

HIG-FRS Transit Study

Final Report

July 31, 2019

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I. Purpose of Report & Study Objectives

The Ohio Valley Regional Development Commission (OVRDC) has retained Carpenter Marty Transportation (CM) to provide a feasibility study of a proposed 5311¹ Rural Transit Program (RTP) system in Highland County, Ohio. The study area includes the City of Hillsboro, the Village of Greenfield, and the residential area surrounding Rocky Fork Lake. A map of the study areas within Highland County are shown in **Figure 1**. This study includes details of the data that was obtained as well as the analysis performed on this data. A recommendation based on the analysis is provided to help determine the feasibility of the RTP and provide planning level routing recommendations for use in applying for RTP funds.

II. Background

The City of Hillsboro is located in the center of Highland county at the intersection of US-50 and US-62. Hillsboro has developed as a grid roadway system with a large retail/commercial area on the north side of town. The city core has many small retail outlots along the main corridor with residential development surrounding this area. The 2010 census reported a population of 6,605, making it the largest city in the county.

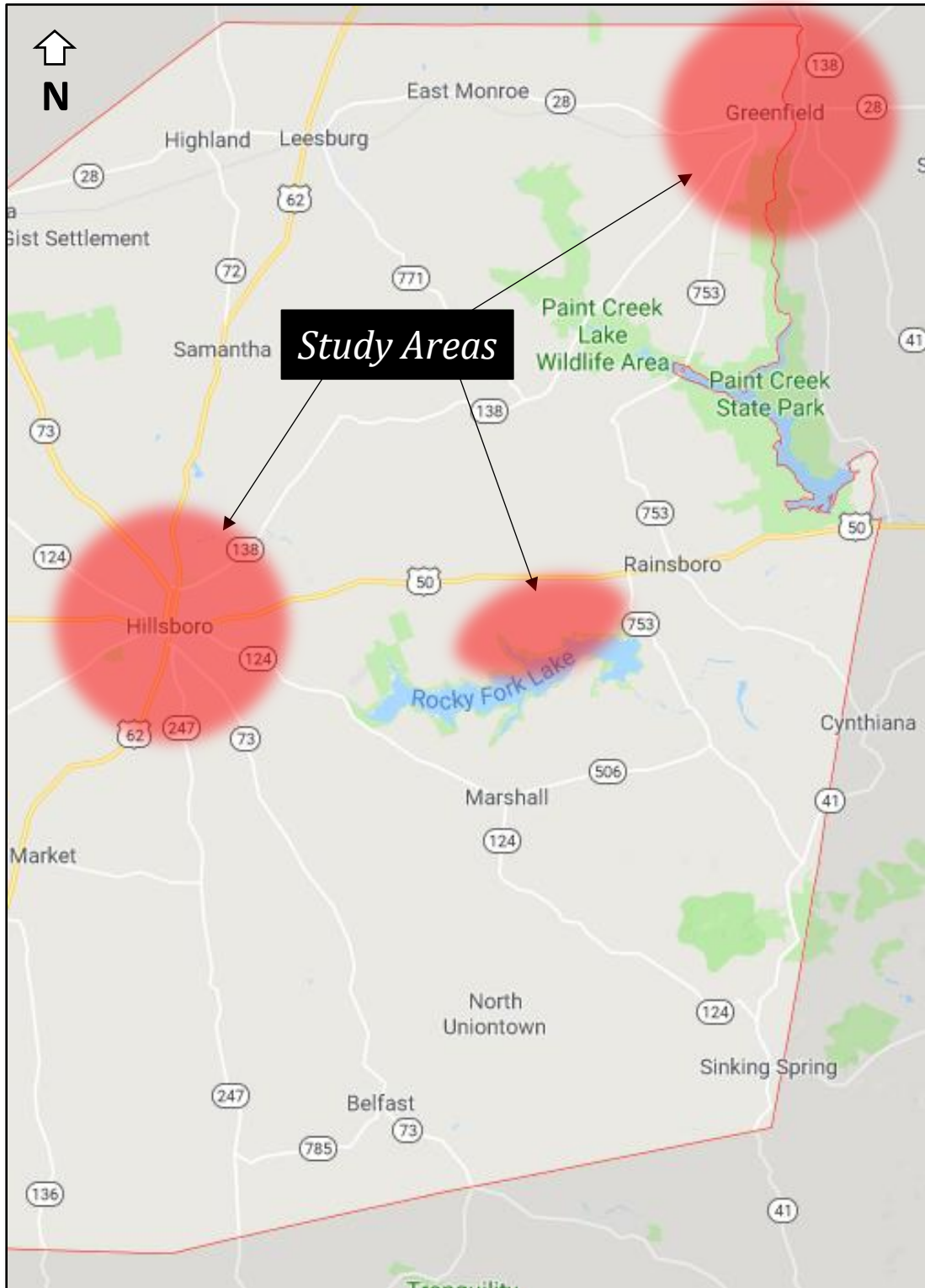
The Village of Greenfield is located approximately 18 miles northeast of Hillsboro along SR-138. Greenfield is also a grid roadway system that is mostly residential with some commercial uses along Jefferson Street. Most offices are located northeast of the Village center along Washington Street.

The Highland Area Rural Transportation System (HARTS) currently has a 5310² Specialized Transportation Program system. With this program, HARTS is able to provide transportation to the elderly and disabled but not the general public.

¹ Section 5311, Federal Transit Administration,
<http://www.dot.state.oh.us/Divisions/Planning/Transit/Pages/Rural.aspx>

² Section 5310, Federal Transit Administration. The current system is HARTS operated by FRS Transportation.

Figure 1 - Study Area



In 2008, Family Recovery Services (FRS) Transportation produced a Coordinated Public Transit-Human Services Transportation Plan (CPTTP)³. The CPTTP has been updated several times, with the most current update being November 2017. It was produced to fulfill the requirements of the Fixing America's Surface Transportation (FAST) Act. The CPTTP includes:

- Population demographics
- Assessment of available services
- Assessment of transportation needs

This document is extensive and some aspects of it were utilized in this report.

III. Data

A. Survey Data

A survey was developed and distributed to members of the community by paper and several online sources. The questions were developed based on historical transit questions used in the CPTTP along with questions developed to further measure the public demand for a 5311 system. Questions also attempted to identify the extent of the desired system. This survey was given to the HARTS Board. Many of the members distributed it to their agencies. Completed surveys were returned to CM to be compiled and analyzed. Survey results were recorded in a spreadsheet so that trends could be observed. A blank survey is provided in **Appendix A**.

B. StreetLight Data

StreetLight Data was utilized to obtain origin-destination (OD) data for the study area. This data uses cell phone location services to show a relative amount of traffic that enters at a predetermined zone (origin) and exits at a separate predetermined zone (destination). The data was organized and reviewed to determine the relative percentages of trips for each OD pair. This data only shows relative index values and does not show the actual volume of traffic. This data was obtained through the Ohio Department of Transportation's license with StreetLight Data.

The study area was divided into 11 zones that operate as the origin or destination for trips taken to and/or from these zones. Multiple zones were set in Hillsboro, one zone was set in Greenfield, and one zone was set in the Rocky Fork Lake Area. The data was collected for 2016-2018 and January-February of 2019⁴. With this data, CM determined the most common origins and destinations within Hillsboro, as well as the demand for travel between Hillsboro to/from Greenfield and the Rocky Fork Lake area. This is useful information to help plan bus stops and routes.

³ <http://www.frstransportation.org/hcplan.pdf>

⁴ Only January-February data was available for 2019 at the time of the data query

C. Socioeconomic Data

Socioeconomic data was obtained through the online US census site. This information was used along with the survey data and streetlight data to better determine the public transportation needs in the Hillsboro area. Topics such as income and employment locations can be important factors when trying to identify demand for public transportation.

D. CPTTP Data

Data from the CPTTP document was utilized to support and add to the data obtained as part of this study.

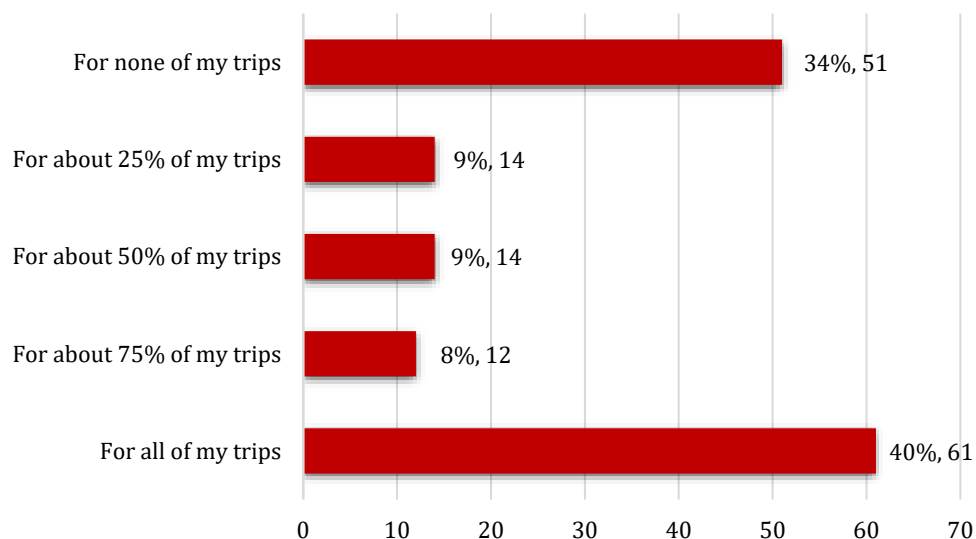
IV. Results

A. Survey Data

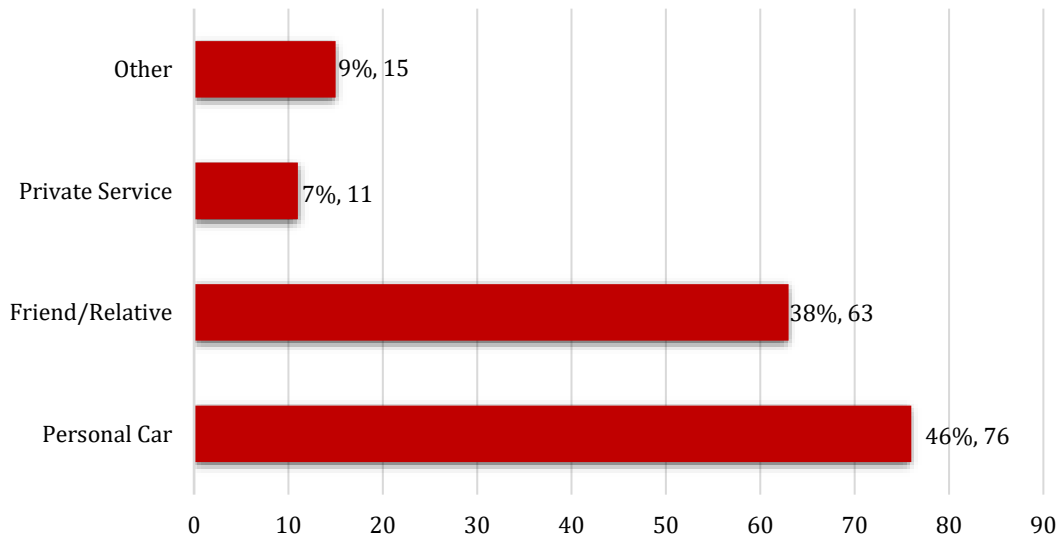
A total of 155 completed surveys were received. The data was compiled and analyzed to identify information important in determining the feasibility of a 5311 system in Highland County. The compiled data output for all survey questions is provided in **Appendix B**. Key results to the feasibility of a 5311 system are provided below.

