PERCEPTIONS OF HIGHWAY MAINTENANCE IN MONTANA IN 2004: THE RESULTS OF A TELEPHONE SURVEY

FINAL REPORT

Prepared for the
STATE OF MONTANA
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FEDERAL HIGHWAY ADMINISTRATION

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EXECUTIVE SUMMARY

Trained interviewers at the Computer Assisted Telephone Interviewing Laboratory at Montana State University, Billings completed 1,000 interviews with randomly selected adult residents of Montana between September October 16th and November 4th, 2004 for the purposes of obtaining the perceptions the respondents held about the maintenance of interstate and state highways in Montana and comparing those perceptions to perceptions held by the respondents to a 2002 survey on the same topic.

For the purposes of the survey, highway maintenance was divided into eight categories: winter maintenance, maintaining a smooth highway surface, maintenance of roadsides, maintenance of signs, debris removal, rest area maintenance, striping maintenance, and winter road conditions reports.

When respondents were asked to rate the current state of each of these activities on a 1 to 4 scale where 1 = poor, 2 = fair, 3 =good and 4 = excellent, signage was rated highest with a mean of 3.12, winter roadway information was rated second at 3.03, rest area maintenance was third at 2.93, highway striping was fourth with a mean of 2.90, roadside maintenance fifth at 2.88, debris removal was sixth at 2.82,winter maintenance was seventh at 2.81, and smoothness of road surfaces last at 2.60. The ratings of three of the eight maintenance activities showed a statistically significant increase from 2002 to 2004. The rating for rest area maintenance increased significantly from 2.79 in 2002 to 2.93 in 2004; the rating for roadside maintenance increased significantly from 2.80 in 2002 to 2.88 in 2004; and the rating for debris removal increased significantly from 2.75 in 2002 to 2.82 in 2004.

When respondents were asked how important each of these activities were to them on a scale of 1 to 4 where 1 = not important, 2 = somewhat important, 3 = important, and 4 = very important, winter maintenance was rated most important with a mean importance rating of 3.74, followed by striping (3.61), winter roadway information (3.54), debris removal (3.50), surface smoothness (3.40), signage (3.37), rest area maintenance (3.21), and roadside maintenance (299). There were no statistically significant changes in the importance ratings assigned the eight maintenance activities between 2002 and 2004.

When respondents were asked to think about the allocation of MDT resources and assign a resource priority of low (1), medium (2), moderately high (3), or very high (4) to each activity, winter maintenance received the highest resource priority rating (3.68) followed by winter roadway information (3.51), striping (3.44), debris removal (3.29), surface smoothness (3.15), signage (3.14), rest area maintenance (3.12), and roadside maintenance (2.80). The increases from 2002 to 2004 in the priorities assigned to winter roadway information (3.44 to 3.51), rest area maintenance (3.04 to 3.12) and roadside maintenance (2.70 to 2.80) were statistically significant.

Finally, these ratings were combined into a composite variable for each of the maintenance activities. The composite variable provides an indication of the level of attention and resources the respondents believed each maintenance activity should receive from MDT. The values of the composite variables as well as the rating of the components of each variable are summarized in the following table.

COMPOSITE VARIABLE MEAN BY RANK OF RATING, IMPORTANCE, AND PRIORITY

	Composite Mean	Rating Rank	Importance Rank	Priority Rank
Winter Maint	9.45	7	1	1
Striping	9.11	4	2	3
Debris Removal	8.94	6	4	4
Smoothness	8.90	8	5	5
Signage	8.36	1	6	6
Winter Road Info	8.34	2	3	2
Rest Area Maint.	7.84	3	7	7
Roadside Maint.	7.81	5	8	8

According to the respondents, MDT should now pay attention and provide resources to maintenance activities on interstates and state highways in Montana in the following order: winter maintenance, highway striping, debris removal, surface smoothness, highway signage, winter roadway information, rest area maintenance and roadside maintenance.

This represents a slight change from the order of composite variables resulting from the 2002 survey which was: winter maintenance, highway striping, debris removal, surface smoothness, winter roadway information, highway signage, rest area maintenance and roadside maintenance. There were no statistically significant 2002 to 2004 changes in any of the eight composite variables.

For the first time in the 2004 survey respondents were asked if they had heard of the 511 Travel Information System and 51% of the respondents said they had. These respondents were then asked if they had used the 511 system and 46.8% of these respondents, who had heard of the system, had used the 511 system. A total of 23.8% of all the respondents had used the 511 system.

The respondents to the 2004 survey were also asked if they had heard of the Transportation Awareness Program (TAP) and 10.1% of the respondents had heard of the TAP program.

The 2004 respondents were also asked if they had spoken with MDT employees at a number of different types of public events. Sixty-one percent of the respondents had spoken with a MDT employee at one of the events. Driver's education classes, county fairs, and school classes were the public events at which the largest percentage of respondents had spoken with a MDT employee.

TABLE OF CONTENTS

TABLE OF TABLES

TABLE OF FIGURES

INTRODUCTION

This report summarizes the procedures and findings of a telephone survey conducted for the Montana Department of Transportation (MDT) by the Computer Assisted Telephone Interviewing Laboratory at Montana State University, Billings. This survey was a replication of nearly identical surveys conducted in October of 2002, September of 2000, October of 1998 and September of 1996. The purposes of this survey were to determine the perceptions of the maintenance of state highways and interstates in Montana held by adult Montanans and to determine if those perceptions had changed in the last 2 years. The survey was conducted from October 16th to November 4th, 2004

The results of the 1996 survey are contained in *Perceptions of Highway Maintenance in Montana: The Results of a Telephone Survey*, the results of the 1998 study are contained in *Perceptions of Highway Maintenance in Montana in 1998: The Results of a Telephone Survey, Final Report*, the results of the 2000 study are contained in *Perceptions of Highway Maintenance in Montana in 2000: The Results of a Telephone Survey, Final Report* and the results of the 2002 survey are contain in *Perceptions of Highway Maintenance in Montana in 2002: The Results of a Telephone Survey, Final Report.*

METHODOLOGY

The survey was conducted by trained interviewers from the Computer Assisted Telephone Interviewing Laboratory (CATI Lab) at Montana State University, Billings. A random digit dialing sample was purchased from Genesys Sampling Systems (Ft. Washington, PA.) Telephone numbers were called back up to five times in an attempt to complete interviews. A total of 1000 interviews were completed requiring 7,030 telephone calls to 3,918 telephone numbers. Table One summarizes the disposition of all telephone calls and shows the most frequent disposition of telephone calls was an answering machine (21.9%) followed by no answer (21.3%) and then a completed interview (14.2%). Only 9.5% of telephone calls resulted in a refusal to participate in the survey.

Upon completion of all interviewing, the data was analyzed with the computer program Statistical Package for the Social Sciences (SPSS).

The results of the survey have a margin of error of about $\pm$ 3% when generalized to the entire state. The MDT has divided the state in five administrative districts, and the margins of error within these districts vary from $\pm$ 6% in the Missoula District to $\pm$ 10% in the Glendive District (see Appendix One for map of districts).

TABLE ONE
DISPOSITION OF ALL TELEPHONE CALLS

Answering Machine	1,538	21.9%
No Answer	1,496	21.3%
Complete	1,000	14.2%
Call Back	775	11.0%
Refused	671	9.5%
Non Working Number	607	8.6%
Busy	419	6.0%
Fax or Computer	260	3.7%
Non Residential Number	231	3.3%
Wrong Category	14	0.2%
Hearing Problem	9	0.1%
Incompetent Respondent	7	0.1%
Language Problem	3	0.1%
TOTAL	7,030	100.0%

FINDINGS

Who Are the Respondents

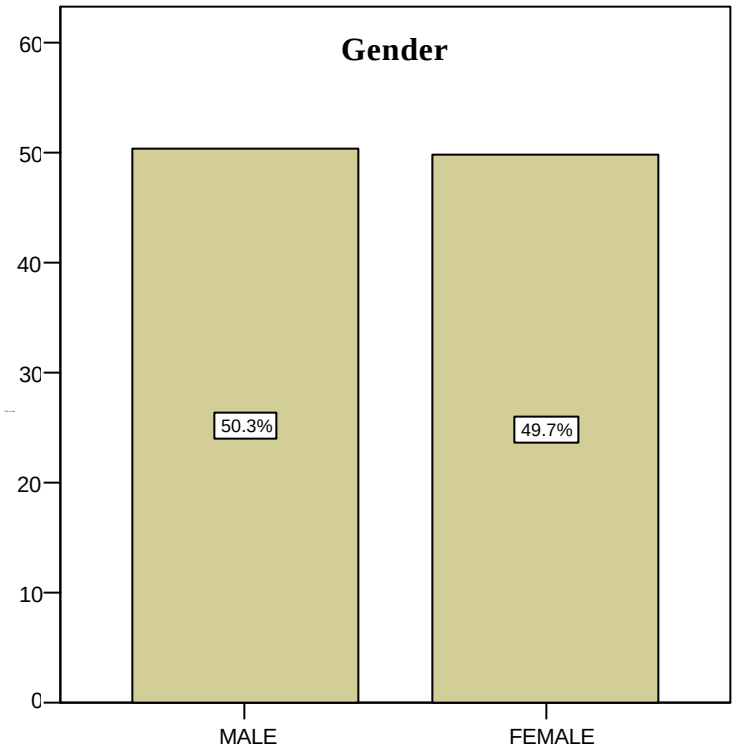
Demographic Characteristics

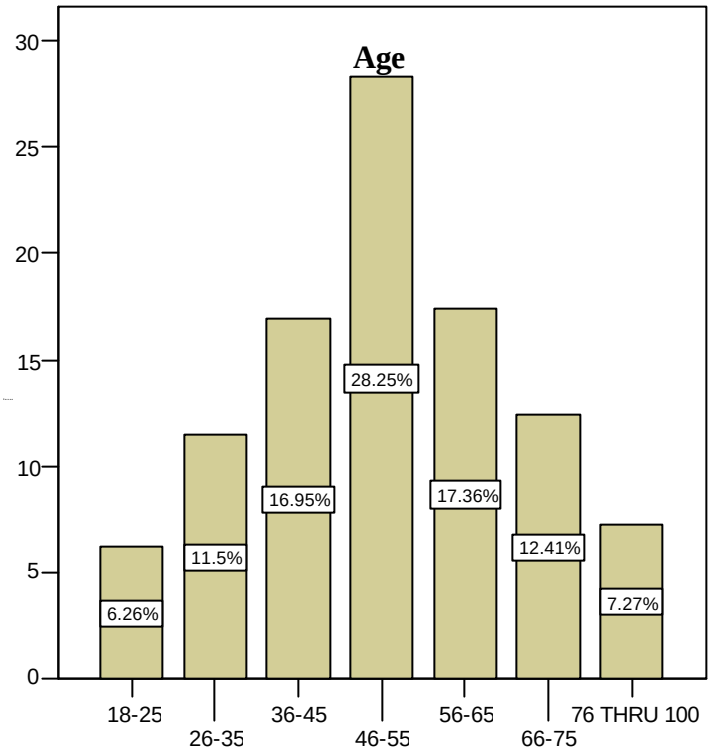
Figure One summarizes the basic characteristics of the 1,000 respondents. Figure One shows that about half the respondents were male and about half were female. The mean age of the respondents was 51.2; 17.8% of the respondents were thirty five years old or less, 37.1% were 56 or over and the remainder of 45.3% were between 36 and 55.

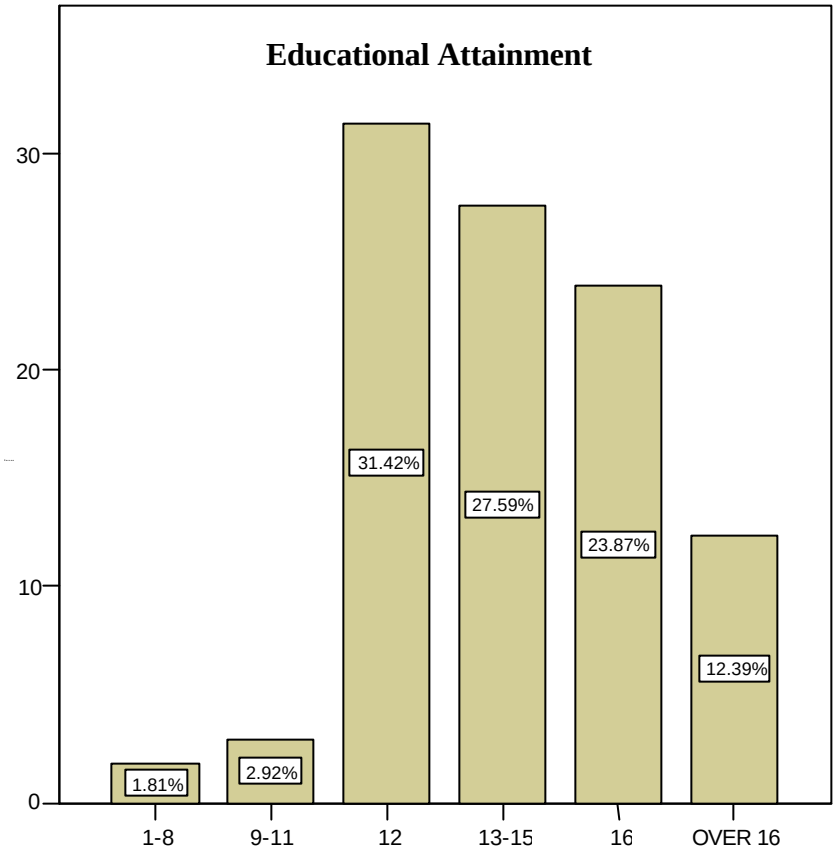
The mean educational attainment of the respondents was 14.1 years of education; 4.7% had not completed high school while 31.4% had completed just high school, 27.6% had completed some college and 36.3% had at least a college degree.

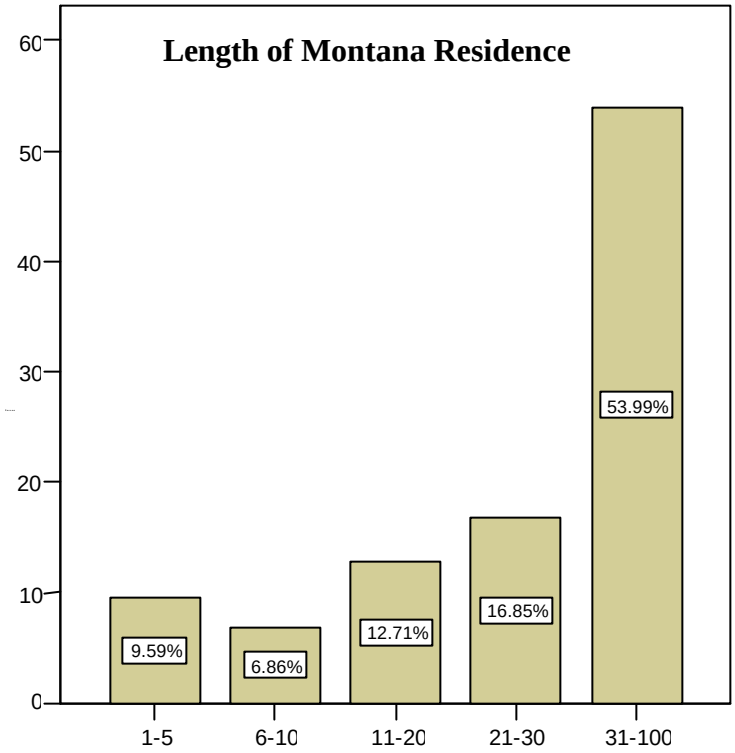
The mean length of time respondents had been in Montana was 35.3 years; 54% of the respondents reported they had lived in Montana over 30 years while 9.6% indicated they had been in Montana for 5 or less years.

FIGURE ONE
DEMOGRAPHIC CHARACTERISTICS OF THE RESPONDENTS









There were no statistically significant differences between the 2002 respondents and the 2004 respondents with respect to sex, age or length of residence in Montana.

However, the difference in educational attainment between the 2002 (13.8) and 2004 (14.1) respondents was statistically significant.

County and Administrative District of Residence

Table Two summarizes the respondents' county of residence, which was obtained by converting telephone prefixes. Table Two shows that 54 of Montana's 56 counties were represented by respondents. Thirteen percent of the respondents lived in Yellowstone County, 10.2% lived in Missoula County, 9.9% lived in Flathead County, 9.2% lived in Gallatin County, 6.5% lived in Lewis and Clark County, and 6.2% lived in Cascade County. Discrepancies between the percentages of the sample that reside in each county as compared with the percentage of the population of Montana in that county can be explained by a number of factors such as: differences in percentages of households with telephones, self selection biases that differ by county, and changes in actual population figures since the last measurement of such figures.

