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Transportation Customer Survey 2003

Executive Summary

This Transportation Customer Survey (TCS), undertaken from May-June 2003, replicates and expands the Constituent Service Quality Survey conducted in 2000 by the University of Missouri-Columbia. The study sample for TCS was comprised of 4,000 respondents with four hundred respondents in each of the ten MoDOT regional districts. This level of sampling provides valid and reliable data in each of the districts, as well as for the state as a whole with a sampling error of +/- 3 percent at the 95 percent level of confidence. The survey was implemented under contract with a commercial survey firm, and the process achieved an excellent 67.1 percent rate of response.

With input from MoDOT stakeholders, some changes were made in the questions from the 2000 survey instrument to reflect MoDOT priorities and recent contextual changes. Between the two surveys, a baseline of thirty-one items reflecting areas of MoDOT performance was retained for an analysis of improvement. Additional data is analyzed and summarized at the statewide level and for district management.

Missouri citizens express overall satisfaction with MoDOT's performance and available transportation system options.

Over two-thirds of the statewide sample respondents expressed satisfaction with MoDOT and more than three-quarters were satisfied with their transportation options. Among respondents claiming to be dissatisfied, about five percent claimed "extreme" dissatisfaction with their transportation options and roughly seven percent cited serious discontent overall with MoDOT. Older and younger respondents tended to give MoDOT higher satisfactory ratings regarding their overall satisfaction than did the middle-aged respondents, with respondents aged 45-54 more likely to rate MoDOT dissatisfactory on this question than other groups.

The oldest respondents tended to give MoDOT more satisfactory ratings regarding their transportation options than did the younger age respondents, with those respondents 45-54 years old more likely to rate MoDOT dissatisfactory on this question than all other groups.

Respondents with an eighth grade education or less gave MoDOT the highest percentage of satisfactory ratings on the question of overall performance and transportation options. Those

with a high school education or less were more likely to give MoDOT satisfactory ratings on both questions.

Most citizens satisfied with MoDOT performance in variety of specific areas of performance.

Thirty of the thirty-four items regarding MoDOT's current performance received either "satisfied" or "extremely satisfied" ratings by more than half the respondents surveyed. The mean rating for almost all thirty-four items in the survey was above 2.50, the mid-point of the scale used. The specific items with the highest ratings of satisfaction reflect technical aspects of highway management, while those items with the lowest ratings are those related to pavement quality and resource management. The ratings display many significant differences among respondent characteristics meaning the overall ratings cannot be widely generalized to all citizens.

Most citizens feel there is room for improvement in MoDOT's performance in many specific areas of work.

All thirty-four areas of performance were ranked as needing "more" or "a lot more" future attention by over half the TCS respondents. The areas of greatest need for future attention were those concerning pavement quality maintenance and meeting future demands on the highway system. Respondents' opinions about where future attention should be placed were quite strong, with twenty-nine of thirty-four items having a mean rating of over 3.0 (on a 4.0 scale). As with ratings of current satisfaction, respondent characteristics generally matter in understanding the nature of future attention ratings.

MoDOT perceived to be a strong performer but with significant differences between current satisfaction and ratings of need for future attention.

Constituents feel that, for the kinds of things they see and experience daily on the highways and in other transportation experiences, MoDOT is a strong performer. Discrepancy scores for some items exceed -1.0 while, for many items, the difference between ratings of current satisfaction and future attention is less than -0.5. All characteristics of respondents investigated make some difference regarding the discrepancy indicators and some, like age and education make a significant difference in nearly all the resulting differences.

TCS respondents do not have a clear preference for sources to increase MoDOT's fiscal base.

Only about thirty-six percent of the respondents believe that MoDOT receives enough money to do what is expected of it. Respondents were asked to consider which sources of additional revenue they would support for increasing MoDOT funding. They were given a number of possible choices and asked to rank their preferences. The results show that there is no consensus as to how additional funding should or could be provided to MoDOT, suggesting that some combination of sources may be most acceptable, although perhaps more complicated to arrange.

When given four possible choices, respondents allocated about twice as much of the fuel tax revenues to maintenance of the current system as to new construction.

Respondents allocated, on average, forty-two percent of the total fuel tax revenue to maintenance of the existing system. New construction attracted an average allocation of twenty-three percent with safety improvements and reducing congestion each attracting less than twenty percent of the tax revenues collected. As the level of overall satisfaction with MoDOT's performance declines, respondents generally allocated more funds to maintaining the current system. These additional funds were taken from those allocated to safety. Not only does age of the respondent make a significant difference (in three of the four choices), but all respondent characteristics show some degree of significant difference in the related response pattern.

TCS respondents generally indicated a high to moderate level of trust in MoDOT to perform as desired.

In all six areas posed to respondents (e.g., spending public funds efficiently, allocating funds fairly, providing a quality transportation system, completing highway projects on time and other related activities), the reactions indicate over sixty percent of respondents indicate they trust MoDOT to perform at least "to some degree" or "to a great degree." The tendency is clearly toward the trusting "to a great degree" end of the distribution rather than trusting "not at all." Trust in MoDOT is not related to the number of years a respondent has lived in Missouri. However, the higher the mileage driven annually by respondents the higher the level of trust assigned to MoDOT by the respondent for most of the six survey items. Even for commercial drivers, only one of the six areas showed any significant difference. The general pattern of responses for commercial drivers is quite similar to that for the total sample. Most all the items

indicate that sixty percent or more of commercial drivers feel they can trust MoDOT to perform in the areas investigated.

There is little support among TCS respondents for continuing to distribute fuel tax to other state agencies.

The results of TCS interviews indicate that there is little support for the statute that mandates distributing fuel tax to other state agencies. At the same time, respondents indicate substantial support for continuing to distribute a portion of these revenues to city and county governments.

Compared to the results of the 2000 survey, MoDOT has made modest progress in improving its performance.

Thirty-one items from the 2000 CSQS survey were repeated in the TCS and the majority of the items show small amounts of absolute improvement in current satisfaction with MoDOT's performance, reduction in the amount of future attention MoDOT needs to spend to address specific performance areas and smaller discrepancy scores. The trend is positive even though the absolute magnitude is not yet substantial, and only three years have expired since the baseline was established—a very short time in the context of the department's work.

TCS sample generally reflects the demographics of the state with only minor variations.

The MoDOT statewide sample is largely representative of the state as a whole and deviates from the overall state population only in minor ways by gender, age and education. The MoDOT sample under-represents respondents in the two youngest age categories and over-represents people in the 55 to 64-age group. Almost two-thirds of respondents are employed and twenty-one percent are retired. The sample contains fewer respondents without a high school diploma than is characteristic of the state population. About seventy-four percent have been state residents for at least twenty-one years. Six hundred ninety-six respondents have special transportation needs due to their own disability or caring for someone with a disability. Twelve surveys were conducted in Spanish.

The next statewide transportation customer survey is planned for 2006.

