Clarksville Transit Strategic Plan

2021 Update

Prepared for:

Clarksville Transit System

Prepared by:

WSP

With support from:

TN TDOT Department of Transportation

Table of Contents

Key Acronyms

The following is a list of acronyms commonly used in this plan.

ACS: American Community Survey

APSU: Austin Peay State University

CHA: Clarksville Housing Authority

CTS: Clarksville Transit System

CUAMPO: Clarksville Urbanized Area Metropolitan Planning Organization

DU: Dwelling Unit(s)

FFY: Federal Fiscal Year

FTA: Federal Transit Administration

FY: Fiscal Year

GIS: Geographic Information System(s)

I-#: Interstate

KYTC: Kentucky Transportation Cabinet

MPO: Metropolitan Planning Organization

NTD: National Transit Database

OTP: On-Time Performance

SFY: State Fiscal Year

SR-#: State Route

TAZ: Traffic Analysis Zone

TIP: Transportation Improvement Program

TDOT: Tennessee Department of Transportation

TAM Plan: Transit Asset Management Plan

UROP: Tennessee State Operating Assistance Program

US-#: United States Route

UZA: Urbanized Area

Introduction

The Clarksville Transit System (CTS) updates their Strategic Plan approximately every five years to better understand the current conditions of the transit system and the market environment of the service area. The strategic update process provides CTS the opportunity to direct planning efforts and investments that align with the agency mission statement of operating a public transportation system that "allows for maximum mobility for the community with emphasis on safety, quality, and efficiency." This planning effort is also used as a programming tool for the City of Clarksville and the Clarksville Urbanized Area Metropolitan Planning Organization (CUAMPO) for input into its Transportation Improvement Program (TIP) and Metropolitan Transportation Plan.

This Strategic Plan Update focuses on CTS' current service capacity, on the transit propensity and market conditions in Clarksville, as well as on input from the public and stakeholders. This information helps CTS strategize realistic improvements that can implemented to improve and expand transit service in Clarksville. This update is not a technical report on the route system and does not collect new route level data nor focus on pre-COVID transit performance to profile.

Goals and Objectives of 2021 Update

The goal of this document is to create a list of obtainable strategic options and project ideas that help guide CTS in improving transit service in the Clarksville area. The list will identify estimated project timeframes and feasibility strength for each strategy.

The objective of this Plan Update is to understand the Clarksville community – demographically who people are, where people live, where people go, and what people want in transit, to understand the current market trends and changing transit landscape, and to understand past planning efforts in order to develop reasonable strategic options for CTS engagement.

To achieve these objectives, several technical and data-driven activities as well as research, general on-the-ground observations, and conversations with stakeholders are utilized to collect data and information. This helps build the framework for understanding the Clarksville community and developing strategies tailored for this community.

Below are highlights of recommendations from the 2016 Strategic Plan that were initiated by CTS:

Completed

- Fare-free rides for seniors
- Real-time bus tracking (SPOT)
- New hybrid vehicles
- On-board

In Progress

- Wi-Fi Capable buses
- Adopt-A-Stop
- Fare collection cost analysis
- Transit center relocation analysis

Background

Study Area

This plan is focused on the current and future transit and mobility needs of the residents of the City of Clarksville and of the greater Clarksville Urbanized Area (UZA) (see Figure 1). Clarksville's municipal boundary and the Clarksville UZA are separate designations, though they do overlap significantly. Clarksville's municipal boundary comprises its corporate limits, whereas the urbanized boundary is a U.S. Census designation based on population patterns and other development patterns in the area. Various federal and state transit funding programs use urbanized area boundaries and the demographics of these areas to make funding decisions.

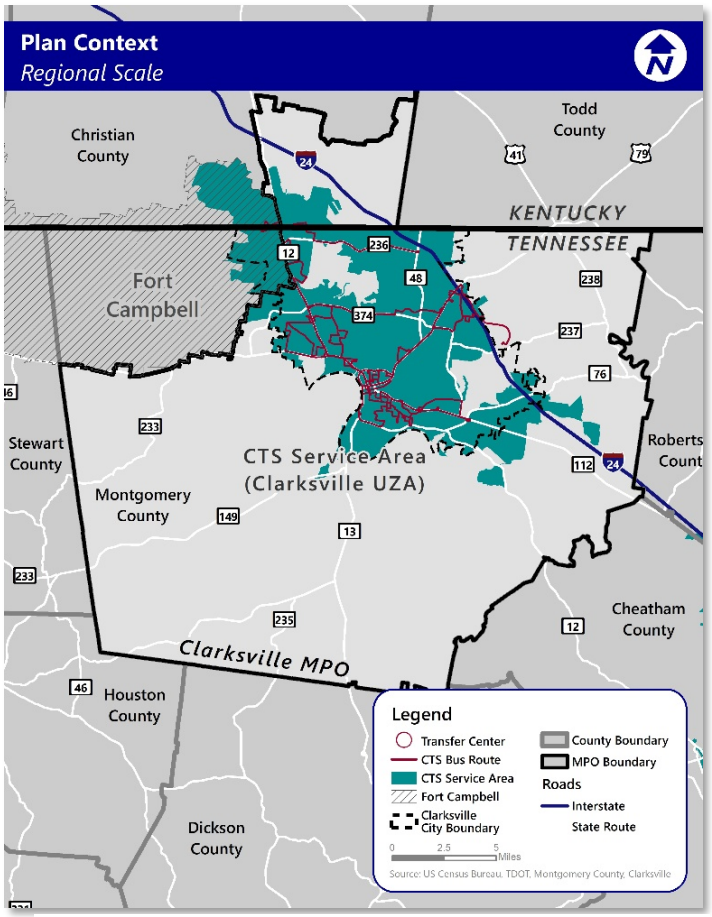


Figure 1: Plan Context, Regional Scale

CTS provides service to the entirety of the Clarksville UZA, operating fixed-route service out of downtown Clarksville and paratransit throughout the approximately 109 square miles of service area. The Clarksville UZA encompasses nearly the entirety of Clarksville municipal boundaries. It extends southeast along SR-112 and I-24, as well as NE along US-41A into Oak Grove, Kentucky. The Clarksville UZA also extends into the Fort Campbell Military Installation, operated by the United States Army.

The City of Clarksville and the Clarksville UZA are located within the Clarksville Urbanized Area Metropolitan Planning Organization (CUAMPO), the regional transportation planning authority responsible for the planning and programming of transportation funds in and around Clarksville. The CUAMPO boundary comprises the entirety of Montgomery County and extends northward into Christian County in southern Kentucky.

CTS operates a fixed-route bus system consisting of 11 fixed bus routes: eight (8) routes operating out of the Transit Center in downtown Clarksville (Routes 1-8), two shuttles operating on the Austin Peay State University campus (APSU North and APSU South), and one shuttle serving industrial destinations along I-24 (Route 1000). CTS is required by the Americans with Disabilities Act (ADA) to provide paratransit service within a ¾ mile area surrounding its fixed-route system, though CTS offers this service within the entirety of the Clarksville UZA.

2016 CTS Strategic Plan Recommendations

The previous strategic plan was published in 2016 in consultation with CTS staff, MPO staff, and various stakeholders in the study area. The recommendations developed from the 2016 Strategic Plan, listed below, included short-term implementable strategies addressing operations, vehicle maintenance, asset management, and service marketing.

Fixed Route Operations

- Monitor the performance of each route and adjust the schedule to maintain on-time performance goals of 85% during peak and 90% during off-peak
- Adjust times for time-points in schedule to reduce early trips
- Identify solutions for improving late night route on-time performance
- Undertake a COA to examine route and segment productivity
- Discontinue route 812
- Study rider needs on Route 8 between Kmart and Walmart on Ft Campbell Blvd
- Explore the creation of a Riders' Advisory Committee
- Study the feasibility of a dedicated transit access lanes along Wilma Rudolph Blvd
- Relocate transit stops to the street and away from building entrances
- Implement and monitor Dial-A-Ride services
- Reintroduce free transfers

Several recommendations regarding new and discontinued service were addressed by CTS following the 2016 Study. After exploring the feasibility of a BAT lane on Wilma Rudolph Boulevard, it was determined not to be feasible. CTS also undertook a Comprehensive Operational Analysis (COA), studied the needs of riders on Route 8, and discontinued Route 812. A few of the recommendations for Fixed Route Operations were also not addressed including the reintroduction of free transfers, funding to implement a Dial-A-Ride service and creating a Rider Advisory Committee.

Paratransit/ADA Operations

- Consider charging higher fare for paratransit
- Consider limiting the ADA services to ¾ miles from existing fixed routes
- Consider general public eligibility for paratransit/dial-a-ride service for a fare
- Continue travel training programs
- Offer free fixed-route rides to passengers who are somewhat ambulatory but would otherwise qualify for ADA services
- Continue to monitor the number of trips and costs and consider policies to combat cost escalation if necessary

Most of the paratransit operations recommendations were not implemented by CTS, though CTS did consider the recommendations. CTS also continues to operate the travel training program for ADA operations.

Facilities and Maintenance

- Work towards a more robust state of good repair for CTS vehicles and buildings
- Consider developing mini hubs at the north Wal-Mart and the southeast K-Mart
- Apply for additional grant funds to address sidewalk needs along transit routes
- Monitor the number of buses using the downtown transit center

CTS is currently studying the opportunity for transit hubs to alleviate the need for the many transferring passengers at the downtown transit center. CTS has achieved a more robust state of good repair with the completion and implementation of its Transit Asset Management (TAM) plan in 2020. The TAM identified all of CTS' assets and rated vehicles and facilities to be adequate or higher in terms of state of good repair. CTS also monitored the number of buses accessing the transit center downtown and determined in the 2017 Relocation Study that a new location is needed outside of the downtown core. CTS is currently reviewing the 2017 study to update it based on the changing needs of the transit system and its passengers.

Vehicles

- Examine investments in Automatic Passenger Counting (APC) equipment
- Examine investments in on-board enunciators
- Develop a CTS next bus real-time information app
- Consider the deployment of real time arrival information at proposed mini hubs
- Replace all vehicles rated as poor or worse
- Coordinate vehicle replacement and additional needs with service area changes

CTS followed the recommendations to invest in APCs, on-board enunciators, developed a next bus real-time app, and replaced all vehicles rated as poor or worse. The only recommendation that was not implemented was to deploy real-time information at proposed mini hubs because the mini hubs have not been implemented.

Marketing

- Provide necessary data required for transit trip directions on Google Transit
- Market and publicize the "free rides for seniors" program funded by AARP
- Continue to sell bus transit advertising and bus wrapping
- Continue to partner with employers to examine potential service expansion
- Continue partnerships with Austin Peay University

CTS followed the recommendations to provide necessary data to provide transit trip directions on Google Transit, continued to sell bus transit advertising, and continued their partnership with Austin Peay University. AARP discontinued the *Free Rides for Seniors* program, but CTS met this recommendation by continuing to provide free rides for seniors on fixed routes.

Other Region/Area Plans

Other plans that were completed in the Clarksville area were examined and considered so that they may inform and frame this strategic plan. The plans were reviewed to determine how entities other than CTS view transit in Clarksville and what their goals for transit are. CTS plans and studies that were completed since the previous strategic plan were also reviewed as a part of this process. The plans reviewed are detailed below.

The Clarksville Montgomery County Growth Plan 2040 was adopted in 2020 to address the needs of growing residential areas and to maintain the character of rural areas. This plan sets the boundaries for growth in the Clarksville municipal area. There are several recommendations in the plan that relate to transit operations including to focus development around areas that transit already serves, and to invest transit around existing developments. It also states that annexed areas and areas in the urbanized area must be evaluated for transit need and propensity.

The Downtown Circulator Survey was completed in 2020 with the purpose of determining the public's appetite for a downtown circulator bus route. The findings from the survey showed that people prefer the frequency for a circulator to be 15 minutes or less and that weekend service would be necessary. It also showed that people visit downtown for reasons other than work and key destinations are Austin Peay State University, the Downtown Courthouse, and the Downtown Commons.

The CTS Ridership Growth Study was completed in 2019 and had the purpose of identifying areas within the CTS service boundaries that have potential ridership opportunities but are not served by fixed-route service. Some of the recommendations include revising Routes 7 and 8 to serve the area to the north of 101st Airborne Division Parkway; revise Route 6 so that it serves the RTA Park-and-Ride east of I-24; and extending Route 1 to exit Fort Campbell at Gate 6.

The 2045 Clarksville Metropolitan Transportation Plan was completed in 2019 with the objective to set a 2045 regional vision and course of action that addresses the transportation needs of the Clarksville Metropolitan Planning Area. System-wide and transit agency related recommendations in the plan include concentrating development around transit corridors; addressing safety concerns for first mile/last mile transit accessibility; concentrating transit improvements in walkable places; and focusing transit improvements to increase frequency and reduce travel time. This plan also echoes the 2016 strategic plan to create a riders advisory committee.

The Clarksville Transfer Center Relocation Feasibility Study was completed in 2017 and serves the purpose of finding a new location for the Downtown Transit Center that meets the growing needs of CTS. This study outlines eight (8) potential sites for the new transfer and ranks them based on distance from the current center, access to the surrounding road system, and pedestrian accessibility. The study further recommended that these eight (8) sites be subjected to further environmental and geological testing. Of those determined to be environmentally and geologically sound, attempts should be made to negotiate with parcel owners.

An Addendum to the Clarksville Transfer Center Relocation Study was recently completed. This addendum was necessitated by preferred sites identified in the initial study being not being environmentally or geologically sound, as well as difficulty in securing agreements with parcel owners. The Addendum identified ten (10) additional, potential sites to relocate the transit center to. It evaluated these sites on the same criteria as the initial study with the addition of an environmental justice criterion.

The CTS Comprehensive Operations Analysis was completed in 2016 with the purpose of assessing the public transportation services for the City of Clarksville and recommending appropriate ways to allocate resources. Some of the recommendations include increasing frequencies on fixed routes to 30 minutes for all routes, and CTS should make the transition to using only hybrid buses.

Demographics and Land Use

Understanding your market is essential to providing effective and efficient transit service. Different customers have different mobility needs, and transit providers must understand who is in their market and where these individuals are to better meet their needs. Additionally, land use has significant bearing on how efficiently and effectively transit service can be operated.

Understanding your market is essential to providing effective and efficient transit service. Different customers have different mobility needs, and transit providers must understand who is in their market and where these individuals are to better meet their needs. Land use and zoning are a significant determinant of where people are located and can detract from or enhance transit provision. Different development styles involve different residential and commercial densities, with denser development supporting higher-quality transit than sparser development.

This plan uses demographic and land use data from a variety of sources to clearly show where different types of individuals and destinations are located within the CTS service area. Map and figures specifically indicate the sources used, with the US Census Bureau, the City of Clarksville, and CUAMPO being the primary originators of data used in this section. Block groups containing data from the 2016 - 2019 American Community Survey (ACS) 5-year estimates are the primary geography used in this section.

General Demographics

This section provides a series of maps, figures, and discussion outlining the general demographic characteristics of the CTS service area, including current and future population and employment patterns. It also identifies key concentrations of various populations within the service area which may be targeted for increased transit provision.

Population and Population Density

Population and population density are particularly important to analyze in the context of public transit because they are significant determinants of the quality of service that can be provided. Higher concentrations of people around transit infrastructure support more frequent and higher quality service. There may be an opportunity to provide service to dense populations not currently served by transit.

Additionally, decennial population counts at the UZA level, carried out by the U.S. Census Bureau, are major inputs into federal and state transit funding formulas.

Table 1 shows estimates of the Clarksville UZA population for 2016 through 2019 and actual 2010 Census tabulations from 2010. Note that counts from the decennial census are used until the next decennial census, so CTS has received federal and state transit funding based upon its 2010 counts, and the 2020 census will yield a new population figure for funding purposes. The Clarksville UZA has steadily increased in population since 2010, with an estimated 183,798 people residing in the UZA in 2019.

Year	Clarksville UZA Population	% Change from Prior Year
2010*	158,655	-
2016	173,411	-0.7%
2017	176,696	1.9%
2018	179,327	1.5%
2019	183,798	2.5%

Table 1: Clarksville UZA Population, 2010 - 2019

Figure 2 illustrates population density within the Clarksville UZA and its surrounding area (expressed in population/acre). This data is reported at the block group level.

People are relatively concentrated in four key areas in the Clarksville service area: downtown Clarksville near the Transit Center (marked TC), north along Route 1 (SR-12/Hwy. 41), east along SR-236 (Tiny Town Rd.), and within the Fort Campbell Military Installation. Population densities in these areas are just over 3 people/acre. Otherwise, people are generally less concentrated as you radiate from these three key areas, with the outskirts of the Clarksville UZA ranging from 0-1 people/acre.

Overall, the Clarksville UZA is sparsely developed, with even the most concentrated areas (previously noted) reaching just 3 persons/acre. This presents a significant challenge to transit provision, as relatively high population density is integral to ensuring that there is sufficient ridership to justify operating transit service, particularly fixed-route service.

