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**Community Transportation Needs and Willingness to Use Shared Micromobility:  
A Case Study of Fort Smith, Arkansas**

Anthony Kammerer

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*Honors Thesis*

Dr. Sarah Hernandez

April 22, 2022

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## Introduction

Shared micromobility is utilized in “targeted service areas with the usage generally intended for short trips such as “first- and last-mile” connections to complete trips made via other modes, including transit” (Price et al., 2021). In the United States, this practice has especially taken off with the implementation of sharing-based systems. This is evidenced by ridership numbers in the United States growing from 84 million riders nationwide in 2018 to 136 million riders in 2019 (NACTO, 2020). Users often use their smart phone or another similar device to unlock the vehicle after paying a fee on the device through their credit card. While many people use these scooters or bikes as a novelty or purely for entertainment, “21% [of] adults would consider using e-scooters when available” (Mitra, 2020).

The growing market for micromobility could result in changes in the way that the public commutes to their destination. E-scooters and bikes have potential to provide users the “last mile” of transportation. This, for instance, could be seen as a quarter-mile walk from the bus stop to a person’s place of employment. In urban areas, racial minorities and low-income users are almost twice as likely to use public transit (Anderson, 2016). Due to this growing market, it is important to analyze the ways low-income citizens will also be able to use scooter and bicycle sharing in cities in the US. Low-income users have less access to mobile phones (Pew Research Center, 2021). Additionally, 7.1 million Americans do not have access to a bank account (FDIC, 2020). Both of these factors combine into a possible user gap for low-income citizens regarding shared micromobility services.

Utilizing data from users and cities, will assist municipalities and companies alike so they can implement micromobility in cities so that low-income communities can also take part. From implementation to public transit, to Sunday joy rides, micromobility has a chance to grow into a

mainstay in American cities. If this is the case, it is important that all people can utilize the system for effective public transportation. This thesis examines the transportation needs of citizens of low income communities in Fort Smith, Arkansas.

This thesis is developed in conjunction with an NSF sponsored research project called SMILIES: Shared Micromobility for affordabLe-accessible Housing. SMILIES seeks to better link affordable housing and workplaces through shared micromobility by developing strategy for decision making. This thesis develops the survey that will be used in SMILIES to view the opinions of potential low-income users in the Fort Smith, Arkansas area.

## **Background**

Various companies have entered the market for scooter and bike sharing hoping to capitalize on the growing market. In the United States, some of the most recognizable companies include Bird, Lime (owned by Uber), Spin, and VeoRide. These companies offer a dock-less system for bicycles, scooters, and even mopeds. Under this model, users unlock the vehicle with a mobile phone application (app) and can park and ride from anywhere within the boundaries the program operates within.

The other popular model has come from direct implementation in larger cities across the United States, such as Chicago and Kansas City (NACTO, 2019). In these cities, the bikes operate on a dock-based system located near public transit stops, meaning riders must return the bicycles to a designated dock. The thought with this is to eliminate parking problems on sidewalks in crowded areas.

One potential issue with micromobility sharing services is that low-income populations do not have the means to access the vehicles whether it be through a lack of smart phone, credit card, or a combination of the two. The Pew Research Center suggests that 76% of adults making

less than \$30,000 own a smartphone, which is almost always necessary for unlocking a vehicle; conversely, of those earning greater than \$75,000, the number jumps to 96% (Pew Research Center, 2021). This could show an inequity in the access that low-income neighborhoods face in ability to get a vehicle.

If micromobility is to be integrated into public transit systems to serve as last-mile connectors within the United States, the main users of public transit also need to be able to use the shared vehicles. Those who earn less than \$30,000 are 5% more likely to use public transportation than any other group of incomes (Anderson, 2020). To combat this, access programs have been established to help marginalized communities gain access to shared vehicles.

As this thesis implements a survey for gauging needs and public interest, it is important to understand the effectiveness of surveys regarding transportation. Surveys aimed at determining transportation needs have been used by various agencies from businesses to the NHTSA. These surveys aim at finding trip data, especially when, how, and where users take trips to work. The results of these surveys are then used to develop routes as well as determine locations where shared micromobility and public transit links could work best. Various online studies in New York City showed success rates in a range of 60% to 95% (Chen, 2010). These high success rates mean that online surveys have the ability to effectively reach their target audience. Additionally, another study (concerned on live reporting of trips) found that users find that a paper survey has a higher burden of usage, meaning that it was more inconvenient or difficult to fill out paper surveys compared to a web-based survey (Sato, 2020). Thus, it can be seen that online surveys are effective for the data collection necessary for adequate planning of transportation options.

## **Research Methodology**

The research for this thesis will be carried out through surveys sent to residents in the Fort Smith, Arkansas area. The survey required four tasks for completion of the survey: (1) Development of questionnaire, (2) Design of a survey, (3) Selection of a sample frame, and (4) Implementation of a survey. This section describes the study area as well as the tasks for completion of the survey.

The objective of the survey was to gain a basic understanding of the transportation needs of low-income communities. An additional objective of the survey was to find potential interest in shared micromobility in these communities. This basic understanding was to be used as the basis for future surveys used in the SMILIES Project.

### ***Study Area Description***

The study area for this survey was Fort Smith, Arkansas, located in the Northwestern part of Arkansas, along Interstate 40. The city's population is 88,233 people, 21.04% of which lives at or below the poverty line, with a growth rate of 0.19% in 2020 (World Population Review, 2021). Fort Smith lies within the Frontier Metropolitan Planning Organization whose boundaries are seen below in Figure 1. The city's transit map is also displayed below in Figure 2. Finally, an income population map for the city of Fort Smith is seen in Figure 3. Analyzing the maps below, it can be seen the areas of low-income in the city are in the "Northside" (as known in Fort Smith) near the Midland (red) bus route and in the area along the Rogers Avenue (blue) route. When comparing the transit operations of Fort Smith to other similarly sized metropolitan areas without major universities in the surrounding region (Topeka, KS; Tyler, TX; and Amarillo, TX) Fort Smith has fewer available route options than these cities, making it harder for those who use public transportation to get to work using these means.

Table 1, shown below, also displays further explanation of the demographics data focusing on race, education attained, and income (World Population Review, 2021). This data shows that Fort Smith has a low population who received a bachelors degree or higher as well as high percentages of minority residents who live in poverty.

