STATE HIGHWAY ADMINISTRATION

RESEARCH REPORT

PERCEPTIONS OF FREIGHT TRANSPORTATION

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16. Abstract

In order to better understand what the general public perceptions are in Maryland about freight movement and its importance to the state, the Maryland Department of Transportation asked the Schaefer Center at the University of Baltimore to conduct a survey. From February 26 – August 19, 2014, 808 surveys were completed using a sample of landline telephones and cell phones. Respondents were asked a series of screening questions to ensure that they were at least 18 years of age and currently held a Maryland driver's license. Drivers with a commercial driver's license who drove trucks commonly referred to as "18-wheelers," were also screened out of the sample.

The survey resulted in a number of interesting findings. Among them was the fact that 14% of those surveyed were aware of the Maryland Statewide Freight Plan. While MDOT would like to further promote the plan, the original expectation was that public awareness would be lower. Several other findings are highlighted below:

- When asked what mode of transportation comes to mind when thinking about freight movement, 63% said trucking (i.e. highways) and 30% said rail.
- When asked how important they thought it was to ensure an efficient freight transportation system, 96% of respondents said it was very important or important.
- When asked which areas of the state were primarily affected by freight movement in Maryland, 72% said that it affects the entire state equally.
- When asked about the biggest safety concern, 48% state it was truck driver fatigue and 30% said it was trucks driving at high speeds.
- When asked to select one mode of transportation to make a top investment priority, 63% said highways and 26% said rail.

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Maryland Department of Transportation

Perceptions of Freight Transportation

Survey Report

University of Baltimore
KNOWLEDGE THAT WORKS

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SUMMARY AND METHODOLOGY

The Schaefer Center for Public Policy, in collaboration with the Maryland Department of Transportation (MDOT), conducted a survey on Public Perceptions & Attitudes Toward Freight Transportation in Maryland in order to better understand knowledge of and attitudes toward movement of Freight within Maryland especially as it relates to truck and rail transportation.

The survey addressed the topics of:
1) General attitude toward truck and rail modes of freight movement.
2) Perceptions of benefits of truck and rail transportation.
3) Perceptions of threats posed by truck and rail transportation
4) Knowledge of the regulatory framework governing truck and rail transportation
5) Knowledge of and perception of economic benefits of truck and rail transportation.

The Schaefer Center used a dual-frame sample to conduct the survey, one of landline telephones and one of cell phones. The landline sample was constructed with a list-assisted random digit dial (RDD) methodology, which uses listed phone numbers to select random blocks of assigned phone numbers sufficient to obtain the necessary number of completed interviews. The cell phone sample frame was also an RDD frame, but without the list-assisted component. The final data is weighted to reflect the most recent estimation of cellphone only (CPO) dual use, and landline only (LLO) households throughout the state.

The survey itself contained over 40 possible questions (depending on skip patterns). Interviews were conducted between February 26 and August 19, 2014, resulting in 808 completed surveys. Responses were weighted to more closely reflect the distribution of CPO, LLO, and dual use households within the state. The weighted number of responses is 790. The survey has a +/- 3.45% margin of sampling error at the 95% confidence interval. This means that it can be expected that if this survey were repeated 100 times on independent, randomly selected samples of the same population, we would expect to find the same estimates of opinion, within a range of +/- 3.45 percentage points.

The results are presented as percentages of the weighted sample, where post survey weighting was used to adjust the type of telephone service of the respondent's household. The weighting methodology is presented in Appendix A.

All percentages are rounded to the nearest whole percentage, and there some cases where rounding may cause all values to sum to just under or over 100%.

Primary Goals

The primary goal of the survey was to measure what Maryland drivers know about the movement of freight by truck and rail in Maryland. The survey specifically addressed:

1) General attitude toward truck and rail modes of freight movement;
2) Perceptions of benefits of truck and rail transportation;
3) Perceptions of threats posed by truck and rail transportation;
4) Knowledge of the regulatory framework governing truck and rail transportation; and
5) Knowledge of and perception of economic benefits of truck and rail transportation.

Who Was Surveyed

When a person was reached on the phone, he or she was asked a series of screening questions to ensure that they were at least 18 years of age and currently held a Maryland driver's license. Drivers with CDL licenses who drove trucks "commonly referred to as "18-wheelers" were screened out of the sample.

The survey results are broadly applicable at the state level. The overall number of respondents means that the results are adequate for statewide inferences. Since the sample was not stratified by geographic area, the number of responses for any given geographic area is insufficient to draw statistical conclusions about one region versus another.

Discussion of the survey methodology, demographics, and weighting procedures used in preparing this analysis can be found in Appendix A, after the body of the report.

Driving Habits

The first question was designed to gauge how familiar respondents were with traffic on Maryland roads and asked how often they drove on Maryland roads. Most respondents indicated that they drove on Maryland roads almost every day (41%) or very often (23%), while over a quarter of respondents indicated that they drove on Maryland roads only occasionally (28%). Respondents were read a list of response categories for this question.

How often do you drive on MD roads?
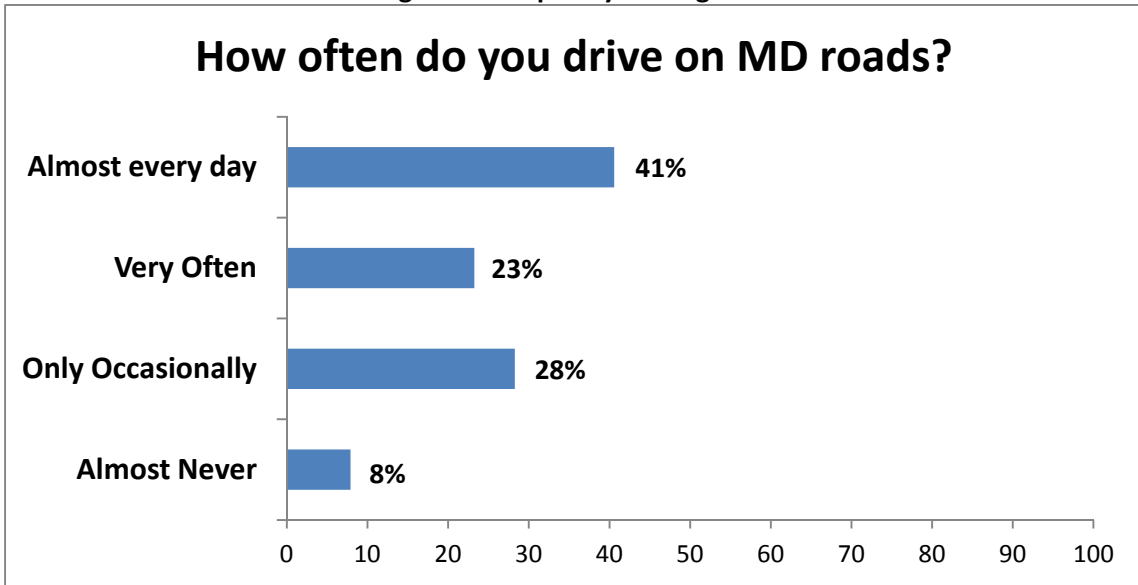
Statewide Freight Plan

Respondents were asked if they were aware of the Maryland Statewide Freight Plan. Most (86%) indicated that they had not heard of the plan. While the public may be familiar with the movement of freight, this indicates an opportunity to educate the public on the way that MDOT plans for the future of freight movement.

Figure 2: Awareness of Statewide Freight Plan

Awareness of Statewide Freight Plan
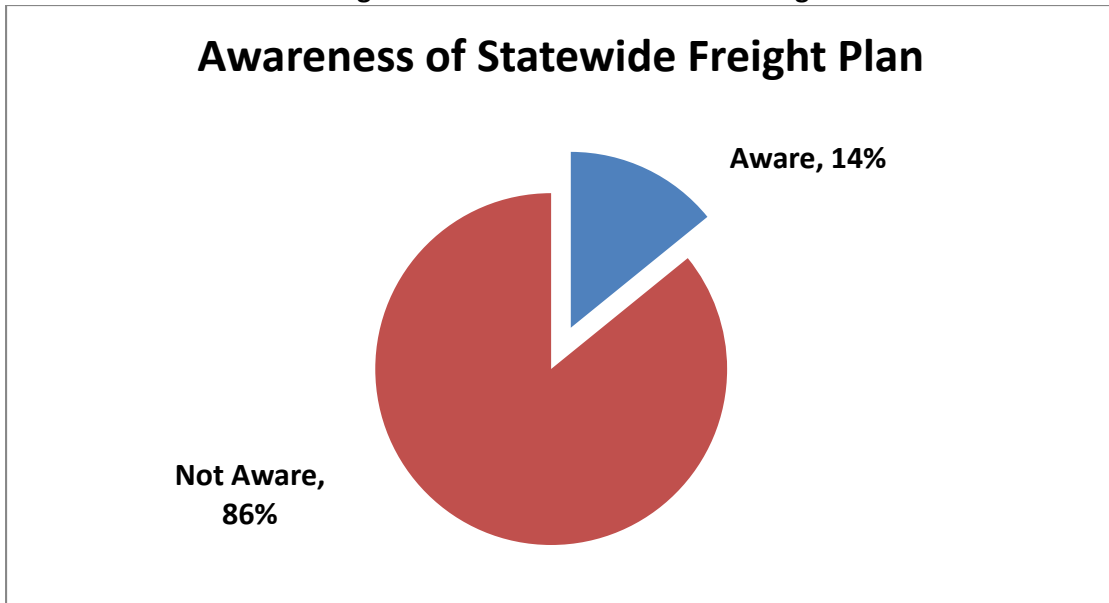
What is Freight Transportation?

In order to gauge what is in the mind of most motorists when discussing freight movement, all respondents were asked what mode of transportation came to mind when they thought of "freight movement." The list of possible freight modes was not offered to the respondents, and the interviewer coded their response according to the predefined categories of aviation, rail, maritime, or trucking. Each was specifically defined to make sure that passenger rail was not confused with freight rail, etc.:

- Aviation [Airplanes]
- Trucking [Tractor Trailers, or 18-Wheelers]
- Maritime [Shipping through the Maryland Port System]
- Rail [NOT Passenger Rail like Amtrak or MARC]

Interviewers recorded all the modes mentioned, not just the first one. Therefore, the percentages displayed below are the percentage of all responses, rather than the percentage of respondents.

Over half of all responses indicated that some form of "Trucking" was the mode that was most associated with freight movement (63%). Non-passenger "Rail" was the second most frequently mentioned transportation mode at almost a third of all responses (30%).

