

A thin vertical line in a dark red color, positioned to the left of the title text.

# COVID-19: TRANSIT IMPACTS AND ACTIONS IN TEXAS

Zachary Elgart, Michael Walk, and Will Rodman  
July 2020

## CONTENTS

Executive Summary .....	3
Background and Purpose .....	6
Transit Survey .....	7
Announcements .....	8
Cleaning .....	9
Staffing Impacts .....	12
Ridership and Revenue Loss .....	14
Service Changes .....	16
Social Distancing .....	18
Preparedness .....	19
Innovations and Lessons .....	20
Case Studies .....	22
Sun Metro—City of El Paso .....	23
Fort Bend County Transit .....	28
Waco Transit System .....	33
Policy and Funding Implications .....	41
Revenue Levels .....	41
Equitable Transit Access .....	42
Employment Policies .....	43
Appendix A: Survey .....	44
Appendix B: List of Survey Respondents with Fiscal Year 2018 Transit Metrics .....	57
Appendix C: Case Study Interview Guide .....	60








## EXECUTIVE SUMMARY

The Texas A&M Transportation Institute's Transit Mobility Program collaborated with the Texas Transit Association and the South West Transit Association to develop and disseminate a survey focused on the transit experience responding to the COVID-19 pandemic—an effort that resulted in 49 complete survey responses from a diverse group of transit agencies representing all parts of Texas. Following the survey effort, researchers conducted comprehensive analysis of survey responses to derive important lessons and identify potential participants in a case study process to collect more detailed information. The following sections present highlights from the survey, lessons from the case studies, and a summary of policy and funding implications related to COVID-19.

## SURVEY HIGHLIGHTS

Survey findings indicate diverse COVID-19 response experiences among transit agencies. However, some clear trends emerged from the survey responses.

### Survey Highlights

-  About 65 percent of the respondents did not have a plan for dealing with a pandemic prior to COVID-19
-  Just over 85 percent of respondents had issues getting supplies to clean vehicles and facilities
-  The cost of cleaning (both labor and supplies) hit large urban agencies and metropolitan transit authorities particularly hard
-  Childcare was particularly challenging, associated with staff shortages/missed work/callouts
-  Average ridership and revenue loss were over 50 percent for the respondents
-  On average, respondents reduced service by 51 percent
-  About 50 percent of the respondents have developed plans to ensure continuity of service for vulnerable groups

## CASE STUDY LESSONS

To learn more about transit agencies' experiences reacting to the pandemic conditions and providing service during COVID-19, researchers conducted three case studies with Sun Metro (El Paso, TX), Fort Bend County Transit (outside of Houston, TX), and the Waco Transit System. This section presents key lessons from each transit agency's experience during the pandemic.

---

## *Sun Metro—City of El Paso*

---

### Try to Keep Things Familiar

- Reducing service to Sunday service levels, a known commodity, contributed to operator and rider understanding of how the route network will work, thereby easing the transition.

### Know Your Market for Protective Actions

- Consider your riders, your operators and other operations staff, and your administrative employees as three separate markets in the development of protective and proactive actions and informational campaigns.

### Be Proactive about Employee Retention

- Retaining your employees through the pandemic and resulting downturn in ridership, with cuts in hours and allowance to work at home where possible, is preferable to laying off staff and later having to recruit, hire, and train the staff buildup when pre-pandemic ridership levels resume.

---

## *Fort Bend County*

---

### Active Learning Processes Are Important

- It is important to take notes on what works and what does not when dealing with unprecedented conditions so you can learn from your experiences and adapt as you go and prepare for the future. This includes developing formal internal lessons-learned documentation and conducting internal surveys to see what worked and what presented an opportunity for improvement.

### Dynamic Communication Enhances Response

- Making sure communication is effective and clear and that folks expect it to be frequent and ever changing is very important for managing expectations and keeping people up to date. It also helps with improving transparency (which build trust) and helps to make sure people working remotely are kept in the loop and know they are an important part of the team.

### Good Practice Is Good beyond the Pandemic

- From effective cleaning practices to policies that allow staff to enjoy greater work/life balance (telework), many of the practices and policies that have been implemented during the pandemic will be useful moving forward and will improve transit service and management.

## Waco Transit System

### Maintain Ongoing and Effective Communication with Staff

- Having constant and consistent communication with employees—especially frontline employees—is critical to success through any emergency situation, especially the COVID-19 pandemic. The Waco Transit System (WTS) credits its ongoing communication (and when possible face-to-face communication) with frontline employees as critical to WTS's ability to retain full staffing levels, keep employees safe, and respond quickly to employee concerns.

### Implement Rules that Can Be Enforced





- One challenge experienced by WTS related to face coverings or masks. In the early stages of the pandemic, WTS would have preferred to implement a mandatory face covering rule for riders. However, because there was no official order from federal, state, or local governing bodies, there was no way for WTS to enforce that rule. A mandatory face covering rule was eventually enacted by the City of Waco, and this made a significant difference in the compliance of riders and the confidence of WTS employees.

### Preparation Is Critical

- Although many transit agencies were struggling to obtain personal protective equipment (PPE) and cleaning supplies, WTS had been proactive and creative in its procurement of PPE and cleaning supplies to the extent that WTS was able to ride out initial shortages using its current stock. There was no time at which WTS was lacking in what it needed to keep employees and riders safe.

## POLICY AND FUNDING IMPLICATIONS

According to survey and case study findings, some specific policy and funding implications for transit service in Texas are directly related to the COVID-19 pandemic.

Revenue Levels	
	<ul style="list-style-type: none"><li>- Formula-driven funding allocations could be reduced by lower ridership</li><li>- Depressed economic activities suppress revenue from taxes and fees</li><li>- Ridership reductions and fare collection holds reduce fares</li><li>- Decision makers and stakeholders may hold back</li></ul>
Equitable Transit Access	
	<ul style="list-style-type: none"><li>- Face covering requirements may limit access for some</li><li>- Permanent service reductions could harm riders that rely on transit</li><li>- New contactless fare options may not be available to all</li></ul>
Transit is Essential	
	<ul style="list-style-type: none"><li>- Transit provides access to essential services such as health care and food</li><li>- Efforts to ensure access for vulnerable groups during crisis conditions highlight transit's essential contributions</li></ul>
Employment Policies	
	<ul style="list-style-type: none"><li>- COVID-19 challenges related to childcare and personal/family health issues provide opportunity to learn about and implement supportive employment policies (flexible leave and telework)</li></ul>

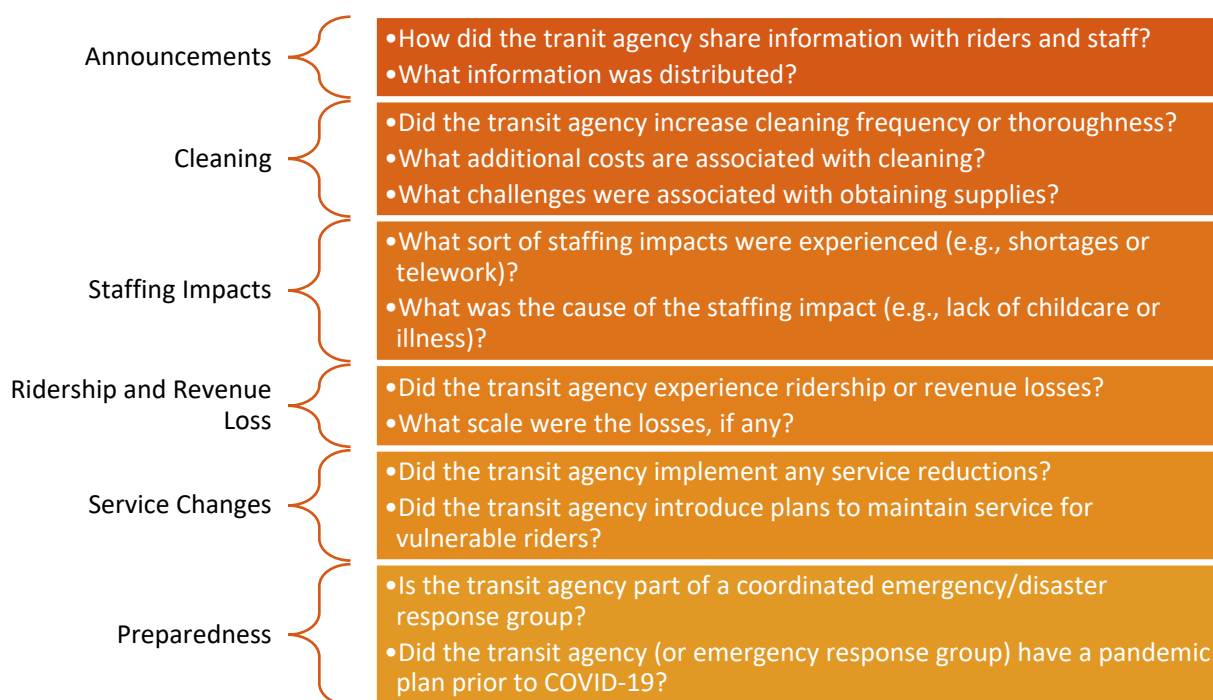
## BACKGROUND AND PURPOSE

The COVID-19 pandemic had significant impact on the daily operations and financial sustainability of Texas transit agencies of all types and sizes. Transit agencies responded to the public health advisories by applying social distancing policies, reducing service, and implementing enhanced cleaning of vehicles and facilities—actions that cause transit agencies to lose ridership and revenue, and to experience staffing shortages or other challenges. However, the rapid nature of the response resulted in limited real-time understanding of the true impacts of COVID-19 on transit in Texas and the actions taken by transit agencies to respond to the conditions and support their riders.

To collect empirical information on the impacts and actions associated with transit's response to COVID-19, the Texas A&M Transportation Institute (TTI) partnered with the Texas Transit Association (TTA) to conduct a survey designed to provide a better, quantifiable picture of transit realities in Texas during the early stages of the pandemic. This report presents the findings derived from a full analysis of the survey data, highlighting important takeaways, three focused case studies that present deeper insight into some transit agencies' responses to these impacts, and specific policy implications that transit may experience during or after the pandemic.

## TRANSIT SURVEY

In March 2020, TTI developed an online survey to collect information about how the COVID-19 pandemic was impacting Texas transit agencies. The survey included questions that covered a range of topics, from methods for sharing information with riders to the revenue impacts of reduced service/ridership, as described in Figure 1 (Appendix A contains the complete survey).



**Figure 1. Summary of Survey Questions**

To distribute the survey, TTI coordinated with TTA to send a survey invitation and link to a TTA-supplied list of contacts—resulting in 49 complete responses from transit agencies. Appendix B presents a complete list of survey respondents including key transit performance measures. Table 1 presents the number of survey respondents by the transit agency type—as shown, the survey collected a balanced set of responses from urban and rural areas.

**Table 1. Number of Survey Respondents by Agency Type**

Transit Agency Type	Definition	Number of Survey Respondents
Large urban or metropolitan	Transit agencies that serve urbanized areas with populations over 200,000 people. This includes metropolitan transit authorities with tax authority.	12
Small urban	Transit agencies that serve urbanized areas with a population between 50,000 and 200,000 people	12
Rural	Transit agencies that serve non-urbanized areas	20
Other	Transit agencies that exist as urban/rural providers or other transportation providers that are not considered transit agencies (e.g., universities and senior housing facilities)	5

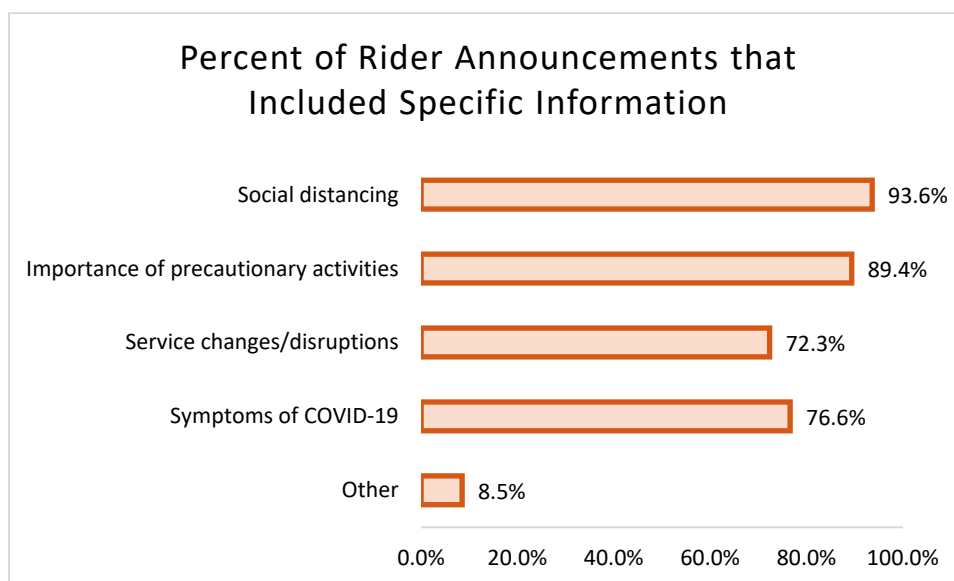
One survey respondent provided a concise assessment of the conditions faced by transit agencies during the initial period of response to the COVID-19 pandemic and how they are preparing for the future:

While FTA seems to be slow in their response and guidance, transit systems are forced to make decisions on an hourly basis to protect employees and communities. We are sending our people into harm's way, and these decisions are extremely difficult. We also have to take actions to limit exposure to our operations staff so that when we reach the restoration phase of our pandemic response plan, we will have a healthy workforce to be able to restore service. This means paying people who are not working.

The following sections summarize survey findings according to the six broad subject areas described in Figure 1.

## ANNOUNCEMENTS

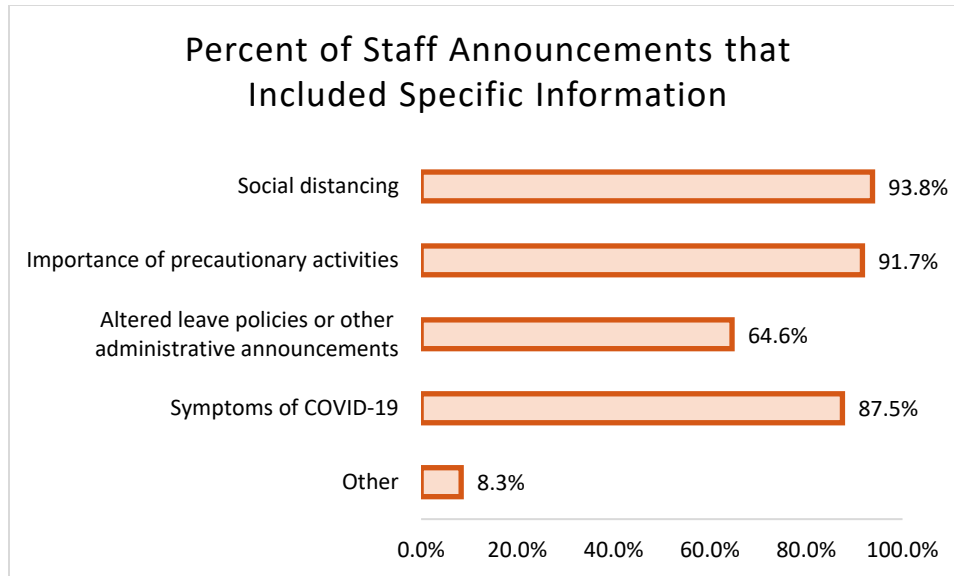
Survey respondents were asked about their practices for communicating with their riders and staff via agency-issued announcements (posters, flyers, or other published materials). When asked about announcements to inform transit riders, of the 47 responses to this question, a majority stated that announcements included all of the information categories suggested (i.e., social distancing, importance of precautionary activities, service changes/disruptions, and symptoms of COVID-19), as presented in Figure 2. Additionally, a little over 8 percent of the respondents stated they included other information in their announcements, including notices of suspended fares, requests that sick people stay home, and revised procedures for wheelchair users to use when loading, disembarking, and being secured in the vehicle.



**Figure 2. Rider Announcements**

As with rider announcements, a majority of responses to this question (of 48 total) stated that staff announcements included each of the suggested subjects (i.e., social distancing, importance of precautionary activities, altered leave policies or other administrative announcements, and symptoms of COVID-19), as shown in Figure 3. Additionally, U.S. Centers for Disease Control and Prevention (CDC) protocol information and notices about agency closures were included in just over 8 percent of staff announcements.

