Greater Yellowstone Rural Intelligent Transportation System Priority Corridor Project

Rural Traveler Needs Survey
Volume I

Prepared by

Randy W. Carroll
Research Assistant

and

John M. Mounce, Ph.D., P.E.
Research Engineer

of the

Western Transportation Institute
Montana State University – Bozeman

Prepared for

STATE OF MONTANA
DEPARTMENT OF TRANSPORTATION
in cooperation with the
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

October, 1997

Executive Summary

The Greater Yellowstone Rural Intelligent Transportation System (ITS) Priority Corridor extends from Bozeman, Montana to Idaho Falls, Idaho. The Corridor encompasses three primary travel routes:

(1) US Highway 191/20 from Bozeman, Montana to Idaho Falls, Idaho;

(2) Interstate Highway 15 from Butte, Montana to Idaho Falls, Idaho including Interstate Highway 90 from Bozeman to Butte, Montana; and

(3) US Highway 89/26 from Livingston, Montana through Jackson, Wyoming to Idaho Falls, Idaho including Interstate Highway 90 from Bozeman to Livingston, Montana.

The Rural Traveler Needs Survey was conducted as part of the Greater Yellowstone Rural ITS Priority Corridor project. Its general purpose was to investigate the concerns and information needs of the rural driver/passenger when traveling in Montana, Wyoming and Idaho. In addition, the survey was designed to determine how these concerns and information needs could best be addressed either pre-trip or en-route. The results will be useful in determining what technologies, if any, could be applied to the roadway or in surrounding areas to help disseminate information to the traveler.

The specific objectives of the Rural Traveler Needs Survey were threefold. First, it was necessary to determine *what* information the rural traveler needs and wants. Thus, it also became important to investigate the concerns the traveler has regarding these information needs. It would not be appropriate or cost effective to provide the traveler with information they do not want or would not be willing to use. Secondly, the survey sought to determine the *medium* through which information would be presented to the traveler. In other words, it was important to determine which technology could convey the needed information most effectively and efficiently. The third objective was to determine *where* the traveler would want this information presented. It would not make sense to present information at locations where the traveler would be unwilling or unable to use it effectively.

The 481 general traveler respondents are composed of 30% Montana, Wyoming and Idaho residents and 68% tourists or individuals from other states. Notice, the respondents had the option of not responding to any question on the survey. Thus, the total percentages do not always sum to one hundred percent. Fifty-five percent (55%) of the respondents were male while 42% were female. The majority of respondents were between the ages of 45-64 (38%). Fifty-six percent (56%) of respondents categorized themselves as living in an urban area while 42% categorized themselves as living in a rural area. The majority of respondents reported their normal mode of travel as the driver of an automobile (78%), their normal miles traveled per day is 0-49 (36%), their normal type of road traveled are 2-lane highways (27%) and their normal trip purpose is for

recreation (47%). Fifty-six percent (56%) of respondents were employed full-time, had a college degree (30%), had an income between $40,000-$79,000 (34%) and 97% of respondents had a current driver's license.

The majority of respondents predominantly worried about the following safety concerns: road conditions like ice and snow, and passing trucks and other heavy vehicles. Occasional concern was expressed by the majority of respondents about animals, such as deer or farm animals, on the roadway and where to get assistance for a vehicle breakdown, accident or emergency medical aid. The majority of respondents believed all forms of pre-trip information was very important. They also preferred to obtain traveler information (e.g., road conditions, weather, and tourist accommodations) both before starting a trip and while on the road. The majority of respondents indicated the following to be very important when planning a trip: location and direction to parks, scenic routes and historical sites, and the ability to obtain trip planning assistance from rest stops or other places along the intended route. They also indicated that travel magazines or travel sections in newspapers, hotels and resorts, as well as State Departments of Tourism are important information sources when planning a trip.

Respondents were asked to indicate their likeliness to use new high-tech sources of information. The majority of respondents indicated they were very likely to use changeable message signs along the highway and special radio channels or phone numbers. They also indicated they were not at all likely to use a small TV screen with traveler information for their car or a cellular phone. The majority of respondents reported a willingness to obtain an attachment to alert police and emergency medical service in the event of an emergency. Ideally this device should be capable of both automatic and manual activation with a notification that help is on the way. The majority of respondents indicated they were not at all likely to use any form of public transit if made available. Respondents stated they would be somewhat likely to use and pay for these new information services while indicating the government, private industry and the user should all share responsibility for paying for new information services. The majority of respondents indicated improving the existing roads, highways and shoulders would be the optimum way to make traveling rural roadways safer and easier.

Significant differences appeared between the responses of Montana, Wyoming and Idaho residents when compared with those of tourists or residents of other states. Residents of Montana, Idaho and Wyoming indicated they worry more about encountering slow vehicles, like snow plows or farm equipment, and animals, such as deer or farm animals, on the roadway than did tourists or residents of other states. This could be due to the fact that tourists and residents of other states are not aware of the dangers animals pose to vehicles on the roadway. They may also not be aware of the fact that farm equipment travels on the roadway or have experience with the dangers associated with snowplows. Tourists and residents of other states indicated they were more concerned with getting lost and not getting enough information from signs along the roadway. By comparison, residents of Montana, Idaho and Wyoming are generally familiar with the area they are traveling through and the direction in which they are

going. Thus, their information needs tend to be oriented towards the road and weather conditions they will experience along their route.

Tourists and residents of other states indicated the following pre-trip information was more important to them than did residents of Montana, Idaho and Wyoming: tourist attractions, the best route to a destination, and traveler service locations. Presence of parking, location and direction to parks and scenic routes, and trip planning assistance from rest stops or other places along the route was also more important to tourists and residents of other states. This was expected in that unfamiliar travelers are typically in need of greater quantity and diversity of information and are more apt to be concerned with pre-trip planning information than residents of the area.

Residents of Montana, Idaho and Wyoming indicated a greater use of radio stations, the yellow pages and road conditions hotlines to obtain planning information. Tourists and residents of other states indicated a greater use of travel magazines or travel sections in newspapers and State Departments of Tourism. Residents of an area are usually interested in up-to-date information when planning a trip, particularly with regard to weather conditions, road closures, and so forth. Tourists are generally planning well in advance of their departure and are often unaware of changing conditions that may affect their trip. Thus, residents tend to use sources of information that can be quickly accessed and updated. Residents of Montana, Idaho and Wyoming indicated they were more likely to use a phone number to obtain current information on weather, construction zones, routes and road conditions than were tourists or residents of other states. However, tourists indicated they were more likely to use small computerized information centers at convenient locations to obtain the same information. Again, it appeared that residents were comfortable with obtaining information through a familiar source, probably before leaving their homes. Tourists may feel it would be more convenient to use on-site information centers since their access to telephones could be limited while traveling. Residents of Montana, Idaho and Wyoming indicated they were more likely to use dial-a-ride services than did tourists or residents of other states. Tourists usually would have a personal mode of transportation available to them, which would preclude them from relying on dial-a-ride transit services. However, the demand for dial-a-ride services, as well as all other modes of public transit, was extremely low.

Disclaimer Statement

The opinions, findings and conclusions expressed in this publication are those of the authors and not necessarily those of the Montana Department of Transportation or the Federal Highway Administration.

Acknowledgements

Grateful appreciation is extended to the following individuals for their support, guidance and advice that facilitated the successful completion of this project:

Leif M. Johnson, General Manager, Yellowstone IMAX Theatre

Larry Beck, Beaverhead Marina and R.V. Park

Helen Champion, Manager, Ponds Lodge

Lori Black, Manager, Rexburg One Stop

Steve Lemon, Teton Travel Plaza

Renae Schumacher, Manager, Big Sky Conoco

Jack Roberts, Yellowstone National Park

Ken Tiahrt, Statistician, Montana State University-Bozeman

Livingston Chamber of Commerce

Abstract

This report focuses on the design, administration and analysis of the Rural Traveler Needs Survey. The Rural Traveler Needs Survey was conducted as part of the Greater Yellowstone Rural ITS Priority Corridor Project. Its general purpose was to investigate the concerns and information needs of the rural driver/passenger when traveling in Montana, Wyoming and Idaho. In addition, the survey would be used to determine how these concerns and information needs could best be addressed. The specific objectives of the Rural Traveler Needs Survey were threefold. It was necessary to determine what information the rural traveler needs and wants, where the traveler would want this information presented and through what medium the information would be disseminated. This information will be useful in determining what technologies, if any, could be applied to the roadway or surrounding area to bring information to the traveler. The survey instrument addressed the following areas of inquiry; safety concerns, pre-trip information, en-route information, trip planning, sources of information, communication mediums, transit services, funding options and demographics.

Four hundred and eighty-one responses were collected at fourteen locations throughout Montana, Idaho and Wyoming. These responses were analyzed to give frequencies, percentages and chi-square values for each question on the survey. The demographic data collected in the survey were used to define the categories for the cross-variable tabulations in the chi-square analysis.

Table of Contents

List of Figures

BACKGROUND

Greater Yellowstone Rural Intelligent Transportation Systems Priority Corridor

The Greater Yellowstone Rural Intelligent Transportation System (ITS) Priority Corridor extends from Bozeman, Montana to Idaho Falls, Idaho. The Corridor encompasses three primary travel routes:

(1) US Highway 191/20 from Bozeman, Montana to Idaho Falls, Idaho;

(2) Interstate Highway 15 from Butte, Montana to Idaho Falls, Idaho including Interstate Highway 90 from Bozeman to Butte, Montana; and

(3) US Highway 89/26 from Livingston, Montana through Jackson, Wyoming to Idaho Falls, Idaho including Interstate Highway 90 from Bozeman to Livingston, Montana.

The Corridor's primary travel routes represent vital transportation links that affect the economy and well-being of the three-state area of Montana, Wyoming and Idaho. They also serve the recreational and resource needs of a growing national constituency which seeks to use the diverse ecosystem found throughout the Corridor. The three-state area encompasses 328,000 square miles and has a population density of less than seven people per square mile. Despite the sparseness of the resident population within the Corridor, the primary roadways are used extensively. Furthermore, travelers throughout the Corridor are, perhaps, more in need of information than those in urban areas due to the remoteness of the region.

The Corridor experiences some of the heaviest snowfall in the nation, with some areas averaging 200 inches per season. Temperatures can reach 50 degrees below zero (Fahrenheit), and a 40-degree temperature change between day and night is not uncommon. Travelers throughout the Corridor must also contend with high winds, fog and heavy rain. The combination of varied driving conditions and abundant off-road, commercial and recreational traffic produces an immediate and expanding need for increased traffic safety measures and information dissemination techniques.

The first step of the Greater Yellowstone Rural ITS Priority Corridor project was to collect and assimilate all relevant data into one useable database. These data include: accident statistics, meteorological conditions, animal habitat and migration patterns, commercial vehicle operation, law enforcement and emergency response capabilities, traveler services, and existing traveler information sources. A related objective was to determine the information needed by motorists traveling through the Corridor. These data were to be gathered through the Rural Traveler Needs Survey. The data would then be analyzed as a whole and used to determine where problem areas exist throughout the Corridor. Ultimately, applicable ITS technologies could be deployed at these locations to serve the information needs of the traveling public, as well as enhance the safety of the roadway.

Purpose and Objectives of the Rural Traveler Needs Survey

The Rural Traveler Needs Survey was conducted as part of the Greater Yellowstone Rural ITS Priority Corridor project. Its general purpose was to investigate the concerns and information needs of the rural driver/passenger when traveling in Montana, Wyoming and Idaho. In addition, the survey was designed to determine how these concerns and information needs could best be addressed either pre-trip or en-route. The results will be useful in determining what technologies, if any, could be applied to the roadway or in surrounding areas to help disseminate information to the traveler.

The specific objectives of the Rural Traveler Needs Survey were threefold. First, it was necessary to determine *what* information the rural traveler needs and wants. Thus, it also became important to investigate the concerns the traveler has regarding these information needs. It would not be appropriate or cost effective to provide the traveler with information they do not want or would not be willing to use. Secondly, the survey sought to determine the *medium* through which information would be presented to the traveler. In other words, it was important to determine which technology could convey the needed information most effectively and efficiently. The third objective was to determine *where* the traveler would want this information presented. It would not make sense to present information at locations where the traveler would be unwilling or unable to use it effectively. Placement essentially becomes a question of convenience, in that many travelers would be unlikely to spend an inordinate amount of time or energy searching for information while traveling on rural roadways.

Literature Review

In a report prepared for the Federal Highway Administration, JHK & Associates conducted two national surveys in both rural and urban areas.[1] The purpose of both surveys was to elicit traveler information priorities from respondents. Focus group sessions were conducted as an exploratory technique to determine the information needs of general travelers throughout the United States. Survey participants were grouped into three categories; general travelers, other highway users and providers. These groups were used to determine the different information needs of each category of traveler. The survey instrument used in the two national telephone surveys was constructed from the responses obtained from the focus groups. The first national telephone survey used a stratified random sample including both urban and rural residents. Findings from this first telephone survey were compared to the focus group responses to determine the validity of the results. A second national telephone survey was then conducted using a sample of respondents taken from rural areas with populations less than 50,000. This survey was similar to the first telephone survey, although it focused on the local travel habits of rural residents.

Input was also gathered from other highway users and providers through focus groups and one-on-one interviews. A total of 31 focus groups, 61 personal interviews and 1025 telephone interviews were completed. The findings were summarized for each category. General travelers included private travelers who were residents of either rural or urban

areas. Other highway users included fleet operators and truck drivers. The category defined as Providers included suppliers of information like highway agencies, as well as law enforcement agencies. The following are the essential information needs determined by JHK & Associates for each type of respondent.[1]

General Travelers

- Residence of the traveler had no influence; rural and urban responses were almost identical
- En-route assistance during a problem was most important
- A Mayday system was considered most important when faced with an en-route problem; both automatic and manual activation was desired
- Accurate trip routing information was identified as most important during pre-trip planning
- Driver advisory information was also indicated as an important need
- Additional information such as automatic teller machine locations, rest areas and local traffic regulation were desired
- Service facility information was identified as beneficial, but not as critically important

Other Highway Users (Truckers)

- Weather and road condition information was most important
- Other types of information were viewed as less critical

Providers (Highway Agencies)

- Accuracy and timeliness of the information is most important
- Emergency and safety information considered most important

Providers (EMS)

- Safe and timely response to an incident most important

Law Enforcement Agencies

- Concerned with traffic management during construction, accidents and adverse weather conditions

Results of the JHK & Associates study indicated that in-vehicle technologies were viewed as potentially useful. User friendliness was an important factor in acceptance of audio and video devices used to disseminate traveler information. A willingness to pay for pre-trip planning information was also indicated.

In a report prepared for CastleRock Consultants by C.J. Olson Market Research, Inc. traveler needs in rural Minnesota were analyzed.[2] The primary goal of this study was to determine the travel needs and concerns of both residents and tourists traveling in rural Minnesota. The results of six focus group discussions with rural Minnesotans were used to construct a telephone survey instrument, which was later refined by representatives from CastleRock Consultants, Minnesota Guidestar and C.J. Olson Market Research, Inc. The Olson Phone Center in Minneapolis completed five hundred and five (505), twenty-five minute telephone interviews. The following is a generalized summary of their findings.[2]

The most important pre-trip information on a ten-point scale with one meaning not at all important and ten meaning very important was *road conditions due to weather* (8.91 mean). The least important pre-trip information on a ten-point scale was *distance between towns* (5.37 mean). *Where to find lodging* (7.18 mean) was rated highest in importance for pre-vacation trip planning, using the same ten-point scale. *Activity ideas* (5.23 mean) ranked as least important.

Using a ten-point scale with one meaning never worry about it and ten meaning always worry about it, respondents were asked how frequently they worry about various safety concerns. *Road conditions like ice and snow* (8.44 mean) was ranked as the most serious safety concern. Conversely the least concern was expressed for *railroad crossings* (4.77 mean).

Eighty-eight percent of those surveyed said they would get information on lodging, routes, road conditions, etc. from *others/word of mouth.* The least used information source was *radio stations* at 55%. Eighty-four percent (84%) of respondents preferred to get information before starting a trip.

A ten-point scale with ten meaning very likely and one meaning not at all likely was used to determine the likelihood of a traveler obtaining information from a given source. A *special radio channel* received the highest ranking (7.89 mean). The lowest ranking was assigned to an *in-vehicle TV monitor* (5.99 mean). Forty-six percent (46%) of those surveyed stated no preference between AM and FM radio for receiving traveler information. Sixty-one percent (61%) of respondents preferred to get information from a *live voice*. Fifty-four percent (54%) of respondents indicated they would like to have in-vehicle devices for traveler information *already installed when they buy the vehicle.*

Eight out of ten respondents indicated interest in installing emergency notification technology in their vehicles. Forty-one percent (41%) of those who expressed interest indicated they would want the technology to be activated automatically, 36% preferred self-activation and 23% preferred to have both options. Seventy-eight percent (78%) of those choosing to have the technology installed would want to be notified that help was on the way.

On a ten-point scale with one being not at all likely and ten being very likely, respondents were ask to indicate their likelihood of using public transit services. The service receiving the highest rating was *flexible bus/van route service* (4.67 mean). *Public taxi* ranked lowest (3.98 mean) among the available options.

Respondents were asked if improving existing highways and shoulders or providing new services and products would make rural travel safer. Fifty-eight percent (58%) indicated improving existing roads, 28% indicated providing new services and five percent indicated both options would improve rural travel. Fifty-four percent (54%) of those surveyed indicated that the user, the government and private industry should all share in the cost of these new services. Thirty-nine percent (39%) indicated only the user

should pay, 3% indicated the government should bear the cost and 2% indicated private industry should be responsible for the cost of new services.

SURVEY METHODOLOGY

Instrument Design

The first step in the Rural Traveler Needs Survey was to design the instrument, which would solicit responses from both local residents and visiting tourists. Two objectives were identified in the design process. First, each respondent should be able to complete the survey within 10 – 15 minutes and easily understand all questions presented therein. To accomplish this objective, a photographic representation of the various technologies discussed in the survey was constructed. The two research staff members who administered the survey at each location were provided with these photographic representations of the various technologies as well as standardized explanations to be given to any respondent who requested additional information. In addition to clarifying the topic in question, the standardized explanations eliminated any potential bias that could have been introduced if answers to questions posed by respondents had varied by individual, location or time. Secondly, the survey instrument was constructed in a similar format to those used in the studies described in the literature review. Thus, results of the survey could be compared more meaningfully to the results from the previous research studies; however, this survey appears to be the only regional rural traveler needs survey conducted.

The survey instrument addressed the following areas of inquiry;

- Safety concerns
- Pre-trip information
- En-route information
- Trip planning
- Sources of information
- Communication mediums
- Transit services
- Funding options
- Demographics

Several methods of inquiry were used throughout the survey to generate responses. A majority of the questions were constructed using a five-point Likert scale, which attempts to measure the perceived importance or usefulness of the information source or service being discussed. Respondents were asked to select one of five values which they felt best represented their behavior, emotion or opinion regarding a particular topic. The ordinal nature of the scale allows conclusions to be drawn on a relative basis only; differences between response values cannot be quantified. In other words, one cannot assume equal intervals between the five points on the scale.

Likert scales have been generally accepted as a valuable tool for measuring the relative importance or strength of opinion among various options and are, therefore, commonly used on public opinion polls. In this survey, the highest and lowest values on each scale were defined for the respondents. However, the extent to which individual interpretation of the five response options may have varied is unknown.

The remainder of the survey included both dichotomous (Yes-No) responses and multiple choice (3-to 6-variable) responses. Standardized response categories, as opposed to open-ended responses, eliminated any potential bias that might have resulted from coding errors. A copy of the survey instrument is presented in Appendix A.

Instrument Testing and Revision

The survey instrument was repeatedly tested to assure ease of completion and understanding by all respondents. Initially, the Western Transportation Institute (WTI) staff internally tested the instrument to obtain a rough, working estimate of the amount of time needed to complete the survey. This internal review was also used as a forum to obtain specific comments regarding question content, format and appropriateness. All comments and concerns contributed by WTI staff were reviewed and the appropriate changes made to the instrument. A second test was administered to a group of ten individuals whose ages ranged from 16 to 75 years. This test was used to gain a valid time estimate and to assure ease of understanding and completion by respondents unfamiliar with the survey content. The photographic representations, as well as the standardized responses, were used during the second test. Based on the results of the second test, appropriate changes were made to the instrument. Through these changes, it appeared the two main design objectives would be met. The survey instrument was then ready to be pilot tested at two locations in the Corridor. The first pilot test was conducted in Jackson, Wyoming on May 16, 1997. Seventy-two surveys from transportation engineering professionals were collected and analyzed. No apparent problems with question content, format or wording were discovered when the results and comments were analyzed. The second pilot test occurred in Bozeman, Montana on June 24, 1997 and included the Greater Yellowstone Rural ITS Priority Corridor Stakeholders. Twenty-two surveys were collected during the Stakeholder meeting and no concerns were voiced over the content or format of the instrument. Thus, the survey instrument was considered ready for its administration throughout the Corridor.

Statistics

The responses gathered through the administration of the survey would be analyzed using various summary statistics, including percentages, frequencies and chi-square values. These results would be used to determine what concerns travelers had when traveling through rural Montana, Idaho and Wyoming. The results would also be used to determine the information needs of motorists traveling throughout the Corridor. Differences in responses, if any, were to be investigated between respondents in selected demographic categories. Results could then be compared to those obtained in previous traveler needs surveys.

Survey Site Locations

The survey instrument was designed so as to involve all rural travelers, including local residents and visiting tourists. This was accomplished by evenly administering the survey throughout the Corridor to eliminate the possibility of bias towards a given area or particular type of traveler. A preliminary assessment was conducted throughout the entire Corridor and all possible administration sites were examined. The sites were analyzed using the volume of people that frequented the area, the demographic breakdown of those individuals, the willingness of the agency or owner to allow the use of their facility, and the actual area available for setup and administration.

Twenty possible sites were originally identified from the preliminary assessment of the Corridor. The twenty possible sites were narrowed to ten locations along with four alternates. It was assumed that these ten sites could produce the desired sample size of 400-500 completed surveys. Each of the ten sites were to be locations at which an actual survey administration would be conducted. The four alternate sites were to be utilized if responses were low at a given site or to compensate for unpredictable weather. The following is a list of the ten sites and dates of survey administration, as well as the four alternate sites. A site map locating all the administration sites throughout the Corridor is shown in Figure 1.

