511 Virginia Evaluation

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Prepared for:
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Prepared by:
Nicole Swan
Stephanie Baker
Rewa Hintz
Tammy Trimble

Virginia Tech
1872
TRANSPORTATION INSTITUTE

EXECUTIVE SUMMARY

This document presents the results of the evaluation of the 511 Virginia Advanced Traveler Information System (ATIS), a system that operates on the I-81 corridor in Virginia. The evaluation focused on The Virginia Department of Transportation's (VDOT) three ITS goals for the 511 Virginia service:

- Productivity
- Customer Satisfaction
- Mobility and efficiency

Methods of collecting data for the evaluation included the following:

- Focus groups to obtain preliminary information about traveler behavior and to help create the phone survey
- A web and phone survey to obtain data directly from users of the service about their levels of satisfaction with the service and how it affected their behavior
- An awareness survey to measure general awareness of the service in the coverage area and across Virginia
- A retroactive data analysis of past performance measures to identify trends in user behavior and system performance, as well as factors affecting the service

Due to the small number of participants, please note that the findings of the focus group and the web survey are not necessarily representative of the general population. Moreover, it is important to note that the 511Virginia website was modified before the final report was delivered. Some findings and recommendations may not apply or have already been implemented.

FINDINGS

Below are the major findings for each of the methods conducted in this evaluation.

Focus Group

Major findings from the focus group included the following:

- Pre-trip information
    - Participants want, in particular, pre-trip information about weather and directions.
    - Participants are also interested in travel times, road conditions, construction, and tourism information.
    - Focus Group participants would change their travel plans if they received pre-trip information about weather, construction, traffic, accidents, and road conditions.
    - Commercial Vehicle Operators (CVO) participants wanted unique pre-trip information.

- En-route information
    - Participants primarily want en-route information about gas and rest stops.
    - Participants are also interested in distances to destinations, road conditions, and food locations. Information about hotels, attractions, weather, and congestion is also desired.
    - En-route information that is likely to affect the participants' travel includes weather and congestion.
- Other findings
    - Most participants travel with a cell phone (34 of 41 particpants, or 83%).
    - Fourteen of 41 participants had heard of 511 Virginia, and only 4 participants had ever called the service.
    - Residents were the most likely to have heard of 511, and tourists were the least likely to have heard of 511.
    - Those who did not call the service did so for the following reasons: there was no reason to call; they were satisfied with current information sources; or they did not know what it was.
    - Most participants were aware of 511 from VDOT signage.
    - CVO participants desire a channel specifically tailored to the trucking community.

Web Survey

Major findings from the web survey included the following:

- Eighty-nine of the 108 respondents (82%) live in Virginia.
- Forty-seven respondents (44%) were first time users of 511Virginia.org.
- Seventy-seven respondents (71%) were looking for travel conditions on the day that they filled out the survey.
- Sixty-three respondents (58%) indicated that they were satisfied with the Travel Conditions page.
- Seventy-five respondents (69%) indicated that they were likely to revisit 511Virginia.org on a regular basis.
- Satisfaction levels were high for 511Virginia.org among those surveyed, particularly for the home and the travel conditions pages.
- Over half of the respondents said that they are likely to visit the site again.

Phone Survey

The phone survey resulted in the following findings:

- Ninety-three percent of callers felt that they had increased awareness of available traveler information through access to 511.
- The majority of participants (233 of 377, or 62%) found out about 511 from the blue road signs on the interstates.
- The phone system did provide enough information and was generally timely enough for users to change their travel behavior based upon what they heard. Forty-nine percent of all callers indicated that they had changed their plans based upon what they had heard on 511

Virginia, and 166 of 212 callers (or 78%) indicated that they altered their plans by changing their route.

- Sixty-three percent of participants reported that they perceived the I-81 Region as either *very safe* or *somewhat safe*. In addition, having access to 511 Virginia has had little effect on users' opinions of the safety of the I-81 Region.
- Ninety percent of the survey respondents felt that 511 Virginia was *somewhat useful* or *very useful*.
- Ninety-nine percent of respondents indicated that they would call 511 Virginia again.

Awareness Survey

The awareness Survey produced the following results:

- Nineteen percent of participants report having heard of 511 Virginia.
- Of those who have heard of 511 Virginia, 8% (or 6 of 73) have used the service.
- Of those who have heard of 511 Virginia, 32% (or 23 of 73) are familiar with the services 511 Virginia provides.
- A majority of the respondents who have heard of 511 Virginia associate the following types of information with the service: road conditions, lodging, traffic/construction, and places to buy food.
- A majority of all respondents are most likely to use 511 Virginia for: emergency services, accidents/construction, and road conditions.

Data Analysis

The analysis of the retroactive data yielded the following information:

- Call and minute volumes are steadily increasing, lasting approximately 1 minute and 52 seconds.
- Peak simultaneous port use was 45 ports.
- The peak call date is Sunday between 2 and 3 pm. 511 Virginia calls peak at 2 pm and 4 pm. Winter months have the highest demand.
- Calls to the 511 number directly account for 91% of total calls. Wireless calls have decreased but still remain the majority of calls to the service. Approximately 26% of calls have been from out-of-state registered phones.
- The system provides an average of 172 events per month.
- Sixty-nine percent of all callers are seeking traffic information, and the remaining percentages are fairly evenly distributed amongst Construction, Weather, Road Conditions, and Services.
- 0.4% of all callers currently utilize the transfer function of the system.
- Traveler Services, predominantly lodging and food requests, has maintained 8% of all requests
- Bookmarks and repeat users are the significant users of the website.
- The website has shifted to being primarily traffic oriented year round.

RECOMMENDATIONS

Focus Group

The primary recommendations for the focus group results include the following:

- Marketing should be focused on education as well as awareness.
- Detours/alternate routes should be added to the system, if possible.
- A truck channel should be created on 511 Virginia.

Web Survey

The web survey data led to the following recommendations:

- Travel condition information needs to be moved to a more prominent place on the website, as it was found to be the most desired information.
- The travel conditions page needs to provide more and better information on road conditions, accidents, and delays.
- More cameras need to be provided.
- Marketing efforts need to be increased to reach people who are looking for travel condition information.

Phone Survey

Based upon the phone survey findings, the evaluation team has the following recommendations:

- More research should be done into both the CVO community's needs and usage of the 511 phone service.
- A permanent feedback loop on the phone system should be developed and monitored.
- More detailed traffic information should be provided to include the exact location and duration of road incidents.
- More usability research should be done regarding how to make the phone system easier to navigate.
- The timeliness of travel information available on 511 Virginia should be monitored and improved.
- The ratio of long-haul to short-haul drivers on I-81 should be determined, and travel information should be catered to the needs of the majority.
- The phone tree structure and information format should be tailored to better facilitate caller decision making, especially more in-depth alternate route information that can be more easily accessed from the traffic menu, if callers change their travel route.
- More research should be done into travel information that callers might desire if they do change their plans based upon information they hear on 511.
- A means to identify and record first time callers through the call software employed (e.g., Tellme, Inc. XML software) should be developed.
- The reasons behind some callers' perception that the voice recognition is not working should be investigated.
- The primary focus on the phone system should be providing timely traffic information.
- Callers' willingness to call 511 again should be investigated.
- More awareness marketing should be done.

- Efforts should be made to peak interest in the system along the road to increase calls, as 23% (87 of 383) of those surveyed indicated that they first called 511 out of curiosity or boredom.
- The marketing should slightly cater to males.
- 511 should be advertised on weather.com or weatherchannel.com (same site).
- Marketing should be directed to residents during work time (8am and 5pm, Monday – Friday) through either radio or billboards.
- In addition to I-81, I-77, and I-64, marketing should be focused along I-40, I-75, I-95, and I-65 welcome centers.
- Marketing or work should be focused within the top three states that use the 511 Virginia phone service (PA, NC, TN) to increase out-of-state awareness.
- To increase tourist awareness of the current 511 system, marketing should be focused within the top three tourist destinations (Blacksburg, Roanoke, and Harrisonburg), as well as the top tourist origination cities (Roanoke, Richmond, Fairfax, Woodbridge, and Winchester).

Awareness Survey

The awareness survey responses produced the following recommendations:

- 511 Virginia should go beyond awareness marketing. Awareness is found to be less than desired due to the gap between awareness and usage and between awareness and an understanding of the services provided.
- Current marketing efforts should be reevaluated, as usage and perception levels in the areas where marketing are focused are similar to areas where no marketing occurred.
- Travelers' perceptions and expectations for Emergency Services in 511 Virginia should be explored via focus groups or surveys.
- Categories not related to travel conditions should possibly be eliminated.
- 511 Virginia should be differentiated from other n11 services through enhanced brand recognition.

Data Analysis

The major recommendations stemming from the data analysis include the following:

- Implementing new changes during the winter should be avoided, as that is the highest usage and demand for the phone system. Better times are in April and September.
- A "Bookmark This Page" function should be built on the main page of the website.
- Trends in 511 call volumes and weather should be identified to help forecast peak usage day characteristics.
- A call data analysis function should be developed to automatically group calls using Nxx numbers.
- A provision for 511 data monitoring needs should be defined prior to awarding the state-wide RFP.
- In order to forecast minutes for the future state-wide 511 minute contract, a 1% adoption rate should be utilized for the first 18 months.
- The state-wide 511 system should be designed to coordinate with existing traveler data measures to better leverage 511 as an ITS investment.

- In order to monitor the wireless/land line ratio, the availability of ANI_II (e.g., ii digits) should be ensured by the state-wide provider.
- Radio time should be bought at the peak usage hours, which are 2pm-3pm and 4pm-5pm.
- Based upon the web site pages visited and surveyed interest, traffic information should be moved to the homepage for 511 Virginia. (This change occurred in September 2003.)
- Efforts should be made to ensure that the telecommunications provider can accommodate at least 45 simultaneous calls.
- More geographic gradation should be added to weather in the top three requested areas: Roanoke, Winchester, and Staunton.
- All link referrals to the new website (i.e., from travelshenandoah.com to 511.va.org) should be updated.
- New link referrals to 511virginia.org should be actively pursued, especially with weather and tourism sites, in addition to pages and information within VDOT's own website.
- Data on 511 Virginia should be updated more frequently during winter storms.
- If possible, post as specific information as possible (multiple incidents on I-81 from mm1 to 35 does not necessarily help travelers make better travel decisions).
- If desired, a quarterly contract for minutes should be negotiated with the telecommunications provider. This would allow VDOT to purchase access to fewer ports for the majority of the year and only purchase several dedicated ports during the peak months from December through March.
- While road signs have been successful with users as an initial source, marketing efforts should be focused upon the land-line users, which, at current rates, will soon overtake the wireless users.
- Further research should be done into the best methods for using CMS and 511 in conjunction.
- Since Hitbox Central no longer offers a free tracking service, a new log analysis software should be researched and implemented as soon as possible to allow for continuous trending.
- A web page rank increase on the top search engines under Virginia Travel (e.g., Google) should be actively pursued.
- The webpage should be configured to be able to accommodate 1024 x 788 screen resolutions, as well as the top Internet browsers.

Lessons learned during the course of the evaluation are presented at the conclusion of each section for the benefit of future evaluators.

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Chapter 1: Evaluation Approach

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CHAPTER 1: EVALUATION APPROACH

GENERAL APPROACH

511 Virginia is an Advanced Traveler Information System (ATIS) that is available along the I-81 corridor of Virginia. Deployed in February 2002, this service is available to users via landline and wireless phones by dialing 511. For a more complete look at the service and the history of its development, please refer to the Historical Development of the Travel Shenandoah Pilot Service report, available under ITS Reports at:
http://virginiadot.org/projects/constSTAN-I81proj-its-projects.asp

This evaluation of the 511 Virginia service was designed with the Virginia Department of Transportation's (VDOT) Intelligent Transportation System (ITS) goals for the 511 Virginia program in mind. VDOT managers determined these ITS goals from the I-81 ITS Framework, which was developed to guide the evaluations of VDOT's ITS projects. The Framework is available at:
http://www.itsdocs.fhwa.dot.gov//JPODOCS/REPTS_TE//13869.html

Objectives and measures of effectiveness were determined from the goals of productivity, customer satisfaction, and mobility and efficiency. Table 1 shows the identified goals, objectives, and measures of effectiveness, as well as the targeted methods for measurement.

Goal	Objective	Measure	Method
Productivity	Increase awareness of 511	Percentage of residents aware of 511	Focus Groups, Awareness Survey
Customer Satisfaction	Meet traveler needs, improve traveler experience	Percentage of residents using 511	Focus Groups, Awareness Survey
		Percentage of travelers using 511	Retroactive Data Analysis
		Travelers ability to access desired travel information	Focus Groups, Awareness Survey, Web Survey, Phone Survey
Mobility and Efficiency	Create corridor awareness of real-time condition information	Change in traveler awareness of travel information	Web Survey, Phone Survey, Retroactive Data Analysis
		Change in traveler confidence in safety of I-81	Phone Survey
	Reduce travel delays	Change in travel behavior	Focus Groups, Phone Survey

By employing a variety of data collection and measurement methods, the project team was able to triangulate, or come at the data from different angles, for the most comprehensive results.

Focus Group

The focus groups were undertaken primarily to gather information that could be used to enhance and refine the 511 Virginia phone survey. Information gathered focused on what information travelers desire and what sources they use to obtain it, as well as decision making factors during travel, cell phone usage, and awareness of 511 Virginia.

Web Survey

The Web Survey was administered to determine if the website was meeting user needs and achieving acceptable customer satisfaction levels.

Phone Survey

This survey was used to determine if the phone system was achieving acceptable customer satisfaction levels, as well as what effects the service has on user behavior.

Awareness Survey

This survey helped to measure the awareness level of 511 Virginia among the general population in Virginia, both within and outside of the 511 coverage area. This survey provided an understanding of what percentage of people are aware of the service, what percentage have used the service, and what their perception of the service is. This survey also gathered information about the types of information for which the respondents were likely to use the 511 Virginia service.

Data Analysis

This analysis was performed to document the actual user behavior patterns and to compare these finding to those of the awareness, phone, and web surveys.

A general discussion of the approach for each section of this evaluation is discussed below. For more specific details about the methodology, refer to the report for each specific section.

METHODOLOGY BY SECTION

Focus Groups

The Focus Groups were conducted across three of the major market segments on I-81; the market segments were identified through an analysis of 511 Virginia phone and web trend data. The market segments included residents, tourists, and commercial vehicle operators (CVO). Two focus groups were held with each market segment over a six-week period. The same questions were used across

all of the focus groups, with the exception of the tourist groups. A monetary incentive was given for participation.

Web Survey

Non-probability sampling methods were employed for the Web Survey. An open, unrestricted, self-selecting survey was posted on the 511Virginia.org website for six months, and users were invited to participate. The survey was accessed through a link posted on each page of the website. Incentives were not used to persuade visitors to complete the survey.

Phone Survey

The Phone Survey was conducted via phone interviews. Participants were recruited from the 511 phone system through an automated message informing users of the survey and the monetary incentive they would receive to participate. If users were interested in participating in the survey, they left their name and phone number. Project team members called the participants back and conducted the survey. The automated message was left on the system for two periods of approximately 20 days each.

Awareness Survey

The Awareness Survey was administered by the Center for Survey Research (CSR) at Virginia Tech. The Virginia Tech Transportation Institute (VTTI) purchased the placement of four questions on the Quality of Life in Virginia survey. CSR representatives conducted interviews with adult respondents in households across Virginia. The CSR employed a stratified disproportionate sampling design.

Data Analysis

The data for the Data Analysis was collected over an 18 month period and was analyzed for trends or other findings. Data was collected from three primary sources:

1. HitBoxCentral.com, which is used for website log analysis for website statistics.
2. Tellme Networks, Inc., which collects data for all calls to the 511 Virginia phone system.
3. VTTI administrative page for outputs from VTTI's specific data measurement needs.

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CHAPTER 2: FOCUS GROUP REPORT

EXECUTIVE SUMMARY

The primary purpose of these focus groups was to gather information that could be used to enhance and refine the 511 Virginia phone intercept survey. The main questions covered in the focus groups were:

- What types of information do travelers use pre-trip and en-route?
- What sources do travelers use to get this travel information?
- How does this information affect their travel decisions?
- How many people travel with cell phones, and how do they use them while traveling?
- Are travelers aware of 511 Virginia?
- What information do travelers want available on 511 Virginia?

The methodology used for these focus groups was very straightforward. The focus groups were conducted across three of the major market segments on I-81; the market segments were identified through an analysis of 511 Virginia phone and web trend data. The market segments included residents, tourists, and commercial vehicle operators (CVO). Two focus groups were held with each market segment over a six-week period. A total of 41 people participated in the focus groups. The same questions were used across all of the focus groups, with the exception of the tourist groups. Because time was limited with the tourist groups, several questions, of secondary importance, had to be excluded.

Appendix A contains raw results from the questions posed during the focus groups. The findings and recommendations presented in this focus group report were extrapolated from these raw results. While percentages are used in the findings and recommendations sections, *the numbers are not statistically significant*. There were several lessons learned during the design, recruitment, implementation, and analysis of the focus groups. The lessons learned are discussed in this report, as they may be helpful to others conducting similar evaluations.

Major findings from the focus group included the following:

- Pre-trip information
  - Participants want, in particular, pre-trip information about weather and directions.
  - Participants are also interested in travel times, road conditions, construction, and tourism information.
  - Focus Group participants would change their travel plans if they received pre-trip information about weather, construction, traffic, accidents, and road conditions.
  - Commercial Vehicle Operators (CVO) participants wanted unique pre-trip information.
- En-route information
  - Participants primarily want en-route information about gas and rest stops.
  - Participants are also interested in distances to destinations, road conditions, and food locations. Information about hotels, attractions, weather, and congestion is also desired.

    - En-route information that is likely to affect the participants' travel includes weather and congestion.
- Other findings
    - Most participants travel with a cell phone (34 of 41 participants, or 83%).
    - Fourteen of 41 participants had heard of 511 Virginia, and only 4 participants had ever called the service.
    - Residents were the most likely to have heard of 511, and tourists were the least likely to have heard of 511.
    - Those who did not call the service did so for the following reasons: there was no reason to call; they were satisfied with current information sources; or they did not know what it was.
    - Most participants were aware of 511 from VDOT signage.
    - CVO participants desire a channel specifically tailored to the trucking community.

The primary recommendations for the focus group results include the following:

- Marketing should be focused upon education as well as awareness.
- Detours/alternate routes should be added to the system, if possible.
- A truck channel should be created on 511 Virginia.

METHODS

The approach used in conducting these focus groups followed a simple ten-step process. The steps included:

1. Determining the research purpose
2. Identifying the sample
3. Securing the locations
4. Recruiting the participants
5. Designing the interview guide
6. Testing the interview guide
7. Conducting the focus groups
8. Transcribing the data
9. Analyzing the data
10. Reporting the findings

A brief discussion of these steps is included below and is followed by the outcome of this process (i.e., findings and recommendations).

Research Purpose

The purpose of these focus groups was to provide input to refine and enhance the phone intercept survey, the centerpiece of the 511 evaluation. Though the focus groups are not statistically significant, useful and interesting qualitative information resulted from the focus groups that were used by the VTTI research team in evaluating 511.

Sample

Focus groups were conducted across the three major market segments on I-81 that were identified through an analysis of 511 Virginia phone and web trend data. The market segments included residents, tourists, and commercial vehicle operators. Participants for the resident and commercial

vehicle operator focus groups were selected randomly from lists of individuals willing to take part in transportation-related research compiled by VTTI. The sample frame for the tourist focus groups were people visiting Massanutten Resort ski lodge on March 7, 2003.

Though an effort was made to get a mix of participants for all of the focus groups (i.e., various ages and genders), the point of the groups was to gather opinions from each market segment in order to enhance the phone intercept survey; the purpose was not to generate quantitative data that could be generalized to the wider population.

Focus Group Location

The resident and commercial vehicle operation focus groups were held at VTTI. The main conference room at VTTI was free; it had the space and resources necessary to run the groups, and it was available after regular working hours. VTTI is also located near I-81, and it was thought that participants recruited in the local area were likely to have driven on I-81 for personal or professional reasons.

Massanutten Resort ski lodge was the location selected for the tourist focus groups. A ski resort was chosen because skiing is a winter tourist activity in Virginia, and skiers tend congregate in lodges for meal breaks throughout the day. Massanutten Resort was also an ideal site because of its location near I-81.

Tourists are a difficult audience to organize logistically because it is assumed that many of them are traveling from outside of Virginia or from different parts of Virginia. To reach such individuals, the focus group had to be brought to them. For this reason, VTTI secured permission from Massanutten Resort's management to conduct focus groups in the ski lodge.

Participant Recruitment

Participants were recruited in slightly different manners, depending upon the market segment within which they fell. Participants for the tourist focus groups were recruited on an ad-hoc basis at Massanutten Resort ski lodge on March 7, 2003. People visiting the ski lodge were asked if they would like to participate in a focus group. The only screening criteria was that they must be 18 years or older and licensed to drive.

Holding ad-hoc focus groups in a ski lodge was a difficult endeavor because tourists do not want to sacrifice much, if any, holiday time. Ski lodges also tend to be noisy places, where holding participants' attention may be difficult. Despite the challenges, it was important to secure the opinions of this market segment. The tourist focus groups, though more difficult to organize, produced some very useful information and were well worth the effort.

Other methods of recruiting were considered for the tourist groups (e.g., intercepting tourists at welcome centers, gathering their contact information, and holding conference calls at later dates). Conducting in-depth interviews at Welcome Centers was another alternative considered. Yet after careful consideration, holding the focus groups at a ski resort was the preferred option because of the research team's desire to have face-to-face interactions with a group of tourists.

To deal with the challenges of the ski resort setting, the sessions with the focus groups were short in length, and the number of participants was small. Typically, a focus group lasts 90 minutes and

includes 7-10 people[1]. However, these parameters were not realistic for the chosen setting. Instead, the focus groups were brief, only 30-40 minutes, as skiers did not want to give up more time than would be required for a lunch break. Also, only 4 participants were gathered for each session so that the major questions could be covered with enough time for each participant to comment.

The CVO and resident focus groups were more traditional in terms of recruiting, setting, and conduction. Participants were recruited via the phone from a list of individuals who have stated that they are willing to participate in transportation-related studies. This list is maintained by VTTI. Four sessions were held at VTTI: two with residents and two with commercial vehicle operators. Twelve participants were recruited for each session with the expectation that 7-8 participants would show-up. Each session lasted 90 minutes. The sessions were scheduled on different days to accommodate participants. Also, a back-up date was set in case of inclement weather.

An aggressive recruiting approach was used with the CVO and resident focus groups. Individuals who agreed to participate in the resident and CVO focus groups were sent a confirmation letter that included directions to the focus group site, the time of the session, the type of refreshments provided, and information about subject payment. Also, a day or two prior to their sessions, participants were called to confirm their attendance.

All participants, regardless of the market segment they fell within, had to be at least 18 years of age and licensed to drive. Those who did not fit these basic criteria were screened out. As an example of what was used to screen for the appropriate participants, the screening guide for the tourist focus groups is shown in *Appendix B*.

Focus Group Interview Guide

The focus group interview guide for the resident focus group is located in *Appendix C*. This serves as an example of what the focus group facilitator used during the sessions. The interview guide was developed directly from the research questions that were the impetus for the evaluation. The focus group guide was similar for each of the market segments, though the tourist interview guide was truncated to deal with the shortened time period.

The questions in the interview guide were similar to the questions in the preliminary phone intercept survey. The interview guide was designed so that the information gleaned from the focus groups could be used to strengthen the phone survey. The interview guide was pre-tested on two groups of graduate students who live in Blacksburg. This was done to make sure that the questions solicited the information needed for the phone intercept survey and to determine how long it would take to get through all of the questions in the focus group interview guide. The interview guides were revised after the pre-tests.

Transcribing and Analyzing Data

The focus group sessions were audio recorded so that the focus group facilitator could concentrate on the session and not on note taking. The facilitator also had the support of a VTTI staff member who took notes in case there were any problems with the tape, helped with various activities, and assisted in handing the subject payments.

[1] Conducting Effective Focus Groups (2002). University Development Training Program, Donaldson Brown Hotel & Conference Center.

Tapes were made into transcripts, but no individual names were attached to comments. All personal information was coded.

Reporting Findings

The transcripts were used immediately by VTTI staff to enhance and refine the phone intercept survey. An in-depth analysis of the transcripts was conducted, and a written report was created noting useful qualitative information that arose from the focus groups. One of the most useful outcomes of the focus groups was that results were used to create pull-down menus for the phone survey. This focus group report is one of several inputs used to prepare the final evaluation of the 511 Virginia service.

Subject Privacy

Participants' privacy was honored throughout the entire study and will continue to be honored. At the beginning of each focus group session, participants were given an Informed Consent Form. The form used for the CVO focus groups is found in *Appendix D*. Participants were asked before the session to read the form carefully and to sign it. The focus group leader also assured participants that they could refuse to answer a question or dismiss themselves from the focus group at anytime.

VTTI staff have continued to uphold participant confidentiality. For instance, this report was written without the use of participant names or initials.

MAJOR FINDINGS

Pre-Trip Information

The first series of questions posed to focus group participants concerned pre-trip travel information. Participants were asked what types of information they seek before they travel, the sources they use to find travel information, the types of travel information that may affect their pre-trip travel decisions, and how the information affects their decisions. The evaluation team wanted to learn from these questions how people talk about pre-trip travel.

Participants from all of the focus groups identified weather and directions as specific types of information that they seek before a trip. Participants look for weather information on TV, particularly on the Weather Channel, and on the Internet at sites such as Weather.com and the VDOT website. Directions are gathered by participants via maps (i.e., VDOT State Map, Rand McNally, American Automobile Association (AAA), and Gazetteer), on the Internet (i.e., mapquest.com), or on destination websites (i.e., National Park System, Massanutten Ski Resort).

Participants from all of the groups, save one CVO group, said that they gather information on travel times and road conditions before departing on a trip. Participants look for travel times on the Internet at mapquest.com or on road maps. Road condition information is sought by participants on informational numbers (i.e., VDOT and VSP 1-800-numbers, 511 Virginia) as well as on the radio.

Other popular types of pre-trip information included construction and tourism information. Participants locate construction information by using the radio, TV, or by calling the department of transportation. Tourism information is found by participants on the Internet or by calling AAA.

CVO focus group participants had some unique types of pre-trip information that they look for including hazmat routes, special load routes, and low underpass information. They can find this information on special maps and by calling the department of transportation in whatever state they are going to travel through.

Participant responses varied when groups were asked what types of information, if any, would cause them to change their travel plans. Participants from most of the focus groups said that pre-trip information on weather, construction, traffic, accidents, and road conditions would cause them to vary their route or departure time.

En-Route Information

The second series of questions concerned the type of information participants seek en-route, the sources they use to gather this information, the types of information that may affect their travel, and how it may affect their travel. With this series of questions, the evaluation team wanted to learn how participants talk about the types of information they look for en-route. The team also wanted to find out if there were any patterns in the types of information participants seek, the sources they use, and how the information affects their travel decisions.

Participants in all but one CVO group said that they look for information about gas and rest stops while traveling. Other common types of en-route information included: distances to destinations, road conditions, and food locations. Participants in each of the focus groups said that they look for service information (i.e., gas, rest stops, and food) as well as distances on road signs, whereas road condition information is sought from overhead and roadside message boards as well as via informational numbers such as #77 and 511.

Information on hotels, attractions, weather, and congestion also were commonly mentioned. Hotel and attraction information is found by participants on road signs, billboards, and at rest stops. Participants said that they look for the more dynamic information (i.e., weather and congestion) on the radio. Congestion information also is sought by participants on message boards.

En-route findings indicate that static information is adequately provided to the traveling public via road signs and billboards. Dynamic information is addressed by several sources, including message boards, informational phone numbers, and the radio. It seems that 511 Virginia has the potential to become a major source for dynamic information as well as being used to supplement road signs as a source of static information.

All of the groups said that weather and congestion information were likely to affect their travel. Weather information causes participants to stop or change routes. If information is learned en-route about construction, traffic, accidents, and adverse road conditions participants also try to change their route.

Cell Phone Usage

The third series of questions concerned whether or not participants travel with cell phones and, if so, how they use them. The evaluation team wanted to determine whether or not most people travel with a cell phone and can access 511 to learn about travel conditions, tourism, and services. The evaluation team also wanted to find out if participants typically use their cell phones to gather the type of information provided by 511.

Most of the participants, 34 of 41 (83%), said that they travel with cell phones. The breakdown by market segment was 17 of 22 (77%) residents, 11 of 12 (91%) truckers, and 6 of 8 (75%) tourists. Several of the truckers said that their companies supply them with cell phones when they travel. Again, the percentages used in this focus group report are for the purpose of general comparison across the focus groups; the numbers the percentages are based upon are not statistically significant.

Some of the reasons participants said that they use their cell phones while traveling included:

- Letting people know they are running late,
- Getting directions and alternate route information,
- Making personal and business calls,
- Making hotel reservations,
- Checking road conditions,
- Communicating emergency and security information.

Several of these reasons could be satisfied by 511 (i.e., making hotel reservations and checking on road conditions).

511 Virginia Awareness and Usage

Overall, 14 of the 41 focus group participants (34%) had heard of 511 Virginia. Residents were the most likely to have heard (10 of 21, or 48%), and tourists were the least likely (0 of 8). This finding is probably due to the fact that all of the residents invited to the focus groups live near the I-81 Corridor, while none of the tourists involved live near I-81. Most of the tourists involved in the focus groups live in Eastern Virginia, around Richmond and Norfolk.

An interesting result of the 511 awareness questions was that out of the 14 who had heard of 511 Virginia, only 4 had ever called the service. Reasons given for not calling included:

- No reason to call,
- Satisfied with current information sources,
- Didn't know what it was.

These findings seem to indicate that marketing efforts need to move beyond awareness to education. The traveling public must be educated about the service so that they understand what the service provides and how it can meet their information needs.

Participant awareness of 511 Virginia was due in large part to VDOT signage. VDOT's 511 signs were noted in every focus group as a way people had learned about 511. Yet people were not sure what 511 was by only reading the sign. The signs appear to be doing a good job of raising awareness, but education is still required. Other avenues of learning about 511 mentioned by participants included the newspaper, friends, and co-workers.

When all of the participants were asked, regardless of if they had heard of 511 or not, what information they would like to have on a traveler information service, they had several suggestions, including:

- Restaurants
- Road Conditions
- Weather Conditions
- Accident Information
- Traffic Conditions
- Alternate Routes and Detours

Most of this information, with the exception of alternate routes and detours, is already provided on 511. Participants also said that, in general, they want the information to be quickly accessible and accurate.

When CVO participants were asked what would need to be on a traveler information service for them to call, they said that they want a channel specifically tailored to the trucking community. CVO participants do not want to wait through menus of information unrelated to their business travel. The CVO participants also identified some information (i.e., low underpass bridges) that they would like that is probably not of interest to residents or tourists. For a complete list of what participants said that they would like to have on 511, please see *Appendix A*.

RECOMMENDATIONS FOR THE 511 VIRGINIA SERVICE

The primary recommendations pulled from these focus group results include:

1. Focusing marketing on education as well as awareness,
2. Adding detours/alternate routes to the system if possible,
3. Creating a truck channel on 511.

The first recommendation is that those managing 511 Virginia focus resources on education and outreach. The awareness campaign seems to be working well; now resources also should be used to assist with education about what the service provides. This recommendation stems from the fact that while 14 focus group participants (34%) were aware of 511 Virginia, only 4 (29%) of those aware had called the service. Participants did not know what 511 was or understand its benefits. These results seem to indicate that 511 road signs should be followed closely and supplemented by educational and other promotional materials.

Another recommendation is that detour or alternate-route information be added to the information provided by 511 Virginia. In almost every case, pre-trip or en-route, participants said that travel information, such as accidents, may cause them to alter their route. Many participants seemed comfortable with just using maps or getting off the interstate and figuring out where to go. Yet it may be helpful to provide recommended routes to those who do not have a map on hand and are unfamiliar with the area. If route changing is a primary behavior in response to travel information regarding traffic, weather, and construction, it may be helpful to have some control over where travelers funnel off of the interstate. It is also notable that focus group participants mentioned detours and alternate routes as types of information they would like on 511.

A final recommendation is that 511 Virginia should include a channel specifically for truckers. Not only did one participant specifically request this, but several mentioned that they look for information such as low underpass bridges and hazmat routes that would likely not appeal to tourists or residents but that is essential to the safe and efficient movement of trucks through the I-81 Corridor.

METHODOLOGICAL LESSONS LEARNED

There were several lessons learned throughout the design, recruiting, implementation, and analysis stages of the focus groups that may be helpful to others conducting similar evaluations. These lessons are shown in the table below and are described in more detail in this section.

Table 1. Lessons Learned

Focus Group	Lesson Learned
Design	Have a back-up plan for those with difficulty reading and writing.
	Consider analysis while designing the interview guide.
Recruitment	Over-recruit commercial vehicle operators.
Implementation	Keep good flip chart notes throughout each session to help with analysis.
Analysis	If focus group are being used as an input to the creation of a survey, leave ample time between the completion of focus group transcripts and the design of the survey.
	Transcripts and flip chart results are very helpful in the creation of pull-down menus for a survey.

There were several lessons learned during the design phase of the focus groups. The first lesson is to be sure to have a back-up plan in case participants have literacy problems. Facilitators should be aware that more than 20 percent of adults in America read at or below a fifth-grade reading level[2]. During these focus groups, it was discovered that at least one or two people had trouble with writing activities. Adjustments were made so that written activities could be done verbally. Everything discussed by participants was captured in writing by the facilitator and was then verbalized several times. This switch was not a problem as the activities lent themselves to either method (i.e., participant or facilitator written). Yet this experience is a reminder that back-up plans should be in place and that activities should be flexible so that everyone can participate comfortably.

In the design stage, the facilitator should also consider carefully the type of analysis that will be done. If outcomes are considered thoroughly during design, results will be obtained in a format that is easier to analyze. For example, the facilitator for these focus groups needed to quickly compare results across all of the focus groups because the team designing the survey instrument was on a tight schedule and needed the results. To achieve this goal, the facilitator designed the process so that participant responses were structured and captured in the form of a matrix on flip chart paper. Afterwards, it was easy to look across all six matrices to see where groups had answers that

[2] Office of Adult Education and Literacy, Virginia Department of Education. http: //www.pen.k12.va.us/VDOT/Instruction/Adult/facts.html

overlapped and where they came up with unique responses. This design enabled the facilitator to produce key focus group results quickly for the team that was designing the survey.

A pre-test is also a good design tool. Some helpful information was gleaned during the two pre-tests conducted by VTTI. The results enabled the facilitator to eliminate or collapse together questions that did not result in useful findings. Pre-testing is critical for the focus groups not only for question design, but also to assess how much time each question takes to explore and to determine how to capture responses. The time spent in designing a solid interview guide and focus group process will benefit the implementation and analysis stages.

An interesting lesson learned during the recruiting process was that CVO participants should be over-recruited. Only 12 of the 24 commercial vehicle drivers who agreed to attend a focus group session participated. This occurred despite an aggressive recruiting approach.

During the recruiting process for the CVO groups, participants were called from a list of those people who had indicated that they were willing to take part in research at VTTI. Once a participant was contacted and agreed to participate, a letter was sent providing directions to the focus group facility as well as a confirmation of the date and time. Finally, the day before each session, all participants were called and reminded of their commitment.

Over recruitment is not recommended for the resident focus groups because 21 of the 24 residents who experienced the same recruiting approach as the CVO group attended their sessions. Recruiters should bear in mind that truckers are a wonderful resource, but a hard one to secure. However, this does not mean that they should be overlooked because those who did attend were easy to work with and were very informative.

In addition, the CVO and tourist focus groups were the hardest to organize because the populations are transient. One method of dealing with mobile or transient groups is to take the focus group to where participants congregate. This approach worked well with the tourists who were contacted, recruited, and used as participants while at Massanutten Ski Resort. The only adjustment in design with this type of group is that the session may need to be shorter to accommodate people who are on vacation or traveling and are thus not willing to give up more time than it takes to have a meal break.

It was very helpful during and after the focus groups to have detailed flip chart notes. The results were useful when it came time to conduct analysis and create reports. Keeping detailed flip chart notes also allows participants to reflect on what they have said and gives them an opportunity to restate things if they do not agree with the way something has been captured on the flip chart.

Another lesson learned is that transcripts should be completed with ample time for review by those using them for survey design. Transcripts were done in this case for each focus group, but the schedule was such that the focus groups ran close to the deadline set for the completion of the survey instrument. While transcripts were quickly created and used in the survey design and in this analysis, it would have been better to have had more time between focus groups and the survey design deadlines.