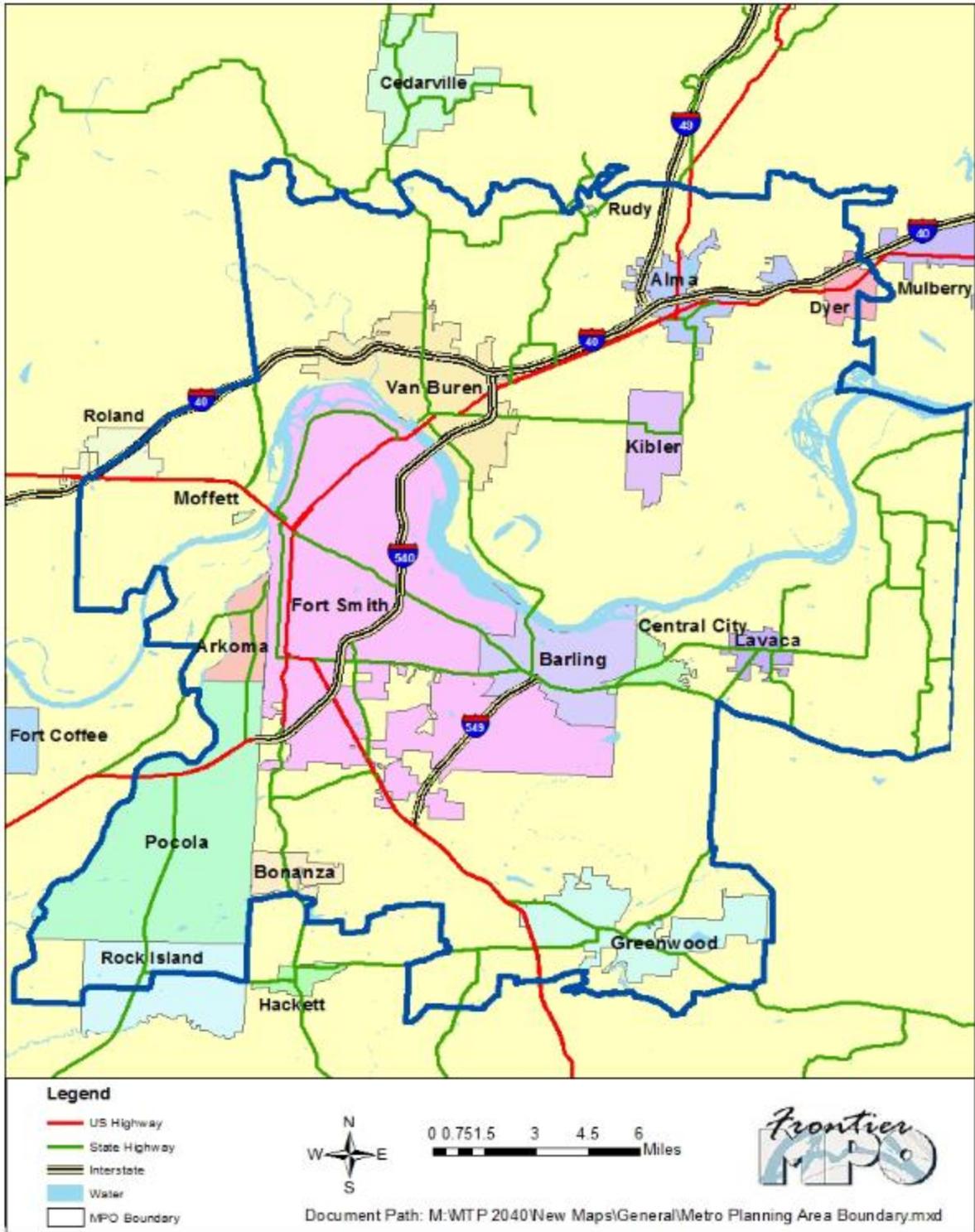


FIGURE 1. FRONTIER MPO BOUNDARY MAP (FRONTIER MPO, 2016)

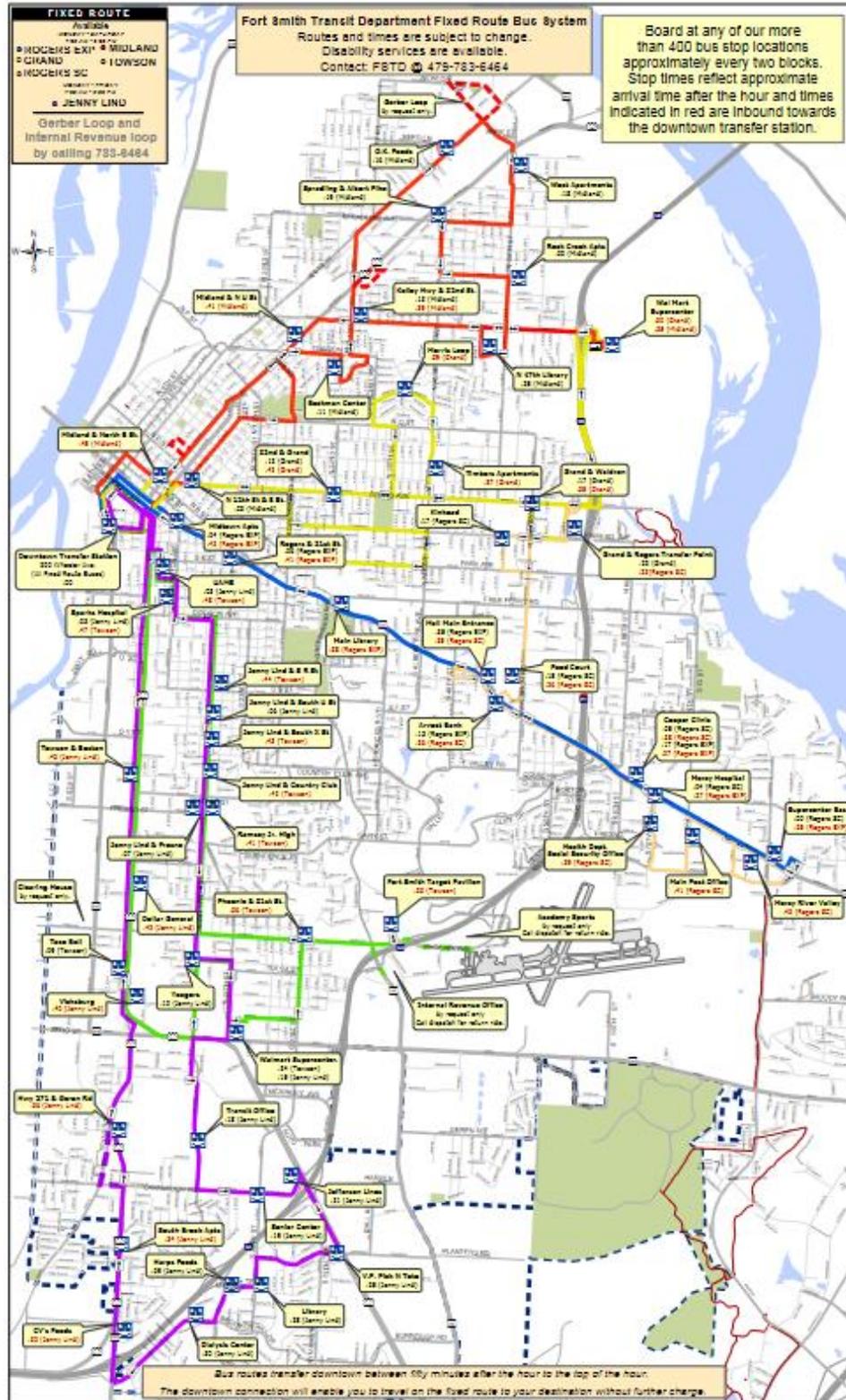
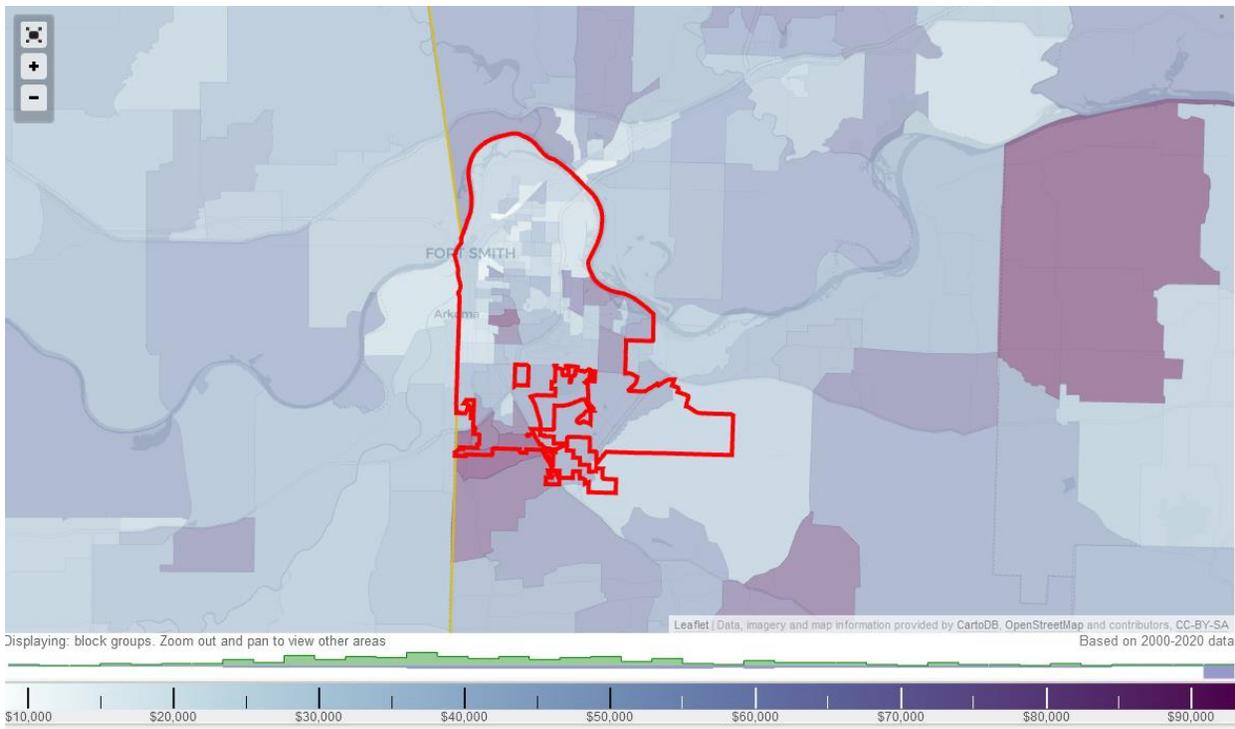