Figure 3: Mode of Freight Transportation

What mode comes to mind?
% of all respondents

Trucking	63%
Rail	30%
Maritime	2%
Aviation	2%
Other	4%
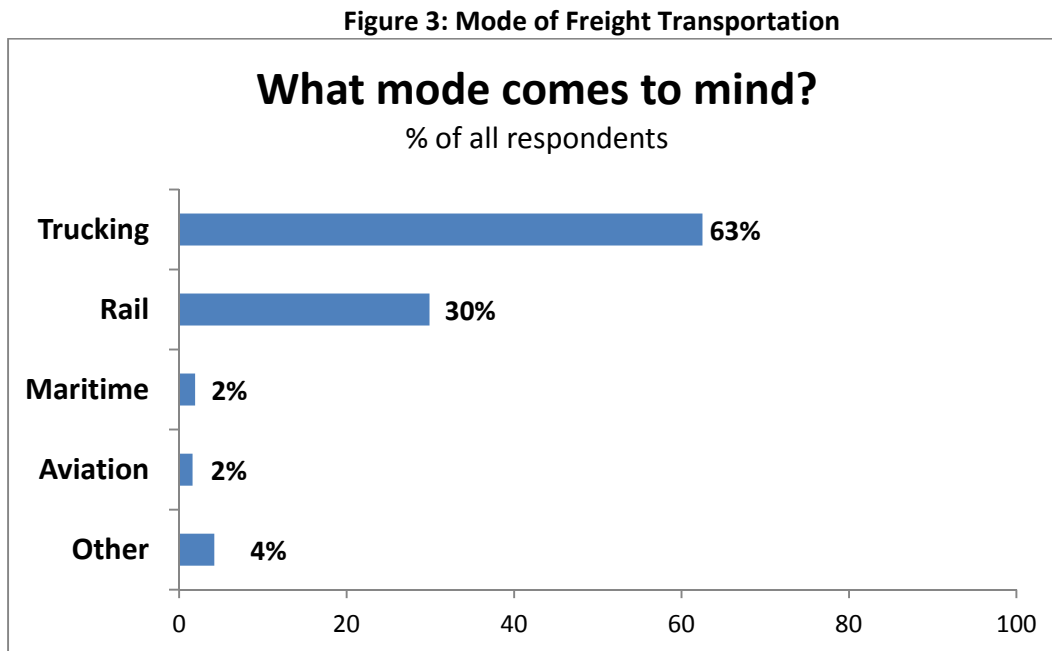
There were a small number of "Other" responses that did not fit into one of the given categories. These included responses indicating a lack of understanding about what freight movement was and freight moved by cars, delivery services (USPS, FedEx, etc.), or by public transportation.

The percentage of responses that specifically mentioned maritime modes of freight transportation was very low (2%), which is notable since Maryland is a state whose population centers are close to bodies of water. Maritime tied with aviation as the freight transportation mode that least often came to mind. It is possible that the preface to the survey, which mentioned the Maryland Department of Transportation, coupled with the screening for licensed drivers could have biased the respondents to modes that are on the road or that interact with the road (rail). There were no follow-up questions, so it is unknown why maritime and aviation modes of freight movement were mentioned as infrequently as they were.

Perception of Maryland's Freight System

All respondents were asked to rate Maryland's freight transportation system as being excellent, good, fair, or poor. Over one-quarter (29%) of respondents indicated that they didn't know how to rate Maryland's freight system. This represents a significant opportunity for MDOT to educate Maryland drivers and the general public about what Maryland's Freight Transportation System is.

Figure 4: Rating of Maryland's Freight Transportation System
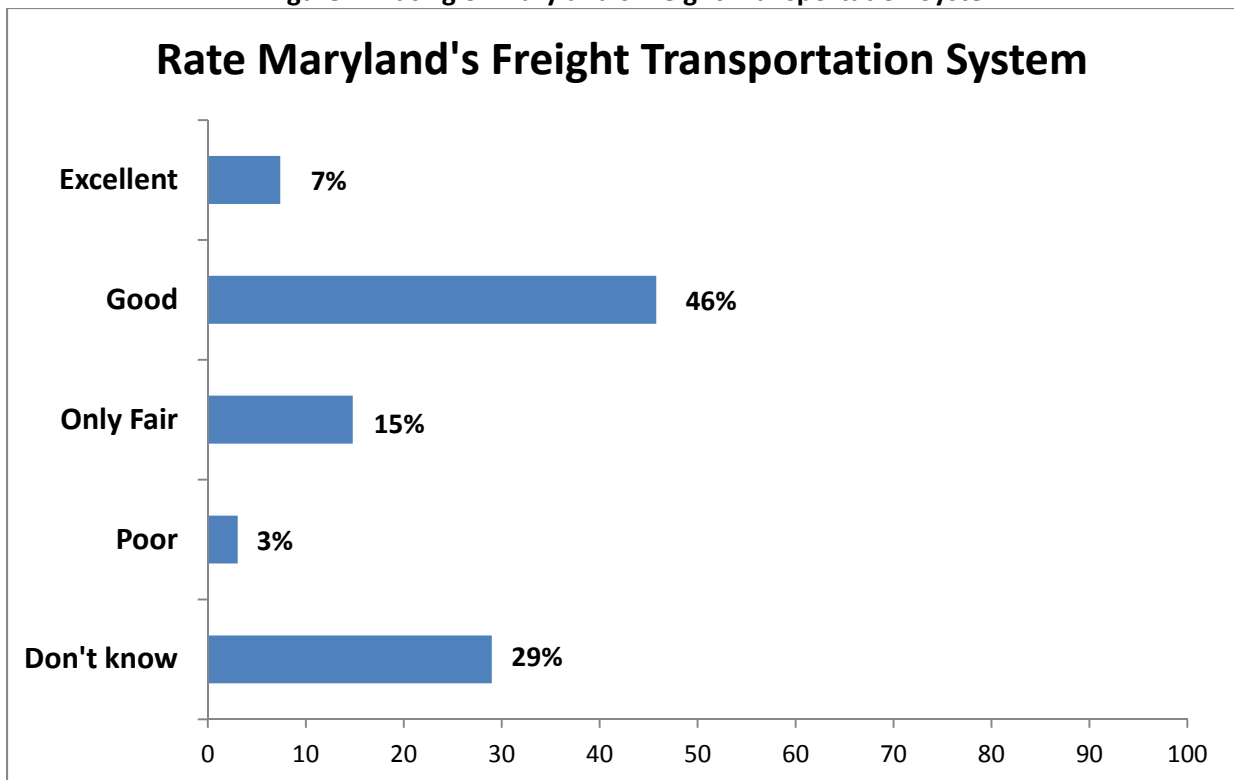
Over half of all responses were positive, either excellent (7%) or good (46%). The responses indicating a poor rating (3%) were under the margin of sampling error for the study. On the whole, this points to a very positive impression, particularly among those who had an opinion.

When asked how important they thought it was for the state to ensure an efficient freight transportation system, most respondents indicated that the freight system was very important (70%), with over a quarter more saying rating it as important (26%). The percentages of those who rated the freight system as either unimportant or not all important were so small as to be insignificant.

Figure 5: Importance of an Efficient Freight System
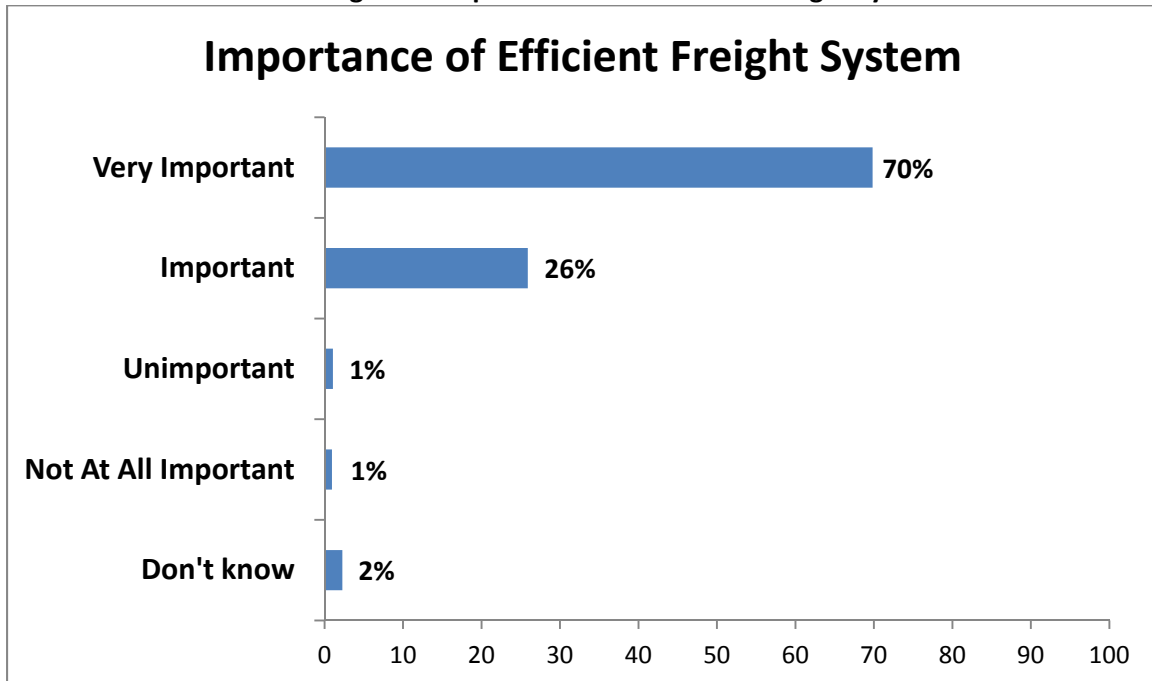
This is a good sign, in terms of the opportunity to educate the public about the larger freight system, in that they largely agree that it is important to have an efficient freight system.

This question does not show the relative importance of an efficient system (against other areas such as the environment, pollution, disruption of commuting, etc.), nor does it allow the respondents to rate the importance of an efficient system against the cost of maintaining or building an efficient system. It would be a useful line of future inquiry to determine what the break points are for the benefits of an efficient freight system against other aspects of transportation funding, public spending, and policy focus.

Industry Dependence on Freight Transportation

A series of questions were asked about how dependent several industries were, broadly, on the Maryland freight transportation system. The question asked respondents to rate the dependence of each industry as very dependent, just dependent, not very dependent, or not dependent at all.

When aggregating the ratings into a negative, less dependent scale (not very dependent and not at all dependent) versus a positive, more dependent scale (just dependent and very dependent), all the industries that were mentioned (agriculture, manufacturing, energy, construction, chemical, and retail) were seen as being more dependent upon Maryland's freight movement system. With the exception of the energy and chemical industries, all other industries garnered responses of 90% to 92% who felt that the industries were more dependent on the freight transportation system. The ratings of more dependent lagged only slightly for energy (77%) and chemical (79%) industries.