In terms of how the focus group transcripts and flip chart results were used, many of the responses were useful in the creation of pull-down menus in the survey. For example, the focus group question

on how certain types of information, such as traffic, affect travel behavior resulted in a pattern of answers across the focus groups. Most participants said that such information would cause them to change the time of their travel or to take an alternate route. The ideas provided by participants were tallied, and those that appeared most frequently were made into pull-down menus in the phone survey. This was probably one of the most helpful things about the focus groups in terms of its use in the phone survey design.

APPENDIX A: 511 EVALUATION FOCUS GROUP RESULTS

Findings by Question

This appendix contains the raw results from the questions that were posed during the focus. Results are broken down by focus group. Interviews were conducted with several types of groups, or market segments, including residents, commercial vehicle operators, and tourists. Two groups were conducted for each market segment.

Questions were posed during the focus groups about the following subjects: pre-trip and en-route traveler information, cell phone usage, and 511 Virginia awareness. Below are the results, by question, of each focus group.

Results for Pre-Trip Travel Information Questions

1. Before traveling what types of information, if any, do you seek?

Type of Information	Resident 1	Resident 2	CVO 1	CVO 2	Tourist 1	Tourist 2
Weather	X	X	X	X	X	X
Directions	X	X	X	X	X	X
Travel Time/Distance	X	X	X		X	X
Road Conditions	X	X		X		X
Construction				X	X	X
Attractions/Tourist Information	X	X				X
Gas Prices/Fuel Locations	X			X		
Expenses (Tolls, Currency Exchange)				X	X	
Accidents				X	X	
Traffic					X	X
Events	X					
Food/Restaurants	X					
Alternate Routes		X				
Scenic Routes					X	
Hotels & Motels						X
DOT Inspection Information			X			
Low Underpass Information			X			
Attitude of States Passing Through			X			
Detours				X		
Hazmat and Special Load Routes				X		
Rest Stops				X		
Citizenship Information (Canada)				X		

INFORMATION IN SHADED AREA WAS IDENTIFIED BY AT LEAST THREE FOCUS GROUPS

2. What are your sources for pre-trip information?

	Sources	Resident 1	Resident 2	CVO 1	CVO 2	Tourist 1	Tourist 2
WEATHER	TV (Weather Channel)	X	X	X	X		X
	Internet (Weather.com, VDOT website, Weather Underground, Destination websites)	X	X			X	X
	1-800 Numbers (VSP, VDOT)	X		X	X		
	National Weather Band Scanner		X	X			
	CB Radio			X	X		
	Radio	X					
DIRECTIONS	Maps (VDOT, Gazeteer, Rand McNally, AAA)	X	X	X	X	X	X
	Internet (Mapquest, Destination website)	X	X	X	X	X	X
	Knowledgeable Person (Company, Customer, Family, Destination)			X	X	X	X
	Dispatch (Trucking Company)			X	X		
	CB Radio			X			
TRAVEL TIME & DISTANCE	Maps (AAA, Rand McNally)	X	X	X			X
	Internet (Mapquest)		X			X	X
	Knowledgeable Person (Company, Destination)			X			X
	TV	X					
	Radio	X					
	Dispatch (Trucking Company)			X			
ROAD CONDITIONS	Information Numbers (DOT, VSP, 511 VA)	X	X		X		X
	Radio	X	X		X		X
	TV		X				X
	Internet		X				
	CB Radio				X		
	AAA						X
CONSTRUC -TION	Radio				X	X	X
	Informational Numbers (DOT)				X		X
	TV					X	X
	AAA						X
	CB Radio				X		
TOURISM	AAA	X	X				X
	Internet (Destination, Mapquest, State Parks)	X	X				X
	Maps (State Maps, Gazeteer)	X	X				
	Brochures (Rest Stops, Hotels)		X				
	Chambers of Commerce & Tourism Bureaus		X				
	TV		X				
	Family & Friends		X				

INFORMATION IN SHADED AREA WAS IDENTIFIED BY AT LEAST THREE FOCUS GROUPS

3. What if any pre-trip information would affect your travel plans? If so, how does it affect your travel?

	Affect on Travel	Resident 1	Resident 2	CVO 1	CVO 2	Tourist 1	Tourist 2
WEATHER	Change route	X		X	X		
	Change departure time	X				X	X
	Cancel trip	X	X				X
	Reschedule trip	X	X				
	Change Vehicle	X	X				
	Drive instead of fly		X				
	Stay at a hotel	X					
	Put supplies in car	X					
CONSTRUCTION							
	Change route	X	X		X	X	X
	Change departure time	X	X			X	X
	Add buffer time	X	X				
TRAFFIC	Change departure time	X	X			X	X
	Stay home (event/holiday)		X				
	Change route					X	
ACCIDENTS	Change route	X	X		X	X	
	Change departure time	X	X			X	
	Add buffer time	X	X				
	Go shopping	X					
ROAD CONDITIONS	Change route		X		X		X
	Change departure time		X				X
	Add buffer time		X				
	Cancel trip						X
LOW UNDERPASS INFORMATION	Change route			X			
ATTITUDE OF STATE TOWARDS TRUCKS	Avoid trip			X			
TOLLS	Choose cheaper way					X	
DISTANCE	Take quickest route					X	

INFORMATION IN SHADED AREA WAS IDENTIFIED BY AT LEAST THREE FOCUS GROUPS

Results from En-Route Travel Information Questions

1. While you are traveling, what types of information, if any, do you use?

Type of Information	Resident 1	Resident 2	CVO 1	CVO 2	Tourist 1	Tourist 2
Gas	X	X	X		X	X
Rest Stops	X	X	X		X	X
Distance	X	X			X	X
Road Conditions	X	X	X			X
Food	X	X	X			X
Hotels	X	X				X
Weather		X		X		X
Congestion (Rush Hour/Events/Traffic)		X		X	X	
Attractions (Things to Do/Tourism)	X	X				X
Speed Limits		X	X			
Directions	X					X
Construction			X		X	
Accidents			X			X
Truck Stops			X			
Alerts from VDOT				X		
Police					X	
Bridge/Tunnel Openings					X	
Emergency Stop Areas					X	

INFORMATION IN SHADED AREA WAS IDENTIFIED BY AT LEAST THREE FOCUS GROUPS

2. What are your sources for this en-route information?

	Sources	Resident 1	Resident 2	CVO 1	CVO 2	Tourist 1	Tourist 2
GAS	Road Signs	X	X	X		X	X
	Billboards	X	X				X
	Exit Guide			X			
	CB			X			
REST STOPS	Road Signs	X	X	X		X	X
	Map		X				
	Radio			X			
DISTANCE	Mile Markers	X	X			X	X
	Road Signs (Airport, Exits)	X	X			X	X
	Billboards	X					
	Maps		X				X
ROAD CONDTIONS	Informational Numbers (VSP, 511 VA)	X	X	X			
	Message Boards (Overhead, Roadside VMS)	X	X				X
	Radio	X	X	X			
	CB Radio	X		X			
	Road Signs		X				X
	Rest Stops	X					
	Truck Stops	X					
FOOD	Road Signs	X	X	X			X
	Billboards	X	X				
	Brochures/Directory	X					
	Location Displays (Golden Arches)		X				
HOTELS	Rest Stop	X	X				
	Road Signs		X				X
	Welcome Center	X					
	Informational Numbers						
	GPS		X				
WEAT-HER	Radio		X	X			X
	CB			X			X
	Informational Numbers (511)		X				
CONGES-TION	VMS Signs		X		X	X	
	Radio		X		X	X	
	CB				X		
ATTRAC-TCTIONS	Road Signs	X					X
	Billboards		X				X
	GPS		X				
	Maps		X				

INFORMATION IN SHADED AREA WAS IDENTIFIED BY AT LEAST THREE FOCUS GROUPS

3. What if any en-route information would affect your travel plans? If so, how does it affect your travel?

WEATHER	Affect on Travel	Resident 1	Resident 2	CVO 1	CVO 2	Tourist 1	Tourist 2
	Stop (Get off road)	X	X				X
	Change route	X			X		
	Stay in hotel	X					
	Slow down	X					
	Put on 4 wheel drive	X					
	Call ahead to those expecting driver	X					
	Try to beat storm		X				
CONSTRUCTION							
	Change route	X	X			X	X
	Slow down	X					
	Get off at exit			X			
TRAFFIC	Change route	X			X	X	
	Call ahead to those expecting driver	X					
	Slow down	X					
	Stop to eat		X				
ACCIDENTS	Change route	X					X
	Stop to eat	X					
	Call ahead to those expecting driver	X					
	Slow down	X					
	Get off at exit			X			
ROAD CONDITIONS	Change route		X	X			X
TOURIST ATTRACTIONS	Stop and sight see	X					
FOOD	Stop and eat		X	X			
DETOURS	Change route					X	
BRIDGE/TUNNEL OPENINGS	Change route					X	
POLICE PRESENCE	Slow down					X	
	Change route					X	

INFORMATION IN SHADED AREA WAS IDENTIFIED BY AT LEAST THREE FOCUS GROUPS

Results from En-Route Cell Phone Usage Questions

1. How many of you travel with a cell phone?

Yes/No	Resident 1	Resident 2	CVO 1	CVO 2	Tourist 1	Tourist 2	Totals
Yes	9	8	4	7	3	3	**34**
No	2	2	1	0	1	1	**7**
Totals	11	10	5	7	4	4	**41**

2. What do you use your cell phone for when you are traveling?

- Let people know I will be late
- Directions and alternate route information
- Emergencies (personal and to report other emergencies)
- Personal and business calls
- Make hotel reservation
- Check road conditions on 511 Virginia
- Security

Results from 511 Virginia Questions

1. How many of you have heard of 511 Virginia?

Yes/No	Resident 1	Resident 2	CVO 1	CVO 2	Tourist 1	Tourist 2	Totals
Yes	5	5	1	3	0	0	**14**
No	6	5	4	4	4	4	**27**
Totals	11	10	5	7	4	4	**41**

Yes/No	Resident 1	Resident 2	Totals
Yes	5	5	**10**
No	6	5	**11**
Totals	11	10	**21**

Yes/No	CVO 1	CVO 2	Totals
Yes	1	3	**4**
No	4	4	**8**
Totals	5	7	**12**

Yes/No	Tourist 1	Tourist 2	Totals
Yes	0	0	**0**
No	4	4	**8**
Totals	4	4	**8**

2. For those of you said you are aware of 511, have you ever used it?

Yes/No	Resident 1	Resident 2	CVO 1	CVO 2	Tourist 1	Tourist 2	Totals
Yes	2	2	0	0	N/A	N/A	**4**
No	3	3	1	3	N/A	N/A	**10**
Totals	5	5	1	3	N/A	N/A	**14**

3. How did you hear about 511?

Type of Information	Resident 1	Resident 2	CVO 1	CVO 2
Road Signs	X	X	X	X
Newspaper	X			X
Friends or Co-workers	X	X		
Smart Road Tour	X			
VDOT Website		X		
Radio				X

INFORMATION IN SHADED AREA WAS IDENTIFIED BY AT LEAST TWO FOCUS GROUPS

4. Why have those of you who have heard of 511 Virginia not called?

- No reason to call
- Satisfied with where I get my information
- Want trip routing and it doesn't provide
- It doesn't provide detailed directions
- Didn't want to deal with menus
- Didn't know what it was

5. For those of you who have not used 511, what would need to be on a traveler information service for you to become a user?

Type of Information	Residents 1	Resident 2	CVO 1	CVO 2	Tourist 1	Tourist 2
Road conditions		X	X			X
Weather conditions			X	X		X
Restaurants		X				X
Accident information (and delay)			X			X
Quickly accessible and accurate information				X	X	
Traffic conditions				X		X
Detours/alternate routes				X		X
Operator access for traffic information and emergencies			X	X		
Current conditions	X					
Directions		X				
School closings		X				
National alert information		X				
Emergency information			X			
Avenue to report drunk drivers			X			
Truck parking information at hotels			X			
Delay information				X		
Separate truck and car channels				X		
Lane closures				X		
Rest areas						X
Hotel information (with ratings)						X
Ability to specify location or region						X
Voice activated					X	
User friendly						X

INFORMATION IN SHADED AREA WAS IDENTIFIED BY AT LEAST TWO FOCUS GROUPS

APPENDIX B: 511 EVALUATION FOCUS GROUP SCREENING GUIDE

Tourist Recruitment and Screening Tool

Recruiter Directions: Begin recruitment by 11:00 on Friday morning.

Hello my name is _____and I work for the Virginia Tech Transportation Institute.

Today we are giving $30 to people who agree to participate in a 40 minute focus group about traveler information.

We are conducting these focus groups as part of an evaluation of traveler information in Virginia. The evaluation is being sponsored by the Virginia Department of Transportation.

The information you share will be used strictly for research purposes. Your name and personal information will remain confidential and will not be shared with anyone.

Would you be interested in participating?

- *If the participant says no, thank the participant for his or her time.*
- *If the participant says yes, go on with the screening.*

To participate in our focus group, you must have a valid drivers license, you must be on vacation here today, and you must be 18 years or older.

Do you meet these criteria?

- *If the participant says no, thank the participant and let him or her know that he or she cannot participate.*
- *If the participant says yes, go on with the screening.*

Thank you for agreeing to participate. We are going to be convening two focus groups: one at 12:00 and another at 1:00.

Which time would you prefer?

Note that if not enough people are secured for either the 12:00 or the 1:00 session, then there is time to do another focus group at a later time.

Write down the participant's name and the time he or she wishes to participate. Point out the table where the focus group will take place, hand him or her a business card with the time of the session on the back, and go onto the next person. Keep going until six people have been recruited for each session. This number assumes that only four people will show up.

APPENDIX C: 511 EVALUATION FOCUS GROUP INTERVIEW GUIDE

RESIDENT INTERVIEW GUIDE (90 minutes)

Facilitator Introduction (*5 minutes*)
Hello, my name is Stephanie Baker and I am a facilitator at the Virginia Tech Transportation Institute. We are working on an evaluation of traveler information services in Virginia. This study is being sponsored by the Virginia Department of Transportation. There are no right or wrong answers; we are just interested in your opinions as residents of Virginia living along I-81.

This focus group is strictly for research purposes: **we are not selling anything,** and **we will not connect anything you say with your personal information**. If you feel uncomfortable at any time, you can refuse to answer a question or you can choose to leave.

Did everyone fill out one of these **informed consent** forms? Please make sure that you signed two copies of the signature page; keep one for yourself, and please pass the other to my colleague now.

There is a **tape recorder** in the room that will be used to create a transcript of this session. The information on the tape will not be associated with your personal information.

This session will run **90 minutes;** we are very appreciative of the time that you are spending with us and will honor it by not running over. Please stay after the session if you would like to receive the payment we have for your participation. This amount is **$40** per participant. Only participants who stay for the entire session will receive a payment.

The bathrooms are located around the corner to your left. There are also refreshments available in the back. If you would like something, please go ahead and help yourself before we get started, and then we will have a break later. Please turn off any cell phones/beepers unless you need to have it on for emergency reasons. This will help us to avoid distractions and to finish on time.

I would like us to observe several ground rules throughout the session. Please let me know if you are uncomfortable with any of them and we can change them. If not, let's agree to abide by them for the next 90 minutes. Are these o.k.? Are there others you want add?

Ground Rules

- Listen to Each Other
- Participate Fully
- No Side Conversations
- Spelling does not count
- Finish on time
- Criticism of others or their ideas is not allowed

Introductory Questions (*5 minutes*)—*write introductory questions up on flip chart.*

- **Facilitator Question**
  - Please write your first name on a name label. Write Big.
  - Lets go around the room and have everyone state your first name, where you are from, and how often and why you travel on I-81.
- **Activity**: Go around and have everyone introduce themselves; start with facilitator.

Travel Information (*30 minutes*)—*draw matrix on flip chart ahead of time.*

- **Facilitator Question**
  - Before traveling, what types of information, if any, do you seek?
  - Take a moment and write these down on colored paper. Write Big. Only one idea per sheet. Use five words or less.
  - Let's go around the table and have each person share one type of information (repeat).
- **Activity**: Conduct a round robin until all of the main ideas are up on the wall.

- **Facilitator Question**
  - Do you see ideas on the wall that we can cluster or duplicate ideas that we can take down?
  - Does the person who put the idea up agree that it should be clustered this way?
  - What should we call this cluster?
- **Activity**: Point to the wall of ideas. Cluster the ideas together and add labels to them if possible.

- **Facilitator Question**
  - What are your sources/where do you go for this information?
- **Activity**: Take each idea from the wall and transfer it to the matrix. Go through each major type of information the group listed, and through an open discussion add the source(s). Encourage open discussion.

PRE-TRIP TRAVEL INFORMATION

Type of Info	Sources of Info	Decision Making

- **Facilitator Question**
  - Would any of these types of information alter your travel if you found it out pre-trip?
- **Activity**: Put a check in the decision-making column next to those that would alter travel.

- **Facilitator Question**
  - How, if at all, would this pre-trip information change your plans? What would you do differently than you had planned, if anything?
- **Activity**: Open discussion: keep track in the decision-making column of what people say for each item on the flip chart.

- **Facilitator Question**
  - Is there any other type of information, not up on the flip chart, that would alter your travel if you found it out before you left for a trip?
  - How would this information alter your travel?
  - Where would you get the information.
- **Activity**: Open discussion: in another color, add the types of information, where they would get the info, and how it would affect decision making.

<u>En-route Travel Information *(30 minutes*)</u>

- **Facilitator Question**
  - While you are traveling, what types of information, if any, do you use?
  - Take a moment and write down the types of information. Write Big. Only one idea per sheet. Use five words or less.
  - It is o.k. if you don't have anything to write or if you have many ideas.
  - Lets go around the table and have each person share one type of information (repeat).
- **Activity**: Conduct a round robin until all of the main ideas are up on the wall. Be sure to use a different color paper for this activity than was used for pre-trip information.

- **Facilitator Question**
  - Do you see ideas on the wall that we can cluster or duplicate ideas we can take down?
  - Does the person who put the idea up agree that it should be clustered this way?
  - What should we call this cluster?
- **Activity**: Point to the wall of ideas. Cluster the ideas together and add labels if possible.

- **Facilitator Question**
  - What are your sources/where do you go for this information?
- **Activity**: Go through each type of information listed and write the sources.

EN-ROUTE TRAVEL INFORMATION

Type of Info	Sources of Info	Decision Making

Facilitator Note: If people say "sign" or "radio," ask them to specify type of sign/radio station.

- **Facilitator Question**
  - Would any of these types of information alter your travel if you found it out en-route?
- **Activity**: Put a check in the decision-making column next to those that would alter travel.

- **Facilitator Question**
  - How, if at all, would this en-route information change your plans? What would you do differently than you had planned, if anything?
- **Activity**: Open discussion: keep track in the decision-making column of what people say for each item on the flip chart.

- **Facilitator Question**
  - Is there any other type of information, not up on the flip chart, that would alter your travel if you found it out en-route?
  - How would this information alter your travel?
  - Where would you get the information.
- **Activity**: Open discussion: in another color, add the types of information, where they would get the info, and how it would affect decision making.

Facilitator Directions before Break
Let's take a five minute break. Before the break, I would like you to take three red dots and three green dots. Place your red dots on the types of information you think are the most important when planning a trip (column 1, matrix 1). I want you to place your green dots on the types of information you think are the most important en-route (column 1, matrix 2). The only rules are that you spend all of your dots and that you can't cut them in half or give them to someone else. You can put all three on one type of information (walk over to the matrix and show them) or you can spread them out and put one dot on three different things. Do this sometime over the break. Any questions?

- **Activity:** Hang each matrix on the wall and put a red circle around column one, matrix one. And put a green circle around column one, matrix two.

Five minute break: Prioritization Activity, Refreshments, Bathroom

Alternate Routes (*10 minutes*)
***VDOT Specific Interest**

- If people say they would change their route while en-route, ask them the following question: when they take alternate routes is it just in familiar areas or also in unfamiliar areas?
- Probe for who route changers are and how they decide what route to take (carry maps)?
- Probe for who the folks are that won't take alternate routes and why. Find out what they would need in order to take an alternate route.

Cell Phone Usage En-Route (*10 minutes—if running over, cut this section*)

- **Facilitator Question**
  - How many of you travel with a cell phone? Please raise your hands.
- **Activity**: Count number of people who carry a cell phone when traveling.

- **Facilitator Question**
  - What do you use your cell phone for when you are traveling?

- **Activity**: Open discussion about how people use their cell phones.

- **Facilitator Question**
  - Who would you call for these things? (i.e., if they say they use their cell phone for emergencies, find out who/what number they call).
- **Activity**: Open discussion about how people use their cell phones.

511 (20 minutes)*—If no one has heard of 511, stop after question one.*

- **Facilitator Question**
  - In closing, I would like to know how many of you have heard of 511 Virginia? If so, please raise you hands.
- **Activity**: Count the number of people that have heard of 511. Note on flip chart.

- **Facilitator Question**
  - For those of you who raised your hands, how did you learn about 511?
- **Activity**: Note on flip chart.

- **Facilitator Question**
  - For those of you who raised your hands, how many of you have ever used 511? Did anyone try to access it and not get through?
- **Activity**: Count the number of people that have used it. Note on flip chart.

- **Facilitator Question**
  - For those of you who raised your hands but have not used the service, tell me why you have not used it?
- **Activity**: Write down the reasons on flip chart.

- **Facilitator Question**
  - For those of you who have used 511, did you access it from a landline or cell phone?
- **Activity**: Count the number of people who have used it. Note on flip chart.

- **Facilitator Question**
  - For those of you who raised your hands, how many of you called back after the first time you used it?
- **Activity**: Count the number of people that have used it. Note on flip chart.

- **Facilitator Question**
  - What would need to be on a traveler information phone service in order for you to use it?
  - What would you need to know, or what would have to change?
- **Activity**: Open Discussion.

***Note any questions that people have about 511.**

Closing Remarks/Payment

- Thank everyone for their time.
- Make sure that everyone has filled out all of the financial paperwork properly (2 forms).
- Give each participant his or her $40 payment.
- Offer participants the 511 materials and let them know that their participation is going to help improve 511 VA.

APPENDIX D: 511 EVALUATION FOCUS GROUP INFORMED CONSENT FORMS

INFORMED CONSENT FOR PARTICIPANTS OF THE RESIDENT AND COMMERCIAL VEHICLE OPERATOR FOCUS GROUPS.

TITLE OF PROJECT: 511 Evaluation

INVESTIGATORS: Aaron Schroeder, Nicole Swan

FACILITATOR: Stephanie Baker

I. PURPOSE OF THIS RESEARCH

You are invited to participate in a study concerning the evaluation of traveler information services in Virginia.

II. PROCEDURES

To accomplish the goals of this part of the study, you will be asked to participate in a focus group in which your usage of traveler information will be explored. Participation in this study will require approximately 90 minutes of your time. In order to participate, you must be at least 18 years old and licensed to drive.

III. RISKS

There are no apparent risks involved with participation in this study.

IV. BENEFITS OF THIS PROJECT

A general benefit of this evaluation is the opportunity to provide information that may ultimately lead to the improvement of traveler information in Virginia.

V. EXTENT OF ANONYMITY AND CONFIDENTIALITY

The verbal responses collected in this study will be kept strictly confidential. At no time will the researchers release any individual participant's responses. The information you provide will be identified through the use of a randomly assigned participant number; only this number (not your name) will be used during data analysis and in any reports on this research.

VI. COMPENSATION

A sum of $40 will be offered to you for participation in this evaluation project.

VII. FREEDOM TO WITHDRAW

You are free to withdraw at any time without penalty.

VIII. APPROVAL OF RESEARCH

This research project has been approved, as required, by the Institutional Review Board (IRB) for Research Involving Human Subjects at Virginia Polytechnic Institute and State University.

IX. PARTICIPANT'S RESPONSIBLITIES

I voluntarily agree to participate in this study. I understand that I have the following responsibilities:

1. To listen to all of the focus group leader's instructions.

2. To provide responses to the focus group leader's questions.

X. PARTICIPANT'S PERMISSION

I have read and understand the informed consent and conditions of this project. I have had all of my questions answered. I hereby acknowledge the above and give my voluntary consent for participation in this focus group.

If I participate, I understand that I may withdraw at any time without penalty.

_____

Participant's Signature and Date

Should I have any questions about this research or its conduct I may contact:

- Aaron Schroeder (Investigator) – (540) 231-1544
- Nicole Swan (Investigator) – (540) 231-1525
- Stephanie Baker (Facilitator) – (540) 231-1524

FACILITATOR NOTE: Please note that the participant will sign two copies of this informed consent form. One is to be given to the participant, and the other form will be retained by the investigator.

References

Conducting Effective Focus Groups (2002). University Development Training Program, Donaldson Brown Hotel & Conference Center.

Education, V. D. o. Office of Adult Education and Literacy. Retrieved DATE, from http://www.pen.k12.va.us/VDOE/Instruction/Adult/facts.html.

511 Virginia Evaluation

January 2004

Web Survey Report
Chapter 3

CHAPTER 3: WEB SURVEY REPORT

EXECUTIVE SUMMARY

An assessment of the 511 Virginia website was a necessary component of this 511 evaluation. The evaluation team at the Virginia Tech Transportation Institute (VTTI) wanted to determine if the website was meeting user needs and achieving acceptable customer satisfaction levels. To accomplish this assessment, VTTI developed and applied a web-based survey methodology.

Non-probability sampling methods were employed for this web-survey. A survey was posted on the 511Virginia.org website for six months and users were invited to participate. Though the sample included only 108 volunteers, the information gleaned from the survey is an interesting and useful compliment to the other research elements of the 511 Virginia Evaluation (e.g., focus groups, phone survey, etc.).

Appendix A contains the raw results from the questions posed in the web-survey. The findings and recommendations presented in this report were extrapolated from these raw results. Because these findings are based on a non-probability sample, the results are anecdotal and should not be used to generalize to the opinions of the entire population of 511 Virginia.org users.

The findings that emerged from the survey tend to fall into five categories: demographics, user awareness, website usage, user satisfaction, and user behavior. Some of the major findings are that:

- 89 of the 108 respondents (82%) live in Virginia.
- 47 respondents (44%) were first time users of 511Virginia.com.
- 77 respondents (71%) were looking for travel conditions on the day that they filled out the survey.
- 63 respondents (58%) indicated that they were satisfied with the Travel Conditions page.
- 75 respondents (69%) indicated that they were likely to revisit 511Virginia.org on a regular basis.

In sum, satisfaction levels were high for 511Virginia.org among those surveyed, in particular for the home and the travel conditions pages. Also, over half of the respondents said that they are likely to visit the site again—a solid indicator of customer satisfaction.

The results were mixed as to whether the website is meeting users' needs. In general, most participants indicated that they were looking for travel condition information and that they spent about as much time searching for the information they wanted on the website as they expected. However, the comments submitted by respondents indicate some frustration with the website. It seems that some users expected to find more information about travel conditions than is currently integrated into 511Virginia.org. Though most participants are satisfied with the website, there is room for improvement in the depth and scope of information provided. In particular, attention needs to be directed towards the area of the website regarding travel condition information.

There were several recommendations that resulted from these findings. First, travel condition information needs to be moved to a more prominent position on the website, preferably the home page. This is so that those looking for the information do not have to search far. The travel conditions page also needs to provide more and better information on road conditions, accidents, and delays. Respondents like the cameras and more camera images should be posted if resources allow. Finally, marketing efforts need to be increased to reach people who are looking for travel condition information in the 511 Virginia coverage area.

There were several lessons learned during the design, recruitment, implementation, and analysis of 511Virginia.org, which are discussed in this report as they may be helpful to others conducting similar evaluations. For instance, during the implementation phase of the web-survey, it was discovered that the placement of the link to the web-survey did not significantly change the number of users that volunteered to participate. Originally, the link was located in the area where banner advertisements would normally be, and later it was moved to the top of the home page, beneath the advertisements. The response rate did not significantly change after the movement of the link. These types of lessons may assist others who will implement similar web-based surveys in the future.

METHODS

Survey Development

The survey that was used to evaluate the 511Virginia.org website was created using survey maker software that was available for free to VTTI through Virginia Tech (http://www.survey.vt.edu).[1] The software not only provided for the creation of the survey, but it hosted the survey and supplied a database of the results. The survey was located on the 511 Virginia website via a link provided on each page. The benefit of using this site was that the survey was developed in a simple and cost-effective manner with no administrative overhead beyond that of one graduate assistant who was responsible for monitoring the survey responses. Use of this software also provided timely feedback to the evaluators. Survey results were downloaded periodically throughout the duration of the evaluation period. Only evaluation administrators had access to this information.

The survey was delivered to respondents through a link on the 511 Virginia website. After clicking on the link, visitors were sent to a web page containing the online survey. The survey asked users to fill out a form consisting of 28 questions, which took approximately 5 minutes to complete. The full survey can be seen in Appendix B. The survey asked users basic demographic questions, what triggered them to go to the website, what information they were looking for on the site, and how satisfied they were with the website. Responses were collected during the period of Friday, February 6, 2003 – Friday, August 1, 2003.

Incentives were not used to entice visitors to complete the survey because they were cost prohibitive and have been shown to cause at least three methodological concerns: response bias, multiple entries, and unwanted entries.[2] Incentives have been shown to cause response bias, as respondents

[1] See also: http://www.computing.vt.edu/internet_and_web/web_publishing/webmasters_toolkit/survey_maker/quickstart.html

[2] Patrick Tierney, "Internet-Based Evaluation of Tourism Web site Effectiveness: Methodological Issues and Survey Results," Journal of Travel Research, Vol.39, November 2000, p. 213.

change their answers based upon the incentive being offered. Additionally, respondents may complete the survey multiple times in order to obtain multiple incentives or to increase their odds of winning a prize-based incentive. Finally, with the proliferation of Internet contest websites that search the web to find prizes and then link to them, unwanted entries may abound with the offering of an incentive. Although increased traffic to the site is desirable, the bias inherent in the responses of incentive specific visitors outweighed the potential benefits and, therefore, was not used.

Subject Privacy

In accordance with university policy, Internal Review Board (IRB) approval for this survey was obtained before it went live on the website. The introduction of the survey informed individuals that the information they provided would remain confidential and would not be sold. Individuals were further guaranteed of their privacy because the site does not collect cookies. Cookies are markers set by a server on a visitor's browser to identify the user. The cookie allows the server to remember the visitor[3]. Because the site does not collect cookies, there was no way for 511Virginia.org to collect personally identifying information or link specific survey responses to individuals.

Subject Recruitment

The survey was an open, unrestricted, self-selecting survey. This meant that the survey was open to every visitor to the site and that individuals chose whether or not they wanted to participate in the survey. Every visitor to 511Virginia.org was a potential recruit for the survey and respondents were all unpaid volunteers.

Since January 2002, the average number of visitors per month to the 511 Virginia website has been 5,092. It is these visitors the evaluation team was targeting with the survey. The survey was designed to extract honest feedback regarding the website from respondents. 108 surveys were completed during the six month period that the survey was active on the website.

Sampling

Non-probability sampling procedures were used for this survey because there was no way to bar a user from responding numerous times to the survey. Non-probability sampling methods are "sampling methods in which the probability of selection of population elements is unknown" and can be used in quantitative studies when "researchers are unable to use probability selection methods."[4] Although a probability sample would have been desirable, non-probability methods were useful since multiple submissions were not restricted.[5]

A non-probability sample was used for several reasons. The primary reason is that it is the policy of 511 Virginia not to collect cookies or personal data from visitors to the website. Thus, evaluators could not ensure that each respondent was a unique participant. This issue was noted in the literature as a problem for those conducting web-based surveys. Because "IP addresses are unique to

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[3] Whalen, David. "The Unofficial Cooke FAQ: Version 2.6" http://www.cookiecentral.com/faq/ (accessed on 8/8/03)

[4] Russell K. Schutt (2001). Investigating the Social World. Third Edition: The Process and Practice of Research. Thousand Oaks, California: Pine Forge Press. Pages 130 and Index 13.

[5] Ibid, p. 131

machines, not people" an evaluator "will not know if he or she is having one person respond several times at different machines or if one machine is being used by multiple individuals."[6]

The use of a non-probability sample limits the use of these results, as they can not be generalized to the population of all users of 511Virginia.org. However, the results are still an interesting supplement to the other parts of the evaluation (e.g., focus groups, phone survey).

MAJOR FINDINGS

There were many interesting findings from this web-survey. As was mentioned previously, 108 511Virginia.org users voluntarily filled in the survey that was linked to the website. The findings from the survey tend to fall into five categories: demographics, user awareness, website usage, user satisfaction, and user behavior. Below is a summary of these findings. The complete list of findings are located in Appendix A.

Demographic

The first series of questions on the web-survey were demographic in nature, dealing with such things as age, gender, and income. One of the major demographic findings is that at least 93, or 86%, of the participants were from the United States, and of that 93, 89, or 96%, live in Virginia. All of the states bordering Virginia, with the exception of Kentucky, had participants who completed the survey (i.e., NC, MD, TN, and WV).

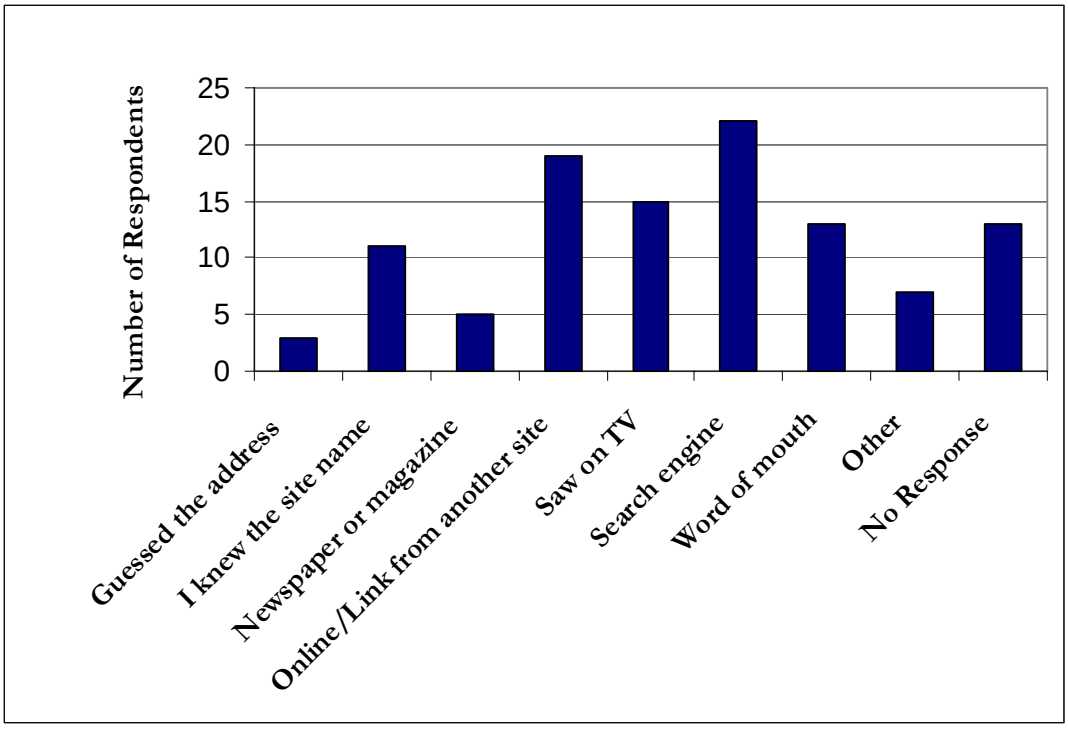
The age and income of respondents varied. The largest number of participants (31 or 29%) were between the ages of 50 and 59 and the smallest number of participants (5 or 5%) were 70 or older. The largest number of participants (19 or 18%) said that they have a household income before taxes of $36,000-$50,000, while the smallest number (3 or 3%) earned $20,000 or less.

Awareness

The survey queried participants about how they learned about 511Virginia.org. The largest number of participants (42 or 39%) learned about 511Virginia.org while on-line, via a search engine or a link from another website. Participants also heard about 511 while watching TV or by word of mouth.

Figure 1. How respondents heard about 511Virginia.org (Survey Question 12).