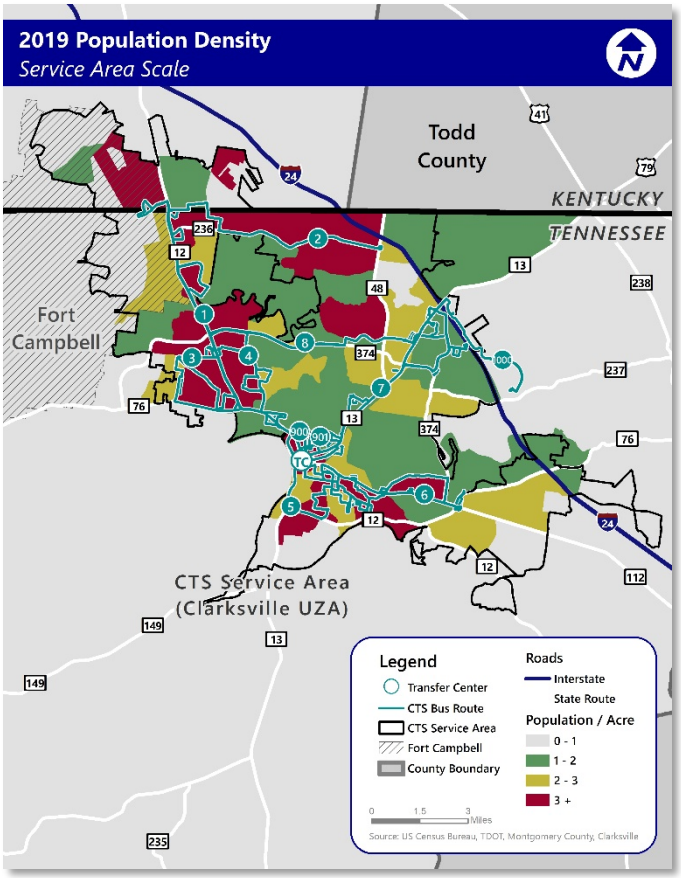


Figure 2: 2019 Population Density

Forecasted Population Growth

It is also critical to examine where population growth may occur and in what amounts. Forecasted data on population growth can give transit planners and professionals an idea of where they may need to provide service in the future. Using forecasts to anticipate trends and judiciously respond can enable transit authorizes to remain competitive.

Figure 3 displays forecasted population density for 2045. This was obtained from CUAMPO and is derived from their regional travel demand model. It is displayed at the TAZ level, a geographic unit commonly used in travel demand modelling.

Population growth is forecasted to primarily occur in the northern portions of the CTS service area. In particularly, along Routes 1, 2, and 8. The areas surrounding Routes 3, 4,

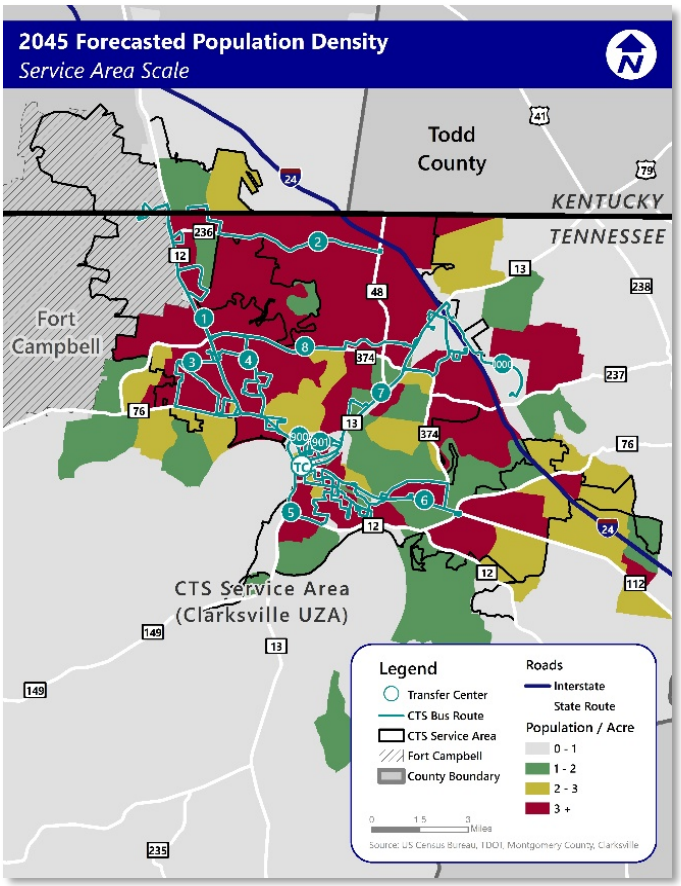


Figure 3: 2045 Forecasted Population Density

and the southern half of 1 already were generally over 3 people/acre, although population trends are forecasted to reinforce this pattern. Along the northern half of Route 1 and along Routes 2 and 8, densities are forecasted to reach 3 people/acre. As a result, nearly the entire northern half of the CTS service area is forecasted to eclipse 3 people/acre in density. If these portions of the CTS service were to densify in this manner, this would enable greater service provision by providing continuous, dense development.

Downtown Clarksville and the areas directly abutting it are also forecasted to densify, particularly the areas south and southeast of downtown, along Routes 5 and 6. All of these areas are forecasted to eclipse 3 people/acre. Otherwise, densification is forecasted to occur in a patchwork fashion throughout the remainder of the CTS service area.

Job Density

Similar to population density, job density is important to the provision of high-quality public transit because employment locations are key destinations for many people. The more people are going to the same location, the better chance that public transit can be a viable option for taking people from their homes to their workplaces.

Figure 4 illustrates job density within the Clarksville UZA and its surrounding area (expressed in jobs/acre). This data was obtained the from the US Census Bureau's Longitudinal Employer-Household Dynamics (LEHD) Program and is reported at the block group level.

Jobs are relatively concentrated in downtown Clarksville and near the I-24/SR-13 (Wilma Rudolph Blvd.) interchange, along Route 7. There is also a relatively high concentration of jobs along Route 3, just south of SR-374 (101st Airborne Division Pkwy.). These employment centers are just over 1.5 jobs/acre. They are generally surrounded by large areas of very low job density, as much of these areas are residential in nature.
Many new jobs are being located on large parcels of land located outside of the CTS service area. Given the location of these jobs, providing transit service to them is difficult.

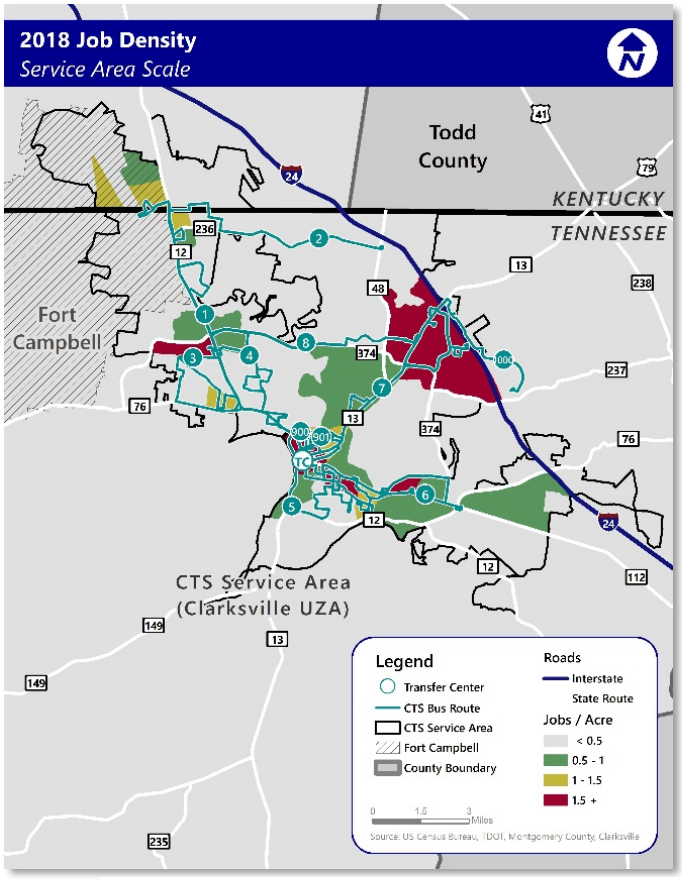


Figure 4: 2018 Job Density

Activity Density

People travel to where jobs are located to fill those jobs. Many jobs also attract customers, such as eating and shopping establishments. People that travel to these locations must also return home or access other activity centers.

Activity Density

$$\frac{\text{Population Density + Job Density}}{\text{Area (in acres)}}$$

Figure 5: Activity Density Calculation

Activity density helps paint a clearer picture of where people travel to and where they travel from, so that transit providers can more readily serve these travel flows. Population density and job density were combined into a unitless composite measure to create this metric (see Figure 5). The total amount of jobs and people residing in each block group were summed and divided by each respective block group's area, to produce Activity Density. This helps identify areas where there are relatively high concentrations of both population and jobs. This is data reported at the Census block group level.

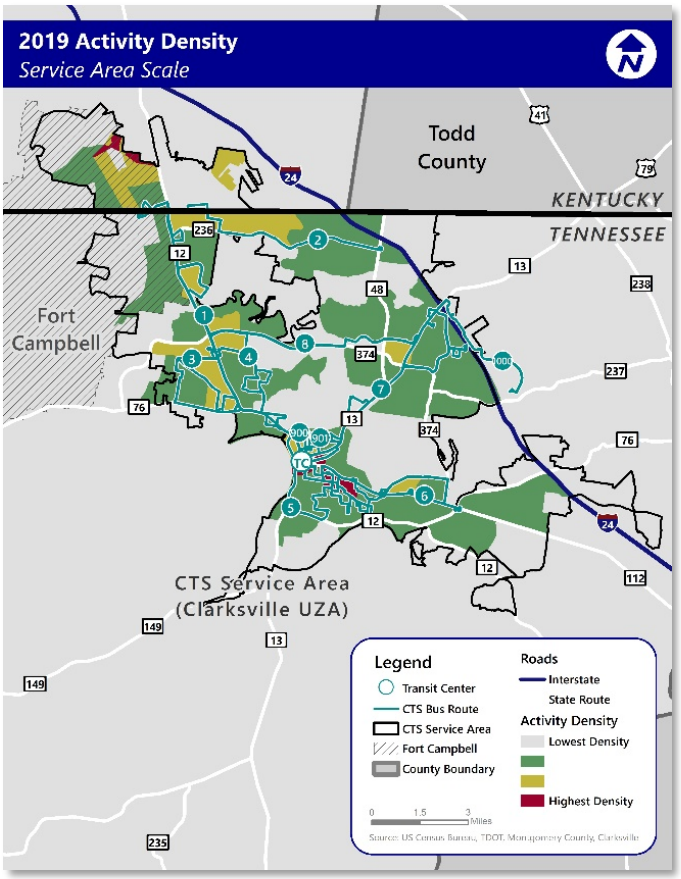


Figure 6: 2019 Activity Density

Downtown Clarksville and the area to the southeast has the highest activity density in the CTS service area. Downtown Clarksville contains numerous employers in its downtown core, including many municipal and county government buildings and an array of private employers. Austin Peay State University (APSU) is also directly adjacent to downtown Clarksville, which includes students housing as well as many jobs associated with the university.

There are less concentrations of activity located along Routes 1 and 3 on SR-12 (Fort Campbell Blvd.). These areas contain some of the most significant residential development in the CTS service area, as well as commercial development concentrated along SR-12 (Fort Campbell Blvd.) and schools and other commercial development scattered around Lafayette Road.

There is another lesser concentration of activity near the intersection of SR-374 (101st Airborne Division Pkwy.) and SR-48 (Trenton Rd.), which is served by Route 7. This area contains both residential development and multiple multi-family apartment/townhome developments, as well as significant commercial development along US-49 (Wilma Rudolph Blvd.).

Similar to other density metrics, activity density tends to decrease as one gets farther from these areas, with the outskirts of the CTS service area having very low activity density.

Worker Density

Commuting to employment is a major travel market that transit strives to serves, so understanding where people work in addition to where they are commuting from is critical to providing transit that meets peoples' mobility needs. Transit plays a key role in economic development by providing workers access to jobs and other opportunities, all the while improving the workers' quality of life. As with all forms of density, the more densely arrayed workers are, the better transit's ability to be a cost-effective and competitive transportation mode.

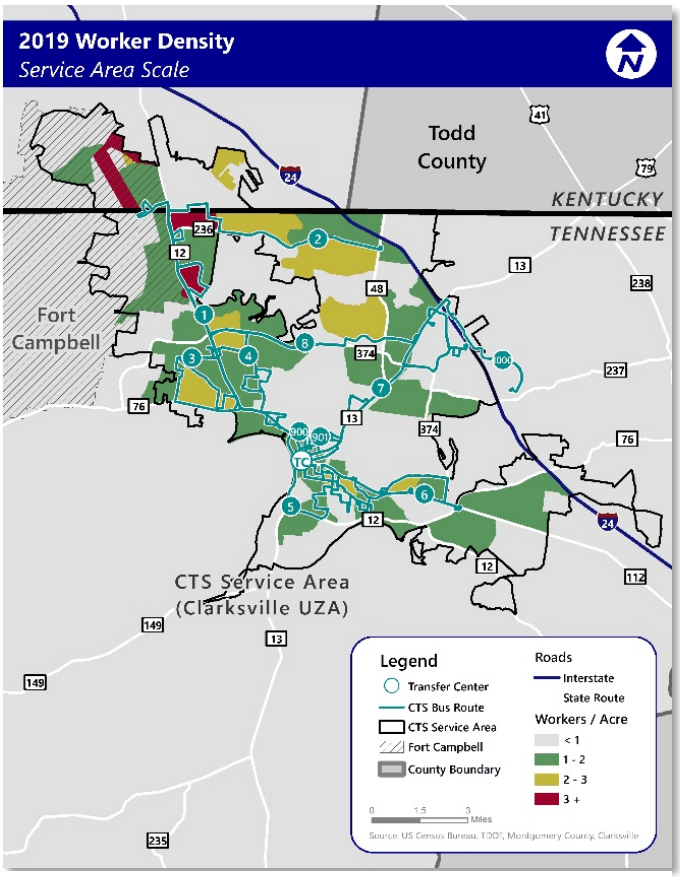


Figure 7: 2019 Worker Density

Figure 7 displays worker density through the Clarksville UZA, defined as those employed over 16 years of age and older. This is expressed as workers/acre in Census block groups.

Workers are primarily concentrated in and around the Fort Campbell Military Installation, most likely due to the high concentration of employed military personnel in proximity to the base. Relatively less intense concentrations are in the following locations: north of Route 8 along SR-48 (Trenton Rd.), along Routes 1 and 3 to the northwest of downtown, along Route 2 on SR-236 (Tiny Town Rd.), and southeast of downtown along Route 6. The concentrations of workers along Routes 1, 2, 3, and 8 correspond to some of the primary residential development within the CTS service area. The concentration along Route 6 also corresponds to major residential development, including a major public housing project operated by the Clarksville Housing Authority (CHA) who would benefit in particularly from reliable transit service.

Prime Working Age Density

Workers need to access employment, and prime working age individuals (and younger people in general) report being more open to using transit if it is convenient. Providing working age individuals increased job access is a major way in which public transit can support economic development. Like other density metrics, the denser prime working age individuals are arrayed, the easier it is for transit to serve their mobility needs in a cost-effective manner.

Figure 8 shows the density of prime working age individuals within the CTS service area, defined as individuals aged 18-34 (expressed as prime working age population/acre). This definition is based on the Census Bureau's definition of prime working age, used in its American Community Survey (ACS) and Decennial Census products.

Prime working age individuals are primarily concentrated in the following locations: downtown Clarksville, along Route 6 southeast of downtown, and along the northern portion of Route 1, up into Fort Campbell. The concentration of prime working age individuals along the northern portion of Route 1 is likely due to the proximity of the Fort Campbell Military Installation. The concentration downtown, particularly on the northern outskirts, is likely due to APSU's campus

Active Military Personnel Density

Clarksville and the CTS service area are unique in their proximity to the Fort Campbell Military Installation. This proximity makes Fort Campbell a potential stakeholder and partner in transit provision. Military personnel have the same mobility needs as non-military individuals, though they have a unique need to access military bases as their primary place of employment. Figure 9 displays the density of active military personnel through the CTS service areas, expressed as active military personnel/acre in Census block groups. This data was obtained from the Census's ACS products.

Military personnel are largely concentrated within and adjacent to Fort Campbell, along Routes 1 and 2, almost certainly a result the proximity to the base. There are lesser concentrations of active military personnel along Route 2 and near I-24, at the outer northern reaches of the CTS service area. Again, the proximity to Fort Campbell plays a major role and these areas are sites of significant residential developments that military personnel likely reside in. Outside of these areas, there are no particularly high concentrations of active military personnel.

