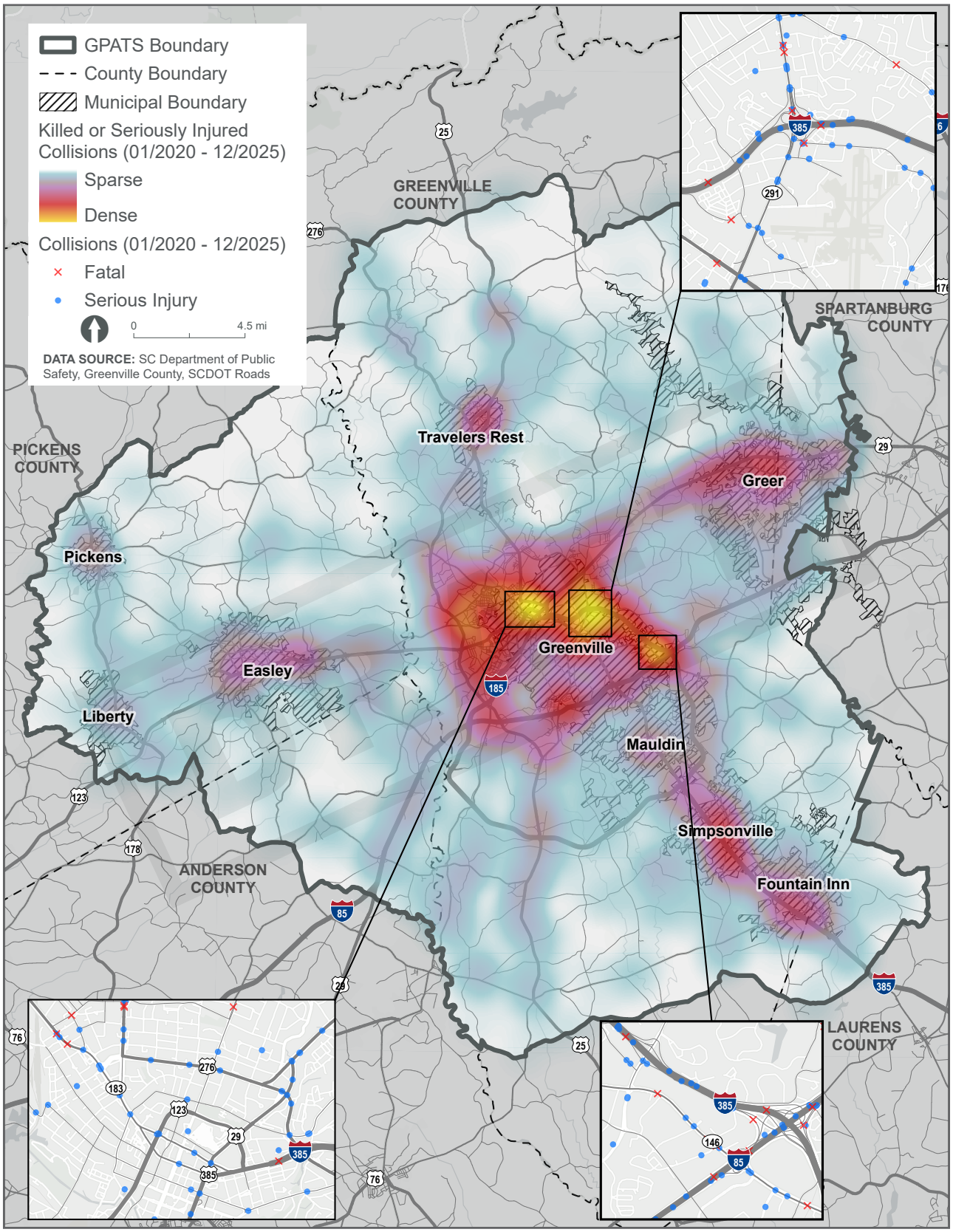


Figure 19 | GPATS Fatalities & Serious Injuries Heat Map

Traffic Operations

Traffic operations reflect how efficiently the transportation system moves people and goods. In the GPATS region, congestion is most pronounced along major corridors and during peak commuting periods. **Figure 20** highlights where the highest travel demand occurs across the GPATS region using average annual daily traffic counts. The most intense concentrations (shown in red and yellow) follow the I-85 and I-385 corridors through Greenville, extending east toward Greer and south toward Mauldin and Simpsonville, with volumes exceeding 100,000 vehicles per day in several segments. These corridors function as the primary regional mobility spine, carrying both commuter and through traffic. Secondary activity centers such as Easley, Travelers Rest, and Greer show moderate volumes, indicating localized circulation patterns feeding into the interstate network.