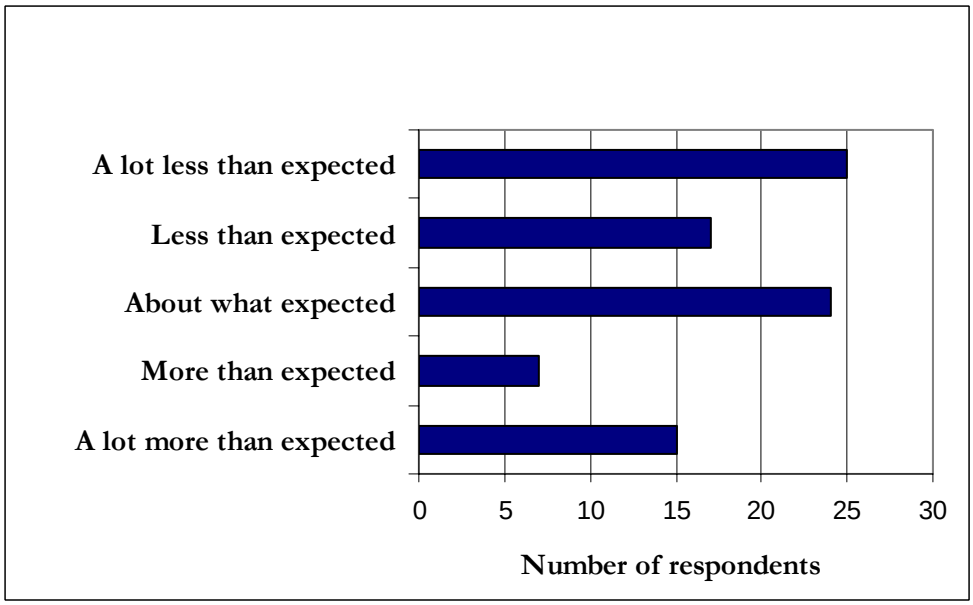
[6] Tuten, Tracy L. and Michael Bosnjak (August 5, 2001). National Academy of Management Briefing: Web-based Survey Methods: Professional Development Workshop. http://www.or.zuma-mannheim.de/aom2001/



Usage

In terms of usage, 47 (or 44%) of the respondents said that they were first time users of the website. While most of the respondents (66 or 61%) said that they were able to find what they were looking for on the website with as much effort or less effort than they expected, 22 (or 20%) participants said that it took them longer than they expected to find what they were looking for.

Figure 2. The effort required by participants to find the information they wanted on 511Virginia.org (Survey Question 15).



One issue that was apparent in the comments section of the web-survey was that some participants were trying to find information that was not available on 511Virginia.org. The absence of information was due either to technical difficulties or a lack of data. For instance, several respondents complained that the cameras on Afton mountain or in Winchester were not working when they checked the website. One respondent said, "Please do the best you can to make sure the cameras are working when the weather is bad (rainy/foggy). Today (March 18) it is rainy and may be foggy, and neither the Afton nor the Winchester cameras are working."

Respondents also commented on the lack of information available for certain areas (e.g., Interstate 66 and Interstate 95). These users did not seem to be aware of the coverage area of 511 and/or they wanted to request that these areas be covered in the future. For example, one respondent said that she "wanted to check the site out for road conditions since I travel 81 and 66 every day to go to work in Northern Virginia. Also, my husband is a truck driver so we check for his work travel also."

Participants also expected more information related to travel conditions than was provided. Respondents want current, accurate travel condition information. For instance, one respondent said that the website "needs to be updated more frequently" and that it "doesn't seem to reflect current conditions."

Respondents' comments, shown in Appendix A, reflect frustration with technical problems and with gaps in travel condition and other information that they felt should be on the website. Yet there were also many comments that reflected satisfaction with the website. One respondent said that 511Virginia.org "is one of the best sites I have found for travel information" and that those who are running the system should "keep up the good work."

Level of Satisfaction

Over half of the participants (68 or 63%) said that they were satisfied with the 511Virginia.org Home Page and with the Travel Conditions page (63 or 58%).

Figure 2. Participant Satisfaction with the 511 Virginia Home Page (Survey Question 8a).

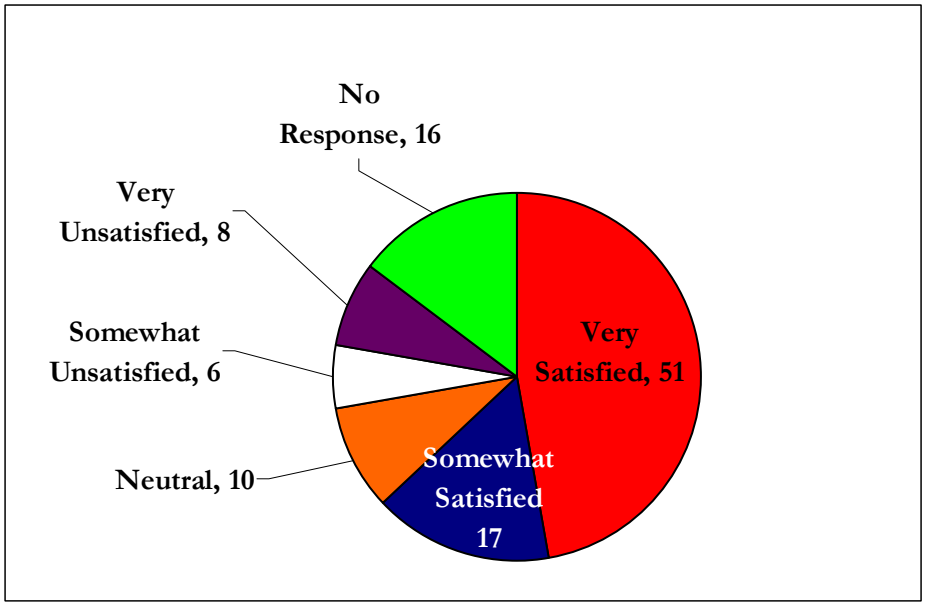
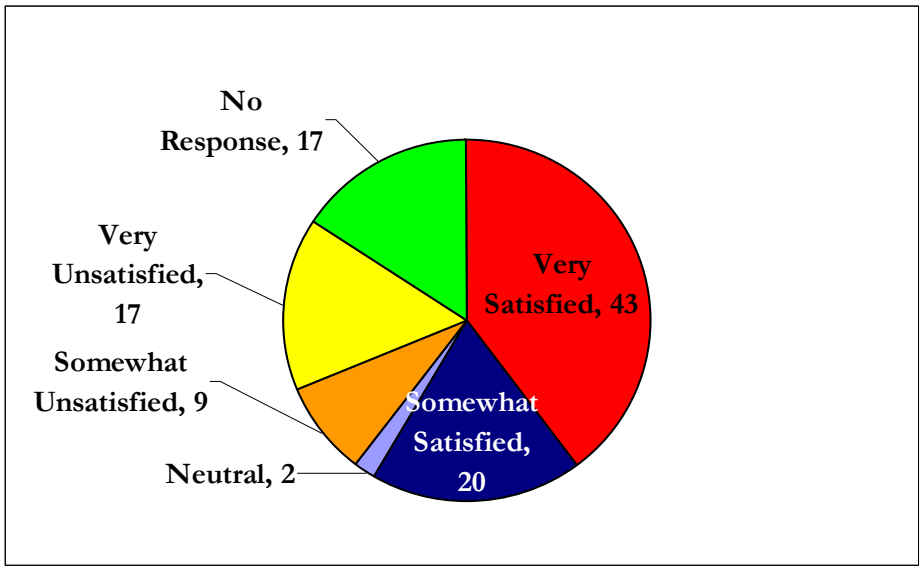


Figure 3. Participant Satisfaction with the 511 Virginia Travel Conditions Page (Survey Question 8b).



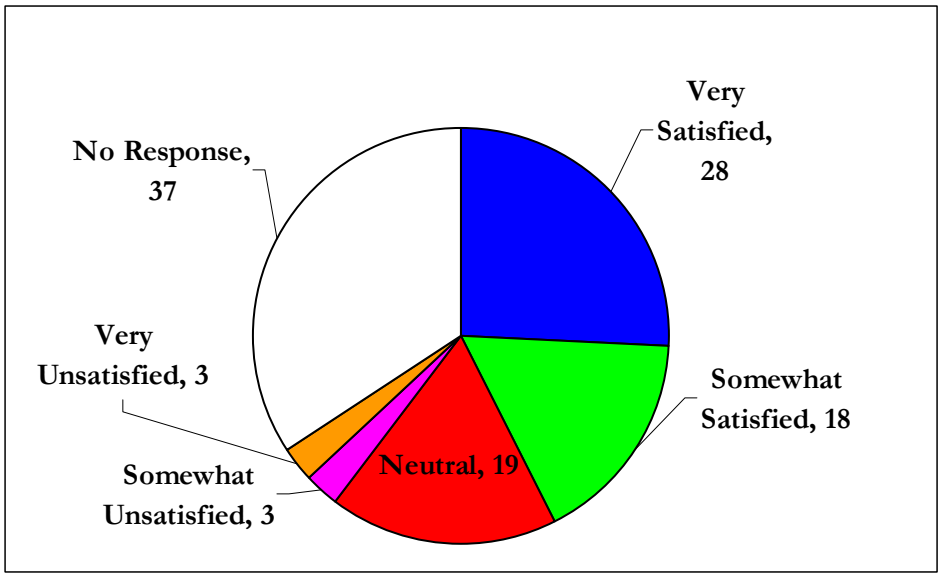
Respondents made more comments related to the travel conditions than any other area of the website. Possibly because responding to the website was voluntary and anonymous, participants tended to voice strong criticism or high praise as can be seen from the comments below:

- "Travel conditions are sketchy and accidents are slow in appearing on the web. There is more than enough information on road construction. The site needs a lot of improving!".
- "Please continue your great work. More web-cams please, and if you could create an e-mail system to send alerts regarding accidents to my inbox!!"

Not as many participants were satisfied with the Emergency Services (51 or 47% satisfied), the Food and Lodging (48 or 44% satisfied), the Shopping and Services (45 or 42% satisfied), the Trip Mapping (52 or 48% satisfied), and the Tourism and Attractions (46 or 43% satisfied) pages.

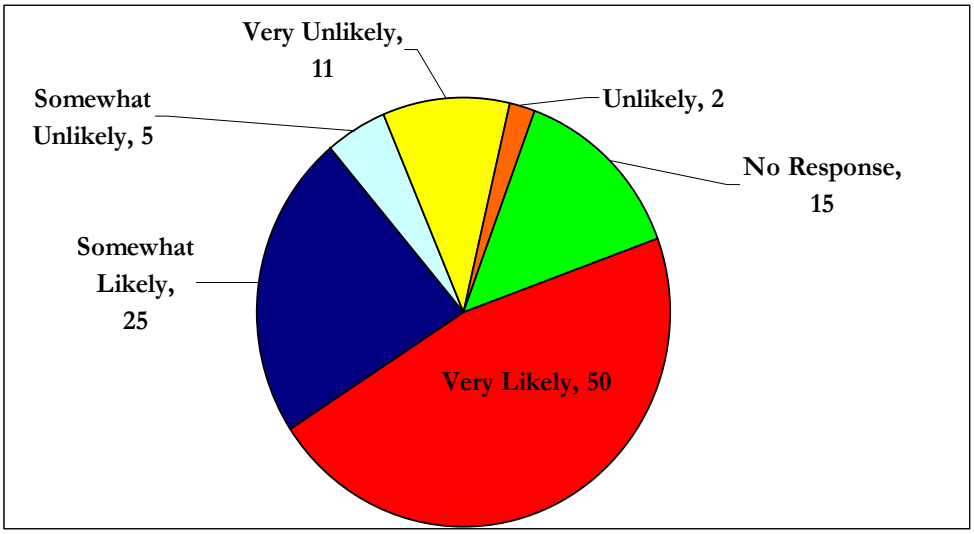
Also, many participants did not answer the questions related to the above mentioned pages, and there were few comments about the pages. This non-response may be taken as an indication that participants did not use these pages enough to be either satisfied or dissatisfied. This lack of response regarding the pages listed above is in contrast to the responses concerning the travel conditions page, which solicited more definite responses from participants about their satisfaction.

Figure 4. Satisfaction with the 511 Virginia Tourism and Attractions Page (Survey Question 8e).



Participants were also asked, as an indicator of their satisfaction, how likely they were to revisit the website or to recommend it to others. Many participants (75 or 70%) said that they were likely to revisit the website or to recommend the site to others (64 or 60%).

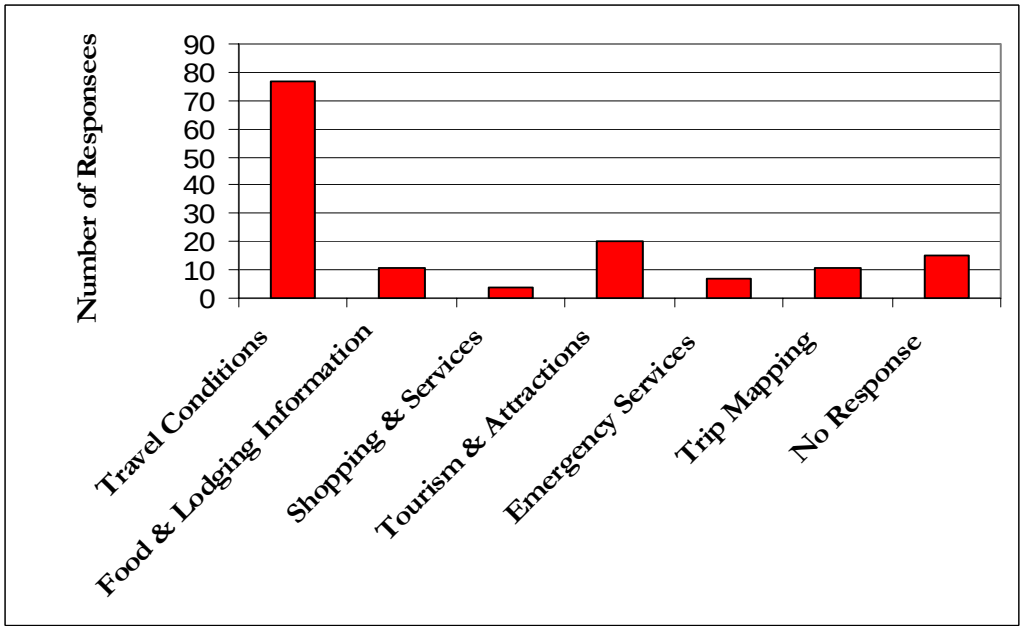
Figure 5. Likelihood of Respondents Revisiting 511 Virginia website (Survey Question 10).



Behavior

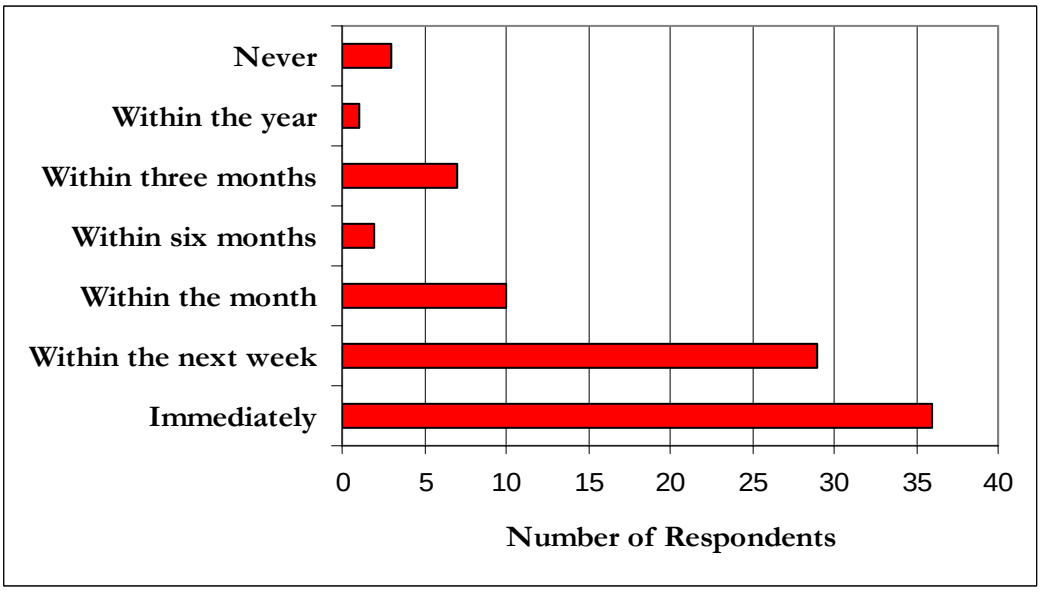
The graph below shows respondent's answers to a question about why they visited 511Virginia.org on the day they filled out the survey. Over two thirds of the participants (77 or 71%) said that they visited the website to find travel condition information (e.g., traffic delays and winter weather advisories). Tourism and attractions was the second most noted type of information that participants were seeking on the day that they took the survey.

Figure 6. Reason for visiting 511 Virginia website (Survey Question 9).



Another interesting question that was posed to participants dealt with when they were planning to travel along the I-81 Corridor. Over half of the participants (65 or 60%) were checking 511Virginia.org either immediately before leaving to travel on I-81 or within the next week from the time they were filling in the survey.

Figure 7. When participants plan to travel along the I-81 Corridor (Survey Question 20).



These responses appear to indicate that people are checking the website; either immediately before or within a few days of leaving on a trip and that they are checking the site for travel condition information.

Several comments were collected that exemplify the type of information that users are searching for, as well as the time in which they are looking for the information in relation to their travel. For example, one respondent said, "I live in Charlottesville and just started working in Staunton, which means traveling over Afton Mountain to work. There are frequently problems on Afton Mountain with traffic and it would be good to add a section of road with more current information (perhaps more in depth)."

In sum, the findings indicate that most of the respondents live in Virginia and that travel condition information is the primary item that they are looking for on the 511Virginia.org website. Participants also said that they were looking for this information fairly soon before traveling on the I-81 Corridor. A majority of these users indicated that they are satisfied with the 511Virginia.org travel conditions page where information on accidents, construction, and winter road advisories is located.

The information presented in this major findings section is just a portion of the overall findings from the web-survey. As was mentioned earlier, the complete raw findings are presented in Appendix A of this document.

RECOMMENDATIONS

Based on these major findings there are several recommendations that can be made for 511Virginia.org. The first recommendation is that the site be redesigned to cater to those looking for travel condition information. This could be done in a variety of ways, but in particular by making the home page focused on travel condition information. Emergency services, shopping, food and lodging, and trip mapping appear to be of less importance to those surveyed. These types of information (e.g., emergency services, shopping, food and lodging, and trip mapping) should be placed deeper in the website, or taken off of the website, depending upon the resources available to maintain the site.

Travel condition information should also be enhanced and expanded. More and better travel condition information on the 511 system is what these respondents were asking for. In particular, some respondents requested access to more camera images along the major interstates in Virginia and in potentially dangerous areas such as Afton Mountain.

Another recommendation is that resources be invested in marketing the website. Many participants found the website via online searches or links from other websites. It is possible that more marketing for the website would increase people's knowledge, therefore limiting the need to search for it. Since travel condition information is what users appear to be looking for, marketing could be targeted towards this audience.

Respondents also made some general recommendations for 511Virginia.org; a few are noted here, and a complete list of participants' comments is located in Appendix A:

- "If you put school, plant, and business closings on this site, you will have more interest."
- "Expand it to cover all Virginia Interstates."
- "Specify the road conditions in more detail and perhaps show current pictures of major highways/interstates."
- "Put exit numbers next to hotels and food vendors."

METHODOLOGICAL LESSONS LEARNED

During the design, implementation, and analysis of the web survey, several lessons were learned that may be helpful to others attempting to evaluate travel-related websites. The following table summarizes the lessons that will be discussed in this section.

Table 1. Lessons Learned

Web Site Survey	Lesson Learned
Design	Consider using alternative collection and survey creation software.
	Take a more proactive approach to data collection.
Implementation	The placement of the link to the survey does not make a significant difference.
	The use of incentives is not helpful.
Analysis	It is important to coordinate demographic data with the phone survey.
	Account for visitors who will use the comments portion of the survey instead of the contact link on the website to comment on technical difficulties with the website.
	Limit web-usage questions, instead place emphasis on customer satisfaction questions.

Design Lessons Learned

During the design phase of the website survey, several lessons were learned. First, alternate collection and survey creation software could have been used. Free software available though Virginia Tech was used because of limited time and resources. Using the Virginia Tech free software meant that the web survey could be developed and implemented in a short period of time with limited staff and software-related costs. The university-based software included an online database function for the collection of data. Hence, the only programming required was the placement of a link to the survey on the 511 website. Had additional time or funding been allotted to the web portion of the evaluation, alternate collection and survey creation software could have been considered. Alternate software would have permitted for the creation of a survey that was more visually appealing and, perhaps, easier to use.

The second lesson learned was that during the design phase a more proactive approach to data collection could have been considered. For example, the use of cookies or an alternate identifier (e.g., e-mail addresses, IP addresses, a unique URL or passwords) should have been considered. The use of cookies or alternate identifiers would be beneficial in two ways: first, to increase response rates; and second, to eliminate duplicate responses. The balance between maintaining adequate user privacy and collecting high quality evaluation results must be weighed carefully by every evaluator and sponsor.

The use of an e-mail invitation that invited individuals to complete the on-line survey may have increased the number of survey responses gathered. Using this technique, visitors to the site would be asked if they were willing to provide feedback on the 511Virginia.org site. If individuals were willing, their e-mail addresses would have been collected. Each individual demonstrating interest (by submitting his/her e-mail address) would have been sent an e-mail inviting them to complete the short web-survey. In order to encourage a higher response rate, follow-up e-mails would also have been sent to those who had not initially responded to the e-mail. After individuals completed the survey, an e-mail thanking them for their participation in the survey would have been sent. The software used in this evaluation would have allowed for this type of invitation-driven evaluation.

Use of an e-mail invitation would also have addressed the duplication of responses. Because 511Virginia.org does not collect cookies and because an e-mail password was not required to complete the survey, there was no way to limit the number of times individuals completed the survey. Future surveys of the 511Virginia.org website should consider the benefits of cookies and other delimiters and how they can be used without compromising the privacy of visitors to the site. Additional disclaimers may have to be employed to ensure visitors that personal information will not be sold and that any personal information collected will be destroyed and not maintained.

Implementation Lessons Learned

During the implementation phase of the survey, two findings emerged. First, changing the placement of the survey link on the website did not make a significant difference in the response rate. Initially, the survey link was listed in the banner section of the website and the response rate was less than one percent. This response rate was comparable with the response rate of web-based ads on the 511Virginia.org site during the same time period.

Due to the initial low response rate, the web-survey invitation was moved from the banner ad section of the website to the site's main body, directly below each page's header. This move

occurred in the beginning of April 2003, approximately two months into the evaluation phase. No noticeable increase in the response rate occurred after the move.

It is interesting to note that, without incentives, 511Virginia.org's completed survey rate was shown to be consistent with the site's click through rate for banner advertisements. This may be a good gauge for future evaluations (i.e., to expect the response rate for surveys to be similar to the click through rate of banner advertisements). If securing a response rate comparable to that of advertisements is an obtainable target, then the evaluation team can plan to leave the survey up on the website for the amount of time required to secure the desired number of responses.

The second lesson that emerged during this period was that incentives would not have been helpful. As noted, 511Virginia.org currently does not collect cookies or other personal information. Using incentives for the survey would necessarily require the collection of a personal identifier. Personal information is needed to inform individuals that they have won a prize and also to limit individuals to one entry. If there is no limit on the number of entries, the site risks being susceptible to websites that inform members of currently running contests.

Analysis Lessons Learned

In considering the analysis, one of the lessons learned became immediately apparent. During the design phase of the survey, the evaluation team failed to coordinate the demographic questions in the web-survey with the demographic questions in the phone survey. Future evaluators should coordinate these questions so that comparisons of users can be made more easily.

The second lesson learned is that many website visitors chose to use the comments portion of the evaluation tool instead of the contact link on the website to comment on technical difficulties with the website. While the website evaluation was intended to elicit user's honest feedback, had users chosen to use the "Your Comments" link on the website, their concerns would have been addressed directly and in a timelier manner. Possibly at the beginning of the survey, mention of the "your comments" link on the 511 website should have been made so that there was no confusion about where participants should voice their concerns with technical problems.

The third lesson pertains to the collection of general web-usage habits. During the design phase, it was believed that collecting such information would help site administrators tailor the site to more specifically address the needs of users. The following questions were asked:

- "How frequently do you surf the Web?"
- "What do you regularly use the Web for?"
- "What is your access speed to the Internet?"

However, the inclusion of these questions may have made the survey appear too long to respondents, and several respondents chose to skip these questions. Also, the questions did not glean very useful information for the analysis.

The following questions were found to provide better insight into user's perceptions of the website and should be included in future evaluations:

- "How likely are you to revisit this site on a regular basis?"
- "How likely are you to recommend our site?"

These questions are good indicators of whether or not individuals like the services provided and if they find the services useful. If individuals find the website useful, they are likely to revisit the site on a regular basis or recommend the site to others.

In conclusion, this web-survey was meant to determine if users were satisfied with the website and if they were receiving the information that they needed. The results of this survey indicate that most of the users surveyed were satisfied with the travel conditions information that they were seeking but that it could be improved to better meet their needs. Also, many lessons were learned during the design, implementation, and analysis process. For instance, evaluators can expect a response rate for a web-survey that is similar to that of the click-through rate for a website's banner advertisements. These findings, recommendations, and lessons should benefit others conducting similar evaluations.

APPENDIX A: WEB FINDINGS

Question 1: What was your age on your last birthday? All information is strictly confidential. If you are under 18, we ask that you immediately stop completing this survey.

	Respondents
19 to 99 years old	24
40 to 49 years old	22
50 to 59 years old	31
60 to 69 years old	12
70 or older	5
Don't know/Refused	3
No Answer	11

Question 2: From which part of the world are you visiting the 511 Virginia web site?

	Respondents
United States	93
Canada	0
Mexico	0
Other	2
No answer	13

Question 3: If you are visiting the 511 Virginia web site from the United States, what is your five-digit zip code? *Unless otherwise noted, respondents' number equals one.

Web Zip codes*	City	State	Totals
24941	Gap Mills	WV	1
22308	Alexandria	VA	1
22201	Arlington	VA	1
22810	Bayse	VA	1
24060	Blacksburg	VA	3
24064	Blue Ridge	VA	1
20136	Bristow	VA	1
22815	Broadway	VA	1
22901, 22902, 22903	Charlottesville	VA	5
23322	Chesapeake	VA	1
23831	Chester	VA	1
24073	Christiansburg	VA	2
20124	Clifton	VA	2
24422	Clifton Forge	VA	1
24228	Clintwood	VA	1

Web Zip codes*	City	State	Totals
22821	Dayton	VA	1
24084	Dublin	VA	1
24085	Eagle Rock	VA	1
22824	Edinburg	VA	2
22827	Elkton	VA	1
23847	Emporia	VA	1
22031, 22039	Fairfax	VA	2
22652	Fort Valley	VA	2
22630	Front Royal	VA	2
23060	Glen Allen	VA	1
23065	Gum Spring	VA	1
22801, 22802, 22807	Harrisonburg	VA	3
20169	Haymarket	VA	1
20171	Herndon	VA	1
24343	Hillsville	VA	2
24104	Huddleston	VA	1
22835	Luray	VA	1
22840	Massanutten	VA	1
22644	Mauertown	VA	1
23111	Mechanicsville	VA	1
24138	Pilot	VA	1
24141	Radford	VA	2
24018, 24019	Roanoke	VA	2
22740	Sperryville	VA	1
22851	Stanley	VA	1
24401	Staunton	VA	5
24477	Stuarts Draft	VA	3
22853	Timberville	VA	1
24175	Troutville	VA	1
22890	UNK	VA	1
24486	Weyers Cave	VA	1
23185	Williamsburg	VA	1
22601, 22602	Winchester	VA	3
22191	Woodbridge	VA	1
37047	Cornersville	TN	1
18704	Kingston	PA	1
19066	Merion	PA	1
17976	Shenandoah	PA	1
14075	Hamburg	NY	1
13492	Whitesboro	NY	1
28278	Charlotte	NC	1
27012	Clemmons	NC	1
27284	Kernersville	NC	1
28589	Williston	NC	1

Web Zip codes*	City	State	Totals
22003	Annadale	MD	1
20783	Hyattsville	MD	1
20851	Rockville	MD	1
90805	Long Beach	CA	1
91335	Reseda	CA	1
	Missing		4
	Total		**93**

*Some cities had more than one zip code noted by participants.

Question 4: Are you:

	Respondents
Female	40
Male	55
No answer	13

Question 5: What is your access speed to the Internet?

	Respondents
33.6K or Less	**7**
56K	**29**
Cable/ISDN	**13**
DSL	**17**
T1	**13**
Don't Know	**17**
Other	**0**
No Answer	**12**

Question 6: Since tourism is so important to the economic livelihood of the I-81 region, we would like to collect a general idea about the incomes of those who drive on I-81 and visit the 511 Virginia web site. Would you be willing to share the range of your 2002 household income before taxes?

	Respondents
Under $20,000	3
$20,000 to $35,000	9
$36,000 to $50,000	19
$51,000 to $65,000	10
$66,000 to $80,000	8
$81,000 to $100,000	11
Over $100,000	12
Don't Know/Refused	21
No Answer	15

Question 7: What do you do for a living?

	Respondents
Student	7
Commercial Vehicle Owner/Operator	4
Employee – non-government	27
Employee – government	18
Military	0
Other	26
No Answer	26

Question 8a: Please rate your level of satisfaction with the 511 Virginia Web site Home Page:

	Respondents
Very Satisfied	51
Somewhat Satisfied	17
Neutral	10
Somewhat Unsatisfied	6
Very Unsatisfied	8
No Answer	16

Question 8b: Please rate your level of satisfaction with the 511 Virginia Web site Travel Conditions:

	Respondents
Very Satisfied	43
Somewhat Satisfied	20
Neutral	2
Somewhat Unsatisfied	9
Very Unsatisfied	17
No Answer	17

Question 8c: Please rate your level of satisfaction with the 511 Virginia Web site Shopping & Services:

	Respondents
Very Satisfied	27
Somewhat Satisfied	18
Neutral	23
Somewhat Unsatisfied	3
Very Unsatisfied	2
No Answer	35

Question 8d: Please rate your level of satisfaction with the 511 Virginia Web site Food & Lodging:

	Respondents
Very Satisfied	29
Somewhat Satisfied	19
Neutral	22
Somewhat Unsatisfied	3
Very Unsatisfied	2
No Answer	33

Question 8e: Please rate your level of satisfaction with the 511 Virginia Web site Tourism and Attractions:

	Respondents
Very Satisfied	28
Somewhat Satisfied	18
Neutral	19
Somewhat Unsatisfied	3
Very Unsatisfied	3
No Answer	37

Question 8f: Please rate your level of satisfaction with the 511 Virginia Web site Emergency Services:

	Respondents
Very Satisfied	36
Somewhat Satisfied	15
Neutral	16
Somewhat Unsatisfied	4
Very Unsatisfied	3
No Answer	34

Question 8g: Please rate your level of satisfaction with the 511 Virginia Web site Trip Mapping.

	Respondents
Very Satisfied	32
Somewhat Satisfied	20
Neutral	12
Somewhat Unsatisfied	6
Very Unsatisfied	4
No Answer	34

Question 9: So that we can match the right information with the needs of our visitors to the site, please tell us why you visited our site today.

	Respondents
Travel conditions, including traffic delays and winter weather advisories	77
Food & Lodging information	11
Shopping & Services	4
Tourism & Attractions	20
Emergency Services	7
Trip Mapping	11

Question 10: How likely are you to revisit this site on a regular basis?

	Respondents
Very Likely	50
Somewhat Likely	25
Unlikely	2
Somewhat Unlikely	5
Very Unlikely	11
No Answer	15

Question 11: How likely are you to recommend our site?

	Respondents
Very Likely	51
Somewhat Likely	13
Unlikely	6
Somewhat Unlikely	8
Very Unlikely	11
No Answer	19

Question 12: Where did you hear about our web site (please check all that apply)?

	Respondents
I knew the site name	11
Search engine	23
Guessed the address	3
Online or link from another web site	19
Saw on TV, heard on the radio	17
Newspaper or magazine	5
Word of mouth	16
Other	11

Question 13: How often do you visit the 511 Virginia web site?

	Respondents
Every day	7
Several times a week	8
About once a week	7
Several times a month	13
About once a month	7
Less than once a month	7
This is my first visit here	47
No Answer	12

Question 14: When browsing the 511 Virginia web site, how long do you typically spend here?*
*Non-numeric comments/criticism not included (8 such answers)

Time Spent on Site	Respondents
Less than 5	4
5 Minutes	9
5 to 10 Minutes	2
10 Minutes	10

Time Spent on Site	Respondents
10 to 15 Minutes	1
15 Minutes	14
20 Minutes	3
30 Minutes	3
30 to 45 Minutes	1
45 Minutes	2
60 Minutes	1

Question 15: How much effort did your search on this site require before you found what you were looking for? (Did it take a long time? Did you have to try several times?)

	Respondents
A lot less than I expected	25
Less than I expected	17
About what I expected	24
More than I expected	7
A lot more than I expected	15
No Answer	20

Question 16: How frequently do you surf the web?

	Respondents
Every day	62
Several times a week	15
About once a week	6
Several times a month	3
About once a month	0
Less than once a month	2
This is my first visit to the web	3
No Answer	17

Question 17: What do you regularly use the web for? (Please check all that apply -- This information will let us know what additional information you would like to see, if possible, on our site.)

	Respondents
News	64
Work Research	48
Personal Research	62
Investments	20
Shopping	45
Auctions	11
E-mail	67
Chat/communities	11
Web-based address book/calendar	7
Banking	30
Other	9

Question 18: How often do you use the web to find traffic information?

	Respondents
Every day	12
Several times a week	18
About once a week	8
Several times a month	7
About once a month	12
Less than once a month	8
This is my first visit here	22
No Answer	21

Question 19: How often do you use the web to find traveler information (i.e., information on tourist attractions, vacation packages, trip routing, etc.)?

	Respondents
Every day	3
Several times a week	4
About once a week	12
Several times a month	11
About once a month	15
Less than once a month	21
This is my first visit here	19
No Answer	23

Question 20: When do you plan to travel along the I-81 Corridor?

	Respondents
Immediately	36
Within the next week	29
Within the month	10
Within three months	7
Within six months	2
Within the year	1
More than one year	0
Never	3
No Answer	20

Question 21: What is your primary use of the 511 Virginia web site?

	Respondents
Business	22
Leisure	35
Education	5
Other	19
No Answer	27

Question 22: Respondent Suggestions and Feedback
Comments have been clustered into categories based on the type of information that the individual was seeking (i.e., travel conditions, tourism and attractions, trip mapping, etc.). Please note that comments addressing multiple categories have been listed under each area. Grammar is included exactly as entered on the survey. Names have been deleted to ensure the privacy of respondents.

Travel Conditions (Accidents, Construction, Road Conditions, etc.)

- Love the camera and weather on Afton! Accident reports very helpful
- Please continue your great work. More web-cams please, and if you could, create an e-mail system to send alerts regarding Accidents to my Inbox!!
- I love the cameras, especially the one on Afton Mountain. I wish the pictures were larger. If I see fog or there are reports of fog/snow/ice, I may alter my travel plans. I would like access to similar information in other parts of Virginia. This is a valuable tool for me. Thanks for this great website and for keeping it up to date.
- I feel that you should cover a little more of the I64 travel conditions. My son has an appointment at UVA this morning and I just could not find what I needed on your website. But it did a great job for I81. Thanks

- I came on here because a girlfriend is stuck in traffic on 81. By going to www.mamma.com and putting in "Traffic"+"I-81" I was able to go to find your site and could tell her while on the phone what she was being stalled for. Thank you SO much!!! I only wish you had a radio station listing so I could have her tune in and know up to the minute information without running up her cell phone minutes. Again, thank you so much for what you *have* done. I have a friend stuck on 81 behind construction and an accident who is grateful this information was readily available because all she could see were the back of cars!!!

- I use the site to obtain current travel conditions during weather events such as snow & flooding (like today). I only see 2 reports of flooding on the site right now in the Roanoke area however even the national weather service is reporting more. My suggestion is that the site be more updated to all areas with traffic issues as quickly as possible. I really like the site when it is updated. I need the information to pass on to our staff to help keep them safe on their travel to and from work. Thanks!

- This is one of the best sites I have found for travel information. Thanks and keep up the good work.

- Needs to be updated more frequently -- doesn't seem to reflect current conditions. The road conditions and accidents need a lot of improvement. Road information from other sources showed a lot of accidents due to snow/ice - you showed one accident. Tractor trailer drivers rated highway conditions worse than you did. You don't seem to update timely and accurately.