FIGURE 2. FORT SMITH, ARKANSAS TRANSIT MAP (FRONTIER MPO, 2016)



**FIGURE 3. FORT SMITH, ARKANSAS INCOME MAP (CITY-DATA.COM, 2021)**

**TABLE 1. FORT SMITH DEMOGRAPHIC DATA (WORLD POPULATION REVIEW, 2021)**

	<b>Population</b>	<b>Percentage</b>
<b>Race</b>		
White	56,592	64.50%
Some Other Race	11,597	13.22%
African American	8,333	9.50%
Asian	5,486	6.25%
Two or More Races	4,662	5.31%
American Indian and Alaskan Native	1,047	1.19%
Native Hawaiian or Other Pacific Islander	26	0.03%
<b>Education Attained</b>		
Less than 9th Grade	4,680	8.11%
9th to 12th Grade	5,908	10.24%
High School Graduate	17,219	29.86%
Some College	13,233	22.94%
Associates Degree	4,045	7.01%
Bachelors Degree	8,628	14.96%
Graduate Degree	3,961	6.87%
<b>Poverty by Race</b>		
White	8,711	17.10%
Hispanic	5,212	30.74%
Other	3,331	28.83%
Black	2,847	34.80%
Multiple	894	19.35%
Asian	580	10.58%
Native	287	27.78%

***Task 1: Development of a questionnaire***

The questionnaire used for the project was designed with assistance and guidance from Dr. Suman Mitra at the University of Arkansas. The goal for the initial survey was to develop a survey that collected information on Fort Smith's transportation systems, the needs of local users, and their willingness to use shared micromobility. The survey questions were first based off of questions commonly asked in the National Household Travel Survey. These factored commute time, transportation mode, and available vehicles (NHTS, 2020). Demographic data

such as gender, education, race, etc. was also implemented in the survey. Finally, a few questions were added specifically about micromobility to gauge input. The survey questions are seen below as presented in the printed off version of the survey (Figure 4, Figure 5, and Figure 6). These questions aim to assist companies and municipalities that are beginning the process of implementing shared micromobility of the user base they will see as well as what wants and needs a potential user wishes to see. By being able to link the needs of income, transportation issues, and desires, a more informed business model relating to the needs of low-income users can be developed.

### **Community Transportation Need Assessment Survey**

How do you usually get to work?

- Personal Car
- Public Transportation
- Walk
- Bicycle
- Not applicable
- Other (please specify)

How long does it take you to get to work?

- Less than 15 minutes
- 15 to 30 minutes
- 30 to 45 minutes
- Greater than 45 minutes
- Not applicable

How strongly do you agree or disagree with the following statement?

	<b>Strongly Disagree</b>	<b>Somewhat Disagree</b>	<b>Neither Agree nor Disagree</b>	<b>Somewhat Agree</b>	<b>Strongly Disagree</b>
I face transportation problems getting to places every day.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**FIGURE 4. PART 1 OF SURVEY QUESTIONS**

What is your biggest problem that you face getting to places every day?

- Lack a car
- Limited public transportation options
- Limited bicycle lanes
- Hazardous roads
- Lack of sidewalks
- Other (please specify)

How can the city develop a bike programs in your city that addresses your transportation problem?

- Create new bike lanes
- Increase number of bikes
- Protect cyclists on busy streets
- Increase safe parking options/ensure bike won't get stolen
- Provide bicycles on public transport stops
- Other (please specify)

How interested would you be using bicycles to get to work in a city-wide bicycle sharing program?

- Very interested
- Moderately interested
- Slightly interested
- Not at all interested

What is your zip code?

---

What is your age?

- Under 18
- 18-25
- 26-35
- 36-45
- 46-55
- 56-65
- 66-75
- Over 75
- I prefer not to answer

What is your race/ethnicity?

- White
- Black or African-American
- Hispanic, Latino, or Spanish
- Asian
- American Indian or Alaska Native
- Native Hawaiian or Other Pacific Islander
- Other
- I prefer not to answer

FIGURE 5. PART 2 OF SURVEY QUESTIONS

What is your gender?

- Male
- Female
- Transgender
- Do not identify as male, female, or transgender
- I prefer not to answer

What is your approximate annual household income, before taxes?

- < \$20,000
- \$20,000-\$34,999
- \$35,000-\$49,999
- \$50,000-\$74,999
- \$75,000-\$99,999
- \$100,000 or more
- I prefer not to answer

What is your highest formal education level?

- No high school diploma/GED
- High School/GED
- Some College
- Associate's Degree
- Bachelor's Degree
- Graduate or Professional Degree
- I prefer not to answer

Name

---

Email

---

Address

---

### FIGURE 6. PART 3 OF SURVEY QUESTIONS

#### *Task 2: Design of a survey*

The survey was designed to be accessible online as well as a paper form. Due to the COVID-19 pandemic which ravaged the United States, it was necessary to make a safe way for users to fill out the survey without having to use shared materials such as pens, papers, etc. One benefit of online surveys is their ability to reach a wide audience. As of April 2021, Frontier MPO had 349 followers on Facebook (Facebook, 2021). This means that all 349 followers had

instant access to the survey on March 30<sup>th</sup>, the day the survey was published. One user also shared the survey to his feed, widening the reach of the survey. Another benefit of online surveys is time saved as the survey software, in this case PublicInput, automatically compiles all results with accuracy. However, there are downsides to online surveys. In work done with the U.S. Department of Health and Human Services, it was found that “more than one in six people in poverty have no internet access” (Swenson, 2020). This means that approximately 17 percent of the low-income population in the United States does not have access to the means to fill out an online survey, which causes obvious issues for a survey directed at understanding the views of low-income residents of Fort Smith. Online surveys were used during the Flint Water Crisis to gauge low-income views; yet, a smaller proportion of Hispanic and other minority populations responded to the survey showing a “digital divide” (Ford, 2020). This further highlights that in low-income areas a true and full sample of the population may not be reached by use of an online survey. Thus, the survey was also distributed in paper format through Frontier MPO.

