FREIGHT STAKEHOLDER SURVEY

January 14, 2015

Memphis MPO
METROPOLITAN PLANNING ORGANIZATION

Strengthening Regional Transportation

THE UNIVERSITY OF MEMPHIS | Intermodal Freight Transportation Institute

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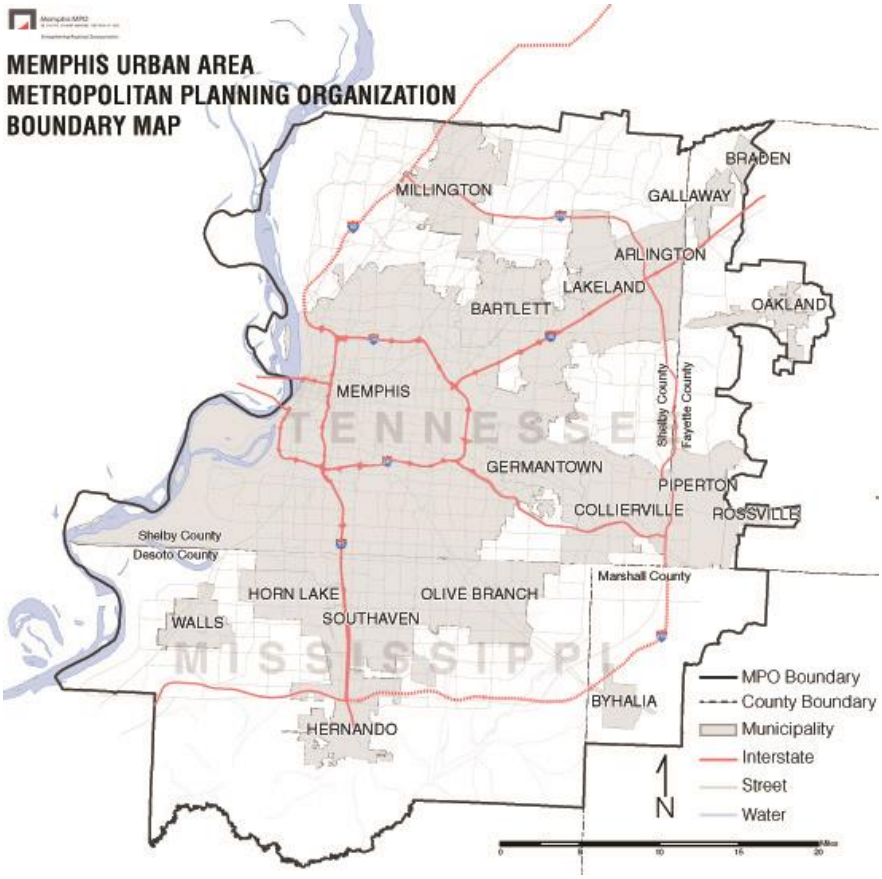
1. Introduction

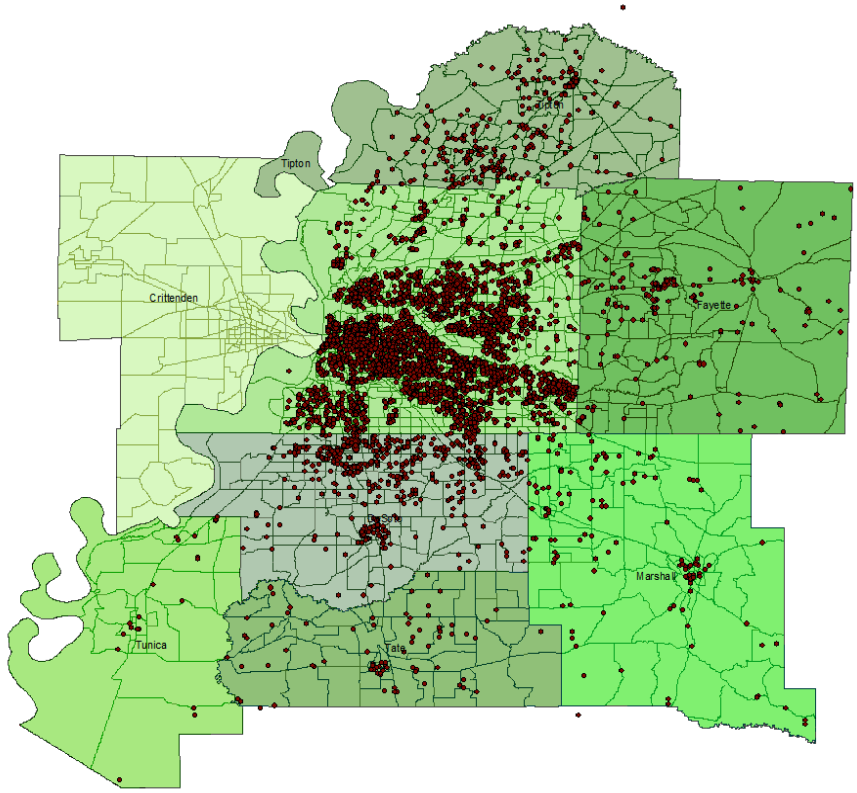
The Memphis Urban Area Metropolitan Planning Organization (MPO) is a regional, multi-jurisdictional agency that is responsible for the planning and programming of Long-Range Transportation facilities in the Memphis Metropolitan Area. The Memphis MPO planning boundary covers all of Shelby County, TN and Desoto County, MS, the western portion of Fayette County, TN and the northwest corner of Marshall County, MS (see Figure 1).

Figure 1. ***Memphis Urban Area Metropolitan Planning Organization Planning Boundary, 2014***



In 2014 the Memphis Urban Area MPO conducted a Household Travel Survey of multimodal travel patterns for the portion of the Memphis TN-MS-AR Metropolitan Statistical Area within the states of Tennessee and Mississippi. The extent of the study area is shown below in Figure 2.

Figure 2. ***Household Travel Survey Area (Memphis AR-TN-MS- MSA, 2014)***



The MPO's goal for the overall study is to produce a statistically significant picture of travel within the region and provide an update to the travel demand forecasting model.

The purpose of the current project is twofold: 1 – to solicit opinions and perceptions and to gather information on the operations and functionality of the freight transportation system; and 2 – to determine the impacts of freight movements on livability within the region.

The results of this work will be analyzed and used in the preparation of the updated MPO's Regional Transportation Plan (RTP). In addition, the results will be shared with the MPO's Freight Advisory Committee to assist their efforts related to freight issues in the region.

2. Methodology

2.1. Survey Instruments

In order to obtain data, two separate survey instruments were developed and administered through e-mail invitation. The first instrument, the Memphis Region Intermodal Freight Survey, was developed to survey members of the freight transportation industry community, regarding their operational strategies in order to address infrastructural elements of doing business in the Greater Memphis Region. This first survey instrument was sent to 495 individuals from a contact list prepared by the University of Memphis' Intermodal Freight Transportation Institute.

The second survey instrument, the Mid-South Region Livability Survey, was sent to 152 individuals across the Memphis TN-MS-AR Metropolitan Statistical Area within the States of Tennessee and Mississippi directly by the University of Memphis' Intermodal Freight Transportation Institute. Additionally, the Memphis MPO distributed the survey to government officials, employees, and other contacts. The individuals were selected from publicly available contact information for churches, planning companies/organizations, assisted living facilities, retirement communities, community organizations, elected government officials, businesses, parent-teacher organizations, non-transportation businesses along major freight corridors, and government engineers. For the purpose of the survey, the Federal Highway Administration (FHWA) definition of livability of "tying the quality and location of transportation facilities to broader opportunities such as access to good jobs, affordable housing, quality schools, and safer streets and roads" was utilized (2014). Both of these survey instruments are included in **Appendix A.**

In order to gain more information, follow up questions were asked to participants of both the Memphis Region Intermodal Freight Survey and the Mid-South Region Livability Survey who indicated that they would be willing to continue to be involved. The target sample size for each group was 20 individuals. These individuals were asked a series of open-ended questions regarding transportation in the Mid-South through telephone interview or through written communication, depending upon the individual's preference. These follow-up questionnaires are included in **Appendix B.**

3. Results

The results for each survey instrument are summarized and presented in the following sections. For the questions where respondents were asked a question in which they were allowed to respond freely, the responses were analyzed based upon the frequencies of common words, phrases, and themes in order to determine what the most common responses were.

3.1. Memphis Region Intermodal Freight Survey

The Memphis Region Intermodal Freight Survey was sent to 495 individuals, and 115 individuals took the survey. The full list of questions used in this survey is summarized in **Appendix A**. It should be noted that not every respondent answered every question and occasionally, free-response answers were selected instead of the provided options. This is why in many of the following tables and figures the number of respondents is not 115.

The survey begins with questions to determine characteristics of the responding business. The following information was obtained about the respondents' organization, shown in Figures 3 through 6 below.

Figure 3. ***Please indicate the number of employees at your company: (114 Respondents)***

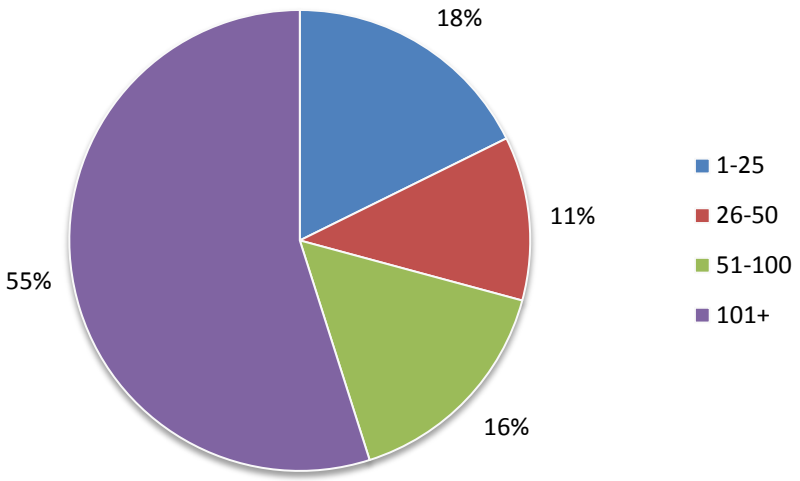


Figure 4. ***How long has your business been in operation at this location? (115 Respondents)***

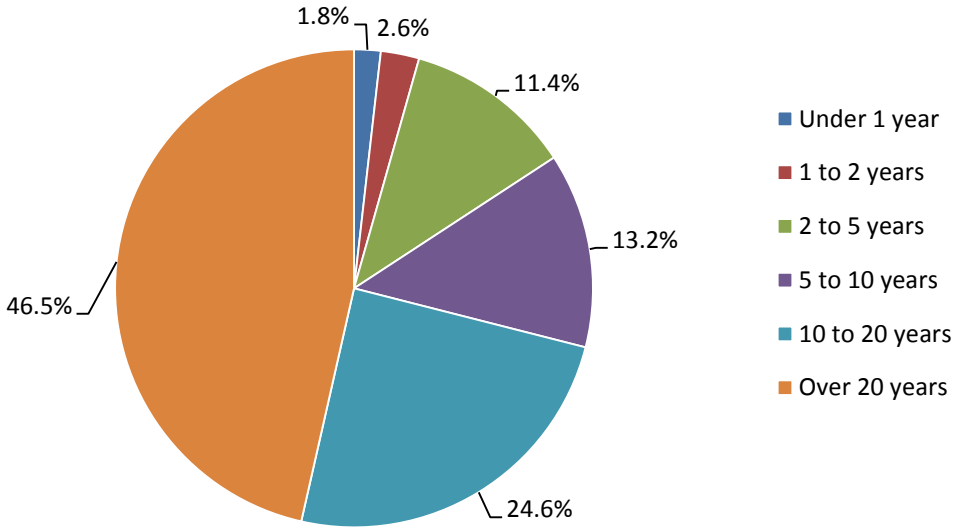
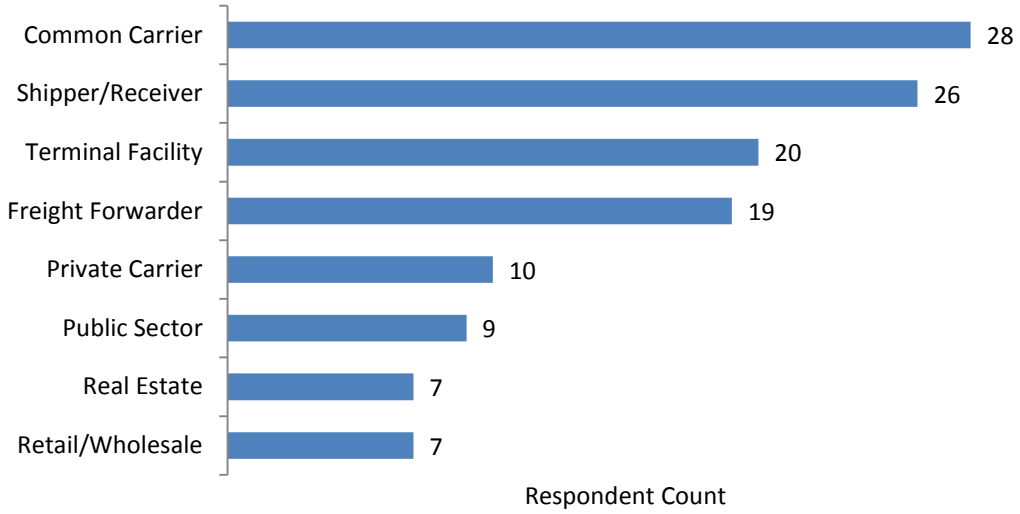
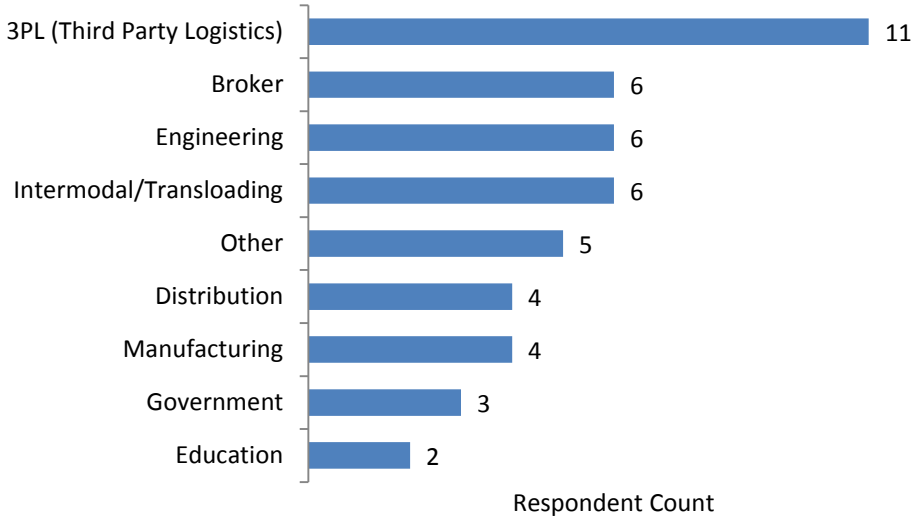


Figure 5. ***What type of industry is your business related to? (Please select all that apply.) (85 Respondents)***



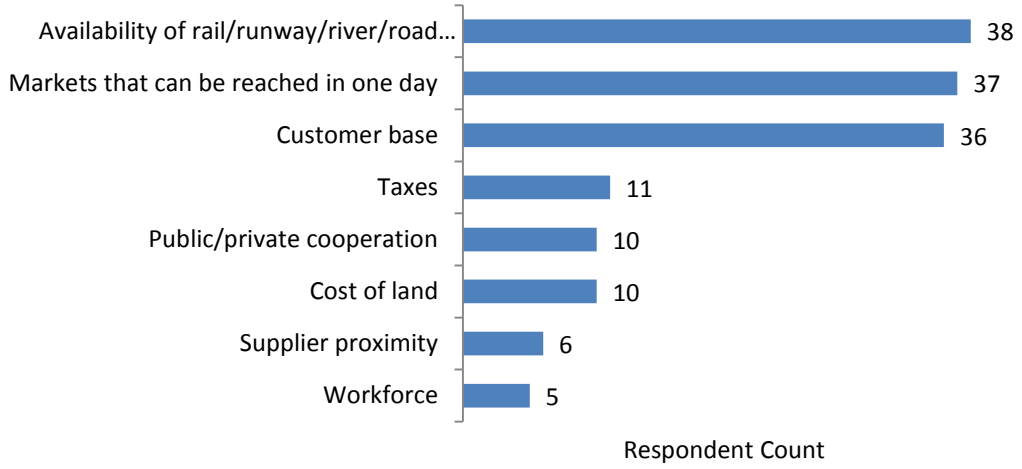
Continuing the on the data from Figure 5, 47 respondents filled out the option for "Other (please specify)" either in addition to the responses presented or individually. These responses are presented below in Figure 6.

Figure 6. ***Industry Type Free-Response Answers (47 Respondents)***



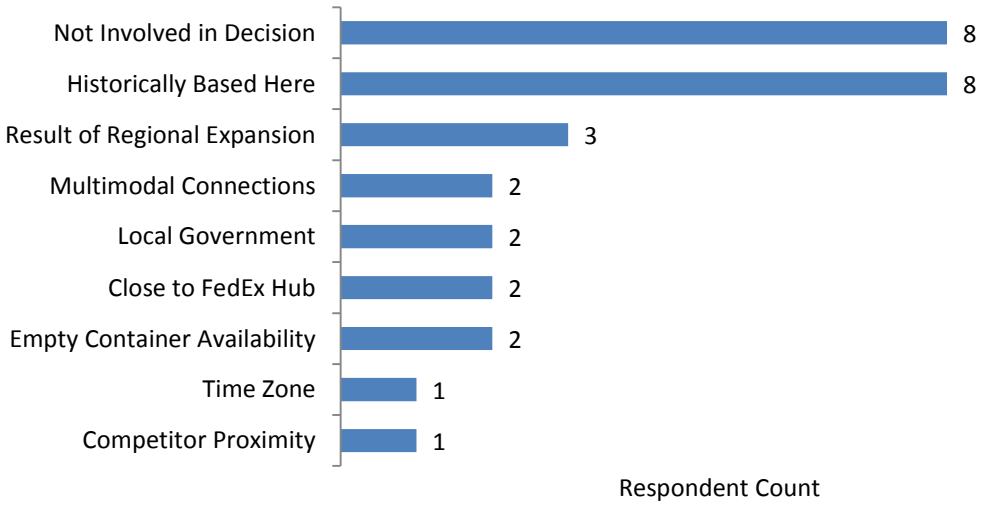
In addition to information about the respondent's organization, the survey instrument obtained the following information regarding the responding organization's decision to locate in the Mid-South area, presented in Figure 7 and Figure 8 below.

Figure 7. ***If you were involved in the decision to locate your business, why was the Mid-South Region chosen as the location of your business? (Please select all that apply.) (75 Respondents)***



Expanding on Figure7, Figure 8 depicts the additional free-response answers for the location decision question. A frequency analysis was performed on these responses to find common themes and the results are presented below.

Figure 8. ***Location Decision Free-Response Answers***



In addition to information about the respondent's organization, the survey instrument obtained the following information regarding the respondents' assessments of the region's transportation infrastructure, presented in Figure 9 and Figure 10 below.

