VIRGINIA TRANSIT CRISIS RESPONSE + RECOVERY HANDBOOK

A Guide for Resilient & Equitable Agency Action

DRPT

ACKNOWLEDGEMENTS

The Virginia Department of Rail and Public Transportation (DRPT) would like to acknowledge the contributions of several individuals to the development of this handbook.

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ABOUT THIS HANDBOOK

This handbook is a component of DRPT's COVID-19 Transit Recovery Toolkit, whose development was funded by the Federal Transit Administration's (FTA) COVID-19 Research Demonstration Grant Program to support strategies that address the operational challenges agencies faced during the pandemic. The program focuses on vehicle, facility, equipment and infrastructure for cleaning and disinfection; exposure mitigation measures; innovative mobility and technologies such as contactless payments; and measures that strengthen public confidence in transit services.

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1.1 Introduction

The COVID-19 pandemic has had a profound effect on the public transportation industry. As stay-at-home orders began rolling out across the U.S. in March 2020 and the term "social distancing" entered the public lexicon, many riders—particularly those with the option to stay or work from home, or with alternative means of transportation—curtailed their use of public transportation. At that time, relatively little was known about how the novel coronavirus, which causes COVID-19, was spread between people or the level of risk involved in taking public transportation. Many transit service providers found themselves caught off-guard, without well-developed contingency or operational plans developed for a public health emergency scenario like the COVID-19 pandemic.

As the pandemic has progressed, more information has become available not only about COVID-19 itself, which has caused hundreds of thousands of deaths in the U.S. alone, but about what practices are effective in enhancing transit operator and rider safety. This handbook identifies, synthesizes, and analyzes the findings from a wide variety of research in the public health, social and economic trends, and transportation realms—both in Virginia and nationally—and brings them together to identify lessons learned and provide examples of effective practices and data-informed guidelines for navigating the remainder of the COVID-19 pandemic and beyond.

1.1.1 About COVID-19 and the Pandemic

COVID-19 Pandemic Background Information

COVID-19 is a potentially fatal respiratory disease caused by a coronavirus (SARS-CoV-2) discovered in 2019. COVID-19 is particularly dangerous for elderly individuals, individuals with chronic health conditions such as obesity and diabetes (among many others), individuals with suppressed immune systems, and individuals who are pregnant. As of September 2021, COVID-19 had caused over 680,000 deaths in the U.S. and over 4.7 million deaths worldwide. For every death that has occurred, there are many more people who were hospitalized and/or experience long-term health problems from COVID-19.

The COVID-19 pandemic and the risks associated with COVID-19 changed dramatically as vaccines to prevent serious illness from COVID-19 became widely available in the U.S. and many other countries. Vaccines available as of September 2021 are extremely effective at preventing death (over 90 percent) and severe illness or hospitalization (70 to 90 percent) from COVID-19 and lower the likelihood that an individual contracts SARS-CoV-2 when exposed to other infected individuals.

SARS-CoV-2, like other viruses, changes through mutations, some of which allow a virus to spread more easily or make it more resistant to treatments or vaccines. When this occurs, a "variant" virus emerges. Throughout the COVID-19 pandemic, several variants have emerged, perhaps most notably, the highly transmissible Delta variant, which began spreading across the globe in the spring and summer of 2021. As a result, the world saw a significant increase in cases and deaths. Troublingly, the more the virus is circulating globally, the greater the likelihood that additional variants of concern will emerge.

At the beginning of the pandemic in the U.S. in early April 2020, the CDC provided information about the virus and broad guidelines for slowing and preventing transmission, including ones specific to the public transit industry.[1] This information was updated as more research was conducted.

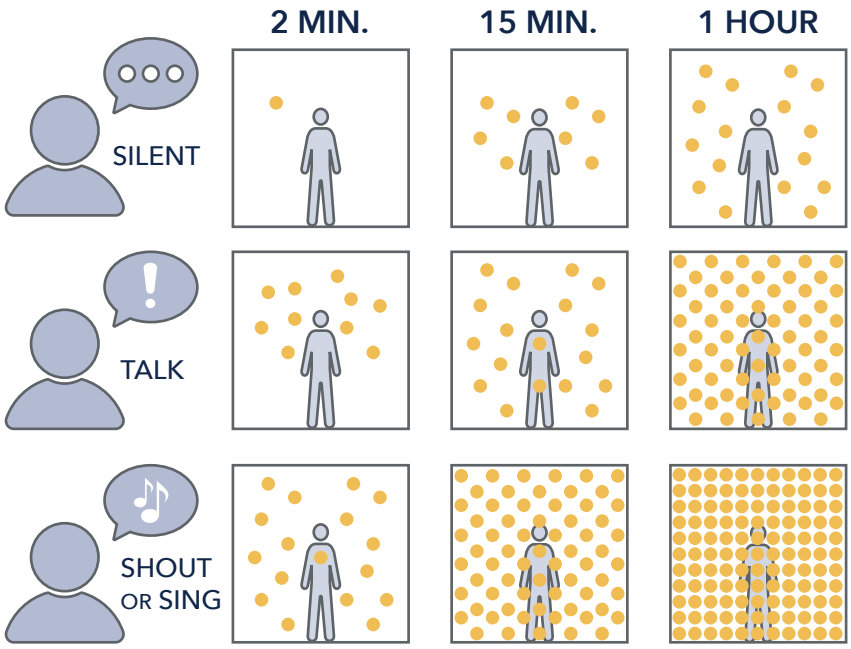
How COVID-19 Spreads

COVID-19 is largely spread in three ways:

- **INHALATION:** *Breathing in air in the vicinity of an infected person who is exhaling virus particles.*
- **DEPOSITION:** *Having particles containing the virus land on the eyes, nose, or mouth (i.e., when an infected person coughs or sneezes around a non-infected person).*
- **TOUCHING:** *Touching the eyes, nose, or mouth with hands that have virus particles on them.*[2]

Risk of transmission varies considerably according to the type and amount of virus exposure. **Figure 1** represents a peer-reviewed estimate of how long infectious virus particles can linger in the air around a person who is either silent, talking, or shouting/singing.[3]

FIGURE 1: Estimate of How Long Infection Virus Particles Linger in the Air



How to Prevent COVID-19 Transmission

In addition to becoming vaccinated, there are several methods that individuals can implement that are extremely effective at reducing the spread of COVID-19:

- *Wearing face coverings or masks*
- *Social distancing (maintaining a distance of at least six feet from others who do not live in one's household, particularly when indoors)*
- *Regular hand washing*

On January 21, 2021, a federal mandate was passed by Executive Order requiring masks on all domestic modes of transportation. As of September 2021, the mandate was still in effect.[4] **Appendix A** contains a list of resources that provide regularly updated and current information about SARS-CoV-2 and COVID-19, as well as information for individuals and employers regarding the hierarchy of controls and the effectiveness of these controls.

1.1.2 The Pandemic's National and Statewide Impact on Transit

Across the U.S., a few key patterns related to transit usage have emerged during the COVID-19 pandemic. In general, bus ridership decreased less than ridership on other fixed-route transit modes such commuter rail and heavy rail (which declined by over 90 percent in some cities).[5] In the aggregate across the U.S., bus riders, including those that continued to ride throughout the pandemic even after stay-at-home orders were put in place, are more likely than rail riders to be: low-income; essential workers; employed in industries where work from home was not possible; and/or people of color.

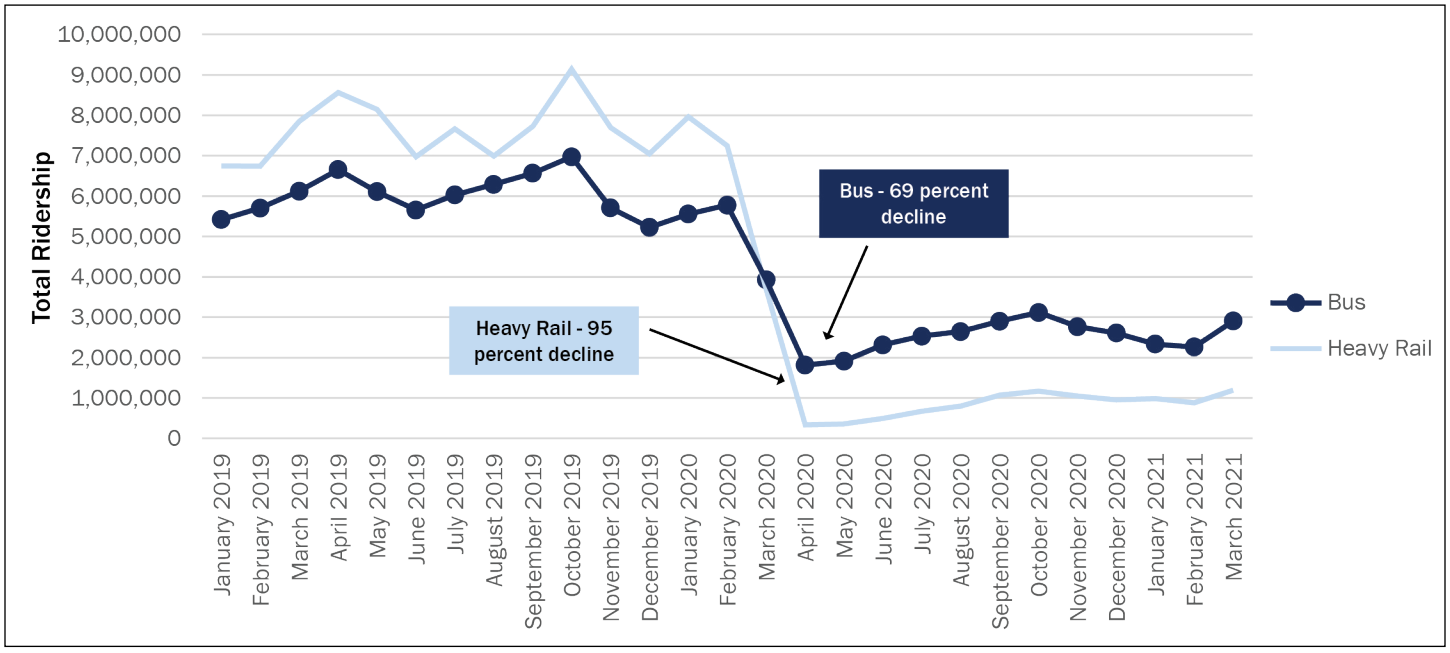
The Washington Metropolitan Area Transportation Authority (WMATA) conducted rider surveys on its rail and bus systems early in the pandemic.[6] A Metrorail survey, with results collected May 16-18, 2020, indicated that 15 percent of riders continued to use Metrorail for commutes. A Metrobus study with results collected April 20-May 21, 2020, showed that 49 percent of Metrobus riders continued to ride and 54 percent of their trips were commutes to work. Two in three Metrobus riders rode three times or more each week. The population of Metrobus riders that continued to ride during this period in the pandemic were "much more likely to be low-income and African-American" than Metrobus customers that were not currently riding at the time the survey was conducted.[7]

Many agencies also found a decrease in demand for peak-period service aimed at weekday commuters and a trend toward more flattened, all-day demand on their bus networks.

In Virginia, all transit modes saw significant declines at the onset of the pandemic. However, paratransit and bus ridership decreased less than ridership for other modes of transit. As shown in **Figure 2**, although heavy rail had higher ridership than bus pre-pandemic, its ridership dropped below that of bus during the pandemic. Between February and April 2020, monthly heavy rail ridership fell from over seven million to under 340,000 riders, while bus ridership statewide decreased from 5.9 million to 1.8 million riders per month in the same period. This represents a 95 percent decrease in ridership for heavy rail and a 69 percent decrease in ridership for bus. Bus ridership had around two million riders per month throughout the pandemic, while heavy rail did not reach one million riders per month until September 2020 and had not reached two million riders per month by the spring of 2021.

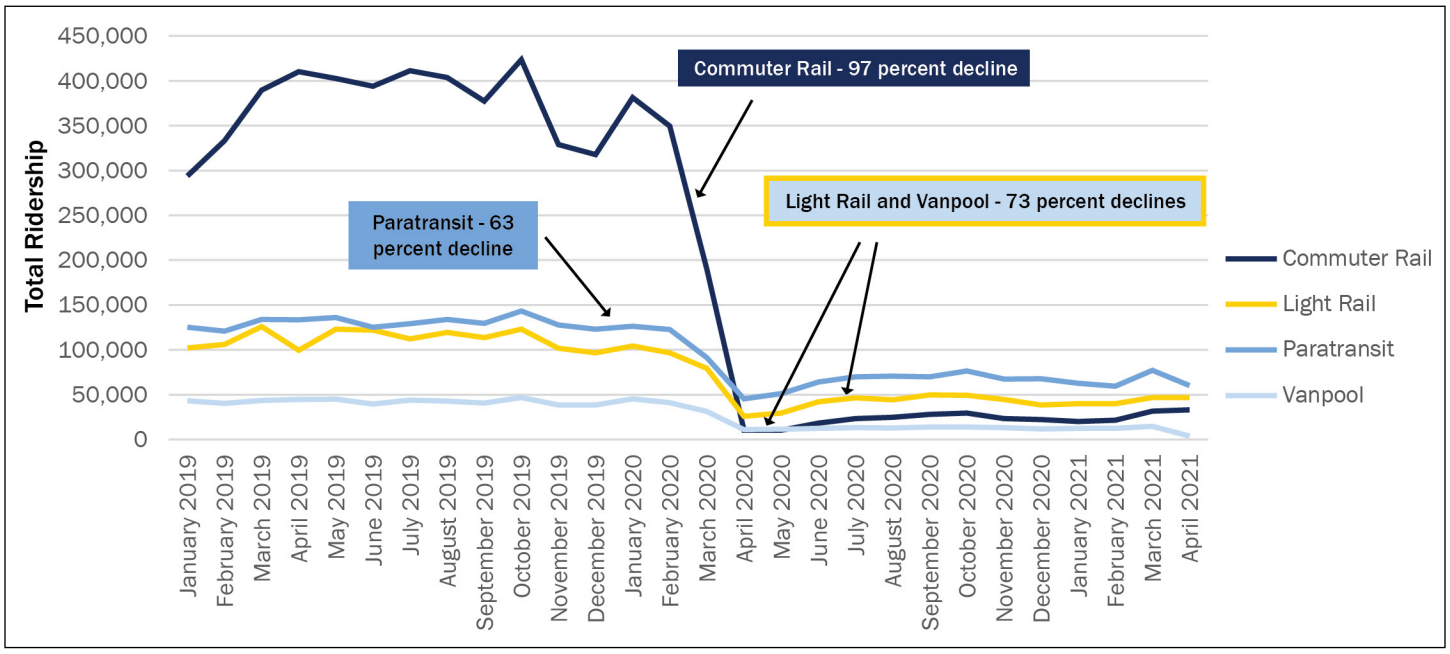
Other modes of transit, which all had fewer than 500,000 riders per month pre-pandemic, had similar drops in ridership. As shown in **Figure 3**, between February 2020 and April 2020, commuter rail ridership decreased by 97 percent; paratransit

FIGURE 2: Statewide Total Ridership on Bus and Heavy Rail, January 2019 - March 2021



Source: DRPT

FIGURE 3: Statewide Total Ridership on Commuter Rail, Light Rail, Paratransit, and Vanpool, Jan 2019 – Mar 2021



Source: DRPT

ridership decreased by 63 percent; and light rail ridership and vanpool ridership both decreased by 73 percent.

Throughout the pandemic, DRPT has collected data from service providers throughout the Commonwealth to gain an understanding of how agencies were adapting to the pandemic conditions in terms of service changes, new policies and protocols, communicating with riders, and workforce-related impacts such as cases among operators. As the pandemic progressed, DRPT collected information from providers regarding vaccination levels among operators as well. Doing this enabled DRPT to understand the conditions for transit throughout the Commonwealth and the "state of the practice" with respect to adapting to the pandemic.

In the recovery period, which can be considered the time before outbreaks of COVID-19 become only rare and isolated incidents, perceptions about the safety of transit are likely just as important as the reality for riders and operators alike. According to focus group feedback gathered for a Transit Center report from October 2020, mask compliance and social distancing were key strategies to make riders feel safe.[8] Some riders that left transit during the pandemic for other modes were deterred by the presence of mask-less riders or the failure by other riders to adhere to social distancing guidelines.[9] This highlights a key policy decision that providers will need to consider and navigate as they enter and continue operating in the recovery period.

1.2 Handbook Purpose

For transit agencies and operators, the pandemic required an immediate initial response that attempted to simultaneously maintain rider and operator safety while also continuing to provide transportation services to the people responsible for providing essential services and other transit-dependent individuals. To apply the safest and most effective solutions, transit agencies had to regularly

Some of the key questions the service providers have faced include:

- *What practices, policies, and protocols should we adopt to keep operators and riders as safe as possible?*
- *How can we recruit and retain enough operators, and reduce operator call-outs, to provide our service despite tumultuous working conditions?*
- *What services should we continue to provide if we cannot maintain our pre-pandemic service levels, whether due to lack of operators or funding?*
- *If we do need to reduce service, how do we do so in a way that considers the needs of the most vulnerable and transit-dependent riders?*
- *What are the passenger perceptions we must address and how do we communicate with our riders related to changes in safety, service, and policies?*
- *How do we address a potential lack of compliance with policies among riders?*

As the pandemic has continued, the questions that providers are facing have in some ways become even more complex. These include:

- *How should we prioritize which services to bring back first, and when should we seek to modify service based on changing ridership patterns?*
- *How can we ensure we have enough human resources to operate our planned levels of service?*
- *To protect those who are unvaccinated (whether by choice or due to ineligibility) or immunocompromised, and reduce the spread of COVID-19, how long will we require all riders and operators, even those who are fully vaccinated, to wear masks?*

- *How do we convince people that riding public transportation is a safe and viable travel choice?*
- *How can transit agencies become adequately prepared for future possible outbreaks of a contagious virus or other hazards requiring significant service and policy changes?*
- *How should communication between service providers and passengers change to enhance safety on and safe access to public transportation?*
- *How will changes in telework policies, worker locations, and other trends impact transit service provision?*
- *How can transit operations become more flexible and ready to respond to changing travel patterns and levels of demand?*
- *Will long-term spacing and ventilation and cleaning needs affect investments in buses and other equipment?*
- *Should we invest our limited resources in contactless payment solutions or maintaining zero-fare service?*

update their practices according to the evolving scientific understanding of COVID-19, often with inconsistent, infrequent, and incomplete direction. This handbook does not provide definitive answers to these questions that can be applied to every service, operator, or situation; nor should it, given that the trajectory of the COVID-19 pandemic and our understanding of industry best practices continues to evolve. However, it does provide information and guidance, based on scientific evidence, that can be applied to the public transportation context to inform service providers in navigating the pandemic recovery period and beyond.

1.3 Handbook Development Process

This handbook contains information that comes from a combination of research and literature review, as well as in-depth conversations with transit industry staff from across the Commonwealth of Virginia. A Stakeholder Advisory Committee (SAC) provided strategic direction for the project as well as valuable input at key points in the handbook development process. Many of this handbook's contents reflect the issues and lessons learned that participants identified. In addition, a series of ten interviews with representatives from service providers across Virginia, conducted in May 2021, provided the project team with further insight regarding the practices and lessons learned from the pandemic.

1.4 Organization of the Handbook

This Handbook is broken into six chapters, with this chapter dedicated to providing background on the pandemic and handbook. **Chapter 2** contains a summary of events and key lessons learned from operating transit during the pandemic. **Chapter 3** identifies a decision-making framework for agencies to consider as they think about how to navigate the pandemic and recovery periods. **Chapter 4** recommends actions for agencies to take to keep people safe and continue to operate needed services in an informed way. **Chapter 5** introduces future trends that will impact the industry and provides recommendations regarding how transit agencies can build long-term resilience to better prepare potential future disruptions to service and operations. **Chapter 6** contains the handbook's conclusion and an annotated and hyperlinked list of resources.

ABOUT KEY INFORMATION SOURCES

There are many agencies and organizations that have been reliable sources of information for transit agencies throughout the pandemic. The U.S. Centers for Disease Control and Prevention (CDC) is the leading source of scientific information and public health guidance regarding COVID-19 in the U.S. federal government. The World Health Organization (WHO) is a global resource for reliable scientific information and public health guidance. The Federal Transit Administration (FTA) has oversight of transit operators in the U.S., setting policies related to operations and funding for operators of public transportation services who receive federal funding. The FTA has had a leading role in providing resources and guidance for transit agencies to inform their pandemic response.

In addition, industry organizations such as the American Public Transportation Association (APTA), Community Transportation Association of America (CTAA), and the Transportation Research Board (TRB) Transit Cooperative Research Program (TCRP), among others, have all conducted research and provided resources throughout the COVID-19 pandemic to help transit agencies respond to the changing conditions in an informed way. These organizations are referenced repeatedly in this handbook and many of the publications they produced during the COVID-19 pandemic are listed in **Appendix A**.