July 07 – Montana (I15) Rest area south of Butte
July 08 – Montana (I15) Rest area north of Dell
July 08 – Montana (I15) Beaverhead Marina (Alternate)
July 09 – Idaho (I15) Rest area north of Dubois
July 10 – Idaho (US 20) One Stop in Rexburg
July 10 – Idaho (I15) Rest area north of Dubois
July 11 – Idaho (US 20) Teton Travel Plaza in Ashton (Alternate)
July 12 – Idaho (US 20) Pond's Lodge in Island Park
July 13 – Montana (US 191/20) Yellowstone National Geographic Theatre in West Yellowstone
July 14 – Wyoming (US 89) Construction zone south of Madison Junction in Yellowstone National Park (Alternate)
July 14 – Wyoming (US 89) South entrance to Yellowstone National Park
July 15 – Wyoming (US 89) Construction zone south of Madison Junction in Yellowstone National Park (Alternate)
July 15 – Wyoming (US 89) Albright Visitor Center at Mammoth Hot Springs in Yellowstone National Park
July 16 – Montana (US 89) Rest area north of Gardiner (Alternate)
July 17 – Montana (US 191) Conoco in Big Sky
July 28 – Montana (US 191) Visitor Center in Livingston

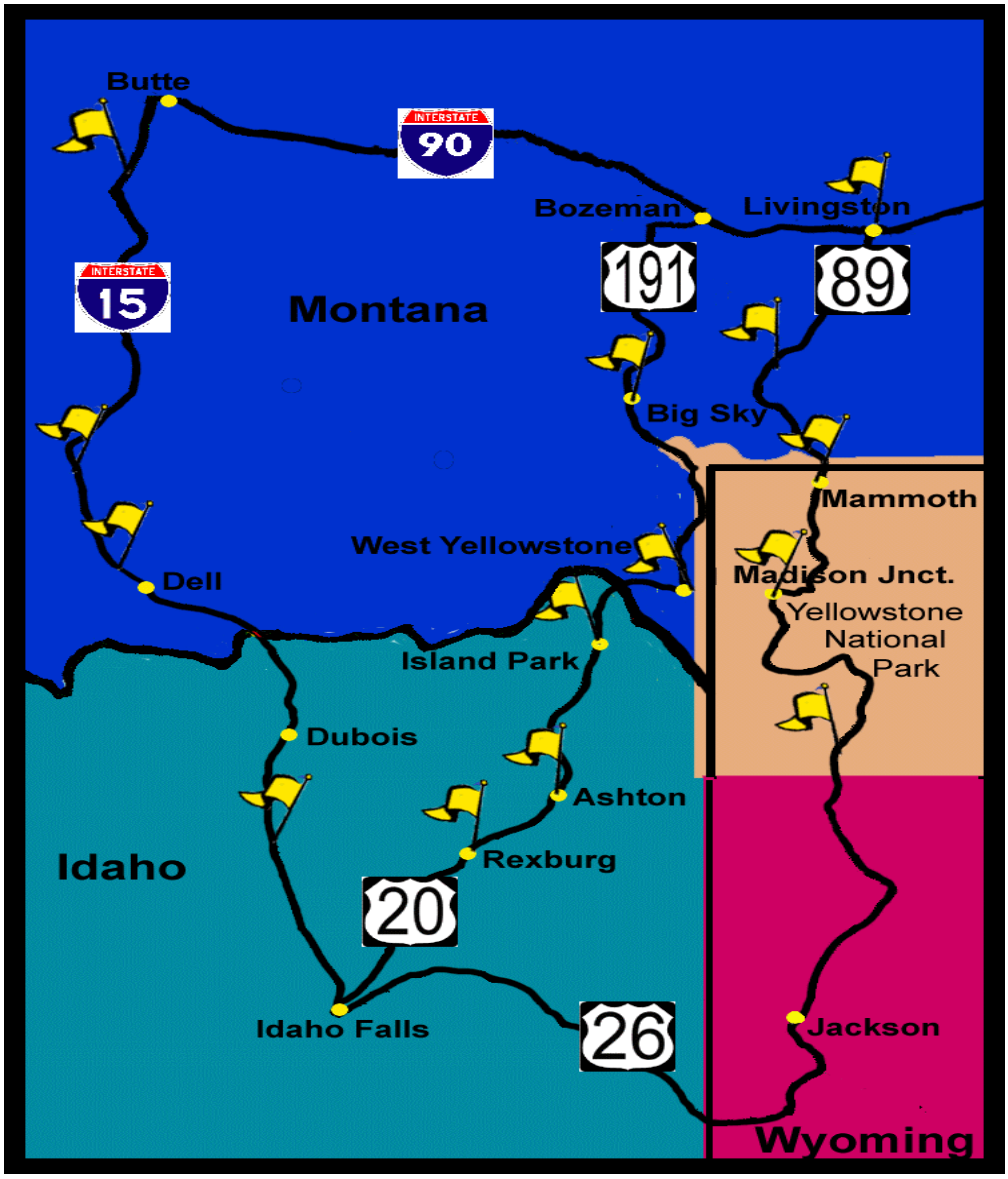


Figure 1: Survey location map

SURVEY ADMINISTRATION

As discussed previously, two individuals administered the survey at each site. These individuals had the responsibility of soliciting respondents and answering any questions that arose before, during or after the survey was completed. A total of 481 responses were collected from the fourteen different sites throughout the Corridor. It was originally hoped that fifty completed surveys could be attained at each location, but this proved to be overly optimistic. The maximum number of survey obtained at any one location was fifty-six. The minimum number of surveys obtained at any one location was seven, with

an approximate average of thirty-five completed surveys per site. The primary reason for failure to obtain fifty surveys per site was the unwillingness of participants to complete a survey. Approximately 40% of those asked to participate completed a survey. Thirty percent (30%) expressed an inability to participate due to a time constraint and the remaining 30% simply would not agree to participate for whatever reason. Although the 40% response rate was somewhat less than expected, the sample was felt to be representative of the general motoring public and yielded sufficient data for the proposed statistical analysis.

SURVEY RESULTS AND ANALYSIS

General

The data were entered separately by location into a database. The survey instrument was designed and coded for ease of data entry in that every answer to each individual question had its own numerical value. These numerical values were entered directly into the database as a string. Once these data were entered, they could be easily combined to give statistics for each location or for the entire set.

Kenneth J. Tiahrt, Statistician, wrote the data analysis program that was utilized for the tabulation of frequencies, percentages and calculated chi-squared values. The chi-squared analysis is used to determine if differences in responses across groups (e.g., residents vs. tourists, males vs. females, or between specified age groups) are statistically significant at a predetermined level of probability. For this analysis, a 99% confidence level ($p \leq 0.01$) was selected for reporting purposes. Thus, statistically significant differences in responses mean there is only one chance in 100 that the variation across categories was due to something other than actual differences (e.g., biased samples) in the groups being analyzed. The demographic data collected in the survey were used to define the categories for the cross-variable tabulations in the chi-squared analysis.

For those who would like to determine if significant differences could be detected using less rigorous confidence levels, three additional probability values ($p \leq 0.05$; $p \leq 0.10$; and $p \leq 0.20$) were incorporated in the analysis with corresponding data provided in Volume II, Cross-Variable Tabulations. Results of these supplemental cross-variable tabulations are not discussed in the text of this report. As previously noted, only those findings that were determined to be significant at $p \leq 0.01$ are described as being statistically significant in the paragraphs to follow.

Demographic Breakdown

The 481 general traveler respondents are composed of 30% Montana, Wyoming and Idaho residents and 68% tourists or individuals from other states (Figure 2). Notice, the respondents had the option of not responding to any question on the survey. Thus, the total percentages do not always sum to one hundred percent. Fifty-five percent (55%) of the respondents were male while 42% were female (Figure 3). The majority of

respondents were between the ages of 45-64 (38%) (Figure 4). Fifty-six percent (56%) of respondents categorized themselves as living in an urban area while 42% categorized themselves as living in a rural area (Figure 5). The majority of respondents reported their normal mode of travel as the driver of an automobile (78%) (Figure 6), their normal miles traveled per day is 0-49 (36%) (Figure 7), their normal type of road traveled are 2-lane highways (27%) (Figure 8) and their normal trip purpose is for recreation (47%) (Figure 9). Fifty-six percent (56%) of respondents were employed full-time (Figure 10), had a college degree (30%) (Figure 11), had an income between $40,000-$79,000 (34%) (Figure12) and 97% of respondents had a current driver's license (Figure13). The demographic breakdown of the respondents are graphically illustrated in Figures 2-13. Frequencies and percentages for the demographic responses (Questions 55-66) are located in Appendix B.

Figure 2: Traveler Needs Survey Question 55: Residence

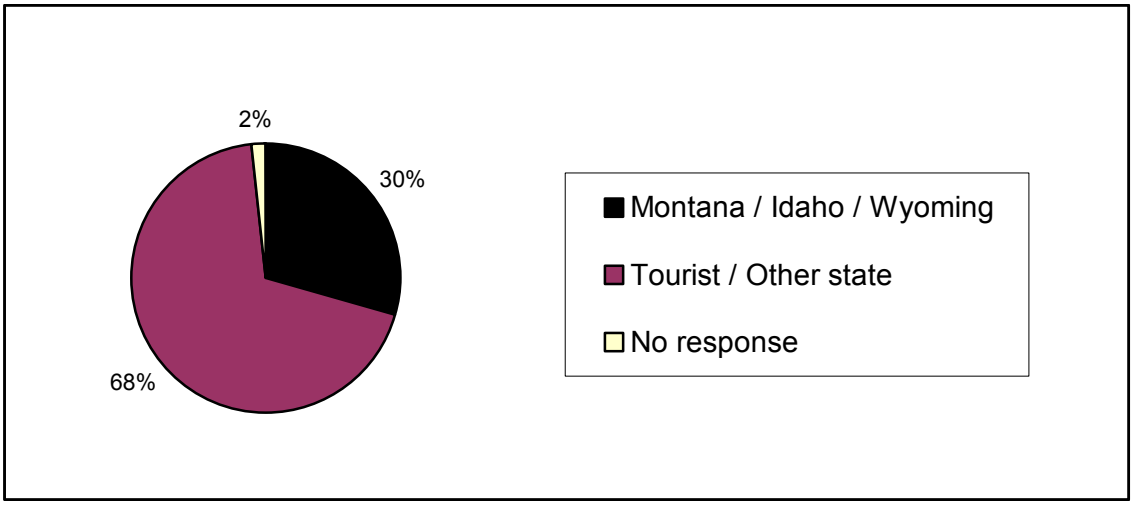


Figure 3: Traveler Needs Survey Question 56: Gender

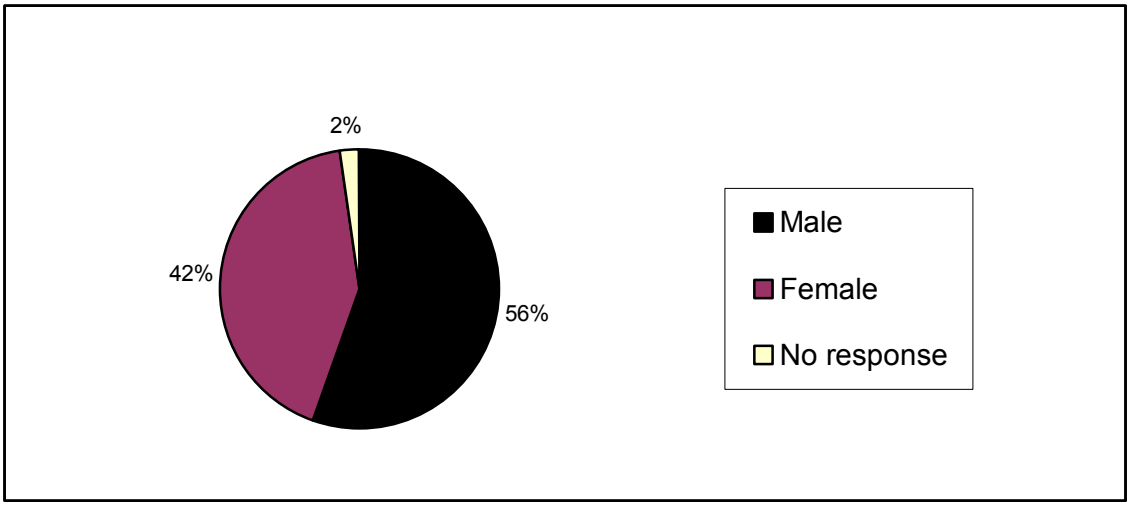


Figure 4: Traveler Needs Survey Question 57: Age

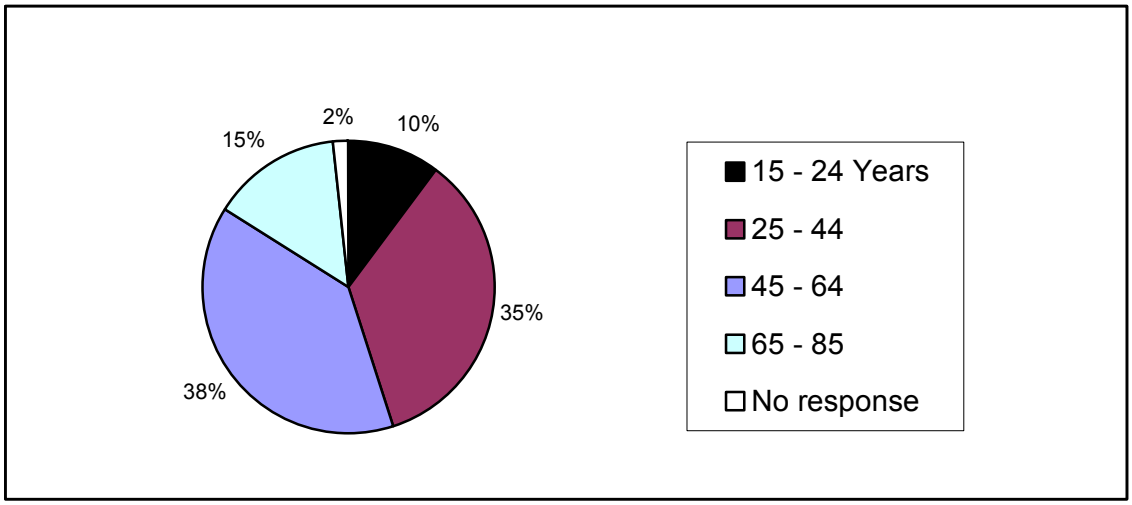


Figure 5: Traveler Needs Survey Question 58: Live in

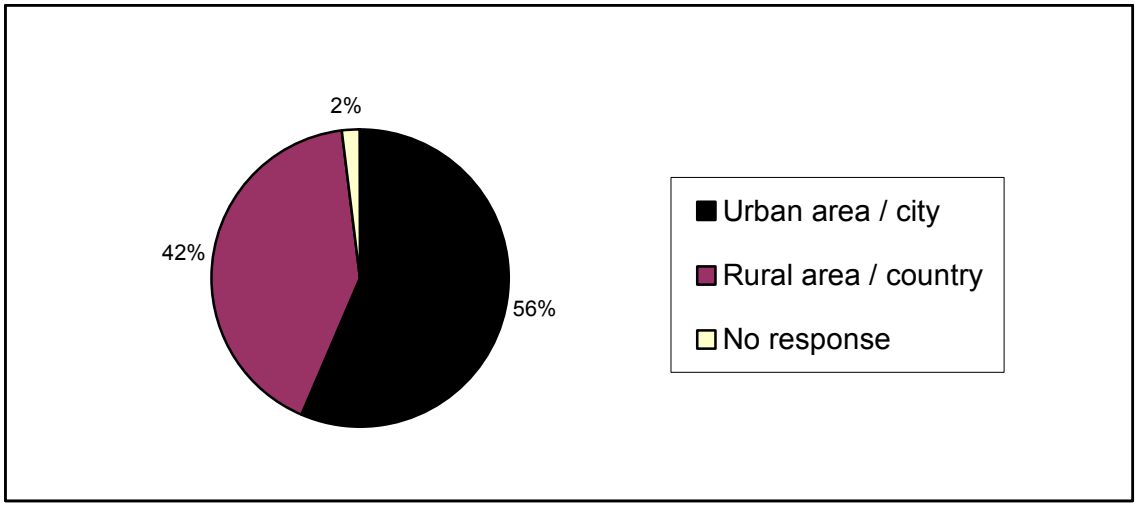


Figure 6: Traveler Needs Survey Question 59: Mode of travel (Normal)

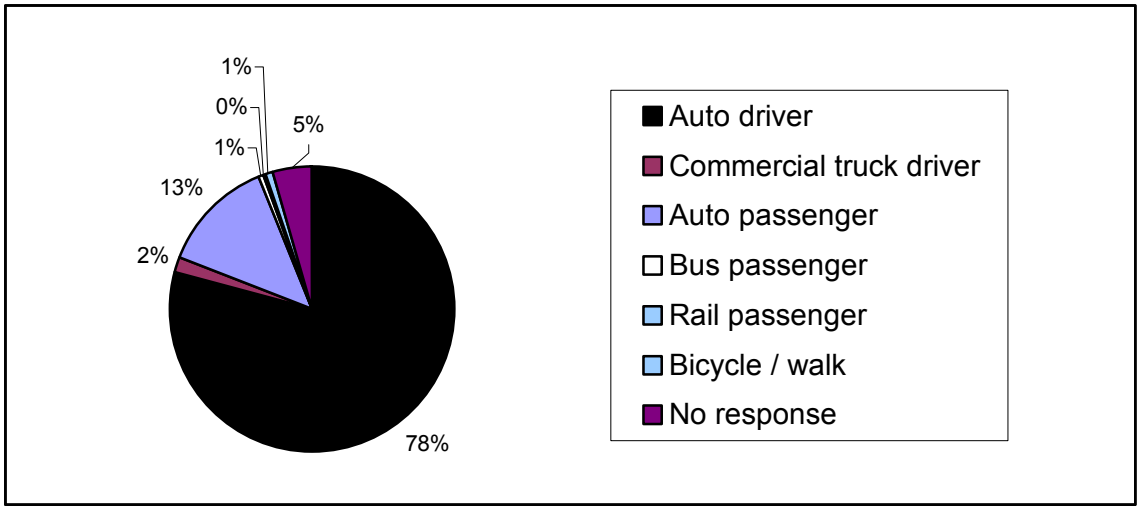


Figure 7: Traveler Needs Survey Question 60: Miles traveled per day (Normal)

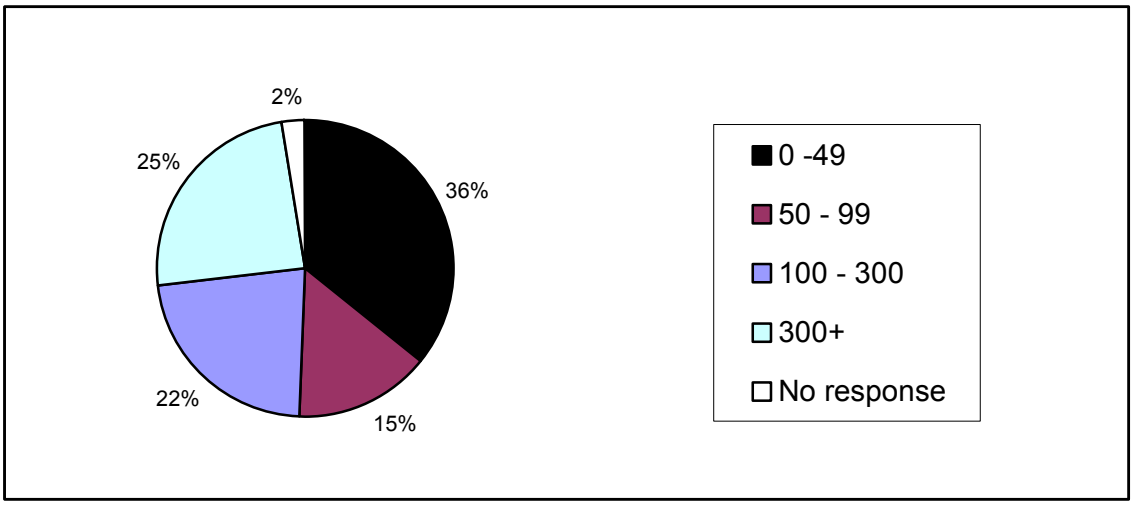


Figure 8: Traveler Needs Survey Question 61: Type of road traveled (Normal)

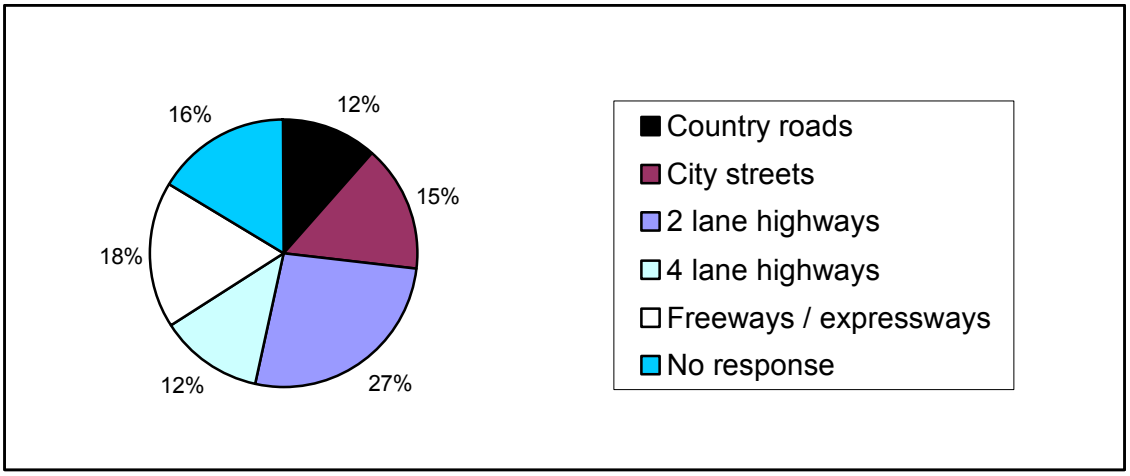


Figure 9: Traveler Needs Survey Question 62: Purpose of trips (Normal)