Figure 6: Industry Dependence on Freight Transportation
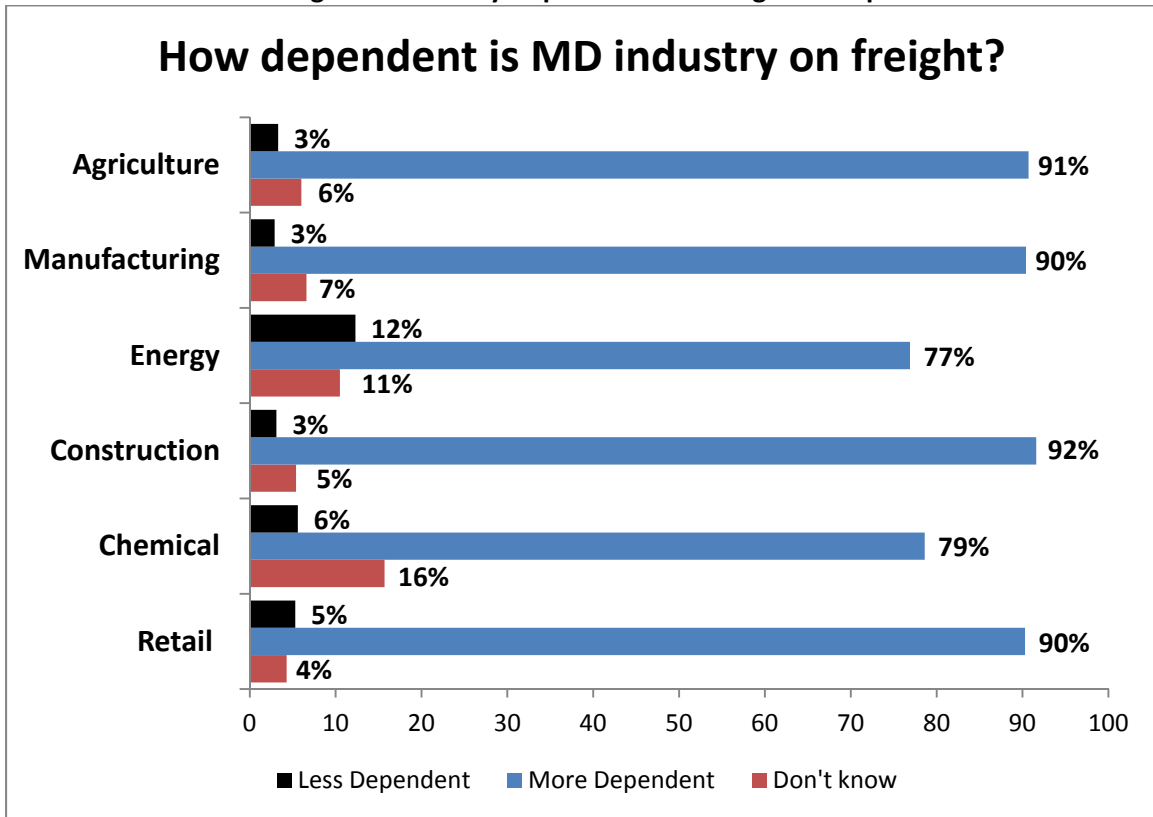
The industries that garnered lower percentages of respondents rating them as more dependent, also received a high percentage of "Don't know" responses. Sixteen percent of respondents (16%) indicated that they weren't sure how dependent the chemical industry was on the Maryland freight transportation system, and just over ten percent (11%) indicated the same thing about the energy industry.

Other than the energy, all other industries mentioned received over half of the responses in the "very dependent" category. The chemical industry also lagged the other industries, with only 51% rating it as "very dependent."

While there is room for disagreement about what the public knows and does not know about the freight transportation system, these results indicate that regardless of their conception of Maryland's freight transportation system, there was consensus within the

sample that the agricultural, manufacturing, energy, construction, chemical, and retail industries in Maryland depend upon Maryland's freight transportation system.

Impact of Freight Movement

A series of questions were asked order to gauge respondents' understanding and opinion about the impact of the freight transportation system on aspects of life in the state of Maryland. The first question asked about which areas of the state were primarily impacted by freight movement.

Geographic Impact of Freight Movement

Each respondent was asked which of a list of areas were primarily impacted by freight movement in Maryland.

Figure 7: Areas Affected by Freight Movement
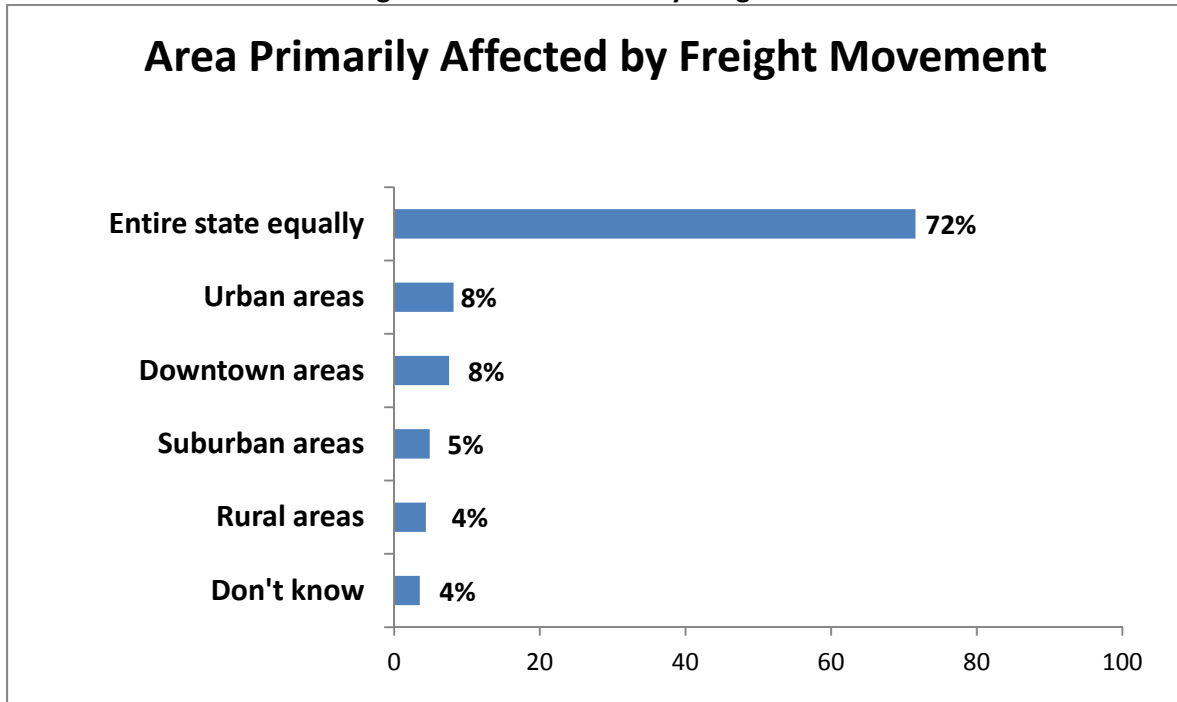
Almost three-quarters of respondents (72%) indicated that the entire state was equally impacted by freight movement. Just under one-tenth of respondents though that either downtown (8%) or urban (8%) areas were primarily affected by freight movement.

The 2013 Maryland Freight System Annual Report showed that according to the 2007 Maryland Motor Carrier Handbook, Maryland's truck system was comprised of 900 miles of Maryland Truck Route System, 908 miles of National Truck Network, 2,376 miles of National Highway System, and 88 miles of Intermodal connectors (p 11).

Since the survey introduction stated that the survey was focused on rail and truck transportation modes, and that the study was being conducted by the Maryland Department of Transportation, it is possible that the idea of the inter-state and intra-state highway systems were in the respondents' minds when answering this question.

When looking at the distribution of freight routes either as truck or rail modes, it is noteworthy that the areas are close to the population centers within Maryland. The idea that the transportation system impacts the state equally may come from the overlap of transportation infrastructure and the areas of greatest population density. This can be seen graphically, when looking at the distribution of Maryland's population, as recorded by the 2010 Census and published by the Maryland Department of Planning in a map of population density.

Figure 8: Maryland Truck Routes
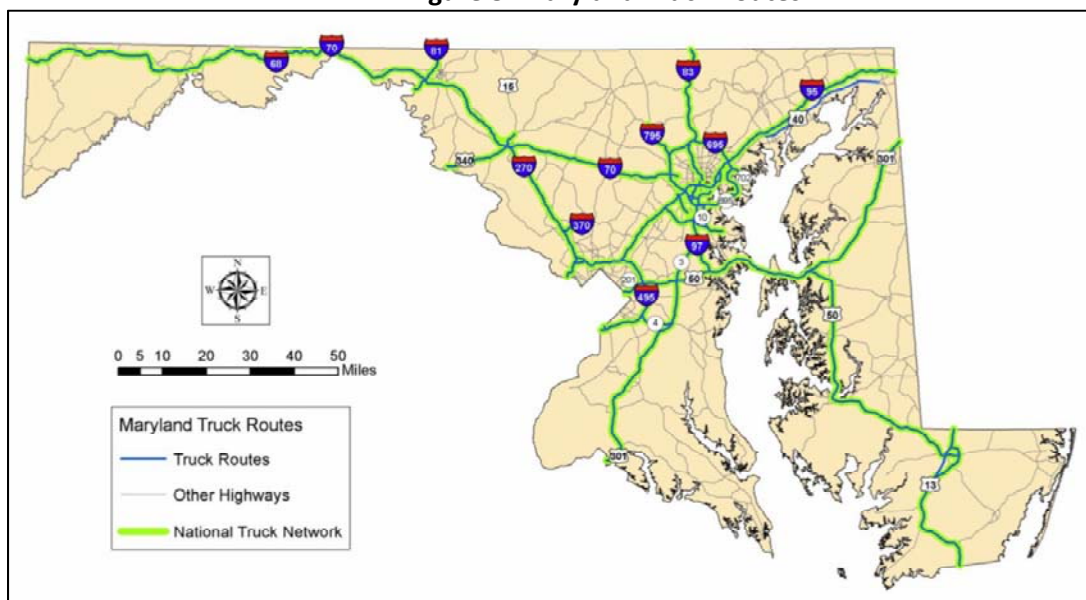
The 2013 Maryland Freight System Annual Report (p 18) also shows the distribution of rail throughout the state by mapping Class I Railroads. This survey indicated that rail was mentioned less than half as often (30%) as truck as the mode of transportation that came to mind when thinking of freight movement.