FIGURE 4: Virginia Tech "Hokie" Mascot Wears Mask on Bus

TRANSIT RESPONSES & LESSONS LEARNED FROM THE COVID-19 PANDEMIC

2

The COVID-19 pandemic and subsequent economic recession comprise the greatest challenges faced by transit systems in several decades, and the long-term impacts and effects to the industry are still emerging. Recent research indicates a high likelihood that transit will continue to face the effects of the virus and its variants for years or even decades to come.[10] This sobering reality underscores the need for transit leaders and managers to understand and act on the key lessons learned through this crisis to better prepare for the next one. This chapter is broken into two major sections: how the transit industry responded and lessons learned.

2.1 Public Transportation Response Efforts

2.1.1 Investing in New Public Health Protocols

To mitigate the spread of COVID-19 while still maintaining transit service, transit agencies implemented a variety of public health protocols based on guidelines from the CDC, the FTA, and other transit-related sources, including industry organizations such as APTA. These practices, and their efficacy, similarly evolved with the scientific community's continued research into and understanding of the virus. Common transit agency responses included masking and personal protective equipment (PPE); social distancing; enhanced cleaning and sanitizing; plexiglass barriers to protect drivers; and the installation of higher rated Minimum Efficiency Reporting Value (MERV) air filters. Masking was initially established by the President's Executive Order signed on January 21, 2021 and will continue until at least January 2022.

2.1.2 Deploying Zero-Fare Policies

The pandemic propelled a discussion about zero-fare transit service as agencies implemented zero-fare policies during the public health crisis. National associations such as CTAA recommended that its members forgo fare collection and fare enforcement for the duration of the pandemic;[11] most agencies across the country went zero fare in March 2020.[12] Not collecting fares enabled operators and passengers to better adhere to social distancing guidelines. Further, providing temporary financial relief in the form of zero-fare transit had a positive impact on equity for those riders that still needed transit to commute and complete essential trips; in many cases such riders were those with no alternative means of transportation. For some agencies, the pandemic was an unplanned opportunity to pilot zero-fare transit. In Virginia, 33 of 42 public transportation providers had gone zero fare by the end of March 2020 according to DRPT.[13]

2.1.3 Developing Policies to Protect the Transit-Dependent

Large groups of riders still continued to rely on public transit even as the healthcare experts increasingly understood the high transmissibility of COVID-19 particles through the air and mask guidelines and mandates were rolled out across the state. Smaller or more rural transit systems across Virginia, where the primary offering is demand response service or paratransit, faced difficult decisions about how to best provide their services to those groups who truly depended on them while still maintaining

CDC guidelines and keeping their drivers safe. Ridership on both modes tends to be more elderly and more likely to have a disability—in addition to being heavily dependent on transit—making them also more likely to have negative outcomes from COVID-19.[14] CTAA outlined a policy for handling this challenge, which involved limiting travel to only essential trips.[15] Agencies re-tasked idle paratransit vehicles to deliver food to seniors and those with disabilities to satisfy the same purposes that these residents might otherwise have used transit to accomplish.[16] The result was a win-win for operators, who remained both employed and less potentially exposed to the virus, and riders who did not have to make trips to carry out basic functions such as accessing food.

When it came to protecting the transit-dependent on fixed-route services, agencies like Jacksonville Transit in North Carolina intentionally researched and added new routes aimed at servicing areas with populations known to have mobility challenges and connecting them with critical resources such as employment and education sites, grocery stores and healthcare services.[17] Others, like Maryland MTA, working with a third-party contractor, identified specific locations in the Baltimore area, like schools, churches and government buildings that could serve, in effect, as park-and-ride locations for shuttle pick-ups.[18] The goal of this was to give essential workers like those at nearby Greater Baltimore Medical Center more transportation options for getting to and from the frontlines of the COVID-19 pandemic.

2.1.4 Emphasizing Agencies' Roles as Employers

Transit service providers have a role in enhancing equity in policies and decisions they make related to their workforces. An April 2020 report by TransitCenter found that "frontline transit workers who must leave their homes for each shift – especially vehicle operators – are more likely than non-frontline workers to be people of color or to come from low-income households."[19] Agencies took various steps to address this inequity and protect the health, safety, and job security of workers. In the Roanoke Valley, RADAR Transit responded in May of 2020 by offering staff an extra $2.00 per hour of hazard pay and removed the cap on the 20 hours of additional pay for those that worked at or near overtime hours.[20] Systems operating around college or university campuses, such as the Harrisonburg Department of Public Transportation (HDPT), faced a different issue, which was a total absence of demand given universities shifting to all-virtual learning environments. Despite James Madison University having limited in-person operations, HDPT continued to issue paychecks for part-time staff through May of 2020, when graduation ceremonies would have taken place.[21] Many agencies encouraged workers who tested positive or were potentially exposed to COVID-19 to stay home and facilitated this by providing more generous sick pay, and implemented temperature checks before shifts. Later in the pandemic, many agencies sought to get their operators and staff early access to vaccine doses.

2.1.5 Partnering to Support Their Communities

Agencies around the country stepped up to support their communities in a variety of ways, many utilizing the incidental use provision permitted by FTA grant programs. This allowed transit providers to use idle assets like buses, vans, transit stations and garages for non-transit purposes to provide community services. For example, in Columbus, Ohio, the Central Ohio Transit Authority (COTA) partnered with Columbus City Schools and the Central Ohio YMCA to provide Wi-Fi hotspots to school children. COTA parked transit vehicles at the YMCA, allowing children access to the Wi-Fi. In Austin, Texas, Capital Metro partnered with a local school district to provide Wi-Fi hotspots for students in specific neighborhoods with the greatest need. Many smaller agencies around the country, even as they were cutting back or ceasing fixed route operations, continued to operate services for dialysis patients and others in urgent need of medical trips, including with volunteer drivers. Additionally, agencies worked with community organizations like Meals on Wheels and local food pantries to ensure meals were delivered.[22] Other agencies, like HRT in Virginia, simply re-instated vital commuter service routes, like the Elizabeth River ferry connecting Portsmouth and Norfolk, even as the pandemic surged in September of 2020.[23]

2.1.6 Crafting Responsive Service Adjustments

With the outbreak of the pandemic and the implementation of stay-at-home and emergency orders, many—if not most—transit agencies initially responded by making service cuts or other service

adjustments. In making these adjustments, agencies needed to consider a variety of factors, including:

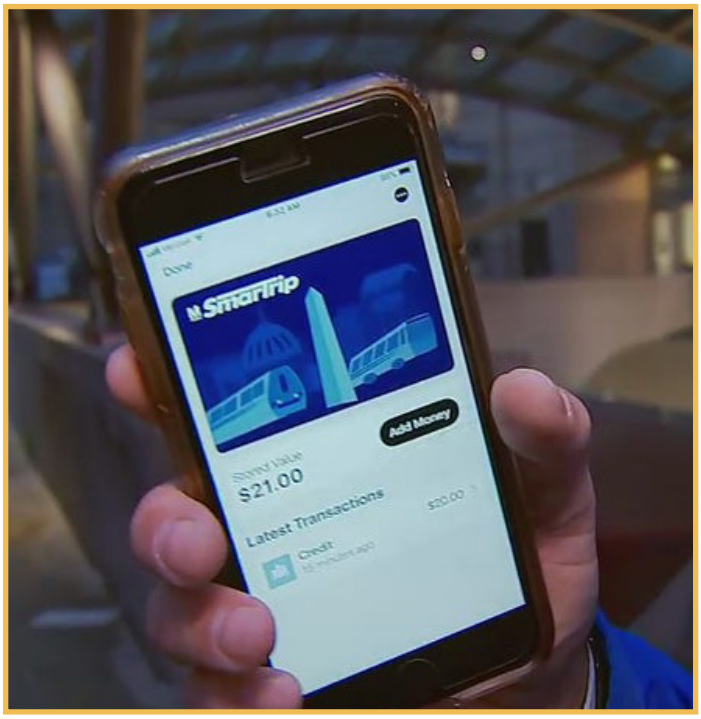
- *Safety considerations, such as:*
  - *The speed at which PPE could be obtained.*
  - *Operating additional "shadow" services to reduce crowding and allow social distancing.*
  - *Reducing services that are not as essential to reduce risks to operators.*
  - *Reducing or diverting service to allow for cleaning and disinfecting of vehicles.*
- *Considerations of ridership patterns and operational productivity.*
- *Uncertainties related to the availability of additional funding to address revenue shortfalls.*
- *Equity impacts of service changes specifically on the most transit-dependent riders.*
- *Aligning services based on operator availability (due to virus exposure, call-outs, or resignations).*[24,25,26]
- *A desire to keep operators employed and compensated.*

Agencies developed methodologies to determine service adjustments. The Jacksonville Transportation Authority (JTA) in Florida conducted an analysis to identify the "essentialness" of its services. The JTA defined essentialness as a function of ridership retention during the pandemic as well as transit-oriented populations (low-income, youth, seniors, people with disabilities) served. Essentialness was one input that was considered as routes were changed and was incorporated into the JTA's first round of changes, implemented in September 2021. San Francisco Municipal Transportation Agency (SFMTA or "Muni") cut fixed-route bus service from 89 routes to 17 routes. The 17 routes were selected based on transit travel patterns observed during the city's shelter-in-place order; connections to medical facilities; and Muni's existing Service Equity Strategy, which targets service in neighborhoods with high percentages of households with low incomes and people of color.[27,28] The agency then adjusted routes to ensure that all residents lived within one mile of Muni service.

2.1.7 Deploying New Technology

Agencies utilized existing technologies, found ways to improve upon existing technologies and systems, and began piloting and deploying new methods to enhance operator and rider safety. These implementations had other positive effects, including boosting riders' perceptions of safety, and allowing agencies to begin safely reinstating fares. Agencies leveraged data from automated passenger counters (APCs) to display real-time crowding information on their website, mobile app, and third-party apps. The data obtained from APCs also helped agencies make strategic service adjustment decisions based on ridership. In response to social distancing guidelines and concerns about high-touch surfaces, agencies expediated the rollout of contactless payment systems in order to safely reinstate fares.[29] Contactless payment, or mobile ticketing, as shown in **Figure 5**, allows riders to create an online account, enter payment information, and purchase mobile tickets. Contactless payment reduces interaction between passengers and operators and the usage of high-touch surfaces and can reassure riders with safety concerns.[30]

FIGURE 5: Washington Metro Area Transit Authority Mobile Ticket



2.2 Lessons Learned from the Pandemic Response

2.2.1 Transit's Role in Supporting Equity

Some urban transit agencies in Virginia saw much more modest declines in ridership throughout the pandemic compared to their smaller, rural counterparts. This is likely due to the percentage

of their ridership made up of essential workers. For example, the Greater Richmond Transit Company (GRTC), for which a majority (54 percent) of the ridership reports combined household incomes of less than $25,000, saw a systemwide decline of less than ten percent in fixed-route ridership, with ridership on some routes actually growing during the pandemic.[31] By contrast, agencies with high commuter ridership such as VRE saw far more dramatic declines in ridership due to the pandemic, as typical VRE riders were more likely to either be able to work from home or use personal vehicles for travel. Agencies with a higher percentage of "white collar" commuters have yet to see ridership resembling pre-pandemic levels.

Research has long pointed to the fact that the average transit user is more likely, compared to the general population, to be: between the ages of 25 and 54, a person of color, employed, have little to no college education, have less access to a personal or household vehicle, and have a household income of less than $50,000 a year.[32] This profile matches the reported socioeconomic profile of the average frontline worker, as detailed in 2020 reports by the Center for Economic and Policy Research (CEPR) and the U.S. Bureau of Labor Statistics.[33,34] This fact is certainly one contributing factor to people of color disproportionately suffering more negative health and economic outcomes as a result of the pandemic.[35] Frontline workers had to be in person at their jobs daily, resulting in increased risk exposure relative to that faced by more affluent or "office" workers.

The pandemic, and its disproportionately negative impacts on frontline workers, low-income people, and people of color, has brought issues of equity to a more central location in the nation's consciousness. As part of this trend, the role transit plays—connecting people who sometimes have no alternative means of transportation to life's opportunities—has come into stronger relief among many people in the public as well as decision makers.

Many agencies both in Virginia and nationally felt it was important to make service cuts and policy decisions equitably (to the greatest extent possible given available data and resources). Agencies such as King County Metro and SFMTA prioritized equity when making service cuts by running extra service to neighborhoods with a higher proportion of low-income or minority residents or employees, and by observing travel patterns throughout the pandemic. LA Metro pivoted its first/last mile on-demand pilot program to provide end-to-end service to allow riders to access essential services. Some agencies went zero fare, including 33 of 42 providers in Virginia by the end of March 2020, which provided temporary financial relief to riders.

2.2.2 The Importance of Understanding Riders' Needs

Declines in ridership varied significantly between agencies and services/modes throughout Virginia, with rail transit seeing significant ridership decreases as compared to more modest declines for large urban bus services. Service adjustments made by agencies also varied significantly based on service modes and the populations they serve. For example, adjusting service levels to reflect travel demand was a simpler process for demand response compared to other modes, resulting in more steady operational productivity for that mode. In addition, services with heavier university student ridership had an increased need for close coordination with community partners to make thoughtful service adjustments.

A key lesson from witnessing these trends is the value of understanding the demographic and behavior profiles of riders. Surveying riders to determine the purposes, origins, and destinations of their trips and gauge their overall comfort and willingness to ride were prime ways for agencies to determine needed adjustments and allocation of resources.[36] Understanding the needs of transit users, particularly those of the most vulnerable or disadvantaged populations, is also a critical strategy to supporting and enhancing equity. Examples of agencies identifying the transportation barriers of riders in accessing healthcare and vaccination sites during the pandemic showed that there are opportunities for agencies to customize their services to meet broader societal need in times of crisis.

2.2.3 Value of Partnerships with Community Partners and Organizations

Cultivating and maintaining relationships with community-based organizations and local government agencies creates several benefits both for transit operators and their communities. Firstly, stronger relationships can lead to innovative and more quickly implementable solutions to the problems that emerge, whether anticipated or not.

For example:

- *Relationships with health department contacts increased efficiency in tracking, sharing information, and contact tracing of cases of COVID-19. Later in the pandemic, these relationships helped more quickly direct transit agency resources to meeting people's needs for transportation to vaccination sites.*
- *Relationships with law enforcement helped agencies determine the most effective strategies for addressing lack of compliance among riders with policies such as mask wearing, as demonstrated by feedback from the SAC.*
- *Relationships with food banks in many locations throughout the U.S. resulted in agencies identifying innovative solutions such as supplemental and safe (i.e., socially distanced) service for riders to get to food banks, as well as the repurposing of transit agency resources (vehicles and drivers) to deliver food to homebound individuals.*

Through strengthened relationships, transit agencies can also reach more members of the community, both in times of crisis as well as part of their routine engagement activities. Community-based organizations can help extend the reach of agency communications, including to those without smartphones or those with limited English proficiency, which will improve overall planning efforts and operating decisions.

Better representation of historically marginalized populations produces more equitable outcomes. These benefits may be amplified in the event of a crisis.

In the early days of the COVID-19 pandemic, GRTC found it increasingly difficult to obtain enough hand-sanitizer to supply their vehicles and locations. A news story about local businesses shifting production from alcoholic spirits to sanitizers led to a conversation with a local distillery. With this connection, GRTC was able to place a recurring bulk order for the company's newly produced sanitizer.[37]

2.2.4 Need for Contingency Planning

Many providers lacked contingency plans that would have assisted in the response to the COVID-19 pandemic. No agency could have fully predicted the scale or specifics of the COVID-19 pandemic, but this experience highlighted a need for agencies to consider basic questions such as:

- *What services should we continue to operate if they are short on operators?*
- *Is a succession plan in place in case any key staff become unavailable to perform their jobs?*
- *What are the best methods of communicating with our employees and riders in the event of significant changes? What are the potential disruptions to transit services?*
- *What are the key plans and supplies to have in place prior to the next emergency?*

FIGURE 6: Bay Transit Express Ribbon Cutting Ceremony

Because the answers to these questions will be unique to every agency's context, the following sections highlight the considerations agencies should consider and steps they could consider taking to prepare for the realm of potential future scenarios to be better prepared for emergency situations in the future.

2.2.5 Importance of Effective Communications

In a dynamic situation such as a public health emergency when conditions and guidance may change rapidly, effective communications plans and practices are critical to transit agencies seeking to maintain their core operations. Communications occur in many directions, such as between the agency and employees, between the agency and riders, and between the agency and other organizations (these are in addition to communications with community partner organizations, as discussed in **Section 2.2.3**).

Internal Communications

During the COVID-19 pandemic, agency leaders relied on internal tools such as emails, intranet sites, text alerts, and collateral postings to communicate with employees regarding both the current state of operations and potential changes. For some providers, these communications were supplemented by weekly virtual staff meetings. The quality of communications also matters; most agencies understood the need to be transparent with employees related to COVID-19 exposures and comply with contact tracing activities.

Communication with the Public

With fewer riders on transit, communicating with riders and the general public required a heavier presence on websites and social media to inform people of service changes, safety conditions, and protocols. Onboard communications, however, such as signage, fliers, and pamphlets were still extremely important during the pandemic in providing updated and transparent safety information to riders. Onboard signage was a critical step to engaging riders in surveys and other outreach efforts.

Communication Between Transit Agencies

Transit providers in Virginia looked to neighboring agencies for guidance during the pandemic, especially regarding ways to communicate with riders and to comply with federal and state mandates. Some of these conversations were informal, while agencies operating in Northern Virginia instituted more formal weekly meetings to keep each other apprised of what was happening within their connected and overlapping service areas. Establishing peer agency networks for information sharing and guidance proved to be effective for some agencies.

2.2.6 Value of Governmental and Industry Leadership and Partnerships

Many service providers noted that guidance from oversight and funding organizations such as DRPT and the FTA has the potential to be immensely valuable during a situation like a pandemic. For example, FTA provided timely guidance regarding eligible uses of grant funding enabled service providers to adapt flexibly to changing needs in their communities. During the COVID-19 pandemic, the FTA allowed agencies to use service vehicles to perform community services like meal deliveries, suspended required procedures for making service adjustments, and provided more flexibility on administrative needs like data reporting.

DRPT played a strong role in collecting data and recording practices of agencies throughout the commonwealth. In doing so, it has positioned itself as a potential facilitator for future information exchanges and to assist agencies in implementing best practices in future emergencies. Industry groups such as APTA, CTAA, and VTA also took leadership roles in gathering, sharing, and facilitating information exchanges among service providers.

Emergency funding from the federal level in the form of CARES Act was a lifeline in enabling service providers to continue to meet community travel and safety needs. Service providers used their supplemental funding to maintain or increase service where needed, procure PPE and sanitizing/cleaning equipment, suspend fare collection, roll out new technologies such as contactless payment, and address fare revenue shortfalls due to decreased ridership.

2.2.7 Workforce Considerations

Finding qualified bus operators was a challenge for service providers even before the pandemic, and the pandemic exacerbated this challenge. Many operators did not, or were not able to, continue working, and the suspension of driver

training and CDL certifications made finding and training qualified drivers even more difficult. A lack of operators left many agencies struggling to provide the service levels needed to meet travel needs. Agencies in Virginia pursued a variety of strategies including more generous leave policies, special employee bonuses, and improvements to workplace culture to maintain and improve morale among operators.

2.2.8 Opportunities to Advance Planning and Technology Innovations

The pandemic presented an unexpected opportunity to advance new technologies, some of which were already under consideration prior to the pandemic. While many agencies were already using APC data, the pandemic highlighted the value and opportunity of using this technology to provide staff and riders alike with real-time information about crowding to improve operations and safety. Similarly, many larger agencies were already pursuing contactless payment and mobile ticketing solutions, which had the additional benefits of promoting social distancing between passengers and operators and enabling fare capping to make transit usage more accessible to low-income individuals. Finally, the pandemic highlighted the value in investing agency resources in obtaining high-quality data on riders' demographics and travel needs to support customization of operational strategies in the future.

CHALLENGES RECRUITING AND RETAINING OPERATORS

Finding enough vehicle operators to operate scheduled services has been a challenge for providers throughout the U.S. for many years. The pandemic exacerbated the issue, with many operators being quarantined due to potential COVID-19 exposure, resigning, or calling out sick due to safety concerns. All of these risks—in addition to the pre-existing challenges of being an operator due to factors such as irregular hours, the stress of driving in heavy traffic, concerns for their own safety, conflicts with passengers, and lack of regular restroom access—combined with pandemic-related issues, such as lack of childcare, resulted in operators leaving the field in even greater numbers.

The root, pre-pandemic causes of the operator shortage include widespread availability of higher paying jobs to workers like bus operators with a commercial driver's license (CDL), the amount of time it takes to become trained, inability of applicants to pass a background check and/or comply with strict rules related to the use of recreational marijuana. The difficulties associated with being a newer operator at a transit agency, such as receiving undesirable shifts due to lack of seniority, also lead new hires to leave after a short time.