TABLE TWO
LOCATION OF RESPONDENTS' RESIDENCES

County of Location		
Beaverhead	11	1.1%
Big Horn	11	1.1%
Blaine	7	0.7%
Broadwater	3	0.3%
Carbon	9	0.9%
Carter	4	0.4%
Cascade	62	6.2%
Chouteau	8	0.8%
Custer	8	0.8%
Daniels	3	0.3%
Dawson	15	1.5%
Deer Lodge	8	0.8%
Fallon	3	0.3%
Fergus	11	1.1%
Flathead	99	9.1%
Gallatin	92	9.2%
Garfield	2	0.2%
Glacier	10	1.0%
Golden Valley	2	0.2%
Granite	3	0.3%
Hill	19	1.9%
Jefferson	13	1.3%
Judith Basin	5	0.5%
Lake	25	2.5%

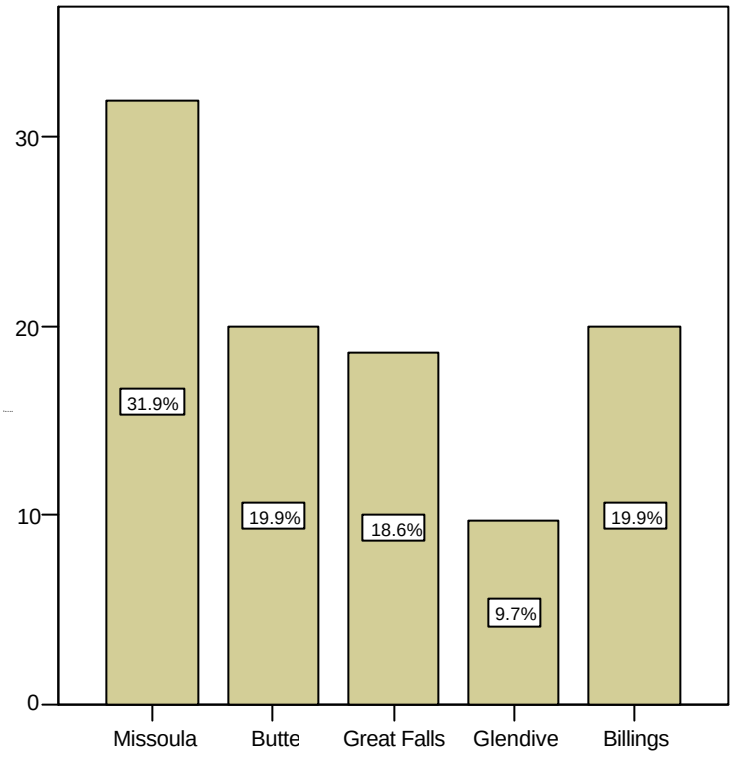
(Table Two Continued)

Lewis and Clark	65	6.5%
Liberty	2	0.2%
Lincoln	28	2.8%
McCone	5	0.5%
Madison	12	1.2%
Meagher	2	0.2%
Mineral	4	0.4%
Missoula	102	10.2%
Musselshell	6	0.6%
Park	24	2.4%
Phillips	6	0.6%
Pondera	7	0.7%
Powder River	3	0.3%
Powell	5	0.5%
Prairie	5	0.5%
Ravalli	42	4.2%
Richland	3	0.3%
Roosevelt	12	1.2 %
Rosebud	14	1.4%
Sanders	11	1.1%
Sheridan	9	0.9%
Silver Bow	34	3.4%
Stillwater	12	1.2%
Sweetgrass	7	0.7%
Teton	2	0.2%
Toole	4	0.4%
Treasure	3	0.3%
Valley	5	0.5%
Wheatland	4	0.4%
Yellowstone	129	12.9%
TOTAL	1000	100.0%

Figure Two shows that 31.9% of the respondents lived in District 1, Missoula; 19.9% lived in 2, Butte; 18.6% in District 3, Great Falls; 9.7% in District 4, Glendive; and 19.9% in District 5, Billings. A map showing the MDT Administrative Districts is included in this report as Appendix One.

This survey was conducted by county line, as close to the Administrative Districts as possible. However, some counties are split between administrative districts, please refer to Appendix One.

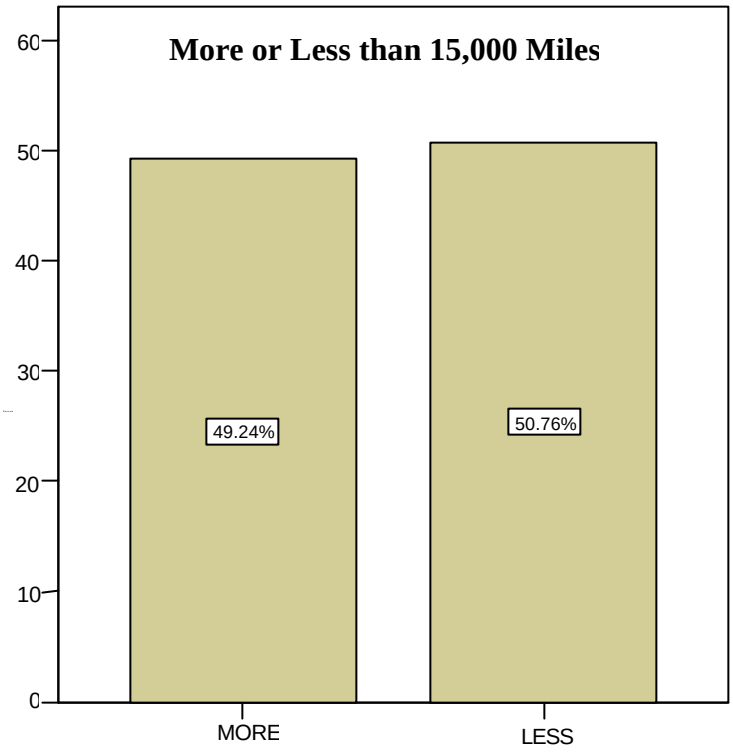
FIGURE TWO
ADMINISTRATIVE DISTRICT

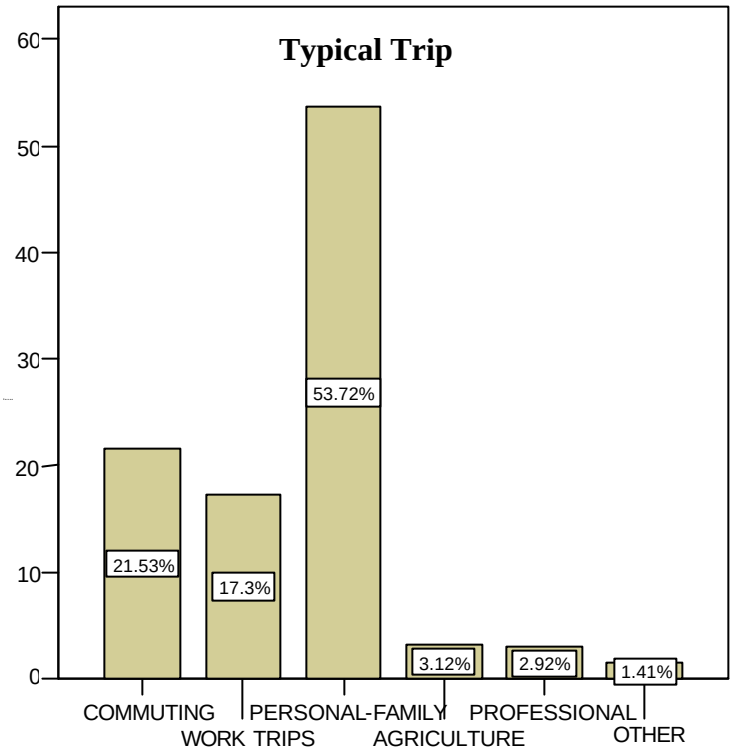


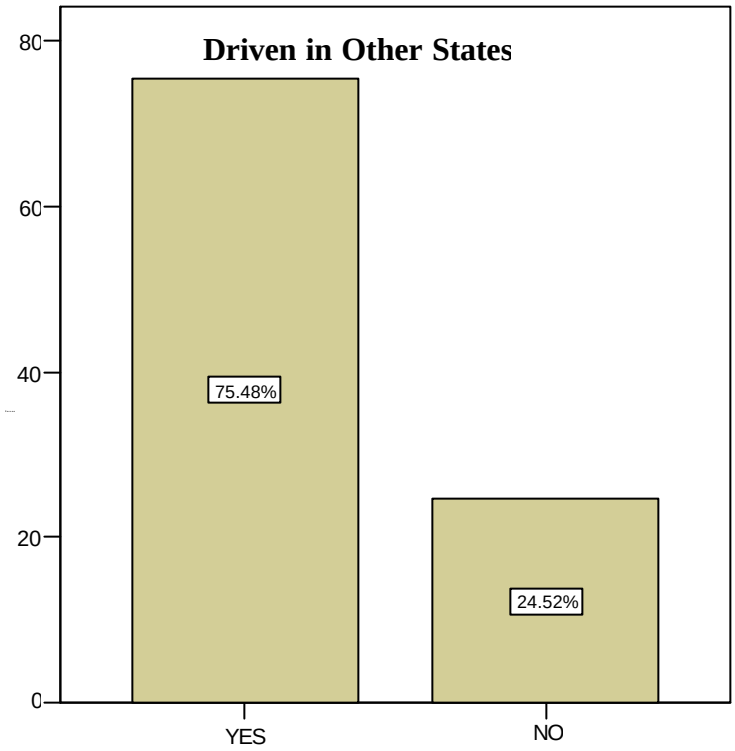
Travel Characteristics

The respondents were asked several questions about their vehicle travel patterns. Figure Three summarizes the results of these questions. Figure Three shows that 49.2% of the respondents indicated they drive more than 15,000 miles per year while 50.8% drove less than 15,000 miles. Figure Three shows the most common trips made by respondents were personal or family errands (53.7) followed by commuting (21.5%) and then work related trips (17.3%). Figure Three also shows that 75.5% of the respondents had driven in other states in the last 12 months.

FIGURE THREE
RESPONDENT TRAVEL CHARACTERISTICS





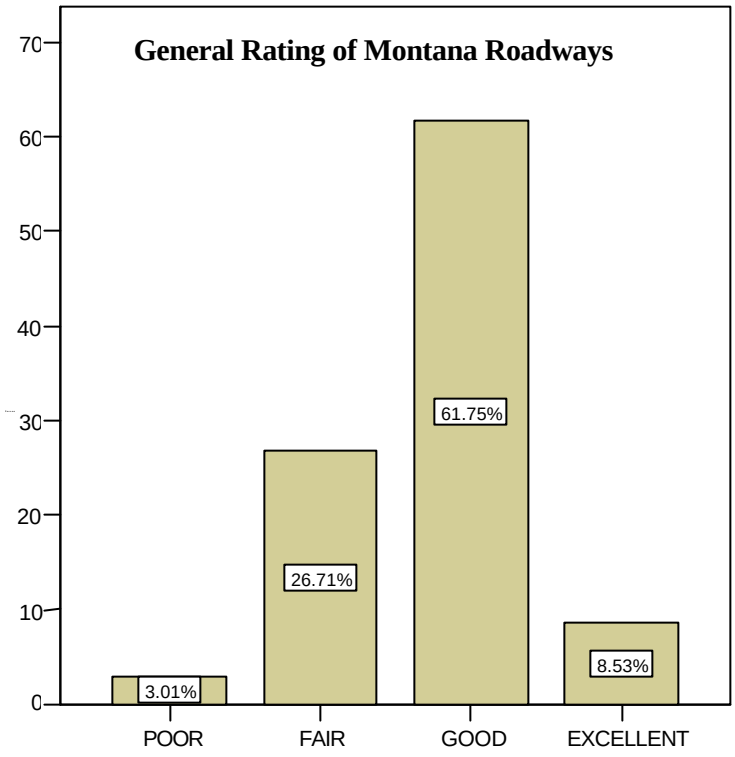


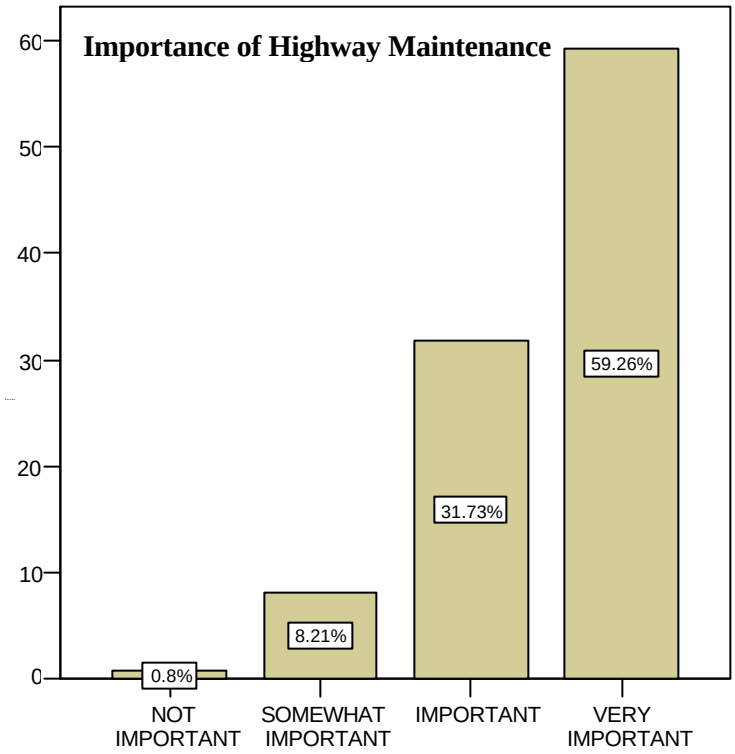
General Perception of Montana Highways and Interstates

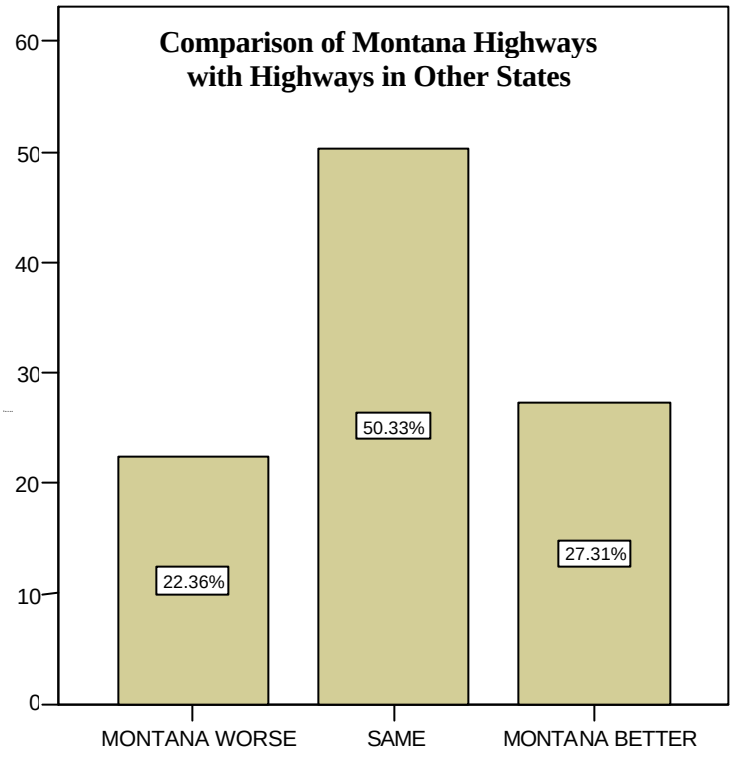
Rating of Montana Highway Maintenance

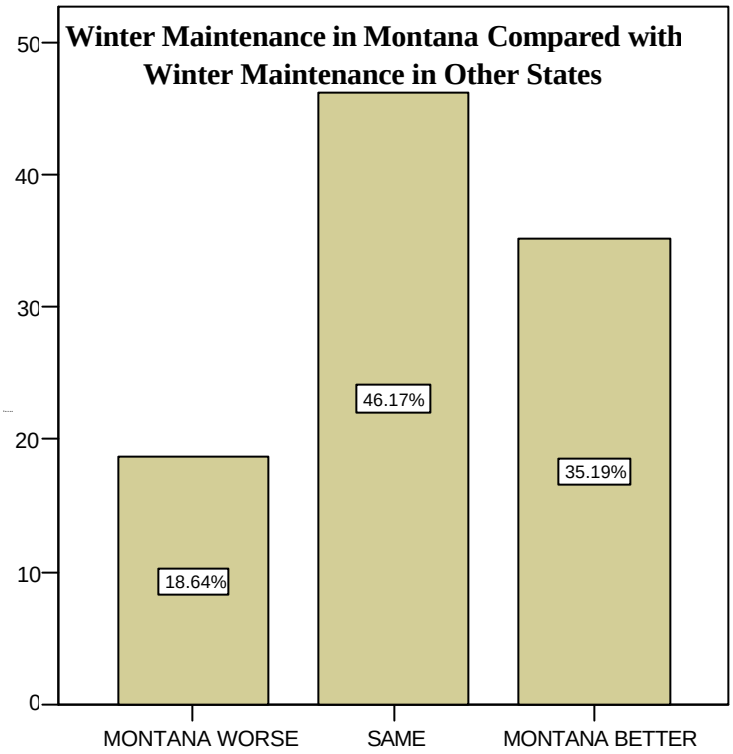
The respondents were asked to rate overall interstate and state highway maintenance in Montana using the responses poor, fair, good and excellent. Figure Four shows that 3.0% of the respondents rated overall maintenance as poor while 26.7% rated maintenance fair, 61.7% rated maintenance good and 8.5% rated maintenance excellent. The mean overall rating of maintenance on a 1 to 4 scale where 1 is poor, 2 is fair, 3 is good and 4 is excellent was 2.76.

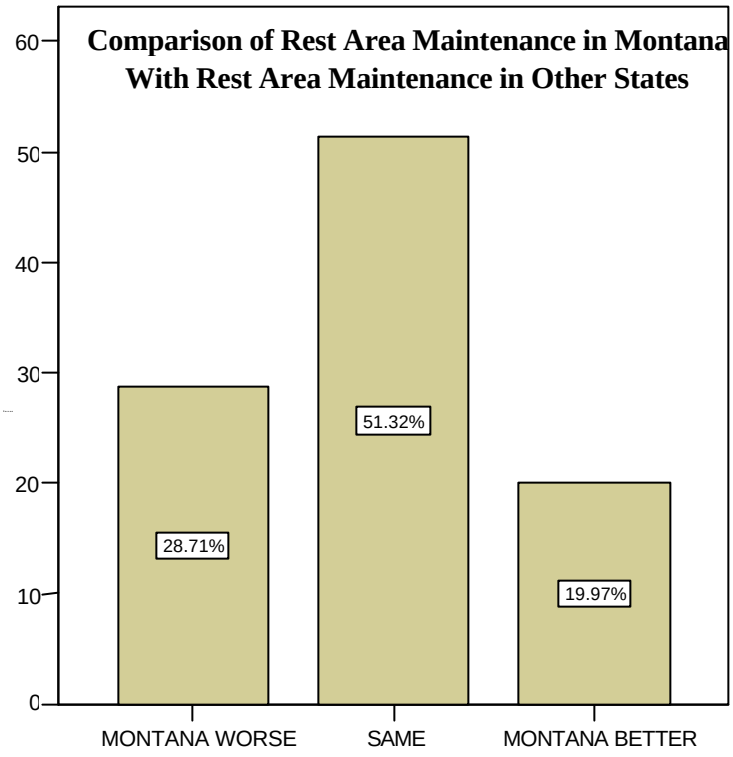
FIGURE FOUR
GENERAL PERCEPTIONS OF MONTANA ROADWAYS






Comparison of Montana Highways with Highways in Other States
60
50
40
30
20
10
0
22.36%
50.33%
27.31%
MONTANA WORSE
SAME
MONTANA BETTER


Winter Maintenance in Montana Compared with Winter Maintenance in Other States
50
40
30
20
10
0
18.64%
46.17%
35.19%
MONTANA WORSE
SAME
MONTANA BETTER



Statistically Significant Relationships Between General Rating of Montana Highway Maintenance and Administrative District

To further investigate the perceptions of the respondents, all rating questions were cross tabulated with Administrative District, sex, age, educational attainment, length of Montana residence, the respondent's typical trip, whether the respondent had driven more or less than 15,000 miles, and whether or not the respondent had driven in other states within the last 12 months. A statistically significant relationship was deemed to exist when the probability of getting the observed outcome by chance was less than 5%. Only statistically significant relationships are reported in this report.