A total of 87 people (57% of the survey respondents) answered that they have relied on others for half of their transportation in the last three months. Also, it was reported that 74 people (45%) rely on either a *friend/relative* or a *private service* as their primary means of transportation. These results can be seen in **Figure 2 and 3**.

**Figure 2 – Survey Question:
Over the past three months, how much did you rely on others for transportation?**

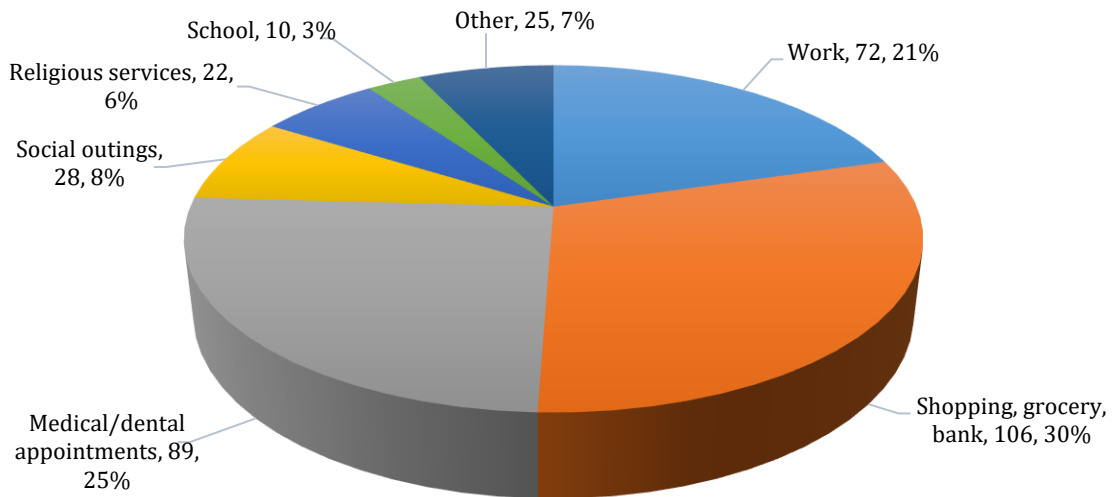


**Figure 3 – Survey Question:
What is your primary means of transportation?**



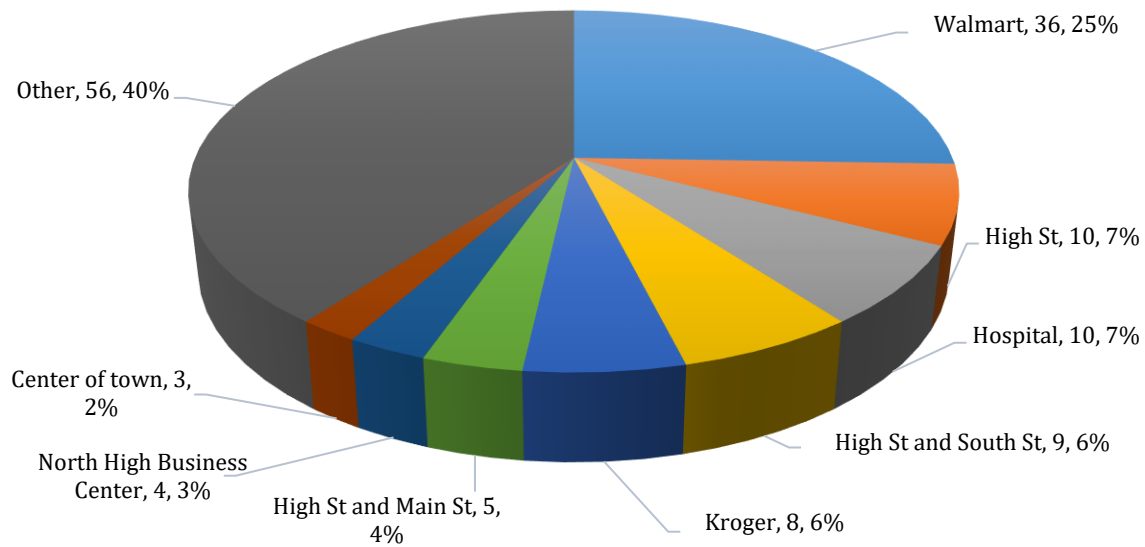
The survey was also used to help determine where people would like a transportation system to take them. The most common type of destination was *shopping, grocery, bank* (30%), *medical/dental appointments* (25%), and *work* (21%). **Figure 4** provides the full results.

**Figure 4 – Survey Question:
What are your most common destinations?**



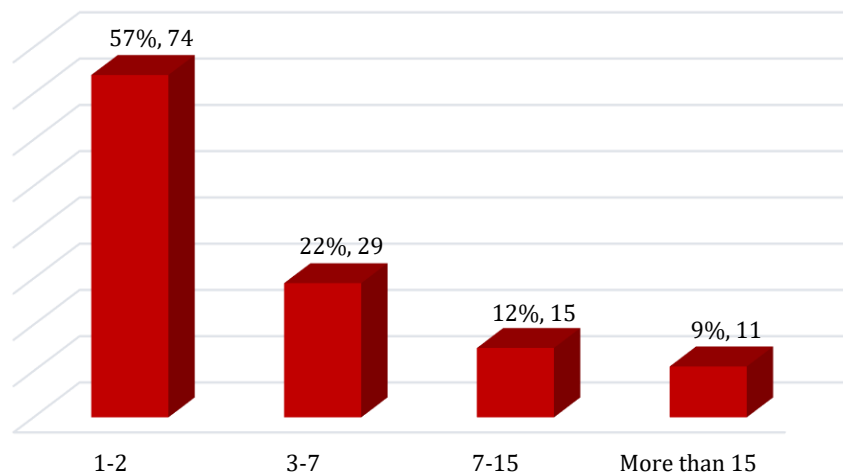
The most common specific destination was *Walmart* (25%). The next two top destinations were *High Street* (7% with 6% specifically listing High Street at South Street) and the *hospital* (7%). **Figure 5** shows the full results.

Figure 5 – Survey Question:
In Hillsboro, what major street corner (or destination) would you want a stop on a scheduled bus route? (top 5)



The survey asked how many additional trips per week would a respondent take if a service with bus routes and stop times were provided. Fifty-five people (43%) said they would take *three or more additional trips per week*. **Figure 6** shows the full results.

Figure 6 – Survey Question:
If you had bus routes with scheduled time stops in Hillsboro, how many more trips per week would you take?



One question probed the issue of whether there was unmet demand for transportation services. 62% said that in the last three months, they were unable to travel to *shopping, bank, grocery* and to *medical/dental appointments*.

In another question, only 20 respondents (11%) said they would not use a service with a bus route and scheduled stops.

73% said they would use or may use a scheduled bus route between Hillsboro and Greenfield. In the CPTTP study survey, 65% said they would use such a service. 28% said they would do so once a week or more. 64% believe there is community support for a scheduled bus service. From the CPTTP study survey, 56% said they would use a bus service within the Village of Greenfield and 72% said they would use such a service within the City of Hillsboro. Within Greenfield, around 66% of respondents listed City Hall (center of the Village) and Save-a-lot as desired bus stop locations.

B. StreetLight Data

The StreetLight zones utilized to obtain OD data can be seen in **Figure 7**. The StreetLight data for average weekday (Monday through Thursday) was organized into an OD matrix to help visualize the relative traffic volumes for each OD pair, see **Table 1**. This matrix was sorted by traffic origin zones represented by rows and the destination zones represented by columns. Green cells represent OD pairs with least volume, as volume grows the cells change colors to yellow, then to orange, then to red for the highest amount of relative volume. White cells indicate that the zone is both the origin and destination for the same trip. These trips have been removed from the sample for clarity.