Figure 9. ***How would you rate the transportation infrastructure in the Memphis region? (112 Respondents)***

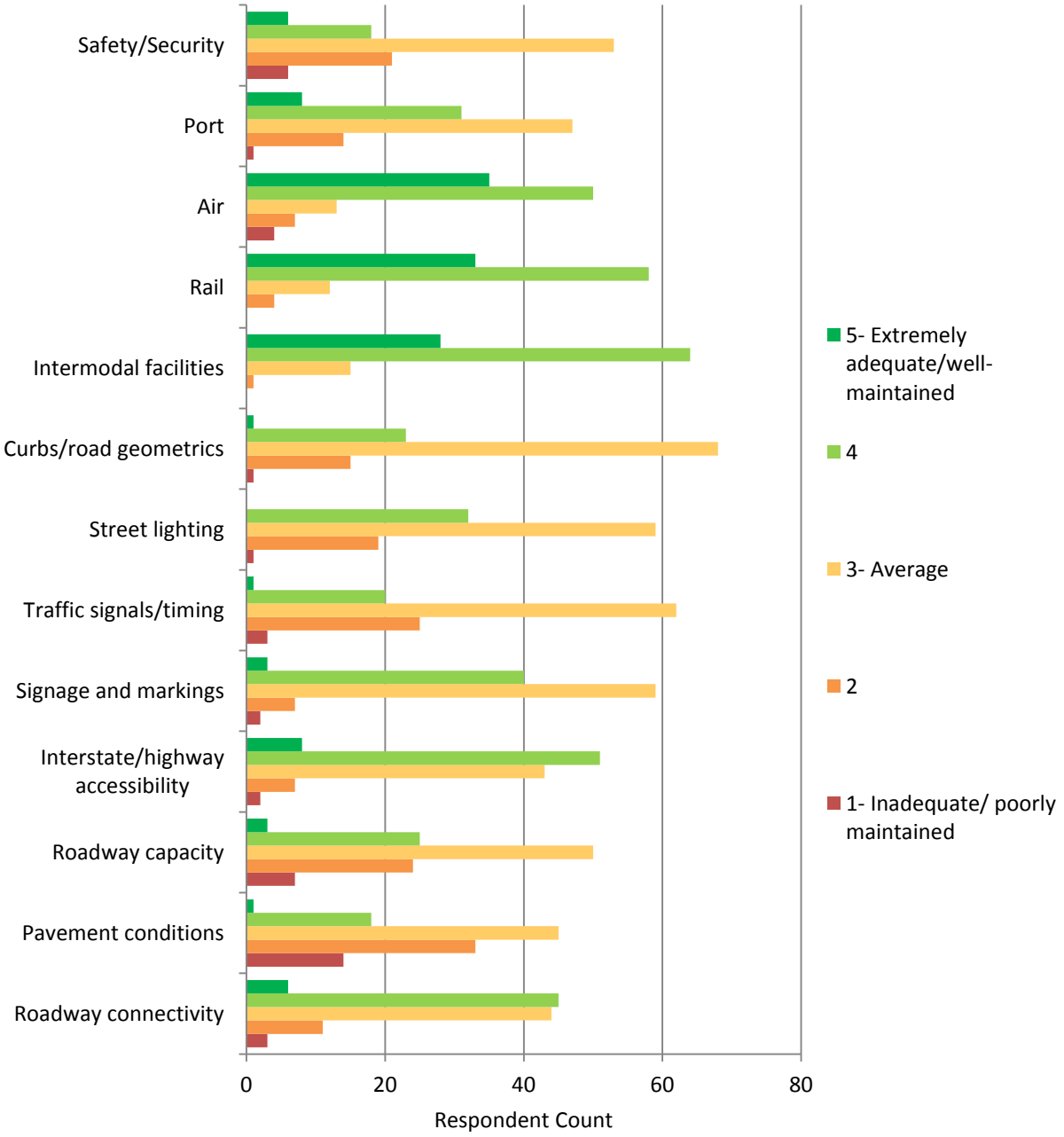
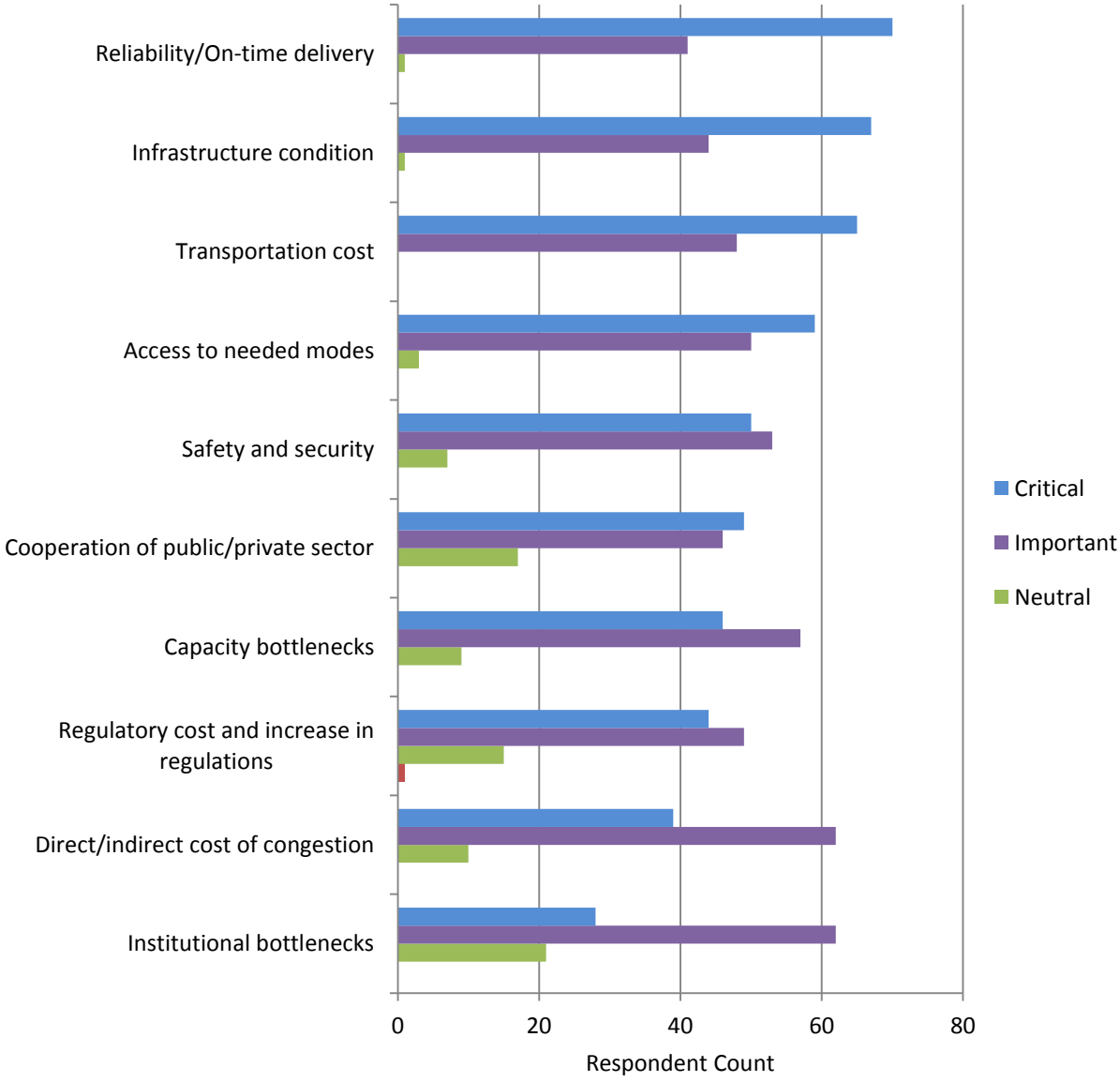


Figure 10. ***How would you rate the importance of each of the following factors for moving freight more efficiently and supporting the regional economy? (113 Respondents)***



Finally, the final portion of the Memphis Region Intermodal Freight Survey concerned business operations and strategies concerning the region's transportation infrastructure. These initial questions are presented in Table and the responses are given in Figure 11 through Figure 17 below.

Figure 11. ***Do you encounter the following barriers to freight-related productivity? (109 Respondents)***

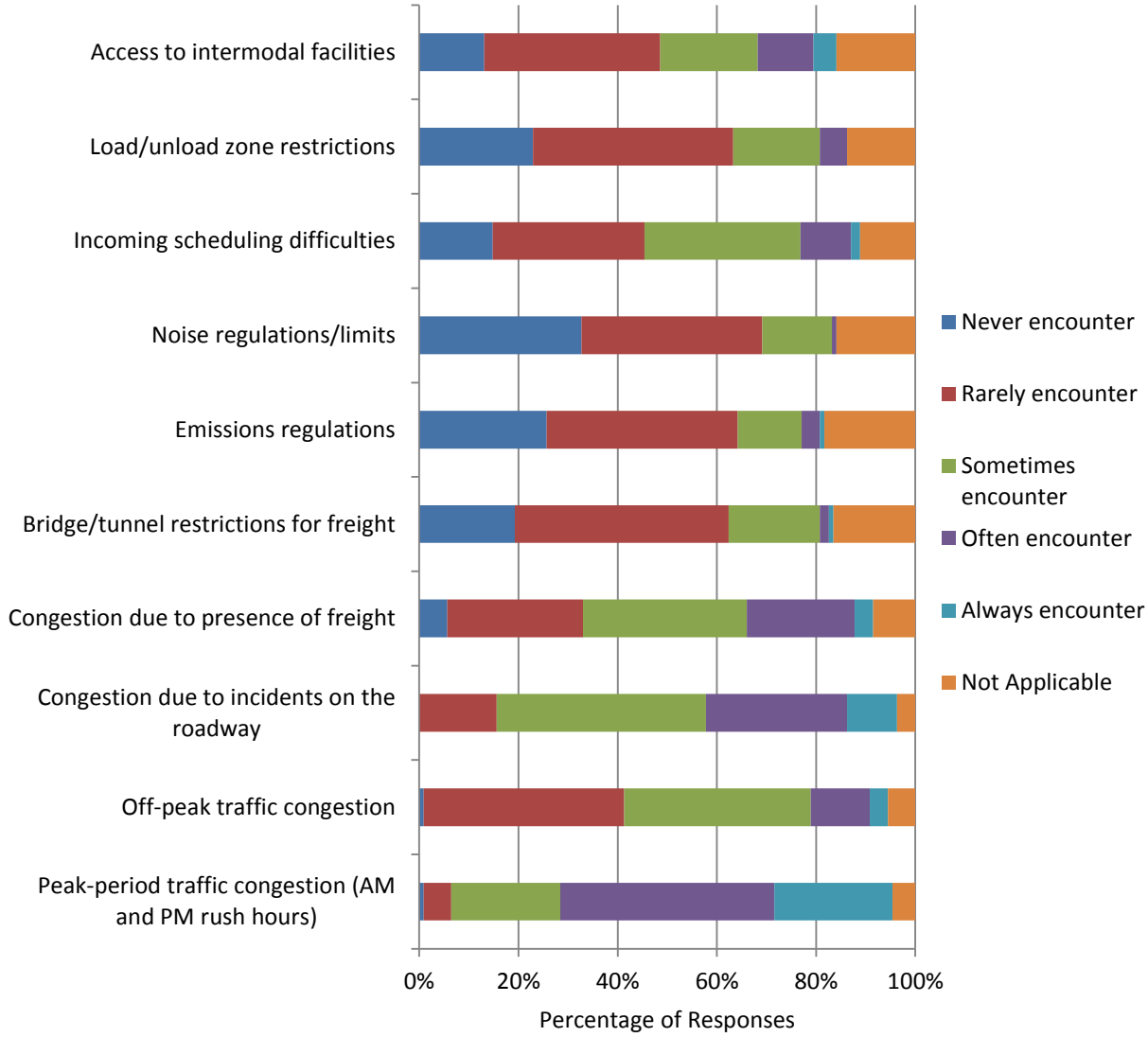


Figure 12. ***What is the most significant cost to your business associated with congestion*? (*97 Respondents)***

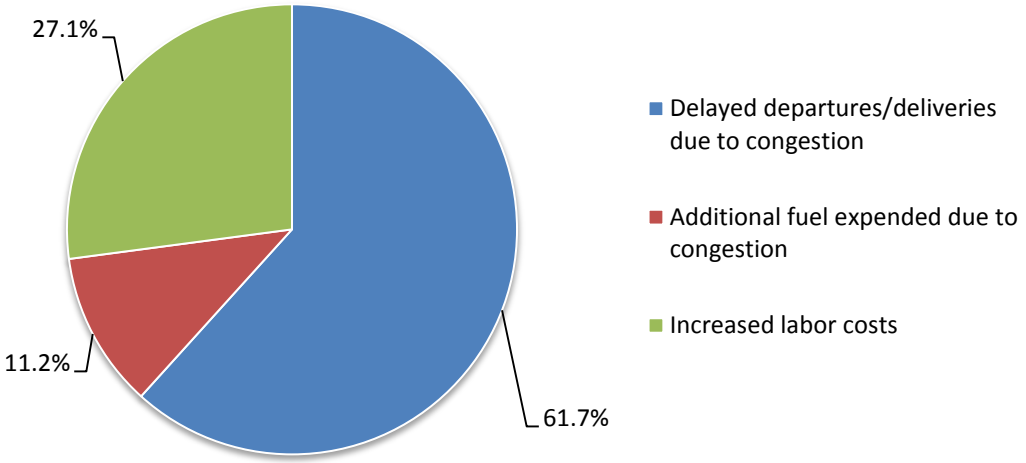


Figure 13. ***Does your company use any of the following? (Please check all that apply) (75 Respondents)***

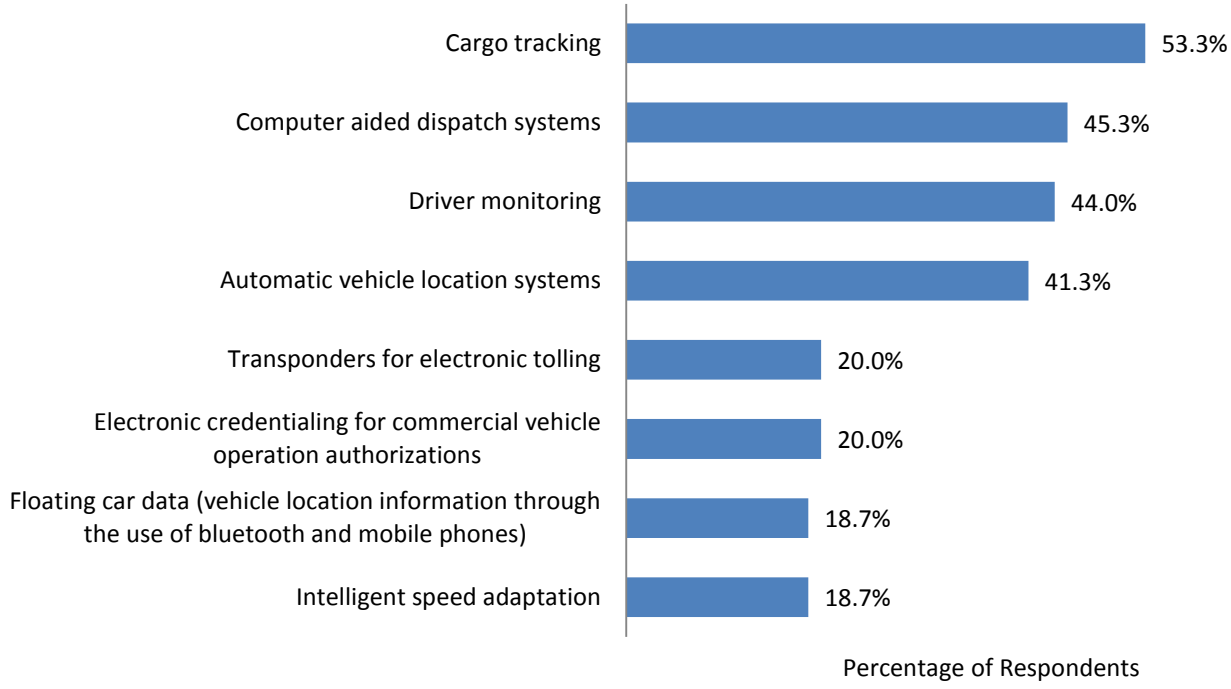


Figure 14. ***Operational Strategies Utilized to Minimize Freight Impact (50 Respondents)***

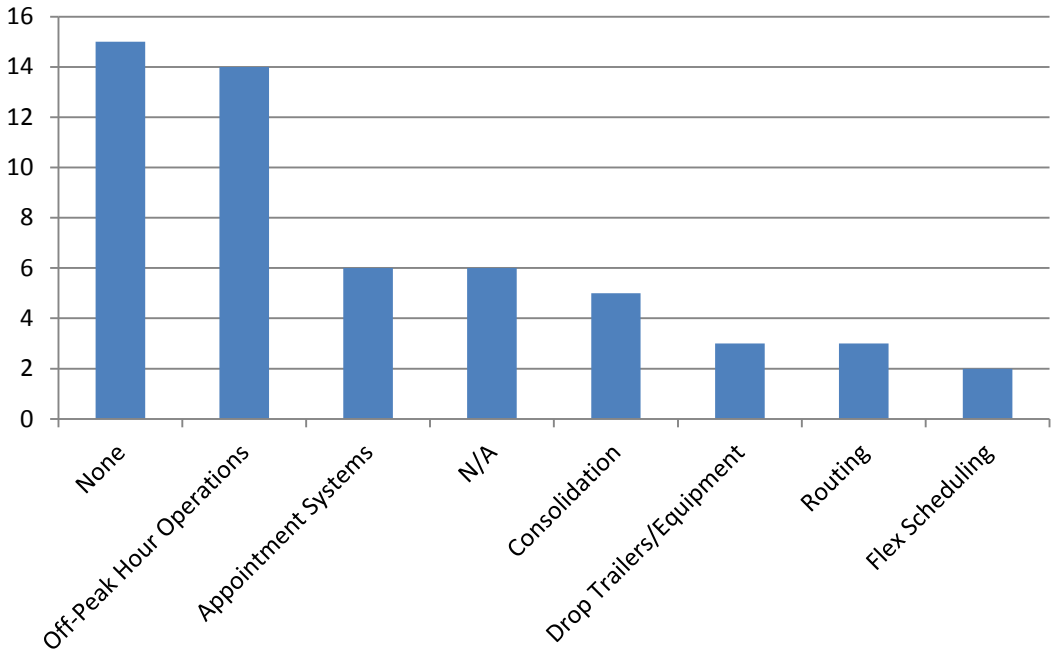


Figure 15. ***Transportation Business Strategy Observed Results (45 Respondents)***

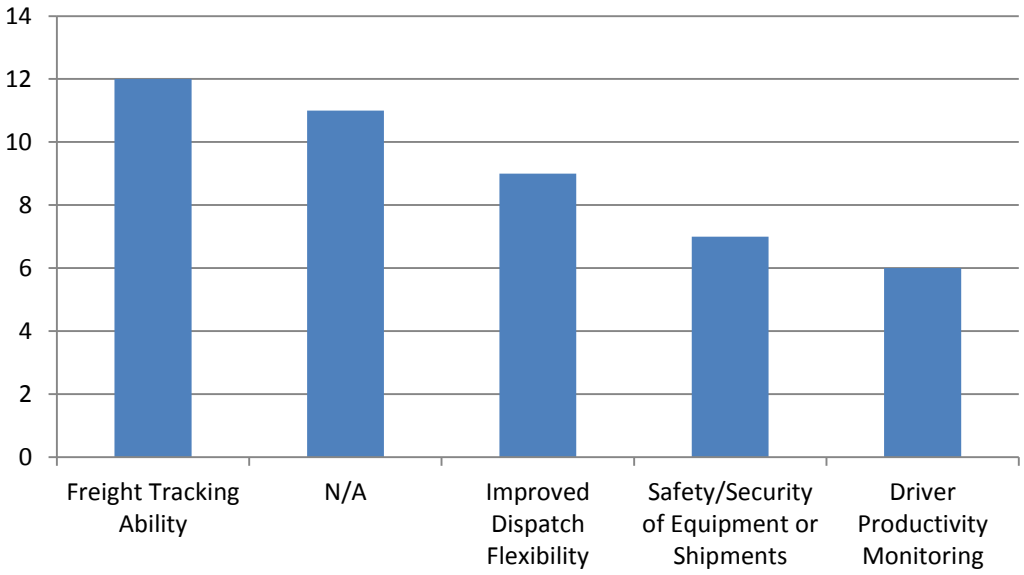


Figure 16. ***Major Infrastructure Bottlenecks in the Memphis Region (67 Respondents)***

