CHAPTER 6

TRANSPORTATION NEEDS AND GAPS ASSESSMENT

6. Transportation Needs and Gaps Assessment

Analyzing transportation needs, service duplications, and gaps in coverage is a key component of the CTCOG Regional Public Transportation Coordination Plan. This effort evaluates how well existing transportation services align with the mobility needs of residents across the seven-county region by comparing current service availability with demographic patterns, key activity centers, and geographic access. In addition to demographic and system-level analysis, this assessment is informed by direct feedback from transit users and stakeholders, providing insight into how transportation services function in practice across the region.

In the CTCOG region, mobility patterns are strongly influenced by the Killeen–Temple–Belton urban corridor, which serves as the primary hub for employment, healthcare, education, and regional services. At the same time, smaller communities—including Copperas Cove, Gatesville, Lampasas, and portions of Milam County—function as important local service centers, while rural areas face additional challenges related to distance, limited service availability, and fewer transportation options.

This evaluation provides insight into how transportation resources are currently being used and where adjustments may be needed. Stakeholders and providers consistently highlighted that, while core services are in place, gaps remain in regional connectivity, service availability outside of standard hours, and access to key destinations. In some cases, services are stretched thin—particularly demand-response and NEMT—while in others, they may not be optimally aligned with evolving travel patterns and growth corridors.

Identifying duplicated services—where multiple providers operate in the same areas or serve similar trip purposes—can reveal opportunities to improve coordination and make more efficient use of available resources. At the same time, identifying gaps in service helps pinpoint where expanded service, new partnerships, or different service models may be needed to better serve the region.

Across the CTCOG region, this analysis supports a more coordinated and collaborative approach among public transit providers, human service organizations, local jurisdictions, healthcare providers, and private operators. The intent is to improve overall system efficiency while expanding access—particularly in smaller communities and rural areas—and strengthening connections to major regional destinations. Ultimately, this work establishes a data-driven foundation to guide future strategies and investments that improve the effectiveness, connectivity, and equity of the regional transportation network.

6.1. Service Duplication

Findings from the Transportation Provider Survey, GIS-based analysis, and review of service characteristics were used to identify where transportation services may be duplicated in terms of geography, trip purpose, or operating patterns. It is important to recognize that some overlap can be beneficial, offering riders more flexibility and improving system reliability; however, excessive redundancy may point to opportunities for better coordination.

Within the CTCOG region, overlapping services are most evident within and around the Killeen–Temple–Belton corridor, where multiple providers—including public transit, human service agencies, and private transportation providers—serve similar trip types. This is particularly true for NEMT and recurring healthcare-related trips, such as dialysis, which were consistently identified through provider input and stakeholder engagement.

In addition, some providers offer general-purpose demand-response services within overlapping service areas or along similar corridors, particularly between Killeen, Temple, Copperas Cove, and surrounding communities. While this overlap can improve availability for riders, it may also result in inefficiencies related to vehicle utilization, scheduling, and coordination.

Feedback from providers and stakeholders also highlighted that coordination between services is often informal or limited, requiring riders to navigate multiple systems when making cross-provider or cross-county trips. This can lead to longer travel times, duplicated trips, or underutilized capacity in certain parts of the system.

These findings point to clear opportunities to enhance coordination across the region. Coordinated dispatching, trip-sharing agreements, mobility management or brokerage models, and improved communication between providers could help reduce inefficiencies, improve rider experience, and allow resources to be redirected to underserved areas and unmet trip needs.

6.2. Transit Needs Index

A Transit Needs Index (TNI) was developed to identify and map areas within the CTCOG region where residents are more likely to depend on public transportation. The TNI combines key demographic and socioeconomic indicators into a single, comparable measure of transit need across the region.

The index incorporates variables commonly associated with transit dependency—including age, income, disability status, vehicle availability, and population density—which are normalized and weighted to reflect local conditions. This approach allows for consistent comparison across urban, suburban, and rural areas.

The TNI provides a data-driven foundation to:

- Identify areas with elevated transit need
- Compare conditions across geographies
- Inform service planning, resource allocation, and coordination strategies

The TNI was developed using a standardized process consistent with TxDOT guidance, including normalization of demographic variables, application of regionally appropriate weights, and classification into relative need categories.