A June 2021 webinar offered by the Virginia Transit Association (VTA) resulted in a robust discussion about the ways service providers can combat these challenges. While more competitive compensation is always a critical factor, there were additional strategies that agencies have employed to try to retain workers. Many of these are based on the understanding that culture and management can have a significant impact on attracting and retaining operators. Strategies suggested by participants included:

- *Conducting exit interviews to identify the causes of operators leaving their positions, and then seeking to address those causes.*
- *Making conditions better for new employees, who often receive less compensation but work more challenging shifts, leading to poor retention.*
- *Investing time in developing personal relationships between managers and operators so operators are more comfortable communicating their concerns and managers have more opportunities to address them before operators leave their positions.*

FIGURE 7: People Boarding a Greater Lynchburg Transit Company (GLTC) Bus

FIGURE 8: Masked Man Adheres to Social Distancing Policies while Riding the Train

DECISION MAKING FRAMEWORK FOR THE COVID-19 PANDEMIC

3

Chapter 1 and **Chapter 2** provided information about what has occurred thus far in the COVID-19 pandemic, and lessons learned from the experiences of transit agencies. This chapter explores the complex decisions and decision-making processes that transit agencies will continue to navigate in the coming years.

3.1 Navigating the COVID-19 Pandemic Period

The COVID-19 pandemic has changed the way in which public transportation providers must plan for and approach hazard response efforts. Agency decision making regarding COVID-19 recovery strategies is affected by a variety of factors, including longer-term trends that will influence agency planning efforts and strategic investments (see **Section 5.1** for details on industry trends). **Figure 9** shows the variety of factors agencies will need to consider in navigating the COVID-19 pandemic period in late 2021 and beyond. As depicted, factors like the trajectory of the pandemic and federal, state, and local policies impact agency decision making, yet agency decision making has varying influence over these and other variables. The next several sections will describe **Figure 9** and provide additional detail on each factor influencing agency decision making, starting with the foundational role of equity.

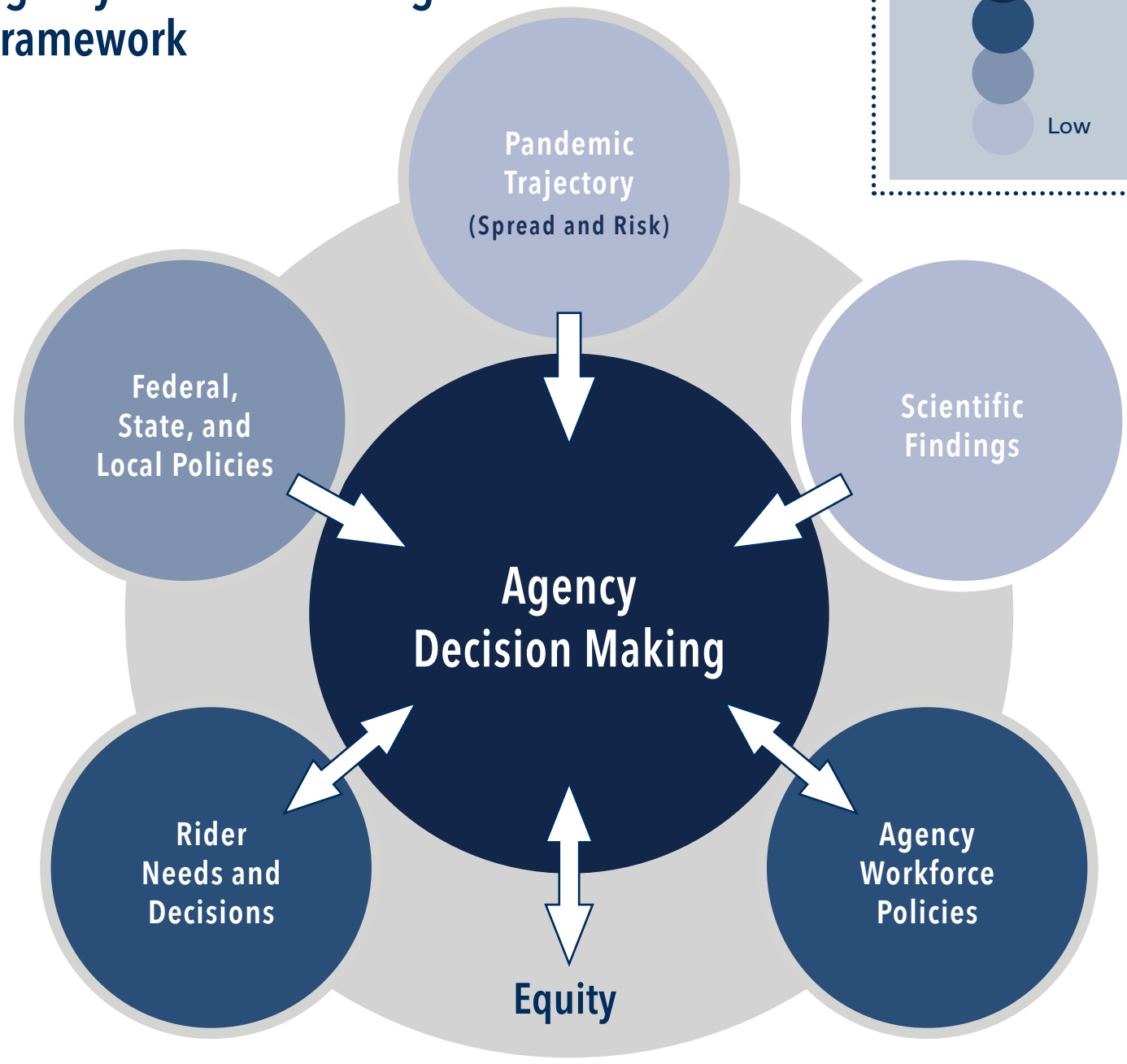
3.1.1 Equity and Equitable Decision Making

Equity is a principle and priority that affects nearly all the elements in the decision-making framework. Largely due to historical inequities in access to education, wealth accumulation, access to health care, business practices, and public investments and policies, the pandemic has had a greater impact on low-income, non-White, and other disadvantaged populations. As a result of both the pandemic's disproportionate impacts on marginalized populations and historical events that occurred in 2020, awareness of racial and social equity in particular has shifted to the forefront of public discourse. While transit agencies in Virginia and nationally have long served a clientele that is disproportionately low-income and non-White, they must continue to consider equity in all decision-making processes, including their response to major disruptions like the current pandemic. The approach and strategies chosen to curb the spread and mitigate the risks of contagion are tied to the degree to which equity is incorpo-rated into federal, state, local, and agency decision making and policy setting.

Agencies set many of their own policies and strategies, and the pursuit of equitable outcomes for transit riders and the public must influence these decisions. For these reasons, equity does not fit on the spectrum of agency influence in the same manner as other factors; it is shown in **Figure 9** as a foundational consideration and influence on all planning and recovery efforts that agencies undertake.

FIGURE 9: Pandemic Period Agency Decision Making Framework

Pandemic Period Agency Decision Making Framework



Long-Term Trends Impacting Agency Decision Making

- Regional Collaboration
- Marketing & Communications
- Demographic Trends
- Diversity, Equity, & Inclusion
- Teleworking Trends
- Mobility Innovation

3.1.2 Pandemic Trajectory and Scientific Findings

There are a suite of factors influencing the *pandemic trajectory*, shown in **Figure 10**. The ability to test, treat, trace, and prevent cases has a huge impact on how much COVID-19 can spread. Masking, distancing, and vaccination are three of the most effective tools for preventing the transmission of COVID-19. *Scientifics findings* provide this foundation for understanding the pandemic trajectory, which in turn influences policy setting and decision making at all levels of government. Findings from the CDC and the WHO helped the world understand how the virus spreads, who is most vulnerable, and what strategies best mitigate contagion. These findings inform the decisions that transit agencies make regarding cleaning and disinfecting, social distancing, the elimination of fares, the use of plexiglass barriers and other resources to enhance operator safety, and can influence decisions about when to increase service levels.

State and local health departments use a variety of metrics to measure the spread and impact of the virus in their communities. Based on these metrics, public health agencies can determine which policies are necessary to ensure that, for example, hospitals are not overwhelmed and healthcare workers are able to keep working. Hospitals must be able to maintain enough capacity to provide adequate care for the number of hospitalized COVID-19 patients without being short-staffed or running out of therapeutics that can save lives, such as respirators and certain medicines.

Transit *agency decision making* has no impact on *scientific findings,* but can impact the *pandemic trajectory*. Decisions regarding implementation of hazard control policies, such as enforcing mask wearing, requiring vaccinations for employees, or offering the teleworking options for employees whose responsibilities can be carried out remotely, does have an impact on community spread and, therefore, the local pandemic trajectory.

3.1.3 Rider Needs and Decisions

Agency decision making has significant influence on the *needs and decisions of riders*, and the needs and decisions of riders should influence *agency decision making* (**Figure 11**). For example, service reductions made by transit agencies impact reliability and thus impact riders' transportation

FIGURE 10: Factors Influencing Pandemic Trajectory

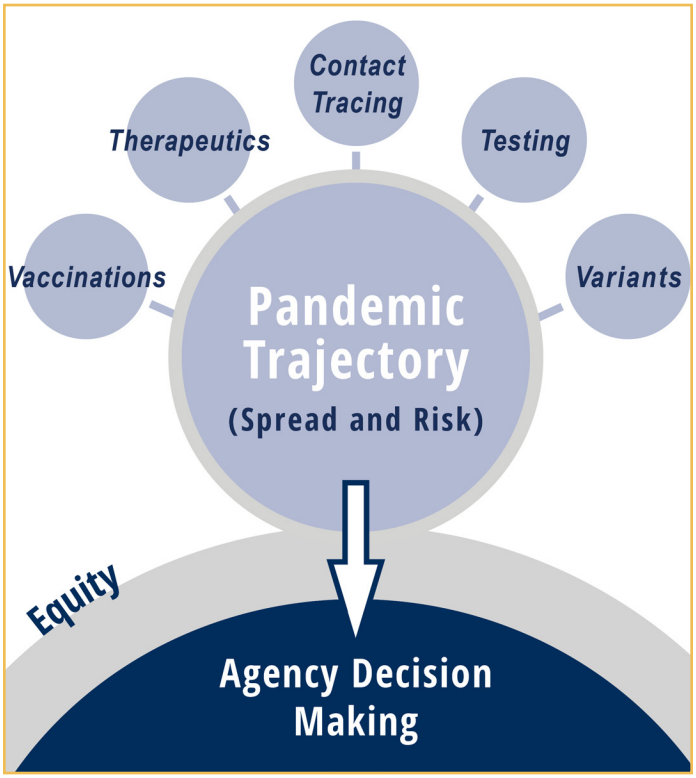
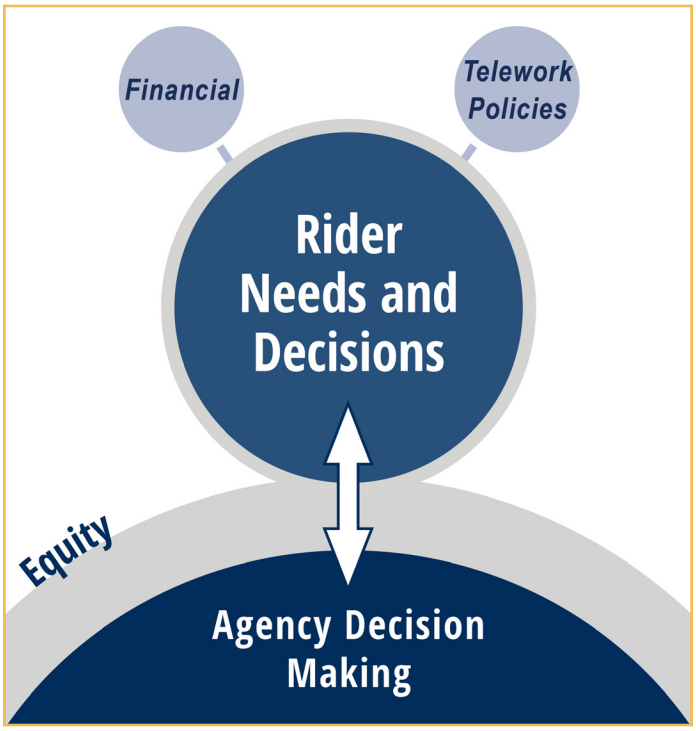


FIGURE 11: Rider Needs and Decisions



decisions. For low-income riders, the cost of a bus fare (set by an agency) is weighed against the need to travel. On the opposite side, variables—such as financial considerations, safety concerns, available mode choice, and teleworking policies—influence the need for and desirability of transit and, therefore, agency decision making regarding the provision of transit services.

3.1.4 Federal, State, and Local Policies

Federal, state, and local policies guide the decision making of transit and other local agencies (**Figure 12**). Policy making and messaging often impacts actions taken at the local level. For example, the federal government's mask mandate applies to all transit agencies in the U.S. In addition, with the rise of the more contagious Delta variant, President Biden signed an executive order requiring that all federal employees be vaccinated against COVID-19 within a predetermined timeframe. Shortly thereafter, other public and private entities (e.g., Google; Apple; some state and local government agencies) passed similar policies. The same rationale applies to other federal and state policies and actions, including but not limited to mask mandates, reopening thresholds, vaccination incentives, eviction moratoriums, and stimulus or recovery funding. These policies in turn impact the local spread of the virus as well as the availability of resources for transit providers to protect the public and their workers while still operating.

3.1.5 Agency Workforce Policies

Agencies determine their own *workforce policies*, but those policies are often influenced by outside factors over which agencies have little control (**Figure 13**). Understanding and identifying these influences is a crucial step that must factor into *agency decision making*. Examples of outside influences during a pandemic include operator shortages and funding constraints, both of which directly influence transit *agency decision making* around service reductions and workforce safety. Agencies can adopt strategies to enhance the safety and level of engagement of their workforce during a pandemic period, but other factors like funding constraints can impact their effectiveness. Therefore, it is important for transit agencies to understand the most appropriate, effective, and science-based short-term and long-term approaches and policies for pandemic recovery, covered in **Chapter 4** and **Chapter 5**, respectively, of this handbook.

FIGURE 12: Federal, State, and Local Policies

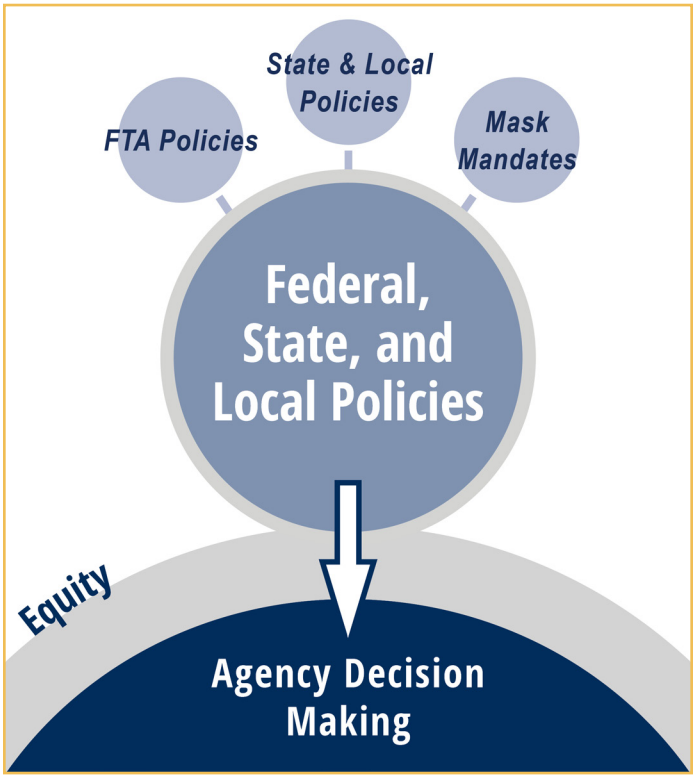


FIGURE 13: Agency Workforce Policies

Equity is a principle and priority that affects nearly all the elements in the decision-making framework.

RESPONDING IN THE SHORT TERM: RECOMMENDED GUIDELINES & PROTOCOLS FOR RECOVERING FROM COVID-19

4

Transit service providers will be navigating the constantly changing landscape of the COVID-19 pandemic through 2021 and likely beyond and will be faced with numerous decisions throughout that time. This period is likely to be marked by frequent changes in public health indicators, official public health guidance, and policies at various levels of government. This chapter provides information to help guide agencies' decision making in addressing the questions they are likely to face in the near term. It also identifies other considerations that agencies will need to account for in setting policies.

4.1 Agency Policies

The disruption caused by the COVID-19 pandemic is likely to remain dynamic because cases tend to increase and decrease at different times through the U.S., new variants may continue to emerge, and federal guidelines may change as more information becomes available. **The focus of this section is on policies that apply across various modes.** Later in this chapter, considerations related to specific modes are addressed in more detail. The tables in this section contain information about what scientific findings tell us about the effectiveness of various policies, protocols, and practices, and provide recommendations for agencies' consideration.

FIGURE 14: A Metrobus Waits at a Bus Stop

Policy Area	Science-Based Recommendations	Other Considerations
MASK-WEARING  *What we know:* Non-valved, multi-layer cloth masks offer 50-70 percent effectiveness at preventing the transmission of fine droplets and particles. The advantage of single-use surgical masks (and providing them for riders as needed) is that they eliminate the possibility that someone does not regularly clean their cloth mask or are using a less effective mask, such as a mask with a valve.	**FOR OPERATORS:** ■ *For the highest level of protection, N95 respirators filter out 95 percent of particles and are specifically recommended for use by healthcare workers. Bus operators and other frontline transit workers would also benefit from wearing N95 respirators, but if these are in short supply or not available, a surgical mask combined with a cloth mask can filter out approximately 90 percent of particles.* ■ *The Occupational Safety and Health Administration (OSHA) states: "Employers may require and mandate the use of facemasks in the workplace, particularly as a preventative measure in the spread of COVID-19. In fact, the U.S. Equal Employment Opportunity Commission (EEOC) has issued guidelines that indicate an employer may require employees to wear a face mask to reduce transmission. Limited exceptions such as those related to the mask creating a hazard or exacerbating a pre-existing respiratory condition exist."* **FOR RIDERS:** ■ *As of late July 2021, the CDC recommends that all vaccinated and unvaccinated individuals wear masks when indoors. Wearing a mask is an effective means to reduce the spread of small virus particles and droplets people emit from their nose and mouth. The effectiveness of mask-wearing is dependent upon everyone choosing to correctly and consistently wear one.*	☑ *Local, state, and/or federal policies may dictate whether agencies can require or enforce policies on mask-wearing. The federal mask mandate for public transportation will be in place until at least January 2022.* ☑ *Public attitudes regarding mask wearing may require agency consideration for balancing conflict with safety, especially when operators are on the frontlines of interfacing with the public.* ☑ *Marketing campaigns and visuals on agency vehicles and in agency facilities may help to encourage mask-wearing, as does providing PPE to riders and staff as needed.*

Require mask-wearing and provide masks to staff and riders where possible. Establish protocols for who should enforce mask-wearing and how they will do so.

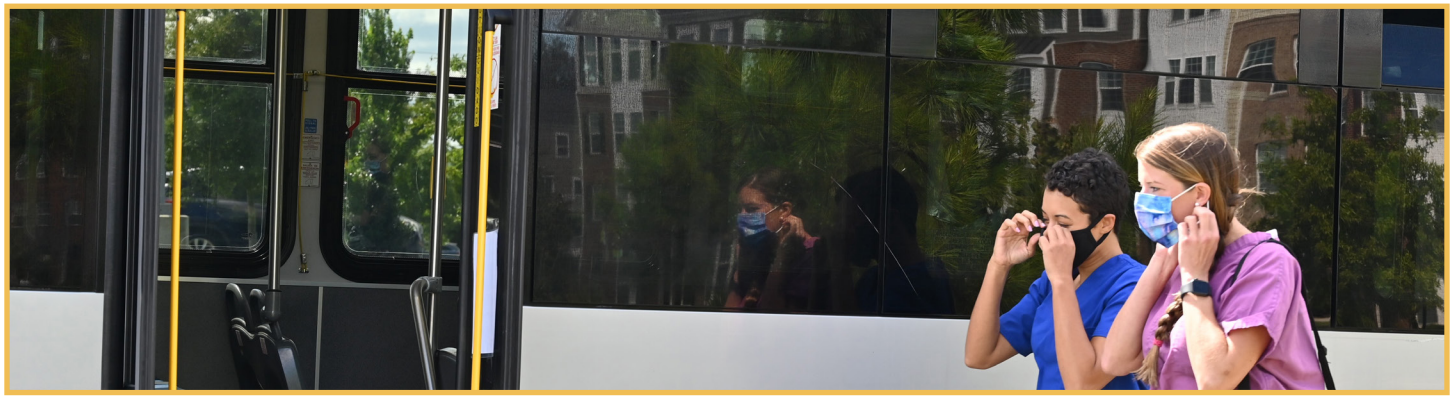
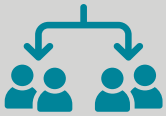


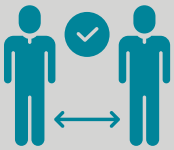
FIGURE 15: Two Healthcare Workers Don Masks Prior to Boarding a Bus

Policy Area	Science-Based Recommendations	Other Considerations
VACCINATIONS  *What we know:* Vaccines reduce the risk of contracting COVID-19 and dramatically reduce the risk of severe illness, hospitalization, and death from COVID-19. Vaccines are the most effective method for reducing the spread of COVID-19.	■ *Transit agencies should support their employees in gaining access to vaccinations, including by providing additional sick time to cope with the side effects of vaccines if necessary.* ■ *Transit agencies should consider adopting requirements that their employees be vaccinated. Regular (i.e., weekly) testing for COVID-19 is the second-best method for reducing the spread of COVID-19 among workers and riders.*	☑ *Virginia has announced it will also require all state employees to be vaccinated or tested weekly.*[38] ☑ *Vaccine hesitation is a significant challenge to high vaccination rates.* ☑ *Research on the potential need for booster shots is ongoing as of Sept. 2021.* ☑ *The Delta variant causes increased breakthrough infections among vaccinated individuals, possibly heightening COVID-19 fears and impacting the return of commuters.*

Require, or strongly encourage and incentivize, workers to become vaccinated. Workers who remain in their positions but do not become vaccinated should be subject to weekly testing.