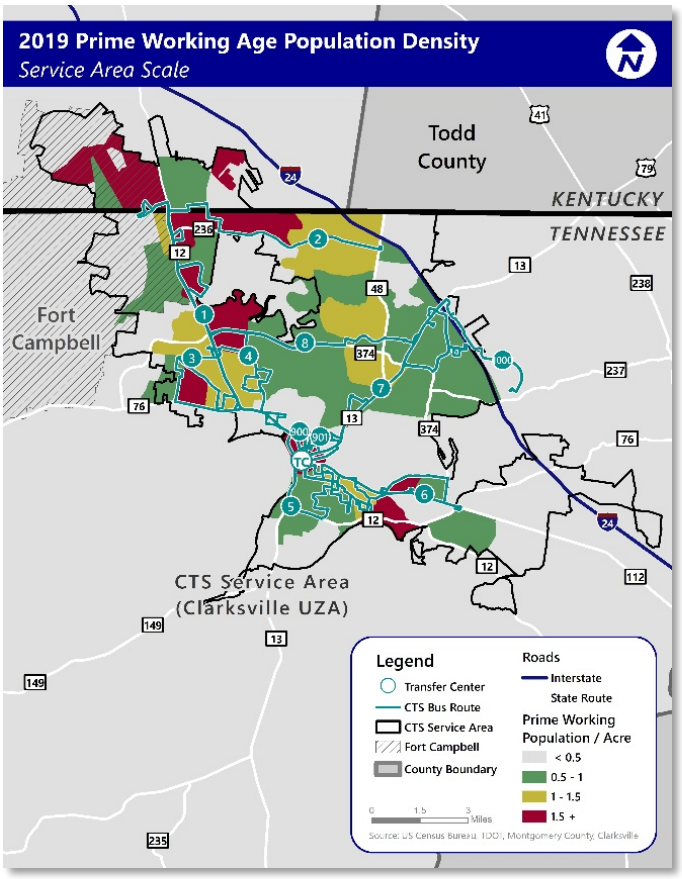


Figure 8: 2019 Prime Working Age Density

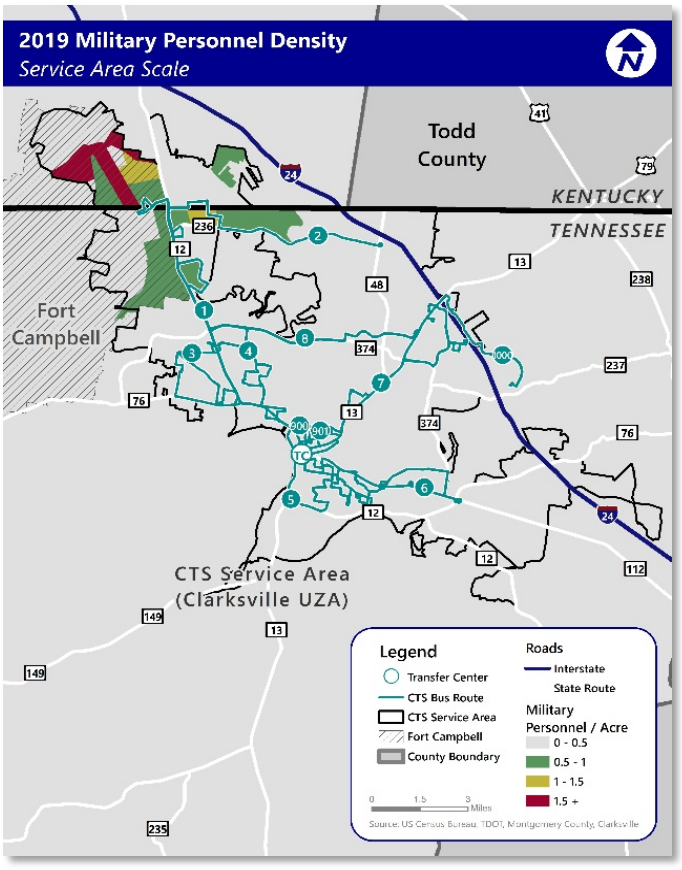


Figure 9: 2019 Military Personnel Density

Transit Reliance

The following section provides maps, figures, and discussion of populations within the CTS service area that are generally more reliant on public transit compared to the area population. Transit often serves as a vital lifeline to these populations, allowing them to access employment opportunities, education, shopping locations, and service organizations. The following populations are included as "transit reliant populations": unemployed individuals, racial and ethnic minorities, zero-vehicle households, individuals in poverty, youth, older adults, and individuals with disabilities. A composite transit reliance index is calculated and discussed at the end of this section, which combines the seven populations to identify geographies where people are most reliant on public transit.

Unless otherwise noted, this data pulls from the Census's American Community Survey (ACS) 2016 – 2019 5-year estimates and is reported at the block group level.

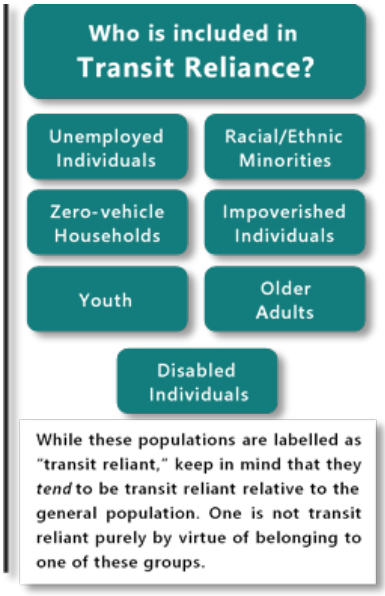


Figure 10: Transit Reliance

Unemployment Density

Unemployed individuals are particularly reliant on public transit, as they often lack the means to buy and maintain an automobile, a key intersection with poverty. Unemployed individuals have all of the same mobility needs as employed individuals, though public transit is doubly important as unemployed individuals seek new employment opportunities. Public transit also continues to serve as a means to access shopping opportunities and social experiences.

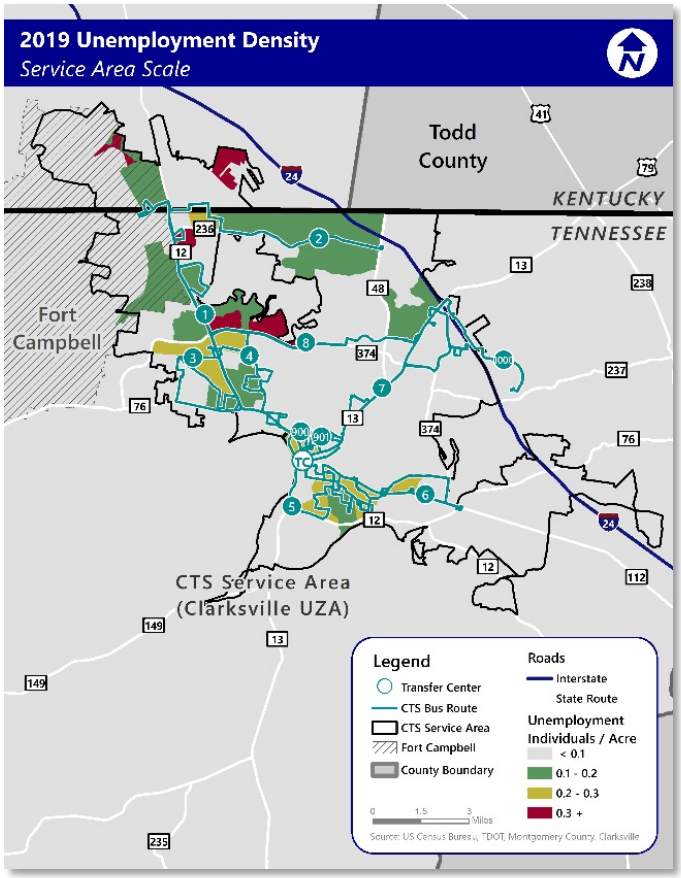


Figure 11: 2019 Unemployment Density

Figure 11 illustrates the density of unemployed individuals, measured as unemployed individuals/acre in Census block groups. The ACS's definition of unemployment is used, meaning individuals are considered unemployed if they have no employment and they are currently seeking work. Unemployed individuals are primarily concentrated in two locations: southeast of downtown Clarksville along Routes 5 and 6 and on Route 8, along SR-374 (101st Airborne Division Pkwy.). The southeastern concentration corresponds to a major public housing project near the CTS administrative headquarters, north of SR-12 (Fort Campbell Blvd.) and south of Crossland Ave. Despite these areas being *relatively* high concentrations, the highest concentrations of unemployment just eclipse 0.3 individuals per acre.

Minority Density

Racial and ethnic minorities frequently face mobility barriers that white people do not face. As such, they may have mobility needs that are worth particular focus. Studying and understanding where these populations are located and in what amounts is critical to fulfilling these needs, thereby enabling access to opportunities not previously afforded to them.

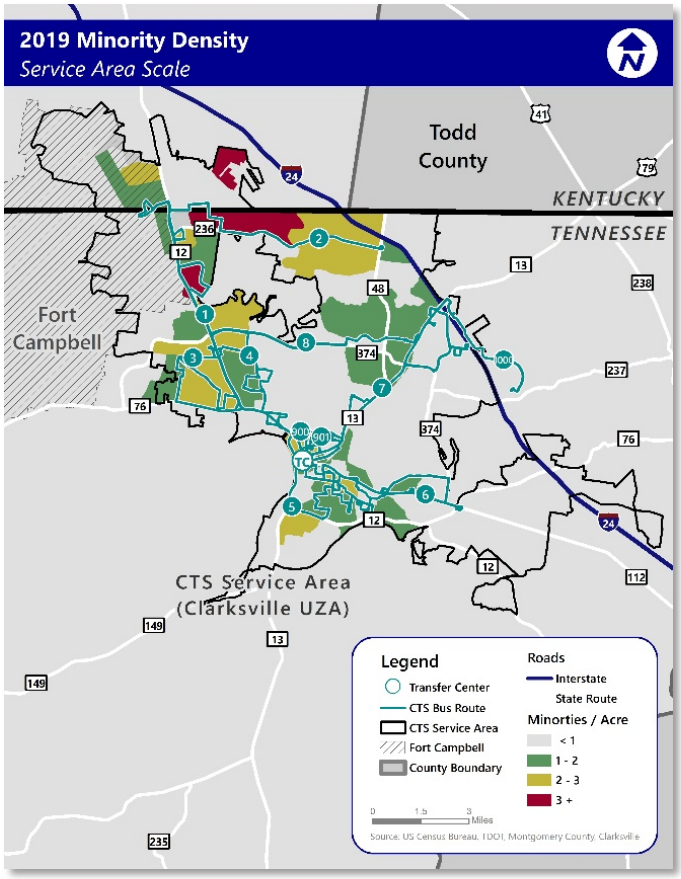


Figure 12: 2019 Minority Density

Figure 12 shows the density of racial and ethnic minorities in and around the CTS service area. For the purposes of this plan, a racial or ethnic minority is anyone who identifies as a race other than white or someone who identifies as Hispanic or Latino. This is expressed as minorities per acre in Census block groups. This data was obtained from the Census's 2019 ACS 5-year estimates.

Racial and ethnic minorities are primarily concentrated along Route 1 and the north-south portion of Route 2, which run north on SR-12 (Fort Campbell Blvd.) to the Fort Campbell Military Installation. There are also concentrations of racial and ethnic minorities along the east-west portion of Route 2, running along SR-236 (Tiny Town Rd.) in the northern part of the CTS service area. These concentrations range from approximately two racial minorities per acre to more than three.

There are lesser concentrations of racial and ethnic minorities within and to the south-southeast of downtown Clarksville, where the Transit Center is located. These concentrations range from one to two racial and ethnic minorities per acre. Particularly in the southeast outskirts of the CTS service area, near SR-374 (101st Airborne Division Pkwy.) and I-24, there are no significant concentrations of racial and ethnic minorities.

Zero-vehicle Household Density

Zero-vehicle households face significant barriers to accessing employment, shopping, recreational, and other opportunities. Public transit acts as a critical lifeline for those without reliable access to a vehicle. Zero-vehicle households may encompass households who do not own a vehicle out of choice and households that cannot afford vehicle. However, due to the low-density, suburban nature of the CTS service area, one can safely assume that zero-vehicle households in the service area are those that cannot afford a vehicle.

Figure 13 illustrates zero-vehicle household density within and around the CTS service area. This is expressed as zero-vehicle households per acre in Census block groups. This data was obtained from the Census's 2019 ACS 5-year estimates.

Zero-vehicle households are primarily concentrated within and to the southeast of downtown Clarksville. There are also smaller, similarly concentrated pockets of zero-vehicle households along Route 3 (on SR-76) and along Routes 1 and 2, near the Fort Campbell Military Installation. Concentrations in these areas are just over 0.3 zero-vehicle households per acre. As discussed in the Population Density section, the densest portions of the CTS service area are approximately three individuals per acre. Taken with a fraction of overall households being zero-vehicle, this is likely a significant contributor to the highest concentrations of zero-vehicle households still being sparsely arrayed.

Outside of these concentrations, there are little to no significant concentrations of zero-vehicle households according to this data.

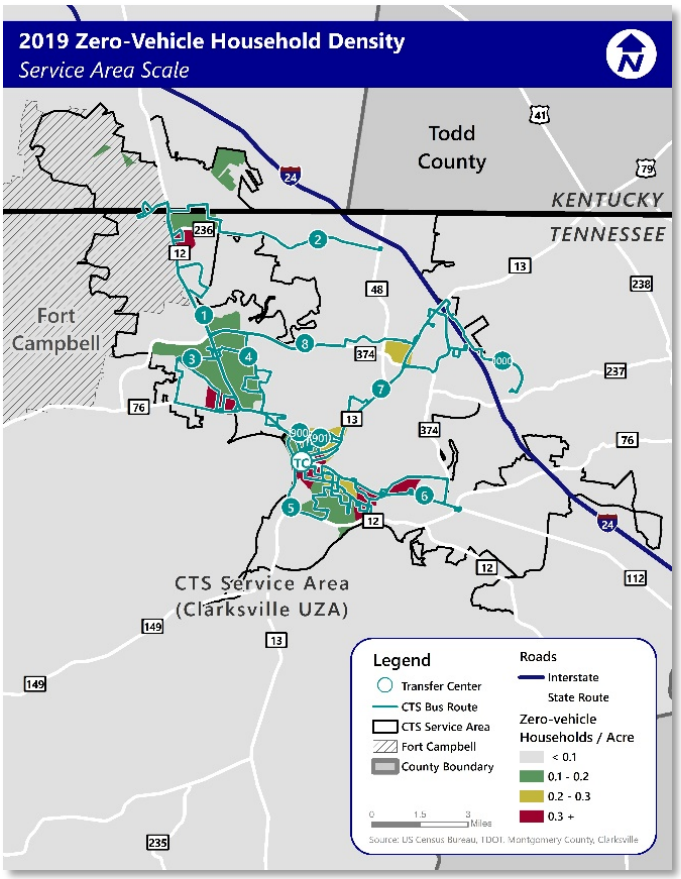


Figure 13: 2019 Zero-Vehicle Household Density

Poverty Density

Poverty intersects with multiple aspects of transit reliance previously discussed, including unemployment and lack of reliable access to vehicles. Lack of employment is frequently a contributor to poverty, which in turn contributes to the lack of ability to purchase and maintain a vehicle. As a result, impoverished persons often rely on public transit to satisfy their basic mobility needs.

Figure 14 illustrates how impoverished persons are distributed across the CTS service area, measured in impoverished persons per acre in Census block groups. This data was obtained from the Census's 2019 ACS 5-year estimates.

Impoverished persons are primarily concentrated in two locations in the CTS service area: southeast of downtown Clarksville and at the intersection of SR-236 (Tiny Town Rd.) and SR-12 (Fort Campbell Blvd.), which are served by Routes 1 and 2. The concentration to the southeast of downtown corresponds to a large public housing development operated by the

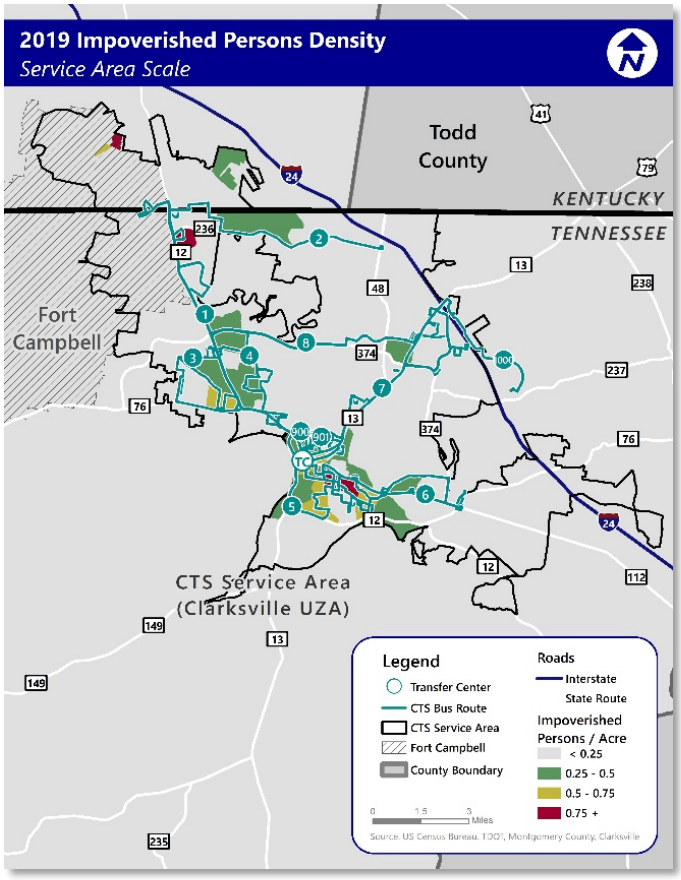


Figure 14: 2019 Impoverished Persons Density

Clarksville Housing Authority. The concentration at the intersection of SR-236 (Tiny Town Rd.) and SR-12 (Fort Campbell Blvd.) corresponds to a series of mobile-home neighborhoods between Goodlett Dr. and SR-236 (Tiny Town Rd.). Like other demographic measurements discussed, while these are high *relative* concentrations, they are not highly concentrated in the absolute sense due to the generally low-density character of the CTS service area.