Chapter 1: Missouri Department of Transportation Customer Survey (TCS)

Acquiring reliable citizen input for decision-making in state agencies is a continuing challenge, one compounded by recent administrative policies that require agencies also to measure and base decisions on “performance” of their programs. The level of citizen satisfaction with the services provided by state agencies is generally considered a useful supplement to other measures of agency performance. The Transportation Customer Survey (TCS) and its predecessor, Constituent Service Quality Survey—CSQS, were designed to provide this kind of input for Missouri Department of Transportation (MoDOT) decision-makers.

Context for Survey Design: Missouri Transportation Issues

In July 1997, the Missouri Total Transportation Commission (TTC) was formed to review MoDOT’s 15-Year Highway Plan, formulated in 1992. The TTC studied all modes of transportation, reviewed needs and funding sources and recommended a number of actions to increase agency accountability. Increased accountability recommendations included *improved evaluation and oversight* of its performance.¹ These improvements can be supported by assessing the level of taxpayers’ satisfaction with the quality of services provided and systematically gathering reliable data on taxpayer preferences for infrastructure management decisions.

Citizen input provides useful measures of satisfaction with agency performance in delivery of services that, when combined with other measures of performance (such as annual number of bridges repaired or reconstructed), can help establish public accountability for transportation officials. Citizen input that reflects taxpayer perceptions of needs and priorities regarding public investment decisions in transportation is also useful to help guide agency personnel in meeting their management responsibilities.

Statewide Survey of Constituent Satisfaction with Service Quality

In order to gauge public needs, values and perceptions on MoDOT performance items and other variables related to transportation in Missouri, the agency contracted with the

¹ Italics added for emphasis. Also included in the recommendations were changes in the manner in which highway improvements are funded, better cost controls implemented within MoDOT and detailed base budget reviews conducted annually.

University of Missouri-Columbia (UMC) to undertake a statewide survey of Missouri taxpayers.² The first such study (Constituent Service Quality Survey—CSQS) was completed in 2000. Three years later, MoDOT requested that UMC replicate this study so that a comparison of performance satisfaction measures and perceived priorities for management could be made. After consultation with MoDOT staff and several stakeholders, a few minor changes were made to the original survey. A survey firm was hired to gather and provide the data to be analyzed. UMC completed the data analysis, compared the 2003 results with those from 2000 and reports the results in this document. As before, the focus is on measuring perceived levels of satisfaction of MoDOT constituents with present performance and expectations regarding future attention given to specific performance aspects of MoDOT’s work.

The approach used measures both expectations and perceptions to determine where there are gaps relevant to agency performance. These include gaps (determined by subtracting ratings of future priority from ratings of current satisfaction) such as the difference between constituents’ expectations and their perceptions of the service received. Over the long term, narrowing the gaps defined by these data provides important indicators of agency performance. These differences represent useful benchmarks to help define areas of improvement in performance. The approach provides valuable short-term feedback to MoDOT that is useful and reliable.

Developing the Survey Instrument

Initially, discussions were held with MoDOT representatives who formed the TCS Advisory Committee for this study. This committee is comprised of representatives from various units within MoDOT including: district offices, general headquarters, public information, planning, and research development and technology. With the assistance of this group, a review of the specific performance areas identified for assessment that correspond to the work performed and decisions made by MoDOT was completed. These areas were used as the basic measures of agency performance. When combined with a four-point scale that asked respondents to rate their level of satisfaction with MoDOT performance in these areas (from “extremely satisfied” to “extremely dissatisfied”), the data collected can be used as reliable indicators for

² For the purposes of this report, the initial definition of MoDOT “constituent” will be the taxpayer and the terms “customer,” “citizen,” “taxpayer” and “constituent” are used interchangeably. Operationally, this will mean the respondent definition is based on “households” (as telephone surveys can be most efficiently conducted using random digit dialing of telephone exchanges in Missouri that are tied to households rather than individuals.)

measuring perceived performance. The same items were used in the survey instrument in a second section (with the same four-point scale) asking respondents to indicate the level of attention they felt MoDOT should assign these areas in the future. The final step in the analysis involves creating indicators by subtracting the scale scores assigned by each respondent for current satisfaction and future priority as indicated in Figure 1.1.

Figure 1.1: Computation Method for Discrepancy Indicator

$$\text{DISCREPANCY} = \begin{array}{l} \text{(Level of current satisfaction in area)} - \\ \text{(Level of future priority to assign to area)} \end{array}$$

These thirty-four areas are listed in Table 1.1 and include items related to safety, maintenance, new highway construction, multi-modal issues and management of resources. An additional listing is also located on the inside of the back cover for easy reference. (Those items new to the 2003 survey are noted with an asterisk.)

Another source of information was a series of key stakeholder interviews conducted by the research team. The MoDOT TCS Advisory Committee identified stakeholders representing various interested parties in the state including public transportation services, community governments, emergency service providers, planning and development councils, and state legislators (see Appendix C). Successful face-to-face interviews were conducted with twenty of these individuals, and information was obtained about many “issues” the stakeholders felt should be addressed by the study. Many stakeholders felt strongly that constituent perceptions of MoDOT’s management of its resources, and planning and priority-setting procedures should be included in the study as they were in the original study.

Information from these sources was assembled and a final draft instrument was reviewed with the TCS Advisory Committee. Upon approval by this group, a Request for Proposals was issued by UMC for “telephone survey services” to about twenty potential providers. Ten bids were received and evaluated by the Principal Investigator and MoDOT Research, Development and Technology (RDT) staff. A contract was established with SRBI based on the reasonableness of the price quoted, the technical quality of its bid and its experience in transportation related survey work. Once SRBI had prepared a draft of the survey for implementation, the Principal Investigator traveled to the survey center to supervise a test of the instrument. This test honed the

Table 1.1: Listing of 34 Items Included in the Survey

Item #	Item Description
1	Using electronic message boards to advise drivers of delays or construction areas
2	Placing yellow warning signs to assure sufficient response time
3	Removing snow/ice efficiently
4	Having signs that can be easily seen at night or in bad weather
5	Building bridges that last a long time
6	Providing useful information about construction, repairs or road conditions
7	Providing lanes that are wide enough for safe driving
8	Communicating with the public in easy to understand language
9	Building bridges that are wide enough to feel safe
10*	Providing the ability to see far ahead on highways and have unobstructed views at intersections
11	Striping center lines and road edges to ensure safety
12	Lighting interchanges and bridges
13	Providing crosswalks and signals for pedestrians to cross the highway safely
14	Treating highway surfaces to resist skidding in wet weather
15*	Managing traffic flow in construction zones to minimize delays to drivers
16	Providing enough passing opportunities on two-lane highways
17	Providing pavement markings that can be easily seen in wet weather
18	Providing passenger light rail routes that meet your needs
19	Building new highways to meet future demand
20	Providing the public with adequate opportunities for input in project planning
21	Providing sufficient transportation for those who don't or can't drive
22	Honoring commitments to provide and maintain Missouri's transportation system
23	Planning a project in a reasonable amount of time
24	Completing road and bridge construction and repairs in a timely manner
25	Providing shoulders that are wide enough to pull off the road safely
26	Providing Amtrak passenger rail service to meet your needs
27	Improving existing highways to meet increasing traffic demands
28*	Acting on recommendations from the public
29	Providing pedestrian/bicycle pathways on or next to highways that are safe
30	Providing pavement that lasts a long time
31	Using public funds in a cost-effective manner
32	Repairing pavement surface promptly
33	Distributing transportation funds fairly to all areas of the state
34	Maintaining the pavement so it provides a smooth ride

Note: New performance items for TCS 2003 are marked with an asterisk.

questions removing any items that were confusing and determining where item wording should be changed. Several minor changes were made to facilitate implementation. The Principal Investigator approved the final instrument in April 2003, and the data collection commenced.