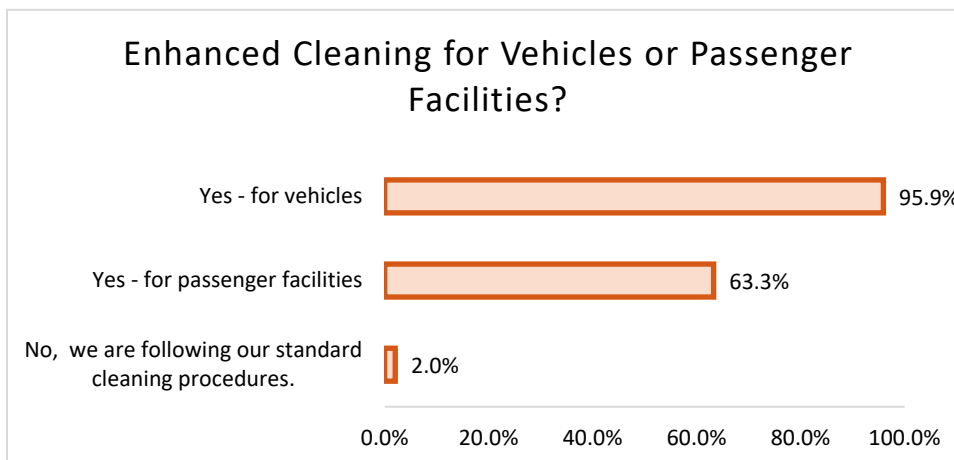




**Figure 3. Staff Announcements**

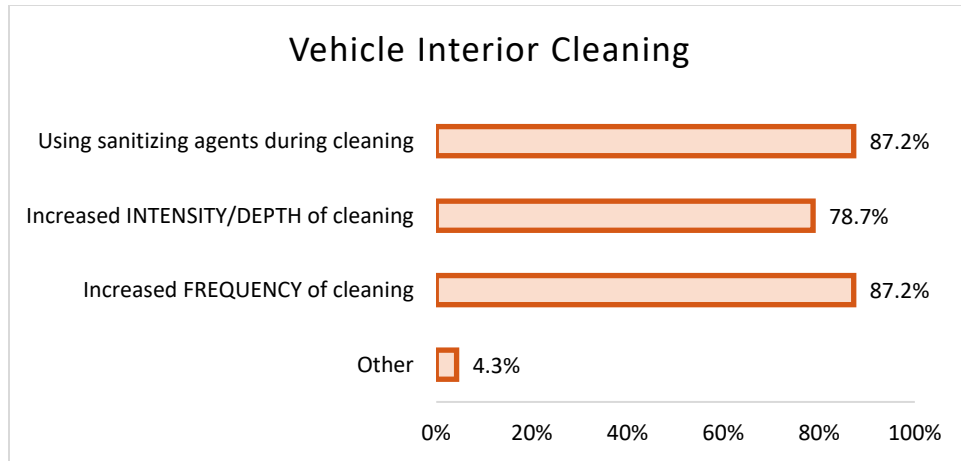
## CLEANING

To learn more about cleaning practices, the survey asked respondents whether they introduced enhanced cleaning practices for vehicle or facilities before delving into the costs associated with such activities. As shown in Figure 4, nearly 96 percent of respondents (47) implemented enhanced cleaning practices for vehicles, and just over 63 percent (31) introduced enhanced cleaning for passenger facilities. Only one agency responded that it did not implement enhanced cleaning of vehicles or facilities.



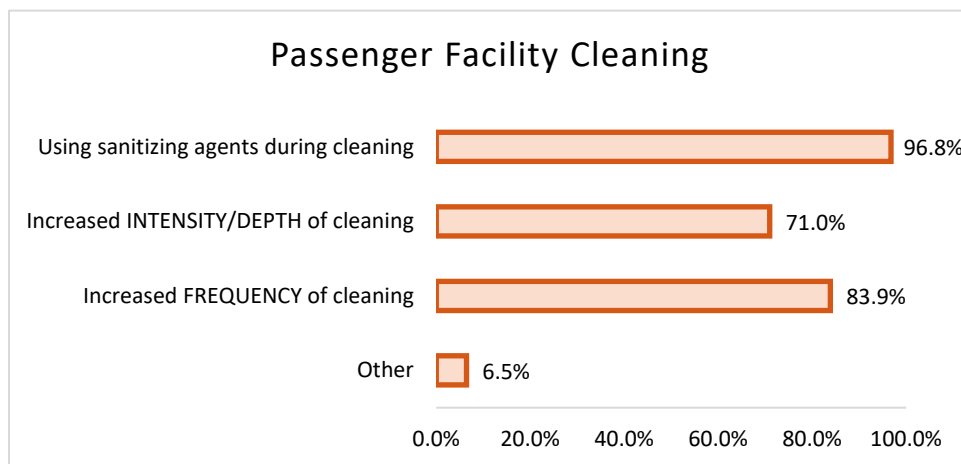
**Figure 4. Enhanced Cleaning**

Regarding vehicle cleaning, survey respondents were presented with four options to describe their new practices: using sanitizing agents during cleaning, increased intensity/depth of cleaning, increased frequency of cleaning, or an option to write in an alternative response. Figure 5 presents the results of this question, showing that COVID-19 cleaning practices at most transit agencies include all of the pre-identified practices as well as “other” options: professional weekly cleaning treatments and cleaning that took place after a transit agency suspended service.



**Figure 5. Vehicle-Cleaning Practices**

Similar to vehicle cleaning, of 31 responses, the majority indicated most agencies embraced a mix of cleaning practices (Figure 6). However, in facilities, respondents indicated a notably higher rate of using sanitizing agents. Among the written responses, one transit agency stated that it also include passenger shelters in facility-cleaning practices, and another used weekly professional treatments in facilities.



**Figure 6. Facility-Cleaning Practices**

---

## CLEANING COSTS

To gauge the impact of enhanced vehicle and facility-cleaning procedures, the survey asked respondents to share the amount of money spent on cleaning supplies and cleaning labor, and to indicate whether those amounts were calculated for a period lasting one week, one month, or for the cumulative time since the COVID-19 response began. Table 2 summarizes the average and maximum supply costs provided by respondents by time period, and Table 3 breaks down the average supply costs by time period and agency type to identify differences in supply costs by agency size or service area type.

**Table 2. Cleaning Supply Costs by Time Period**

<b>Average Supply Cost</b>	
Cumulative	\$159,616
Per month	\$3,478
Per week	\$183
<b>Maximum Supply Cost</b>	
Cumulative	\$2,000,000
Per month	\$12,500
Per week	\$450

**Table 3. Average Cleaning Supply Costs by Time Period and Agency Type**

<b>Average Supply Cost</b>					
	Large urban or metropolitan	Small urban	Rural	Other	<b>Response Count</b>
Cumulative	\$685,167	\$4,759	\$547	\$1,250	<b>13</b>
Per month	\$6,750	\$1,750	\$2,242	\$2,500	<b>14</b>
Per week		\$128	\$228		<b>11</b>
<b>Response count</b>	<b>7</b>	<b>3</b>	<b>18</b>	<b>10</b>	<b>38</b>

As with cleaning supplies, respondents provided costs associated with cleaning labor. Table 4 summarizes the average and maximum labor costs provided by respondents by time period, and Table 5 breaks down the average supply costs by time period and agency type to identify differences in labor costs by agency size or service area type.

**Table 4. Cleaning Labor Costs**

<b>Average Labor Cost</b>	
Cumulative	\$1,030,103
Per month	\$106,036
Per week	\$14,170
<b>Max Labor Cost</b>	
Cumulative	\$1,000,000
Per month	\$32,000
Per week	\$4,000

**Table 5. Average Labor Costs by Time Period and Agency Type**

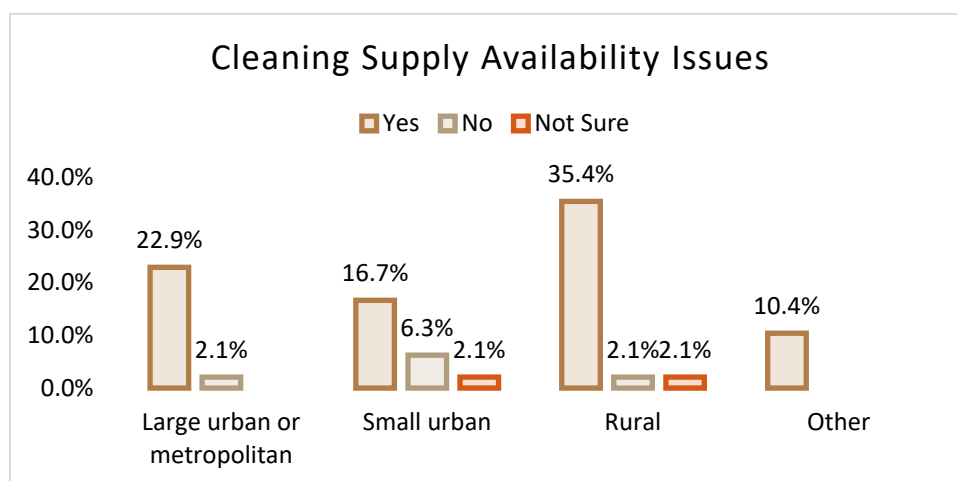
<b>Average Labor Cost</b>					
	Large urban or metropolitan	Small urban	Rural	Other	<b>Response Count</b>
Cumulative	\$504,524	\$9,203	\$75	\$2,500	<b>7</b>
Per month	\$17,000	\$12,500	\$5,259	\$9,000	<b>10</b>
Per week	\$1,000	\$1,380	\$1,119	\$1,200	<b>12</b>
<b>Response count</b>	<b>6</b>	<b>3</b>	<b>13</b>	<b>7</b>	<b>29</b>

Following up on the request for cleaning supply and labor costs, the survey asked respondents about how they calculated these expenses. The open-ended responses to this question indicate that each transit agency used a method developed in house, instead of following a state-wide or national model for tracking these expenses. Methods for tracking expenses included the following (some shared by multiple respondents):

- Spreadsheet kept for COVID expenses.
- Cost to purchase cleaning supplies.
- Cost of supplies plus hourly staff rates.
- Estimate based on payroll and budget.
- Estimate based on purchase orders and Invoices.

## CLEANING AVAILABILITY

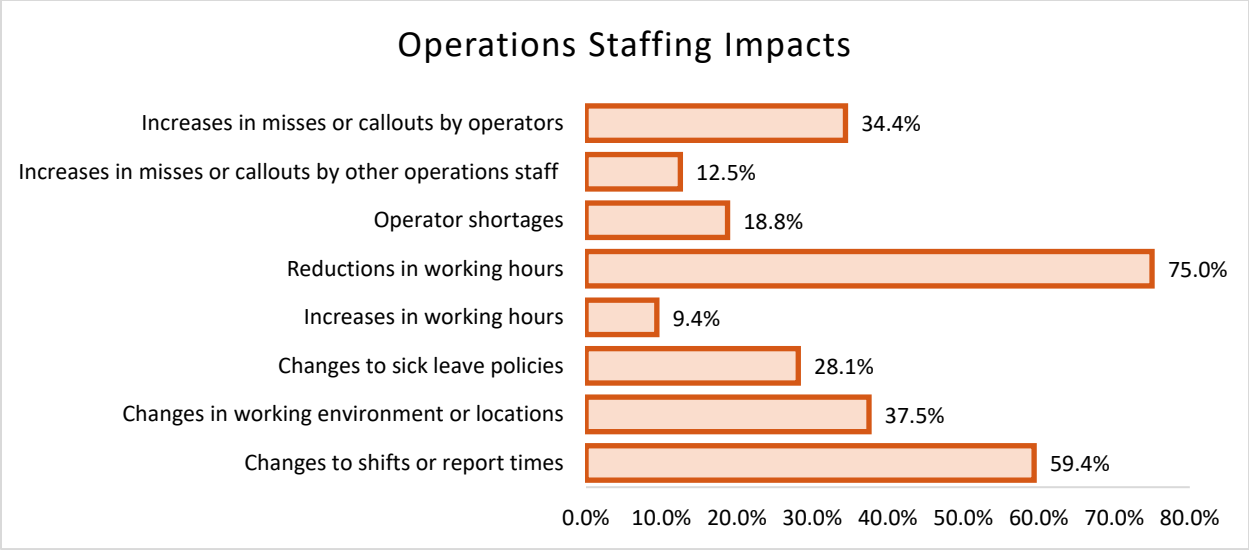
In the immediate response to COVID-19, cleaning supplies became difficult to acquire because of heightened demand. To learn whether this issue impacted transit agencies, the survey asked whether or not the respondents or transit agency experienced problems with obtaining cleaning supplies. Of 48 respondents to this question, 41 indicated they did have issues with the availability of cleaning supplies, five stated they did not know if supply availability was an issue, and two stated they did not have issues. Figure 7 summarizes responses indicating whether there was an issue with cleaning supply availability, according to agency type. The largest proportion of “yes” responses was from rural transit agencies.



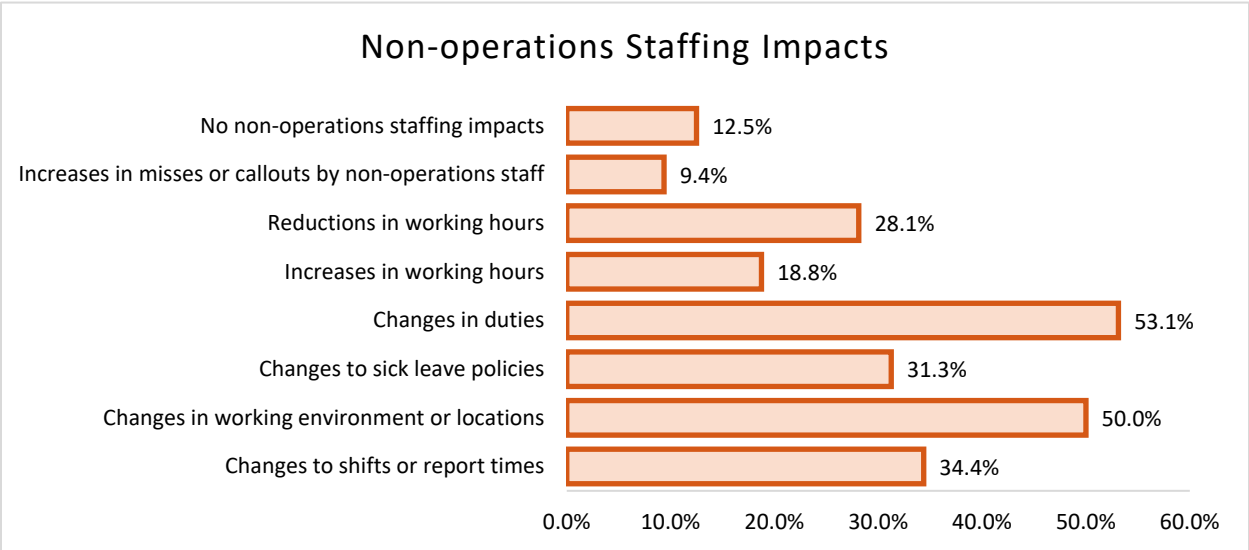
**Figure 7. Cleaning Supply Availability Issues**

## STAFFING IMPACTS

COVID-19 resulted in significant impacts on employment. As a result, transit agencies experienced challenges related to staffing. When asked whether their agency had experienced staffing impacts, 32 respondents responded in the affirmative. These respondents were then asked about specific impacts (e.g., increased rate of callouts, changes in working hours, changes to sick leave policies, or changes to working environment/locations) related to both operations and non-operations staff. Figure 8 summarizes the impacts related to operations staffing, and Figure 9 summarizes impacts for non-operations staffing. To learn more about the top reasons for staff shortages, the survey asked respondents to rank the most common reasons for staff shortages on a scale where 1 indicated the most common reason and 5 represented the least common reason. Table 6 presents the findings from this question, showing that childcare and personal health concerns or illness had similar impacts.