Youth Density

Examining where younger residents are concentrated is important because they often do not have as much independence in moving about their community as adults do. If they are younger than 16, they likely cannot drive themselves and are thus dependent on adults for mobility. Even 16 and 17-year-olds may not have ready access to a vehicle depending on their socioeconomic status. As a result, public transit can be important to ensuring that younger individuals' mobility needs are met.

Figure 15 illustrates where youth are concentrated within the and around the CTS service area. For this plan, youth is defined as those younger than 18 years of age and this data is expressed in youth per acre in Census block groups. This data was obtained from the Census's 2019 ACS 5-year estimates.

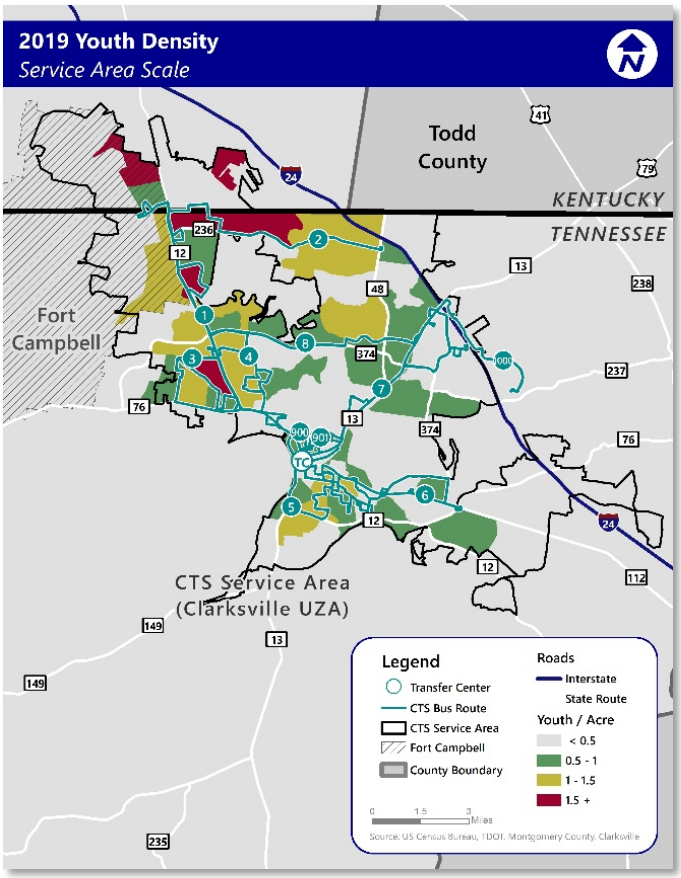


Figure 15: 2019 Youth Density

Youth are primarily concentrated in three key locations: north of downtown Clarksville along SR-12 (served by Routes 1, 2, and 3), along SR-236 (Tiny Town Rd.; served by Route 2), and within and adjacent to the Fort Campbell Military Installation.

The area along SR-12 (Fort Campbell Blvd.) corresponds to significant residential development surrounding Lafayette Road (served by Route 3). This area also contains multiple schools, including Liberty Elementary School, Minglewood Elementary School, and Northwest High School.

Likewise, the youth concentration along SR-236 (Tiny Town Rd.) corresponds to significant residential development along the Kentucky/Tennessee border.

In the case of Fort Campbell, this may be due to the presence of base housing serving young military families.

Older Adult Density

Older adults often face challenges with the physical and cognitive effects of aging, which can impede their ability use an automobile. As a result, older adults are particularly dependent on public transit, particularly ADA-required paratransit, which CTS provides throughout the entirety of its service area. Public transit is an important service that helps older adults maintain a high quality of life and access the same opportunities as younger cohorts.

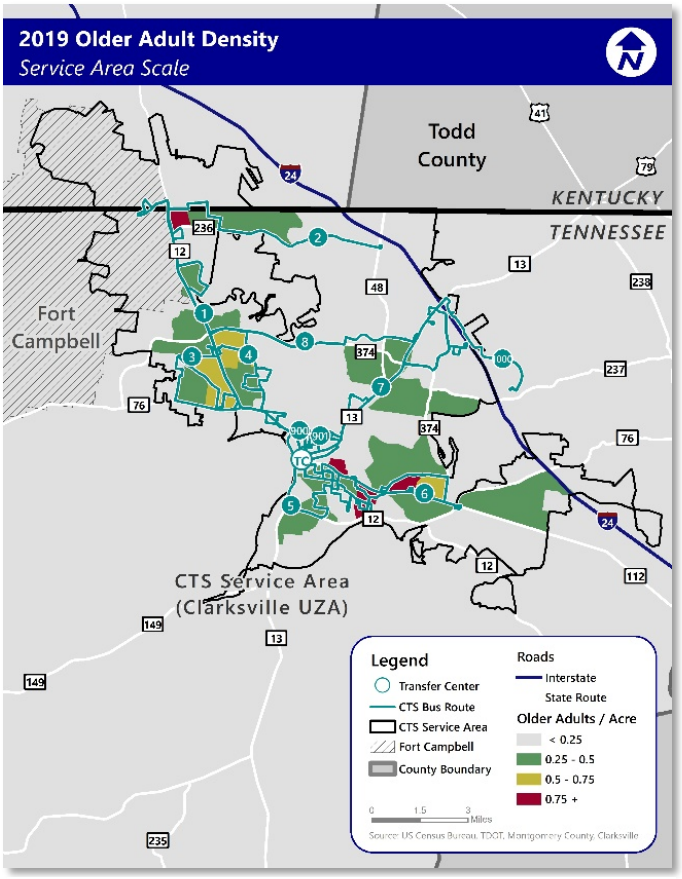


Figure 16: 2019 Older Adult Density

Figure 16 shows the density of older adults throughout the CTS service area, defined as those aged 65 and over. This is expressed in older adults per acre in Census block groups. This data was obtained from the Census's 2019 ACS 5-year estimates.

Older adults are primarily concentrated in three locations: to the southeast of downtown Clarksville along Route 6, directly east of downtown Clarksville, and near the Kentucky/Tennessee state border on Route 1. The concentration to the southeast of downtown Clarksville along SR-12 (Ashland City Rd.; served by Route 6) corresponds to at least one existing retirement community, including the Uffelman Estate community. To the east of downtown Clarksville, there is not a specific older adult community, though the Clarksville 50+ Activity Center is located in this area. The older adult concentration near the Kentucky/Tennessee border also does not correspond with a specific retirement community. This illustrates how older adults do not only reside in older adult-specific communities, but they can also reside in mixed-generation neighborhoods where they may still require transit service.

Individuals with Disability Density

While people have varied disabilities, having a disability frequently makes it difficult for people to operate a vehicle, making individuals with disabilities particularly reliant on public transit. As a result, it is important that these individuals with disabilities have their basic mobility needs met through public transit. In particular, paratransit allows individuals with disabilities to move about their communities by providing door-to-door service and overcoming first/last mile challenges in accessing fixed-route transit. Disability also often intersects with other aspects of transit reliance, such as poverty and age, compounding mobility challenges and the importance of providing service to these individuals.

Figure 17 displays the density of individuals with disabilities through the CTS service area. This is expressed as individuals with disabilities per acre and is reported at the block group level. This data was obtained from the Census's 2016-2019 ACS 5-year estimates. While the Americans with Disabilities Act (ADA) only requires transit agencies to provide paratransit ¾ of a mile around fixed-route transit, CTS provides paratransit to the entirety of its service area. Individuals with disabilities are primarily concentrated in three areas: southeast of downtown Clarksville (along Routes 5 and 6), along SR-12 (served by Route 1), and along the Kentucky/Tennessee border.

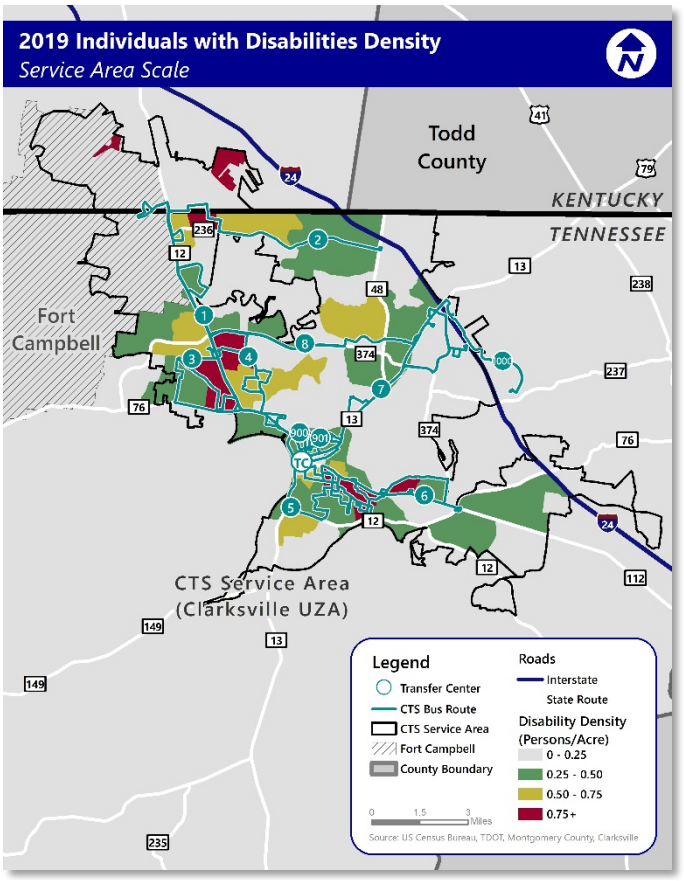


Figure 17: 2019 Individuals with Disabilities Density

The area southeast of downtown Clarksville corresponds with the Clarksville 50+ Activity Center. There are also multiple retirement communities in this area, such as Uffelman Estates, Dogwood Bend, and Walking Horse Meadows, as well as a major public housing project, highlighting the intersection of disability with poverty and age. The concentrations of individuals with disabilities along SR-12 (Fort Campbell Blvd.; served by Route 1) and along the Kentucky/Tennessee border do not correspond with any particular pockets of older adults or impoverished individuals. Rather, these areas are more densely settled compared to the rest of the CTS service. Nonetheless, these are concentrations of individuals with disabilities and thus warrant transit service.

Transit Reliance Index

The seven populations previously discussed were used to calculate a composite transit reliance index, which can be used to identify portions of the CTS service area that tend to be the most reliant on public transit. Raw counts of these were summed and then divided by the area (in acres) of the respective block groups, producing a composite transit reliance index. All inputs were obtained from the ACS 2016-2019 5-year estimates. Because this data is reported per acre, it can be used to identify concentrations of groups who tend to be reliant on public transit. Note that this data highlights cases where different individuals within these groups are present or cases where one individual may fall into multiple groups.

When collocated, these transit reliant groups represent a concentrated mobility need that transit can meet effectively and efficiently. Transit can serve as a vital mobility lifeline for many people who need the service and capture an important part of the transportation market. Even where fixed route may not be viable, paratransit or other flexible forms of transit (such as microtransit) may be another means of ensuring the mobility needs of these populations are met.

Figure 18 illustrates the patterns of transit reliance identified within the CTS service area. Transit reliant populations are primarily concentrated in the following areas: within and south of downtown Clarksville, along SR-12 (Fort Campbell Blvd.; served by Route 1), and along SR-236 (Tiny Town Rd.; served by Route 2).

Directly south of downtown Clarksville and along SR-13 (Cumberland Dr.), transit reliance is primarily driven by high concentrations of youth and racial/ethnic minorities. Moving eastward along Route 6, youth are less concentrated and thus contribute less to transit reliance, although there is still a moderate-high concentration of racial minorities. Individuals with disabilities and older adults are the primary contributor to transit reliance in these areas. Along SR-12 (Fort Campbell Blvd.; served by Route 1) and SR-236 (Tiny Town Rd.; served by Route 2), youth and racial/ethnic minorities are again the primary contributor to transit reliance in these areas. There are also relatively high concentrations of other populations considered to be transit reliant in this analysis, especially individuals with disabilities and impoverished individuals.

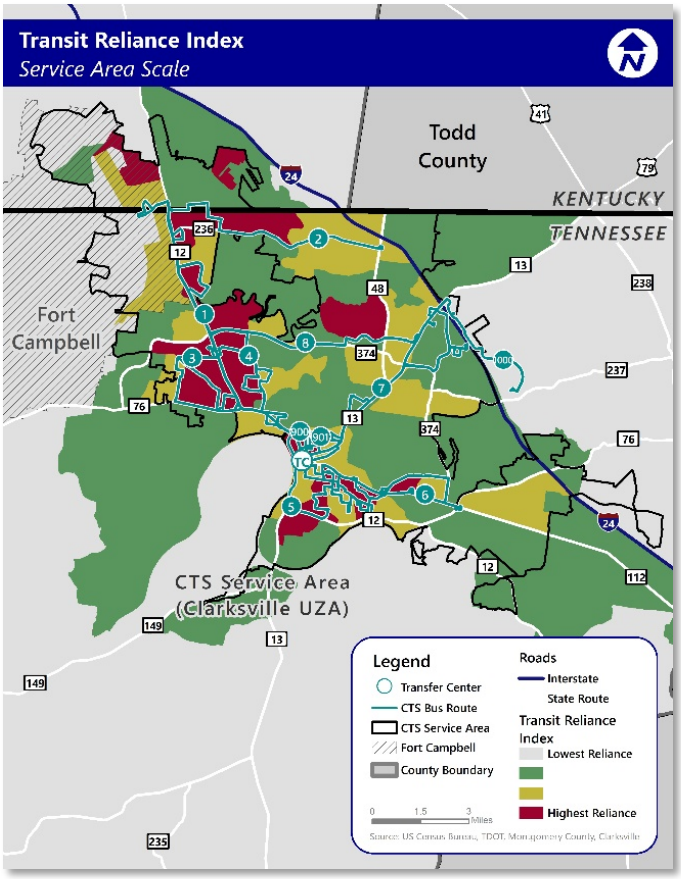


Figure 18: Transit Reliance Index

Land Use

The need and desire for transportation is ultimately derived from land use. People have destinations they wish to access, and transportation is the means for achieving that access. Thus, it is important to consider the destinations that people wish to access as well as the local regulatory framework. This section discusses land use and major activity generators in the CTS service area, including an overview of zoning in the CTS service area, historical trends in building permit issuances, and activity generators.

Zoning

Zoning is a power exercised by local legislative bodies to control land use within a municipality's corporate limits. Clarksville's City Council has this ability. The City Council may regulate many different aspects of land use, such as the type of use, density, or many different design factors (e.g. parking requirements). The Clarksville City Council can change what land can legally be used for in different parts of the city and how.

Transit is particularly reliant on a sufficiently high population density to drive healthy ridership, with greater density generally being more supportive of higher capacity transit. Zoning is frequently used to legally constrain the number of dwelling units (and therefore people) allowed

on parcels of land. This is a significant contributor to widespread development patterns that inhibit the ability of transit authorities to provide efficient, high-quality service. Greater, transit-supportive population density cannot legally occur until local ordinances are amended to allow it.

Figure 19 is a generalized zoning map of the CTS service area. This map was created by sorting the City of Clarksville/Montgomery County's existing zoning data into generalized categories with other similar zoning designations. Generally speaking, the Clarksville UZA is not zoned in a transit-supportive manner. The Clarksville UZA is primarily composed of low-density residential and agricultural zoning districts, which are unlikely to allow sufficient population densities to generate ridership. Commercial areas are concentrated in downtown Clarksville, with mid-density residential and commercial areas located along major highways. There are major industrial parcels on the east side of I-24, near the Kentucky/Tennessee border. However, these are technically outside the Clarksville UZA and therefore outside the CTS service area.