Figure 7 - StreetLight Zones

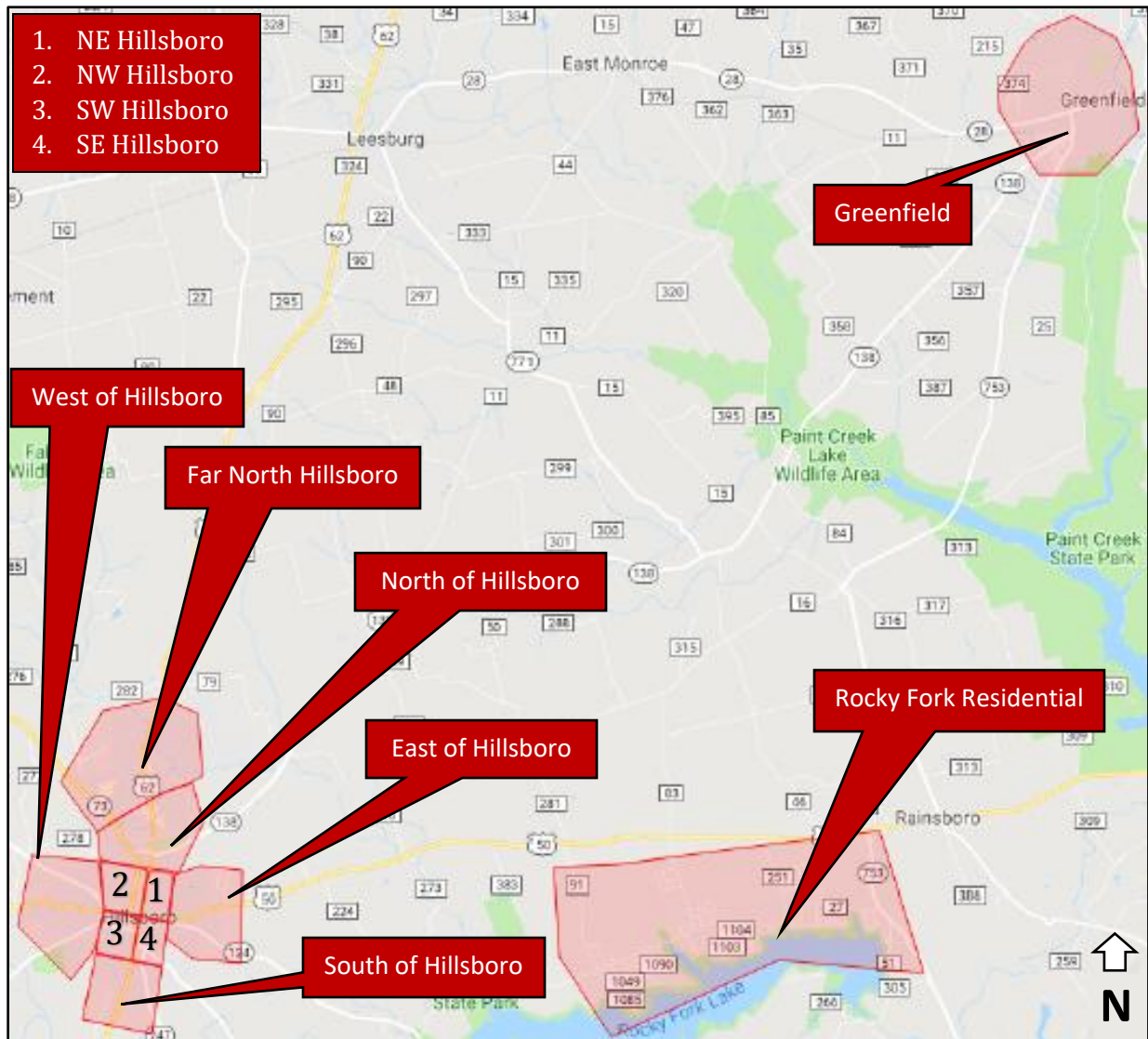


Table 1 – Origin Destination Matrix

Origin/Destination	East of Hillsboro	Far North Hillsboro	Greenfield	NE Hillsboro	North of Hillsboro	NW Hillsboro	Rocky Fork Residential	SE Hillsboro	South of Hillsboro	SW Hillsboro	West of Hillsboro	Grand Total
East of Hillsboro	0.00%	2.32%	0.08%	0.46%	1.58%	0.72%	0.23%	0.48%	0.56%	0.56%	0.78%	7.77%
Far North Hillsboro	2.27%	0.00%	0.65%	1.70%	7.22%	2.98%	1.58%	2.11%	1.08%	2.47%	2.70%	24.75%
Greenfield	0.06%	0.70%	0.00%	0.04%	0.20%	0.08%	0.42%	0.06%	0.03%	0.06%	0.03%	1.67%
NE Hillsboro	0.40%	1.72%	0.04%	0.00%	0.98%	0.25%	0.14%	0.32%	0.27%	0.39%	0.61%	5.11%
North of Hillsboro	1.59%	8.11%	0.22%	0.92%	0.00%	1.64%	0.62%	1.09%	1.03%	1.24%	1.22%	17.68%
NW Hillsboro	0.75%	3.09%	0.07%	0.25%	1.73%	0.00%	0.28%	0.78%	0.61%	0.96%	1.01%	9.52%
Rocky Fork Residential	0.23%	1.46%	0.41%	0.17%	0.63%	0.27%	0.00%	0.13%	0.15%	0.25%	0.18%	3.89%
SE Hillsboro	0.50%	2.11%	0.06%	0.34%	1.09%	0.76%	0.17%	0.00%	0.44%	0.46%	0.66%	6.59%
South of Hillsboro	0.52%	1.32%	0.02%	0.28%	1.16%	0.62%	0.13%	0.47%	0.00%	0.77%	0.51%	5.80%
SW Hillsboro	0.64%	2.58%	0.04%	0.39%	1.23%	0.87%	0.23%	0.47%	0.82%	0.00%	0.90%	8.18%
West of Hillsboro	0.73%	2.82%	0.04%	0.66%	1.24%	1.07%	0.19%	0.72%	0.58%	1.01%	0.00%	9.04%
Grand Total	7.68%	26.21%	1.63%	5.20%	17.06%	9.25%	3.99%	6.65%	5.56%	8.17%	8.60%	100.00%

Results of the StreetLight data analysis shows that the *Far North of Hillsboro* zone is the most common origin (24.8%) and destination (26.2%) in the study area. This is most likely due to the fact that this zone includes most of the major retail centers (including Walmart), banks, and restaurants in the study area. This validates the survey results listing *Walmart* as the most commonly desired bus stop. The second most popular OD zone is the *North of Hillsboro* zone (17.7% of origins and 17.7% of destinations). This zone has similar characteristics to the *Far North of Hillsboro* zone, just with less large retail development. The hospital is in this zone, which further validates the survey data since this location was also commonly listed as a desired bus stop.

With the *Far North of Hillsboro* zone and *North of Hillsboro* zones being the most common origins and destinations, it is intuitive that the most common OD pairs are *North of Hillsboro* zone to the *Far North of Hillsboro* zone (8.1%) and the opposite trip (7.2%).

StreetLight data represents relative trips that have been taken in the past and is not an indication of what relative trips may be taken in the future or an indication of true transit demand. OD demand can be an indication of where transit may be desirable. However, there may be OD demand for trips that are not currently being taken due to transportation limitations. That demand is not represented in this OD data set. For those reasons, careful interpretation of these results is required.

C. Socioeconomic Data

Using census data, poverty estimates for Highland County were found and compared to the state of Ohio as a whole. This type of data can be an indicator of transit demand as those under the poverty line typically have transportation limitations. See **Table 2** below for a comparison between Highland County and Ohio.

Table 2 – Percentage of Population Below the Poverty Line

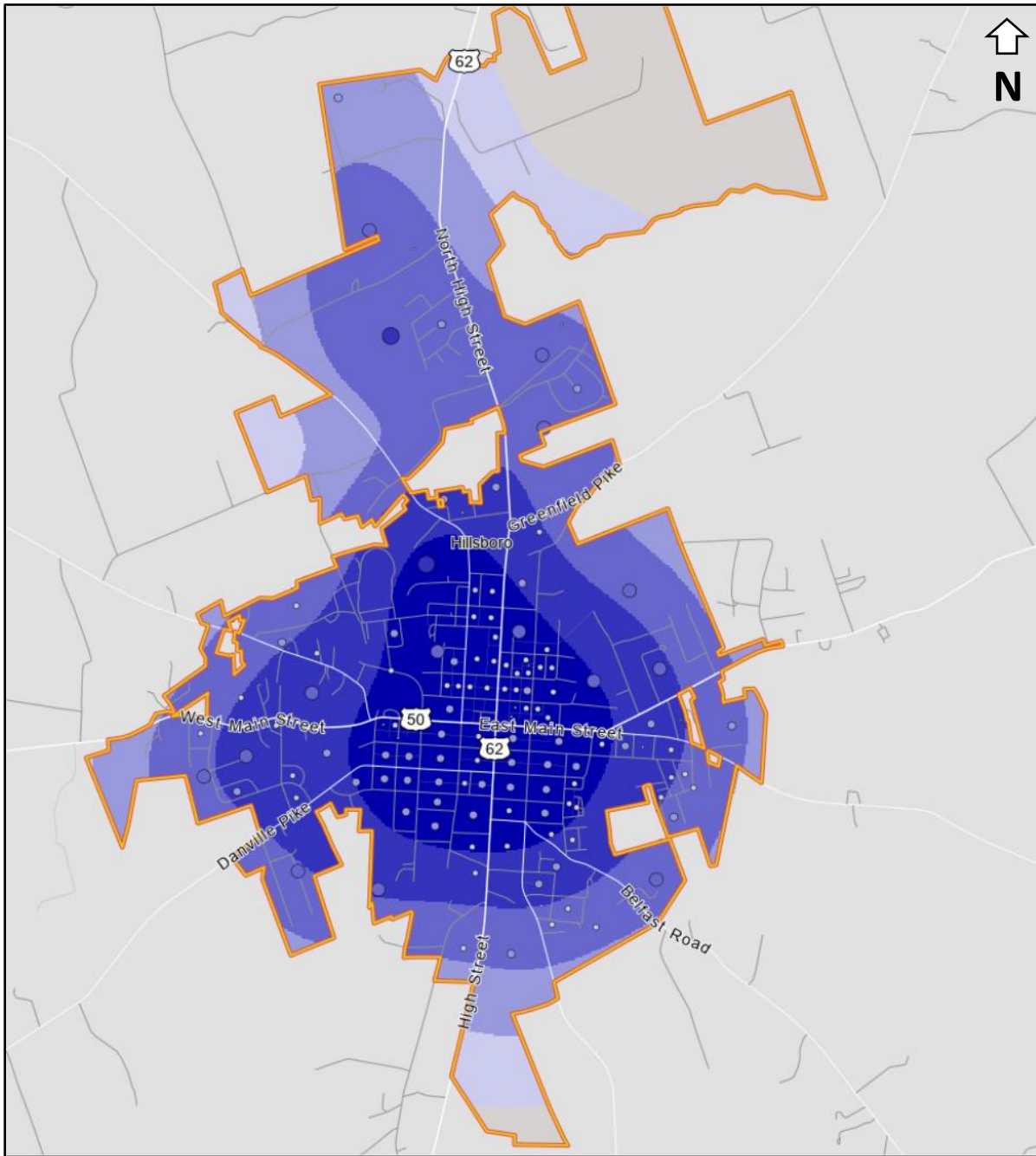
Age	Percentage below the Poverty Line	
	State of Ohio	Highland County
All Ages	13.90%	16.80%
Under Age 18	19.80%	25.40%
Ages 5 to 17 in Families	18.20%	23.40%

This comparison shows that Highland County has a larger percentage of the population living below the poverty line than the state of Ohio. Additionally, the median household income for the state of Ohio is \$54,077 compared to the median household income of Highland County of \$43,840.

This data validates the survey answers to Question 19 – *what is your reason for using the scheduled bus routes?* The most common answer to this question was *do not own a car* with 28% and the second most common was *save money* with 25%.