### ***Task 3: Selection of sample frame***

The SMILIES team, along with Frontier MPO, assisted in the distribution of the survey. As previously mentioned, Frontier MPO published the survey on its website and Facebook page. Frontier MPO also worked with local homeless and aid shelters to encourage participation or hand out physical copies of the survey. It can be expected that online surveys have a response rate of approximately 33%; essentially, a third of those who see the survey will take the time to fill out the survey (McMaster, 2017). These numbers are expected for the online survey that was implemented on March 30, 2021.

#### ***Task 4: Survey implementation***

The survey was published and sent to local organizations through Frontier MPO on March 30<sup>th</sup>, 2021. Although the survey is still open, as of April 26, 2021, the survey had 73 respondents answer every question except for the zip code question (which only had 59 responses). This may be because the zip code question required users to type in a value compared to selecting a bubble. The physical copies of the survey have yet to be collected.

If results from this survey do not provide adequate data, a second survey may need to be created to better understand the views of low-income populations in Fort Smith, Arkansas.

#### **Research Timeline**

**TABLE 2. TIMELINE FOR CREATION OF THESIS**

Begin Survey Questions (Completed)	January 2021
Survey Distributed (Completed)	March 2021
Collect Survey Results	May 2021
Analyze Survey Results	June – August 2021
Determine if Second Survey Needed	September 2021
Distribute Second Survey	September 2021
Develop Thesis Committee	October 2021
Turn in 60% Draft	October 2021
Analyze Second Survey (if needed)	October 2021
Turn in 90% Draft	December 2021
Turn in Final Draft	Spring 2022
Thesis Defense	Spring 2022

## **Survey Results**

### ***Sample Size Results from the Survey***

The survey failed to poll an adequate sample size for the Fort Smith Metropolitan Statistical Area. An appropriate conservative sample size for the population of Fort Smith is 380 persons surveyed (Taherdoost, 2018). The survey conducted in this paper only garnered 85 responses, well below the required count. While the COVID-19 pandemic was taking place during the time of surveying, the pandemic cannot be used as a bypass for not collecting sufficient data.

In future surveys, better steps need to be taken to ensure the survey is able to be adequately used for analysis. Text messaging responses to the survey made up 7.05% of the responses to the survey, yet out of these six responses, not a single survey was fully completed. There were no reports of a technical error with the text messaging form of the survey. Additionally, at minimum four responses to the survey came from outside of the Fort Smith area according to the location data from the survey. While these responses still can provide helpful data, they cannot be assumed to be representative of the Fort Smith Metropolitan Area. Another potential issue in the survey results is that there was no way to identify if someone took a survey multiple times. While no data was an exact match across every survey, it is possible for someone to have taken a paper and web survey.

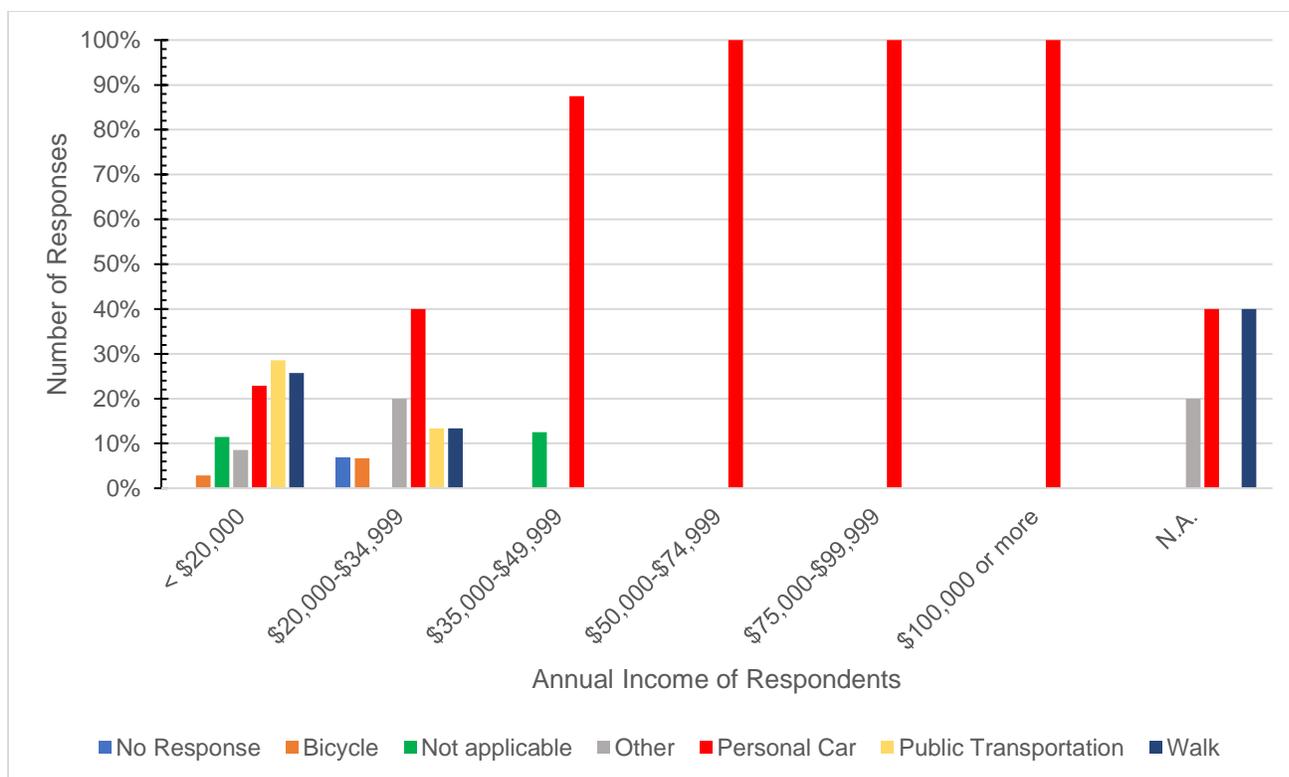
The survey was successful in obtaining results from members of the community who live low-income lifestyles which was the target audience. 43.75% of respondents earn less than \$20,000 a year, and a total of 62.50% of respondents earn less than \$35,000 a year.

### ***Modes of Transportation to Work***

While the survey was not successful in establishing an ample sample size, it did offer some insights into the wants of low-income residents of Fort Smith. Figure 7, below, shows a graphical representation of the responses to the survey concerning the modes respondents use to get to work. The responses show more variability in the lower income tiers. Of the five responses to the question labeled as “other,” four were related to carpooling and one was related to a taxi company in Fort Smith, Arkansas.

Of the 35 respondents who noted that their income was less than \$20,000, the amount who do not use their own personal car to get to work is 77.14%. Additionally, as income levels increase the amount of personal car usage increases as well. 86.67% of respondents who reported making over \$35,000 a year use their own vehicle.