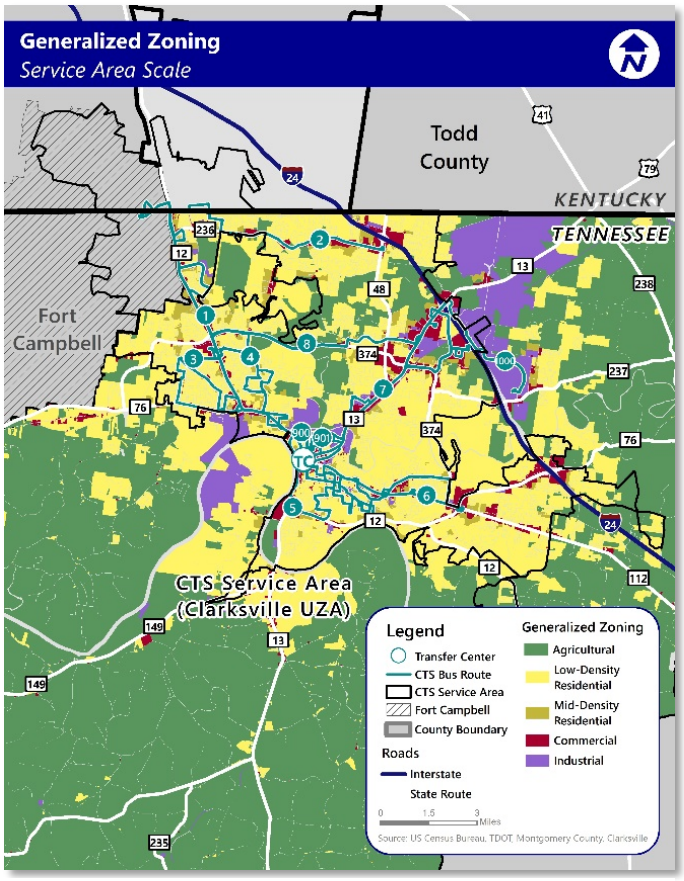


Figure 19: Generalized Zoning

Building Permits

Building permits offer another means of examining development patterns, thereby painting a clearer picture about where service may need to be expanded. While population data shows where people are, building permit data can be used to show near-term patterns. The lag between the issuance of a building permit and eventual construction allows one to see where people and commercial activities are likely to be in the near future. Both tabular and spatial data are used in this section.

The City of Clarksville's Buildings and Codes Department provides regular updates to building permits issued in Clarksville, broken down by type in comparison to previous years.[1] Table 2 contains data derived from these reports. It shows permit issuances by type for 2019 through September 2021.

Building Permit Issuances: 2019 – September 2021

Year	Permit Type		
	SFR	MFR	COM
2019	928	153	254
2020	1,195	198	225
2021	1,203	175	207

SFR = Single-family Residential
MFR = Multi-family Residential
COM = Commercial

Table 2: Building Permit Issuances, 2019 - September 2021

[1] City of Clarksville Public Safety Committee, Agenda Center

Clarksville is clearly growing. Single-family residential (SFR) permits have increased through all three years, with 2021 SFR permits being higher as of September 2021 than the entirety of 2019 or 2020. 2021 Multi-family Residential and Commercial permits are currently lower than 2019 and 2020. However, given that this data does not yet account for October – December, year-end 2021 figures may still eclipse 2020 in these categories, especially if this year's October – December issuances are similar to previous years.

Building permit data was obtained from APSU's GIS department, which provides GIS services for the City of Clarksville. It is point data primarily derived from parcel data that displays when a particular structure was permitted. This point data was combined with Census block groups in Figure 20 to calculate a permits/acre metric, which can be interpreted as identifying concentrations of locations where building permits have been issued. Data from 2018 through 2021, year to date, is displayed. This data includes all permit types.

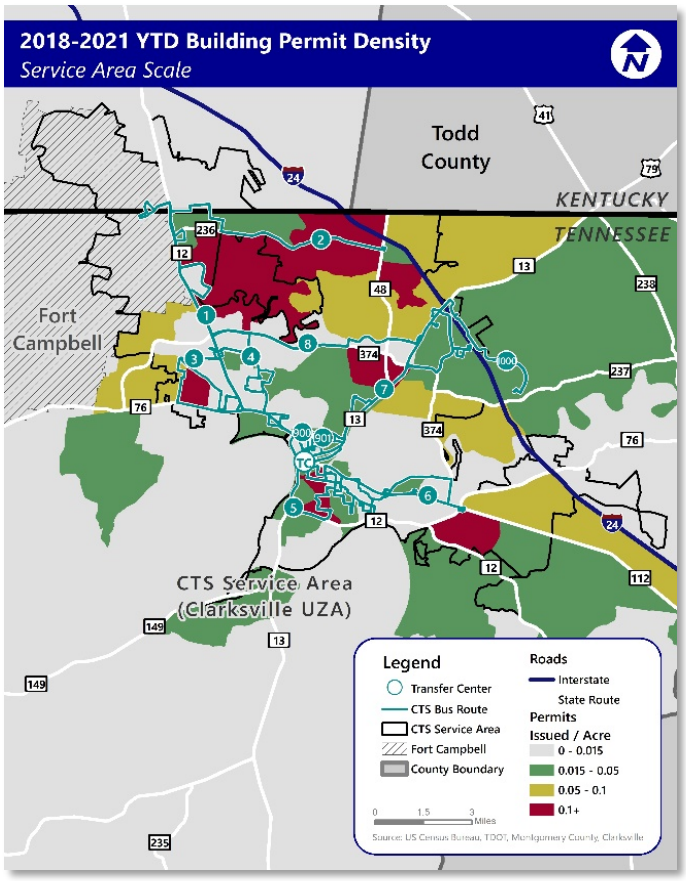


Figure 20: Building Permit Density, 2018-2021 YTD

Buildings permits have been primarily concentrated north of downtown Clarksville, in between SR-12 (Fort Campbell Blvd.) and SR-48 (Wilma Rudolph Blvd.). Notably, the primary concentration of permit issuances in this area is partially outside CTS's current service area. However, given Clarksville growth and the upcoming revisions to UZA boundaries by the Census, this may soon change. Otherwise, there are major concentrations of permitting along Routes 3, 5, 7, and at the end of Route 6.

Downtown Clarksville and the area directly along SR-12/Route 1 (Fort Campbell Blvd.) have seen comparatively less permit activity. This may be due to these areas being developed already. Downtown Clarksville hosts major commercial, institutional, and civic uses, while there is a strong mix of commercial residential development along SR-12 (Fort Campbell Blvd.).

Activity Generators

Demand for transit service can also be derived from direct input from existing and potential transit users. Citizens are a valuable source of information on their own needs and desires and can be integral partners in intelligent transit investments.

Key activity generators in the CTS service area were derived from a variety of sources, including previous plans and studies, online survey responses, public meeting inputs, and local knowledge from transit practitioners. They include a mix of commercial, recreational, and institutional locations. Figure 21 displays these activity generators as points with numbers that tie into Table 3 to aid interpretation.

Overall, major activity generators are dispersed throughout the CTS service area, with some even outside the CTS service area/UZA boundary. This reflects the generally sprawling nature of residential and commercial development throughout the area. Despite the dispersed nature, there is a relative concentration of generators in the east/northeast portion of the CTS service area, near the intersection of SR-374 (101st Airborne Pkwy.) and SR-48 (Wilma Rudolph Blvd.). This area is currently served by Routes 7 and 8. Additionally, activity generators are primarily concentrated along major roadways, a reflection of the general physical separation between residential and commercial land uses.

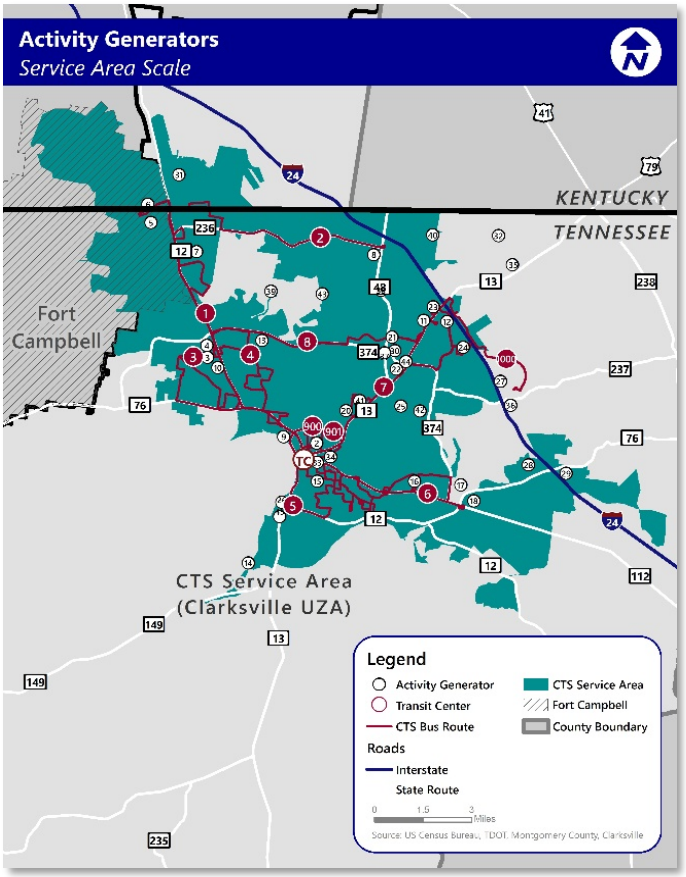


Figure 21: Activity Generators

Map ID	Activity Generator Name	Map ID	Activity Generator Name	Map ID	Activity Generator Name	Map ID	Activity Generator Name
TC	CTS Transit Center	13	Heritage Park Sports Complex	26	Liberty Park	38	Trenton Road
2	Austin Peay State University	14	Ajax Senior Center	27	Montgomery County Corporate Business Park S.	39	Peachers Mill Road
3	Tradewinds North Shopping Center	15	Veterans Plaza and Public Library	28	Sango Square	40	Tylertown Road
4	Walmart (Ft. Campbell Blvd.)	16	Tradewinds South Southing Center	29	RTA 94X Park and Ride	41	Nashville State Community College
5	Blanchfield Army Community Hospital	17	Spring Meadows Health Care Center	30	Greyhound Bus Station	42	Swan Lake Sport Complex
6	PXTRA	18	Walmart (Madison St.)	31	Oak Grove Racing & Gaming	43	Needmore Road
7	Clarksville Regional Airport	19	Driver's License Exam Station	32	LG Plant	44	Kroger (Lowes Drive)
8	Regal Clarksville Stadium 16	20	Daymar College	33	Multi-Purpose Event Center	45	Wilma Rudolph Event Center
9	Two Rivers Shopping Center	21	Social Security Office	34	New Mixed-Use Development		
10	Cunningham Plaza	22	Walmart (Wilma Rudolph Blvd.)	35	Montgomery County Corporate Business Park N.		
11	Austin Square Shopping Center	23	Austin Peay State University	36	Exit 8 Athletic Complex		
12	Governor's Square Shopping Center	24	Gateway Medical Center	37	Publix		

Table 3: Activity Generators and Map IDs

Existing CTS Service Conditions

Over the past 5 years, CTS has initiated several projects to upgrade, modify, and reboot administrative, capital, and operational sectors of the transit system. Improvements have been both public facing like technology upgrades to improve the passenger experience, and internal to CTS like creating new staff positions and offering training certifications. Note that projects and operations can have significant crossover between administration activities and capital improvements and operational services.

The highlights and snapshots of CTS existing service conditions categorized below provide general details on the labor, funding, capital assets, and bus service of CTS operations in 2021.

1 Administration

CTS staff is responsible for ensuring compliance with FTA and TDOT rules and procedures to operate the entire transit system. CTS administration manages the programs and people, the facilities and finances, and the movement and maintenance of assets daily. CTS also provides continuous support and resources to its employees and communication and outreach to its passengers.

Personnel

The CTS organizational structure includes a comprehensive array of administrative, management/supervisory, operations, and maintenance staff typical to a transit service.

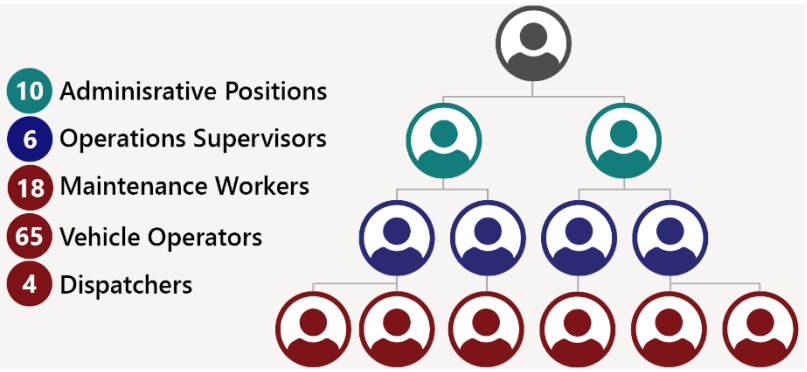


Figure 22: CTS Organizational Structure

CTS has 10 staff who are responsible for a variety of administrative tasks. Certain administrative staff are responsible for the administration and program oversight of the transit system on a long-term basis. Others are geared towards on-the-ground daily service operations. Two (2) of CTS' administrative are new positions, reflecting CTS' ability to consistently evolve its organizational structure and staff expertise. These newly created administrative positions are aimed at segregating procurement and planning duties from the director and grants analyst. Both new positions allow for additional program support in addressing service needs and compliance in implementing various projects.

Six (6) operations supervisors oversee the day-to-day operations of CTS' passenger fleet and other operational staff. There are 65 combined full-time and part-time bus and paratransit operator positions at CTS, as well as four (4) dispatchers. 60 of CTS' operators are full-time, while the remaining five (5) are part-time. Two (2) dispatchers each are dedicated to fixed-route and para-transit operations.

CTS has 18 positions for maintenance employees to help keep a fleet of 41 passenger vehicles in a state of good repair and safely operating daily. The maintenance crew is also responsible

for complying with agency and FTA preventative maintenance schedules and reporting procedures. CTS has 21 additional non-revenue vehicles that the same 18 positions also maintain.

Finance

CTS has limited revenue streams from local, state, and federal funding sources. The City of Clarksville provides local funds to help match TDOT and FTA grant program awards and CTS also generates money through fare revenue and advertising opportunities.

CTS is a direct recipient of FTA program funds that are passed through from the Tennessee Department of Transportation (TDOT) and Kentucky Transportation Cabinet (KYTC). TDOT and KYTC allocatee Section 5307 and Section 5339 funds by formula to the small urban transit agencies. In TDOT's case, a new formula based on population, operational performance, and local investment was implemented with the 2021 program allocations. In addition to the annual apportionment 5307 and 5339 programs, the FTA offers discretionary funding programs for large investments in facilities and vehicles.

TDOT and KYTC passes through the FTA funds to Clarksville and provides state funding for either operating or capital assistance. There are also transit capital discretionary programs that TDOT offers, as well as other funds for planning studies.

Annual Apportionment Funds	
FFY2021 FTA 5307 (TDOT):	$2,370,918
FFY2021 FTA 5307 (KYTC):	$313,937
FFY2021 FTA 5339 (TDOT):	$244,998
SFY2020 TDOT UROP:	$960,100

Table 4: State and Federal Apportionment Funds

Annual Expenditures by Funding Source: Calendar 2019 & 2020		
Source	2019	2020
Local	$2,777,675	$2,802,254
State	$1,376,088	$1,471,024
Federal	$3,783,489	$6,508,572
TOTAL	$7,937,352	$10,781,850

Table 5: Annual Expenditures by Funding Source, 2019-2020 (Combined Capital and Operating; NTD)

CTS relies heavily on local funding from the City of Clarksville to match the annual federal and state program allocations to operate transit service. CTS generates fare and advertising revenue; however, these amounts are small in comparison to the local match needed to receive federal and state transit funds. Currently, the City does not have a dedicated source of funding for transit, therefore the budget provided to CTS has the potential to vary from year to year based on City budgetary actions.

Table 4 shows the funds apportioned to CTS by TDOT and KYTC for FFY2021, as well as funds granted to CTS through TDOT's State Operating Assistance Program (UROP). Up until 2021, CTS has received annual funding similar to the numbers in Table 4. However, with the passage of the Infrastructure Investment and Jobs Act (IIJA), these numbers can be expected to increase substantially in the near future. These federal and state funding sources are major sources of funding for CTS' operating and capital expenditures, displayed in Table 5.

Outreach & Engagement

CTS provides continuous customer service and communication with the Clarksville community through various opportunities and formats. CTS staff is available by telephone during operating hours and is responsible for maintaining an online presence and keeping up-to-date information on the website and social media platforms.