Data were collected over a five-week period, ending about June 5, 2003. SRBI provided a cleaned data set and technical report on the survey methodology used to the Principal Investigator in early July 2003.

Report Outline

The following chapters in this report present the research methodology, survey respondents, and survey results and research findings. Chapter 2 provides an orientation to the data collection methodology, as well as an introduction to the kinds of analyses and subgroup comparisons used throughout the data discussion. Chapter 3 presents data on various characteristics of the survey sample. The first sections examine respondent social and demographic characteristics. Later portions focus on transportation and driving habits of the sample, including such variables as annual miles driven, license types and service usage. Chapter 4 presents respondent ratings of thirty-four MoDOT performance dimensions ranging from safety to the effective use of public funds. The focus in this chapter is on respondents' ratings of satisfaction and their opinions about the level of future attention that various activities ought to receive. Chapter 5 presents the description and analysis of differences between respondents' ratings of satisfaction and their opinions about future attention. Chapter 6 moves from the analysis of survey items to other aspects of customer satisfaction with MoDOT operations such as attitudes towards resource allocation. Chapter 7 compares the results of the TCS with the baseline created in the CSQS in 2000 and a more integrated discussion of the implications of the survey data for MoDOT management and planning.

The Appendices to this report includes additional information on the TCS team and stakeholders consulted in this project, the complete methods discussion used in the TCS and a complete set of statewide results for survey variables. Part 2 of this report contains the summary results for each MoDOT district.

Chapter 2: Study Methodology and Data Presentation

This chapter presents information on the research design, sample and collection methodology, as well as an introduction to the general types of analyses contained in this report. Data for this project were collected through telephone surveys of 400 randomly chosen telephone listings in each of the ten MoDOT districts in the state (see Figure 2.1).

Research Sampling Design

MoDOT representatives requested data on a statewide and district basis. The overall sample size was determined according to a binomial percentage distribution of 60/40 on a hypothetical dependent variable with a sampling error of plus or minus 2.9 percent at a ninety-five percent level of confidence. In essence, the goal was to maintain a maximum sampling error of plus or minus three percent for each district and the state as a whole. Using these criteria, and building in a modest statistical buffer, the goal was to collect 4,000 interviews statewide from residents aged eighteen years and above. Table 2.1 shows the overall sampling design numbers and total usable surveys collected.

Survey Implementation

Data collection was completed by SRBI, a commercial firm specializing in telephone surveys. SRBI selected respondents through use of a procedure called “list-assisted random-digit dialing.” This method efficiently takes advantage of the availability of large computer databases of telephone directory information. The random digit aspect of the sample selection avoids response bias and provides representation of both listed and unlisted numbers (including not-yet-listed). The design of the sample ensured this representation by random generation of the last two digits of telephone numbers selected on the basis of their area code, telephone exchange and bank number. A working bank is defined as 100 contiguous telephone numbers containing three or more residential listings. Although this process takes longer because it does not exclude unused numbers, businesses, fax/modems or other unusable listings, it is the most random of all approaches. Telephone numbers were generated by random selection within zip codes encompassed in each district.

Figure 2.1: Map of MoDOT Districts (Basis of Sampling Frame)

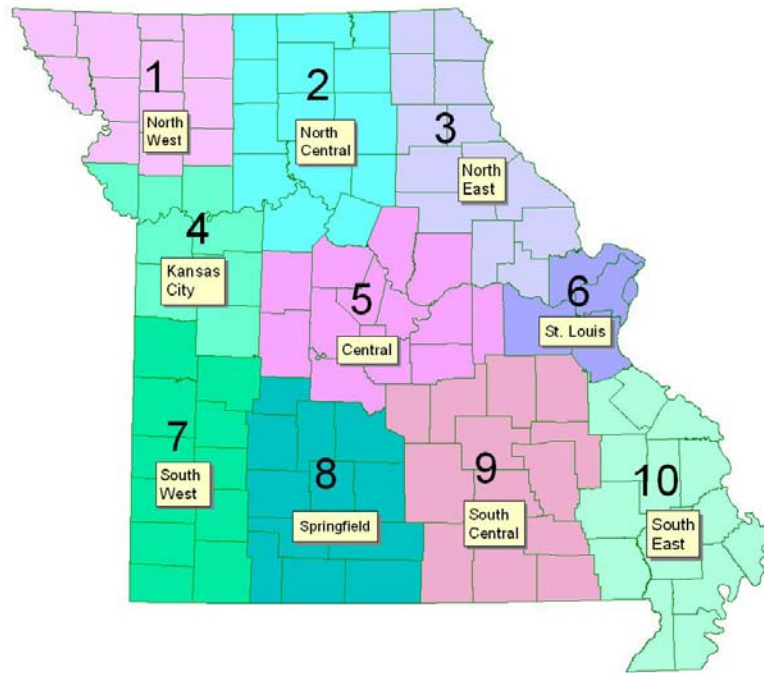


Table 2.1: Sample Design

	North West	North Central	North East	St. Louis	Central	Kansas City	South West	Springfield	South Central	South East	Total
District Population Size	152,952	135,488	148,247	1,431,466	344,975	830,286	242,861	394,075	191,869	295,300	4,167,519
% of State Population	3.7	3.3	3.6	34.3	8.3	19.9	5.8	9.5	4.6	7.1	100%
Sample Size	400	400	400	400	400	400	400	400	400	400	4,000
Completed and Usable Cases	401	402	399	401	400	401	402	400	401	403	4,010**
Sample Weight	0.366	0.323	0.356	3.426	0.828	1.982	0.580	0.946	0.459	0.703	N/A
Proportional Sample Size*	146.77	129.85	142.40	1373.83	331.20	796.76	233.16	378.40	184.06	283.31	3,999.73
% of Total Sample, Weighted	4%	3%	4%	34%	8%	20%	6%	9%	5%	7%	100%

**Proportional Sample Size represents the number of “good numbers” actually derived from the random sample of phone numbers available when business/government, cell phone, fax, etc., phone numbers are eliminated. Respondents only include individuals age 18 years and older. The population from which the sample was drawn includes all Missouri residents over 18 years of age. The proportional sample size does not equal 4,000 exactly due to the fractional components resulting from application of the weighting factors shown in the table. These have been rounded to the closest hundredths. For the analysis herein, each of these numbers is rounded to the nearest whole number.*

***This number does not reflect the two surveys that were coded by hand rather than the automated system used by SRBI. See Appendix A.1 for a reference to this procedure. The total sample of completed interviews is 4,012.*

SRBI used the Trodahl-Carter-Bryant (T-C-B) respondent selection method to select eligible respondents from households randomly contacted for the study. The T-C-B method requires the interviewer to ask two questions shortly after the introductory statements, “How many adults aged eighteen or over live in your household, including yourself?” and “How many of them are women/men?” Based on the answers to the two questions, the interviewer can objectively select the most appropriate respondent using the selection matrix that appears on their computer screen. The likelihood of within-sampling-unit non-coverage error is thus minimized because all eligible respondents in a household are equally considered by the selection method.