While bicycling to work may only be the mode of transportation to work for 2.5% of all respondents, all of these respondents were in the lower income brackets. An additional 16.25% of survey-takers reported walking to work. All 12 respondents (14.12% of the total) who reported using public transportation to get to work made less than \$35,000 in annual income.

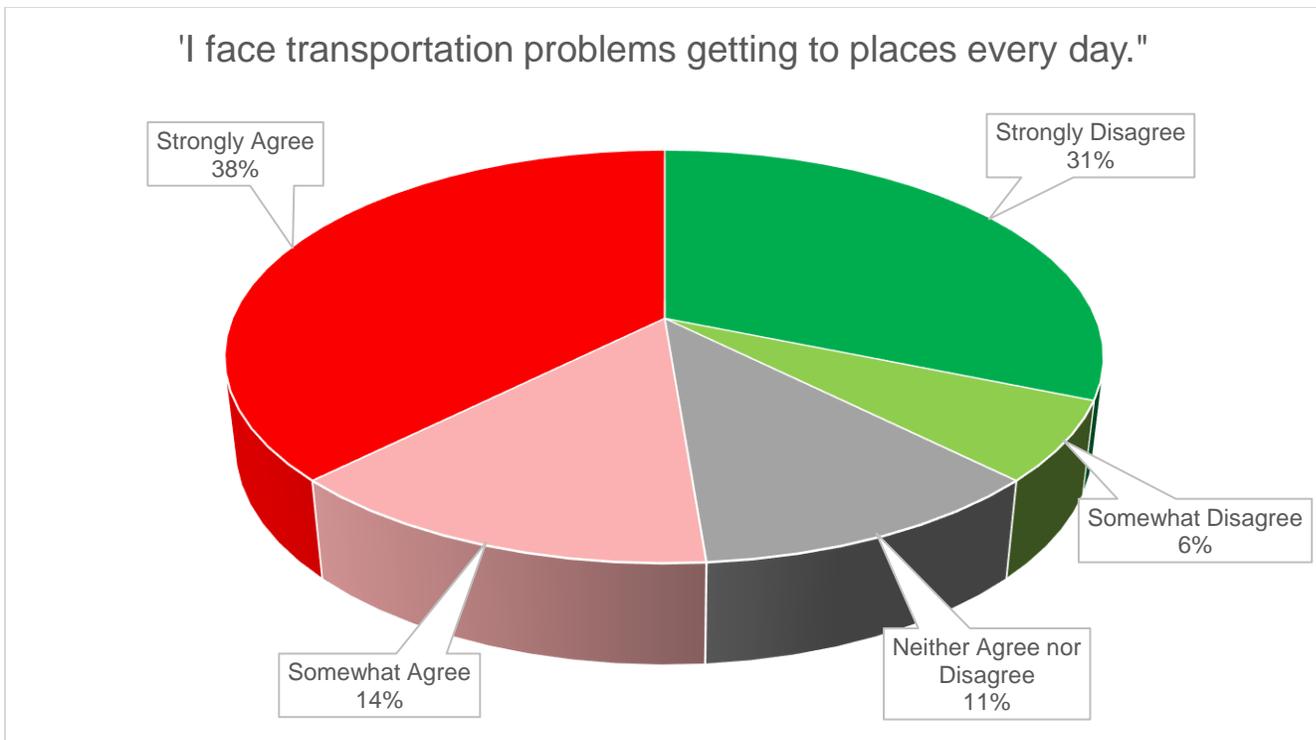


**FIGURE 7. TRANSPORTATION MODES USED BY EACH INCOME BRACKET**

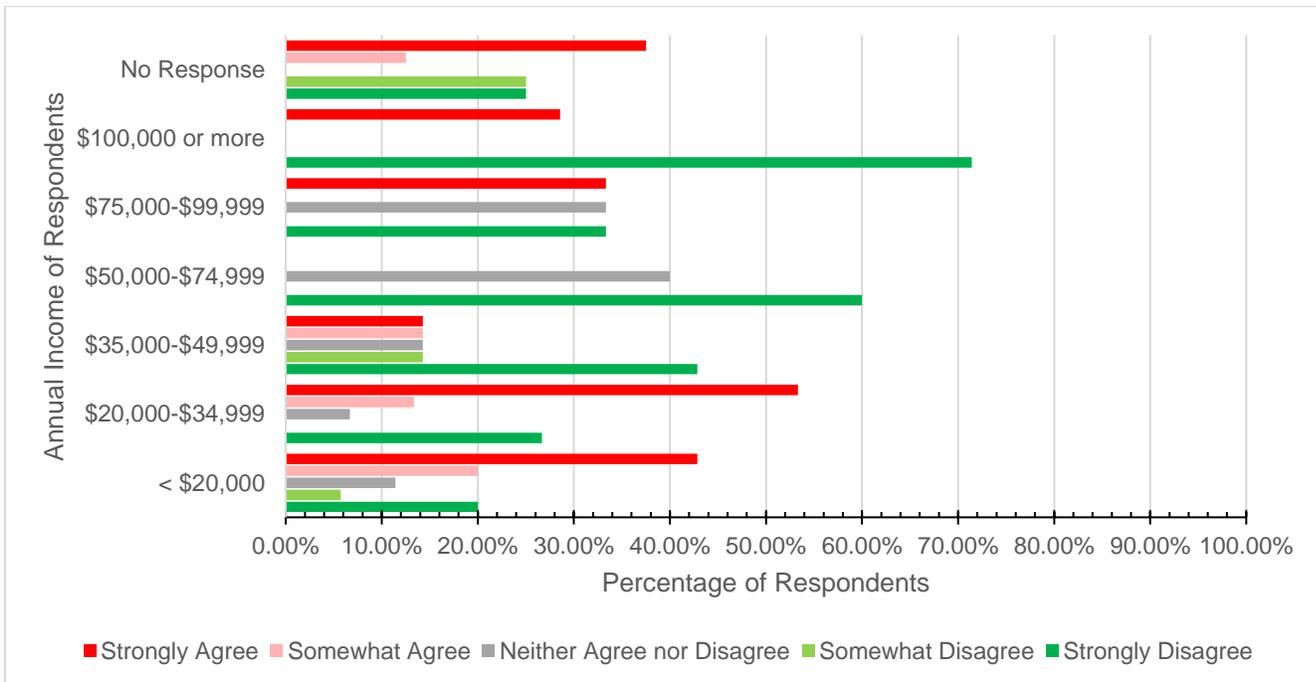
### ***Transit Related Issues***

Figure 8 and Figure 9 demonstrate the percentages of respondents who feel that they face transportation issues. Red was chosen in these figures to display issues or frustration with transportation; conversely, green was chosen to display increasing levels of ease. 52% of those who partook in the survey feel that they face at least some issues getting places in the area.

