Appendix E: Transit

GET THERE TOGETHER.

Kentucky's Long-Range Transportation Vision

TRANSIT INDUSTRY OVERVIEW

The Federal Transit Administration (FTA) defines public transportation (transit) as the operation of a vehicle that provides the public with general or special service on a regular or continuing basis, consistent with 49 U.S.C Chapter 53.[1] With public transit, transit dependent individuals have access to employment, shopping, recreation, and medical care. Choice riders may find that transit provides a more convenient or cost-effective option compared to owning a vehicle. In the United States, over 6,800 organizations provide public transportation, however 45% of Americans have no access to public transportation. The American Public Transportation Association (APTA) reported that 9.9 billion trips were taken using public transportation in 2019, with approximately 4% of work commutes nationwide taken using public transit. In the same year, only 1% of Kentucky's population used public transportation according to 2019 American Community Survey (ACS) 5-Year Estimates.[2]

Funding

Transit funding in the United States typically comes from a mix of federal, state, local, and fare-recovery revenue streams. Public transportation receives significant government subsidies due to the weight of the benefits accruing from transit being received at the community level more than the level of individual riders. Federal public transportation programs generally allow a maximum of an 80% matching share towards capital expenses and a 50% maximum for operating expenses.[3] Operating expenses include vehicle and facility maintenance and operation, general administration, and purchasing transportation from private operators. The purchase of all equipment, such as buses, rail lines, and rail stations are capital expenses. Federal and state funds often help finance transit improvements, however additional local funding is usually needed. According to APTA, about one third of public transit revenues across the nation come from local sources. These may include strategies such as fees and taxes such as parking fees, road tolls, fuel taxes, or a fare increase.

Current State of Transit in Kentucky

Overview

A strong transit network is an essential part of a strong economy. Public transportation provides people with mobility and access to employment, community resources, medical care, and recreational opportunities in communities across America. It benefits those who choose to ride, as well as those who have no other choice. In Kentucky, more than 40 transit providers supply rides to the 120 counties through at least one mode of

[1] Federal Transit Administration. (2021, June 1). Interpretations of Definitions. https://www.transit.dot.gov/research-innovation/interpretations-definitions#:~:text=Public%20transportation%20service%20means%20the,%E2%80%9Cmass%20transportation%20%5Bservice%5D.
[2] United States Government. (2019). American Community Survey: Means of Transportation to Work by Age – 2019: ACS 5-Year Estimates Detailed Tables. https://data.census.gov/cedsci/table?g=0400000US21&y=2019&d=ACS%205Year%20Estimates%20Detailed%20Tables&tid=ACSDT5Y2019.B08101
[3] Mallett, W.J. (2021) Federal Public Transportation Program: In Brief. Washington, D.C.: Congressional Research Service.

transportation: fixed-route, demand response, bus transportation, or passenger rail.[4] Each mode has unique operating characteristics, program goals, customer expectations, and funding sources. The three largest providers of these services are the Transit Authority of River City (TARC) in Louisville, Transit Authority of Lexington (LEXTRAN), and the Transit Authority of Northern Kentucky (TANK).