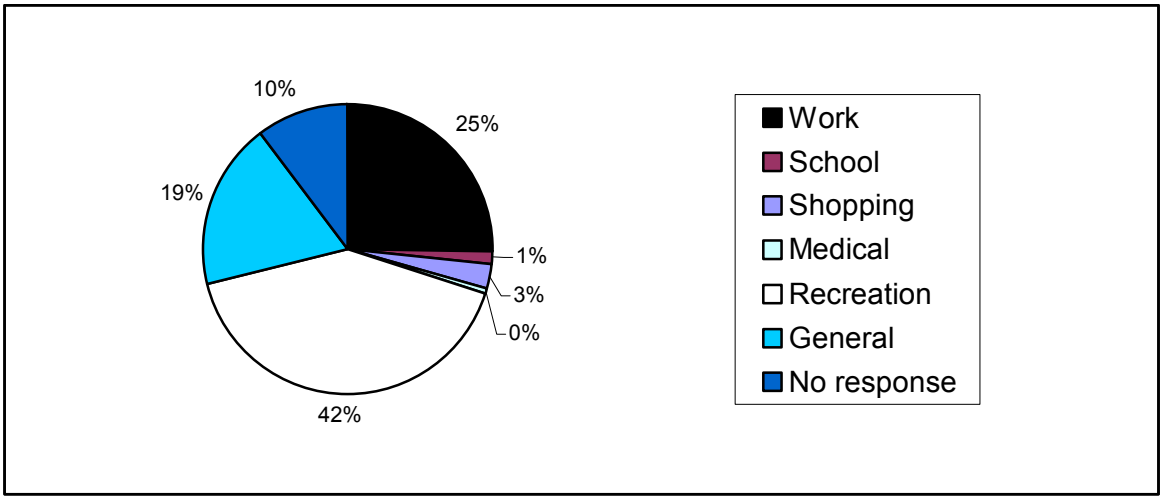


Figure 10: Traveler Needs Survey Question 63: Employment

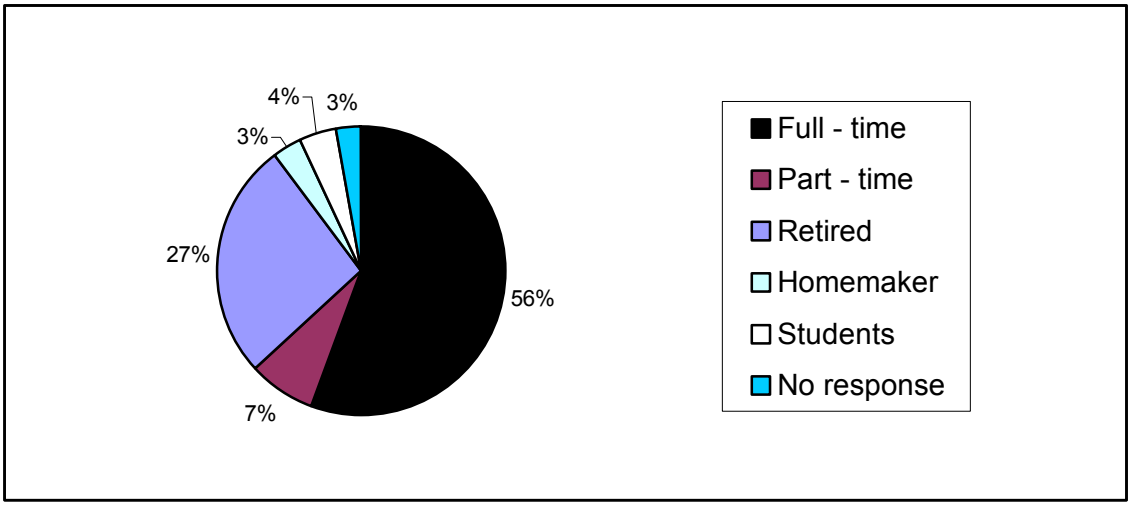


Figure 11: Traveler Needs Survey Question 64: Education

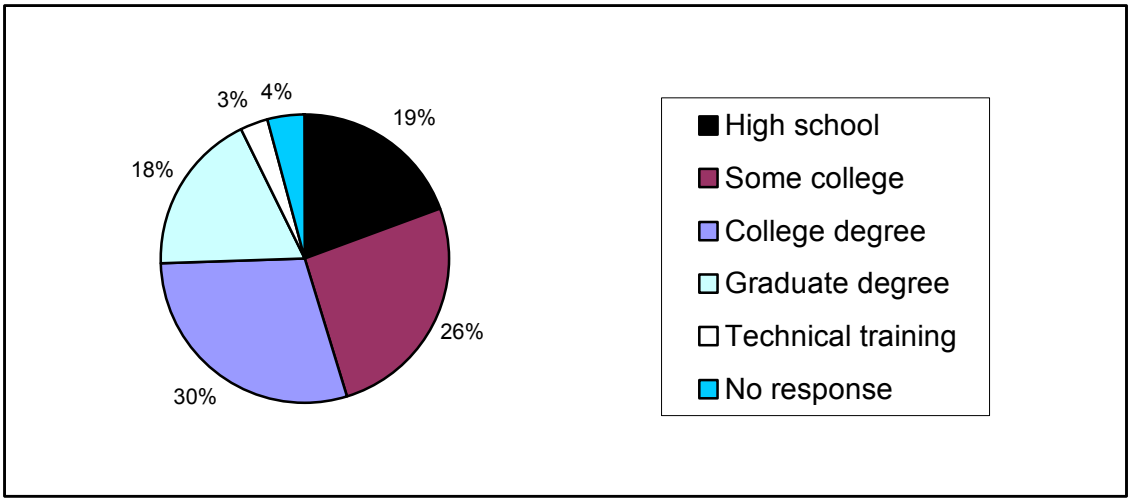


Figure 12: Traveler Needs Survey Question 65: Income

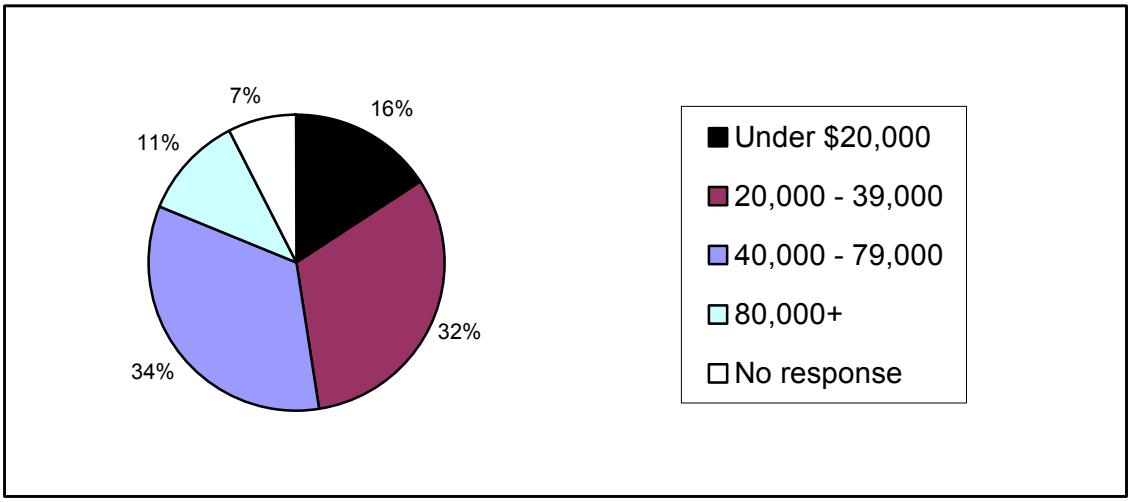
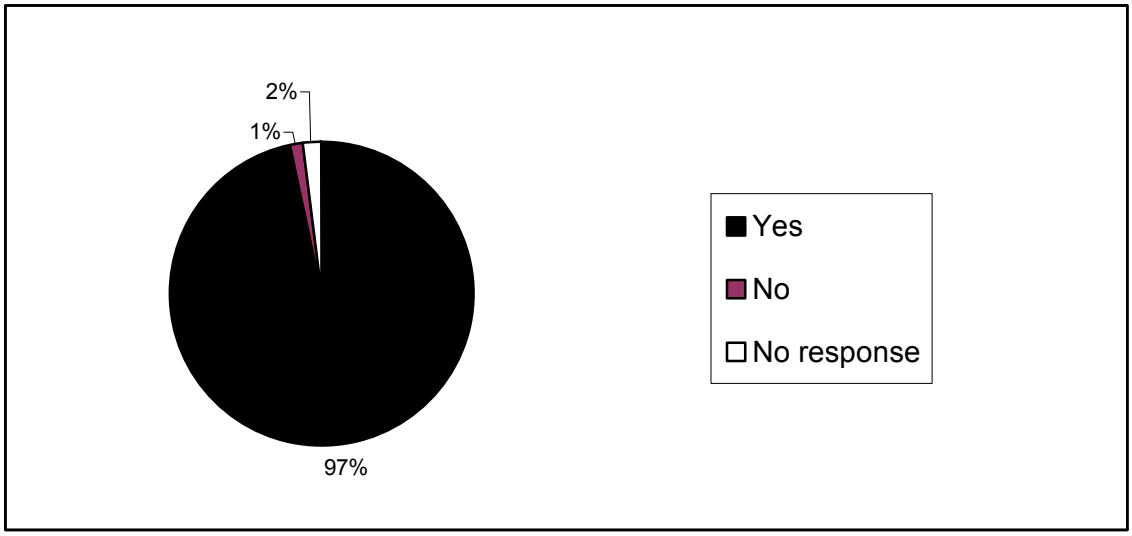


Figure 13: Traveler Needs Survey Question 66: Current driver's license



Safety Concerns

The first twelve questions of the survey dealt with safety concerns. The following heading, as it appears on the survey, was used for the first twelve questions.

> When you are traveling in rural Montana/Idaho/Wyoming, how frequently do you worry about the following safety concerns and other issues as a driver or passenger? Please use a five-point scale where 1 means you **never** worry about it and 5 means you **always** worry about it. (**Circle one number per question**)

The issues or concerns ranked in the order of the highest mean scores, indicating the most frequent cause of worry were as follows:

- Road conditions like ice and snow (Mean 3.18)
- Passing trucks and other heavy vehicles (3.04)
- Animals such as deer or farm animals on the roadway (3.01)
- Where to get assistance for a vehicle breakdown, accident or emergency medical aid (2.93)
- Driving through construction zones (2.90)
- Dangerous hills/curves (2.86)
- Traffic delays (2.71)
- Not enough information from signs along the roadway (2.64)
- Encountering slow moving vehicles like snow plows or farm equipment (2.48)
- Running off the roadway due to drowsiness/inattentiveness (2.42)
- Not enough law enforcement around (2.29)
- Getting lost (1.99)

The following graphs, Figures 14-25, illustrate the percent of respondents in each of the five response categories on the Likert scale, as well as the percentage who did not respond to the question. Frequencies and percentages for the 481 general traveler responses to Questions 1-12 are located in Appendix B. Chi-square values are given in Volume II, Cross-Variable Tabulations.

Figure 14: Traveler Needs Survey Question 1: Where to get assistance for a vehicle breakdown, accident or emergency medical aid

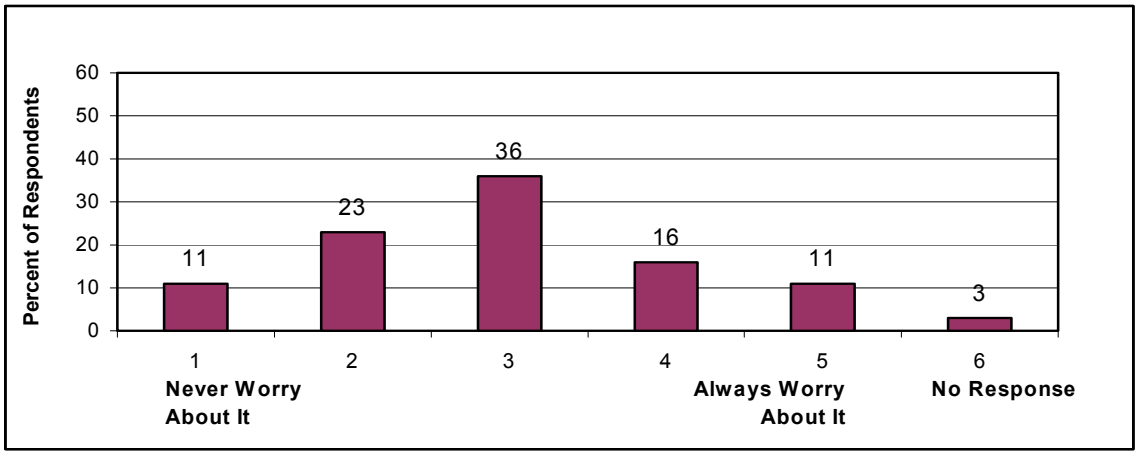


Figure 15: Traveler Needs Survey Question 2: Encountering slow moving vehicles like snow plows or farm equipment

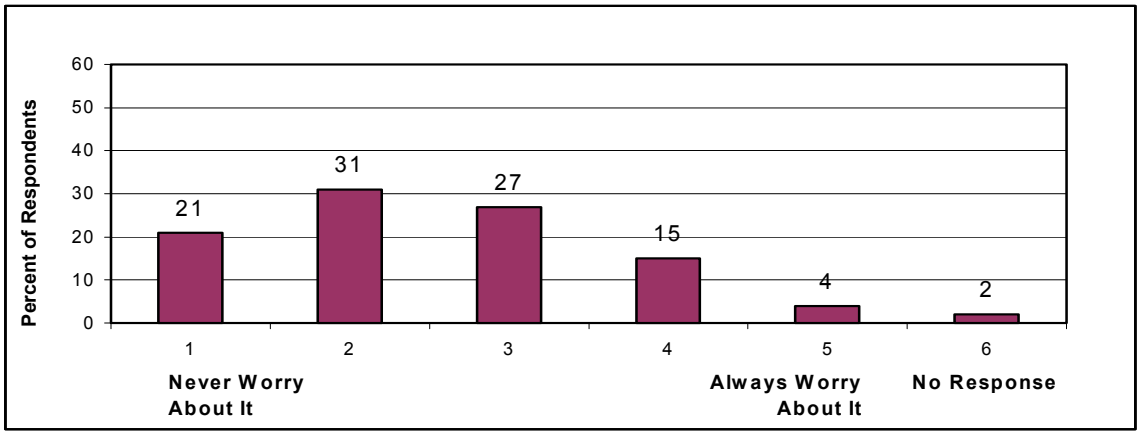


Figure 16: Traveler Needs Survey Question 3: Getting lost

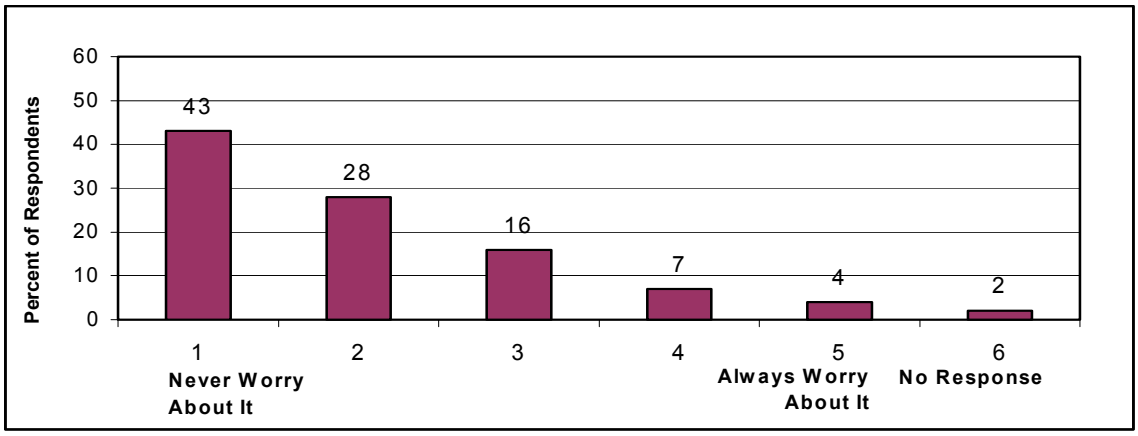


Figure 17: Traveler Needs Survey Question 4: Not enough law enforcement around

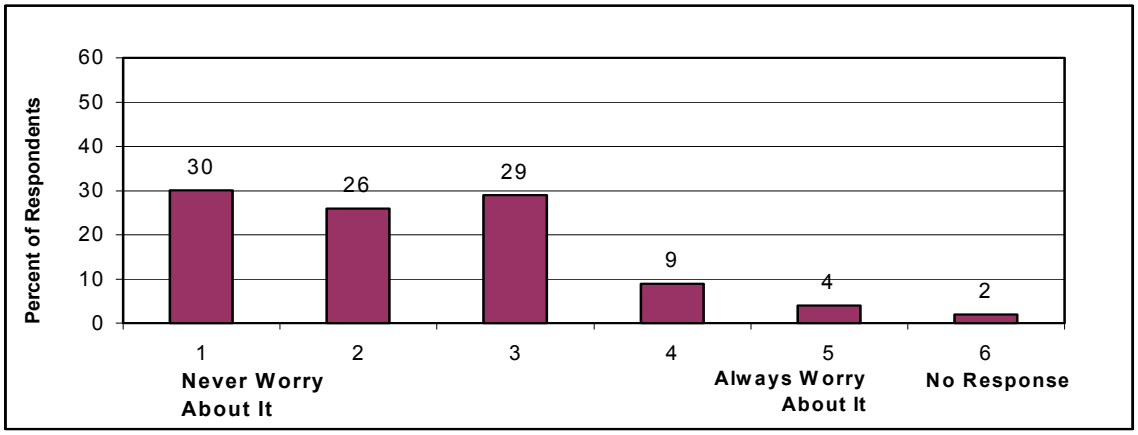


Figure 18: Traveler Needs Survey Question 5: Running off the roadway due to drowsiness/inattentiveness

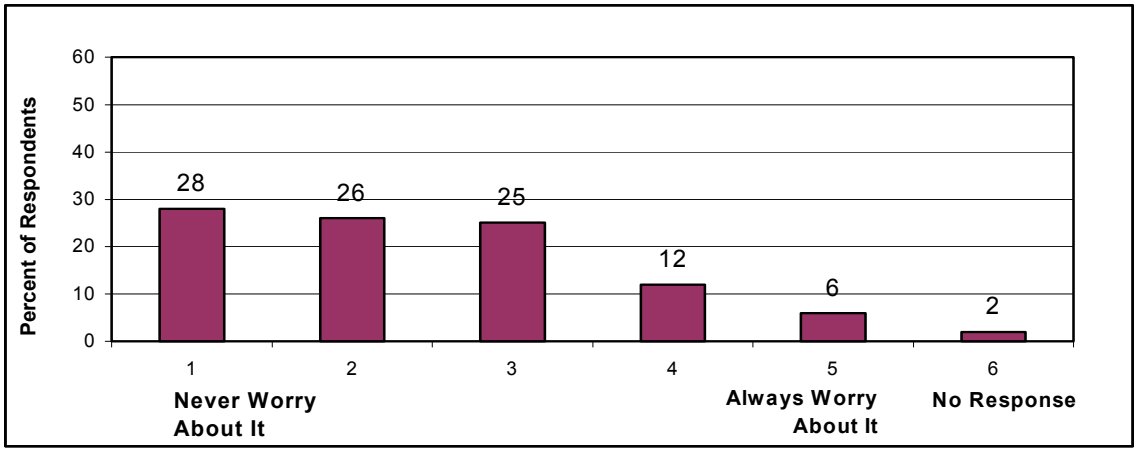


Figure 19: Traveler Needs Survey Question 6: Not enough information from signs along the roadway

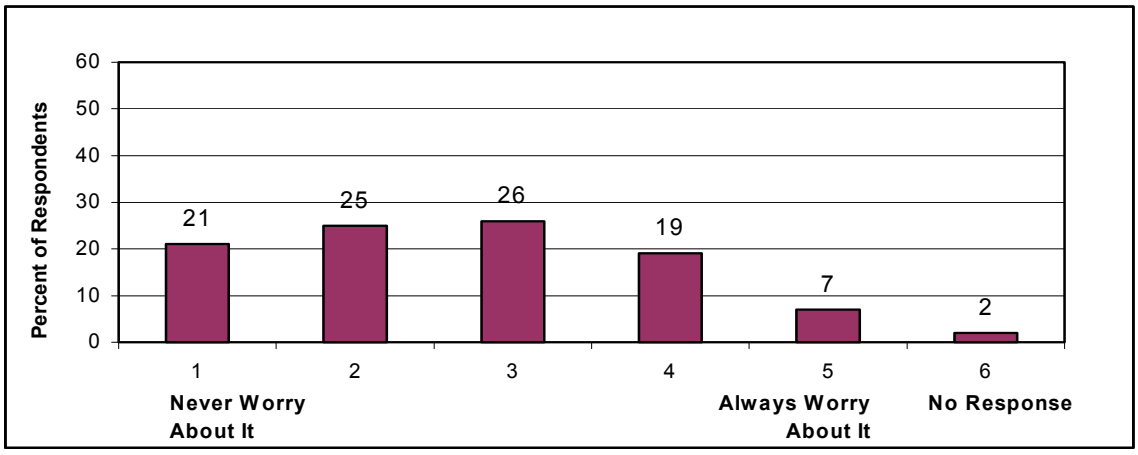


Figure 20: Traveler Needs Survey Question 7: Animals such as deer or farm animals on roadway

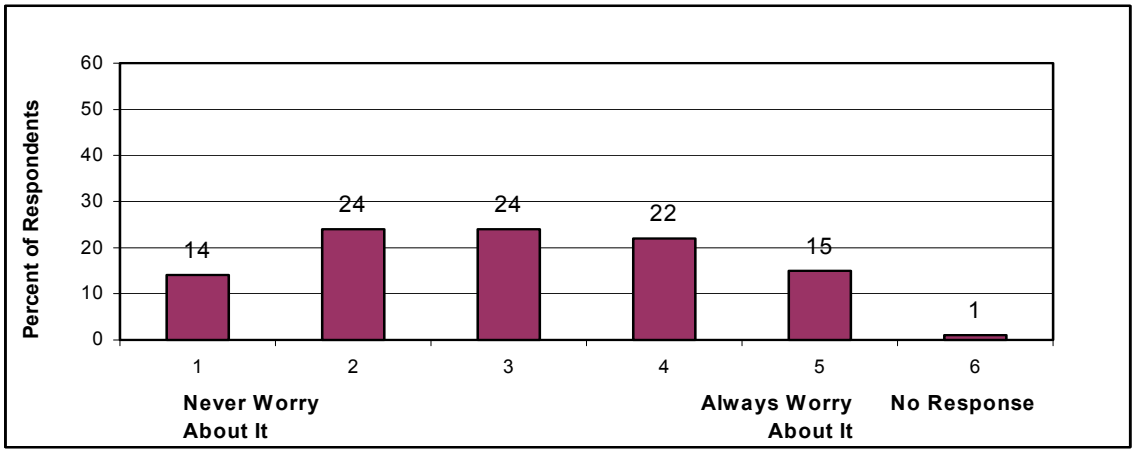


Figure 21: Traveler Needs Survey Question 8: Passing trucks and other heavy vehicles (clearance/visibility)

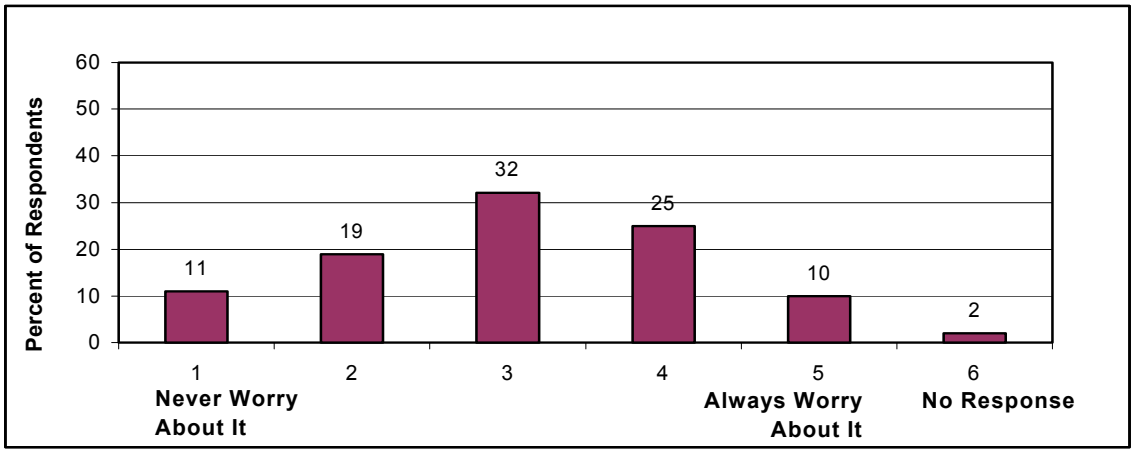


Figure 22: Traveler Needs Survey Question 9: Dangerous hills/curves

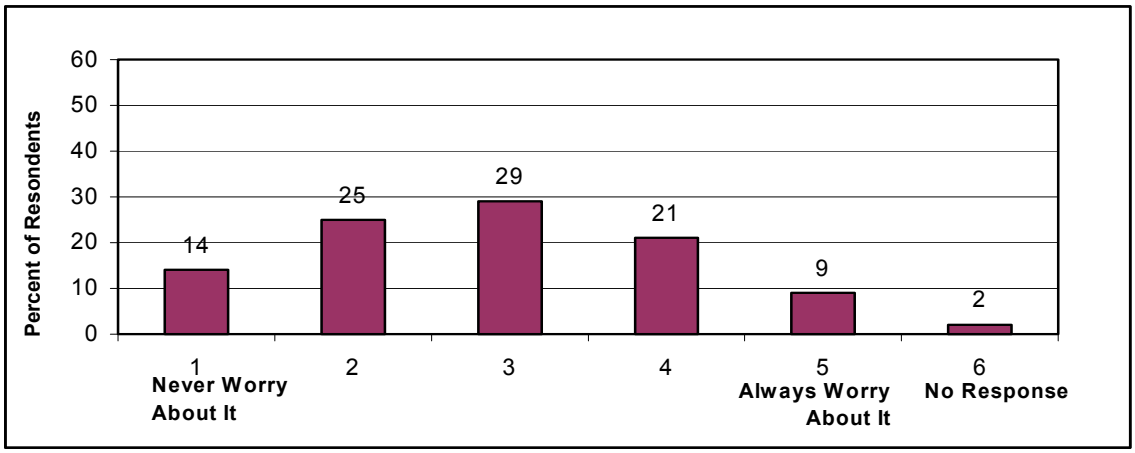


Figure 23: Traveler Needs Survey Question 10: Road conditions like ice and snow

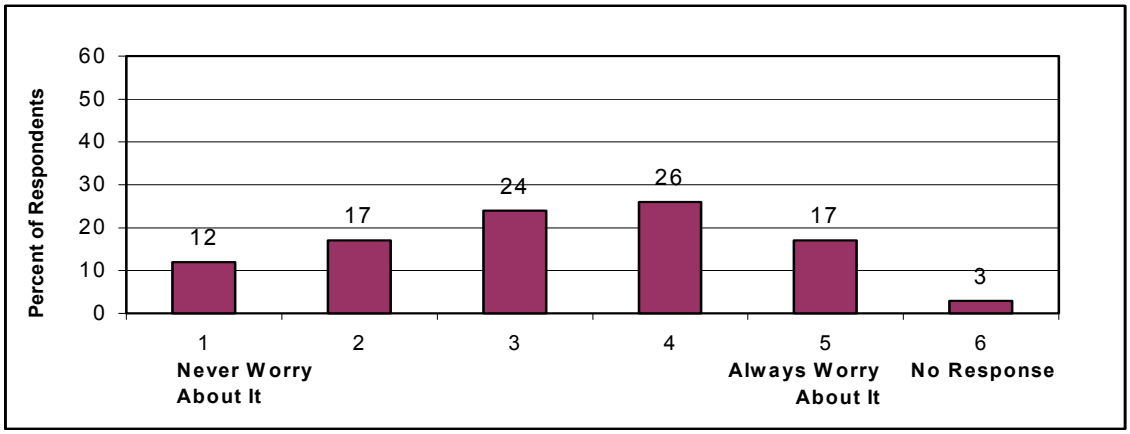


Figure 24: Traveler Needs Survey Question 11: Driving through construction zones

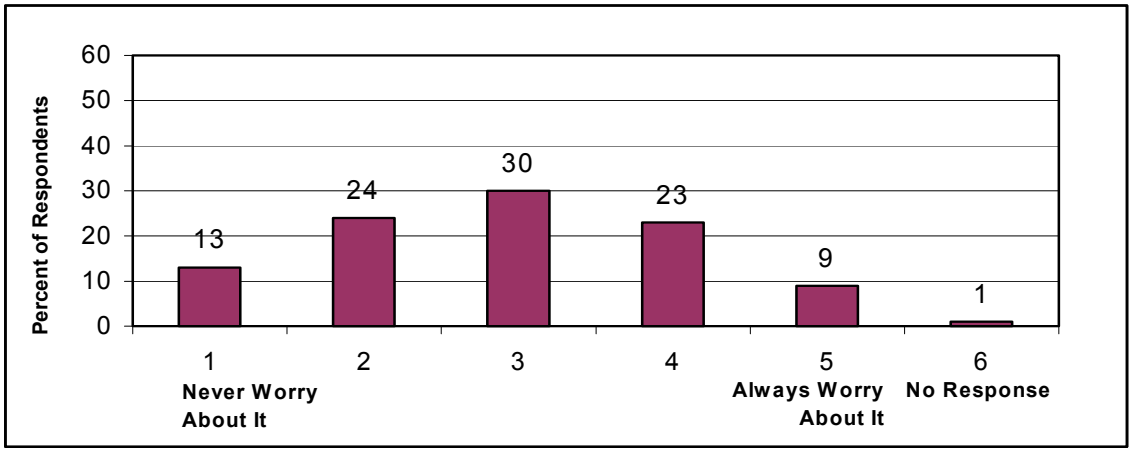
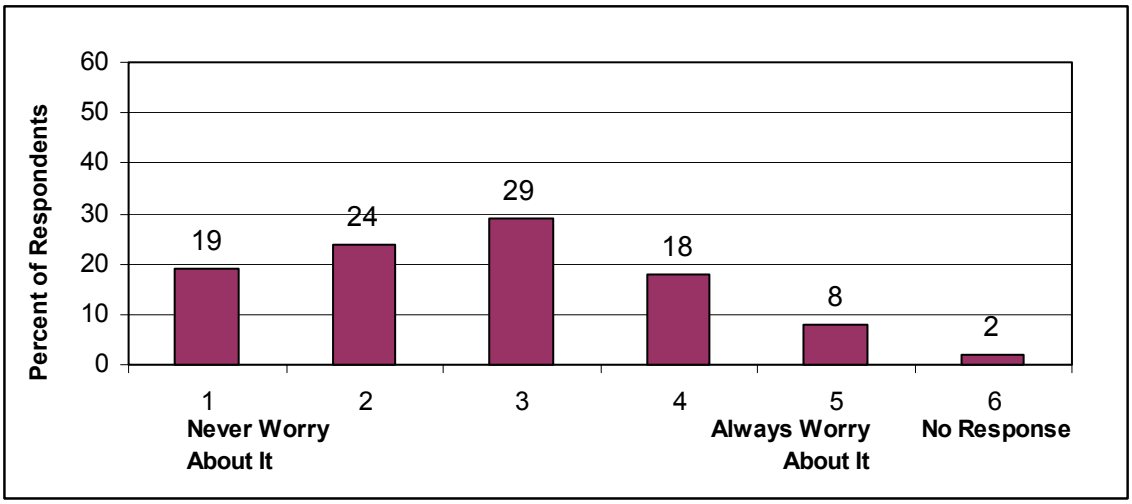


Figure 25: Traveler Needs Survey Question 12: Traffic delays



Chi-square values were computed for each question relating to safety concerns by using the demographic breakdown of all respondents. Significant differences appeared in some of the responses given by residents of Montana, Idaho and Wyoming versus those reported by tourists or residents of other states. Residents of Montana, Idaho and Wyoming indicated they worry more about encountering slow moving vehicles like snow plows or farm equipment than do tourists or residents from other states. They also indicated a greater concern for animals, such as deer or farm animals, on the roadway. Respondents who classified the area in which they live as rural also indicated they worry more about encountering slow moving vehicles than do respondents who live in urban areas. Respondents who had technical training showed the greatest concern for animals on the roadway, whereas those respondents with a graduate degree showed the least concern. Significant differences also appeared in respondents' income and current driver's license status. Respondents who made less than $20,000 or more than $80,000 indicated the greatest concern for road conditions like ice and snow. Respondents who did not possess a current driver's license displayed greater worry towards getting lost than those who had a current license.