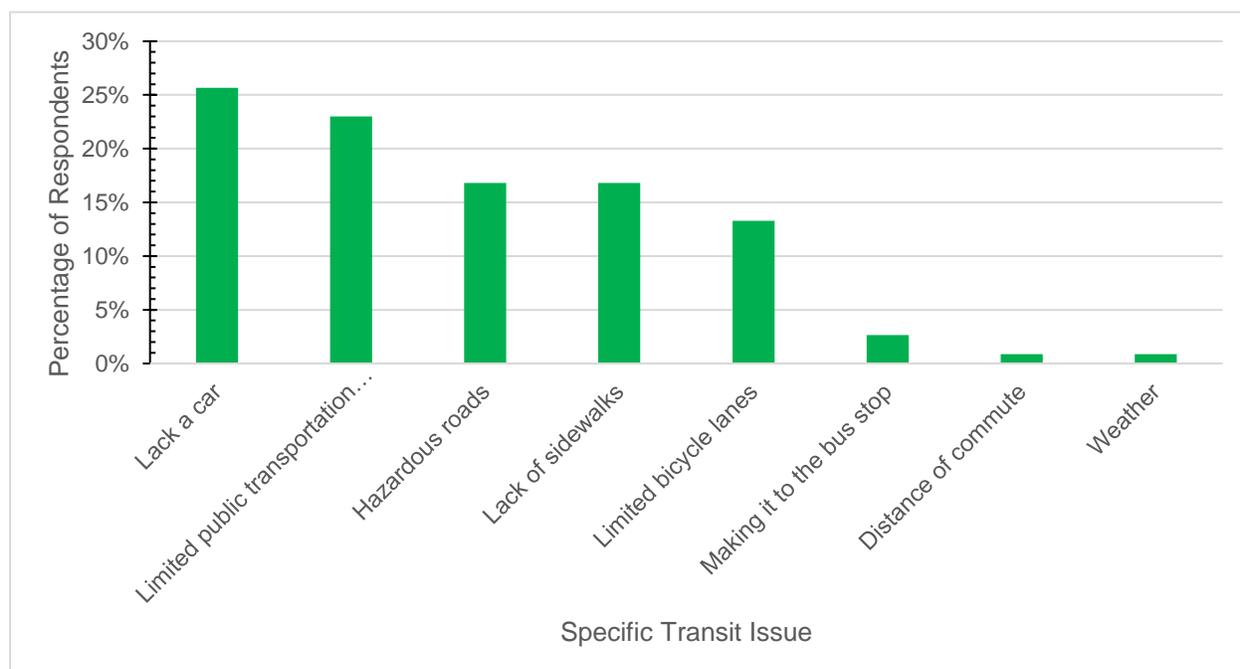
When analyzing the results with respect to annual income, lower income tiers showed a higher percentage of issues relating to their commutes. 62.86% of those making less than \$20,000 annually face issues. Additionally, 2/3 of respondents making between \$20,000 and \$34,999 also reported troubles. It should be noted, however that every income bracket, but one (\$50,000 - \$74,999) had some respondents that were displeased with their daily commute. This could suggest that transportation is struggling as a whole in the Fort Smith metropolitan area.



**FIGURE 8. PERCENTAGE OF RESPONSES RELATING TO TRANSPORTATION ISSUES**



**FIGURE 9. TRANSPORTATION RELATED ISSUES BY INCOME TIER**



**FIGURE 10. FREQUENCY OF SPECIFIC TRANSPORTATION ISSUES**

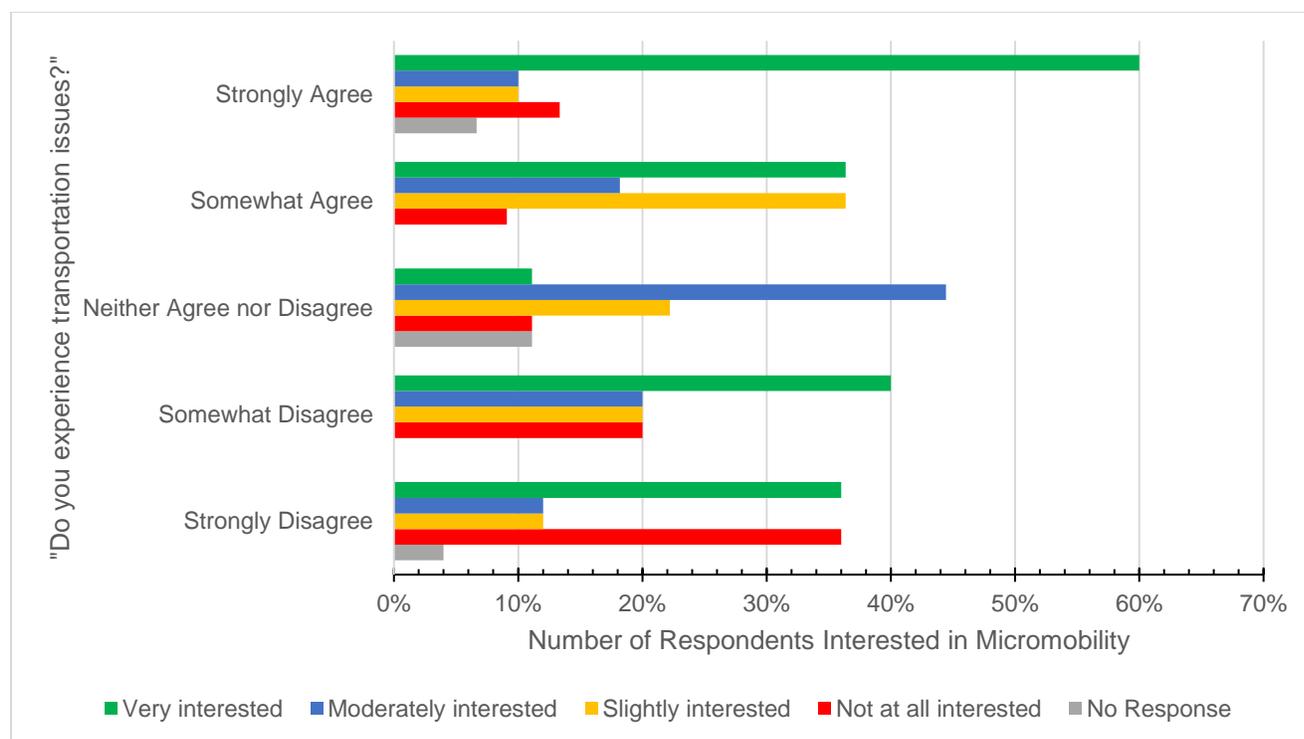
Figure 10 (above) shows the frequency of the issues reported in the survey. While the top two options were related to access transportation, it's interesting to note the next three most common issues could directly be related to micromobility. Many respondents feel as though when they are not in a vehicle, it is unsafe to commute as evidenced by responses relating to “hazardous roads,” “lack of sidewalks,” and “limited bicycle lanes.” If micromobility is to be implemented in Fort Smith, there needs to be a way to make users feel as though it truly is an option.