SRBI enumerators made at least five attempts to reach “ring, no answer” numbers before dropping that number from the sample list. The calls are scheduled each day between 4:30 pm and 9:30 pm (CDT) to maximize the chances of making contact with a potential respondent. All refusals are contacted at least one additional time in order to (attempt) to convert them to completed surveys.

The data was collected in May and June 2003. Interviews lasted an average of 20.1 minutes. Twelve surveys were conducted in Spanish. Overall, the response rate was 67.1 percent. The total number of refusals was 303 among potential respondents. Given the topic and length of the survey, the response rate is exceptional and constitutes a sufficiently high percentage to maintain specified confidence intervals. The survey sample was compared to the state population as a whole to examine possible demographic and social biases, and these comparisons are reported in Chapter 3.

The final usable total sample includes 4,012 respondents distributed as shown in Table 2.1. Given the initial “buffer” built into the original targeted survey numbers, the final statewide and region sample numbers satisfy statistical requirements that the data contain a less than +/- 3 percent sampling (or other random) error with a 95 percent confidence interval. As indicated in Table 2.1, the original sample of 4,012 respondents does not accurately represent the state as a whole as the same number of respondents in each district is not proportional to the population found in each district. So, in order to eliminate the bias in the original sample, the results were weighted. The weighting factors (shown in Table 2.1) were calculated. The calculation was based on the ratio of district to state population. This sample weight for each district produces a number of respondents (for the statewide analysis) that is proportional to the population in each

district (as of 2000). The resulting “proportional sample size” is equivalent to this proportion as noted in the last row of Table 2.1. A complete review of the study methods is provided in Appendix A.

Descriptive Analysis and Significance Testing

Most of the data discussions in the following chapters include descriptive statistics on each survey item, including mean scores and respondent percentages within categories. Where mean scores are presented, readers will typically find mention of the scale endpoints (e.g., “scale of 1-4”) and a descriptor of the value at each endpoint (e.g., “1=very dissatisfied, 4=very satisfied”). By far, the most commonly utilized scale in this research is a four-point Likert scale. For example, satisfaction levels are rated along the following points: 1=extremely dissatisfied, 2=dissatisfied, 3=satisfied and 4=extremely satisfied. Similarly, ratings of future attention that ought to be devoted to various performance items are given as 1=a lot less, 2=less, 3=more and 4=a lot more. With the use of four-point scales, the mean score that would represent a mid-point of respondent evaluations (e.g., as dissatisfied/satisfied) is 2.50. The four-point scale was used throughout the survey to ease comparative research and to provide respondents (and readers) with an unambiguous ordinality of response categories.

The analysis of the MoDOT data includes both univariate and bivariate analysis. Univariate analysis focuses on examination of the distribution of cases on one variable at a time. In most cases, the format is solely one of frequency distributions of grouped data, e.g., percentage of respondents who answered “yes” or “no” to a particular question, or percentages of respondents selecting each point on an ordinal scale. The “mean” (or average response) is also reported on many items. Bivariate analysis is used for inferential analysis of subgroup comparisons (e.g., between sample regions). In making inter- or intra-group comparisons, only tests of statistical significance are considered. The most common procedure used in reporting the data is significance testing of mean scores between subgroups of the survey sample. In essence, a designation of significant difference in this report denotes that the reported differences between groups will occur by chance or sampling error in only five of every one hundred instances. The second test of significance used is that of chi square (X^2) analysis, which examines the observed distribution of values on two separate variables and computes the conjoint distribution that would be expected if there were no relationship between the variables. Chi square analysis compares the expected and actual distribution of cases and determines the

probability that any discovered differences could have resulted from sampling error alone. As with means testing, only chi square analyses with a probability value (or p-value) of $< .05$ are reported as significant.

Sample Subgroups

A major dimension of the analysis of the MoDOT data is subgroup analysis. In accordance with preferences communicated by the Transportation Customer Survey (TCS) Advisory Committee, many survey items have been subjected to comparative analysis based on gender, age, education, income, annual miles driven and possession of a commercial driving license. Table 2.2 shows the composition of each subgroup and the basis of its derivation. Throughout this report, references to comparative analysis of any subgroup refer to the categories noted in this table. Primarily, subgroup analysis is performed on the statewide or total sample (e.g., gender differences statewide). In Part 2, each district's summary report is provided.

Summary

In summary, a systematic random telephone survey was implemented in May-June 2003. Trained enumerators collected 4,012 usable surveys, including approximately 400 surveys from each MoDOT district. Statewide and district sample size ensures a sampling error of no more than plus or minus 2.9 percent at a 95 percent level of confidence.

The survey data were subjected to both univariate and bivariate analyses. Comparative subgroup analysis involved testing for significant difference based on respondent geographic region, gender, age, education, 2000 household income, annual miles driven and whether or not respondents had a commercial driving license. All references to statistically "significant" difference are cases where the level of statistical significance is $.05$ or greater.

Table 2.2: Composition of Subgroups

Subgroup Category	Number (n)	Basis of categorization
Total Sample Size		
Total	3,999.73	Total after application of weighting factors to actual number of telephone interviews (4,012). Zip code associated with telephone prefix. In cases where a prefix crossed regional lines, regional location was determined by the zip code's primary geographic location.
Gender		
Male	1,911.00	As noted by interviewer.
Female	2,089.00	
Age		
18-24	345.204	Self-reported by respondents at time of their interviews. Responses were categorized into the following categories at the time of the interview.
25-34	609.615	
35-44	826.155	
45-54	810.711	
55-64	663.494	
65 or older	730.138	
Education		
High School Diploma or Less	1,428.180	Self-reported by respondents at time of their interviews. Education levels were reported in seven categories.
At least some college	2,559.991	
Miles driven (2002)		
<10,000 miles	1058.085	Self-reported by respondents at time of their interviews. Miles driven were reported as continuous variable and categorized for analysis.
10,000-20,000 miles	1377.683	
>20,000 miles	1248.531	
Years Lived in Missouri		
< 10 years	464.129	Self-reported by respondents at time of interviews. Years lived in Missouri were reported as actual years and categorized for analysis.
10-19 years	457.904	
20-29 years	677.013	
30 years or more	2392.827	
Commercial Driving		
Yes	411.277	Self-reported by respondents at time of their interviews.
No	3586.968	
*The number (N) for each category does not always total 4,000 (total weighted sample) due to missing/refusal responses. The missing/refusal Ns are as follows: age (14.413), education (11.559), miles driven (315.431), years lived in Missouri (7.857) and possession of a commercial license (1.485). In following sections, all numbers are rounded to the nearest whole number to facilitate presentation (i.e., 3,999.73 = 4,000).		