Pre-Trip Information

Questions 13-22 dealt with the importance of specific information before the beginning of a trip. The following heading for these ten questions as it appeared on the survey is as follows:

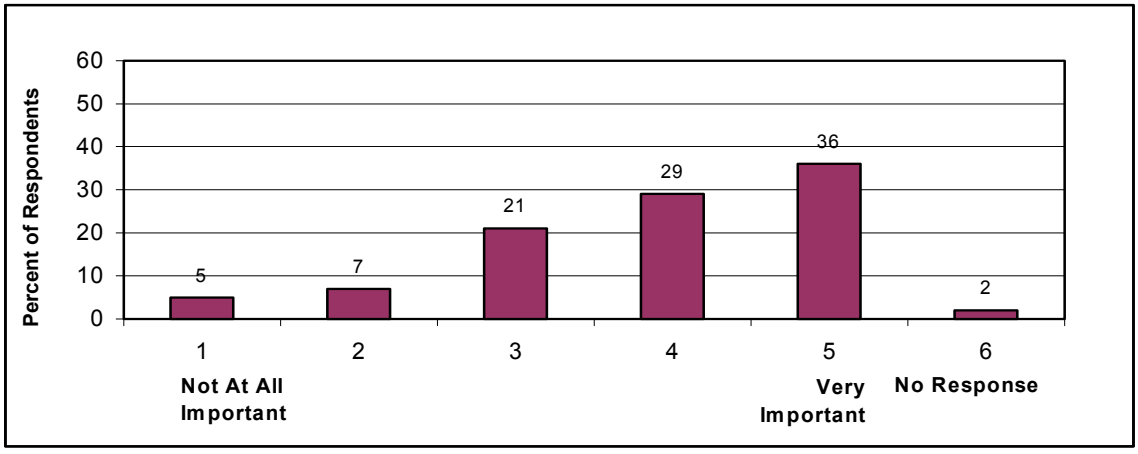
> Using a five-point scale where 1 means **not at all important** and 5 means **very important**, please indicate what number on the scale best describes how important each of the following kinds of information are to you **before** you start a trip by motor vehicle on rural roads and highways in Montana/Idaho/Wyoming. (**Circle one number per question**)

Pre-trip information ranked in the order of the highest mean score (which indicates the greatest importance), are as follows:

- The best route to destination (Mean 3.92)
- Road condition problems due to weather (3.91)
- Adverse weather conditions (3.87)
- Tourists attractions (i.e. parks/recreation/historical) (3.85)
- Traveler service locations (rest stops) (3.73)
- Length of time to destination or number of miles (3.61)
- Construction zone locations and/or detours (3.54)
- Distance between towns (3.20)
- Locations of traffic delays due to special events (3.15)
- Locations of accidents/incidents (3.14).

The following (Figures 26-35) illustrate the percentage of respondents represented by each number on the Likert scale. Frequencies and percentages for the 481 general traveler responses to Questions 13-22 are located in Appendix B. Chi-square values are located in Volume II, Cross-Variable Tabulations.

Figure 26: Traveler Needs Survey Question 13: Tourist attractions i.e. parks/recreation/historical



[1] JHK & Associates. "Preliminary Assessment of Rural Applications of Advanced Traveler Information Systems (ATIS)" Draft Report, Contract No. DTFH61-93-C-00048, April 1994 for the Federal Highway Administration

[2] C.J. Olson Market Research, INC. "Qualitative Market Research Regarding Travel/Transportation Needs in Rural Minnesota" #93501, January 1994 for Castle Rock Consultants and Minnesota Guidestar

Figure 27: Traveler Needs Survey Question 14: Length of time to destination or number of miles

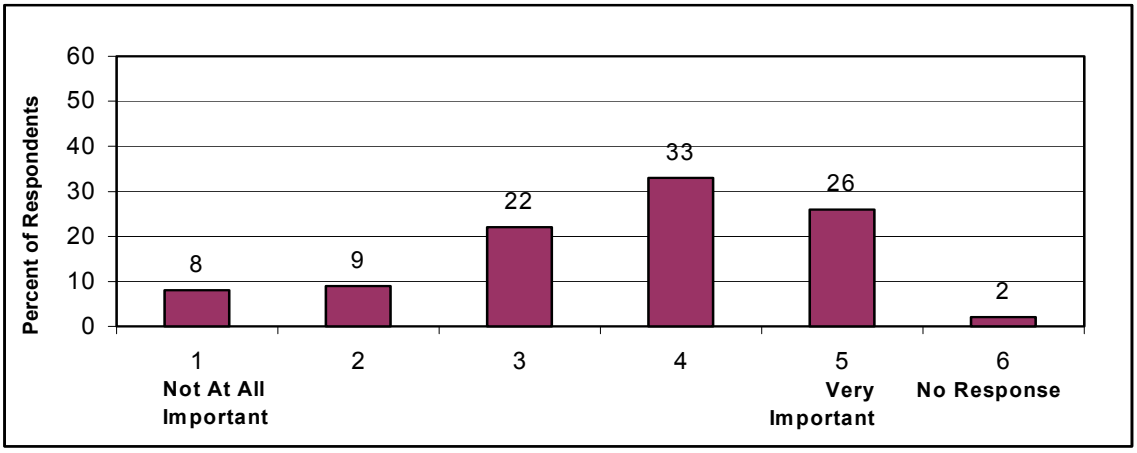


Figure 28: Traveler Needs Survey Question 15: The best route to destination

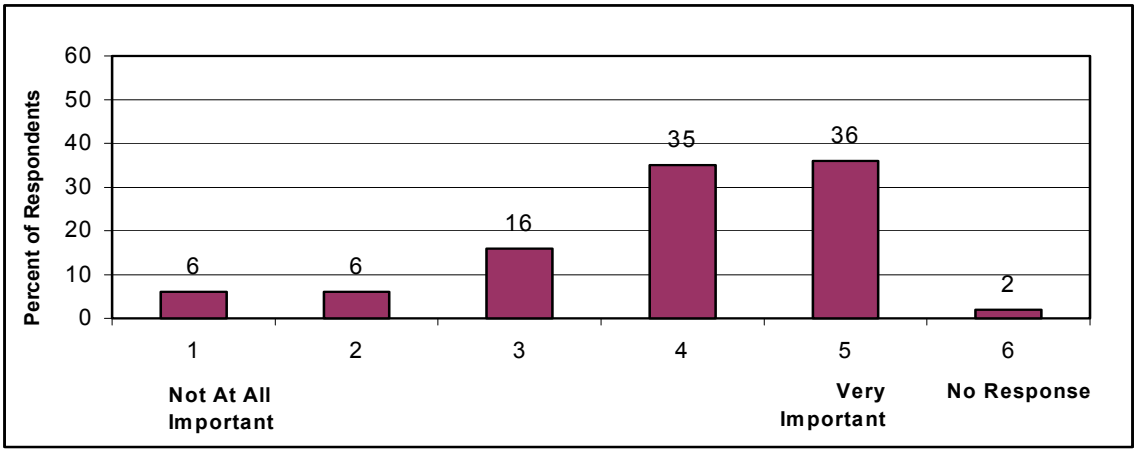


Figure 29: Traveler Needs Survey Question 16: Traveler service locations (rest stops)

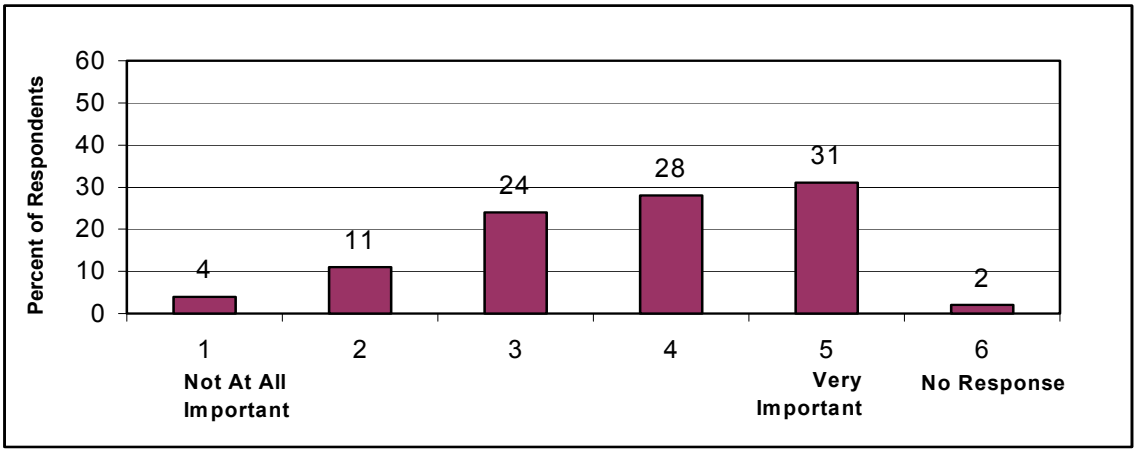


Figure 30: Traveler Needs Survey Question 17: Distance between towns

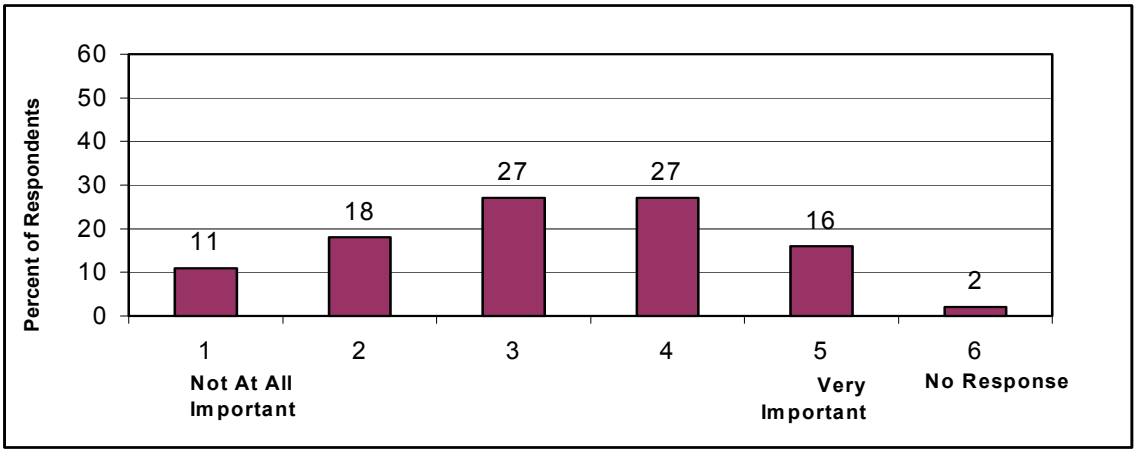


Figure 31: Traveler Needs Survey Question 18: Locations of traffic delays due to special events

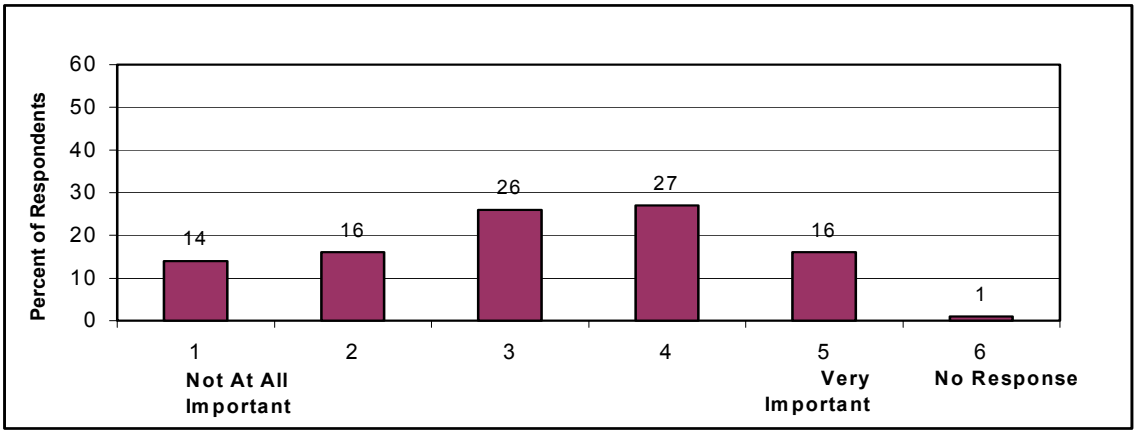


Figure 32: Traveler Needs Survey Question 19: Locations of accidents/incidents

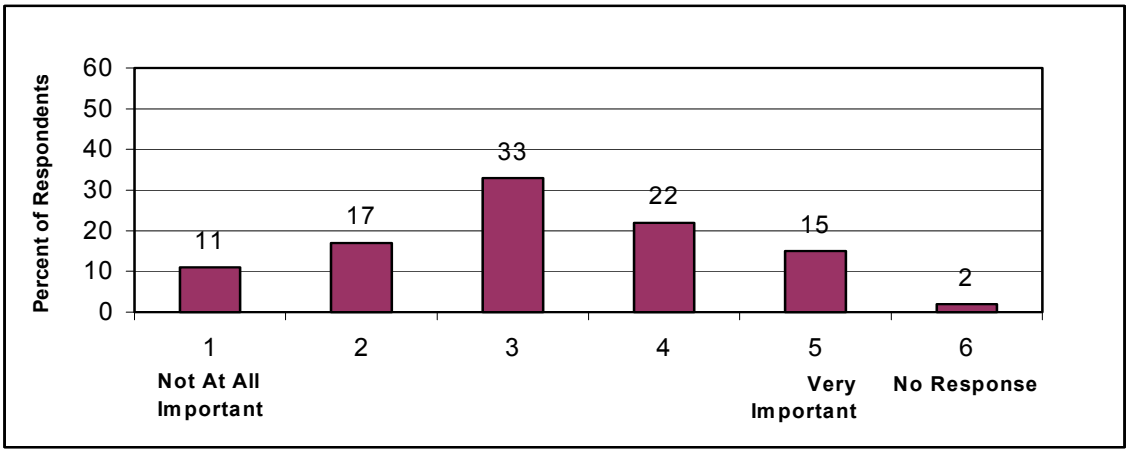


Figure 33: Traveler Needs Survey Question 20: Construction zone locations and/or detours

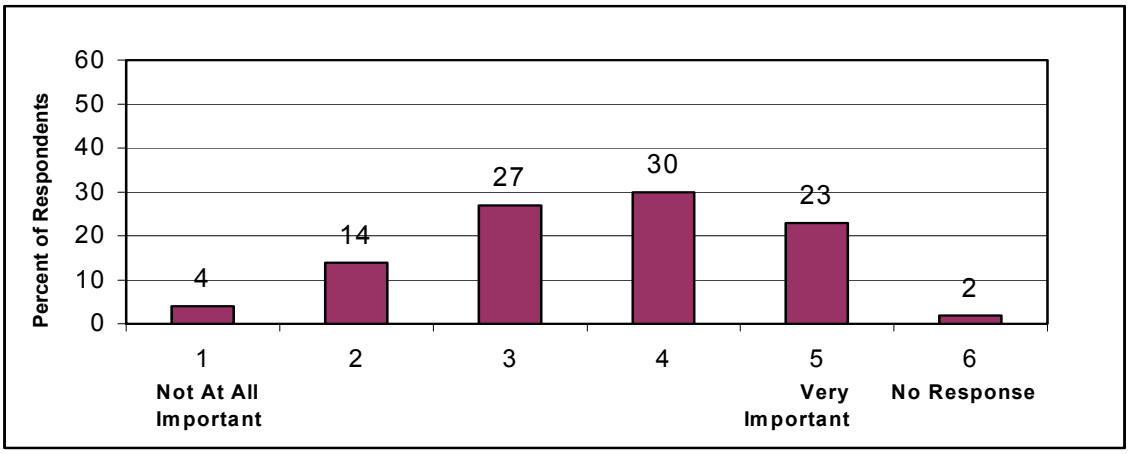


Figure 34: Traveler Needs Survey Question 21: Adverse weather conditions

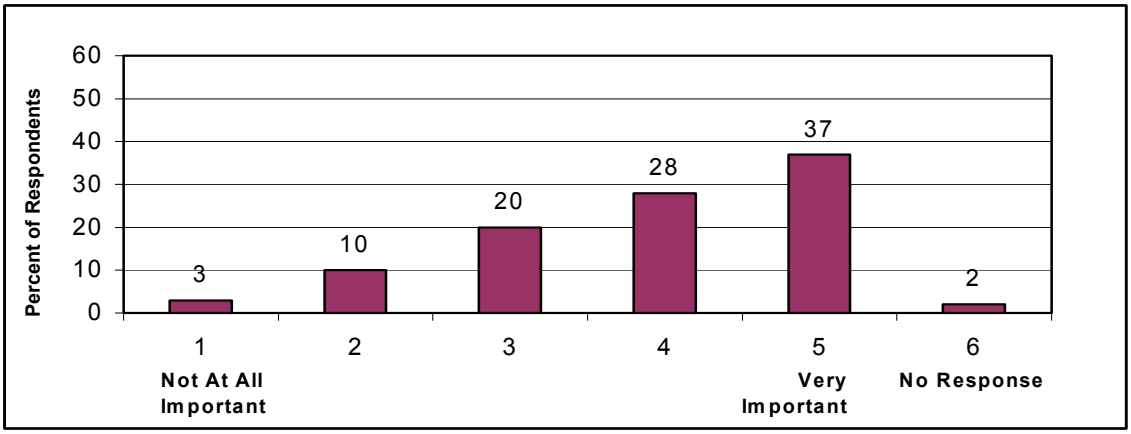
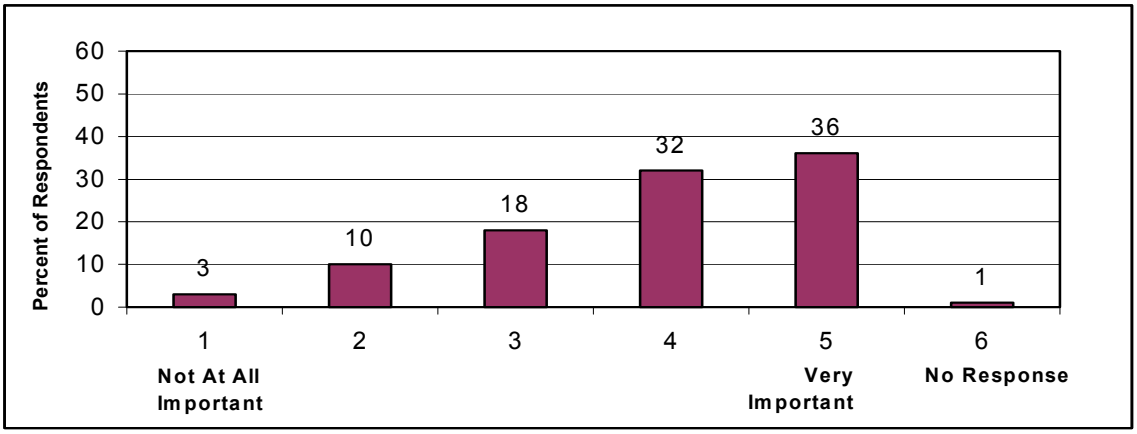


Figure 35: Traveler Needs Survey Question 22: Road condition problems due to weather

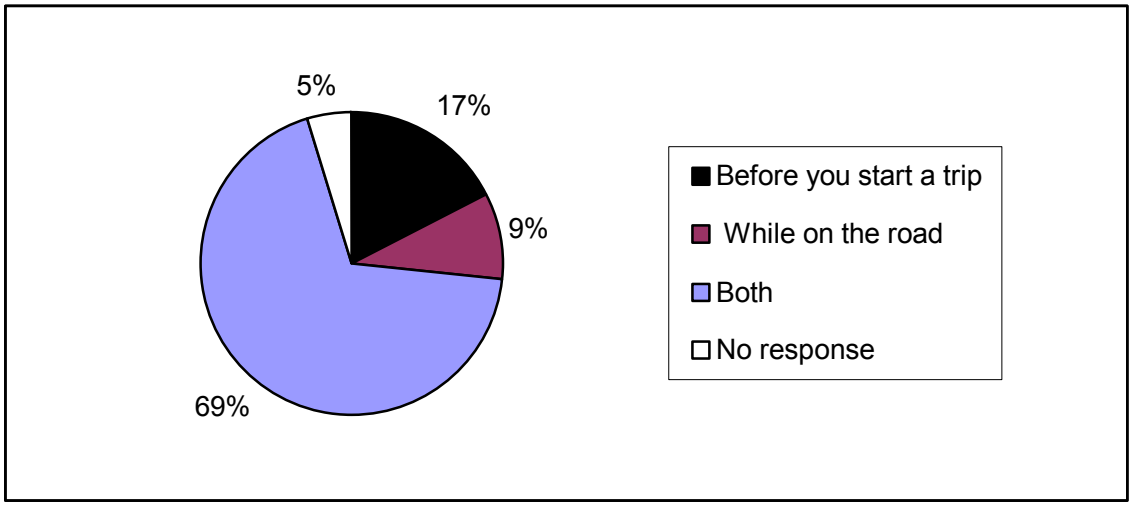


Chi-square values were computed for each question relating to pre-trip information by using the demographic breakdown of all respondents. Significant differences appeared in the responses given by residents of Montana, Idaho and Wyoming versus those of the tourists or residents of other states. When planning a trip, the best route to a destination, tourist attractions and traveler service locations (rest stops) were all indicated to be more important to tourists or residents of other states than to residents of Montana, Idaho and Wyoming. Significant differences also appeared between respondents of various age groups. Traveler service locations (rest stops) became increasingly more important as the age of the respondent increased. Knowing about adverse weather conditions before a trip was more important to older respondents than to younger respondents. Significant differences appeared between rural versus urban residents in terms of the importance of knowing the best route to a destination; specifically, knowing the best route to a destination before a trip was more important to urban, as compared to rural residents. Significant differences also appeared when the number of miles traveled per day, the type of road normally traveled and employment were compared with the importance of traveler service locations. Generally, as the number of miles traveled per day increased, so did the importance of knowing traveler service locations before a trip. Traveler service locations were also more important to those that normally traveled freeways and expressways; they were least important to those respondents who normally traveled on two-lane highways. Respondents who reported having a college degree indicated the most concern over the location of traveler service locations. Significant differences also appeared between the type of road normally traveled and the importance of knowing accident or incident locations before a trip. Respondents who normally travel country roads indicated they were most concerned with accident or incident locations, while those that travel two-lane highways were least concerned. Significant differences appeared when respondents of various employment statuses were compared with the importance of knowing the length of time or the number of miles to a destination before a trip. The length of time or the number of miles to a destination was more important to those respondents who indicated they have had some college education.