Policy Area	Science-Based Recommendations	Other Considerations
TESTING & CONTACT TRACING  *What we know:* Tracking who has the virus and informing those who have been around an infected person can help to reduce the spread by encouraging people who have come into contact with an infected person to isolate from others. However, the effectiveness of contract tracing is limited by human behavior and peoples' willingness to share information about their contacts.	■ *The CDC Guidance for Business and Employers recommends employers determine which employees may have been exposed to the virus and inform employees of their possible exposure to COVID-19 in the workplace. However, employers should maintain confidentiality as required by the Americans with Disabilities Act (ADA). The information disclosed and method of disclosure must comply with applicable federal, state, and local laws.* ■ *Virginia announced it would require state workers to be tested weekly for COVID-19 unless vaccinated.*[39]	☑ *Working with local health departments and establishing reporting protocols when employees test positive for COVID-19 is beneficial.* ☑ *Local health departments have limited resources and may become overwhelmed in virus hotspot areas.*

Conduct regular testing of non-vaccinated employees; perform contact tracing as needed to curb the spread of COVID-19 in the workplace; and inform employees as quickly as possible if they have been exposed at work.

Policy Area	Science-Based Recommendations	Other Considerations
SOCIAL DISTANCING  *What we know:* The CDC recommends making foot traffic single direction in narrow and confined areas and using visuals like floor decals, colored tape, and signs to remind workers and passengers to maintain a distance of at least six feet.	**ON TRANSIT VEHICLES AND IN TRANSIT FACILITIES:** ■ *Transit agencies have relied on vehicle occupancy and service changes to reduce the number of people riding transit at any given time.* ■ *It can be difficult to require distancing on transit vehicles or at facilities, but placing signage or taping over seats to create distance between seated passengers can help.* ■ *Some agencies have additionally created signage on seats that encourage social distancing (i.e., putting signage on empty seats to create space barriers between passengers).*	☑ *Some agencies experience too much demand to enable consistent implementation and enforcement of social distancing measures.* ☑ *Employees and the public may not always respect distancing policies in transit facilities.* ☑ *Larger transit agencies with more resources are more likely to be able to afford implementing smartphone apps that allow for contactless payment, real-time crowding tracking, and communication with riders regarding agency social distancing or cleaning and sanitizing policies.* ☑ *Rear-door boarding can assist with distancing riders from operators.*

Depending on local spread and available resources, reduce the number of people riding transit through vehicle occupancy limitations and service changes. On board and off, use marketing campaigns and visual cues to create space barriers between people and encourage social distancing on transit and in transit facilities. For agencies who have them, APCs can be used to track and convey real-time crowding information on transit.

FIGURE 16: Buses Wait in Line to Pick-up Passengers

Policy Area	Science-Based Recommendations	Other Considerations
CLEANING & DISINFECTING *What we know:* Cleaning and then disinfecting high-touch surfaces and objects, especially on buses, can be an effective administrative control to help slow or control the virus's spread. Perhaps equally importantly, cleaning and disinfecting can give riders the perception that they are safer when riding transit. While COVID-19 is not thought to be highly transmissible via contaminated surfaces, other viruses may be more likely to spread in this way, so enhanced cleaning and sanitizing practices may be especially useful to develop and maintain, even beyond the COVID-19 pandemic.	■ *According to the CDC and the Transportation Research Board (TRB), transit facilities and vehicles should be cleaned and then sanitized at least daily with particular focus paid to high-touch surfaces such as workstations, operator controls, seats, kiosks, ticket machines, door handles, and restrooms, although some agencies conducted immediate cleanings.* ■ *CDC recommendations for inactivating viruses through cleaning and disinfecting are as follows:* **FOR HANDS:** » *Soap/detergent for scrubbing the hands with water for at least 20 seconds.* » *Alcohol mixtures for hand sanitizer (at least 60 percent alcohol).* **FOR HIGH-TOUCH SURFACES:** » *Disinfectant, such as sodium hypochlorite (bleach), to break down the viral envelope, or the outermost layer of the virus.* » *Alcohol mixtures for disinfecting surfaces (at least 70 percent)*	☑ *Some transit agencies have decided to maintain an enhanced cleaning and sanitizing protocol beyond the pandemic.* ☑ *Providing hand sanitizer to operators or riders will make it more likely for some people to maintain clean hands.*

Clean and then sanitize transit vehicles and facilities at least daily, paying close attention to high-touch surfaces. Communicate and market these cleaning and disinfecting policies to showcase agency efforts to enhance public safety. Encourage employees to follow hand-washing guidelines.

FIGURE 17: The Tide Light Rail System in Norfolk, Virginia

Policy Area	Science-Based Recommendations	Other Considerations
VEHICLE ADAPTATIONS *What we know:* The virus spreads primarily through inhalation of particles from an infected person and deposition of virus-laden particles from an infected person on the eyes, nose, or mouth of a healthy individual. Enhanced ventilation efforts can reduce the number of particles with the virus in the air and in-vehicle barriers reduce exposure from riders for operators.	■ *Vehicle adaptations can keep riders and operators safer and healthier by reducing exposure to particles and aerosols that could get them sick, whether with COVID-19 or from another virus.* » *The CDC's COVID-19 guidance for bus transit operators includes the recommendation of establishing physical barriers between bus operators and passengers where possible.* ■ *Vehicle adaptations like plexiglass barriers between operators and riders and enhanced ventilation may help mitigate operator safety concerns, even outside of a pandemic scenario.* » *OSHA recommends plexiglass because it is easy to clean, smooth, readily available, transparent, and easily worked.* » *Upgrading vehicle ventilation/HVAC systems to use higher levels of Minimum Efficiency Reporting Value (MERV) filters enhances the ability of the system to trap SARS-CoV-2 particles and prevent them from recirculating within an enclosed space such as a bus or rail car. The higher the MERV rating, the better the filter is at trapping specific sizes and types of particles.*	☑ *Transit agencies may have limited resources to purchase and maintain vehicle adaptations.* ☑ *Some transit agencies have decided to maintain the use of higher quality air filters and plexiglass barriers beyond the pandemic.* ☑ *Keeping windows open may be more difficult during the coldest and hottest times of the year.*

Vehicle adaptations like the ability to open windows to increase ventilation, use better air filters, or install plexiglass or other barriers between operators and riders are valuable changes that enhance public and worker safety in a pandemic and in general.

FIGURE 18: Brite Bus Transit Service in Staunton and Waynesboro, Virginia

Policy Area	Science-Based Recommendations	Other Considerations
FARE COLLECTION & SAFETY  *What we know:* There is evidence that COVID-19 is more likely to spread between individuals than through contact with surfaces. It is preferable to avoid individuals being near each other for the purpose of collecting fare by handling customer credit, debit, or rechargeable transit cards and cash.	■ *Fare collection that occurs without two individuals interacting in close proximity is safer for both riders and operators. Agencies may explore options, based on available resources and capacity, to limit close, physical interaction. Options could include: zero-fare service, tap cards with readers or fare-collection boxes placed at least six feet from the operator, self-validating or visually validated passes, or off-board fare collection systems.*	☑ *Agencies may hesitate to adopt zero-fare policies due to financial impacts or other concerns.* ☑ *Agencies who do pursue contactless payment solutions must ensure un- or underbanked riders still have ways to pay for their fare.*

Eliminate the need for operators to come within six feet of passengers for the purpose of handling fares. If cash must be handled, provide gloves and barriers for operators to create space between them and potentially infected passengers. Zero-fare policies and contactless payment options (mobile app, off-board purchase of tickets/multi-ride passes, etc.) can protect operators by reducing close interactions with riders.

MATERIALS RESERVES  *What we know:* Hazard preparedness and response planning encourages procuring a supply of face masks and disinfectant gel to keep in reserve for use by employees. At the start of the pandemic in 2020, these materials were in short supply.	■ *APTA's Contagious Virus Response Plan includes recommended actions for sanitary aids including maintaining a reserve of materials like face masks and disinfectant gel to ensure sufficient supply for employees as well as working with suppliers to maintain a steady flow of these materials, pending progression to higher alert phases in the event of a contagious virus.*[40]	☑ *Some transit agencies have limited resources to maintain reserves of PPE, hand sanitizer, gloves, and other materials.*

If possible, maintain a reserve of face masks, disinfectant gel, and other sanitizing materials as needed in case a sudden health threat emerges. Preferably, maintain enough supplies to meet the needs of agency staff and workers for at least one month.

4.2 Determining Whether and How to Operate, Level of Risk, and Operational Considerations

Many agencies that reduced or removed service because of the pandemic—whether due to lower demand from riders, bus operator shortages, proactively to reduce operator exposure, or a combination of factors—are now considering if, how, and when to resume the operation of services they offered prior to the pandemic. Additionally, some agencies are using the pandemic as an opportunity to implement new fixed-route, on-demand, and other redesigned services. As the COVID-19 pandemic progresses and case counts fluctuate, and in future emergency situations or simply based on long-term demographic and economic trends, agencies will continue to face decisions about how to adjust their service levels to best meet their community's transit needs despite their constraints.

There is no one-size-fits-all approach to scaling service levels. Each agency operates within a unique context in terms of factors like population, destinations served, job types, and land use and may provide service across a variety of modes (e.g., fixed route bus, commuter bus, vanpool, etc.). In addition to considering service level adjustments for specific modes, agencies may also contemplate either replacing full fixed routes or route segments with demand responsive options such as microtransit, so long as those alternatives are more efficient to operate while providing an equivalent or better transit experience.

All service level decisions should be supported by both quantitative and qualitative inputs that inform transit need and public health and/or general safety concerns. A detailed list of questions agencies should consider to inform service adjustments is included in **Appendix B**. Some of these questions apply to multiple disruptive scenarios, not just public health crises.

4.2.1 Balancing Travel Needs with Safety and Health Risks

The health and safety of operators and riders is paramount to transit service provision amidst and following a pandemic. Transit agency officials should consider current indicators and scientific findings (such as case counts, transmissibility and vaccination rates, and the impact of variants) when determining how to provide service safely and efficiently and develop a sustainable process for monitoring, tracking, and responding to changes in these metrics throughout a public health crisis.

Agencies that provide multiple modes should evaluate which modes are most appropriate for on-the-ground conditions (e.g., by running additional buses on routes with high demand to facilitate social distancing and/or reallocating vans to provide on-demand service for low-demand areas, thereby freeing up fixed-route buses for extra runs where beneficial and viable). Aside from the vehicle type, agencies may also consider whether vehicles are equipped with enhanced ventilation and contactless fare systems or processes, which improve safety for operators and riders.

In addition to safety concerns, agencies should gauge the overall need for transit service. This involves understanding community needs as well as identifying and monitoring indicators to gauge the need for transit in any service area. These indicators may include:

- *Ridership by route and stop*
- *Passengers per revenue mile by route*
- *Presence of essential services, employees, and community services*
- *Reopening/closure of major job centers and other trip generators*
- *Presence of low-income households, minority communities, persons with disabilities, and older adults*

It is important to engage with riders to understand who is using transit service and why. There are many ways that agencies can develop an understanding of their ridership, and in particular, regular transit riders. This can be accomplished through a route-level satisfaction survey or, if public health conditions permit, on-board surveys. Surveying can be especially helpful method when demographic questions about where riders live and work are included, particularly if data from APCs or routing software (in the case of demand response service) are not available to provide stop-level ridership. In the long-term, route level surveying can help agencies develop a clearer picture of their customer base and their specific reasons for using transit.

SAN FRANCISCO MUNI

SFMTA has developed a Transportation Recovery Plan and a COVID-19 Data Dashboard (**Figure 19**). A chart (**Figure 20**) in the Recovery Plan outlines drivers of transit demand and their anticipated impact on transit service (e.g., increased trips citywide and the resumption of downtown trips would result in resuming or increasing rail service).[41] Decisions for service expansion are based on ridership trends and where ridership is highest, the Muni Service Equity Strategy, and public and operator outreach.[42] The Muni Service Equity Strategy is an effort to improve service performance in eight neighborhoods with high percentages of households with low incomes and people of color.[43] By incorporating the Service Equity Strategy into its Recovery Plan, SFMTA ensures its Recovery Plan prioritizes transportation for people who need it the most.

FIGURE 19: SFMTA COVID-19 Data Dashboard

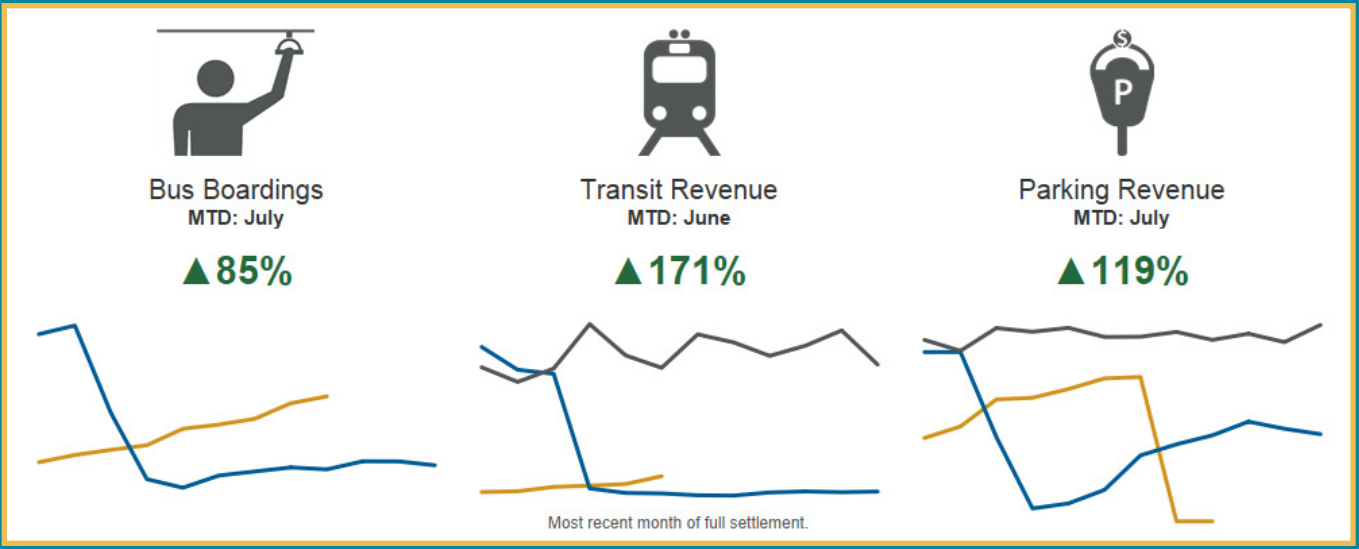


FIGURE 20: SFMTA COVID-19 Recovery Plan Chart Excerpt

Tranportation Recovery Plan | Summary				
Anticipated Transportation Demand Drivers	Shelter-in-place Essential trips only	Increase in trips for outdoor recreation and to neighborhood commercial (pick-up/delivery)	Expansion of trips to neighbor-hood commercial corridors and to large institutional employers	Increased trips to neighborhood commercial corridors
Muni Service Transit Lanes	Core Service Existing network	Increasing frequency on Core Service routes No change	Core Service + two additional routes, and capacity increases Begin installation of temporary treatments in critical locations	No change Continuing temporary emergency transit lane (TETL) program

Once key indicators have been evaluated, agencies should establish clear thresholds to guide the scaling of service and monitor conditions. Throughout this process, agencies should (and in many cases, must) also develop a mechanism to assess how reduced or increased service will impact historically disadvantaged populations and populations that rely on transit more heavily than the general population to assure that service is reduced, restored, and increased equitably. Agencies should also monitor these indicators to understand when affected transit may resume. Aside from agency performance metrics, agencies should also monitor conditions that may remain in the longer-term, such as the prevalence of working from home policies on behalf of local employers.

Aside from transit demand, agency decision makers will need to address several operational concerns to get and keep buses moving. From a safety perspective, agencies will need to assess whether they have a sufficient and consistent supply of PPE and driver protective barriers to safely operate service. Conversations with SAC stakeholders in Virginia indicated that:

- *Some agencies had already begun installing plexiglass barriers for operators prior to the pandemic.*
- *Agencies that installed barriers during the pandemic anticipate retaining them in the recovery period, and in some instances, continuing to proactively request them when placing orders for new rolling stock.*

Staffing will also be another major consideration, as operator, maintenance, or vehicle shortages may impact an agency's ability to provide service. As indicated in the checklist, agencies may also consider establishing guidelines for when service should be suspended (e.g., surges); identifying thresholds for when vehicles may be considered "too crowded," and require additional runs; and whether service or vehicle changes will require additional reporting, paperwork, or administrative efforts.

Agencies should also consider fiscal or regulatory aspects tied to operations. These include the impact of service cuts, increases, or zero-fare service on agency budgets. There may also be other key policies that may impact transit operations or service provision in the recovery period that agencies will need to monitor.

4.2.2 Route Considerations

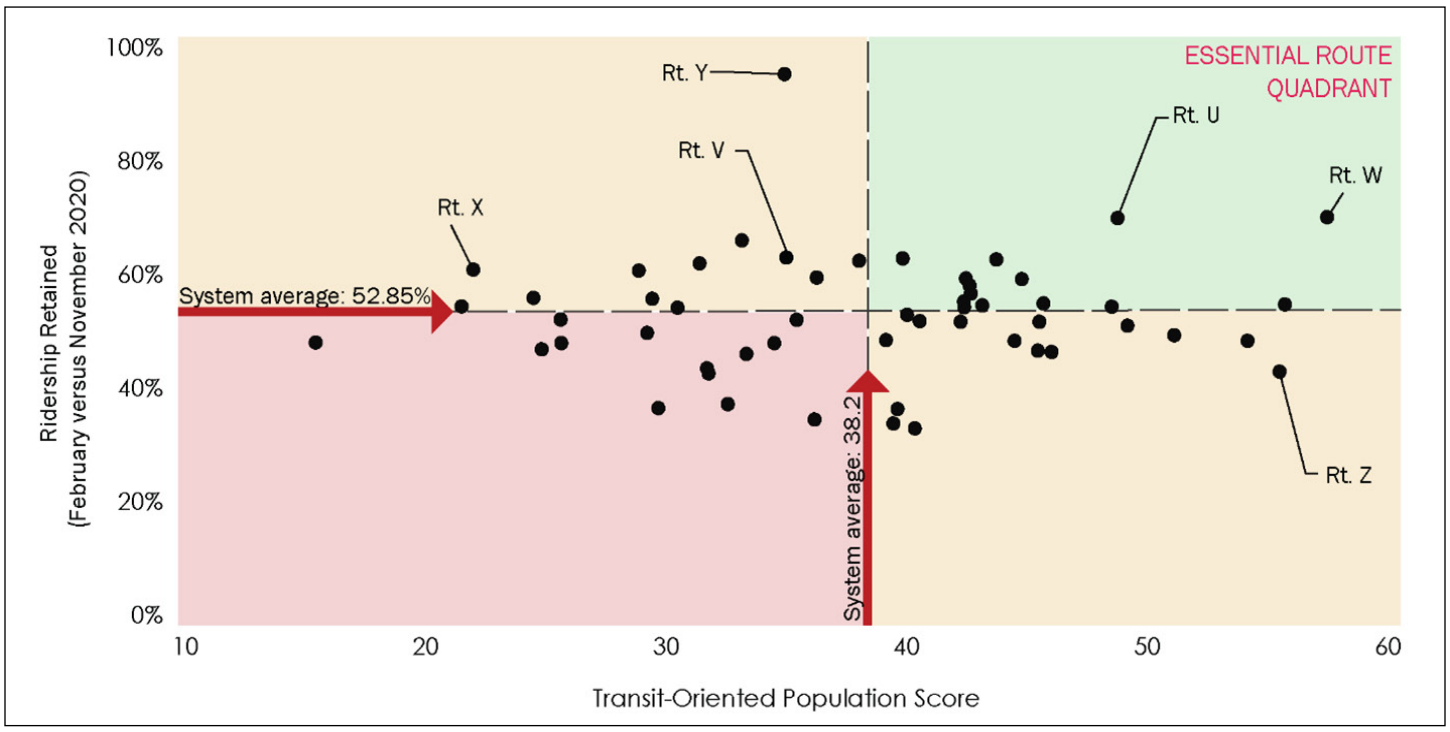
During a pandemic or other disruption, agencies benefit from being prepared to quickly adapt service to real-time conditions. Service adjustments should first focus on maintaining or restoring previously discontinued essential services (or service levels) and adding capacity where necessary. The COVID-19 recovery period may be marked by a gradual return to pre-COVID service levels across the system depending on transit demand and other public health metrics. In the short-term, agencies should carefully consider what type of service can best serve underlying transit needs and how to equitably provide service. This may mean scaling the vehicle that provides service (e.g., replacing less productive fixed-route service with smaller, on-demand vehicles) to achieve more efficient service delivery with changing and limited resources. An example of the latter is LA Metro's Rapid Equity Assessment tool, which was used to assess the equity impacts of potential agency actions to respond to the pandemic.