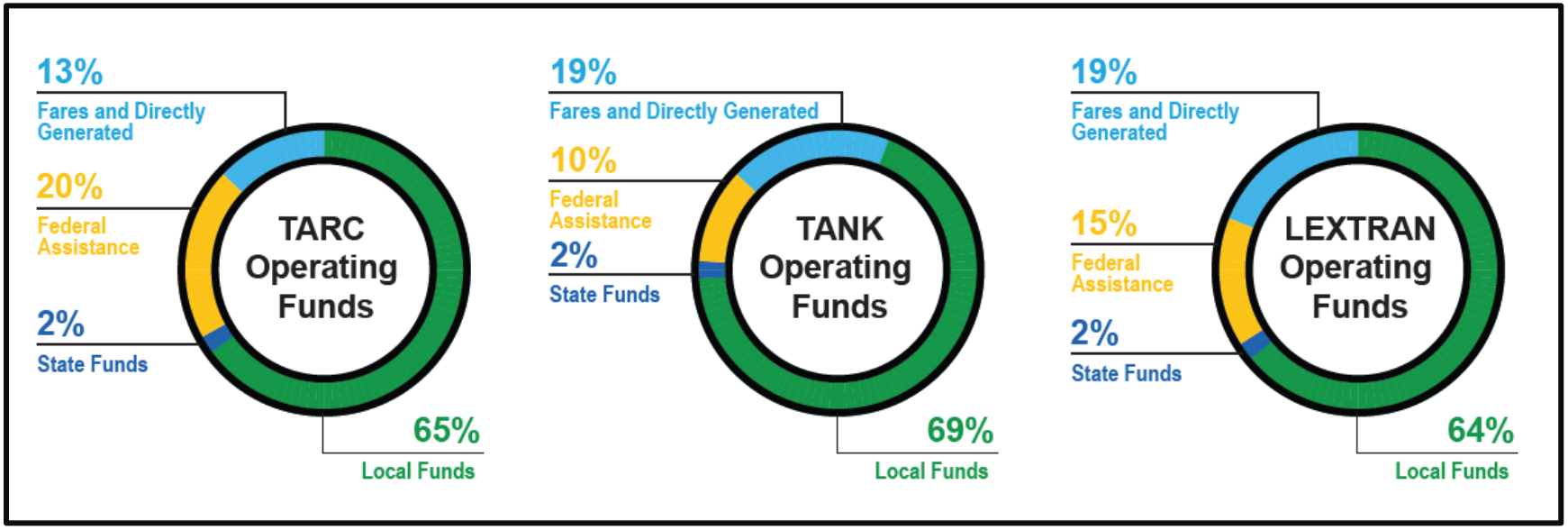
Funding

Within the Commonwealth, the federal government is a major provider of funding for the state's transit systems, providing significant funding based on the revenue generated in the state by the federal motor fuel tax. However, Kentucky has been struggling with Road Fund revenues in recent years. Revenues from the motor fuel tax have been flat since 2015 when the price of gas dropped by almost $2 per gallon. Since then, KYTC has lost more than $1 billion.[5]

The following figure shows the source percentage of 2019's operating funds for Kentucky's three largest transit providers: TARC, TANK, and LEXTRAN. The majority of these agencies' operating funds comes from local funding sources with very little contribution from the state (whereas APTA reports a national average of around 25% state funding for transit operations).[6]

[4] Kentuckians for Better Transportation. (2022). Public Transit. https://kbtnet.org/public-transit/
[5] Pitts, J. (2021, February 24). Bottom Line: Kentucky Transportation Secretary says state must face reality more revenue is necessary for quality roads and bridges. https://www.lanereport.com/138746/2021/02/bottom-line-kentucky-transportation-secretary-says-state-must-face-reality-more-revenue-is-necessary-for-quality-roads-and-bridges/
[6] Dickens, M. (2021). 2021 Public Transportation Fact Book. Washington, D.C.: American Public Transportation Association.

Figure 1: Source Percentage of 2019's Operating Funds for Kentucky's Three Largest Transit Providers



*Note: Directly generated funds may include items such as advertising revenues and charter service fees.

Transit Agencies

Residents in all 120 counties in Kentucky have access to public transportation. The state's transit network includes a mix of urban and rural transit providers, with services ranging from fixed-route bus service that operates on a regular schedule; to demand-response service that provides call-ahead, door-to-door trips; to deviated fixed-route service, a hybrid of demand-response and fixed-route service. Fixed-route service areas are federally categorized as either urban or rural based on demographics and funding sources.