Figure 9: Maryland Rail Network
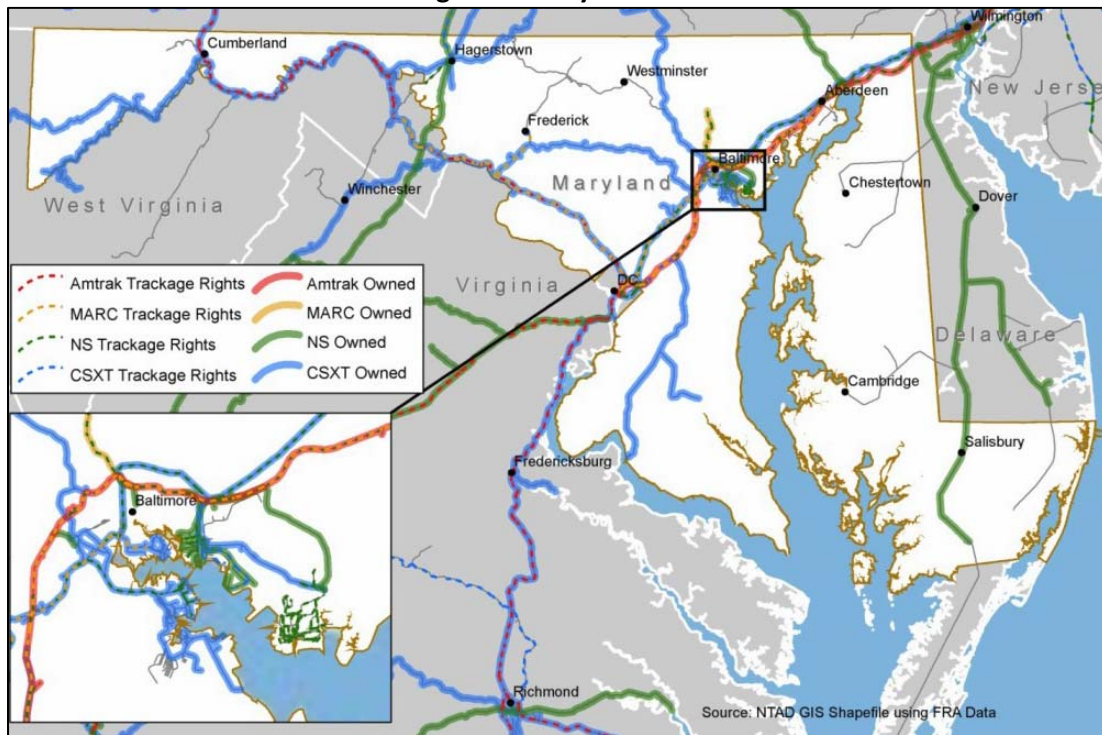
The areas of greater population density also fall along the areas that are served by Maryland's freight system. This is not surprising, given that the role of freight transportation is not only to move goods across the country (Inter-state), but also to get those goods to consumers and manufacturers, etc.

Figure 10: Maryland Population Density, 2010
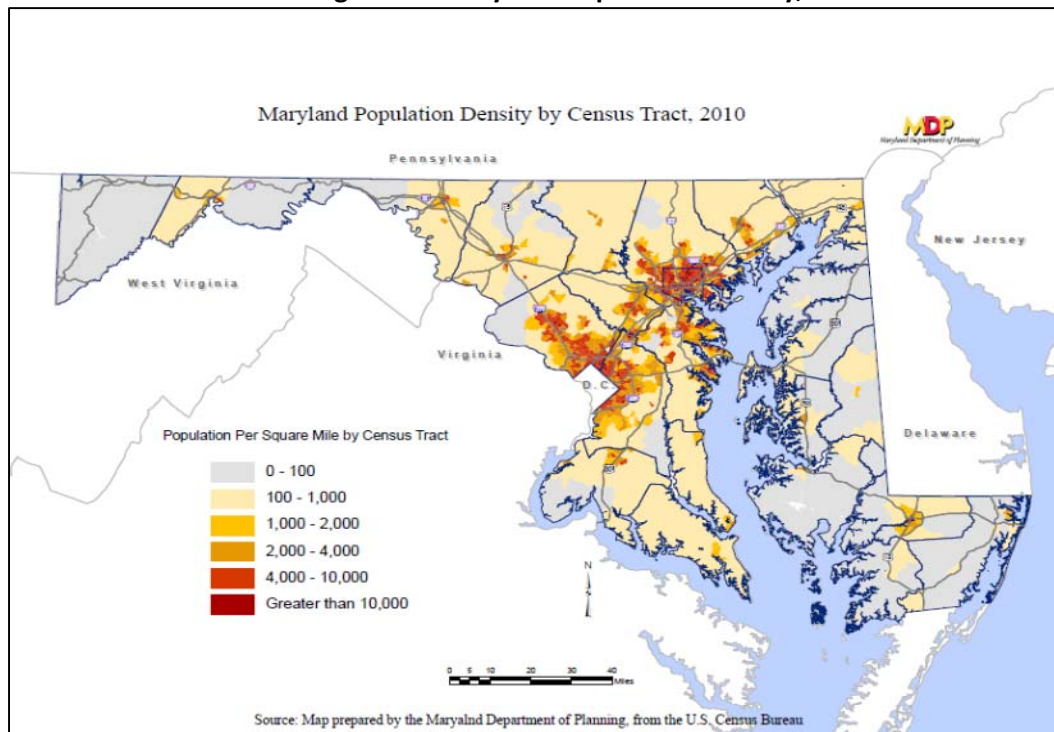
Beneficiaries of a Good Freight System

The next question asked about the impact of freight movement in a slightly different context. Instead of a geographic impact, respondents were asked which one group from a list benefited the most from a good freight transportation system.

Respondents were slightly more likely to identify Maryland consumers (37%) than they were big business (23%) as the group that benefited most from freight transportation. Interestingly, 15% of all respondents indicated that they did not know which group benefited most. Maryland small businesses and Maryland agriculture received 12% and 11% of responses, respectively. Out-of-state businesses and overseas manufacturers were the least frequently cited beneficiaries of a good freight transportation system.

Figure 11: Beneficiaries of a Good Freight System
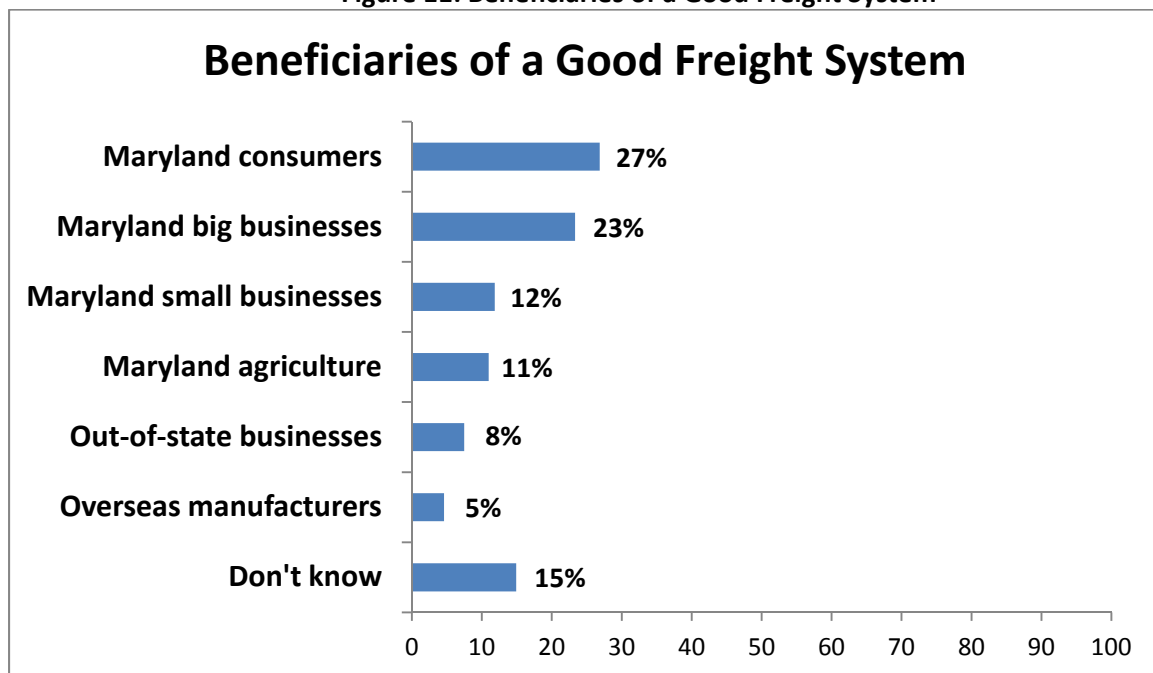
Since the question asked respondents to think about "our freight network," this may have lead them to put more of an emphasis on Maryland-based freight beneficiaries, or it may simply be that in thinking about the benefits of a good freight system, Marylanders think about aspects closer to home first.

Benefits of an Efficient Freight System

Respondents were asked to rate the benefit of each of five aspects of an efficient freight movement system (very great benefit, just a benefit, not much of a benefit, not much benefit at all). Each element was read in a random order; and respondents were prompted to use the response scale and also allowed to indicated that they did not know.

When aggregating the ratings into a negative, less beneficial scale (not much of a benefit and not much benefit at all) versus a positive, more beneficial scale (just a benefit and very great benefit), all the listed aspects of an efficient freight system were rated on the positive benefit side of the scale by over three-quarters of respondents. Particularly high percentages rated an increase in economic activity and job creation as being either just a benefit or a very great benefit of an efficient freight transportation system.

Figure 12: Benefits of an Efficient Freight System

Benefits of an Efficiant Freight System

Increase Economic Activity: Less Benefit 4%, More Benefit 92%, Don't know 4%
Job Creation: Less Benefit 7%, More Benefit 90%, Don't know 3%
Private entrepreneurship: Less Benefit 16%, More Benefit 78%, Don't know 5%
Standard of Living: Less Benefit 9%, More Benefit 87%, Don't know 3%
Lower Costs for Retail Goods: Less Benefit 12%, More Benefit 80%, Don't know 8%

Legend: ■ Less Benefit ■ More Benefit ■ Don't know
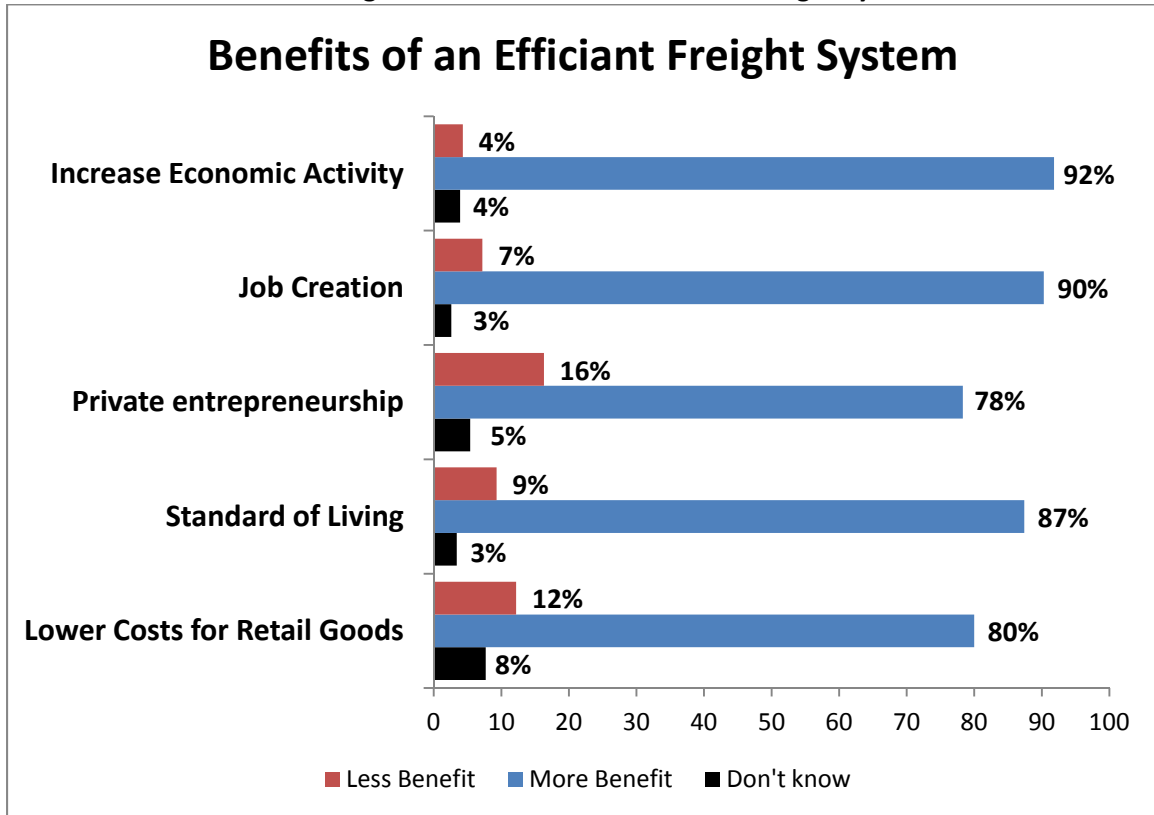
Opportunities for private entrepreneurship received the lowest percentage of ratings on the more beneficial end of the scale (78%). Similarly, the aspect of lower costs for retail goods (80%) also received a relatively low percentage of more beneficial responses than the rest of the aspects.