Chapter 3: Social, Demographic and Transportation Characteristics of the MoDOT Survey Sample

This section describes general social, demographic and transportation characteristics of the total MoDOT survey sample. The first section discusses basic demographic and social traits; the second portion presents information on the transportation characteristics, particularly items linked to driving habits.

General Demographic and Social Characteristics

The objective of this section is to describe some of the basic social and demographic characteristics of the statewide sample.

Table 3.1: Social and Demographic Characteristics of the Survey Sample

Characteristics	% of Total		Characteristics	% of Total
Age			Years in Missouri	
18-24	8.6		Less than 6 years	7.6
25-34	15.2		6-20 years	18.2
35-44	20.7		21 or more years	74.2
45-54	20.3		Employment Status	
55-64	16.6		Employed Full Time	54.0
65 or older	18.3		Employed Part Time	9.0
Gender			Unemployed	2.7
Male	47.8		Retired	21.4
Female	52.2		Student	2.7
Education			Homemaker	7.1
Less than HS Graduate	6.8		Disabled	2.1
High School/GED	28.9		Other	1.0
Some College/No Degree	26.4		<i>Numbers in characteristics categories may not add to 100 due to missing data or non-responses.</i>	
College Graduate	22.1			
Post Grad/Prof.-Bus. School	15.5			

Respondents between 35 and 54 years of age account for about forty percent of the sample. Individuals age 35 to 44 years comprise the largest single group. The overall respondent pool is 52.2 percent female. The educational profile of the total sample includes about 35.7 percent with a high school education or less, approximately one-quarter with some college and the remaining 37.6 percent with a completed college education or an advanced degree. The total sample shows little inter-state mobility, with just under three-quarters claiming residence in Missouri for more

than twenty years. Approximately two-thirds of respondents are employed, the majority with full-time work. Twenty-one percent of the sample is retired.

Comparisons of MoDOT Survey Sample Characteristics with State Population

Differences between the MoDOT survey population and state population as a whole are minor. The MoDOT survey respondents are slightly older, slightly more frequently female and more highly educated. In terms of age, the MoDOT sample under-represents respondents

Table 3.2: Comparisons of Missouri Census Data and MoDOT Survey Sample

	State of Missouri*	MoDOT Survey Sample**
Age		
18-24	12.9%	8.6%
25-34	17.7%	15.2%
35-54	39.1%	40.9%
55-64	12.2%	16.6%
65 or older	18.1%	18.3%
Gender		
Male	48.6%	47.8%
Female	51.4%	52.2%
Education		
Less than HS Graduate	31.5%	6.8%
High School/GED	27.6%	28.9%
Some College/No Degree	22.8%	26.4%
College Graduate	18.2%	37.6%
<i>* State totals based on the 2000 Census.</i>		
<i>** The missing/refusal Ns are as follows: age (13), education (14). Totals may not add to 100 due to missing/refusals that are not counted.</i>		

in the two youngest age categories and over-represents people in the 55-64 age group. The MoDOT sample is about fifty-two percent female, slightly higher than the proportion of females in the state population. Finally, the survey sample contains far fewer respondents without a high school diploma than is characteristic of the state population as a whole. The two groups are similar in terms of high school graduations, but the MoDOT group has significantly more people with at least some years of college education.

Respondent Transportation Characteristics

Respondents were asked, “Approximately how many miles do you drive per year, including miles driven for both pleasure and business?” The average number of miles driven

was 17,735. The largest percentage of respondents (34.0 percent, N=1,378) drives 10,000-20,000 miles per year. When the number of miles driven per year was analyzed statewide across five demographic variables (age, gender, education, income and commercial driver status) all were statistically significant. Males were more likely to drive 10,000 or more miles per year than females. Females were more likely to drive less than 10,000 miles per year or not to drive.

Those aged 65 and older were more likely not to drive or to drive less than 10,000 miles per year than those under the age of sixty-five. Respondents aged 35-44 were more likely to drive 20,000 or more miles per year than other age groups. Respondents with a high school education or less were more likely to drive 10,000 miles annually or less. Commercial and professional drivers were twice as likely to drive 20,000 miles or more per year than non-commercial drivers.

All respondents were read a list of five common reasons people drive or made trips and asked to indicate whether or not they drove or make trips for each reason. The five reasons are commuting to or from work or school, personal or family errands (shopping, doctor's appointments, church, etc.), work related trips (sales calls, business meetings, etc.), pleasure or recreation trips (vacations, visiting friends or relatives, etc.), or farm and agricultural trips. The data indicate that the most frequent reason for making trips or driving was commuting (66.9 percent, N=2676) and that the least frequent reason for making trips was for farm or agricultural reasons (0.1 percent, N=6).

Respondents were asked, "Do you do any commercial or professional driving?" Of the 4,000 respondents, 10.2 percent (N=411) responded, "Yes." Commercial/professional drivers drive significantly more miles per year than non-commercial drivers; commercial drivers average 33,627 miles; non-commercial drivers average 15,920 miles. Commercial drivers were more likely to be male, less than 65 years of age and to drive 20,000 or more miles per year.

Respondents were asked, "Are you or anyone who relies on you for transportation disabled?" Only 17.4 percent (N=696) of the respondents answered, "Yes." Those with special transportation needs due to a disability were statistically more likely to be 55-64 years of age or older than those 18-34 years old. Respondents with special transportation needs were statistically more likely to drive less than 10,000 miles per year. There are also statistically significant differences between respondents with special transportation needs and those without special needs when examined by gender, education or years lived in Missouri.

Respondents were asked, “Do you currently hold a valid driver’s license?” More than ninety-five percent (3,804 respondents) indicated “Yes.” Respondents with a valid driver’s license were statistically more likely to have completed “some college or more” for education, be 45-54 years of age, male, and to drive 10,000 or more miles per year. Commercial drivers were more likely to have a valid driver’s license than non-commercial drivers.

In summary, the MoDOT statewide sample is largely representative of the state as a whole and deviates from the overall state population only in minor ways by gender, age and education. The largest proportion of survey respondents was between 35-54 years of age and is about fifty-two percent female and forty-eight percent male. A majority has a least some college education, with slightly more than thirty-five percent ending their formal education with a high school diploma or less. Almost two-thirds of respondents are employed, and about twenty-one percent of respondents are retired. While a small percentage (twelve percent) has lived in Missouri less than ten years, slightly more than seventy-seven percent have been state residents for at least twenty-one years.