A common measure of roadway performance is Level of Service (LOS), which describes traffic operating conditions on a scale from A to F. LOS A represents free-flowing conditions with minimal delay, while LOS F indicates heavily congested conditions with significant delays and recurring queuing. As traffic volumes increase, roadway segments and intersections may experience lower levels of service, reflecting reduced mobility and travel reliability. Monitoring LOS helps transportation agencies identify locations where operational improvements or capacity enhancements may be needed to maintain efficient movement throughout the network.

Figure 21 illustrates how well the roadway network accommodates demand, with green representing uncongested conditions and orange and red indicating segments approaching or exceeding capacity. While much of the GPATS network operates efficiently, several key corridors, particularly around Greenville's urban core and along I-85, I-385, and major arterials connecting Greer, Mauldin, and Simpsonville, show elevated volume to capacity ratios. These conditions point to recurring congestion, bottlenecks, and reduced reliability during peak periods. The pattern reinforces that operational challenges are concentrated along the same high volume corridors identified in **Figure 20** and highlights where targeted capacity improvements, operational strategies, or multimodal investments may be needed. More information can be found in the Existing Conditions Assessment.

DRAFT

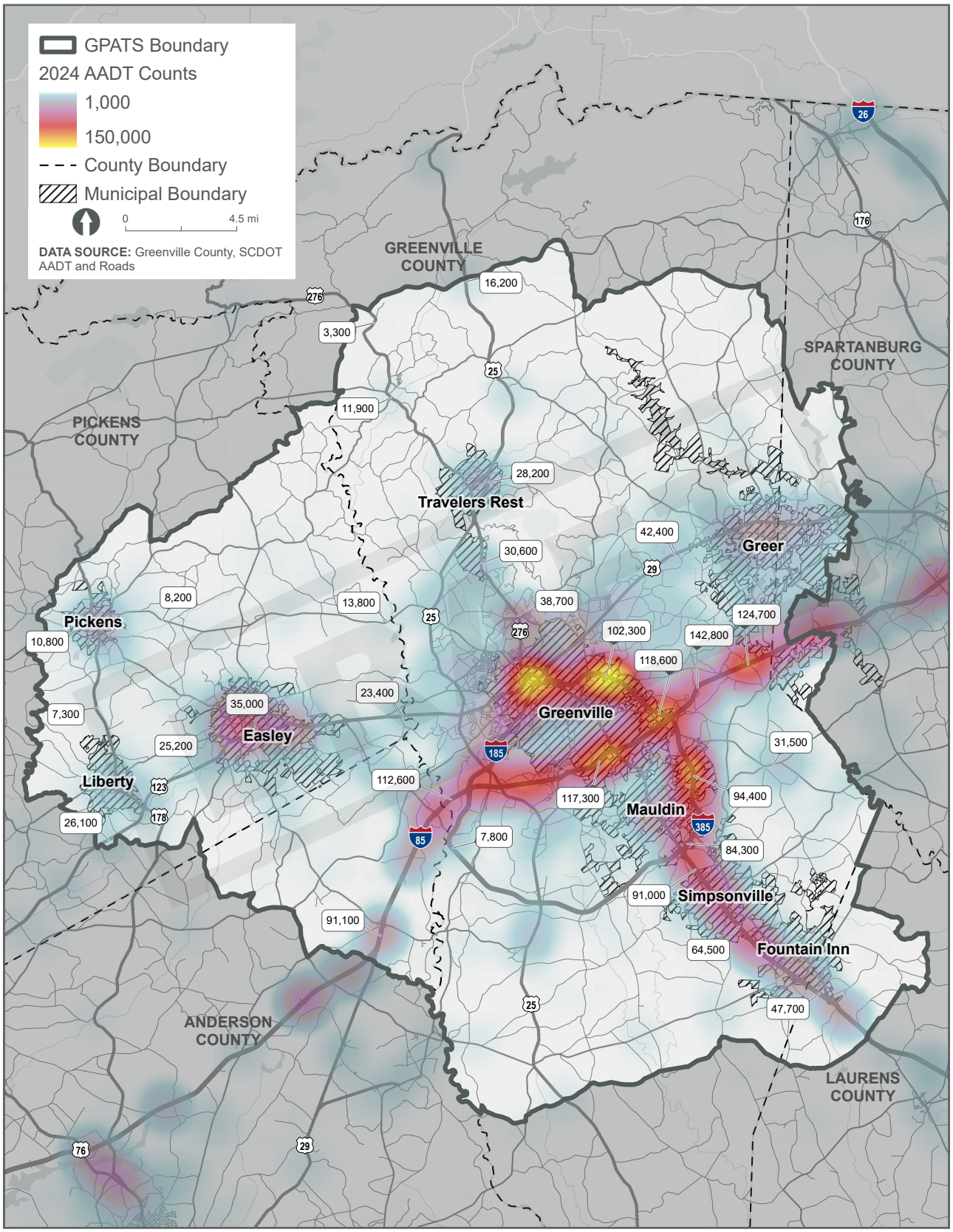


Figure 20 | AADT Heat Map

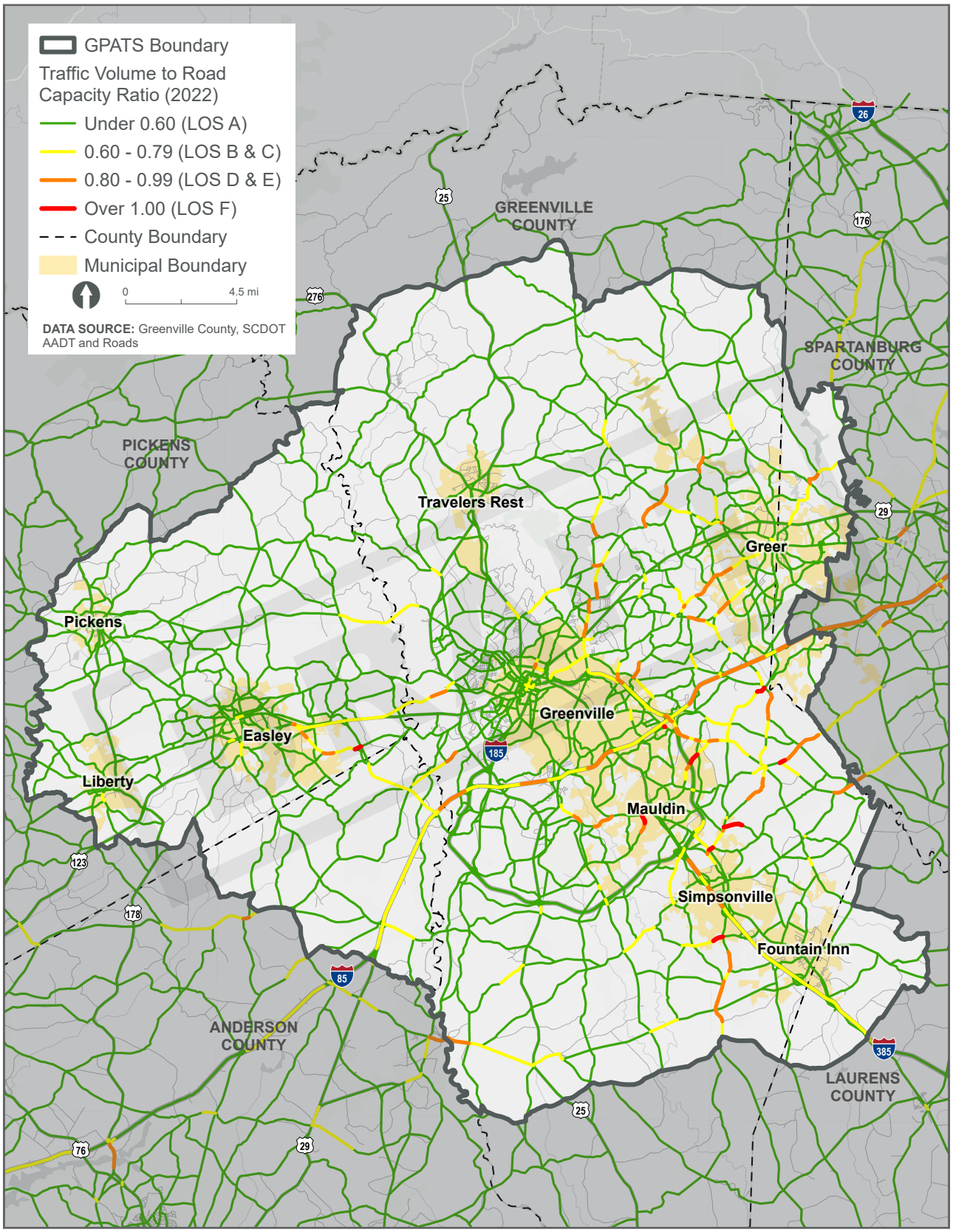


Figure 21 | Estimated Volume to Capacity Ratio (2022)

TRAVEL RELIABILITY

Travel reliability is a measure used to evaluate the predictability of passenger vehicle and freight truck travel times across a corridor or entire transportation network. While a corridor may experience recurring peak hour congestion and travel delays, the consistent occurrence of these delays provides a predictable condition that travelers can account for when planning trips and travel conditions along the corridor. In this case, these corridors would be considered "reliable." Passenger vehicle travel reliability is described using a metric referred to as Level of Travel Time Reliability (LOTTR) while freight truck travel reliability is described using a metric referred to as Truck Travel Time Reliability Index (TTTR). State transportation agencies and MPOs are required to establish performance measure targets and report LOTTR, described as the percentage of person-miles traveled that are reliable, on Interstate and Non-Interstate NHS routes and TTTR on Interstate routes as part of federal transportation planning requirements.

Figure 22 and **Figure 23** show monthly LOTTR results for GPATS' Interstate and Non-Interstate NHS routes that were calculated using data sourced from the National Performance Management Research Dataset for the year 2025; the figures include GPATS performance baseline for Interstate and Non-Interstate NHS reliability that were adopted in May 2023.

Monthly LOTTR results for GPATS Interstate routes for the year 2025 exceeded GPATS' baseline of 85.2% of all person-miles traveled on Interstate routes that are reliable during each month during this year. The month of January demonstrated the highest percentage of Interstate person-miles that were reliable, 92.8%, while the month of November recorded the lowest percentage of Interstate person-miles traveled that were reliable at 85.8%.