Transit agencies can also be classified into two tiers based on their fleet size and responsibilities for transit asset management (TAM). Tier I providers, those that operate 101 or more vehicles in maximum service and/or operate rail transit, are responsible for creating their own individual TAM plans to operate, maintain, and improve capital assets effectively throughout their lifecycles. Tier II providers, defined as those that operate 100 or fewer vehicles without rail service or receive funds from the 5311 Rural Area Formula Program, may develop their own TAMs or participate in

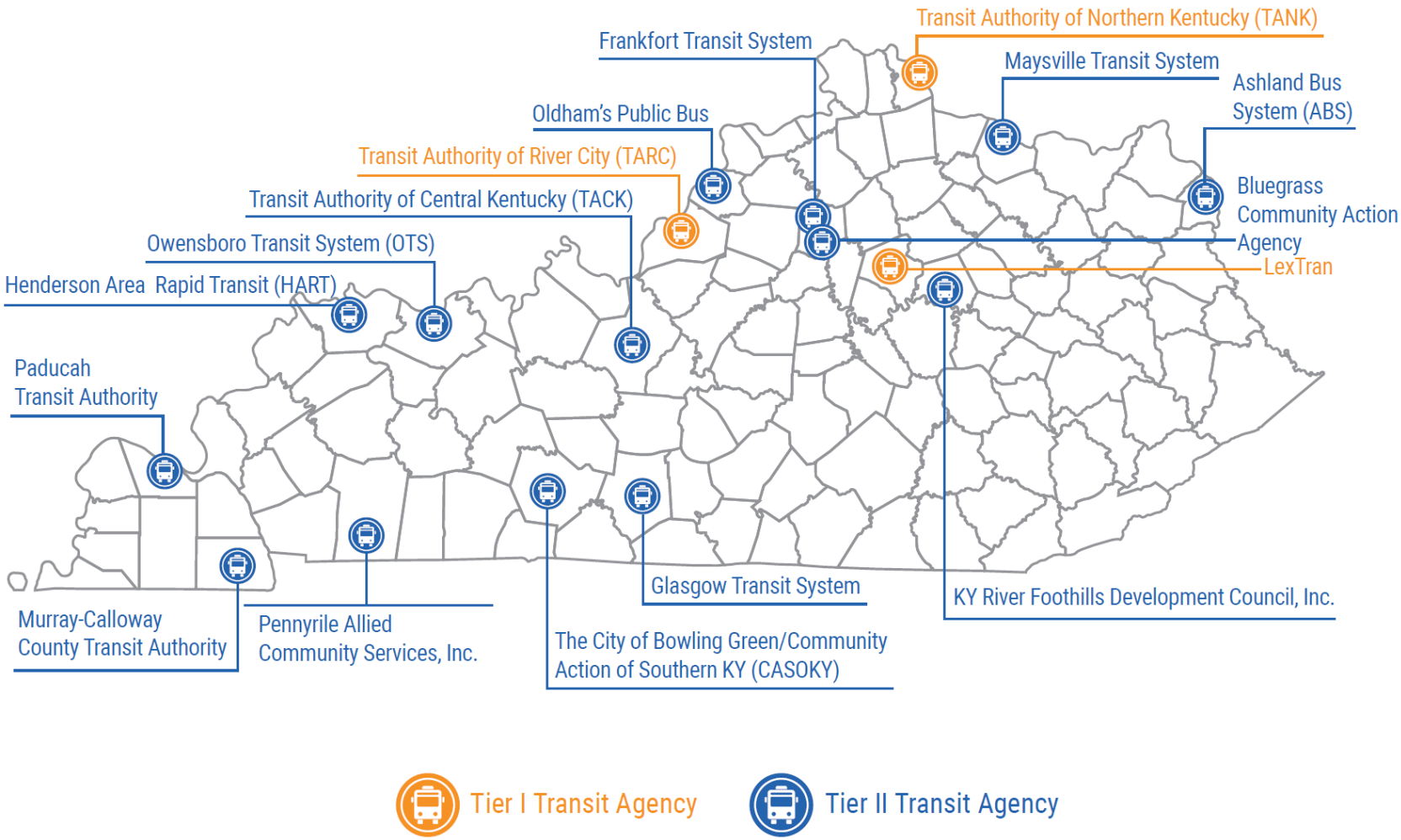
group plans. A Tier II group plan is managed by the state or by a designated agency and should be developed and implemented in coordination with each provider in the group.