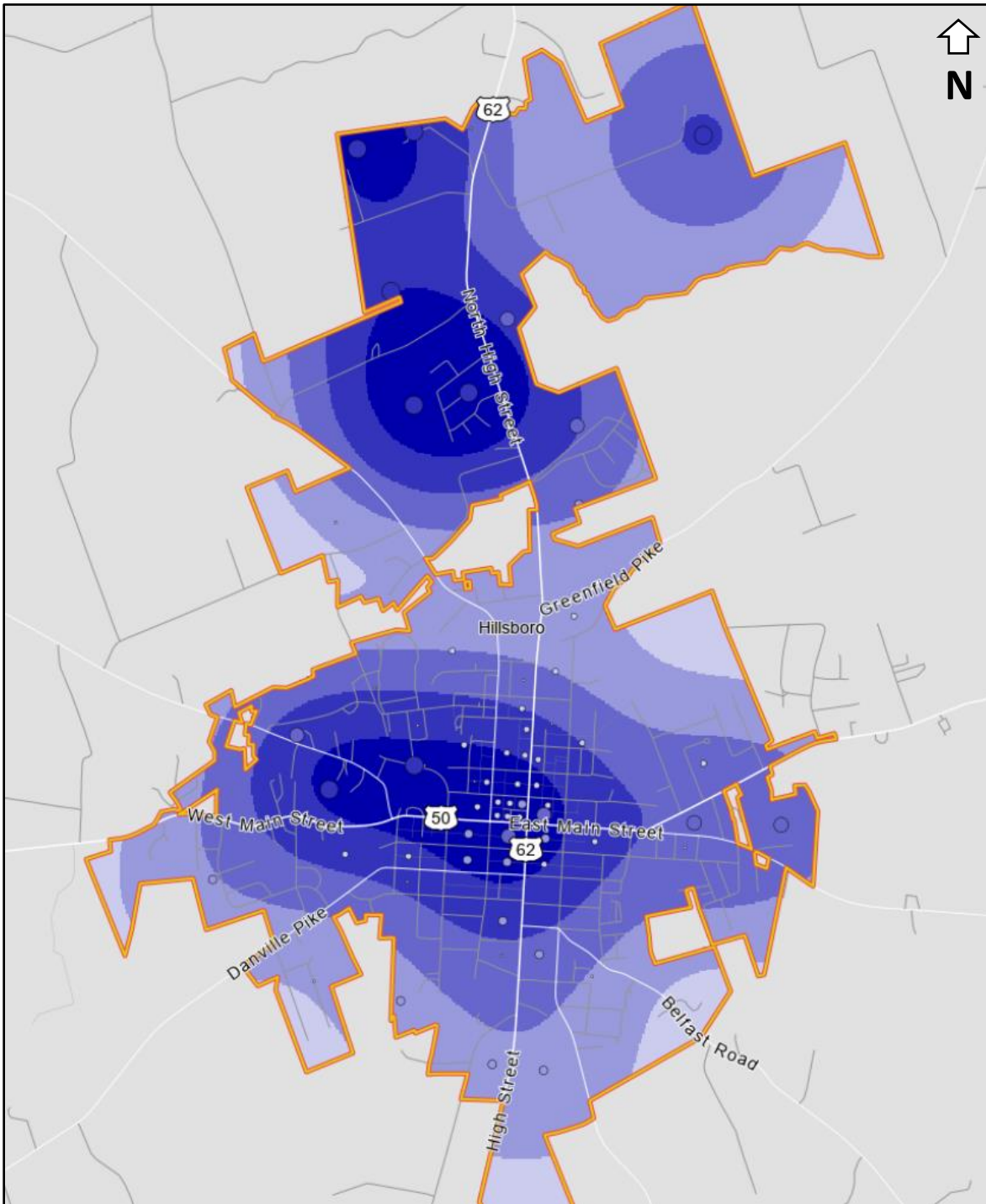
Question 14 of the survey showed that in the last three months, 12% of the respondents were not able to make it to work due to a lack of transportation. From census data, a heat map of the location where workers are employed versus where workers live was used to determine work related OD demand not readily apparent in the OD data. The heat maps show that while most people live in or near the center of Hillsboro, they work on the north and west side of town. The heat maps can be seen in **Figure 8** and **Figure 9**.

Figure 8 - Where Workers Live



Referring to **Figure 8**, people primarily live in zones *NW Hillsboro, NE Hillsboro, SW Hillsboro, and SE Hillsboro*.

Figure 9 - Where Workers are Employed



Referring to **Figure 9**, people primarily work in zones *Far North Hillsboro* and *NW Hillsboro*. This data, along with all other data in this report, were used to identify planning-level bus routing for the proposed 5311 public transportation system.

V. Conclusions

Results of the survey shows there is a desire for scheduled route public transportation in the Hillsboro area. The survey showed a majority of the individuals surveyed have to rely on others for their transportation needs. Over half of the respondents reported using friends, relatives, or a private service as their primary means of transportation. Over 40% said they would take three or more additional trips per week if scheduled route transit was available. Well over half said that in the past three months, they were not able to make a medical, dental, shopping, grocery, or banking trip due to a lack of transportation. Less than a quarter said they would not use a scheduled route bus service. 12% said they were not able to make it to work and 5% said they could not make it to school over the past three months due to a lack of transportation. Most people surveyed said there is public support for scheduled route service. Socioeconomic data shows that Highland County has a higher percentage of its population under the poverty line compared to the state of Ohio as a whole. It can be concluded from this data that there is a demand and support for a 5311 service in the study area.

Shopping/food/banking and medical/dental transportation needs are not being met and are desirable bus stop locations. Walmart was identified as being the top desired bus stop location. This is supported by the OD data which identifies this area of town as a top origin and top destination for current travel. The census data shows the density of residences and employment to be the central part of town and the north side of town. Around 33% of the respondents answered *yes*, they would make a Hillsboro-Greenfield trip via a scheduled route service. Approximately 33% answered *maybe*, they might make a Hillsboro-Greenfield trip via route service. In the CPTTP study, the majority of respondents said they would use a Hillsboro-Greenfield service. A majority said they would use this type service for trips within Hillsboro and trips within Greenfield.

VI. Recommendations

The data and results indicate public support and demand for a 5311 service within Hillsboro, Greenfield, and between those two municipalities. Based on the data, results, and conclusions, CM provides the following recommendations:

- A 5311 service should be pursued in the study area
 - Service within Hillsboro
 - Service within Greenfield
 - Service between Hillsboro and Greenfield
- **Figure 10** and **Figure 11** provide preliminary bus route recommendations for future study and refinement. These routes could be three distinct routes or one large route (to be determined based on further study and refinement).

Figure 10 - Preliminary Route in Hillsboro

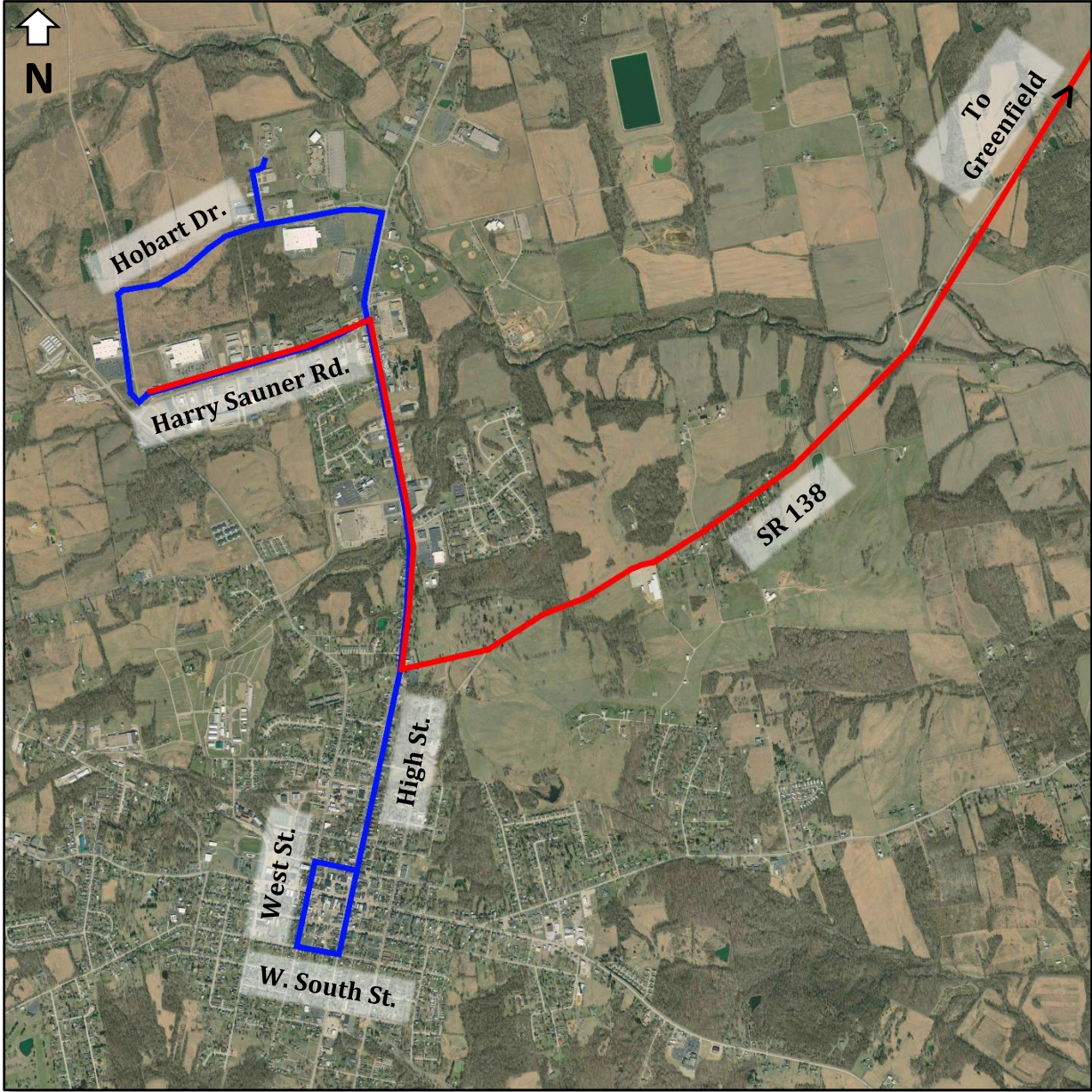


Figure 11 - Preliminary Route in Greenfield



Appendix A

Survey

Appendix A



Public Transportation Survey

1. What is your age?

- 15-24
- 25 - 34
- 35-44
- 45-54
- 55-64
- 65-74
- 75-84
- 85+

2. What city/town do you live in (or what is the nearest city or town to your home)?

3. Which of the following BEST applies to you? You are presently: _____

- Employed outside your home
- Employed in your home
- Homemaker
- Retired
- Student
- Unemployed: _____

4. If you work outside your home, who is your employer?

5. What city/town or county is your employer located?

6. Primary means of transportation: _____

- Personal car
- Friend/relative
- Private service
- Other: _____

7. How many times a week do you use your primary transportation?

- 1-2
- 3-7
- 7-15
- More than 15

8. Over the past 3 months, how much did you rely on others for transportation?

- For all of my trips
- For about 75% of my trips
- For about 50% of my trips
- For about 25% of my trips
- For none of my trips



9. If you depend on others for any of your trips, who do you depend on? (Check all that apply)

- Spouse
- Children/other relatives
- Friends/neighbors
- Private services (such as taxis)
- Public services (bus system, Medicaid-paid transportation)
- Volunteers (from churches or non-profit organizations)

10. What are your most common destinations?

- Work
- Shopping, grocery, bank
- Medical/dental appointments
- Social outings
- Religious services
- School
- Other: _____

11. How much would you pay a transportation service (such as a cab or bus) each way? (Please check one that applies most)

- Less than \$3.00
- \$3.01 - \$5.00
- \$5.01 - \$7.00
- More than \$7.01
- Other: _____

12. If you had bus routes with scheduled time stops in Hillsboro, how many more trips per week would you take?

- 1-2
- 3-7
- 7-15
- More than 15

13. What is the most common destination for these additional trips?

- Work
- Shopping, grocery, bank
- Medical/dental appointments
- Social outings
- Religious services
- School
- Other: _____

14. During the past 3 months, were you unable to travel to any of the following destinations because you did not have access to transportation (either your own car or a ride)?