### ***Interest in Shared Micromobility***

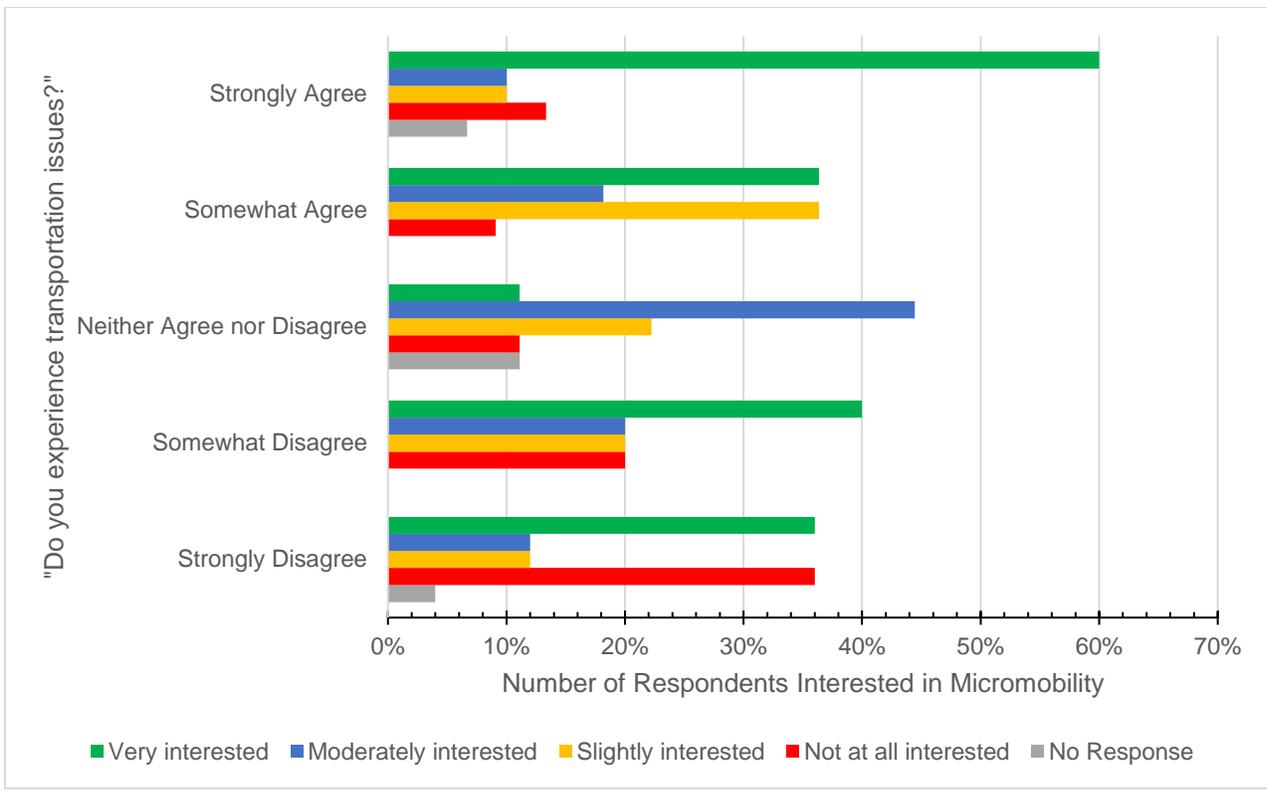
Of the 39 respondents who reported issues in their daily commute to work, 34 noted having at least some level of interest in micromobility programs. Those who have issues in their daily commute to-and-from work have an increased level of interest in micromobility as seen in

Figure 11. Additionally, the level of interest actually increases as income levels decrease. This information can be seen in Figure 12 and Table 3. If this trend holds true in a more effective survey, there is evidence that low-income communities would participate in a bike-sharing program. This data shows that in low-income communities throughout the Fort Smith area, micromobility would be likely to be utilized.

This implementation would most likely have success in the form of providing users a first and last mile option in their daily commute. Walkers and public transit users would benefit as it would allow them to decrease travel time in their daily commute. Under this model, e-scooters could be used to get one from their house to the bus stop or from the bus stop to work more quickly by eliminating time walking to and from their origin/destination.



**FIGURE 11. INTEREST IN MICROMOBILITY COMPARED TO TRANSPORTATION ISSUES**



**FIGURE 12. INTEREST IN MICROMOBILITY COMPARED TO INCOME LEVELS**

**TABLE 3. SUMMARY OF TRANSIT PROBLEMS, INCOME, AND BIKE SHARE INTEREST**

Transit Problem Getting to Work	Annual Income	Interest in Bike Sharing				Grand Total
		Not at all interested	Slightly interested	Moderately interested	Very interested	
No Response					1	1
	\$35,000-\$49,999			1		1
	\$75,000-\$99,999			1		1
	\$100,000 or more	1				1
	Total	1		2	1	4
Strongly Disagree						
	< \$20,000	1		2	4	7
	\$20,000-\$34,999	2	1		1	4
	\$35,000-\$49,999	1		1	1	3
	\$50,000-\$74,999	1	1		1	3
	\$75,000-\$99,999				1	1
	\$100,000 or more	4	1			5
	I prefer not to answer				1	1
	Strongly Disagree Total	9	3	3	9	24
Somewhat Disagree	No Response	1				1
	< \$20,000			1	1	2
	\$35,000-\$49,999		1			1
	I prefer not to answer				1	1
	Somewhat Disagree Total	1	1	1	2	5
Neither Agree nor Disagree	< \$20,000		1	2	1	4
	\$20,000-\$34,999		1			1
	\$35,000-\$49,999			1		1
	\$50,000-\$74,999	1				1
	\$75,000-\$99,999			1		1
	Neither Agree nor Disagree Total	1	2	4	1	8
Somewhat Agree	< \$20,000	1	3	1	2	7
	\$20,000-\$34,999			1	1	2
	\$35,000-\$49,999		1			1
	I prefer not to answer				1	1
	Somewhat Agree Total	1	4	2	4	11
Strongly Agree						
	< \$20,000		2	3	9	14
	\$20,000-\$34,999	1			7	8
	\$35,000-\$49,999				1	1
	\$75,000-\$99,999		1			1
	\$100,000 or more	2				2
	I prefer not to answer	1			1	2
	Strongly Agree Total	4	3	3	18	28
<b>Grand Total</b>		<b>17</b>	<b>13</b>	<b>15</b>	<b>35</b>	<b>80</b>

## Discussion

### *Options to obtain a better sample size*

While the sample size was not adequate, there were certain successes in the implementation of the survey. Table 4 shows that the paper and web distribution methods of the survey were by far the most effective. Of the 85 respondents, these two methods made up 89.41% of the total responses. Additionally with life returning to normal from the COVID-19 Pandemic, paper surveys have a potential to be utilized more as health and safety protocols are relaxed.

**TABLE 4. NUMBER OF RESPONDENTS BY SURVEY METHOD**

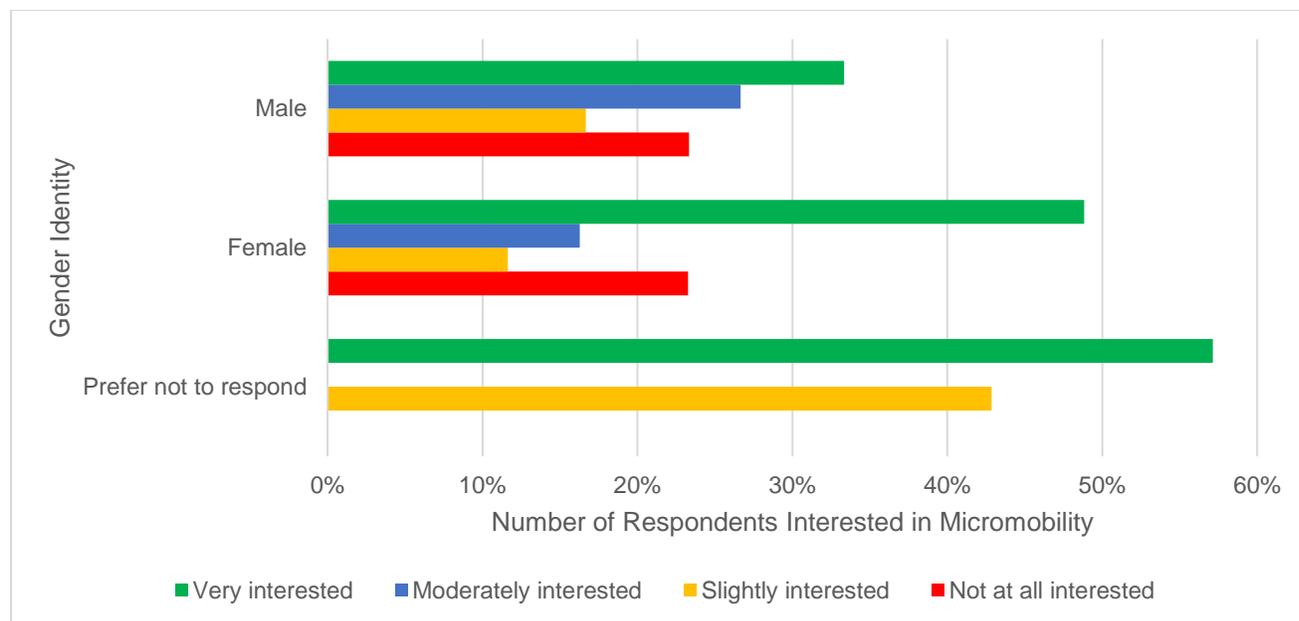
Source of Survey	Number of Respondents
Live Meeting	3
Paper	49
Text Messaging	6
Web	27
<b>Grand Total</b>	<b>85</b>