Among Kentucky's transit providers, TARC, LEXTRAN, and TANK are federally classified as Tier I and termed "large urban" systems at the state level. There are another 14 Tier II transit agencies which provide fixed-route service, including six agencies that receive urban funds. Figures 2 shows a list of Kentucky's Tier I and Tier II fixed-route providers, per the National Transit Database's 2019 reporting and Figure 3 shows all transit providers in Kentucky.

Figure 2: Kentucky's Tier I and Tier II Fixed-Route Providers

	Transit Agency	City Served	Urban/Rural	Total Fixed-Route Ridership in 2019
TIER I	Transit Authority of River City (TARC)	Louisville	Urban	10,832,836
	Lextran	Lexington	Urban	4,364,637
	Transit Authority of Northern Kentucky (TANK)	Fort Wright & Suburban Cincinnati	Urban	2,910,241
TIER II	Ashland Bus System (ABS)	Ashland	Urban	116,944
	Bluegrass Community Action Agency	Frankfort	Rural	16,052
	Frankfort Transit System	Frankfort	Rural	148,243
	Glasgow Transit System	Glasgow	Rural	8,075
	Henderson Area Rapid Transit (HART)	Henderson	Urban	107,282
	KY River Foothills Development Council, Inc.	Richmond	Rural	114,632
	Maysville Transit System	Maysville	Rural	27,672
	Murray-Calloway County Transit Authority	Murray	Rural	34,875
	Oldham's Public Bus	La Grange	Urban	14,902
	Owensboro Transit System (OTS)	Owensboro	Urban	295,210
	Paducah Transit Authority	Paducah	Rural	178,761
	Pennyrile Allied Community Services, Inc.	Hopkinsville	Rural	77,969
	The City of Bowling Green/Community Action of Southern Kentucky (CASOKY)	Bowling Green	Urban	85,894
	Transit Authority of Central Kentucky (TACK)	Elizabethtown, Radcliff	Urban and Rural	32,508

Figure 3 - Kentucky Transit Providers

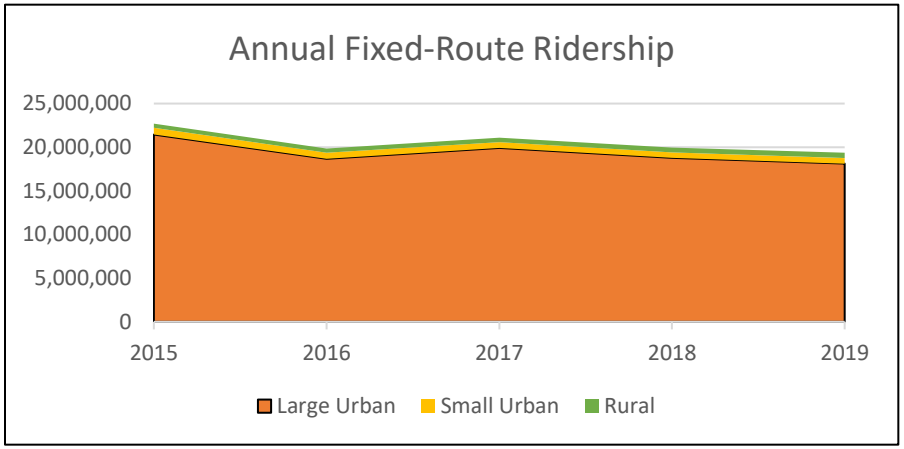


Transit Performance

Over the past four years, ridership within the Commonwealth has remained steady, with only small increases or decreases. The COVID-19 pandemic and related restrictions led to major transit disruptions for many public transit systems in the United States. In Kentucky, large transit agencies were no exception, experiencing drops in ridership of roughly 50% or more.