Community Designs for Freight Movement

Since the growth of transportation infrastructure can be at odds with areas of growing populations, a question was asked to gauge how satisfied respondents were with the way their communities were designed to handle freight movement. While master planning can specify the locations of infrastructure and housing to mitigate negative interactions, the growth of areas that overlap existing transportation infrastructure or the desire to keep transportation lines close to populated areas can have negative impacts on public perception.

While this is a larger issue, rather than one that MDOT has direct control over, respondents seemed relatively satisfied with the way their communities were designed. An interesting opportunity for future communication is highlighted by the fact that almost a third of respondents (31%) indicated that they hadn't given much thought to the intersection of their communities design and freight movement.

Figure 13: Satisfaction with Community Design for Freight
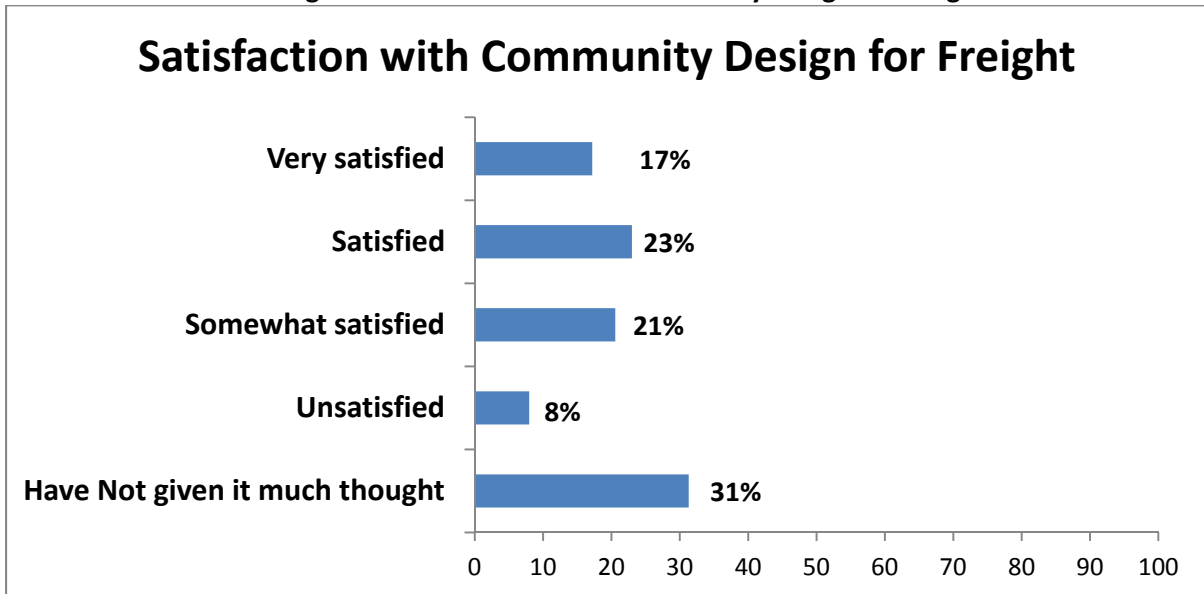
Only eight percent (8%) of respondents indicated that they were unsatisfied with how their communities were designed to handle freight movement.

Problems Related to Freight Movement

Several questions were asked about potential negative impacts or problems related to freight movement in Maryland.

Potential Problems

Six potential problems were cited and respondents were asked to rate each potential problem as not a problem at all, not much of a problem, just a problem, or a very big problem. Some respondents also responded that they did not know. The percentage of those who indicated that they did not know were insignificant, other than four percent (4%) for delays at railroad crossings.

For all of these questions, "trucks" were defined as commercial motor vehicles, delivery vans, etc.

The response scale can be aggregated together, with not a problem at all and not much of a problem seen as a measure of a smaller potential problem. The responses of just a problem and a very big problem can likewise be aggregated together as a larger potential problem.

Figure 14: Potential Problems with Freight Movement
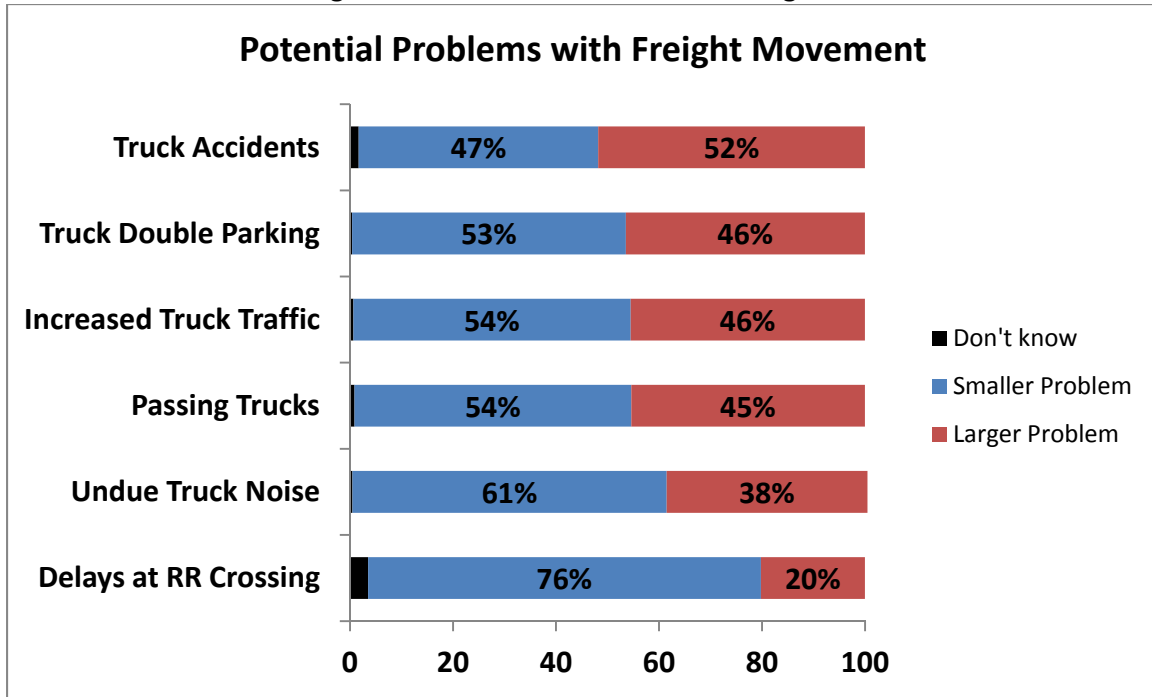
With some notable exceptions, the results from this series of questions seem to indicate that there is a lot of ambivalence about how much of a problem these issues represent. Most Maryland drivers are less concerned about delays at railroad crossings, since only 20% rated that problem as either just a problem or a very big problem.

Respondents were more likely to think that undue noise from trucks was a smaller problem (61%) than a larger problem (39%). Since this was specifically defined as noise from braking, horns, etc., it is not constructed as a measure of any other aspects of a truck's normal operation.

Figure 15: Table of Potential Problem Ratings

	Don't know	Not a problem at all	Not much of a problem	Just a Problem	Very Big Problem
Increased truck traffic in your neighborhood/ community	<1%	27%	27%	24%	22%
Undue noise resulting from a truck (i.e. braking, horn)	1%	32%	30%	22%	17%
Double parked trucks interrupting traffic flow on streets	<1%	29%	24%	20%	26%
Accidents involving trucks	2%	20%	26%	27%	24%
Delays at railroad crossing due to freight trains	4%	41%	36%	12%	8%
Passing or being passed by trucks on the interstate or highway	1%	28%	26%	22%	24%

Since many of these issues were specifically defined during the survey, the results may not account for all of the different ways that drivers think about truck noise, or the differences between trucks in neighborhoods and on highways and interstates, etc.

Most Important Freight Issues

Since the question about the most important freight issues was posed in terms of issues that have negative connotations (highway congestion, wear and tear on infrastructure, safety issues, etc.), it is included in the section on Problems Related to Freight Movement.

Respondents were asked to pick their three most important issues related to the movement of goods and services in Maryland from a list of eight that were read by the interviewer. Specific issues were defined narrowly for each respondent; for instance, "wear and tear" was specifically limited to the heavy use of trucks and rail and safety issues such as railroad grade crossings or driver fatigue. While this provides clarity on the way the concepts were framed, it is possible that it limited the respondents by constraining their frame of "safety" or trucks affecting traffic on highways only as opposed to local streets.