The sample is somewhat comprised of respondents who annually drive less than 10,000 miles, that make up 26.5 percent of the sample (N=1058); respondents who drive between 10,000 and 20,000 miles that make up 34.4 percent of the sample (N=1378) and those who drive more than 20,000 miles who represent 31.0 percent of the sample (N=1248). About five percent have no driver’s license (N=190), while slightly more than ten percent report commercial or professional driving (N=411). Almost sixty-seven percent commute to work (N=2676) while only twenty-four percent (N=940) drive principally for personal and family reasons. Six hundred and ninety-six respondents have special transportation needs due to a disability or because they care for someone with a disability.

Chapter 4: Findings of the Survey: Perceptions of MoDOT Performance

The performance of Missouri's Department of Transportation was measured in several ways. Using multiple approaches provides greater confidence that the evidence gathered is reliable and accurate, especially when using perception data from telephone surveys. Constituents who agreed to be interviewed were asked questions about how they would rate their satisfaction with current department performance in accomplishing a number of aspects of transportation-related work. Constituents were also asked to rate each of these same items regarding their perception about the degree of future attention that the department should give to each aspect. These two dimensions—current satisfaction and future attention—were used to compute discrepancy measures that are discussed in Chapter 5. Constituents were also asked a broad question about their general level of satisfaction with MoDOT performance in providing transportation services. These results are presented and discussed in this chapter.

Modifications made to this version of the survey involved eliminating performance items (from the CSQS) on which MoDOT was considered to be performing well in 2000. Therefore, it was considered unnecessary to ask customers of their perceptions on these items. Ten of the original forty-one items were removed for this reason. Three new items that were added to the instrument reflect aspects of MoDOT activities related to the management of construction sites and congested traffic flow. The wording of two other items was modified to more accurately reflect MoDOT efforts and make responses more accurate.

Overall Satisfaction

Respondents were asked two general questions concerning their overall satisfaction with transportation in Missouri. One inquiry asked them to give an overall rating of their satisfaction with MoDOT as a provider of transportation services and a second solicited respondents' ratings of satisfaction with their available transportation options. Statewide, mean levels of satisfaction are higher for transportation options (2.79, on a scale from 1=extremely dissatisfied to 4=extremely satisfied) than for MoDOT's overall performance (mean of 2.66), and the mean difference between the two issues is significant. The total number of respondents selecting each of the satisfaction categories is shown in Figure 4.1.

Over two-thirds of the statewide sample expressed general satisfaction with MoDOT's overall performance. Over sixty-seven percent responded "satisfied" or "extremely satisfied."

The responses to the question regarding satisfaction with available transportation options show that seventy-six percent (Table 4.1) were either satisfied or extremely satisfied. Among respondents claiming to be dissatisfied, about five percent claimed extreme dissatisfaction with their transportation options and roughly seven percent cited extreme dissatisfaction with MoDOT performance overall.

Table 4.1: Percent Responses by Response Category for General Satisfaction Questions in TCS

Response Categories	Satisfaction with Transportation Options	Overall Satisfaction with MoDOT Performance
	Percent	
Extremely Dissatisfied	4.7%	6.8%
Dissatisfied	19.3%	25.5%
Satisfied	68.0%	62.6%
Extremely Satisfied	8.0%	5.1%
Total	100.0%	100.0%
TOTAL SATISFACTION		
Satisfied + Extremely Satisfied	76.0%	67.7%

There are several significant subgroup differences in overall satisfaction scores for both questions. Age and education subgroups statewide show significant variance in ratings of overall satisfaction for MoDOT. In terms of age differences, more respondents in the youngest age category (18-24 years) and those over sixty-five gave MoDOT satisfactory ratings than did respondents in the middle-aged groups (Figure 4.1). Respondents aged 18-24 and 65 and over gave MoDOT the highest level of satisfaction ratings among all age categories for overall satisfaction.

A somewhat similar age difference is found in respondent ratings of satisfaction with the available transportation options. Figure 4.2 indicates that, as before, the oldest-aged group (65 and over) has a significantly higher number of respondents answering “satisfied” on this question than other age groups. However, younger respondents tended to give MoDOT higher satisfactory ratings regarding their transportation options than did the older age respondents except for the 65 and over group. As noted above, respondents more frequently expressed satisfaction than dissatisfaction with their transportation options. Respondents aged 45-54 more frequently gave a “dissatisfied” or “extremely dissatisfied” response than other age groups.

Figure 4.1: Percent of Respondents Expressing Overall Satisfaction with MoDOT Performance by Age Category