Nationally, transit ridership in 2020 dropped by 79% compared to 2019 levels at the start of the pandemic.[7] While some riders have returned to public transit, ridership in 2020 from summer to winter remained about 65% below pre-pandemic levels.[8] In addition, transit providers are coping with higher costs related to training, personal protective equipment (PPE), personnel absences, and growing labor costs. To that end, 2019 data was chosen to offer a view of transit data in a normal fiscal year.

Figure 4: Annual Fixed-Route Ridership



*Small urban areas are those transit systems serving areas of populations less than 50,000

[7] EBP US, Inc. (n.d.). The Impact of the COVID-19 Pandemic on Public Transit Funding Needs in the U.S. https://www.apta.com/wp-content/uploads/APTA-COVID-19-Funding-Impact-2021-01-27.pdf
[8] EBP US, Inc. (n.d.). The Impact of the COVID-19 Pandemic on Public Transit Funding Needs in the U.S. https://www.apta.com/wp-content/uploads/APTA-COVID-19-Funding-Impact-2021-01-27.pdf

Figure 5: Kentucky Tier 1 Transit Overview

	2019	LEXTRAN	TANK	TARC
	Service Area (Square Miles)	284	267	357
	Population Served	295,803	278,653	806,893
	Passenger Miles	20,659,326	21,360,653	51,769,341
	Unlinked Passenger Trips	4,612,703	3,002,618	11,456,984
	Operating Expenses	$26,325,127	$22,017,108	$89,289,697
	Fare Revenue All Modes	$4,032,358	$3,860,756	$11,299,147
	Operating Expenses per Trip	$5.71	$7.33	$7.79

Transportation infrastructure is one of the pillars of Kentucky's economy. The state's economic health and its ability to remain competitive in the globalized economy depends on the efficient transport of people and goods. Kentucky's multimodal network of roads and highways, commercial and general aviation airports, waterways, freight rail corridors and public transit services will need greater investment going forward. Figure 5 shows the transit infrastructure overview.

Transit Asset Management (TAM) Plan

KYTC's Office of Transportation Delivery (OTD) prepared the Statewide TAM plan in 2018 with an update in 2021. The document is a Tier II Sponsored Transit Asset Management Plan and was developed to assist the Tier II agencies "to manage their physical assets and maintain a State of Good Repair (SGR), which means the condition in which a capital asset is able to operate at a full level of performance."[9] The plan helps lower rehabilitation and maintenance costs, maximizes the assets useful life, and prioritizes spending on new assets. The TAM also includes performance measures for each type of asset.

Public Transportation Agency Safety Plan (PTASP)

OTD is responsible for preparation of the PTASP, which is a federal requirement for public transportation systems that receive federal funds through FTA's Enhanced Mobility of Seniors and Individuals with Disabilities Formula Program (Section 5310) and/or Rural Area Formula Program (Section 5311). The plan discusses the processes and procedures used by the Tier II agencies to implement Safety Management Systems (SMS) including performance targets. The PTASP is updated annually and certified by KYTC.

[9] KYTC/OTC TAM Plan, https://transportation.ky.gov/TransportationDelivery/Documents/

KEY TRENDS, CHALLENGES, AND OPPORTUNITIES

Trends

A review of the most recent trends was used to determine what is currently impacting public transportation is listed below:

Connected and Automated Vehicles

Connected and automated vehicles (C/AV) have the potential to drive themselves without requiring human interaction through sensing their environment, detecting, and classifying objects, and identifying safe navigation pathways while obeying traffic laws. They are aimed at making roadway travel safer and more efficient by utilizing sensors and computer information. It is still an emerging technology and unclear how rapidly C/AV will be adopted by the public transportation industry. Many vehicles currently available are propelled electrically, which requires transit agency policy decisions regarding the funding of electric vehicles and the impact it could have on procurement decisions.