Determining Essentialness

A helpful analysis to inform service-related decisions involves determining the "essentialness" of each individual transit service. Routes that serve a large population, critical or major destinations, and/or job centers, are likely to be essential and should therefore be prioritized when returning or increasing service. Another approach for evaluating essentialness involves identifying populations within a service area that have higher transit needs than the general population (an example visualization is shown in **Figure 21**). Agencies should consider conducting some type of essentialness analysis for all routes or services in their network and re-running the analysis on a regular basis. An accurate, up-to-date picture of essential routes would help agencies allocate service during any emergency, not just the pandemic.

An essentialness analysis is likely to benefit from building on pre-existing performance guidelines and targets as well. Some of these factors may be documented in a transit strategic plan (TSP) or transit development plan (TDP), but each agency may have different needs depending on the context in which they operate. An example of proposed service standards for Arlington County, Virginia is shown in **Figure 22**. In some instances, only larger agencies have specific data or information readily available (or have selected it for inclusion in service

FIGURE 21: Example of Prioritization



standards). If agencies have not yet established any service standards or targets, they should consider doing so in the longer term by selecting metrics that will help them monitor their performance. Service standards commonly include indicators such as:

- *Service frequency*
- *Span of service*
- *Service/route directness*
- *Service coverage*
- *Bus stop spacing*
- *Crowding*

Targets for route performance could include:

- *On-time performance*
- *Passengers per revenue hour*
- *Passengers per revenue mile*
- *Cost per passenger trip*
- *Farebox recovery*

Agencies may choose to evaluate present and forecasted performance against pre-pandemic levels or performance targets to measure the state of transit in their service area. Using indicators and performance measures, agencies could establish agency-specific procedures for adjusting service (e.g., when current passengers per route approach 50 percent of pre-COVID ridership, increase service by X percent). These indicators could also include equity metrics that would help agencies develop processes for equitable scaling.

For each route, agencies should also evaluate logistical considerations. Longer routes increase the amount of in-vehicle time for operators, increasing

FIGURE 22: Proposed Arlington County Service Standards

Category and Subcategories			Standard
Vehicle Load Factor	Peak Periods	Express	100% of seated capacity
		Local	125% of seated capacity
	Off-Peak Periods	All routes	100% of seated capacity
Frequency (minimum)	Premium Transit Network		10-minute peak headways and 12-minute off-peak headways
	Primary Transit Network		15 minute headways
	Secondary Transit Network		30-minute peak headways and either 30 minute off-peak headways or availability of Flex service
Span of Service (minimum)	Premium Transit Network		18-hours a day, 7 days a week
	Primary Transit Network		18-hours a day, 7 days a week
	Secondary Transit Network		7-hours a day, 5 days a week
On-Time Performance[3]			95%
Service Availability			90% of residents live within ¼-mile of transit
Bus Stop Spacing	Limited Stop Service		1,760 – 2,640 feet
	Premium Transit Network		1,320 – 2,649 feet
	Primary Transit Network		1,320 feet
	Secondary Transit Network		660 – 1,320 feet
Average Mean Distance Between Failure			11,000 miles

risk through greater exposure. Also, operators need safe and adequate places for layovers and breaks, and the availability of these places may fluctuate depending on public health indicators. Depending on the length, number of stops, and what they serve, long routes may also increase passenger time on-board. Agencies may be operating with limited operators, making service adjustments more challenging—and also more necessary—if there are insufficient operators to run all scheduled routes. In some instances, agencies may be able to use alternate vehicles to run service to reduce risk, but this is only possible if sufficient operators and the appropriate vehicles are available (e.g., vans replacing buses).

4.3.1 Staffing Considerations

Staff safety and transparency in the decision-making process will continue to be key topics for agencies moving forward. As noted above, it is recommended that agencies monitor the percentage of their workforce that is vaccinated and continue to facilitate and encourage (if not require) vaccination for employees. Agencies should also make sure that operators have safe, adequate accommodations for layovers. Union leaders or other employee representatives should also be engaged and informed throughout the service adjustment decision-making process.

Staff health and safety should continue to be a priority. In addition to vaccine requirements, as long as masks are recommended or required on transit vehicles, agencies should continue to provide their operators and staff with PPE. As noted in **Section 4.1**, other protective equipment, such as barriers that separate operators from riders, should be used on vehicles, in transit centers and other facilities, and in administrative offices. Agencies should also consider telework polices for administrative staff who are able to work from home.

4.3.2 Considerations by Mode

Adjusting and scaling transit service will be influenced by different factors. While some considerations are mode-specific, others apply to all modes.

The fact sheets throughout this section provide an at-a-glance reference by mode. They explore some of the major considerations for when and how to increase services by mode (based on what scientific research indicates regarding safety and risk levels); how much service to offer (and where, including equity and demand considerations but also including strategies to scale up or down quickly if circumstances require); and what practices to require (e.g., distancing to limit the number of people on board, masking, etc.), including re-implementing services that were paused.

Some key considerations that apply to all modes include:

- *Can the service be run safely? Different considerations apply based on mode, technology (e.g., ventilation), vehicle size, etc.*
- *Do service levels correspond to current transit demand? Anticipated demand (based on policy or circumstance changes)?*
- *Do current route configurations align with current and anticipated travel patterns and employment status (e.g., if non-essential businesses are closed)?*
- *Do public health guidelines impact the level of service that can be provided? Additional runs may be required to adhere to social distancing guidelines.*
- *Do public health guidelines impact the number of riders that can safely be accommodated?*
- *How do available services and commuting needs impact this mode? (E.g., if hospitals cancel non-emergency medical appointments due to a surge, to what extent will demand for paratransit service decrease?)*
- *If existing federal and state guidance is repealed (e.g., mask mandates), what safety and operating procedures will the agency implement?*
- *What is the most effective method to communicate service changes?*

Mode	When/How to Increase Service	How Much Service to Add	Recommended Safety Practices
FIXED-ROUTE BUS 	■ *When crowding is observed* ■ *As teleworking or avoiding non-essential travel becomes less prevalent (although many riders rode throughout the pandemic and did not work from home)*	■ *Prioritize essential routes* ■ *Identify potential to service low-performing routes with smaller vehicles (potentially enabling use of non-CDL-holding operators)*	■ *Rear-door boarding with eventual move to all-door (if possible, APC placement on all boarding doors)* ■ *Maintain social distancing* ■ *Follow masking recommendations*

Mode-Specific Considerations	
	■ *Have essential routes been identified?* ■ *Can low-performing fixed routes be replaced with other modes, and if so, are there enough operators, vehicles, and maintenance staff to facilitate service?* ■ *Can APC data be used to measure crowding?*

Mode	When/How to Increase Service	How Much Service to Add	Recommended Safety Practices
ON DEMAND 	■ *Based on rider demand and operator and vehicle availability*	■ *Varies based upon rider demand (e.g., is there a need for non-emergency medical transportation (NEMT) trips, or are hospitals only focused on emergencies?)*	■ *Maintain social distancing* ■ *Follow masking recommendations* ■ *Follow CDC guidelines for shared rides (e.g., open windows)*

Mode-Specific Considerations	
	■ *A benefit of demand response service during a pandemic is the ability to adjust service levels more quickly, without interfering with the nature of the service (given the lack of set schedules or routes)* ■ *Social distancing guidelines may impact the number of operators and vehicles required to provide service* ■ *How many operators and vehicles (by make, type, and size) are available?* ■ *If demand exceeds available resources (drivers/vehicles), gather input from riders to understand the essentialness of their trips. Log denials and any associated outcomes/impacts. Are there other resources in the community that can meet the needs of those whose trips are denied?* ■ *If there is low-performing fixed-route service in the network, can operators be diverted to demand response?*

Mode	When/How to Increase Service	How Much Service to Add	Recommended Safety Practices
COMMUTER BUS 	■ *As teleworking or avoiding non-essential travel becomes less prevalent* ■ *Agencies may conduct outreach with local employers to gauge needs*	■ *Varies based upon demand/telework status*	■ *Rear-door boarding with eventual move to all-door (if applicable based on vehicle type used)* ■ *Maintain social distancing* ■ *Follow masking recommendations* ■ *Consider additional barriers, air filtration upgrades, etc. to reduce exposure on the longest routes*
Mode-Specific Considerations	■ *Do pre-pandemic routes correspond to post-pandemic demand, is realignment required, or are they no longer viable?* ■ *Could some commuter lines be converted to vanpools or carpools?* ■ *The nature of commuter bus service features riders and operators sharing a confined space for an extended period. Are there any guidelines or thresholds for when service may need to be scaled back to maintain safety practices?*		

Mode	When/How to Increase Service	How Much Service to Add	Recommended Safety Practices
VANPOOL 	■ *As teleworking (or to a lesser extent, avoiding non-essential travel) becomes less prevalent, agencies may conduct outreach with local employers to gauge needs*	■ *Varies based upon commuter demand/telework status* ■ *Target service to employers with a significant proportion of essential workers*	■ *Follow masking recommendations* ■ *Follow CDC guidelines for shared rides (e.g., open windows)* ■ *Provide PPE* ■ *Implement vehicle cleaning*
Mode-Specific Considerations	■ *Do new programs or routes need to be established based on recovery in employment patterns/activity?* ■ *Are there new strategies for matching drivers and riders, and encouraging/ maintaining established groups of people to ride together to limit exposure?* ■ *How are vanpool program managers keeping in contact with employers to determine their return to work timelines and needs?* ■ *Are there resources available at the state or regional level to help vanpool organizers reach out to employers?* ■ *Is there an opportunity to integrate vanpools with transit service?*		

Mode	When/How to Increase Service	How Much Service to Add	Recommended Safety Practices
HUMAN SERVICE PROVIDERS 	■ *Based on rider demand and availability of drivers*	■ *Varies based upon the locations riders are traveling to, whether these locations are open, and driver availability*	■ *Follow masking recommendations* ■ *Follow CDC guidelines for shared rides (e.g., open windows)*

Mode-Specific Considerations

Human service providers offer transportation through networks of volunteer drivers, vouchers for taxicabs, local agencies with vans, and others. As such, there is typically no centralized platform or formalized system of communication linking all these providers to one another. Agencies should identify which providers are available throughout the region and the services they provide.

- *How are community needs and transportation demand being monitored?*
- *In what ways can existing resources shift from providing transportation to needed community services?*
- *How are human service providers in one geographic area communicating and collaborating with each other?*
- *What human service providers are available throughout the region, and what services do they respectively provide to their passengers?*

Mode	When/How to Increase Service	How Much Service to Add	Recommended Safety Practices
TDM SERVICES 	■ *As in-person work and/or non-essential trips increase*	■ *Varies based upon commuter demand/ telework status*	■ *Regularly clean and disinfect shared bikes and scooters* ■ *Encourage riders to disinfect shared bikes and scooters before and after use*

Mode-Specific Considerations

- *What is the general status reopening and return to work, and how will they impact the need for TDM services?*
- *How are TDM service providers contacting employers and employees to inform them about their services in the return-to-work period?*
- *Are any commuter or employer surveys planned and if so, what information do TDM service providers hope to gain by surveying?*
- *Is there an opportunity to partner with micromobility (e.g., bikeshare, shared scooters) service providers to support first/last-mile connections to transit?*

4.2.5 New Service Types

New modes, such as on-demand or microtransit, may provide flexibility to replace fixed-route service in targeted locations in the recovery period. A study from the Mineta Transportation Institute found that microtransit is a "viable strategy where fixed-route productivity is below 15 boardings an hour." In Virginia, commuter services agencies have worked to adapt service. For example, RideFinders (a division of GRTC in Richmond), initiated the process of transitioning some low-ridership express routes to vanpools and carpools. As an example, the program set up a vanpool to a big box distribution center, and the employer is offering to pay for the service, as it is struggling to hire workers.

These vanpools will be structured around shifts and are based on the ridership of express routes. As most express riders get partially or fully funded travel through their employers, RideFinders tapped into existing contact lists and reached out to riders to ask about their anticipated commute needs (e.g., whether they are teleworking full-time, etc.). RideFinders is considering replacing express service with microtransit or vanpools for employees that plan on a return to their physical locations.

SPECIAL CONSIDERATIONS FOR USING VOLUNTEER DRIVERS

Volunteer driver programs match drivers with passengers that have a variety of transportation needs, such as errands and medical appointments in areas where transportation options may be limited. The passengers that use volunteer driver programs may also be seniors or persons with disabilities. CTAA maintains a list of volunteer driver programs across the county.

The National Aging and Disability Transportation Center's (NADTC) 2020 Annual Report notes that both volunteer riders and drivers tend to skew older and are therefore in the high-risk category for COVID-19. The report also highlights some of the responses that volunteer driver programs had to the pandemic, including: keeping drivers busy with other deliveries during periods in which transporting passengers was unsafe (this is a permitted use of the FTA's Section 5310 funds); establishing protocols and trusting riders and drivers to follow them; and assigning drivers the same passenger(s) to limit exposure risks. The NADTC also developed a list of strategies to operate safely during the pandemic. In the pandemic recovery period, volunteer driver programs will need to balance increasing demand for rides and continue to attract volunteer drivers.

4.3 Maintaining and Strengthening the Transit Workforce

Developing and retaining a transit workforce is a continuous, long-term process. This section focuses on short-term measures that agencies can take to understand current challenges facing staff, barriers to retention and recruitment, and other constraints to providing service and how to implement immediate tactical solutions. The long-term outlook for strengthening the transit workforce in an equitable way is explored further in **Section 5.4**.

4.3.1 Equitable Transit Workforce Development

Ongoing transit workforce employee retention and expansion efforts are essential elements in each transit agency's ability to provide essential services during a pandemic or other state of emergency. These aspects are even more vital once an agency begins to consider increasing service, potentially up to pre-pandemic levels. The strategies in this section are intended to help retain and expand an agency's existing transit workforce, so that such discussions about what service should be offered and where can be made during proper service planning periods, rather than as daily operating survival tactics.

FIGURE 23: WMATA Operations Employee Wears a Mask

Retaining Transit Workforce

Supporting an agency's existing transit workforce is a critical component of maintaining and expanding transit service, especially in the case of the COVID-19 pandemic. Relying upon staff knowledge of the area as pre-pandemic services are re-introduced or newer solutions are explored will be key for the riding public's acceptance and understanding of the changes.

As always, it is essential to maintain an ongoing dialogue with operators and maintenance staff in the recovery period. This dialogue will help agencies to better understand the specific needs for each job function so that the person performing the job can do so in a manner that maximizes their safety and security. Targeted communications aimed to engage with employees should be attempted across different platforms to increase the likelihood of receiving critical feedback. Some agencies increased employee engagement during the pandemic with interaction on operator room bulletin boards, the publication of internal newsletters, intranet portals that contain valuable employee information, links, and available resources, satisfaction and engagement surveys, recorded Facebook live events, and push notifications.

Once communication channels have been introduced or reinforced, it is important for agencies to identify the needs and concerns for staff working in each capacity in the agency. Brief operator or employee engagement surveys could be deployed throughout the recovery period to gauge employee needs and job satisfaction, and to allow for on-going feedback on recent changes or new initiatives that could be further explored or quickly implemented. Being transparent with results is vital in building and maintaining trust between an agency and its staff.

To maximize the personal safety of frontline staff, in addition to providing PPE and barriers, support should be quickly provided to all operators or other frontline staff who come in conflict with individuals (whether riders or other staff) who are not willing to follow agency safety guidelines. Agencies should continue to offer (or consider offering) flexible work schedules for workers who are able to work from home either full-time or part-time.

Recruiting a Transit Workforce

Recruiting new employees to the transit workforce has been difficult for many if not most agencies. In Virginia, pre-existing operator shortages have been exacerbated by local Department of Motor

OPERATOR SHORTAGES, SERVICE IMPLICATIONS, AND THE IMPORTANCE OF COMMUNICATIONS

As the COVID-19 pandemic progressed, operator and maintenance staff call-outs and open positions increased such that agencies had to either selectively miss trips or redesign or cancel services based on the availability of staff resources. Service adjustments due to the staff call-outs during the pandemic have typically resulted in two types of service adjustments: ad hoc changes depending on operator availability; or longer-term scheduling adjustments that account for the new staffing levels (e.g., routes originally scheduled to return in Summer 2021 were postponed due to operator shortages). A lack of sufficient operators and maintenance staff may continue throughout the recovery period and beyond, highlighting the need to find effective ways to communicate service changes, including on short notice, to riders and operators.

Vehicles (DMV) offices either being closed or operating on significantly limited hours, creating a situation in which would-be recruits face difficulty or delays in obtaining a CDL. Because of this, and other factors, competition for operators is severe, with agencies often losing out on talent because they are limited in what they can provide to make the job more appealing.

Some agencies have found that instituting referral and signing bonus campaigns have helped as recruiting strategies, providing incentives for both existing and potential operators to earn additional money while building the ranks. Other agencies have set up clear paths for promotion and early wage increases based on both milestone and performance achievements obtained. Some agencies have focused on rehiring operators that were furloughed or laid off during the pandemic.

4.4 Communications and Marketing

In the short term, transit service providers have two key marketing and communications challenges:

- *Communicating policies and service changes to riders and the community (**Figure 24**).*
- *Attracting riders back to transit. At the same time, agencies will be dealing with the constantly changing pandemic situation.*

In the short-term, agencies may be running a mix of pandemic-related ads and those that show post-pandemic scenes. Marketing and communications may try to find a balance between pandemic and post-pandemic imagery while shifting the tone to welcoming passengers back. The FTA America's Open and Transit's Open initiative features case examples from across the country highlighting how agencies are engaging with riders to bring them back. Some of the many examples include the Northern Virginia Transportation Commission's Moving Forward Together Campaign (**Figure 25**) as well as Bay Transit's Good to Go Campaign (**Figure 26**). In the San Francisco Bay Area, the Bay Area Council led a social media contest ("TixforTransit"), in which riders could take selfies on transit and be entered into a drawing for tickets to Bay Area sporting events.

Agencies can utilize several tools to engage with riders to inform them of changes and encourage their return to transit. Some additional marketing strategies that agencies may consider include retargeting, search engine optimization (SEO), and video.

