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Surveys of Transit Riders and Agencies During the COVID-19 Pandemic

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Disclaimer

The contents presented in this report are the sole responsibility of the Upper Great Plains Transportation Institute and the authors.

ABSTRACT

This study examines public opinion toward transit during the COVID-19 pandemic, changes in rider behavior, and responses by transit agencies. This was accomplished through two surveys. First, a survey of transit riders and the public was conducted to examine response to the pandemic. It focused on the use of public transit and strategies that transit agencies could employ to increase post-pandemic ridership. This survey was conducted largely of transit users in the Fargo-Moorhead (ND-MN) metro area but also included responses from around the country. Results showed that many had reduced or stopped their usage of transit. While respondents were generally satisfied with the response of transit agencies and felt that their health was being protected, many also gave recommendations for what transit agencies could do to increase their likelihood of using transit. Second, a survey of transit agencies was conducted to identify how they were impacted by COVID-19. This survey focused on rural and small urban systems, and most responses were from North Dakota. Results show the substantial decrease in ridership and revenue, the challenges faced by transit agencies, and the actions taken.

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1. INTRODUCTION

The COVID-19 pandemic has had substantial impacts on transit across the world. Transit ridership dropped dramatically during the first few months of the pandemic because of an overall decrease in travel and shifts in mode shares away from transit. During the pandemic, the perception that using public transit posed a higher risk than using personal vehicles led to loss of ridership and service reduction. As pointed out by Teixeira and Lopes (2020), increased use of personal bicycles was observed in major cities, which may have served as an optional mode of transportation for transit users in these cities.

Ridership in major cities in the United States, Europe, and China declined by 50-90%. More specifically, there was a 74% decline in New York, 79% in Washington, D.C., 93% in Boston, and 87% in the Bay Area. Operators struggled with low ridership while complying with all Centers for Disease Control and Prevention (CDC) and National Institutes for Health (NIH) guidelines, resulting in large operational costs. While ridership began to rebound later in 2020 and 2021, it was still far behind previous levels.

Even during challenging times, such as during the COVID-19 pandemic, public transportation remains one of the top essential services. It sometimes plays a crucial role in providing access to health facilities. Although deemed essential, public transportation on a global scale faces challenges stemming from a drastic decline in both supply and demand (Tirachini and Cats 2020). Therefore, one of the critical responsibilities of transport operators is to maintain operations despite the constraints brought by the spread of COVID-19. Thus, during these times, such providers should focus on their staff's safety and address challenges that come with absenteeism (UITP, 2020). Furthermore, public transit systems have become vital, especially for maintaining economic stability and equity throughout the world (Musselwhite, Avineri, and Susilo 2020). As cities reopen, transit agencies' next challenges are addressing massive budget shortfalls and reclaiming previous riders (Clemens and Veuger 2020). Measures such as high-visibility cleaning and health-messaging campaigns, together with universal mask-wearing mandates, can help reassure passengers that it is safe to use public transit.

This study examines transit rider and public opinion toward transit during the pandemic, changes in rider behavior, and responses by transit agencies. This was accomplished through two surveys. First, a survey of transit riders and the public was conducted in October-November of 2020 to examine response to the pandemic regarding use of public transit and to identify strategies that could be employed by transit agencies to increase post-pandemic ridership. This survey was conducted largely of transit users in the Fargo-Moorhead (ND-MN) metro area but also included responses from around the country. Second, a survey of transit agencies was conducted in the Fall of 2020 to identify how they were impacted by COVID-19. This survey focused on rural and small urban systems, and most responses were from North Dakota. Both surveys were conducted at a time when cases were increasing across the country. Section 2 describes how the surveys were conducted, Sections 3 and 4 presents results of the two surveys, and conclusions are provided in Section 5.

2. SURVEY METHODS

A survey of transit riders and the public was conducted to examine response to the pandemic regarding use of public transit and to identify strategies that could be employed by transit agencies to increase post-pandemic ridership. The intent was to learn how consumer behavior changed during the pandemic and identify how transit agencies can adapt to the new normal. The survey collected information about travel behavior before the COVID-19 pandemic, travel behavior after the pandemic began, concerns about health and safety riding transit, opinions about transit agency response to the pandemic, and suggestions about what transit agencies can do to increase the likelihood that they would use transit, as well as demographic information about the respondents.

The survey was conducted entirely online, and it was targeted toward current, past, or potential transit riders. A majority of responses were from the Fargo-Moorhead (ND-MN) metro area. MATBUS, the transit provider of Fargo-Moorhead, distributed the survey electronically via social media and email lists. The survey was also distributed via Upper Great Plains Transportation social media accounts, where it reached participants from across the country. Survey responses were collected from October 26, 2020, through November 29, 2020.

A survey of transit agencies was also conducted to identify how COVID-19 impacted public transit operators in North Dakota and Minnesota. The main goals of this survey were to identify ridership as well as service and revenue changes experienced by the public transit agencies and to learn about how each transit agency responded during the pandemic and the issues they faced. The survey was focused on rural and small urban agencies. It was conducted online and sent to all North Dakota transit providers, as well as some rural Minnesota agencies.

The transit agency survey collected some basic information about the transit agencies, and then included sections on transit ridership, service changes, transit response to the pandemic, rider and employee awareness, and staffing impacts. The survey was conducted in August and September of 2020.

3. RESULTS OF TRANSIT USER SURVEY

The survey received 156 responses. The largest number of responses was received from people in the 25-34 age group, with 49 participants, followed by the 35-44 and 45-54 groups, with 36 and 34 responses respectively. Many, but not all, of the respondents were current transit users. As noted, a majority of responses were from North Dakota and Minnesota, and the primary transit system they use is MATBUS. However, there were also several responses from across the country from individuals using different transit systems.

3.1 Use of Public Transit

Because the survey was targeted toward likely transit users, a large percentage of respondents reported using transit. A total of 105 participants reported using public transportation as a mode for commuting from home to work or school. Figure 3.1 shows how this total was distributed among age groups. Most were working-age adults. This distribution, however, is partly explained by the larger number of responses from those age groups. Figure 3.2 shows the percentage of respondents from each age group that reported using transit. For example, even though only 7% of reported transit users were aged 65 or older, 78% of respondents from that age group reported using it. These results are not expected to be representative, but merely descriptive of the survey respondents.

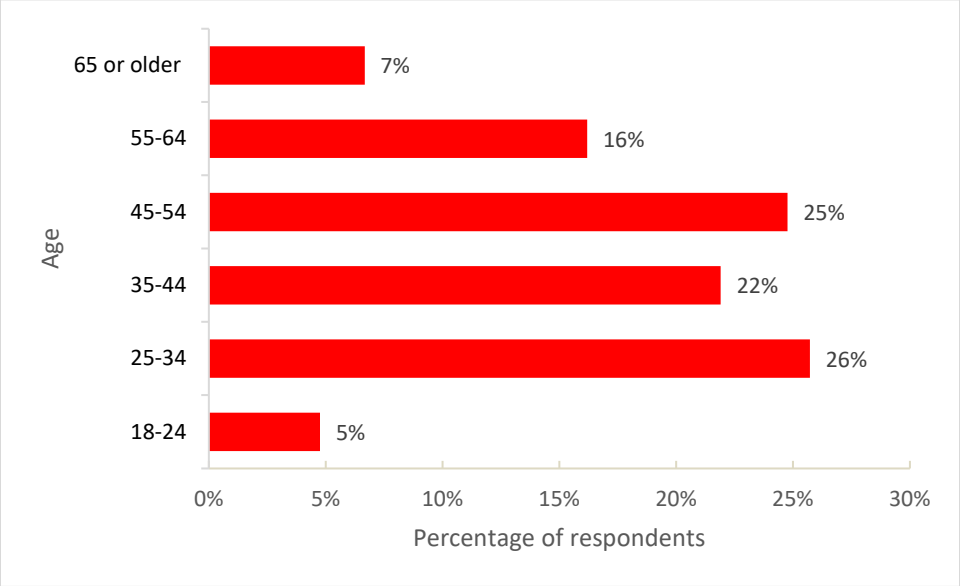

Figure 3.1 Age Distribution of Public Transportation Users (n=105)