?? Respondents living in the Butte district provided a higher general rating of highway maintenance than did respondents living in other Administrative Districts while those living in the Missoula district provided a lower general rating of highway maintenance than did respondents living in other districts.

Statistically Significant Relationships Between General Rating of Montana Highway Maintenance and Demographic/Travel Variables

Statistically significant relationships were also found between the respondents' general rating of highway maintenance and age, educational attainment, and typical trip.

?? Respondents between 56 and 65 rated general highway maintenance higher than did younger or older respondents while respondents between 26 and 35 rated general highway maintenance lower than did younger or older respondents.

?? Respondents with post graduate education rated general highway maintenance higher than did respondents with a lower level of educational attainment while respondents

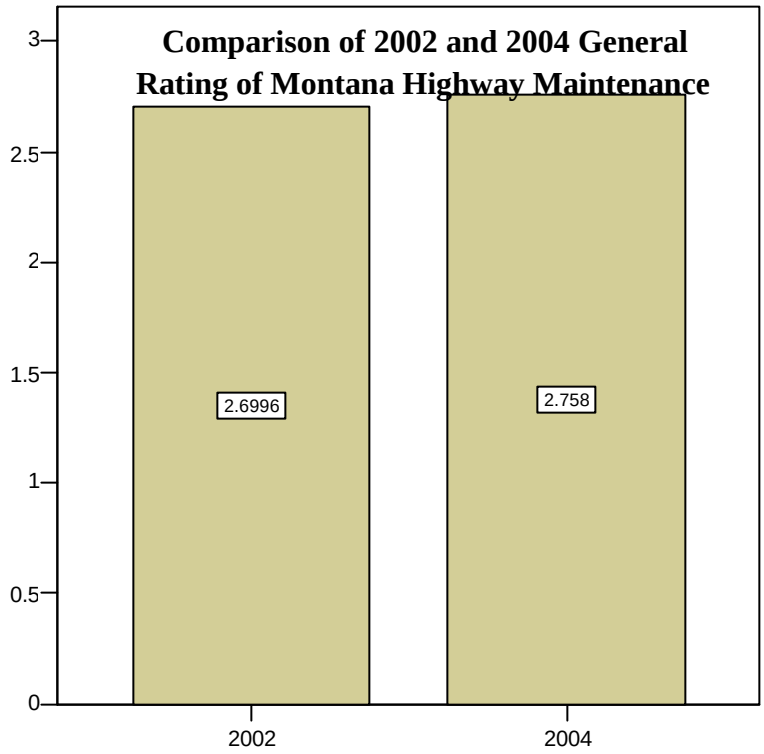
with some high school rated general highway maintenance lower than did respondents with more or less education.

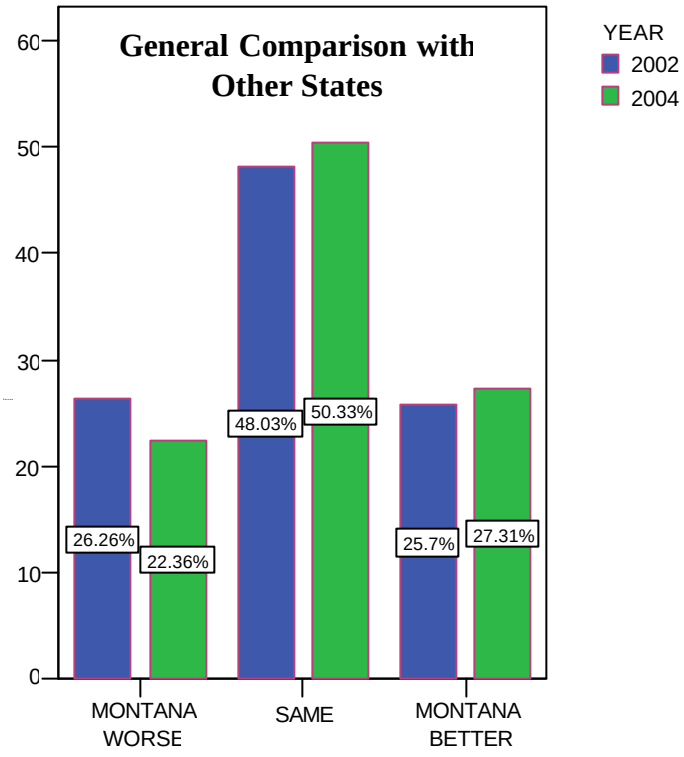
?? Respondents whose typical trip was agricultural or "other" rated general highway maintenance higher than did respondents whose typical trip was commuting, work related, personal or family related, or professional. Respondents whose typical trip was commuting rated general highway maintenance lower than did respondents listing some other type of typical trip.

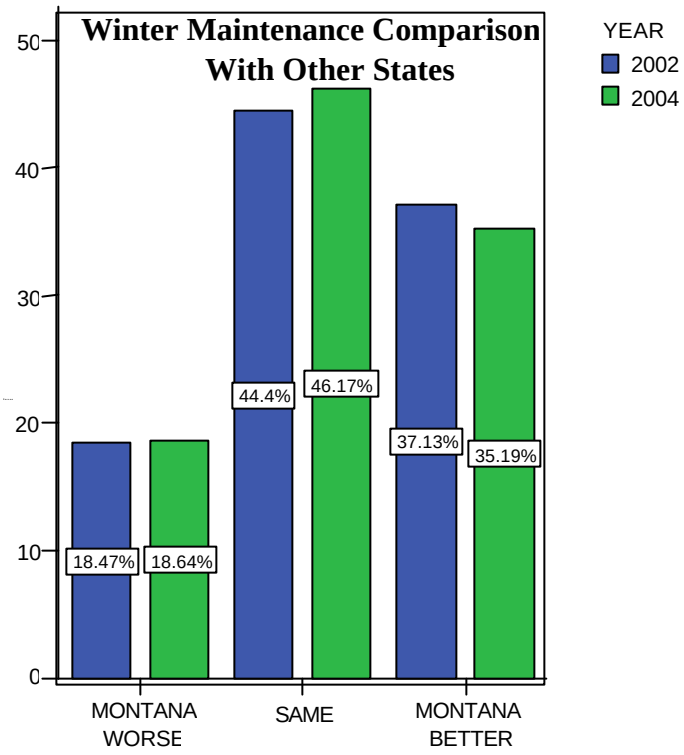
Comparison of 2002 and 2004 General Rating of Montana Highway Maintenance

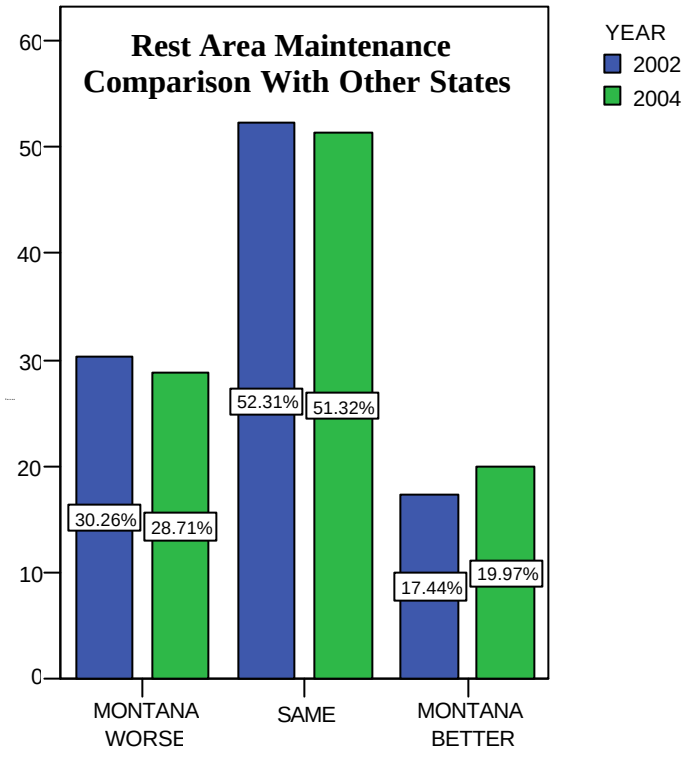
Figure Five provides a comparison of the 2002 and 2004 General Rating of Montana Highway Maintenance. Figure Five shows an increase in the general rating from 2.70 in 2002 to 2.76 in 2004. This difference in rating was statistically significant.

FIGURE FIVE
GENERAL RATING OF HIGHWAY MAINTENANCE IN MONTANA




General Comparison with Other States
YEAR
2002
2004
60
50
40
30
20
10
0
26.26%
22.36%
48.03%
50.33%
25.7%
27.31%
MONTANA WORSE
SAME
MONTANA BETTER


Winter Maintenance Comparison With Other States
YEAR
2002
2004
50
40
30
20
10
0
18.47%
18.64%
44.4%
46.17%
37.13%
35.19%
MONTANA WORSE
SAME
MONTANA BETTER



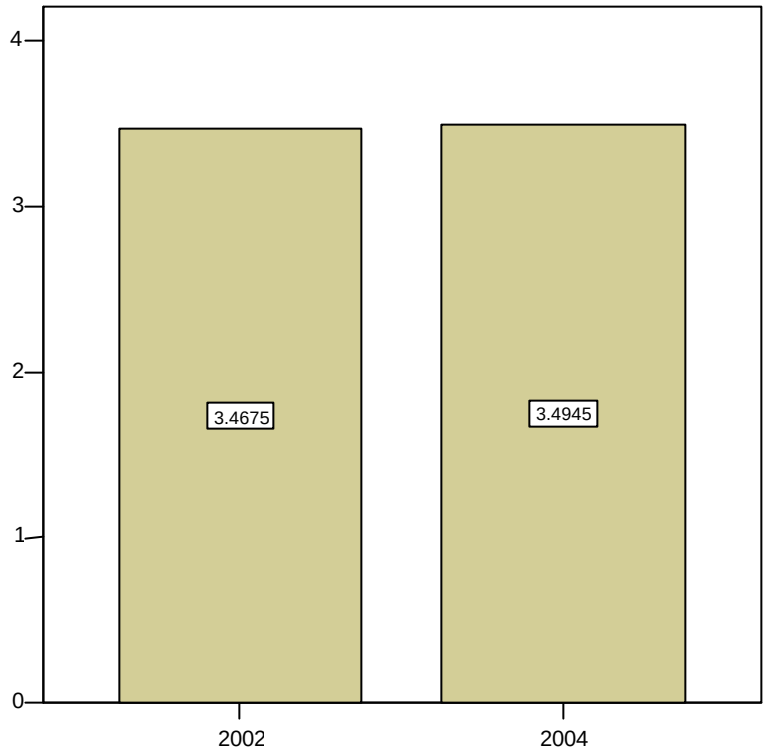
Respondents' Opinion of the Personal Importance of Highway Maintenance

The respondents were also asked generally how important highway maintenance was to them and asked to answer with not important, somewhat important, important or very important. Figure Four shows that 59.3% of the respondents said very important, 31.7% said important, 8.2% said somewhat important, and 0.8% said not important

Statistically Significant Relationships Between Importance of Highway Maintenance and Demographic/Travel Variables

?? Females rated the importance of highway maintenance higher than did males.
?? Respondents between 46 and 65 rated the importance of highway maintenance higher than did younger and older respondents while respondents between 18 and 25 and those over 75 rated the importance of highway maintenance lower than did those from 26 to 75.
?? Respondents who reported they were professional drivers and respondents who said their typical trip was work related rated the importance of highway maintenance higher than did respondents who said their typical trip was commuting, family or personal, or agricultural.
?? Respondents who reported they drove more than 15,000 miles per year rated the importance of highway maintenance higher than did respondents driving less than 15,000.
?? Respondents who reported they had driven in other states in the last 12 months rated the importance of highway maintenance higher than did respondents who had not driven in other states.

FIGURE SIX
COMPARISON OF 2002 AND 2004 IMPORTANCE
OF MONTANA HIGHWAY MAINTENANCE



Comparison of 2002 and 2004 Importance of Montana Highway Maintenance Rating

Figure Six provides a comparison of the 2002 and 2004 Importance of Montana Highway Maintenance rating. Figure Six shows a slight increase in the rating of the importance of Montana highway maintenance from 3.47 in 2002 to 3.49 in 2004. This slight increase in rating was not statistically significant.

General Comparison of Montana Highways with Highways in Other States

The respondents who had driven in other states in the last 12 months were asked to compare the general condition of Montana highways and interstates to those in the states they had driven. Figure Four shows that 50.3% of these respondents said the highways and interstates of Montana were about the same as those in the other states in which they had driven, 22.4% felt the roads in Montana were worse and 27.3% felt the roads in Montana were better.

Statistically Significant Relationships Between Comparison of Montana Highway Maintenance with Highway Maintenance in Other States and Administrative District

?? Respondents in the Glendive districts were more likely than respondents in other Administrative Districts to believe general highway maintenance was worse in Montana than in other states. Respondents in the Butte district were more likely

than respondents in other districts to believe Montana highway maintenance was better than in other states.

Statistically Significant Relationships Between Comparison of Montana Highway Maintenance with Highway Maintenance in Other States and Demographic/Travel Variables

?? Respondents who had lived in Montana over 20 years were more likely than those who lived in Montana for 20 years or less to think Montana highway maintenance was generally worse than other states while respondents who had lived in Montana for 10 years or less were more likely than those who had lived here more to believe highway maintenance in Montana was better than in other states.

Comparison of 2002 and 2004 Assessment of Montana Highway Maintenance Versus Highway Maintenance in Other States

?? Figure Five shows the way 2002 respondents and 2004 respondents who had driven in other states compared highway maintenance in Montana with highway maintenance in other states. There was no statistically significant difference in the 2002 and 2004 ratings.

Comparison of Montana Winter Maintenance with Winter Maintenance in Other States

The respondents who had driven in other states in the last 12 months were also asked to compare winter maintenance in Montana to winter maintenance in other states. Figure Four shows 46.2% of these respondents, who had an opinion, believed winter maintenance was about the same in Montana as in other states while 35.2% believed winter maintenance was better in Montana and 18.6% believed winter maintenance was worse in Montana.

Statistically Significant Relationships Between Comparison of Montana Highway Winter Maintenance with Highway Winter Maintenance in Other States and Administrative District

?? Residents of the Glendive district were more likely than residents in other districts to believe winter maintenance was worse in Montana than in other states while respondents living in the Butte district and the Missoula district were more likely than respondents in other districts to believe that winter maintenance in Montana was better than in other states.

Statistically Significant Relationships Between Comparison of Winter Maintenance and Demographic/Travel Variables

?? Respondents who had lived in Montana for 10 years or less were more likely than those who had lived here longer to believe winter maintenance was better in Montana than in other states.

?? Females were more likely than males to believe that winter maintenance in Montana was worse than in other states.

Comparison of 2002 and 2004 Assessment of Montana Highway Winter Maintenance Versus Winter Maintenance in Other States

?? Figure Five shows the way 2002 respondents and 2004 respondents who had driven in other states compared winter maintenance in Montana with winter maintenance in other states. There was no statistically significant difference in the 2002 and 2004 ratings.

Comparison of Montana Rest Area Maintenance and Rest Area Maintenance in Other States

The respondents who had driven in other states within the last 12 months were also asked to compare rest area maintenance in Montana with rest area maintenance in the other states in which they had driven. Figure Four shows that 51.3% of respondents who had an opinion felt rest area maintenance was about the same in Montana as in other states, while 28.7% said rest area maintenance was worse in Montana and 20% said it was better in Montana.

Statistically Significant Relationships Between Rest Area Maintenance Comparison and Demographic/Travel Variables

?? Respondents who had lived in Montana over 10 years and especially those who had lived in Montana over 30 years were more likely than those who lived in Montana 10 years or less to think rest area maintenance was worse in Montana than in other states. Respondents who had lived in Montana 5 or less years were more likely than those who had lived here longer to believe rest area maintenance was better in Montana than in other states. Respondents who had lived in Montana for between 6 and 10 years were more likely than respondents who had lived here less or more to believe rest area maintenance in Montana was about the same as rest area maintenance in other states.

?? Females were more likely than males to believe that rest area maintenance in Montana was worse than rest area maintenance in other states while males were more likely than females to believe rest area maintenance in Montana was about the same as rest area maintenance in other states.

Comparison of 2002 and 2004 Assessment of Montana Rest Area Maintenance Versus Rest Area Maintenance in Other States

?? Figure Five shows the way 2002 respondents and 2004 respondents who had driven in other states compared rest area maintenance in Montana with rest area maintenance in other states. There was no statistically significant difference in the 2002 and 2004 ratings.

Respondents Rating of Eight Maintenance Activities

For the purposes of this survey, highway maintenance activities were divided into 8 categories: winter maintenance, maintaining a smooth highway surface, maintenance of roadsides, maintenance of signs, debris removal, rest area maintenance, striping maintenance, and winter road condition reports. The respondents were asked to rate each of these activities with the responses poor, fair, good, very good and excellent. Table Three summarizes the results of that rating. The ordering of the activities in Table Three is provided by the mean score for each item on a 1 to 4 scale where 1 = poor, 2 = fair, 3 = good, and 4 = excellent.