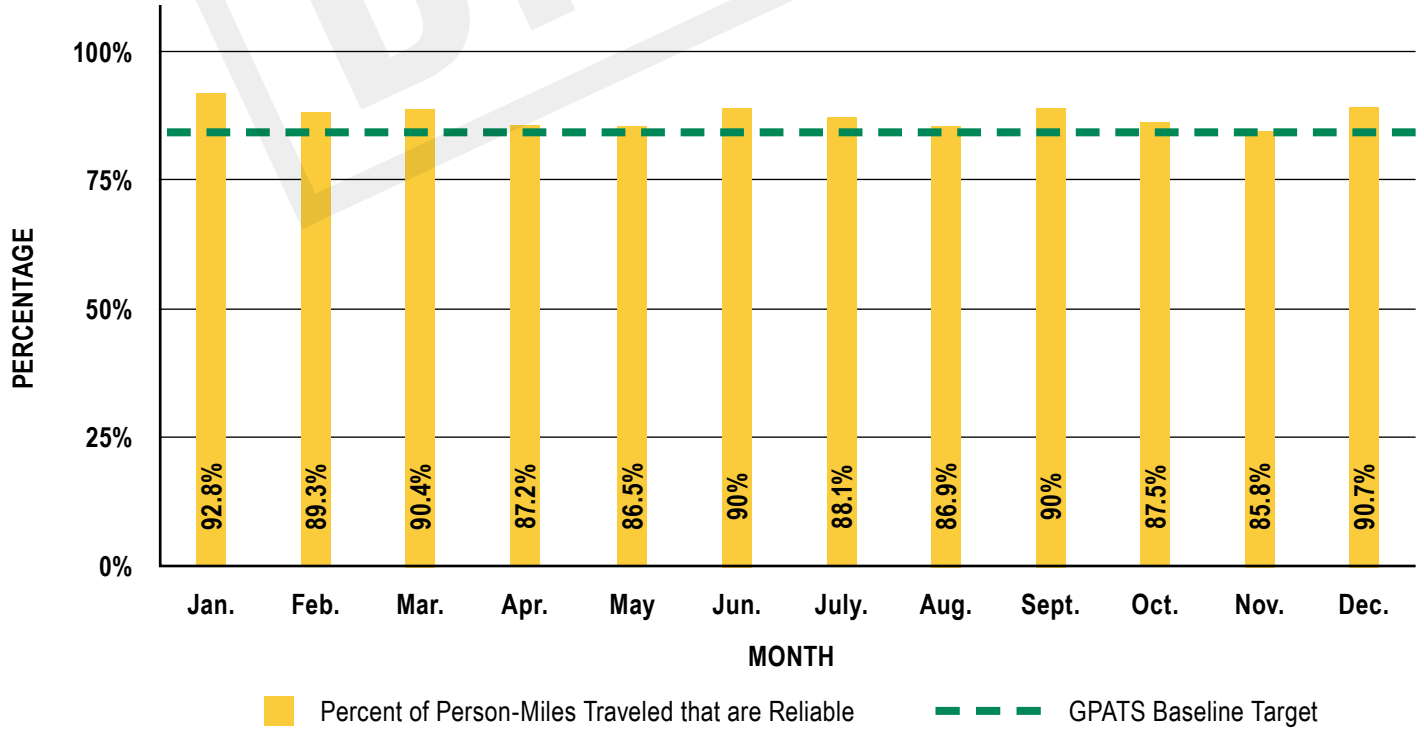


Figure 22 | Monthly Percentage of Person-Miles Traveled on Interstate Routes that were Reliable, 2025

Reliability conditions on GPATS non-Interstate NHS routes demonstrated similar results as the region's Interstate routes, but each month during the year 2025 failed to meet GPATS' non-Interstate NHS reliability baseline of 93.9% of person-miles traveled on non-Interstate NHS routes being reliable. The month of July exhibited the highest percentage of reliable non-Interstate NHS person-miles traveled at 91.5% while the months of January and February both exhibited the lowest percentages of reliable person-miles traveled at 88%.