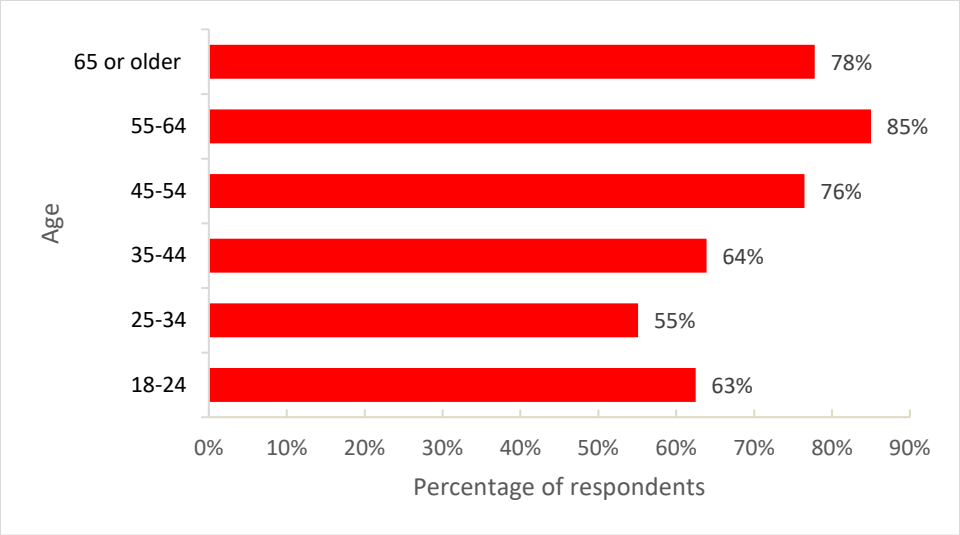

Figure 3.2 Percentage of Respondents in Each Age Group Who Reported Using Transit (n=156)

The figures do not represent the use of public transportation as the only way of commuting, but rather they display how many people use transit, either by itself or in combination with other modes. Table 3.1 shows how transportation modes are combined for commuting. While some rely only on transit for commuting, many also walk and some use a car, taxi, bicycle, or other mode. Most of those who ride transit reported using it multiple days per week, with about half riding five or more days per week. A majority of respondents reported that on the days they use transit, they will use transit twice during the day.

Table 3.1 Combination of Public Transportation and Other Modes Used for Commuting (n=105)

Modes	Number of Respondents
Public transportation, walk	17
Public transportation	15
Car, public transportation, walk	11
Car, public transportation	8
Public transportation, walk, taxi	5
Public transportation, walk, taxi, private bicycle	5
Car, public transportation, taxi, private bicycle	4
Car, public transportation, walk, private bicycle	3
Public transportation, taxi	3
Car, public transportation, private bicycle	2
Car, public transportation, taxi	2
Car, public transportation, walk, taxi	2
Car, public transportation, walk, Uber/Lyft	2
Public transportation, private bicycle	2
Public transportation, walk, taxi, Uber/Lyft	2
Public transportation, walk, Uber/Lyft	2
Car, public transportation, other	1
Car, public transportation, taxi, bike-sharing	1
Car, public transportation, taxi, Uber/Lyft, bike-sharing, private bicycle	1
Car, public transportation, Uber/Lyft	1
Car, public transportation, walk, taxi, other	1
Car, public transportation, walk, taxi, Uber/Lyft, bike-sharing	1
Car, public transportation, walk, taxi, Uber/Lyft, bike-sharing, private bicycle	1
Car, public transportation, walk, Uber/Lyft, private bicycle	1
Public transportation, taxi, bike-sharing	1
Public transportation, taxi, private bicycle	1
Public transportation, Uber/Lyft	1
Public transportation, walk, bike-sharing	1
Public transportation, walk, taxi, bike-sharing, private bicycle	1
Public transportation, walk, private bicycle	1
Public transportation, walk, private bicycle, other	1
Public transportation, walk, taxi, bike-sharing, private bicycle	1
Public transportation, walk, taxi, other	1
Public transportation, walk, Uber/Lyft, bike-sharing	1
Public transportation, walk, Uber/Lyft, other	1
Public transportation, walk, Uber/Lyft, private bicycle	1

3.2 Car Ownership

As Figure 3.3 shows, a majority of respondents own a car, though many do not. Although many of the respondents own a car, few rely on it as their only means of transportation. Of the 156 people surveyed, 88 own a car and 14% of them (12 individuals) use only their own car to travel around town. The remaining 76 participants use a mix of private car and other modes of transportation, as shown in Table 3.2.

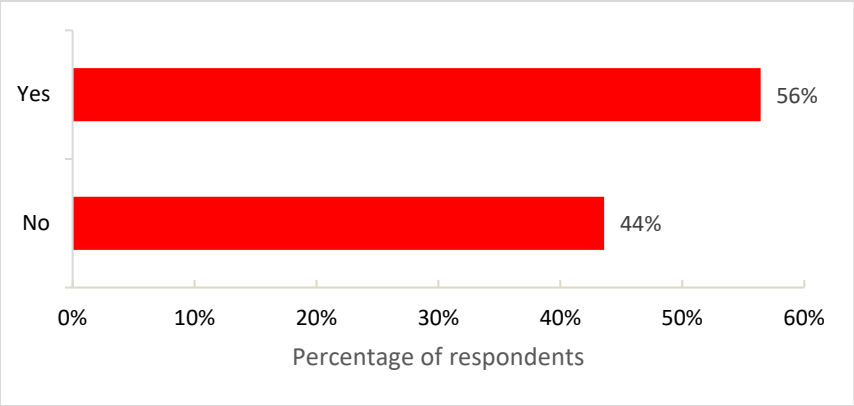

Figure 3.3 Percentage of Respondents Who Own a Car (n=156)

Table 3.2 Modes Used by Car Owners for Commuting (n=88)

Modes	Percentage of Respondents
Car, public transportation, and other mode	22 %
Car and public transportation *	20 %
Only uses car	14 %
Car, no public transit, and other mode	14 %
Car and bicycle (sharing program or own)	13 %
Don't use car, don't use public transit, just other mode	7 %
Don't use car, just public transit and other mode	6 %
Only uses public transportation	5 %

*For the category of car and public transportation, people that answered walking as another transportation mode were included.

3.3 Public Transit Riding Patterns After Outbreak

Figure 3.4 shows how the use of public transit changed after the COVID-19 outbreak started. About half of respondents reported that they began riding less. This was the most common response and was expected, because cities went into lockdown and education and jobs went online. In addition to those that reduced their riding, 16% reported that they stopped riding. About a quarter reported no change in riding behavior, and a small percentage (7%) said they began riding public transit more, perhaps due to their jobs.