Also reported in Table Three are the standard deviation (SD) of the distribution of rating for each activity and the standard error of the mean (SE) for the ratings of each activity. While it is not possible to indicate what constitutes a statistically significant difference between means because each mean represents a separate variable, the standard deviation and standard error of the ratings should assist in making any additional interpretations. The largest standard of error is 0.028 resulting in a 95% confidence interval of $\pm$ .055. This means that if the difference between two means is greater than 0.11, each mean is outside of the 95% confidence interval of the other. Therefore a difference between means greater than 0.11 should be considered a real difference.

Table Three shows that the maintenance of highway signs is rated highest (3.12) followed by winter road information (3.03), rest area maintenance (2.93), striping (2.90), roadside maintenance (2.88), debris removal (2.82), winter maintenance (2.81), and highway surface maintenance (2.55). These ratings show that the maintenance of signs is rated highest followed by winter road information. Then rest area maintenance, striping and roadside maintenance are rated fairly close together. Next, debris removal and winter maintenance are rated nearly identically. Surface smoothness is rated lowest of the eight maintenance activities.

TABLE THREE
RATING OF MAINTENANCE ACTIVITIES

Activity	Poor	Fair	Good	Excellent	N	Mean	SD	SE
Signage	1.3%	10.8%	62.7%	25.2%	997	3.12	0.632	0.020
Information	4.0%	15.2%	54.4%	26.5%	824	3.03	0.759	0.026
Rest Area Maint.	6.3%	16.9%	54.7%	22.2%	812	2.93	0.798	0.028
Striping	5.6%	17.2%	58.5%	18.6%	993	2.90	0.758	0.024
Roadsides	5.5%	17.3%	60.6%	16.5%	980	2.88	0.739	0.024
Debris Removal	7.0%	22.9%	51.2%	18.9%	993	2.82	0.817	0.026
Winter Maint.	7.5%	22.7%	51.5%	18.2%	959	2.81	0.820	0.026
Surfaces	8.2%	30.5%	54.3%	7.0%	995	2.60	0.739	0.023

Statistically Significant Relationships Between Rating of Maintenance Activities and Administrative District

?? Respondents living in the Butte District rated winter maintenance higher than did respondents living in other districts while respondents living in the Glendive and

Billings Districts rated winter maintenance lower than did respondents living on other districts.

?? Respondents in the Glendive District rated striping higher than did respondents from other districts while respondents from the Missoula District rated striping lower than did respondents from other districts.
?? Respondents living in the Glendive District rated maintenance of highway roadsides lower than did respondents living in other districts while respondents in the Butte District rated roadside higher than did respondents from other Districts.
?? Respondents living in the Billings District rated debris removal lower than did respondents living in other districts while respondents living in the Great Falls District rated debris removal higher than did respondents from other Districts.
?? Respondents in the Glendive District rated smoothness of highway surfaces significantly lower than did respondents living in other districts while respondents living in the Butte District rated surface smoothness higher than did respondents from other Districts.

Statistically Significant Relationships Between Rating of Signage and Demographic/Travel Variables

?? Respondents from 18 to 25 rated signage lower than did older respondents.
?? Respondents who reported their typical trip was commuting rated signage lower than did respondents reporting typical trips which were not commuting.

Statistically Significant Relationships Between Rating of Winter Roadway Information and Demographic/Travel Variables

?? No statistically significant relationships were found between the rating of winter roadway information and demographic/travel variables.

Statistically Significant Relationships Between Rating of Rest Area Maintenance and Demographic/Travel Variables

?? Males rated rest area maintenance higher than did females
?? Respondents who had lived in Montana five years or less rated rest area maintenance higher than did respondents who had lived here longer while respondents who lived in Montana for over 30 years rated rest area maintenance lower than did respondents who had lived here for 30 years or less.

Statistically Significant Relationships Between Rating of Highway Striping and Demographic/Travel Variables

?? The older the respondent the higher the respondent rated striping.

Statistically Significant Relationships Between Rating of Roadside Maintenance and Demographic/Travel Variables

?? Males rated roadside maintenance higher than did females.

?? Respondents with an 8th grade or less education and those with post graduate education rated roadside maintenance higher than did respondents with a level of education between 9th grade and a college degree.
?? Respondents living in Montana for more than 20 years rated roadside maintenance lower than did respondents living in Montana for 20 years or less.

Statistically Significant Relationships Between Rating of Debris Removal and Demographic/Travel Variables

?? Respondents between 18 and 25 and those between 36 and 45 rated debris removal lower than did younger or older respondents while respondents over 65 rated debris removal higher than did younger respondents.

Statistically Significant Relationships Between Rating of Winter Maintenance and Demographic/Travel Variables

?? Males rated winter maintenance higher than did females.
?? Respondents 35 and younger rated winter maintenance lower than did older respondents while respondents over 75 rated winter maintenance higher than did younger respondents.
?? Respondents with postgraduate education rated winter maintenance higher than did respondents with a lower level of education.
?? Respondents who indicated their typical trip was commuting rated winter maintenance lower than did respondents who reported a different type of typical trip.

Statistically Significant Relationships Between Rating of Surface Smoothness and Demographic/Travel Variables

?? Males rated surface smoothness higher than did females
?? Generally, the older the respondent the higher they rated surface smoothness. The lowest rating for surface smoothness can from respondents between 26 and 35.
?? The higher the respondent's level of education, the higher they rated surface smoothness.
?? Respondents whose typical trip was agriculturally related or commuting rated surface smoothness lower than did respondents reporting their typical trip was work related, personal or professional.
?? Respondents who drove more than 15,000 miles per rated surface smoothness lower than did respondents who drove less than 15,000.

Comparison of 2002 and 2004 Ratings of the Eight Maintenance Activities

FIGURE 7
COMPARISON OF 2000 AND 2002 RATINGS OF MAINTENANCE ACTIVITIES

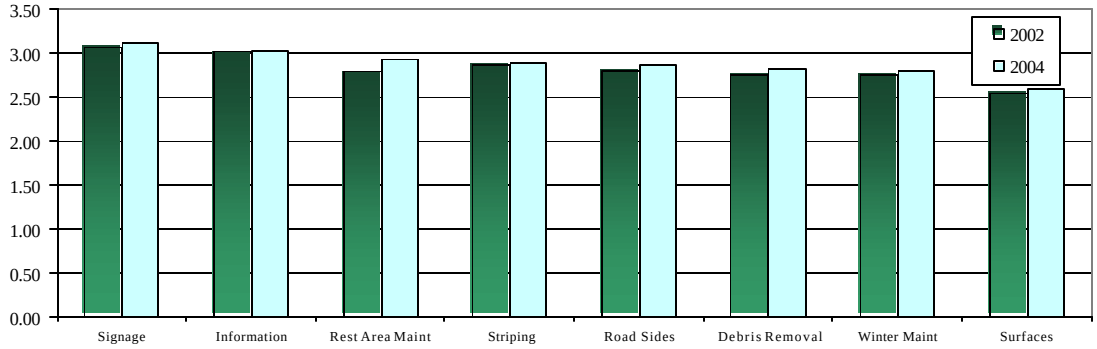


Figure Seven provides a comparison of 2002 and 2004 ratings of the eight maintenance activities. The ratings of three of the eight maintenance activities showed a statistically significant increase from 2002 to 2004. The rating for rest area maintenance increased significantly from 2.79 in 2002 to 2.93 in 2004, the rating for roadside maintenance increased significantly from 2.80 in 2002 to 2.88 in 2004 and the rating of debris removal increased significantly from 2.75 in 2002 to 2.82 in 2004.

None of the ratings of these eight maintenance activities decreased from 2002 to 2004.

Importance of Highway Maintenance Activities to the Respondents

The respondents were asked how important each of the eight maintenance activities was to them. They were asked to respond with not important, somewhat important, important and very important. Table Four summarizes the respondents' perception of the importance of these different activities. The ordering of activities in Table Four is provided by the mean score of each activity on a 1 to 4 scale where 1 = not important, 2 = somewhat important, 3 = important and 4 = very important.

Table Four shows that winter maintenance is the most important maintenance activity to respondents with a mean of 3.74 followed by striping (3.61), winter roadway information (3.54), debris removal (3.50), surfaces (3.40), signage (3.37), rest area maintenance (3.21) and roadside maintenance (2.99). The standard deviation and standard error of the mean are presented for the importance ratings of each activity. The largest standard error is 0.029 with a resulting 95% confidence interval of $\pm$ 0.057 meaning that any difference between means greater than .11 can be considered a real difference. With this figure in mind, winter maintenance is clearly the most important to respondents followed by striping, then winter roadway information and debris removal, surface smoothness and signage, and then rest area maintenance. Roadside maintenance is clearly the least important of the eight maintenance activities to the respondents.

TABLE FOUR
IMPORTANCE OF MAINTENANCE ACTIVITIES

Activity	Not Important	Smwhat Import.	Import.	Very Import.	N	Mean	SD	SE
Winter Maint.	1.1%	3.2%	16.6%	79.0%	988	3.74	0.571	0.018
Striping	0.8%	4.7%	27.0%	67.5%	997	3.61	0.617	0.020
Information	2.7%	6.5%	25.4%	65.4%	904	3.54	0.734	0.024
Debris Removal	0.8%	8.3%	31.1%	59.8%	999	3.50	0.682	0.022
Surfaces	1.7%	9.1%	36.7%	52.5%	997	3.40	0.725	0.023
Signage	2.2%	11.5%	33.8%	52.5%	999	3.37	0.771	0.024
Rest Area Maint.	3.7%	15.5%	36.9%	44.0%	898	3.21	0.835	0.028
Roadsides	7.1%	21.3%	36.8%	34.8%	989	2.99	0.919	0.029

Statistically Significant Relationships Between Importance of Maintenance Activities and Administrative District

?? Respondents in the Glendive District rated the importance of highway roadside maintenance higher than did respondents living on other districts.

Statistically Significant Relationships Between Importance of Winter Maintenance and Demographic/Travel Variables

?? Winter maintenance was more important to females than to males
?? Winter maintenance was more important to respondents between 36 and 45 and between 55 and 65 than it was to respondents of other ages. Winter maintenance was less important to respondents between 18 and 25 than it was to older respondents.
?? Winter maintenance was more important to respondents who drove more than 15,000 per year than it was to those who did not drive that far.

Statistically Significant Relationships Between Importance of Highway Striping and Demographic/Travel Variables

?? Striping was more important to females than to males.
?? Generally, the older the respondent the more important was striping with respondents between 66 and 75 regarded striping as more important than any other age group.
?? Respondents who had lived in Montana for more than 30 years regarded striping as more important than did respondents who had lived in Montana for 30 years or less.

Statistically Significant Relationships Between Importance of Winter Roadway Information and Demographic/Travel Variables

?? Winter roadway information was more important to females than to males.
?? Winter roadway information was more important to respondents who indicated their typical trip was as a professional driver than it was to respondents indicating their typical trip was different from professional driving. Winter roadway information was the least important to respondents listing their typical trip as commuting.

?? Winter roadway information was more important to respondents who drove more than 15,000 miles per year than it was to respondents who drove less than 15,000 miles.

Statistically Significant Relationships Between Importance of Debris Removal and Demographic/Travel Variables

?? Respondents between 66 and 75 regarded debris removal as more important than did younger or older respondents while those between 26 and 35 regarded debris removal as less important than did older or younger respondents.
?? Debris removal was more important to respondents who had been in Montana for over 20 years than it was to respondents who had been in Montana for 20 or less years.

Statistically Significant Relationships Between Importance of Surface Smoothness and Demographic/Travel Variables

?? Surface smoothness was more important to respondents between 66 and 75 than it was to younger or older respondents. Surface smoothness was less important to respondents between 18 and 25 than it was to older respondents.
?? Smooth highway surfaces were more important to respondents who were professional drivers than it was to respondents who said their most frequent trip was commuting, work related, personal or agriculturally related.

Statistically Significant Relationships Between Importance of Highway Signage and Demographic/Travel Variables

?? Highway signage was more important to female respondents than it was to male respondents.
?? Highway signage was more important to respondents over 66 than it was to younger respondents. Highway signage was less important to respondents between 26 and 35 than it was to older or younger respondents.

Statistically Significant Relationships Between Importance of Rest Area Maintenance and Demographic/Travel Variables

?? Rest area maintenance was more important to females than to males.
?? Rest area maintenance was more important to respondents between 66 and 75 than it was to younger or older respondents and was less important to respondents between 26 and 35 than it was to younger or older respondents.
?? Rest area maintenance was more important to respondents who were professional drivers than it was to respondents reporting a different typical trip. Rest area maintenance was less important to respondents indicating commuting as their typical trip than it was to respondents reporting a different typical trip.

Statistically Significant Relationships Between Importance of Roadside Maintenance and Demographic/Travel Variables

?? Roadside maintenance was more important to respondents who had not driven in other states that it was to those who had.
?? Generally, the older the respondent, the more important was roadside maintenance.
?? Roadside maintenance was more important to respondents who had been in Montana for over 30 years than it was for respondents who had been in Montana for less than time.
?? Roadside maintenance was more important to respondents who had not driven in other states in the last year than it was to respondents who had driven in other states.

Comparison of 2002 and 2004 Importance Rating for Eight Maintenance Activities

FIGURE 8
COMPARISON OF 2002 AND 2004 PERCEPTIONS OF IMPORTANCE OF MAINTENANCE ACTIVITIES

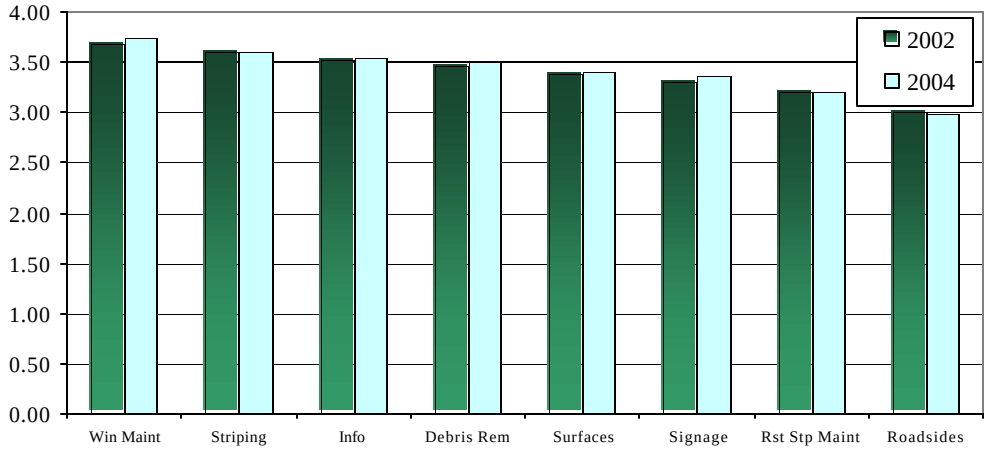


Figure Eight provides a comparison of the 2002 and 2004 importance ratings for the eight maintenance activities. There were no statistically significant changes in the importance ratings of the eight maintenance activities between 2002 and 2004.

Respondents' Perception of the Resource Priority Which Should Be Attached to Each Maintenance Activity

The respondents were asked to think about the allocation of Department of Transportation resources and assign a resource priority of low, medium, moderately high, or very high to each of the maintenance activities. Table Five summarizes the results of the respondents' assignment of resource priorities. The ordering of activities in Table Five is provided by the mean resource priority score for each item on a scale where 1 = low, 2 = medium, 3 = moderately high and 4 = high. As Table Five shows, respondents awarded the highest resource priority to winter maintenance (3.68). Information about winter road conditions (3.51) and highway striping (3.44) were next in terms of resource

priorities. Debris removal (3.29) had the next highest priority rating. Smoothness of roadway surface (3.15), signage (3.14) and rest area maintenance (3.12) were next in terms of priorities for resource allocation. Clearly in last place in terms of the allocation of resources was roadside maintenance (2.80). The standard deviation and standard error of the mean are presented for each activity's resource priority mean. The largest standard error is 0.026 producing a 95% confidence interval of ± 0.051. Therefore a difference between means greater than 0.10 is a real difference. With this figure in mind, the highest resource priority goes to winter maintenance followed by a tie between winter roadway information and striping, then debris removal, then a tie between surface smoothness, signage and rest area maintenance, and finally roadsides.

TABLE FIVE
RESOURCE PRIORITIES

Activity	Low	Medium	Moderately High	Very High	N	Mean	SD	SE
Winter Maint.	0.2%	3.4%	24.9%	71.4%	991	3.68	0.548	0.017
Information	1.2%	7.1%	31.4%	60.2%	971	3.51	0.683	0.022
Striping	1.2%	7.5%	37.7%	53.6%	997	3.44	0.685	0.022
Debris Removal	1.8%	12.0%	41.2%	45.0%	996	3.29	0.746	0.024
Surface	1.8%	14.0%	51.6%	32.6%	993	3.15	0.719	0.023
Signage	3.0%	16.6%	43.5%	36.9%	994	3.14	0.796	0.025
Rest Area Maint.	2.6%	17.8%	44.7%	34.9%	956	3.12	0.786	0.025
Roadsides	6.2%	28.3%	45.2%	20.3%	994	2.80	0.833	0.026

Statistically Significant Relationships Between Resource Priorities Assigned to Maintenance Activities and Administrative District

?? Respondents living in the Missoula District assigned a higher priority to striping than did respondents living in the other districts. Respondents in the Billings and Butte Districts assigned a lower priority to striping than did respondents from other districts.
?? Respondents in the Glendive District assigned a higher priority to roadside maintenance than did respondents from other districts. Respondents from the Butte District assigned a lower priority to roadside maintenance than did respondents from other districts.

Statistically Significant Relationships Between Resource Priority Assigned to Winter Maintenance and Demographic/Travel Variables

?? Females assigned a higher priority to winter maintenance than did males.
?? Respondents between 46 and 65 assigned a higher priority to winter maintenance than did older or younger respondents. Respondents between 18 and 25 assigned a lower priority to winter maintenance than did older respondents.
?? Respondents who drove more than 15,000 miles per year assigned a higher priority to winter maintenance than did respondents who drove less than 15,000 miles.