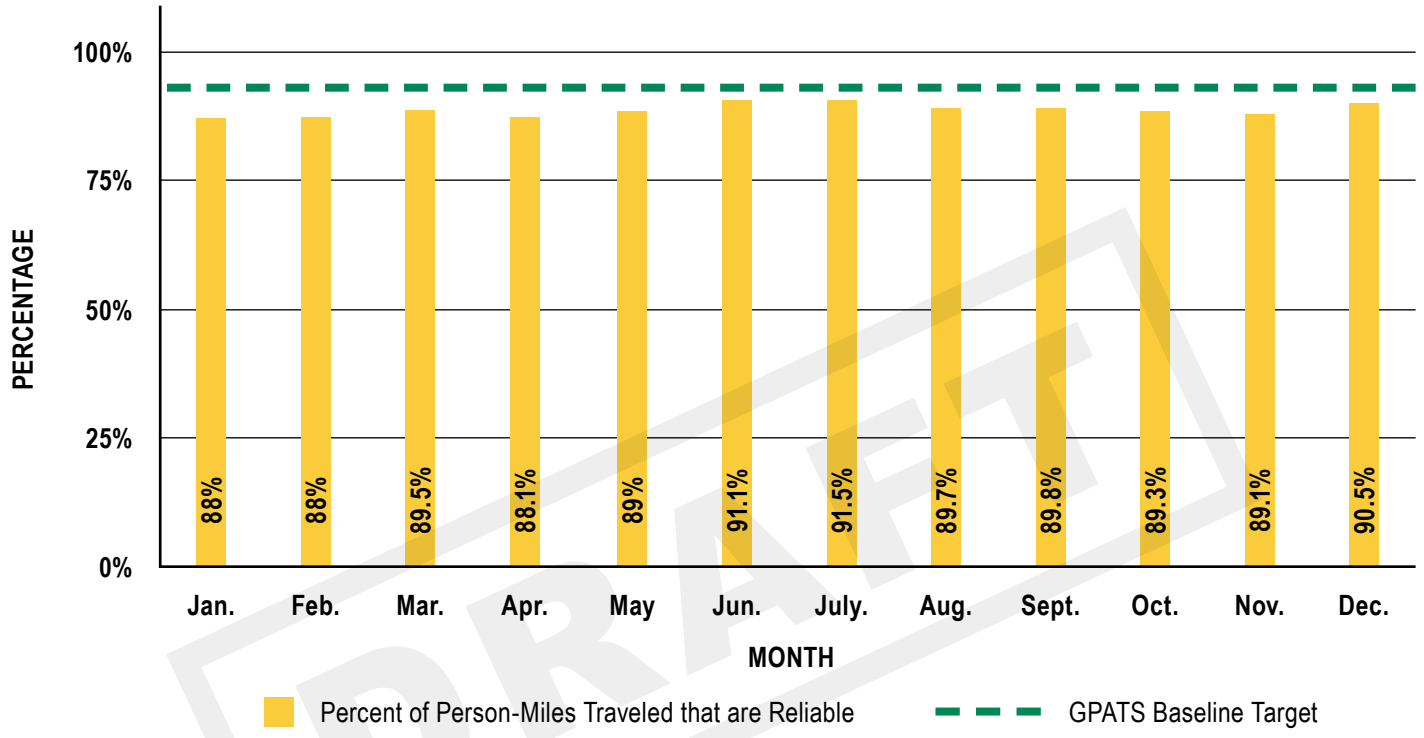


Figure 23 | Monthly Percentage of Person-Miles Traveled on Non-Interstate NHS Routes that were Reliable, 2025

DRAFT

Figure 24 shows monthly TTTR results for GPATS Interstate routes for the year 2025. GPATS' current baseline for TTTR is 1.57, and the monthly TTTR results did meet this baseline during the year 2025. Monthly TTTR results demonstrate a degree of variation, with the month of March recording the highest TTTR of 1.52 while the month of June recorded the lowest TTTR of 1.35.