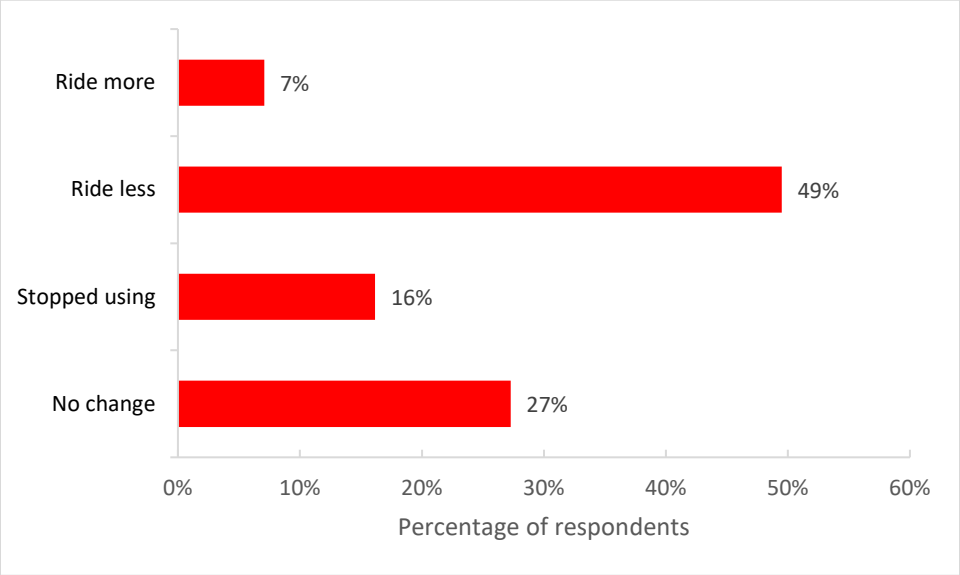

Figure 3.4 Change in Transit Use During COVID-19 (n=99)

Changes in transit usage could vary by age. Older populations are more vulnerable to COVID-19 and may therefore be more concerned about riding transit and sharing closed spaces with other users. Younger populations are the least vulnerable and may, therefore, be less likely to change behavior. To investigate whether this is the case, the responses shown in Figure 3.4 were separated by age groups. Figures 3.5-3.10 show changes in usage of transit after the outbreak started for each age group.

The effect of age on changes in transit use is not clear. The youngest age group, 18-24, and the older age group, 65 and older, had too few responses to make any conclusions. The 25-34 age group had the highest percentage of respondents who stopped using transit, and the 45-54 age group had the highest percentage who either stopped using transit or began riding less. The 55-64 age group had a high percentage who began riding less, but few who stopped riding. Changes in usage of transit may not have been only due to concerns about feeling safe during the pandemic but also the need to use transit. Some transit users did not have many other options for commuting. Furthermore, some had options to work or go to school from home during the pandemic while others did not. About a quarter of respondents were working from home during the pandemic, half continued going to work, and the remainder did not have a job.

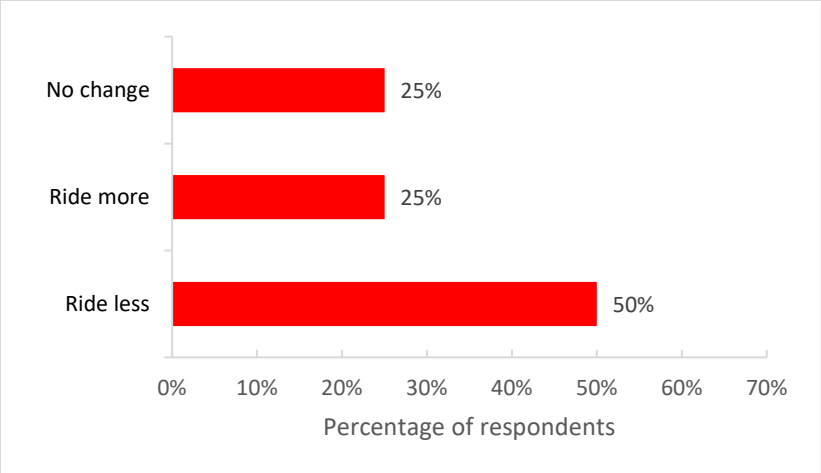

Figure 3.5 Change in Transit Use During COVID-19 for 18-24 Age Group (n=4)

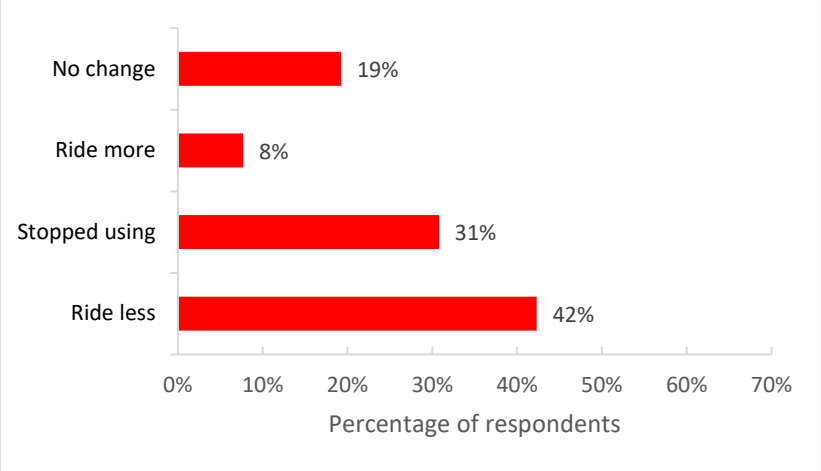

Figure 3.6 Change in Transit Use During COVID-19 for 25-34 Age Group (n=26)

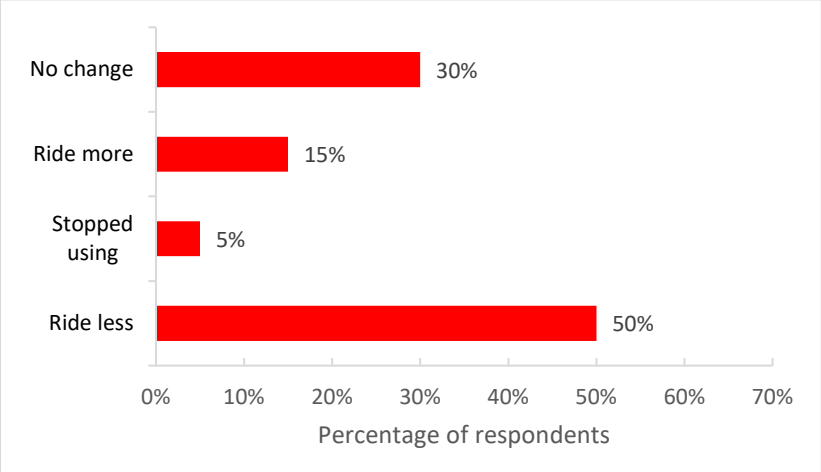

Figure 3.7 Change in Transit Use During COVID-19 for 35-44 Age Group (n=20)