- Shopping, grocery, bank
- Medical/dental appointments
- Social outings
- Religious services
- School
- Work

15. Over the next 1-3 years, to which of these destinations do you anticipate needing transportation because you will be unable to drive there?

- Shopping, grocery, bank
- Medical/dental appointments
- Social outings
- Religious services
- School
- Work
- A different city
- Not applicable



16. What times would you MOST want the scheduled bus routes to run?

- 6 AM - Noon
- Noon - 6 PM
- 8 AM - 4 PM

17. Which day(s) of the week would you be most likely to use a scheduled bus route?

- Monday
- Tuesday
- Wednesday
- Thursday
- Friday
- Saturday
- Sunday

18. In Hillsboro, what *major* street corner (or destination) would you want a stop on a scheduled bus route? Example: "High St. & South St.", "Hospital", "DJFS", "North High Business Center", "Walmart", "Movie Theater", etc.

19. What is your reason for using the scheduled bus routes?

- Save money
- Better for environment
- Do not own a car
- Cannot operate a car
- Better wheelchair accessibility
- I would not use it
- Other: _____

20. Please rank how important each of these items are to you. (1- Very Important, 2- Important, 3- Somewhat Important, 4- Very Important)

Cost _____
Number of stops _____
Reliability (vehicle is on time) _____
Time available for use _____

21. How often do you travel between Hillsboro and Greenfield?

- Daily
- Several times a week
- Once a week
- Once or twice a month
- Less than once a month

22. Would you use a scheduled bus route for this trip?

- Yes
- No
- Maybe

23. What times would you MOST want a Hillsboro-Greenfield scheduled bus route to be available?

- 6 AM - Noon
- Noon - 6 PM
- 8 AM - 4 PM

24. In Greenfield, what *major* street corner (or destination) would you want a stop on a scheduled bus route? Example: "Adena Medical Center", "Greenfield Medical Center", "HCCAO", "City Hall", "Save-A-Lot", etc.



25. Do you think there is community support for scheduled bus route service? (Please explain)

- Yes
- No

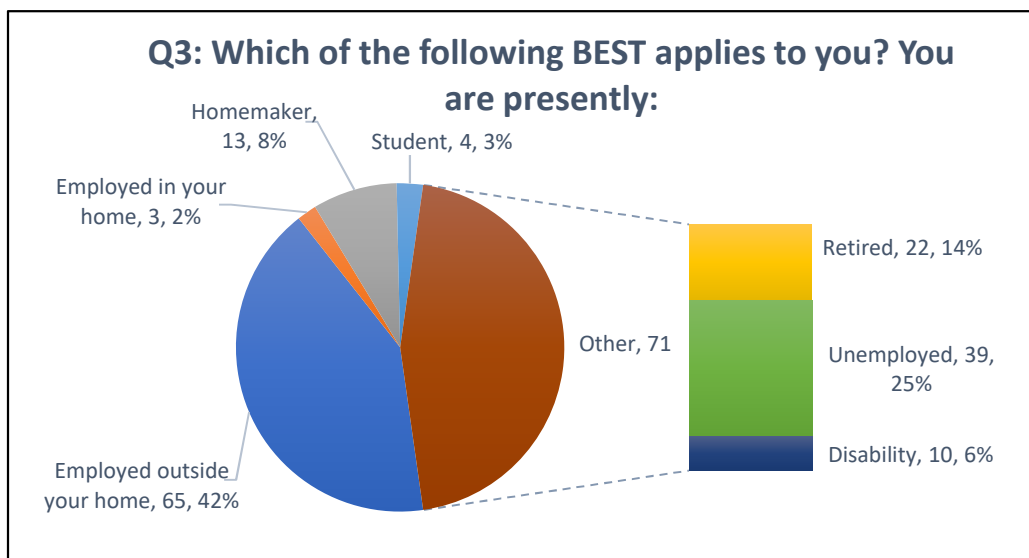
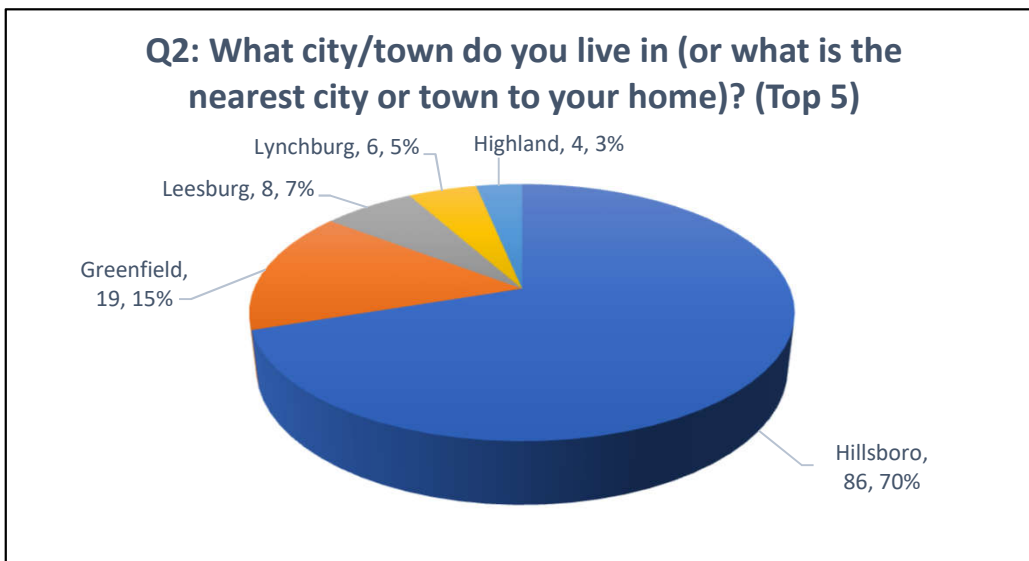
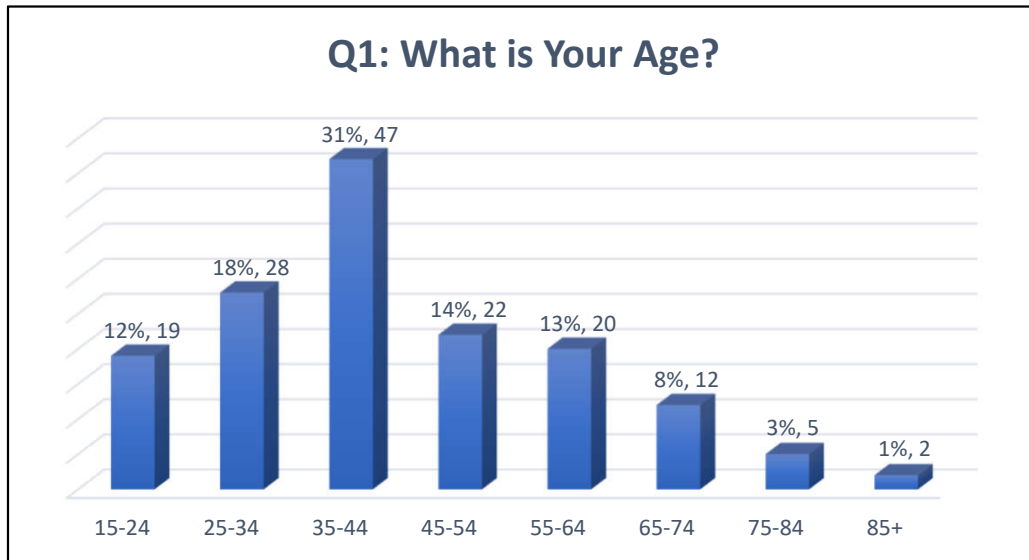
26. Please add any additional comments you may have about public transportation in the area.