- It is February 16 "the snow storm." Why don't you post on the website I-81 driving conditions? Why do I have to call 511. I am stuck in Philadelphia and trying to get back to Roanoke where I live. West Virginia and Maryland did better than you all. The computer I am using at a friends house can to bring up your color coded map. Can't you type the information some where as well??

- You have not updated the site today even though we are having a snow storm. What I want to know is if there are any problems on the road. I have no idea what the answer to that question is after seeing your website.

- There should be current traffic information--although you say it is there, your maps do not give any information--there is an ice storm going on and I need to go from Blacksburg to Tazewell County and I can't find out the condition of 460--if you are going to offer this service you need to do better than the map with rollovers--find out what state is good at this and copy them

- No pictures of Afton Mountain 15 June 8:30 pm. Daughter stuck in traffic and 511/phone/VDOT website no help!

- When there are problems on 81 such as the one on June 24 between mile 257 & 264, please give more info than to call 511. NOT EVERYONE HAS A CELL PHONE!!! If the

variable message sign had said that the road was closed at 257, I would have taken 33 to 340 to 66. Since the message only said accident and call 511, I did not know the road was closed (repeat NOT EVERYONE HAS A CELL PHONE). It took me 3 hours to go 7 miles. I have never been in anything that bad in the DC metro area. As far as I am concerned, 511 is useless. P. S. We were returning home from VA Tech. Our daughter is considering Tech and had attended an info session at admissions. If she goes to Tech, we will be making many trips. There has to be a better way to warn of major road problems!

- Travel conditions are sketchy & accidents are slow in appearing on web. More than enough information on road construction. The site needs a lot of improving!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!

- I wanted to check the site out for road conditions since I travel 81 & 66 every day to go to work in Northern Virginia. Also my husband is a truck driver so we check for his work travel also. I was disappointed because nothing showed up for road conditions.

- I desire to know the weather related travel conditions using I95,I64 and I81 and if possible, the road conditions from Fredericksburg to Orange then to Gordonsville and finally to Shadwell. Many of my questions are still unanswered so I'll call the State Police where I'll not get a runaround.

- Couldn't get ANY information regarding road conditions.

- Need to put your travel conditions for 1-81 in more detail especially in snowy weather.

- Your road conditions site SUCKS!!!!

- Specify the road conditions in more detail and perhaps show current pictures of major highways/interstates.

- I desire to know the weather related travel conditions using I95,I64 and I81 and if possible, the road conditions from Fredericksburg to Orange then to Gordonsville and finally to Shadwell. Many of my questions are still unanswered so I'll call the State Police where I'll not get a runaround.

- I live in Charlottesville and just started working in Staunton which means traveling over 64 (Afton Mt) to work. There is frequently problems on Afton Mt with traffic and it would be good to add this section of road with more current information (perhaps more in depth).

- A little bit more information about traffic congested areas similar to the "traffic watch service" available in larger cities.

- I would like to have updates in my email box. This would include accidents, etc. I can envision other traveling with portable web devices benefiting tremendously. My email is: *(VTTI deleted personal information for privacy reasons).*

- I would like to see an option under traffic conditions where I would be emailed if there were any incidents on I-81. I commute from Radford to Roanoke daily. It would be very useful.

Tourism & Attractions

- Yours is an excellent Website**.** The only fault I found was the dates were not listed immediately underneath the "Fairs and Festivals" listed.

- Today I was trying to find something about the Luray Caverns. I live in Front Royal and have visited Luray a number of times over the years. There must be some ways you can make this site far easier to use. I have to guess, and you seem to change it from time to time. I have not seen any improvement despite some changes. Thanks.

Food & Lodging

- I love the places you advertise, I have stayed at most. If the restaurant gave some type of coupon that could be printed off this site as other sites do that would be great.

- Put the exit numbers next to hotel and food vendors.

- Please have listing of campgrounds and RV support.

Weather

- Provide accurate weather predictions, especially in the winter, so that we know whether to travel or not.

- In the winter provide weather conditions!!!!! When we click on weather conditions, nothing comes up. Get busy!!!!!!

Trip Mapping

- I don't know what mile markers are at what city. It would be nice to have mile markers shown on the map on the web site. Also, by phone, say what cities are at what mile marker.

Marketing

- SITE needs more connecting links. Needs to be advertised ... Bumper sticks, newspaper ads, merchants using the site, PHONE Book and Yellow Pages, etc**.**

- When I was visiting the Frontier Culture Museum recently I picked up one of the 511 litter bags at the Tourist Information Stand. I would like to know how I could obtain @400 of the these 511 plastic litter bags. We are organizing a RV Rally for Carriage Trailers in Virginia in September and would really like to give these bags out with information packed

in them. I would appreciate a message back by E-Mail or a telephone call to inform me of the possibility of getting these bags. If there is other information that would appropriate to include in the bags I would like to have information on that also. Thank you. *(VTTI deleted personal information for privacy reasons).*

Technical & Design Issues

- Keep it clean and simple, just like it is. Don't clutter it up with ads or pop ups. As a computer specialist, you have done a remarkable job. LOVE IT.

- Get the cams in working order. I know the one on Afton was hit buy lightening but not everyday. It is always out any more. My son lives right there and it is great to see his area. Over all this is a very pleasant site that is very easy to navigate. I never hit a dead link and except for the cam problem it is great!! Excellent job and this makes my day a little bit nicer. Thank you.

- Please do the best you can to make sure the cameras are working when the weather is bad (rainy / foggy). Today (4-18) it is rainy, may be foggy, and neither the Afton nor Winchester camera is working.

- No pictures of Afton Mountain 15 June 8:30 pm. Daughter stuck in traffic and 511/phone/VDOT website no help!

- I love the cameras, especially the one on Afton Mountain. I wish the pictures were larger.

- Every few seconds the page moves, which is very distracting.

- I tried to look at the traffic conditions, and it didn't load at all.

- When I was there NOTHING came up. I couldn't find out about the weather or how bad the roads were.

- Site is difficult to view due to the constant resizing of the window containing traffic incident information.

- This constant resizing makes it very difficult to read any of the textual portions on the site. Can anybody concerned with the website maintenance have actually tried to view it recently. My guess is no. Bad design but easily correctable by making fixed width window.

- Travel information never came up.

- I click on current traffic conditions and only a blank page comes up. The little window with accidents is to small and the lines scroll too fast.

- I have clicked on road conditions for I-81 over and over again and nothing comes up. HELLO!!! ARE YOU THERE????

- I have clicked on road conditions endlessly with no results. Is anyone there? Your service is terrible!! Anyone thinking about visiting Virginia would really be turned off.

- When I clicked on any of the road condition choices it would just come back to the same page without providing any information. Giving some information about road conditions would be an improvement.

- Road condition map nearly unreadable. Flashing items flash too fast.

- I find information such as weather in strange places. Your search engine is poor. There are not enough web links to properties on the site.

- Larger maps!!!

- Have the information available in an alternative format, i.e. tabular so it can be printed. The maps are pretty but have limited value if you want to take the data with you.

- I have a question? Why are the signs posted on the highway? I can't use it with my cell phone.

- 511 cannot be dialed from Verizon Wireless Network in Botetourt County. 511 is blocked**.**

General Comments & Criticisms

- Great site, wish all of the states had one

- This site is a very good idea.

- Great Resource, Thanks for the Help!

- This is a great site with great information, maps, etc. I wish more states would do this type of page.

- Do something with your time that you know something about.

- You can not find information on this site it is not worth getting on here

- What a VA Governmental Waste of Resources. This website should be shutdown. It should include Counties of Fairfax, Loudon, Arlington, and Prince William. What a disappointment.

- If you put school, plant, and business closings on this site you will have more interest.

- When you list cities you might also include a map or listing of the county. Thank you

- Expand it to cover all Virginia Interstates.

- I think that it would really be helpful to extend the 511 up a little to WV! That would be great for the loads of people who work in WV and live in VA!

APPENDIX B: 511 VIRGINIA WEB SITE SURVEY

511 Virginia Survey

Thank you for taking the time to complete our survey. The survey will take about five minutes. We will use the responses from the survey to evaluate and improve the functionality of the 511 Virginia website. This survey is being conducted by the Virginia Tech Transportation Institute for the Virginia Department of Transportation (VDOT). VDOT is interested in your opinions about traveler information available about I-81 in Virginia. This is strictly for research purposes; we are not selling anything and we do not collect personally identifying information. You are free to stop this questionnaire at any point and you can refuse to answer any particular question at any time. If you have already completed the survey once or if you would like to provide detailed comments and suggestions on how we can improve the site, please forward your comments at any time to the webmaster via our electronic submission page at: 511 Virginia Comments.

To view 511 Virginia's privacy policy, please click here: Privacy Policy.

Before you tell us what you think about our site, please tell us about yourself—remember, this information is private. We will not sell or share our information with anyone.

1. What was your age on your last birthday? All information is strictly confidential. If you are 18, we ask that you immediately stop completing this survey.
- ☐ 19 to 39 years old
- ☐ 40 to 49 years old
- ☐ 50 to 59 years old
- ☐ 60 to 69 years old
- ☐ 70 or older
- ☐ Don't know/Refused

2. From which part of the world are you visiting the 511 Virginia website?
- ☐ United States
- ☐ Canada
- ☐ Mexico
- ☐ Other: _____

3. If you are visiting the 511 Virginia website from the United States, what is your five-digit zip code? _____

4. Are you:
- ☐ Male
- ☐ Female

5. What is your access speed to the Internet?

- 33.6K or less
- 56K
- Cable/ISDN
- DSL
- T1
- Don't know
- Other

6. Since tourism is so important to the economic livelihood of the I-81 region, we would like to collect a general idea about the incomes of those who drive on I-81 and visit the 511 Virginia website. Would you be willing to share the range of your 2002 household income before taxes?

- Under $20,000
- $20,000 to $35,000
- $36,000 to $50,000
- $51,000 to $65,000
- $66,000 to $80,000
- $81,000 to $100,000
- Don't Know/Refused

7. What do you do for a living?

- Student
- Commercial Vehicle Owner/Operator
- Employee – non-government
- Employee – government
- Military
- Other: _____

8. Please rate your level of satisfaction with the 511 Virginia website:

8a. Home Page

- Very Satisfied
- Somewhat Satisfied
- Neutral
- Somewhat Unsatisfied
- Very Unsatisfied

8b. Travel Conditions

- Very Satisfied
- Somewhat Satisfied
- Neutral
- Somewhat Unsatisfied
- Very Unsatisfied

8c. Food & Lodging

- Very Satisfied
- Somewhat Satisfied
- Neutral
- Somewhat Unsatisfied
- Very Unsatisfied

8d. Shopping & Services

- Very Satisfied
- Somewhat Satisfied
- Neutral
- Somewhat Unsatisfied
- Very Unsatisfied

8e. Tourism & Attractions

- Very Satisfied
- Somewhat Satisfied
- Neutral
- Somewhat Unsatisfied
- Very Unsatisfied

8f. Emergency Services

- Very Satisfied
- Somewhat Satisfied
- Neutral
- Somewhat Unsatisfied
- Very Unsatisfied

8g. Trip Mapping

- Very Satisfied
- Somewhat Satisfied
- Neutral
- Somewhat Unsatisfied
- Very Unsatisfied

9. So that we can match the right information with the needs of our visitors to the site, please tell us why you visited our site today:

- Travel conditions, including traffic delays and winter weather advisories
- Food & Lodging
- Shopping & Services
- Tourism & Attractions
- Emergency Services
- Trip Mapping

10. How likely are you to revisit this site on a regular basis?
- Very Likely
- Somewhat Likely
- Unlikely
- Somewhat Unlikely
- Very Unlikely

11. How likely are you to recommend our site?
- Very Likely
- Somewhat Likely
- Unlikely
- Somewhat Unlikely
- Very Unlikely

12. Where did you hear about our website (please check all that apply)?
- I knew the site name
- Search engine
- Guessed the address
- Online or link from another website
- Saw on TV, heard on the radio
- Newspaper or magazine
- Word of mouth
- Other_____

13. How often do you visit the 511 Virginia website?
- Every day
- Several times a week
- About once a week
- Several times a month
- About once a month
- Less than once a month
- This is my first visit here

14. When browsing the 511 Virginia website, how long do you typically spend here? _____

15. How much effort did your search on this site require before you found what you were looking for? (Did it take a long time? Did you have to try several times?)
- A lot less than I expected
- Less than I expected
- About what I expected
- More than I expected
- A lot more than I expected

16. How frequently do you surf the web?

- Every day
- Several times a week
- About once a week
- Several times a month
- About once a month
- Less than once a month
- This is my first visit here

17. What do you regularly use the web for? (Please check all that apply—This information will let us know what additional information you would like to see, if possible, on our site?)

- News
- Work research
- Personal research
- Investments
- Shopping
- Auctions
- E-mail
- Chat/communities
- Web-based address book/calendaring
- Banking
- Other:_____

18. How often do you use the web to find traffic information?

- Every day
- Several times a week
- About once a week
- Several times a month
- About once a month
- Less than once a month
- This is my first visit here

19. How often do you use the web to find traveler information (i.e., information on tourist attractions, vacation packages, trip routing, etc.)?

- Every day
- Several times a week
- About once a week
- Several times a month
- About once a month
- Less than once a month
- This is my first visit here

20. When do you plan to travel along the I-81 Corridor?

- ☐ Immediately
- ☐ Within the next week
- ☐ Within the month
- ☐ Within three months
- ☐ Within the year
- ☐ More than one year
- ☐ Never

21. What is your primary use of the 511 Virginia website?

- ☐ Business
- ☐ Leisure
- ☐ Education
- ☐ Other:_____

22. If you have a suggestion or recommendation to improve our site, please provide it below.

Thank you for taking the time to complete this survey! Your comments and remarks are greatly appreciated. Please visit 511 Virginia again soon!

SUBMIT

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http://www.computing.vt.edu/internet_and_web/web_publishing/webmasters_toolkit/survey_maker/quickstart.html.

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511 Virginia Evaluation

January 2004

Phone Survey Report
Chapter 4

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CHAPTER 4 : PHONE SURVEY REPORT

EXECUTIVE SUMMARY

An assessment of the 511 Virginia phone system was a primary goal of this 511 evaluation. The evaluation team at the Virginia Tech Transportation Institute (VTTI) wanted to determine if the phone system was achieving acceptable customer satisfaction levels and making progress towards stated Virginia Department of Transportation (VDOT) Intelligent Transportation (ITS) goals, as well as meeting the National 511 quality goals for 511 phone service of accuracy, timeliness, reliability, consistency of presentation, and relevancy. To accomplish this assessment, VTTI developed and implemented a phone-based survey methodology to determine statistically significant findings among users. The key difference between the phone survey and the awareness omnibus survey was that the phone survey focused only on callers to 511 Virginia while the omnibus surveyed the general population of Virginia and did not include awareness or usage of 511 as a deciding factor for participation.

With regards to VDOT's ITS stated goals (as applicable to the 511 Evaluation), the 511 users surveyed indicated that:

Customer Satisfaction

1.) Callers felt that they had increased awareness of available traveler information through access to the new three digit traveler information number, 511 Virginia (365 of 393, or 93%).

Mobility and Efficiency

1.) The phone system did provide enough information and was, in general, timely enough for users to change their travel behavior based upon what they heard. But, the results included first time callers who had not had the opportunity to experience 511 Virginia enough to affect their travel behavior. However, with first time callers included, 49% of all callers indicated that they had changed their plans based upon what they had heard on 511 Virginia, and 166 of 212 indicated that they changed their plans by changing their route. See Figures 27 and 28 for more details.

2.) While no baseline survey work was conducted, a reasonable confidence level in the safety of the I-81 regional roads currently exists. The mean was Somewhat Safe, or 0.6 on a scale from -2 to 2, and 63% reported that they perceived the I-81 Region as either very safe or somewhat safe. In addition, having access to 511 Virginia has had little effect on users' opinions of the safety of the I-81 Region (i.e., 53% reported no change in their perception of the safety of the I-81 Region based on 511 Virginia alone). See Figures 19-21 for complete breakdowns of the results.

With regards to National 511 quality goals of accuracy, reliability, consistency of presentation, and relevancy, the incident inputs to 511 Virginia were analyzed for presenting three factors:
1.) What (Accident, Lane Closure, etc.)
2.) Where (Location)
3.) Action/Effect (Directions for Traveler)

It was found that 94% of all incident postings to 511 from August 1, 2002 through September 30, 2002 and from August 1, 2003 through September 30, 2003 (both periods, a total of 96 events) complied with this standard of transportation information.

Other findings of interest from the phone survey of 511 Virginia users were:

1.) Based upon a very small sample of only 19 drivers, findings indicated that commercial vehicle operators are neutral about the availability of truck parking for the I-81 Region. This may be due to the fact that over half of the CVOs surveyed were short-haul drivers who would not have a need for overnight parking. See Figure 16 for a complete breakdown of responses.

2.) To answer the most important question about whether or not 511 Virginia is meeting the public's travel information needs, the survey respondents were asked about the service's usefulness. The mean response was Very Useful (a score of 1.5 on a scale from -2 to 2). A full 90% ranked 511 Virginia as Somewhat Useful or Very Useful. See Figure 22 for a complete breakdown of responses.

3.) A good way to measure loyalty and satisfaction for a phone service is to determine whether or not a caller would indicate that he or she would call back. 511 Virginia was very successful in this area; 99% of the respondents indicated they would call 511 Virginia again. See Figure 29 for a breakdown of the remaining respondents.

4.) A large majority of respondents (73%) perceived VDOT in a more positive light based upon its offering 511 Virginia. See Figure 32 for more details.

Summary of Recommendations

The evaluation team recommends that:

1.) More research should be done into the CVO community's needs and usage of the 511 phone service.
2.) Develop and monitor a permanent feedback loop on the phone system.
3.) Provide more detailed traffic information to include the exact location and duration of road incidents.
4.) Do more usability research into how to make the phone system easier to navigate.
5.) Monitor and improve timeliness of travel information available on 511 Virginia.
6.) Determine the ratio of long haul to short haul drivers on I-81 and cater travel information to the majorities' needs.

7.) Tailor the phone tree structure and information format to better facilitate caller decision making (e.g., more in-depth alternate route information should be easily accessible from the traffic menu, if callers change their travel route).
8.) Do more research into travel information that callers might desire if they do change their plans based upon information they hear on 511.
9.) Develop a means to identify and record first time callers through the call software employed (e.g., TellMe, Inc. XML software).
10.) Investigate why some callers perceive that the voice recognition is not working.
11.) Focus primarily on providing timely traffic information.
12.) Investigate why callers are willing to call 511 again.
13.) Do more awareness marketing.
14.) Peak interest in the system along the road to increase calls. 23% (87 of 383) of those surveyed indicated that they first called 511 out of curiosity or boredom.
15.) Slightly cater marketing to males.
16.) Advertise 511 on weather.com or weatherchannel.com (same site).
17.) Focus marketing to residents during work time (8am and 5pm, Monday – Friday) radio or billboards.
18.) In addition to I-81, I-77, and I-64, focus marketing along I-40, I-75, I-95, and I-65 welcome centers.
19.) Focus marketing or work with the top three states (PA, NC, TN) to increase out-of-state awareness.
20.) Focus marketing in the top three tourist destinations (Blacksburg, Roanoke, Harrisonburg) to increase tourist awareness of the current 511 system, and focus marketing in Roanoke, Richmond, Fairfax, Woodbridge, and Winchester (Top tourist origination cities).
21.) Develop special travel information for business travelers

Summary of Lessons Learned

As a summary of lessons learned for future evaluation methodologies, the evaluation team recommends:

1.) If multiple team members will be responsible for different segments of the write-up, agree ahead of time on the formatting of the graphs and the methods of referring to statistics/parameters. For example, always indicating "n=xxx" for each statistic, if the responses are low enough to prevent accurate representation with a percentage alone (i.e., too small of a sample size to be statistically significant) or deciding whether or not to include the "Don't Know/Refused" category in each presented graph. This will save hours of revisions if done ahead of time and correctly.
2.) Make sure that response brackets match between the different instruments (i.e., using the same age brackets with the web survey as with the phone survey) for an easier comparison between instruments.
3.) Over-recruit the sampling frame. Expect a 1.5% response rate to the initial intercept, if attempting to intercept callers to the 511 phone system.
4.) In future 511 surveys, evaluation teams should find out whether or not the participant is a first time caller.
5.) For the most efficient use of resources, purchase questions on an omnibus - especially for general population awareness items.

6.) If appropriate, include business travelers as a category (in addition to residents, tourists, and CVO) to better assess their needs.
7.) For better CVO sampling, design an instrument and incentive exclusively for that segment.

BACKGROUND

Purpose

While the focus groups, which served as the question development forum for the phone survey, and the omnibus survey for measuring 511 awareness, drew from users and non-users alike, the phone survey drew only from current users of the system. The phone survey was used to derive statistically significant results of the users' demographics, associations between their reasons for travel and their usage behavior, the effect that the information they were able to access had on their travel behavior, what causes users to access the system, and finally, what other sources for traveler information the system competes against.

Objectives

Specifically, the phone survey was developed to meet the following 511 Evaluation goal areas and objectives:

Customer Satisfaction:

- Improve traveler's ability to access information

Mobility & Efficiency:

- Measure the change in traveler behavior (e.g., When provided with real time information about an accident, what effects does the information has on traveler behavior?)
- Measure the change in traveler confidence in the safety of I-81

METHODS

Approach

The phone survey consisted of developing an automated phone intercept that was placed in the global portion of the message that callers first hear when they call 511. This message would not be bypassed by the average caller. The system requested that the caller leave his or her name and number to be contacted at a later time for a survey. The participants would be paid ten dollars, if they were interested. The names and numbers were recorded to voice files. These were then listened to and entered into a sample frame database, which was the main entry page into a web-based survey software developed by VTTI for administering the survey. This software included a means of gathering payment information. The .wav files were deleted after being converted into the database. As far as the entered data, the callers who left their name and number but could not be reached were deleted, as were those who participated and did not wish to have their names and numbers remain on a list for VDOT's use in the future. The names and numbers of those willing to remain on a list for VDOT's use were delivered to the VDOT representative managing this evaluation through a separate, more secure means. All personally identifying information was removed before analysis was begun on the data.

Subject Recruitment

In order to develop a database of participants, each caller was offered (in the global portion of the phone system menu) an opportunity to leave his or her name and number for a survey administrator

to call him or her back at a time that was convenient. There was a $10 incentive offered to obtain a more neutral participant pool.

The following is the draft of the message that users heard in the global portion of the phone system, which asked callers if they would like to participate in a survey about the 511 system.

After the initial greeting and before the traffic information all users heard:

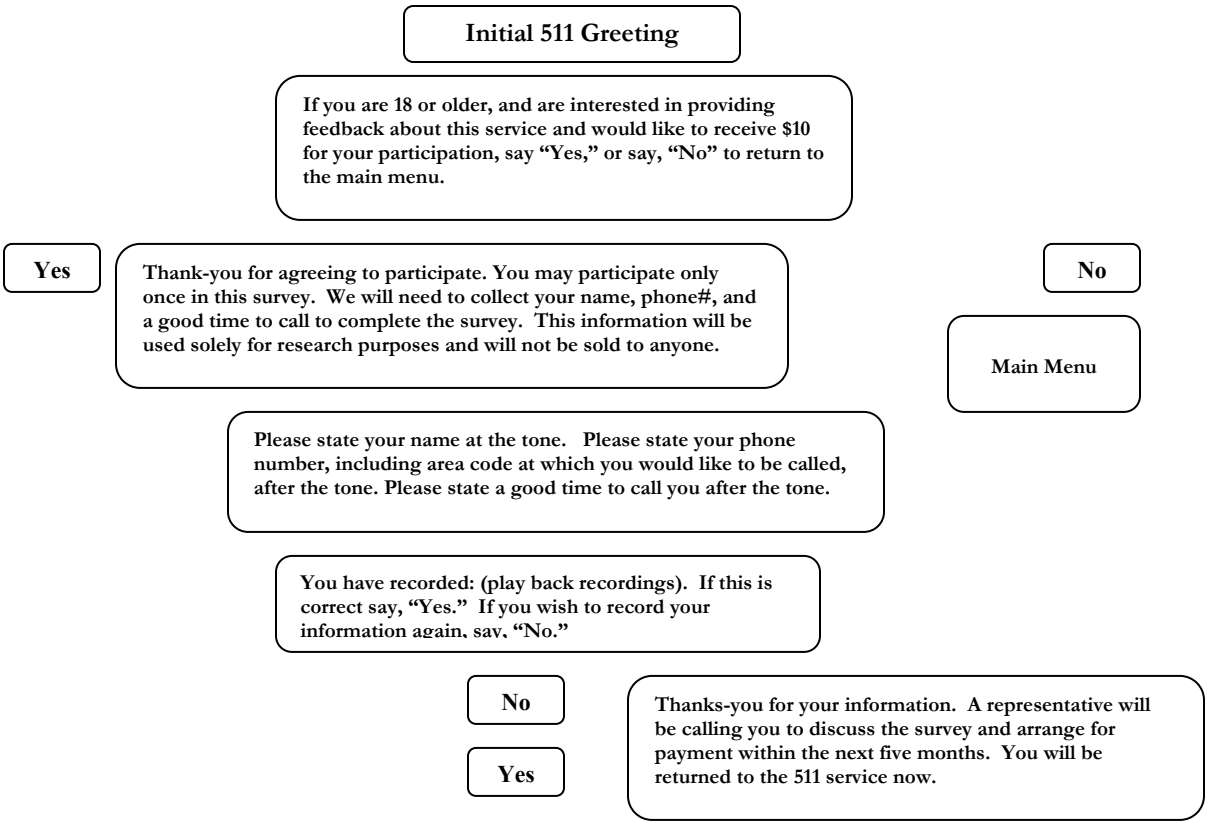


Figure 1: 511 Virginia Intercept Phone Tree.

Survey Development

Instrument

See Appendix A for a copy of the phone survey with instructions to administrators, all tables of raw data, and the associated graphs. The phone intercept message was active for two periods of time: one period in March for 21 days, and one period in May for 18 days. Each period, users who agreed to leave their information were contacted, and the survey was administered verbatim from the online survey administration web site by evaluation team members trained in phone survey techniques. The survey was revised based upon findings from the focus groups, and it received verbal approval from Virginia Tech's IRB. The results were coded and maintained in an Excel spreadsheet that was independent of the participants' personally identifying information. The personally identifying information was maintained in a separate database for accounting purposes.

Data Management

The names and information were initially stored as voice files. Every period, one member of the evaluation team accessed the voice files and transferred them to the web-based survey, permanently deleting the voice files after they had been recorded. The Excel file of responses was maintained on an independent computer that was password protected. From the website, the survey administrators called and administered the survey over the phone, collecting personally identifying information separately and only for the purposes of mailing the incentive to participants. Each respondent was assigned a sequential subject identification number, and this ensured that no personally identifying information was connected with survey responses. A separate area of the web-based survey was used to account for the incentive payments, and it did contain participants' names and address information. This file was deleted once all of the surveys were completed, and it was maintained in the interim only to resolve any incentive payment issues and to document the allocation of the incentive funds for Virginia Tech's Purchasing Department.

Subject Privacy

The introduction to the survey was developed to inform participants about the goal of the survey, as well as to assure them that personally identifiable information would not be connected with their answers and the survey administrators were not selling anything.

Below is the excerpt of the introduction:

> Hello, my name is *your first & last name* and I am administering a research survey about 511 for the Virginia Tech Transportation Institute for the Virginia Department of Transportation or VDOT (pronounced "vee-dot"). You previously indicated that you would be interested in answering a survey for 10 dollars regarding your experience with 511. This is strictly for research purposes; we are not selling anything, and we only collect personally identifying information in order to send you your payment. Personal information will not be connected with your responses in anyway. If you do participate, you are free to stop the survey at any point and you can refuse to answer any particular question at any time. The entire survey should only take about 10 minutes. Are you still interested in telling us your opinions about travel information in the I-81 region?

The screening questions were designed to ensure that each respondent was older than 18 years of age, and that he or she was in fact a driver on the roads of interest. It was also intended to give the survey administrator a chance to collect basic demographic information about the respondent. The screening questions ended with the reason for traveling question, in order to group the respondents into one of the three segments: resident, tourist, or commercial vehicle operator. Although the user already indicated his or her age once on the phone, the survey administrators asked once again before proceeding to the survey. This was used as a secondary precaution to ensure that minors were not questioned in the survey.

SAMPLING

Sample Frame

Before taking the sample, based upon a 95% confidence interval, maximum variability (50-50), and a + or - 5% error rate for a large population, the sample size, to be statistically significant, was

determined to be at least 384 responses. The phone system's average monthly call volume was 7,371 callers. Based upon an estimated 1.5% response rate, the intercept was expected to run for eighteen weeks. The timeline could be adjusted based upon the actual response rates once they could be determined. The users would be self-selecting, due to the fact that they were users of 511 to begin with and would possibly be acting out of interest in the monetary incentive or a desire to provide negative or positive feedback.

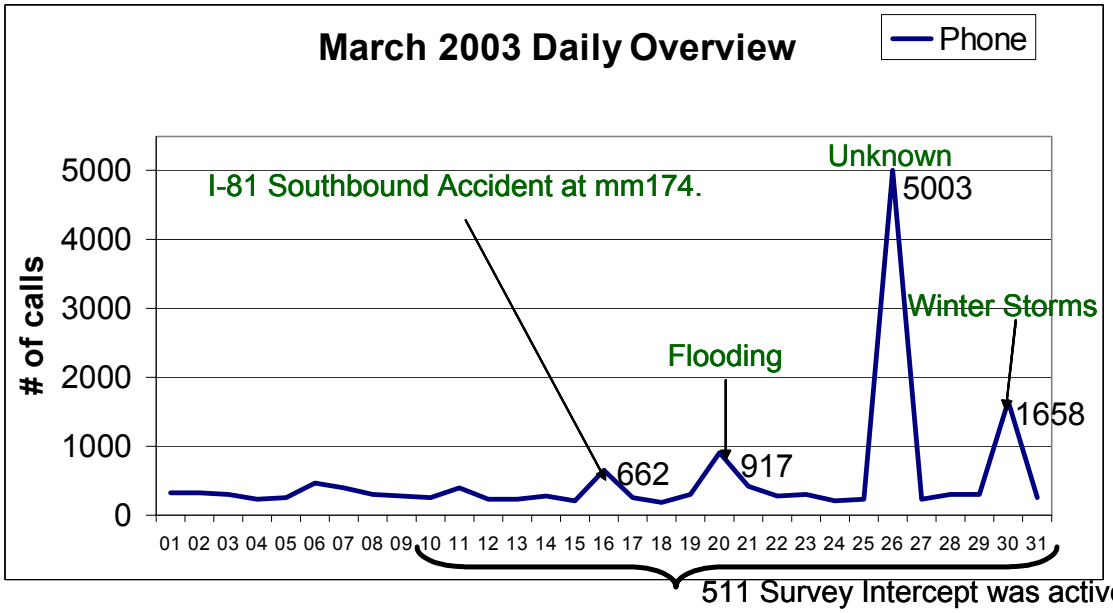
The sampling and final sample frame for this survey was broken into two periods:
1st Period: March 10, 2003 - March 31, 2003 (201, or 50.25% of the sample), and
2nd Period: May 2, 2003 – May 20, 2003 (199, or 49.75% of the sample).

During the first period, which was 21 days long, there were 13,139 total callers into 511 Virginia. 422 callers (or 3.2% of all callers) left their name, indicating that they might be willing to complete the survey for ten dollars. A total of 201 callers (or 1.5% of all callers, or 48% of those that left their name) completed the survey for ten dollars. The call duration was 1 minute and 12 seconds while the phone survey was active.

During the second period which was only 18 days long, there were 6,479 total callers into 511 Virginia. 322 callers (or 5% of all callers) left their name, indicating that they might be willing to complete the survey for ten dollars, and 199 (or 3.1% of all callers, or 62% of those that left their name) completed the survey for ten dollars. During the second call period, the call duration was one minute and 41 seconds.

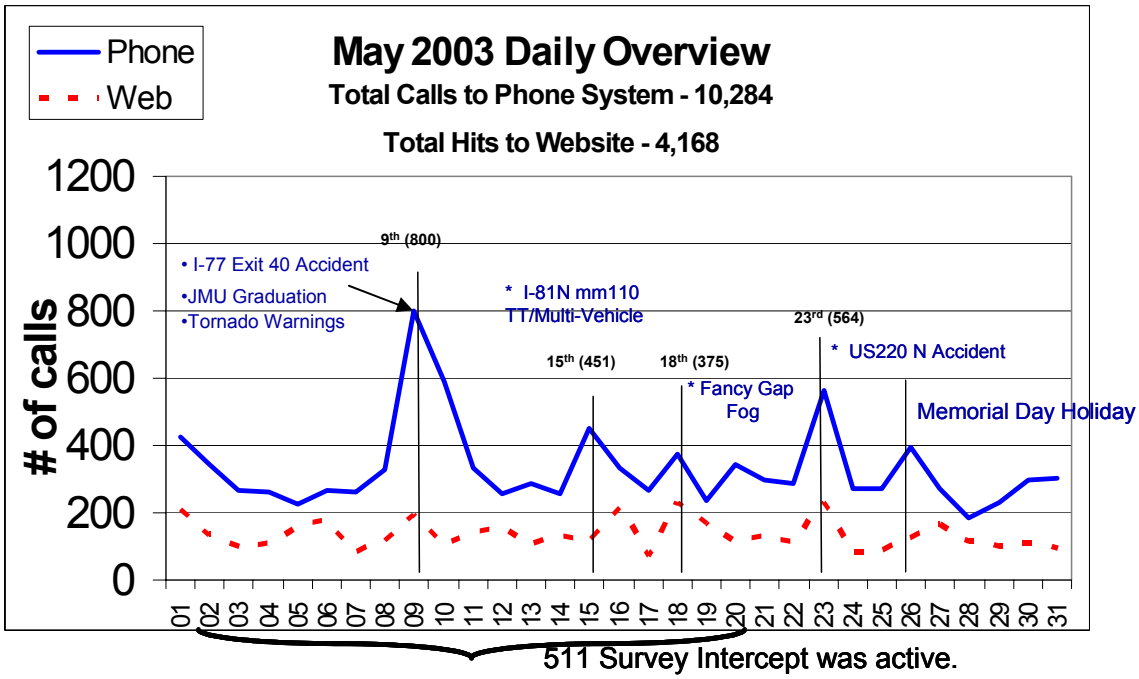
The weather during these two periods varied significantly. During the first period, the weather included one severe thunderstorm warning and two winter storm warnings for the whole corridor, and in the Staunton District, there was also a flood warning. The following are the events that correlated with the first sampling period:

Figure 2: March 2003 Correlations on I-81.



The weather during the second sampling period was more severe, with five severe thunderstorm warnings, high wind warnings, dense fog warnings, flood and flash flood watches, and one tornado warning that affected the entire corridor. The following are the events that correlated with the active intercept period:

Figure 3: May 2003 511 Correlations on I-81.



The survey response rate was based upon the 1982 approved Council of American Survey Research Organization (CASRO) formula for response rates[1]. The following is the final calculation for response rates, treating both collection periods for the sample as one set of data:

Table 1: Final Cumulative Response Rate Calculations.

Population:	Callers to 511 Virginia	
Sampling Frame:	Callers who left contact info on the phone system in March and May 2003	
Desired Sample Size:	400 callers	
Sample Plan:	Systematic sample, including over sampling in order to achieve the 400 desired completions.	
Eligibility of Respondents:	Sponsor wants only callers who have experience with 511	
Codes:	**Response Rate = 29.75%**	**Totals**
D	Disconnected	25
WT	Wrong Target	33

[1] Burns, Alvin C., R.F. Bush. Marketing Research, 3rd Ed. Prentice Hall, Upper Saddle River: NJ, 2000, pgs. 471-472.

IR	Ineligible Respondent	0
R	Refusal	34
T	Terminate	25
C	Completed	390
BSY	Busy	0
NA	No Answer	915
CB	Call Back	183
Response Rate= Completions/[Completions + (completions/(completions + ineligible)) * (refusals + not reached)]		

The survey utilized a modified Likert-scale and lifestyle inventory questions. The survey questions were developed from focus group input and were tested prior to administering the survey for clarity of meaning.

MAJOR FINDINGS

Demographics/Screening Questions

The evaluation team asked seven screening questions to attempt to decipher who the average caller is that calls 511 Virginia. The seven screening questions were:

1. Are you at least 18 years old?
2. Do you travel on I-81, I-77, I-66, I-64, or in the areas around these interstates?
3. Recorded Gender
4. What was your age on your last birthday?
5. Since tourism is so important to the economic livelihood of the I-81 region, we would like to collect a general idea about the incomes of those who drive on I-81. Would you be willing to share the range of your 2002 household income before taxes? Please stop me when I get to the right range: (income ranges are then read to the participant)
6. To make sure we talk with a variety of people, in which county and state do you live?
7. What is your typical reason for traveling in the I-81 Region?