Battery Electric Buses

Battery electric buses (BEB) are an alternative to diesel buses. BEBs produce less diesel exhaust emissions that contribute to the ground-level ozone and greenhouse gases. In addition, they contribute less noise pollution compared to their diesel counterpart. BEBs have higher upfront capital costs compared to similarly equipped diesel-powered buses; however, they have shown to have lower maintenance and fuel costs per vehicle over time. If a large fleet of BEBs is being implemented, charging facilities need to be built either on newly acquired land, by retrofitting buildings or by constructing facilities along transit routes. Facility or depot charging requires cheaper infrastructure compared to on-route charging. The number of charging facilities required is dependent upon the number of vehicles as there is generally a site limit of 2.5 megawatts of power. Depending on the size of the electric bus battery and the charging station, buses can typically fully charge between 3 to 6 hours.

A transition to an electric bus fleet may take time due to current backlog and lack of electric buses available for purchase. The availability of using federal grant money has attributed to this delay, and it is likely the new federal infrastructure funds will be beneficial but would also result in further increased bus production demand.

First-Mile/Last-Mile Connections

First-Mile/Last-Mile (FM/LM) is the distance between a traveler's origin or destination and a transit station or stop. Providing FM/LM connections and improvements, such as pedestrian and bicycle connectivity and incorporating bike-sharing systems, increases public transportation accessibility for more homes and destinations as riders must factor in the distance and time from their origin or destination to public transit as part of their overall trip. Less than a quarter mile is the distance most people in the United States are comfortable walking to or from public transit stops, but this may be affected by variables like weather and the time of day.

Pedestrian Infrastructure

Transit agencies can play a critical role in pedestrian sidewalk accessibility and pedestrian safety at and around transit stops. However, they must coordinate with municipal, county, or state governments to implement other pedestrian improvements involving roads. Riders and potential riders may feel more comfortable during their FM/LM leg of their commute if certain amenities are present. Lighting along sidewalks and bike lanes at and around transit stops and their facilities can improve visibility and the safety of pedestrians. In addition, the need for parking may be reduced and therefore free up more space for economic development as transit users will be enabled to reach transit by foot or bicycle.

Micromobility

Micromobility services can also be a solution for FM/LM. They provide shared mobility devices which may include bicycles, e-bikes, and e-scooters. Public bike-sharing systems enable short-term bicycle use by providing strategically placed stations to help facilitate one-way or round trips. They are usually subscription-based. Micromobility can also be offered as a solution by way of an employer-run shuttle or vanpool service.

Mobility-as-a-Service/Microtransit

An emerging type of service, Mobility-as-a-Service (MaaS), utilizes a digital interface through which users can plan, book, and pay for multiple types of mobility services such as car sharing, ride sourcing, and bicycle sharing. This service gives multimodal transportation access to individuals unable to afford or operate a car by facilitating the purchase of rides rather than personal vehicles. This can be cheaper than personal vehicle ownership as it does not require such a significant upfront cost, along with its associated ongoing costs such as fuel, maintenance, fees, taxes, insurance, and parking. Its trip-by-trip style can help reduce dependence on personal vehicle ownership, resulting in a reduction in road network congestion and emissions. MaaS can be offered at varying levels of services, but it is most powerful when it is able to integrate several transportation modes into one platform, such as an app. Government agency, transportation service providers, and third-party companies currently run MaaS platforms. Government agencies, such as municipal governments or transit agencies, can help their riders by adopting a journey-planning app that includes micromobility. Transportation service providers have primarily been Transportation Network Companies (TNCs) such as Uber and Lyft. These third-party companies do not own vehicle fleets but are apps that assist or enhance riders and/or drivers experience regarding driving, riding, owning, or charging a vehicle.