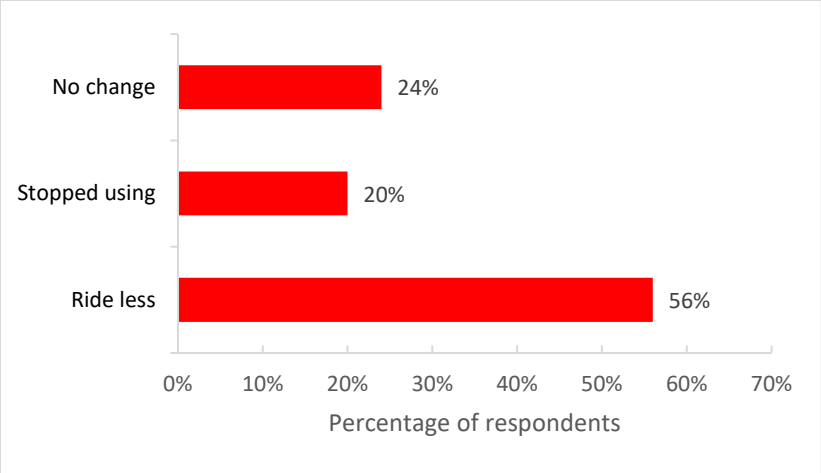

Figure 3.8 Change in Transit Use During COVID-19 for 45-54 Age Group (n=25)

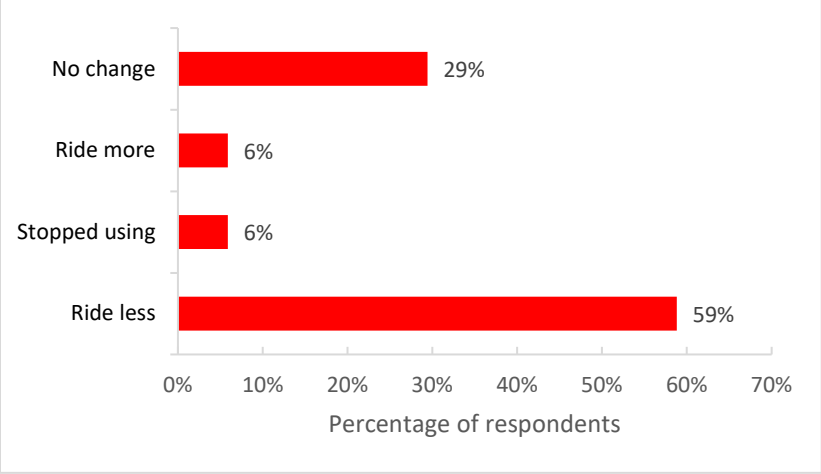

Figure 3.9 Change in Transit Use During COVID-19 for 55-64 Age Group (n=17)

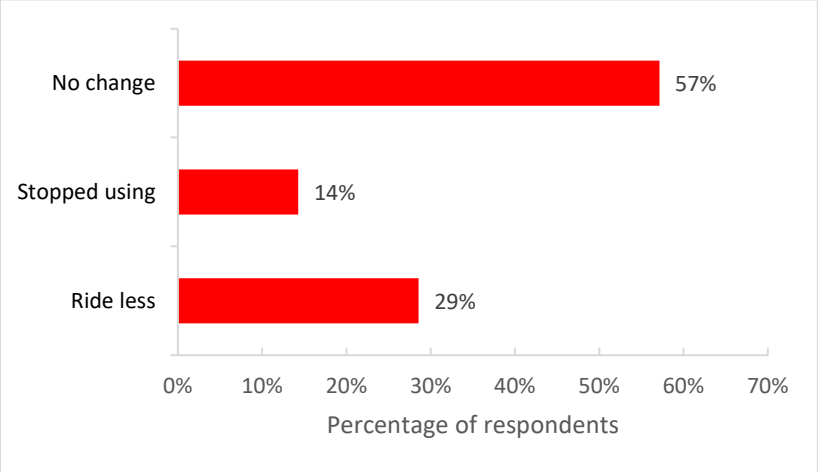

Figure 3.10 Change in Transit Use During COVID-19 for 65 or Older Age Group (n=7)

The survey also asked respondents if they have felt that their health and safety were protected while riding public transit. With 99 responses, 64% replied feeling safe, while 36% felt their health and safety was not being protected. With the large volume of information available on how the virus is spread, one might think that most of the users would feel in danger when using public transit, but only 36% felt that way. There was generally no significant difference between different age groups regarding how safe respondents felt.

Respondents were asked how soon they would be willing to return to using public transit at the same rate as before the pandemic. The two most common answers were “after the pandemic is over” and “after a vaccine is found.” A few respondents mentioned they would return to using transit if mask wearing or more safety protocols were enforced or once their work scheduled resumed.

Although riders generally felt their health and safety were protected while riding transit, 61% felt they had to choose between their health and their financial security or livelihood while riding transit, as shown in Figure 3.11. Those in the 25-44 age range were most likely to respond this way. Many may have felt that they did not have another option for getting to work with the pandemic going on.

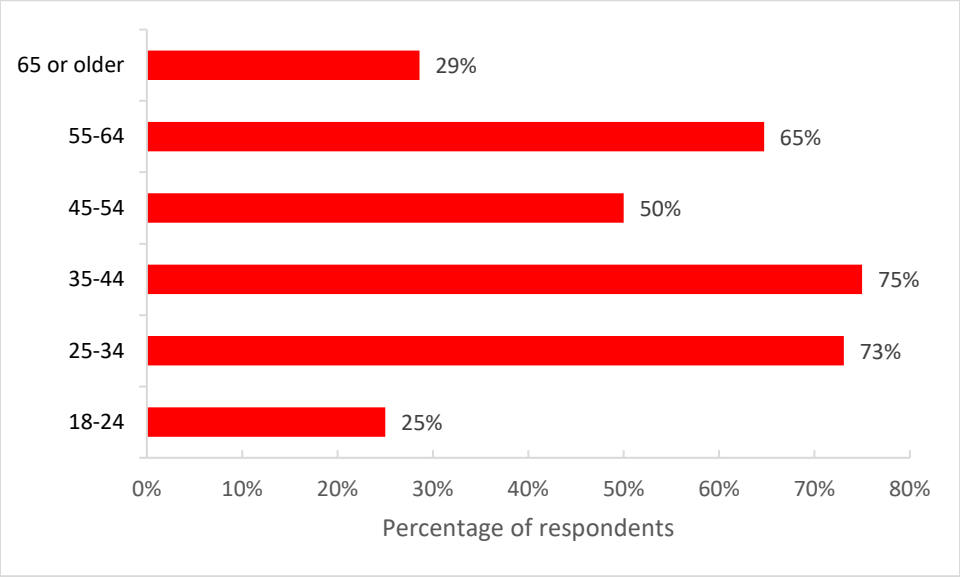

Figure 3.11 Respondents Who Felt They Had to Choose Between Their Health and Their Financial Security as They Rode Transit During COVID-19

Most of the results show that people over age 45 are concerned about the pandemic and having to use public transit. They remain uncertain and, although not all of them have stopped using buses or are not riding them less, their replies show that at least they have their doubts and are fearful of being infected. But younger people have also been affected in their commuting behavior. A high percentage replied that their rate of riding public transit has decreased or completely stopped, and they also expressed being worried about the virus and their well-being. Results show that younger users between 25-44 years of age may be concerned with sacrificing their health as well (Figure 3.11).

3.4 Public Transit Perception and Suggestions

Slightly more than half of respondents perceived the response of transit agencies during the pandemic as being either good or excellent, while 10% viewed the response as being poor, or not meeting their safety demands or expectations (Figure 3.12).