The issues were:

1. Highway Congestion on Interstates and highways
2. Wear and tear on infrastructure from heavy use of truck and rail
3. Getting products to their destination on time
4. Trucks affecting traffic on local streets

5. Trucks Traveling at High Speeds on roadways
6. Environmental issues such as air quality and storm water runoff
7. Safety issues such as railroad grade crossings or driver fatigue
8. Hazardous Materials Movement

Figure 16: Most Important Freight Related Issue

Most Important Issues Related to Freight
(3 most important)

Issue	Percentage
Wear and tear on infrastructure	20%
Interstate highway congestion	19%
Trucks traveling at high speeds	13%
Safety issues	13%
Environmental issues	11%
Hazardous Materials	11%
Trucks affecting local traffic	7%
Timely delivery of products	6%
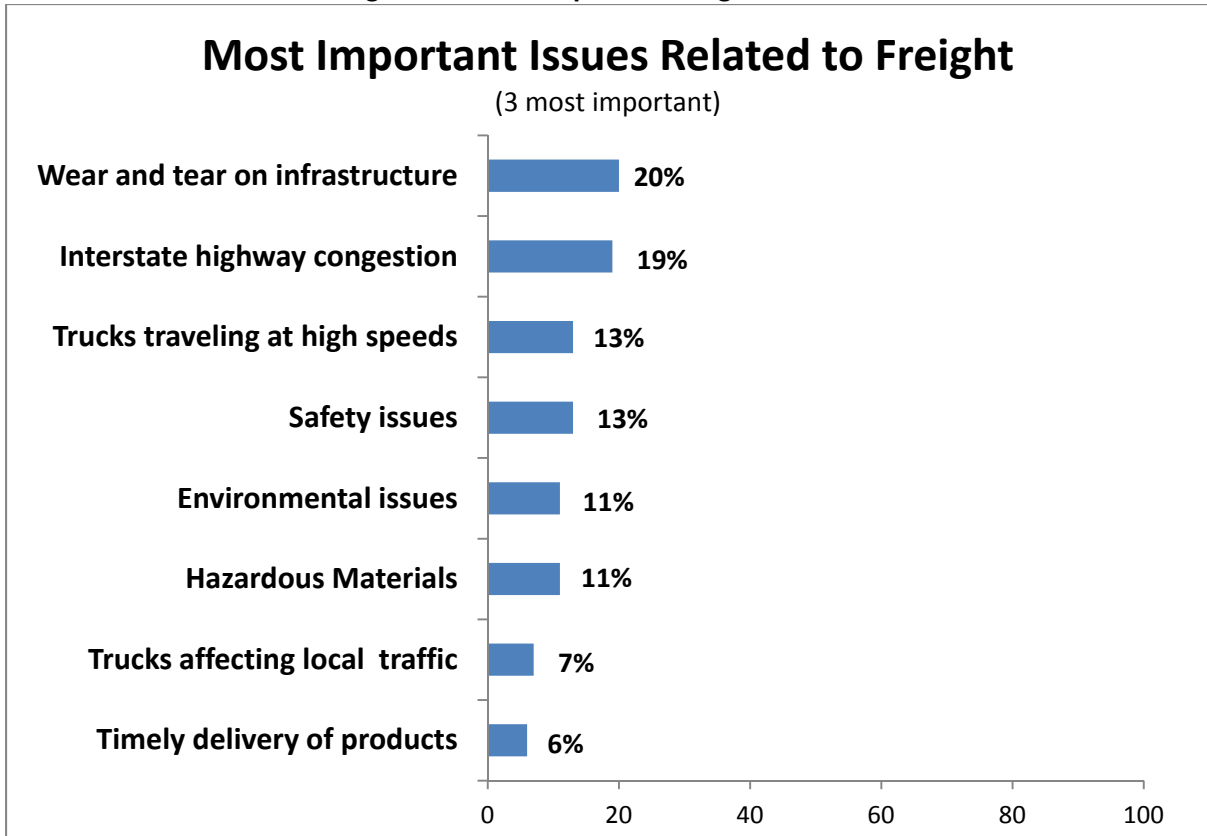
Figure 16 aggregates all of the responses into one graphic, so that the percentages are a proportion of all the issues mentioned, rather than the number of respondents. Wear and tear on infrastructure from heavy truck and rail usage was cited 20% of the time as one of the three most important issues. This was closely followed by highway congestion on interstates and highways at 19%. Most of the other issues clustered between 11% and 13%.

When looking at the first issue picked by respondents, highway congestion accounted for 33% of the first choices, followed by wear and tear on infrastructure at 22% of first choices. The third most often cited issue on the first round was hazardous materials movement (10%).

Safety Issues

A follow-up question asked any respondent who indicated that safety issues were among the top three most important freight issues to choose one issue as the biggest safety concern from a structured list:

1. Railroad crossings
2. Truck driver fatigue
3. Trucks driving at high speeds
4. Trucks carrying hazardous materials, or
5. Some Other concern

Almost half of respondents (48%) indicated that truck driver fatigue was their biggest safety concern, followed by trucks driving at high speeds (30%).

Figure 17: Biggest Safety Concern
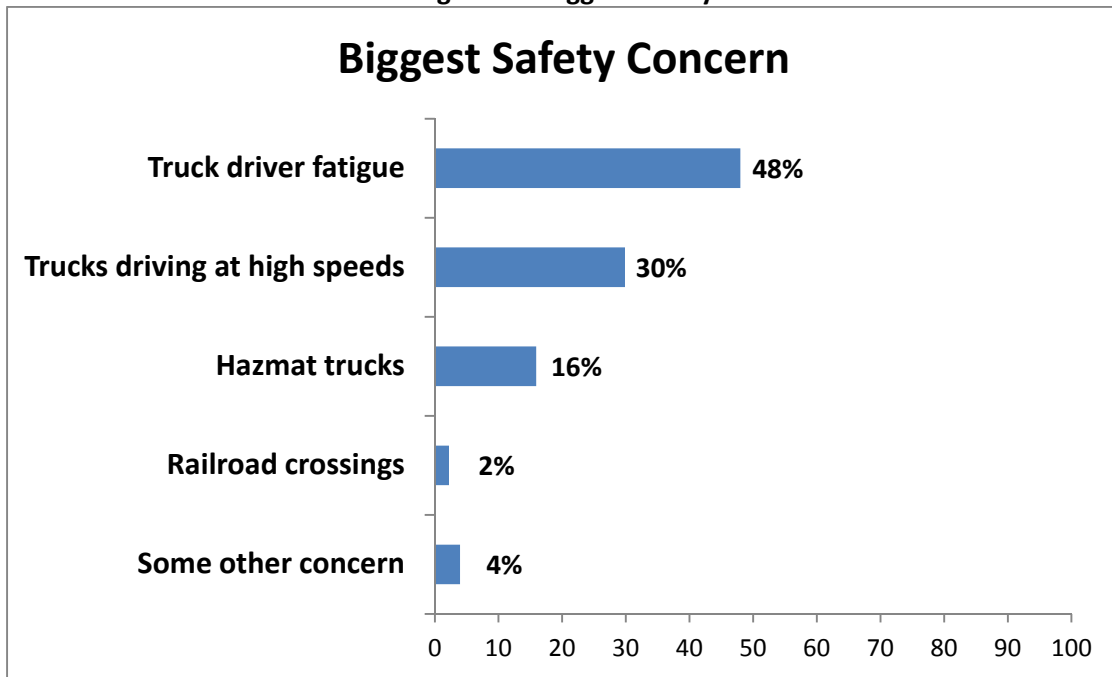
Only one of these issues was related to rail, as opposed to truck freight transportation. It is not possible to know if the range of possible responses constrained the respondents opinions, nor how representative the responses are, since they comprise a small subset of all respondents to the survey.

Future Investment in Freight Transportation

Several questions were asked about the level and area of investment in freight transportation infrastructure in Maryland. The first question asked about the relative level of investment in Maryland's freight network as opposed to other forms of

transportation (public transportation, bicycles, pedestrian or general highway maintenance).

Current Transportation investment

When asked if they thought the level of investment in Maryland's freight network was too high, too low, or about right, more respondents chose about right (37%), than either too high (6%) or too low (19%). Caution is warranted when interpreting these results, due to the high proportion of those responding "Don't Know." In fact, the percentage of those who thought funding was about right was equal to those who indicated that they didn't know.

Figure 18: Investment in Freight Transportation
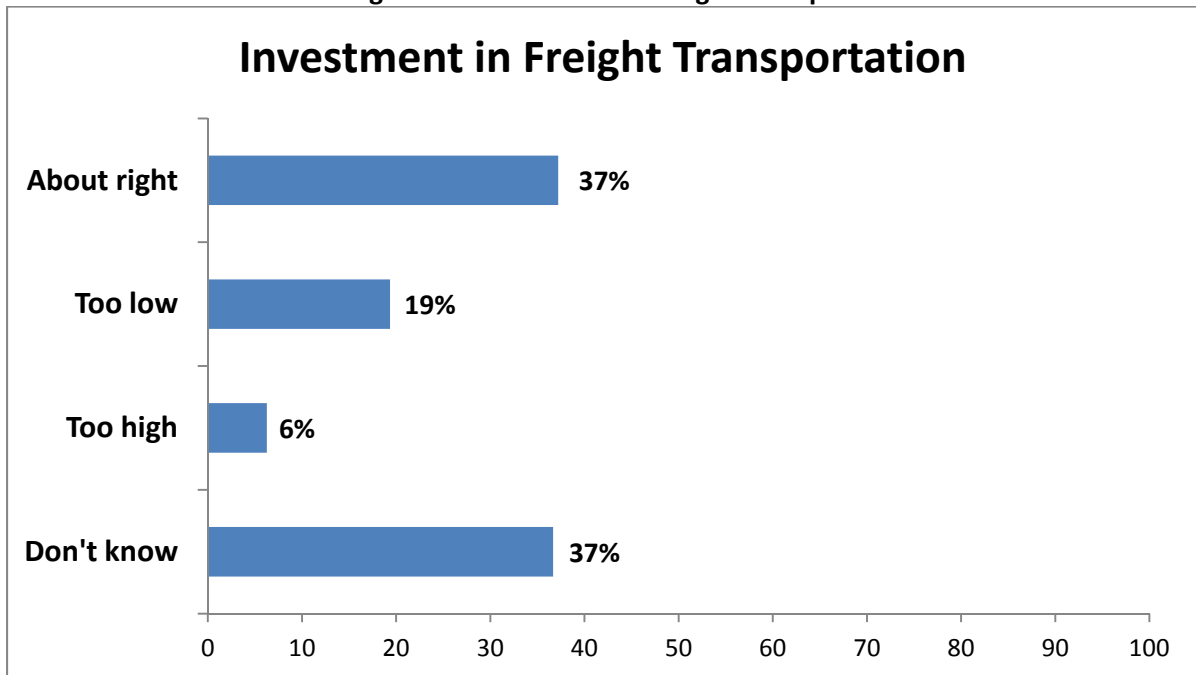
This high percentage of "don't know" responses could be due to a number of factors, including uncertainty about the intent of the question, a lack of understanding about the terms or other modes of transportation, an uncertainty about the correct funding of any transportation mode or infrastructure, as well as other nonresponse factors.

Transportation Investment Priorities

Respondents were asked to select one mode of transportation for Maryland to make a top investment priority. Respondents were read a list of modes: Rail, Roads and Highways, Air, and Maritime and had to choose one mode that should be Maryland's top investment priority.