En-Route Information

Respondents were also asked in Question 23 whether they preferred to get information regarding road conditions, weather and tourism accommodations before they started a trip, while on the road, or both. Sixty-nine percent (69%) indicated they preferred to get information both before starting a trip and while on the road. Seventeen percent (17%) indicated they preferred to get information before they start a trip and 9% indicated they preferred to get information while on the road. No significant differences ($p \leq 0.01$) in responses to this question were determined between any of the demographic groups. Frequencies and percentages for the 481 general traveler responses to Question 23 are located in Appendix B. Figure 36 illustrates the percentage breakdown of respondents in graphical format.

Figure 36: Traveler Needs Survey Question 23: Do you prefer to get information like road conditions, weather and tourism accommodations



Trip Planning

Respondents were asked in Questions 24-27 how important four items are to them when they are planning a trip. The following was the heading for these four questions as it appeared on the survey.

> Using the same five-point scale where 1 means **not at all important** and 5 means **very important**, please indicate how important each of the following items are to you when you are **planning** a trip by car in Montana/Idaho/Wyoming. (**Circle one number per question**)

The four items, ranked in order of the highest mean score (indicating the most importance) are:

- Location and direction to parks, scenic routes, recreational facilities and historical sites (Mean 3.96)
- Trip planning assistance from rest stops or other places along your route (3.44)
- On-site presence of parking and transit facilities (3.06)
- Ability to make lodging and meal reservations from rest stops or other places along your route (3.02)

The following (Figures 37-40) illustrate the percentage of respondents represented by each number on the Likert scale. Frequencies and percentages for the 481 general traveler responses to Questions 24-27 are located in Appendix B. Chi-squared values are given in Volume II, Cross-Variable Tabulations.

Figure 37: Traveler Needs Survey Question 24: On-site presence of parking and transit facilities

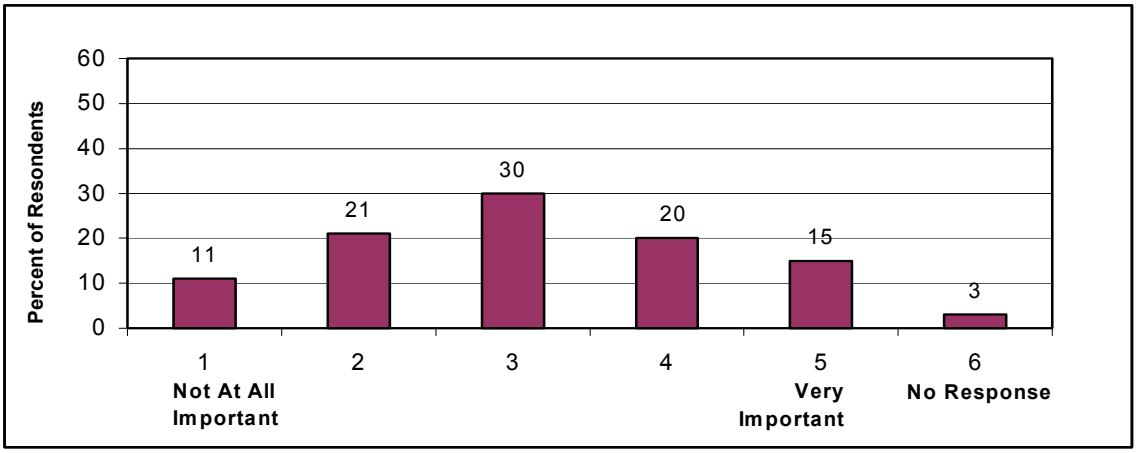


Figure 38: Traveler Needs Survey Question 25: Location and directions to parks, scenic routes, recreation facilities and historical sites

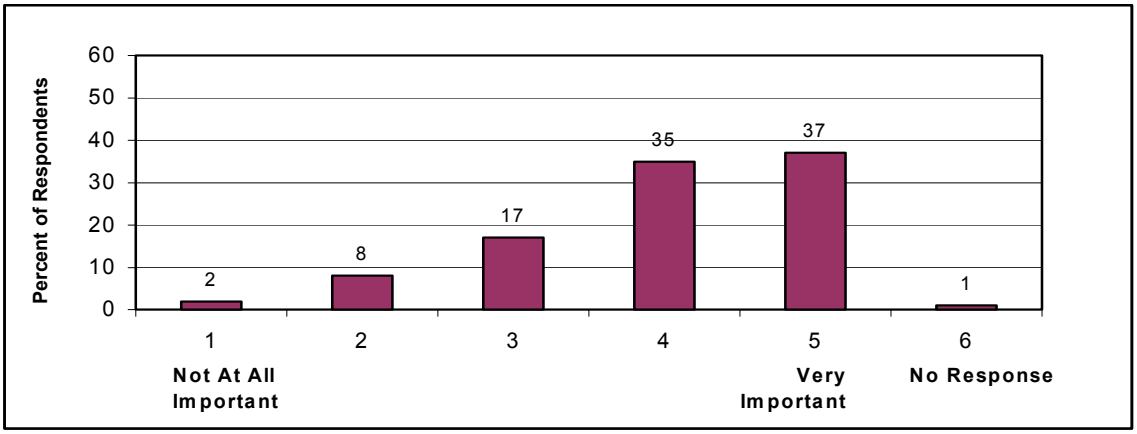


Figure 39: Traveler Needs Survey Question 26: Trip planning assistance from rest stops or other places along your route

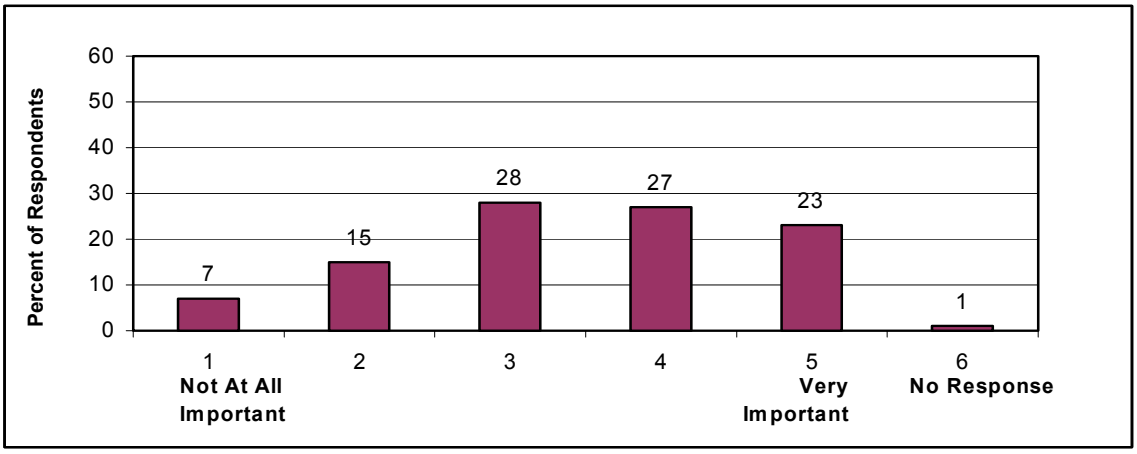
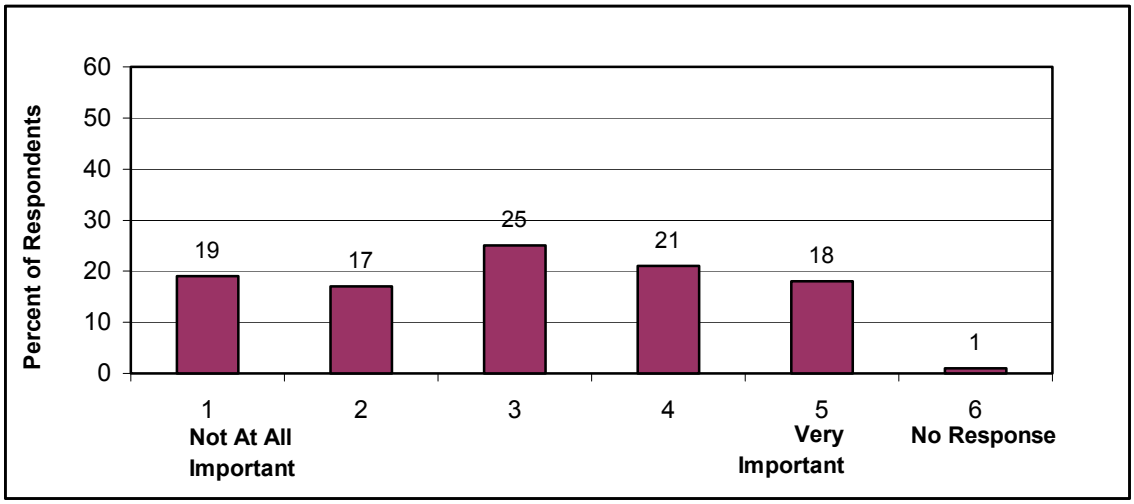


Figure 40: Traveler Needs Survey Question 27: Ability to make lodging and meal reservations from rest stops or other places along your route



Chi-square values were computed for each question relating to planning a trip by using the demographic breakdown of all respondents. Significant differences appeared between groups in terms of the importance of knowing the location and direction to parks, scenic routes, recreation facilities and historical site and obtaining trip planning assistance from rest stops or other places along the route. These items were more important to tourists or residents of other states when planning a trip than they were to residents of Montana, Idaho and Wyoming. Respondents who indicated they live in urban areas were also more concerned about knowing the location and direction to parks, scenic routes, recreation facilities and historical sites than those respondents who reside in rural areas. Planning assistance from locations along the route was also more important to automobile drivers and passengers than to persons using any other mode of travel. Significant differences also appeared between the type of road normally traveled and the importance of on-site parking and transit facilities. Respondents who normally traveled four-lane highways indicated an increased concern for the presence of on-site parking and transit.

Questions 28-37 were also included under the survey section of trip planning. The following was the heading for these ten questions as it appeared on the survey.

> When planning for a trip in rural Montana/Idaho/Wyoming, whether you're a driver or a passenger, how would you like to get the information you need, such as lodging, points of interest, routes to take or road conditions from the following sources?

The majority of respondents indicated they would use the following sources:

- Call chamber of commerce (49%)

- Travel agents (49%)
- Call hotels/resorts directly (75%)
- Travel magazines or travel sections in newspapers (72%)
- Road conditions hotline (57%)
- Service stations (59%)
- The Internet (50%)
- State Departments of Tourism (68%)

The majority of respondents indicated they would not use the yellow pages (56%) for planning a trip (Figure 43). Forty-nine percent (49%) of respondents indicated they would use a radio station for planning a trip, but an equal portion indicated they would not use a radio station for this purpose (Figure 42).

The following (Figures 41-50) illustrate the percentage breakdown of responses for each question. Detailed statistical results including frequencies and percentages for the 481 general traveler responses to Questions 28-37 are located in Appendix B. Chi-square values are located in Volume II, Cross-Variable Tabulations.

Figure 41: Traveler Needs Survey Question 28: Call chamber of commerce of destination

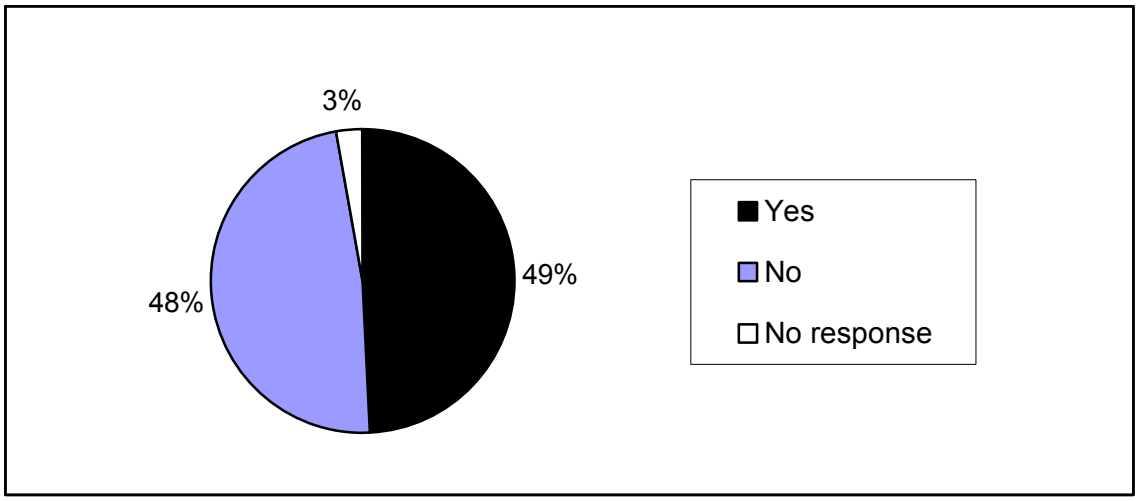


Figure 42: Traveler Needs Survey Question 29: From radio stations

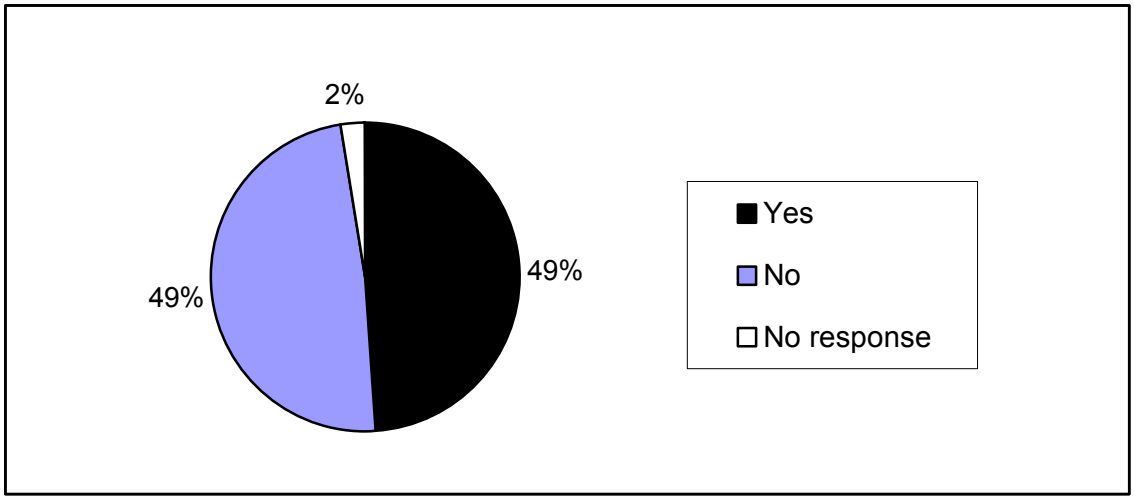


Figure 43: Traveler Needs Survey Question 30: From yellow pages

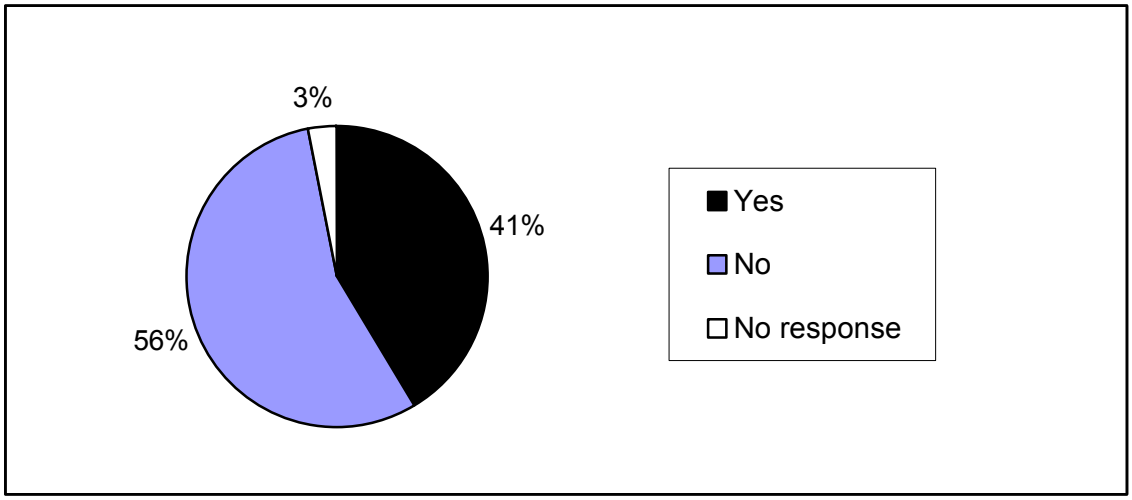


Figure 44: Traveler Needs Survey Question 31: Travel agents

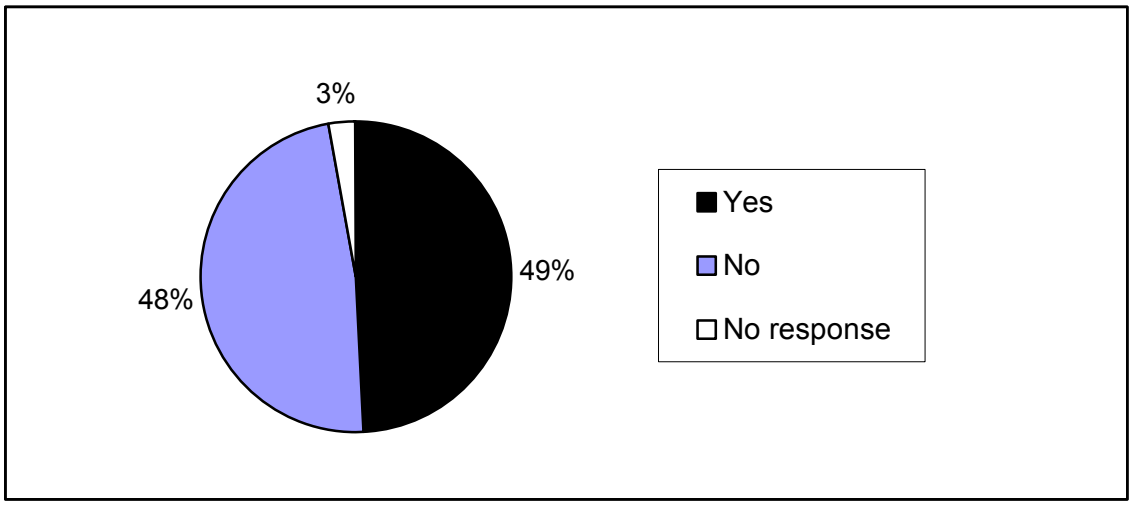


Figure 45: Traveler Needs Survey Question 32: Calling hotels/resorts directly

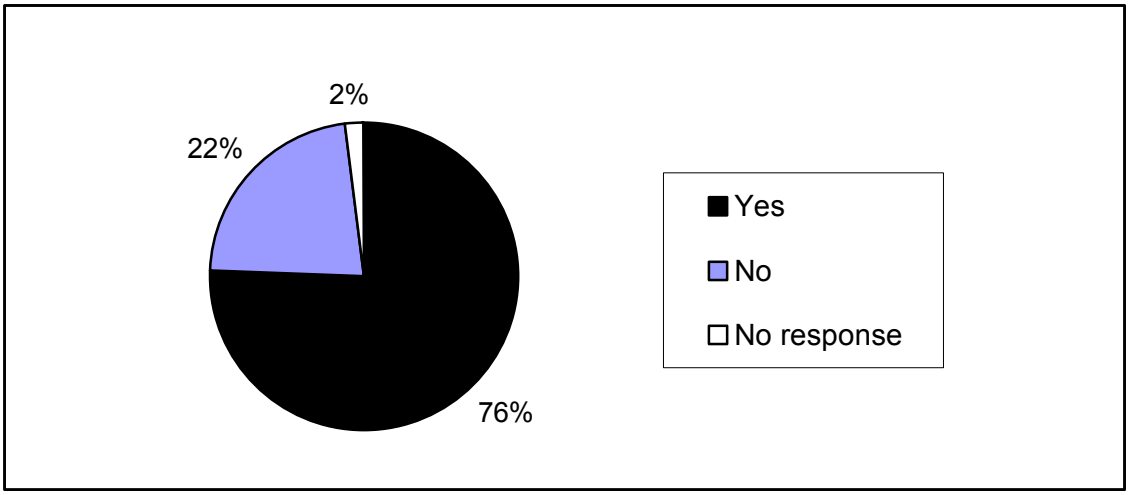


Figure 46: Traveler Needs Survey Question 33: Travel magazines or travel sections in newspapers