Based upon the demographic information collected from 511 callers who participated in the survey, all participants were 18 years or older, and had driven on the roads in the I-81 511 coverage area. The average caller was a male, in-state resident of the 511 region, between the ages of 18 and 29, with a household income between $51,000 and $65,000 a year. This differs from the Census Bureau's information for what the average resident of Virginia looks like, which is a female between the ages of 35 and 44, with a household income between $50,000 and $74,000.

Below is a comparison of demographic information for the 511 survey participants, the demographic data of just the 511 covered counties in Virginia, and that of all Virginians[2]:

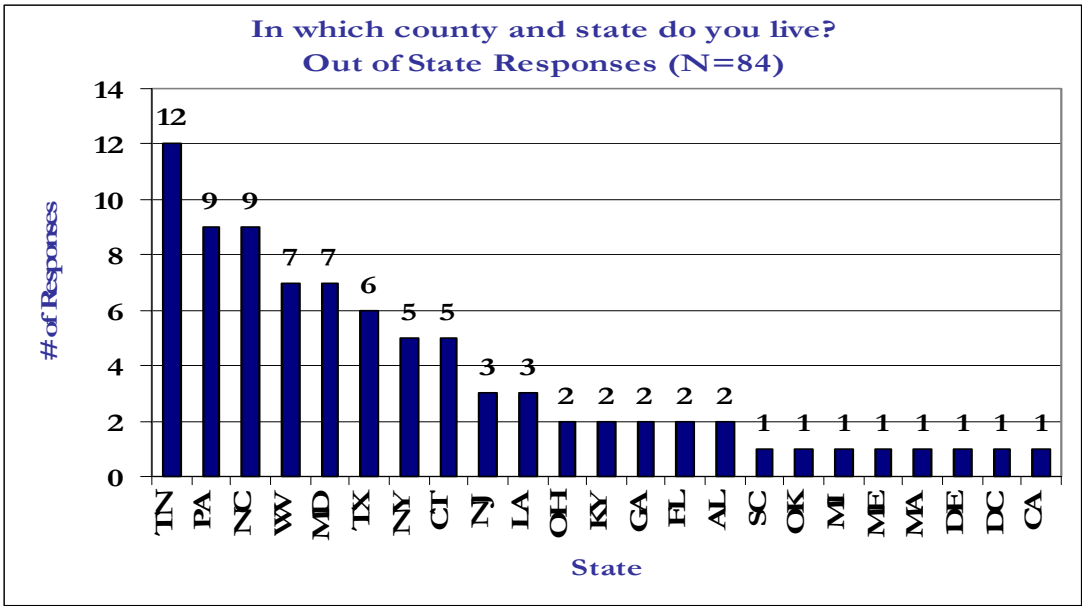
	511 Virginia Survey Highest Frequency Categories	511 Virginia Counties - Census Data	All of Virginia - Census Data
Mean Travel Time to Work	30 minutes to 1 hour	26.5 minutes	27.0 minutes
Median Household Income	$51,000-$65,000	$32,330	$46,677
Male vs. Female	56% Male vs. 44% Female	49.6% Male vs. 50.4% Female	49.0% Male vs. 51.0% Female

	511 Virginia Survey Demographics
Age Brackets	18-29 years old
Commute Time of Day (Residents)	8am in the morning 5pm in the evening Monday-Friday
Travel to/from/in I-81 Region? (Tourists)	> 5 times a year
How far in advance do you decide to make the trip? (Tourists)	1 – 3 weeks in advance
Typical # in Party? (Tourists)	2

Within Virginia, not all callers were from the 511 coverage area. Based upon all participants in the survey (including out of state participants), 37% (or 148 of 400) were from the outside the 511 coverage area. Not all survey participants were from Virginia. A full 37% (148 of 400) of the respondents were from out-of-state, with Tennessee leading the way, as can be seen in Figure 4.

[2] Census information from the 2000 Census for Virginia. Accessed 10NOV03 http://www.census.gov

Figure 4: Out-of-State Responses.



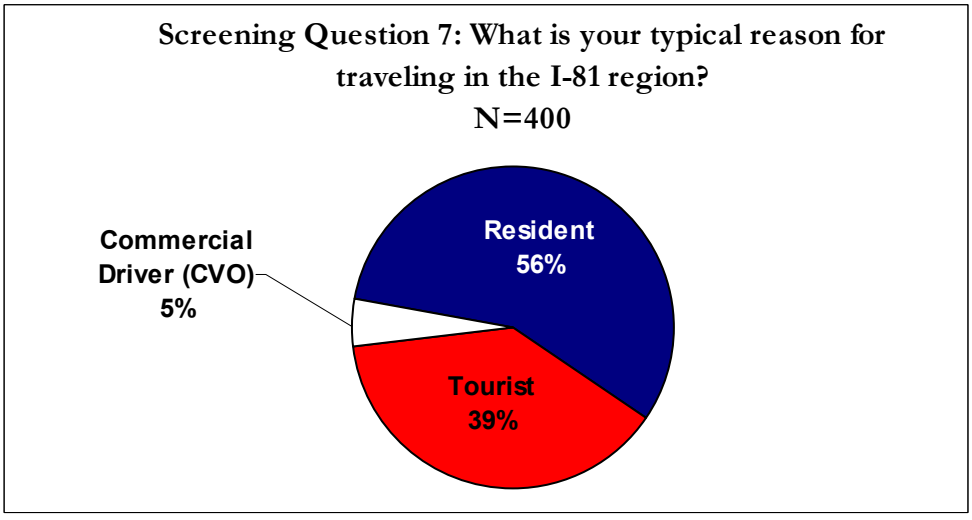
The complete break down of the genders, ages, income brackets, and residences of the callers is included in the phone survey in Appendix A.

The evaluation team decided to funnel the respondents into three categories by asking what their reason was for traveling in the I-81 Region. Respondents could choose from the following three categories:

1. Resident,
2. Tourist, or
3. Commercial Vehicle Operator.

The way in which respondents broke down into these three categories is shown in Figure 5.

Figure 5: Typical Reason for Traveling Survey Respondent Categories.



While these categories were convenient, in the future it is suggested that one more category be included: business travelers (i.e., if you suspect there is considerable through traffic in your 511 area). The business travelers surveyed in this survey were forced into the resident category, which did not adequately reflect different business travelers' behavior.

Path #1: Resident Questions

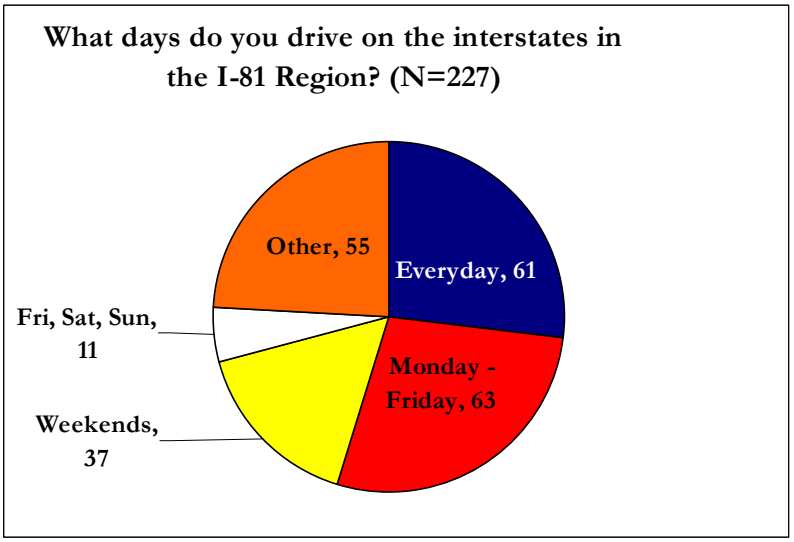
Residents were important because they have access to 511 on a more regular basis than do the other categories of users, and they represent the primary intended base of callers. Residents also represent both the interstate and commuting driver behavior, which is of interest in developing 511 Virginia for a statewide audience.

The evaluation team asked the 227 self-defined residents seven questions about their travel behavior:

1. On average, how many days a week do you drive a car or other vehicle?
2. What days do you drive on the interstates in the I-81 Region?
3. What is the primary reason you travel on the interstates?
4. Do you drive to either work or school on a regular basis?
5. What time of day do you commute?
6. Which days do you typically commute?
7. Normally, how long does it take you to commute to/from work or school?

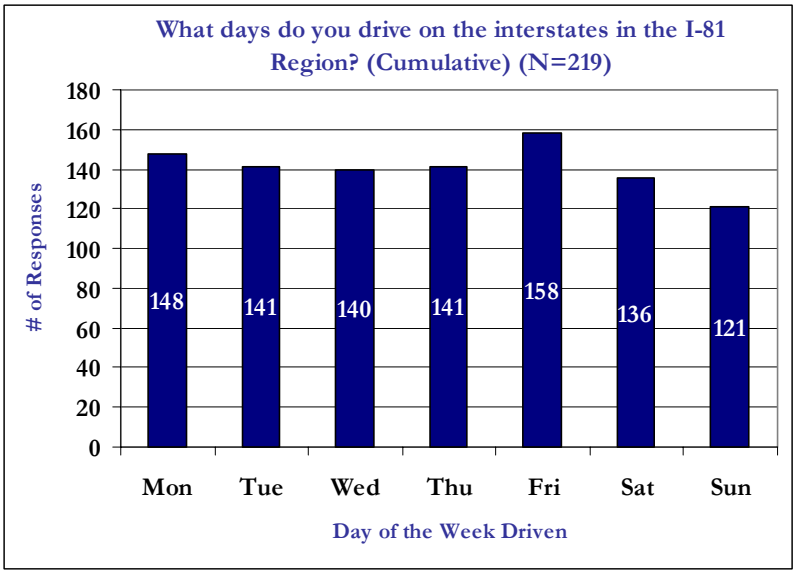
These questions flushed out differences between residents' driving behavior when driving on the interstates versus when they commute on roads covered by 511. Specifically, interstate driving tended to be an everyday occurrence (61), peaking on Fridays (Figures 6 and 7). The primary reason that residents drove on the interstates was for work (Figure 8).

Figure 6: Days Driven on the Interstates by Category.



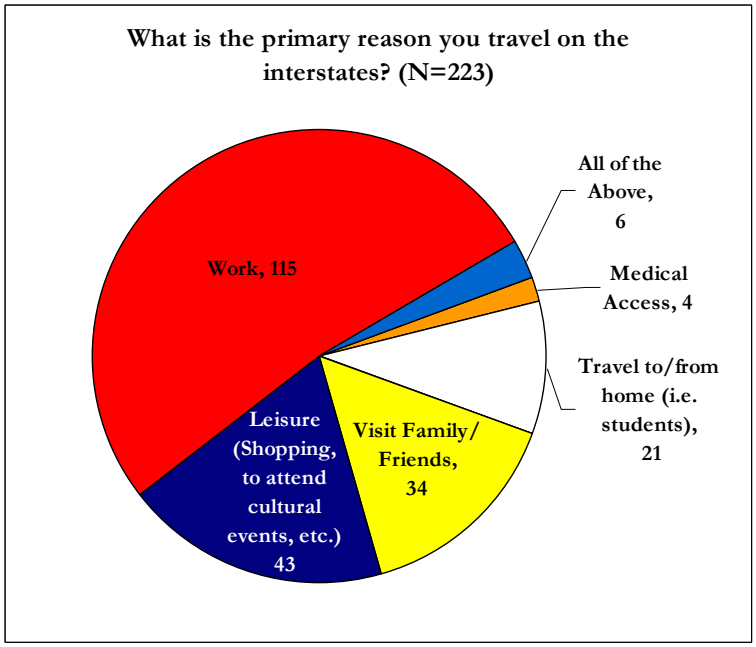
When all reported patterns are taken into account, a cumulative graph (Figure 7) shows that, based upon reported behavior, the traffic should peak on Fridays.

Figure 7: Cumulative Resident Days Driven on Interstates.



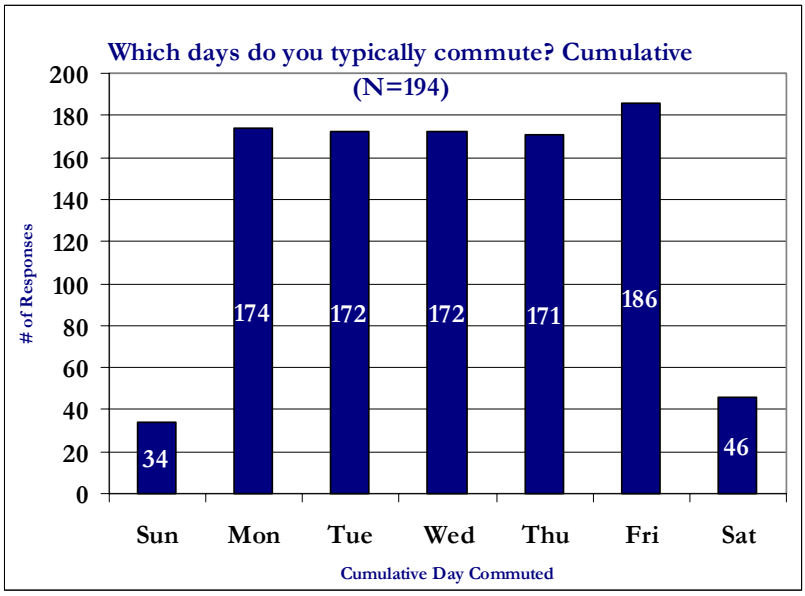
However, given the fact that the Commonwealth's largest universities and 20 other colleges line the 511 region, traveling to and from home by students was also a major reason for travel on the interstates (Figure 8).

Figure 8: Primary Reasons for Resident Travel on 511 Interstates.



In the 511 region, it is apparent that commuter traffic corresponds with interstate travel, which peaks on Fridays as well. However, the commuting traffic on weekends is less than the weekend interstate travel reported by residents. The key commute times are 8am and 5pm, taking 30 to 60 minutes both morning and evening, with the majority of commuting taking place Monday through Friday (Figure 9).

Figure 9: Resident Cumulative Commute Days.



Path #2: Tourist Questions

Tourism is important to the I-81 region. Since 511 is a rural traveler information system that also provides tourism type information through advertisers, the behaviors of tourists were of special interest to this evaluation.

The evaluation team asked the 154 tourists six questions about their travel behavior:

1. On average, how many days a week do you drive a car or other vehicle?
2. From where do your trips to the I-81 Region in Virginia normally originate?
3. What is your typical final destination?
4. How often do you travel on I-81 en-route to (insert destination from Q3)? Stop me when I get to the right frequency?
5. How far in advance do you typically decide to make this trip? Please stop me when I get to the right time frame?
6. How many people are typically in your party for these trips?

In general, the tourists reported planning their trips to the I-81 Region 1-3 weeks ahead of time (51 of 152) or 2-3 days beforehand (42 of 152), traveling with two people in their party. Several of the tourists who participated in the survey originated their trips to the I-81 Region from inside Virginia (88 of 152). However, there were a number from out-of-state as well (Figures 10 and 11).

Figure 10: Tourist Origination States.

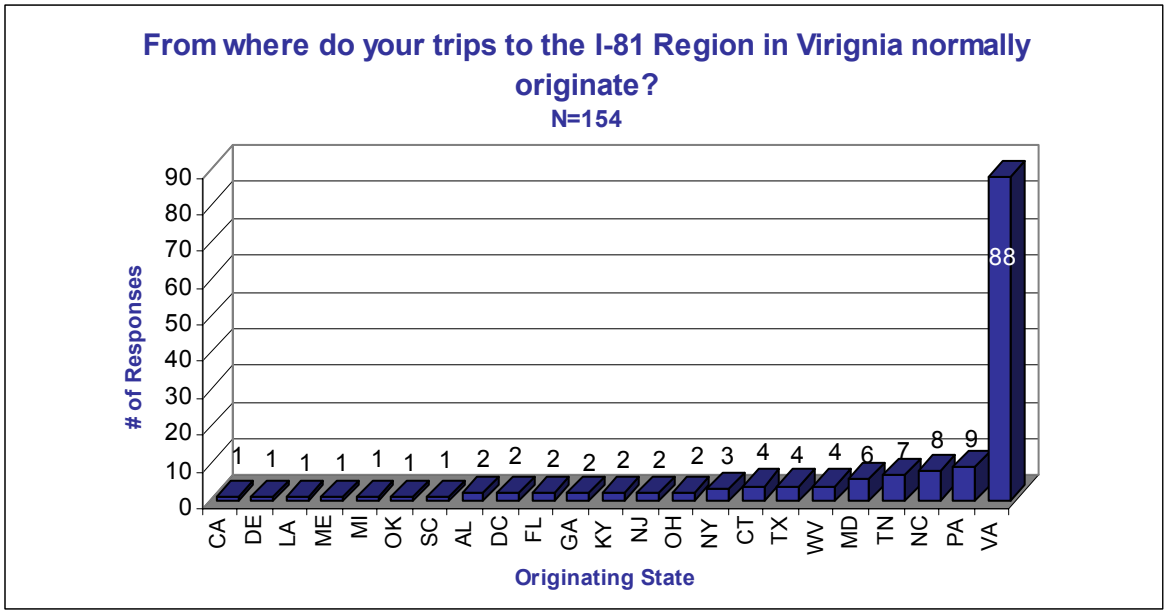
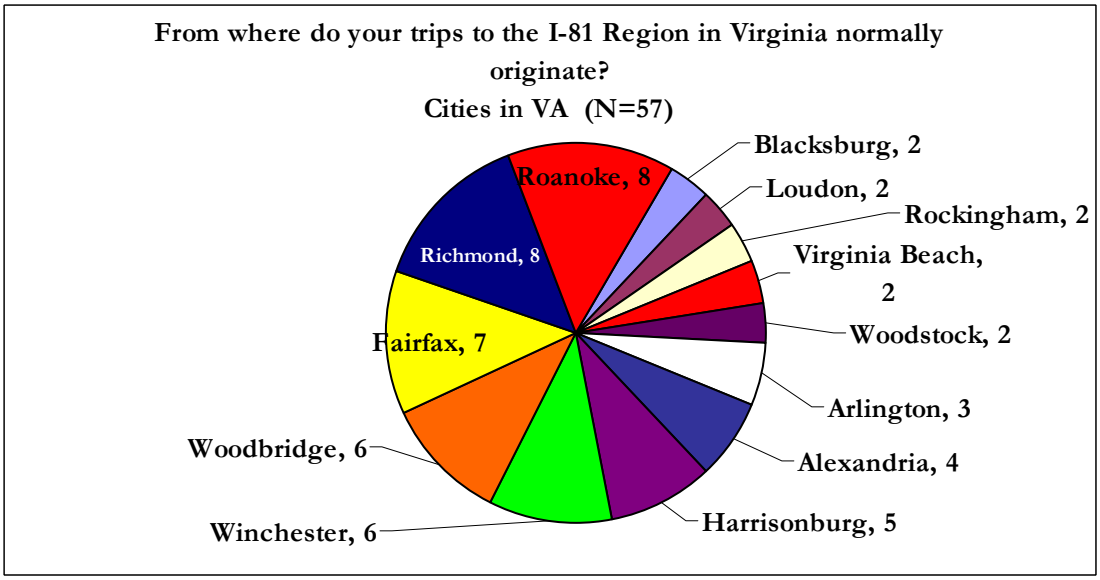


Figure 11: Tourist Origination Cities in Virginia.



The top three states where trips originated from, other than Virginia, were Pennsylvania (nine different locations), North Carolina (Charlotte), and Tennessee (Chattanooga and Knoxville).

The typical destination for tourists was Virginia (Figure 12), the top three cities being Harrisonburg (15), Roanoke (14), and Blacksburg (9). See Figure 13 for the rest of the cities.

Figure 12: Tourist Typical Destinations by State.

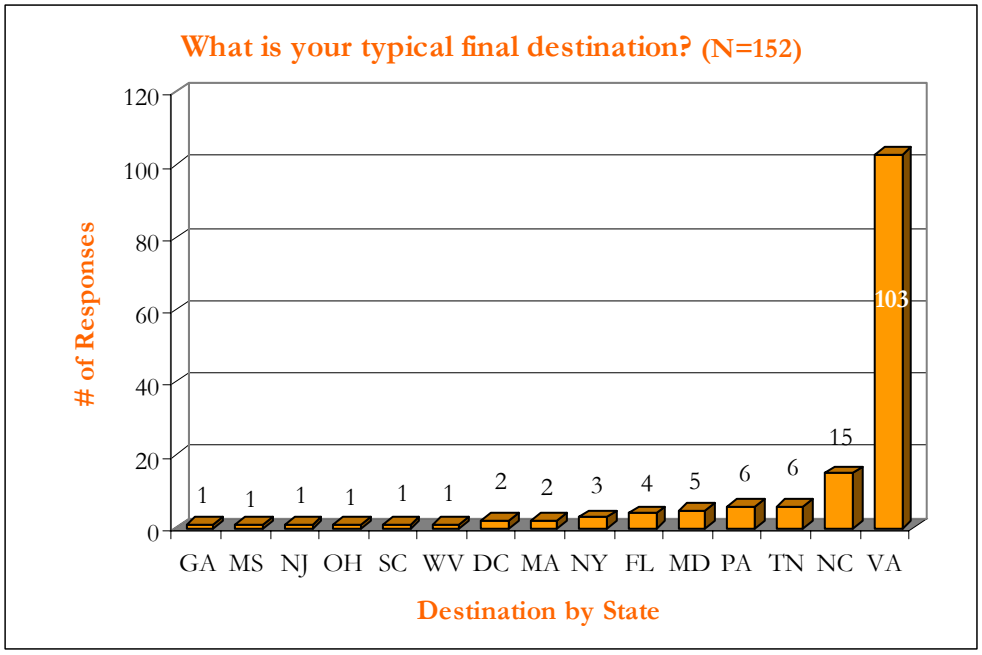
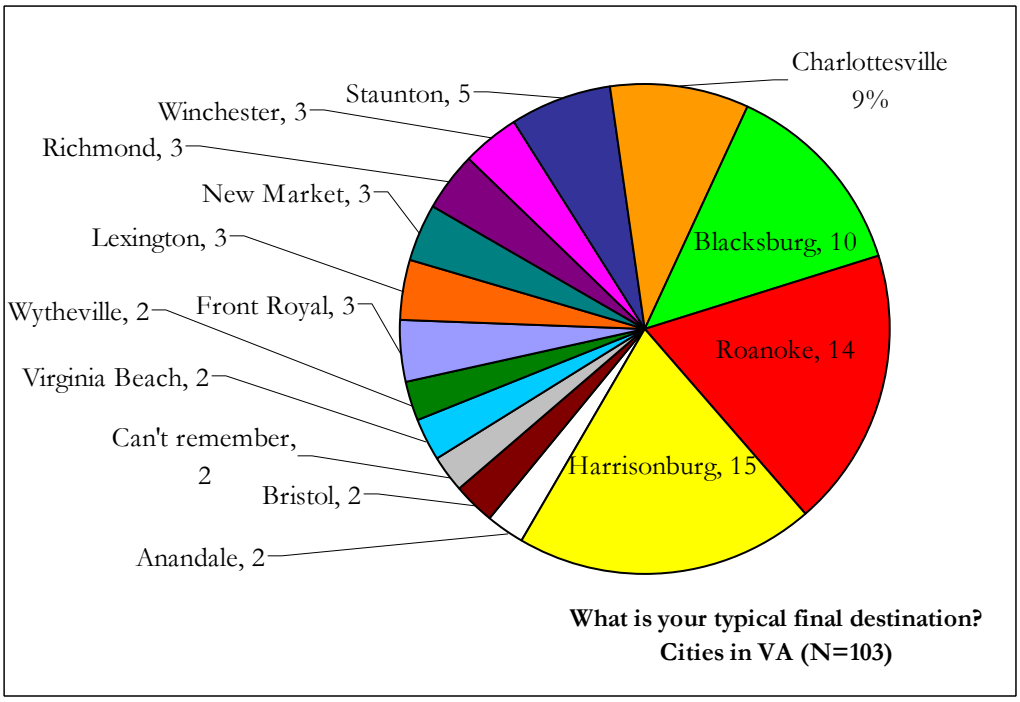


Figure 13: Tourist Typical Destinations by Cities in Virginia.



The top three states that also were destinations for 511 Virginia callers were North Carolina (predominately southbound on I-81 to Charlotte), Pennsylvania (northbound to six destinations), and Tennessee (southbound, mostly to Bristol).

Path #3: Commercial Vehicle Operators

Because there is upwards of 40% truck traffic on I-81, commercial vehicle drivers were of particular interest to this evaluation. However, only a very small sample of commercial vehicle operators actually completed the survey. As such, the findings from this group are very generic and should not be considered representative of all truckers on I-81.

The evaluation team asked 19 commercial vehicle operators nine questions about their travel information needs and behavior:

1. What type of Commercial Vehicle Operator are you?
2. How often do you travel in the I-81 region for CVO operations? Stop me when I get to the right frequency: (A range of frequencies is read to the participant)
3. On average, how many days a week do you drive a commercial vehicle?
4. Which routes do you drive commercially in the I-81 Region on a regular basis?
5. How accessible is truck parking in the I-81 Region?
6. If available, would you seek truck parking information in the I-81 Region?
7. Are you able to find truck parking information for the I-81 Region?
8. Where do you find it (truck parking information)?
9. Do you operate as a single or team driver?

The CVO respondents were mostly short haul (10 of 19), with a good portion also being long haul (7 of 19). See Figure 14. The CVO respondents drove mostly on I-81 and I-64 (see Figure 15). They reported that they generally travel in the I-81 region more than once a week and that they are commercial drivers seven days a week.

The neutrality that the truckers had towards the issue of truck parking may be due to the fact that over half of the commercial vehicle operators surveyed were short-haul drivers. A recent study on truck parking conducted by the Federal Highway Administration revealed similar results. The study found that short-haul drivers, when asked about truck parking, indicated that it was not a relevant issue for them *(Footnote)*[3]. Possibly if more long-haul truckers had been involved in the survey, the results would have been different on this question.

[3] U.S. Department of Transportation Federal Highway Administration. Study of Adequacy of Commercial Truck Parking Facilities--Technical Report (FHWA-RD-01-158). http://www.tfhrc.gov/safety/pubs/01158/2.htm

Figure 14: Type Haul of CVO Survey Participants.

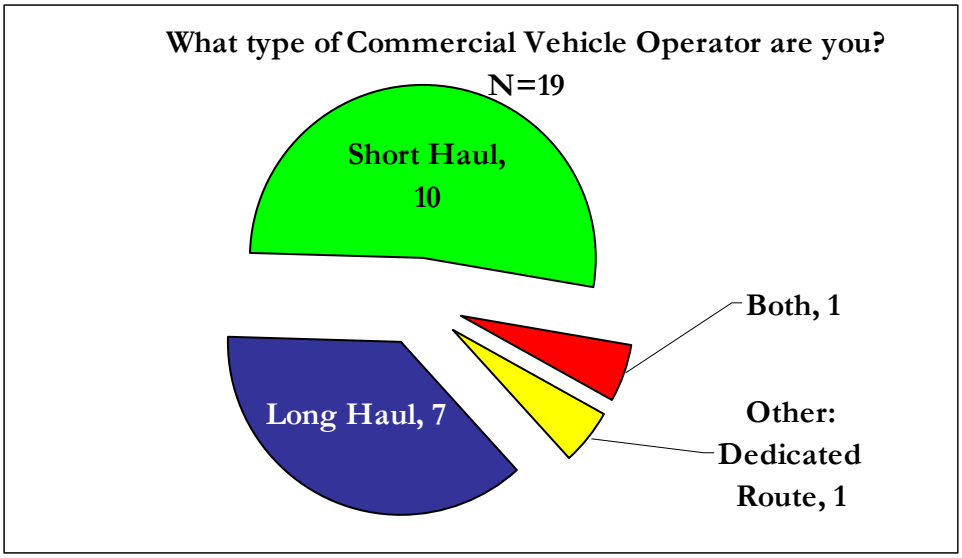
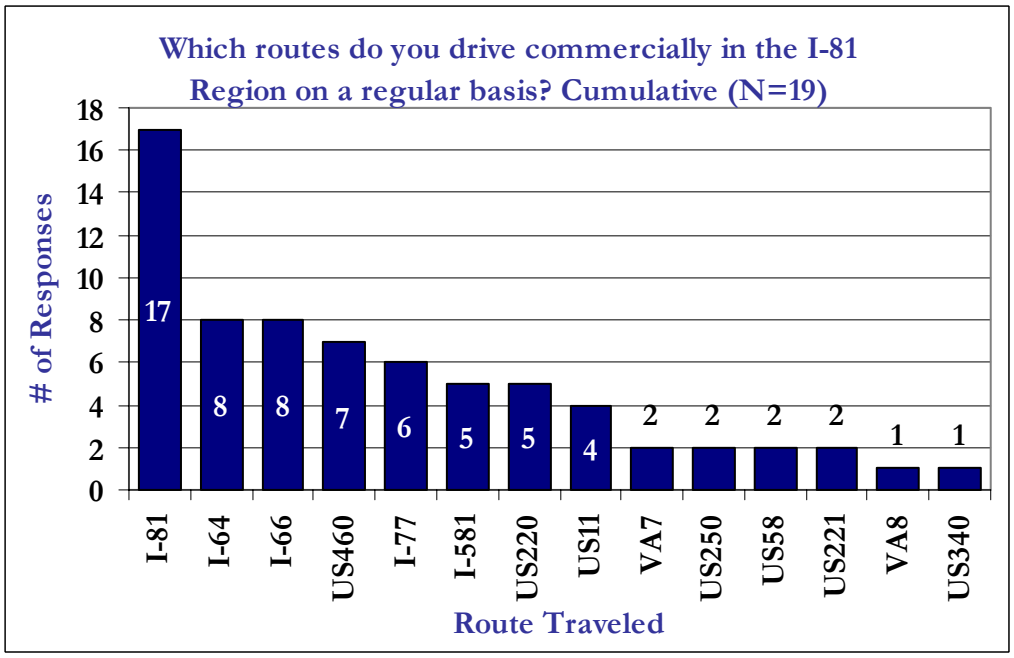
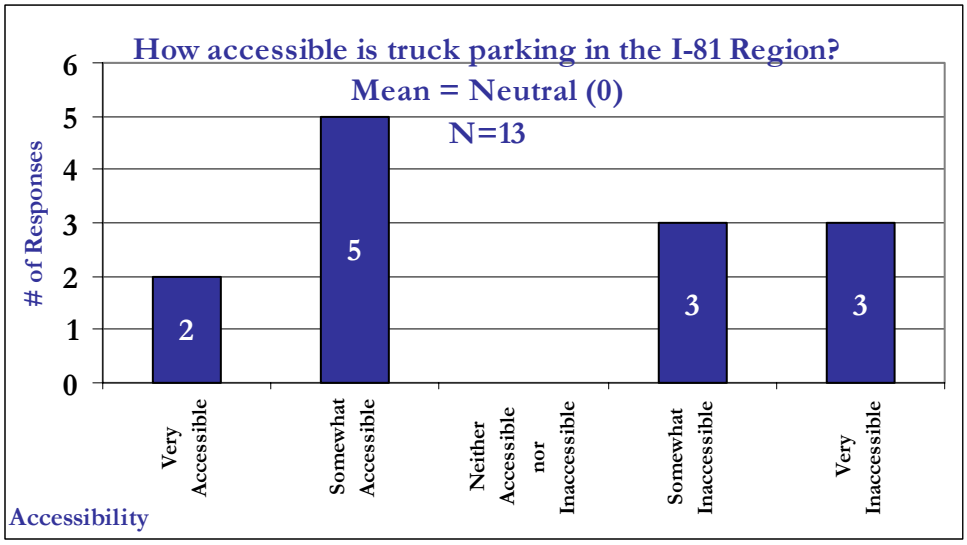


Figure 15: CVO Routes Driven in the I-81 Region.



An issue of interest for further developing 511 Virginia for the state-wide implementation was the demand by CVO respondents for truck parking information. The majority (11 of 19) indicated that they would seek truck parking information if it was offered. However, when asked about the current accessibility of truck parking information, respondents were neutral. (See Figure 16 for the actual disposition of responses).

Figure 16: CVO Perception of Accessibility of I-81 Truck Parking Information.



Access/Awareness Questions

At this point, all respondents, whether a tourist, resident, or CVO, were asked five access/awareness questions:

1. Do you currently have a cell phone?
2. Do you typically use a phone to get information?
3. Where did you hear about 511 Virginia?
4. Why did you first call 511 Virginia?
5. How did you first access 511 Virginia?

The respondents indicated that they did, in general, have a cell phone (96%), and 77% use a phone to gain access to information. Eight-eight percent, (352 of 398) reported that their first method for accessing 511 Virginia was using a cell phone. The primary source for 511 Virginia was the blue road signs (233 of 377), and the primary reason for calling the first time was for traffic issues like congestion and delays (138 of 383, or 36%). See Figures 17 and 18 for more sources and reasons for the first call to 511 Virginia.

Figure 17: First Source for 511 Virginia.

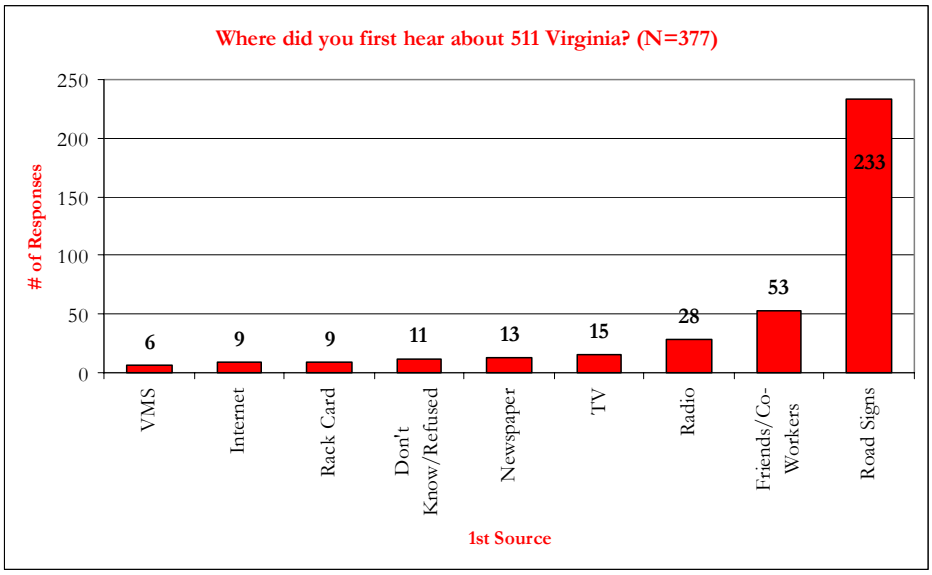
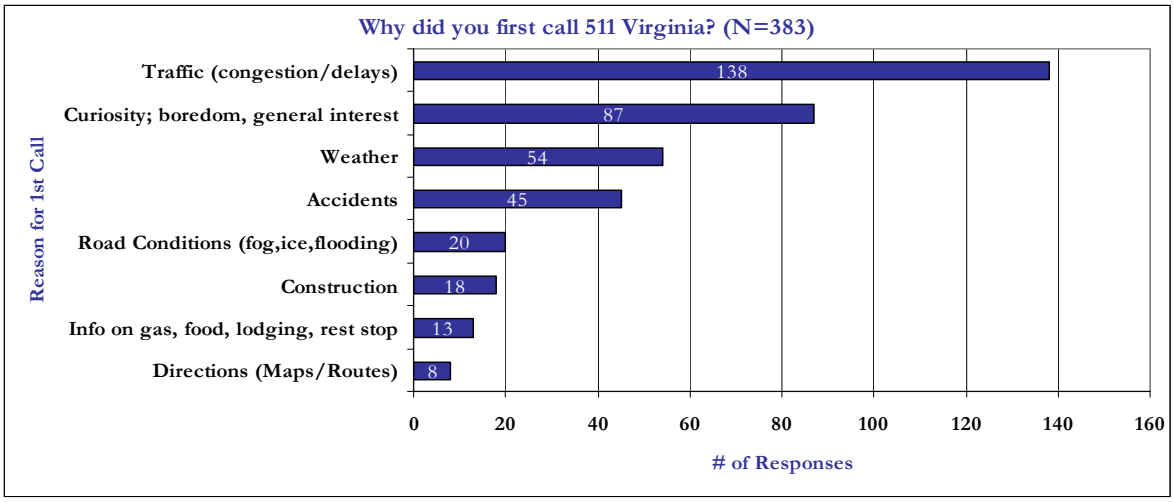


Figure 18: Reason for First Call to 511 Virginia.