Statistically Significant Relationships Between Resource Priority Assigned to Winter Roadway Information and Demographic/Travel Variables

?? Females assigned a higher resource priority to winter roadway information than did males.
?? Respondents with an eighth grade education or less provided a lower priority rating for winter roadway information than did respondents with a higher level of education. Interestingly, the next lowest priority rating for winter roadway information was provided by respondents with post graduate education.

Statistically Significant Relationships Between Resource Priority Assigned to Roadway Striping and Demographic/Travel Variables

?? Females assigned a higher priority to striping than did males.
?? Generally, the older a respondent the higher the priority they assigned to striping with respondents from 66 to 75 assigning the highest priority.
?? Professional drivers assigned a higher priority to striping than did respondents reporting other typical trips while commuters assigned a lower priority to striping than did respondents reporting a different typical trip.

Statistically Significant Relationships Between Resource Priority Assigned to Debris Removal and Demographic/Travel Variables

?? No statistically significant relationships were found between the resource priority assigned to debris removal and any demographic or travel variable.

Statistically Significant Relationships Between Resource Priority Assigned to Surface Smoothness and Demographic/Travel Variables

?? The older the respondent the higher the resource priority assigned to surface smoothness.
?? Respondents with an eighth grade or less level of education and those who were high school graduates assigned a higher priority to surface smoothness than did respondents with a higher or lower level of education.
?? Respondents who were professional drivers assigned a higher priority to surface smoothness than did respondents who reported a different type of typical trip.

Statistically Significant Relationships Between Resource Priority Assigned to Signage and Demographic/Travel Variables

?? Signage was assigned a higher priority by female respondents than by male respondents.
?? Generally, the older the respondent the higher a priority was assigned to signage with the lowest priority being assigned by respondents between 26 and 35.
?? Respondents with an eighth grade or less level of education and those who were high school graduates assigned a higher priority to signage than did respondents with

other levels of education. The lowest priority level was assigned by respondents with post graduate education.

?? Respondents who had driven in other states in the last 12 months assigned a higher priority to signage than did those who had not driven in other states.

?? Respondents who drove more than 15,000 miles per year assigned a higher priority level to signage than did respondents who reported driving less than 15,000 miles.

Statistically Significant Relationships Between Resource Priority Assigned to Rest Area Maintenance and Demographic/Travel Variables

?? Females assigned a higher priority to rest area maintenance than did males.

?? Generally, the older the respondent the higher a priority they assigned to rest area maintenance

?? Respondents reporting an education level of some high school assigned a higher priority to rest area maintenance than did respondents with more or less education.

?? Respondents who had driven in other states in the last 12 months assigned a higher priority to rest area maintenance than did respondent who had not driven in other states.

?? Respondents who drove more than 15,000 miles per year assigned a higher priority to rest area maintenance than did respondents who drove less than 15,000 miles.

Statistically Significant Relationships Between Resource Priority Assigned Roadside Maintenance and Demographic/Travel Variables

?? Generally, the older the respondent the higher the resource priority assigned to roadside maintenance.

?? Respondents with a college degree or post graduate education assigned a lower priority to roadside maintenance than did respondents with a lower educational level.

?? Respondents who had lived in Montana for more than 30 years assigned a higher priority to roadside maintenance than did respondents who had lived in Montana for 30 years or less.

?? Respondents who had not driven in other states in the last 12 months gave roadside maintenance a higher priority than those who had driven in other states.

Comparison of 2002 and 2004 Priorities Assigned to the Eight Maintenance Activities

FIGURE 9
COMPARISON OF 2002 AND 2004 RESOURCE PRIORITIES

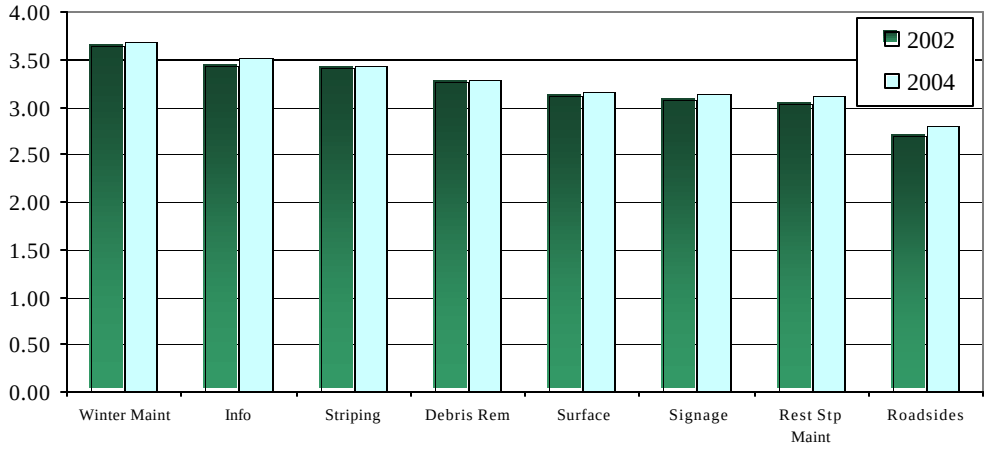


Figure Nine provides a comparison of the 2002 and 2004 assignment of priorities to the eight maintenance activities. The increases from 2002 to 2004 in the priorities assigned to winter roadway information (3.44 to 3.51), rest area maintenance (3.04 to 3.12), and roadside maintenance (2.70 to 2.80) were statistically significant. The 2002 to 2004 change for priorities assigned to winter maintenance, striping, debris removal, surface smoothness and signage were not statistically significant

Composite Variables for Each Maintenance Activity

To better understand the perceptions of the respondents toward each maintenance activity, a composite variable was constructed for each maintenance activity by combining the answers to the rating, importance, and resource priority questions. The first step in constructing these variables was to reverse the values assigned to the responses to the rating of each maintenance activity. After reversal, an excellent rating = 1, a good rating = 2, a fair rating = 3, and a poor rating = 4. Then, the composite variable for each maintenance activity was created by adding this reversed value for rating, the score on the importance question (1 = not important, 2 = somewhat important, 3 = important and 4 = very important) and the score on the resource priority question (1 = low, 2 = medium, 3 = moderately high, and 4 = high).

If a respondent had answered all three of the questions about a maintenance activity, the scores on the composite variable for that activity would range from 3 to 12. If the value of the composite variable were a 3, it would indicate an excellent rating of the activity, an answer of not important on the importance question and of low priority on the resource priority question. A score of 12 would indicate a poor rating, very important and a high resource priority. A score of less than 3 is possible if the respondent did not answer each question about a particular maintenance activity.

The higher the score on this composite variable, the lower the rating, the more important the activity is considered, and the higher the resource priority assigned to the activity. Thus, the higher the score on the composite variable, the more attention respondents believe should be paid to the maintenance activity.

Table Six summarizes the values of the composite variable created for each maintenance activity. Each of the eight composite variables of Winter Maintenance, Surface Smoothness, Striping, Debris Removal, Winter Road Information, Signage, Rest Area Maintenance and Roadside Maintenance occupies a column in Table Six. The ordering of columns in Table Six is based upon the mean score for each composite variable and ranges from Winter Maintenance with a mean score of 9.45 to Roadside Maintenance with a mean score of 7.81. The standard deviation and standard error of the mean are presented for each composite variable. The largest standard error is 0.070 producing a 95% confidence interval of $\pm$ 0.13721. Therefore, a difference between means of greater than .274 represents a real difference. Winter Maintenance has by far the highest composite score followed by striping, then debris removal and surface smoothness, signage and winter roadway information. The mean scores for the composite variables for rest area maintenance and roadside maintenance are clearly the lowest.

TABLE SIX
VALUES OF COMPOSITE VARIABLES

Value	Winter Maint	Striping	Debris Removal	Surface Smooth	Signage	Wtr Rd Informat	Restarea Maint	Rd Side Maint
1	0.0%	0.0%	0.0%	0.1%	0.0%	0.6%	0.3%	0.2%
2	0.1%	0.0%	0.0%	0.0%	0.0%	1.2%	1.7%	0.4%
3	0.2%	0.2%	0.1%	0.1%	0.4%	3.7%	3.7%	1.2%
4	1.0%	0.6%	0.2%	0.5%	0.7%	5.3%	3.8%	2.3%
5	0.5%	1.7%	1.6%	1.1%	3.1%	1.4%	2.7%	5.5%
6	1.6%	2.5%	3.0%	2.3%	5.7%	3.4%	8.7%	10.4%
7	3.9%	6.8%	8.8%	10.9%	14.5%	6.7%	15.1%	21.0%
8	11.1%	18.7%	21.1%	21.8%	24.0%	15.2%	23.1%	25.8%
9	28.0%	28.7%	29.9%	29.6%	31.2%	33.1%	20.2%	19.2%
10	34.5%	29.6%	24.1%	21.5%	16.7%	21.3%	13.7%	11.3%
11	14.1%	8.3%	8.0%	8.6%	3.1%	6.0%	4.8%	3.3%
12	4.9%	3.9%	3.2%	3.5%	0.6%	2.2%	2.2%	1.3%
N	999	1000	1000	1000	1000	986	963	1000
Mean	**9.45**	**9.11**	**8.94**	**8.90**	**8.36**	**8.34**	**7.84**	**7.81**
SD	**1.419**	**1.409**	**1.422**	**1.459**	**1.445**	**2.189**	**2.133**	**1.769**
SE	**0.045**	**0.045**	**0.045**	**0.046**	**0.046**	**0.070**	**0.069**	**0.056**

In order to better explain the meaning of these composite variables as well as the respondents' perceptions of the eight maintenance activities, Table Seven shows the mean score of the composite variable for each activity as well as the relative position of each activity in the respondents' rating of how well each activity is currently being

accomplished, the respondents' feeling on the importance each activity, and the resource priority assigned by the respondents to each maintenance activity.

The mean composite score for Winter Maintenance is the highest of all the composite variables because it is rated the most important maintenance activity by the respondents, is assigned the highest resource priority by the respondents, and is rated seventh by the respondents.

Striping ranks second in terms of mean composite variable score because it is second in importance and third in priority and rated fourth by respondents.

Debris removal rates third in terms of mean composite variable because it is fourth in importance and priority but sixth in rating.

Surface Smoothness is rated the next highest on the composite variable not so much because of its importance and resource priority, which fall in the middle of the rating for all maintenance activities, but because of the rating of the current condition of surface smoothness. Respondents rated surface smoothness last as compared with other maintenance activities.

The Signage composite variable is fifth because it is ranked toward the bottom of the eight maintenance activities in terms of importance and priority and because the current condition of highways signs is rated higher than any other maintenance activity.

Winter Roadway Information is rated sixth in terms of composite variable means, not because it is not given a high importance and resource priority value by the respondents, but because respondents currently rate it as being done well.

TABLE SEVEN
COMPOSITE VARIABLE MEAN BY RANK OF RATING, IMPORTANCE, AND PRIORITY

	Composite Mean	Rating Rank	Importance Rank	Priority Rank
Winter Maint	9.45	7	1	1
Striping	9.11	4	2	3
Debris Removal	8.94	6	4	4
Smoothness	8.90	8	5	5
Signage	8.36	1	6	6
Winter Road Info	8.34	2	3	2
Rest Area Maint.	7.84	3	7	7
Roadside Maint.	7.81	5	8	8

Rest Area Maintenance is rated seventh in terms of composite variable means not because of the relatively low rating of its current condition but rather because it is rated next to last in importance, and third from the last in priority.

Roadside Maintenance is rated last because it is ranked dead last in terms of importance and resource priority.

Statistically Significant Relationships Between Composite Variables and Administrative District

?? Missoula District respondents had higher scores on the striping variable than did respondents living in other districts.
?? Glendive District respondents scored higher on the roadside maintenance composite variable than did respondents from other district while respondents living in the Butte District scored lower on the roadside maintenance composite variable than did respondents in other districts.

Statistically Significant Relationships Between Scores on Winter Maintenance Composite Variable and Demographic/Travel Variables

?? Females had higher scores on the Winter Maintenance composite variable than did males.
?? Respondents over 65 scored lower on the Winter Maintenance composite variable than did younger respondents and respondents over 75 scored the lowest.
?? Respondents who had been in Montana for five or less years scored lower on the Winter Maintenance composite variable than did respondents who had been in Montana longer, and respondents who had been in Montana for between 11 and 30 years scored higher on the Winter Maintenance Composite variable than did respondents who had been in the state longer than 30 years or between 6 and 10 years.
?? Respondents who reported their typical trip as personal or family related scored lower on the winter maintenance composite variable than did respondents reporting a different type of typical trip.
?? Respondents who reported driving more than 15,000 miles per year scored higher on the Winter Maintenance composite variable than did respondents who drove less than 15,000 miles.

Statistically Significant Relationships Between Scores on Striping Composite Variable and Demographic/Travel Variables

?? Females scored higher on the striping composite variable than did males.

Statistically Significant Relationships Between Scores on Debris Removal Composite Variable and Demographic/Travel Variables

?? Respondents who had been in Montana for over 20 years scored higher on the debris removal composite variable than did respondents who had been in Montana for 20 years or less.

Statistically Significant Relationships Between Scores on Surface Smoothness Composite Variable and Demographic/Travel Variables

?? Respondents over 35 scored higher on the surface smoothness variable than did respondents who were 35 or younger.
?? Respondents reporting an educational level of eighth grade or less scored higher on the surface smoothness composite variable than did respondents with a higher level of education. Respondents with some high school and those with post graduate education scored the lowest on this variable.
?? Respondents who had lived in Montana for more than 30 years scored higher on the surface smoothness composite variable than did respondents who had lived in Montana for less than 30 years and respondents who had lived in Montana for 5 years or less scored lower on this variable than respondents who had lived in Montana for more than 5 years.
?? Respondents who drove more than 15,000 miles per year scored higher on the surface smoothness composite variable than did those who drove less than 15,000 miles.

Statistically Significant Relationships Between Scores on Signage Composite Variable and Demographic/Travel Variables

?? Female respondents scored higher on the Signage composite variable than did males.
?? Respondents over 65 scored higher on the signage composite variable than did respondents 65 or younger while respondents between 26 and 35 scored the lowest on this variable.
?? Respondents who were professional drivers scored the highest on the Signage composite variable while those whose most frequent trip was agriculturally related scored the lowest.
?? Respondents who reporting driving less than 15,000 miles per year scored higher on the signage composite variable than did respondents driving more than 15,000 miles per year.
?? Respondents who had not driven in other states in the last 12 months scored higher on this composite variable than did respondents who had driven in other states.

Statistically Significant Relationships Between Scores on Winter Roadway Information Composite Variable and Demographic/Travel Variables

?? Females scored higher on the Winter Roadway Information composite variable than did males.
?? Respondents over 65 scored lower on the Winter Roadway Information composite variable than did respondents 65 or less and those over 75 scored the lowest.
?? Professional drivers and respondents whose most frequent trip was work related scored higher on the Winter Roadway information composite variable than did respondents whose most frequent trips were commuting, personal or agriculturally related, or respondents who said they were professional drivers.
?? Respondents who reported driving more than 15,000 miles per year scored higher on this composite variable than did respondents who drove less than 15,000 miles per year

Statistically Significant Relationships Between Scores on Rest Area Maintenance Composite Variable and Demographic/Travel Variables

?? Females scored higher on the Rest Area Maintenance composite variable than did males.
?? Respondents over 55 scored higher on the Rest Area Maintenance Composite variable than did respondents 55 or younger.
?? Respondents who had lived in Montana more than 20 years scored higher on the Rest Area Maintenance Composite variable than did respondents who lived in Montana 20 years or less and respondents who had lived in Montana for 5 year or less scored the lowest on this variable.
?? Respondents who had driven in other states in the last 12 months scored higher on the Rest Area Maintenance composite variable than did respondents who had not driven in other states.

Statistically Significant Relationships Between Scores on Roadside Maintenance Composite Variable and Demographic/Travel Variables

?? Respondents over 55 scored higher on the Roadside Maintenance composite variable than did younger respondents.
?? Respondents with some high school or a high school diploma scored higher on the Roadside Maintenance composite variable than did respondents with a different level of education. Respondents with post graduate education scored lower on the Roadside Maintenance composite variable than did respondents with a lower level of education.
?? Respondents who had been in Montana for 5 or less years scored lower on the Roadside Information composite variable than did respondents who had been in the state longer while respondents who had lived in Montana for more than 30 years scored the highest on the Roadside Maintenance Composite variable.
?? Respondents who had not driven in other states in the last 12 months scored higher on this composite variable than respondents who had driven in other states.

Comparison of the 2002 and 2004 Composite Variable Means
for the Eight Maintenance Activities

FIGURE TEN
COMPARISON OF 2002 AND 2004 COMPOSITE VARIABLE MEANS

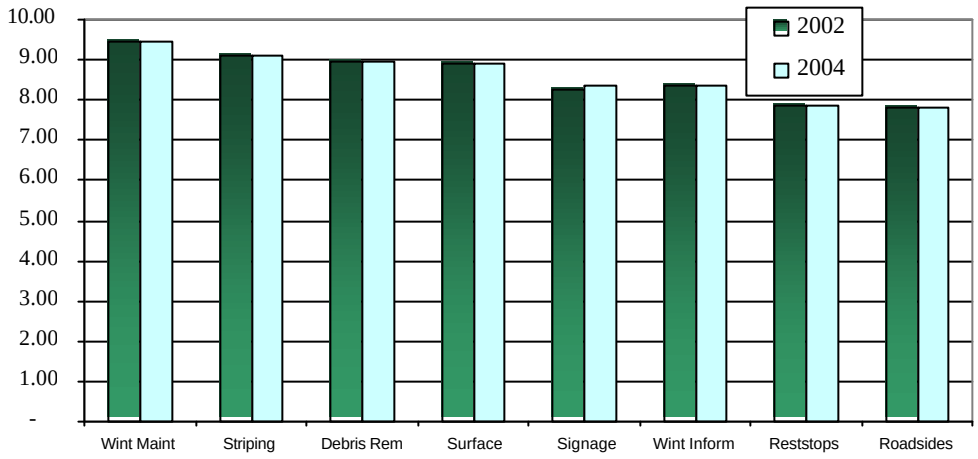


Figure Ten provides a comparison of the 2002 and 2004 composite variable means for the eight maintenance activities. None of the 2002 to 2004 changes in the means of the eight composite variables was statistically significant.