**Figure 8. Operations Staffing Impacts**



**Figure 9. Non-operations Staffing Impacts**

**Table 6. Common Reasons for Staffing Shortages**

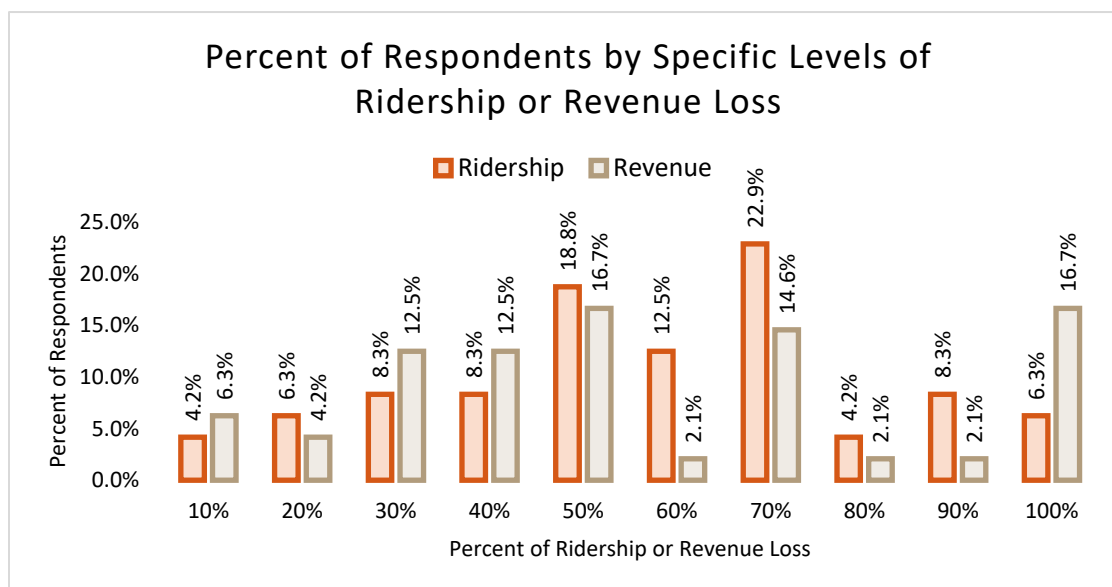
	One (Most Common)	Two	Three	Four	Five (Least Common)	Total Responses	
<b>Personal health concerns</b>							
Large urban or metropolitan	4	0	0	2	0	13	
Small urban	1	0	0	1	0		
Rural	0	1	0	1	0		
Other	0	0	1	2	0		
Total	5	1	1	6	0		
<b>Childcare</b>							
Large urban or metropolitan	1	3	1	1	0	13	
Small urban	0	1	1	0	0		
Rural	1	0	0	1	0		
Other	1	2	0	0	0		
Total	3	6	2	2	0		
<b>Personal illness/sickness</b>							
Large urban or metropolitan	0	3	0	2	1	13	
Small urban	1	0	0	1	0		
Rural	1	0	1	0	0		
Other	1	0	2	0	0		
Total	3	3	3	3	1		
<b>Illness/sickness of family or loved one</b>							
Large urban or metropolitan	0	0	4	2	0	12	
Small urban	0	1	1	0	0		
Rural	0	0	1	0	0		
Other	1	1	0	1	0		
Total	1	2	6	3	0		

## RIDERSHIP AND REVENUE LOSS

When asked to comment about ridership or revenue loss, respondents described the following experiences (some general statements were shared by multiple survey respondents):

- April has started much worse than March ended.
- An ongoing downward spiral in trips and fares/contract revenue. Revenue losses will continue to increase.
- Fare collection has been suspended, which reduces revenue.
- Sales tax loss would represent a 50 percent loss for a month.
- Limited capacity to 10 maximum including operator on fixed routes.
- Reduced university service.
- Medicaid trips decreased.
- Paratransit cancellations.
- Charters canceled, and advertising revenues impacted.
- Ridership decreased 80 to 85 percent due to service limitations, which reduced revenues.
- Ridership has significantly decreased.
- There are significant ridership losses—as much as 50 percent.
- Anticipate significant fare box and contract revenue losses.
- While ridership has significantly declined, the use of assets has increased due to social distancing and limiting the amount of riders per vehicle.
- Expect to continue to experience negative impacts beyond the pandemic period.

Of the 48 total responses to the survey's request for information about ridership or revenue lost (provided as a percent, compared to the expected service in March 2020), many indicated significant losses as shown in Figure 10. Table 7 presents the average amount of ridership and revenue lost among transit agencies of different types, with large urban or metropolitan transit agencies experiencing the greatest average ridership losses (62.5 percent) and small urban transit agencies experiencing the greatest average revenue losses (64.5 percent). For all respondents, ridership was down, on average, by 57.5 percent, and revenue was down, on average, by 56 percent.



**Figure 10. Ridership and Revenue Loss**

**Table 7. Average of Ridership and Revenue Losses by Agency Type**

Agency Type	Average of Lost Ridership (%)	Average of Lost Revenue (%)
Large urban or metropolitan	62.5	57.5
Small urban	60.0	64.5
Rural	53.7	53.8
Other	54.0	37.5
<b>Average</b>	<b>57.5</b>	<b>56.0</b>

Transit agencies that experienced revenue losses were asked to share the amount of revenue lost, by category, due to COVID-19 circumstances and to indicate whether those amounts were calculated for a period lasting one week, one month, or for the cumulative time since the COVID-19 response began. Revenue categories available to select in the survey included fare revenue, contract revenue, local sales tax revenue, and an option to write in another source ("other"). Table 8 summarizes fare, contract, and local sales tax revenue losses by time period, and Table 9 presents the revenue losses in other categories.

**Table 8. Fare, Contract, and Local Sales Tax Revenue Losses**

	<u>Time Period</u>	<u>Average</u>	<u>Maximum</u>	<u>Minimum</u>
<b>Fare revenue loss estimate</b>	Cumulative	\$409,205	\$1,000,000	\$27,614
	Per month	\$184,436	\$1,800,000	\$500
	Per week	\$1,946	\$6,000	\$75
<b>Contract revenue loss estimate</b>	Cumulative	\$50,000	\$50,000	\$50,000
	Per month	\$112,701	\$586,000	\$1,200
	Per week	\$6,397	\$21,666	\$500
<b>Local sales tax loss estimate</b>	Cumulative	\$15,000,000	\$15,000,000	\$15,000,000
	Per month	\$2,400,000	\$6,800,000	\$300,000
	Per week	n/r	n/r	n/r

*n/r = no response in this category*

**Table 9. Other Revenue Losses**

<b>Leases</b>	50%	Per week
<b>Medicaid</b>	\$5,500	Per week
<b>Advertising</b>	\$4,000	Per week
<b>Parking Revenue</b>	\$10,000	Per month
<b>Investment Income</b>	\$25,000	Per month

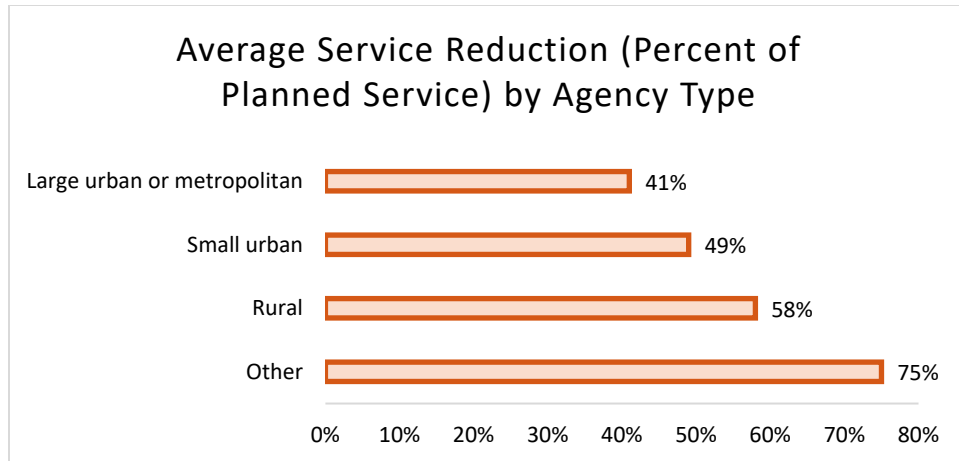
## SERVICE CHANGES

Changes to transit service are expected as a result of any impacts to transit staffing and revenue or rider circumstances. To learn more about the service changes that occurred in response to COVID-19, the survey asked whether respondents implemented service reductions and whether the transit agency had plans to maintain service for specific vulnerable groups. Of the 49 respondents, 30 stated their agency would reduce service in some way. Table 10 breaks down these responses by agency type. Figure 11 describes the average amount that service was reduced among each type of agency compared to the planned level of service in March 2020. Of the 30 agencies that reduced service, half reduced service by at least 50 percent, with three rural agencies and one senior living center completely suspending service.

**Table 10. Service Reductions by Agency Type**

<b>Agency Type</b>	<b>Number of Agencies that Reduced Service</b>	<b>Percent of Agencies that Reduced Service</b>
Large urban or metropolitan	10	83%
Small urban	8	67%
Rural	10	50%
Other	2	40%



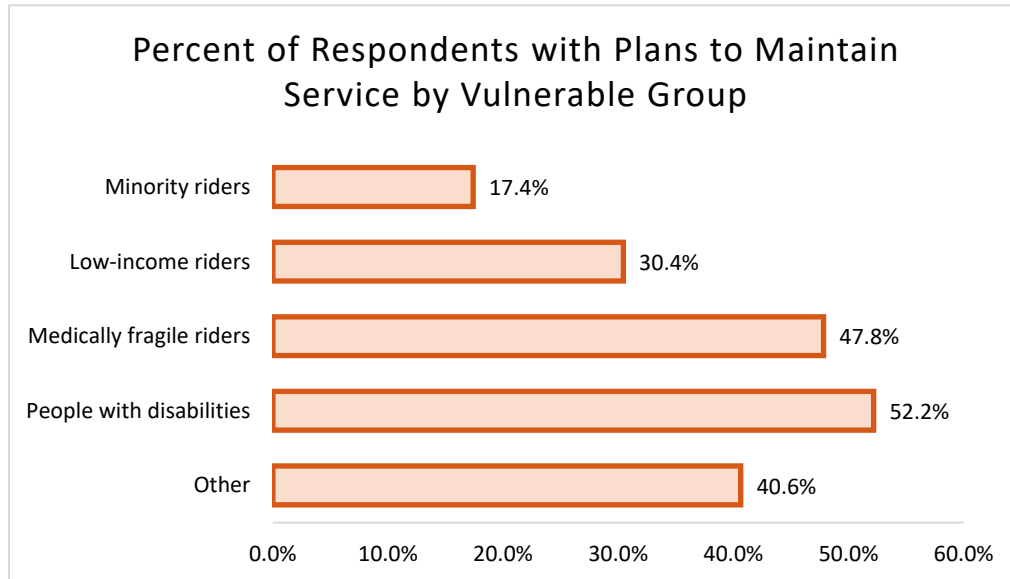


**Figure 11. Scale of Service Reduction by Agency Type**

Transit service is often a critical source of mobility, and without service, many people are left without access to vital services. To learn more about how transit agencies accounted for this fact, the survey asked whether respondents had developed plans to maintain service for four groups (with the option to write in others) including people with disabilities, medically fragile riders, low-income riders, and minority riders. Thirty-two respondents indicated that their transit agency had plans in place to maintain service for at least one group. Figure 12 presents the percent of respondents that stated their agency had plans for each group. The respondents that indicated they had other plans outlined their initiatives as follows:

- All our trips are per household only. Therefore, no one that does not already come in close contact in a home environment can ride at any one time.
- Continued access to taxi services and continued access to reduced-occupancy demand-response vehicles.
- Free general public rides (in county) to essential services.
- Only offering transportation for dialysis and other medical appointments.
- Maintain paratransit hours even though fixed routes have been shortened.
- Maintain transit for essential goods and services access.
- Riders with medical needs and disabilities are receiving normal service.
- We have reduced our regular service but are still running to serve those that require transit service.
- We will use demand-response vehicles to pick up seniors and people with disabilities for trips to the grocery store or pharmacy to ensure they are able to obtain essentials.
- We will not leave anyone behind. As riders call in to request service, we are working with them and partner organizations to maintain a steady level of service.
- We are providing shuttle service for individuals without other transportation to obtain COVID-19 testing (at the request of public health officials).
- We are providing meal delivery boxes to senior independent living centers and our paratransit customers through a partnership with HEB and the Food Bank.
- We started a dial-a-ride service versus our previous call-in-advance model.
- We have not reduced service for these populations and have increased extra-board operators for service continuity, and we are working with the city to provide extra services to these populations.
- When it was possible, we encouraged staff to perform single trips (no other passengers) for our medically fragile riders.

- Work with local organizations to determine how transit can fill gaps in order to aid people to access medical services and food.



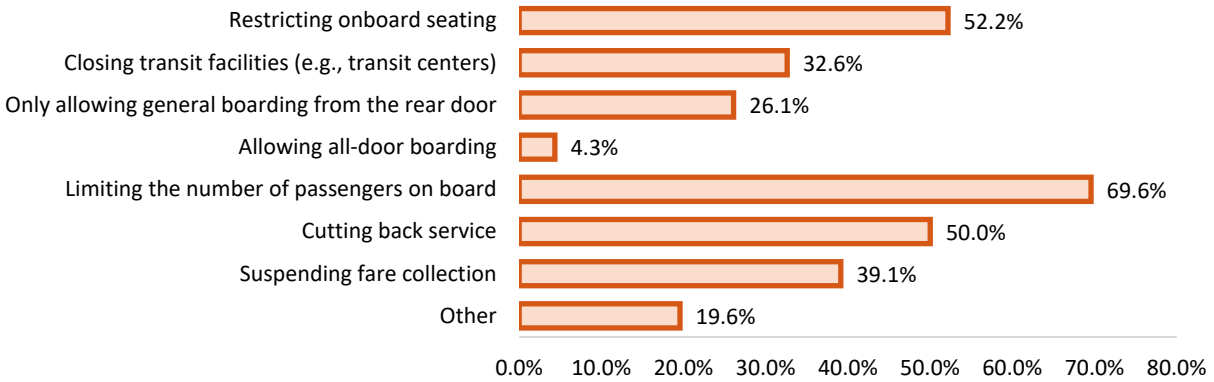
**Figure 12. Plans to Maintain Service for Specific Vulnerable Groups**

## SOCIAL DISTANCING

One way to combat transmission of infectious diseases, including COVID-19, is by maintaining physical distance between people—social distancing. When asked about social distancing practices, 46 respondents shared information about how their transit agency was requiring or facilitating the practice. Figure 13 presents the percent of respondents that indicated they had enacted specific social distancing practices. Unique social distancing strategies—submitted as written responses and indicated in Figure 13 as “other”—included the following:

- Blocked every other seat on the bus to limit potential for close contact.
- Installed a barrier between the operator and passengers.
- Passengers are being directed to allow 6 feet between each other (no need to limit the number of passengers on board at any one time due to reduced ridership).
- Persons per vehicle is always low due to sparse population.
- Placed social distancing marks at bus boarding areas at the terminal.
- Transit facilities are limited to staff only.
- Limited seating in passenger lobby to promote social distancing and allowed no more than 10 people.

### Percent of Respondents Indicating Use of Specific Social Distancing Actions



**Figure 13. Actions to Limited Social Interaction**

### PREPAREDNESS

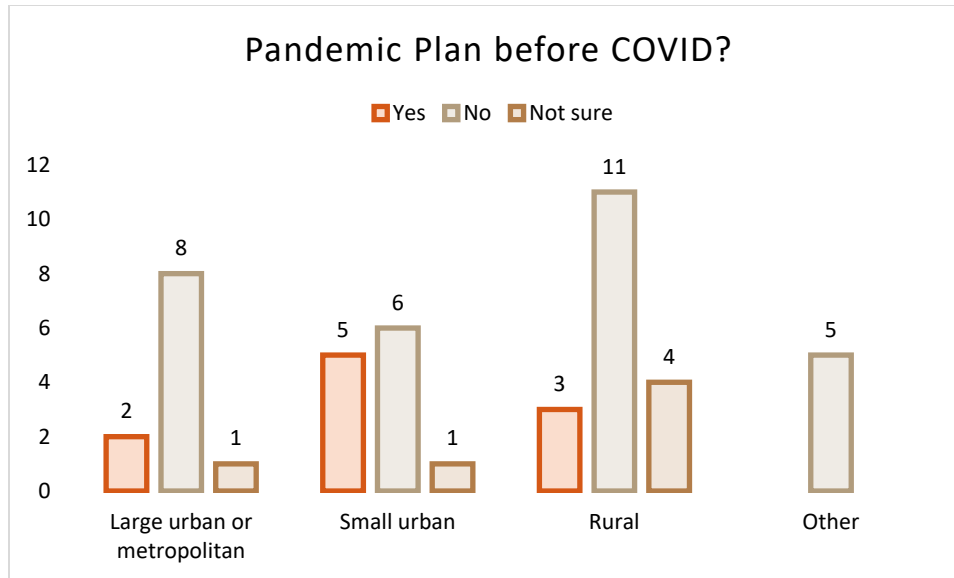
When managing public health and other emergency situations, prevention and preparedness are critical. Many transit agencies are members of a larger organization dedicated to emergency response (e.g., in the Houston, TX, area, transit agencies report to the relevant county Office of Emergency Management during hurricanes to assist with evacuation transportation). The survey asked respondents to indicate whether they contribute to organized emergency responses and whether the emergency response organization they support or the transit agency itself had a pandemic plan prior to COVID-19.