Table 6.1 summarizes the demographic indicators used in the index.

Table 6-1 Summary of Demographic Indicators

Variable	Description	Weight (%)
People With Disabilities	Disabled Residents Per Square Mile	20%
Low-Income Households	Low Income Residents Per Square Mile	20%
Zero-Vehicle Households	Households With Zero Vehicles Per Square Mile	20%
Population 65+	Residents Age 65 And Over Per Square Mile	15%
Limited English Proficiency Households	Households with Limited English Proficiency Per Square Mile	10%
Population Density	People Per Square Mile	10%
Population Under 17	Residents Age 17 And Under Per Square Mile	5%

Figure 6-1 Transit Needs Index (TNI) Map

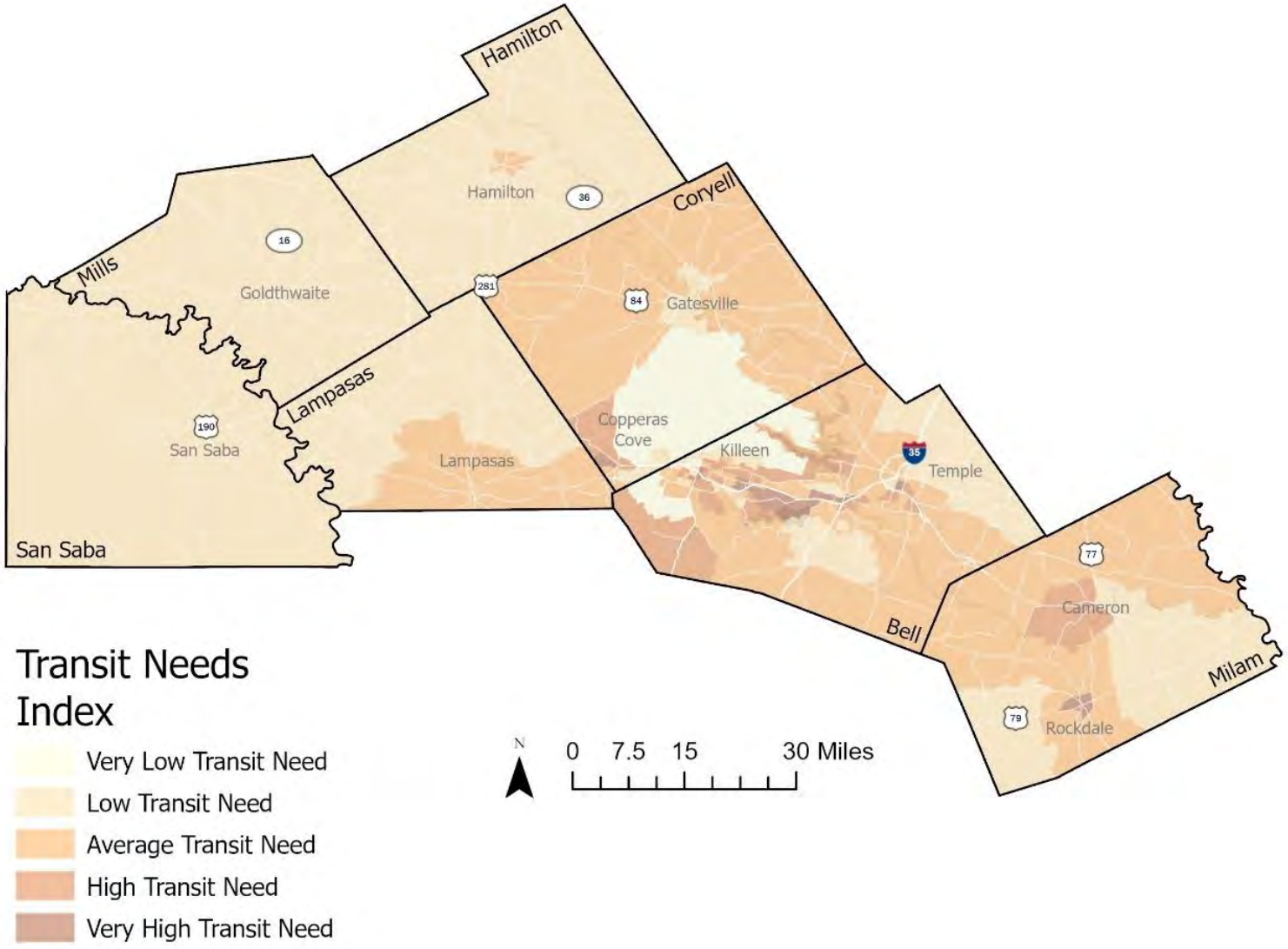


Figure 6-2 Transit Needs Index (TNI) for Small Urbanized Areas

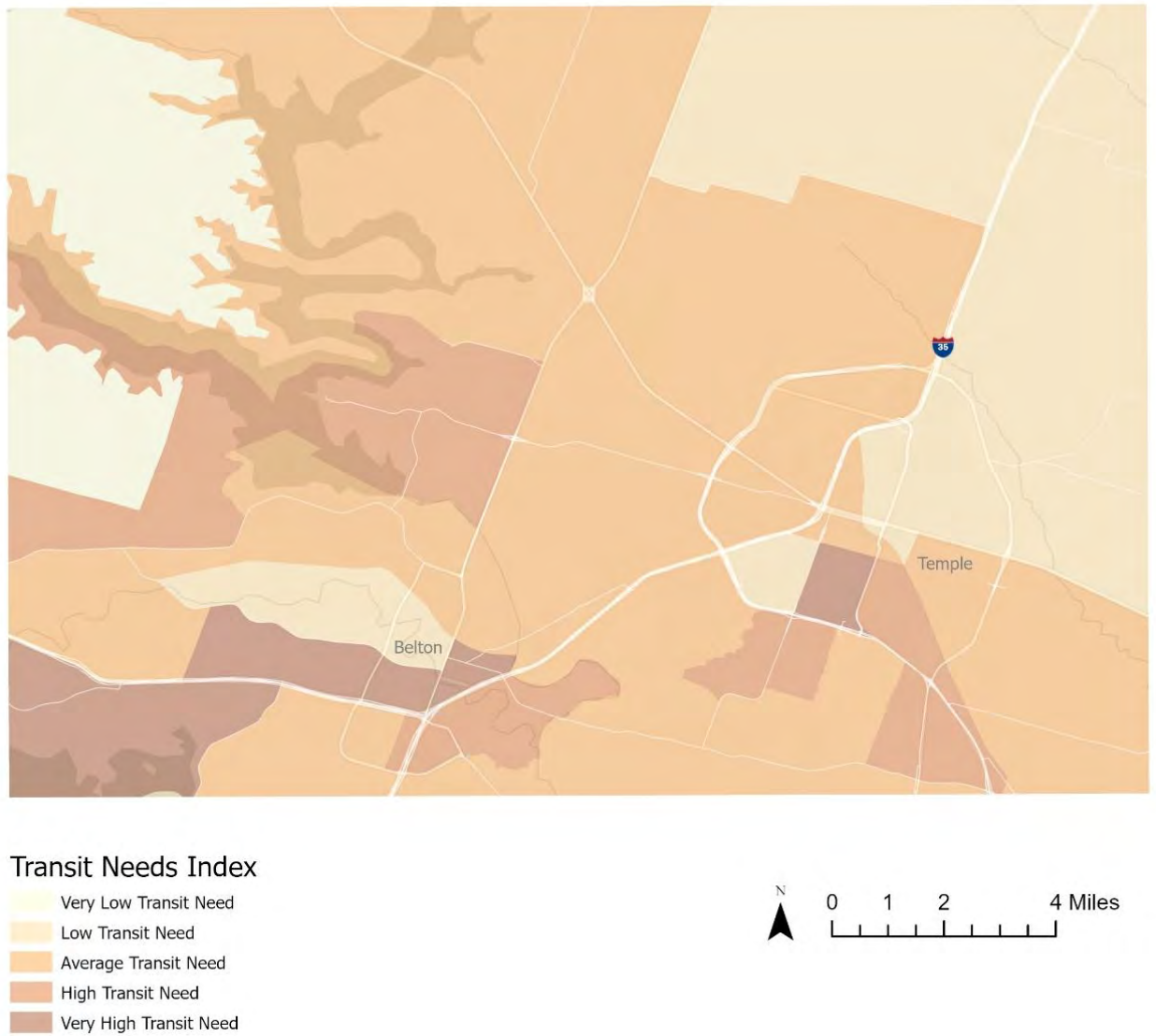


Figure 6-3 Transit Needs Index (TNI) for Large Urbanized Areas