Respondents Experience with and Perception of the 511 Travel Information System

The respondents were asked if they had heard of the 511 Travel Information System. Figure Eleven shows that 51.1% of the respondents had heard of the 511 Travel Information System while 48.9% of the respondents had not.

Statistically Significant Relationship Between Whether or Not the Respondent Had Heard of the 511 Travel Information System and Administrative District

?? Respondents in the Missoula District were less likely to indicate they had heard of the 511 Travel Information System than were respondents in other districts.

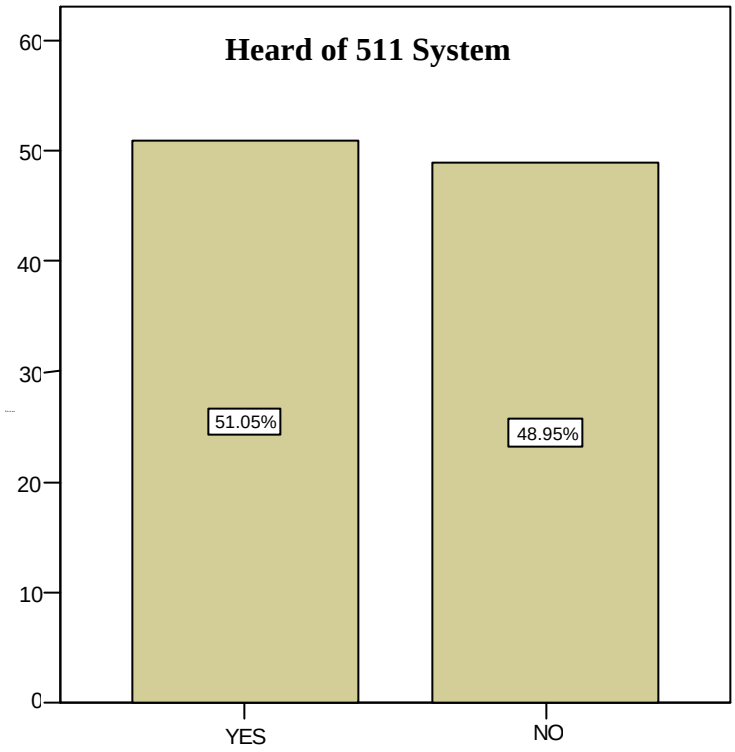
Statistically Significant Relationship Between Whether or Not the Respondent Had Heard of the 511 Travel Information System and Demographic/Travel Variables

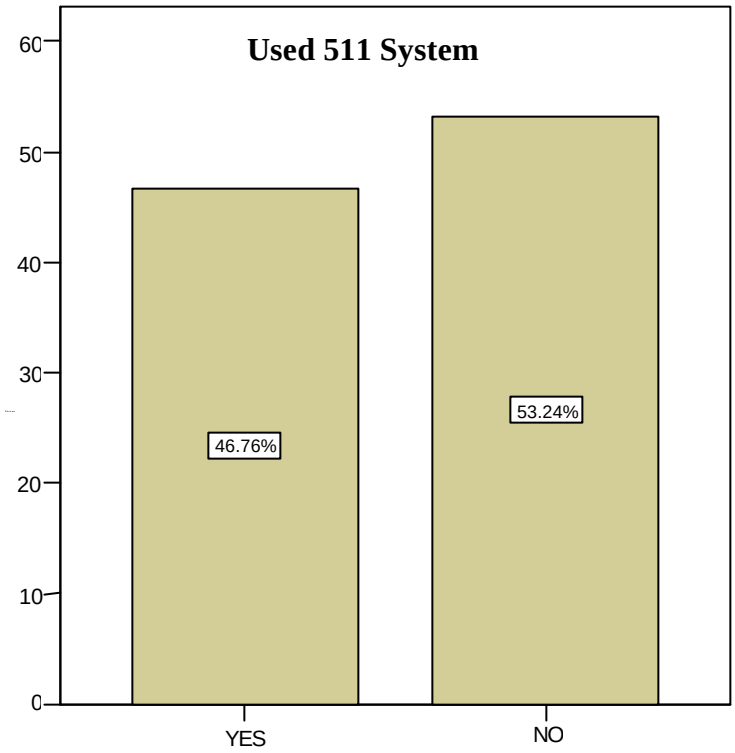
?? Respondents between 18 and 25 and those between 56 and 65 were more likely than respondents of other ages to have heard of the 511 Travel Information System. Respondents over 75 were less likely than younger respondents to have heard of the 511 system.
?? Professional drivers and respondents who indicated their typical trip was work related were likely to have heard of the 511 system than were respondents listing other types of typical trips.

?? Respondents who reported they drove more than 15,000 miles per year were more likely than those who drove less likely than 15,000 miles per year to say they had heard of the 511 system.

The 509 respondents who had heard of the 511 Travel Information System were then asked if they had used the system Figure Eleven shows that 46.8% of the respondents who had heard of the 511 system had used it while 53.2% of those who had heard of it had not used it.

FIGURE ELEVEN
THE 511 SYSTEM





Statistically Significant Relationship Between Whether or Not the Respondent Had Used the 511 Travel Information System and Demographic/Travel Variables

- Females were more likely to have used the 511 system than were males.
- Respondents between the age of 46 and 55 were more likely than younger or older respondents to have used the 511 system. Respondents over 75 were the least likely to have used the 511 system and those between 18 and 25 were the next least likely.
- Respondents who had been in Montana for between 11 and 20 years were less likely than those who had been here more or less to have used the 511 system
- Respondents who drove more than 15,000 miles per year were more likely than those who drove less than 15,000 miles per year to say they had used the 511 system.
- Professional drivers were less likely than respondents reporting other types of typical trips to say they had used the 511 system. Those reporting a typical trip for personal or family reasons were the next less likely.

The 238 respondents who had used the 511 system were asked if there where any additional feature they would like to see added to the 511 system. Table Eight summarizes their answers to this question. Table Eight shows that 66% of these respondents could not think of any addition to the 511 system and another 13% said that the system was good now. The most common suggestion made by 10.5% of the respondents who had used the system was to update the information more frequently.

TABLE EIGHT
SUGGESTED ADDITIONS TO THE 511 SYSTEM

No Additions Suggested	157	66.0%
System Good Now	31	13.0%
Update More Frequently	25	10.5%
More Specific Information	6	2.0%
Talk to a Person	4	1.7%
Too Lengthy and Slow	4	1.7%
Offer by Area as Well as Highway	3	1.3%
More User Friendly	2	0.8%
More Accurate and Complete	1	0.4%
Wind Conditions	1	0.4%
Add Towns	1	0.4%
Road Construction	1	0.4%
Alternate Route for Truckers	1	0.4%
Advertise More	1	0.4%

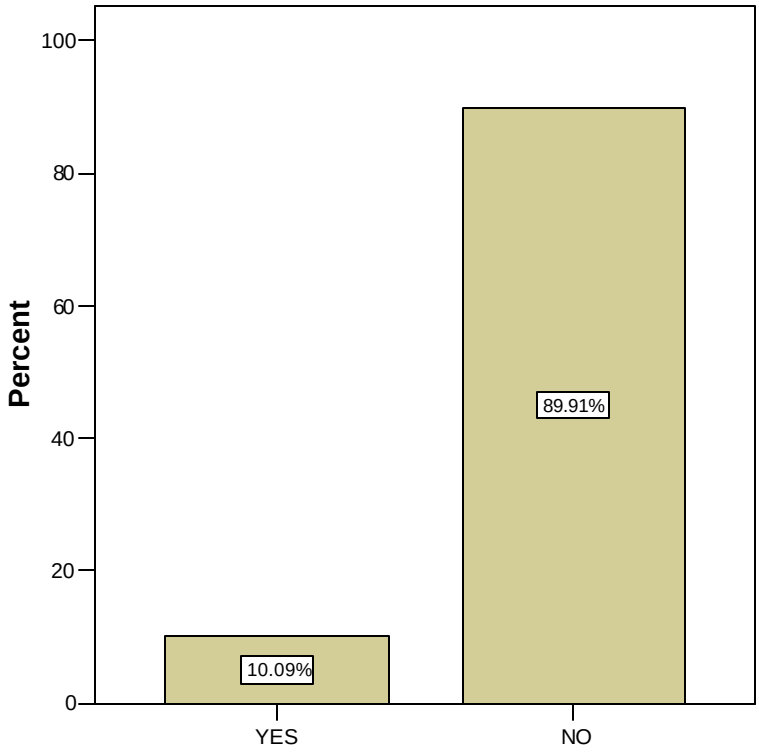
The Transportation Awareness Program (TAP)

The respondents were asked if they had heard of the Transportation Awareness Program which is also called TAP. Figure Twelve summarizes the answers to this question and shows that only 10.1% of the respondents said they had heard of TAP.

Statistically Significant Relationships between Whether or Not the Respondents Had Heard of TAP and Demographic Travel Variables

?? Respondents from 66 to 76 were more likely than younger or older respondents to say they had heard of TAP. Respondents over 75 and those between 26 and 35 were less likely than younger or older respondents to say they had heard of TAP.
?? Respondents who reported their educational attainment as some high school were more likely than respondents with more or less education to say they had heard of TAP.
?? Males were more likely than females to say they had heard of TAP.

FIGURE TWELVE
HEARD OF TAP



Spoken to MDT Employee at a Public Event

The respondents were asked if they had spoken with a Montana Department of Transportation Employee at a variety of public events. Six hundred and fourteen respondents indicated they had not spoken to a Montana Department of Transportation employee at any public event while 386 respondents had. Table Nine summarizes how many respondents had spoken to MDT employees at the specific events asked about and shows the most frequently mentioned event was driver's education followed by a county fair, a school class, some activity not asked about, a trade, a 55 alive event, a parade, and a winter driving seminar.

TABLE NINE
SPOKEN TO MDT EMPLOYEE AT A PUBLIC EVENT

At Drivers Education	151	15.1%
At County Fair	135	13.5%
At a School Class	102	10.2%
At Some Other Activity	86	8.6%
At a Trade Show	75	7.5%
At 55 Alive Event	64	6.4%
At a Parade	57	5.7%
At a Winter Driving Seminar	34	3.4%
At a Public Forum	25	2.5%

The category of public forum was not specifically mentioned in the question but was by far the most commonly mentioned "other event."

Statistically Significant Relationships Between Events at Which Respondents Spoke with MDT Employees and Administrative District

?? Respondents living in the Billings District were more likely than respondents living in other districts to say they had spoken with MDT employees at a driver's education class. Respondents living in the Glendive District were less likely than respondents from other districts to say they had spoken with an MDT employee at a driver's education class.
?? Respondents living in the Glendive and Billings Districts were more likely than respondents living in other districts to say they had spoken with a MDT employee at a county fair.
?? Respondents from the Glendive District were more likely than respondents from other districts to say they had spoken with a MDT employee at a trade show. Respondents from the Missoula and Butte districts were less likely than respondents from other districts to say they spoken with a MDT employee at a trade show.

Statistically Significant Relationships Between Events at Which Respondents Spoke with MDT Employees and Demographic/Travel Variables

At Driver's Education

?? Respondents 45 and younger were more likely than older respondents to say they had spoken with a MDT employee at a driver's education class. Respondents from 18 to 25 were the most likely to say they had spoken to a MDT employee at a driver's education class.
?? Respondents who had lived in Montana for more than 10 years were more likely than those who had lived in Montana for 10 years or less to say they had spoken with a MDT employee at a driver's education class.

At a County Fair

?? Respondents between 36 and 45 were more likely than younger or older respondents to say they had spoken to a MDT employee at a county fair. Respondents over 75 were less likely than younger respondents to say they had spoken to a MDT employee at a county fair.
?? Respondents who were high school graduates and those with some college were more likely than respondents with less or more education to have spoken with a MDT employee at a county fair.

At a School Class

?? Generally, the younger the respondent the more likely they were to indicate they had spoken with a MDT employee at a school class.
?? Respondents who had lived in Montana for more than 10 years were more likely than those who lived in Montana for 10 years or less to say they had spoken to a MDT employee at a school class.

?? Respondents who drove more than 15,000 miles per year were more likely than those who drove less than 15,000 miles per year to have spoken to a MDT employee at a school class.

At a Trade Show

?? Respondents who drove more than 15,000 miles per year were more likely than those who drove less than 15,000 miles per year to have spoken to an MDT employee at a trade show.
?? Professional drivers were more likely than respondents identifying other purposes of their typical trip to say they had spoken with a MDT employee at trade shows. Respondents reporting their typical trip was work related were the next most likely in terms of typical trip to say they had spoken with a MDT employee at a trade show.

At a 55 Alive Event

?? Respondents over 75 were more likely than younger respondents to say they had spoken with an MDT employee at a 55 Alive event.
?? Respondents who had lived in Montana for over 30 years were more likely than those who had lived here for 30 years or less to say they had spoken to a MDT employee at a 55 Alive event.
?? Respondents who had not driven in other states in the last 12 months were more likely than those who had to say they had spoken with a MDT employee at a 55 Alive event.

At a Parade

?? No statistically significant relationships were found between whether or not the respondent had spoken with an MDT employee at a parade and any demographic/travel variable.

At a Winter Driving Seminar

?? No statistically significant relationships were found between whether or not the respondent had spoken with an MDT employee at a winter driving seminar and any demographic/travel variable.

Respondents Perception of How the Montana Department of Transportation Could Do Better in the Area of Highway Maintenance

The respondents were asked in the form of an open-ended question, what the Department of Transportation could do better in terms of maintenance. Eight hundred twelve respondents provided 929 responses. The responses were categorized and Table Ten presents a general summary of the categorized answers.

Table Ten shows the most common answer to the question of what the department could do better was winter maintenance followed by surface smoothness, striping, keeping rest areas open all year around, that the department is doing a good job now, construction, more lanes or wider roads, and road kill removal.

When these answers are compared to the responses in 2002, the number of comments about rest area maintenance has decreased in 2004, but there is more concern in 2004 in

keeping rest areas open all year. Concern was also expressed in 2004 about the size of material used for sanding.

TABLE TEN
WHAT COULD THE TRANSPORTATION DEPARTMENT DO BETTER IN TERMS OF MAINTENANCE

Winter Maintenance	177	19.0%
Make Surfaces Smoother	101	10.9%
Striping	68	7.3%
Rest Area Open Year Around	62	6.7%
Doing a Good Job	54	5.8%
Construction	49	5.3%
More lanes/Wider Roads	38	4.1%
Road Kill Removal	38	4.1%
Use Sand Not Rocks	36	3.9%
Rest Area Maintenance	35	3.8%
Information	33	3.5%
Signage	33	3.5%
Trim Weeds	30	3.2%
Debris Removal/Roadsides	30	3.2%
Liquid De-Icers are Bad	25	2.7%
Personnel Management	22	2.4%
Funding	18	1.9%
Safety	14	1.5%
Barriers/Reflectors/Guard Rails	12	1.3%
Speed Limits/Enforcement	11	1.2%
Rest Area Security	8	0.9%
Better Lighting	6	0.6%
Other	29	3.1%
TOTAL	929	100.0%

In What Maintenance Activities Does the Department of Transportation Currently Do a Good Job

The respondents were also asked in an open-ended question what maintenance activities done by the MDT met or exceeded the respondent's expectations. Three hundred eighteen respondents could not think of anything MDT does that met or exceeded their expectations. The remaining 682 respondents provided 760 comments about what MDT does that meets or exceeds their expectations. These answers were also categorized and Table Eleven summarizes the answers to this question.

Table Eleven shows that the most common answer to the question of what maintenance activities meet or exceed the respondents expectations is that generally a good job is being done followed by winter maintenance and then general maintenance.

When these answers are compared to the 2002 answers, the number of comments that the department is improving and the number of mentions of rest area maintenance shows an increase.

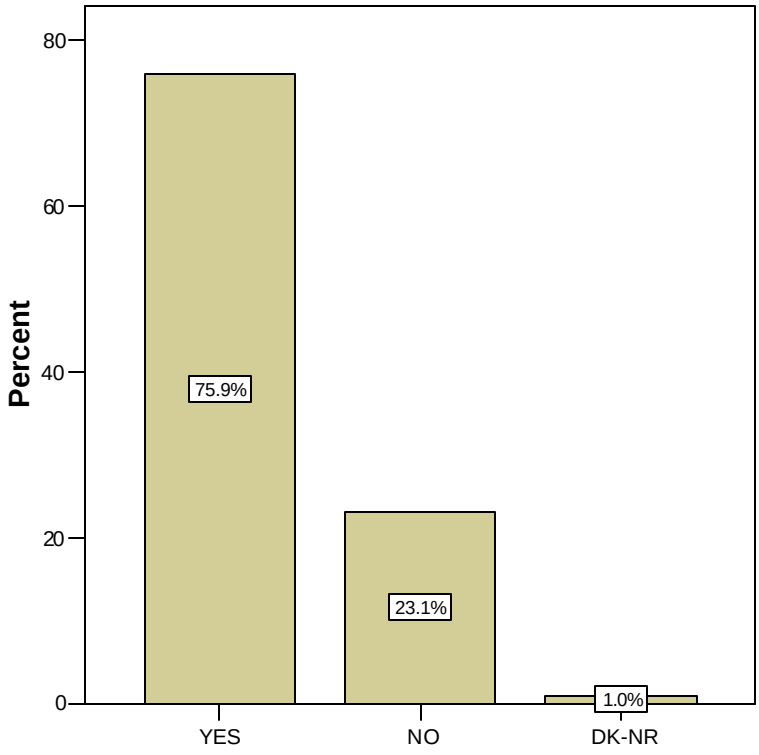
TABLE ELEVEN
MAINTENANCE ACTIVITIES THAT MEET OR EXCEED RESPONDENTS' EXPECTATIONS

Doing a good job	181	23.8%
Winter Maintenance	157	20.6%
General Maintenance	85	11.2%
Surface Smoothness	48	6.3%
Debris/Road kill Removal	47	6.2%
Improving Roads	30	3.9%
Rest Area Maintenance	30	3.9%
Roadside Maintenance	27	3.6%
Are Improving	25	3.3%
Roadway Information	21	2.8%
Signage	20	2.6%
General Safety	16	2.1%
Striping	15	2.0%
Employees	14	1.8%
Prompt Repair	13	1.7%
Weed Control	8	1.1%
Barriers	4	0.5%
Website	3	0.4%
Other	18	2.4%
TOTAL	760	100.0%

Willingness to Participate in a Follow Up Study

Finally, the respondents were asked if they would be willing to participate in a follow up study. Figure Thirteen shows that 75.9% of the respondents indicated they would be willing to participate in a follow up study while 23.1% said they would not be and 1% said they did not know whether or not they would be interested in participating in a follow up study.