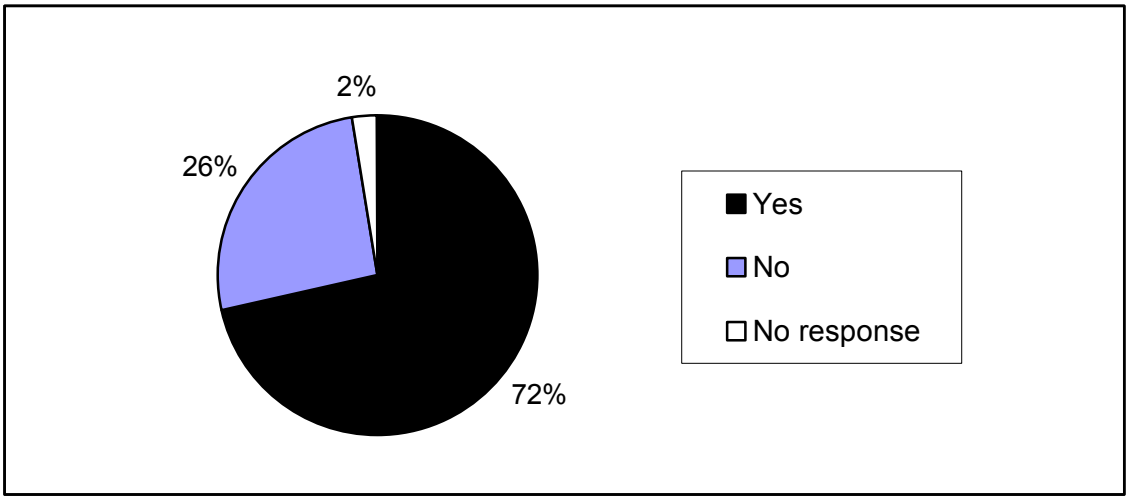


Figure 47: Traveler Needs Survey Question 34: Road conditions hotline

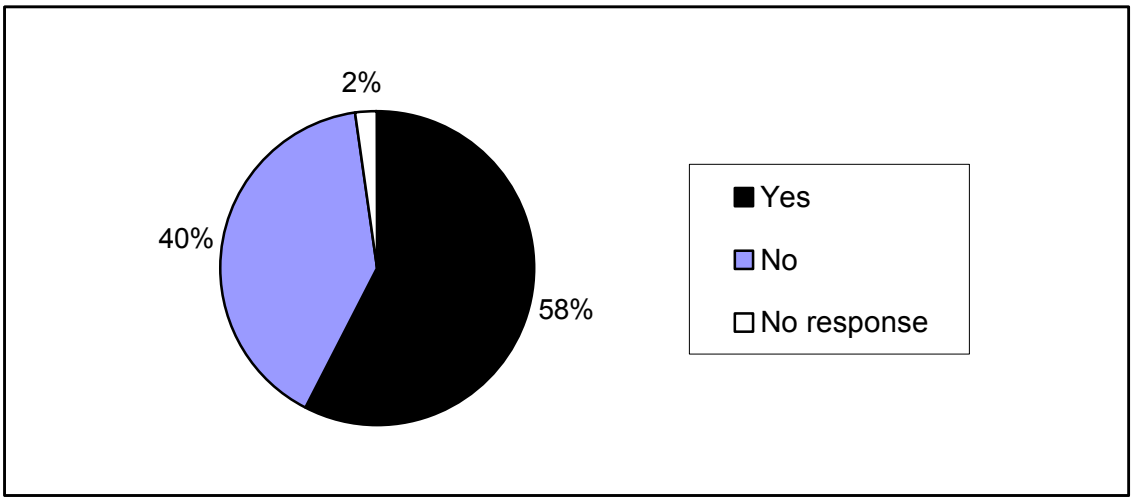


Figure 48: Traveler Needs Survey Question 35: Service stations

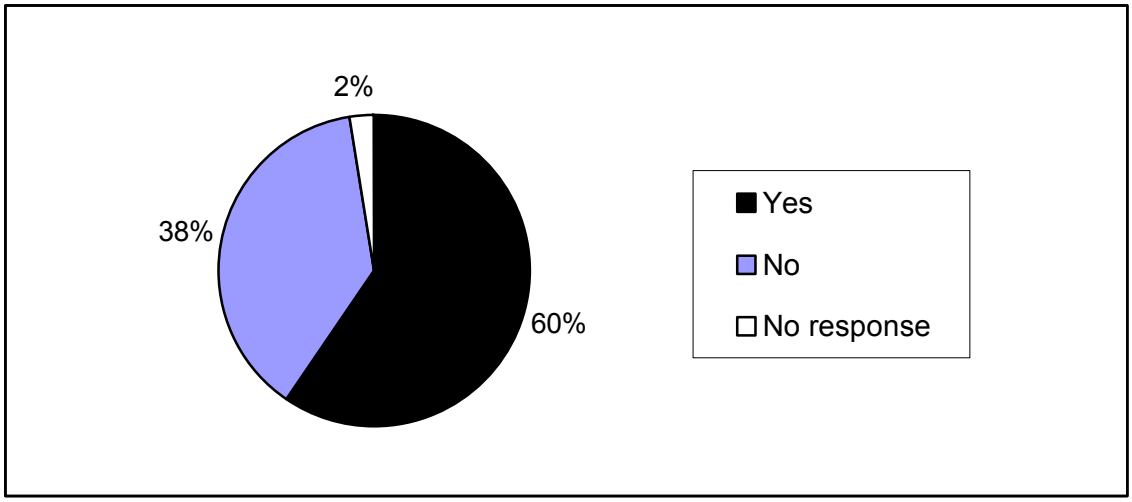


Figure 49: Traveler Needs Survey Question 36: The Internet

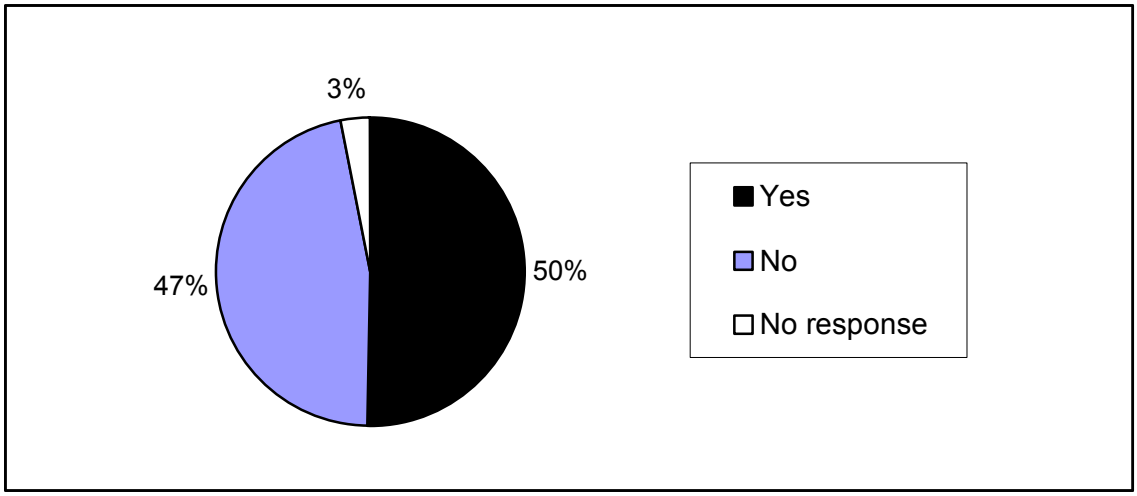
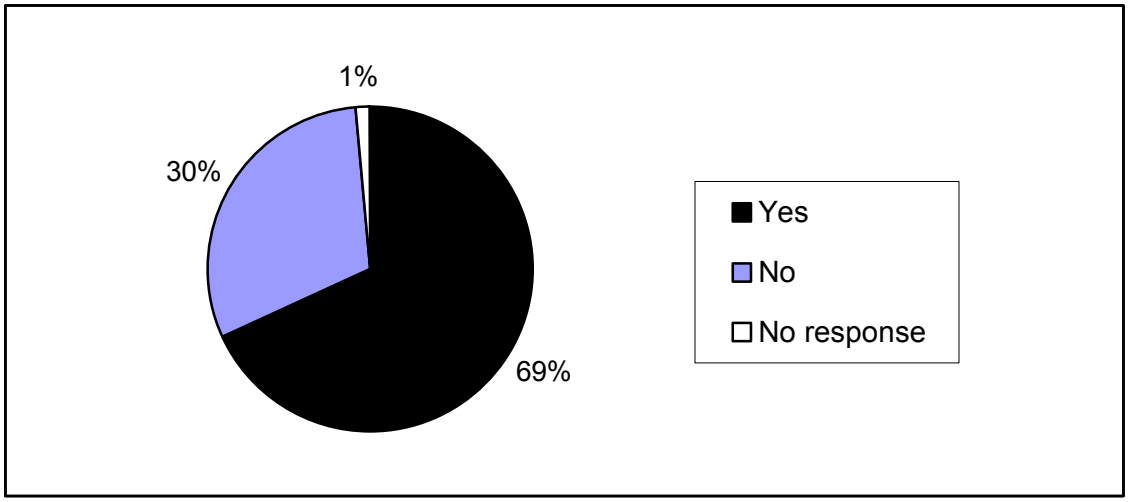


Figure 50: Traveler Needs Survey Question 37: State departments of tourism



Chi-square values were computed for questions relating to trip planning by using the demographic breakdown of all respondents. Significant differences appeared between the use of the yellow pages to obtain trip planning information and the following demographic categories: residence, age, normal type of road traveled, education and income. The type of road normally traveled and their willingness to use travel agents revealed significant differences between respondents, as well. Significant differences also appeared between the use of the Internet for trip planning purposes and the following demographic categories: age, area of residence, normal miles traveled per day, employment and education. Significant differences appeared between the use of State Departments of Tourism and the respondents' residence, age and employment. Significant differences also appeared between the use of Chambers of Commerce and the age and income of respondents. Significant differences appeared between the residence of respondents and their willingness to use road condition hotlines and radio stations. Residents of Montana, Idaho and Wyoming indicated they use radio stations, the yellow pages and road condition hotlines more than did tourists or residents of other states. Tourists and residents of other states indicated they use State Departments of Tourism more than did Montana, Idaho and Wyoming residents. Respondents with a high school degree indicated more willingness to use the yellow pages to obtain information than did those in other education categories. Respondents who reside in urban areas and travel less than fifty miles per day indicated they were more willing to use the internet to obtain traveler information than those that reside in a rural area and travel over fifty miles per day. The majority of respondents who were retired indicated they were not willing to use the Internet while those in all other employment categories indicated a willingness to use the Internet. Students also represented a significantly smaller percentage of respondents who were willing to use State Departments of Tourism compared to those in any other employment group. The majority of respondents who have some college, a college degree or a graduate degree indicated they would use the Internet to obtain information, while those who have a high school degree or technical training indicated they would not use the Internet. As respondents' income increased, their willingness to use Chambers of Commerce for trip planning assistance increased while their use of they yellow pages to obtain assistance generally decreased.

Sources of Information

Respondents were asked in Questions 38-43 how likely they were to use each of six services to obtain current traveler related information. The following was the heading for these six questions as it appeared in the survey.

> Using a five-point scale where 1 means **not at all likely** and 5 means **very likely**, how likely would you be to use each of the following services to obtain current information on weather, construction zones, routes and road conditions if you had it available to you? (**Circle one number per question**)

The information sources ranked in the order of highest mean score (indicating the greatest likeliness of use) are as follows:

- Changeable message signs along the highway (Mean 4.13)
- A special radio channel (3.66)
- A phone number (3.65)
- Small computerized information centers at convenient locations (3.32)
- A cellular phone (2.86)
- A small TV screen with traveler information only for your car (2.10).

The following (Figures 51-56) illustrate the percentage breakdown of respondents for each question. Frequencies and percentages for the 481 general traveler responses to Questions 38-43 are located in Appendix B. Chi-square values are located in Volume II, Cross-Variable Tabulations.

Figure 51: Traveler Needs Survey Question 38: A phone number

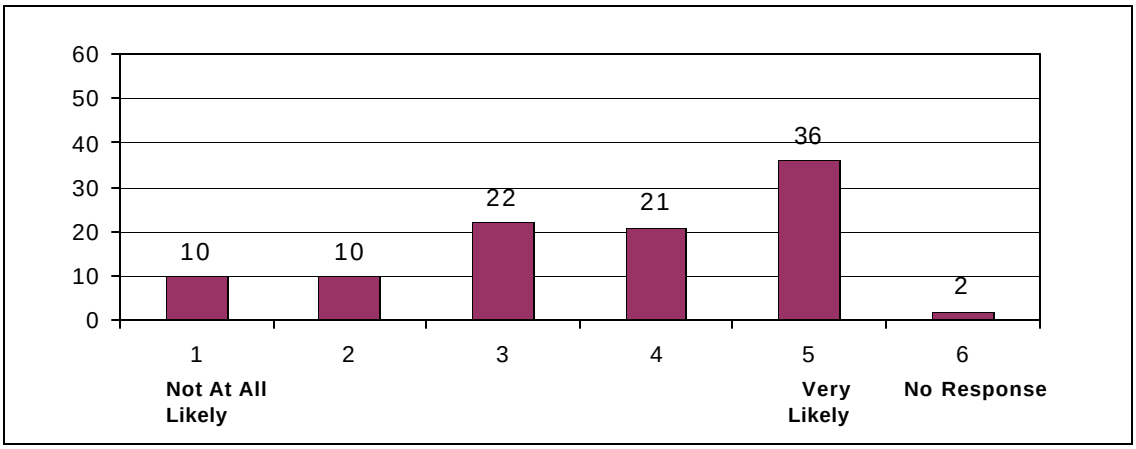


Figure 52: Traveler Needs Survey Question 39: A special radio channel

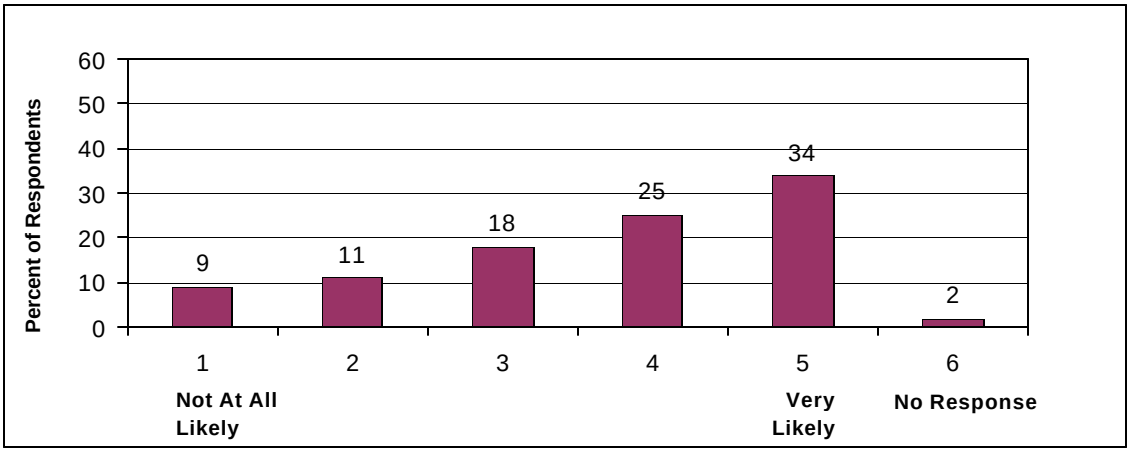


Figure 53: Traveler Needs Survey Question 40: A small TV screen with traveler information only for your car

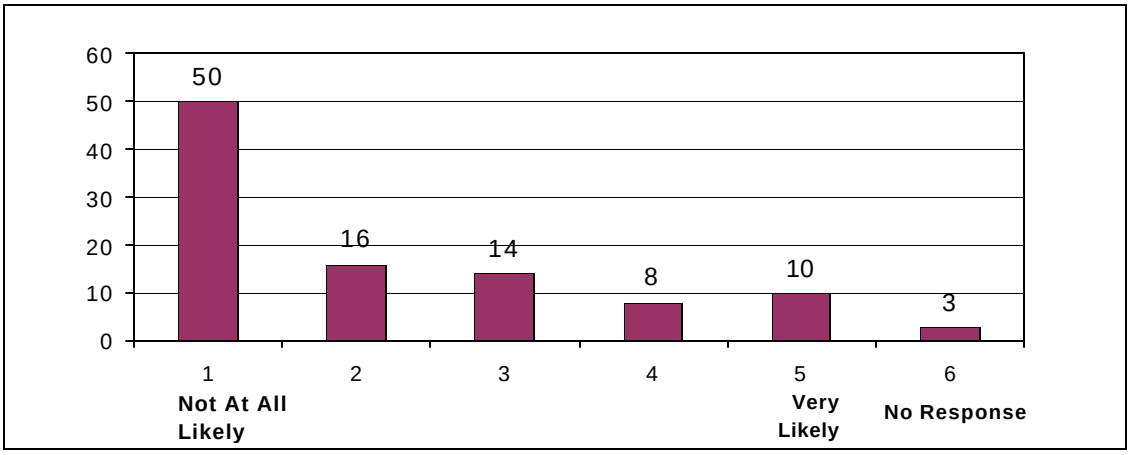


Figure 54: Traveler Needs Survey Question 41: A cellular phone

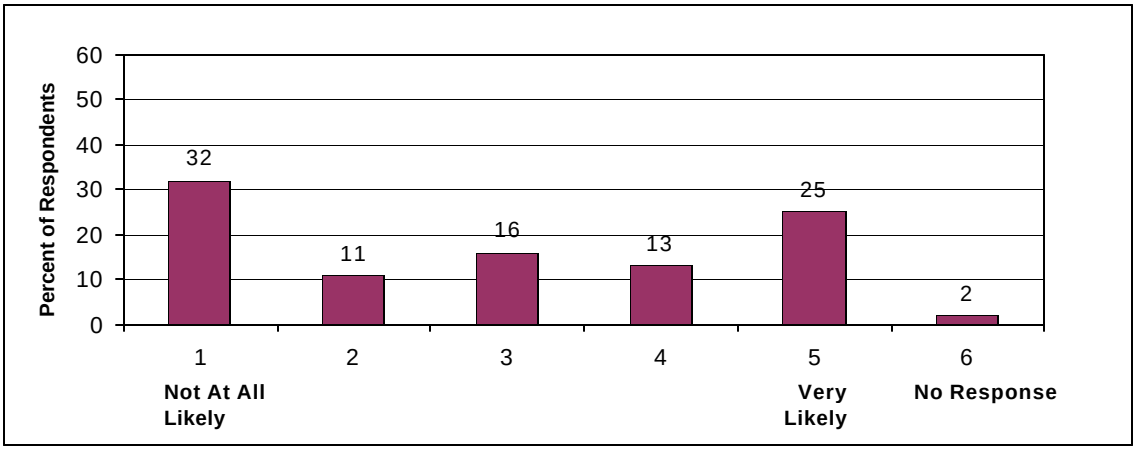


Figure 55: Traveler Needs Survey Question 42: Changeable message signs along the highway

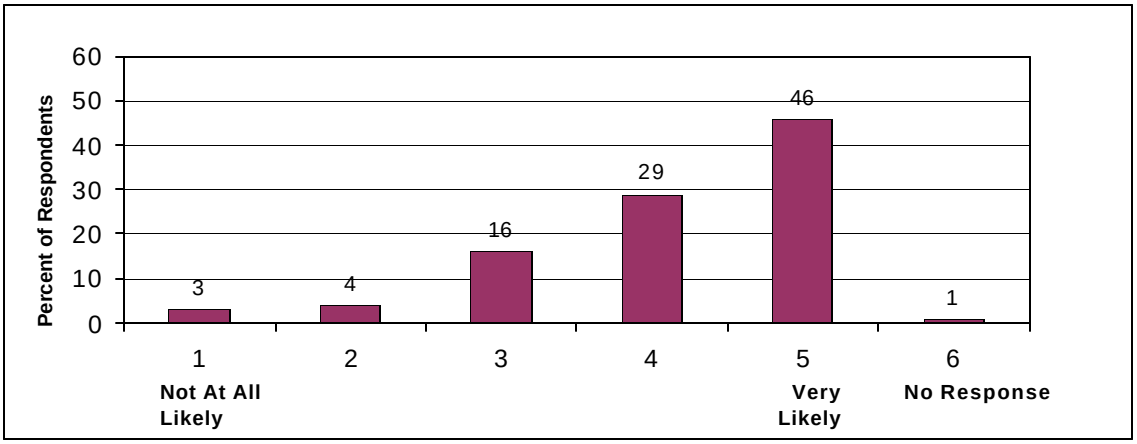
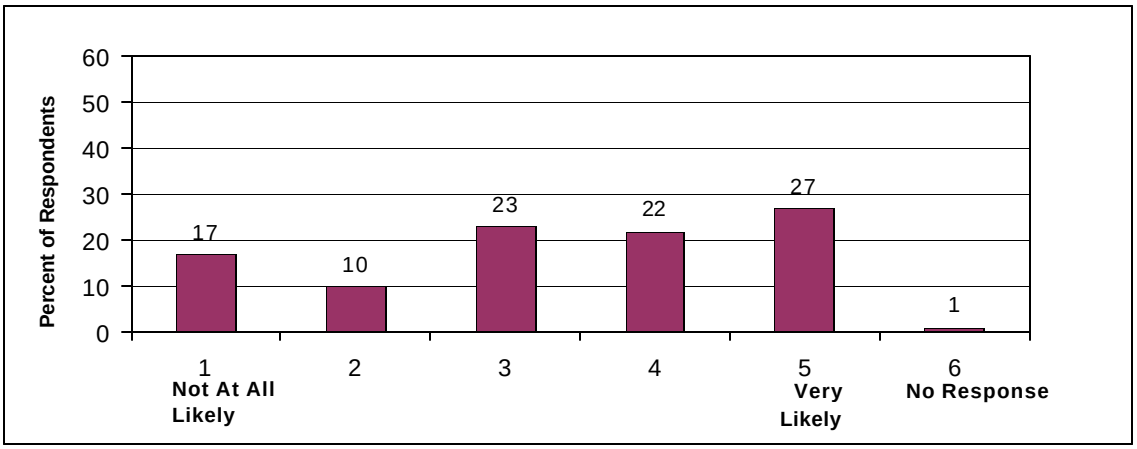


Figure 56: Traveler Needs Survey Question 43: Small computerized information centers at convenient locations



Significant differences appeared between the respondents' employment type and the likelihood of using a cellular phone. Students indicated the greatest likeliness to use cellular phones, while retired respondents indicated the least likeliness to use cellular phones. Significant differences also appeared between the age of the respondent and their likeliness to use a small TV screen with traveler information for their car. As the age of the respondent increased, the likelihood of using this technology decreased.

Respondents were then asked whether they prefer traveler information be broadcast on an AM or FM radio channel. Forty-eight percent (48%) of respondents indicated they had no preference, 33% indicated they prefer FM, 12% indicated a preference for AM and 6% did not know. Respondents were also asked how they prefer to obtain information on road conditions and tourist information. Forty-nine percent (49%) indicated they prefer a live voice giving the information, 35% indicated message menus where you select what you want to hear by dialing specified numbers and 10% indicated a recorded message. These results are also illustrated graphically in Figures 57 and 58 with frequencies and percentages for the general traveler responses in Appendix B. Chi-square values are given in Volume II, Cross-Variable Tabulations.

Significant differences appeared between the use of AM or FM to broadcast traveler information and the residence, gender and age of the respondents. Males seemed to indicate a greater preference for either AM or FM, whereas females generally indicated no preference. As the age of the respondent increased the preference for FM radio decreased. Significant differences also appeared between the age of the respondents and their preference for obtaining traveler information. All age groups preferred obtaining information on road conditions and tourist information from a live voice; however, the degree to which a live voice was preferred varied across the age groups.

Figure 57: Traveler Needs Survey Question 44: Do you prefer that traveler information broadcast over a special radio channel be on

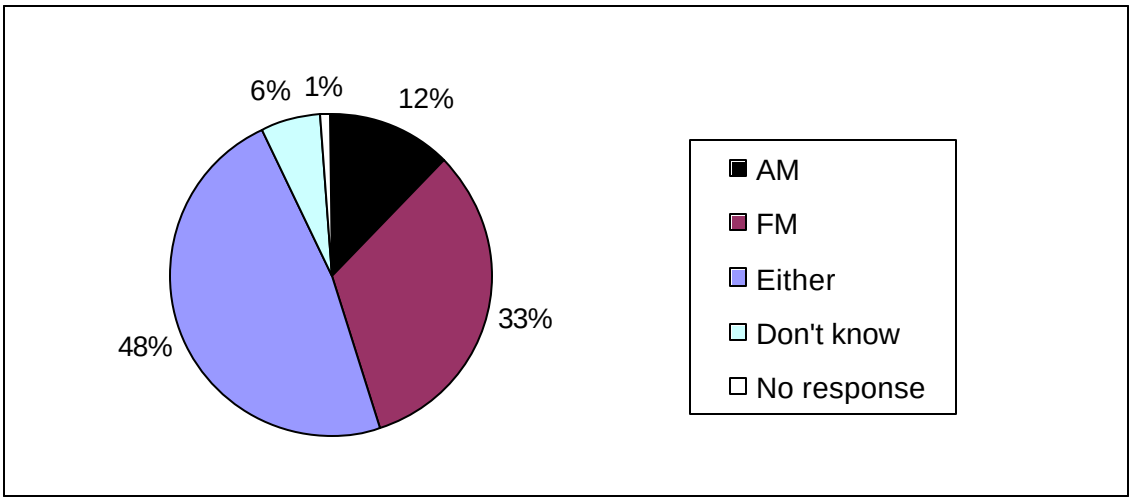
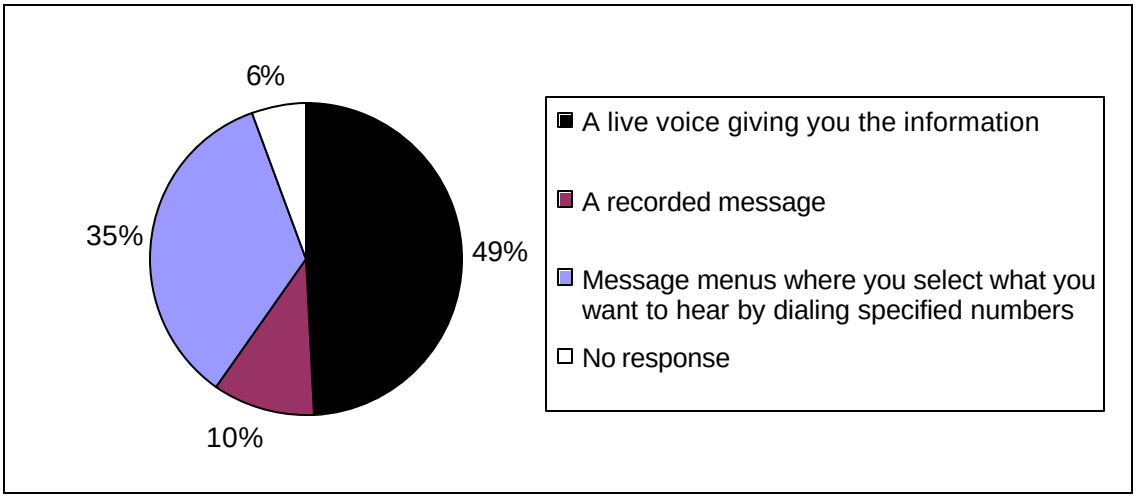


Figure 58: Traveler Needs Survey Question 45: Which of the following ways of obtaining information on road conditions and tourist information would you prefer



Communication Medium

Sixty-eight percent (68%) of the respondents indicated they were willing to have an attachment installed in their car or truck that would alert police and emergency medical services if they should have a run-off-the-road accident or be involved in a collision. Fifteen percent (15%) indicated they would not want such an attachment and 16% did not know. Thirty-six percent (36%) indicated they would want the device to become activated automatically upon impact. Eighteen percent (18%) wanted to activate the

device manually, while 42% wanted both automatic and manual activation. Eighty-two percent (82%) of respondents wanted notification that help was on the way if such a device was activated. Nine percent (9%) indicated notification did not matter and 6% did not know. This information is graphically illustrated in Figures 59-61. Frequencies and percentages for Questions 46-48 are located in Appendix B. Chi-square values are given in Volume II, Cross-Variable Tabulations.