FIGURE 24: GRTC Service and Policy Updates, August 2021

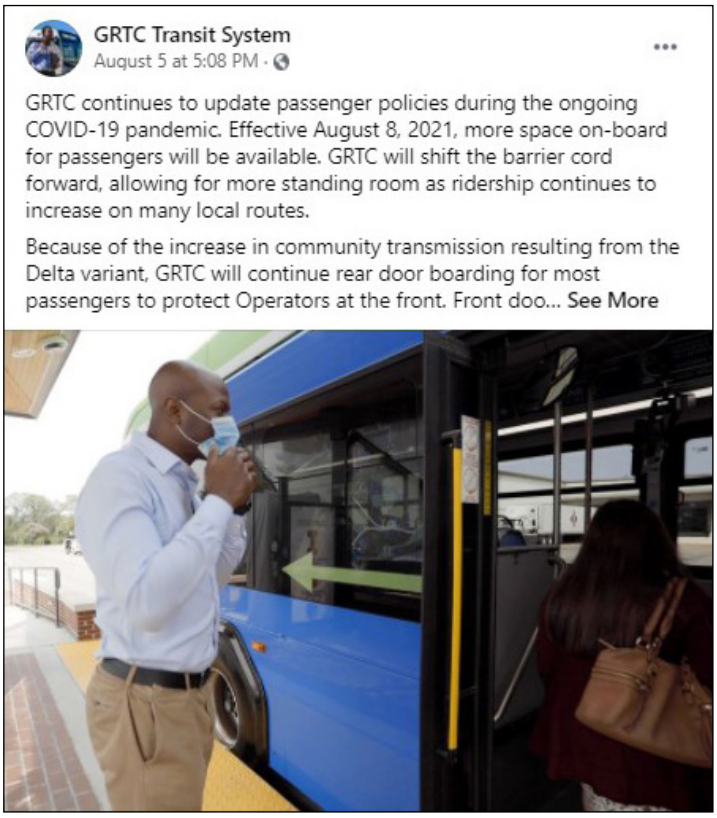
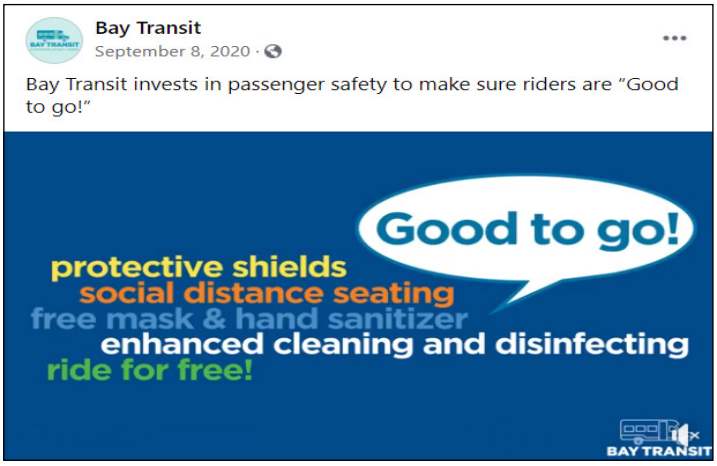


FIGURE 25: Video from NVTC Moving Forward Together Campaign

FIGURE 26: Bay Transit Good to Go Campaign (Facebook Post)



4.4.1 Retargeting

Retargeting continues to rise to the forefront of digital advertising tactics. Retargeting is the act of targeting users who have been to your website, mobile app, or physical location and did not follow the visit up with a specific action (such as signing up for alerts or purchasing tickets). They then are served an ad reminding them to complete the action or learn more. With the aid of cookies, agencies can collect information from web users such as demographic data, interests, product preferences, and other browsing histories, and then target ads to them based on their specific actions. This information can also be combined with existing customer databases and mailing lists.

4.4.2 Search Engine Optimization (SEO)

SEO continues to be an integral part of a transportation or transit agency marketing plan. Many agencies are asking, "How does our website both provide users with boilerplate information to answer their questions, and also keep them engaged with original, conversational content?" SEO is driven by site structure, ease of use, loading speed, mobile device responsiveness, and how the site connects with other web properties or social channels. Some best practices for transit can be found, for example, in a blog post titled SEO Best Practices for Transit and Ridesharing. Monterey-Salinas Transit's Integrated Marketing and Communication Plan for 2019-2021 highlights the agency's use of a wire service to distribute press releases to improve SEO in order to enhance credibility within the industry.[44]

4.4.3 Video

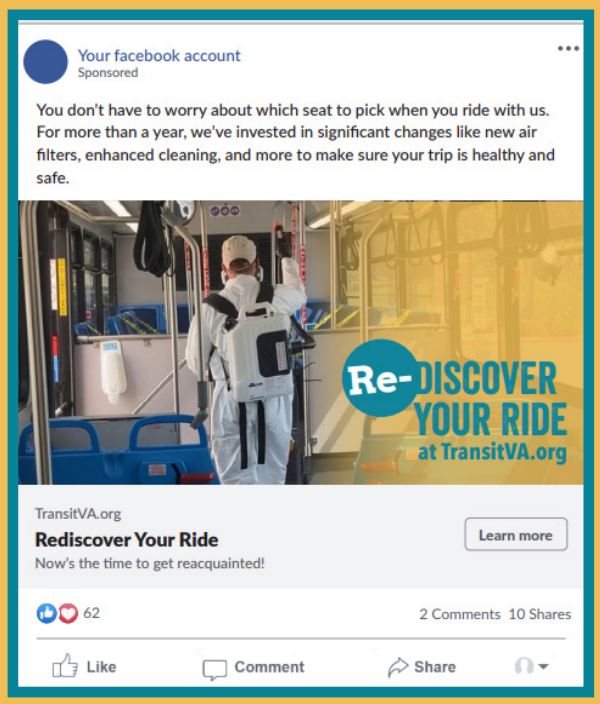
Over half of consumers say they want to see more video content produced by a brand they support. To support this increase, there has been an uptick in transit and transportation producing informative and educational pieces for their end users.[45] Anticipating and answering customer questions and addressing common concerns or criticisms is increasingly commonplace. As transportation and transit brands realize the effectiveness of videos such as explainer videos, customer profiles, and local spotlights, they are putting more time, effort, and creativity into generating content that engages the viewer in a meaningful way, just like the videos they watch for fun.

FIGURE 27: Charlottesville Transit Center

REDISCOVER YOUR RIDE CAMPAIGN SUMMARY

As part of a statewide COVID-19 recovery and return to transit initiative, DRPT developed an advertising toolkit and provided grants for local agencies, transit operators and commuter program managers to implement the advertisements. The advertising tools are intended to encourage ridership among previous transit and commuter program users and inspire their confidence in returning to the service they used prior to the pandemic. To inspire confidence, the advertisements create awareness about the COVID-related protocols that services in Virginia have adopted.

FIGURE 28: Sample Ads (Print, Web Banner, Social Media)



Rediscover Your Ride Theme

To inform the creative approach, DRPT's advertising toolkit team used Virginia DOT's 2020 and 2021 commuter surveys and national transportation surveys to gauge audience readiness to use public transportation services. For an audience of previous transit users, the advertising toolkit team decided to focus on reassuring messages about health protocols and service flexibility. The team tested three concepts to help inform the ads' tone and approach, based on the finding that the potential audience was most receptive to an inviting, informative tagline and tone.

Rediscover Your Ride is a theme that recognizes going out in the world requires new considerations. It reassures potential returning passengers they can trust Virginia public transportation to take care of their health concerns. The ads primarily feature drivers and passengers from services around the state.

The advertising toolkit includes print ads, web banner ads, sample social posts for paid booting, transit ads, a billboard ad, radio scripts, and a 30-second video for digital and television advertising.

Implementation

The advertising is expected to commence in the Spring of 2022. DRPT plans to ask grant recipients to share engagement data (ad impressions, views, reach) to measure success.

PREPARING FOR THE FUTURE: ENHANCING RESILIENCY

5

Beyond the short-term recovery period, agencies can harness the lessons learned from the pandemic to build long-term resiliency. Enhanced resiliency will help agencies respond more quickly, in a safer manner, and appropriately to future disruptions while increasing flexibility to meet the needs of customers and agency staff. This chapter explores actions long-term trends that will influence agencies in the coming decades, and the actions they can take, including with these trends in mind, to strengthen resiliency. These actions may enhance preparedness for one or multiple disruptive scenarios, including public health emergencies, natural or man-made disasters, climate change, and cyberattacks.

5.1 Looking Ahead: Preparing for Long-Term Trends

Long-term trends are already having impacts on transit service providers that they will need to consider in their forward-looking decision-making processes. These trends (**Figure 29**) were all underway prior to the COVID-19 pandemic; however, a few, such as telework, land use, and diversity, equity, and inclusion (DE&I) became even more relevant because of changes that have occurred due to the pandemic. While many of these trends and their implications for transit agencies are beyond the scope of the immediate pandemic recovery period, all are worth keeping in mind when developing approaches and strategies for moving forward.

5.1.1 Demographic Trends

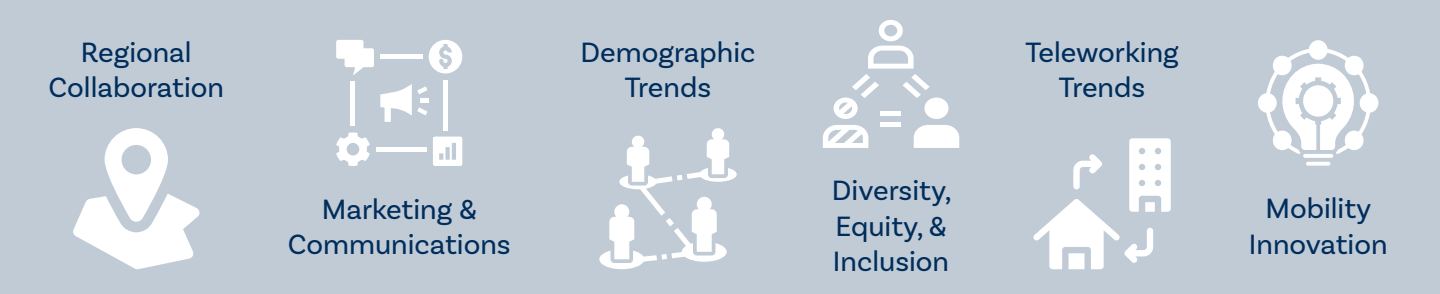
Aging Population

The population of Virginia, and the United States as a whole, has been steadily growing—Virginia's population is projected to expand by almost 675,000 people (eight percent) by 2030.[46] This growth is being driven by more people living longer, rather than increased births or growing migration, with over half of that growth occurring in those 65 and older.[47] This ongoing shift to a fundamentally older society has profound workforce, service, and communications implications for Virginia's transit agencies.

Transit Workforce

Transit agency leaders will need to continuously train, cater to, and support the older members of

FIGURE 29: Long-Term Trends Influencing Agency Decision Making



their workforce, while at the same time competing against all other employers for their share of younger workers. They will also benefit from considering the benefits and incentives offered to staff, as well as how they market their open positions and their agencies overall, to compete for these new generations of workers. (The arrival of automated vehicles may also change the skills needed in the transit workforce.)

Transit Preferences

While transit demand is likely to increase for Baby Boomers,[48] as 77 percent report that they want to "age in place" in their own homes,[49] 63 percent of Millennials reported that they would prefer to live in a place where they did not need to use a car often and 66 percent placed "high-quality transportation" in their top three concerns when evaluating a new place to live.[50,51] Additionally, the percentage of 16-year-olds with a driver's license has decreased from 46 percent in 1983 to just 26 percent in 2017.[52] The implication to providers is that younger generations will actively seek to live, work, and play in places with a robust transit network.

Demographic Trends Summary

Key Insights	Transit Industry Implications
Virginia is in the middle of a growing population "Age Wave" that will result in a society with relatively more older people and fewer younger people.	■ *The workforce of Virginia's transit agencies will increasingly be comprised of relatively older workers. As competition for younger workers intensifies, intentional job placement and upskilling efforts may be needed to fill openings, maintain staff levels, and expand services.* ■ *As more Americans live longer and strive to "age in place," demand re-sponse and paratransit services will grow in popularity and require ex-panded destination options.*
Younger generations are the most diverse in U.S. history. By 2045, minority populations will make up the majority of the U.S. population.	■ *Communications and recruiting should be developed in a way that resonates with demographic makeup the service area.* ■ *Intentional efforts to survey and understand the various minority cohorts within an agency's service area help agencies understand how to best meet their riders' needs.*
The Millennial and Generation Z populations are the least "car-centric" generations in America's history.	■ *Transit agencies in communities with significant younger generation populations have an opportunity to broaden their base of riders by providing high quality service and marketing. Younger people today are more likely to select places to live and work that offer transit access.*

5.1.2 Commuting and Telework Trends

COVID-19 made a widespread transition toward telework occur seemingly overnight. Many employers have adapted their operations to this new landscape, with employees working remotely as much as possible for safety reasons. However, much remains unknown about what the level of teleworking will be in the short and long-term. Most experts agree that it is sure to be higher than before the pandemic.

While teleworking is still most commonly done at home, increased telework also gives people the potential opportunity to work from anywhere, both in the U.S. or abroad. Compared to people who commute, people who are full-day homeworkers travel slightly more for non-work purposes, even though their total amount of travel is lower. People who have lower overall daily travel times experience a positive effect on their well-being.[53]

A widespread increase in teleworking opportunities effectively reduces the need for a workforce to be geographically concentrated.

Many workers have identified opportunities to relocate to other areas in the U.S. while keeping their jobs during the pandemic. Employers have already been faced with questions related to how they will adapt their policies in the long term to accommodate workers who wish to relocate away from the region where their job was originally located. Employers insisting that workers whose work can be done remotely return to in-person work is cited by younger workers as a top reason to seek new employment. [54]

Telework Summary

Key Insights	Transit Industry Implications
More American workers are teleworking more, are less bound to specific locations because of their work, and therefore have more flexibility to live wherever they like.	■ *Teleworking is likely related to the trend of transit travel occurring more throughout the day and less during peak periods. Transit agencies should track these trends and changes, and consider adjusting service levels throughout the day accordingly.* ■ *Transit agencies' clientele may either grow or decline, with lower cost of living areas and/or areas offering incentives for relocation, potentially seeing influxes of new residents from other areas.* ■ *Because many transit agency workers (bus operators, maintenance workers, etc.) cannot do their work remotely, the difficulty of finding workers for transit agencies in areas losing population may increase, while it may decrease for others. Those with difficulty finding workers for in-person positions may need to be prepared to offer incentives, particularly to recruit younger workers.*
Allowing teleworking can have benefits for workers, employers, and communities.	■ *As employers, transit agencies may benefit from allowing some of their workers to telework. The benefits are likely to come in the form of enhanced employee retention.*
Remote work creates new opportunities for agencies to collaborate and consolidate.	■ *Over time, transit agencies should identify opportunities to consolidate administrative functions to achieve cost savings and redirect more of their funding to providing service.*
Lack of broadband access is a barrier for workers, transit agencies, and transit riders alike.	■ *Transit agencies help to keep people in regions without widespread broadband access, which are losing population overall, connected to opportunities.* ■ *Transit agencies themselves benefit from more widespread broadband access, which opens the use of more advanced communications technologies and makes it possible for them to access the cost savings associated with having some of their functions performed remotely.*
Some regions, such as those that have high tourism or offer relocation incentives, may encounter an influx of teleworkers.	■ *Transit agencies in these areas should work with local partners to develop comprehensive TDM strategies that support the use of transit to accommodate these influxes.*

5.1.3 Diversity, Equity, and Inclusion

As discussed in **Chapter 3**, while the COVID-19 pandemic has affected everyone, it has exacerbated health and economic disparities for marginalized population groups. Transit agencies have been at the forefront of supporting equity in communities for decades and will continue to have a role in supporting equity in the years to come, both in terms of meeting the needs of their riders and serving as employers.

Creating a workplace culture of Diversity, Equity, and Inclusion (DE&I) involves embracing practices, initiatives, and tools designed to support DE&I and requires a structured process of planning. This includes understanding attitudes and experiences of employees and the workplace culture; creating management goals, practices, and policies; and communicating with employees and external audiences.

Many of the practices transit agencies are already pursuing, or are working with community partners to pursue, help to enhance DE&I for riders, particularly for those in communities with high concentrations of residents from historically marginalized groups.

These practices include but are not limited to:

- *More frequent service to reduce waiting and travel time.*
- *Zero fares or fare subsidies for lower-income riders.*
- *Strategically located bus stops to minimize walking distance.*
- *Bus stops with improved seating, adequate lighting, and weather protection.*
- *Investments in sidewalks, signage, and crosswalks at busy intersections.*
- *Enhanced and more flexible on-demand transit options.*

Diversity, Equity, and Inclusion Summary

Key Insights	Transit Industry Implications
Increasing awareness of and actions to support equity initiatives continue to be integral to the public service mission of transit agencies.	■ *DE&I initiatives are becoming a "must have" for employers. The demonstration of meaningful DE&I policies and programs will become a key driver in attracting and retaining employees and meeting the changing and critical needs of underserved populations.* ■ *The ONE Virginia Plan provides comprehensive resources to support the development of DE&I plans and programs in the state.*
Engagement partnerships based on mutuality help agencies better serve riders and the community.	■ *Building partnerships with government and community-based bodies is an effective way to help identify equity needs and opportunities, and to establish mutual understanding and collaboration in the community.*

5.1.4 Regional Collaboration

A trend toward comprehensive regional planning and collaboration is occurring nationally, including in Virginia, with the pandemic having reinforced the need for cross-jurisdictional collaboration. In 2020, a mega-regional effort was launched with the formation of an organization called RVA-757 Connects, backed by foundations, chambers of commerce, and businesses in the Richmond and Hampton Roads areas. One of the top priorities of this organization is to further develop and strengthen transportation infrastructure between the two regions and beyond.[55]

This kind of regional collaboration is often a necessity for congested, metropolitan jurisdictions, but there are implications for transportation organizations at every level. The benefits of regional collaboration in transportation planning—thinking and planning beyond jurisdictional borders—will be critical for communities looking to support a vibrant, resilient local economy that can remain competitive with the growing list of megaregions across the country. Transit agency leaders and managers can support these efforts by taking an active role in advocating for and supporting regional transportation planning and initiatives.

Regional Collaboration Summary

Key Insights	Transit Industry Implications
Intentional regional transportation and economic collaboration efforts, whether between neighboring states, regions, cities, towns, or transit agencies, are happening across the country. Those willing to make the effort are well-positioned for future success.	▪ *As the population of Virginia continues to grow and interdependencies between local economies deepen, industry leaders can take an active role in strengthening the resiliency and success of their communities by advocating for and supporting the development of regional transportation services and initiatives.*

5.1.5 Mobility Innovation

On-demand ridesharing owes its existence to the development and widespread deployment of smart phones, GPS technology, and electronic payments. Whether renting a scooter or bike or dispatching an Uber or Lyft, people have been increasingly choosing on-demand transportation services over the past several years because of their relative ease of operation, affordability, and greater convenience than traditional car ownership or transit services. With Millennials and Generation Z being less "car-centric" generations than their older peers, the demand for these services is well-positioned to continue to grow.

The proliferation of new technologies that enable more real-time trip planning and ridesharing has created opportunities for agencies to pilot and implement microtransit solutions, particularly in locations that have not sustained productive fixed route services nor have the density to support them. Microtransit solutions are often accomplished by transit agency contracting with a mobility as a service (MaaS) providers. Improving coordination of these services across agencies, vendors, and jurisdictions is an ongoing goal.

DRPT's Commute!VA website and mobile app is an example of MaaS. Commute!VA provides the user with information on all forms of travel (transit, vanpool, carpool, bikeshare), park-and-ride lots, and ridematching in real-time and trip planning for regular commuting and one-time trips. A trip logging feature allows transit, vanpool, carpool, and bike users to earn rewards as an incentive to use those modes.

Mobility Innovation Summary

Key Insights	Transit Industry Implications
On-demand transportation services are increasingly offering services that compete directly with traditional transit offerings, and transit agencies are seeing opportunities to operate some on-demand services themselves.	■ *Transit industry leaders should continue to consider ways to engage with both public and private sector partners to expand on-demand transportation options, tackle first/last-mile challenges, and provide services in areas where fixed-route has not been successful or is not supported.* ■ *Transit agencies will need to adopt a nimbler and more responsive services approach, be willing to reconsider regulations that get in the way of expanded services, and constantly measure the preferences of riders to remain competitive.*

5.1.6 Marketing and Communications

Increasing Expectations for Transparency and Engagement

Agencies who embrace transparency and active dialogue with end users and their communities have opportunities to not only increase awareness of their service, but also build stronger ties with the community. By providing information about potential or planned initiatives and system enhancements or expansions, transit agencies can demonstrate responsible stewardship of public funds, provide information about logistical and technical decisions, and explain the factors that go into their decision-making. Agencies who approach engagement and information-sharing with the public as an opportunity rather than an obligation, and who focus more on exchanging information than on defending their decisions, can become perceived as more authentic and trustworthy.

Social Media and Paid Digital Campaigns

Transit agencies have been leveraging social media platforms, email, and search-engine marketing to supplement traditional advertising for more than a decade now, but a more deliberate and integrated communications approach is recently on the rise. An increasing number of riders are now firmly using digital communications channels as their preferred method for service information, rather than printed materials.

As a result, agencies have decreased their reliance upon printed material, such as static timetable, service information cards, and brochures. Instead, they are embracing real-time updates, streamlined websites, mobile apps, GPS-based trip planners, and a variety of other digital methods to communicate relevant and timely information. As digital adoption continues to rise across all generations, transit agencies are further evolving as they develop clear, data-driven strategies to cater to the end users' needs at every touchpoint of the customer journey. This approach mostly applies to the emerging reality of paid social media campaigns.

To engage multiple niche audiences, organizations are increasingly less reliant on the visibility of organic posts and instead are increasing their paid digital marketing budgets more than ever before.

This strategy provides three broad benefits:

- *Customized budgets and maximizing return on investment*
- *Customized audience targeting and engagement*
- *Increased brand awareness and identity.*

These benefits give agencies a clearer understanding of the performance of their marketing efforts, helps them better understand their customers' needs, and provides them occasions to be a more humanized organization.