Needs/Usage Questions

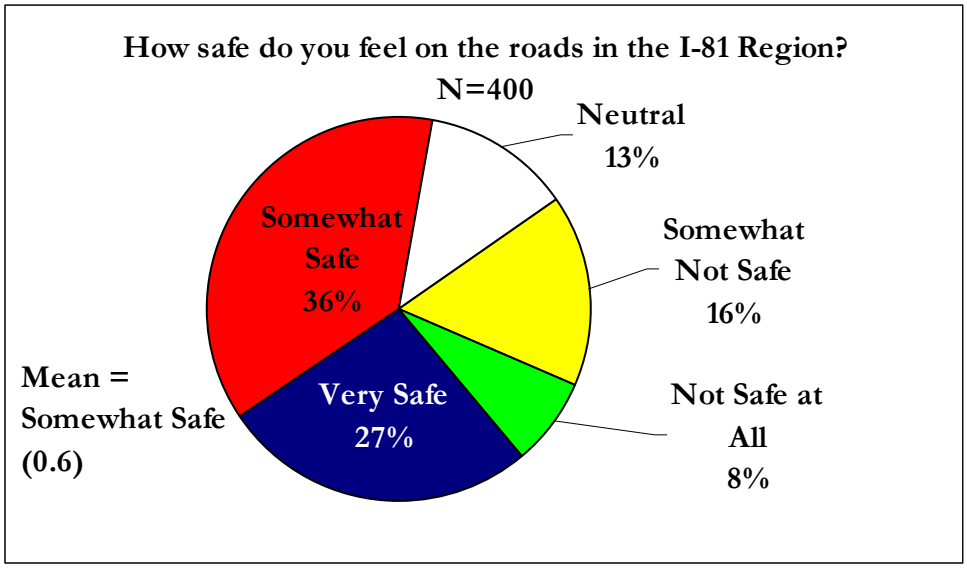
The primary focus of the 511 survey was to determine if the service meets the Evaluation Framework goals, as well as to better understand how callers would like to use a travel information service for development of the service for future expansions of 511 state-wide. To reflect this, the majority of questions that were asked fell under this heading.

All 400 respondents were asked twelve needs/usage questions:

1. How safe do you feel on the roads in the I-81 Region?
2. Has having access to 511 Virginia changed your perception of the safety of the roads in the I-81 region?
3. Was that change positive or negative?
4. Has 511 Virginia increased your awareness of traveler information in the I-81 Region?
5. What information do you look for *before* you leave to travel in the I-81 region?
6. What sources do you use to plan for a trip to this region?
7. What information do you look for while traveling in the I-81 region?
8. What information were you looking for when you called 511 and left your name for this survey?
9. What information are you typically seeking when you call 511 Virginia?
10. How useful is the information you find?
11. What makes it useful?
12. What could be more useful?

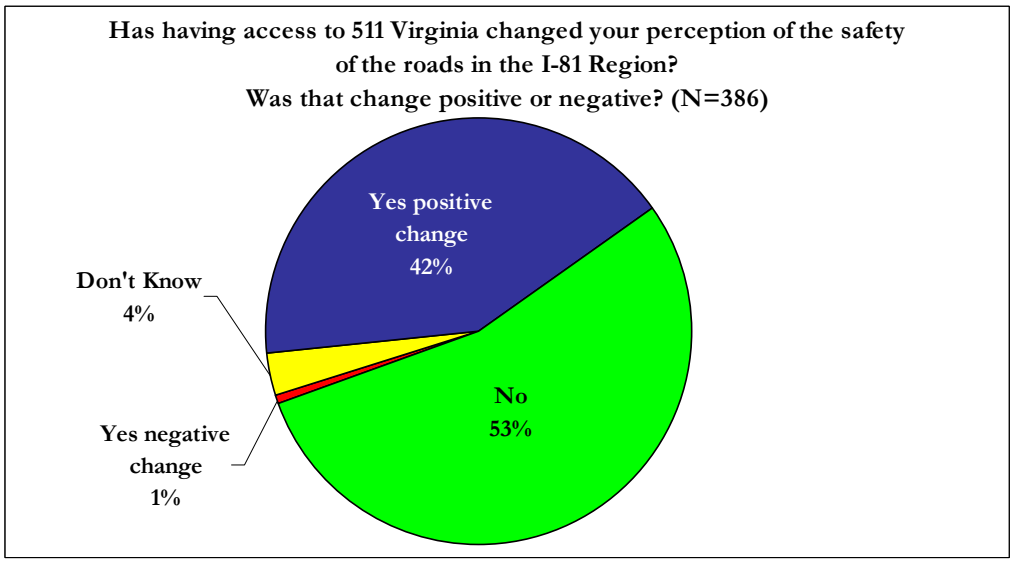
Contrary to general media representation, the survey respondents (which were statistically significant) reported that they perceived I-81 to be Somewhat Safe (the mean was 0.6 on a scale from -2 to 2). Sixty-three percent (or 255 of 400) reported that they perceived the I-81 Region to be either Very Safe or Somewhat Safe. See Figure 19 for the rest for the results.

Figure 19: Perception of Safety of I-81.



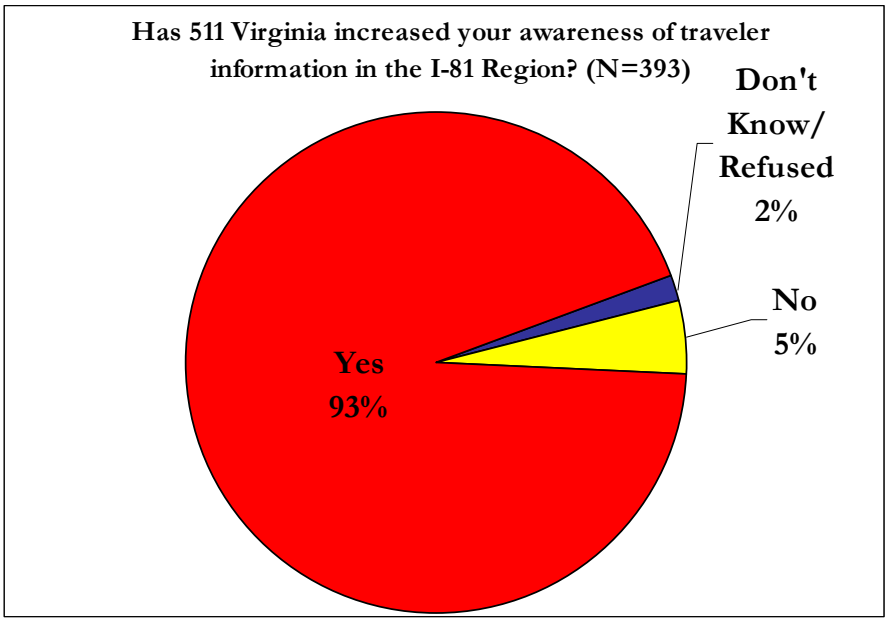
However, in general (53%), survey respondents did not feel as if having access alone to 511 Virginia was enough to change their perception of the safety of the I-81 Region. See Figure 20 for the rest of the results.

Figure 20: Changes in Perception about the Safety of I-81 based on having Access to 511 Virginia.



Despite not directly increasing the perception of safety of the I-81 Region, 511 Virginia has been extremely effective in increasing travelers' awareness of traveler information available in the I-81 Region (e.g., 93% indicated 511 Virginia produced a positive change in their awareness of traveler information in the I-81 Region). See Figure 21 for a complete breakdown of responses.

Figure 21: 511 Virginia's Affect on Awareness of Traveler Information



Respondents were then asked several questions about their travel information needs throughout the travel planning and travel process. The top three sources for planning for a trip to the I-81 Region were the Internet (45% or 179 of 400), 511 Virginia (36% or 144 of 400), and television (17% or 68 of 400). Respondents were also offered the opportunity to specify exactly which internet sources they used. This was done through the use of an "Other" category. Table 2 gives a break down of these responses.

Table 2: Internet Sources for Planning a Trip to the I-81 Region

Internet Sources Specified	Respondents
freetrip.com	1
hotel web sites	1
superpages.com	1
switchboard.com	1
Yahoo Travel	1
expedia.com	2
VDOT web site	6
mapquest.com	10
weather.com, weather channel	22
Total	**45**

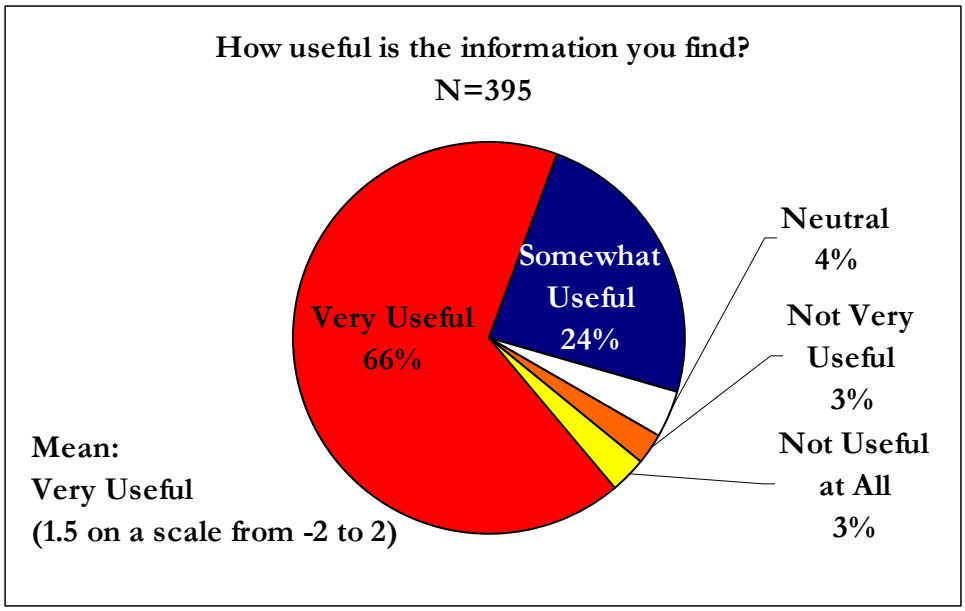
Table 3 represents a large majority of the questions asked in the Needs/Usage section. The most unique finding was the difference between the amount of information travelers said that they were looking for and the amount that they were looking for when they actually called. The top identified needs centered on en-route travel information. However, several tourism/economic topics were also listed and can be found in the complete listing in Appendix A.

Table 3: Reported Information Sought Throughout Traveling Process

Before Traveling	While Traveling	Typically Seeking on 511 Virginia	Specifically Seeking for this Survey Call
75% had Multiple Information Needs	60% had Multiple Information Needs	54% had Multiple Information Needs	75% had a Single Information Need
1. Weather (179)	Traffic (199)	Traffic (123)	Traffic (171)
2. Traffic (124)	Accidents (143)	Accidents (166)	Accidents (120)
3. Accidents (117)	Other (161)	Construction (114)	Weather (92)
4. Construction (109)	Construction (91)	Weather (103)	Construction (75)

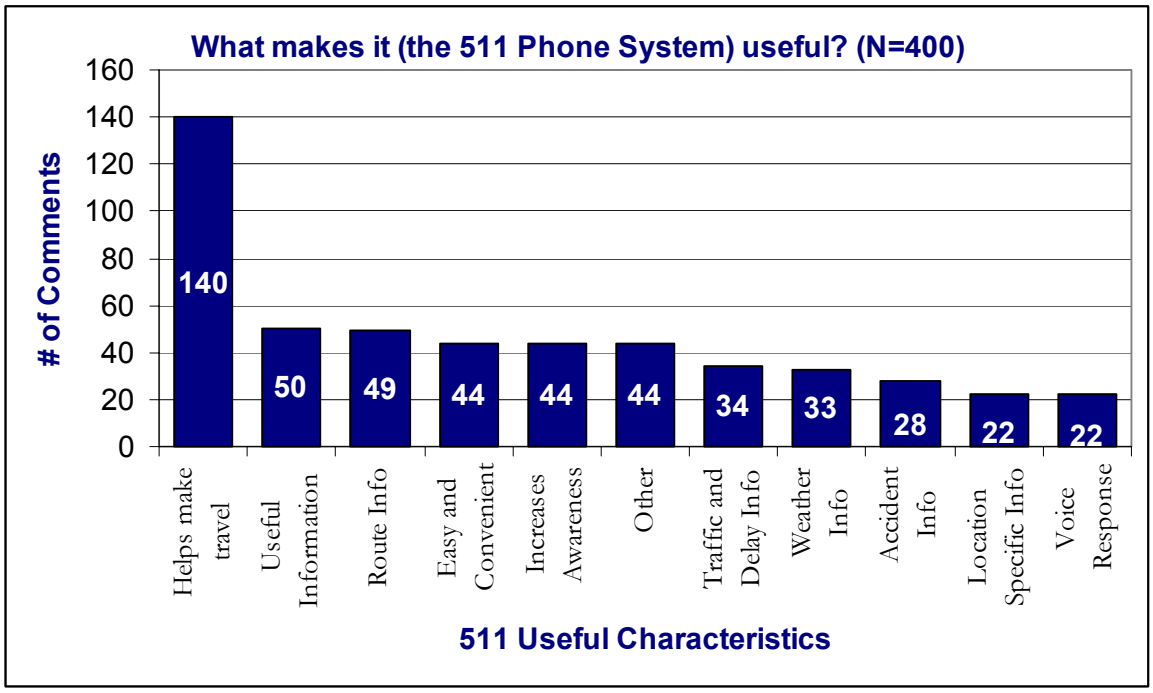
Finally, to determine whether or not the survey respondents felt like 511 Virginia was meeting their needs, they were asked about its usefulness. The mean response found it "Very Useful" (a score of 1.5 on a scale from -2 to 2). Ninety percent (or 358 of 395) ranked 511 Virginia as Somewhat Useful or Very Useful. See Figure 22 for a complete breakdown of responses.

Figure 22: Ranked Usefulness of 511 Virginia.



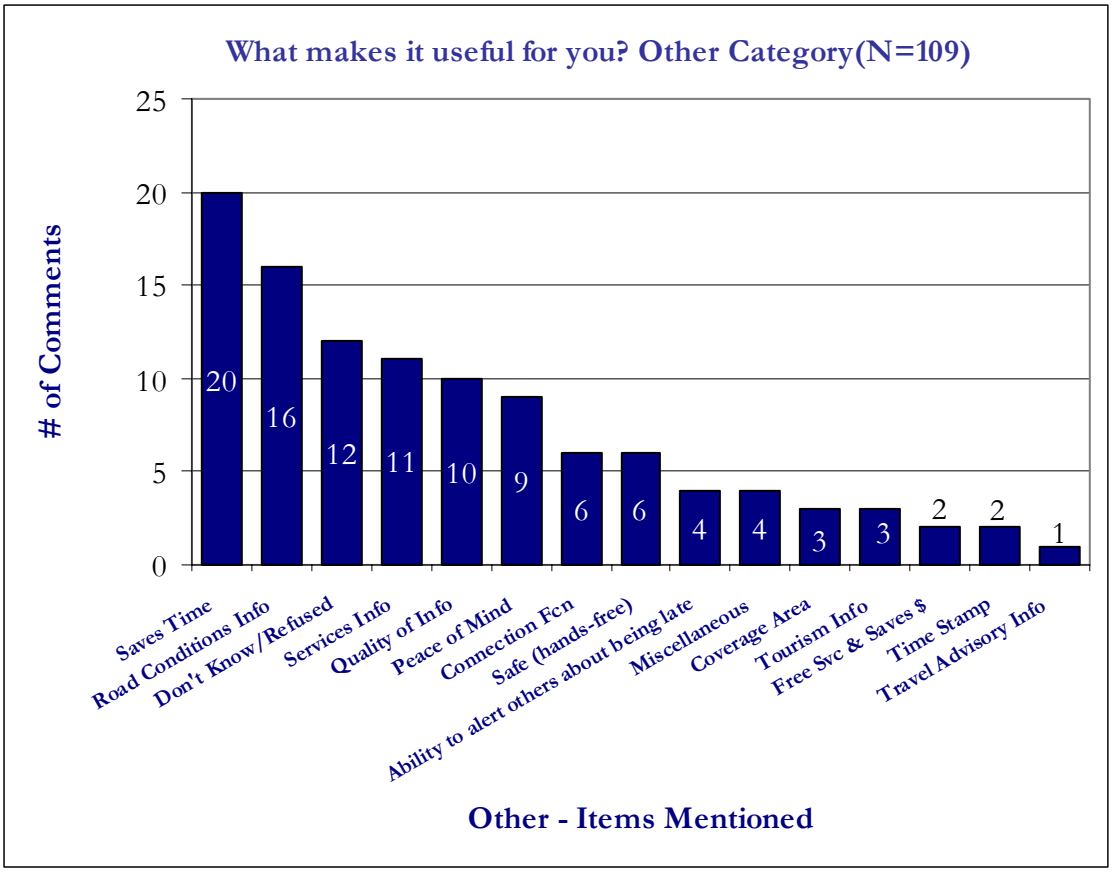
The most important benefit that survey respondents indicated was that 511 Virginia offered was help in making informed travel decisions. VDOT hypothesized that local area travelers made more informed decisions in the I-81 Region by deciding to shift to Route 11 when I-81 was experiencing back-ups. Several respondents indicated that they specifically used the information they found on 511 Virginia to help them decide to switch to Route 11 when they heard on 511 Virginia that I-81 was experiencing back-ups. See Appendix A for the actual responses in terms of what made 511 Virginia useful. Figure 23 shows the evaluation team's compilations of these free text responses.

Figure 23: How 511 Virginia is Useful.



The other category of responses was significant (44 of 40), and the categories of those responses are included in Figure 24, led by saving time.

Figure 24: How 511 Virginia is Useful (Other Category).

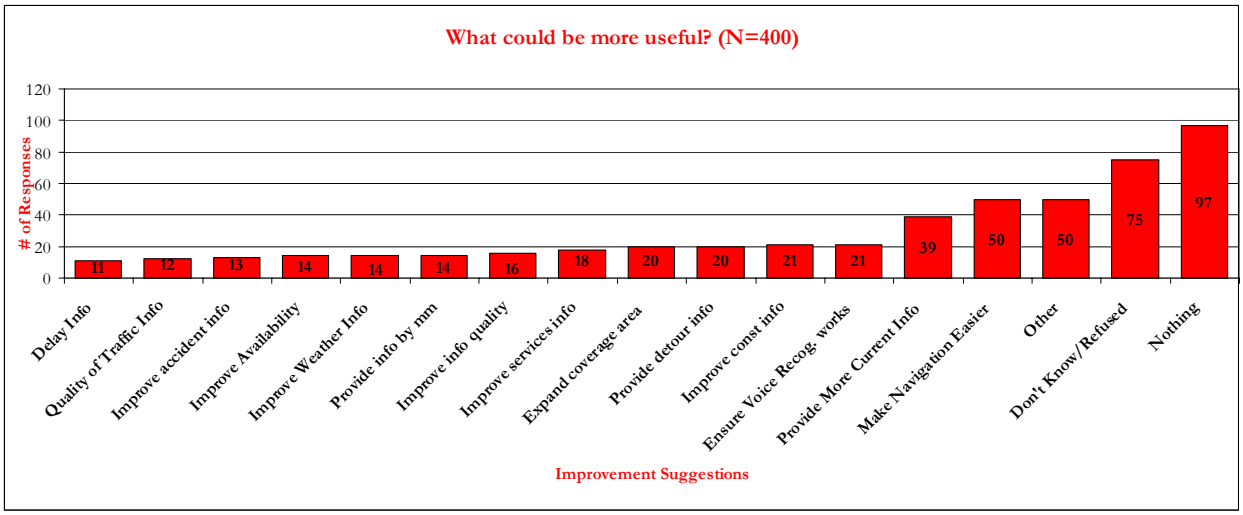


A great deal can be learned from deficiencies, especially in planning the development of the state-wide implementation of 511 Virginia. While a majority of participants were pleased with the system and could not think of anything for this free text response, the top three functions that could be improved to make 511 Virginia more useful were:

1. Difficulty of Navigation,
2. Timeliness of Information, and
3. Voice Recognition System perceived as not working.

Figure 25 summarizes all major suggestions for improvements.

Figure 25: How 511 Virginia Could be More Useful?

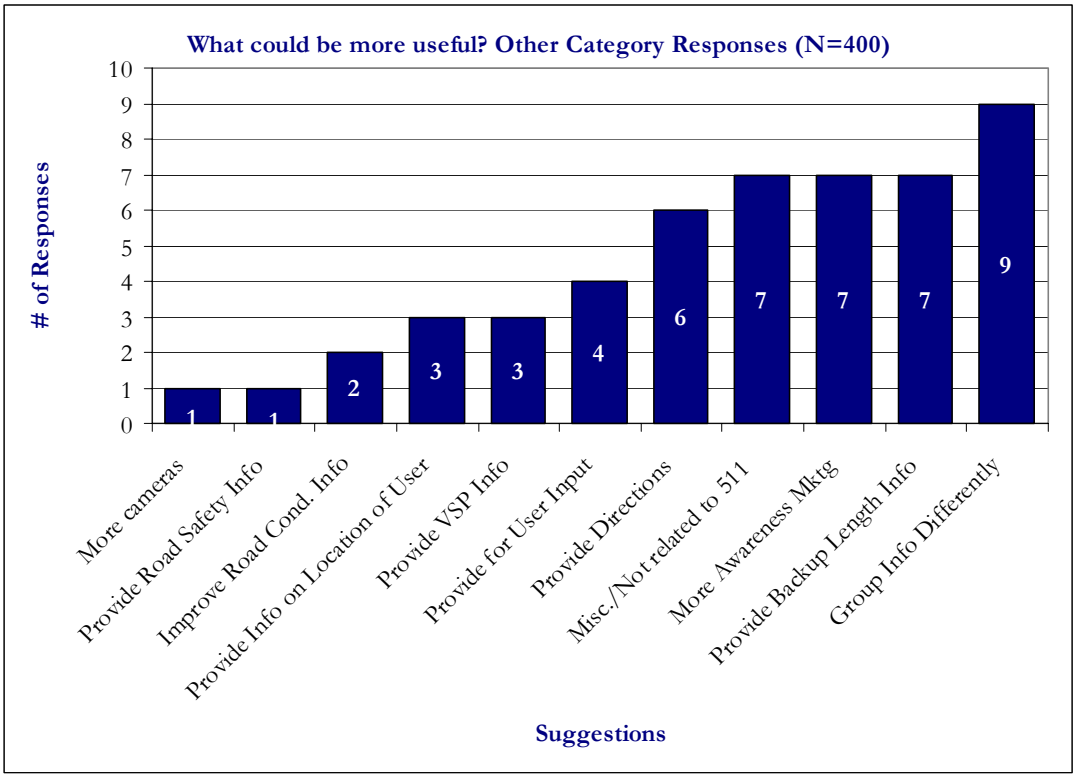


In this question, the other category was the third top response for usefulness (with 50 of 400 responses). The top three Other Category responses for improving 511 Virginia were:

1. Group the information differently,
2. Provide more information on exact location and length of reported incidents, and
3. Do more awareness marketing.

Figure 26 depicts these suggestions for improvements.

Figure 26: How 511 Virginia could be More Useful (Other Category).



Level of Satisfaction/ Behavior/Decision Making Questions

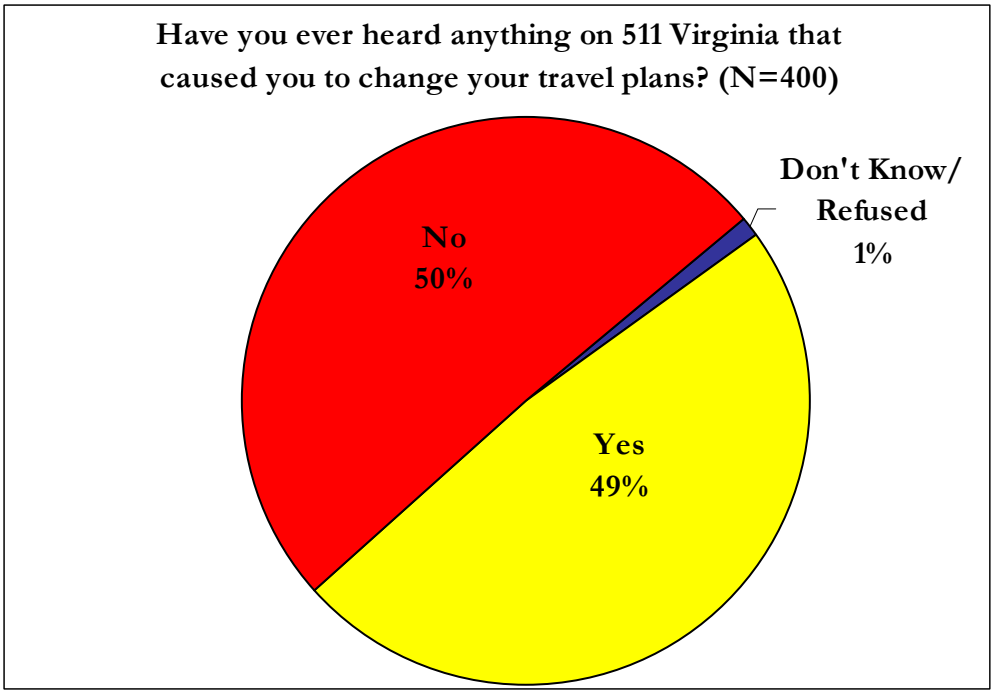
Determining customer satisfaction is vital to any customer-based service. Being able to assist travelers in their decision process is a key component in successful ITS systems. These questions were asked to concisely pinpoint how 511 Virginia accomplished these goals.

We asked all 400 respondents three decision making questions:

1. Have you ever heard anything on 511 that caused you to change your travel plans?
2. How did you change your plans?
3. Would you call 511 Virginia again?

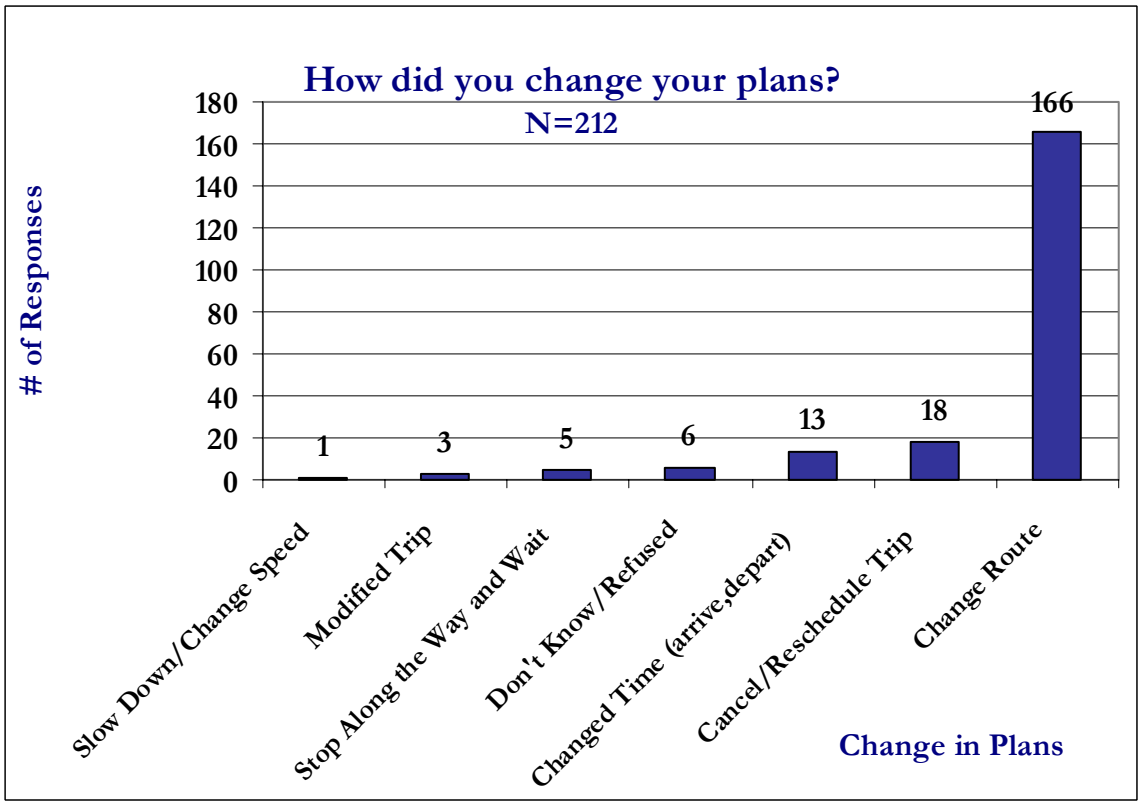
While 50% of all survey participants indicated that they had not yet heard anything on 511 Virginia that made them change their travel plans, several users were first time users. Unfortunately, the total number of first time users was not captured. Despite this fact, it is impressive that 49% of all respondents had heard something on 511 Virginia that made them change their travel plans. See Figure 27 for a complete breakdown of these responses.

Figure 27: Influencing Changes in Travel Plans.



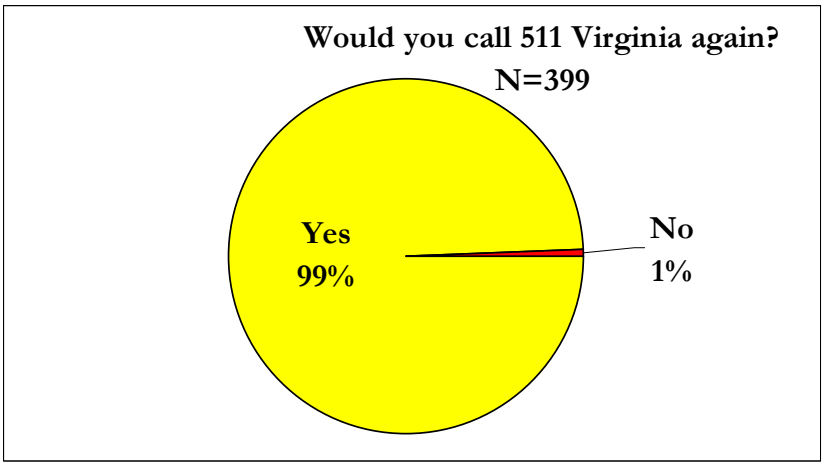
For those that did indicate that they changed their plans, the majority changed their route (166 of 212). See Figure 28 for more detail of how respondents changed their travel plans.

Figure 28: Making Informed Travel Decisions with 511 Virginia.



During national evaluation meetings, it was suggested that the best way to measure loyalty and satisfaction for a phone service was whether or not a caller would call back. 511 Virginia was very successful in this area - 99% of the respondents indicated that they would call 511 Virginia again. See Figure 29 for a breakdown of the remaining respondents.

Figure 29: Loyalty to the 511 Service.



Who Should Run 511? Questions

One of the questions of interest to VDOT is, what agency was perceived by the public to be the appropriate provider of the 511 Virginia service?

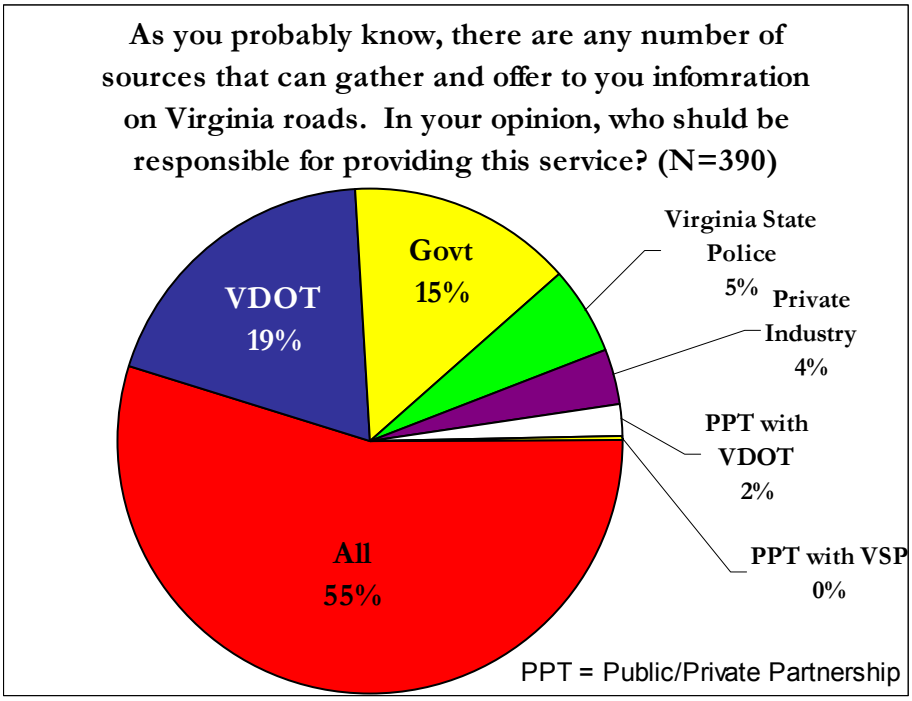
To access these perceptions, all 400 respondents were asked four questions about who they thought should be responsible for 511 Virginia, even if they had indicated that they were tourists to the area:

1. As you probably know, there are any number of sources that can gather and offer to you information on Virginia roads. In your opinion, who should be responsible for providing this service?
2. And, in your opinion, which do you think would provide travel information that is more reliable?
3. Has access to 511 Virginia changed your perception of the services provided by the Virginia Department of Transportation?
4. Has this change been positive or negative?

Respondents were first read a description of the how the 511 Virginia service is organized, at the sponsor's request. This was beneficial in giving respondents a better idea of what was being asked and for marketing the value of the service to first time callers. However, it may have influenced the outcome of these questions. See the complete survey in Appendix A for the actual statement read to the survey respondents before answering these questions.

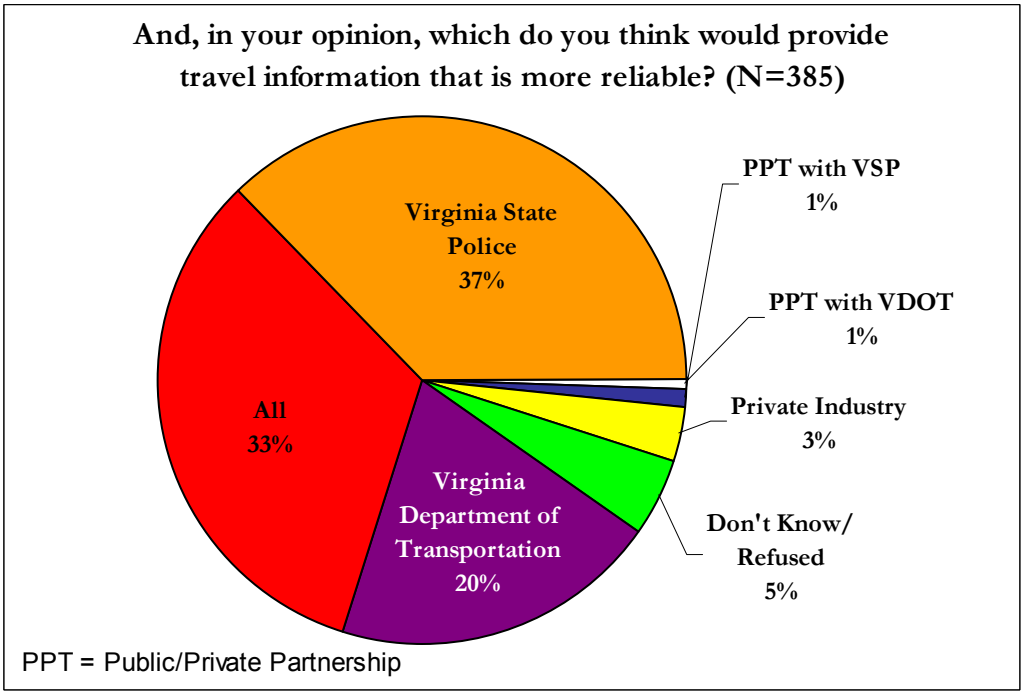
In general (55%), respondents felt that all agencies should work together to provide this service. See Figure 30 for the rest of the breakdowns.

Figure 30: Which Agency Should Provide 511 Virginia?