Figure 6-4 Transit Needs Index (TNI) for Copperas Cove

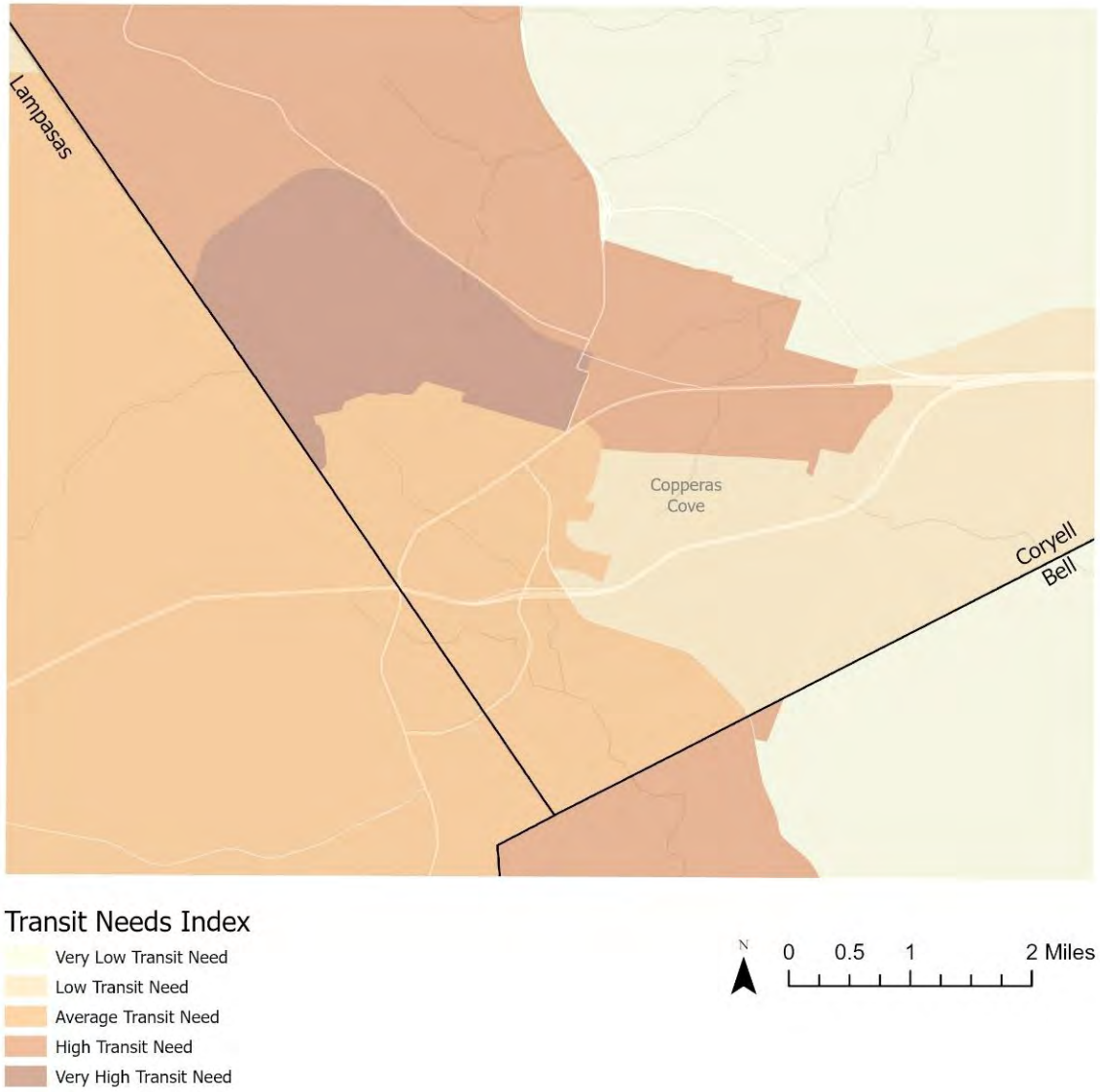


Figure 6-5 Transit Needs Index (TNI) for Gatesville

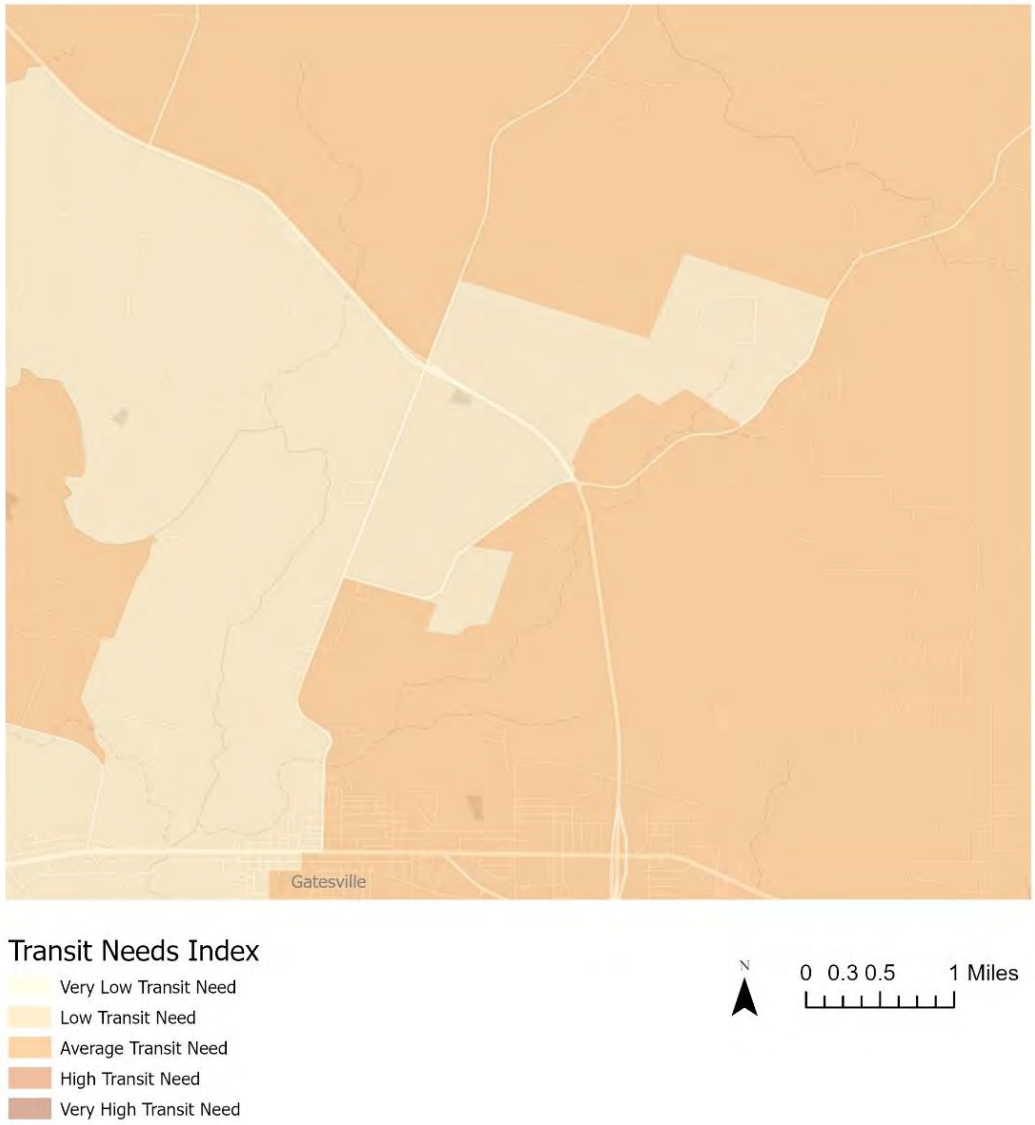
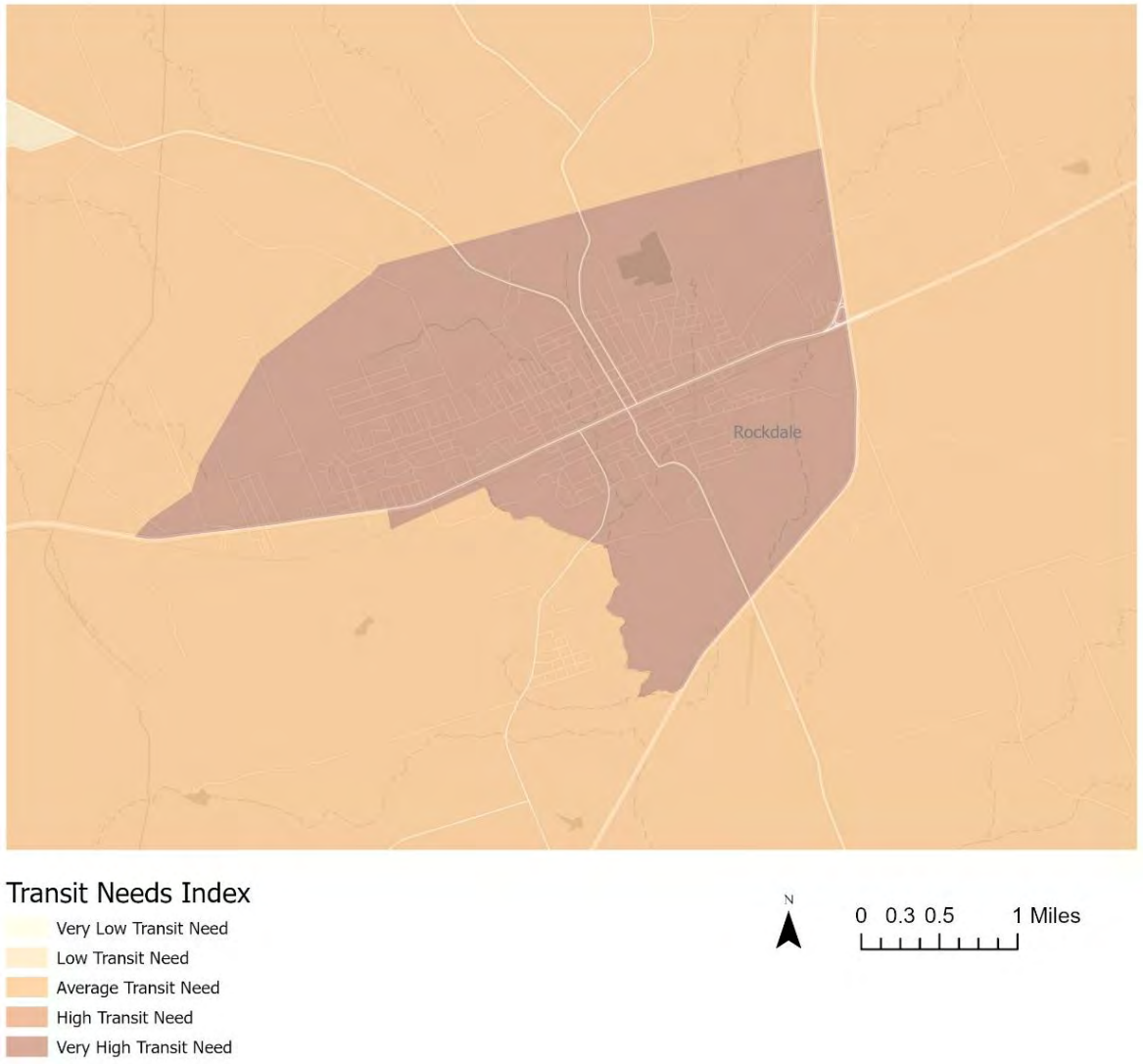


Figure 6-6 Transit Needs Index (TNI) for Killeen and Fort Hood

Figure 6-7 Transit Needs Index (TNI) for Rockdale



6.2.1. Transit Needs Index Key Findings

The following summarizes the spatial distribution of transit need across the CTCOG region based on demographic characteristics and access patterns identified through the TNI analysis.