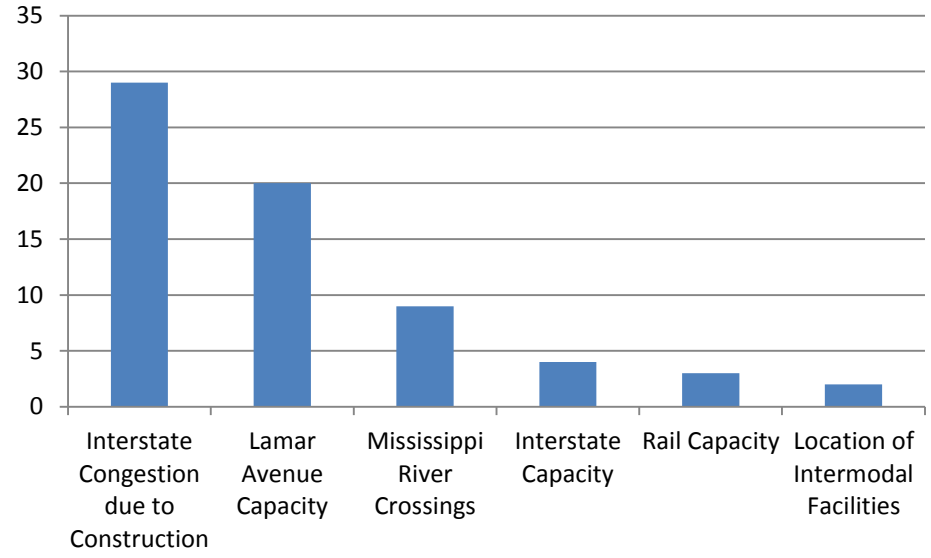
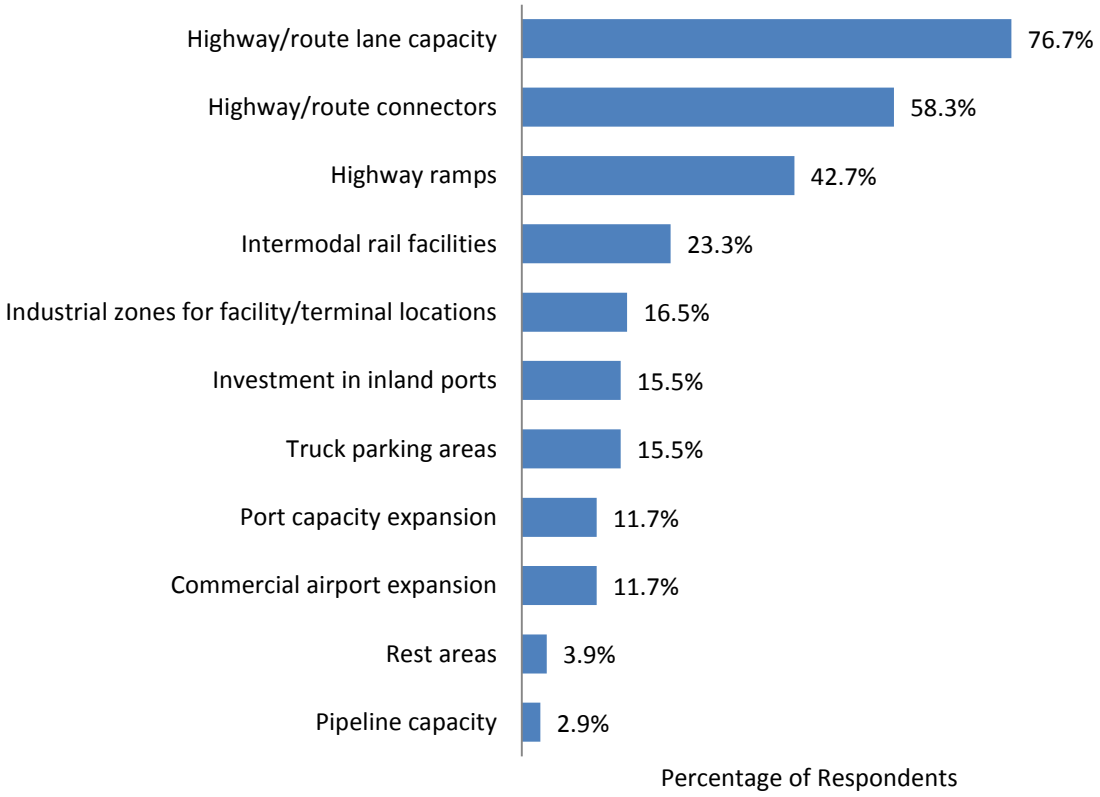


Figure 17. ***Choose up to three improvements to the transportation system in the Memphis region that would benefit freight movements the most for your company: (103 Respondents)***



In addition to the responses shown above in Figure 17, there were free-response "Other, please specify" options available. A frequency analysis was performed on these responses and the results are presented below in Table 5.

Table 1
Three Potential Improvements that would Provide the Most Benefit Free-Response Answers, n=8

Response	Frequency
Third Mississippi River Bridge	2
Completion of Construction Projects in a Timely Manner	1
Expanded River Transportation Infrastructure	1
Higher-Capacity Truck Trailers	1
Improved Gate Operations at Canadian National Railway Co./CSX Intermodal Terminal	1
Lamar Corridor (U.S. Highway 78) Capacity	1
N/A	1

Finally, respondents were asked if they would like to add any additional comments regarding freight policy, infrastructure improvements, or other freight-related concerns. Although many elected to skip the question, the responses collected do provide additional insight into what some of the major issues facing the Memphis region are. These comments included recommendations and concerns that:

a) Railroads invest in additional intermodal facility ramp capacity as freight traffic continues to move towards intermodalization.
b) Railroads throughout Memphis need to work together and with local government and industry to encourage growth. This most easily can be accomplished by being open to reciprocal switching.
c) Mergers and acquisitions of the railroads have resulted in what some feel as an uncompetitive environment, with carload and intermodal costs rising across all as a result. Particularly, respondents indicated that the railroads seem to focus on only the needs of large shippers like J.B. Hunt Transport Services, Inc. and Schneider National, Inc. This is a major concern when looking as freight continues to move towards intermodalization.
d) BNSF Railway Co. has eliminated their 53-foot intermodal service.
e) Through-city rail traffic should be relocated to the city perimeter to reduce inner-city service delays.
f) Improvements on the Lamar Corridor (U.S. Highway 78) that have been discussed for a long time have not yet occurred. Capacity issues are resulting in businesses leaving the area. There needs to be a sense of urgency among local leaders in order to get the project completed.
g) A cohesive freight policy needs to be developed, embraced, and understood by all area chambers of commerce and government officials and it needs to be in alignment with the Memphis Urban Area Metropolitan Planning Organization and government engineers.
h) Area environmental concerns should be addressed without stifling commerce.
i) Workforce education continues to be an issue.
j) Damage to shipments more frequently occurs through terminals in the Memphis region, regardless of shipment origin, destination, or carrier utilized.

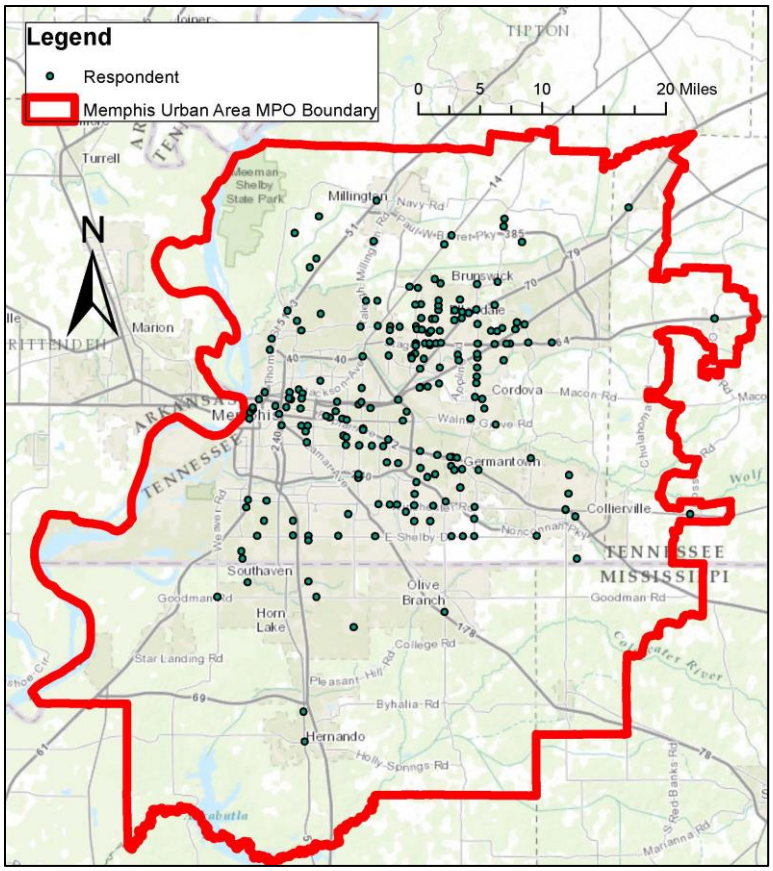
3.2. Memphis Region Intermodal Freight Survey Follow-Up

Thirty-six individuals who took the Memphis Region Intermodal Freight Survey agreed to further participate. These thirty-six individuals were contacted via provided e-mail addresses and given their choice of answering the questions via telephone interview or e-mailed questionnaire. Of the thirty-six individuals, only eleven participated. The questionnaires are included in **Appendix B** and the results are included in **Appendix C.**

3.3. Mid-South Region Livability Survey

The Mid-South Region Livability Survey was developed in order to identify perceptions related to the impact of freight operations on community livability in the Memphis, Tennessee metropolitan area. The survey instrument was sent to 152 individuals from both the private and public sector via e-mail by the University of Memphis' Intermodal Freight Transportation Institute. Additionally, the survey was sent via e-mail to public sector officials for further distribution by the Memphis Urban Area Planning Organization. 270 individuals took the survey. It should be noted that not every respondent answered every question and occasionally, free-response answers were selected instead of the provided options. This is why in many of the following tables and figures, the number of respondents is not equal to 270 individuals. Based upon asking respondents the closest intersection to their place of residence, the locations of all of the 270 respondents were plotted using ArcGIS as shown below in Figure 18.

Figure 18. ***Location of Livability Survey Respondents in the Mid-South Region***



Due to some respondents listing the same intersection, several points in the map overlay one another. Upon inspection of the locations given, it becomes apparent that there may be some bias in the results as not many of the respondents reside in the Mississippi portion of the Memphis Urban Area Metropolitan Planning Organization and a large cluster of the respondents live in the Bartlett-Lakeland area. To examine if any other potential bias exists, the results of the demographic questions were taken in account. The results revealed that the respondents tended to be Caucasian, older than 45, college educated, employed, making over $50,000 per year, own their home and have lived there for at least 10 years, and own at least one vehicle. Additionally, respondents tended to live in smaller households in terms of number of people, without children. The results of the demographic questions are included in **Appendix D**.

The first portion of the Mid-South Region Livability Survey asked respondents about their perceptions regarding livability within their own neighborhood. The results are presented in Figure 19 through Figure 25 below.

Figure 19. ***How do you rate your neighborhood for livability? 10 being very livable. (189 Respondents)***

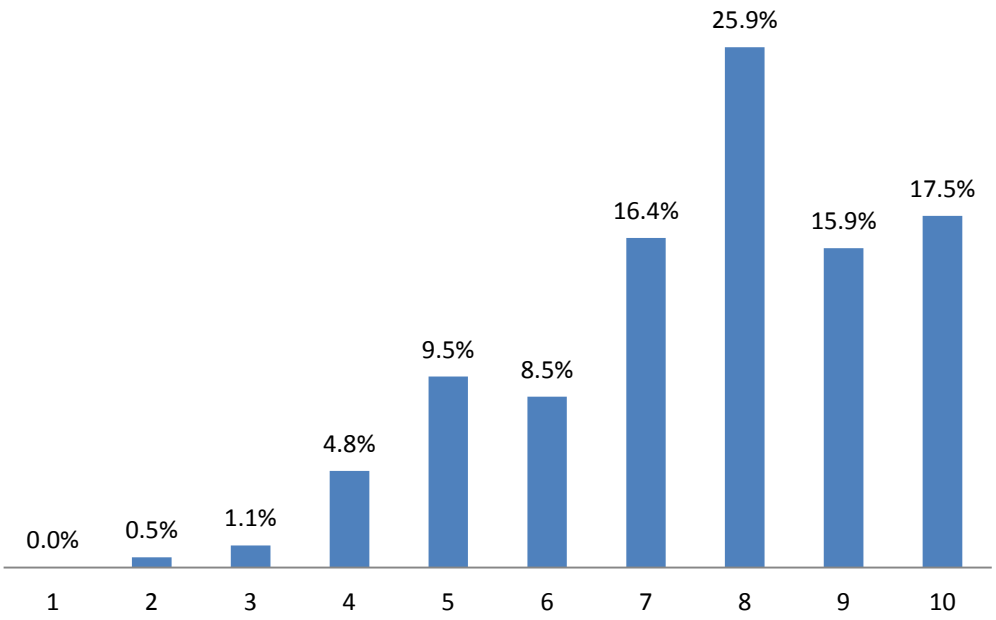


Figure 20. ***How has your neighborhood changed since you have lived here? (Select all that apply)***
Top 5 Choices Indicated (262 Respondents)

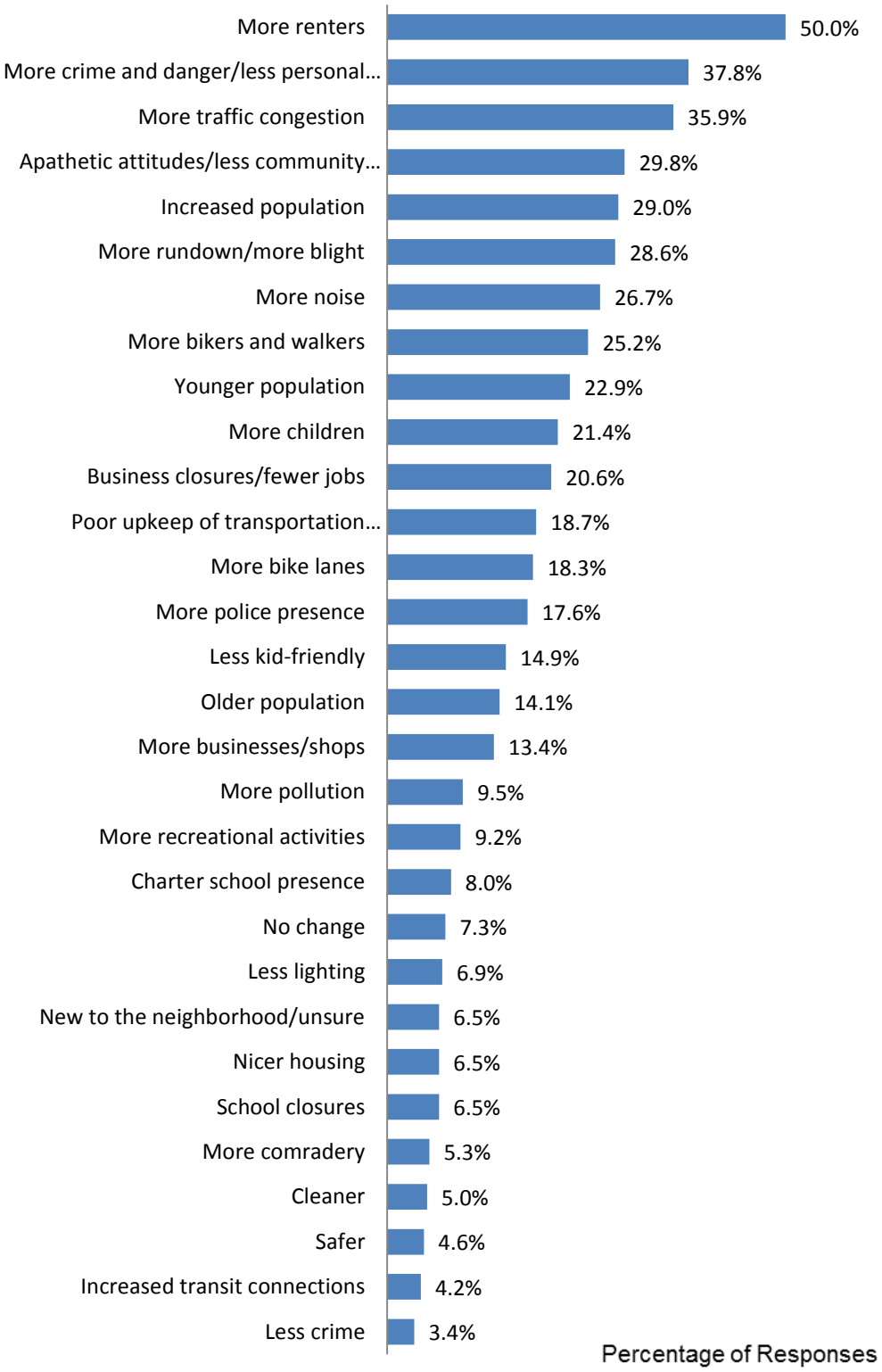


Figure 21. ***What are the most important contributors to livability in your neighborhood? (Please pick your top 5 most important.) (248 Respondents)***

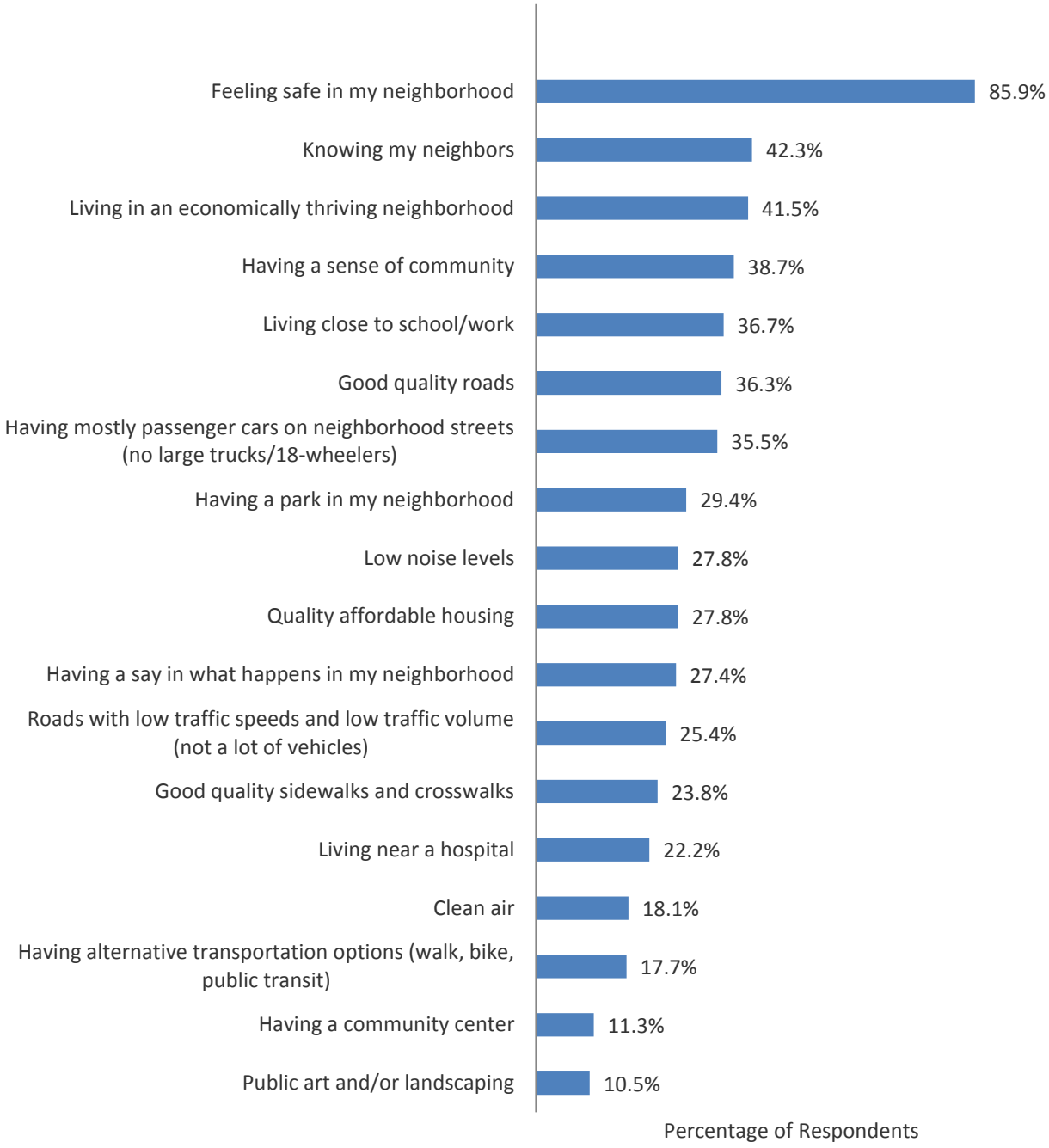


Figure 22. ***In terms of transportation (walking, biking, driving, and public transportation), what are areas that need improvement in your neighborhood? (Select all that apply) (243 Respondents)***