Public Information Outlets	
• Buses	• Agency Website
• Transit Center	• Instagram
• City Website	• Facebook

Table 6: Public Information Outlets

TS also reaches out to the public and provides notification for planning and operational projects that request input from the community. Currently CTS pushes notifications out via their website, onboard annunciator system, and Instagram and Facebook accounts. Public events are attended by the Director, business analyst, and other applicable administrative staff. CTS attempts to stay active in the community and involved on boards and councils as much as time allows. CTS does not have a dedicated staff member for marketing the transit system and does not have an engagement plan in place to actively market the service.

2 Capital

CTS is responsible for the procurement of the capital asset, the preventative maintenance and upkeep of it, the conditioning and reporting on it, and the eventual final disposal of it. Capital ranges from large transit facilities and hubs to office and maintenance equipment to buses and vans to security cameras and bus shelters. Some capital items benefit internal operations, others benefit passengers and users of the transit service, and other capital projects and equipment benefit both.

Facilities

CTS has five facilities listed in their 2020 Transit Asset Management (TAM) Plan: 1) the downtown Transit Center, 2) the combined administration and maintenance building located at 430 Boillin Lane, 3) the bus wash and fueling facility, 4) Building C, and 5) the bus and van sheds.

DOWNTOWN TRANSIT CENTER

Figure 23: Downtown Transit Center

Age: Major renovation in 2019

TAM Condition: Good (4 out of 5)

The transit center is located in the center of the city and acts as the only hub for the transit system. The current transit center is shown in Figure 23 and is operating at capacity. CTS is currently undergoing the process of searching for a new site for a transit center that would be able to handle the growth that is expected to occur.

ADMINISTRATIVE AND MAINTENANCE BUILDING

Figure 24: Administrative Building

Figure 25: Maintenance Facilities

Age: 20-50 Years

TAM Condition: Adequate (3 out of 5)

The primary administrative and maintenance structures for CTS are connected. Both have been continuously updated and added onto as CTS' needs have evolved.

The Administrative and Maintenance Building provides office space for 25 staff members including administration, supervisors, and dispatchers. It has headquartered CTS management for the past 30+ years as staff has increased. There is limited to no space available to house additional CTS employees.

The Administrative and Maintenance Building is also where CTS's revenue and non-revenue fleet is serviced. There are 5 bays to maintain vehicles.

BUS WASH AND FUELING FACILITY

Figure 26: Bus Wash and Fueling Facility

Age: 17 Years

TAM Condition: Good (4 out of 5)

The bus wash and fueling facility is located on the same grounds as the administrative/maintenance structures. CTS uses this facility to maintain the cleanliness of and fuel its revenue and non-revenue fleet.

BUILDING C

Figure 27: Building C

Age: 10 Years

TAM Condition: Adequate (3 out of 5)

Building C is located at CTS's headquarters and serves a key multipurpose fuction for CTS's daily operations. It holds CTS's accounting offices and file storage, as well as additional storage for the Maintenance and Building and Grounds Departments. Building C also contains a fitness center and conference area that are both open to all CTS employees.

BUS AND VAN SHEDS

Figure 28: Bus Shed

Figure 29: Van Shed

Age: 14 Years

TAM Condition: Good (4 out of 5)

CTS' bus and van sheds are also located on the same grounds as the administrative/maintenance structures. Both are 14 years old, having been constructed concurrently.

The bus shed protects CTS's buses from the elements when they are not in revenue service. It has a capacity of 14 sues.

Similarly, the van shed protects CTS's vans and cutaway vehicles when they are not in use. It has a capacity of 8 vans or cutaway vehicles.

Vehicles

CTS operates and maintains a fleet of 41 revenue vehicles that are in a state of good repair based on FTA and agency performance standards. CTS's revenue fleet consists of a mix of buses, cutaways, and vans, which are used for fixed-route and paratransit service. The entire CTS revenue vehicle fleet is ADA accessible, and all buses are equipped with safety and security cameras, electronic fareboxes, LED signage and voice annunciator, as well as automatic passenger counters. Buses run on diesel fuel whereas other agency vehicles use unleaded gas.

CTS also operates and maintains fleet of 21 service vehicles. CTS' service fleet is comprised of a mix of SUVs, vans, pickup trucks, and other utility vehicles. These vehicles are used for a variety of service-related purposes, such as towing revenue vehicles and transporting staff during the course of day-to-day operations.

Table 7 details information on CTS's revenue and maintenance fleets, including the number of vehicles per type, passenger capacity, average age, average mileage, TAM condition, and the type of transit service the vehicles are used for.

CTS Fleet	Buses	Cutaways	Vans	Service Vehicles
# in Fleet:	24	7	10	21
Passenger Capacity	26	3-12	9	0
Average Age (Years)	5.5	4.5	3.5	5
Average Mileage	270,961	115,706	104,823	44,631
TAM Condition	Good (4 out of 5)	Adequate (3 out of 5)	Good (4 out of 5)	Adequate (3 out of 5)
Type of Transit Service	Fixed-Route	Fixed-Route Paratransit	Paratransit	N/A

Table 7: CTS Fleet Characteristics

Passenger Amenities

Passenger amenities improve the transit experience for riders getting to and from a stop to getting on and off the bus to riding the bus. Some examples of amenities include stops, shelters, benches, real-time arrival information, trash cans, sidewalks, on-board enunciators, route schedules, route maps, on-board Wi-Fi, and alternative fare payment options. As show in Table 8, CTS fixed-route service serves 589 bus stops along 11 routes in the Clarksville area. Among these stops 50 or 9% have a shelter and 26 or 4% have a bench. The conditions of these stops, shelters, and benches vary as shown in Figure 30.

CTS Bus Stops	Number	Percent
Shelter	50	9%
Bench	26	4%
Stand Alone Sign	513	87%
Total	589	-

Table 8: CTS Bus Stop Amenities

In the past two years CTS has increased the number of passenger shelters located at bus stops that provide passengers protection from the weather elements, and general safety from vehicular traffic and debris. Shelters are equipped with benches, and many also have lighting and signage.

Figure 30: CTS Bus Stop Photo Examples

3 Operations

CTS operates a fixed route and paratransit bus system using equipment and software technology to help the agency plan and provide transit service to the Clarksville area. Many of the ITS upgrades are aimed to help CTS more efficiently operate administrative activities and to improve the overall passenger experience, and other technologies produce data and information that can be used to serve the community more effectively.

Technology

In 2020, CTS overhauled paper-based procedures and launched an ITS system for its fixed route and paratransit systems. Upgrades included the introduction of online paratransit scheduling and digital driver manifests, cashless electronic fare collection options, and new transit planning software.

CTS recently created a phone application that allows passengers to track bus locations and receive the estimated arrival times of buses to specific bus stops located throughout the entire region. CTS also has a mobile application that can be accessed from the CTS website called CTS SPOT Tracker. It provides passengers with features to plan their next bus trip, to track a bus and its estimated time of arrival to the next bus stop, as well as details if the bus stop has a shelter.

The CTS website also has a bus stop and shelter map. This map is housed on Google Maps and identifies all CTS bus stops and details passenger amenities at those stops. The map also shows major transfer points in the system.

- Scheduling Software
- Digital Driver Manifests
- Transit Planning Software
- CTS SPOT Tracker
- On-Board Annunciators
- APCs
- Electronic Fareboxes
- Cashless Fare Options

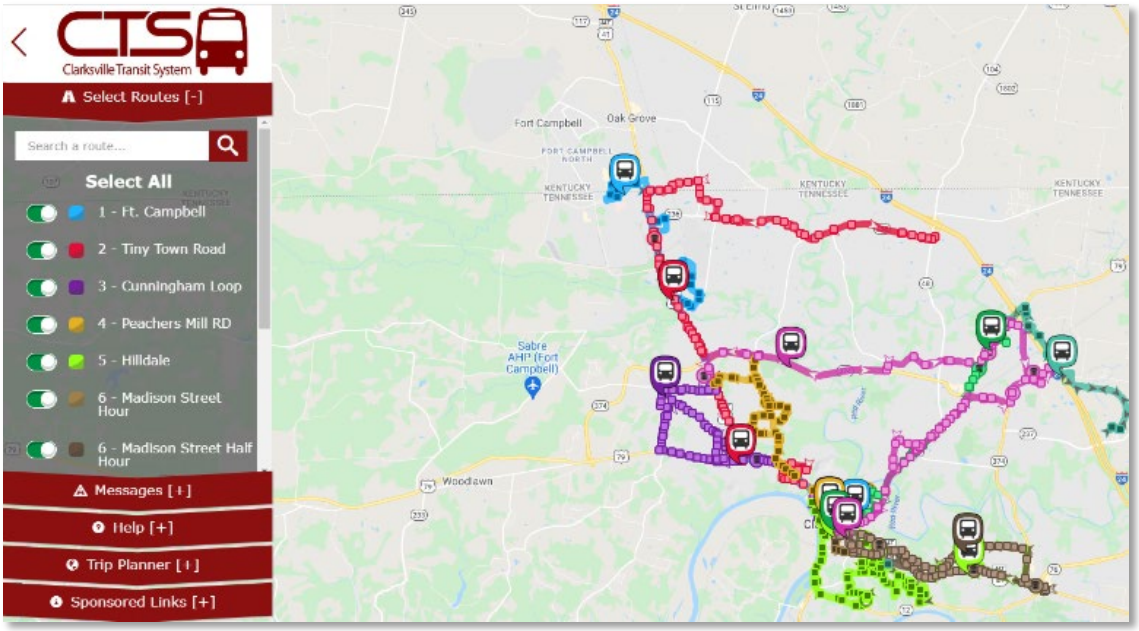


Figure 31: CTS SPOT Tracker Interface

Service Planning

CTS operates fixed route bus service within the Clarksville UZA. ADA demand response paratransit service is also provided to qualified individuals within the Clarksville Urbanized Area.

All fixed routes begin operation between 4:40 and 6:00 AM on Monday through Saturday and start their last route trip between 6:30 and 8 PM. Buses have finished their last trip ending at the Transit Center and are out of service before 9 PM. Routes 3, 6, and 7 operate every 30 minutes throughout the day Monday through Saturday and Route 1000 operates every 30 minutes throughout the day Monday through Friday. Routes 1, 2, 4, 5, and 8 operate every hour throughout the day Monday through Saturday.

The base fare for riding CTS is $1.50 with discounts available to students, seniors, and people with disabilities. Children under age 4 ride free and transfers between routes are an additional $0.25. Cash fare must be paid with correct change only. CTS also offers discounted multiple ride and monthly passes. These passes can be purchased on buses or at the downtown transit center.

Due to the Covid-19 pandemic and its impact on ridership and transit service, this strategic plan update compares ridership and operational performance between April 2019 and April 2021 (Figure 32 and Figure 33). April tends to be one of the highest ridership months for transit, therefore, pre-Covid April 2019 and most recent available April 2021 data has been utilized in this comparison. In April 2019 the total monthly trips per revenue hour was 7.89 with Routes 6 and 3 performing the best both being over 10 trips per revenue hour and Routes 8, 900, and 1000 all having less than 5 trips per revenue hour. Both ridership and trips per revenue hour decreased across all routes except for Route 1000 which experienced an increase in both.

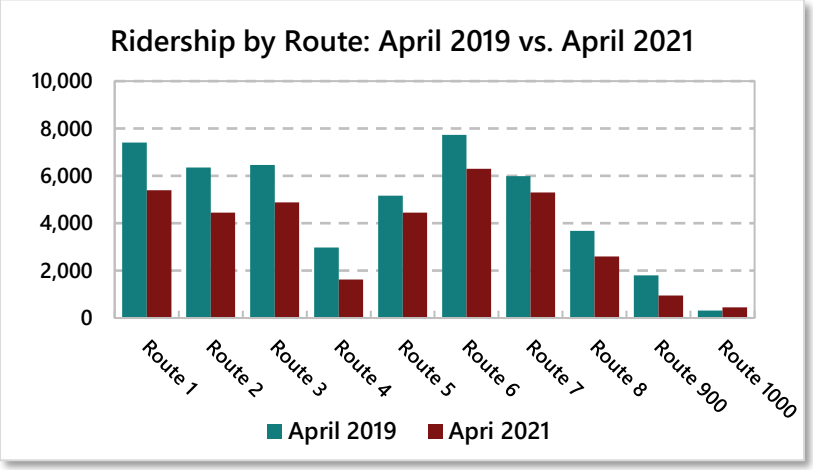


Figure 32: Ridership by Route, April 2019 vs. April 2021

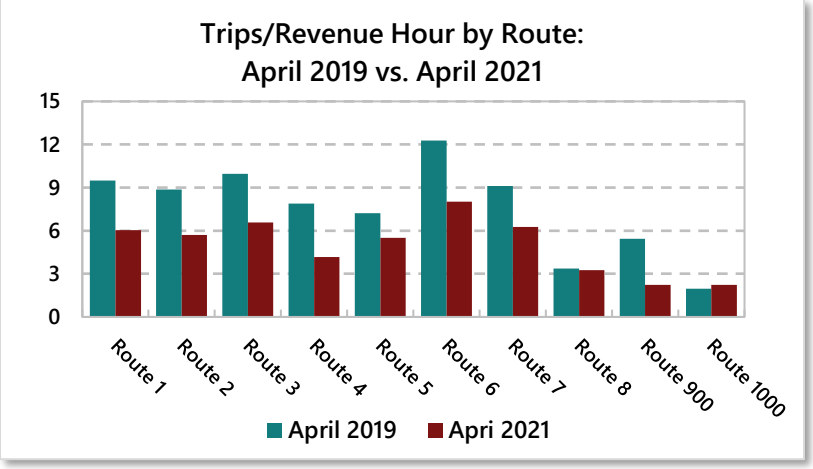


Figure 33: Trips/Revenue Hour by Route, April 2019 vs. April 2021

On-time performance (OTP) is important because it reduces the amount of time that transit riders wait at the stop if they know the schedule for their bus. More people are likely to utilize transit when it is more predictable, and they are not forced to wait longer than expected for their bus. Thus, on-time performance is a major indicator of consistency for a transit system.

A bus is considered by CTS to be on time if it is less than 5 minutes late or if it is at all early to a stop. As evidenced by any early arrivals being considered early, CTS takes them particularly seriously. This is because early arrivals are particularly deleterious to the transit customer experience. Customer's may tolerate waiting somewhat longer. However, customers should be able to reasonably expect that as so long as they are at a stop prior to the scheduled departure, they can board a vehicle.

On-Time Performance (OTP): September 2021 to November 2021

Route	On-Time %	Early %	Late %
1. Ft. Campbell	92.3%	0.4%	7.4%
2. Tiny Town Road	83.8%	0.4%	15.8%
3. Cunningham Loop	88.7%	0.1%	11.2%
4. Peachers Mill Road	81.2%	0.4%	18.5%
5. Hilldale	90.4%	0.5%	9.1%
6. Madison Street (Half-Hour Service)	91.2%	2.2%	6.6%
6. Madison Street (Hour Service)	89.2%	2.0%	8.9%
7. Governor's Square Mall	75.9%	1.8%	22.3%
8. Hospital/101 Express	73.4%	5.7%	20.9%
1000. Industrial Park Shuttle	92.3%	0.4%	7.4%
All Routes	**84.6%**	**1.4%**	**14.0%**

Table 9: On-Time Performance, September 2021 to November 2021

Overall, CTS has strong OTP, with 84.6% of trips between September and November of 2021 arriving on-time (see Table 9). OTP varies by route, from 73.4% at the lowest (Route 8) to 92.3% at the highest (Route 1 and 1000). Encouragingly, the percentage of trips arriving early is particularly low, with most routes having less than 1% of trips arriving early, though Route 8 has a notably high early % compared to other routes, which may be worth further examination.

Conversely, a large majority of trips not arriving on time are late. Routes 7 and 8 both have at least 20% of trips arriving late. Routes 2 and 4 both have late %'s in the upper teens, at 15.8% and 18.5%, respectively. While an issue, these are not as concerning as early arrivals.

2021 Outreach Activities

Public and Stakeholder Input Process

Recommendations for this strategic plan update were developed in consultation with CTS' staff and input from the public. The development of recommendations began with a review of the previous Strategic Plan, other related plans, and existing transit operations. Input was also received from the public through a survey and public meeting held on September 14, 2021. There were also two workshops held that included representatives from WSP, CTS, and TDOT on July 27, 2021 and October 5, 2021.

Input and involvement of the public and other stakeholders is a key component of effective and efficient transit service. The recommendation development process began with a review of the previous Strategic Plan, other related plans, and existing transit operations. This served as the basis for other involvement activities, including:

- A Public Meeting
- A Public Survey
- A Stakeholder Survey
- Internal Project Team Workshops

Public Meeting

A public meeting was held on September 14, 2021 to determine the needs of the public, whether CTS is currently meeting those needs, and how those needs could potentially be met. The public meeting also included presentations on potential transit center locations, equal employment opportunity, and Title VI. Attendees of the meeting included representatives from WSP, CTS, TDOT, elected officials in Clarksville, and members of the public.