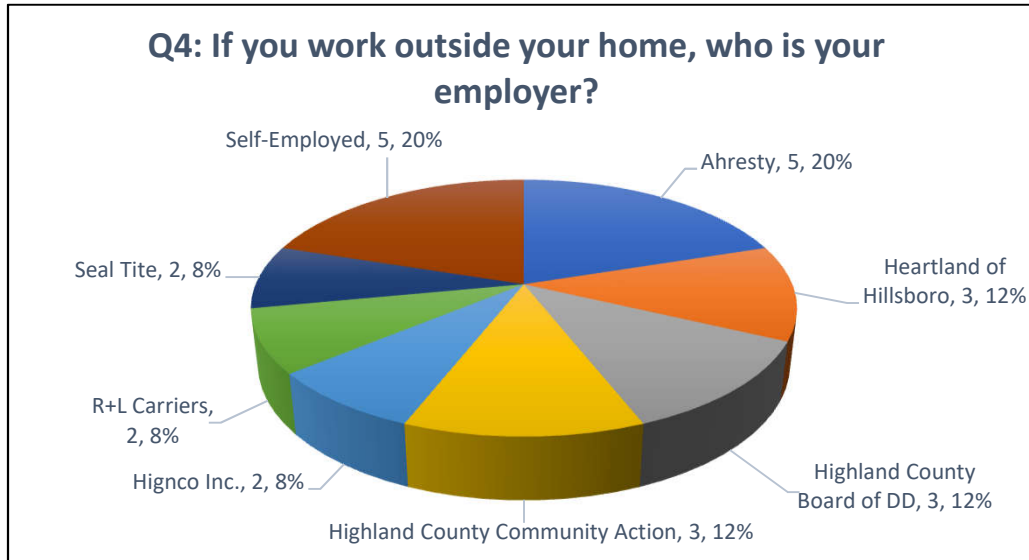
Appendix B

Survey Results

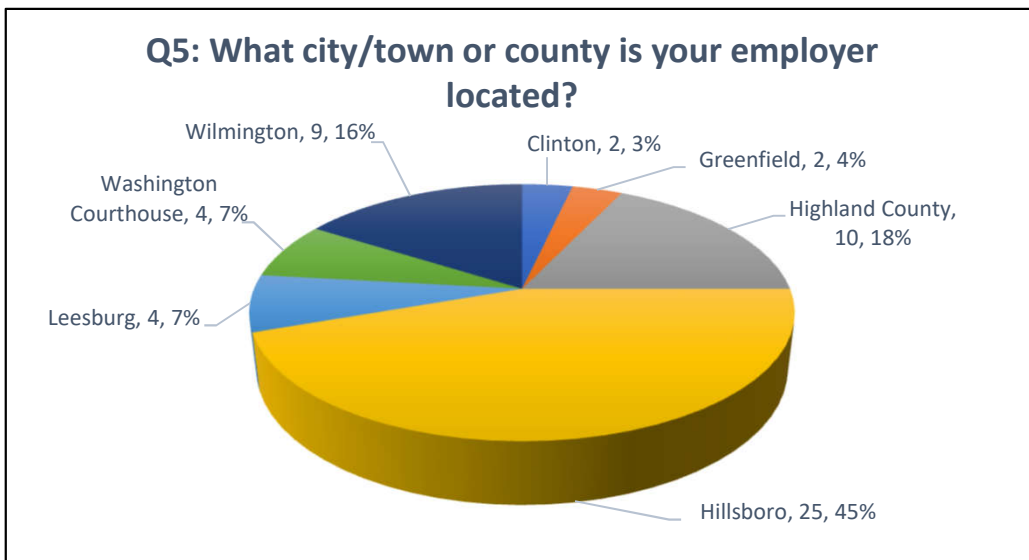
Appendix B

All responses in which the question was left blank have been omitted from the data analysis.

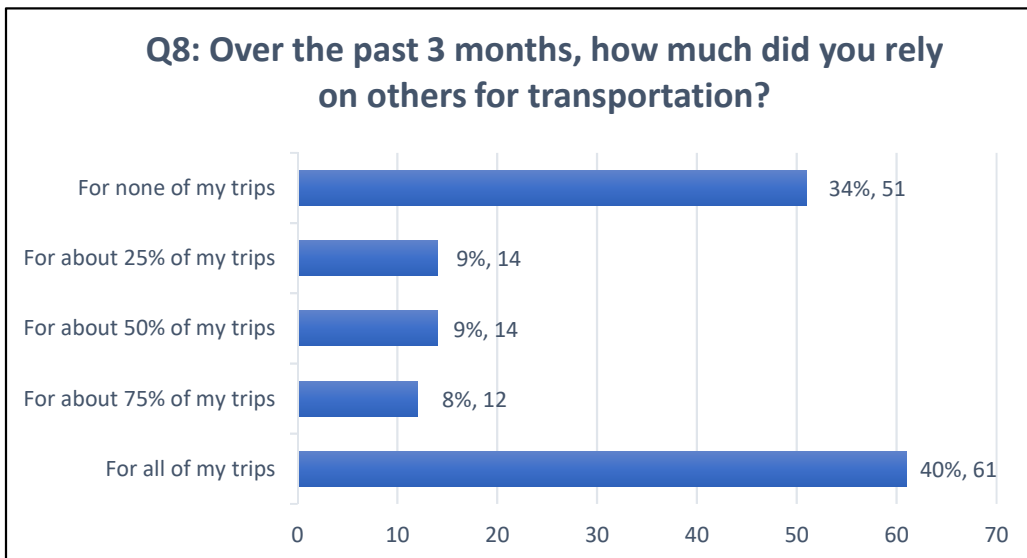
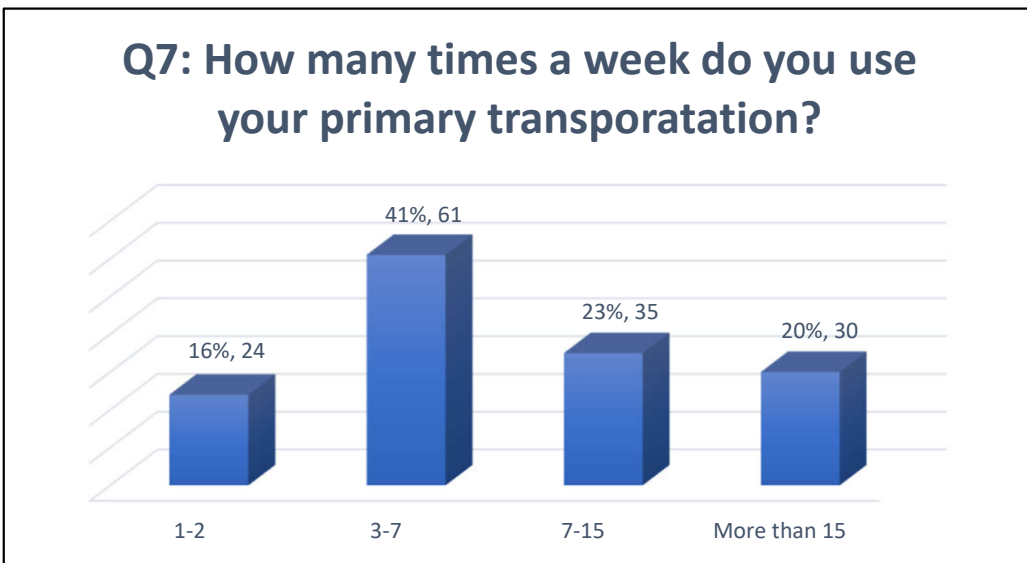
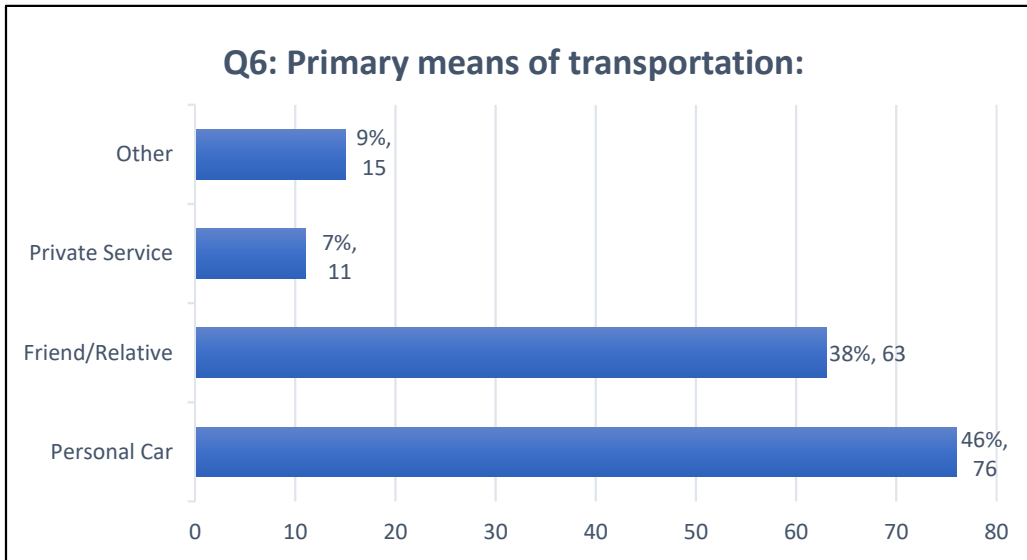




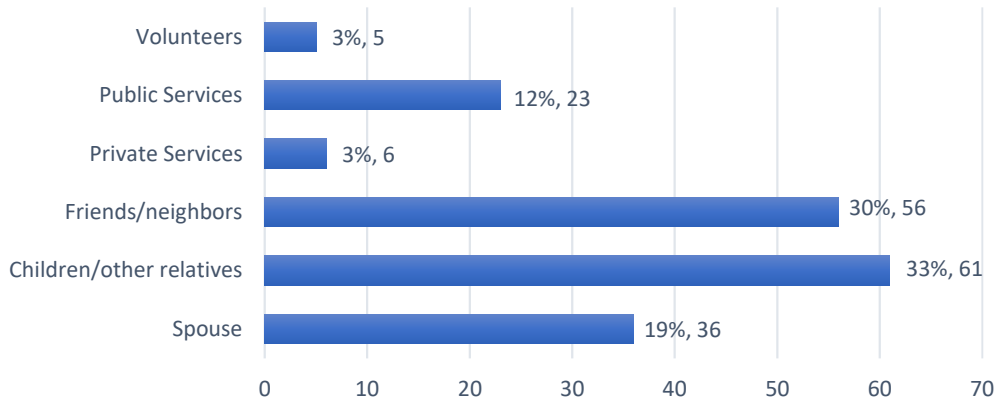
The above data visualizes only those answers that appear more than once. A further 39 employers were noted by individual answers. The data utilizes only those answers that indicate an employer. Homemaker, retired, student, disabled and unemployed were excluded due to the nature of the question.



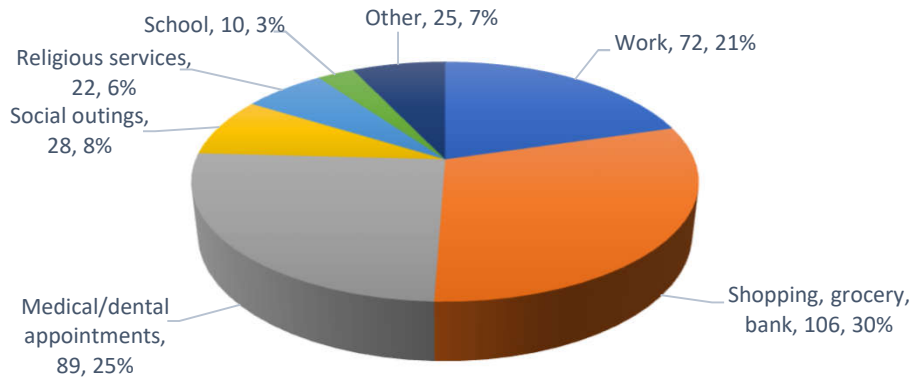
The above data visualizes only those answers that appear more than once. A further 15 cities were noted by individual answers. The data utilizes only those answers that indicate an employer's location. Disabled, retired, and unemployed were excluded due to the nature of the question.



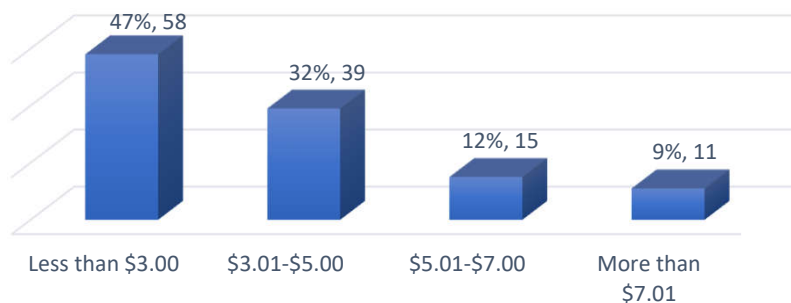
Q9: If you depend on others for any of your trips, who do you depend on?