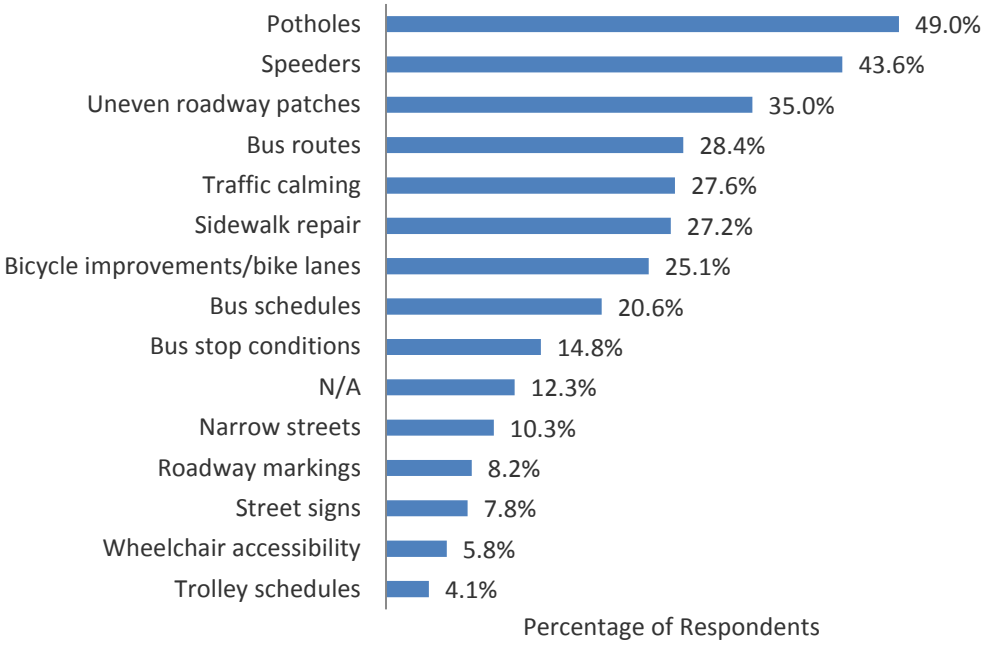


Figure 23. ***How often do you see? (249 Respondents)***

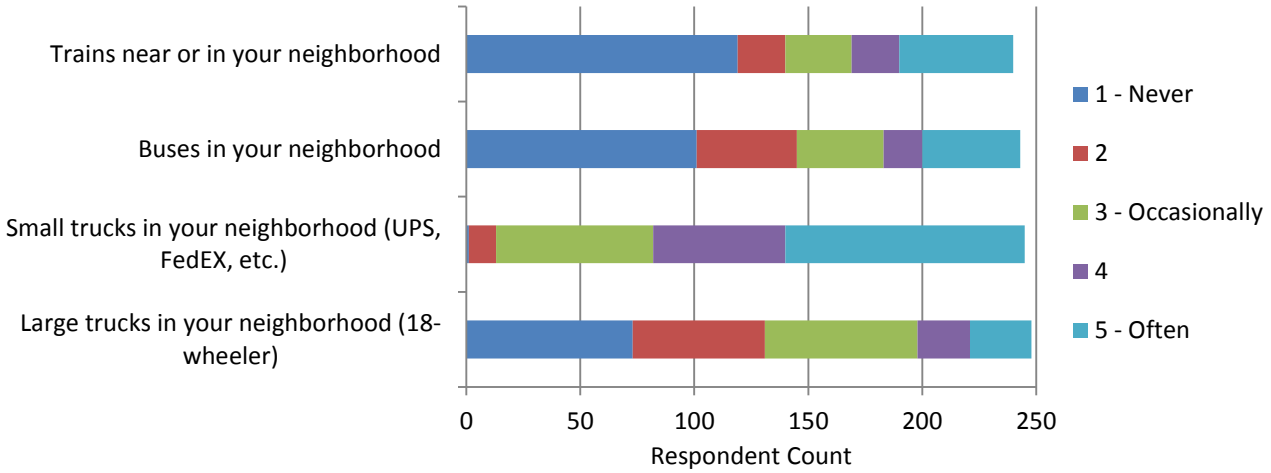


Figure 24. ***Do you experience any negative environmental issues in your neighborhood (smog, air pollution, noise, or otherwise)? (249 Respondents)***

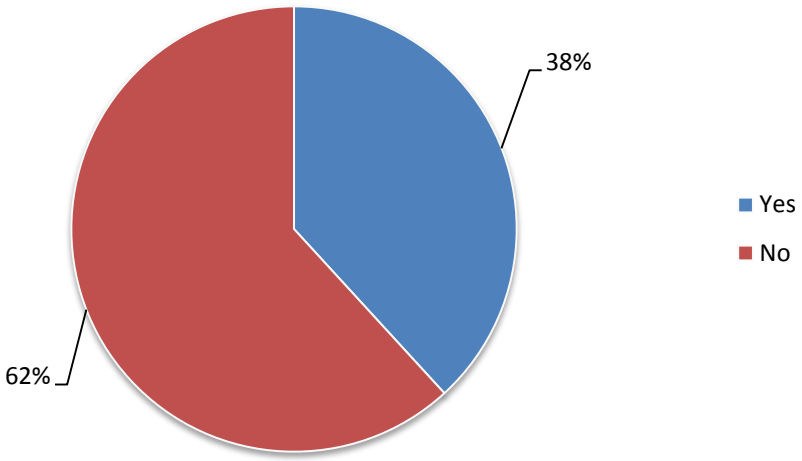
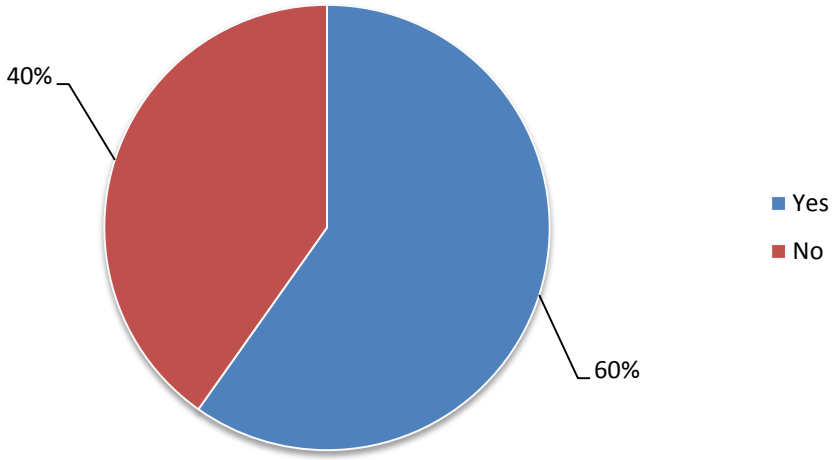


Figure 25. ***Do you feel that the presence of freight-related businesses impact nearby property values? (241 Respondents)***



Additionally, respondents were given the option of providing their own input if they responded "Yes" regarding environmental issues and property values. These responses are indicated in Figure 26 and Figure 27 below.

Figure 26. ***Sources of Respondents' Environmental Concerns (95 Respondents)***

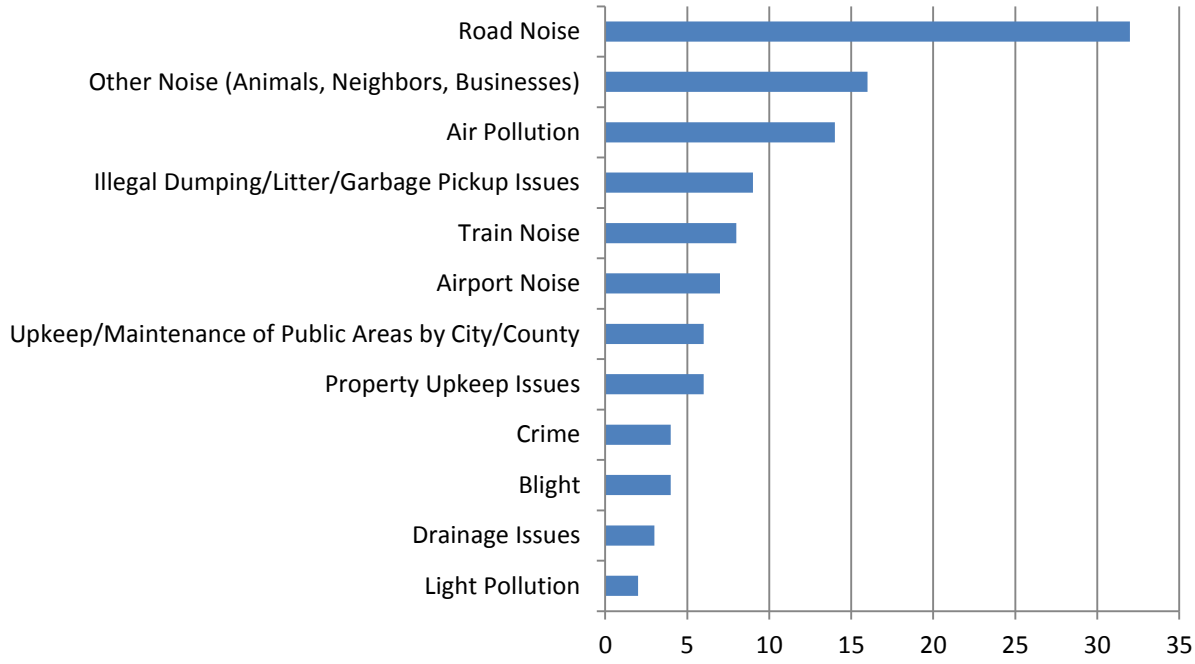
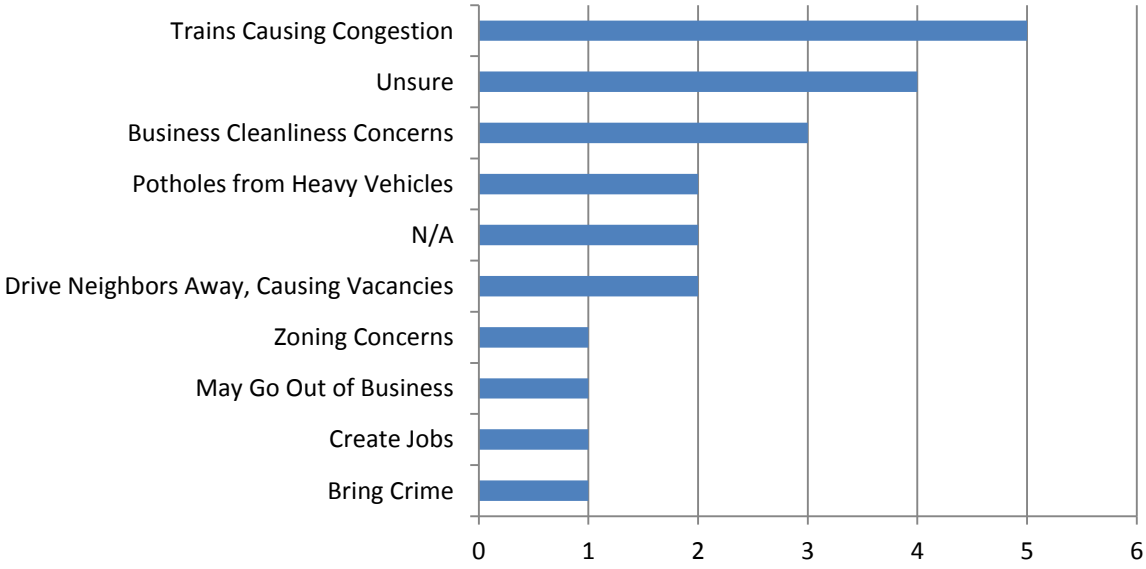


Figure 27. ***Property Value Concerns due to Freight Activity (24 Respondents)***



In the next segment of the Mid-South Region Livability Survey, respondents were asked about their perceptions regarding livability in the Mid-South area as a whole. The responses given are presented in Figure 28 through Figures 33 below.

Figure 28. ***Perceived Barriers to Livability in the Mid-South (152 Respondents)***

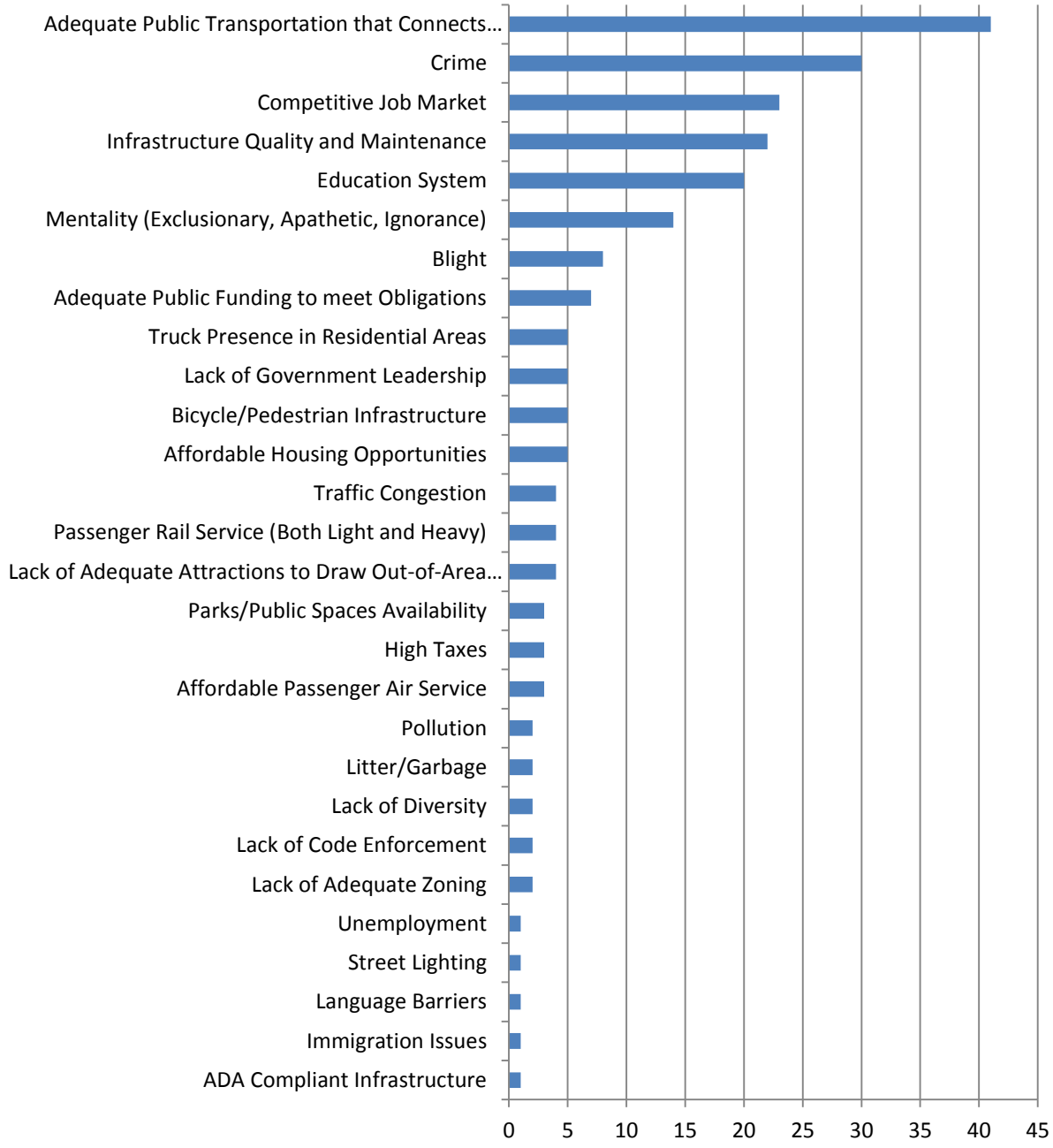


Figure 29. ***Please tell us about your traffic experiences in the Mid-South region: (245 Respondents)***

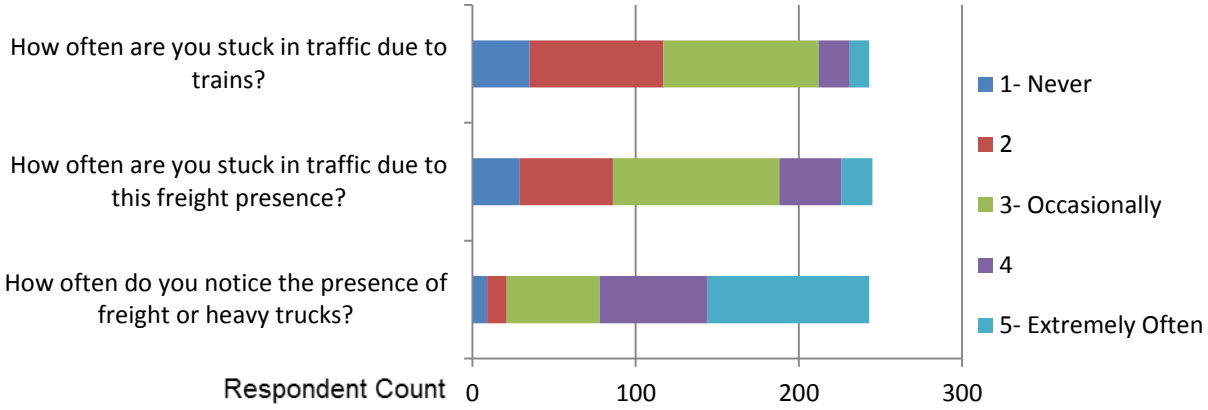


Figure 30. ***Do you find yourself taking alternative routes to avoid roadways with rail crossings or high volumes of trucks? (246 Respondents)***

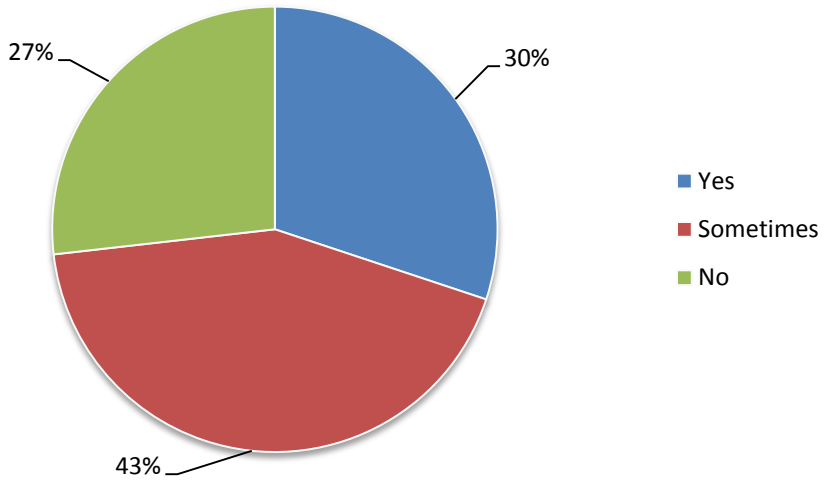


Figure 31. ***Do you ever notice any unwanted noise related to airplanes overhead? (243 Respondents)***

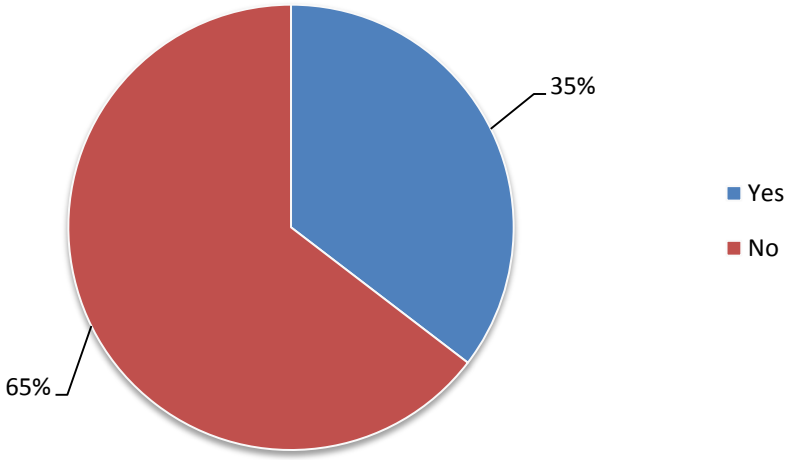


Figure 32, ***Do you ever notice any unwanted noise related to nearby interstate/major roadway traffic? (246 Respondents)***

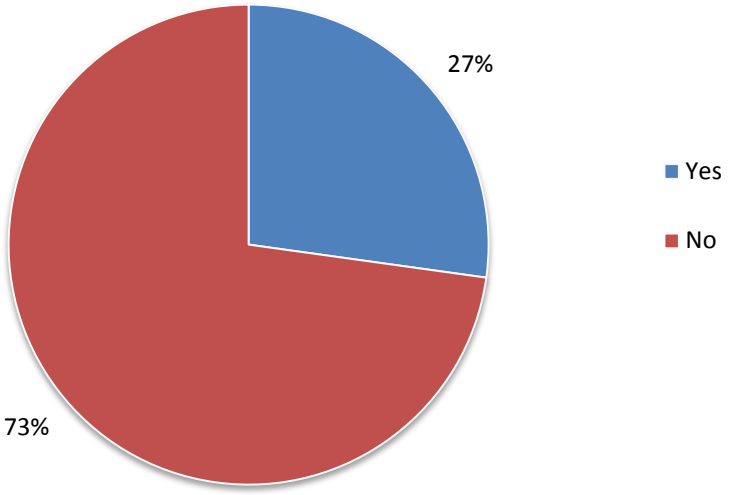


Figure 33. ***What is your primary mode of transportation? Please rank them with 1 being the most used mode and 6 being the least used mode. For any mode that you never use, select N/A (241 Respondents)***