- **High and very high transit need is concentrated along the Killeen–Temple–Belton corridor, particularly in Killeen and Temple**, where multiple transit-dependent populations overlap. These areas represent the region's most significant and continuous concentration of need.
- **Elevated need extends into secondary communities including Copperas Cove, Gatesville, Lampasas, and parts of Milam County**. These areas form smaller but meaningful clusters of higher need that are not fully captured by focusing on the urbanized area alone.
- **Moderate need follows key corridors such as IH-14/US 190 and IH-35**, as well as connections to outlying communities. These corridors reflect concentrations of population and access to employment, healthcare, and services, suggesting strong potential for regional connectivity improvements.
- **Rural counties—including Hamilton, Mills, and San Saba—generally exhibit lower measured transit need**, largely due to lower population densities. However, the map indicates **scattered pockets of moderate need even in these areas**, reinforcing that residents may still face significant mobility challenges due to distance, limited service availability, and lack of transportation options.

6.2.2. Planning Implications

The TNI underscores the importance of maintaining and enhancing transit services within the Killeen–Temple urbanized corridor, where the highest and most consistent levels of need are present. At the same time, the presence of elevated need in Copperas Cove, Gatesville, Lampasas, and parts of Milam County highlights the importance of **expanding regional connectivity and coordination beyond the urban core**.

In rural and lower-density areas, transit need is less concentrated but still significant, particularly for populations with limited access to vehicles or essential services. In these areas, **flexible, demand-response, and coordinated service models** will be critical for improving access.

Overall, these findings support a **tiered approach to service delivery**, including:

- Higher-capacity, more frequent services within the Killeen–Temple corridor
- Regional connections along key corridors linking smaller communities to major destinations
- Demand-response and coordinated services in rural and low-density areas

This approach ensures that transit investments are aligned with both the intensity and geographic distribution of need across the CTCOG region, directing resources where they can have the greatest impact.

These findings are supported by survey responses, which indicate that areas with higher concentrations of transit-dependent populations also experience the greatest barriers related to

service availability, reliability, and accessibility. This alignment reinforces the validity of the Transit Needs Index as a tool for identifying priority areas for investment.

6.3. Service Gaps and Unmet Needs

Service gaps and unmet mobility needs were identified through a combination of spatial analysis, provider coordination, and community engagement. This analysis compared transportation provider service areas with demographic data, Transit Needs Index (TNI) results, rider feedback, and stakeholder input to identify where existing services do not fully meet demand.

**These needs will be further refined and prioritized in the final plan phase, in coordination with regional stakeholders and funding considerations.*

6.3.1. Process for Identifying Gaps

Multiple data sources and engagement strategies informed the identification of service gaps across the CTCOG region:

- **Overlay Analysis:** GIS layers—including TNI, population density, and provider service areas—were combined to identify locations where high-need populations fall outside existing service coverage.
- **Temporal and Modal Review:** Service schedules and delivery models were evaluated to identify gaps related to evening, weekend, and intercity travel.
- **Provider Surveys and Agency Profiles:** Input from transportation providers helped identify operational constraints, eligibility limitations, and areas where demand exceeds available capacity. Providers serve a range of populations, including older adults, individuals with disabilities, low-income households, and residents without access to a vehicle.
- **Rider Survey and Public Engagement:** Feedback collected through surveys, online tools, and stakeholder engagement provided insight into travel behavior, satisfaction, and unmet needs. This input helped identify specific locations where service, accessibility, or connectivity improvements are needed.
- **Accessibility and First/Last-Mile Assessment:** Transit stops, routes, and transfer locations were evaluated for ADA accessibility and pedestrian connectivity, including sidewalks, crossings, and safe access to transit facilities.