Tracking Apps

Tracking apps provide real-time information on public transportation vehicles. For the public, tracking apps can help current and potential riders plan their trips and find the nearest transit stop or station. The apps can track vehicle locations and provide predicted departure times based on real-time data. Many transit agencies incorporate tracking and payment within a single app. Agencies can use the apps' General Transit Feed Specification (GTFS) to monitor their vehicles real-time departure and arrival times to stations/stops, service alerts, current vehicle location, and congestion levels. The apps can help agencies track on-time performance to ensure reliability and can use it to track ridership as well.

Fare Policy and Payment Methods

Affordable fare policies can be adopted by transit agencies to help increase and maintain ridership while keeping balance with revenue. Fare policies can be offered in a variety of ways: making fares more affordable to riders who meet a certain criterion, offering passes such as time-based or distance-based passes, or opting for free transfer or zero-fare service. Another factor to consider is the unbanked population, which refers to those who do not use banks or credit unions for their financial transactions, as they may have limited or no access to credit cards or rely solely on pre-paid cards. While cashless systems have proven benefits, there must also be strategies included to reach those who have transit barriers due to cashless fare system.

Criteria-Based Fare

Discounted fare may be offered based upon income, age, or military or student status.

Time-Based Fare

Time-based passes allow for an unlimited number of rides during a set period of time.

Distance-Based Fare

Distance-based passes can either be charged dependent upon the number of miles traveled or the number of geographical zones traversed.

Free Transfers (Modern Fare Collection Technology)

Free transfers allow for riders to pay a single fare to ride two or more public transit vehicles when making a single trip.

Zero-Fare Service (Free-Fare System)

Zero-fare/free-fare offers transit service use at no direct cost to the public, generally operated similar to parks and libraries. It may utilize parking funds to finance the system and usually operates within a public facility such as hospital, university, or airport as they are most feasible for smaller transit agencies.

Transit-Oriented Development

Transit-oriented development (TOD) reduces car dependency and supports jobs and housing without requiring vehicle ownership by providing compact, walkable, pedestrian-oriented, mixed-use communities within close distance of public transit. The goal of TOD is to provide sustainable development around transit stations to promote transit use. TOD projects require transit agencies to coordinate with stakeholders and local government, while considering public feedback.

TOD can help to accomplish the creation of affordable housing as proximity to transit can increase property values, causing lower-income residents to get priced out of transit-accessible communities and moving farther from activity centers. Increasing density around transit stations is often a key recommendation to improving FM/LM connections. The number of potential riders within a comfortable walking distance to a transit stop increases when there is a density of housing and employment around. TOD can help to create value and help to support the revitalization of underserved neighborhoods.

COVID-19 Pandemic Impacts

In January 2020, the World Health Organization (WHO) identified an outbreak of a new virus that causes COVID-19 (Coronavirus Disease 2019). International travel restrictions were imposed by the United States in February to help with containment. Governor Andy Beshear declared a State of Emergency in Kentucky on March 6, 2020. On March 11th, the WHO officially declared COVID-19 as a global pandemic. On March 17th, the governor ordered limited shutdown on non-life sustaining business and governmental businesses. Restrictions on most non-life sustaining businesses were ordered to shut down on March 23rd and continued throughout March, April, and May. Summer 2020 saw a brief decline in cases, however restrictions were reestablished in the fall of 2020 and continued into early 2021. (Ky.gov An Official Website of the Commonwealth of Kentucky, n.d.)

Across the country, transit agencies experienced significant reductions in ridership and the associated fare revenue. Taxes and fees, the typical transit funding mechanisms such as revenue from sales taxes, motor fuel taxes, tolls, TNC fees, and the lottery all declined. The majority of state and local sources which comprise the transit funding also declined, with future impacts due to those reductions being difficult to quantify.