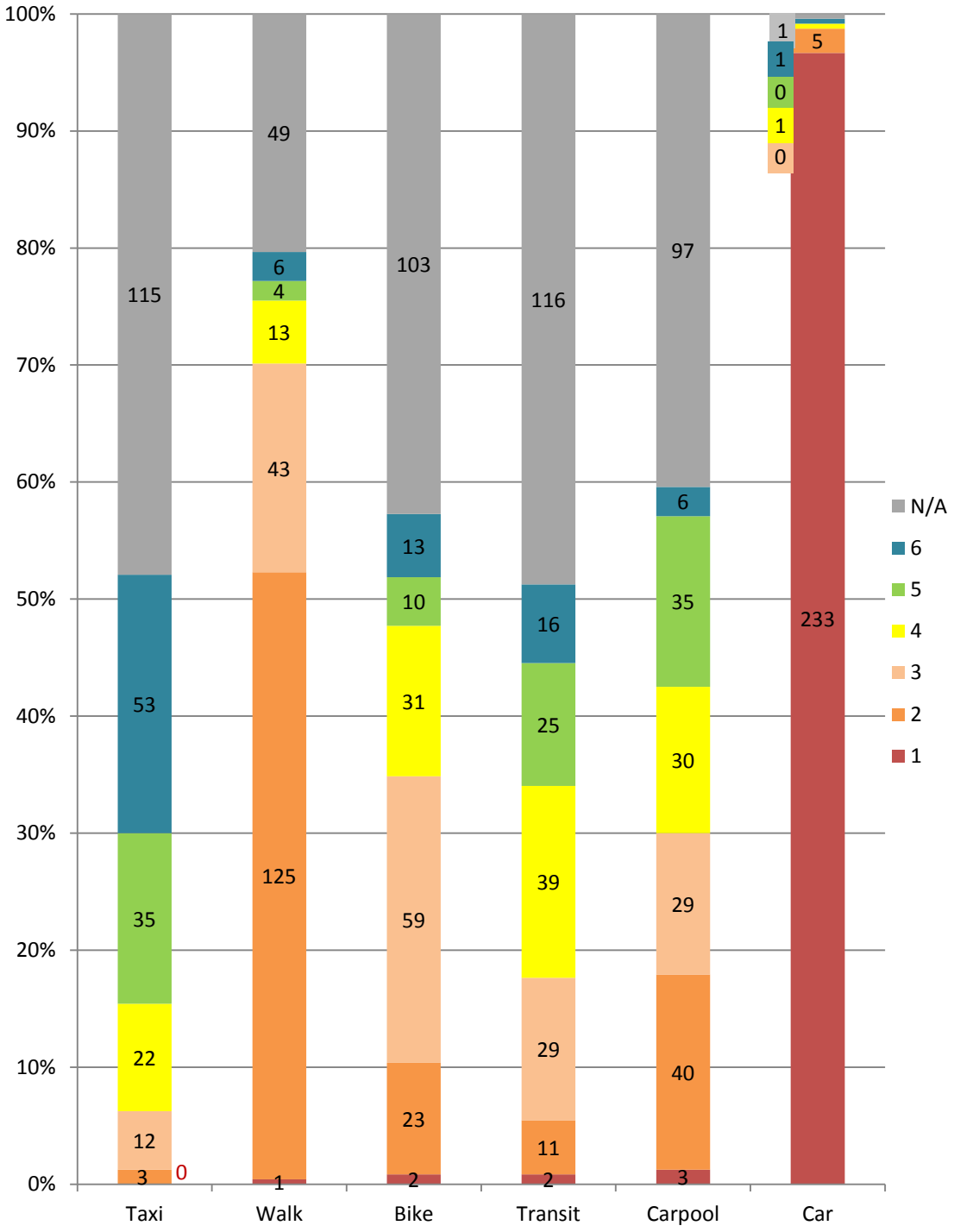
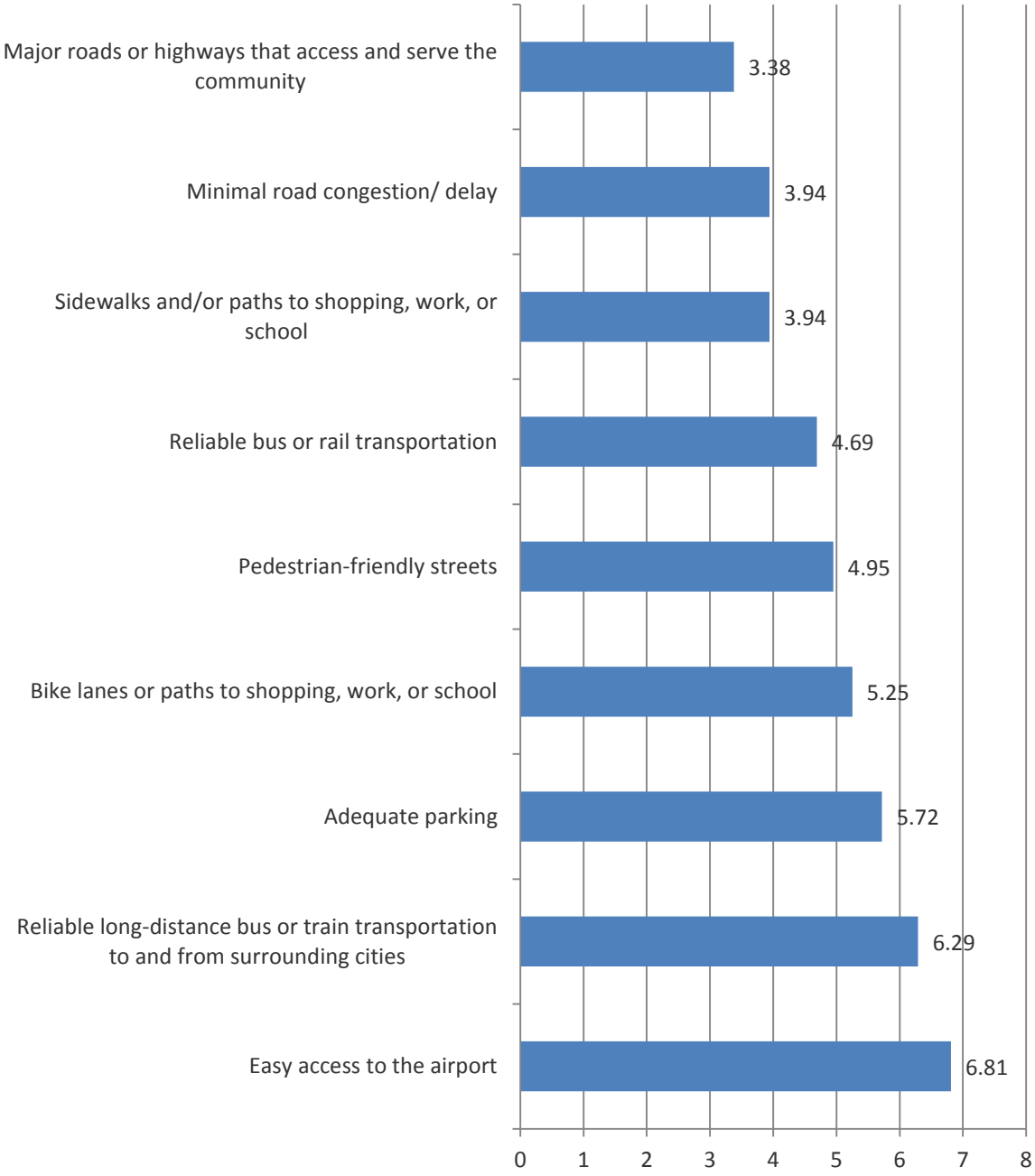
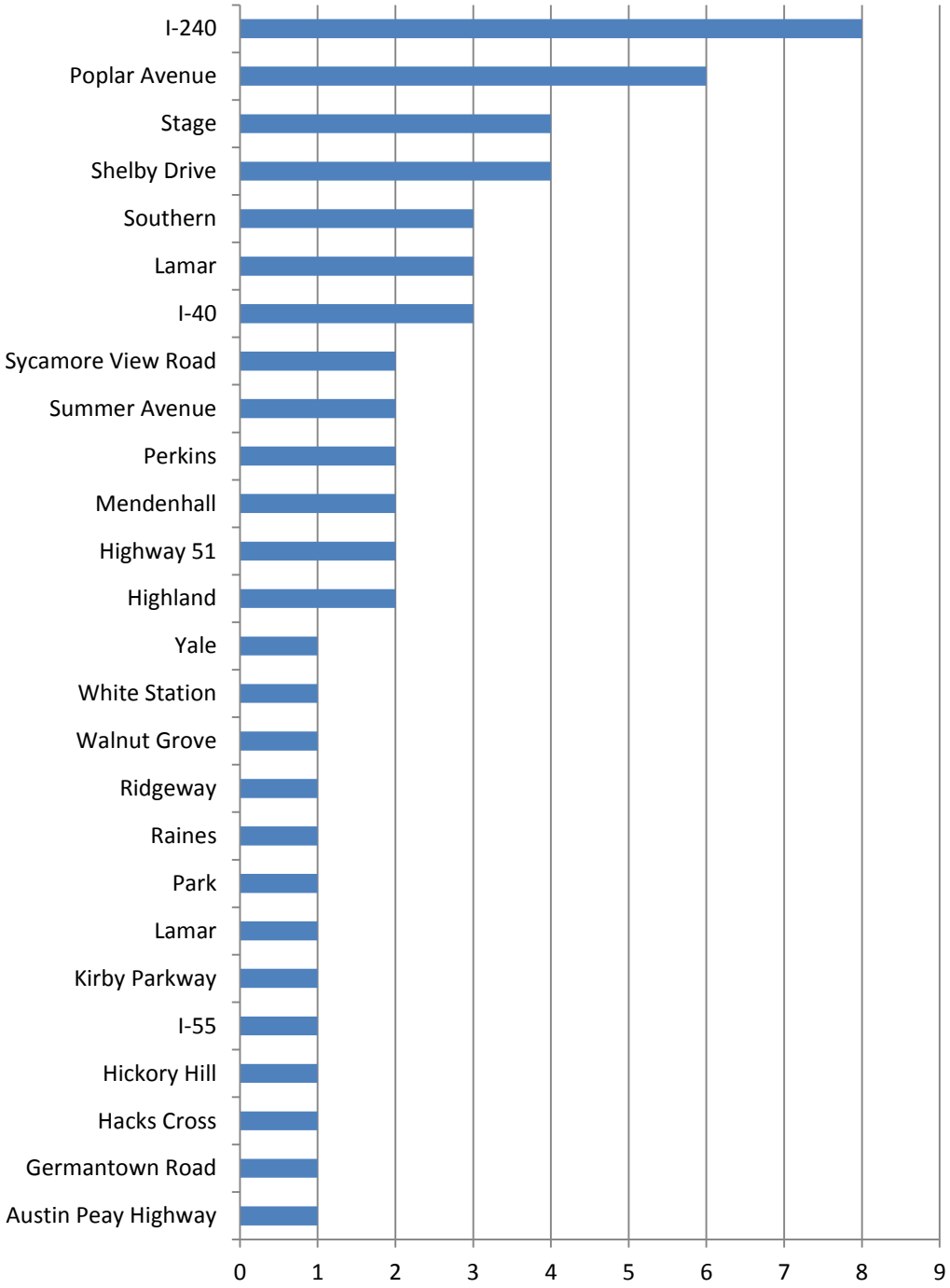


Figure 34. ***What do you consider most important in terms of transportation options? Please rank: 1 is most important and 9 is least important? (239 Respondents)***



Finally, when the respondents were asked if there were any areas avoided due to freight traffic (either rail or truck), the frequencies shown in Figure 35 below were obtained.

Figure 35. ***Please rank: Avoided Routes due to Freight Traffic***



3.4. Mid-South Region Livability Survey Follow-Up

Those participants from the Mid-South Region Livability Survey who agreed to continue were filtered by demographic information in order to ensure that the sample group was more balanced across race, location, and income. The selected 40 respondents of the Mid-South Region Livability Survey were asked 12 questions to gain more information about livability in the region. These questions focused on perceptions about livability in the Mid-South region, transportation investment, alternative transportation modes, and the environment. Respondents were given their choice of answering the questions via telephone interview or e-mailed questionnaire. In all, 20 respondents participated.

Q1 What areas of the Mid-South region are the most livable in your opinion? Why?

Respondents to this question generally split into two categories: urban and suburban. Those respondents who suggested urban areas like Downtown and Midtown Memphis were the most livable focused on Complete Streets elements like having a variety of land uses in close proximity and having a sufficient multi-modal network providing for bicycle, pedestrian and transit connections. Those respondents that suggested suburban areas like Germantown, Collierville, northern Mississippi, and Millington were the most livable focused on non-transportation elements such as personal safety, schools, and economic vitality. Ten respondents favored suburban elements while nine favored urban elements. One respondent favored rural areas.

Q2 What areas of the Mid-South are the least livable in your opinion? Why?

Considering the urban/suburban split in the previous question, a similar split would be expected. However, the results instead were more varied. Twelve respondents felt urban areas, "within the I-240 belt loop," were the least livable commonly cited poor schools, crime, politics, and blight as the major issues. Notably, two of these respondents selected the high freight-traffic areas of Hickory Hills and South Memphis as being the least livable. Five respondents selected suburban areas like Cordova, Collierville, Germantown, and Millington as being the least livable due to limited availability for alternative modes of transportation. Finally, three respondents indicated rural areas in DeSoto County and Arkansas as being the least livable due to limited services available.

Q3 What are specific examples of developments or infrastructure in the Mid-South Region that have improved livability?

Respondents consistently highlighted three projects as improving livability in the Mid-South. Five respondents selected the development of Tennessee State Route 385, connecting several of the major suburbs and stimulating economic growth. Seven respondents selected the growth of the bicycle network across Memphis, particularly highlighting the success of the Greenline. Four respondents indicated that the City of Memphis' efforts to combat blight and redevelop areas like Crosstown, Overton Square, and Downtown to stimulate growth have improved livability. The remainder of the respondents selected other projects.

Q4 What do you see as the top investment opportunities to improve livability within your community?

Respondents provided a variety of answers, however most of the responses could be reduced to four categories: provision for senior and/or youth activity centers and social services in order build constructive relationships within communities; investment either directly or indirectly to stimulate growth of light commercial activity that makes residential areas more desirable, like entertainment, dining, etc.; expansion of the bicycle and transit networks to connect to more locations and to make the existing networks more useful by providing more

meaningful service to those who utilize them; and providing for traffic mitigation. Other respondents indicated that a revision of the taxation system, quality affordable housing, trade education, and addressing crime.

Q5 In what ways do you think freight may or may not impact your community? Do you consider this impact to be negative (pollution, noise, etc.) or positive (provides jobs, attracts businesses, etc.)? In what ways do you think the negative impacts could be reduced and the positive impacts expanded?

Respondents were evenly split regarding whether or not freight provided a positive or negative impact on livability, and commonly respondents indicated that freight impacted livability in both ways. Commonly cited positive impacts were that freight businesses provided a boost to the region's economy and employment by taking advantage of the Memphis Region's geographic location within the United States. Commonly cited negative impacts were air and noise pollution, overweight vehicle traffic in residential areas, traffic congestion, and crime. Several respondents recommended that livability could be improved through the implementation of restricted access freight-only corridors, expansion of existing roadway capacity, and promoting the shift of freight traffic from trucking to rail. Finally, one respondent indicated that the number of outdated and/or abandoned warehouse properties across the Greater Memphis Region negatively impacted properties across the region as the current state of the facilities is not desirable enough to draw new businesses to the area.

Q6 According to the Federal Highway Administration, "livability in transportation is about leveraging the quality, location, and type of transportation facilities and services available to help achieve broader community goals such as… enhancing the natural environment through… enhanced air quality, and decreased greenhouse [sic] gasses" (Rue, et al., 2011, p. 6). Considering that the utilization of alternative fuels "can help reduce operating costs, meet emissions requirements, improve... sustainability, and support U.S. energy independence," would you ever consider buying an alternative fueled vehicle (U.S. Department of Energy, 2013, p. 4)? Why or why not?

All but one respondent indicated that they would consider purchasing an alternatively fueled vehicle. The respondent that indicated that they would not cited vehicle cost as the barrier. Of the respondents that indicated that they would be willing to purchase an alternatively fueled vehicle, the commonly cited reasons for doing so were related to emissions reduction, a desire to have new technology, and driving domestic job growth as the supporting infrastructure is constructed. However, all but one respondent that indicated that they would consider such a purchase had concerns about vehicle cost, refueling infrastructure availability, vehicle capacity, and vehicle lifecycle. The one respondent that did not have any concerns indicated that they already are planning on purchasing an alternatively fueled vehicle, though no specification was made regarding type.

Q7 According to the U.S. Department of Energy's Alternative Fuel Data Center, the Mid-South region currently has 1 ethanol station, 2 liquid natural gas (LNG) stations, 1 compressed natural gas (CNG) station, 10 propane stations, and 22 electric vehicle charging stations open to the public. There are no biodiesel or hydrogen stations. Additionally, many of these stations are not open on a 24-hour basis. If Mid-South regional governments were to encourage the development of more alternative fueling stations with greater accessibility, would you be more likely to consider alternative fueled vehicles? Why or why not?

Respondents were split into three distinct, evenly-sized groups: those who would support government encouragement of the development of alternative fueling stations, those against it, and those with no opinion. Those without any opinion felt that due to previous experiences, their voices were going to be marginalized by the local government regardless of level of support. Those respondents who did support government encouragement

of the construction of alternative fueling stations primarily did so as it would encourage them to procure alternatively fueled vehicles, show support for previous purchase decisions, and reduce the level of reliance on foreign oil imports. Finally, those respondents against government encouragement of the construction of alternative fueling stations argued that the developmental state of alternatively fueled vehicles did not warrant any investment at this time.

Q8 Passenger rail service is currently only available via Amtrak along a north-south route between Chicago and New Orleans. Would you like to see an expansion of passenger rail service, potentially along an east-west route, connecting Little Rock and Nashville?

All but two respondents indicated support for a hypothetical expansion of passenger rail service, potentially along an east-west route. These respondents indicated that they supported such an option due to the resultant decrease in interstate traffic, they felt that the level of travel between the three cities could support such an investment, and it would provide for potential growth through increased accessibility. Those opposed either gave no reason or indicated that ease of personal vehicle use would negate any benefit such service would provide. Finally, despite supporting expanded passenger rail service, two respondents expressed concerns regarding funding and travel time.

Q9 The Memphis Area Transit Authority trolley system is the only light-rail system within the Mid-South region. In 2012, the system set several national records for ridership (Charlier, 2012). Despite being currently closed for maintenance, do you believe an expansion of the system or the addition of other light-rail services would be beneficial to the Mid-South region? Why or why not?

Three distinct groups of respondents emerged: half the respondents felt that an expansion of the existing Memphis Area Transit Authority trolley system or other light rail services in the Mid-South Region was warranted, while one quarter of respondents were opposed, and one quarter of respondents were unsure. Those in support of an expansion indicated that they believed improving accessibility across the Mid-South would be a key element of improving livability, it would reduce traffic congestion, could help address the gaps in Memphis Area Transit Authority service in the suburban regions, and that light rail is a service that the region should have invested in a long time ago. Those respondents opposed to an expansion of the existing Memphis Area Transit Authority trolley system or other light rail services expressed concerns about the inconsistency of land uses across the Mid-South Region not promoting usage of such a system, and as a result, that they would rather drive. Finally, those that were unsure cited the potential construction cost tax burden and cost of service as barriers while the benefits of service were not directly clear.

Q10 The Memphis Area Transit Authority is the major transit system in the Mid-South region. It recently adopted a new Short Range Transit Plan for the system, which calls for a revised network that provides greater coverage and more transfer points across the system. What are some changes that you would like to see in the Memphis Area Transit Authority system?

Respondents were provided access to the recent *Short Range Transit Plan* adopted by the Memphis Area Transit Authority board this spring to better frame their responses. Many of the respondents viewed the revised network included in the proposal very favorably, while a few did not comment as they explained that they do not and will not use the system for regular transportation purposes. Additionally, several respondents included suggestions, including: providing 24-hour service during weekdays and more service during weekends, more express busses that only stop at major bus stations, and an expansion of the existing trolley or other light rail service.

Q11 Recently, pension funding issues resulting in rumored work action by both the Memphis Police Department and Memphis Fire Department, commonly referred to as the "Blue Flu" and the "Red Rash" in the media, and pitted both forces against the City of Memphis over the utilization of PILOT (Payment in Lieu of Taxes) programs and other tax incentives to generate new businesses within the area (Rufener, 2014). Given that previous research into livability indicated that two of the top-five most important contributors to livability in the Mid-South Region were "feeling safe in my neighborhood" and "living in an economically thriving neighborhood," what are some other ways governments within the Mid-South region can generate business?