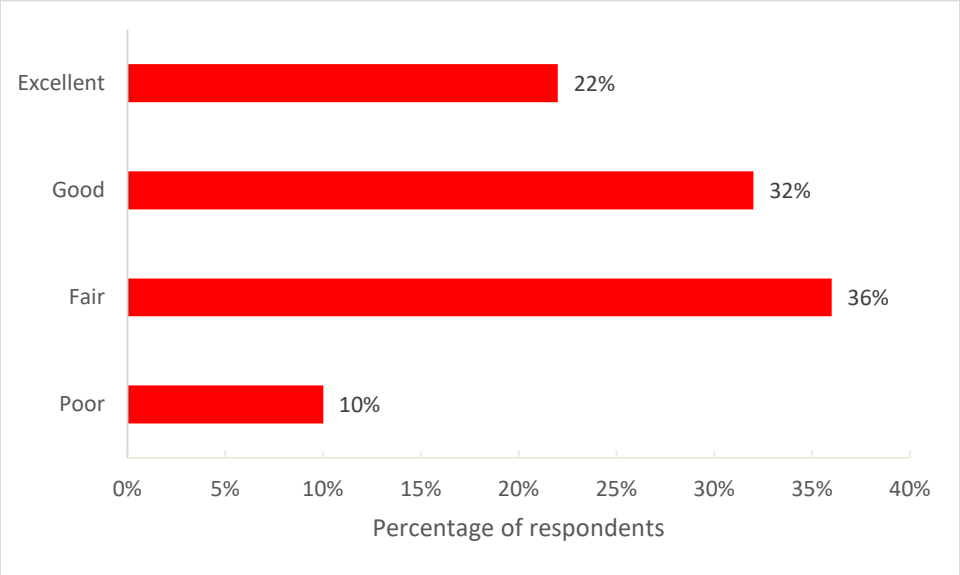

Figure 3.12 Rating of Transit Agency Response to the COVID-19 Pandemic by Survey Respondents (n=100)

Respondents were given the opportunity, in an open-ended question, to comment on what transit agencies could do to entice them to ride public transportation again, or to have them try transit if they have never ridden before. The most common responses can be grouped into four main areas: disinfecting and cleaning, mask enforcement, suggestions about service and operations, and social distancing and temperature checks. The number of comments received in these areas are shown in Figure 3.13.

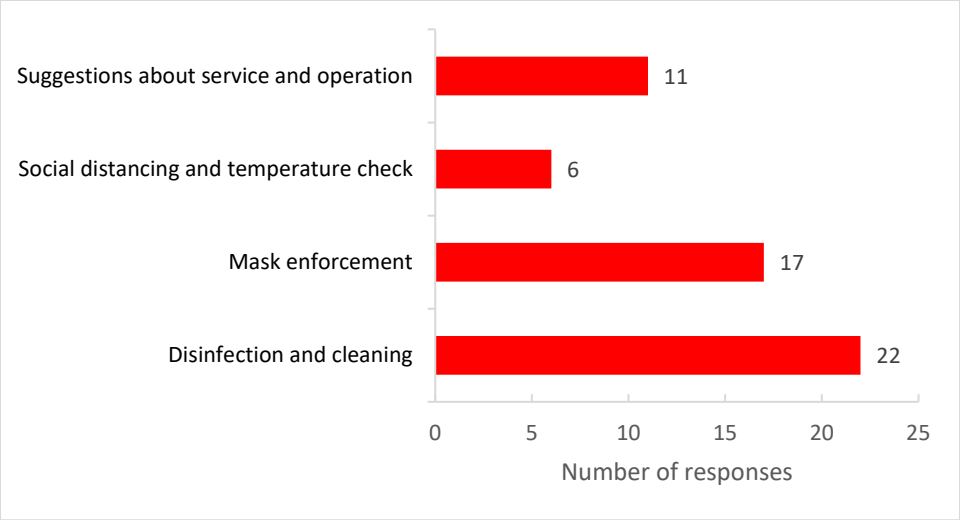

Figure 3.13 Suggestions for Increasing the Use of Transit During the Pandemic

4. RESULTS OF TRANSIT AGENCY SURVEY

Surveys were completed by 13 transit agencies, 12 in the state of North Dakota and 1 in Minnesota. This includes small urban providers in Fargo, Bismarck, and Grand Forks, and rural providers across North Dakota and in Minnesota. Figure 4.1 shows the types of services provided by the responding agencies. Most provide demand-response for the general public or ADA paratransit. Fixed-route service is also provided in the urban areas or larger cities.

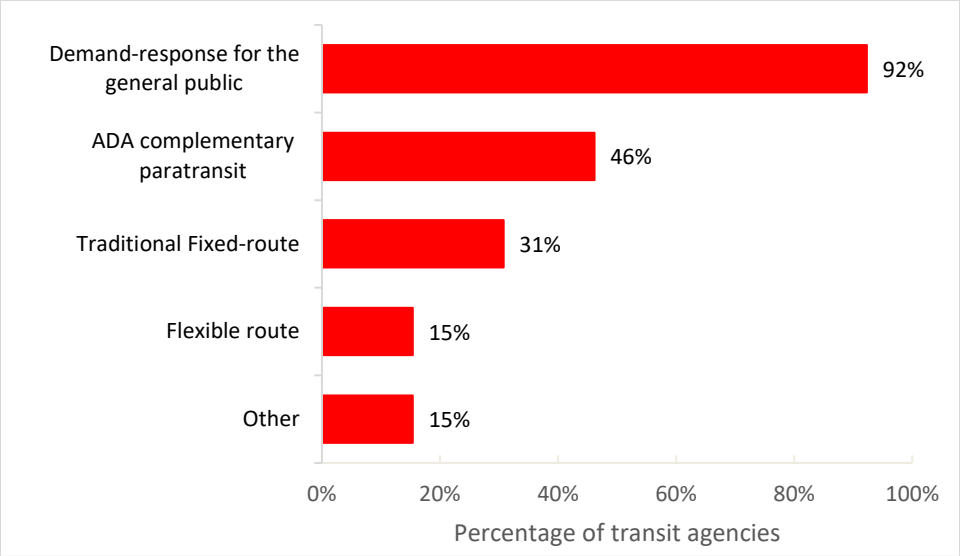

Figure 4.1 Types of Services Provided by Responding Transit Agencies (n=13)

All responding agencies reported a ridership decrease after the COVID-19 outbreak. This has also translated to revenue losses for nearly all agencies. Figures 4.2 and 4.3 show the average monthly losses in ridership and revenue during March, April and May of 2020, compared to the same span in 2019. Information was not collected past May.