6.3.2. Key Service Gaps and Unmet Needs

These findings were consistently reinforced through stakeholder engagement, provider input, and rider survey results. The combined analysis indicates that, while transportation services are available across the CTCOG region, many are not consistently aligned with how residents need to travel. The following categories summarize the most significant and recurring service gaps:

Rural and Small Community Gaps (Spatial Gaps – Service Coverage)

Many rural areas within the region lack fixed-route transit service and rely heavily on demand-response transportation provided by transit agencies, senior centers, or human-service organizations. While these services are essential, they are often limited in coverage, availability,

and trip flexibility. Residents in more remote or unincorporated areas frequently must travel long distances to access employment, healthcare, and essential services—often requiring trips into the Killeen–Temple corridor. Survey responses indicate that limited service beyond city limits and a lack of inter-county connections are significant barriers to mobility in these areas.

Temporal Access Gaps (Service Hours)

Most transportation services operate primarily during weekday daytime hours, with limited evening or weekend availability. This restricts access for individuals working nontraditional hours, attending evening activities, or requiring off-peak medical services. Rider feedback consistently identified service hours as a primary barrier, noting that available service often does not align with work schedules, medical appointments, or caregiving responsibilities.

Cross-County and Regional Connectivity (Spatial + Coordination Gaps)

Connectivity between counties and across the region remains limited. Trips that cross jurisdictional boundaries often require coordination between multiple providers, resulting in longer travel times, increased complexity, and reduced reliability. Both riders and stakeholders emphasized the need for more seamless regional connections, particularly for accessing healthcare, employment centers, and educational institutions.

Reliability and Convenience Gaps

Long wait times, inconsistent service reliability, and complex trip coordination reduce the overall usability of the system. Many riders reported that trips require multiple transfers or advance scheduling, which can increase travel time and create uncertainty. These challenges often lead residents to rely on personal vehicles or informal transportation options when available, even when transit services exist.

First-/Last-Mile Connectivity and Network Coverage

Many riders rely on walking or other informal means to access transit services, highlighting the importance of safe and reliable first-/last-mile connections. In some areas, gaps in sidewalks, long crossing distances, and limited accessibility features create barriers to reaching transit stops—particularly for older adults and individuals with disabilities. These conditions reduce the effective service area of transit and limit accessibility.

Information and Awareness Gaps

Survey responses indicate that many residents are unaware of available transportation services or are unsure how to access them. Riders reported difficulty understanding eligibility requirements, scheduling processes, and service availability. These findings highlight the need for clearer communication, improved outreach, and user-friendly trip planning tools, as well as travel training and customer support.

Affordability Barriers

Transportation costs create challenges for low-income households and individuals with limited financial resources. While some reduced fare programs exist, survey and stakeholder feedback indicate that affordability remains a barrier to consistent use. Opportunities exist to expand fare

assistance programs and reduce cost burdens associated with accessing employment, healthcare, and essential services.

6.3.3. Summary of Opportunities

Overall, the analysis highlights several opportunities to strengthen the regional transportation network through improved coordination, targeted service enhancements, and infrastructure investments. Key strategies include:

- Expanding demand-response services in underserved rural and low-density areas
- Strengthening coordination and connectivity between providers across county lines
- Improving pedestrian and ADA access to transit stops and facilities
- Evaluating opportunities to extend service hours and improve service frequency in higher-demand areas

Collectively, these strategies support a more **connected, efficient, and equitable transportation system** that better meets the diverse mobility needs of the CTCOG region. These strategies reflect TxDOT's emphasis on improving efficiency through coordination while expanding service to address unmet needs among transit-dependent populations.

6.3.4. Alignment with Planned Investments

Many of the identified service gaps and unmet needs are consistent with priorities already reflected in ongoing and planned transit investments. Efforts to expand microtransit services, improve service reliability, and enhance regional coordination directly respond to gaps related to limited service coverage, constrained service hours, and challenges in accessing key destinations.

Continued alignment between identified needs and planned investments will be critical to ensuring that resources are directed toward the most impactful improvements, particularly in areas with high concentrations of transit-dependent populations and limited transportation options.