Respondents provided a variety of answers to this question, but there was a general frustration regarding government leadership considering so many respondents had indicated in the Mid-South Region Livability Survey that personal safety was one of principal elements of livability. Respondents indicated displeasure at the ease of which many of the corporate tax incentives were provided in order to keep or attract businesses to the Mid-South area considering many of the benefits to businesses locating in the region were not evenly distributed due to employees traveling across state lines and spending wages earned in one state elsewhere. Finally, respondents indicated that a better education system at all levels of education would provide for a local workforce population that would be more desirable for employers, thereby eliminating some need to incentivize them.

Q12 Taxes from the sale of gasoline and diesel fuel predominantly support the construction and maintenance of roads, bridges, and other infrastructure across the United States. Despite increasing vehicle fuel efficiency, the Federal tax rate has remained at 18.4¢ per gallon of gasoline and 24.4¢ per gallon of diesel since 1993, the Tennessee tax rate has remained at 21.4¢ per gallon of gasoline and 18.4¢ per gallon of diesel since 1990, and the Mississippi tax rate has remained at 18.4¢ per gallon of gasoline and 18.4¢ per gallon of diesel since 1987. The American Society of Civil Engineers' most recent State Report Card for Tennessee gave the state's infrastructure a D, and the most recent State Report Card for Mississippi gave the state's infrastructure a C-. Would you support raising either local or federal taxes if it meant improving the quality of infrastructure? If not, how could infrastructure maintenance and improvement be better funded?

Generally, respondents indicated that while they understood the conceptual funding problem, almost all did not want to see a tax increase to support infrastructure construction and maintenance. Instead, many proposed a usage-based fee, either through taxation or toll roads in order to target the users that utilize the system proportionally.

4. Conclusions from the Memphis Region Intermodal Freight Survey

The results had a good sample size returned from the initial survey given to the respondents. This dictates the concern and priority of some of the transportation infrastructure issues surrounding the Memphis region. There were a wide variety of industries and companies represented in the responses to the survey with the majority of respondents being more established and larger companies represented. The geographical benefits of the Memphis region (markets which can be reached in one day and the availability of rail/runway/river/road infrastructure and customer base) was highlighted among the respondents and should continue to be a major influence on companies staying, enlarging or relocating to the region. It is a great selling point for the region which we should continue to market. Congestion issues were often encountered at peak-period and when incidents occurred on the roadway. This was critical for the respondents as they have seen their costs increase from delays, fuel and labor costs. The overall opinion is to improve the transportation system benefiting freight movement in the region is to improve the highway ramps, connectors and capacity throughput, while also improving access to the intermodal facilities.

The respondents indicated overwhelming support for construction projects to be completed as quickly as possible (24 hour construction) or with the least amount of disruption to their operations (off-peak or nighttime construction). Additionally, they would prefer re-routing options when congestion or construction occurs to help eliminate congestion choke points, if this is possible. There is some concern of the length of current construction projects in general. Specifically, construction projects that are taking too long to complete, as well as, perceived lack of progress on Lamar Avenue. The Lamar Corridor gained interesting responses from the survey in-depth study indicating some would move (or have moved) and others would move if congestion increases or capacity is constrained. However, several respondents indicated they are located in the Corridor for the long term as their customer base and supplier base is located in the area. Overwhelmingly, the responses favored increasing local and federal taxes to fund infrastructure maintenance and growth. They respondents were very receptive to looking at alternatively fueled vehicles at some point in the future.

Generally, businesses have adapted operational strategies to deal with setbacks, as they not only provide benefits in the Memphis region, but to their whole operation. However, if the Memphis region is to retain and grow its freight-related sector of the economy, it must be proactive in addressing the indicated capacity concerns. Generally, it seems that the freight-related business community has located here due to a historical geographic competitive advantage, but that is no longer enough when improvements have been made to entire networks and the hub is constrained

5. Conclusions from the Mid-South Region Livability Survey

The results were a good sample size of the residents of the Memphis region. This survey was distributed to 152 individuals with the intentions of forwarding on to several other organizations and communities resulting in 252 responses. Although there was a large sample size of respondents from the Bartlett-Lakeland area, the sample size covered the MPO boundary which was the area the survey was intended to address. The initial top concerns of the respondents was more renters, crime, congestion and public involvement. Feeling safe in my neighborhood was the overwhelming contributor to livability in their neighborhood. Results indicated that the presence of freight did affect property values and was a concern.

The overwhelming perceived barrier to livability was adequate public transportation and crime. Minimum road congestion, sidewalk options and major road or highway were ranked as the most important factors in terms of transportation options and should be a focus. The results were split on responses regarding livability in urban or rural settings. Downtown or Midtown responses were geared completely around connectivity in the multi-modal network. However, suburban areas were focused on non-transportation elements, such as personal safety, schools and economic viability. The detailed survey was almost a 50/50 split of preference between urban and suburban areas. Respondents indicated support for expansion of passenger rail service and extending the Memphis Area Transit Association trolley line. However, they also indicated they did not know how funding of these expansions would be addressed.

The results from the Mid-South Region Livability Survey and the follow-up questionnaire indicate that the public considers their neighborhoods to be fairly livable. Unfortunately, many of the observed changes in the area and barriers to improving livability are not directly transportation related. The Memphis Urban Area Metropolitan Planning Organization should aggressively work with the necessary partners to address the transportation related issues. The main priority should be adapting the Memphis Area Transit Authority route network to better connect areas of affordable housing with areas of employment across the entire region, as this solution can help alleviate two of the other perceived barriers to livability, competitive jobs and affordable housing, through improved access. Additionally, congestion- and maintenance-related issues were identified as hindrances to livability.

6. Summary

There were several common differences between the two different surveys that were administered. The differences included the following three major items: safety / crime, alternative based fuels, and taxes. In the survey administered to the companies, safety and crime was listed as a factor but not the critical factor to address. However, in the livability survey it was perceived as the major issue affecting livability in the region. Companies are willing and receptive to the idea of new fuel alternatives, as long as they make economic sense and are environmentally friendly. However, when asked in the livability survey, there was not much of an interest in these alternatives from their viewpoint. Overwhelmingly, businesses were in favor of taxes to pay for infrastructure needs, new construction and repairing of current infrastructure needs. However, the respondents on the liability portion were not in favor of increasing taxes as a method of repairing infrastructure or increasing capacity. However, there were also some common themes from the results of both surveys which helps with fluidity of the transportation system in the region. The three major common themes are: congestion issues, potholes / maintenance, and major roads / highways. Both parties realize the impact of congestion on both the companies and the individuals. They understand the importance of a fluid freight system and how it impacts all in the region. Potholes and maintenance of the current system were both factors that should be addressed on an ongoing basis and affect the fluidity of the entire transportation system. Lastly, a common theme was the use of major roads and highways for the efficient movement of freight in the region. Both parties were in agreement to use more of these major arteries or lanes for freight movement and increasing capacity in these lanes would help to alleviate some concerns on congestion in the region.

All elements indicated a common theme: a lack of faith in local government to adequately provide beneficial solutions, primarily due to funding issues, political infighting, or poor decision making. A cohesive transportation plan is greatly needed. Transportation and livability are tied together in the Memphis region by more than the Federal Highway Administration's definition. As a major transportation hub within the United States, transportation-related industries are a major driver of the regional economy. As residents identified "living in an economically thriving neighborhood" as one of the most important factors concerning livability, the Memphis Urban Area Metropolitan Planning Organization should form a strategy to improve the transportation infrastructure in the Memphis region in order to play to the area's geographic strengths and generate new business.

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Appendix A – Survey Instruments

Memphis Region Intermodal Freight Survey

The Memphis Region Intermodal Freight Survey was distributed via e-mail to 495 individuals from the freight transportation industry community regarding the impact of freight operations in the Memphis, Tennessee area. Specifically, the survey instrument was designed to identify infrastructure and operational barriers, as well as suggestions for improving operational efficiencies. The survey was sent via e-mail to a list of industry contacts prepared by the University of Memphis' Intermodal Freight Transportation Institute. The questions presented below in Table 2 were posed in order to gain a sense of the respondents' businesses.

Table 2
Memphis Region Intermodal Freight Survey Business Questions

#	Survey Question	Type
1	Please indicate the number of employees at your company: • 1-25 • 26-50 • 51-100 • 101+	Multiple Choice, Single Response
2	What type of industry is your business related to? • Shipper/Receiver • Common Carrier • Private Carrier • Terminal Facility • Freight Forwarder • Retail/Wholesale • Real Estate • Public Sector • Other (please specify)	Multiple Choice, Multiple Response
3	How long has your business been in operation at this location? • Under 1 year • 1 to 2 years • 2 to 5 years • 5 to 10 years • 10 to 20 years • Over 20 years	Multiple Choice, Single Response

In addition to the demographic questions presented in Table 6, four questions were asked to assess the current transportation infrastructure. These questions are presented below in Table 3.

Table 3
Memphis Region Intermodal Freight Survey Transportation Infrastructure Assesment Questions

#	Survey Question	Type
4	If you were involved in the decision to locate your business, why was the Mid-South Region chosen as the location of your business? • Cost of land • Markets that can be reached in one day • Workforce • Taxes • Public/private cooperation • Availability of rail/runway/river/road infrastructure • Customer base • Supplier proximity • Other (please specify)	Multiple Choice, Multiple Response
5	How would you rate the transportation infrastructure in the Memphis region: • Roadway connectivity • Pavement conditions • Roadway capacity • Interstate/highway accessibility • Signage and markings • Traffic signals/timing • Street lighting • Curbs/road geometrics • Intermodal facilities • Rail • Air • Port • Safety/security • Other (please specify)	1. Inadequate or Poorly Maintained 2. 3. Average 4. 5. Extremely Adequate or Well Maintained
6	To move freight more efficiently to support the regional economy, how important are the following transportation factors? • Infrastructure condition • Transportation cost • Reliability/on-time delivery • Access to needed modes • Direct/indirect cost of congestion • Capacity bottlenecks • Institutional bottlenecks • Safety and security • Regulatory cost and increase in regulations	1. Critical 2. Important 3. Neutral 4. Not Important

#	Survey Question	Type
	• Cooperation of public/private sector • If you care to expand your response:	
7	Do you encounter the following barriers to freight related productivity? If you do not consider an option as one that impedes productivity, please choose N/A. • Peak period traffic congestion (AM and PM rush hours) • Off-peak traffic congestion • Congestion due to incidents on the roadway • Congestion due to presence of freight • Bridge/tunnel restrictions for freight • Emissions regulations • Noise regulations/limits • Incoming scheduling difficulties • Load/unload zone restrictions • Access to intermodal facilities • Other (please specify)	1. I never encounter 2. I rarely encounter this 3. I sometimes encounter this 4. I often encounter this 5. I always encounter this 6. N/A

Finally, survey respondents were asked a series of questions related to business operations and strategy as related to the transportation network. These questions are presented in Table 4.

Table 4
Memphis Region Intermodal Freight Survey Operations and Strategy Questions

#	Survey Question	Type
8	What is the most significant cost to your business associated with congestion? • Delayed departures/deliveries due to congestion • Additional fuel expended due to congestion • Increased labor costs • Other (please specify)	Multiple Choice, Single Response
9	Does your company use any of the following: • Electronic credentialing for commercial vehicle operation authorizations • Transponders for electronic tolling • Computer aided dispatch systems • Automatic vehicle location systems • Cargo tracking • Driver monitoring • Intelligent speed adaptation • Floating car data (vehicle location information through the use of Bluetooth and mobile phones)	Multiple Choice, Multiple Response

10	What are some of the results you've obtained using any of the above technologies (Question 9)?	Free Response
11	Do you use any operational strategies to reduce negative impacts of freight traffic on nearby communities and improve operations for freight carriers? (For example: off-peak operations, load/unload restrictions, consolidation efforts, or appointment systems).	Free Response
12	What do you see as the top transportation infrastructure bottleneck(s) in the Memphis region? Please indicate what the problem is, where it is, and the impact it has on your business.	Free Response
13	Choose up to three improvements to the transportation system in the Memphis region that would benefit freight movements the most for your company: • Highway ramps • Highway/route connectors • Highway/route lane capacity • Rest areas • Truck parking areas • Industrial zones for facility/terminal locations • Intermodal rail facilities • Commercial airport expansion • Port capacity expansion • Investment in inland ports • Pipeline capacity • Other (please specify)	Multiple Choice, Multiple Response
14	Are there any other recommendations that you have regarding freight policy, infrastructure improvements, or other freight-related concerns?	Free Response

Mid-South Region Livability Survey

The Mid-South Region Livability Survey was developed in order to identify perceptions related to the impact of freight operations on community livability in the Memphis, Tennessee metropolitan area. The survey instrument was sent to 152 individuals from both the private and public sector via e-mail by the University of Memphis' Intermodal Freight Transportation Institute. Additionally, the survey was sent via e-mail to public sector officials for further distribution by the Memphis Urban Area Planning Organization. The contact list utilized for sending the survey instrument was compiled through browsing publicly available e-mail addresses via the internet for the desired types of contacts. In order to quickly obtain these contacts, not much time was spent searching for individual contacts within one organization as the goal was to have representation from multiple organizations of a similar type. These contacts included: churches, planning companies/organizations, assisted living facilities, retirement communities, community organizations, elected government officials, businesses, parent-teacher organizations, non-transportation businesses along major freight corridors, and government engineers. Respondents were asked a series of open-ended, ranking, and rating questions that explored their opinions related to livability issues. First, the questions shown below in Table 5 were asked in order to gauge respondents' perceptions of livability in their neighborhood.

Table 5
Mid-South Region Livability Survey Neighborhood Perception Questions

#	Survey Question	Type
1	Please tell us the closest intersection to where you live:	Free Response
2	How has the neighborhood changed since you have lived there?	Multiple Choice
3	How do you rate your neighborhood for livability? 10 being very livable.	Ranking, 1-10
4	What are the most important contributors to livability in your neighborhood? Please pick your top 5 most important.	Multiple Choice, Multiple Response
5	In terms of transportation (walking, biking, driving, and public transportation), what are areas that need improvement in your neighborhood? Select all that apply.	Multiple Choice, Multiple Response
6	How often do you see: • Large trucks in your neighborhood (18-wheeler) • Small trucks in your neighborhood (UPS, FedEx, etc.) • Busses in your neighborhood • Trains near or in your neighborhood • Other (Please Specify)	1. Never 2. 3. Occasionally 4. 5. Often
7	Do you experience any negative environmental issues in your neighborhood (smog, air pollution, noise, or otherwise)? If so, please explain.	Yes/No, Free Response
8	Do you feel that the presence of freight-related businesses impact nearby property values?	Yes/No

In addition to the questions in Table 5, several questions were asked of respondents regarding their perceptions of livability as related to the Mid-South region as a whole. These questions are below in Table 6.

Table 6
Mid-South Region Livability Survey Mid-South Region Perception Questions

#	Survey Question	Type
9	In your opinion, what things are barriers to livability in the Mid-South region?	Free Response
10	Please tell us about your traffic experiences in the Mid-South region: How often do you notice the presence of freight or heavy trucks? How often are you stuck in traffic due to this freight presence? How often are you stuck in traffic due to trains?	1. Never 2. 3. Occasionally 4. 5. Extremely Often
11	Do you find yourself taking alternative routes to avoid roadways with rail crossings or high volumes of trucks? If yes, please list specific roads you avoid.	Yes/No
12	Do you ever notice any unwanted noise related to airplanes overhead?	Yes/No
13	Do you ever notice any unwanted noise related to nearby interstate/major roadway traffic?	Yes/No

Respondents were then asked two questions related to their personal transportation. These questions are presented in Table 7 below.

Table 7
Mid-South Region Livability Survey Personal Transportation Questions

#	Survey Question	Type
14	What is your primary mode of transportation? Please rank tem with 1 being the most used mode and 6 being the least used mode. For any mode that you never use, select N/A. • Walk • Bike • Bus/public transportation • Car/personal vehicle • Carpool • Taxi	Ranking 1-6
15	What do you consider most important in terms of transportation options? (Please rank: 1 is most important and 9 is least important) • Sidewalks and/or paths to shopping, work, or school • Bike lanes or paths to shopping, work, or school • Reliable bus or rail transportation • Reliable long-distance bus or train transportation to and from surrounding cities • Major roads or highways that access and serve the community • Easy access to the airport • Pedestrian-friendly streets • Adequate parking • Minimal road congestion/delay	Ranking 1-9

Finally, respondents were asked a series of demographic questions in order to determine information about the respondents themselves. The questions asked are presented below in Table 8.

Table 8
Mid-South Region Livability Survey Demographic Questions

#	Survey Question	Type
16	Are you currently renting or do you own your own home?	Multiple Choice, Single Response
17	How old are you?	Multiple Choice, Single Response

18	What race or ethnicity do you best identify with?	Multiple Choice, Single Response
19	Including yourself, how many people currently live in your household?	Multiple Choice, Single Response
20	How many children live in your household?	Multiple Choice, Single Response
21	Are you married, separated, divorced, widowed, or have you never been married?	Multiple Choice, Single Response
22	How many vehicles are owned or leased by the people who currently live in your household?	Multiple Choice, Single Response
23	What is the highest level of education you have completed?	Multiple Choice, Single Response
24	Are you employed full-time, part-time, not employed for pay at the moment, retired, or a student?	Multiple Choice, Single Response
25	How many years have you lived in your neighborhood?	Multiple Choice, Single Response
26	During the past year, roughly how much was your total family income before taxes?	Multiple Choice, Single Response

The potential responses for the questions in Table 12 were typical of personal demographic questions. Finally, respondents were asked a series of questions related to community planning. These questions are presented in Table 9 below.

Table 9
Mid-South Region Livability Survey Community Planning Questions

#	Survey Question	Type
27	What is the best way for community leaders to let people know about opportunities to get involved in community planning?	Free Response
28	Would you be willing to become more involved in the decisions made by industry and policy decision makers in or around your neighborhood?	Yes/No
29	Would you support your local jurisdiction spending money to minimize the impact of freight on local communities?	Yes/No
30	If you would like to be involved, may we contact you?	Yes/No

Appendix B – Follow-Up Questionnaires

Memphis Region Intermodal Freight Survey Follow-Up

Nineteen follow-up questions were asked to the 36 individuals who took the Memphis Region Intermodal Freight Survey and agreed to further participate. These questions are presented below in Table 10.

Table 10
Memphis Region Intermodal Freight Survey Follow-Up Questions

#	Question
1	What is the nature of your business?
2	How many employees work at your company?
3	Including employee vehicles, how many vehicles would you estimate enter and exit your facility per day?
4	What is the predominant form of transportation activity conducted by your company within the boundaries of the Metropolitan Planning Organization?
5	Do capacity issues or congestion within the boundaries of the Metropolitan Planning Organization primarily affect your company's long-haul transportation activity, short-haul transportation activity, or a mixture of both?
6	Would you consider any disruption in the Mid-South Region to be of local significance to your business, of regional significance to your business, or of national significance to your business?
7	Have you previously considered relocating your operations either in part or in full to compensate for any traffic congestion due to the condition of the current transportation facilities? For example, moving non-transportation-related employees to office space elsewhere.
8	If you have considered relocating your operations either in part or in full to compensate for any traffic congestion that results from construction activity or other capacity constraints, what operations would you foresee relocating? For example, moving non-transportation-related employees to office space elsewhere.
9	If you planned on relocating operations in part or in full, would you consider the relocation to have a local, regional, or national impact on your business?
10	If you planned on relocating operations in part or in full, for how long would you consider your move to be temporary before it became permanent?
11	If you planned on relocating operations in part or in full, what value is there to return to your current location?
12	With projects underway or in the works to address capacity/traffic issues along Lamar Avenue (U.S. Highway 78), I-240 between the Bill Morris Parkway (TN State Route 385) and Walnut Grove Road, the I-40/240 interchange, and the I-55 Mississippi River Bridge ramp, what construction methodology would be most beneficial to use, and why: Phased Construction, 24-Hour Construction, Off-Period/Nighttime Construction, or something else? Would you be willing to pay more in taxes for a different methodology if it meant the project was completed sooner? What if it means greater congestion in the short-term?
13	With projects underway or in the works to address capacity/traffic issues along Lamar Avenue (U.S. Highway 78), I-240 between the Bill Morris Parkway (TN State Route 385) and Walnut Grove Road, the I-40/240 interchange, and the I-55 Mississippi River Bridge ramp, what element of the existing roadway

	network in the Mid-South Region do you see as the next major bottleneck that should be addressed and why?
14	Regarding rail capacity, competition, and rates, are you aware that the U.S. Department of Transportation's Surface Transportation Board offers mediation services? If so, have you utilized these services?
15	How can the Memphis Urban Area Metropolitan Planning Organization (MPO) best alleviate any inconveniences posed by the current capacity constraints?
16	According to the Federal Highway Administration, "livability in transportation is about leveraging the quality, location, and type of transportation facilities and services available to help achieve broader community goals such as… enhancing the natural environment through… enhanced air quality, and decreased green house gasses" (Rue, et al., 2011, p. 6). Considering that the utilization of alternative fuels "can help reduce operating costs, meet emissions requirements, improve fleet sustainability, and support U.S. energy independence," would you ever consider utilizing alternative fueled vehicles at your company (U.S. Department of Energy, 2013, p. 4)? Why or why not?
17	According to the U.S. Department of Energy's Alternative Fuel Data Center, the Mid-South region currently has 1 ethanol station, 2 liquid natural gas (LNG) stations, 1 compressed natural gas (CNG) station, 10 propane stations, and 22 electric vehicle charging stations open to the public. There are no biodiesel or hydrogen stations. Additionally, many of these stations are not open on a 24-hour basis. If Mid-South regional governments were to encourage the development of more alternative fueling stations with greater accessibility, would you be more likely to consider using alternative fueled vehicles at your company? Why or why not?
18	Taxes from the sale of gasoline and diesel fuel predominantly support the construction and maintenance of roads, bridges, and other infrastructure across the United States. Despite increasing vehicle fuel efficiency, the Federal tax rate has remained at 18.4¢ per gallon of gasoline and 24.4¢ per gallon of diesel since 1993, the Tennessee tax rate has remained at 21.4¢ per gallon of gasoline and 18.4¢ per gallon of diesel since 1990, and the Mississippi tax rate has remained at 18.4¢ per gallon of gasoline and 18.4¢ per gallon of diesel since 1987. The American Society of Civil Engineers' most recent State Report Card for Tennessee gave the state's infrastructure a D, and the most recent State Report Card for Mississippi gave the state's infrastructure a C-. Would you support raising either local or federal taxes if it meant improving the quality of infrastructure? If not, how could infrastructure maintenance and improvement be better funded?