One recommendation for better results in a future survey would be to ensure that word is better spread about the survey. The link to the survey was only posted once on Frontier MPO's Facebook page and one additional share by a user (Facebook, 2021). If one were to not check Facebook for a week, he or she may not have seen information about the survey on his or her newsfeed. Paper surveys also could benefit from better marketing. Options for distribution that would benefit the sample size for this survey could include one's place of work or one's place of worship.

Another recommendation for the survey is to ensure that all questions are explicit into what they were asking. A common option for getting to work, carpooling/ride-share, was left off of the survey. 6.25% of respondents noted this option in the “other” category for mode of getting to work. However, the placement of a personal car option could have confused some respondents. This could be alleviated by having the survey looked over by more people before its implementation – particularly, someone who is not deeply knowledgeable about the project. This is so that they can effectively see what an outsider would view the survey as.

### ***Gender and household structure usage of shared micromobility***

One area in which the survey could have better performed was studying interest in shared micromobility based on household structure. The survey found that in Fort Smith, female respondents were more likely to show strong interest in shared micromobility and overall female respondents showed equal levels of disinterest compared to their male counterparts.



**FIGURE 13. INTEREST IN SHARED MICROMOBILITY BY GENDER IDENTITY**

This data, however, disagrees with other research on the usage of shared micromobility in cities across the United States. One study which surveyed four metropolitans in the U.S. showed that women only make up approximately 28.25% of shared micromobility trips when it came to using e-scooters. Bike-sharing systems do show increasing movement towards equity among male and female riders (Dill et al., 2021).

One of the main reasons for lower usage rates in women could be the discrepancy in unpaid care work among males and females. Unpaid care work is time spent taking care of chores such as cooking, cleaning, and shopping; additionally, the care for children and elderly members of the home also falls under this definition. In the United States, women “spend more than 37% more time on household chores and care than men” (Hayes et al., 2020). If women are spending more time to take care of the home and dependents, they will not have as much time to use modes of transportation that are slower than car travel. Additionally, caring for dependents may mean that the physical nature of using shared micromobility is too difficult for usage.

Noting the effects of unpaid care, household structure is an important facet that should be examined in usage. In terms of household structure, this survey did not ask questions related to structure, such as “How many dependents are you responsible for?” This is something that needs to be addressed in future surveys to better understand the needs of those who do the most work for the household when it comes to shared micromobility.

### ***Cost of car ownership versus the cost of micromobility***

An important part of the discussion of shared micromobility usage among low-income users is if it is cheaper for them to use the service or to save up for a car. In Arkansas, the average price of car ownership is \$365 per month or \$4,379.89 per year (Roberts, 2022). If shared micromobility usage is to benefit low-income communities, the cost of the service must

be lower than these two numbers. The two predominant e-scooter companies in nearby Fayetteville, Arkansas, Spin and VeoRide charge prices as seen in Table 5. Sales tax, which is charged on all transactions, for Fort Smith, Arkansas is currently at 9.5% (*Arkansas sales tax rates: Fort Smith 2022*). Additionally, assuming an average speed of 13 miles per hour, the price of a one mile ride can be seen below. A one mile ride was chosen as shared micromobility is focused on first- and last-mile connections.

**TABLE 5. PRICES OF SHARED MICROMOBILITY**

<b>E-scooter Provider</b>	<b>Price to Unlock</b>	<b>Price per Minute After Unlocking</b>	<b>Fort Smith Sales Tax</b>	<b>Price of a One Mile Ride</b>
Spin	\$1.00	\$0.29	9.5%	\$2.37
VeoRide	\$1.00	\$0.25	9.5%	\$2.19

The average price of a one-mile ride can be seen to be \$2.28. If a household is going to utilize 40 or more one-mile trips per week, then it is cheaper for a family to save up money for their own car. It is of utmost social responsibility that when advertising the service to low-income communities that consumers know the true cost of shared micromobility compared to their potential car usage.

### ***A possible effective business model***

While the survey did not specifically focus on a business model for the implementation of shared micromobility in Fort Smith, there could be possible answers from the survey results. The survey did show that low-income residents of Fort Smith, Arkansas most frequently bike, walk, or use public transportation in their commute. This needs to be kept in mind when selecting a business model which could be aided by the use of access programs.

For programs implemented by cities, access programs, whose goal is to make micromobility more open to low-income individuals, have been implemented successfully (Zack, 2018). In Kansas City, Missouri, for example, “individuals who rely upon needs-based services

are able to sign up for an annual membership of just \$10” (Campbell, 2020). The program also allows for users who do not have bank accounts to pay with a pre-paid credit card (Campbell, 2020). This is great for implementation in low-income areas as it allows for easier payment methods not dependent on smart phones. Users also do not have to pay on a “per-ride” basis meaning that their rides are unlimited, creating long term savings if utilized often.

Private companies have also begun to implement their own versions of access programs. Spin and Lime are both great examples of their commitment to improving access for lower income populations. Lime’s access program allows for users to use “PayNearMe,” a service that allows for users to pay in cash for their ride at a nearby 7/11 or CVS (Lime, 2018). Meanwhile, Spin encourages users needing financial assistance to purchase “Access credit” at local offices or with pre-paid debit cards (Spin, 2020). Spin’s program is definitely harder for lower income populations to use as they most likely will have to go to a select office which may be far from home just to utilize the scooters. These programs also both require the possession of a cell phone, which while more commonly owned, still add a layer of difficulty for those wishing to ride.

## **Conclusion**

The survey used for Phase I of the SMILIES: Shared Micromobility for affordable-accessible Housing Project may not have been able to achieve a meaningful sample size. However, the data from it can still be applied to attitudes about micromobility and the needs of residents in the Fort Smith, Arkansas Metropolitan area.

It is important that the next use of surveys for Phase II of the project be better managed and organized so that a valid sample size can be obtained. This would be benefitted by increased awareness, better questions, and more focused distribution methods. This in turn, would bring more participation to the survey and give more quality data for researchers to examine.

Next steps for future surveys should also begin to key in on a potential business model. As of right now, it can be seen that many with financial issues are willing to spend money to get to a bus stop. The next question to determine is if they would spend additional time or money to get to the bus stop if their usage of shared micromobility related to first and last mile transportation.

Overall, it appears that there is interest in micromobility in Fort Smith. Many residents, especially those of low income, noted their interest. This may stem from many respondents facing transportation issues on their daily commutes – specifically relating to the lack of car ownership and the nature of public transportation in the community.

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