Table 11 presents the responses (yes, no, or not sure) to the following three questions (of the agencies with a plan before COVID-19, two were large urban or metropolitan, five were small urban, and three were rural agencies, as shown in Figure 14):

1. Is the transit agency a member of an emergency response organization?
2. If yes, did the organization have a plan for handling pandemics?
3. Did the respondent's transit agency have a plan for pandemics prior to COVID-19?

**Table 11. Emergency Response Organizations and Pandemic Plans**

	Member of response organization?	Was there an organization plan for pandemics?	Prior to COVID-19, did the agency have a pandemic plan?
Yes	28	20	10
No	14	2	30
Not sure	4	6	6



**Figure 14. Pre-COVID Pandemic Plans by Agency Type**

## INNOVATIONS AND LESSONS

Survey respondents were given the opportunity to share additional information regarding their innovations or lessons learned during the COVID-19 pandemic. The following list summarizes these responses:

- We are decreasing the number of riders per vehicle at one time when possible, spreading riders out in vehicles to reduce viral spread, and asking screening questions before scheduling rides.
- Our agency is creating a short video on services and steps taken to mitigate risks, personal protective equipment (PPE) used, etc.
- During the COVID-19 pandemic, we set in place procedures to enhance sanitation measures:
  - Vehicles and facilities are disinfected frequently, with disinfectant stations placed throughout the facility.
  - Additional procedures were set in place for close-contact transport of wheelchair clients. Drivers must announce the requirement of non-verbal communications during the loading, unloading, and four-point tie-down procedure unless communication is absolutely necessary. This will prevent or minimize the spread of bodily fluids such as saliva. The agency set in place procedures for drivers who are required to ride on the lift with fragile riders. The driver will turn sideways in lieu of forward facing to prevent or minimize the spread of bodily fluids such as saliva. During the COVID-19 pandemic, our transit agency will not schedule more than one-half or 50 percent of the manufacturer load capacity on any given transit vehicle to abide by the social distancing rule.
  - Smaller transit vehicles carrying less than five passengers have been taken out of service to abide by the 6-foot distance rule.
  - In-office workstations assigned to staff have been adjusted to extend the distance between staff members.
- If we do reopen, we will need PPE for employees and patrons, preferably. Also, the virus is a big concern to staff who are high risk, and that would cause a driver shortage. We would need to assess the situation if our programs are back in service and if the virus is still a threat. We would need more cleaning supplies and PPE prior to being in service, and it is not clear when we would be able to get these items because currently they are on back order for a few months at the latest.

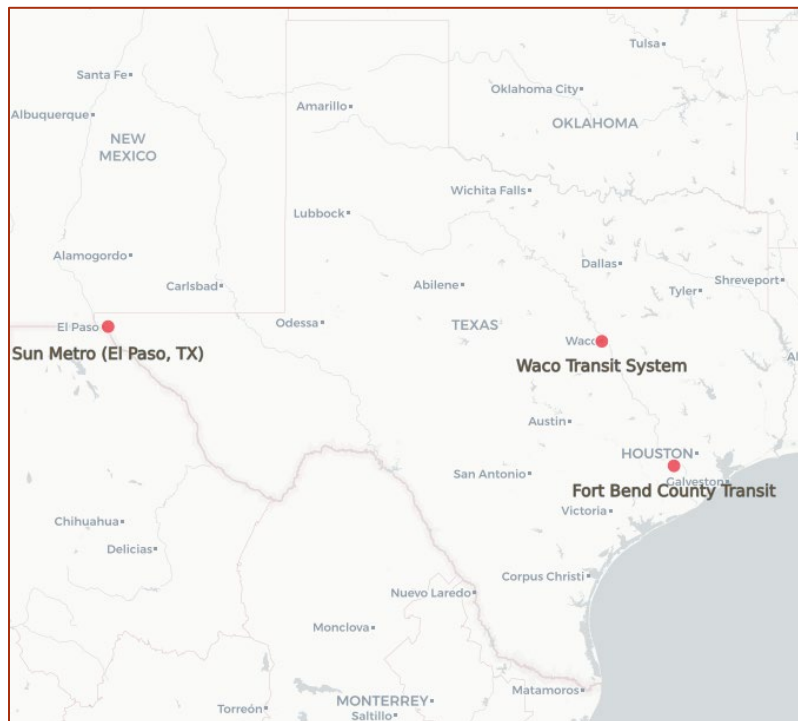
- We have increased the PPE available for drivers who load/unload individuals on lifts.
- We have limited the number of passengers per bus and dispatch another vehicle when those limits are hit.
- We trade out vehicles for cleaning at transfer points, only allow passengers who have destinations to board (no continuous riding), and do cleaning at night. In the office, we are practicing social distancing or working from home when possible.
- Mostly social distancing. With the reduction in ridership, we have been able to schedule more buses for less people, we have increased sanitizing, and we are wearing PPE and suggesting passengers wear PPE.

## CASE STUDIES

To provide a more detailed understanding of the Texas transit industry's experience responding to the COVID-19 pandemic, the research team identified three transit agencies, representing diverse service areas and agency sizes, to highlight in case studies via a secondary data collection interviews (the case study interview guide is presented in Appendix C). The purpose of the following case studies is to identify, as available, detailed information on impacts, actions taken, lessons learned, notable practices, and policy implications at the local, regional, state, and national levels (if appropriate). Table 12 identifies the case study transit agencies and highlights each agency's interesting characteristics. Figure 15 shows each case study agency's location within Texas.

**Table 12. Case Study Transit Agencies**

Transit Agency	Agency Type	Interesting Characteristics
Sun Metro (El Paso, TX)	Large urban	<ul style="list-style-type: none"> <li>• Urban area</li> <li>• Large number of non-English speakers</li> <li>• Border environment</li> </ul>
Fort Bend County Transit	Rural	<ul style="list-style-type: none"> <li>• Rural service in very low-density areas combined with direct and frequent service to high-density areas</li> <li>• General public demand-response service over large distances, requiring more vehicles/miles for fewer riders</li> </ul>
Waco Transit System	Small urban	<ul style="list-style-type: none"> <li>• Small city</li> <li>• Unique pandemic service model for fixed route</li> </ul>



**Figure 15. Case Study Agency Locations**

## SUN METRO—CITY OF EL PASO

A department of the City of El Paso, Sun Metro currently operates 171 buses, 36 articulated buses, and 6 streetcars over 59 fixed routes and one streetcar route. Sun Metro has 7 terminals, some of which function as a transfer point for trips transferring to/from El Paso County Transit (the area's rural transit operator).

Sun Metro's fixed-route service is operated and maintained by city employees. For paratransit service (called LIFT), Sun Metro uses a contracted service provider for management and operations, but the city supplies the vehicles (67) for this service. All of Sun Metro's vehicles (both fixed route and paratransit) are wheelchair accessible.

Table 13 summarizes the key performance metrics for Sun Metro.

**Table 13. Sun Metro—City of El Paso Agency Metrics for Fiscal Year 2018**

<b>Metric</b>	<b>Total</b>
Service area population	747,495
Service area size (square miles)	250
Service area population density	2,989.98
Total operating expense	\$63,685,758
Fare revenue	\$8,152,314
Fare recovery ratio (operations expenses covered by fares)	12.8%
Passenger trips	13,115,932
Revenue hours	709,900
Revenue miles	10,002,320
Operating expense per passenger trip	\$4.86
Operating expense per revenue hour	\$89.71
Operating expense per revenue mile	\$6.37
Passenger trips per revenue hour	18.48
Passenger trips per revenue mile	1.31
Vehicles operated in maximum service	386

---

## COVID-19 RESPONSE

Prior to the COVID-19 pandemic, the City of El Paso's emergency preparedness team (which Sun Metro participates in via a representative) established an emergency continuity management plan with protocols for handling health emergencies, although these protocols were not geared to responding to the nature and magnitude of a situation like COVID-19. Sun Metro was quick to adopt the guidelines from CDC and emerging best practices, identifying its buses, operators, and other staffing as necessary/critical to the community, but also instituting a rear-door loading policy and reducing the level of transit service.

By March 2020, Sun Metro's ridership on the fixed-route system had decreased (because of the pandemic) from 25,000 rides per day to about 8,000 per day, a reduction of 61 percent. In response, Sun Metro took the following actions in late March and early April:

- During the week of March 23–March 29, Sun Metro reduced its fixed-route service hours and routes on all days of the week to match its typical Sunday services. As a result, Sun Metro suspended service on 26 routes and reduced service hours on the remaining routes—a reduction of about 56 percent of revenue vehicle hours compared to a typical weekday service level.

- On March 23, drivers were asked to sign up for a weekly work schedule that included three days operating buses, two days telecommuting, and two days off. Drivers' weekly work shifts ranged between 15 and 32 hours a week, and no drivers were laid off or furloughed.<sup>1</sup>
- On March 23, Sun Metro stopped operating its streetcar service.
- On March 25, Sun Metro's reduced service went into effect with policies that required rear-door boarding (for those that did not require use of the lift at the front of the bus) and suspended fare collection.
- On March 29, driver assignments were finalized.
- In late March, Sun Metro launched information campaigns for riders, the general public, and employees.
- On April 3, Sun Metro enforced social distancing by closing every other seat and by cordoning off the area directly behind the driver.
- In the first week of April, Sun Metro began operating extra standby buses on the heavier routes for overflow passengers. This allowed enforcement of social distancing by reducing demand on reduced-capacity vehicles.
- In the first week of April, Sun Metro ramped up its cleaning campaign of vehicles and facilities via a third-party contract. As of this writing, the transit agency continues its new deep-cleaning process for vehicles, but the contract for facility deep cleaning ended on May 31.
- In April through June, Sun Metro completed a mockup of a driver barrier prototype and installed it on three buses in early April and collected feedback from drivers about the barriers throughout the rest of April and May. Using the lessons from the prototypes, Sun Metro initiated production of barriers in May, and installation of the barriers began on June 1 (continuing through the month).

---

### Information Sharing

In late March 2020, Sun Metro launched a dual-pronged information campaign that was focused on two groups—riders/the general public and employees:

- Rider/general public information: Sun Metro prepared and installed posters for their riders and the general public that included information on the fixed-service changes and disruptions, social distancing, the importance of precautionary activities such as washing one's hands and not touching one's face, and symptoms of COVID-19. The posters were mounted on the bus seats that were not available for use and by the back door (where passengers boarded and alighted from the bus). Sun Metro also placed posters in each of the transit agency's seven terminals. Due to the uncertain development of the pandemic, decals were added to all Sun Metro shelters to advise passengers that changes in service may occur at any point in time. Similar information about safety on transit and the changeable conditions was posted on Sun Metro's website and social media pages. To emphasize a key message, the phrase "Practice Social Distancing" intermittently appeared on each bus's overhead banner.
- Employee information: Sun Metro prepared and installed posters for employees containing information about revised leave policies and other administrative announcements as well as COVID-19-specific safety considerations (as on the rider posters). These posters were mounted in Sun Metro's main facility at the one entrance that remained open, where all employees entered the building.<sup>2</sup> The employee posters were also mounted in high-traffic areas in the main building (e.g., the driver break rooms, near the time

---

<sup>1</sup> Sun Metro was also able to keep all of its administrative staff without layoffs or furloughs, with some serving in other roles to help with the city's efforts to conduct contact tracing.

<sup>2</sup> When employees entered the facility, their temperature was taken, and if they were not running a fever, it was confirmed they were wearing face masks before they were granted entry.



clocks, and at bulletin board locations) and at the transit agency's other three locations: the maintenance building, the streetcar facility, and the downtown depot.

---

### Cleaning Campaign and Costs

In early April, Sun Metro increased the depth of its cleaning for both vehicles and facilities (practices that continue, as of this writing, for transit vehicles). Pre-pandemic, Sun Metro would conduct deep cleaning of vehicles once a month. The deep-cleaning activities included cleaning the vehicle seats and stanchions with soap, water, and towels. Beginning in late March, the frequency of deep cleaning was doubled to twice a month, and maintenance crews began using an electrostatic sanitizing sprayer. A similar cleaning campaign focused on Sun Metro's facilities.

Over April and May, Sun Metro's third-party cleaning contract cost \$16,500 for cleaning the buses and \$36,500 for cleaning the facilities. In addition, Sun Metro purchased approximately \$30,000 in cleaning supplies at the beginning of the pandemic, noting that it is unclear how many of the supplies are still unused. This bulk purchase was considered proactive because, at the time, cleaning supplies were in short supply.

Not included in these cleaning costs are the costs of PPE (masks and sanitation supplies that the City of El Paso provided to Sun Metro as a city department) that were distributed to operators and staff.

---

### Services for Persons with Disabilities

While fixed-route service was cut down to Sunday-level service, Sun Metro made the decision to maintain its paratransit (LIFT) service hours (Weekdays 3:45 a.m. to 11:30 p.m., Saturdays 4:15 a.m. to 11:00 p.m., and Sundays 4:45 a.m. to 10:00 p.m.) despite similar reductions in ridership. Sun Metro's free-fare policy included LIFT trips.

While the significant reduction in LIFT ridership was a result of customers choosing not to make trips at the pre-pandemic level, Sun Metro staff also encouraged LIFT customers to reduce their non-essential trips in order to reduce their exposure to the virus. Because of the reduced demand, MV Transportation, the LIFT contractor, laid off approximately 25 operators.

Similar to the fixed-route service, Sun Metro instructed MV Transportation to implement social distancing on the paratransit vehicles. Because the LIFT vehicles are smaller, this effectively meant shared rides would be eliminated.

Since late March, several of Sun Metro's customers that use wheelchairs have continued to use the bus service despite Sun Metro bus operators' encouragement (but not mandate) to use LIFT service instead to reduce the riders' and drivers' potential exposure to the virus.

To help Sun Metro riders that use wheelchairs get to COVID-19 testing stations, Sun Metro retained the services of a local human service agency with wheelchair-accessible vehicles to transport customers to these locations at no cost to the customer.

---

## BARRIERS AND CHALLENGES

---

### Supplies

In March 2020, cleaning supplies, PPE, masks, etc., had become scarce. Fortunately for Sun Metro, the City of El Paso was able to secure PPE, masks, and sanitation supplies for all of its departments, including Sun Metro. Despite the support of the city's buying power and coordination, cleaning and sanitation supplies were limited. Not

knowing how long the pandemic would last, Sun Metro made a bulk purchase of cleaning and sanitation supplies (\$30,000) that have not yet run out.

---

#### Funding and Fares

As mentioned previously, Sun Metro's pre-pandemic weekday ridership was approximately 25,000 passenger trips. By mid-March, weekday ridership on the fixed-route system had declined to 8,000 passenger trips, a 61 percent reduction. With the free-fare policy that went into effect in late March, Sun Metro estimated that its 100 percent reduction in fare revenue (including fare box revenue, revenue from ticket vending machines, and ticket window sales) equates to about \$547,000 per month.

Sun Metro also benefits from sales tax revenue, which has been reduced by approximately 16 percent since January 2020. Comparing the sales tax revenue from June 2019 and June 2020, the sales tax revenue for Sun Metro is down \$637,000.

While there are no quantifiable costs to support this, Sun Metro suspects that cost associated with retaining all of the transit agency's staff through the substantial ridership declines seen during COVID-19 is likely to be less than the costs associated with layoffs and the subsequent efforts to recruit, hire, and train new staff when pre-pandemic ridership levels resume. In other words, in the long run, the extra cost to keep staff on board will translate to savings.