Topics raised by members of the public at the public meeting include:

- Lack of service on Sundays
- Expansion of service area
- Service to Nashville
- Shelters/protection from weather at stops
- Concerns for visually impaired persons riding transit
    - Is there a way to know what bus is coming when waiting at a stop?
    - It is difficult to find the correct bus at the transit center
- Frequency is currently adequate but could be increased in the future
- Interest was shown in alternative fare payment methods

At the public meeting there was also a priority matrix board where attendees were able to communicate which three improvements CTS should place an emphasis on. This board shows that the priorities of the people that attended the public meeting included transfers, new or upgraded vehicles, and bus frequency all received one vote while bus service area and expanded bus service hours received two votes. There was also a destination mapping board where attendees could mark somewhere that they would like CTS to serve in the future that they do not currently serve. Notable areas that people would like CTS to serve that it does not include Dunbar Cave State Park and the Park and Ride lot run by RTA that goes to Nashville.

Public Survey

Responses were collected to a public survey between August 9th, 2021 and November 5th, 2021. This survey was distributed via social media, physical postings on vehicles and facilities, and through word of mouth. The questions that were asked included topics including frequency, safety, service hours, fares, and frequent destinations. In all, 158 responses were collected. Detailed breakdowns of responses to each question are included in the Appendix

Public survey respondents were diverse in terms of demographics, needs/desires, and current CTS use, with particularly strong representation among non/infrequent users. Approximately half of respondents either use CTS one day per week or not at all, with a strong majority of current users primarily using CTS's buses. More generally, single-occupant vehicles and transit were the primary modes respondents reported using in Clarksville. Respondents were asked what they use CTS for, if they are a current user.

More than half respondents reported using CTS to get to work or for shopping. Respondents were asked to rate CTS services in various categories and to report their most desired improvements to CTS services. The condition of and accessibility to stops were highlighted in particular. Many respondents reported struggling to reach stops safely, let alone at all, mentioning lack of sidewalks or other pedestrian amenities. Bus service area and service span were also frequently mentioned, with more than 60% of respondents wanting each of these aspects to be prioritized.

Stakeholder Survey

Concurrent with the public survey, a stakeholder survey was conducted of key organizational stakeholders in the Clarksville area, including advocacy organizations, public agencies, industry, and other transit agencies.

Unfortunately, the stakeholder survey received a single response, which came from the Mid-Cumberland Human Resource Agency (MCHRA). While the MCHRA reported being accessible via public transit, like the public survey, they were not safely accessible via public transit. The MCHRA indicated they are not interested in a commuter benefit program. However, the MCHRA may still be a partner in a commuter benefit program or similar programs, as engagement is often necessary to generate interest.

CTS Workshops

Two workshops were held that were attended by representatives from WSP, CTS, and TDOT. These workshops were integral in developing the recommendations in this Strategic Plan Update. The first workshop was held on July 27, 2021, with the purpose of discussing the distribution and content of the public survey, recommendations from past plans including the strategic plan, and future strategies that CTS would like to explore. The second workshop was held on October 5, 2021, with the purpose of discussing the recommendations that would be included in this Strategic Plan Update. It was determined in the second workshop that the recommendations would fall into three categories administration, capital, and operations.

Recommended Strategic Options

Development of Strategies

The previous sections of this document help build a better understanding of the existing conditions of CTS service and resources to operate transit, as well as the market propensity to grow service in the Clarksville community. This information coupled with public and stakeholder input helped develop and prioritize a list of strategic options for CTS to potentially pursue. Graphics are also included that rate these strategies on time and feasibility, which may serve as a tool to drive further discussion. These ratings were developed in consultation with CTS staff.

It must be recognized that in order to improve and expand transit services, additional funding and resources are required. Each of the strategies developed are not revenue-neutral and will cost the agency to implement, however a few strategies have the potential to generate local revenue and receive additional state or federal funds.

Due to budget cycles and grant programs that offer different eligibility on different award timelines, this plan divides strategies into three categories: Administration, Capital, and Operations. Priority levels are also assigned to each strategy within a category. Some strategies reiterate and complement existing initiatives by CTS and other strategies have impact across categories and require chronological prioritization. Other strategies can be implemented as standalone initiatives.

All of the strategic options have the possibility to help improve the entire transit system operate and deliver service and have the potential to be implemented and move forward toward completion well within a 5-year timeline.

1 Administration

The current CTS management staff is working at capacity, and without additional resources they will be at a disadvantage to maintain, upgrade, and grow the transit system. Administrative strategies to hire additional staff and to review revenue-building efficiencies are important in addressing the current needs and future opportunities for the agency, as well as implementing other strategic options outlined in this plan.

Personnel

The safe and efficient operation of a transit system requires a wide spectrum of trained technical and managerial experts. Transit agency staff includes financing and planning specialists, bus operators and road supervisors, mechanics, schedulers and dispatchers, and other office specialists in HR, marketing, safety, and IT support. The current CTS organizational structure does not include positions for many of these activities and current employees are working with available resources to be flexible in their job activities and effectively complete administrative requirements.

HIGH PRIORITY

- **Develop and execute an agency staffing plan**. The plan will attempt to better align with current CTS services as well as future administrative and operational plans. The staffing plan should cover several elements for analysis to better assist CTS in planning for additional growth including:
  - the review of personnel dedicated to CTS for finance, maintenance, human resources, procurement, marketing and outreach, IT, and planning
  - budgets and timelines for employee onboarding and training
  - budgets and timelines for FTA required training and certifications
  - budgets for employee professional development and technical training
  - a contingency plan for labor shortages and other pandemic-like situations that would impact CTS service operations.
  - address other strategic options with the potential to impact staffing needs

- **Hire marketing and IT support staff**. In 2020, CTS launched an ITS system for its fixed-route and paratransit operations and introduced customer facing technologies aimed to enhance choice ridership and rebrand the image of transit service in Clarksville. Staff dedicated to marketing these new tech features to the public, and implementing other strategic options detailed under Outreach & Engagement would be significant in rebranding efforts and the passenger experience. CTS also now has available information on bus and operational performance, ridership trends, administrative efficiencies, and other valuable data from these technology and software systems. However, they lack the resources to collect, interpret, and act on this data.

  CTS is data rich, but information poor. To fully engage and utilize the new technology tools, CTS needs a dedicated IT support staff.

Finance

FTA and TDOT grant programs provide annual apportionments for capital and operating expenses that require a local match. There are also discretionary federal and state transit grant programs that competitively award capital projects to agencies. CTS generates some local matching funds through passenger fares and advertising, but the majority of local match is provided by the City of Clarksville. The city approves the CTS budget on annual basis without a dedicated funding source therefore there is potential for the CTS allocation to vary from year to year. The US Census also determines how CTS is categorized by the FTA and funded by its transit programs. As the Clarksville area grows in population, it opens the possibility for CTS to move from Small Urban to Large Urban status and have significant impact on budget and operations.

HIGH PRIORITY

- **Generate local matching funds and increase revenue streams**. CTS must have local match available to receive and obligate federal and state transit funds. This includes both annual apportionments for operating and capital needs, and discretionary grant program awards if any. CTS needs to conduct a Revenue Study that reviews the current revenue streams, potential new revenue streams, and strategies to increase overall revenue. All opportunities to generate additional revenue should be identified and researched to determine cost-benefit and feasibility of pursuing including grants through TennCare, fare structure and pass modifications, and new advertising and marketing opportunities. Hiring marketing, planning, and finance support staff would allow a Revenue Study to be conducted in house.

- **Continue to monitor US Census population classification for Clarksville.** Currently CTS is classified as a Small Urban transit agency by the FTA based on Census 2010 population statistics. This classification in Census 2020 could move Clarksville to a Large Urban status, and if not in 2020 than it most likely will in Census 2030. Apportionment formulas and local match requirements for FTA and TDOT transit grant programs change based on an agency's urban status. CTS needs to continue to analyze the procedural and financial impact a status change would entail for the system. CTS needs to identify opportunities for grant funding in FTA programs that are available to Small Urban transit agencies to determine if the programs warrant pursuit.

MODERATE PRIORITY

- **Finance and budgeting of FTA and State grant funds**. CTS should review FTA and TDOT discretionary grant programs to decide if project needs align with potential grant programs and warrant pursuit. Local match is required and could present a barrier for CTS along with other operational needs, strategic options, and budgetary constraints.

  Budget and compliance reporting processes and procedures required by the FTA and employed by CTS has barriers to using various accounting systems predetermined by other operating systems. Other possible effective methods of bookkeeping and accounting for CTS operations should be explored in order to more efficiently access information. Staffing finance personnel dedicated to CTS operations as described in previous strategic options would be responsible for these tasks.

2 Capital

CTS is outgrowing their current facilities and are in need of updates and expansion to attract and retain employees and transit passengers. CTS also needs to ensure their fleet of vehicles are maintained in a state of good repair, that passenger amenities are upgraded, and that the agency investments in technology are fully realized.

Facilities

CTS has a number of administration and passenger facilities that the agency uses and maintains on a daily operational basis. With the growth of transit demand, CTS has maximized their office, maintenance, bus storage, and transfer center space available and now needs to address renovations, expansions, and possible relocations of specific facilities. There are other administration, capital, and operational strategies that interface with capital facility project strategies that need to be addressed and accounted for by CTS in their chronological strategic action plan. These interfaces include financial, technological, and service planning aspects of the system.

HIGH PRIORITY

- **New Transit Center**: a new transit center is needed to facilitate CTS expansion plans. CTS completed a relocation feasibility study in 2017 that identified 8 locations as potential new sites for the facility. The plan has been updated based on available property and resources. As economic and service conditions change, CTS should continue to evaluate the need for a new transit center and update their planning processes and documents accordingly.

  A new location will require significant changes in service routes, schedules, and planning, which all have a potential impact on the operation, expenses, and the overall CTS budget. The new facility should be designed with space for intercity bus, Greyhound, and others to provide transit service at the location. The facility should also consider park and ride and other multimodal features along with innovative technology to enhance the passenger experience. Opportunities to generate revenue at the facility should also be considered.

- **Transit Hubs**: a strategy for major capital construction of multiple passenger facility and transfer hubs in areas of Clarksville. The transit hubs should require a smaller land footprint than the downtown transfer center and offer passenger amenities and technology features to enhance the passenger experience. The locations of hubs should be strategic in terms of accessibility, bus route service, and near high ridership and major trip generators in the areas. Route schedules should be designed to maximize transfers, reduce travel time, reduce travel downtown, and increase operational efficiencies. It is recommended that an update to the 2017 relocation feasibility study considers the strategy for transit hubs as well as maintaining the current downtown transfer center as a transit hub. The downtown transfer center and its 2019 renovation provides a central hub between Fort Campbell and St. Bethlehem activity centers. The downtown transfer center also provides direct access to downtown events, human service organizations, and government services.

- **New Administrative Office**: as detailed in the existing conditions and personnel strategic option, CTS staff resources are at capacity and additional office space is needed to house people and hardware. There are multiple options for CTS and City staff to explore in order to provide ample office space and to meet the expanding need of CTS staff resources. Possible options include expanding the current location or relocating staff to another location. It is recommended that CTS incorporate plans for a new administrative office with plans to construct a new transfer center. It is an operational efficiency and a customer service benefit to house the administrative staff in and around the operations of the transit system and to have more interaction with CTS operators and passengers. An innovative and technologically advanced administrative and passenger transfer center enhances the overall experience and attraction of the transit service. This will help retain employees and bring riders back to the system.

- **Open Air Bus & Storage Maintenance Facility**: CTS needs more space to park and maintain vehicles and to store equipment and other assets at the current administration and maintenance facility. A design plan for an open-air garage that is large enough to house current and future fleet vehicles and to add additional maintenance space for work and storage is underway. TDOT IMPROVE program funds have been applied for to construct this facility that would ultimately provide a safer environment to maintain vehicles, enable all CTS vehicles to be parked in one location, and store maintenance and other equipment securely. It also allows for maintenance staff, operators, supervisors, and admin staff have direct access to all vehicles while not in operation and to start and stop transit service from the same location. This capital project and strategic option should continue to be pursued if IMPROVE funds are not awarded.

Vehicles

Revenue vehicles (buses and vans) are the lifeblood of CTS. They must be reliable and in good condition to provide service on the street to the Clarksville community, and they need to be clean to be used as a marketing tool for advertising revenue and need to be presentable to offer clean and safe transportation for current and choice riders.

HIGH PRIORITY

- **Replacement/Expansion Vehicles**: CTS should continue to follow the agency Transit Asset Management (TAM) plan to retire prioritized vehicles with new replacement vehicles to sustain current service and remain in a State of Good Repair (SOGR). Annual allocations for capital programs and discretionary funding opportunities with FTA, TDOT, and KYTC are available for awards to utilize in to disposing and replacement vehicles as well as expanding agency fleet to provide additional transit service. There are strategic options detailed in this plan that have the potential to lead to service expansion therefore will require procuring additional vehicles for spare and revenue service.

Passenger Amenities

The passenger experience is crucial to providing enhanced bus service to the riding public and to build choice ridership on the CTS system. Improving the visual appearance of bus stops, making technology available to passengers, and allowing accessibility of information to the system will help CTS increase service and support for the system.

HIGH PRIORITY

- **Bus Stop Upgrades & Maintenance Action Plan**: a major overhaul of the CTS bus shelter program is needed in order to present the transit services to the public as safe, clean, comfortable, and reliable. The majority of CTS bus stops are stand-alone signed stops without a bench or shelter or easily accessible by sidewalk. CTS needs to implement an action plan to identify the highest trip generating bus stops, and the costs and constraints to install additional bus shelters at these locations. Shelters in poor condition, or that are not utilized above a particular threshold should be upgraded or removed from service. New shelters should feature technology upgrades for safety and convenience including solar and LED lighting, real-time arrival and other system information, and mobile fare payment options. CTS already follows a consistent bus stop maintenance schedule, including but not limited to trash pickup and landscaping, which is important for keeping stops safe and presenting an attractive image. As CTS expands service and increased ridership, it must invest time and resources commensurate with the increased need for maintenance.

Technology

CTS has made significant investment in ITS solutions for administration and bus operations. Continuing to understand the complex systems and using the full array of tools available in the technology packages will help CTS better understand the riding public as well as enhance the passenger and CTS staff experience.

HIGH PRIORITY

- **Technology Systems Utilization**: CTS has invested significant time and money in cutting-edge transit system technology to improve agency operations and enhance the passenger experience. This investment should not stop at the installation and implementation stages, but it needs to continue with training of staff for understanding of its functions and capabilities that can improve service. The public-facing technology investments also need to continue with marketing to existing and potential riders of CTS. Possible additional features could include free WiFi onboard buses and at transit hubs. Based on Clarksville demographics, university students and military personnel, and technology-based employers, CTS can use the new IT systems to build the CTS brand and market choice riders.

MODERATE PRIORITY

- **Improve Real-time Arrival Info Availability:** in addition to the continued utilization and marketing of the ITS tools described above, CTS should make available the real-time arrival information to the public as easily accessible as possible. Strategic options for capital improvements and operations detail the opportunity to incorporate real-time information with the bus fleet, at bus stops, and at transfer hubs to enhance the passenger experience.

3 Operations

Public-facing operations on the street and in the office are opportunities for CTS to engage with passengers and stakeholders and build the CTS brand. The agency has an opportunity to move forward an already solid transit service foundation and to utilize current investment technologies to study possible modifications and upgrades to the transit system. CTS has the potential to more efficiently operate a system that addresses transit demand effectively in Clarksville.

Outreach & Engagement

Listening to and acting on public demand and requests for transit service are important as well as meeting with large employers, state officials, and other benefactors of public transit service in Clarksville.

HIGH PRIORITY

- **Coordinate with City Officials and Departments**: it is important for CTS to engage with City officials and collaborate with them on a regular basis to ensure that transit is at the table for land use, public works, and other community development project conversations. CTS should pursue opportunities with City Council boards and committees to coordinate and discuss transit-supportive policies and projects. CTS should also invite City officials to CTS facilities for tours of the administration, fleet, and maintenance, as well as invite individuals to ride the bus to experience revenue service.

  CTS engaging and building a partnership with City departments will also provide opportunities for projects to better serve the Clarksville community. CTS will have ample notice of significant roadway and development projects that have the potential to incorporate transit and other multimodal network elements. CTS could also review and provide input on zoning and site design elements that address pedestrian accessibility and transit passenger amenities. There is also opportunity to coordinate with City departments in grant applications to TDOT that propose combining transit, IT, roadway, and utility projects for an alternative project delivery method.