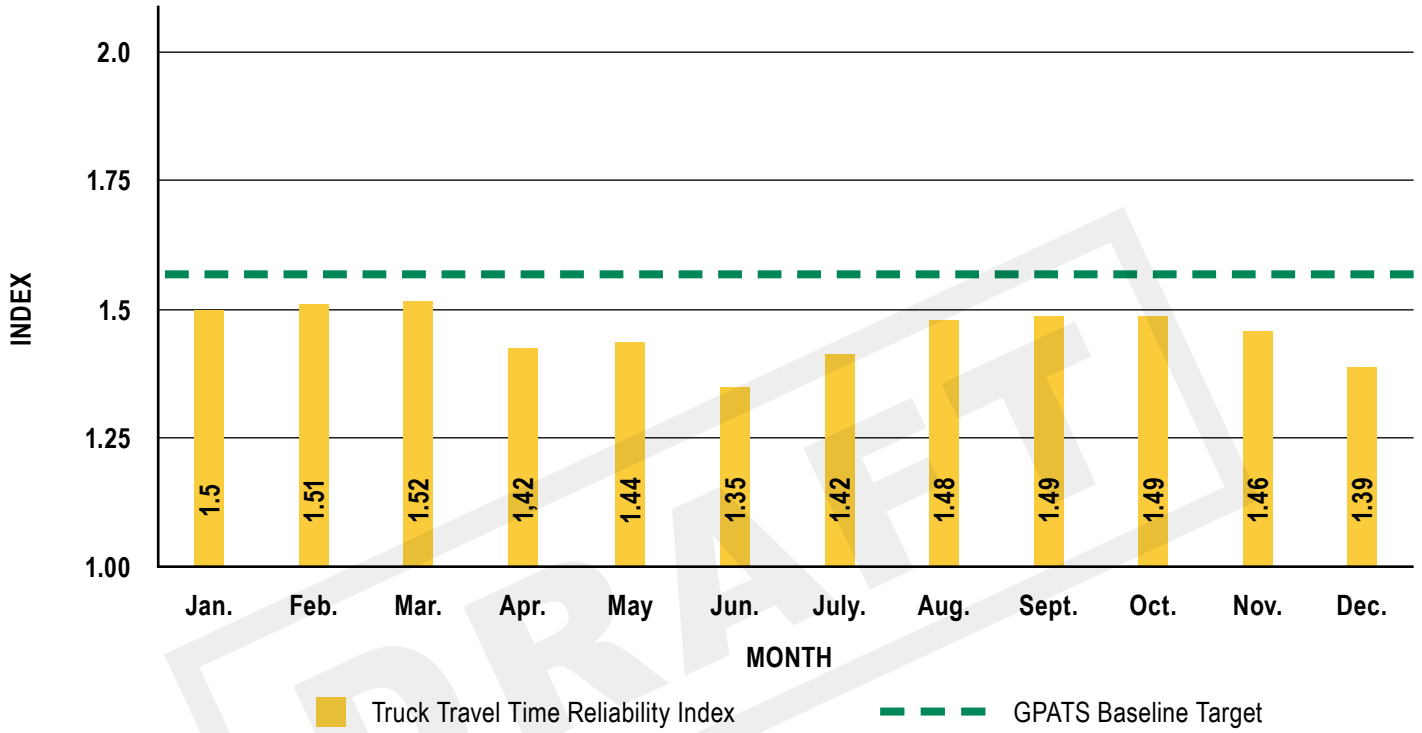


Figure 24 | Monthly Truck Travel Time Reliability Index on Interstate Routes (2025)

DRAFT

Asset Conditions

Maintaining the condition of transportation assets is essential for system reliability, safety, and long-term cost efficiency. The GPATS region's transportation assets include pavements, transit vehicles, and supporting infrastructure.

Pavement conditions are assessed using measures such as the Pavement Quality Index (PQI). Interstate routes show stronger overall pavement conditions, with about 63% of centerline miles rated in good condition and only about 25% in poor condition. In contrast, non-interstate NHS routes have a smaller share in good condition, roughly 48%, and a higher proportion in poor condition at about 36%.

This pattern suggests that interstates are generally maintained at a higher standard, likely due to their critical role in regional and national mobility, while non-interstate NHS routes may require more focused investment and maintenance to improve overall pavement quality.

The condition of bridges found on the NHS within the GPATS region were analyzed using National Bridge Inventory (NBI) data for the year 2025 for the purpose of summarizing bridge conditions by deck area. The NBI data indicates a total of 156 bridge structures are found on the NHS within the region; of these 156 bridges, 90 are classified as being in Good condition, 57 in Fair condition, and 9 in Poor condition. To better reflect how bridge condition performance is reported in the region, condition ratings by bridge deck area were calculated as shown on the following page.