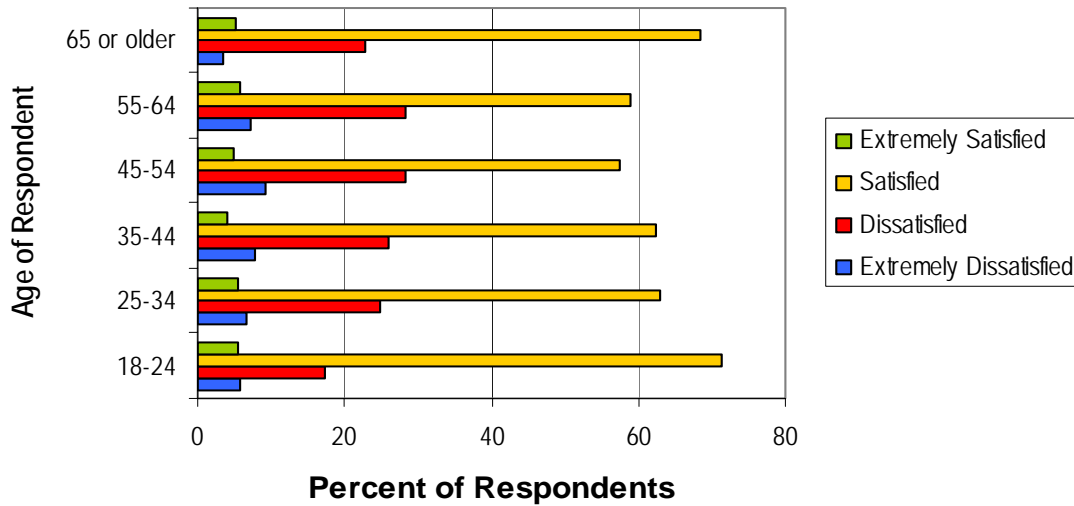
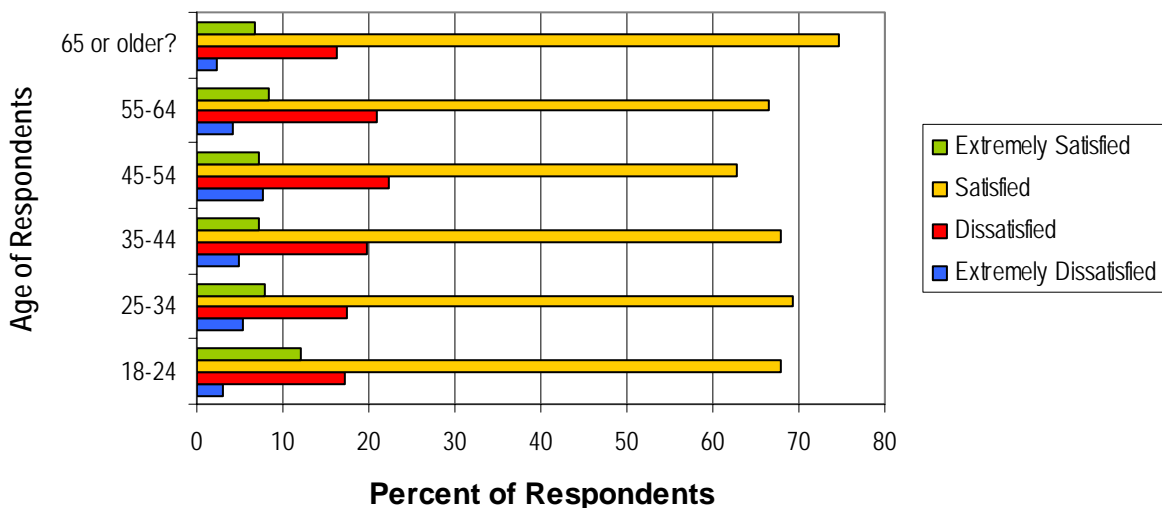
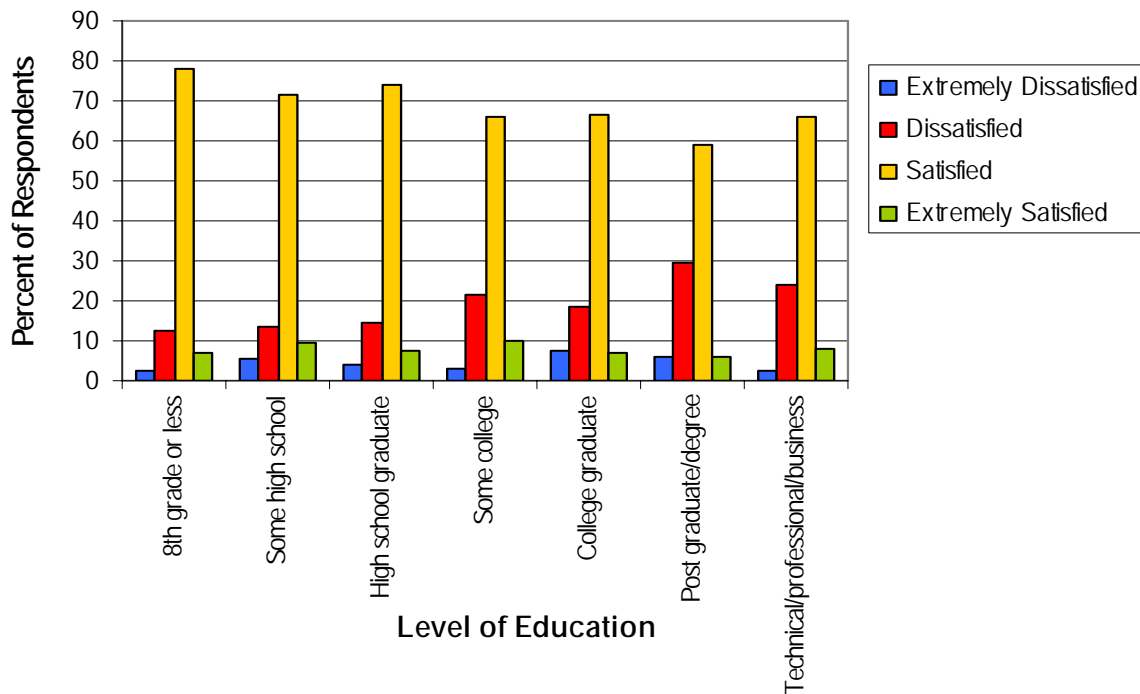


Figure 4.2: Ratings of Satisfaction with Available Transportation Options by Age Category



When examined by education levels, respondents with a 8th grade education or less gave MoDOT the highest percentage of satisfactory ratings on the questions of overall performance and transportation options (Figures 4.3 and 4.4). Those with a post graduate education were less likely to give MoDOT satisfactory ratings on available transportation options, and those with a college degree were less likely to give MoDOT satisfactory ratings on overall performance. The difference between educational attainment groups is statistically significant. Those respondents with “some college” education and college graduates more often responded “dissatisfied” to

Figure 4.3: Respondents' Ratings of Satisfaction with Transportation Options in Missouri by Educational Attainment Category



the question regarding satisfaction with overall performance and available transportation options than other age groups. It can be concluded that education makes a difference in how MoDOT's overall performance is perceived. Those with less than an eighth grade education perceive MoDOT's overall performance as significantly higher than those respondents with higher levels of education.

Finally, there are few differences in the relationship between miles driven annually and responses to these two questions. As shown in Table 4.2, the level of satisfaction with overall performance decreases with mileage driven while the level of dissatisfaction increases. This pattern is somewhat more pronounced regarding responses of "extremely dissatisfied." The pattern does not hold for respondents indicating extreme satisfaction; i.e., as miles driven annually increases, the percentage of respondents answering extremely satisfied increases. The decrease in the percentage of respondents expressing satisfaction as more miles are driven is somewhat expected. Greater familiarity (expressed as miles driven annually) with the condition of the infrastructure is likely to be related to a respondent's perceptions of infrastructure quality.

Figure 4.4: Percent of Respondents Expressing Overall Satisfaction with MoDOT in Missouri by Educational Attainment Category