Marketing and Communications Summary

Key Insights	Transit Industry Implications
Increased focus on transparency in public spending and decision-making.	■ *Increased efforts to inform and educate the public and appear transparent and authentic have never been more important. If the public is properly engaged, agencies are better positioned to enter into trust-building dialogues with their end users rather than simply providing one-way information to them.*
Greater emphasis on digital marketing channels.	■ *Digital marketing via paid social media advertising is rising to the forefront of transportation communications. Rather than using social media platforms organically, it can be more cost effective to increase brand awareness and directly reach many people through customized content.*

5.2 Continuity of Operations (COO) Planning

A Continuity of Operations Plan (COOP) is a blueprint to prepare a transit agency to continue to perform and provide essential functions following a significant event that limits the availability of facilities, system, equipment, vehicles, or personnel. For each essential function, a COOP describes the actions to be taken and the tasks that need to be performed through specific procedures, checklists, and task lists. Essential functions for a transit agency include fuel/power delivery; providing vehicle maintenance; providing necessary communications; providing for employee needs; providing public information; and maintaining safety and security. Developing a COOP is a component of emergency response planning.

While an Emergency Operations Plan is an organized approach that includes defining operations before, during, and after emergency situations, the COOP specifically addresses the recovery of essential business functions.[56]

Emergencies that can disrupt transportation operations, and which a COOP can address, include:[57]

- *Naturally occurring emergencies (e.g., tornadoes, snowstorms, wildfires, etc.).*
- *Intentional human-caused emergencies (e.g., security breaches, fraud, terrorist assaults, etc.).*
- *Unintentional, human-caused emergencies (e.g., water outages, software failures, etc.).*

In response to COVID-19, transit agencies recognized the need for emergency planning. The Federal Emergency Management Agency (FEMA) recommended COO planning for transit agencies during the pandemic to consider how to maintain operations while accounting for employee health and limited resources.[58] While many transit agencies maintain COOPs and update them on an annual basis, they are often not public-facing documents. However, Maine Department of Transportation developed a COVID-19 COOP with detailed procedures for each office that can be used for future pandemics.[59]

By developing a COOP, agencies can ensure they will know what actions to take in the face of a disruption and will have methods in place to perform their essential functions. There are many resources available to transit agencies who wish to develop COOPs; these are listed in the box on the next page.

RELATED TREND

Regional Collaboration

Regional collaboration will also be relevant in conducting contingency and continuity planning. COVID-19 has reinforced what many transit agencies already understood that partnerships across sectors, fields, and geographic boundaries are beneficial in a time of uncertainty. In conducting this planning,

agencies are encouraged to identify how they can work with community partner organizations to ensure their constituents needs are being met. They should also coordinate with regional and even statewide planning organizations to identify areas where government can support coordinated preparedness and response planning. Coordination between local, regional, and statewide entities is a time-intensive investment, but it may yield benefits in addition to preparedness and response planning.

COOPs enable agencies to be prepared, particularly on a tactical level, for restoring essential functions in a range of potential emergency scenarios. **Resiliency plans** are another tool that agencies—either independently or in coordination with other regional or even statewide planning and transportation organizations—can develop to identify adjustments they can make in their long-term priorities and strategic direction to reduce their vulnerability to being affected by risks of many kinds, including public health emergencies. The Victoria Transport Policy Institute's Pandemic-Resilient Community Planning is a resource that provides valuable information (and identifies additional resources) to inform resiliency planning for transit systems.

COOP DEVELOPMENT RESOURCES

While there are many professionals who specialize in COOP development, transit agencies can also develop COOPs internally with relatively low direct costs. There are many COOP guidelines, toolkits, templates, checklists, and worksheets publicly available or available for purchase. Below are some examples of free, public resources for agencies seeking guidance on how to develop a COOP. While some are several years old, the framework and approaches, such as identifying essential functions, contact lists, succession lines, and communications strategies remain fundamental to the COOP development process. COOP development can be a time-intensive process, but also has the potential to save agencies significant resources in the long term and ensure that riders continue to be served to the greatest extent possible during an emergency.

GUIDELINES

- *APTA, Continuity of Operations Plan for Transit Agencies (updated in 2020)*
- *NCHRP, Continuity of Operations (COOP) Planning Guidelines for Transportation Agencies (2005)*

TOOLKITS

- *FEMA, Continuity Resource Toolkit (contains various resources for continuity planning updated for the COVID-19 pandemic)*

TEMPLATES AND WORKSHEETS

- *City of Richmond, Continuity of Operations (COOP) Worksheets (2010)*
- *Southern California Agency of Governments, Contingency Plan Template (2020)*
- *FEMA, Continuity of Operations Plan Template and Instructions for Federal Departments and Agencies (2011)*

5.3 Reconfiguring Operations Through the Lens of Accessibility and Equity

In the long-term, agencies should identify key service metrics and establish performance standards, if they have not already done so. In addition to the traditional service metrics that agencies rely upon, such as passengers per hour and on-time performance, access is a key metric used to understand where service is available versus where it should be provided. Access has often been measured by the number of jobs to which transit riders can commute within a specific amount of time. However, some agencies have worked to expand the way they define access to incorporate equity into their metrics in a more nuanced way. For example, the Massachusetts Bay Transportation Authority (MBTA) has developed a framework called Competitive Access, which includes equity as a metric for measuring network quality, not as a standalone measure that evaluates trips made by low-income people, people of color, or environmental justice (EJ) communities.

RELATED TREND

Teleworking

A recent New York Times article[60] illustrated how the pandemic has flattened peak period travel across all modes (**Figure 30**).[61] The long term trend toward more telework across a variety of industries and sectors of the work-force is likely to result in more people having the flexibility to travel when it is most convenient for them rather than scheduling their travel around the constraints of a 9-to-5 commuting schedule, also contributing to a flattening of the peaks. This suggests that a shift of focus from traditional weekday commutes to all-day, everyday services in the recovery period and potentially for even the long-term period. A shift along these lines has two main benefits:

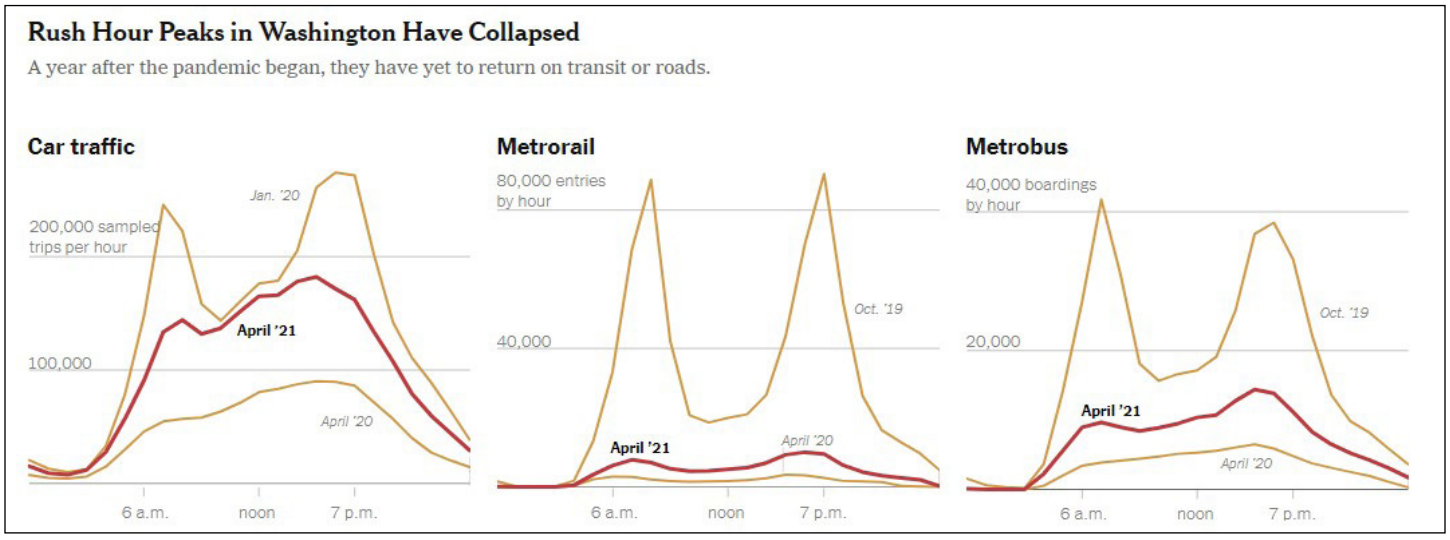
- *Providing service effectively and efficiently where and when it is most needed*
- *Improving equity in service provision to reach populations such as low-income workers and communities of color that relied heavily on bus service throughout the pandemic.*[62]

RELATED TREND

DE&I

Access to reliable transportation is often a barrier to employment for low-income workers. A 2013 report looking at nonstandard work schedules and their impacts on low-income families noted that balancing commutes with additional trips for childcare can be difficult for workers with nonstandard hours that rely on transit, as these workers may not have access to late night or early morning services. Agencies should identify the populations who continued to ride transit throughout the pandemic and assess whether the service they are receiving could be enhanced to better meet their travel needs.

FIGURE 30: Decline in Rush Hour Peaks in Washington, D.C. Region



The demographic and mobility innovation trends discussed earlier in this chapter also have implications for providing equitable services in the future. Some metropolitan areas are expected to experience residential growth as:

- *Telework enables people to live where they prefer*
- *An aging population will have increased needs for paratransit*
- *A younger and more diverse generation will have a higher likelihood to use transit*
- *Mobility innovations will expand the options to craft a suite of services to best meet riders' needs*

RELATED TRENDS

Demographics | Marketing | Mobility Innovation

All of these are trends that should be monitored to better understand changing ridership demands. The findings should be used to inform on-going service planning activities. Agencies should also invest in marketing and communications strategies to obtain feedback regarding passenger need, to develop stronger community relationships, and to identify actionable steps that can improve the rider experience.

POINTS TO CONSIDER...

- *Has my agency conducted a recent rider survey?*
- *Does my agency's ridership trends indicate that peak demand has flattened?*
- *Has my agency established a definition of equity?*
- *Has my agency established metrics to measure equity?*
- *What actions has my agency taken to improve equity? (E.g., service-related measures; fare-related measures; non-fare related measures such as sidewalks, seating, and/or weather protection at stops; the creation of equity advisory boards; interagency collaboration; etc.)*

5.4 Increasing the Attractiveness of Transit Careers

RELATED TRENDS

Demographics | DE&I

There are many paths that transit agencies can explore to strengthen long-term resiliency. In the post-pandemic landscape, organizations will need to develop flexible workforce strategies that work best for their situation and employees. Employers will be expected to purposefully incorporate DE&I principles into their policies and the services they provide. Agencies will also need to address operator and other staffing shortages and understand demographic changes in the workforce to help future-proof their organizations. These considerations will need to occur within three aspects of workforce development (**Figure 31**). Developing the transit workforce is the main focal point for the new National Transit Workforce Center, which received $5 million in initial FTA funding in August 2021. The Center will help transit agencies "recruit, hire, train, and retain a diverse workforce needed now and in the future."[63] On a larger level, TRB has compiled research on diversity in the transportation industry.

Recruiting Operators

Recruiting the next generation of operators will be critical to the long-term success of transit agencies. An FTA report on frontline workforce training needs summarizes the findings from a symposium of transit and labor leaders, which highlight additional factors that present challenges to recruiting frontline staff (**Figure 32**). The report also notes that the transportation industry has one of the oldest workforces in the US economy, with 41 percent of bus services and urban transit workers aged 55 and older.[64]

FIGURE 31: Three Aspects of Workforce Development

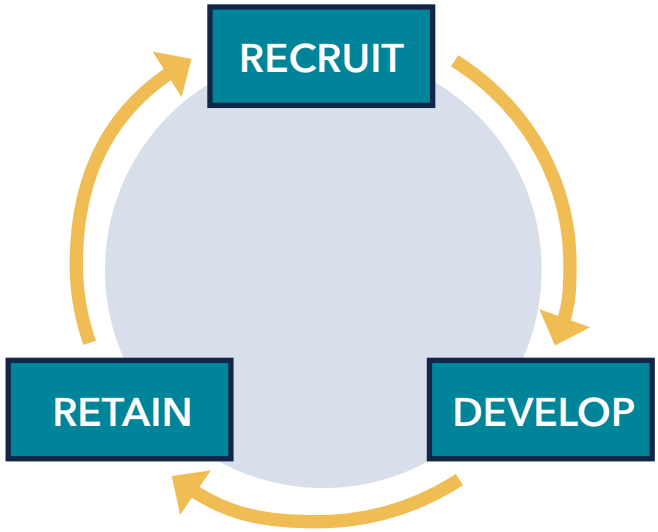
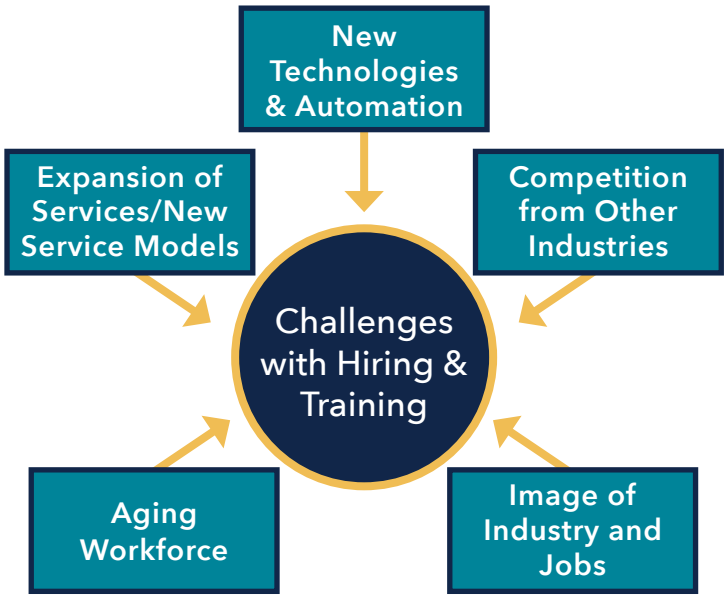


FIGURE 32: Transit Frontline Hiring and Training Needs



In addition, older workers left the labor market at unprecedented levels in 2020; whether they will return is unclear.[65] There will be relatively fewer younger workers as America's society continues to age, meaning that competition for employees will be high. Agencies will need to balance retaining a qualified and experienced workforce with attracting talent in a competitive environment, the importance of which has been underscored by the pandemic.

An APTA presentation on bus operator recruitment and retention cites the perception of the transit industry, stigma of bus operation as a profession, and a lack of diversity as some of the key factors influencing operator recruitment. The presentation identifies referrals or sign-on bonuses, and competitive pay and benefits, among others as examples of successful recruitment strategies. Overall, the concept that there is a career to be had in transit needs to be reinforced by both policy decisions and through the implementation and advancement of benefits that are both sustainable to the agency and attractive to a potential employee.

Developing and Training Staff

During the COVID-19 pandemic, agencies had difficulty finding qualified drivers as many CDL testing centers and DMVs were closed. Front-line staff recruitment is regularly complicated by legal requirements such as a five-year, clean driving record, lack of regulated time off between trips, and low starting pay, to the point where many agencies struggle to fill all open positions. Successful recruitment strategies include providing health, retirement, and vacation benefits, offering competitive salaries and providing potential for career growth. In the long-term, agencies may consider educational and training incentives to develop staff. This may include tuition reimbursement for staff interested in switching to another position in the organization, developing in-house CDL programs, or partnering with other local or regional agencies to share training resources. Agencies may also develop metrics to gauge whether training efforts have been successful.

Retaining Operators

Agencies should develop customized processes for improving retainment, especially among operators. Frontline operators have the highest turnover rates and, in some instances, receive training at a transit agency and the leave for other (often more lucrative or less stressful) opportunities. Agencies can incentivize less desirable shifts with higher wages, create a positive work culture, and hold employee appreciation events as some ways to increase retainment.[66] In a presentation on bus operator recruitment and retention, APTA summarizes survey results from a RouteMatch user conference highlighting a few key issues pertaining to operator retention, including salaries, benefits, a lack of consistent hours and shifts, and limited professional development opportunities for operators. The presentation also cites employee appreciation events, bonus reward programs, flexible schedules, professional development, and open communication as successful retention strategies.

GRTC OPERATOR COMMUNICATION

Part of maintaining a positive workplace culture involves establishment of communications and relationship-building between management and operational staff. GRTC in Richmond, Virginia has attempted to address operator needs and questions, as well as past experiences with incorrect or incomplete information about management's plans proliferating, by developing two- to four-minute "desktop videos."

The desktop videos provide information to operators when there is a change in policy about why it is being made to increase understanding of the limitations or difficult trade-offs that management must face in balancing the needs of riders and operators with financial, regulatory, or constraints. This format has worked well in allowing operators to get the information at a time that is convenient for them, given that operators' shifts occur nearly around the clock and it is not possible for them all to attend a meeting at the same time. Strategies like these may help to open lines of communication and increase trust and transparency between operators and management.

FIGURE 33: Pulse BRT Stop near City Hall in Richmond, Virginia

POINTS TO CONSIDER...

- *Does my agency conduct surveys with current employees? If so, is the feedback shared and used in making future policy decisions?*
- *Does my agency conduct exit interviews? If so, is the feedback shared with leadership and used in making future policy decisions?*
- *Does my agency track upcoming employee retirements and consider future recruiting needs?*
- *How does my agency recognize employees' contributions?*
- *How frequently does my agency evaluate benefits package and/or conduct an analysis of how benefits compare to competitors and competing industries? If financial resources are tight, has my agency considered in-kind benefits or other low-cost "perks" that can be offered?*
- *Are there opportunities to partner with local educational organizations (e.g., high schools, trade schools, and other higher education institutions) to help establish an employment pipeline?*

5.5 Strategic Investments in Equipment and Supplies

Agencies invested in equipment and technology throughout the pandemic. In addition to improved cleaning and sanitizing methods and technologies and the installation of plexiglass barriers, agencies of all sizes, such as Bay Area Rapid Transit (BART), Colorado Valley Transit, and Green Bay Metro installed enhanced ventilation systems.[67] Green Bay Metro used a portion of its CARES Act funding to purchase and install a purification system to minimize the impact on operations and reduce the previous need for buses to be taken out of commission for six hours for vigorous cleaning.[68] Investments in ventilation systems can keep vehicles in service, rather than halting or re-routing buses to the closest depot for midday cleanings.

Agencies that had already invested in technologies such as contactless fare payment, mobile apps, and APCs, found themselves more prepared to make data-driven decisions during the pandemic. Contactless fare payment allows riders to avoid high-touch surfaces, protects operators, and facilitates the use of all-door boarding. Agencies that already used APCs were able to display real-time crowding information on their website, mobile app, and third-party apps, and the data obtained from APCs helped agencies make strategic service adjustment decisions based on ridership. Not only can strategic investments in these technologies facilitate decision-making, but they also help to create a better rider experience overall.

Smaller agencies that wish to implement contactless payment or other technologies but have limited funds individually may consider joint procurements with similarly-sized agencies. Alternatively, agencies that have lower farebox support of the operational costs of service may evaluate whether going zero-fare is a better financial solution when considering the costs associated with collecting fares.

In the long-term, as agencies develop COOPs and consider the implications of potential future disruptions, they will want to evaluate which investments may be most strategic for them, as well as which materials they should purchase and maintain that would enable them to continue to operate in another emergency situation. These could include strategic reserves of things like PPE or communications equipment.

POINTS TO CONSIDER...

- *Does this investment fulfill a need expressed by staff or riders?*
- *Does this investment help fulfill my agency's mission?*
- *Does this investment have a safety benefit for staff or riders?*
- *Are there any challenges or limitations that this investment would pose to my agency?*
- *Can my agency partner with other agencies or organization or agency to procure this technology?*

5.6 Strengthened Partnerships

5.6.1 Partnerships with Community Partners

RELATED TREND

Regional Collaboration

Transit agencies should form and, equally importantly, maintain relationships with other community partners to better serve and more effectively communicate with members of the community. As the COVID-19 pandemic demonstrated, these relationships become especially important in a time of crisis. Below are several types of potential community partners with whom transit agencies should maintain relationships and with whom they can identify collaboration opportunities. Cross-sector and -agency collaboration will also support the larger trend of regional collaboration being essential to enhancing a region's (or megaregion's) competitiveness.

Healthcare Institutions

During the pandemic, partnerships between local healthcare providers and transit agencies allowed for the distribution of PPE, hand sanitizer, and other supplies to both operators and riders, and effectively communicated the importance of COVID-19 safety on transit through informational campaigns.[69] Transit agencies also coordinated with health organizations to provide access to vaccinations. The Jacksonville Transportation Authority (JTA) partnered with a community health clinic to launch a mobile vaccination clinic using transit buses. In the Washington, DC region, WMATA partnered with FEMA to provide a COVID-19 vaccination site in the parking lot at one of its stations to ensure people without a car still had access to vaccinations.[70] Healthcare institutions continue to be key destinations served by transit agencies and in some communities are also financial supporters of transit services.