---

#### Operator and Staff Issues

Before Sun Metro's reduced service was implemented in late March, Sun Metro was experiencing staffing shortages as the pandemic worsened, with bus operators and staff callouts occurring more and more frequently as a result of personal health concerns or sickness, sickness of family members, and childcare issues.

Coupled with the significant decrease in ridership, Sun Metro wanted to implement a plan for their operators that would not necessitate having to lay off any operators while also facilitating service reductions. The plan that was implemented (three days driving, two days telecommuting, and two days off) accomplished both goals. At the same time, Sun Metro also implemented changes in shifts or report times and a reduction in hours for non-operating staff (maintenance and administrative staff). While the majority of administrative staff were able to work from home full-time, some employees alternated between the office and telecommuting.

---

#### Operations Issues

In the transition from standard to reduced service, the transit agency was, at first, challenged by demand for service that exceeded the reduced capacity of its vehicles (to ensure social distancing practices could be maintained). After approximately one week, Sun Metro implemented a process to use standby vehicles for overflow passengers on the high-demand routes.

---

### RECOVERY AND NEXT STEPS

Sun Metro staff believe their efforts to force social distancing on fixed-route and paratransit vehicles, the deep-cleaning protocols of vehicles and facilities, and the transit agency's dual-pronged information campaign were all very successful. The transition to the reduced service was implemented with few flaws and was accomplished in a matter of days. The information campaign combined with the free-fare policy also assisted rider understanding and acceptance of Sun Metro's actions.

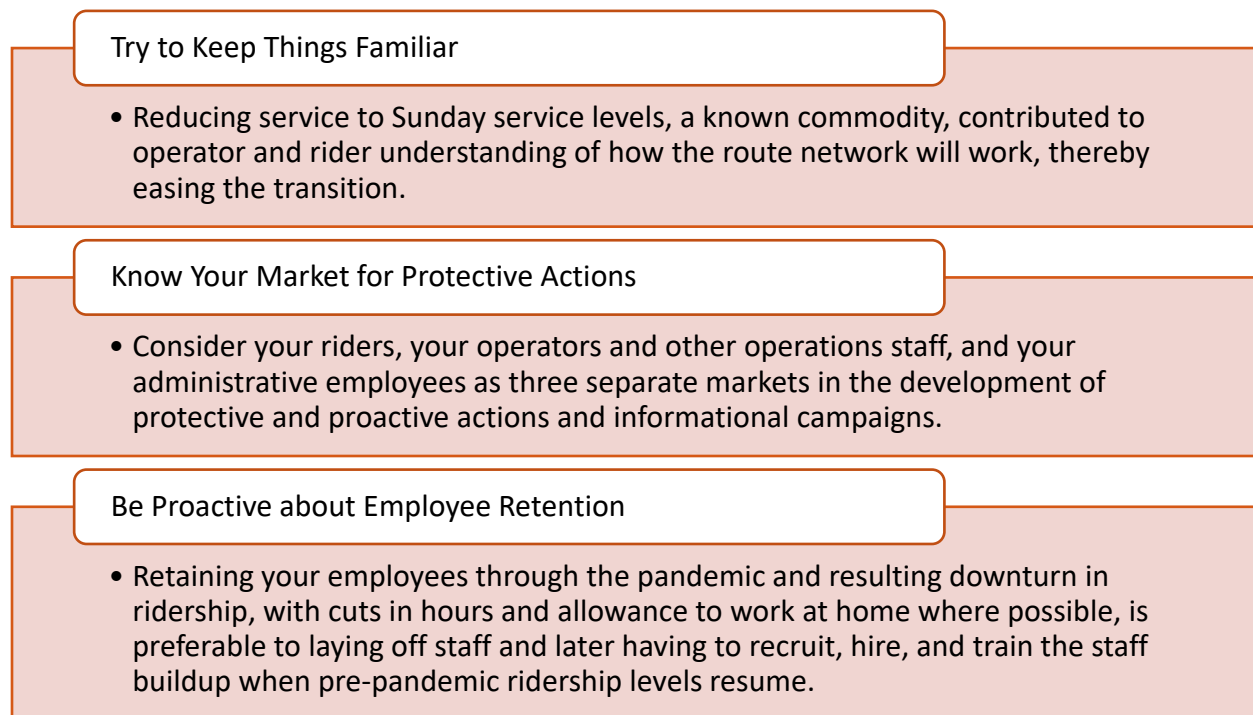
Sun Metro is planning to maintain the current course of action at least through July and into August. If the intensity of the pandemic continues, Sun Metro will continue its efforts to protect riders and employees, with forced social distancing, protective barriers, enhanced cleaning, and relevant informational campaigns.

Certainly, the lost revenue from fares, sales tax, and parking presents a big obstacle to overcome. While Sun Metro is planning to re-institute pre-pandemic service levels with fares in August, the transit agency also realizes that the pre-pandemic level of ridership may take a while to rebound. It is possible that this may take 6–18 months. If the pandemic continues and ridership does not rebound quickly, it may be necessary to delay the resumption of full service or make other service adjustments.

---

## KEY LESSONS

Figure 16 highlights three key lessons learned from Sun Metro that are applicable to the industry and can directly influence policies and practices for dealing with pandemics and other times of crisis such as natural disasters.



**Figure 16. Sun Metro's Key Lessons**

## FORT BEND COUNTY TRANSIT

The Fort Bend County Public Transportation Department (Fort Bend County Transit [FBC]) is a rural transit district that provides transit service throughout Fort Bend County, TX. FBC's transit service includes commuter routes between key population centers in Fort Bend County (e.g., the city of Sugar Land) and three employment centers in Harris County, general public demand-response service that operates throughout the county, a point-deviation transit service in Richmond and Rosenberg, and some dedicated service options for older adults and people with disabilities. The Fort Bend County Commissioners Court is FBC's local governing body. Table 14 summarizes key performance metrics for Fort Bend County.

**Table 14. Fort Bend County Agency Metrics for Fiscal Year 2018**

<b>Metric</b>	<b>Total</b>
Service area population	685,345
Service area size (square miles)	861
Service area population density	795.99
Total operating expense	\$7,784,536
Fare revenue	\$787,832
Fare recovery ratio (operations expenses covered by fares)	10.1%
Passenger trips	392,613
Revenue hours	82,601
Revenue miles	1,754,794
Operating expense per passenger trip	\$19.83
Operating expense per revenue hour	\$94.24
Operating expense per revenue mile	\$4.44
Passenger trips per revenue hour	4.75
Passenger trips per revenue mile	0.22
Vehicles operated in maximum service	132

---

## COVID-19 RESPONSE

Prior to the COVID-19 situation, Fort Bend County developed a simple one-page response plan for dealing with pandemics. After it was clear that COVID-19 would require a more significant and thorough response, FBC administration met with other county staff to review what their response would need, and FBC moved forward with developing a transit-specific response plan. Led by FBC's transit asset, safety, and security manager, FBC developed a response to COVID-19 that included considerations for:

- Social distancing and disinfecting vehicles:
  - Signage on vehicles to block seats to enforce social distancing.
  - Nightly disinfecting of vehicles.
  - Protocols for response if an operator encountered someone with symptoms of COVID-19 including how and when to remove the vehicle from service and conduct in-depth disinfecting.
- Remote work for employees.
- Return-to-work plans, including employee screening for illness and office practices for social distancing.
- Specific physical needs (e.g., PPE and cleaning supplies).
- Strategies to receive, process, and act on information from CDC and other similar bodies.

The FBC transit asset, safety, and security manager is the transit agency's main point of contact for pandemic-related actions and information. This person is tasked with ensuring ongoing coordination of the transit agency's response, including the following activities:

- Monitoring and dissemination of information from all relevant sources.
- Development and notification of expectations and requirements for riders, staff, and service contractors.
- Represent transit in the county's risk management group. This group met daily at the beginning of the pandemic response and, as of this writing, has transitioned to weekly meetings.

As of this writing, FBC has reconfigured its office space to facilitate social distancing practices while at work, has installed partitions in the reception areas, and is investigating how to implement barriers to separate drivers from passengers. Additionally, in an effort to keep people safe, ridership is limited to no more than 50 percent of the vehicle's actual capacity, and FBC is not collecting fares. The transit agency is researching how it might implement a shield between passenger seats to increase vehicle capacity. However, according to FBC, this concept may introduce safety/comfort challenges.

To sanitize FBC vehicles when first responding to COVID-19, the transit agency implemented new practices to increase the frequency and intensity of its existing vehicle-cleaning procedures (facility cleaning was already at satisfactory levels). In May 2020, FBC purchased a system from Halosil International that can treat an entire vehicle (interior) with a disinfectant agent in a process that takes 20 minutes and allows the transit agency to quickly return vehicles to service. Figure 17 presents an example of this system.



## HaloFogger® FLX

The HaloFogger FLX provides flexibility in nozzle positioning while maintaining the precision of broad spectrum disinfectant delivery. The base FLX unit can be located outside the room being treated while the detachable nozzle assembly operates inside the room, enabling users to treat multiple spaces in succession with a single base unit.

**Figure 17. FBC's Vehicle Disinfectant System <sup>3</sup>**

---

### Access to Information

Throughout the COVID-19 response, FBC received good direct information from the county (including health and human services, emergency management staff, and the county judge) describing the status of the disease and the county's path forward. While information sharing was useful, the rapidly changing nature of the circumstances led to rapid-fire information dissemination that sometimes led to quick changes and contradictory understanding. This fact is one of the reasons FBC elected to have a single person that was responsible for receiving and processing information before distributing it to the rest of the transit agency.

---

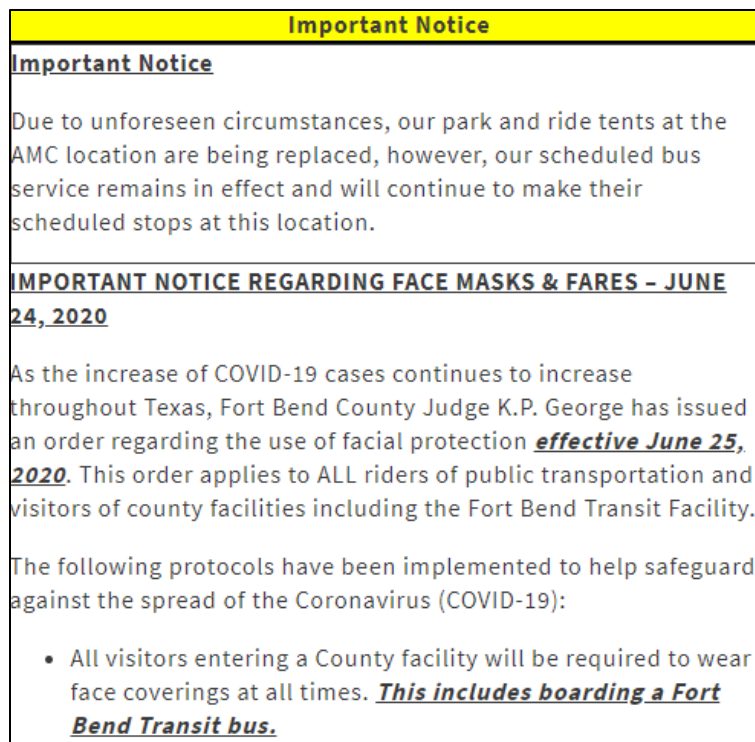
<sup>3</sup> Source: Halosil International. The Halo Disinfection System. <https://halosil.com/products/the-halo-disinfection-system/>.

To learn more about how to respond as a transit agency, FBC worked directly with other transit agencies in the local areas and throughout the state to share information and inform each other about successful practices. According to FBC's representative, traditional sources for guidance related to transit operations (the Federal Transit Administration, American Public Transportation Association, and others) did not, initially, have many useful resources, and most of the information that was widely available came from non-transit sources such as CDC.

---

### Communication and Rider Engagement

FBC did not experience any challenges communicating with riders. The transit agency has two ways to share information and get feedback (its website and a staffed information phone line) and found that these were effective for the purposes of updating riders and receiving information about their questions or concerns. FBC staff noted that calls to the information line would increase/decrease in relationship to count/state mandates related to opening or closing businesses—indicating that riders were not interested in transit if they did not have to get to work or have the option to go to typical recreational destinations. Figure 18 presents an example of a rider notice from FBC's website.



**Figure 18. Screenshot of FBC's Website Notice to Riders**

---

### Supplies

FBC staff initially struggled to obtain physical supplies to respond to COVID-19 such as PPE and cleaning supplies. However, this challenge was quickly remedied when the county made a large bulk purchase on behalf of all county departments. According to FBC's representative, before implementation of the Halosil cleaning system discussed previously, cleaning supplies cost the transit agency around \$2,300 in the time between when its response to COVID-19 began and when it took the survey in early April 2020—approximately one month.

---

## Funding and Fares

FBC received funding from the Coronavirus Aid, Relief, and Economic Security Act (CARES Act), which helped to fund FBC's service operations and supplied limited funding for administrative expenses. For example, labor costs associated with enhanced cleaning procedures are estimated to cost the transit agency an additional \$1,200 per week (before implementation of the Halosil cleaning system discussed previously).

According to FBC staff, every month the transit agency operates with reduced service and does not collect fares results in lost revenue from fares (\$65,000 per month) and contracts (\$53,517 per month). Historically, FBC earns approximately 10 percent of its operating revenue from fares.

---

## Decision Makers and Decision-Making

According to FBC staff, the county commissioners were quick to support the necessary expenditures (e.g., purchases to facilitate remote work for a large portion of county staff) in response to COVID-19 and contributed to an efficient and transparent response.

---

## RECOVERY AND NEXT STEPS

The previous sections document FBC's experience responding to COVID-19. As of this writing, COVID-19 continues to spread and is likely to threaten the funding for transit, limit ridership due to safety concerns, and introduce new policies and practices that may be costlier. This section outlines FBC's expectations for the future and its plans for moving beyond pandemic operating conditions.

FBC has already initiated the process of recovering from the impacts of COVID-19 by re-examining its priorities for the coming year and deferring projects where possible. This effort helped the transit agency balance its budget for the remaining service year and helped avoid the efforts required to identify and obtain new sources of revenue.

As of this writing, FBC is operating at limited capacity by implementing a restriction that limits capacity to 50 percent of the vehicle's standard load. Additionally, ridership fluctuates but declined by as much as 60 percent because much of the ridership before COVID-19 came from commute trips, and the majority of these riders are now working from home.

Looking forward, in anticipation of continued ridership limitations and cognizant of the changeable conditions associated with COVID-19, FBC intends to actively manage its budget and proactively delay or modify new services or projects to ease potential revenue challenges. Additional revenue would help the transit agency procure driver shields.

Of the practices implemented during COVID-19, FBC anticipates maintaining its new vehicle-disinfecting practices because they are cost-effective and do not add large amounts of time to regular vehicle maintenance schedules. Additionally, the transit agency expects to maintain its remote work practices to facilitate balance for staff and maintain flexibility should conditions like those experienced during COVID-19 arise in the future. Many of the policies and practices developed during the COVID-19 response may be relevant to FBC's continuity plan (currently focused on hurricanes), and FBC staff will update that document as appropriate.

According to FBC staff, the biggest unknown element of its recovery and next steps has to do with whether there are new waves of virus and how the scope and scale of those issues impacts service. Essentially, the unknown is a key challenge, but FBC anticipates using the same strategies to operate in the future and has committed to a process intended to capitalize on the experience so far by conducting its own internal documentation process

outlining lessons learned. These lessons will be leveraged to update the evolving response plan so that FBC is ready for future pandemic (or similar) conditions.

---

## KEY LESSONS

Figure 19 highlights three key lessons learned from Fort Bend County that are applicable to the industry and can directly influence policies and practices for dealing with pandemics and other times of crisis such as natural disasters.

### Active Learning Processes Are Important

- It is important to take notes on what works and what does not when dealing with unprecedented conditions so you can learn from your experiences and adapt as you go and prepare for the future. This includes developing formal internal lessons-learned documentation and conducting internal surveys to see what worked and what presented an opportunity for improvement.

### Dynamic Communication Enhances Response

- Making sure communication is effective and clear and that people expect it to be frequent and ever changing is very important for managing expectations and keeping people up to date. It also helps with improving transparency (which builds trust) and helps to make sure people working remotely are kept in the loop and know they are an important part of the team.

### Good Practice Is Good beyond the Pandemic

- From effective cleaning practices to policies that allow staff to enjoy greater work/life balance (telework), many of the practices and policies that have been implemented during the pandemic will be useful moving forward and improve transit service and management.