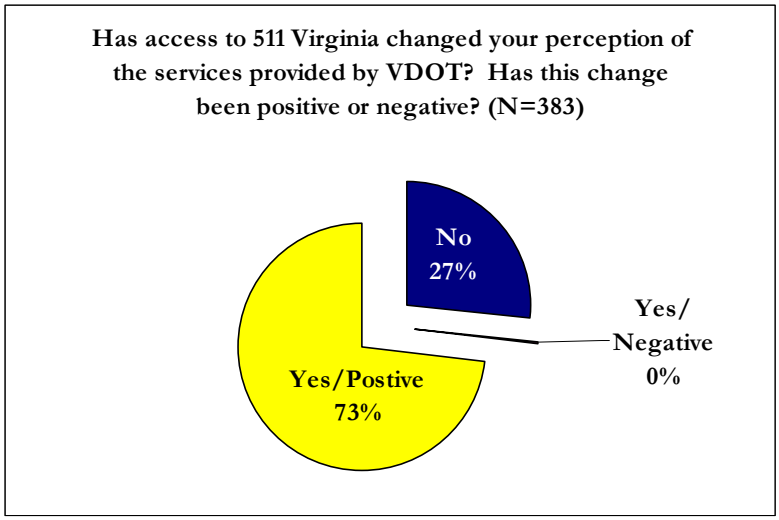
Respondents were more split about who provides the more reliable information between the Virginia State Police (37%) and all agencies (33%). See Figure 31 for more details.

Figure 31: Which Agency's Information is More Reliable?



However, based upon its offering 511 Virginia, a large majority of respondents (73%) perceived VDOT in a more positive light.

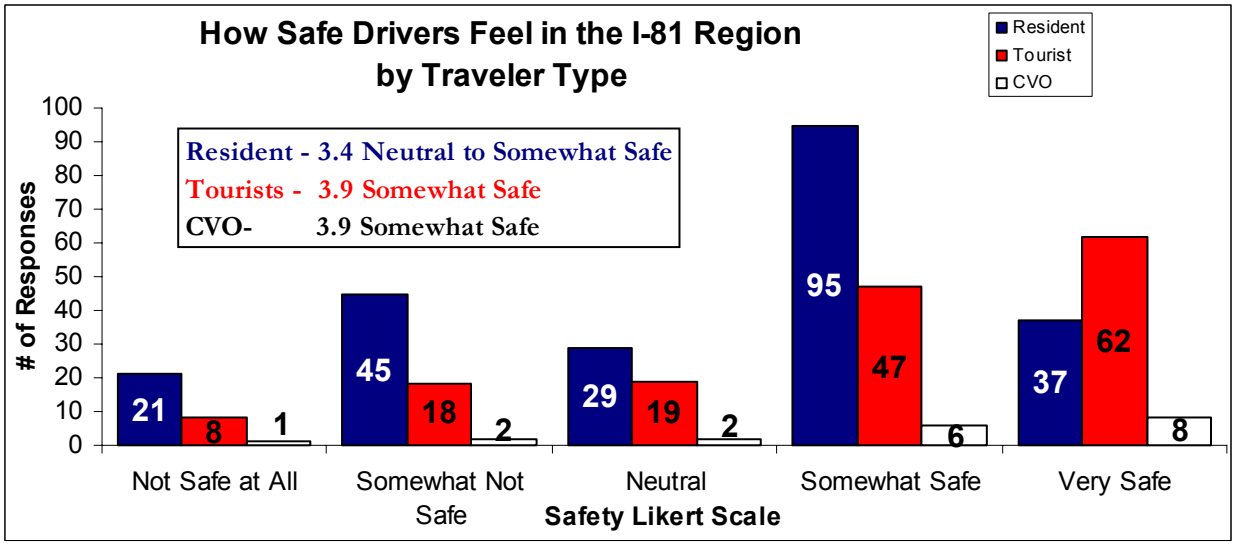
Figure 32: Affect of 511 Virginia on VDOT's Reputation.



PHONE SURVEY CORRELATIONS

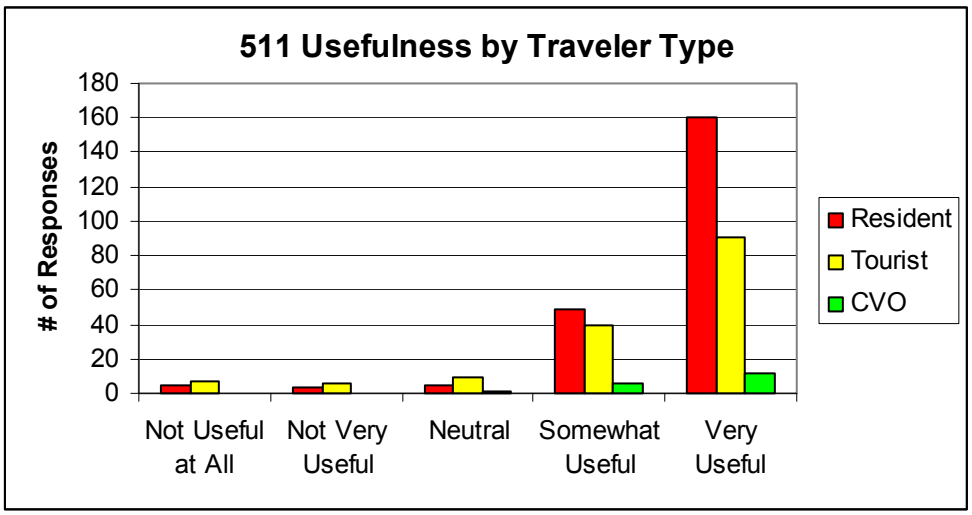
According to the results from the phone survey safety question, in general, Virginia residents feel less safe on roads in the I-81 region than do tourists to the region. More in depth research would need to be conducted to truly define the reasons for this perception. See Figure 14 for how drivers responded by their traveler type. Detailed SPSS tables are available in Appendix G.

Figure 33: How Safe Drivers Feel in the I-81 Region by Traveler Type.



One area where local residents and commercial vehicle operators agree is in the usefulness of 511. Both found the service to be more useful to them than did tourists. This might be because of a familiarity with the road system in the area. Tourists might have more difficulty determining which routes to use and which routes detours are referring to.

Figure 34: 511 Usefulness by Traveler Type.



Traveler Type Means
Resident = 4.5
Tourist = 4.3
CVO = 4.6
Mean = 4.5

Both genders found 511 to be useful.

Overall, all ages found 511 to be useful. However, there is a slight drop off of usefulness based upon age, with progressive declines as the age groups increase. This could easily be attributed to general age group declines in acceptance and use of new technologies. However, a Somewhat Useful to Very Useful overall rating is a very positive indicator of 511 Virginia's success in its first 18 months.

Figure 35: 511 Usefulness by Age.

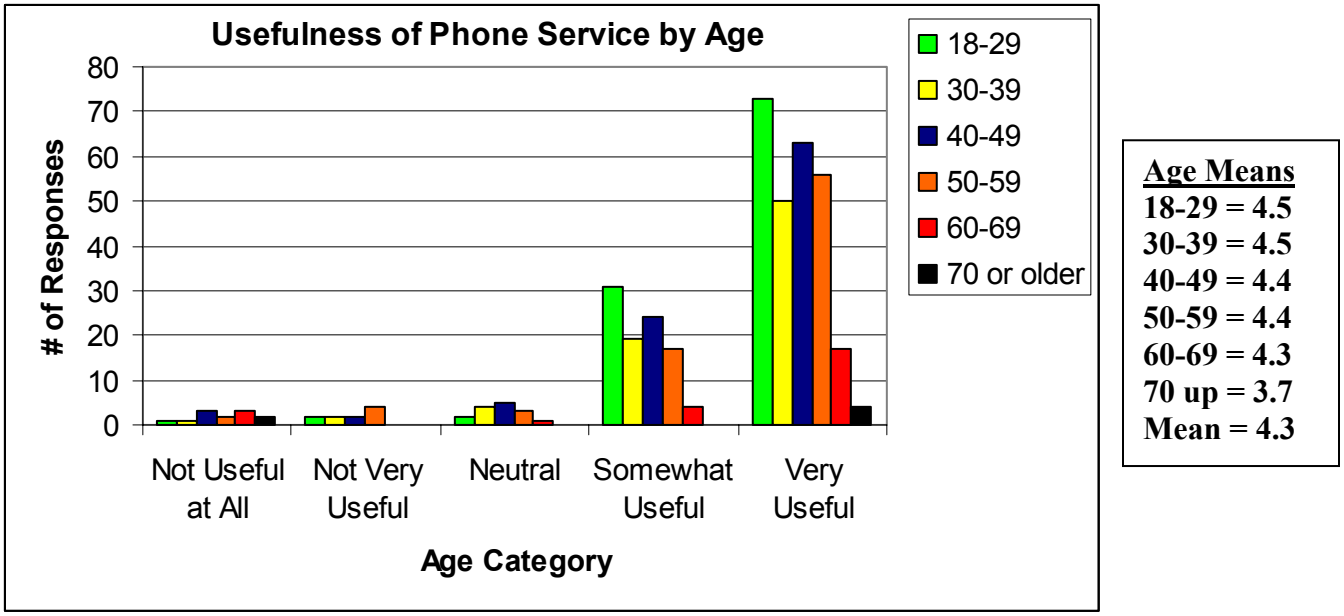
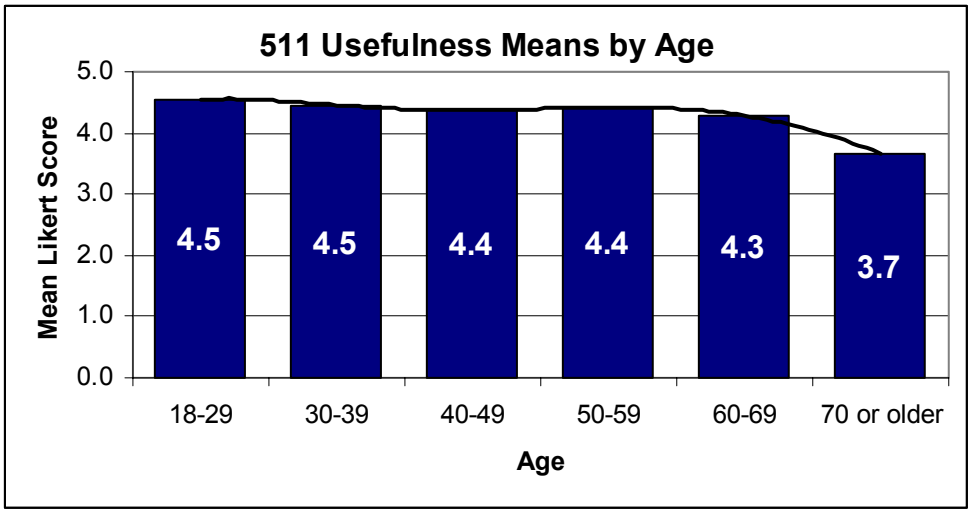


Figure 36: 511 Usefulness Means by Age.



RECOMMENDATIONS

Based upon the phone survey findings, the evaluation team has the following recommendations:

1.) More research should be done into the CVO community's needs and usage of the 511 phone service.
2.) Develop and monitor a permanent feedback loop on the phone system.
3.) Provide more detailed traffic information to include the exact location and duration of road incidents.
4.) Do more usability research into how to make the phone system easier to navigate.
5.) Monitor and improve timeliness of travel information available on 511 Virginia.
6.) Determine the ratio of long haul to short haul drivers on I-81 and cater travel information to the needs of the majority.
7.) Tailor the phone tree structure and information format to better facilitate caller decision making (e.g., more in-depth alternate route information should be more easily accessible from the traffic menu, if callers change their travel route).
8.) Do more research into travel information that callers might desire if they do change their plans based upon information they hear on 511.
9.) Develop a means to identify and record first time callers through the call software employed (e.g., TellMe, Inc. XML software).
10.) Investigate why some callers perceive that the voice recognition is not working.
11.) Focus primarily on providing timely traffic information.
12.) Investigate why callers are willing to call 511 again.
13.) Do more awareness marketing.
14.) Peak interest in the system along the road to increase calls. Twenty-three percent (87 of 383) of those surveyed indicated that they first called 511 out of curiosity or boredom.
15.) Slightly cater marketing to males.
16.) Advertise 511 on weather.com or weatherchannel.com (same site).
17.) Focus marketing to residents during work time (8am and 5pm, Monday – Friday) radio or billboards.
18.) In addition to I-81, I-77, and I-64, focus marketing along I-40, I-75, I-95, and I-65 welcome centers.
19.) Focus marketing or work with the top three states (PA, NC, TN) to increase out-of-state awareness.
20.) Focus marketing in the top three tourist destinations (Blacksburg, Roanoke, Harrisonburg) to increase tourist awareness of the current 511 system, and in Roanoke, Richmond, Fairfax, Woodbridge, and Winchester (Top tourist origination cities).

LESSONS LEARNED

See Table 4 for a summary of lessons learned.

Table 4: Lessons Learned

Lessons Learned from the Phone Survey
1. Provide a permanent feedback tool on the phone system.
2. Don't use the customer satisfaction surveys as an awareness/marketing tool.
3. Secure cooperation from all sources for 511 (telecommunications provider, manager, input providers, advertisers, etc.).
4. Purchase questions on an omnibus for the most effective means to determine awareness.
5. Develop the evaluation instruments from a list of performance measures, preferably in place before the system is implemented.
6. Break out business travelers from residents, if you suspect there are large numbers on your roads.
7. If you want a good CVO sample, you may want to sample separately or use different incentives.
8. Expect a 1.5% response rate to your initial intercept
9. With a $10 incentive, we experienced as high as a 50% response rate from those who left their name to participate in our survey. (Though, using the official marketing response rate formula, it was only 30%).
10. Record whether or not the caller is a first time caller.

As a summary of lessons learned for future evaluation methodologies, the evaluation team recommends:

1.) If multiple team members will be responsible for different segments of the write-up, agree ahead of time on the formatting of the graphs and the methods of referring to statistics/parameters. For example, always indicating "n=xxx" for each statistic, if the responses are low enough to prevent accurate representation with a percentage alone (i.e., too small of a sample size to be statistically significant); or deciding whether or not to include the "Don't Know/Refused" category in each presented graph. This will save hours of revisions if done ahead of time and correctly.

2.) Make sure that response brackets match between the different instruments (e.g., using the same age brackets with the web survey as with the phone survey for an easier comparison between instruments).

3.) Over-recruit the framing sample. Expect a 1.5% response rate to the initial intercept, if done over the 511 phone system.

4.) Based upon other state 511 surveys, a chance to win a sum of money or a prize has been reported to be as successful in incentivizing the surveys, as was paying $10 for each completed survey. In future 511 evaluations, administrators may choose not to incentivize to the level chosen for the 511 phone survey. However, the second reason for choosing this method was to balance negative respondents. In general, those with either positive or negative motives for answering are more likely to agree to participate. A method of using incentives is seen as a method for attracting more neutral respondents.

Conclusion

The phone survey served two purposes: determining whether or not 511 Virginia was meeting the applicable ITS Framework goals, and setting a baseline for future evaluations of 511 Virginia. The phone intercept with a call back at a later time proved to be both effective (for the administrators) and safe (for callers and drivers). The phone survey determined that the phone system is garnering repeat usage, is of value for those who call, is generally meeting customer satisfaction goals (99% indicated that they would call again), and is helping callers make more informed decisions (49% have changed their plans, and of those 212, 166 had changed their route because of information they heard on 511 Virginia). 511 Virginia is reflecting well on VDOT: 73% indicated that having access to 511 Virginia has changed their opinion of VDOT in a positive way. While these findings are encouraging, they set a high benchmark for future comparisons as 511 Virginia prepares to expand state-wide.

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APPENDIX A: PHONE SURVEY RAW DATA

SCREENING QUESTIONS

Screening Question 1: All participants were at least 18 years of age

Screening Question 2: All participants had driven on the roads covered by 511

Screening Question 3: Male vs. Female Respondents		
Gender	**Responses**	**Percentage of Total**
Male	224	56%
Female	176	44%
Total	**400**	**100%**

Screening Question 4: Respondents Age Ranges		
Age Bracket	**Responses**	**Percentage of Total**
18-29	110	28%
30-39	77	19%
40-49	99	25%
50-59	83	21%
60-69	25	6%
70+	6	2%
Total	**400**	**100%**

Screening Question 5: Since tourism is so important to the economic livelihood of the I-81 region, we would like to collect a general idea about the incomes of those who drive on I-81. Would you be willing to share the range of your 2002 household income before taxes?		
Income Bracket	**Responses**	**Percentage of Total**
Under 20K	35	9%
21-35K	58	15%
36-50K	60	15%
51-65K	67	17%
66-80K	43	11%
81-100K	40	10%
100K +	57	14%
Don't Know/Refused	40	10%
Total	**400**	**100%**

Screening Question 6: To make sure we talk with a variety of people, in which county and state do you live?		
County	**Responses**	**Percentage of Total**
Augusta	32	8%
Bath	1	0%
Bedford	3	1%
Botetourt	11	3%
Carroll	2	1%
Clarke	2	1%
Floyd	5	1%
Franklin	5	1%
Frederick	7	2%
Giles	2	1%
Henry	1	0%
Montgomery	26	7%
Not in 511 Area	148	37%
Pulaski	8	2%
Radford	6	2%
Roanoke	62	16%
Rockbridge	9	2%
Rockingham	35	9%
Scott	1	0%
Shenandoah	19	5%
Smyth	1	0%
Staunton	1	0%
Tazewell	2	1%
Warren	2	1%
Washington	6	2%
Wise	1	0%
Wythe	2	1%
Total	**400**	**100%**

In versus Out-of-State	**Responses**	**Percentage of Total**
Out of state	84	21%
In State	316	79%
Total	**400**	**100%**

State Only	Responses	Percentage of Total
VA	316	79%
TN	12	3%
PA	9	2%
NC	9	2%
WV	7	2%
MD	7	2%
TX	6	2%
NY	5	1%
CT	5	1%
NJ	3	1%
LA	3	1%
OH	2	1%
KY	2	1%
GA	2	1%
FL	2	1%
AL	2	1%
SC	1	0%
OK	1	0%
MI	1	0%
ME	1	0%
MA	1	0%
DE	1	0%
DC	1	0%
CA	1	0%
Total	**400**	**100%**

In versus Out of 511 Area	Responses	Percentage of Total
In 511 Area	252	63%
From Out of 511 Area	148	37%
Total	**400**	**100%**

Screening Question 7: What is your typical reason for traveling in the I-81 Region?		
Reason for I-81 Travel	**Responses**	**Percentage of Total**
Resident	227	57%
Tourist	154	39%
Commercial Driver	19	5%
Total	**400**	**100%**

RESIDENT QUESTIONS

Resident Question 1: On average, how many days a week do you drive a car or other vehicle?	
Days of week	**Respondents**
1	1
2	4
3	5
4	5
5	11
6	15
7	186
Total	**227**

Resident Question 2: What days of the week do you drive on the interstates in the I-81 Region?	
Days of the Week Driven	**Respondents**
Everyday	61
Monday - Friday	63
Weekends	37
Fri, Sat, Sun	11
Other	55
Total	**227**

Cumulative totals								
	Mon	Tue	Wed	Thu	Fri	Sat	Sun	DK/R
	148	**141**	**140**	**141**	**164**	**142**	**121**	**8**

Resident Question 3: What is the primary reason you travel on the interstates?		
Reason for Travel on Interstates	**Responses**	**For graph**
Medical Access	4	4
Travel to/from home (i.e. students)	15	21
Other	16	
Visit Family/Friends	34	34
Leisure (Shopping, to attend cultural events, etc.)	43	43
Work	115	119
All of the Above		6
Total	**227**	**227**

Resident Question 4: Do you drive to either work or school on a regular basis?	
Agreement	**Respondents**
Yes	187
No	40
Total	**227**

Resident Question 5: What time of day do you commute?	
Morning Commute	**Respondents**
1am	1
2am	1
3am	0
4am	2
5am	7
6am	27
7am	49
8am	58
9am	10
10am	4
11am	9
Total	**168**

Evening Commute	Respondents
Noon	3
1pm	4
2pm	12
3pm	15
4pm	20
5pm	73
6pm	30
7pm	9
8pm	2
9pm	5
10pm	7
11pm	3
Total	**183**

Resident Question 6: Which days do you typically commute?	
Days Commuted -By Category	**Responses**
Everyday	17
Weekends	13
Monday-Friday	137
Monday-Friday, Saturday	13
Total	**180**

Cumulative totals							
	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Total	**34**	**174**	**172**	**172**	**171**	**186**	**46**

Resident Question 7: Normally, how long does it take you to commute to/from work or school?	
Time for Commute	**Respondents**
0-5 minutes	16
6-15 minutes	43
15-30 minutes	47
30 minutes - 1 hour	59
Greater than 1 hour	13
Don't Know/Refused	5
Total	**183**

TOURIST QUESTIONS

Tourist Question 1: On average, how many days a week do you drive a car or other vehicle?	
Days in a Week	**Respondents**
1	1
2	4
3	5
4	2
5	3
6	4
7 days a week	135
Total	**154**

Tourist Question 2: From where do your trips to the I-81 Region in Virginia normally originate?	
All States	**Respondents**
CA	1
DE	1
LA	1
ME	1
MI	1
OK	1
SC	1
AL	2
DC	2
FL	2
GA	2
KY	2
NJ	2
OH	2
NY	3
CT	4
TX	4
WV	4
MD	6
TN	7
NC	8

Tourist Question 2: From where do your trips to the I-81 Region in Virginia normally originate?	
All States	**Respondents**
PA	9
VA	88
Total	**154**

Top Virginia Cities	
Blacksburg	2
Loudon	2
Rockingham	2
Virginia Beach	2
Woodstock	2
Arlington	3
Alexandria	4
Harrisonburg	5
Winchester	6
Woodbridge	6
Fairfax	7
Richmond	8
Roanoke	8

Top North Carolina Cities	
Concord	1
Fayetteville	1
Gaston County	1
Lexington	1
Raleigh	1
Charlotte	3

Top Pennsylvania Cities	
Breezewood	1
Bux County	1
Dalton	1
DuBois	1
Johnstown	1
Lansdale	1
Pittsburgh	1
Sealands Grove	1
Stuartstown	1

Top Tennessee Cities	
Bristol	1
Nashville	1
Tullahoma	1
Chattanooga	2
Knoxville	2

Tourist Question 3: What is your typical final destination?	
All States	**Respondents**
GA	1
MS	1
NJ	1
OH	1
SC	1
WV	1
DC	2
MA	2
NY	3
FL	4
MD	5
PA	6
TN	6
NC	15
VA	103
Total	**152**

Top Virginia Cities	
Anandale	2
Bristol	2
Can't remember	2
Radford	2
Virginia Beach	2
Wytheville	2
Front Royal	3
Lexington	3
New Market	3
Richmond	3
Winchester	3
Staunton	5
Charlottesville	7
Blacksburg	10
Roanoke	14
Harrisonburg	15

Top Pennsylvania Cities	
Allentown	1
Carlisle	1
Easton	1
Scranton	1
Strausburg	1
Winchester	1

Top Tennessee Cities	
Chattanooga	1
Johnson City	1
Kingsport	1
Knoxville	1
Bristol	2

Top North Carolina Cities	
Ashville	1
Banner Elk	1
Boone	1
Chicory	1

Top North Carolina Cities	
Franklin	1
Greensboro	1
Hickory	1
Myrtle Beach	1
Outer Banks	1
Raleigh	1
Charlotte	4

Tourist Question 4: How often do you travel on I-81 enroute to (insert destination from Q3)?	
Frequency	**Respondents**
Less than once a year	5
Once a year	9
Twice a year	18
3 to 5 times a year	15
> 5 times a year	105
Don't Know/Refused	2
Total	**154**

Tourist Question 5: How far in advance do you typically decide to make this trip?	
Frequency	**Respondents**
Same Day	15
2-6 Days	42
1-3 weeks	51
1-3 months	28
4-6 months	7
More than 6 months	9
Don't Know/Refused	2
Total	**154**

Tourist Question 6: How many people are typically in your party for these trips?	
# in Party	**Respondents**
1	47
2	66
3	22
4	11
5	6
More than 5	2
Total	**154**

CVO QUESTIONS

CVO Question 1: What type of Commercial Vehicle Operator are you?	
CVO Type	**Respondents**
Both	1
OTR Dedicated route	1
Long Haul	7
Short Haul	10
Total	**19**

CVO Question 2: How often do you travel in the I-81 region for CVO operations?	
Frequency	**Respondents**
More than once a week	11
Once every 2 weeks	3
Once a month	3
Once a week	1
Less than once a year	1
Total	**19**

CVO Question 3: On average, how many days a week do you drive a commercial vehicle?	
Days Driven	**Respondents**
1	1
2	0
3	0
4	3
5	4
6	4
7	7
Total	**19**

CVO Question 4: Which routes do you drive commercially in the I-81 Region on a regular basis?	
Roads	**Respondents**
I-81	17
I-64	14
I-66	11
US460	13
I-77	8
I-581	5
US220	10
US11	7
VA7	4
US250	4
US58	4
US221	4
VA8	2
US340	2

CVO Question 5: How accessible is truck parking in the I-81 Region?			
Accessibility	**Respondents**	**Applied Value**	**Totals**
Very Accessible	2	2	4
Somewhat Accessible	5	1	5
Neither Accessible nor Inaccessible	0	0	0
Somewhat Inaccessible	3	-1	-3
Very Inaccessible	3	-2	-6
Don't Know/Refused	6		0
		Mean = (Neutral)	**0**
Scale Ranges			
-2 to -1	**Very Inaccessible**		
-1 to 0	**Somewhat Inaccessible**		
0	**Neither Accessible nor Inaccessible**		
0 to 1	**Somewhat Accessible**		
1 to 2	**Very Accessible**		

CVO Question 6: If available, would you seek truck parking information in the I-81 Region?	
Response	**Respondents**
Yes	11
No	2
Don't Know/Refused	6
Total	**19**

CVO Question 7: Are you able to find truck parking information for the I-81 Region?	
Response	**Respondents**
Yes	5
No	4
Don't Know/Refused	10
Total	**19**

CVO Question 8: Where do you find it?	
Response	**Respondents**
Interstate Signage	1
Maps/State Information	1
Rest Areas	1
Truck stops	1
Books/Truckers' Guides	2
Total	**6**

CVO Question 9: Do you operate as a single or team driver?	
Type Driver	**Respondents**
Team Driver	2
Single Driver	17
Total	**19**

ACCESS AND AWARENESS

Access/Awareness Question 1: Do you currently have a cell phone?	
Response	**Respondents**
Yes	383
No	17
Total	**400**

Access/Awareness Question 2: Do you typically use a phone to get information?	
Response	**Respondents**
Yes	308
No	92
Total	**400**

Access/Awareness Question 3: Where did you first hear about 511 Virginia?		
Source for 511 Virginia	**Responses**	**%**
VDOT Website	2	0%
Don't Know/Refused	11	3%
Newspaper	13	3%
Radio	28	7%
Friends/Co-Workers	53	13%
Other	73	18%
Road Signs	233	56%
Total	**413**	**100%**

Source for 511 Virginia - Other	Respondents	Percentage
Advertisement at a rest area	1	1%
ASHTO	1	1%
Bus Tour (local tourist)	1	1%
State road map	1	1%
Tourist agency	1	1%
AAA magazine	2	3%
Brochure in cell phone mailing	3	4%
Brochure at hotel	3	4%
Gas Pump	4	5%
Information meeting	4	5%
VMS	6	8%
Internet	9	12%
Rack card	9	12%
Other	13	18%
TV	15	21%
Total	**73**	**100%**

Access/Awareness Question 4: Why did you first call 511 Virginia?	
For graph- Reason for 1st Call	**Respondents**
Directions (Maps/Routes)	8
Info on gas, food, lodging, rest stop	13
Construction	18
Road Conditions (fog,ice,flooding)	20
Accidents	45
Weather	54
Curiosity; boredom, general interest	87
Traffic (congestion/delays)	138
Total	**383**

Purpose - Other	Respondents	
Towing/Info for motorist assistance	2	2%
VMS sign directed to 511	4	4%
Can't remember	5	5%
Other	6	6%
Curiosity; boredom, general interest	87	84%
Total	**104**	**100%**

Access/Awareness Question 5: How did you first access 511 Virginia?	
Access Method	**Respondents**
Land Line (1-800 Number)	13
Land Line (511)	18
Cell Phone (1-800 Number)	9
Cell Phone (511)	352
Web	6
Don't Know/Refused	2
Total	**400**

NEEDS AND USAGE QUESTIONS

Needs & Usage Question 1: How safe do you feel on the roads in the I-81 Region?			
Perception of Safety	**Respondents**	**Scale**	**Results**
Very Safe	107	2	214
Somewhat Safe	148	1	148
Neutral	50	0	0
Somewhat Not Safe	65	-1	-65
Not Safe at All	30	-2	-60
Total	400		
		Mean=Somewhat Safe	**0.6**

Scale Ranges	
-2 to -1	**Not Safe at All**
-1 to 0	**Somewhat Not Safe**
0	**Neutral**
0 to 1	**Somewhat Safe**
1 to 2	**Very Safe**

Needs & Usage Question 2: Has having access to 511 Virginia changed your perception of the safety of the roads in the I-81 Region?		
Response	**Respondents**	**%**
Don't Know	14	4%
Yes	169	42%
No	217	54%
Total	**400**	**100%**

Needs & Usage Question 3: Was that change positive or negative?		
	Respondents	**%**
Negative	2	1%
Positive	167	99%
Total	**169**	**100%**

Needs & Usage Question 4: Has 511 Virginia increased your awareness of traveler information in the I-81 Region?		
	Respondents	**%**
Don't Know/Refused	7	2%
No	19	5%
Yes	374	94%
Total	**400**	**100%**

Needs & Usage Question 5: What information do you look for *before you leave* to travel in the I-81 Region?		
Travel Info Source - Before Leaving	**Respondents**	**Percentage**
Travel Time/Distance	10	1%
Directions (maps, routes)	26	4%
None	32	4%
Road Conditions (fog, ice, flooding)	51	7%
Other	64	9%
Construction	109	15%
Accidents	117	16%
Traffic	124	17%
Weather	179	25%
Total	**712**	**100%**

Other - Broken Out	**Respondents**	**%**
Police	1	2%
Inconveniences	1	2%
Scheduling	1	2%
Good deals	1	2%
General info	1	2%
Size of road,	1	2%
Traveling situations	1	2%
GPS from laptop to check construction etc.	1	2%
Anything unexpected	1	2%
How may trucks will be on the road	1	2%
Road problems	1	2%
Gas level	2	3%
Time of day	2	3%
Road closures	3	5%
Events, holidays	3	5%
Detours	5	8%

Other - Broken Out	Respondents	%
Attractions, things to do	8	13%
Delays	9	14%
Info on gas, food, lodging, rest stop	21	33%
Total	**64**	**100%**

Needs & Usage Question 6: What sources do you use to *plan for* a trip to this region?		
	Respondents	**Percentage**
Exit Source Books	1	0%
Local/State Travel Guide	2	0%
Fleet Office/Dispatch	3	0%
Destination Company	3	0%
Own Experience	7	1%
Other Truckers/Travelers	7	1%
Friends/Relatives	12	2%
AAA/AARP	19	3%
Rand McNally/Atlas/Maps	22	4%
None	37	6%
Radio	56	9%
Other	61	10%
TV	68	11%
511 Virginia	144	23%
Internet	179	29%
Total	**621**	**100%**

Internet Sources Specified	Respondents	%
freetrip.com	1	2%
hotel web sites	1	2%
superpages.com	1	2%
switchboard.com	1	2%
Yahoo Travel	1	2%
expedia.com	2	4%
VDOT web site	6	13%
mapquest.com	10	22%
weather.com, weather channel	22	49%
Total	**45**	**100%**

Needs & Usage Question 7: What information do you look for *while traveling* in the I-81 Region?		
Data	**Respondents**	**%**
Don't Know/Refused	5	1%
Distances	8	1%
Info about Gas Stations	30	4%
Info about Gas Stations	30	4%
None	31	4%
Road Conditions (ice, flooding, fog)	48	6%
Info about Food (Where to Eat)	54	7%
Construction	91	12%
Accidents	143	18%
Other	161	21%
Traffic (Congestion, Delays)	184	23%
Total	**785**	**100%**

Other- Broken Out	**Respondents**	**%**
Attractions for kids	1	1%
Blacksburg Weather Station, portable CB	1	1%
Change in roads	1	1%
Emergency phone numbers	1	1%
HAR - 1610am	1	1%
Road hazards	1	1%
Info about gas Stations	1	1%
flashing lights	1	1%
emergency warning	1	1%
Automotive shops	1	1%
Police activity	1	1%
Terrorist Info	1	1%
Road/lane closures	2	1%
Exits/Mile markers	3	2%
Info about Food (Where to eat)	3	2%
News	3	2%
Shopping	4	2%
Directions	6	3%
Detours	8	4%
Rest Stops/Welcome Centers	8	4%
Informational Signage	9	5%

Other- Broken Out	Respondents	%
Lodging	11	6%
Traffic (Congestion, Delays)	15	8%
Info about Attractions	18	10%
Weather	78	43%
Total	**180**	**100%**

Needs & Usage Question 8: What information were you looking for when you called 511 and left your name for this survey?		
Categories	**Respondents**	**%**
None	5	1%
Don't Know/Refused	6	1%
Trip Routing	3	1%
Services	8	1%
Road Conditions	30	5%
Other	67	12%
Construction	75	13%
Weather	90	16%
Accidents	120	21%
Traffic	170	30%
Total	**574**	**100%**

Other - Broken Out	Respondents	%
Report speeding vehicles	1	1%
Road closures	1	1%
Traffic	1	1%
Truck activity	1	1%
Bridge Closing	2	3%
Motorist assistance	2	3%
Weather	2	3%
Tornado warnings	3	4%
General information	4	6%
Survey	5	7%
Trip routing	6	9%
Not specific - curiosity	12	17%
Services	14	20%
Delays/congestion/blockages	16	23%
Total	**70**	**100%**

Needs & Usage Question 9: What information are you typically seeking when you call 511 Virginia?		
Categories	**Respondents**	**%**
Don't Know/Refused	2	0%
Trip Routing	3	0%
None	5	1%
Services	11	2%
Other	46	6%
Road Conditions	50	7%
Weather	103	14%
Construction	114	16%
Accidents	166	23%
Traffic	222	31%
Total	**722**	**100%**

Other - Broken Out	Respondents	%
Report incident	1	2%
Traffic	1	2%
Blockages	2	4%
Boredom, curiosity	2	4%
Bridge Closing	2	4%
General Road Information	2	4%
Road Closures	2	4%
Backups	2	4%
Alternate Route	3	6%
Trip Routing	3	6%
First call	4	8%
Delays	12	24%
Services	14	28%
Total	**50**	**100%**

Needs & Usage Question 10: How useful is the information you find?			
Usefulness	**Respondents**	**Scale**	**Results**
Very Useful	263	2	526
Somewhat Useful	95	1	95
Neutral	15	0	0
Not Very Useful	10	-1	-10
Not Useful at All	12	-2	-24
Don't Know/Refused	5		
Total	**400**		
		Mean: Very Useful	**1.5**
Scale Ranges			
-2 to -1	**Not Useful at All**		
-1 to 0	**Not Very Useful**		
0	**Neutral**		
0 to 1	**Somewhat Useful**		
1 to 2	**Very Useful**		

Needs & Usage Question 11: What makes it useful?	
Category	**Respondents**
Helps make travel decisions	140
Useful information	50
Route information	49
Easy and convenient to use	44
Increase awareness	44
Other	44
Traffic and delay information	34
Weather information	33
Accident information	28
Location specific information	22
Voice response	22
Total	**510**

Other-broken out	Respondents
Saves time	20
Road condition information	16
Don't know/refused	12
Services information	11
Quality of information	10
Peace of mind	9
Connection function	6
Safe/hands free	6
Ability to alert others about being late	4
Miscellaneous	4
Coverage area	3
Tourism information	3
Free service & saves money	2
Time stamp	2
Travel advisory information	1
Total	**109**

Needs & Usage Question 12: What could be more useful for you?	
Category	**Respondents**
Nothing	97
Don't know/refused	75
Other	50
Make navigation easier	50
Provide more current information	39
Ensure voice recognition works	21
Improve construction information	21
Provide detour information	20
Expand coverage area	20
Improve services information	18
Improve information quality	16
Improve information by mile marker	14
Improve weather information	14
Improve availability	14
Improve accident information	13
Quality of traffic information	12
Delay information	11
Total	**505**

Other-broken out	**Respondents**
Group information differently	9
Provide backup length information	7
More awareness marketing	7
Miscellaneous/not related to 511	7
Provide directions	6
Provide for user input	4
Provide VSP information	3
Provide information on location of user	3
Provide road condition information	2
Provide road safety information	1
More cameras	1
Total	**51**

DECISION MAKING QUESTIONS

Decision Making Question 1: Have you ever heard anything on 511 Virginia that caused you to change your travel plans?		
Response	**Respondents**	**%**
Don't Know/Refused	4	1%
Yes	194	49%
No	202	51%
Total	**400**	**100%**

Decision Making Question 2: How did you change your plans?		
Category	**Respondents**	**%**
Slow Down/Change Speed	1	0%
Modified trip	3	1%
Stop Along the Way and Wait	5	2%
Don't Know/Refused	6	3%
Changed Time (arrive, depart)	13	6%
Cancel/Reschedule Trip	18	8%
Change Route	166	78%
Total	**212**	**100%**

Decision Making Question 3: Would you call 511 Virginia again?	
Responses	**Respondents**
Yes	397
No	2
Don't Know/Refused	1
Total	**400**

WHO SHOULD RUN 511?