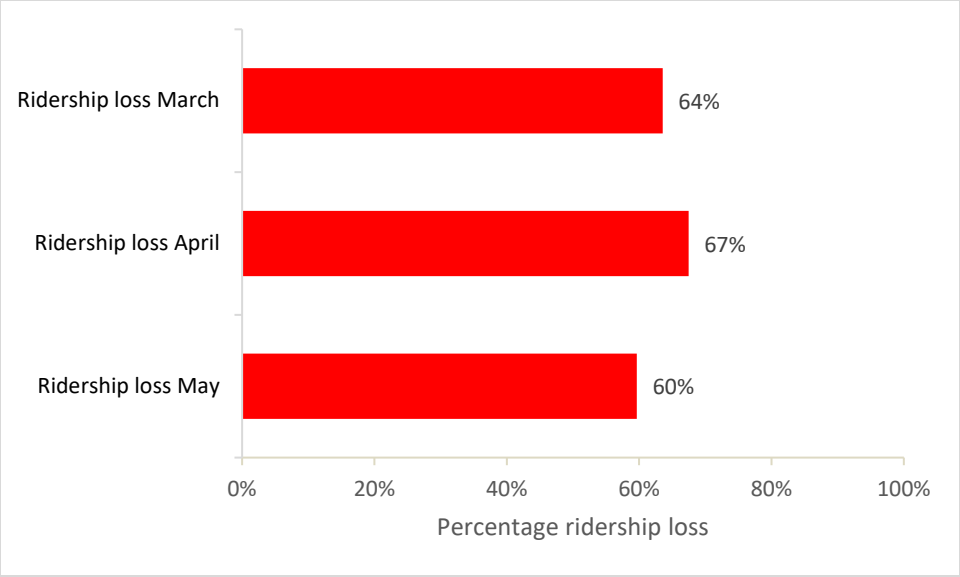

Figure 4.2 Average Reported Ridership Losses in 2020, Compared to 2019

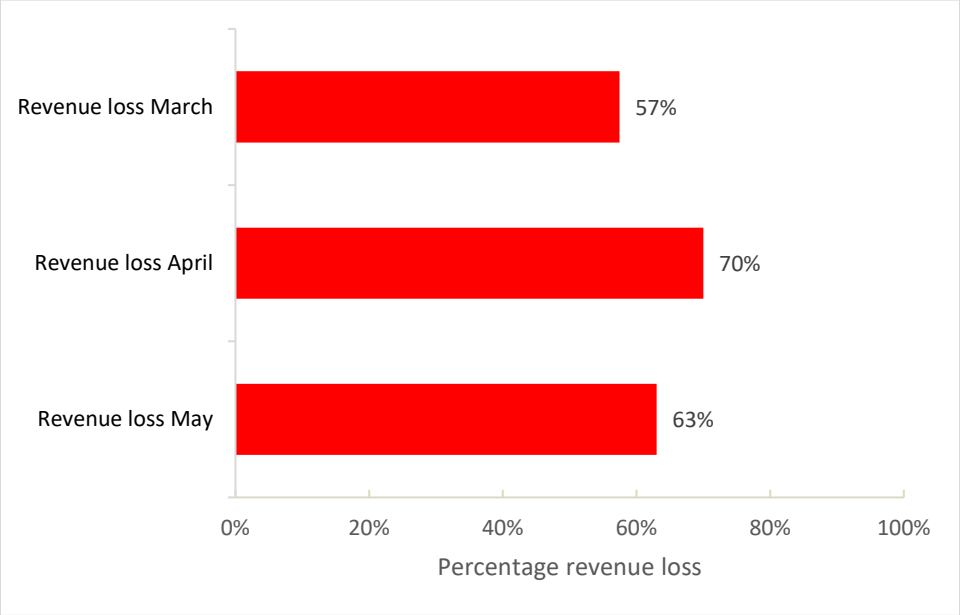

Figure 4.3 Average Reported Revenue Losses in 2020, Compared to 2019

The largest decreases in ridership and revenue occurred in April. This may be because the lockdown started during the third week of March, and by May agencies had already had some time to make some improvements regarding the safety of the passengers, prompting some riders to return to using public transit. During the month of March, agencies reported ridership losses between 28% and 90% compared to the previous year. During April, ridership deficits were between 19% and 100%, and during May, losses ranged from 33% and 90%. The same transit agency reported the highest ridership decreases every month, but overall, during the three months most of the agencies reported ridership loss of more than

50%. Ridership losses were slightly higher for the rural agencies. Ridership losses among just the rural systems (excluding the three urban agencies), averaged 68% in March, 72% in April, and 64% in May.

Revenue losses ranged between 2% and 92% during March, 10% and 100% during April, and 8% and 100% in May. The same agency registered the highest percentages of revenue losses, but when it comes to ridership losses, this agency had one of the lowest numbers, 34% and 33% for April and May, respectively. The transit agency that had the lowest decrease of revenue losses was an entity that offers demand-response senior rides. Perhaps they were able to offer the same number of rides while watching out for the safety of their users, and it should be considered that this service, even under regular conditions, didn´t have high volumes of demand. Revenue losses for the urban and rural systems were similar.

Agencies were also asked if they had already cut service or they were planning to do so in the future because of the pandemic and the observed decreases in both ridership and revenue (Figure 4.4). Six out of thirteen agencies replied they had already cut service. Three out of four agencies providing fixed-route service said they were still operating at regular levels. For the 6 agencies that said they had already cut service, the average service reduction was 28% in March, 45% during April, and 35% during May.

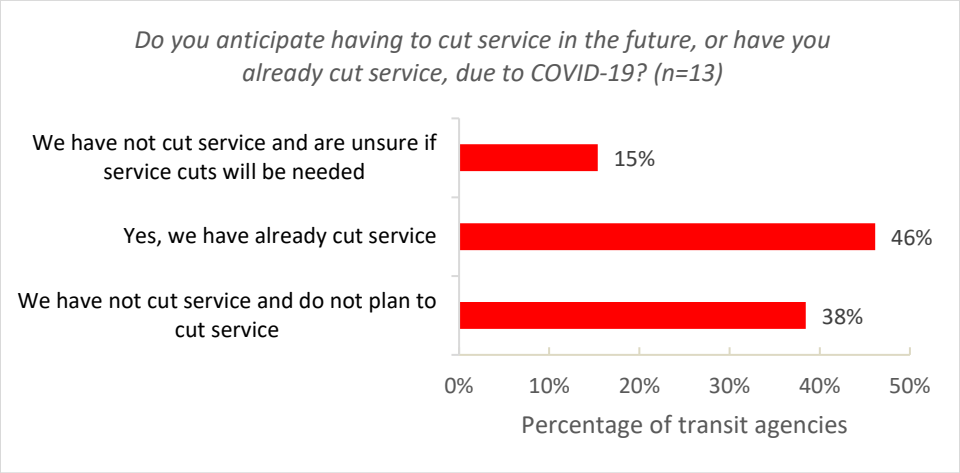

Figure 4.4 Service Cuts Due to COVID-19

Agencies were asked if they had developed a strategy to offer improved service to people with disabilities or other groups. Half of the responding agencies said they would do something to provide a better service for people with disabilities and nearly as many said the same about service for low-income riders (Figure 4.5).

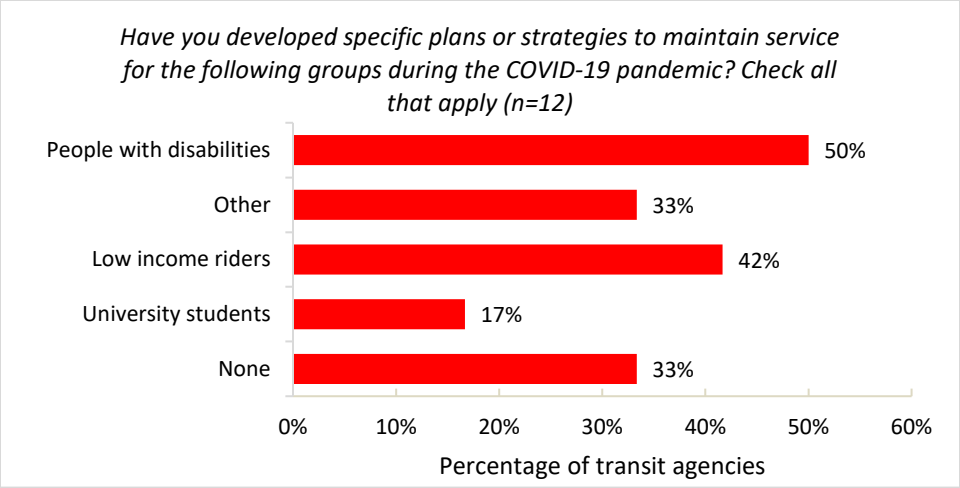

Figure 4.5 Strategies for Specific User Groups

Agencies were asked if, prior to the COVID-19 outbreak, they had a pandemic response plan. Most of the agencies said they did not have such a plan. Just one of the transit providers said they had a contingency plan for this type of event. After dealing with the pandemic and the resulting revenue and ridership losses, most of the agencies had to adapt and develop new measures and policies to be able to keep providing services in a safer way for both users and workers without sacrificing efficiency. As shown in Figure 4.6, most of the agencies had either created a pandemic response plan during the year or were in the process of creating one.