In response to the COVID-19 pandemic, on January 20, 2020, the FTA authorized the use of public transportation funds to be used at 100% federal share. In March 2020, Kentucky was awarded $22.9 million in Federal Coronavirus Aid, Relief, and Economic Security Act (CARES), as well as over $6.4 million in August 2020 from the Coronavirus Response and Relief Supplemental Appropriation Act (CRRSAA). These funds could be applied for directly by urban agencies and could be spent immediately after FTA approval. The Transit Act of 2021 enabled the FTA to fund transit operations, making the changes of the CARES Act permanent, which is a significant change in funding.[10] This was a benefit to transit operations; however, the pandemic has likely affected some aspects of transit demand permanently and it is unknown if or when ridership will recover to pre-pandemic levels. Alternatives to in-person travel, such as telemedicine, teleworking, and delivery services, may reduce future transit demand.

[10] Federal Transit Administration. (n.d.). American Rescue Plan Act of 2021. https://www.transit.dot.gov/funding/american-rescue-plan-act-2021

Opportunities

The KYTC's OTD states its mission regarding public transportation is "the promotion of accessible, safe, cost-effective transportation that fulfills the needs of citizens of Kentucky."[11] Several strengths have been identified within transit operations in the state that are consistent with that mission:

- The Human Services Transportation Delivery Program (HSTD) has been effective at delivering comprehensive services while streamlining costs. The program currently partners with the Department for Medicaid Services, Office of Vocational Rehabilitation, and Office of the Blind. It is currently working to expand its partnerships to the Department of Aging and Independent Living, veteran groups, and recipients participating in Department for Medicaid Services' Money Follows the Person program. The program has been able to contain cost below financial estimates and is an industry leader in coordinated human services transportation.
- The State Management Plan for public transportation allows administrative expenses incurred by local transit providers to be separated from capital or operating expenses. This creates a category of non-operating expenses which includes traditional overhead costs such as administrative and executive salaries, office supplies, insurance, professional services, and interest on short-term loans. OTD states "Indirect cost expenses may be eligible for reimbursement if a cost allocation methodology has been established and approved by the appropriate authority and OTD."
- Kentucky allows income from transportation service contracts with human service agencies to be used to provide local match under Section 5311 operating assistance. Kentucky Medicaid non-emergency contract revenues may also be used for local match.

Challenges

There are also several traits of Kentucky's transit system that are inconsistent with OTD mission:

- The level of funding for operating and capital expenses is very low compared to other states. The local match must meet the entirety of the FTA match requirement, even for smaller agencies. This limits the ability of transit providers to deliver intercity routes being abandoned by Greyhound. Demand response trips by rural agencies into urban areas are filling the void, but there may be a need for scheduled commuter bus services between the major urban areas.
- Public transportation services must be expanded to meet the needs of an aging population. The percentage of the state's population over the age of 55 is growing rapidly. By 2030, it is forecasted that over 30% of the state's population will be over 55.[12]

[11] Perez, E. M. (n.d.). KY State Management Plan. https://transportation.ky.gov/TransportationDelivery/Documents/KY%20State%20Management%20Plan.pdf
[12] Ruther, M., Sawyer, T., & Ehresman, S. (n.d.). Projections of Population and Households State of Kentucky, Kentucky Counties, and Area Development Districts 2015-2040. http://ksdc.louisville.edu/wp-content/uploads/2016/10/projection-report-v16.pdf

- Traffic congestion is increasing each year on the state's highways. For example, the average delay for rush-hour drivers has increased from 9 to 46 hours per year in Louisville over the past 10 years.
- Kentucky is among the top five states when it comes to the percentage of persons with disabilities.[13] Only Arkansas, Louisiana, and West Virginia. have a higher percentage than Kentucky –Statewide, 9% of the population is disabled, and most of them are dependent on transit for trips to access healthcare, jobs, and school. Many of them do not work at all because of the lack of transportation; an estimated 70% of persons with disabilities are not employed.

[13] Centers for Disease Control and Prevention. (n.d.). Disability & Health U.S. State Profile Data: Kentucky. https://www.cdc.gov/ncbddd/disabilityandhealth/impacts/kentucky.html