***Figure 19. Fort Bend County's Key Lessons***



## WACO TRANSIT SYSTEM

The Waco Transit System (WTS) is a department of the City of Waco that provides both urban and rural transit service in the Waco region. WTS is managed by a contracted service provider—RATP Dev—under an agreement with the City of Waco. In the Waco urbanized area, WTS provides fixed-route bus service, a downtown bus circulator called the Silo District Trolley, complementary ADA (Americans with Disabilities Act) paratransit, and an evening demand-response service called LINK. WTS also operates campus shuttles under a contract with Baylor University. In the rural parts of McLennan County, WTS operates general public demand-response service under an interlocal agreement with the McLennan County Rural Transit District. WTS also operates as a provider of non-emergency medical transportation (NEMT) under a contract with Logisticare.

At the center of WTS's urban service in Waco is the Downtown Transit Terminal, owned by the City of Waco, which serves as a hub for WTS's Waco services and as a Greyhound station.

Table 15 presents a summary of key performance metrics for WTS.

**Table 15. WTS Agency Metrics for Fiscal Year 2018**

<b>Metric</b>	<b>Total</b>
Service area population	173,192
Service area size (square miles)	99
Service area population density	1,749.41
Total operating expense	\$6,430,496
Fare revenue	\$1,342,178
Fare recovery ratio (operations expenses covered by fares)	20.9%
Passenger trips	1,295,788
Revenue hours	78,629
Revenue miles	1,230,989
Operating expense per passenger trip	\$4.96
Operating expense per revenue hour	\$81.78
Operating expense per revenue mile	\$5.22
Passenger trips per revenue hour	16.48
Passenger trips per revenue mile	1.05
Vehicles operated in maximum service	64

---

## COVID-19 RESPONSE

Before the onset of COVID-19, WTS did not have a pandemic response plan in place but quickly recognized the need to establish a plan. WTS reached out to other transit agencies and its contractor (RATP Dev) and reviewed industry research (e.g., *NCHRP Report 769, A Guide for Public Transportation Pandemic Planning and Response*) to establish its own response plan. On March 23, 2020, WTS officially implemented its pandemic response plan including guidance for and information related to:

- Governance and decision-making.
- Prevention and education.
- Operation of service during a pandemic.
- Pandemic alert levels and corresponding staffing levels.

- General CDC recommendations.

WTS issued its first COVID-19 communication on March 5, 2020, to share information, via a flyer, about hand sanitization practices to help prevent the spread of COVID-19. On March 21, 2020, WTS issued an internal memo that described the system and service changes that were to be implemented on March 23. These changes included new procedures for cleaning and modified services, which were outlined in a March 23 press release and updates on WTS's website to help riders be aware and prepared. As of this writing, the latest change to WTS practices occurred on June 19, 2020, when the City of Waco issued an order requiring the use of face coverings in situations where social distancing cannot be ensured. This order took effect on June 20, 2020, and WTS began requiring that all riders wear a face covering.

WTS's primary goal in its pandemic response activities was to help reduce the risk of infection for transit agency employees and customers. The key activities implemented included:

- Performing enhanced cleaning of all revenue service vehicles (emphasizing hand-contact surfaces).
- Providing sanitary aids (e.g., hand sanitizer, face coverings, etc.) for employees and passengers.
- Increasing physical distance between passengers and between passengers and vehicle operators.

Implementing these activities required foresight, coordination, and employee buy-in. The following sections present additional details about WTS's immediate response to the COVID-19 pandemic and how it implemented its preventative measures in the face of a rapidly changing reality, including:

- Changes to service (e.g., reductions in service).
- Changes to fare collection.
- Changes to boarding and onboard policies.
- Changes at transit facilities.
- Changes to cleaning procedures.
- Efforts to protect and engage employees.

---

### Changes to Service

Effective March 23, 2020, WTS implemented the following changes to service:

- Reduced the span of its fixed-route bus service by approximately four hours per day so that service was available from 7:15 a.m. to 5:15 p.m. Monday through Saturday. (Normally, service runs from about 5:15 a.m. to 7:15 p.m. Monday through Saturday. <sup>4</sup>)
- Suspended the Silo District Trolley (a free downtown circulator that primarily serves Waco's shopping, dining, and art venues).
- Limited demand-response trip purposes to medical appointments, access to food, and going to or from work.

These service changes are still in effect as of July 2020 and will likely remain in effect until the COVID-19 risk is significantly reduced.

Service reductions were implemented to help reduce operators' and passengers' risk of exposure and to be in line with the City of Waco's city-wide stay-at-home orders that discouraged non-essential trips. Although the service

---

<sup>4</sup> Source: Texas A&M Transportation Institute. Texas Transit Dashboard: City of Waco.  
<https://www.texastransitdashboard.com/transit-district/city-of-waco/>.

reductions reduced the number of operators needed to run the service, WTS did not lay off or furlough any staff; instead, excess operators were tasked with other responsibilities such as serving as standby operators or performing other tasks like passenger assistance or enhanced cleaning.

---

### Changes to Fare Collection

WTS previously sold fares both at the Downtown Transit Center and on board transit vehicles. Although WTS did not discontinue fare collection, WTS did stop selling fares on board vehicles. Passengers are required to purchase their fares at the Downtown Transit Center if they do not already have a pass or other fare media. According to WTS, because all WTS fixed-route bus routes use the Downtown Transit Center, this policy worked relatively well. In practice, if passengers boarded a bus without a pass, they would be allowed to ride through to the Downtown Transit Center. The operator of the bus would contact staff at the Downtown Transit Center to let them know that a passenger would need to pay the fare when the bus arrived. When the bus arrived at the Downtown Transit Center, a WTS employee (often a standby operator) would meet the passenger and help facilitate the fare payment at the transit center.

---

### Changes to Boarding and Onboard Policies

WTS implemented several changes to policies for boarding and riding transit vehicles. For example, as a part of its initial activities, WTS began boarding fixed-route bus passengers at the back door only. Back-door boarding helped to decrease the exposure of bus operators to passengers as they moved in and out of the bus.

WTS also sought to protect operators by roping off the first three seats of each bus to be used only by individuals with mobility devices.

In addition, WTS implemented a policy that all fixed-route vehicles could have no more than 10 people on board (including the operator). Operators were expected to enforce this policy in the field, and if an operator had to pass up an individual due to this policy, the operator would contact the operations control center and request a specialized pickup for that passed-up passenger. The specialized pickup would be performed by a standby operator or other WTS staff person using a smaller agency vehicle (i.e., a service support vehicle not typically used to carry passengers).

WTS worked to implement social distancing on its vehicles by installing signs on seats that indicated the seat was unavailable (Figure 20).

Demand-response service was also subject to reduced passenger capacity rules. However, this policy was implemented by adjusting vehicle capacity limits in its demand-response scheduling software. The vehicle capacity limit varied by vehicle type and was set in the software so that no more passengers would be scheduled to be on a single vehicle than the allowed number.



*Figure 20. WTS's Sign Used to Block Off Selected Seats to Encourage Social Distancing*

Effective June 20, 2020, in line with the mayor of Waco's order, all people 10 years of age or older were required to wear a face covering over their nose and mouth when on WTS transit vehicles or at WTS transit facilities. WTS advertises this policy not only on its website and other media outlets but also on board transit vehicles and at facilities using various flyers or posters (Figure 21 shows an example). WTS has face coverings available to give to WTS passengers when needed.



*Figure 21. Example WTS Notice for Required Face Coverings*

---

#### Changes to Transit Facilities

Although WTS did not close or restrict access to any of its facilities, the transit agency implemented a policy requiring people at the Downtown Transit Center to have a destination. On-site WTS employees are empowered to ask a person his or her destination and then ensure that the person boards the appropriate bus to get to that destination. If the person does not leave the facility when the necessary bus departs, the WTS employee can ask the person to leave the premises.

WTS installed hand sanitizer dispensers at the Downtown Transit Center and implemented enhanced cleaning procedures at its passenger and operational facilities.

---

#### Changes to Cleaning Procedures

WTS enhanced its cleaning procedures on vehicles and in facilities. On vehicles, WTS increased both its frequency and depth of cleaning, which helped not only reduce passengers' and employees' risk of exposure but also increased employees' confidence and comfort. To directly combat COVID-19, WTS implemented hydrostatic cleaning of vehicles hourly and overnight.

WTS also enhanced cleaning procedures at its facilities including the Downtown Transit Center, WTS's main offices, and the transit agency's operations and maintenance facility. The enhanced facility-cleaning procedures included increases in the frequency of cleaning, increases in the depth of cleaning, and the use of disinfectants that are approved for use in killing the COVID-19 virus. WTS's ability to engage in enhanced facility cleaning is possible in part because of the number of vehicle operators available to conduct other duties due to service reductions.

---

## Efforts to Protect and Engage Employees

According to WTS, successful protection for its employees resulted from both providing physical protection for employees and providing adequate communication and engagement throughout all levels of the organization. Each aspect of the transit agency's protection effort is described as follows.

### *Physical Protection for Employees*

---

Although it was not initially feasible for WTS to install barriers to separate operators from passengers, WTS worked to keep operators distanced from passengers by implementing a rear-door boarding policy, eliminating onboard fare sales, and blocking off the front three seats of each transit vehicle for people that did not require wheelchair securement or other mobility device access to so that drivers could be further separated from passengers.

In addition, WTS procured and provided PPE and supplies to operators and maintenance staff, including:

- Face masks or coverings.
- Face shields (if desired).
- Individual hand sanitizers.
- Gloves.

WTS tried to have multiple options available for employees so that employees who are more comfortable with certain PPE (e.g., a face shield instead of a face mask) had options. WTS acted proactively at the beginning of the pandemic and was able to procure PPE and related supplies early. Although bulk orders from traditional suppliers were delayed, WTS had a large assortment of suppliers locally that helped WTS avoid issues related to a lack of PPE or supplies for those who needed them.

In addition to PPE and supplies, WTS enhanced its vehicle-cleaning procedures (as previously discussed), due in part to employees' concerns related to the adequacy of typical vehicle-cleaning procedures. WTS management responded by enhancing cleaning procedures, both to increase the safety of employees and to increase confidence in their safety.

WTS also screens operators and other higher-risk employees upon reporting to work using a contactless thermometer.

These efforts have helped WTS employees stay safe and healthy amid rising numbers of COVID-19 cases in the Waco region.

### *Communicating and Engaging with Employees*

---

Another aspect of keeping employees safe and available for work is helping employees understand the changes that are being implemented (and the reasons for them) and allowing employees to openly communicate their concerns and questions. WTS management made sure to communicate with all employees before the service and policy changes were put into effect and worked with employees to understand their concerns and generate buy-in at all levels of the organization.

In some circumstances, WTS was able to accommodate employees' needs to modify their work schedules (e.g., modifying an employee's schedule to allow the person to perform childcare duties when childcare centers were closed). In other cases, some WTS employees (especially administrative employees) were able to work from home.

All bulletins or policies about service or procedural changes were verbally reiterated to WTS employees using safety officers or WTS management.

WTS upper management consistently engaged with frontline employees face-to-face to make sure that employees understood they are fully supported and cared for. WTS management also sought to communicate openly about how everyone at WTS was affected (from frontline to administrative employees) and how everyone is needed to support the transit service through their individual contributions.

---

## IMPACTS AND CHALLENGES

This section describes COVID-19's impacts and challenges on WTS's ridership and revenue streams.

---

### Ridership

WTS estimated a nearly 60 percent loss in ridership in March 2020 and reported that this lower level of ridership has mostly remained constant throughout the pandemic—due to both an overall reduction in service (discussed previously) and state and local orders aimed at reducing travel to prevent the spread of COVID-19. The reduction in ridership has actually helped WTS in its attempts to maintain service while still enforcing onboard passenger limits and conducting enhanced cleaning. There have been very few occasions when a fixed-route vehicle reached 10 passengers (the onboard limit) and needed to bypass a waiting passenger. (As previously discussed, WTS sends a support vehicle to transport the bypassed passenger.)

---

### Revenue Streams

WTS's revenue streams have also been impacted by COVID-19. Revenue stream impacts include lost fares (due to reductions in ridership), lost contract revenue (e.g., from NEMT, charters, and other contracts for service), and other types of funding (e.g., advertisement revenue). In addition to these direct impacts, the City of Waco, which supports WTS with city general funds, will likely see some impacts on its revenues that may trickle down as impacts to WTS. For example, the City of Waco's hotel tax revenues are likely impacted by reductions in tourism activity related to COVID-19.

These funding impacts will likely have long-term implications for WTS if they are not addressed or mitigated through other sources of revenue. For now, federal assistance from the Federal Transit Administration in the source of CARES Act funds have helped WTS keep services running and staffing at normal levels.

---

## LONG-TERM IMPLICATIONS AND LESSONS LEARNED

This section describes, from the perspective of WTS, COVID-19's long-term implications and lessons learned, including:

- Rider and general public confidence.
- The role of innovation in pandemic safety.
- Pandemic preparedness.

---

### Rider and Community Confidence

As of this writing, WTS is running reduced service but hopes to eventually return to pre-pandemic service levels. However, it is unknown whether riders and the community will feel completely safe and confident riding transit right away. This lack of certainty has implications for WTS's long-term ridership and revenue forecasts as well as public opinion about the role of public transit in the overall transportation landscape.

WTS is preparing to regain rider and community confidence by both continuing its measures that keep riders healthy and developing communication plans to promote its efforts to the community to reinforce the message that transit is safe to ride. WTS hopes these efforts will help ridership grow back to its pre-pandemic levels.

---

### The Role of Innovation in Pandemic Safety

Another long-term implication of COVID-19 is how it has changed WTS's perspectives when investigating technological innovations in the transit industry. As an example, pre-COVID-19, contactless fare payment technologies were very intriguing but not necessarily seen by WTS as a need. However, COVID-19 has changed this perspective—contactless fare payment is now seen as a potential solution to the challenges of collecting fares during a pandemic. Other technologies or innovations, such as operators' barriers and innovative service delivery models, now have an additional value proposition if they help to address needs during pandemic operations. WTS anticipates that innovations that may help prepare for or mitigate a pandemic's impacts will likely be seen as more valuable than those that do not.

Specifically, WTS is already in the procurement process to have barriers installed on WTS buses to protect operators. Pre-COVID-19, barriers were mostly considered as a tool to protect against operator assaults. Now, they are a critical piece of bus equipment that also reduces operators' exposure to pathogens.

---

### Pandemic Preparedness

Prior to the COVID-19 experience, WTS did not consider pandemic-associated supplies and skills (e.g., PPE and the capability to sanitize vehicles) as critical to daily operations or to emergency preparedness. However, post-COVID-19, WTS sees these aspects as necessary to daily operations and is developing long-term policies and procedures to help ensure WTS is well prepared in advance of the next possible pandemic. WTS also anticipates an even greater focus on health and safety as drivers in investment decisions. This may be especially true for considerations such as (but not limited to) buying buses, planning and scheduling services, designing employee support programs, purchasing supplies, developing operational procedures, and procuring technology.

---

## KEY LESSONS

Figure 22 highlights three key lessons learned from WTS that are applicable to the industry and can directly influence policies and practices for dealing with pandemics and other times of crisis such as natural disasters.

#### Maintain Ongoing and Effective Communication with Staff

- Having constant and consistent communication with employees—especially frontline employees—is critical to success through any emergency situation, especially the COVID-19 pandemic. WTS credits its ongoing communication (and when possible face-to-face communication) with frontline employees as critical to WTS’s ability to retain full staffing levels, keep employees safe, and respond quickly to employee concerns.

#### Implement Rules that Can Be Enforced

- One challenge experienced by WTS was related to face coverings or masks. In the early stages of the pandemic, WTS would have preferred to implement a mandatory face covering rule for riders. However, because there was no official order from federal, state, or local governing bodies, there was no way for WTS to enforce that rule. A mandatory face covering rule was eventually enacted by the City of Waco, and this made a significant difference in the compliance of riders and the confidence of WTS employees.

#### Preparation Is Critical

- Although many transit agencies were struggling to obtain PPE and cleaning supplies, WTS had been proactive and creative in its procurement of PPE and cleaning supplies to the extent that WTS was able to ride out initial shortages using its current stock. There was no time at which WTS was lacking in what it needed to keep employees and riders safe.