FIGURE THIRTEEN
WILLINGNESS TO PARTICIPATE IN A FOLLOW UP STUDY



The respondents who agreed to participate in a follow up study were then asked for their name, address and telephone number.

SUMMARY

Trained interviewers at the Computer Assisted Telephone Interviewing Laboratory at Montana State University, Billings completed 1,000 interviews with randomly selected adult residents of Montana between October 16th and November 4th, 2004. The purposes of this telephone survey were to obtain the perceptions the respondents held about the maintenance of interstate and state highways in Montana, and to determine what if any changes have occurred in these perceptions since a similar telephone survey was conducted in the Fall of 2002.

The Respondents

About half the respondents were male and half were female. The mean age of the respondents was 51.2 with 17.8% of the respondents thirty five years old or less, 37.1% were 56 or over, and the remainder of 45.3% between 36 and 55.The mean educational attainment of the respondents was 14.1 years of education, 4.7% had not completed high

school, 31.4% had completed just high school, 27.6% had completed some college, and 36.3% had at least a college degree.

The mean length of time respondents had been in Montana was 35.3 years and 54% of the respondents reported they had lived in Montana over 30 years, while 9.6% indicated they had been in Montana for 5 or less years.

About 31.9% of the respondents lived in the Missoula District, 19.9% lived in the Butte District, 18.6% in the Great Falls District, 9.7% in the Glendive District, and 19.9% in the Billings District. About 49.2% of the respondents indicated they drive more than 15,000 miles per year, while 50.8% drove less than 15,000 miles. The most common trips made by respondents were personal or family errands (53.7%), followed by commuting (21.5%) and then work related trips (17.3%). Seventy-five percent of the respondents indicated they had driven in other states within the last 12 months.

General Perception of Highway Maintenance

When asked to rate overall highway maintenance, 3% of the respondents rated overall maintenance as poor while 26.7% said fair, 61.7% said good and 8.5% said excellent. Respondents in the Butte District rated general highway maintenance higher than did respondents in other districts while Missoula District residents rated general maintenance lower than did respondents from other districts. Respondents between 56 and 65 rated general highway maintenance higher than did younger or older respondents while respondents between 26 and 35 rated general highway maintenance lower than did younger or older respondents. Respondents with post graduate education rated general highway maintenance higher than did respondents with a lower level of educational attainment while respondents with some high school rated general highway maintenance lower than did respondents with more or less education. Respondents whose typical trip was agricultural or "other" rated general highway maintenance higher than did respondents whose typical trip was commuting, work related, personal or family related, or professional. Respondents whose typical trip was commuting rated general highway maintenance lower than did respondents listing some other type of typical trip. There was a statistically significant increase in the mean rating, on a 1 to 4 scale labeled as poor, fair, good and excellent, of overall highway maintenance from 2.70 in 2002 to 2.76 in 2004.

When asked to rate the importance of highway maintenance to them 59.3% of the respondents said very important, 31.7% said important, 8.2% said somewhat important, and 0.8% not important. General highway maintenance was more important to female than to male respondents, to respondents between 46 and 65 as compared to younger or older respondents, to respondents who reported they were professional drivers and said their typical trip was work related as compared to those who said their typical trip was commuting, family or personal, or agricultural, to respondents who drove more as compared to less than 15,000 miles per year, and to respondents who had driven in other states in the last 12 months..

On a 1 to 4 scale labeled as not important, somewhat important, important and very important, the mean importance rating for general highway maintenance increased very slightly from 3.47 in 2002 to 3.49 in 2004.

Comparison of Highway Maintenance in Montana with Other States

Fifty percent of the respondents who had driven in other states within the last 12 months said the highways and interstates of Montana were about the same as the highways and interstates in the other states in which they had driven, while 22.4% felt the roads in Montana were worse and 27.3% felt the roads in Montana were better. Respondents in the Glendive District were more likely than respondents in other districts to believe general highway maintenance was worse in Montana than in other states while respondents in the Butte district were more likely to think Montana highway maintenance was better than in other states. Respondents who had lived in Montana over 20 years were more likely than those who lived in Montana for 20 years or less to think Montana highway maintenance was generally worse than other states while respondents who had lived in Montana for 10 years or less were more likely than those who had lived here more to believe highway maintenance in Montana was better than in other states. There was no statistically significant difference between 2002 and 2004 respondents in comparing general maintenance in Montana to other states.

About 46.2% of the respondents who had driven in other states and who had an opinion believed winter maintenance was about the same in Montana as in other states, while 35.2% believed winter maintenance was better in Montana and 18.6% believed winter maintenance was worse in Montana. Residents of the Glendive district were more likely than residents in other districts to believe winter maintenance was worse in Montana than in other states while respondents living in the Butte district and the Missoula district were more likely than respondents in other districts to believe that winter maintenance in Montana was better than in other states. Respondents who had lived in Montana for 10 years or less were more likely than those who had lived here longer to believe winter maintenance was better in Montana than in other states. Females were more likely than males to believe that winter maintenance in Montana was worse than in other states. There was no statistically significant difference between 2002 and 2004 respondents in comparing winter maintenance in Montana to other states.

About 51% of the respondents who had driven in other states in the last 12 months and who had an opinion, felt rest area maintenance was about the same in Montana as in other states, while 28.7% said rest area maintenance was worse in Montana and 20% said it was better in Montana. Respondents who had lived in Montana over 10 years and especially those who had lived in Montana over 30 years were more likely than those who lived in Montana 10 years or less to think rest area maintenance was worse in Montana than in other states. Females were more likely than males to believe that rest area maintenance in Montana was worse than rest area maintenance in other states while males were more likely than females to believe rest area maintenance in Montana was about the same as rest area maintenance in other states. There was no statistically significant difference between 2002 and 2004 respondents in comparing rest area maintenance in Montana to other states.

Respondent Perception of the Eight Maintenance Activities

For the purposes of this survey, highway maintenance activities were divided into 8 categories: winter maintenance, maintaining a smooth highway surface, maintenance of

roadsides, maintenance of signs, debris removal, rest area maintenance, striping maintenance, and winter road condition reports. The respondents were asked three different questions about each of these eight maintenance activities. First they were asked how good a job the Montana Department of Transportation (MDT) was doing with each of the eight maintenance activities and to respond with poor, fair, good, or excellent. Then they were asked how important each of the maintenance activities were to them and to respond with not important, somewhat important, important, or very important. Finally, the respondents were asked to think of the allocation of resources to each of the maintenance activities by the MDT and assign a resource priority of low, medium, moderately high, or very high to each of the eight maintenance activities.

A composite variable was then constructed for each of the maintenance activities by combining the answers to the three different questions asked about that activity. To construct these variables, the first step was to reverse the values assigned to the responses to the rating of each maintenance activity. After reversal, an excellent rating = 1, a good rating = 2, a fair rating = 3, and a poor rating = 4. Then the composite variable for each maintenance activity was created by adding this reversed value for rating, the score on the importance question (1 = not important, 2 = somewhat important, 3 = important, and 4 = very important), and the score on the resource priority question (1 = low, 2 = medium, 3 = moderately high, and 4 = high).

If a respondent had answered all three of the questions about a maintenance activity, the range of scores on the composite variable for that activity would be from 3 to 12. If the value of the composite variable were a 3, it would indicate an excellent rating of the activity, an answer of not important on the importance question and of low priority on the resource priority question. A score of 12 would indicate a poor rating, very important and a high resource priority. A score of less than 3 is possible if the respondent did not answer each question about a particular maintenance activity.

The higher the score on this composite variable, the lower the rating, the more important the activity is considered, and the higher the resource priority assigned to the activity. Thus, the higher the score on the composite variable, the more attention respondents believe should be paid to the maintenance activity.

The overall mean scores for each of the composite variables are: Winter Maintenance, 9.45; Highway Striping, 9.11; Debris Removal, 8.94; Smoothness of Surface, 8.90; Highway Signage, 8.36; Winter Roadway Information, 8.34; Rest Area Maintenance, 7.84; and Roadside Maintenance, 7.81. In 2002 the mean scores on the composite variables were: Winter Maintenance 9.43; Highway Striping, 9.11, Debris Removal, 8.94; Smoothness of Surface, 8.90; Highway Signage, 8.25; Winter Roadway Information, 8.38; and Rest Area Maintenance, 7.84; and Roadside Maintenance, 7.83.

While the relative position of highway signage and winter roadway information were reversed from 2002 to 2004, none of the values of the composite variables changed significantly from 2002 to 2004.

Winter Maintenance

The mean composite score for Winter Maintenance is the highest of all the composite variables because it is rated the most important maintenance activity by the respondents,

is assigned the highest resource priority by the respondents, and is rated seventh by the respondents.

Females had higher scores on the Winter Maintenance composite variable than did males. Respondents over 65 scored lower on the Winter Maintenance composite variable than did younger respondents. Respondents who had been in Montana for five or less years scored lower on the Winter Maintenance composite variable than did respondents who had been in Montana longer, and respondents who had been in Montana for between 11 and 30 years scored higher on the Winter Maintenance Composite variable than did respondents who had been in the state longer than 30 years or between six and ten years. Respondents who reported their typical trip as personal or family related scored lower on the winter maintenance composite variable than did respondents reporting a different type of typical trip. Respondents who reported driving more than 15,000 miles per year scored higher on the Winter Maintenance composite variable than did respondents who drove less than 15,000 miles.

There was no statistically significant change between 2002 and 2004 in the way respondents compared winter maintenance in Montana to winter maintenance in other states. There was no statistically significant difference between 2002 and 2004 in the general rating of winter maintenance in Montana, in the importance of winter maintenance or in the resource priority assigned to winter maintenance.

Highway Striping

Striping ranks second in terms of mean composite variable score because it is second in importance, third in priority and is rated fourth. Missoula District respondents had higher scores on the striping variable than did respondents living in other districts. Females scored higher on the striping composite variable than did males.

There was no statistically significant difference between 2002 and 2004 in the general rating of highway striping in Montana, in the importance of highway striping or in the resource priority assigned to highway striping.

Debris Removal

Debris removal rates third in terms of mean composite variable because it is fourth in importance and priority but sixth in rating.

Respondents who had been in Montana for over 20 years scored higher on the debris removal composite variable than did respondents who had been in Montana for 20 years or less.

The respondent's rating of debris removal increased significantly from 2.75 in 2002 to 2.82 in 2004. The importance of debris removal and the resource priority assigned to debris removal did change significantly from 2002 to 2004.

Highway Surface Smoothness

Surface Smoothness is rated the next highest on the composite variable not so much because of its importance and resource priority, which fall in the middle of the rating for all maintenance activities, but because of the rating of the current condition of surface smoothness. Respondents rated surface smoothness last as compared with other maintenance activities.

Respondents over 35 scored higher on the surface smoothness variable than did respondents who were 35 or younger. Respondents reporting an educational level of eighth grade or less scored higher on the surface smoothness composite variable than did respondents with a higher level of education. Respondents with some high school and those with post graduate education scored the lowest on this variable. Respondents who had lived in Montana for more than 30 years scored higher on the surface smoothness composite variable than did respondents who had lived in Montana for less than 30 years and respondents who had lived in Montana for 5 years or less scored lower on this variable than respondents who had lived in Montana for more than 5 years. Respondents who drove more than 15,000 miles per year scored higher on the surface smoothness composite variable than did those who drove less than 15,000 miles.

The respondent's rating of surface smoothness, the respondent's perception of the importance of surface smoothness and the resource priority assigned to surface smoothness did not change significantly from 2002 to 2004.

Highway Signage

The Signage composite variable is fifth because it is ranked toward the bottom of the eight maintenance activities in terms of importance and priority and because the current condition of highways signs is rated higher than any other maintenance activity. While the value of the Signage composite variable climbed from 6^{th} position in 2002 to 5^{th} in 2004, the 2002 to 2004 change in value was not statistically significant.

Female respondents scored higher on the Signage composite variable than did males. Respondents over 65 scored higher on the signage composite variable than did respondents 65 or younger while respondents between 26 and 35 scored the lowest on this variable. Respondents who were professional drivers scored the highest on the Signage composite variable while those whose most frequent trip was agriculturally related scored the lowest. Respondents who reporting driving less than 15,000 miles per year scored higher on the signage composite variable than did respondents driving more than 15,000 miles per year. Respondents who had not driven in other states in the last 12 months scored higher on this composite variable than did respondents who had driven in other states.

The respondent's rating of signage, the respondent's perception of the importance of signage and the resource priority assigned to signage did not change significantly from 2002 to 2004.

Winter Roadway Information

Winter Roadway Information is rated sixth in terms of composite variable means, not because it is not given a high importance and resource priority value by the respondents, but because respondents currently rate it as being done well. While the mean of the composite variable of winter roadway information dropped from 5th position in 2002 to 6th position in 2004, the 2002 to 2004 change in value was not statistically significant.

Females scored higher on the Winter Roadway Information composite variable than did males. Respondents over 65 scored lower on the Winter Roadway Information composite variable than did respondents 65 or less and those over 75 scored the lowest. Professional drivers and respondents whose most frequent trip was work related scored higher on the Winter Roadway information composite variable than did respondents whose most frequent trips were commuting, personal or agriculturally related, or respondents who said they were professional drivers. Respondents who reported driving more than 15,000 miles per year scored higher on this composite variable than did respondents who drove less than 15,000 miles per year

The mean rating of the resource priority assigned to winter roadway information increased significantly from 3.44 in 2002 to 3.51 in 2004. There was no statistically significant change from 2002 to 2004 in the rating of winter roadway information or the importance of winter roadway information.

Rest Area Maintenance

Rest Area Maintenance is rated seventh in terms of composite variable means not because of the relatively low rating of its current condition but rather because it is rated next to last in importance, and third from the last in priority.

Females scored higher on the Rest Area Maintenance composite variable than did males. Respondents over 55 scored higher on the Rest Area Maintenance Composite variable than did respondents 55 or younger. Respondents who had lived in Montana more than 20 years scored higher on the Rest Area Maintenance Composite variable than did respondents who lived in Montana 20 years or less and respondents who had lived in Montana for 5 year or less scored the lowest on this variable. Respondents who had driven in other states in the last 12 months scored higher on the Rest Area Maintenance composite variable than did respondents who had not driven in other states.

There was no significant difference between 2002 and 2004 in the way respondents compared rest area maintenance in Montana to rest area maintenance in other states. The respondent's rating for rest area maintenance and the resource priority assigned to rest area maintenance increased significantly from 2002 to 2004. The importance of rest area maintenance to the respondent did not change significantly from 2002 to 2004. There were fewer complaints about rest area maintenance in the open ended questions in 2004 than there were in 2002, although there were more suggestions in 2004 that rest areas be open all year around.

Roadside Maintenance

Roadside Maintenance is rated last because it is ranked dead last in terms of importance and resource priority.

Respondents over 55 scored higher on the Roadside Maintenance composite variable than did younger respondents. Respondents with some high school or a high school diploma scored higher on the Roadside Maintenance composite variable than did respondents with a different level of education. Respondents with post graduate education scored lower on the Roadside Maintenance composite variable than did respondents with a lower level of education. Respondents who had been in Montana for 5 or less years scored lower on the Roadside Information composite variable than did respondents who had been in the state longer while respondents who had lived in Montana for more than 30 years scored the highest on the Roadside Maintenance Composite variable. Respondents who had not driven in other states in the last 12 months scored higher on this composite variable than respondents who had driven in other states.

The respondent's rating of roadside maintenance and the resource priority assigned to roadside maintenance increased significantly from 2002 to 2004 but the respondent's perception of the importance of roadside did not change significantly from 2002 to 2004.
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511 Travel Information System

Fifty-one percent of the respondents had heard of the 511 Travel Information System while 48.9% had not. Respondents in the Missoula District were less likely to indicate they had heard of the 511 Travel Information System than were respondents in other districts. Respondents between 18 and 25 and those between 56 and 65 were more likely than respondents of other ages to have heard of the 511 Travel Information System. Respondents over 75 were less likely than younger respondents to have heard of the 511 system. Professional drivers and respondents who indicated their typical trip was work related were likely to have heard of the 511 system than were respondents listing other types of typical trips. Respondents who reported they drove more than 15,000 miles per year were more likely than those who drove less likely than 15,000 miles per year to say they had heard of the 511 system.

Forty-seven percent of the respondent who had heard of the 511 Travel Information System said they had used it while 53.2% of those who had heard of it had not used the system. Females were more likely to have used the 511 system than were males. Respondents between the 46 and 55 were more likely than younger or older respondents to have used the 511 system. Respondents over 75 were the least likely to have used the 511 system and those between 18 and 25 were the next least likely. Respondents who had been in Montana for between 11 and 20 years were less likely than those who had been here more or less to have used the 511 system. Respondents who drove more than 15,000 miles per year were more likely than those who drove less than 15,000 miles per year to say they had used the 511 system. Professional drivers were less likely than respondents reporting other types of typical trips to say they had used the 511 system. Those reporting a typical trip for personal or family reasons were the next less likely.

The Transportation Awareness Program

Ten percent of the respondents had heard of the Transportation Awareness Program (TAP). Males were more likely than females to say they had heard of TAP. Respondents from 66 to 76 were more likely than younger or older respondents to say they had heard of TAP. Respondents over 75 and those between 26 and 35 were less likely than younger or older respondents to say they had heard of TAP. Respondents who reported their educational attainment as some high school were more likely than respondents with more or less education to say they had heard of TAP.

Spoken to MDT Employee at a Public Event

Six hundred and fourteen respondents indicated they had not spoken to a Montana Department of Transportation employee at any public event while 386 respondents had. The most frequently mentioned event at which respondents spoke to MDT employees was driver's education followed by a county fair, a school class, some activity not asked about, a trade, a 55 alive event, a parade, and a winter driving seminar.