Figure 19: Transportation Investment Priority

Top Investment Priority

Mode	Percent
Roads and Highways	63%
Rail	26%
Maritime	4%
Air	3%
Don't know	3%
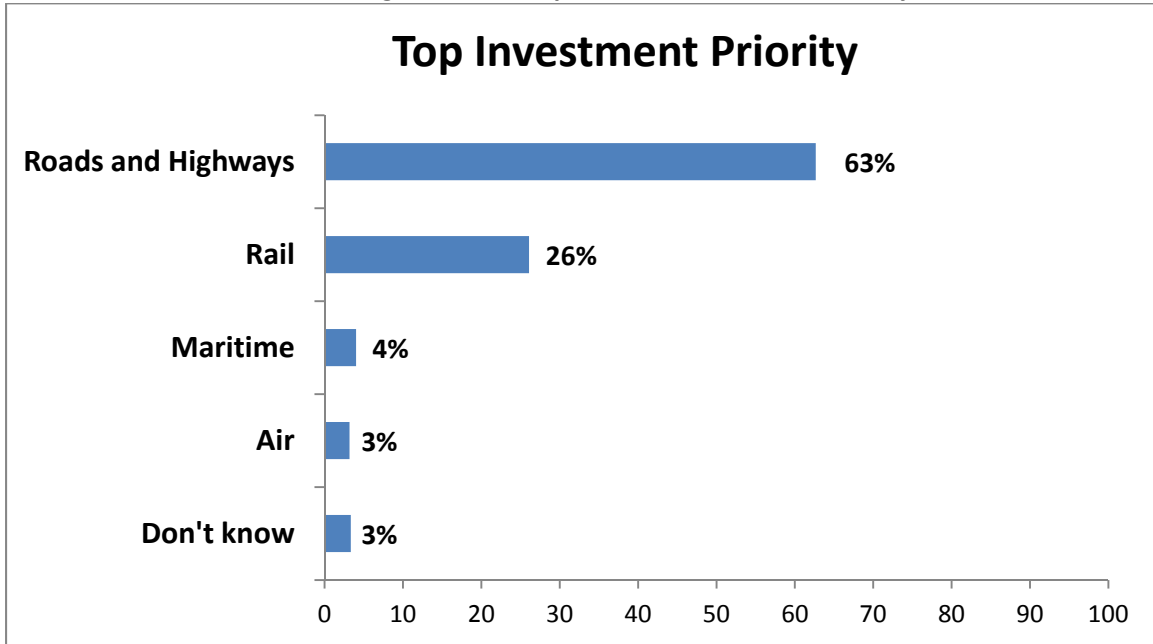
Survey Project Timeline

The MDOT Perceptions of Freight Survey was designed by the Schaefer Center with representatives of the MDOT Office of Freight and Multimodalism and Maryland State Highway Administration (SHA). The survey was programmed and fielded using Sawtooth Software's Ci3 Computer Assisted Telephone Interviewing (CATI) software by the Schaefer Center CATI Lab staff.

The CATI data collection took place at the Schaefer Center's CATI Lab between February 26, 2014 and August 19, 2014.

Survey Implementation

The sampling method used by the Schaefer Center is a list-assisted random digit dialing (RDD) approach. List-assisted RDD, while not as inclusive as pure RDD, is a much more efficient method of selecting households to survey. In pure RDD, all possible combinations of area code and three digit prefixes have randomly generated four digit suffixes attached. The resulting numbers include businesses, disconnected numbers, and numbers that have not been assigned. This greatly increases the number of non-productive calls that must be made. List-assisted RDD differs in that it assigns random numbers in "100 series" of numbers that have been demonstrated to have been allocated to likely respondents. This greatly increases the efficiency of the sample with minimal loss of working numbers.

The Schaefer Center purchased sample numbers from Survey Sampling, Inc. (SSI), which employs the list-assisted RDD approach to sampling. SSI routinely tests new "100 series" number banks for inclusion. In addition, SSI increases the data efficiency of the sample by screening the resulting sample against a list of disconnected and business telephone numbers before providing the numbers to the Schaefer Center. The survey questionnaire screened potential respondents to include only Maryland residents over the age of 18 with Maryland driver's licenses. Respondent selection was randomized within the household by asking for the respondent who met the screening criteria who had the most recent birthday.

The final sample is the result of two sampling frames, one for numbers assigned to landline households and one assigned to cellular telephones, known as dual frame sampling. The final sample was designed to achieve a margin of sampling error of 3.45% at the 95% confidence interval for the state as a whole.

Calculation of Response, Cooperation and Refusal Rates

Final disposition and outcome rates are based on the American Association for Public Opinion Research's (AAPOR) *Standard Definitions: Final Dispositions of Case Codes and Outcome Rates for Surveys*, and are in compliance with AAPOR's *Code of Professional Ethics and Practices*. You may view this and other AAPOR reports and documents on the Internet at http://www.aapor.org.

Table 1: Final Disposition and Outcome Rates

AAPOR Final Disposition Code	Category	Records
1.1	Complete	804
1.2	Partial	57
2.11	Callback	135
2.11	Refusal	2,349
2.33	Language barrier	118
3.12	Always busy	408
3.13	No answer	1,414
3.14	Telephone answering device	2,731
4.2	Fax/data line	151
4.3	Non-working/disconnected number	2,360
4.41	Number changed	32
4.51	Business, government office, other organization	476
4.7	No eligible respondent	224
Total		**11,259**

SHA Survey Outcome Rates

Response Rate (RR3) = **0.279**

Cooperation Rate (COOP3) = **0.934**

Refusal Rate (REF2) = **0.020**

Survey respondents who completed the survey (808) were asked over 40 questions, depending on survey skip patterns. These completed surveys were weighted to ensure that the resulting data properly mirrored the distribution of cellphone only, landline only, and dual use households within the overall population. This process ensures statistical validity in the analysis of the survey data. The resulting weighted number of respondent is equal to 795 individuals.

Using the final disposition codes described in Table 1.3 response and outcome rates are calculated by using the following:

I	= Complete Interview (1.1)
P	= Partial Interview (1.2)
R	= Refusal (2.10)
NC	= Non-contact (2.20)
O	= Other (2.0, 2.30)
UH	= Unknown if household/occupied (3.10)
UO	= Unknown, other (3.20 – 3.9)
e	= Estimated proportion of cases of unknown eligibility that are eligible

The Response Rate for the survey was calculated using AAPOR's Response Rate 3 calculation. The response rate is the number of complete interviews divided by the number of Interviews (completes plus partials) plus the number of non-interviews (refusals, non-contacts, others) plus an estimation (e) of the probability of the eligibility of households that were not contacted and are considered "unknown."

$$RR3 = \frac{I}{(I + P) + (R + NC + O) + e(UH + UO)}$$

The Cooperation Rate for the survey was calculated using AAPOR's Cooperation Rate 3 calculations. The cooperation rate is the number of complete interviews divided by the number of complete interviews plus partial interviews, plus refusals. This treats those unable to do an interview as also incapable of cooperating.

$$COOP3 = \frac{I}{(I + P) + R}$$

The Refusal Rate for the survey was calculated using AAPOR's Refusal Rate 2 calculation. The Refusal Rate is the number of refusals divided by the interviews (complete and partial) plus the non-respondents (refusals, non-contacts, and others) plus an estimation (e) of the probability of the eligibility of households that were not contacted and are considered "unknown."

$$REF2 = \frac{R}{(I + P) + (R + NC + O) + e(UH + UO)}$$

Weighting Methodology

Post-survey weighting to known population characteristics is used to correct samples that are not distributed in the same proportion as the population from which they are drawn. Post-survey weighting is based on the differences between the proportion of the sample with the characteristic and the proportion of the population that also shares that characteristic.

A proportional weight was calculated to adjust the final results by the mode of telephone use after the samples were combined. This was done using the latest estimates from the National Health Statistics Report, Number 70, December 18, 2013. This report provides an estimation of state-level household telephone status for wireless only/mostly; dual use; and landline only/mostly users. The sample statistics were derived from questions that asked the respondents to classify their telephone usage based on the whether they resided in a cell phone household, and if so, what the usage of cell phones was:

Do you or anyone in your household have a working cell phone?

    Yes
    No
    Don't know [DO NOT READ]
    Refused [DO NOT READ]

Of all the phone calls that your or your family receives, are...

    All or almost all calls received on cell phones
    Some on cell phones and some on regular home phones
    Very few or none on cell phones
    Don't know [DO NOT READ]
    Refused [DO NOT READ]

Respondents who indicated that they did not have a working cell phone in their household were considered landline only/mostly. If all or almost all of their calls were received on cell phones, they were considered wireless only/mostly households. If some calls were on cell phones and some were on regular phones, they were considered dual use households. Seven respondents refused to answer questions about cell phone usage and were not used in calculating the weighting factors. These cases received a weight of 1.00

Table 2: Weighting Factors and Weighted N's Statewide

Phone Group	Surveyed N	Estimated Population Proportion	Weighting Factor	Statewide Total Weighted N
Wireless only/mostly	251	.4750	1.515	157
Dual use	377	.2840	0.603	392
Landline only/mostly	173	.2240	1.037	257

One weight was created using the same proportional weighting formula, where the proportion of each group in the sample is divided by the proportion of each group expected in the population. In the standard proportional weighting formula below, (N) represents a known population, (n) represents the total sample size and (k) indicates a subsection of the respective total.

$$\pi_k = \frac{N_k / N}{n_k / n}$$

Since the increasing shift away from landline only to dual use or cell phone only/mostly households, using a dual frame sample that encompasses cell phones and landline phones has become important. Without then adjusting the proportion of each group through weighting, the results can still suffer from over or underrepresentation of opinions that may differ among the type of telephone usage. While there are other demographics that could be used to weight the survey results, it was not clear that the error inherent in weighting to change the proportions of males to females or age classifications would have been proper adjustments to the sample. While it is possible that opinion about freight differs among gender or age groups, there is no evidence that this would be an appropriate additional weighting practice for this survey.

Question Qintro
Hello. My name is _____.

I am calling from the University of Baltimore, Schaefer Center
for Public Policy, on behalf of the Maryland Department of
Transportation. We are conducting a survey about Transportation
Issues in Maryland. Your responses to this survey are anonymous,
and your identity will not be linked to your responses. Your
participation is also voluntary, and you may choose to stop
participating at any time.

The survey should take less than ten minutes. Do you have a few
minutes to answer some questions?

    1. CONTINUE WITH SURVEY
    2. REFUSED TO PARTICIPATE (OBJECTS to CELL PHONE CALL)
    3. CALL BACK
    4. LANGUAGE PROBLEM: CANNOT COMPLETE
     ------SELECT IF NO VALID CONTACT-------------
    8. BUSY, NO ANSWER, ANSWERING MACHINE
    9. BUSINESS, GOVERNMENT, DISCONNECT, ETC

Question qsafe
Are you in a place where you can safely talk on the phone
and answer my questions?

For example, if you are driving, I can schedule a time
to call you back.

    1. YES - Continue with survey
    2. YES - They are driving, schedule call back
    3. NO - Schedule a call back

Question Qintrox
In order to reach the broadest cross-section of the state, we are
interviewing the person with the most recent birthday who is also
over 18 years of age in each household. Would this description fit
you or does that description fit someone else who is at home?

    1. Yes (fits them)
    2. No (fits someone else)

Question askfor
   Is there another person at your home who does fit that description?

      1. Yes, will call to phone
      2. No, person not here....callback
      3. No. No one in household fits

Question QD1
   Are you 18 years of age or older?

      1. Yes
      2. No EXIT FROM SURVEY
      9. Refused

Question QD2
   Do you currently have a valid Maryland Driver's License?

      1. Yes
      2. No EXIT FROM SURVEY
      9. Refused

Question QD3
   Do you currently have a CDL Commercial Driver's License?

      1. Yes
      2. No
      9. Refused

Question QD4
   Do you drive trucks that are commonly referred to as "18

wheelers"?