Human Services Agencies

RELATED TRENDS

Demographics

DE&I

Transit agencies must balance supporting people who are struggling with poverty and homelessness while minimizing safety risks to transit employees and other riders. For example, agencies can partner with shelter leaders and other social work organizations to learn how to best support homeless persons, whether that is creating a zero-fare zone or route or transporting people experiencing homelessness to emergency accommodations.[71] COVID-19 hit the population of people experiencing homelessness harder than the general U.S. population, so partnerships between transit agencies and human services agencies have the potential to save lives.[72] Human service agencies may also be able to identify ways for partnerships with transit agencies to fill critical need gaps, such as adding meal delivery services. As the U.S. population ages, considering and addressing the needs of seniors during times of crisis will become especially important. Human service agencies are well-positioned to work as partners with transit agencies to identify techniques to enhance equity in the manner services are provided to disadvantaged populations.

Major Employers

RELATED TREND

Demographics

By partnering with a transit agency, an employer can ensure that their employees still have access to transit during service cuts through regular engagement activities. Given that employers will be competing in coming years for workers, they may have greater incentives to work with transit agencies to ensure that transportation is not a barrier to workers being able to come to jobs that do need to be done in-person. Some employers in the private sector may also choose to partner with transit agencies to fund specific or supplemental services.

Local Government

Partnerships with local government can help a transit agency ensure that their policies, such as mask mandates and social distancing guidelines, are in line with local regulations. Local government may also use existing communication methods (social media, push messaging) to communicate timely transit-related information and engagement activities. Regional collaboration can help agencies and jurisdictions learn what their peers are doing and facilitate communication and best practice exchange.

Tribal Leaders

RELATED TREND

DE&I 

There are six federally recognized tribes in the Mid-Atlantic region, and nine state-recognized tribes in Virginia.[73,74] In the early months of the pandemic, unemployment among Native Americans reached 26 percent, while rates for the country peaked at 15 percent in the same period. In some regions, tribal members had to travel 30 miles for health care.[75] Forming relationships with tribal leaders can help agencies ensure that they are reaching all members of their community, especially during a time of crisis.

Law Enforcement

Transit agencies have an opportunity to partner with law enforcement to ensure safety in their vehicles and stations. Strong relationships between agencies and law enforcement can enable the parties to work together to more efficiently and consistently enforce potentially life-saving policies such as mask mandates. Partnering with law enforcement can also help agencies prepare for coordination in future emergency situations, such as maintaining safety for riders during disruptive circumstances such as natural disasters. There are many examples of agencies working with law enforcement to implement de-escalation approaches for addressing conflicts on transit such as lack of mask policy compliance, alternatives to fare evasion enforcement (e.g., enrolling individuals in low-income fare payment programs), and expansions of community outreach units to connect at-risk individuals with the services they need.[76,77]

5.6.2 Industry Partnerships

RELATED TREND

Regional Collaboration 

Industry associations provide members with advocacy, communications, and training opportunities. Throughout the pandemic, APTA and CTAA provided timely resources for agencies to keep their employees, operators, and riders safe, some of which were cited within this Handbook. Additionally, identifying and utilizing resources from regulatory organizations such as FTA, DRPT, and VTA will enable agencies to respond to the latest regulations and policy changes.

The establishment of peer agency information-sharing agreements was also beneficial during the COVID-19 pandemic, indicating that agencies should continue to have staff attend key industry events and maintain contacts at peer agencies in the same region or state. This practice is a valuable source of information in times of need or while making important agency decisions.

POINTS TO CONSIDER...

- *Has my agency approached the key organizations in the community who interface with its riders?*
- *What organizations would my agency need to reach out to in a pandemic or emergency situation?*
- *How might the relationship or partnership allow my agency to serve its community more effectively?*
- *What are areas of potential coordination or collaboration with each potential partner organization?*
- *How will my agency maintain relationships with its community partners?*

CONCLUSION 6

The COVID-19 pandemic tested the transit industry in unexpected ways, decreasing ridership and exacerbating already existing problems, such as driver shortages. At the same time, the pandemic presented unique opportunities to initiate or accelerate technology deployments and enhance agencies' focus on equitable operations.

Agencies across the country rose to the challenge, continuing to operate despite the circumstances while providing critical transit service to frontline workers. Agencies implemented creative solutions such as on-demand transit and addressed societal problems by delivering meals, helping people make necessary trips, and getting people to vaccination sites, all while adapting to frequently changing conditions and new information about the virus. The industry will continue to face challenges in the recovery period and the years ahead.

These challenges include but are not limited to:

- *Continuing to navigate the ever-changing landscape of the pandemic and long-term changes.*
- *Building trust with riders to bring them back.*
- *Providing critical, equitable service despite lagging demand in some locations.*
- *Addressing challenges in recruiting and retaining staff, in particular operators.*
- *Facing an uncertain funding landscape in some places.*
- *Investing in planning for potential future pandemics or other disruptions.*

The industry will be most effective in addressing these through coordinated efforts, partnerships, and building closer relationships between agencies and riders.

FIGURE 34: Pulse BRT Stop on Broad Street in Richmond, Virginia

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APPENDIX A: RESOURCES

This section contains an annotated list of key resources, many of which are regularly updated, that may assist agencies in navigating the pandemic and recovery periods.

APTA PUBLICATIONS AND RESOURCES

- APTA, Cleaning and Disinfecting Transit Vehicles and Facilities During a Contagious Virus Pandemic.

  This white paper is designed to aid transit agencies in the development of viral pandemic response programs for maintenance, cleaning, and disinfecting their vehicles and facilities.

- APTA, COVID-19 Resource Hub.

  Resource hub specifically designed for public transportation agencies and operators.

- APTA, Developing a Contagious Virus Response Plan.

  The purpose of this guide is to aid transit agencies in the development of a Contagious Virus Response Plan (CVRP). It outlines elements that might be covered by the plan and provides implementation and format suggestions and examples. Elements of a CVRP include identification of alert phases that trigger specific action; information and education program; disinfection program; sanitary aid to limit spread; vaccine/antiviral medications; and service reduction, shutdown, and restoration.

- APTA, Impact of COVID-19 on Public Transit Agencies.

  A policy brief summarizing responses to a March 12, 2020 survey about actions taken in response to COVID-19, ridership impacts, and potential for service cuts.

- APTA, Public Transit Ridership Report, Fourth Quarter 2020.

  Raw data showing ridership for the fourth quarter of 2020 in comparison with the fourth quarter of 2019 for United States and Canadian agencies across all modes.

- APTA, The COVID-19 Pandemic: Public Transportation Responds: Safeguarding Riders and Employees.

  Strategies and tactical guidance for public transportation agencies during the COVID-19 pandemic and to inform future pandemic preparedness.

- APTA, Transit Leadership in the Post-COVID-19 Mobility Landscape.

  This paper discusses two aspects of achieving the employee and passenger perception of safe facilities: behaviors and compliance among the workforce and riders and strategic messaging, branding, and partnerships.

CDC PUBLICATIONS AND RESOURCES

- CDC, COVID-19 Employer Information for Bus Transit Operators.

  Guidelines on how employers can protect their transit operators by creating a COVID-19 Workplace Health and Safety Plan and developing hazard controls.

- CDC, Latest COVID-19 Information.

  Scientific resource for up-to-date information on COVID-19 including toolkits with easy-to-understand graphics for public engagement and announcements.

NATIONAL ACADEMIES/TRANSIT COOPERATIVE RESEARCH PROGRAM RESOURCES

- NCHRP Report 769, A Guide for Public Transportation Pandemic Planning and Response.

  This guide is designed to assist transportation organizations as they prepare for pandemics and other infectious diseases such as seasonal flu by providing information, tools, tips, and guidance on where to find up-to-date recommendations from federal agencies and other resources, prior to and during a pandemic.

- TCRP Report 148, Practical Resources for Recruiting Minorities for Chief Executive Officers at Public Transportation Agencies.

  This report focuses on barriers in recruiting minorities for top-level management positions and offers strategies for boards and search firms to recruit talent.

- TCRP Synthesis 101, Implementation and Outcomes of Fare-Free Transit Systems.

  This synthesis highlights the experiences of public transit agencies that have planned, implemented, and operated fare-free transit systems.

- TCRP Synthesis 147, Attracting, Retaining, and Advancing Women in Transit.

  This report focuses on strategies that transit agencies used to increase the number of female employees at all levels and identifies barriers that impact the number of female employees in transit.

FEDERAL TRANSIT ADMINISTRATION PUBLICATIONS AND RESOURCES

- DOT-FTA, DOT-FTA HUD-PIH Partnership for COVID-19 Recovery Fact Sheet.

  The U.S. DOT, FTA and U.S. HUD, and the Office of Public and Indian Housing (PIH) partnered to share information on value-added services and partnerships that are developing across the country to ensure that targeted populations have access to transportation, education support services including Wi-Fi, food, and medical care by leveraging transit assets as communities recover from the COVID-19 public health emergency.

- FTA, Advancing Frontline Workforce Development Meeting: Synthesis.

  FTA synthesized findings from a two-day gathering of more than two dozen transit industry labor and management representatives who engaged in in-depth discussions on frontline workforce training needs across the U.S. The purpose of the meeting was to identify immediate, short-term, and long-term training needs for the frontline public transportation workforce in the U.S. and ways to connect apprenticeship and formal training programs to support these needs.

- FTA, America's Open, Transit's Open.

  FTA gathered best practices from three listening sessions that featured 45 panelists representing transit agencies and stakeholder and advocacy groups. They focused on best practices to renew ridership, safety, community partnerships, and how to build back better.

- FTA, COVID-19 Recovery Practices in Transit.

  Practices used by transit agencies worldwide about their COVID-19 recovery efforts, collected by the FTA. Topics include worker protection; employee protection; cleaning, disinfecting, and ventilating vehicles and infrastructure; operational considerations; passenger communications; and technology and innovation.

- FTA, Novel Coronavirus (COVID-19).

  Resource hub that prioritizes the need of transit agencies while also providing up-to-date information on federal policies and guidelines regarding the pandemic.

TRANSITCENTER PUBLICATIONS AND RESOURCES

- TransitCenter, A Transit Agenda for the COVID-19 Emergency.

  Drawing on interviews with public health experts and transit agency officials, as well as a survey of more than 2,000 residents in major American cities, this brief summarizes epidemiological knowledge about COVID-19 and transit and rider attitudes. This research informs recommendations to make transit service safe, effective, and appealing.

- TransitCenter, How Transit Agencies Are Reallocating Service to Prioritize Public Health and Social Equity.

  This article details efforts by San Francisco Muni, Pittsburgh Port Authority, and MBTA to prioritize equity during COVID-19 service cuts.

- TransitCenter, Protecting Transit Workers is a Matter of Racial Justice.

  TransitCenter analyzed race and income within the transit workforce, comparing frontline workers like bus operators with non-frontline workers like managers, service planners, and others who can work from home.

VIRGINIA RESOURCES

- DRPT, Commuting Safely and Confidently.

  Living resource document containing tips for businesses and commuters in the COVID-19 environment.

- DRPT, COVID-19 Pandemic Response and Mitigation.

  Virginia DRPT's resource hub for pandemic response and mitigation, including but not limited to vaccination resources, federal and state actions, commuter guidance, and resources for transit agencies.

- Forward Virginia, Coronavirus.

  Resource hub for Virginia-specific guidelines, updates, and support regarding the local pandemic situation.

- Telework!VA, Telework!VA Homepage.

  A resource for telework including benefits, success stories, frequently asked questions, and tips to be successful for employers, managers, and employees.

- Virginia Department of Human Resource Management, COVID-19.

  Coronavirus hub with Virginia-specific workforce resources and other state public health guidance and announcements.

OTHER RESOURCES

- Center for Economic and Policy Research (CEPR), A Basic Demographic Profile of Workers in Frontline Industries.

  Tables that provide a basic demographic profile of workers in frontline industries, including grocery store clerks, nurses, cleaners, warehouse workers, and bus drivers, among others.

- Community Transportation Association of America (CTAA), CTAA Recommended COVID-19 Safety Protocols.

  A compilation of safety protocols from a variety of federal agencies including guidance on masks (for passengers and drivers), driver compartment barriers, at-risk drivers, vehicle/transit facility cleaning and disinfecting, essential trips, fare collection, wheelchair securement, and transporting a COVID-19 positive patient.

- Economic Policy Institute, Black Workers Face Two of the Most Lethal Preexisting Conditions for Coronavirus—Racism and Economic Inequality.

  A report detailing the economic and health effects of the pandemic on black workers through the lens of underlying economic and health factors and policy divides.

- ENO Center for Transportation, COVID's Differing Impact on Transit Ridership.

  This article analyzes the impact of the pandemic on transit ridership, including commuter rail, heavy rail, and bus systems.

- Institute for Health Metrics and Evaluation (IHME), **C**OVID-19 Resources.

  Resource hub for scientifically valid resources including health policies and practices nationally and globally.

- Johns Hopkins University, Coronavirus Resource Center.

  Leading research institute providing up-to-date scientifically sound resources and guidance for a variety of audience types.

- National Association of City Transportation Officials (NACTO), COVID-19: Transportation Response Center.

  Resource hub for transportation agencies and city governments acting as a clearinghouse for pandemic response guidance and best practices shaping our streets.

- National Center for Mobility Management, Current Pandemic Creates Opportunities for Transit and Human Services Partnerships.

  This article describes how agencies adapted their transit to serve emergent needs of families during the pandemic, beyond regular activities.

- Sam Schwartz, Public Transit and COVID-19 Pandemic: Global Research and Best Practices.

  This report looked at the correlation between COVID-19 transmission and public transit based on global research and interviews with public health experts.

- Transportation Research Interdisciplinary Perspectives, Impacts of COVID-19 on Access to Transportation for People with Disabilities.

  This paper finds that people with disabilities without car access faced especially limited transportation during the pandemic, and people with disabilities lacked access to up-to-date communications. Getting needed assistance became more difficult for some with disabilities. The paper recommends how agencies can address access barriers for a disability-inclusive pandemic response.

- U.S. Bureau of Labor Statistics, Demographics, Earnings, and Family Characteristics of Workers in Sectors Initially Affected by COVID-19 Shutdowns.

  This article looks at the demographic characteristics of workers in the initially highly exposed industries, as well as the characteristics and earnings of families with workers in these industries. The article also uses recent Current Population Survey data to look at how various demographic groups have fared in the early weeks of the COVID-19 pandemic between February and April.

- U.S. Department of Health and Human Services, Public Transportation Workers Toolkit.

  Toolkit aimed at increasing confidence in and uptake of COVID-19 vaccines among public transportation workers.

- U.S. Environmental Protection Agency (EPA), Interim Results for SARS-CoV-2 Surface Disinfection with UV-March 1, 2021.

  The EPA conducted research into using UV light-generating devices to kill or inactivate the virus on surfaces.

- Victoria Transport Policy Institute, Pandemic-Resilient Community Planning.

  This resource provides valuable information (and identifies additional resources) to inform resiliency planning for transit systems.

- Wiley Public Health Emergency Collection, Racial Disparities in COVID-19 Mortality Among Essential Workers in the United States.

  Results from a study investigating the racial disparities in COVID-19 mortality among America's essential workers.

APPENDIX B: FULL CHECKLIST

B

SHORT TERM CONSIDERATIONS

This checklist can be used to guide agencies through the short-term decision-making process regarding whether to operate service; how to select routes to operate; and short-term staffing considerations to immediately respond to a public health or other crisis that impacts transit service.

Determining Whether and How to Operate, Level of Risk, and Operational Considerations

- ✓ Is it safe to operate service?
  - ☑ *How transmissible are the variants of the virus currently circulating in my community?*
  - ☑ *What is the level of virus transmission in my community? (Levels of transmission in a community are assigned by the CDC, based on case and positivity rates, to four categories: Low, Moderate, Significant/Substantial, and High. Higher vaccination rates are correlated with lower levels of transmission. Hospital capacity in a community is an additional factor to consider, with overburdened hospitals potentially impacting the health of anyone seeking medical treatment.)*
  - ☑ *Are there any public gatherings in the service area that may make routes unsafe?*
  - ☑ *Is there any physical damage to structures or infrastructure in the service area that may make routes unsafe?*
- ✓ Are transit vehicles safe?
  - ☑ *Is there adequate ventilation?*
  - ☑ *Is our fare payment contactless?*
  - ☑ *What is the ability of riders to socially distance on the vehicle (dependent upon vehicle size and crowdedness)?*
  - ☑ *Is it possible to limit boarding to rear door only?*
- ✓ What metrics does/will my agency use to determine when transit service should be increased or de-creased? (And are there state and/or federal guidelines that supersede agency policies?)
  - ☑ *How does my agency monitor these metrics?*
  - ☑ *How does my agency convert metrics to service changes?*
- ✓ Does my agency have an adequate reserve of protective equipment?
- ✓ If contactless payment systems are not available, would temporary zero-fare service be appropriate?

- ✓ How will service cuts or service increases impact budget?
- ✓ How will operator or maintenance shortages impact the ability to provide service?
- ✓ Will service or vehicle changes require additional reporting, paperwork, cleaning, maintenance, or ad-ministrative burdens?
- ✓ Has my agency identified other key policies that impact transit operations or service provision (e.g., lo-cal, state, etc.)?
- ✓ Has my agency established guidelines dictating when service should not be operated?
- ✓ How much time will operators spend on the vehicle?
- ✓ At what point will vehicles be considered "too crowded," requiring additional runs?
- ✓ How many operators are required to run the route?
- ✓ Does my agency have sufficient vehicles (including type of vehicle) and operators to run the route?

Route Considerations for Short-Term Planning

- ✓ How essential is each route?
  - ☑ *Does the route serve a large and/or dense population?*
  - ☑ *Does the route serve critical destinations or job centers, and if so, are they open? Do essential workers or those unable to work from home depend on this route for commuting?*
  - ☑ *Which routes should be prioritized when returning to service?*
- ✓ Has my agency conducted outreach to the public, particularly to riders, regarding the services it considers most essential and plan to continue to use despite public health risks?
- ✓ What type of service can best serve underlying transit need (e.g., fixed route, demand response, etc.)?
- ✓ How long is the route?
- ✓ How much time will passengers spend on the vehicle? (There is potential for increased risk due to longer exposure.)
- ✓ Are there safe, adequate places for operator layovers/breaks?
- ✓ Are there any physical or geographical limitations that impact the normal operation of the specific service?

Staffing Considerations for Short-Term Response

- ✓ What percentage of operators are vaccinated?
- ✓ What percentage of maintenance and other support staff are vaccinated?
- ✓ What percentage of administrative staff are vaccinated?
- ✓ Should vaccines be mandated?
- ✓ How have the appropriate unions or a group of staff representatives been engaged and informed of agency decision-making related to COVID-19 protocols and policies?

LONG TERM CONSIDERATIONS

Once immediate needs have been addressed, agencies may decide to work through this checklist which includes action items aimed to build equity and resilience in the long-term. These questions will help guide agencies in providing more equitable service; building a diverse workforce; identifying how to make strategic investments; and strengthening partnerships with community organizations and other partners.

Equitable Service for Riders and Communities

- ✓ Has my agency conducted a recent rider survey?
- ✓ Does my agency's ridership trends indicate that peak demand has flattened?
- ✓ Has my agency established a definition of equity?
- ✓ Has my agency established metrics to measure equity?
- ✓ What actions has my agency taken to improve equity? (E.g., service-related measures; fare-related measures; non-fare related measures such as sidewalks, seating, and/or weather protection at stops; the creation of equity advisory boards; interagency collaboration; etc.)

Driving Equitable Workforce Development

- ✓ Does my agency conduct surveys with current employees? If so, is the feedback received shared with leadership and used in making future policy decisions?
- ✓ Does my agency conduct exit interviews? If so, is the feedback received shared with leadership and used in making future policy decisions?
- ✓ Does my agency track employees that are nearing retirement and consider future recruiting needs?
- ✓ How does my agency recognize employees' contributions?
- ✓ How frequently does my agency evaluate its benefits package and/or conduct a comparison of how benefits compare to competitors and competing industries? If financial resources are tight, has my agency considered in-kind benefits or other low-cost "perks" that can be offered?
- ✓ Are there opportunities to partner with local educational organizations (e.g., high schools, trade schools, and other higher education institutions) to establish an employment pipeline?

Increasing the Attractiveness of Transit Careers

- ✓ Does this investment fulfill a need expressed by staff or riders?
- ✓ Does this investment help fulfill my agency's mission?
- ✓ Does this investment have a safety benefit for staff or riders?
- ✓ Are there any challenges or limitations that this investment would pose to my agency (e.g., timelines, staffing, other resources, etc.)?
- ✓ Can my agency partner with other agencies or a regional or statewide planning organization or agency to procure or purchase this technology?

Strengthened Partnerships

- ✓ Has my agency connected with all of the key organizations in the community who interface with its riders?
- ✓ What organizations would my agency need to reach out to in a pandemic or another emergency situation?
- ✓ How might the relationship or partnership allow my agency to serve its community more effectively?
- ✓ What are areas of potential coordination or collaboration with each potential partner organization?
- ✓ How will my agency maintain relationships with its community partners?