- **Marketing and Branding Campaign:** newly implemented services and systems as well as several strategic options detailed in this plan provide opportunity for CTS to market their service and grow their ridership and community support. Any significant improvement or modification to CTS operations also offers the discussion for rebranding of the system. A strategic marketing campaign and public engagement opportunity should address several transit operational elements aimed to build the CTS brand and to appeal more to passengers, stakeholders, and the Clarksville community. Outreach and campaign elements, if other strategic options are implemented, should include activities addressing:
  - New public-facing technologies
  - Bus Shelter Upgrades and Maintenance – this could include an Adopt-A-Stop or similar sponsorship program of bus stops
  - New Transit Hubs
  - New Transfer Center
  - New Administration Building
  - New Fleet
  - New Services

MODERATE PRIORITY

- **Coordinate with Public and Organizational Stakeholders**: CTS engagement activities and public outreach need to target large employers, schools and institutions, civic groups and organizations, and other transit providers in the community. CTS should attempt to strengthen and establish relationships with these stakeholders by hosting regularly scheduled public outreach events and by attending and presenting at stakeholder meetings.

- **Coordinate with other Transit Operators**: there are opportunities to coordinate with RTA, Greyhound, and other intercity bus providers on bus scheduling, transferring between services, and fare acceptance between operators. A stronger partnership with Nashville RTA should be entertained. This partnership should form the basis for new/upgraded passenger amenities and new CTA service to the RTA 94X park-and-ride, which provides commuter service to Nashville. Improvements should also address clean up and maintenance of trash and landscaping, signage, lighting, parking striping, and other safety and security elements. The partnership will increase visibility and make the choice for commuting between Nashville and Clarksville by public transit a more attractive option for people.

  CTS can also pursue more coordination with Mid-Cumberland Human Resource Agency for providing on-demand, rural, TennCare, and FTA 5310 passenger trips in and around Clarksville. These coordination efforts offer possible avenues to generate revenue for local match.

Service Planning

CTS has made significant efforts in studying the route system and operational services for transit in Clarksville over the past few years. Several new systems and route modifications have been implemented successfully, therefore, the strategic options for service and planning address the new ITS efforts, recent trends in people growth and movement, and development projects that impact CTS operations.

HIGH PRIORITY

- **Utilize ITS Data and Information**: CTS needs to continue to learn and understand the tools and capabilities of the technology systems that they have recently invested in for administrative and operational uses. These systems allow for CTS to be more efficient in the services that they provide, as well as be extremely data and information rich from system features and outputs. CTS needs to dedicate staff to managing and maintaining these systems in order to maximize the agency's benefit from their capital investment.

  CTS is able to collect extensive passenger details and operational data using farebox, APC, GPS, and real-time arrival technologies. This information provides route-by-route, stop-by-

stop, and passenger-by-passenger detailed information that has the potential to assist CTS in better understanding daily minute-by-minute ridership trends and bus route performance. The COVID-19 pandemic has significantly impacted people movement and transportation trends. CTS needs to take a current comprehensive review of its bus operations to analyze all of this new information and data prior to any major modification or upgrade in service including operational and capital investment strategies. The updated COA Study would utilize the new data and information to determine if route modifications, bus stop consolidation, or the introduction of microtransit and on-demand mobility operations is needed.

MODERATE PRIORITY

- **Identify Potential New Service:** CTS is providing transit service to a large growing urban area that has sprawling residential and business development patterns away from the downtown core area. People and businesses are building to the northeast, northwest, and south areas of Clarksville that CTS stretches limited resources to serve with minimal to no service. Public outreach and stakeholder engagement strategies have also identified areas near Oak Grove, KY, and Exit 11/Sango, Fort Campbell and military housing areas, LG and the industrial park areas, as well as newly annexed areas of Clarksville for potential areas for new service. Sunday service, additional weekday service hours, higher frequency service in high congested corridors, and service to the RTA 94X park-and-ride have also all been identified as possible new transit service.

  CTS should also look for opportunities to reallocate resources away from underperforming routes to bolster better performing ones. While a difficult decision, doing so can provide a basis for future reevaluation of discontinued services if market conditions change. CTS may also use this as an opportunity to explore alternatives where fixed-route service may not be the most appropriate service type.

  There is a need for a basic route study and operational analysis by CTS that details the cost-benefit to implement new service to these areas so that CTS is prepared to act on this opportunity if resources are provided to the agency.

- **Fleet & Operating Contingency Plans:** CTS needs to be prepared for and have an action plan in place to address future events that impact supply chains and labor shortages, such as the COVID-19 pandemic. Currently, CTS is facing vehicle and part delivery delays and bus operator shortages. These conditions impact daily level of service operations for CTS as well as the safety and reliability of operating and maintaining an aging vehicle fleet. The creation of an operating and fleet contingency plan should be in place by CTS.

Closing Statement

The prior sections of this document highlight the past plans and recommendations for transit in a pre-pandemic Clarksville environment, and it details the current demographic and market conditions of the study area including the propensity for transit demand in 2021. Existing conditions and performance of the CTS administration and operation systems are detailed as well as conditions and available resources for transit operations. Public input, demand, and stakeholder information and other items that have potential to impact CTS operations were all considered in the development of strategies.

The next step for CTS is to evaluate the options and develop an action-oriented plan to initiate the administrative, capital, and operational strategies that the agency prioritizes. Although this plan does not identify a top strategic priority overall, it is noted that each strategy will require staff attention and time, and expertise to successfully implement. CTS needs to address staffing and hire IT and marketing staff prior to any strategic initiative so that new staff can assist in utilizing current resources, moving forward strategies that CTS prioritizes, and assisting existing staff to continue to provide high-quality, safe, reliable transit service to the Clarksville community.

Appendix: Public Survey Results

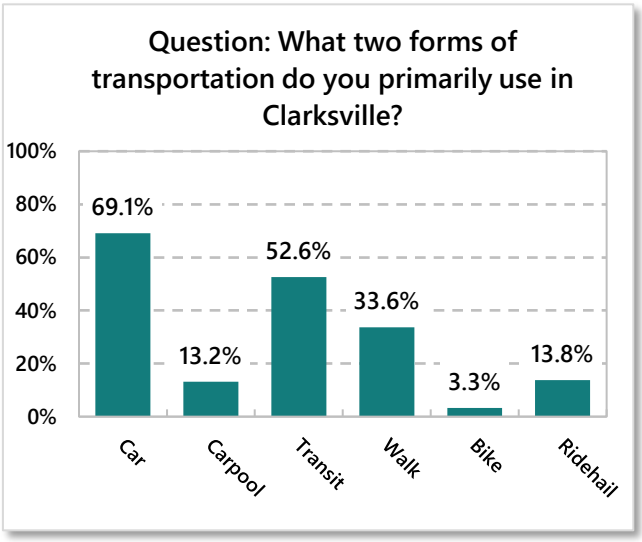
This appendix contains question-by-question summaries of the responses to the public survey deployed as part of this planning process. The questions and associated tables are organized into the following categories: CTS Performance, Travel Behavior and Attitudes, and Demographics.

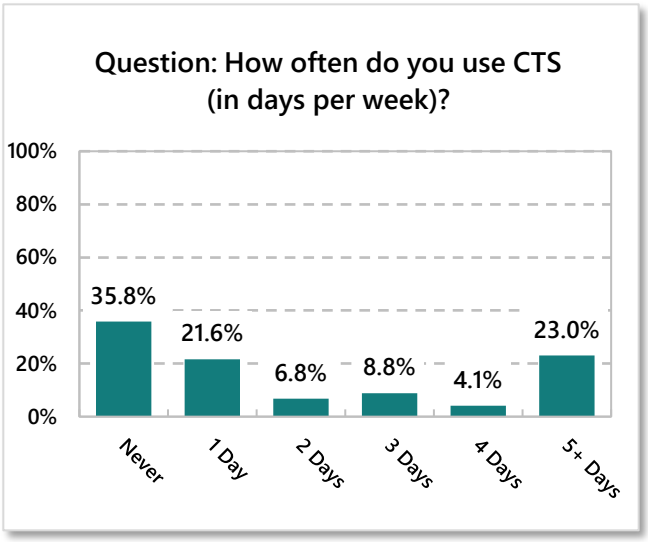
CTS Performance

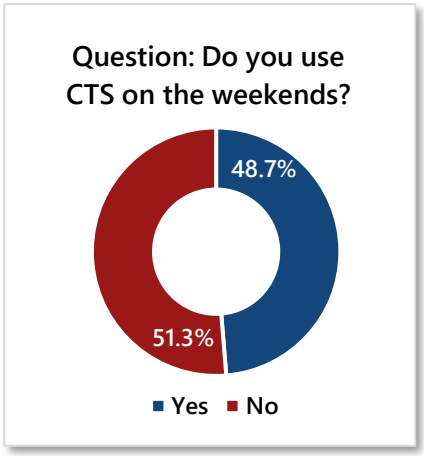
Question: How would you rate CTS's performance in the following categories? (1 = Poor; 5 = Excellent)						
Category	Score					
	1	2	3	4	5	N/A
On-time Performance	6.0%	9.8%	17.3%	24.8%	21.8%	20.3%
Bus Frequency	12.0%	15.0%	21.8%	15.8%	17.3%	18.0%
Service Area	14.8%	18.5%	23.0%	15.6%	17.0%	11.1%
Stop Condition	17.3%	14.3%	18.0%	23.3%	15.0%	12.0%
Transit Center Amenities	5.3%	13.0%	16.8%	18.3%	21.4%	25.2%
Ease of Boarding	3.1%	6.9%	17.7%	19.2%	30.8%	22.3%
Ease of Reaching Stops	12.0%	11.3%	18.0%	21.8%	19.5%	17.3%
Vehicle Comfort/Features	4.5%	12.1%	15.2%	21.2%	26.5%	20.5%
Personal Safety While Riding	3.8%	11.5%	12.2%	16.8%	34.4%	21.4%
Personal Safety at Stops	11.5%	15.3%	19.8%	20.6%	17.6%	15.3%
Ease of Payment	3.8%	10.6%	9.8%	20.5%	30.3%	25.0%
Professionalism/Friendliness of Operators/Staff	3.8%	9.8%	9.8%	18.9%	35.6%	22.0%
Helpfulness of Call Center Reps	3.8%	9.1%	15.9%	12.9%	30.3%	28.0%
Usefulness of CTS Website	6.1%	10.7%	10.7%	20.6%	27.5%	24.4%
Clarity of CTS Routes/Maps	5.3%	11.3%	12.8%	21.8%	32.3%	16.5%

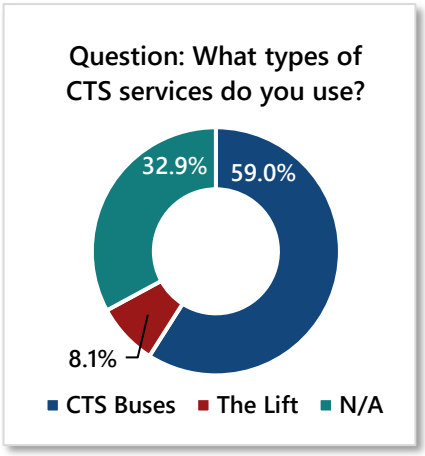
Question: If you currently use CTS, what three (3) improvements would you most like CTS to prioritize? Alternatively, what three (3) improvements would most convince you to use CTS if you do not currently do so?	
Improvement	**% of Respondents**
Bus Stop Amenities	56.0%
Transit Center Improvements	9.6%
Ease of Transferring Buses	7.2%
New/Upgraded Vehicles	8.0%
On-time Performance	12.8%
Bus Frequency	25.6%
Bus Service Area	65.6%
Expanded Hours	61.6%
Parking Near Stops	10.0%
Additional Payment Options	11.0%
Other*	8.0%

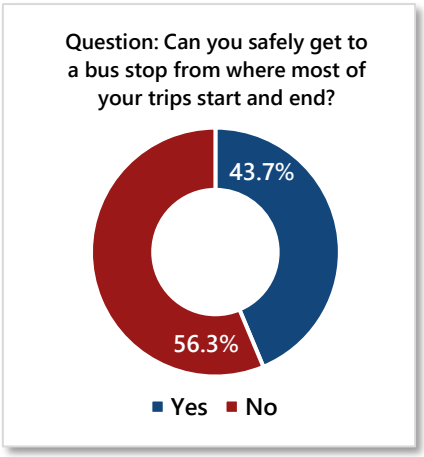
Travel Behavior and Attitudes

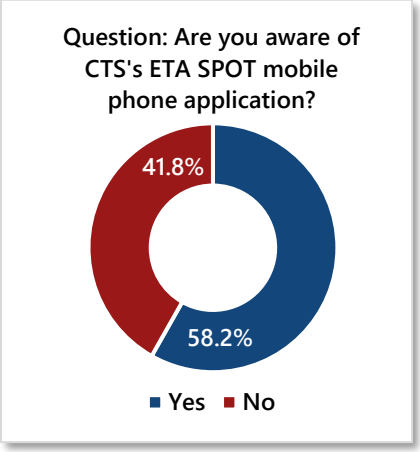












Question: For what purposes do you use CTS?	
Work/Commuting	54.6%
School	15.1%
Shopping	58.8%
Medical Appointments	41.2%
Leisure/Recreation	37.0%
Accessing Service Orgs	18.5%

Question: How long are you willing to do the following:					
	<5 Minutes	5- 10 Minutes	10 – 15 Minutes	15 – 20 Minutes	20+ Minutes
Travel to/from a Bus Stop	27.1%	46.6%	14.3%	7.5%	4.5%
Wait at a Bus Stop	8.1%	44.1%	33.8%	11.0%	2.9%
Ride the Bus	4.6%	5.4%	22.3%	29.2%	38.5%

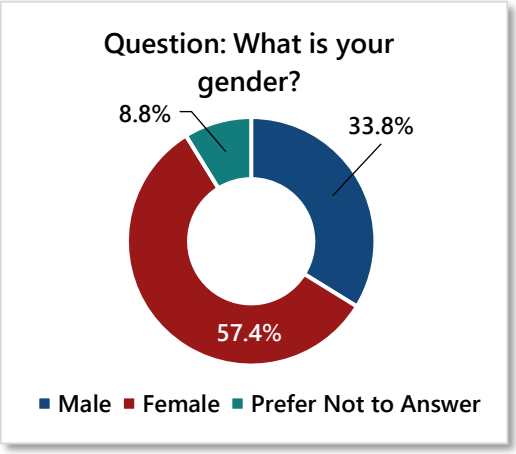
Question: CTS occasionally must altar how much it charges for its bus service. This may include raising fares or the cost of transfers. How would the following fare and transfer fee increases affect your likelihood of using CTS?						
Change in Fare	Change in Likelihood of Using CTS					
	Small Decrease	Moderate Decrease	Large Decrease	Stop Riding	None	N/A
Fare Increased to $2	8.2%	11.2%	9.7%	5.2%	50.0%	15.7%
Fare Increased to $2.50	13.1%	15.4%	13.1%	15.4%	27.7%	15.4%
Transfer Increased to $0.35	6.9%	13.0%	6.9%	4.6%	52.7%	16.0%
Transfer Increased to $0.50	14.3%	13.5%	11.3%	10.5%	34.6%	15.8%

Question: Similarly, CTS may decrease fares/transfers fees or eliminate them altogether. How would the following fare and transfer fee decreases affect your likelihood of using CTS?				
Change in Fare	Change in Likelihood of Using CTS			
	Small Increase	Moderate Increase	Large Increase	None
Fare Decreased to $1	17.2%	16.4%	17.2%	49.2%
Fare Decreased to $0.75	13.0%	22.8%	21.1%	43.1%
Fare Decreased to $0	9.4%	8.6%	35.9%	46.1%
Transfer Decreased to $0	8.5%	12.4%	33.3%	45.7%

Question: Please indicate your level of agreement with the following statements.					
Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The City of Clarksville should dedicate a portion of its revenue to funding public transit.	5.4%	2.7%	11.5%	31.1%	49.3%
Montgomery County should dedicate a portion of its revenue to funding public transit.	5.4%	2.7%	12.2%	32.7%	46.9%

Question: Which of the following destinations do you frequent?	
Walmart - Fort Campbell	46.5%
Walmart - Wilma Rudolph	43.7%
Walmart - Madison St., Sango	43%
Governor's Square Mall	57.7%
Mille Motte Technical College	4.9%
Clarksville Commons/Food Lion	27.5%
Kroger - Fort Campbell	26.8%
APSU	23.2%
Fort Campbell Military Installation	23.9%
Veterans Plaza and Public Library	50.7%

Demographics



Question: What is your race?	
White	61.1%
Black	15.4%
Asian	0.7%
American Indian/Alaskan Native	0.0%
Native Hawaiian or Other Pacific Islander	0.0%
Two or more races	4.7%
Other	2.7%
Prefer not to answer	15.4%

Question: How old are you?	
Under 18	2.0%
18-24	6.6%
25-34	14.5%
35-44	25.0%
45-54	19.1%
55-64	17.1%
65+	13.8%
Prefer not to answer	2.0%

Question: What is your household income?	
Less than $10,000	16.8%
$10,000 to $14,999	6.7%
$15,000 to $24,999	12.8%
$25,000 to $34,999	13.4%
$35,000 to $49,999	12.1%
$50,000 to $74,000	11.4%
$75,000 to $99,999	3.4%
$100,000 or more	3.4%