    1. Yes   EXIT FROM SURVEY
    2. No
    9. Refused

Question QD5

About how often would you say you drive on Maryland's Interstate or Major Four Lane Highways? Would you say [READ LIST]

    1. Almost every day
    2. Very Often
    3. Only Occasionally
    4. Almost Never
    9. Refused

Question QD6

When you think of freight movement, what transportation mode typically comes to mind?
[SELECT EACH MENTIONED] [DO NOT READ LIST]

    1. Aviation [Airplanes]
    2. Trucking [Tractor Trailers, or 18-Wheelers]
    3. Maritime [Shipping through the Maryland Port System]
    4. Rail [NOT Passenger Rail like Amtrak or MARC]
    5. OTHER
    8. NO MORE. EXIT from QUESTION

Question Intro2

The Following Questions will ask about your perceptions and opinions of freight transportation in Maryland. For the purpose of the following Questions we are defining Maryland's freight transportation system as roads (trucks) and rails (freight trains). Although important, we are not interested in freight transported by ships for purposes of this survey. We are interested only in freight transportation by trucks - commonly referred to as 18-wheelers - and trains.

    PRESS ANY KEY TO CONTINUE

Question Q1
In general, how would you rate Maryland's freight
transportation system? Would you say it is [READ LIST]

    1. Excellent
    2. Good
    3. Only Fair
    4. Poor
    8. Don't know
    9. Refused

Question Q2
How important would you say it is for the state to ensure an
efficient freight transportation system? Would you say [READ
LIST]

    1. Very Important
    2. Important
    3. Unimportant
    4. Not At All Important
    8. Don't know
    9. Refused

Question Q3_1
How dependent would you say each of the following industries
are on the Maryland Freight Transportation system. For each would
you say Very dependent, just dependent, not very dependent, or not
at all dependent?

        AGRICULTURE

    1. Very dependent
    2. Just dependent,
    3. Not very dependent, or
    4. Not at all dependent
    8. Don't know
    9. Refused

Question Q3_2
How dependent would you say each of the following industries
are on the Maryland Freight Transportation system. For each would
you say Very dependent, just dependent, not very dependent, or not
at all dependent?

        MANUFACTURING

1. Very dependent
2. Just dependent,
3. Not very dependent, or
4. Not at all dependent
8. Don't know
9. Refused

Question Q3_3

How dependent would you say each of the following industries are on the Maryland Freight Transportation system. For each would you say Very dependent, just dependent, not very dependent, or not at all dependent?

ENERGY

1. Very dependent
2. Just dependent,
3. Not very dependent, or
4. Not at all dependent
8. Don't know
9. Refused

Question Q3_4

How dependent would you say each of the following industries are on the Maryland Freight Transportation system. For each would you say Very dependent, just dependent, not very dependent, or not at all dependent?

CONSTRUCTION

1. Very dependent
2. Just dependent,
3. Not very dependent, or
4. Not at all dependent
8. Don't know
9. Refused

Question Q3_5

How dependent would you say each of the following industries are on the Maryland Freight Transportation system. For each would you say Very dependent, just dependent, not very dependent, or not at all dependent?

CHEMICAL

1. Very dependent

2. Just dependent,
3. Not very dependent, or
4. Not at all dependent
8. Don't know
9. Refused

Question Q3_6

How dependent would you say each of the following industries
are on the Maryland Freight Transportation system. For each would
you say Very dependent, just dependent, not very dependent, or not
at all dependent?

RETAIL

1. Very dependent
2. Just dependent,
3. Not very dependent, or
4. Not at all dependent
8. Don't know
9. Refused

Question Q4

Thinking about freight movement in Maryland, do you view it
as primarily an issue that affects

[READ LIST SELECT ONE]

1. Urban areas
2. Suburban areas
3. Rural areas
4. Downtown areas, or the
5. Entire state equally
8. Don't know
9. Refused

Question Q5

Thinking about our freight network, which of the following do
you think benefits most from a good freight transportation system?
[READ LIST SELECT ONE]

1. Maryland small businesses
2. Maryland big businesses
3. Maryland consumers
4. Overseas manufacturers
5. Out-of-state businesses

6. Maryland agriculture
7. Don't know, can't say
9. Refused

Question Q6_1
  I am going to read you a list of items related to having an efficient
  freight system.
  For each item, tell me if you think each is a:
  very great benefit, just a benefit, not much of a benefit,
  or not much of a benefit at all.

        Increased economic activity

    1. Very great benefit
    2. Just a benefit
    3. Not much of a benefit, or
    4. Not much of a benefit at all
    8. Don't know
    9. Refused

Question Q6_2
  I am going to read you a list of items related to having an efficient
  freight system.
  For each item, tell me if you think each is a:
  very great benefit, just a benefit, not much of a benefit,
  or not much of a benefit at all.

        Job creation

    1. Very great benefit
    2. Just a benefit
    3. Not much of a benefit, or
    4. Not much of a benefit at all
    8. Don't know
    9. Refused

Question Q6_3
  I am going to read you a list of items related to having an efficient
  freight system.
  For each item, tell me if you think each is a:
  very great benefit, just a benefit, not much of a benefit,

or not much of a benefit at all.

Opportunities for private entrepreneurship

1. Very great benefit
2. Just a benefit
3. Not much of a benefit, or
4. Not much of a benefit at all
8. Don't know
9. Refused

Question Q6_4
I am going to read you a list of items related to having an efficient
freight system.
For each item, tell me if you think each is a:
very great benefit, just a benefit, not much of a benefit,
or not much of a benefit at all.

Maintaining our standard of living in Maryland

1. Very great benefit
2. Just a benefit
3. Not much of a benefit, or
4. Not much of a benefit at all
8. Don't know
9. Refused

Question Q6_5
I am going to read you a list of items related to having an efficient
freight system.
For each item, tell me if you think each is a:
very great benefit, just a benefit, not much of a benefit,
or not much of a benefit at all.

Lower costs for retail goods

1. Very great benefit
2. Just a benefit
3. Not much of a benefit, or
4. Not much of a benefit at all
8. Don't know
9. Refused

Question Q7
    For each of the following, please tell me if you think it is a very
    big problem, just a problem, not much of a problem, or not a
    problem at all.

    PRESS ANY KEY TO CONTINUE

Question Q7a
    Increased truck traffic in your neighborhood/community
    (commercial vehicles, delivery van, etc.)

    1. Very big problem
    2. Just a problem
    3. Not much of a problem
    4. Not a problem at all
    8. Don't know
    9. Refused.

Question Q7b
    Undue noise resulting from a truck (commercial motor
    vehicle) (i.e. braking, horn)

    1. Very big problem
    2. Just a problem
    3. Not much of a problem
    4. Not a problem at all
    8. Don't know
    9. Refused.

Question Q7c
    Double parked trucks interrupting traffic flow on streets

    1. Very big problem
    2. Just a problem
    3. Not much of a problem
    4. Not a problem at all
    8. Don't know
    9. Refused.

Question Q7d

Accidents involving trucks (commercial motor vehicle,
delivery van, etc.)

1. Very big problem
2. Just a problem
3. Not much of a problem
4. Not a problem at all
8. Don't know
9. Refused.

Question Q7e
Delays at railroad crossing due to freight train

1. Very big problem
2. Just a problem
3. Not much of a problem
4. Not a problem at all
8. Don't know
9. Refused.

Question Q7f
Passing or being passed by trucks (commercial motor
vehicle, delivery van, etc.) on the interstate or highway.

1. Very big problem
2. Just a problem
3. Not much of a problem
4. Not a problem at all
8. Don't know
9. Refused.

Question Q8
From the following list of issues, please tell me what you think
are the 3 most important issues related to the movement of goods in
Maryland? [READ SELECT UP TO THREE]

1. Highway Congestion on Interstates and highways
2. Wear and tear on infrastructure from heavy use of truck and rail
3. Getting products to their destination on time

4. Trucks affecting traffic on local streets

5. Trucks Traveling at High Speeds on roadways

6. Environmental issues such as air quality and storm water runoff

7. Safety issues such as railroad grade crossings or driver fatigue

8. Hazardous Materials Movement

9. Refused

10. NO MORE CHOICES: EXIT

Question Q8A

Which of the following is your biggest safety concern?

READ LIST: CHOOSE ONE

1. Railroad crossings

2. Truck Driver fatigue

3. Trucks driving at high speeds

4. Trucks carrying hazardous materials, or

5. Some Other concern [SELECT AND RECORD]

9. Refused

Question Q9

Compared to the level of investment in other forms of
transportation such as public transportation, bicycles,
pedestrian movement, or highway maintenance, do you think
the level of investment in Maryland's freight network is

1. Too high when compared to the other networks

2. About right when compared to the other networks

3. Too low when compared to the other networks

8. Don't know

9. Refused

Question Q10

In which of the following transportation modes would you like
to see Maryland make a top investment priority?

1. Rail

2. Roads and Highways

3, Air

4. Maritime

8. Don't know

9. Refused

Question Q11
The State of Maryland uses the Maryland Statewide Freight
Plan as one tool to help guide policy and investment in our freight
network. Before now, were you aware that Maryland had a plan?

1. Yes
2. No
9. Refused

Question Q12
How satisfied are you with how your community is designed to
handle freight movement? WOULD YOU SAY....

1. Very satisfied
2. Somewhat satisfied
3. Satisfied
4. Unsatisfied, or
5. Have Not given it much thought
9. Refused

Question demoint
Finally we have some questions that will be used for
classification purposes only.

Question sex
Respondent is:
[DO NOT ASK UNLESS UNSURE]

1. Male
2. Female

Question age
How old were you on your last birthday?

ENTER YEARS

IF REFUSED ENTER 00

Question race
What is your race/ethnicity? Would you say:

1. White - not Hispanic
2. Black - not Hispanic
3. Hispanic

4. Other
9. Refused [DO NOT READ]

Question educ
What is the highest grade or year of school you completed?
Would you say . . . . . .[READ LIST]

1. Less than high school
2. High school graduate or GED
3. Some college or Tech School (2 year degree)
4. College graduate (4 year degree), or
5. Graduate or professional education
6. Don't know [DO NOT READ]
9. Refused [DO NOT READ]

Question phone1
Do you or anyone in your household have a working cell phone?

1. Yes
2. No
8. Don't know [DO NOT READ]
9. Refused [DO NOT READ]

Question phone2
Of all the phone calls that your or your family receives, are...

1. All or almost all calls received on cell phones
2. Some on cell phones and some on regular home phones
3. Very few or none on cell phones
8. Don't know [DO NOT READ]
9. Refused [DO NOT READ]

Question income
For statistical purposes only, we need to know your
total family income in 2013 before taxes. Will you
please tell me if it was . . . READ LIST

1. Less than $25,000
2. Between $25,000 and $50,000,
3. Between $50,000 and $100,000,
4. Over $100,000.
5. Don't know [DO NOT READ]
9. Refused [DO NOT READ]

Question zipx
So that we can compare various regions of the state,
could you please give me your zip code....

ENTER: _____

Question ansmac
LEAVE MESSAGE ONLY FIRST TIME CALL GOES TO VOICEMAIL

I am calling from the University of Baltimore on behalf of
the Maryland Department of Transportation.
We are conducting a survey on the opinions of cell phone users.
This is NOT a sales call.

We will try to reach you again.