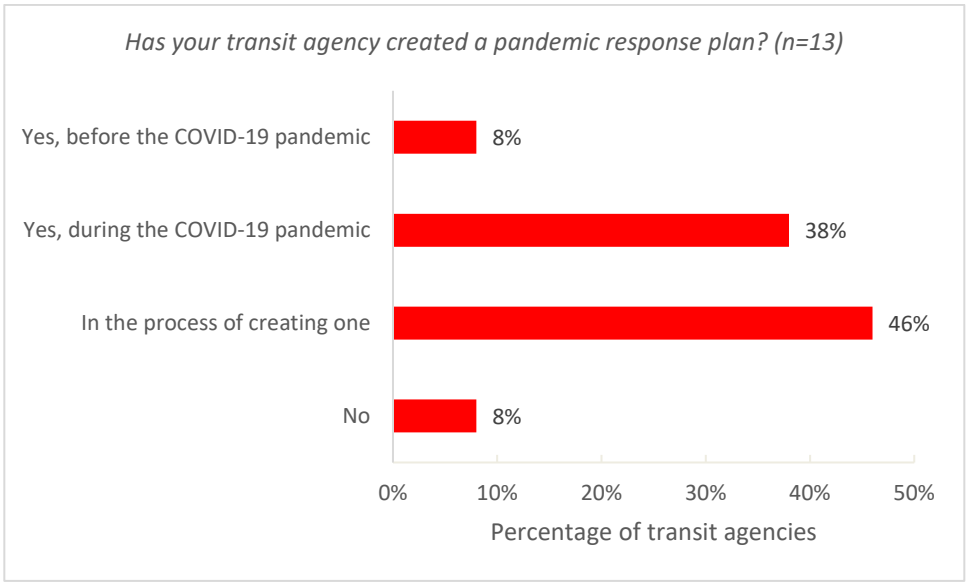

Figure 4.6 Development of Pandemic Response Plan

Transit agencies relied on municipal, state, or federal authorities to receive updates on the COVID-19 situation. Eleven of the 13 responding agencies said they received information that is relevant and targeted to operating and improving their systems. Being able to collect information and working hand-to-hand with the government, however, does not exempt agencies from facing challenges to keep up with the pandemic. In addition to an increase in cleaning expenses, many transit providers experienced difficulty getting protective equipment and cleaning supplies (Figure 4.7).

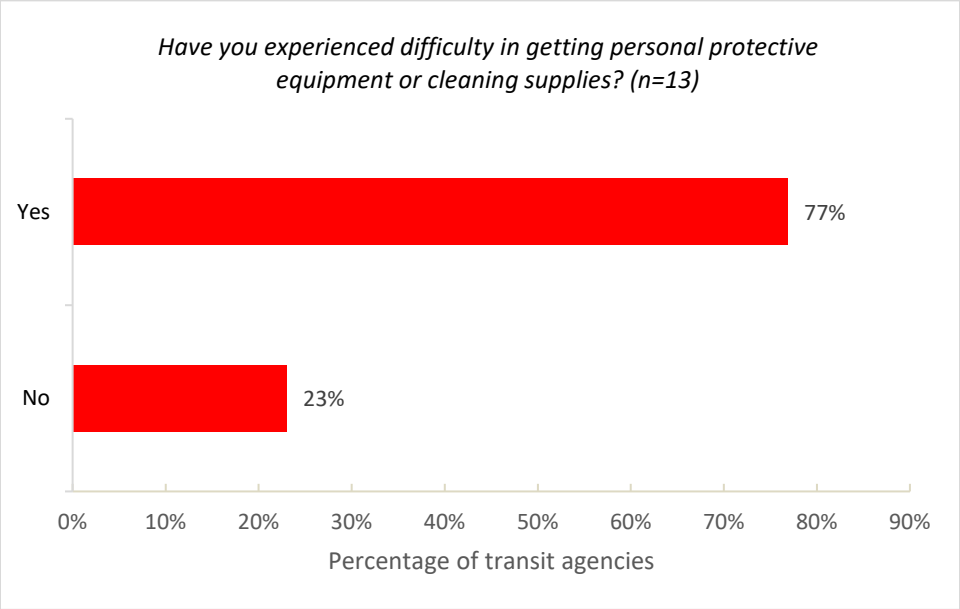

Figure 4.7 Challenges Getting Equipment and Supplies

Although most agencies experienced difficulties getting supplies for cleaning buses and facilities, all responding agencies had increased cleaning of vehicles and facilities and purchased extra supplies to provide a safer environment for riders (Figure 4.8). All agencies had also provided employees with information and guidance. Communication with riders and workers played an important role in the actions agencies implemented. Other actions taken by some agencies included limiting the number of riders, eliminating fares, and installing barriers around the driver.

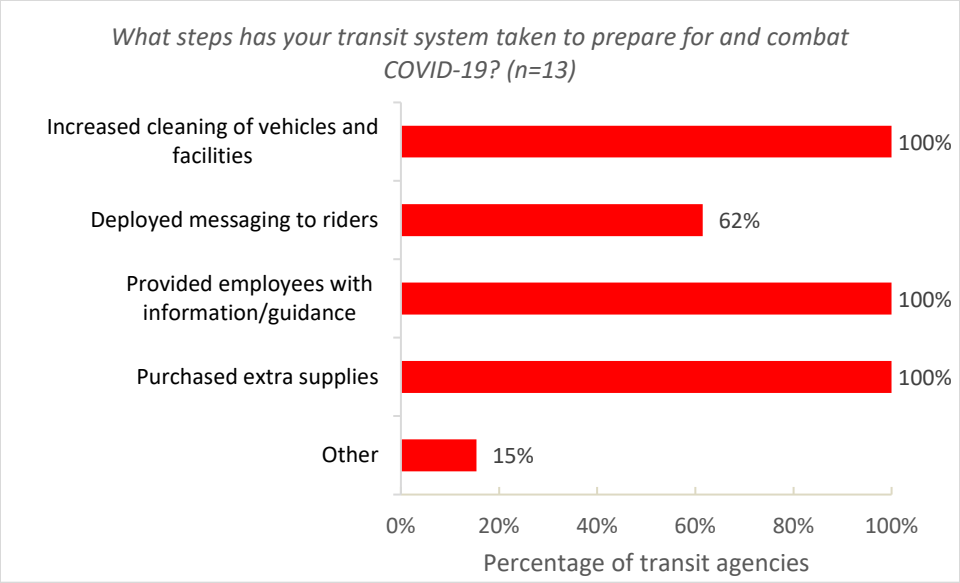

Figure 4.8 Actions Taken by Transit Agencies to Face COVID-19

Handling the pandemic required transit agencies to communicate with both riders and employees on a variety of topics. As shown in Figures 4.9 and 4.10, most responding agencies communicated with both riders and employees about social distancing, personal precautionary measures, and the symptoms of COVID-19. Some agencies also communicated with riders about service disruptions and new schedules or with employees about new leave policies.