Mid-South Region Livability Survey Follow-Up

Those participants from the Mid-South Region Livability Survey who agreed to continue were filtered by demographic information in order to ensure that the sample group was more balanced across race, location, and income. The selected 40 respondents of the Mid-South Regional Livability Survey out of 79 potential respondents were asked 12 questions to gain more information about livability in the region. These questions focused on perceptions about livability in the Mid-South region, transportation investment, alternative transportation modes, and the environment. Respondents were given their choice of answering the questions via telephone interview or e-mailed questionnaire. The questions are below in Table 11.

Table 11
Mid-South Region Livability Survey Follow-Up Questions

#	Question
1	What areas of the Mid-South Region are the most livable in your opinion? Why?
2	What areas of the Mid-South Region are the least livable in your opinion? Why?
3	What are some specific examples of developments or infrastructure improvements in the Mid-South Region that have improved livability?
4	What do you see as the top investment opportunities to improve livability within your community?
5	In what ways do you think freight may or may not impact your community? Do you consider this impact to be negative (pollution, noise, etc.) or positive (provides jobs, attracts businesses, etc.)? In what ways do you think the negative impacts could be reduced and the positive impacts expanded?
6	According to the Federal Highway Administration, "livability in transportation is about leveraging the quality, location, and type of transportation facilities and services available to help achieve broader community goals such as… enhancing the natural environment through… enhanced air quality, and decreased greenhouse gasses" (Rue, et al., 2011, p. 6). Considering that the utilization of alternative fuels "can help reduce operating costs, meet emissions requirements, improve... sustainability, and support U.S. energy independence," would you ever consider buying an alternative fueled vehicle (U.S. Department of Energy, 2013, p. 4)? Why or why not?
7	According to the U.S. Department of Energy's Alternative Fuel Data Center, the Mid-South region currently has 1 ethanol station, 2 liquid natural gas (LNG) stations, 1 compressed natural gas (CNG) station, 10 propane stations, and 22 electric vehicle charging stations open to the public. There are no biodiesel or hydrogen stations. Additionally, many of these stations are not open on a 24-hour basis. If Mid-South regional governments were to encourage the development of more alternative fueling stations with greater accessibility, would you be more likely to consider alternative fueled vehicles? Why or why not?
8	Passenger rail service is currently only available via Amtrak along a north-south route between Chicago and New Orleans. Would you like to see an expansion of passenger rail service, potentially along an east-west route, connecting Little Rock and Nashville?
9	The Memphis Area Transit Authority trolley system is the only light-rail system within the Mid-South region. In 2012, the system set several national records for ridership (Charlier, 2012). Despite being currently closed for maintenance, do you believe an expansion of the system or the addition of other light-rail services would be beneficial to the Mid-South region? Why or why not?
10	The Memphis Area Transit Authority is the major transit system in the Mid-South region. It recently adopted a new Short Range Transit Plan for the system, which calls for a revised network that provides greater coverage and more transfer points across the system. What are some changes that you would like to see in the Memphis Area Transit Authority system?
11	Recently, pension funding issues resulting in rumored work action by both the Memphis Police Department and Memphis Fire Department, commonly referred to as the "Blue Flu" and the "Red Rash" in the media, and pitted both forces against the City of Memphis over the utilization of PILOT (Payment in Lieu of Taxes) programs and other tax incentives to generate new businesses within the area (Rufener, 2014). Given that previous research into livability indicated that two of the top-five most important contributors to livability in the Mid-South Region were "feeling safe in my neighborhood" and "living in an economically thriving

	neighborhood," what are some other ways governments within the Mid-South region can generate business?
12	Taxes from the sale of gasoline and diesel fuel predominantly support the construction and maintenance of roads, bridges, and other infrastructure across the United States. Despite increasing vehicle fuel efficiency, the Federal tax rate has remained at 18.4¢ per gallon of gasoline and 24.4¢ per gallon of diesel since 1993, the Tennessee tax rate has remained at 21.4¢ per gallon of gasoline and 18.4¢ per gallon of diesel since 1990, and the Mississippi tax rate has remained at 18.4¢ per gallon of gasoline and 18.4¢ per gallon of diesel since 1987. The American Society of Civil Engineers' most recent State Report Card for Tennessee gave the state's infrastructure a D, and the most recent State Report Card for Mississippi gave the state's infrastructure a C-. Would you support raising either local or federal taxes if it meant improving the quality of infrastructure? If not, how could infrastructure maintenance and improvement be better funded?

Appendix C – Memphis Region Intermodal Freight Follow-Up Survey Results

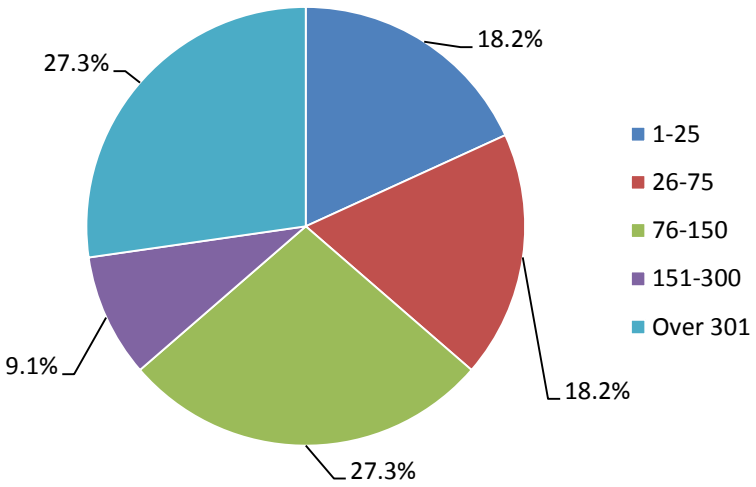
Memphis Region Intermodal Freight Survey Follow-Up

Thirty-six individuals who took the Memphis Region Intermodal Freight Survey agreed to further participate. These thirty-six individuals were contacted via provided e-mail addresses and given their choice of answering the questions via telephone interview or e-mailed questionnaire. Unfortunately, of the thirty-six individuals, only eleven participated. The low level of participation is potentially due to the participants having the ability to preview the questions to be asked, despite having the ability to answer them at their leisure and by method of their choice. One participant, contacted by telephone, expressed frustration at the apparent lack of focus in the questions on the Lamar Corridor area, as it is the "key freight infrastructure element in an region reliant on freight as an economic driver."

Q1 What is the nature of your business? How many employees work at your company?

The respondents who agreed to participate in the follow-up questionnaire included consulting engineers, transportation and logistics professionals, manufacturing professionals, government officials, and real estate agents. The breakdown of company size is presented below Figure 36.

Figure 36. ***How many employees work at your company?***

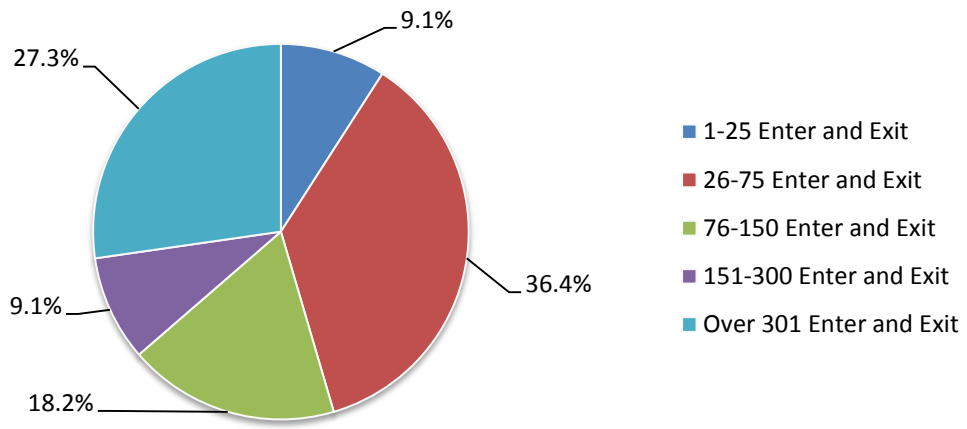


These questions were asked again as it was unknown which of the 36 respondents would participate and unlike the participants for the Mid-South Region Livability Survey Follow-Up, they were not prescreened due to a smaller number of potential participants.

Q2 Including employee vehicles, how many vehicles would you estimate enter and exit your facility per day?

This question was asked of the respondents in order to evaluate the impact their companies had on the transportation network in the Mid-South region and to ensure that all groups were represented. The results are shown below in Figure 37.

Figure 37. ***Including employee vehicles, how many vehicles would you estimate enter AND exit your facility per day?***



Q3 What is the predominant form of transportation activity conducted by your company within the boundaries of the Metropolitan Planning Organization? Do capacity issues or congestion within the boundaries of the Metropolitan Planning Organization primarily affect your company's long-haul transportation activity, short-haul transportation activity, or a mixture of both?

These questions were asked in order to gain a sense of the predominant transportation activity that respondents participated in and what elements of these businesses suffer due to congestion in the Mid-South. The results are shown below in Figure 38 and Figure 39.

Figure 38. ***What is the predominant form of transportation activity conducted by your company within the boundaries of the Metropolitan Planning Organization?***

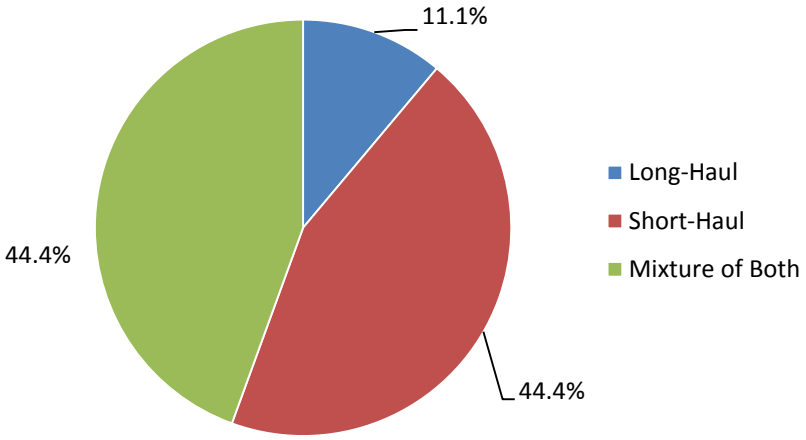
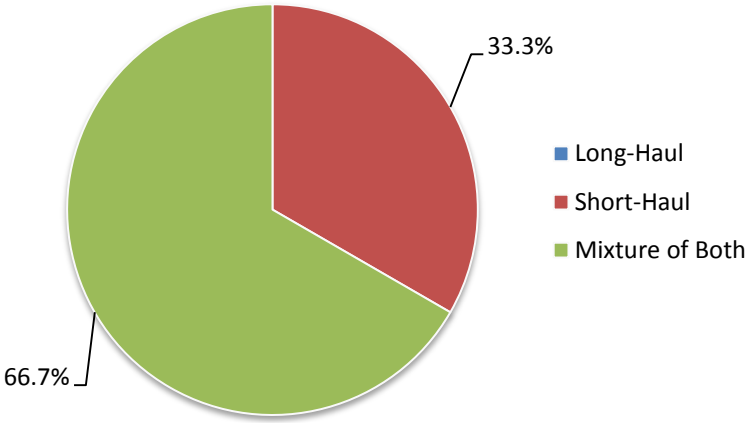


Figure 39. ***Do capacity issues or congestion within the boundaries of the Metropolitan Planning Organization primarily affect your company's long-haul transportation activity, short-haul transportation activity, or a mixture of both?***

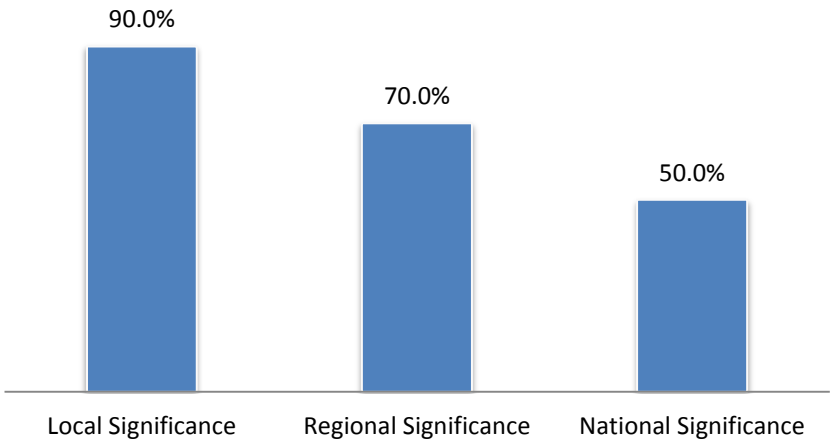


Interestingly, despite several respondents indicating that their business in the Mid-South was primarily long-haul transportation, none of the respondents indicated that congestion in the area affected their long-haul business.

Q4 Would you consider any disruption in the Mid-South Region to be of local significance to your business, of regional significance to your business, or of national significance to your business?

While this question may seem similar to asking about the congestion impact, as short-haul is a local activity and long-haul has more national impact, the aim of this question was to determine the value that the Greater Memphis Region may or may not have to the companies participating in the questionnaire. The results are presented below in Figure 40 below. It must be noted that respondents could indicate multiple choices if desired.

Figure 40. ***The Mid-South Region's Significance to Respondents' Business***



Q5 Have you previously considered relocating your operations either in part or in full to compensate for any traffic congestion due to the condition of the current transportation facilities? For example, moving non-transportation-related employees to office space elsewhere.

All but three respondents indicated that they had never considered moving. Of those three, one indicated that they had considered it but worked with the City of Memphis to stay in place, one indicated that they already had relocated their facility due to congestion, and one indicated that even if they desired to move, they could not due to being tied to the rail infrastructure. However, the respondent who indicated that the rail infrastructure limited his options did indicate that if a facility were available in an area serviced by multiple railroads he would consider it due to the canceling of earlier reciprocal switching agreements.

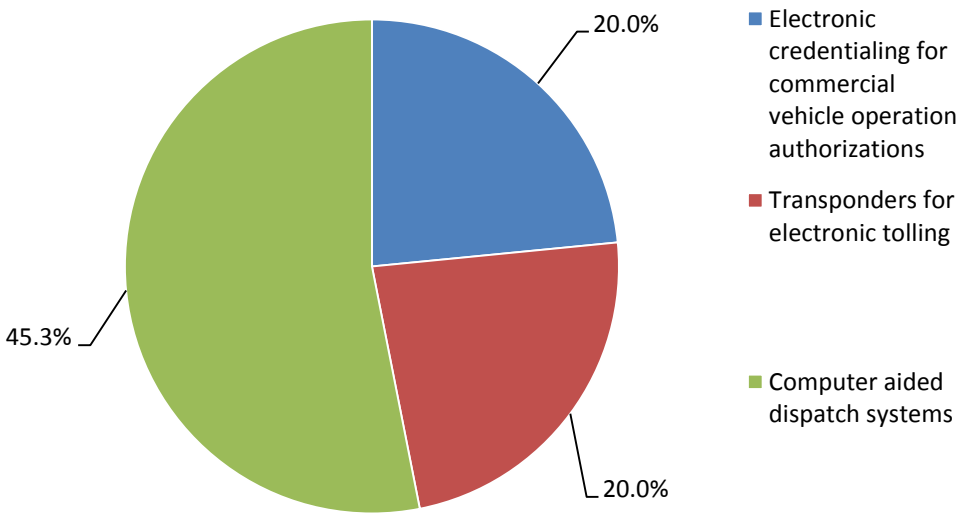
Q6 If you have considered relocating your operations either in part or in full to compensate for any traffic congestion that results from construction activity or other capacity constraints, what operations would you foresee relocating? For example, moving non-transportation-related employees to office space elsewhere.

This question only applied to the three respondents who indicated that they had considered moving. The respondent who indicated that they had worked with the city to remain in their current condition cited that they had considered moving due to congestion and roadway conditions along Lamar Avenue, and considered moving their entire facility. The respondent who indicated that they already had moved indicated that they had moved their asset operations. Finally, the respondent who indicated that they would move if a facility served by multiple railroads became available dictated that they would move their entire operation.

Q7 If you planned on relocating operations in part or in full, would you consider the relocation to have a local, regional, or national impact on your business?

This question was asked to gauge respondents' perception of the impact a potential move would have on their business. The responses gathered are presented Figure 41 below.

Figure 41. ***Impact of a Potential Relocation on Respondents' Business***



Interestingly, the ratio of responses to each other differed from those presented in Figure 40. This is potentially due to the types of facilities being asked about. A potential relocation of a headquarters may have a more national impact than the relocation of a single terminal in a national network.

Q8 If you planned on relocating operations in part or in full, for how long would you consider your move to be temporary before it became permanent? If you planned on relocating operations in part or in full, what value is there to return to your current location?

These questions were asked to gauge respondents' perceived value of their current location. With one exception, all respondents indicated that they would consider any relocation permanent from the day they move, and would not consider returning. The one exception indicated that they would consider the move to be temporary for one year before becoming a permanent relocation.

Q9 With projects underway or in the works to address capacity/traffic issues along Lamar Avenue (U.S. Highway 78), I-240 between the Bill Morris Parkway (TN State Route 385) and Walnut Grove Road, the I-40/240 interchange, and the I-55 Mississippi River Bridge ramp, what construction methodology would be most beneficial to use, and why: Phased Construction, 24-Hour Construction, Off-Period/Nighttime Construction, or something else? Would you be willing to pay more in taxes for a different methodology if it meant the project was completed sooner? What if it means greater congestion in the short-term?

All respondents indicated that they would prefer the indicated roadway construction projects to be completed as quickly as possible. Regarding methodology, two respondents indicated that they would prefer 24-hour construction in order to expedite the completion date, one indicated they would prefer phased construction as it was safer for both the construction workers and the roadway users, while the remainder preferred off-peak or nighttime construction as they perceived it would reduce the impact to their operations. Additionally, two respondents also indicated that they would like to see more effort on improving alternate routes to handle additional capacity prior to embarking on major projects, as rerouting of traffic flows could allow for more construction progress in a shorter amount of time.

Q10 With projects underway or in the works to address capacity/traffic issues along Lamar Avenue (U.S. Highway 78), I-240 between the Bill Morris Parkway (TN State Route 385) and Walnut Grove Road, the I-40/240 interchange, and the I-55 Mississippi River Bridge ramp, what element of the existing roadway network in the Mid-South Region do you see as the next major bottleneck that should be addressed and why?

The major bottleneck areas that respondents would like to see addressed were: the TN State Route 385/I-240 interchange, an additional roadway bridge across the Mississippi River, an additional rail bridge across the Mississippi River, Poplar Avenue between Highland Street and Germantown Road, East Shelby Drive around the Lamar Avenue, and Summer Avenue. Additionally, respondents expressed frustration regarding the perceived lack of progress on the Lamar Avenue project.

Q11 Regarding rail capacity, competition, and rates, are you aware that the U.S. Department of Transportation's Surface Transportation Board offers mediation services? If so, have you utilized these services?