Figure 59: Traveler Needs Survey Question 46: Suppose an attachment was available for your vehicle which would alert police and emergency medical services if you should have a run-off the road accident or be involved in a collision, would you be interested in having something like that installed in your car or truck

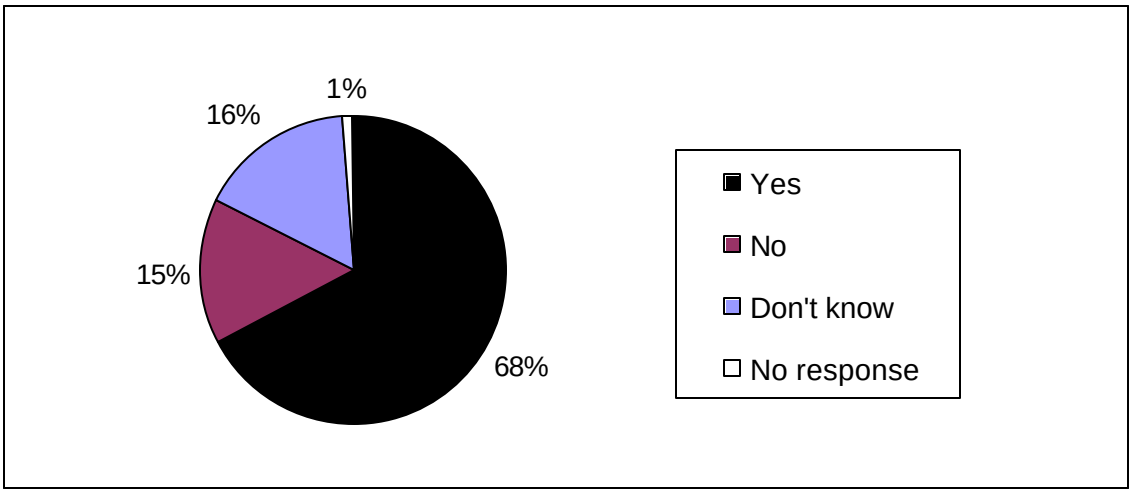


Figure 60: Traveler Needs Survey Question 47: If one was in your vehicle would you want it to become activated automatically upon impact, or would you want to be able to activate it yourself?

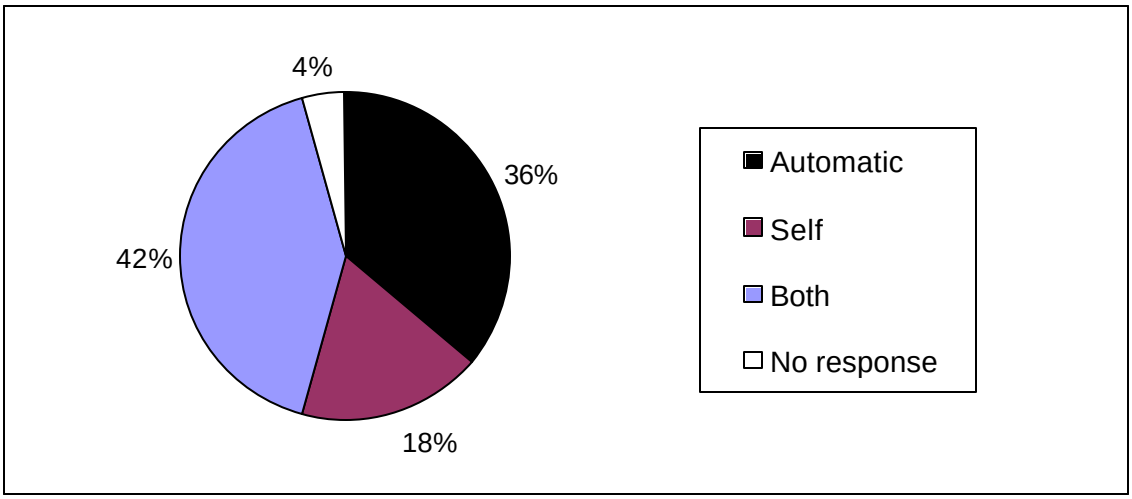
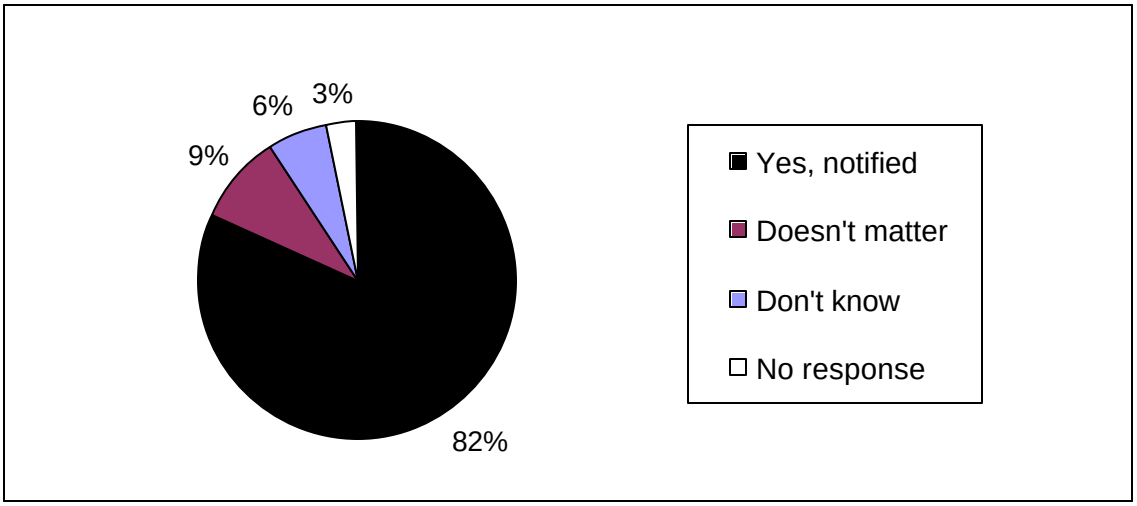


Figure 61: Traveler Needs Survey Question 48: If one was in your vehicle and was activated would you want to be notified that help is on the way, or would that matter?



Significant differences appeared between the automatic activation of a mayday device and the gender and area of residence. Females generally indicated a greater desire to have a device that could be both automatically and self activated. Females also indicated a greater preference for automatic activation than did males. Respondents who indicated they live in an urban area generally showed a greater desire to have a device that was automatically activated.

Transit Services

Respondents were asked in Questions 49-51 to indicate the likelihood of using various public transit services if made available in Montana, Idaho and Wyoming. The following was the heading for Questions 49-51 as it appeared on the survey.

> How likely would you be to use each of the following public transit services if made available in Montana/Idaho/Wyoming. Using a five-point scale with 1 meaning not at all likely and 5 meaning very likely, please indicate what number on the scale best describes how you feel about the following. (Circle one number per question)

The transit services ranked in order of the highest mean (indicating the greatest likelihood) are:

- Bus or van routes which are not fixed, but could be changed to meet your needs (Mean 2.34)
- Dial-a-ride van service to your door (1.93)
- Public taxi service (1.68).

Questions 49-51 are presented graphically in Figures 62-64. Detailed statistics regarding these questions are located in Appendix B. Chi-square values are located in Volume II, Cross-Variable Tabulations.

Figure 62: Traveler Needs Survey Question 49: Public taxi service

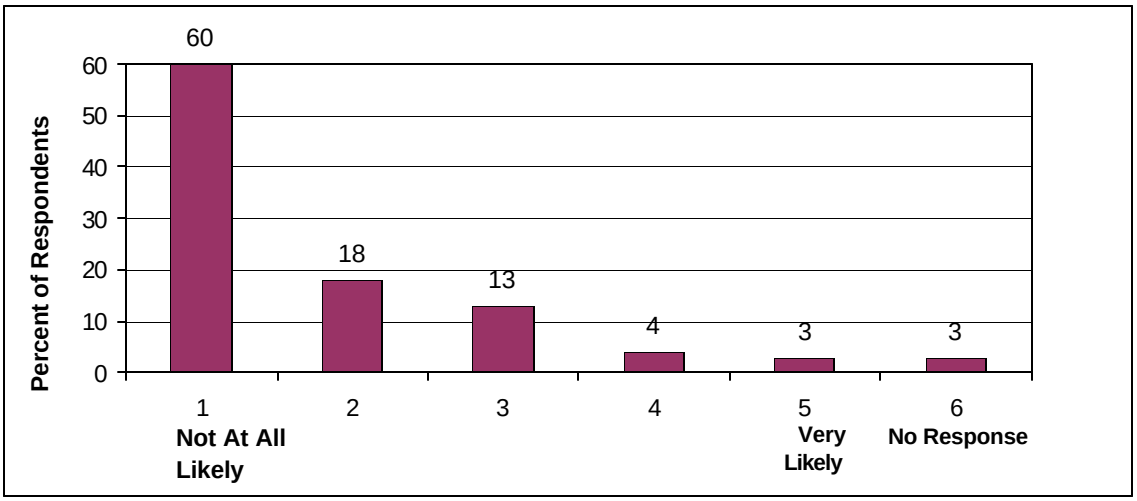


Figure 63: Traveler Needs Survey Question 50: Dial-a-ride van service to your door

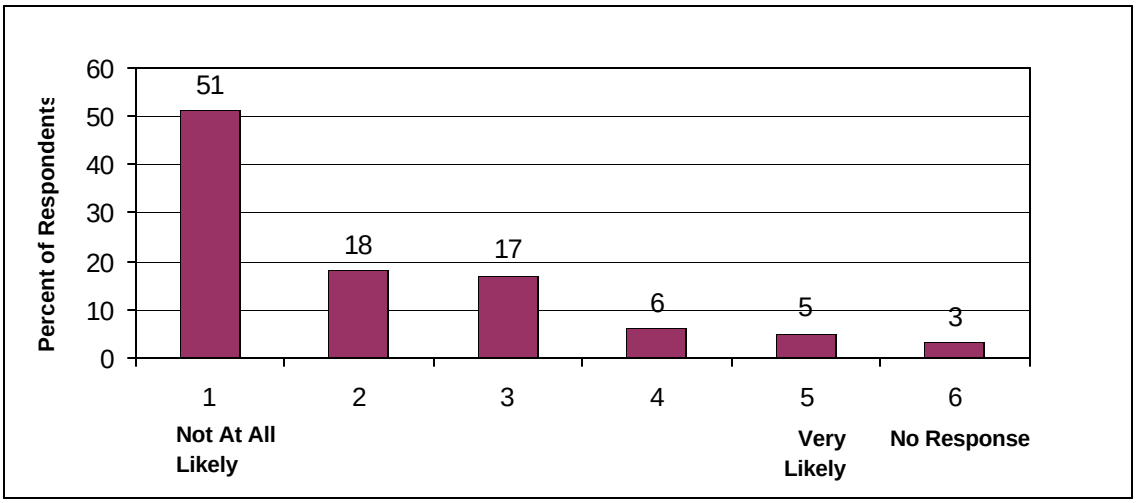
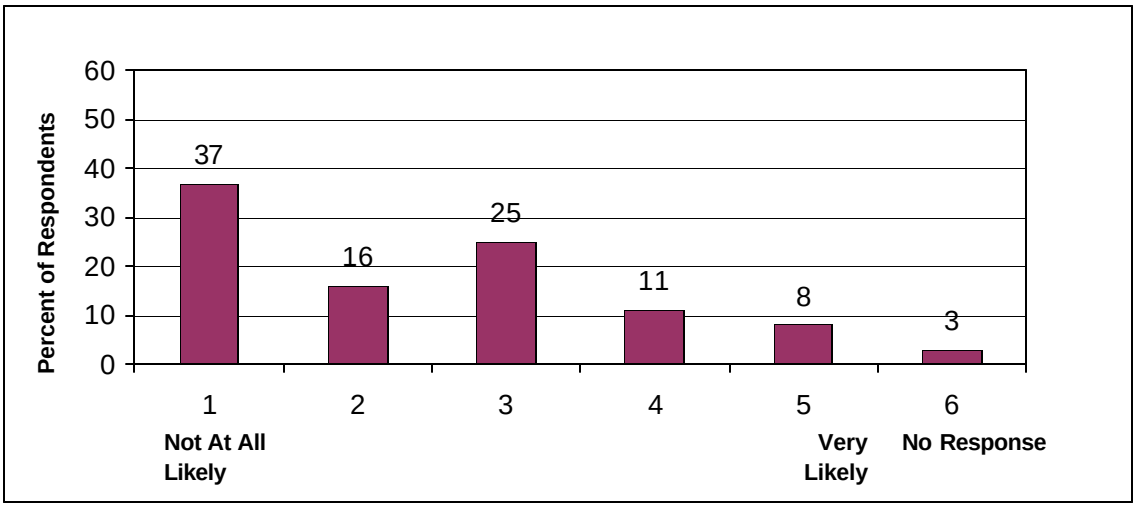


Figure 64: Traveler Needs Survey Question 51: Bus or van routes which are not fixed, but could be changed to meet your needs



Significant differences appeared in the likelihood of using bus or van routes that could be changed to meet one's needs and the respondents' age and income. Younger respondents had a greater likelihood of using changeable bus or van routes. As respondents' income increased, their likelihood of using changeable bus or van routes decreased. Significant differences also appeared between the normal mode of travel and the likelihood of using dial-a-ride van service. Auto passengers generally indicated they were the least likely to use dial-a-ride services.

Funding Options

A majority of respondents (63%) indicated in Question 52 that improving the existing roads, highways and shoulders would make traveling rural roadways safer and easier. Twenty-two percent (22%) indicated providing the new services mentioned in the survey would make rural travel safer and 11% indicated they did not know. Respondents then were asked in Question 53 who should pay for these new services if made available. Twenty-five percent (25%) indicated the user, 18% indicated the government, 4% indicated private industry, 10% indicated they did not know, and 37% believed the user, the government and private industry should all share the responsibility for paying for these new services. In Question 54, respondents were then asked how likely they would be to use and pay for a special service that would deliver travel information such as lodging, road conditions, weather and trip planning directly to them in their vehicle. Twenty-one percent (21%) indicated it was very likely, 42% were somewhat likely, 16% were somewhat unlikely and 18% were not at all likely to use and pay for such services. The results from Questions 52-54 are graphically illustrated in Figures 65-67. Detailed statistics are also available for these questions in Appendix B. Chi-square values are given in Volume II, Cross-Variable Tabulations.

Figure 65: Traveler Needs Survey Question 52: Which one of the following would make traveling rural roadways safer and easier, in your opinion?

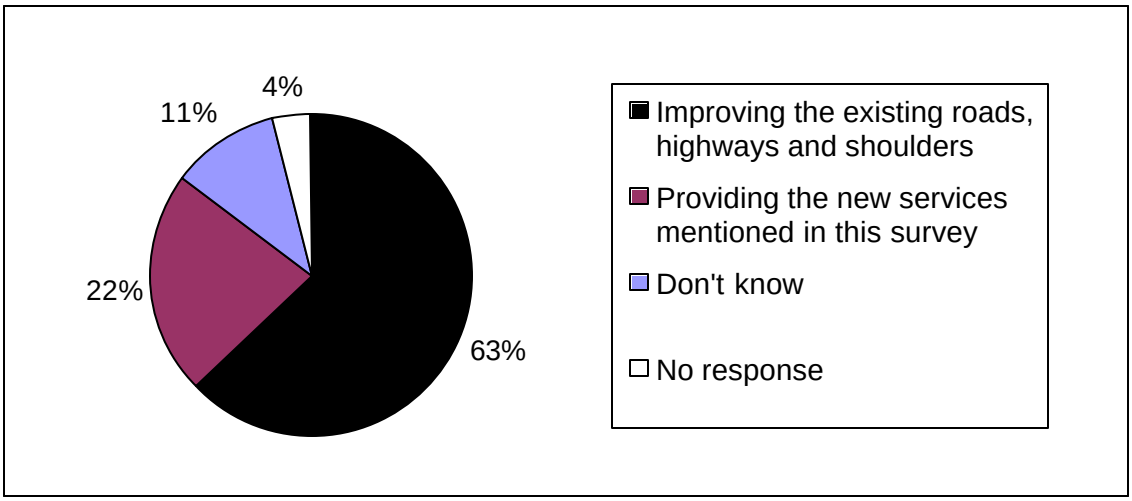


Figure 66: Traveler Needs Survey Question 53: If these new services are made available, who should pay for them?

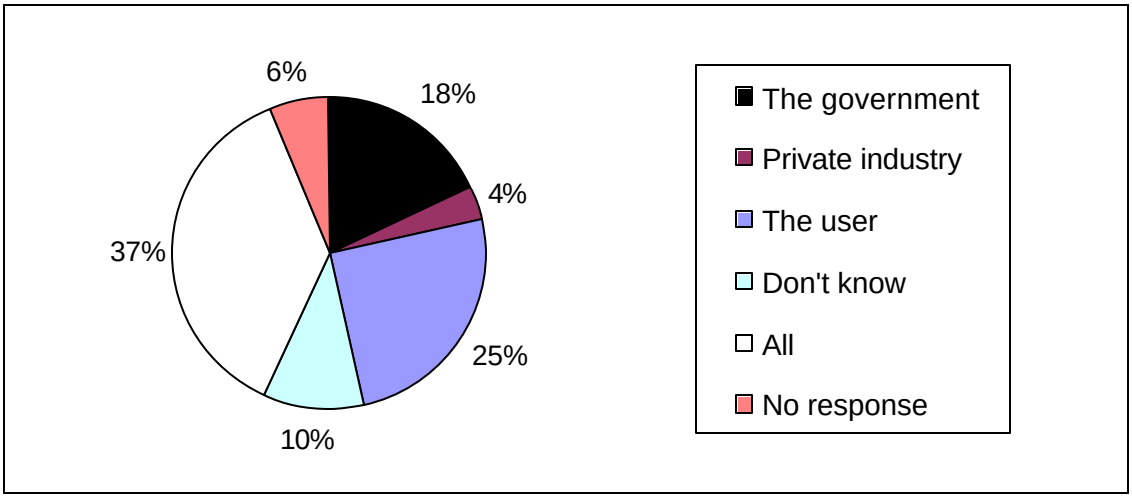
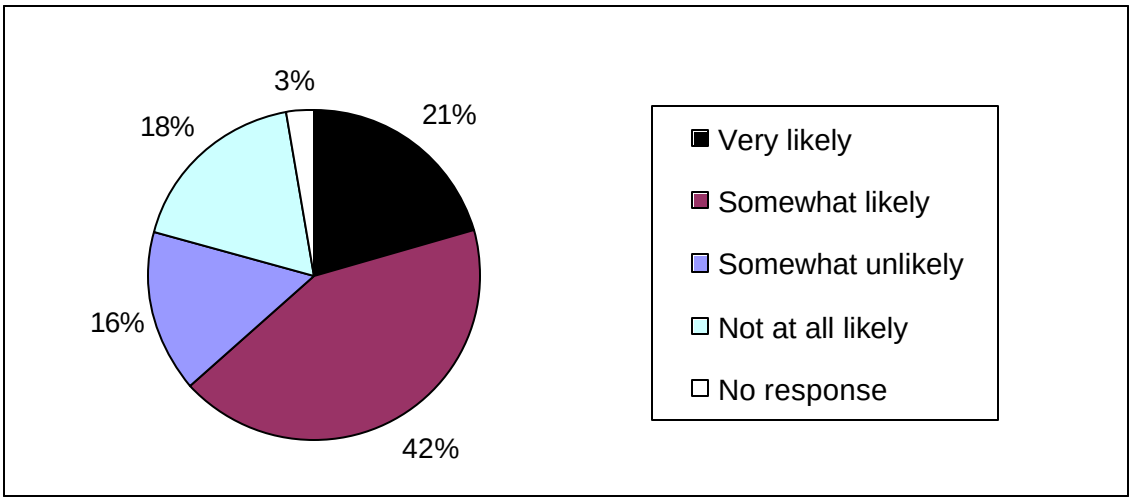


Figure 67: Traveler Needs Survey Question 54: How likely would you be to use and pay for a special service that would deliver travel information such as lodging, road conditions, weather and trip planning directly to you in your vehicle?



Significant differences appeared between respondents' drivers license status and their opinion on making rural roadways safer and easier. Those respondents who did not have a current driver's license indicated they did not believe providing the new services discussed in the survey would make travel safer and easier. Significant differences also appeared in responses given by those of various employment categories when considering who should pay for the new technologies mentioned in the survey.

CONCLUSIONS

The following is a generalized summary of each area of inquiry. The majority of respondents predominantly worried about the following safety concerns: road conditions like ice and snow, and passing trucks and other heavy vehicles. Occasional concern was expressed by the majority of respondents about animals, such as deer or farm animals, on the roadway and where to get assistance for a vehicle breakdown, accident or emergency medical aid. The majority of respondents believed all forms of pre-trip information was very important. They also preferred to obtain traveler information (e.g., road conditions, weather, and tourist accommodations) both before starting a trip and while on the road. The majority of respondents indicated the following to be very important when planning a trip: location and direction to parks, scenic routes and historical sites, and the ability to obtain trip planning assistance from rest stops or other places along the intended route. They also indicated that travel magazines or travel sections in newspapers, hotels and resorts, as well as State Departments of Tourism are important information sources when planning a trip.

Respondents were asked to indicate their likeliness to use new high-tech sources of information. The majority of respondents indicated they were very likely to use changeable message signs along the highway and special radio channels or phone numbers. They also indicated they were not at all likely to use a small TV screen with traveler information for their car or a cellular phone. The majority of respondents reported a willingness to obtain an attachment to alert police and emergency medical service in the event of an emergency. Ideally this device should be capable of both automatic and manual activation with a notification that help is on the way. The majority of respondents indicated they were not at all likely to use any form of public transit if made available. Respondents stated they would be somewhat likely to use and pay for these new information services while indicating the government, private industry and the user should all share responsibility for paying for new information services. The majority of respondents indicated improving the existing roads, highways and shoulders would be the optimum way to make traveling rural roadways safer and easier.

Significant differences appeared between the responses of Montana, Wyoming and Idaho residents when compared with those of tourists or residents of other states. Residents of Montana, Idaho and Wyoming indicated they worry more about encountering slow vehicles, like snow plows or farm equipment, and animals, such as deer or farm animals, on the roadway than did tourists or residents of other states. This could be due to the fact that tourists and residents of other states are not aware of the dangers animals pose to vehicles on the roadway. They may also not be aware of the fact that farm equipment travels on the roadway or have experience with the dangers associated with snowplows. Tourists and residents of other states indicated they were more concerned with getting lost and not getting enough information from signs along the roadway. By comparison, residents of Montana, Idaho and Wyoming are generally familiar with the area they are traveling through and the direction in which they are going. Thus, their information needs tend to be oriented towards the road and weather conditions they will experience along their route.

Tourists and residents of other states indicated the following pre-trip information was more important to them than did residents of Montana, Idaho and Wyoming: tourist attractions, the best route to a destination, and traveler service locations. Presence of parking, location and direction to parks and scenic routes, and trip planning assistance from rest stops or other places along the route was also more important to tourists and residents of other states. This was expected in that unfamiliar travelers are typically in need of greater quantity and diversity of information and are more apt to be concerned with pre-trip planning information than residents of the area.

Residents of Montana, Idaho and Wyoming indicated a greater use of radio stations, the yellow pages and road conditions hotlines to obtain planning information. Tourists and residents of other states indicated a greater use of travel magazines or travel sections in newspapers and State Departments of Tourism. Residents of an area are usually interested in up-to-date information when planning a trip, particularly with regard to weather conditions, road closures, and so forth. Tourists are generally planning well in

advance of their departure and are often unaware of changing conditions that may affect their trip. Thus, residents tend to use sources of information that can be quickly accessed and updated. Residents of Montana, Idaho and Wyoming indicated they were more likely to use a phone number to obtain current information on weather, construction zones, routes and road conditions than were tourists or residents of other states. However, tourists indicated they were more likely to use small computerized information centers at convenient locations to obtain the same information. Again, it appeared that residents were comfortable with obtaining information through a familiar source, probably before leaving their homes. Tourists may feel it would be more convenient to use on-site information centers since their access to telephones could be limited while traveling. Residents of Montana, Idaho and Wyoming indicated they were more likely to use dial-a-ride services than did tourists or residents of other states. Tourists usually would have a personal mode of transportation available to them, which would preclude them from relying on dial-a-ride transit services. However, the demand for dial-a-ride services, as well as all other modes of public transit, was extremely low.

When comparing the results of the Rural Traveler Needs Survey to those obtained by JHK & Associates and CastleRock Consultants several similarities and differences were apparent. In the study completed by JHK & Associates, the authors noted that the residence of the traveler had no influence on response. In other words, rural and urban responses were virtually identical. This study indicated that residence (i.e., local vs. tourist), as well as the area in which one lives (i.e., urban vs. rural), had an impact on the way in which an individual responded to various questions. These differences have been presented in the body of this report. It is important to note that this survey was not administered in a truly urban area. However, over half the respondents indicated they lived in an urban environment.