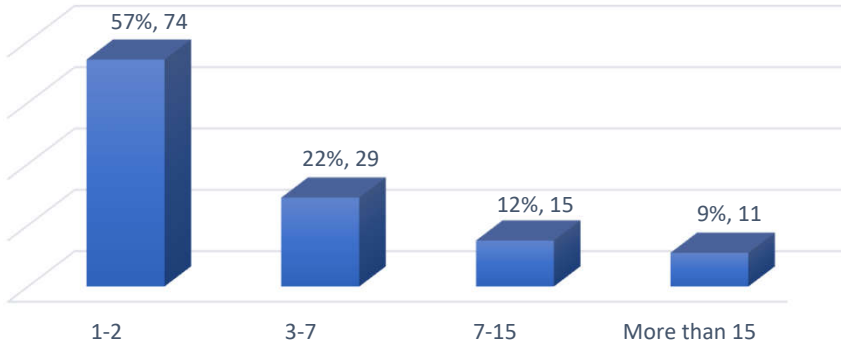
Q10: What are your most common destinations?



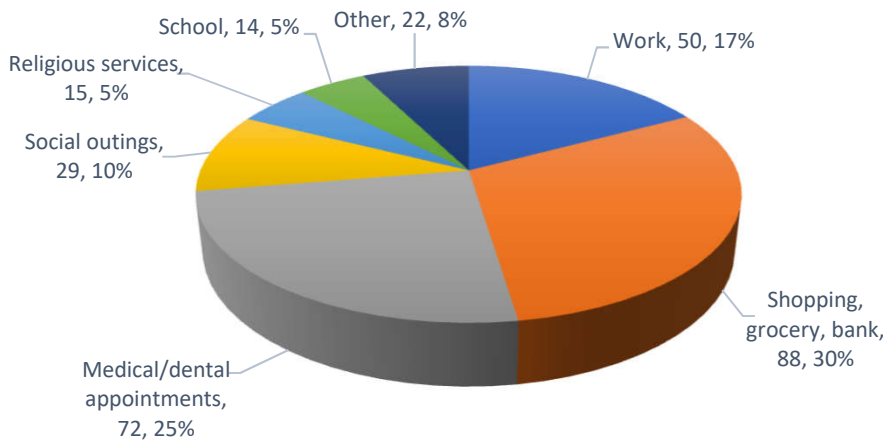
Q11: How much would you pay a transportation service (such as a cab or bus) each way?



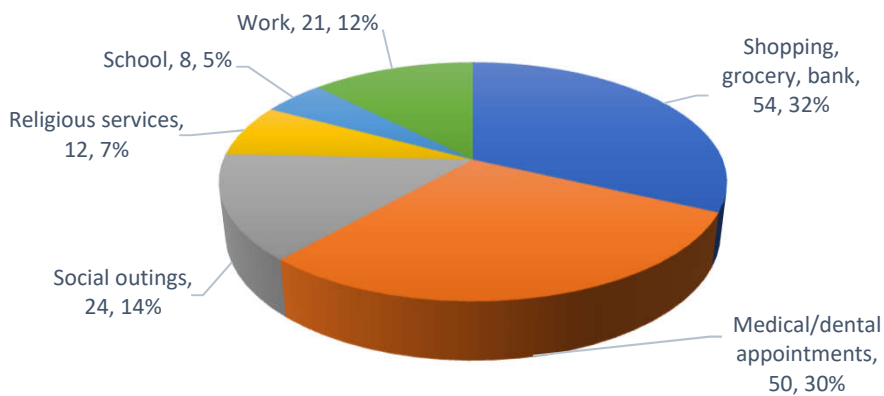
Q12: If you had bus routes with scheduled time stops in Hillsboro, how many more trips per week would you take?

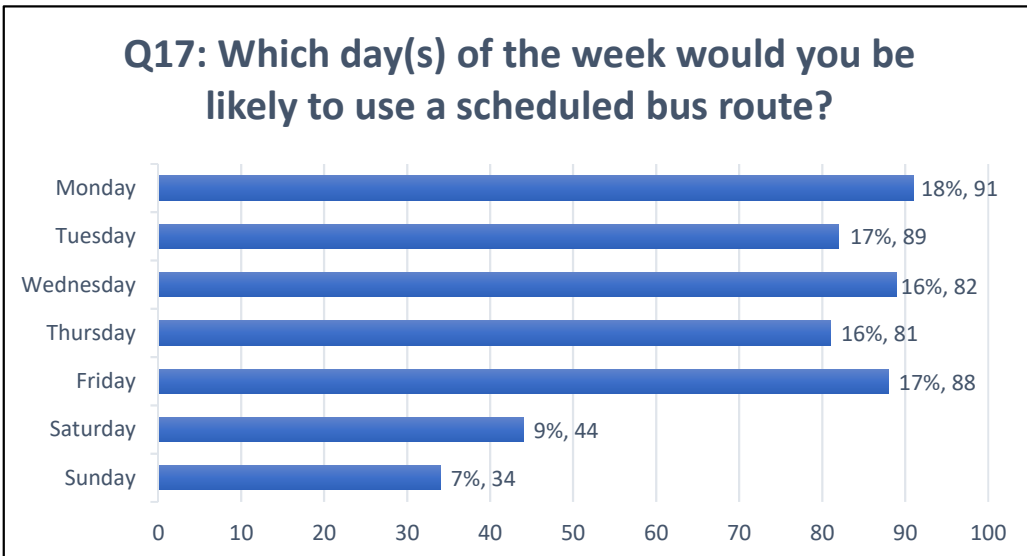
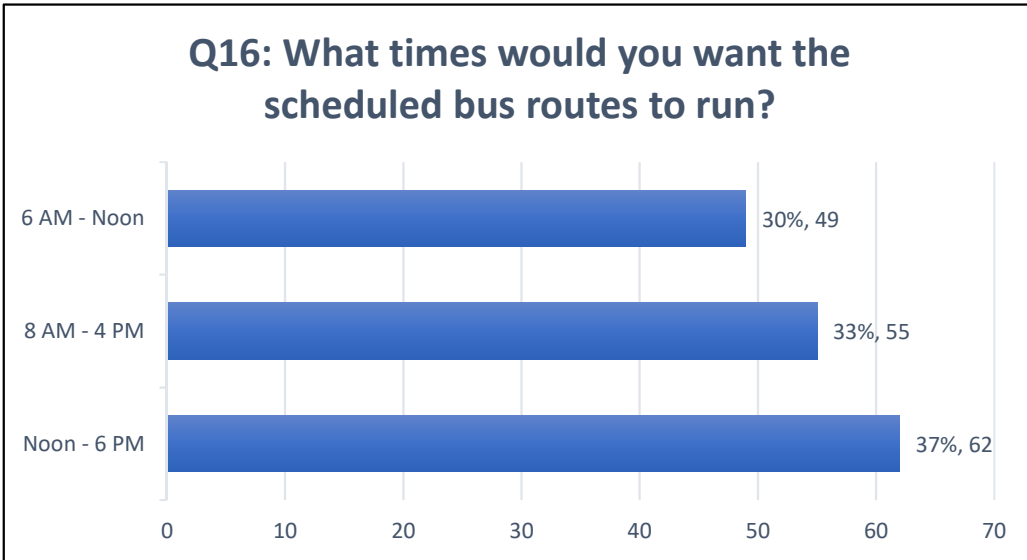
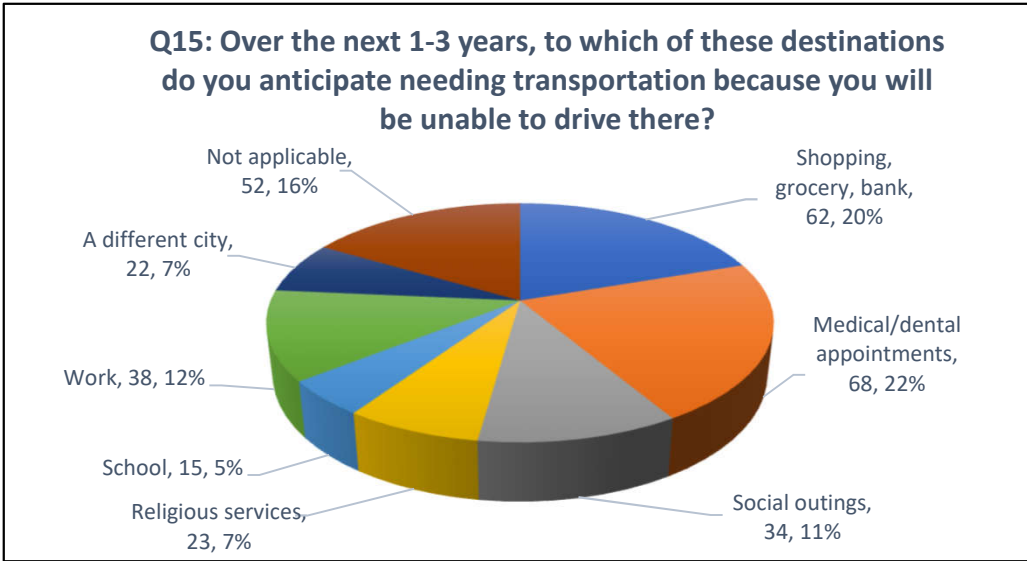


Q13: What is the most common destination for these additional trips?

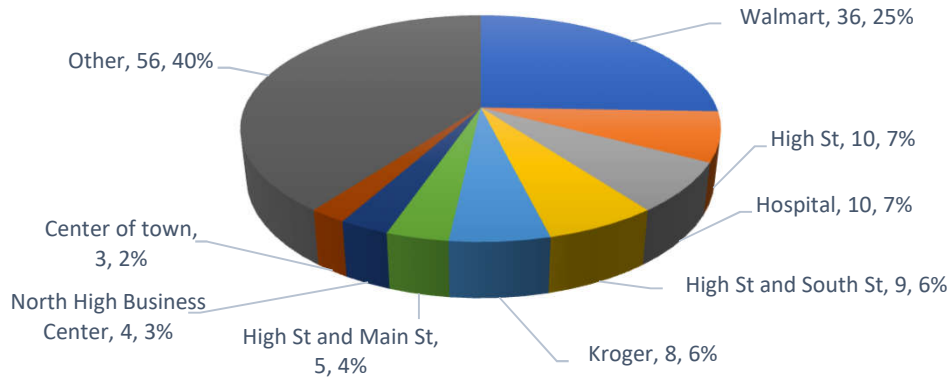


Q14: During the last 3 months, were you unable to travel to any of the following destinations because you did not have access to transportation?