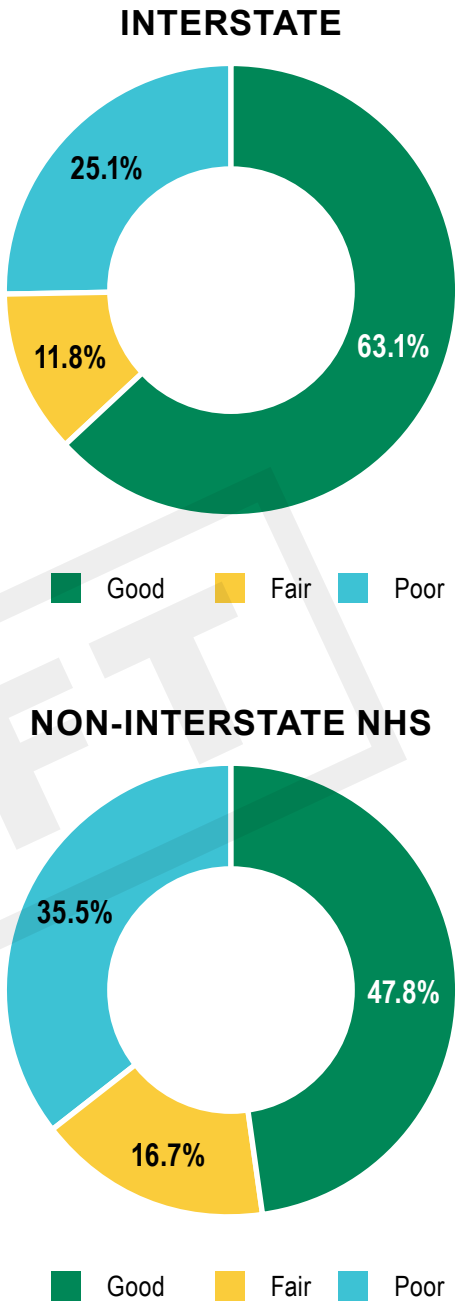


Figure 25 | Pavement Conditions

DRAFT

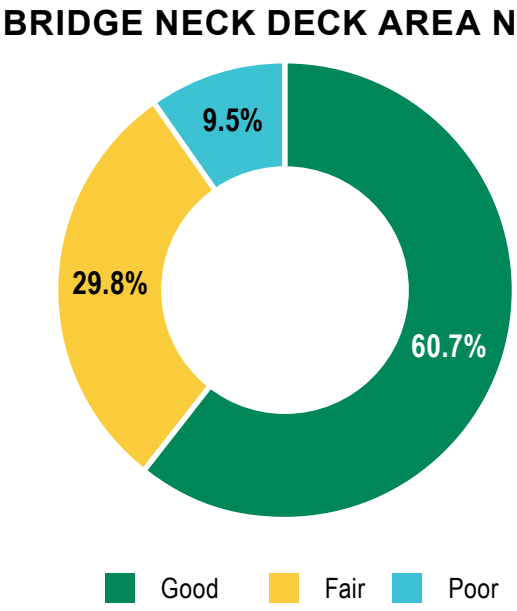


Figure 26 | NHS Bridge Deck Area Conditions (2025)

Transit asset conditions vary by fleet age and facility condition. The average age of transit vehicles is 7.3 years.[3]

Proactive maintenance and preservation strategies are critical to extending asset life and reducing lifecycle costs.

Multimodal System Performance

The GPATS region continues to advance toward a more balanced multimodal transportation system; however, gaps in access and performance remain. Mode share data indicates that the majority of trips 76% are made by single-occupancy vehicles, while transit, walking, and bicycling account for 1.3% of trips.

Transit performance measures, including ridership and on-time performance, indicate that 704,200 trips are provided annually, with an average on-time performance of 74%.[4]

Bicycle and pedestrian activity has increased, supported by investments in trails and sidewalks. However, gaps in connectivity remain.

Accessibility considerations are also central to multimodal performance, as transportation options are critical for households without access to a vehicle, which represent approximately 2% of households in the region.

What this Means for the Needs Assessment

The current system performance assessment shows that the GPATS transportation network generally functions as expected, moving people and goods through the study area, and continues to support the region's growing population, workforce, and economy. However, the analysis also highlights several challenges, including increasing congestion along key interstate and arterial corridors, continued reliance on single-occupancy vehicle travel, safety concerns in high-crash locations, and gaps in transit, bicycle, and pedestrian connectivity. As growth continues, these trends suggest that maintaining mobility will require a balanced approach that includes roadway improvements, system preservation, operational strategies, and expanded multimodal transportation options.

The findings in this chapter provide the foundation for the Needs Assessment by identifying where existing transportation deficiencies and performance gaps occur today. When combined with future forecasts of population, employment, and travel demand, these results will help GPATS determine where capacity constraints, safety issues, asset management needs, and multimodal investment opportunities are most likely to emerge. This information will guide the development of strategies, projects, and priorities for the *Horizon 2050 LRTP*.

[3] Department of Transportation. 2022 Annual Agency Profile. 2022. https://www.transit.dot.gov/sites/fta.dot.gov/files/transit_agency_profile_doc/2022/40053.pdf

[4] City of Greenville. Quantity of Service. 2026. https://www.greenvillesc.gov/2722/Quantity-of-Service

DRAFT

GPATS Horizon 2050

LONG-RANGE TRANSPORTATION PLAN

GPATS@greenvillecounty.org

GPATShorizon2050.com