The importance of a Mayday system was identified in both surveys, as was the need for both automatic and manual activation of such a device. The JHK study noted that accurate trip routing information was identified as the most important factor during pre-trip planning. The Rural Traveler Needs Survey also indicated the best route to a destination was the most important piece of pre-trip planning information. En-route assistance during a problem was noted as important in the JHK study. Trip planning assistance from rest stops or other places along the route were identified as important in this survey. The two questions posed were not identically worded, but were similar in context and, thus, illustrated the importance of en-route assistance for travelers. Driver advisory information was also indicated as important in the JHK study. This was consistent with the results of this survey, which noted the importance of road condition and weather information, animal hazards and routing. In general, the need for travelers to obtain up-to-date information on a variety of topics was evident from both surveys.

Comparing the results from the Rural Traveler Needs Survey to those of rural Minnesota and CastleRock Consultants also revealed apparent similarities and in responses. The most important pre-trip information indicated in the CastleRock study was information regarding road conditions due to weather. Road condition information due to weather was selected as the second most important piece of pre-trip information in

this survey. Both studies indicated the most important safety concern was road conditions, such as ice and snow. The overwhelming majority of CastleRock respondents indicated they prefer to get information before starting a trip. A relatively small percentage of respondents in this study indicated they preferred to get information before starting a trip, while well over half indicated they preferred to get information both before and during a trip. CastleRock respondents indicated they would most likely use a special radio channel to obtain traveler information; the least likely information source was an in-vehicle TV monitor. These results were similar to those obtained in this study. Changeable message signs were indicated as the most likely used source of information, followed by a special radio channel, while a small TV screen for one's car was the least likely to be used to obtain traveler information. Comparable percentages of the respondents in this study and the CastleRock survey indicated no preference between AM and FM radio for receiving traveler information. A sizeable percentage of respondents in both studies indicated they prefer to get information from a live voice.

At least two-thirds of the respondents in both surveys indicated an interest in installing emergency notification technology in their car or truck. The greatest number of CastleRock respondents wanted automatic activation, while the highest percentage of Rural Traveler Needs Survey respondents wanted both automatic and self-activation. More than three-quarters of the respondents in this study and the CastleRock study wanted notification that help was on the way.

Respondents from both surveys indicated they were not likely to use any type of public transit service. Rural Traveler Needs respondents and CastleRock respondents both indicated that improving the existing roads, highways and shoulders would make traveling rural roadways safer and easier. They also agreed that the user, the government and private industry should all share in the cost of these new services. In general, results from the two surveys appeared similar. However, one should be cautious when making comparisons given that the methods of obtaining the data were different in the two studies.

It is apparent that the rural traveler needs a great deal of information to feel comfortable when traveling rural roadways. This is illustrated in the results of the Rural Traveler Needs Survey.

References

1. JHK & Associates. "Preliminary Assessment of Rural Applications of Advanced Traveler Information Systems (ATIS) – Draft Report," Contract No. DTFH61-93-C-00048, Prepared for Federal Highway Administration, April, 1994.

2. C.J. Olson Marketing Research, Inc. "Quantitative Market Research Regarding Travel/Transportation Needs in Rural Minnesota," No. 93501, Prepared for CastleRock Consultants and Minnesota Guidestar, January, 1994.

APPENDIX A: RURAL TRAVELER NEEDS SURVEY

GREATER YELLOWSTONE RURAL ITS PRIORITY CORRIDOR TRAVELER NEEDS SURVEY

ID NUMBER_____ **DATE**_____ **LOCATION**_____

SAFETY CONCERNS

When you are traveling in rural Montana/Idaho/Wyoming, how frequently do you worry about the following safety concerns and other issues as a driver or passenger? Please use a five-point scale where 1 means you **never** worry about it and 5 means you **always** worry about it. (**Circle one number per question**)

	NEVER WORRY ABOUT IT				ALWAYS WORRY ABOUT IT
1. Where to get assistance for a vehicle break down, accident or emergency medical aid…….	**1**	**2**	**3**	**4**	**5**
2. Encountering slow moving vehicles like snow plows or farm equipment...	**1**	**2**	**3**	**4**	**5**
3. Getting lost…….……	**1**	**2**	**3**	**4**	**5**
4. Not enough law enforcement around.	**1**	**2**	**3**	**4**	**5**
5. Running off the roadway due to drowsiness/inattentiveness…….……	**1**	**2**	**3**	**4**	**5**
6. Not enough information from signs along the roadway……..	**1**	**2**	**3**	**4**	**5**
7. Animals such as deer or farm animals on roadway…….	**1**	**2**	**3**	**4**	**5**
8. Passing trucks and other heavy vehicles (clearance/visibility)……..	**1**	**2**	**3**	**4**	**5**
9. Dangerous hills/curves……...	**1**	**2**	**3**	**4**	**5**
10. Road conditions like ice and snow…	**1**	**2**	**3**	**4**	**5**
11. Driving through construction zones...	**1**	**2**	**3**	**4**	**5**
12. Traffic delays…….	**1**	**2**	**3**	**4**	**5**

PRE-TRIP INFORMATION

Using a five-point scale where 1 means **not at all important** and 5 means **very important**, please indicate what number on the scale best describes how important each of the following kinds of information are to you **before** you start a trip by motor vehicle on rural roads and highways in Montana/Idaho/Wyoming. (**Circle one number per question**)

	NOT AT ALL IMPORTANT				VERY IMPORTANT
13. Tourist attractions i.e. parks/recreation/historical…..…….	**1**	**2**	**3**	**4**	**5**
14. Length of time to destination or number of miles……..	**1**	**2**	**3**	**4**	**5**
15. The best route to destination……..	**1**	**2**	**3**	**4**	**5**
16. Traveler service locations (rest stops)	**1**	**2**	**3**	**4**	**5**
17. Distance between towns…….	**1**	**2**	**3**	**4**	**5**
18. Locations of traffic delays due to special events…….	**1**	**2**	**3**	**4**	**5**
19. Locations of accidents/incidents……	**1**	**2**	**3**	**4**	**5**
20. Construction zone locations and/or detours……	**1**	**2**	**3**	**4**	**5**
21. Adverse weather conditions……...	**1**	**2**	**3**	**4**	**5**
22. Road condition problems due to weather……...	**1**	**2**	**3**	**4**	**5**

23. Do you prefer to get information like road conditions, weather and tourism accommodations

Before you start a trip……..	**1**
While on the road……	**2**
Both…….	**3**

PLANNING A TRIP

Using the same five-point scale where 1 means **not at all important** and 5 means **very important**, please indicate how important each of the following items are to you when you are **planning** a trip by car in Montana/Idaho/Wyoming. (**Circle one number per question**)

	NOT AT ALL IMPORTANT				VERY IMPORTANT
24. On-site presence of parking and transit facilities……..	**1**	**2**	**3**	**4**	**5**
25. Location and directions to parks, scenic routes, recreational facilities and historical sites……...……...	**1**	**2**	**3**	**4**	**5**
26. Trip planning assistance from rest stops or other places along your route……...	**1**	**2**	**3**	**4**	**5**
27. Ability to make lodging and meal reservations from rest stops or other places along your route……..	**1**	**2**	**3**	**4**	**5**

When **planning** for a trip in rural Montana/Idaho/Wyoming, whether you're a driver or a passenger, how would you like to get the information you need, such as lodging, points of interest, routes to take or road conditions from the following sources?

	YES	NO
28. Call chamber of commerce of destination……...	**1**	**2**
29. From radio stations……..	**1**	**2**
30. From yellow pages...……	**1**	**2**
31. Travel agents……	**1**	**2**
32. Calling hotels/resorts directly……..	**1**	**2**
33. Travel magazines or travel sections in newspapers…….	**1**	**2**
34. Road conditions hot line……..	**1**	**2**
35. Service stations……	**1**	**2**
36. The internet……..	**1**	**2**
37. State departments of tourism……...	**1**	**2**

INFORMATION SOURCES

Using a five-point scale where 1 means **not at all likely** and 5 means **very likely**, how likely would you be to use each of the following services to obtain current information on weather, construction zones, routes and road conditions if you had it available to you? (**Circle one number per question**)

	NOT AT ALL LIKELY				VERY LIKELY
38. A phone number…….	**1**	**2**	**3**	**4**	**5**
39. A special radio channel……..	**1**	**2**	**3**	**4**	**5**
40. A small TV screen with traveler information only for your car…….	**1**	**2**	**3**	**4**	**5**
41. A cellular phone…….……	**1**	**2**	**3**	**4**	**5**
42. Changeable message signs along the highway……..	**1**	**2**	**3**	**4**	**5**
43. Small computerized information centers at convenient locations……..	**1**	**2**	**3**	**4**	**5**

44. Do you prefer that traveler information broadcast over a special radio channel be on (**Circle one**)

AM…….. **1**
FM…….. **2**
Either…….. **3**
Don't know……. **4**

45. Which of the following ways of obtaining information on road conditions and tourist information would you prefer? (**Circle one**)

A live voice giving you the information…….. **1**
A recorded message……. **2**
Message menus where you select what you want to hear by dialing specified numbers…… **3**

46. Suppose an attachment was available for your vehicle which would alert police and emergency medical services if you should have a run-off the road accident or be involved in a collision, would you be interested in having something like that installed in your car or truck? (**Circle one**)

    Yes…… **1**
    No……. **2**
    Don't know……... **3**

47. If one was in your vehicle would you want it to become activated automatically upon impact, or would you want to be able to activate it yourself? (**Circle one**)

    Automatic……. **1**
    Self…… **2**
    Both…….. **3**

48. If one was in your vehicle and was activated would you want to be notified that help is on the way, or would that matter? (**Circle one**)

    Yes, notified……. **1**
    Doesn't matter……. **2**
    Don't know…….. **3**

TRANSIT SERVICES

How likely would you be to use each of the following public transit services if made available in Montana/Idaho/Wyoming. Using a five-point scale with 1 meaning **not at all likely** and 5 meaning **very likely**, please indicate what number on the scale best describes how you feel about the following. (**Circle one number per question**)

	NOT AT ALL LIKELY				VERY LIKELY
49. Public taxi service……..	**1**	**2**	**3**	**4**	**5**
50. Dial-a-ride van service to your door..	**1**	**2**	**3**	**4**	**5**
51. Bus or van routes which are not fixed, but could be changed to meet your needs……..	**1**	**2**	**3**	**4**	**5**

52. Which one of the following would make travelling rural roadways safer and easier, in your opinion? (**Circle one**)

Improving the existing roads, highways and shoulders…….. **1**
Providing the new services mentioned in this survey…… **2**
Don't know……. **3**

53. If these new services are made available, who should pay for them? (**Circle one**)

The government…… **1**
Private industry…… **2**
The user…… **3**
Don't know…….. **4**
All…… **5**

54. How likely would you be to use and pay for a special service that would deliver travel information such as lodging, road conditions, weather and trip planning directly to you in your vehicle? (**Circle one**)

Very likely…… **1**
Somewhat likely……... **2**
Somewhat unlikely……... **3**
Not at all likely……. **4**

General Information (**Circle one number per question**)

55. Residence
Montana / Idaho / Wyoming…… **1**
Tourist / Other state……. **2**

56. Gender
Male……. **1**
Female…….. **2**

57. Age
15 – 24 Years……... **1**
25 – 44……. **2**
45 – 64……. **3**
65 – 85……. **4**

58. Live in
Urban area / city……..…… **1**
Rural area / country…….. **2**

General Information (**Circle one number per question**)

59. Mode of travel (Normal)	Auto driver……..	**1**
	Commercial truck driver……..	**2**
	Auto passenger…….	**3**
	Bus passenger……..	**4**
	Rail passenger……..	**5**
	Bicycle / walk……..	**6**
60. Miles traveled per day (Normal)	0 - 49……...	**1**
	50 - 99…….	**2**
	100 - 300……..……..	**3**
	300 +……	**4**
61. Type of road traveled (Normal)	Country roads……...	**1**
	City streets……...	**2**
	2 lane highways……...	**3**
	4 lane highways……...	**4**
	Freeways / expressways……..	**5**
62. Purpose of trips (Normal)	Work……	**1**
	School……..	**2**
	Shopping……..	**3**
	Medical……	**4**
	Recreation..……..	**5**
	General…….	**6**
63. Employment	Full – time……	**1**
	Part – time……	**2**
	Retired……..	**3**
	Homemaker……..	**4**
	Student…….	**5**
64. Education	High school……..	**1**
	Some college……	**2**
	College degree…….	**3**
	Graduate degree……...	**4**
	Technical training……	**5**
65. Income	Under $20,000…….	**1**
	20,000 – 39,000……...	**2**
	40,000 – 79,000……...	**3**
	80,000 +……...	**4**
66. Current Driver license	Yes……...	**1**
	No……	**2**

APPENDIX B: FREQUENCIES AND PERCENTAGES BY QUESTION

Greater Yellowstone Rural ITS Priority Corridor Rural Traveler Needs Survey - July 1997

Number of Responses 481

response	count	percent
1	Get Assistance	
1.00	52.00	0.11
2.00	113.00	0.23
3.00	172.00	0.36
4.00	77.00	0.16
5.00	54.00	0.11
0.00	13.00	0.03
2	Slow Vehicles	
1.00	102.00	0.21
2.00	150.00	0.31
3.00	128.00	0.27
4.00	70.00	0.15
5.00	20.00	0.04
0.00	11.00	0.02
3	Getting Lost	
1.00	206.00	0.43
2.00	135.00	0.28
3.00	76.00	0.16
4.00	36.00	0.07
5.00	17.00	0.04
0.00	11.00	0.02
4	Law Enforcement	
1.00	146.00	0.30
2.00	125.00	0.26
3.00	139.00	0.29
4.00	43.00	0.09
5.00	19.00	0.04
0.00	9.00	0.02
5	Drowsiness	
1.00	133.00	0.28
2.00	126.00	0.26
3.00	122.00	0.25
4.00	59.00	0.12
5.00	31.00	0.06
0.00	10.00	0.02
6	Inadequate Signs	
1.00	103.00	0.21
2.00	121.00	0.25
3.00	124.00	0.26
4.00	90.00	0.19
5.00	34.00	0.07
0.00	9.00	0.02
7	Animals	
1.00	66.00	0.14
2.00	115.00	0.24
3.00	115.00	0.24
4.00	105.00	0.22
5.00	73.00	0.15
0.00	7.00	0.01

```
8            Trucks
 1.00         54.00          0.11
 2.00         93.00          0.19
 3.00        155.00          0.32
 4.00        121.00          0.25
 5.00         50.00          0.10
 0.00          8.00          0.02
9            Hills/Curves
 1.00         67.00          0.14
 2.00        120.00          0.25
 3.00        139.00          0.29
 4.00         99.00          0.21
 5.00         45.00          0.09
 0.00         11.00          0.02
10           Ice/Snow
 1.00         60.00          0.12
 2.00         83.00          0.17
 3.00        116.00          0.24
 4.00        126.00          0.26
 5.00         81.00          0.17
 0.00         15.00          0.03
11           Construction Zones
 1.00         64.00          0.13
 2.00        115.00          0.24
 3.00        143.00          0.30
 4.00        110.00          0.23
 5.00         42.00          0.09
 0.00          7.00          0.01
12           Traffic Delays
 1.00         93.00          0.19
 2.00        116.00          0.24
 3.00        139.00          0.29
 4.00         85.00          0.18
 5.00         39.00          0.08
 0.00          9.00          0.02
13           Tourist Attractions
 1.00         24.00          0.05
 2.00         34.00          0.07
 3.00        100.00          0.21
 4.00        141.00          0.29
 5.00        173.00          0.36
 0.00          9.00          0.02
14           Length of  Trip
 1.00         40.00          0.08
 2.00         44.00          0.09
 3.00        104.00          0.22
 4.00        157.00          0.33
 5.00        127.00          0.26
 0.00          9.00          0.02
15           Best Route
 1.00         28.00          0.06
 2.00         27.00          0.06
 3.00         75.00          0.16
 4.00        168.00          0.35
 5.00        175.00          0.36
 0.00          8.00          0.02
```

16	Traveler Service		
1.00	19.00	0.04	
2.00	54.00	0.11	
3.00	115.00	0.24	
4.00	133.00	0.28	
5.00	151.00	0.31	
0.00	9.00	0.02	
17	Distance		
1.00	51.00	0.11	
2.00	85.00	0.18	
3.00	129.00	0.27	
4.00	129.00	0.27	
5.00	77.00	0.16	
0.00	10.00	0.02	
18	Special Events		
1.00	66.00	0.14	
2.00	77.00	0.16	
3.00	127.00	0.26	
4.00	128.00	0.27	
5.00	76.00	0.16	
0.00	7.00	0.01	
19	Accident Locations		
1.00	52.00	0.11	
2.00	80.00	0.17	
3.00	160.00	0.33	
4.00	104.00	0.22	
5.00	74.00	0.15	
0.00	11.00	0.02	
20	Construction Areas		
1.00	20.00	0.04	
2.00	67.00	0.14	
3.00	132.00	0.27	
4.00	144.00	0.30	
5.00	109.00	0.23	
0.00	9.00	0.02	
21	Weather		
1.00	13.00	0.03	
2.00	50.00	0.10	
3.00	97.00	0.20	
4.00	137.00	0.28	
5.00	176.00	0.37	
0.00	8.00	0.02	
22	Road Condition		
1.00	13.00	0.03	
2.00	46.00	0.10	
3.00	88.00	0.18	
4.00	153.00	0.32	
5.00	174.00	0.36	
0.00	7.00	0.01	
23	Get Information		
1.00	84.00	0.17	
2.00	44.00	0.09	
3.00	330.00	0.69	
0.00	23.00	0.05	

```
24            Parking & Transit
  1.00         55.00          0.11
  2.00        102.00          0.21
  3.00        143.00          0.30
  4.00         97.00          0.20
  5.00         71.00          0.15
  0.00         13.00          0.03
 25            Parks Etc
  1.00         10.00          0.02
  2.00         40.00          0.08
  3.00         83.00          0.17
  4.00        167.00          0.35
  5.00        176.00          0.37
  0.00          5.00          0.01
 26            Planning Assistance
  1.00         33.00          0.07
  2.00         70.00          0.15
  3.00        137.00          0.28
  4.00        128.00          0.27
  5.00        109.00          0.23
  0.00          4.00          0.01
 27            Lodging Reservations
  1.00         89.00          0.19
  2.00         82.00          0.17
  3.00        119.00          0.25
  4.00        101.00          0.21
  5.00         85.00          0.18
  0.00          5.00          0.01
 28            Chamber of Commerce
  1.00        237.00          0.49
  2.00        231.00          0.48
  0.00         13.00          0.03
 29            Radio Stations
  1.00        235.00          0.49
  2.00        234.00          0.49
  0.00         12.00          0.02
 30            Yellow Pages
  1.00        199.00          0.41
  2.00        267.00          0.56
  0.00         15.00          0.03
 31            Travel Agents
  1.00        236.00          0.49
  2.00        232.00          0.48
  0.00         13.00          0.03
 32            Call Hotels
  1.00        363.00          0.75
  2.00        108.00          0.22
  0.00         10.00          0.02
 33            Magazines/Newspapers
  1.00        344.00          0.72
  2.00        125.00          0.26
  0.00         12.00          0.02
 34            Road Hot Line
  1.00        276.00          0.57
  2.00        194.00          0.40
  0.00         11.00          0.02
```

```
35           Service Stations
 1.00       286.00          0.59
 2.00       183.00          0.38
 0.00        12.00          0.02
36           Internet
 1.00       242.00          0.50
 2.00       224.00          0.47
 0.00        15.00          0.03
37           State Tourism
 1.00       328.00          0.68
 2.00       146.00          0.30
 0.00         7.00          0.01
38           Phone Number
 1.00        46.00          0.10
 2.00        47.00          0.10
 3.00       105.00          0.22
 4.00       100.00          0.21
 5.00       172.00          0.36
 0.00        11.00          0.02
39           Radio Channel
 1.00        43.00          0.09
 2.00        54.00          0.11
 3.00        87.00          0.18
 4.00       122.00          0.25
 5.00       165.00          0.34
 0.00        10.00          0.02
40           TV in Car
 1.00       240.00          0.50
 2.00        76.00          0.16
 3.00        65.00          0.14
 4.00        39.00          0.08
 5.00        48.00          0.10
 0.00        13.00          0.03
41           Cellular Phone
 1.00       156.00          0.32
 2.00        55.00          0.11
 3.00        75.00          0.16
 4.00        64.00          0.13
 5.00       119.00          0.25
 0.00        12.00          0.02
42           Message Signs
 1.00        14.00          0.03
 2.00        20.00          0.04
 3.00        79.00          0.16
 4.00       141.00          0.29
 5.00       221.00          0.46
 0.00         6.00          0.01
43           Computer Info Centers
 1.00        81.00          0.17
 2.00        48.00          0.10
 3.00       112.00          0.23
 4.00       104.00          0.22
 5.00       129.00          0.27
 0.00         7.00          0.01
```

```
44            Info by Radio
 1.00          60.00          0.12
 2.00         157.00          0.33
 3.00         231.00          0.48
 4.00          27.00          0.06
 0.00           6.00          0.01
45            Obtaining Info
 1.00         237.00          0.49
 2.00          50.00          0.10
 3.00         167.00          0.35
 0.00          27.00          0.06
46            EMS Caller
 1.00         324.00          0.67
 2.00          73.00          0.15
 3.00          79.00          0.16
 0.00           5.00          0.01
47            Activated
 1.00         174.00          0.36
 2.00          87.00          0.18
 3.00         200.00          0.42
 0.00          20.00          0.04
48            Notified
 1.00         393.00          0.82
 2.00          44.00          0.09
 3.00          29.00          0.06
 0.00          15.00          0.03
49            Taxi
 1.00         289.00          0.60
 2.00          85.00          0.18
 3.00          61.00          0.13
 4.00          17.00          0.04
 5.00          15.00          0.03
 0.00          14.00          0.03
50            Dial-a-ride
 1.00         244.00          0.51
 2.00          88.00          0.18
 3.00          80.00          0.17
 4.00          30.00          0.06
 5.00          24.00          0.05
 0.00          15.00          0.03
51            Bus
 1.00         179.00          0.37
 2.00          79.00          0.16
 3.00         118.00          0.25
 4.00          55.00          0.11
 5.00          37.00          0.08
 0.00          13.00          0.03
52            Safer Roads
 1.00         302.00          0.63
 2.00         108.00          0.22
 3.00          52.00          0.11
 0.00          19.00          0.04
```

53	Who pays	
1.00	87.00	0.18
2.00	17.00	0.04
3.00	119.00	0.25
4.00	50.00	0.10
5.00	178.00	0.37
0.00	30.00	0.06
54	Would use	
1.00	99.00	0.21
2.00	206.00	0.43
3.00	76.00	0.16
4.00	87.00	0.18
0.00	13.00	0.03
55	Residence	
1.00	142.00	0.30
2.00	331.00	0.69
0.00	8.00	0.02
56	Gender	
1.00	266.00	0.55
2.00	204.00	0.42
0.00	11.00	0.02
57	Age	
1.00	49.00	0.10
2.00	167.00	0.35
3.00	187.00	0.39
4.00	70.00	0.15
0.00	8.00	0.02
58	Live in	
1.00	271.00	0.56
2.00	200.00	0.42
0.00	10.00	0.02
59	Travel mode	
1.00	381.00	0.79
2.00	8.00	0.02
3.00	62.00	0.13
4.00	3.00	0.01
5.00	1.00	0.00
6.00	4.00	0.01
0.00	22.00	0.05
60	Miles/day	
1.00	172.00	0.36
2.00	71.00	0.15
3.00	108.00	0.22
4.00	118.00	0.25
0.00	12.00	0.02
61	Type of Road	
1.00	56.00	0.12
2.00	74.00	0.15
3.00	126.00	0.26
4.00	60.00	0.12
5.00	86.00	0.18
0.00	79.00	0.16

```
62            Purpose of Trips
  1.00        122.00          0.25
  2.00          6.00          0.01
  3.00         14.00          0.03
  4.00          2.00          0.00
  5.00        198.00          0.41
  6.00         90.00          0.19
  0.00         49.00          0.10
 63            Employment
  1.00        267.00          0.56
  2.00         36.00          0.07
  3.00        129.00          0.27
  4.00         16.00          0.03
  5.00         20.00          0.04
  0.00         13.00          0.03
 64            Education
  1.00         93.00          0.19
  2.00        125.00          0.26
  3.00        140.00          0.29
  4.00         88.00          0.18
  5.00         15.00          0.03
  0.00         20.00          0.04
 65            Income
  1.00         76.00          0.16
  2.00        152.00          0.32
  3.00        162.00          0.34
  4.00         55.00          0.11
  0.00         36.00          0.07
 66            License
  1.00        465.00          0.97
  2.00          6.00          0.01
  0.00         10.00          0.02
 67            Road Prof/Gen Public
   1.00         0.00          0.00
   2.00       481.00          1.00
   0.00         0.00          0.00
```