Who Should Run 511 Question 1: As you probably know, there are any number of sources that can gather and offer to you information on Virginia roads. In your opinion, who should be responsible for providing this service?		
Who should run 511?	**Respondents**	**%**
All	213	53%
Virginia Department of Transportation	76	19%
Government	57	14%
Virginia State Police	21	5%
Private Industry	14	4%
Don't Know/Refused	10	3%
PPT/VDOT	8	2%
PPT/VSP	1	0%
Total	**400**	**100%**

Who Should Run 511 Questions 2: And, in your opinion, which do you think would provide travel information that is more reliable?		
Agency	**Respondents**	**%**
PPT/VDOT	2	1%
PPT/VSP	3	1%
Private Industry	11	3%
Don't Know/Refused	15	4%
Virginia Department of Transportation	63	16%
Government	84	21%
All	104	26%
Virginia State Police	118	30%
Total	**400**	**100%**

Who Should Run 511 Questions 3 & 4: Has access to 511 Virginia changed your perception of the services provided by the Virginia Department of Transportation? Has this change been positive or negative?		
Response and Positive/Negative	**Respondents**	**%**
Don't Know/Refused	17	4%
No	102	26%
Yes/Negative	1	0%
Yes/Positive	280	70%
Total	**400**	**100%**

511 Virginia Evaluation

January 2004

Awareness Survey Report
Chapter 5

CHAPTER 5: AWARENESS SURVEY REPORT

EXECUTIVE SUMMARY

An important component of this 511 Virginia evaluation is an assessment of how the Virginia Department of Transportation (VDOT) met the objective of increasing traveler awareness of the 511 Virginia service, under the overall goal of productivity, by measuring the awareness level of the general population within the 511 Virginia coverage area. An understanding of what percentage of people are aware of the service, what percentage have used the service, and what their perceptions of the service are was addressed with an awareness survey. Furthermore, an understanding of what types of information the respondents were likely to use the 511 Virginia service for was addressed. Appendix B, C, D, & E contain the raw results from the questions posed in the awareness survey.

The awareness survey was administered by the Center for Survey Research (CSR) at Virginia Tech. VTTI purchased the placement of four questions on the Quality of Life (QOL) in Virginia survey enabling the project team to reach a much larger audience than otherwise possible within the timeframe and budget of this evaluation. The four questions asked by the CSR for 511 Virginia are listed in appendix A. The CSR employed a stratified disproportionate sampling design for the 2003 QOL survey. The resulting completion of 1,099 interviews provides a representative sample of adult respondents in households across Virginia with a margin error of ±3.0 percent at the 95 percent level of confidence.

Statistically significant data was collected for all of Virginia. As a result, a baseline of data for the Commonwealth is established through this assessment and may be used in future evaluations for comparison purposes as more regions of Virginia are included in 511 Virginia's coverage area. For the purposes of this evaluation, the data that was collected across Virginia is broken into two sets. One set of data includes just the 511 Virginia coverage area (i.e., the I-81 Corridor). The second set of data includes the 511 Virginia coverage area as well as the rest of Virginia. The results from this data set are referred to as the "all-Virginia" results throughout this paper, as opposed to the "511 Virginia coverage area" results. The all-Virginia results are used when appropriate for comparison purposes.

The findings that emerged from the survey fell into two categories:

- Awareness and usage
- Categories of information users are most likely to use

Some of the major findings from respondents include:

- 19% of participants report having heard of 511 Virginia
- Of those who have heard of 511 Virginia, 8%, or 6 of 73, have used the service
- Of those who have heard of 511 Virginia, 32%, or 23 of 73 are familiar with the services 511 Virginia provides

- A majority of the respondents who have heard of 511 Virginia associate the following types of information with the service:

    - Road Conditions
    - Lodging
    - Traffic/Construction
    - Places to buy food
- A majority of all respondents are most likely to use 511 Virginia for:
    - Emergency Services
    - Accidents/Construction
    - Road Conditions

Based on the findings there are several recommendations that can be made for 511 Virginia:

- Go beyond awareness marketing.
    - There is gap between awareness and usage and between awareness and an understanding of services provided.
- Reevaluate marketing efforts.
    - There are relatively similar usage/perception levels in 511 coverage area and all-Virginia.
- Explore further the users' perceptions of the meaning of terms "Road Conditions" and "Emergency Services."
- Consider enhancing Emergency Services to fit traveler's perceptions and expectations or differentiate 511 from #77 in Virginia.
- Consider eliminating categories that are not related to Travel Conditions.
- Differentiate 511 from other n11 services.

In terms of lessons learned, the project team found participation in an omnibus survey to be a good way to determine general awareness. The cost was low and the requirements of the team were minimal as well. In developing the awareness survey, one lesson learned was that consistency across other surveys being administered as part of the overall evaluation is important (e.g., the phone, web, and awareness survey).

Methods

(The following methods description is taken from the Quality of Life in Virginia: 2003 report)

The 511 Virginia Awareness Survey was administered as part of the 2003 QOL survey. The CSR administers the QOL survey annually and reserves a portion of the instrument for special items that may be requested by state policy-makers or faculty members at Virginia Tech. The 2003 QOL survey instrument is administered by telephone to Virginia citizens and is designed to encompass a wide variety of items assessing a broad domain of experiences and opinions.

After the initial draft of the 2003 QOL survey was developed, a multi-phase instrument pre-test was conducted by the CSR in order to test the position of each survey item within the instrument, the wording of each item, and the length of the interview. The survey pre-test was conducted with a small sample of randomly selected Virginia citizens. Following the pre-test, consequent non-substantive wording changes were made in order to improve the clarity of the instrument. It was established during the pre-test that the average interview length was 19 minutes. A copy of the 2003

QOL survey instrument (questions only relating to 511 Virginia), as well as demographic questions are provided in Appendix A.

A stratified disproportionate sampling design was employed for the 2003 QOL survey. The sample for this project was obtained by the CSR from the national sampling firm, Survey Sampling Inc., and it included the telephone number and numeric geographic identifier (Virginia city or county of residence) for each of the randomly selected 4,528 sample members. The sample used for this study included both listed and unlisted telephone numbers.

All telephone numbers in this sample were called between April 4 and June 11,2003. Only adults in households were interviewed. Excluding non-working and non-residential telephone numbers as well as numbers for which no eligible adult was available, the final "eligible" sample for this survey included 2,965 working household telephone numbers. With 1,099 interviews completed out of this sample of households, a completion rate of 37.1 percent was attained. The resulting completion of 1,099 interviews provides a representative sample of adult respondents in households across Virginia with a margin of error equaling ±3.0 percent at the 95 percent level of confidence. Thus, assuming there are no substantial differences between completed interviews and those that were not completed, results based on this sample size should vary no more than 3.0 percentage points above or below the obtained results. Given repeated administrations of the survey, results would vary beyond XX percent only five out of 100 administrations.[1]

Sample for the 511 Coverage Area

For the 511 Coverage area, a sample of 384 respondents was desired. This number is sufficient for a 5% acceptable error rate. This number (384) is obtained by using the formula in the box below.[2]

$n=z^2(p \times q)/e^2$
n=sample size
z=std error
p=established variability
q=(100-p)
e=acceptable error
$n=(1.96)^2(50 \times 50)/5^2$
n=384.16

Demographic Information

As stated previously, participants for the QOL survey were randomly selected. A portion of the survey was dedicated to obtaining demographic information about the participants. Figure 1 shows a chart of selected demographic information for both the 511 coverage area and for all of Virginia.

In analyzing the all-Virginia results, it is important to note that 35% of the participants are from the 511 coverage area and 65% are not from the 511 coverage area. Map1 shows the overlap in region of the two sets of results.

[1] Bayer, Alan E., and Willis-Walton, Susan M. (2003). Quality of Life in Virginia. Pages 2-5
[2] Burns, Alvin C., Bush, Ronald F., Marketing Research 3rd Edition, Prentice Hall 2000. Page 439.

Map 1. Map of 511 Coverage Area vs. All of Virginia

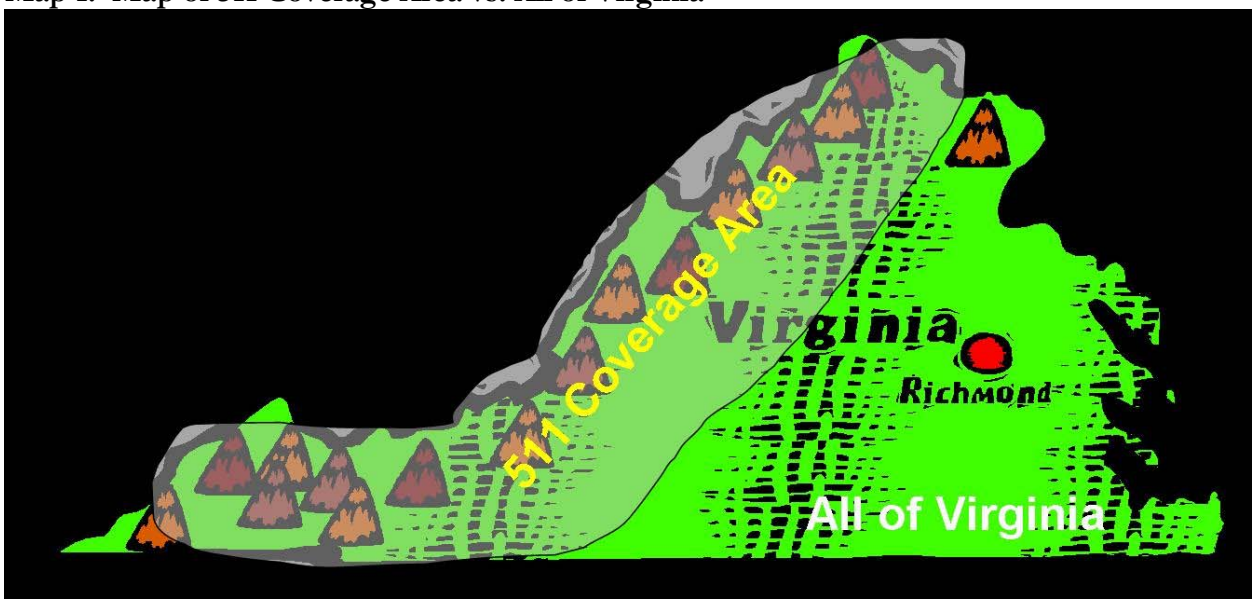


Figure 1. Selected Demographic Information (Survey Questions 23 – 38).

	511 Coverage Area	All Virginia
How old are you?	40-49 *Range: 18-96*	40-49 *Range: 18-96*
Does anyone in your household have a cell phone?	65% has cell phone	72% has cell phone
Is there a computer in your home?	63% with computer	78% with computer
Do you have access to the internet?	70% with access to internet	79% with access to internet
How many times per month do you use the internet?	Daily (21-31/month) *Range: 0/month to 300/month*	Daily (21-31/month) *Range: 0/month to 900/month*
Has anyone in your household ever purchased a product on the internet?	53% has purchased on the internet	63% has purchased on the internet
What was your household income before taxes last year?	Less than $20,000 *Range: less than $20,000 to over $120,000*	$30,000 to 40,000 (majority refused) *Range: less than $20,000 to over $120,000*
What is your gender?	66% female	65% female
	N=385	N=1099

Data from the 2000 Census shows that the information in Figure 1 is similar to, but not a complete reflection of, the general population of the Commonwealth of Virginia. Census data shows[3]:

- The average citizen in Virginia is female (51%)
- The average age is between 34-55
- The average income is between $50,000 and $74,999

MAJOR FINDINGS

The awareness survey yielded many interesting findings. For the purpose of this evaluation, findings are focused on results from the 511 Virginia coverage area; significant findings from the all Virginia results are noted when appropriate. In interpreting the analysis, it should be noted that, unless otherwise stated, the all Virginia category contains the responses from the 511 Virginia coverage area reflecting the entire Commonwealth, not just the area outside of the 511 region.

The findings from the survey fall into two categories:

- Awareness and usage
- Categories of information users are most likely to use

[3]U.S. Bureau of the Census, Census 2000.

Below is a summary of these findings. The complete list of raw findings is located in Appendices B, C, D, & E. Appendix D and E present the complete, relevant demographic findings from the QOL survey. Although these findings are not part of this analysis, they may be of interest to VDOT.

Awareness and Usage

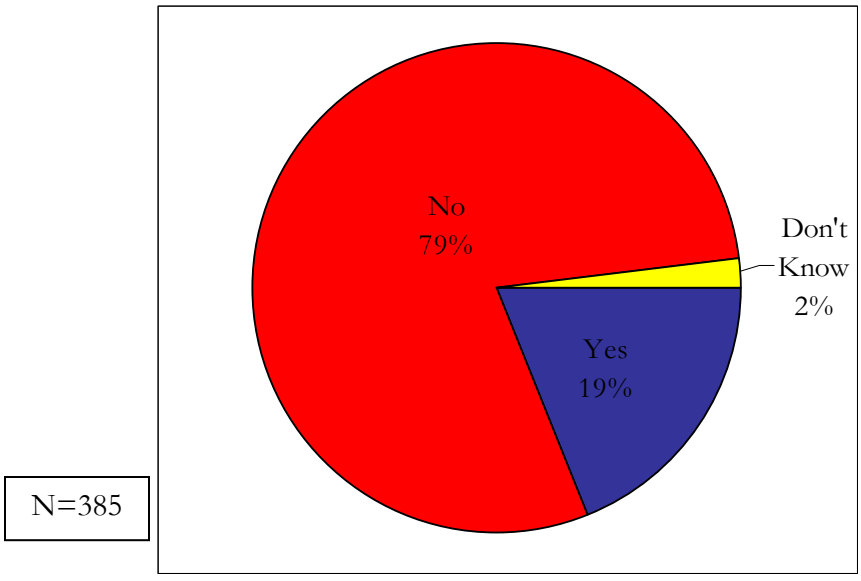
Awareness

One of VDOT's goals for the 511 Virginia service is to increase traveler awareness of the 511 Virginia service. In an effort to measure current awareness levels, participants of the QOL survey were asked if they had ever heard of 511 Virginia. Figure 2 represents the results of this question. 19% of all respondents report having heard of the service.

By comparison, the all-Virginia results showed that 13% of the respondents had heard of the service. When the data for the 511 Virginia coverage area was removed from the all-Virginia results, it was revealed that 9% of respondents outside of the 511 Virginia coverage area are aware of 511 Virginia. This finding is interesting to note because marketing and awareness efforts to date have occurred only in the 511 Virginia coverage area.

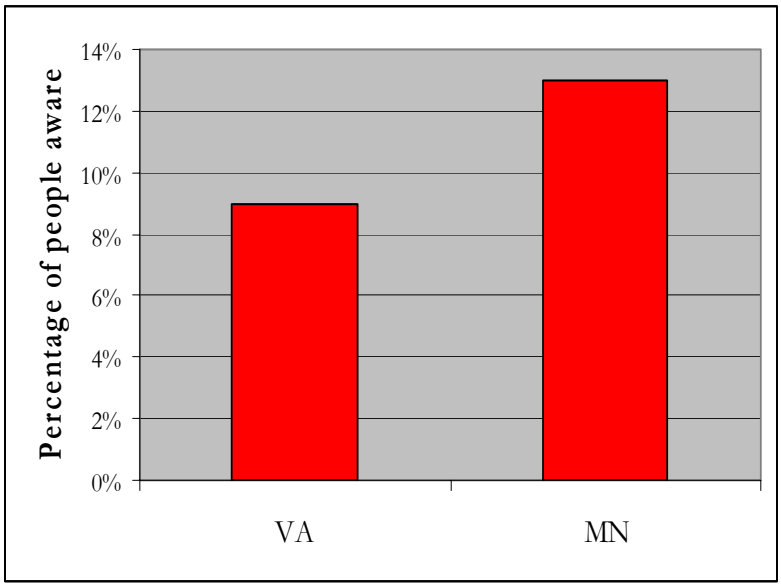
In comparing the results from the 511 Coverage area to the 511 Coalition Goals for national 511, it can be concluded that Virginia is not far from meeting the national goal of 25% of the nation's population being aware of 511 by 2005[4]. However, the all-Virginia results reveal that Virginia is far from that goal. At least one other state has published awareness results that can be compared to 511 Virginia. Statewide Minnesota had an awareness level of 13% prior to marketing. In comparing the states, Virginia has the least awareness, another indication of the need to step up awareness efforts.

Figure 2. Have you ever heard of 511 Virginia, the three-digit phone number service that provides information to citizens? (Survey Question 18).



[4] 511 Deployment Coalition. 511 Implementation and Operational Guidelines (2003), Version 2.0, page ii

Figure 3. Comparison of state awareness levels.

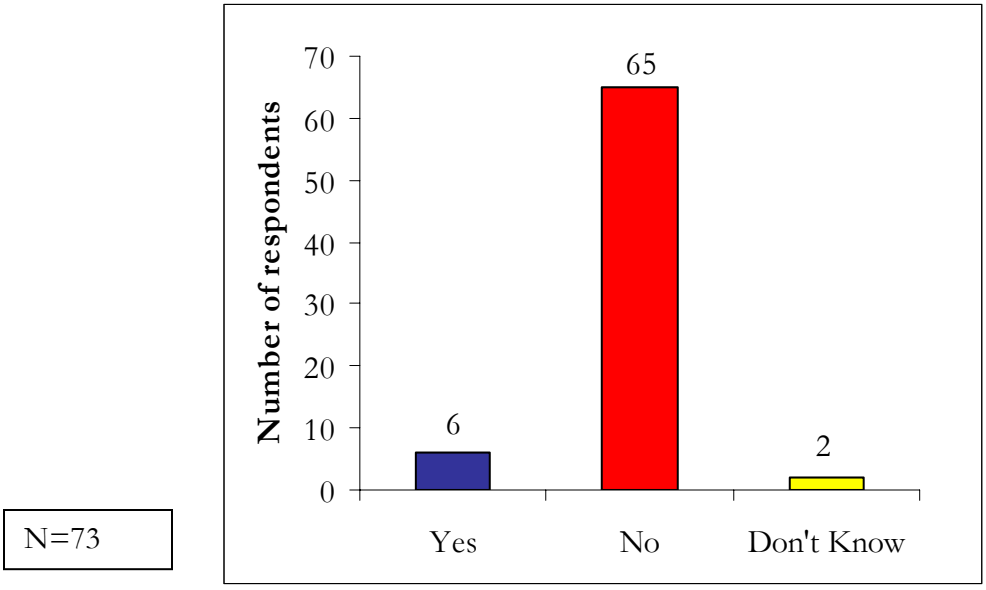


Usage

Going a step beyond awareness of the 511 Virginia service, the project team desired to measure the number of people who have heard of 511 and have used the service. Figure 3 shows the result that 6 participants (or 8%) of the 73 participants who reported having heard of 511 have ever called the service.

Similarly, the all Virginia results show that 7% (10 of 139) of the participants who reported having heard of 511 had ever called. As both sets of data indicate, there is a large gap between those who are aware of the 511 service and those who have used the service. This may be an indicator of a need for more effective awareness marketing of the 511 Virginia service.

Figure 4. Have you ever used the 511 Virginia phone service? (Survey Question 19).



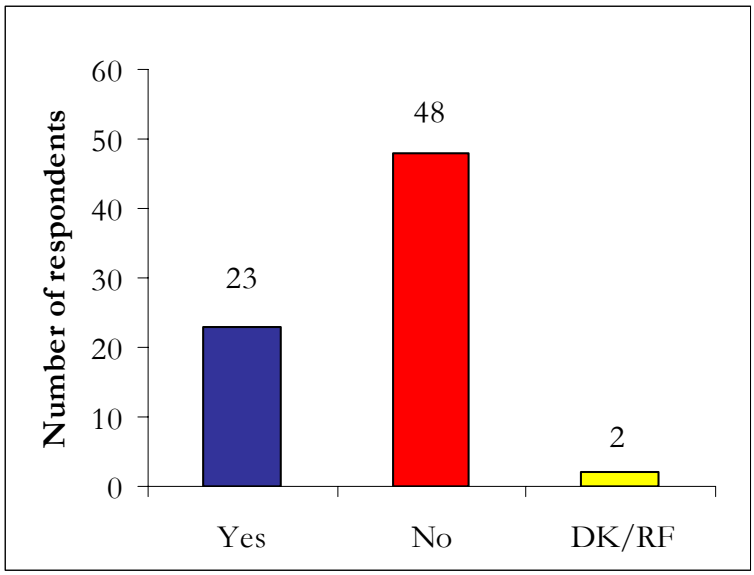
Perception of Services Offered

The 73 respondents who reported having heard of 511 were asked if they were aware of what types of information the 511 Virginia service provides. Figure 4 depicts the results that 23 (or 32%) of the 73 respondents were familiar with what the service provides.

The results for all Virginia indicate that 38 (or 27%) of the 139 who had heard of 511 were aware of the services it offers. Again, this is interesting to note given the focus of the marketing and awareness efforts only in the 511 Virginia coverage area.

This gap between awareness of 511 and understanding what it provides indicates an even greater need for an awareness campaign that includes education on what the service provides.

Figure 4. Are you familiar with the types of information that the 511 service provides? (Survey Question 20).

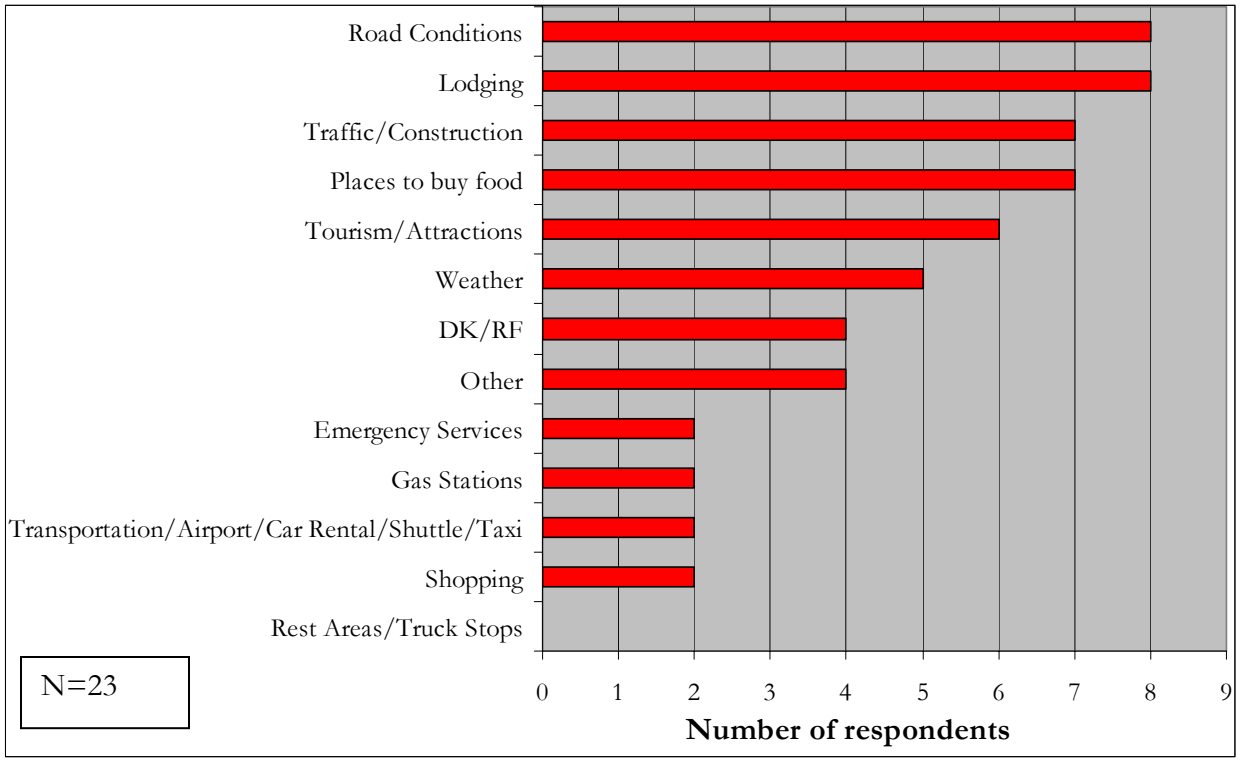


N=73

To gain an understanding of what respondent's perceptions of the services provided by 511 are, the 23 respondents who indicated they were aware of 511 Virginia were asked what the service provides to users. This was an open question, and no choices were presented to select from. Figure 5 represents the responses from the 23 respondents.

The data reveals that, of the 23 respondents, perceptions were almost equally split between travel condition information (road conditions, traffic/construction, and weather) and traveler services (lodging, places to buy food, tourism/attractions, gas stations, etc.).

Figure 5. What types of information are provided by the 511 service? (Survey Question 21).



The "other" responses are broken down as follows:

- Health information and environmental issues
- Jobs, economic situations you can discuss with people
- Locating different types of places to go while traveling
- What is going on in a given community

The "other" responses may indicate some confusion with other N11 numbers such as 311 which has been designated to provide non-emergency governmental services. This is a further indication of the need for a marketing effort beyond general awareness.

Categories of Information Users are Most Likely to Use

VDOT was interested in gaining an understanding of what types of information the general population are interested in. All participants were asked how likely they were to use each of the various categories of information 511 Virginia provides:

- Restaurants or places to stop for food
- Lodging or places to stay while traveling
- Shopping
- Tourism sites and attractions
- The weather
- Transportation (e.g., airports, car rentals, shuttles, or taxi services)
- Places to stop for gasoline

- Accidents, construction or traffic that might affect travel
- Rest areas or truck stops
- Road conditions
- Emergency services

Figure 6 depicts the findings from this question.

Figure 6. How likely are you to dial 511 to get each type of information below? (Survey Question 22).

	Very Likely	Somewhat Likely	Somewhat Unlikely	Not at all likely	DK/RF
Shopping	6%	19%	17%	58%	1%
Rest Areas	6%	21%	17%	56%	1%
Gas	8%	16%	17%	58%	1%
Restaurants	8%	24%	15%	54%	1%
Transportation	8%	26%	15%	51%	1%
Tourist Attractions	11%	33%	13%	43%	1%
Lodging	13%	31%	12%	44%	1%
Weather	14%	27%	10%	49%	1%
Road Conditions	17%	33%	9%	40%	1%
Emergency Services	19%	35%	10%	36%	1%
Accidents/Construction	21%	31%	10%	37%	1%
N=385					

Figure 7 shows the findings grouped into likely or not likely categories for a clearer picture of the respondent's opinions.

Responses indicate that only three categories are more likely than not to be used by participants:

- Emergency Services
- Accidents/Construction
- Road Conditions

All other categories the majority of participants stated they were less likely to use.

It is interesting to note that the categories that the majority of participants were likely to use were related to travel condition information. In contrast, the categories the majority of participants were not likely to use were related to traveler services, with the exception of weather.

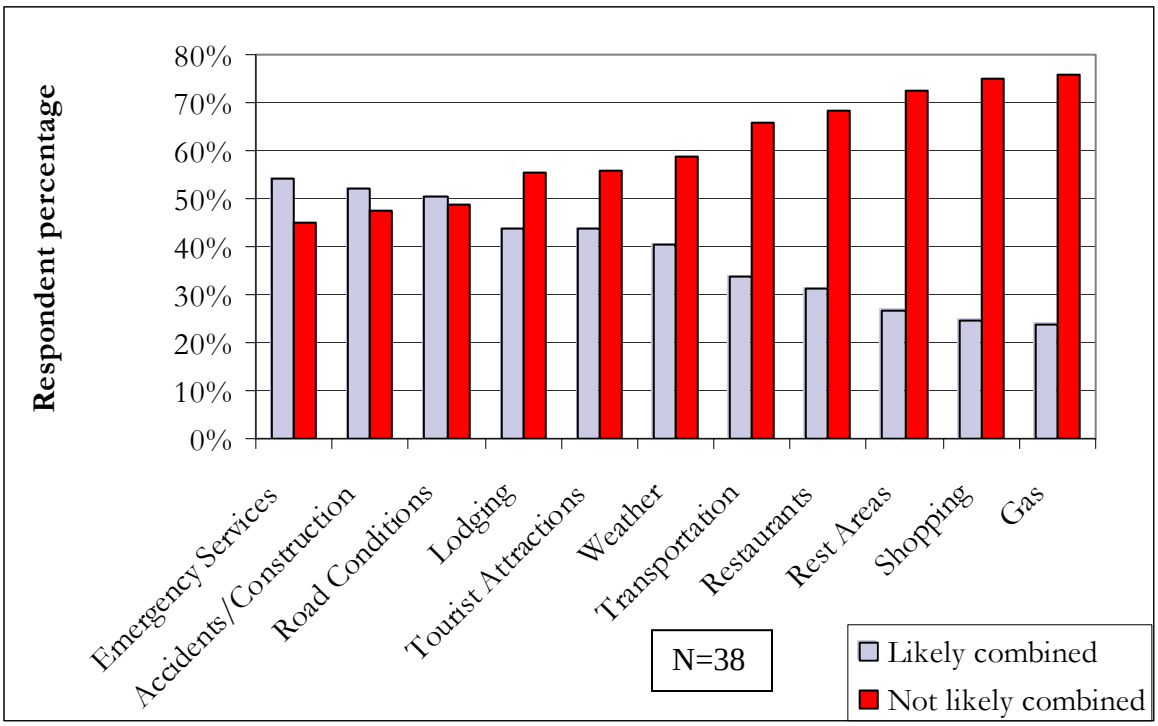
The all-Virginia results revealed the same findings. The only three categories the participants stated they would be more likely than not to use are:

- Accidents/construction
- Road Conditions
- Emergency Services

All other categories the majority of participants stated they were less likely to use.

It is the opinion of the project team that the term "emergency services" was most likely interpreted by participants to mean access to emergency services at the time they need it, perhaps similar to dialing #77. However, without further exploration, this is difficult to conclude.

Figure 7. How likely are you to dial 511 to get each type of information below? (Combined answers). (Survey Question 22).



RECOMMENDATIONS

Based on the findings, there are several recommendations that can be made for 511 Virginia:

- Go beyond awareness marketing.
- There is gap between awareness and usage and between awareness and an understanding of services provided.
- Reevaluate marketing efforts.
- There are relatively similar usage/perception levels in 511 coverage area and all Virginia.
- Explore further the users' perceptions of the meaning of terms "Road Conditions" and "Emergency Services."

- Consider enhancing Emergency Services to fit travelers' perceptions and expectations or differentiate 511 from #77 in Virginia.
- Consider eliminating categories that are not related to Travel Conditions.
- Differentiate 511 from other N11 services.

The awareness and usage section provided the insight that there is a large gap between the number of people who are aware of 511 and the number of people who are using 511. Further, another gap is evident between awareness of 511 and the understanding of what types of services 511 provides. These gaps indicate that the general population in the 511 coverage area is not being educated about what 511 Virginia can provide. It is the recommendation of the project team that further emphasis be placed on educating travelers within the 511 Virginia coverage area about what services 511 offers, as well as information that may make a user more likely to try the service. Such information could include:

- Ease of use. The user will be able to easily access information needed to make travel decisions.
- The cost to the user is no more than a local call.
- The service is safety conscious, using hands-free voice response technology.

This campaign should be fully implemented once a desirable awareness level is reached. Education without awareness may not lead to more users choosing to use 511, but education after an awareness of 511 will be meaningful and should optimize an increase in usage.

Similarly, the finding that the usage and perception of services offered were relatively consistent for both the 511 coverage area results and the all-Virginia results may indicate that the marketing efforts employed within the 511 Virginia coverage area prior to the evaluation period have not been as effective as anticipated. Therefore, the project team recommends that a marketing and awareness plan that emphasizes traveler awareness and understanding of the 511 Virginia service be created. This effort should stem from clear goals and targets established by VDOT for awareness and usage levels (e.g., VDOT could adopt the national goals). This effort should not be confused with an effort to create sales and revenue for the service.

Another recommendation is to create a better understanding of how the terms used in 511 Virginia are perceived, specifically the terms "Emergency Services" and "Road Conditions." These two terms are of particular importance to 511 Virginia as they are two of the three categories that the general population has an interest in throughout Virginia. The project team suspects that the term "Emergency Services" may be interpreted as roadside assistance or emergency assistance similar to the service #77 provides. "Road Conditions" may be interpreted by the general population as a broader category including traffic, construction, weather, or anything that is affecting the flow of traffic on the roads. It is the project team's recommendation that in-depth focus groups could be held to determine how a sample of the population interprets these terms. This information could provide the marketing/awareness campaign with useful information and be used to improve the 511 Virginia service.

For example, if it is found through further analysis that emergency services is interpreted by the majority of the population to be like #77, then it is to be assumed that the respondents who stated they were "very likely" or "somewhat likely" to call for this feature are really seeking a service similar

to #77. It is the project team's recommendation that either VDOT enhance this feature of 511 Virginia to provide more meaningful information (e.g., users may expect to be able to talk to a person for Emergency Services) or eliminate the category from 511 Virginia so users do not have a negative experience with 511 when their expectations are not met. Should the category be eliminated, VDOT should consider the need to differentiate 511 Virginia from #77 in public perception.

The project team recommends that VDOT consider eliminating the categories that the respondents indicated they were not likely to call 511 to get information for. The results show that these categories are almost exclusively traveler services categories, with the exception of weather information. If it is not VDOT's intention to completely eliminate the traveler services portion of the 511 Virginia service, then the project team recommends significantly reducing the categories that are offered under traveler services. Users from both the 511 coverage area as well as all of Virginia indicate that, although they are less likely to call for this type of information, the categories they would most likely be interested in are lodging and tourist attractions. The least likely categories are transportation, restaurants, rest areas, shopping, and gas in that order. Therefore, the project team would recommend maintaining only lodging and tourist attractions and eliminating the other categories if traveler services is to be maintained on 511 Virginia. Further, eliminating categories will help to simplify any sales efforts.

Finally, further evaluation may reveal an overall confusion with n11 numbers that exist in Virginia. 311 is available in some regions of Virginia and is designed for non-emergency governmental services, and 211 is coming to certain locations in Virginia. 211 is for social services (e.g., United Way, battered women shelters, etc.). More awareness and education marketing geared toward this possible problem may be beneficial.

METHODOLOGICAL LESSONS LEARNED

There is one primary lesson learned from the awareness survey. During the design phase of the survey, the evaluation team failed to coordinate the way questions were phrased in the awareness survey with the phone and web survey. For example, the breakdown of categories offered by 511 Virginia were identified differently in the phone and the web surveys (e.g., accidents/construction as one category or two separate categories). This resulted in findings that were difficult to compare across surveys within this 511 Virginia evaluation. Future evaluators should coordinate these questions so that comparisons of users can be made more easily.

Beyond this lesson learned, the project team found that participation in an omnibus survey such as the QOL survey was an efficient and effective method for determining awareness across a broad area. The cost of the survey was low compared to the cost it would have required to administer the survey in-house. Minimal staff resources needed to be allocated to the survey beyond development of the questions and analysis of the results. All other aspects were provided by the CSR.

In conclusion, the awareness survey was administered to determine whether or not VDOT met the goal of increasing traveler awareness of the 511 Virginia service by measuring the awareness level of the general population within the 511 Virginia coverage area. Significant findings include:

- 19% of participants report having heard of 511 Virginia.
- Of those who have heard of 511 Virginia, 6 of 73, or 8%, have used the service.
- Of those who have heard of 511 Virginia, 23 of 73, or 32%, are familiar with the services 511 Virginia provides.
- The majority of all respondents are most likely to use 511 Virginia for:
    - Emergency Services
    - Accidents/Construction
    - Road Conditions