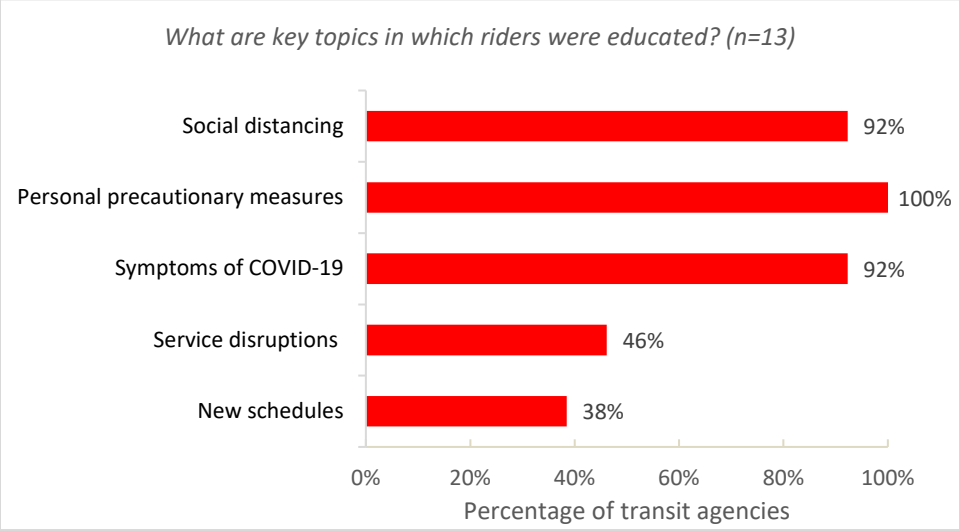

Figure 4.9 Topics Communicated to Riders

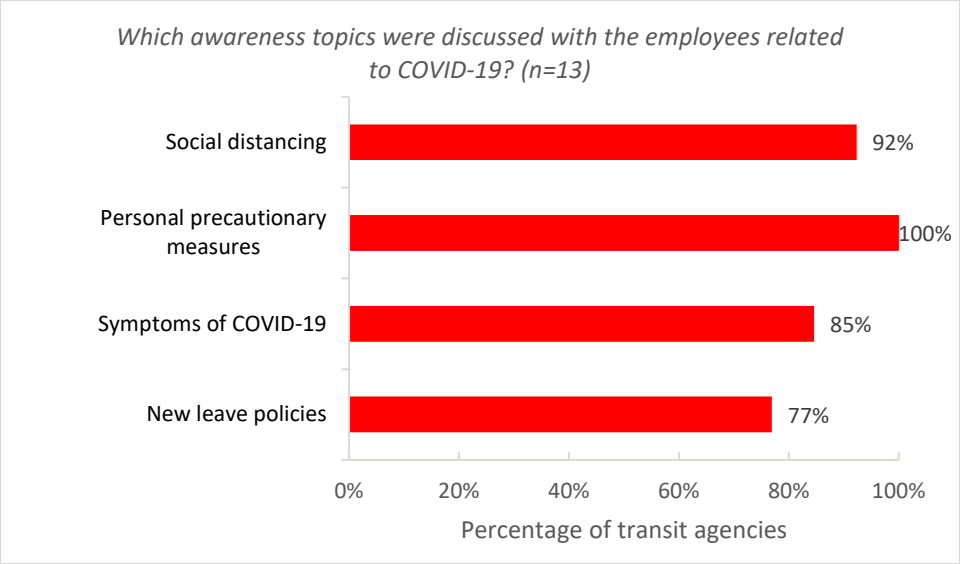

Figure 4.10 Topics Communicated to Employees

Staffing can also be a significant challenge during a pandemic, especially considering most of the agencies weren´t prepared for a pandemic. An increase in employee absences could result either from workers becoming sick or needing to stay home if they had any type of symptoms to avoid infecting others, or because of increased concern about infection. Five of the agencies mentioned making changes to their sick leave policies. Nearly half of the agencies reported an increase in employee absences as a result of COVID-19. These agencies mentioned issues with operator shortages. Maintaining sufficient staffing is essential for agencies to maintain their services while improving safety. Some agencies had made shift changes or workhour changes in response. Four of the agencies reported that they had to lay off employees.

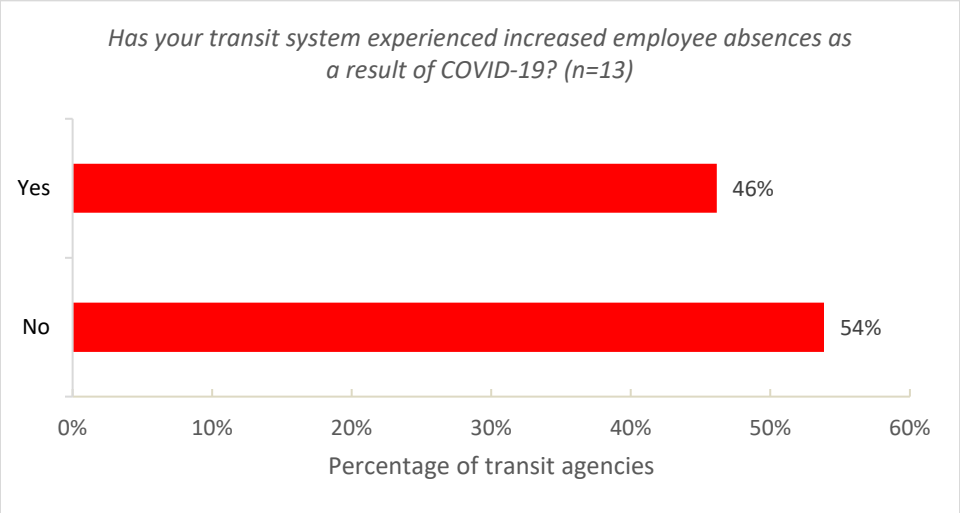

Figure 4.11 Increase in Employee Absences

5. CONCLUSIONS

The survey of transit riders provided insight on rider opinions during the pandemic and changes in travel behavior. About 65% of respondents had either stopped riding transit entirely or reduced their use of transit. A majority felt that their health and safety were being protected while riding transit, though slightly more than one-third disagreed. Slightly more than half of respondents perceived the response of transit agencies during the pandemic as being either good or excellent, while 10% viewed the response as being poor, or not meeting their safety demands or expectations. The most common recommendations respondents gave for what transit agencies could do to make them more likely to use transit were in regard to disinfecting and cleaning, mask enforcement, suggestions about service and operations, and social distancing and temperature checks.

Survey responses from 12 transit agencies in North Dakota and one in Minnesota showed the extent to which ridership and revenue dropped during the pandemic. During the month of March, agencies reported ridership losses between 28% and 90% compared to the previous year. During April, ridership deficits were between 19% and 100%, and during May, losses ranged from 33% and 90%. About half of the agencies had cut services. Only 1 of the 13 agencies had a response plan for this type of situation before the pandemic. By the time of the survey in the Fall of 2020, most of the agencies had developed a pandemic response plan or were in the process of creating one. Most transit agencies reported difficulties in getting personal protective equipment or cleaning supplies. All responding agencies had increased cleaning of vehicles and facilities and purchased extra supplies to provide a safer environment for riders. All agencies had also provided employees with information and guidance. Communication with riders and workers played an important role in the actions agencies implemented. Other actions taken by some agencies included limiting the number of riders, eliminating fares, and installing barriers around the driver. Staffing was also a significant challenge. About half of the transit systems had experienced an increase in employee absences as a result of COVID-19.

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