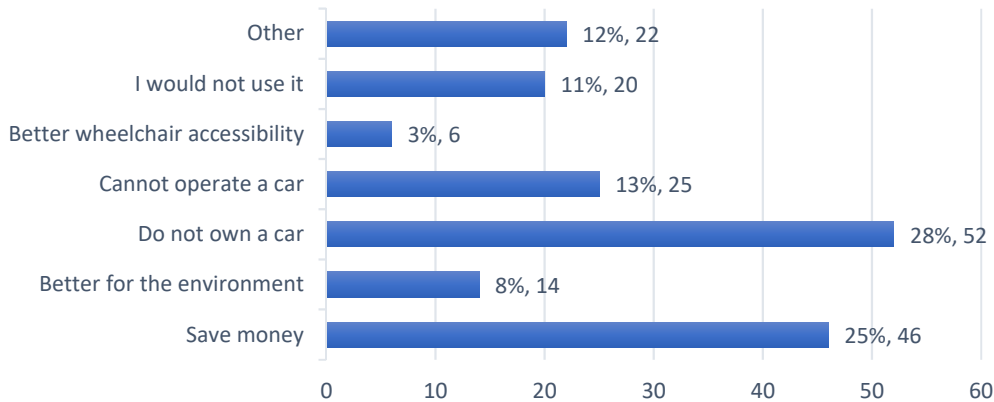


Q18: In Hillsboro, what major street corner (or destination) would you want a stop on a scheduled bus route?

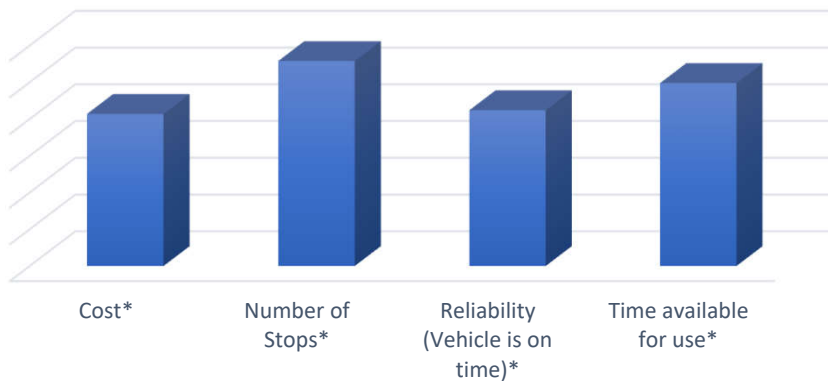


The above data visualizes only those answers that appear more than twice. A further 35 locations were noted by 1 or 2 answers.

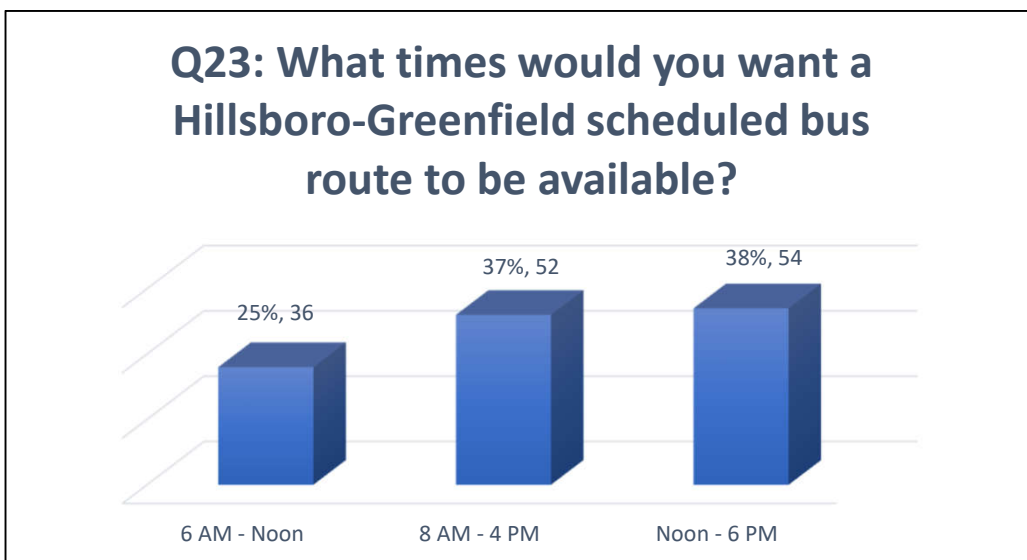
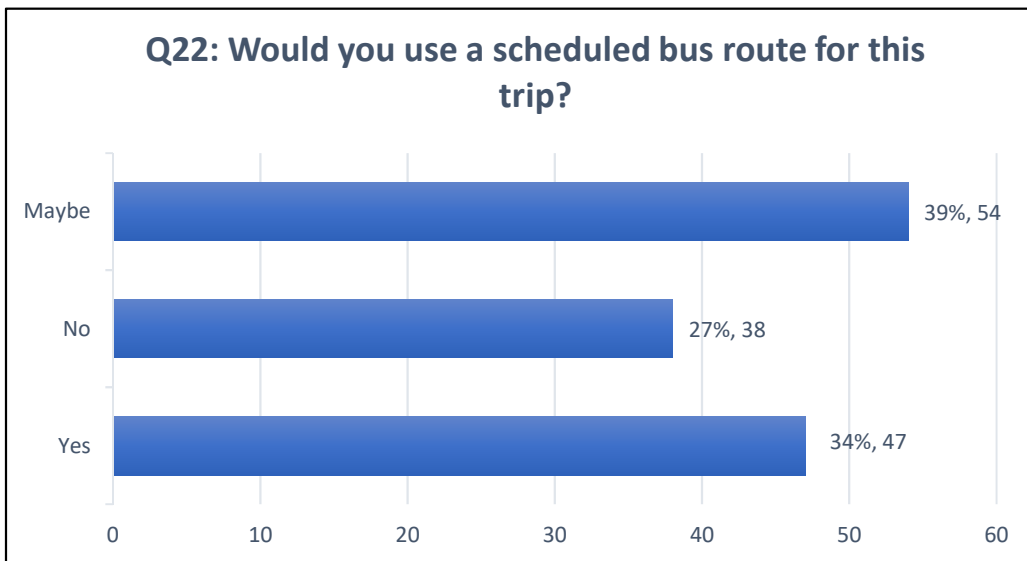
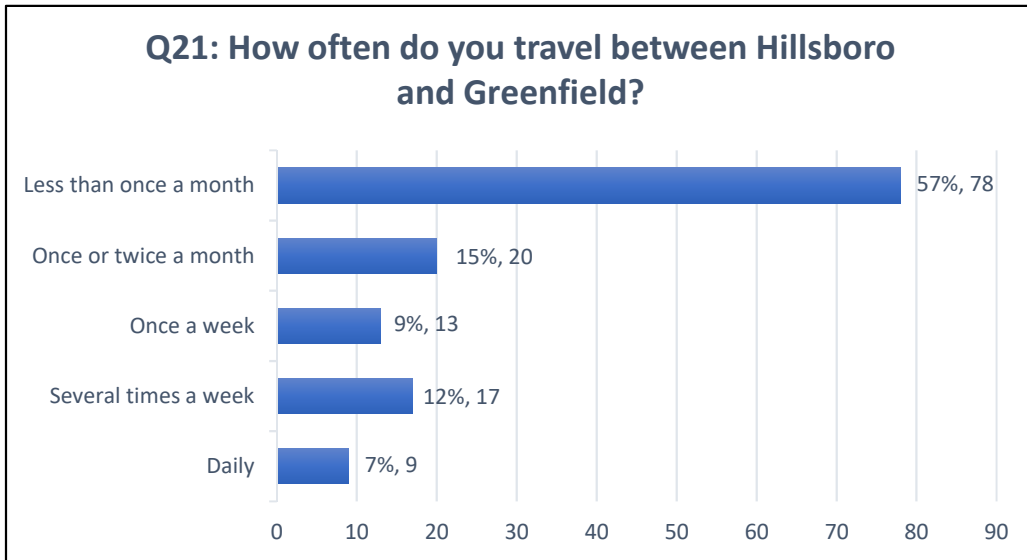
Q19: What is your reason for using the scheduled bus routes?



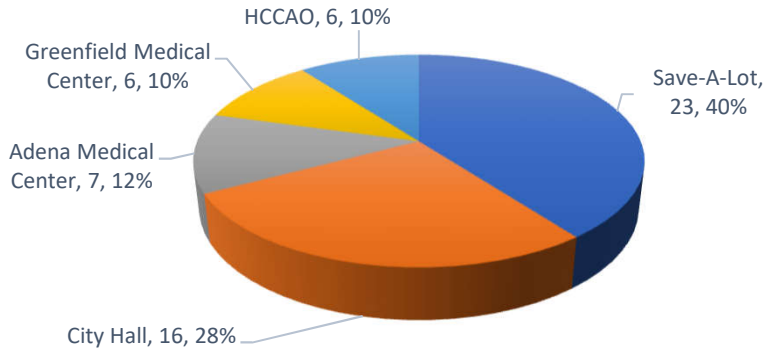
Q20: Please rank how important each of these items are to you:



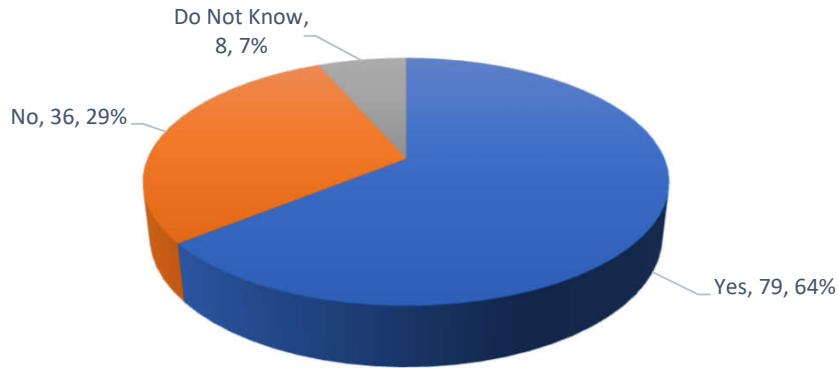
*The above data shows the relative importance of each answer in comparison to the others. This was determined by taking the sum of the rankings from every survey.



Q24: In Greenfield, what major street corner (or destination) would you want a stop on a scheduled bus route?



Q25: Do you think there is community support for scheduled bus route service?



Desirable Transit Destinations - Greenfield