2002 to 2004 Differences

The following statistically significant differences were observed when comparing 2002 and 2004 data:

?? The general rating for Montana highway maintenance increased from 2.70 in 2002 to 2.76 in 2004.
?? The rating for Roadside Maintenance increased from 2.80 in 2002 to 2.88 in 2004.
?? The rating for Rest Area Maintenance increased from 2.79 in 2002 to 2.94 in 2004.
?? The rating for Debris Removal increased from 2.75 in 2002 to 2.82 in 2004.
?? The resource priority for Winter Roadway Information increased from 3.44 in 2002 to 3.51 in 2004.
?? The resource priority for Rest Area Maintenance increased from 3.04 in 2002 to 3.12 in 2004.
?? The resource priority assigned to Roadside Maintenance increased from 2.70 in 2002 to 2.80 in 2004.

CONCLUSIONS AND IMPLEMENTATION

All statistically significant differences between 2002 and 2004 responses were in a positive direction and included increases in the general rating for highway maintenance in Montana, the rating for roadside maintenance, for rest area maintenance and for debris removal. The resource priorities assigned to winter roadway information, rest area maintenance and roadside maintenance also increased significantly from 2002 to 2004. In the open-ended questions, the number of complaints about rest area maintenance decreased from 2002 to 2004 and the number of comments of "are improving" increased from 2002 to 2004.

According to the respondents to this survey, the Montana Department of Transportation should now pay attention and provide resources to maintenance activities on interstate and state highways in Montana in the following order:

- Winter Maintenance
- Highway Striping
- Debris Removal
- Surface Smoothness
- Highway Signage
- Winter Roadway Information
- Rest Area Maintenance
- Roadside Maintenance

REFERENCES

Floyd, J.W. (1996), *Perceptions of Highway Maintenance in Montana: The Results of a Telephone Survey. Final Report.* FHWA/MT-96/8136A, Montana Department of Transportation, Helena, MT.

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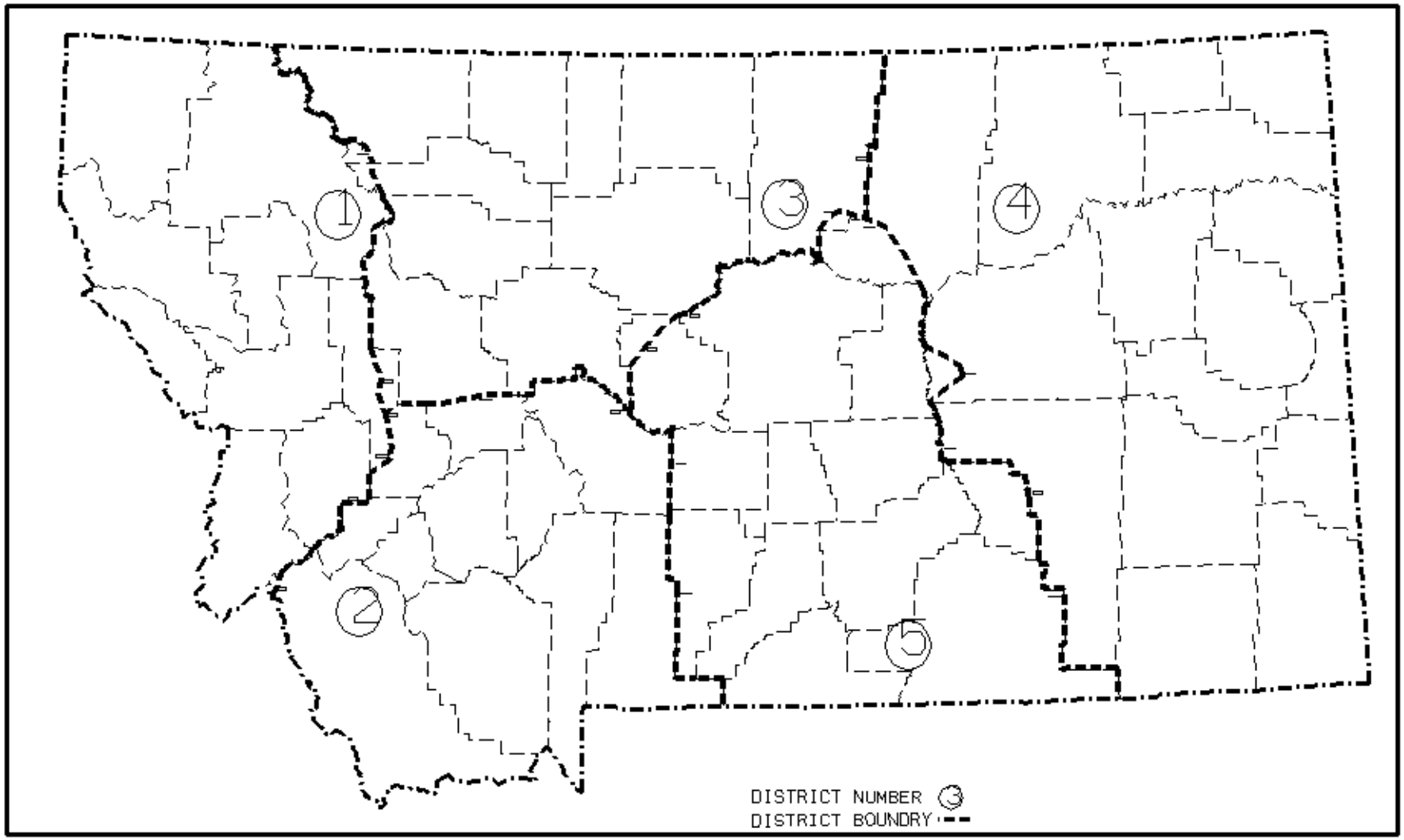
Floyd, J. W. (2000), *Perceptions of Highway Maintenance in Montana in 2000: The Results of a Telephone Survey, Final Report.* FHWA/MT-00/8136C, Montana Department of Transportation, Helena, MT.

Floyd, J. W. (2002), *Perceptions of Highway Maintenance in Montana in 2002: The Results of a Telephone Survey, Final Report.* FHWA/MT-02/8136D, Montana Department of Transportation, Helena, MT.

APPENDIX ONE:

MAP SHOWING MDT ADMINISTRATIVE DISTRICTS AND MONTANA COUNTIES


1
2
3
4
5
DISTRICT NUMBER
DISTRICT BOUNDRY

APPENDIX TWO:

TRANSPORTATION SURVEY QUESTIONS

Question Hello

Hello, my name is _____ and I am calling from Montana State University, Billings. We are conducting a survey on attitudes and opinions of highway maintenance for the Montana Department of Transportation. The Department of Transportation wants the opinions of citizens of Montana about the condition of our roadways. Your participation in this survey will assist the department in establishing future priorities and enable the maintenance program to better use available resources. In order to interview the right person, I need to speak to the member of your household who is at home, over 18, and has had the most recent birthday. Would that be you? CTRl-END OR 3 DIGITS

Question Intruct

Before I ask the first question, let me explain that this survey deals only with maintenance of highways. Maintenance includes such things as maintaining the established roadway surface, snow and ice removal, removal of debris and litter, maintaining roadsides, repairing signs, re-painting roadway stripes and rest area maintenance. This survey does not deal with the construction of new highways nor construction of new rest stops. This survey only deals with interstates and state highways in Montana. We are not asking you about city streets or county roads, just interstates and state highways. Also, we are only interested in opinions based on your experiences with interstates and state highways in Montana in the last two years.
Finally, your household was randomly selected by a computer and all your answers will remain anonymous.
PRESS ANY KEY TO CONTINUE

Question RateAll

How would you rate overall interstate and state highway maintenance in Montana?

1. Poor
2. Fair
3. Good
4. Excellent
5. DK or NR

Question ImpAll

How important would you say interstate and state highway maintenance in Montana is to you?

1. Not Important
2. Somewhat Important
3. Important
4. Very Important
5. DK or NR

Question RateWint

How would you rate winter maintenance of interstates and state highways in Montana? By winter maintenance, I mean snow and ice control including plowing, sanding, de-icing, and preventing drifting.

1. Poor
2. Fair
3. Good
4. Excellent
5. DK or NR

Question ImpWint

How important would you say interstate and state highway winter maintenance is to you?

1. Not Important
2. Somewhat Important
3. Important
4. Very Important
5. DK or NR

Question RateSurf

How would you rate the surface of Montana's interstates and state highways. In making this rating, consider ride quality which is affected by potholes, ruts, bumps, cracks, etc.

1. Poor
2. Fair
3. Good
4. Excellent
5. DK or NR

Question ImpSurf

How important is the smoothness of Montana's interstates and state highways to you?

1. Not Important
2. Somewhat Important
3. Important
4. Very Important
5. DK or NR

Question RateSide

How would you rate the management of interstate and state highway roadsides in Montana? Roadside management includes mowing shoulders and eliminating unwanted vegetation.

1. Poor
2. Fair
3. Good
4. Excellent
5. DK or NR

Question ImpSide

How important is interstate and state highway roadside management in Montana to you?

1. Not Important
2. Somewhat Important
3. Important
4. Very Important
5. DK or NR

Question RateSign

How would you rate the condition of interstate and state highway signs in Montana?

1. Poor
2. Fair
3. Good
4. Excellent
5. DK or NR

Question ImpSign

How important is the condition of interstate and state highway signs to you?

1. Not Important
2. Somewhat Important
3. Important
4. Very Important
5. DK or NR

Question RateRemv

How would you rate the removal of debris such as litter, roadkill, and fallen rocks, on Montana's interstates and state highways?

1. Poor
2. Fair
3. Good
4. Excellent
5. DK or NR

Question ImpRemv

How important is the removal of debris on interstates and state highways in Montana to you?

1. Not Important
2. Somewhat Important
3. Important
4. Very Important
5. DK or NR

Question RateRest

How would you rate the maintenance of rest areas on Montana interstates and state highways. Rest area maintenance includes cleaning rest areas and keeping rest areas in working order.

1. Poor
2. Fair
3. Good
4. Excellent
5. DK or NR

Question ImpRest

How important is interstate and state highway rest area maintenance to you?

1. Not Important
2. Somewhat Important
3. Important
4. Very Important
5. DK or NR

Question RateStrp

How would you rate the condition of striping (lines) on Montana's interstates and state highways? Striping and lines include the middle lines, no-passing lines, left turn lanes, and shoulder lines.

1. Poor
2. Fair
3. Good
4. Excellent
5. DK or NR

Question ImpStrp

How important is interstate and state highway striping to you?

1. Not Important
2. Somewhat Important
3. Important
4. Very Important
5. DK or NR

Question RateInfo

How would you rate winter roadway information and the way it is provided by the Montana Department of Transportation? Roadway information is provided by a statewide 800 telephone number, highway advisory radio, and changeable message signs.

1. Poor
2. Fair
3. Good
4. Excellent
5. DK or NR

Question ImpInfo

How important is up to date winter interstate and state highway information to you?

1. Not Important
2. Somewhat Important
3. Important
4. Very Important
5. DK or NR

Question PriWint

Now I am going to go back through the list of maintenance activities. This time, I want you to think about allocation of resources to each of the activities. For each activity, please tell me if you think it warrants a low, medium, moderately high, or very high resource priority when deciding how state highway maintenance resources should be utilized. Remember, we are only dealing with interstates and state maintained roadways.

What resource priority should be placed on interstate and state highway winter maintenance in Montana?

1. Low
2. Medium
3. Moderately High
4. Very High
5. DK or NR

Question PriSurf

What resource priority should be placed on smooth pavement on interstates and state highways in Montana?

1. Low
2. Medium
3. Moderately High
4. Very High
5. DK or NR

Question PriSide

What resource priority should be placed on interstate and state highway roadside management in Montana?

1. Low
2. Medium
3. Moderately High
4. Very High
5. DK or NR

Question PriSign

What resource priority should be placed on repairing and replacing signs on interstates and state highways in Montana?

1. Low
2. Medium
3. Moderately High
4. Very High
5. DK or NR

Question PriRemv

What resource priority should be placed on debris removal on interstates and state highways in Montana?

1. Low
2. Medium
3. Moderately High
4. Very High
5. DK or NR

Question PriRest

What resource priority should be placed on rest area cleanliness and maintenance on interstates and state highways in Montana?

1. Low
2. Medium
3. Moderately High
4. Very High
5. DK or NR

Question PriStrp

What resource priority should be placed on roadway striping on interstates and state highways in Montana?

1. Low
2. Medium
3. Moderately High
4. Very High
5. DK or NR

Question PriInfo

What resource priority should be placed providing accurate and up to date information about the current condition of state maintained highways in Montana?

1. Low
2. Medium
3. Moderately High
4. Very High
5. DK or NR

Question Heard511

Have you heard of the Montana 511 Travel Information System?

1. Yes
2. No
3. DK-NR

Question Used511

Have you ever used the Montana 511 system?

1. Yes
2. No
3. DK-NR

Question Addto511

Are there any additional features that you would like to see added to the 511 system?

IF THEY DO NOT MENTION ANY ADDITIONAL FEATURES, TYPE IN NO. IF THEY DO MENTION ADDITIONAL FEATURES, TYPE THEM IN. TO GO ON, CLICK THE NEXT BUTTON.
YOU HAVE THREE LINES FOR ADDITIONAL FEATURES.

Question TAP

Have you ever heard of the Transportation Awareness Program which is also called TAP?

1. Yes
2. No
3. DK-NR

Question Parade

Next I am going to mention several types of public events. For each type of event I mention, please tell me whether or not you have ever spoken to a Montana Department of Transportation employee at such an event.

At a Parade

1. Yes
2. No
3. DK-NR

Question Fair

At a county fair?

1. Yes
2. No
3. DK-NR

Question DrivEd

At a driver's education class?

1. Yes
2. No
3. DK-NR

Question WinTrain

At a winter driving training seminar?

1. Yes
2. No
3. DK-NR

Question TradShow

At a trade show?

1. Yes
2. No
3. DK-NR

Question SchClass

At a school class

1. Yes
2. No
3. DK-NR

Question Alive55

At a 55 alive event

1. Yes
2. No
3. DK-NR

Question OthSpeak

Have you ever spoken with a Montana Department of Transportation employee at any other public event?

1. Yes
2. No
3. DK-NR

Question WhtOth

What type of event?

TYPE IN THEIR ANSWER AND THEN CLICK THE NEXT BUTTON. YOU HAVE 3 LINES.

Question OthState

Just a couple of more questions about interstate and state highway maintenance.

Have you driven on roadways in states other than Montana in the last 12 months?

1. Yes
2. No
3. DK or NR

Question GenComp

How would you compare general roadway conditions of Montana's state maintained roadways with the general roadway conditions of state maintained roadways in other states? IF THEY SAY THEY HAVE BEEN IN MORE THAN ONE STATE, ASK FOR A GENERAL COMPARISON. IF THEY CANNOT DO THAT, HAVE THEM COMPARE WITH THE STATE THEY DROVE IN MOST RECENTLY.

1. Montana roadways worse
2. About the same
3. Montana better
4. DK or NR

Question WintComp

How would you compare winter maintenance of Montana's state maintained roadways with winter maintenance of state maintained highways in other states?

1. Montana winter maintenance worse
2. About the same
3. Montana better
4. DK or NR

Question RestComp

How would you compare rest area cleanliness and maintenance in Montana with rest area cleanliness and maintenance in other states?

1. Montana rest areas worse
2. About the same
3. Montana better
4. DK or NR

Question Better

The Department of Transportation is striving to improve maintenance operations. In your opinion what could the department do better?

TYPE IN ANSWER AND THEN CLICK THE NEXT BUTTON. YOU HAVE 3 LINES.

Question GoodNow

What is the department doing that meets or exceeds your expectations?

TYPE IN RESPONSE AND THEN CLICK THE NEXT BUTTON. YOU HAVE 3 LINES.

Question Trips

As you probably know different types of people have different types of opinions. The following questions are for statistical purposes only.

Which of the following types of trips would you say is most typical of your driving?

1. Commuting to and from work
2. Work related trips, that is trips that are made as a part of work activities.
3. Personal and family errands or trips
4. Agriculture related trips
5. Professional driving
6. Other
7. DK or NR

Question HowFar

Would you say you drive more or less than 15,000 miles per year?

1. More

2. Less

3. DK or NR

Question Age

How old are you?

TYPE IN THEIR AGE AND PRESS ENTER USE 100 FOR 100 OR OLDER AND 101 FOR DK OR NR.

Question Educ

What is the highest level of education you have completed?

TYPE IN ANSWER AND PRESS ENTER. 12 IS HIGH SCHOOL GRADUATE, 16 IS COLLEGE GRADUATE, 18 IS MASTERS DEGREE AND 20 IS DOCTORATE. USE 21 FOR DK OR NR

Question InMT

How long have you lived in Montana?

TYPE IN THEIR ANSWER AND PRESS ENTER USE 100 FOR 100 OR MORE AND 101 FOR DK OR NR.

Question Sex

RESPONDENTS SEX (DO NOT ASK)

1. MALE

2. FEMALE

Question Follow-up

The Montana Department of Transportation may make changes in the way it allocates resources based on the results of this study. Would you be willing to participate in a follow up study so that we can see if your opinions of highway maintenance change in the next two years?

1. Yes

2. No

3. DK or NR

Question Address

In order to include you in the follow up study, I will need your name, address and telephone number.

ENTER NAME ON ONE LINE; STREET ADDRESS ON THE NEXT LINE; CITY, STATE, AND ZIP CODE ON THE THIRD LINE; AND TELEPHONE NUMBER ON THE FOURTH LINE. PLEASE USE APPROPRIATE CAPITALIZATION AND SPELLING. YOU HAVE AN EXTRA LINE FOR ANY STRANGE THINGS IN THE ADDRESS.

Question Bye

That was the last question. Thank you very much for taking the time to answer these questions. Good bye and have a nice day (or evening).

Montana Department of Transportation

Montana Department of Transportation web site: www.mdt.state.mt.us

This survey and all preceding surveys are available at:
http://www.mdt.state.mt.us/departments/maintenance

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