Only three respondents were aware of the Surface Transportation Board's mediation services, but none had utilized them personally. However, one respondent indicated that their trade association had been involved in the

mediation process. Additionally, this respondent indicated a desire for local government to become involved in mediation with the railroads in order to promote local businesses.

Q12 How can the Memphis Urban Area Metropolitan Planning Organization (MPO) best alleviate any inconveniences posed by the current capacity constraints?

Respondents provided a variety of answers, but only two answers were said more than once: improve/increase the funding of infrastructure projects and better planning for alternate routes during construction activity. Other responses included: getting construction on the Lamar Corridor project started to avoid further customer loss due to poor infrastructure, improved signal timing synchronization along major corridors through the city, improving public education regarding infrastructure and transportation and the role they plays in the region's economy, provide the public with regular status updates on all scheduled projects as well as those currently underway, and encourage more modal shift for both passengers and freight in order to reduce the burden on the roadway network. More specifically, regarding funding, one respondent strongly recommended that the MPO should aggressively pursue federal funding by having projects declared to be of national importance. Additionally, the individual who recommended promoting multimodal transportation faulted the MPO for failing to utilize the former CSX right of way for a light rail line, connecting the suburbs with the central city core, to help address Memphis Area Transit Authority gaps, instead opting to remove the rails and construct the Memphis Greenline.

Q13 According to the Federal Highway Administration, "livability in transportation is about leveraging the quality, location, and type of transportation facilities and services available to help achieve broader community goals such as… enhancing the natural environment through… enhanced air quality, and decreased green house [sic] gasses" (Rue, et al., 2011, p. 6). Considering that the utilization of alternative fuels "can help reduce operating costs, meet emissions requirements, improve fleet sustainability, and support U.S. energy independence," would you ever consider utilizing alternative fueled vehicles at your company (U.S. Department of Energy, 2013, p. 4)? Why or why not?

All of the respondents were very receptive to the utilization of alternatively fueled vehicles. The most common reasons for doing so were public relations, legislation in other regions that the company operates in, and fuel costs. Additionally, three respondents indicated that they already utilized alternatively fueled vehicles. Regarding future use, one respondent indicated that they are working with their providers to encourage "green logistics" and another indicated that they would incentivize the usage of alternatively fueled vehicles among employees through subsidies if local governments showed support for the technology.

Q14 According to the U.S. Department of Energy's Alternative Fuel Data Center, the Mid-South region currently has 1 ethanol station, 2 liquid natural gas (LNG) stations, 1 compressed natural gas (CNG) station, 10 propane stations, and 22 electric vehicle charging stations open to the public. There are no hydrogen or biodiesel stations. Additionally, many of these stations are not open on a 24-hour basis. If Mid-South regional governments were to encourage the development of more alternative fueling stations with greater accessibility, would you be more likely to consider using alternative fueled vehicles at your company? Why or why not?

Generally, the respondents were supportive of this proposal. Those who were opposed or indicated no preference did so either due to the fact that the vehicles they owned remained on-property or they did not provide transportation services directly. That being said, one of these respondents indicated that their on-site vehicles were alternatively fueled already with propane.

Q15 Taxes from the sale of gasoline and diesel fuel predominantly support the construction and maintenance of roads, bridges, and other infrastructure across the United States. Despite increasing vehicle fuel efficiency, the Federal tax rate has remained at 18.4¢ per gallon of gasoline and 24.4¢ per gallon of diesel since 1993, the Tennessee tax rate has remained at 21.4¢ per gallon of gasoline and 18.4¢ per gallon of diesel since 1990, and the Mississippi tax rate has remained at 18.4¢ per gallon of gasoline and 18.4¢ per gallon of diesel since 1987. The American Society of Civil Engineers' most recent State Report Card for Tennessee gave the state's infrastructure a D, and the most recent State Report Card for Mississippi gave the state's infrastructure a C-. Would you support raising either local or federal taxes if it meant improving the quality of infrastructure? If not, how could infrastructure maintenance and improvement be better funded?

All but two respondents favored both local and federal taxes to fund infrastructure maintenance and growth. Of the two respondents whom opposed, one gave no reasons while the other indicated that they felt poor management of funds would negate any useful result of a tax rate increase.

Figure 42. ***Are you currently renting or do you own your home? (234 Respondents)***

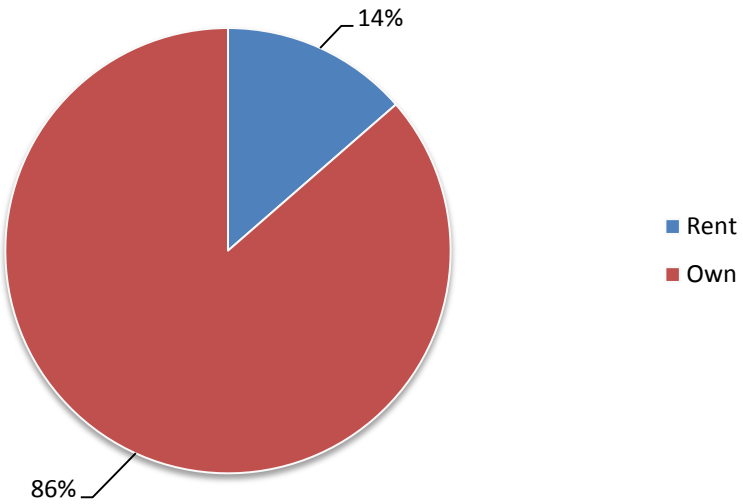


Figure 43. ***How old are you? (237 Respondents)***

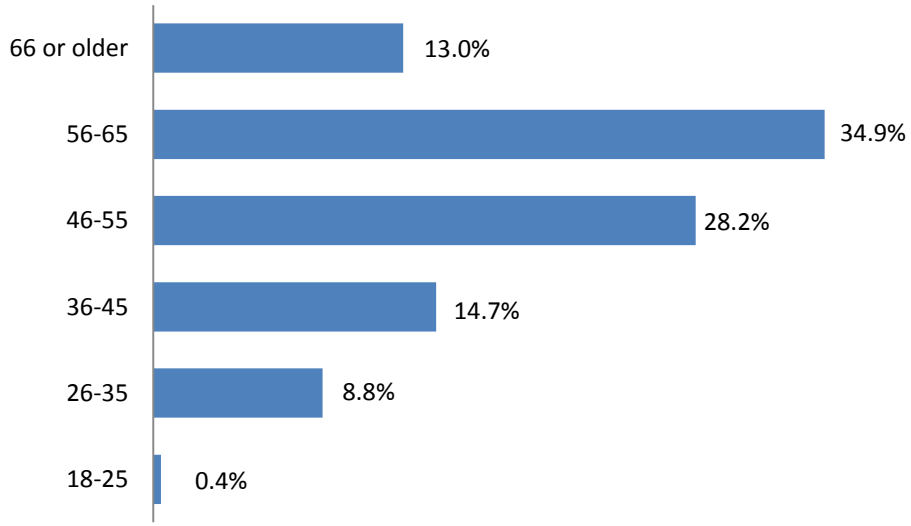


Figure 44. ***What race or ethnicity do you best identify with? (231 Respondents)***

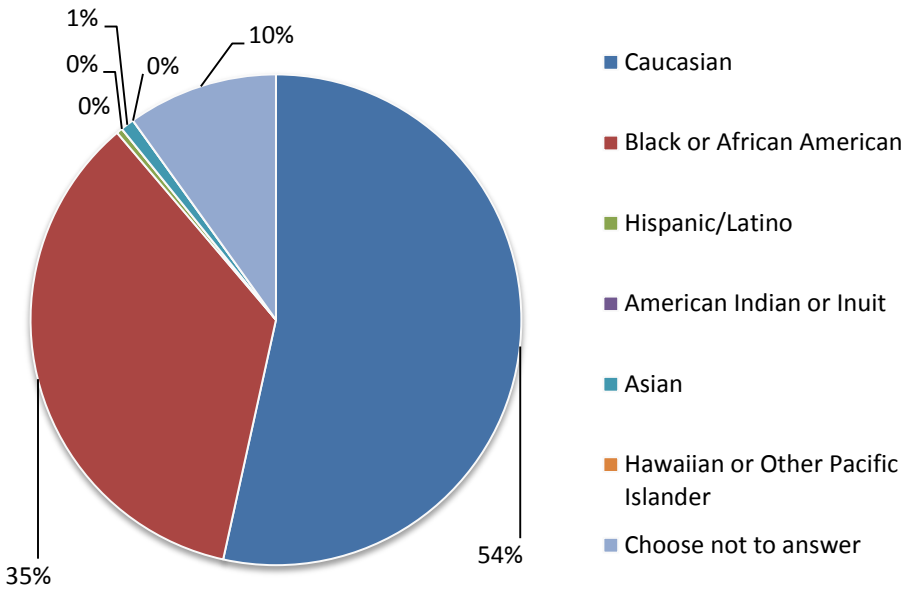


Figure 45. ***Including yourself, how many people currently live in your household? (238 Respondents)***

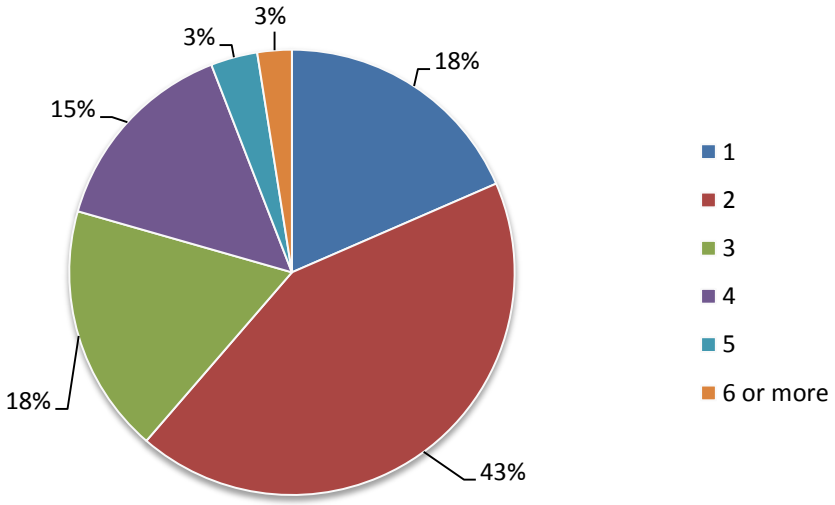


Figure 46. ***How many children live in your household? (234 Respondents)***

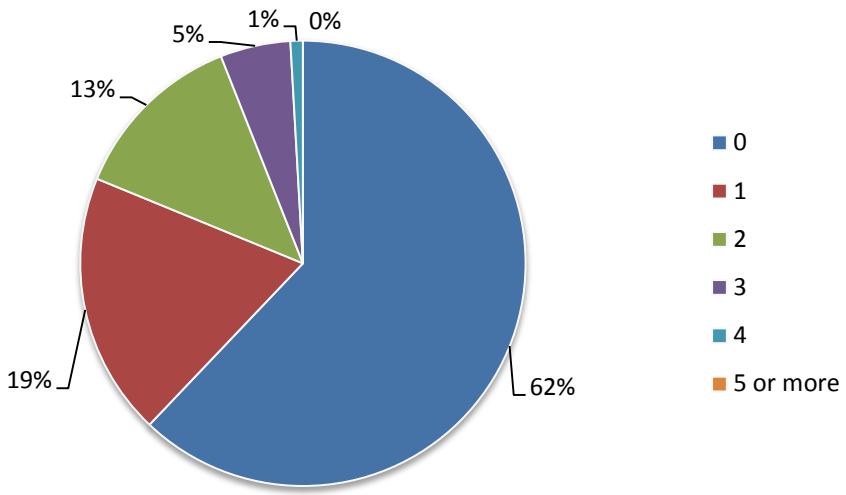


Figure 47. ***Are you married, separated, divorced, widowed, or have you never been married? (233 Respondents)***

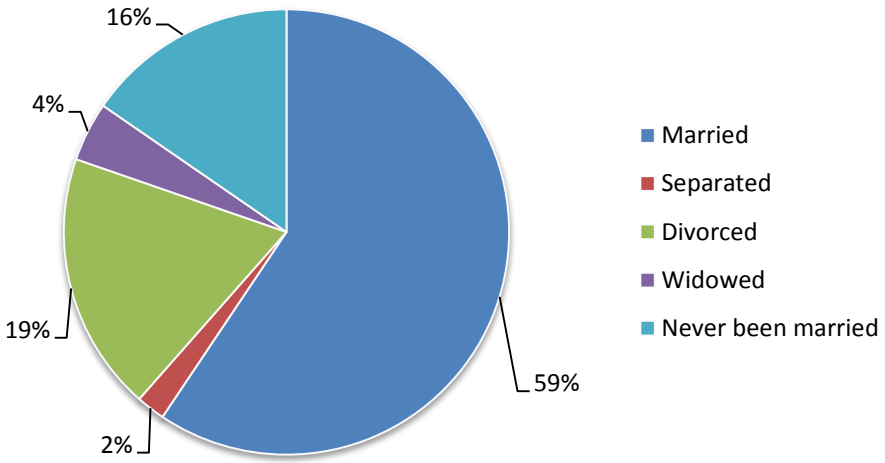


Figure 48. ***How many vehicles are owned or leased by the people who currently live in your household? (237 Respondents)***

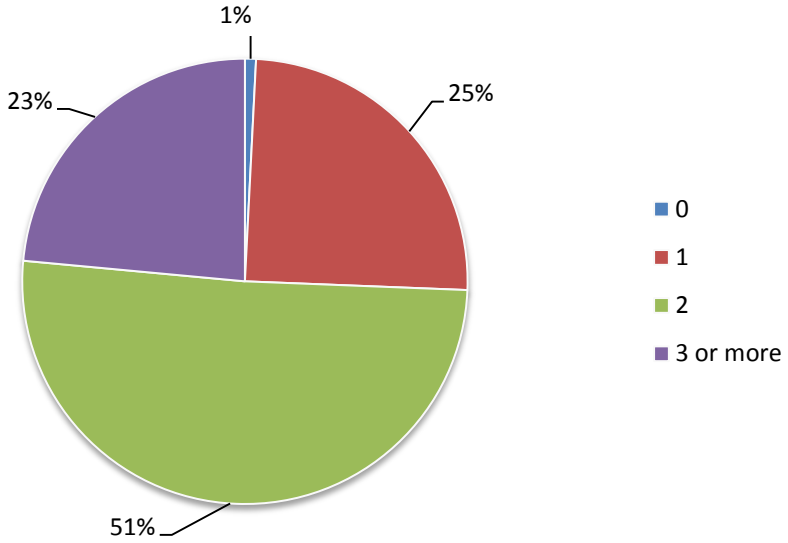


Figure 49. ***What is the highest level of education you have completed? (234 Respondents)***

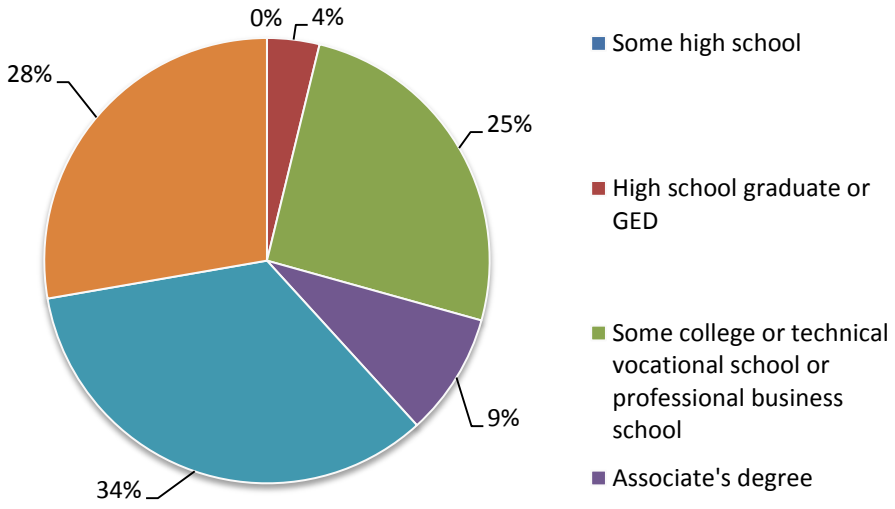


Figure 50. ***Are you employed full-time, part-time, not employed for pay at the moment, retired, or a student? (237 Respondents)***

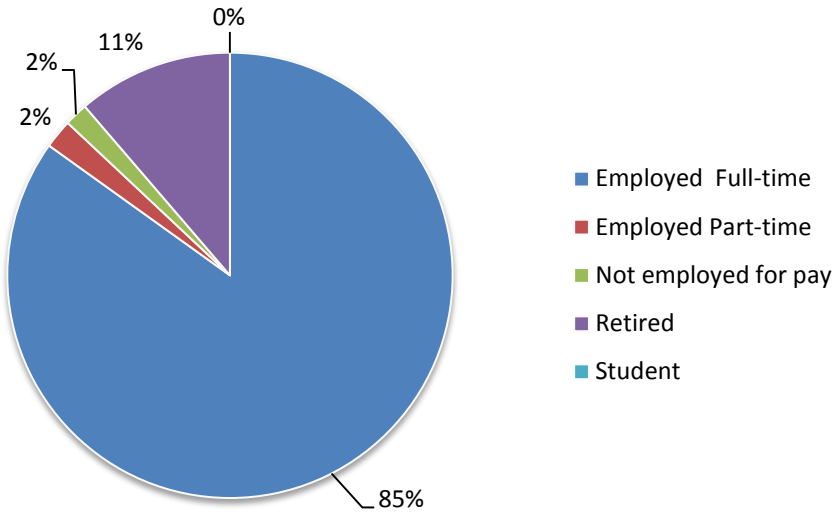


Figure 51. ***How many years have you lived in this neighborhood? (239 Respondents)***

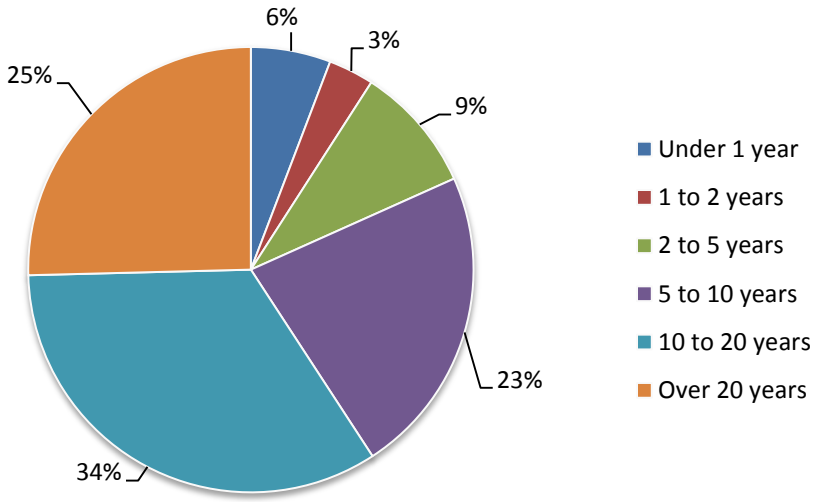
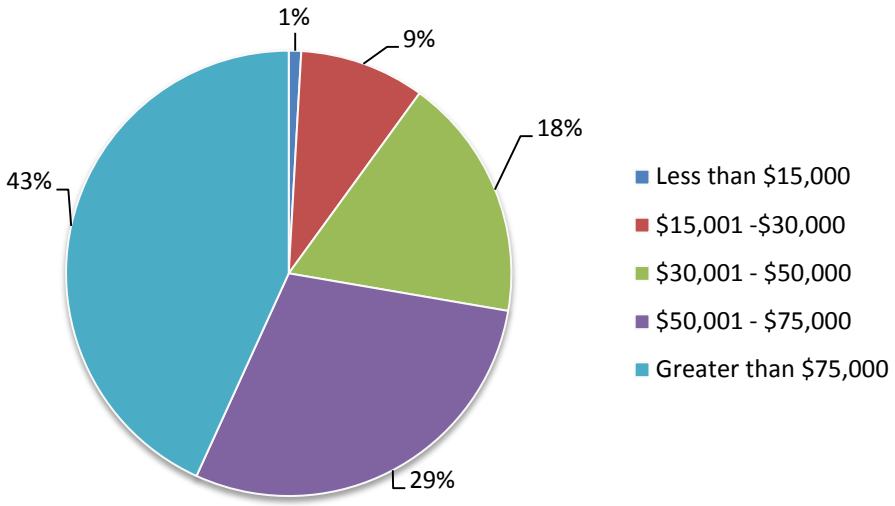



Figure 52. ***During the past year, roughly how much was your total family income before taxes? (219 Respondents)***