**Figure 22. WTS’s Key Lessons**



## POLICY AND FUNDING IMPLICATIONS

According to survey and case study findings, some specific policy and funding implications for transit service in Texas are directly related to the COVID-19 pandemic. This section summarizes these implications.

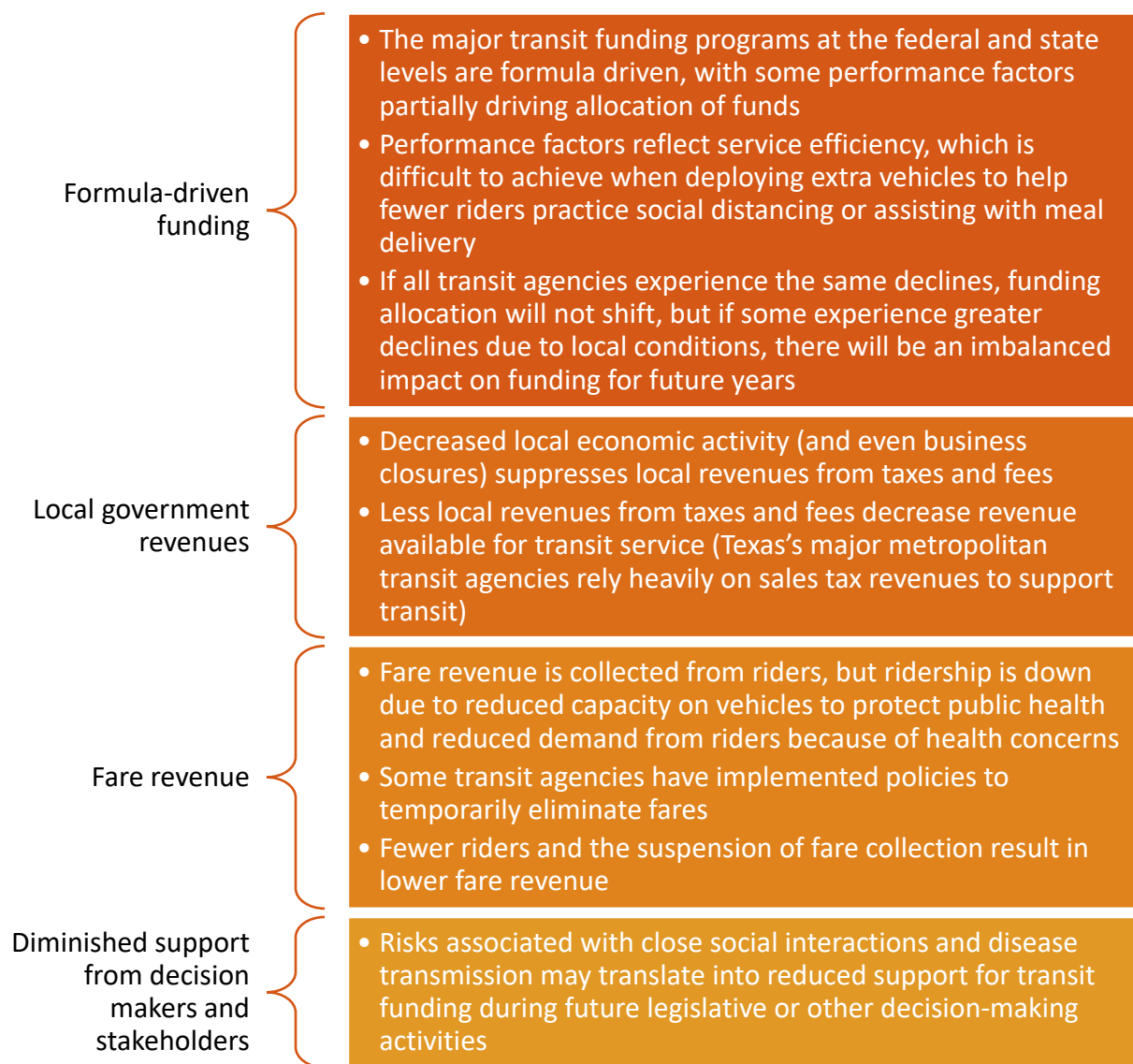
### REVENUE LEVELS

Moving forward, funding for transit may be diminished. Transit agencies in Texas rely on diverse sources of funding to support operations, and each may not return to pre-pandemic levels without strategic actions. Of specific concern are:

- Transit revenues that are allocated according to the previous year's performance.
- Tax-based revenue.
- Fare revenue.

Challenges for each are described in Figure 23. For all revenue sources, long-term ridership decline due to fear of contracting COVID-19 or other viruses/diseases could exacerbate the impacts presented.

In Texas, metropolitan transportation authorities (MTAs) derive most of their revenue (approximately 85 percent) from local sources such as sales tax, while urban and rural transit districts receive around 50 percent of their revenue from federal sources, another 10–20 percent from state sources, and 30–40 percent from local sources. The exact revenue breakdown for each agency type varies by year, but the implications are clear—Texas's largest transit agencies (MTAs) are likely to experience the greatest revenue impacts from declines in local funding, while urban and rural districts are likely to see more evenly distributed impacts across all revenue sources.



**Figure 23. Funding Implications**

## EQUITABLE TRANSIT ACCESS

According to the Federal Transportation Administration's circular outlining Title VI of the Civil Rights Act of 1964,<sup>5</sup> "no person shall, on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance." This circular requires transit agencies to ensure their service decisions do not result in disparate impacts or disproportionate burdens for Title VI protected populations (people with low incomes and people that identify as a member of a minority group). Some actions associated with the COVID-19 response, such as service reductions and service-related policies, may introduce the following challenges:

<sup>5</sup> Source: U.S. Department of Transportation, Federal Transportation Administration. *Title VI Requirements and Guidelines for Federal Transit Administration Recipients*. FTA Circular 4702.1b. October 1, 2012. [https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/FTA\\_Title\\_VI\\_FINAL.pdf](https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/FTA_Title_VI_FINAL.pdf).

- Requirements for transit users to wear face covering on transit vehicles are intended to protect everyone. However, if transit agencies do not include considerations for riders without access to appropriate face coverings, these rules may limit transit access for some riders. *According to case study findings, transit agencies are currently supplying appropriate face coverings to riders that do not have their own, but it is unknown if this practice is universal.*
- Transit agencies may elect to make pandemic-related service reductions permanent to either continue practicing social distancing or as a result of diminished demand for service and reduced revenue. Regardless of the reasons, permanent service changes that are identified as *major* service changes (defined by each agency) must be analyzed to identify and mitigate any resulting disparate impacts and disproportionate burdens.
- Some transit agencies may prioritize the introduction of contactless fare payment options to facilitate fare collection without direct contact between riders and the transit vehicle or vehicle operator. However, contactless fare payment technology requires one or more user-supplied elements, such as smartphones with data access and Bluetooth capability, bank accounts, debit/credit cards, and/or enough funding available to invest in a dedicated transit account, which may be unavailable to all riders and could, therefore, limit access to transit.

## TRANSIT IS ESSENTIAL

Highlighting the fact that transit service is essential to their communities, 17 survey respondents indicated they did not reduce their level of transit service in response to COVID-19, and the transit agencies that identified a need to reduce service strived to ensure that some service remained to support people without other transportation options. Furthermore, 70 percent of survey respondents made special plans to protect transit service for one or more vulnerable groups of riders or to ensure that people who could not get to services were able to access essentials. Some examples include:

- Continued access to taxi services and continued access to reduced-occupancy demand-response vehicles.
- Maintenance of paratransit and transit to access essential goods and services.
- Policies to ensure no rider is left behind.
- Shuttle service for individuals without other transportation to obtain COVID-19 testing.
- Meal delivery boxes to senior independent living centers and paratransit customers.
- Dial-a-ride service instead of a call-in-advance model.
- Coordination to fill gaps in order to aid people to access medical services and food.

These examples of transit's ability to ensure service continuity and assist riders during crisis conditions support identification of transit employees and agencies as essential workers/organizations to facilitate better access to revenue sources dedicated to essential workers/services and improve their access to supplies.

## EMPLOYMENT POLICIES

Survey findings indicate that many of the staffing and employment impacts experienced by transit agencies during their response to COVID-19 were related to personal/family health issues and the need to provide care for children that were not in school. While these issues are likely to be temporary, they highlight an opportunity to develop employment policies (either within transit agencies or at the state level) that better account for the needs of families with children, people that need to care for others, and more.

# COVID-19 Pandemic Impacts on Transit Agencies

The [Texas A&M Transportation Institute](#) (TTI) is collecting information for the [Texas Transit Association](#) (TTA) and the [South West Transit Association](#) (SWTA) about how transit agencies are currently being impacted by and responding to the COVID-19 pandemic. This information is expected to be useful in **disseminating ideas** and **identifying additional needed resources** to address COVID-19 impacts. The survey will take about 15–20 minutes.

Your survey answers will be kept confidential to the extent permitted or required by law, and the information you provide will be synthesized with information collected from other transit professionals. There are two ways your responses may be shared with others outside TTA, SWTA, and TTI:

- As a part of an aggregate (e.g., 10 percent of transit agencies report that...) OR
- As an anonymous anecdote (e.g., one transit agency reported, “We are experiencing significant driver shortages, caused by concerns...”).

Participation is voluntary, and you are free to quit the survey at any time without penalty. If you have any questions about the survey, please contact Kelly Blume at [k-blume@tti.tamu.edu](mailto:k-blume@tti.tamu.edu).

By agreeing to participate below, you acknowledge that you understand how your responses will be used and are allowing TTA, SWTA, and TTI to collect and use your responses as described on this page.

Do you agree to participate in this research?

☐ Yes (1)

☐ No (2)

## Transit Agency Information

Please provide the name of your transit agency.

---

What category is your transit agency?

- ☐ Large urban or metropolitan (1)
- ☐ Small urban (2)
- ☐ Rural (3)
- ☐ Other (4) \_\_\_\_\_

Is your transit agency located inside Texas?

- ☐ Yes (1)
- ☐ No (3)

**Announcements for the General Public**

Are you posting announcements, posters, or flyers for the **general public** related to the COVID-19 pandemic inside vehicles or at facilities?

- ☐ Yes (1)
- ☐ No (2)

What topics do the announcements, posters, or flyers cover? Check all that apply.

☐

Service changes/disruptions (4)

☐

Social distancing (5)

☐

Importance of precautionary activities such as washing one's hands and not touching one's face (6)

☐

Symptoms of COVID-19 (9)

☐

Other (7) \_\_\_\_\_

#### **Announcements for Transit Agency Employees**

Are you posting announcements, posters, or flyers for **employees** related to the COVID-19 pandemic inside vehicles or at facilities?

☐

Yes (1)

☐

No (2)

What topics do the announcements, posters, or flyers cover? Check all that apply.

- ☐ Altered leave policies or other administrative announcements (4)
- ☐ Social distancing (5)
- ☐ Importance of precautionary activities such as washing one's hands and not touching one's face (6)
- ☐ Symptoms of COVID-19 (7)
- ☐ Other (8) \_\_\_\_\_

### **Cleaning**

Is your agency performing any enhanced cleaning procedures for vehicles or transit facilities? Check all that apply.

- ☐ No, we are following our standard cleaning procedures (2)
- ☐ Yes—for vehicles (1)
- ☐ Yes—for passenger facilities (3)

Please select which enhanced VEHICLE INTERIOR cleaning procedures your agency is performing. Check all that apply.

- ☐ Increased FREQUENCY of cleaning (7)
- ☐ Increased INTENSITY/DEPTH of cleaning (8)
- ☐ Using sanitizing agents during cleaning (9)
- ☐ Other (13) \_\_\_\_\_

Please select which enhanced PASSENGER FACILITY cleaning procedures your agency is performing. Check all that apply. (Passenger facilities could be transfer centers, terminals, shelters, and other amenities.)

☐

Increased FREQUENCY of cleaning (1)

☐

Increased INTENSITY/DEPTH of cleaning (2)

☐

Using sanitizing agents during cleaning (3)

☐

Other (4) \_\_\_\_\_

Please provide an estimate of increased cleaning costs. Indicate whether the cost estimate is per week, per month, or cumulative.

	Cost Estimate	Time Period		
		Per Week (1)	Per Month (2)	Cumulative (3)
Cleaning supplies (1)		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cleaning labor (2)		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please describe how you calculated any *cumulative* increased expenses, including what date range was used to calculate the costs.

---



---



---



---



---



Are you experiencing any problems with the availability of cleaning supplies?

☐ Yes (1)

☐ No (2)

☐ Not sure (3)

### Staffing Impacts

We'll now ask you some questions about COVID-19 impacts on staffing. If you've experienced staffing impacts, we'll ask you some follow-up questions both about *operations staffing* and *non-operations staffing*.

Have you experienced any staffing impacts (e.g., increases in callouts or changes in shifts, duties, workload, or sick leave policies) as a result of the COVID-19 pandemic?

☐ Yes (1)

☐ No (2)

☐ Not sure (4)

Please indicate what OPERATIONS STAFFING (e.g., operators, mechanics, road supervisors, etc.) impacts your agency has experienced. Check all that apply.

☐

No operations staffing impacts (15)

☐

Increases in misses or callouts by operators (4)

☐

Operator shortages (5)

☐

Increases in misses or callouts by other operations staff (e.g., mechanics, road supervisors, dispatchers, etc.) (13)

☐

Changes to shifts or report times (7)

- ☐ Changes in working environment or locations (e.g., telework) (14)
- ☐ Increases in working hours (8)
- ☐ Reductions in working hours (17)
- ☐ Changes to sick leave policies (18)
- ☐ Other (12) \_\_\_\_\_

Please indicate what NON-OPERATIONS STAFFING (e.g., administrative) impacts your agency has experienced. Check all that apply.

- ☐ No non-operations staffing impacts (5)
- ☐ Increases in misses or callouts by non-operations staff (6)
- ☐ Changes to shifts or report times (1)
- ☐ Changes in working environment or locations (e.g., telework) (2)
- ☐ Changes in duties (e.g., additional duties or tasks) (7)
- ☐ Increases in working hours (3)
- ☐ Reductions in working hours (8)
- ☐ Changes to sick leave policies (9)

☐

Other (4) \_\_\_\_\_

What are the top reasons for staff shortages or increases in misses or callouts? Please rank the options below by typing a number in the box beside each option. Type 1 for the most common reason and 5 for the least common reason.

\_\_\_\_\_ Personal health concerns (e.g., worried about getting sick or spreading the virus) (1)

\_\_\_\_\_ Childcare (2)

\_\_\_\_\_ Personal illness/sickness (3)

\_\_\_\_\_ Illness/sickness of family or loved one (4)

\_\_\_\_\_ Other (5)

### Ridership or Revenue Loss

Have you experienced a loss of ridership and/or revenue (any local revenue sources) as a result of the COVID-19 pandemic?

☐ Yes (1)



☐ No (2)

☐ Not sure (4)

Please estimate the percentages of lost ridership and lost revenue compared to originally forecasted or anticipated March 2020 conditions.

Not Applicable

0 10 20 30 40 50 60 70 80 90 100

Lost ridership (%) ( )	
Lost revenue (%) ( )	

### Lost Revenue Estimates

We will now ask you for estimates of revenue loss directly associated with COVID-19 for different types of local revenue, including losses of fares, revenue from contracts to provide service, local sales tax, and other sources that you can type yourself. You can provide your estimates as lost revenue per week, per month, or as a cumulative total loss.

*You can provide estimates; you don't need to be exact.*

If you have estimates of lost revenue directly associated with COVID-19, please provide those estimates in U.S. dollars, below. Then, indicate whether your estimates are *per week*, *per month*, or *cumulative*.

		Time Period		
	Lost Estimate (\$) (1)	Per Week (1)	Per Month (2)	Cumulative (3)
Fare revenue losses (1)		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Contract revenue losses (e.g., sponsored service contracts) (2)		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Local sales tax losses (3)		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other revenue loss (4)		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other revenue loss (5)		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please describe how you calculated any cumulative estimated losses, including what date range was used to calculate the losses.

---

---

---

---

---

Add any comments you may have about ridership or revenue losses.

---

---

---

---

### Service Changes

Have you *implemented* any service reductions as a result of the COVID-19 pandemic (e.g., reduced frequencies or service span)?

☐ Yes (4)

☐ No (5)

How much have you reduced service compared to planned/projected March 2020 service levels?

0 10 20 30 40 50 60 70 80 90 100



Do you anticipate implementing service reductions if the COVID-19 pandemic situation does not improve?

☐ Yes (1)

☐ No (2)

☐ Not sure (4)

How much do you anticipate reducing service if the COVID-19 pandemic situation does not improve? Please estimate the service reduction compared to current service levels.

0 10 20 30 40 50 60 70 80 90 100



Have you developed specific plans or strategies to maintain service for the following groups during the COVID-19 pandemic? Check all that apply.

- ☐ None (11)
- ☐ People with disabilities (4)
- ☐ Medically fragile riders (5)
- ☐ Low-income riders (6)
- ☐ Minority riders (7)
- ☐ Other (please describe) (8) \_\_\_\_\_

Please describe the plans or strategies.

---

---

What actions have you taken to limit interactions between passengers and/or between passengers and your employees during the COVID-19 pandemic? Check all that apply.

- ☐ None (14)
- ☐ Cutting back service (12)
- ☐ Suspending fare collection (4)
- ☐ Allowing all-door boarding (13)
- ☐ Only allowing general boarding from the rear door (15)
- ☐ Limiting the number of passengers on board (5)
- ☐ Restricting onboard seating (7)
- ☐ Closing transit facilities (e.g., transit centers) (8)
- ☐ Other (9) \_\_\_\_\_

### Emergency Preparedness

Is your agency a member of a local or regional emergency response team or emergency preparedness program? Such teams and programs typically coordinate multiple agencies' and organizations' responses to natural disasters and other significant events.

- ☐ Yes (1)
- ☐ No (2)
- ☐ Not sure (4)

Does the emergency response team or emergency preparedness program have protocols and procedures for handling pandemics?

☐ Yes (1)

☐ No (2)

☐ Not sure (4)

Prior to the emergence of the COVID-19 pandemic, did your agency have documented protocols and procedures for handling pandemics?

☐ Yes (1)

☐ No (2)

☐ Not sure (4)

#### **Contact Information**

Please provide your contact information.

*This will be helpful to contact you in case we have any questions.*

☐ Name (1) \_\_\_\_\_

☐ Title (3) \_\_\_\_\_

☐ Phone Number (11) \_\_\_\_\_

☐ Email Address (12) \_\_\_\_\_



# APPENDIX B: LIST OF SURVEY RESPONDENTS WITH FISCAL YEAR 2018 TRANSIT METRICS

Agency	Principal City	State	Total Operating Expenses	Fare Revenues Earned	Fare Recovery Ratio	Passenger Trips	Revenue Hours	Revenue Miles	Op. \$/Pass. Trip	Op. \$/Rev. Hour	Op. \$/Rev. Mile	Pass./Rev. Hour	Pass./Rev. Mile
Alamo Area Council of Governments	San Antonio	TX	\$4,234,303	\$236,334	5.6%	117,378	63,149	1,070,586	\$36.07	\$67.05	\$3.96	1.86	0.11
Amarillo City Transit	Amarillo	TX	\$5,059,695	\$193,498	3.8%	340,731	65,448	1,012,770	\$14.85	\$77.31	\$5.00	5.21	0.34
Avoyelles Council on Aging	Marksville	LA	\$546,901	\$31,740	5.8%	15,476	10,530	282,151	\$35.34	\$51.94	\$1.94	1.47	0.05
Brazos Transit District	Bryan	TX	\$7,107,190	\$407,715	5.7%	473,543	86,794	1,662,234	\$15.01	\$81.89	\$4.28	5.46	0.28
Brownsville Metro	Brownsville	TX	\$7,904,594	\$1,272,321	16.1%	1,582,769	93,844	1,543,303	\$4.99	\$84.23	\$5.12	16.87	1.03
Capital Area Rural Transportation System	Austin	TX	\$7,084,241	\$215,926	3.0%	228,177	87,929	1,451,782	\$31.05	\$80.57	\$4.88	2.60	0.16
Capital Area Transit System	Baton Rouge	LA	\$28,428,204	\$2,158,542	7.6%	3,962,488	297,352	3,930,254	\$7.17	\$95.60	\$7.23	13.33	1.01
Capital Metro	Austin	TX	\$226,716,115	\$22,312,442	9.8%	29,491,269	1,883,400	26,428,115	\$7.69	\$120.38	\$8.58	15.66	1.12
Central Texas Rural Transit District	Coleman	TX	\$3,904,043	\$111,865	2.9%	111,556	55,772	1,415,069	\$35.00	\$70.00	\$2.76	2.00	0.08
Cheyenne and Arapaho Tribes	Concho	OK	\$187,946	\$3,507	1.9%	10,089	7,534	221,742	\$18.63	\$24.95	\$0.85	1.34	0.05
CITIBUS	Lubbock	TX	\$12,249,896	\$4,637,462	37.9%	3,759,406	182,779	2,497,590	\$3.26	\$67.02	\$4.90	20.57	1.51
City of Longview Transit	Longview	TX	\$1,739,449	\$179,111	10.3%	254,913	23,185	355,138	\$6.82	\$75.02	\$4.90	10.99	0.72
City of Port Arthur	Port Arthur	TX	\$2,207,818	\$110,074	5.0%	101,043	22,372	342,222	\$21.85	\$98.69	\$6.45	4.52	0.30
CityLink Transit	Abilene	TX	\$3,947,859	\$386,931	9.8%	381,417	59,116	801,037	\$10.35	\$66.78	\$4.93	6.45	0.48
Community Services, Inc.	Corsicana	TX	\$1,199,063	\$64,371	5.4%	54,323	11,839	210,842	\$22.07	\$101.28	\$5.69	4.59	0.26
Collin County Transit	Collin County	TX	Service operated by Denton County Transportation Authority										
Dallas Area Rapid Transit	Dallas	TX	\$526,345,932	\$65,209,382	12.4%	62,438,784	3,381,064	51,415,470	\$8.43	\$155.67	\$10.24	18.47	1.21
Denton County Transportation Authority	Lewisville	TX	\$29,427,562	\$4,693,568	15.9%	2,981,039	190,554	2,970,161	\$9.87	\$154.43	\$9.91	15.64	1.00
East Texas Council of Governments	Kilgore	TX	\$3,197,638	\$180,353	5.6%	91,948	59,894	1,102,668	\$34.78	\$53.39	\$2.90	1.54	0.08

Agency	Principal City	State	Total Operating Expenses	Fare Revenues Earned	Fare Recovery Ratio	Passenger Trips	Revenue Hours	Revenue Miles	Op. \$/Pass. Trip	Op. \$/Rev. Hour	Op. \$/Rev. Mile	Pass./Rev. Hour	Pass./Rev. Mile
<b>Fort Bend County Public Transportation</b>	Sugar Land	TX	\$7,784,536	\$787,832	10.1%	392,613	82,601	1,754,794	\$19.83	\$94.24	\$4.44	4.75	0.22
<b>Golden Crescent Regional Planning Commission</b>	Victoria	TX	\$3,951,101	\$136,681	3.5%	326,137	59,844	1,074,097	\$12.11	\$66.02	\$3.68	5.45	0.30
<b>Heart of Texas Council of Governments</b>	Waco	TX	\$1,237,366	\$37,100	3.0%	34,631	21,890	456,515	\$35.73	\$56.53	\$2.71	1.58	0.08
<b>GRASP Transit</b>	Converse	TX	No data available										
<b>Hill Country Transit District</b>	San Saba	TX	\$10,536,140	\$409,641	3.9%	652,990	134,626	1,881,751	\$16.14	\$78.26	\$5.60	4.85	0.35
<b>Houston METRO</b>	Houston	TX	\$536,936,766	\$65,799,079	12.3%	90,300,547	4,931,237	75,354,539	\$5.95	\$108.88	\$7.13	18.31	1.20
<b>Kleberg County Human Services</b>	Kingsville	TX	\$734,356	\$10,594	1.4%	60,709	11,622	194,670	\$12.10	\$63.19	\$3.77	5.22	0.31
<b>LaSalle Association for the Developmentally Delayed, Inc.</b>	Jena	LA	No data available										
<b>Lower Rio Grande Valley Development Council</b>	Weslaco	TX	\$6,929,067	\$0	0.0%	709,226	101,291	2,195,682	\$9.77	\$68.41	\$3.16	7.00	0.32
<b>Matagorda County RTransit</b>	Matagorda County	TX	No data available										
<b>Metro McAllen</b>	McAllen	TX	\$2,189,440	\$348,733	15.9%	617,926	39,284	544,510	\$3.54	\$55.73	\$4.02	15.73	1.13
<b>Plano Community Home, Inc.</b>	Plano	TX	No data available										
<b>Project Amistad</b>	Big Bend	TX	No data available										
<b>Public Transit Services</b>	Mineral Wells	TX	\$1,804,946	\$94,671	5.2%	69,704	27,271	583,797	\$25.89	\$66.19	\$3.09	2.56	0.12
<b>Rolling Plains Management Corporation</b>	Crowell	TX	\$1,823,092	\$28,361	1.6%	147,854	54,468	871,979	\$12.33	\$33.47	\$2.09	2.71	0.17
<b>Rural Economic Assistance League, Inc.</b>	Alice	TX	\$2,456,150	\$122,317	5.0%	271,842	57,224	1,010,169	\$9.04	\$42.92	\$2.43	4.75	0.27
<b>Southwest Area Regional Transit District</b>	Uvalde	TX	\$2,620,033	\$148,166	5.7%	120,168	46,153	929,369	\$21.80	\$56.77	\$2.82	2.60	0.13
<b>SPAN, Inc.</b>	Denton	TX	\$1,950,336	\$95,855	4.9%	59,562	31,205	595,823	\$32.74	\$62.50	\$3.27	1.91	0.10

Agency	Principal City	State	Total Operating Expenses	Fare Revenues Earned	Fare Recovery Ratio	Passenger Trips	Revenue Hours	Revenue Miles	Op. \$/Pass. Trip	Op. \$/Rev. Hour	Op. \$/Rev. Mile	Pass./Rev. Hour	Pass./Rev. Mile
<b>SPCAA, Inc.</b>	Levelland	TX	\$2,936,423	\$190,581	6.5%	141,166	44,130	1,183,911	\$20.80	\$66.54	\$2.48	3.20	0.12
<b>STAR Transit</b>	Terrell	TX	\$5,979,989	\$153,997	2.6%	238,062	118,826	1,839,407	\$25.12	\$50.33	\$3.25	2.00	0.13
<b>Sun Metro, City of El Paso</b>	El Paso	TX	\$63,685,758	\$8,152,314	12.8%	13,115,932	709,900	10,002,320	\$4.86	\$89.71	\$6.37	18.48	1.31
<b>Texas State University</b>	San Marcos	TX	\$4,033,695	\$6,945,365	172.2%	2,710,009	65,201	805,926	\$1.49	\$61.87	\$5.01	41.56	3.36
<b>The Gulf Coast Center</b>	Texas City	TX	\$4,017,739	\$317,544	7.9%	251,908	51,375	965,679	\$15.95	\$78.20	\$4.16	4.90	0.26
<b>Tyler Transit</b>	Tyler	TX	\$2,694,356	\$176,740	6.6%	205,275	45,422	654,006	\$13.13	\$59.32	\$4.12	4.52	0.31
<b>VIA Metropolitan Transit</b>	San Antonio	TX	\$206,472,128	\$23,164,693	11.2%	39,910,803	2,351,316	37,412,791	\$5.17	\$87.81	\$5.52	16.97	1.07
<b>Waco Transit System, Inc.</b>	Waco	TX	\$6,430,496	\$1,342,178	20.9%	1,295,788	78,629	1,230,989	\$4.96	\$81.78	\$5.22	16.48	1.05
<b>Webb County Community Action Agency</b>	Laredo	TX	\$820,281	\$93,036	11.3%	70,086	14,826	218,470	\$11.70	\$55.33	\$3.75	4.73	0.32
<b>West Texas Opportunities, Inc.</b>	Lamesa	TX	\$4,443,072	\$54,860	1.2%	103,746	81,806	1,784,471	\$42.83	\$54.31	\$2.49	1.27	0.06

# COVID-19 Pandemic Texas Transit Agency Impacts and Actions: Case Study Interview Guide

## Project Background

The COVID-19 pandemic had significant impact on the daily operations and financial sustainability of Texas transit agencies of all types and sizes. Transit agencies lost ridership and revenue. Some experienced staffing shortages or other challenges. Transit agencies responded to the public health advisories by applying social distancing policies, reducing service, and implementing enhanced cleaning of vehicles and facilities. However, the rapid nature of the response resulted in a lack of empirical information on COVID-19 impacts and actions taken.

At the request of the Texas Transit Association (TTA), the Texas A&M Transportation Institute (TTI) released a survey to begin collecting these data to provide a better, quantifiable picture of transit realities in Texas during the early stages of the pandemic.

This project will use the data collected from the survey to conduct a full analysis, develop focused case studies, produce a report to gain a fuller understanding of COVID-19 transit impacts, describe the agency's responses to these impacts, and outline specific policy implications highlighted by the experience during or after the pandemic.

## Interview Objectives

- Collect detailed information about the experience of providing transit service under pandemic conditions.
- Learn about the challenges that face transit agencies during and after the pandemic.
- Identify lessons learned to help prepare the transit industry and decision makers for similar future conditions/responses.

## Interview Questions

### Response to COVID-19

For respondents that indicated they **did not** have a plan in place before COVID:

1. What did the agency do to develop a COVID-19 response plan?
  - a. What did it include?
  - b. What resources did they identify as necessary/critical?
  - c. How was it managed/executed?

For respondents that indicated they **did** have a plan in place before COVID:

2. You indicated your agency had a plan for addressing a pandemic before COVID. What was the plan? Can you share any of the supporting documents?

For ALL respondents:

3. Please describe, to your best recollection, the timeline of the response:
  - a. This could include milestones such as service reductions, installation of barriers to enforce distancing, the start of a rear-door boarding policy, response revisions (and why), or when responses were lifted.
4. What, specifically, was done to protect the following groups?
  - a. Riders
  - b. Operators
  - c. Other transit staff
5. Did the response to COVID-19 work?
6. What would or did you change?
7. What plans are in place to respond if there's a second wave or a different virus results in a future pandemic?

## Barriers and Challenges

In introducing this section, explain that the barriers and challenges likely fall into three broad categories:

- Immediate response—issues in the period immediately following orders such as shelter in place, social distancing, business closures, etc. Approximately 2 weeks after orders were issued.
- Pandemic operations—issues related to day-to-day operations after the immediate response but during pandemic conditions.
- Long-term issues—issues that came up during the pandemic but seem like they will remain.

*Barriers and challenges include problems with access to information, policies or legislation, communication, decision-making, access to supplies, funding and fare collection, or other factors that exerted negative influence on a transit agency's response to COVID-19.*

8. Did your agency struggle with access to information? Such as:
  - a. Ways to protect staff and riders
  - b. Disease status—will it get better soon, or is this a long-haul shift in operations?
  - c. Strategies for amending operations to respond to the pandemic
  - d. Rider needs
9. Were there any policies or legislation at the city/county/regional/state/federal level that precluded or limited action? These issues could also impart confusion as to how specific actions comply (or don't) with specific requirements.
10. Was communicating with riders, staff, or others more difficult than usual? How so?

11. Did you experience any challenges with decision makers—for example, slow approvals for necessary expenditures?
12. Did your agency struggle with access to supplies (e.g., PPE, cleaning, etc.), and how did you overcome this issue?
13. Did your agency experience challenges related to funding (e.g., which sources of funding could be used for which aspect of the COVID-19 response) or fare policies/collection?
  - a. Can you provide an estimate of the revenue lost (if possible, by type) and total cost to respond to COVID-19 during the period from March 1 through May 31, 2020?
14. Were there other barriers and challenges?

### Next Steps

15. How will the transit agency move forward considering the changes in revenue/expenses due to the pandemic?
16. Will service be reduced long term? If so, why, to what extent, and how will the decisions to reduce certain services be made?
17. How will revenue loss be addressed?
18. Has your transit agency looked at CARES Act funding to assess how much help it can provide in reality?
  - a. What do they plan to use CARES for?
19. What other sources of emergency funding (local or otherwise), if any, were used to offset revenue losses or increased expenses?
20. Are any of the policies, practices, or procedures that were implemented in response to COVID-19 going to be kept in place after the pandemic is over?
  - a. For what reason(s)?
  - b. For how long?
21. What other strategies does your agency have for recovery?

### Key Lessons

22. What are the key lessons you've taken away from this experience?
  - a. How will they benefit future times of crisis and/or general operations?