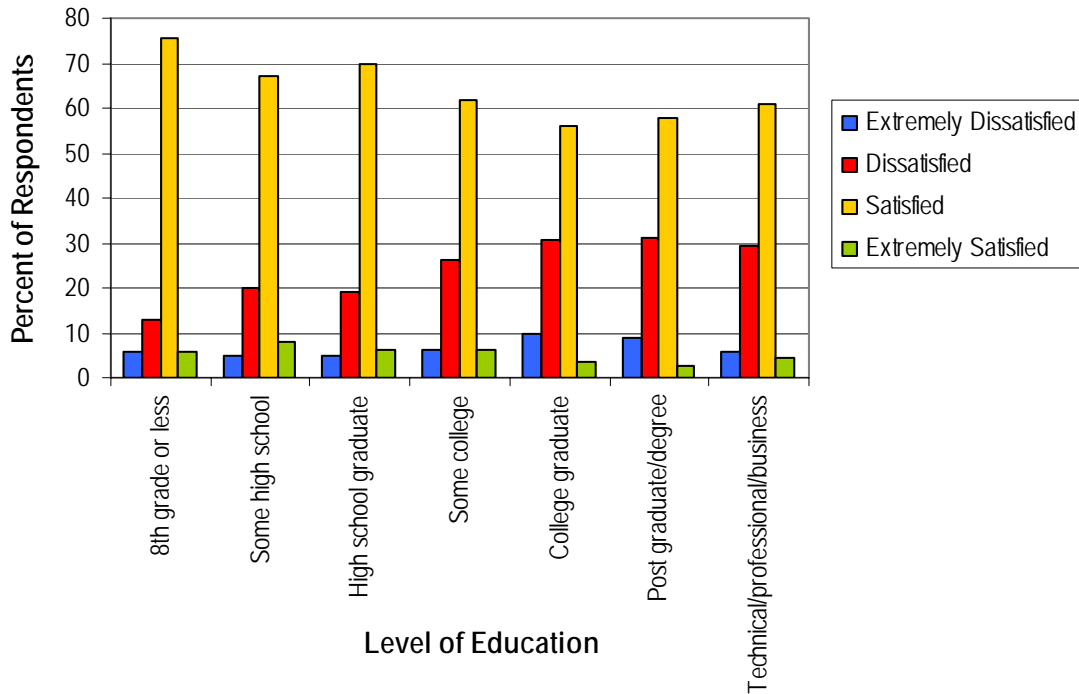


Table 4.2: Statewide Frequencies of Overall Satisfaction by Miles Driven

Miles Driven Annually	Satisfaction with MoDOT's Overall Performance				Total
	Extremely Dissatisfied	Dissatisfied	Satisfied	Extremely Satisfied	
<10,000 miles	4.5%	22.9%	68.2%	4.5%	100.1%
10,000 to 20,000 miles	7.0%	24.8%	63.3%	4.9%	100.0%
>20,000 miles	8.3%	27.9%	58.3%	5.6%	100.1%
Satisfaction with Available Transportation Options					
<10,000 miles	4.2%	20.0%	69.3%	6.5%	100.0%
10,000 to 20,000 miles	6.0%	18.9%	68.0%	7.1%	100.0%
>20,000 miles	4.1%	19.1%	67.1%	9.6%	99.9%

Note: Totals may not add to 100% due to rounding.

With regard to level of satisfaction with transportation options provided by MoDOT, the level of dissatisfaction decreases very slightly with increased annual mileage driven and the level of satisfaction also decreases slightly. This decrease does not appear to suggest any logical

relationship except that additional options are considered desirable as more miles are driven. As in the example above, the percentage of respondents answering extremely satisfied increases with miles driven. In addition, the percentage of those answering satisfied with overall performance is about the same as those expressing satisfaction with transportation options.

Another outcome of the analysis is found in a comparison of respondents' ratings of satisfaction with MoDOT's overall performance and how they compare Missouri's roadways to those in other states (Table 4.3). Respondents were asked if they had driven in other state(s) in the past year. All those who responded yes (seventy-seven percent, N=3083) were asked to rate Missouri's roads as "about the same," "better," or "worse" than those in the other state(s) in which they had recently driven. Those respondents who rated Missouri's roads "better" or "about the same" compared to those in other states, were very likely to give MoDOT satisfactory ratings on overall performance. Those respondents who rated Missouri's roads "worse" were more likely to rate MoDOT's overall performance dissatisfactory. With regard to satisfaction with transportation options available, respondents who rated Missouri's roads as "better," "worse" or "about the same" as those in other states were more likely to give MoDOT satisfactory ratings. These results were statistically significant. Thus, the only area in which respondents were dissatisfied with available options or overall performance, based on their assessment of driving experiences in other states was for those respondents who felt Missouri's roads were "worse"

Table 4.3. Respondents' Overall Ratings of MoDOT Compared to Driving Experiences in Other States

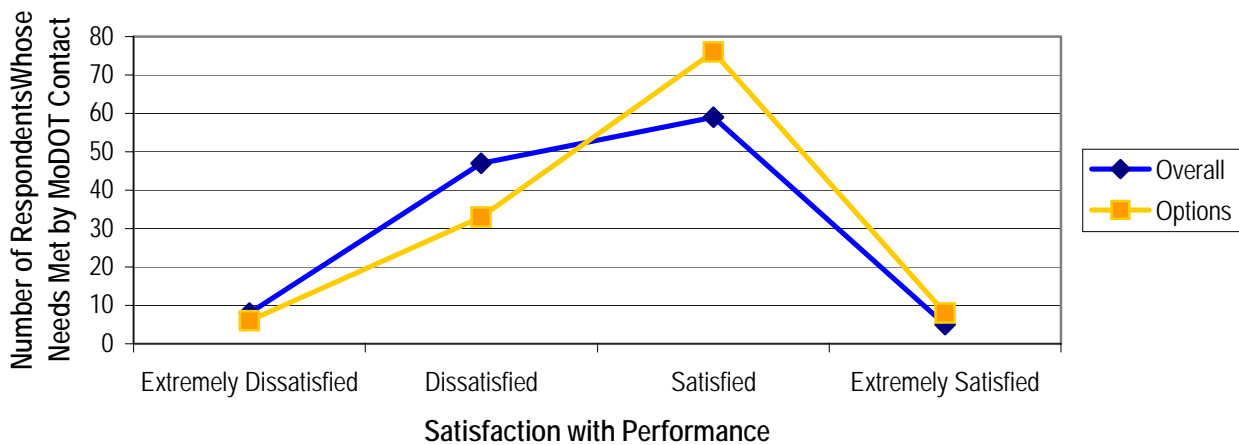
Ratings of Highway Conditions in Other States	Satisfaction with Overall MoDOT Performance				Row Total
	Extremely Dissatisfied	Dissatisfied	Satisfied	Extremely Satisfied	
Better	0.5%	12.7%	74.4%	12.4%	100.00%
Worse	15.1%	42.5%	41.2%	1.2%	100.00%
About the same	1.6%	16.7%	76.1%	5.6%	100.00%
Don't know	7.5%	19.4%	61.2%	11.9%	100.00%
Refused	0.0%	0.0%	100.0%	0.0%	100.00%
	Satisfaction with Available Transportation Options				
Better	3.0%	17.9%	63.9%	15.2%	100.00%
Worse	6.4%	27.3%	61.0%	5.3%	100.00%
About the same	4.4%	14.3%	73.0%	8.3%	100.00%
Don't know	6.1%	24.2%	63.6%	6.1%	100.00%
Refused	0.0%	0.0%	100.0%	0.0%	100.00%

than those in other states in which they had driven in the past year. Overall it appears that respondents were as satisfied with MoDOT's performance in providing a quality driving experience as with that of the transportation agencies in other states.

Additionally, respondents were asked if they had contacted MoDOT in the past year seeking information or assistance. About five percent of the respondents (N=221) had contacted MoDOT for either reason. Respondents who contacted MoDOT were also asked if they were successful in obtaining the information or assistance they needed. If respondents replied “yes” to the question regarding their success in obtaining information or assistance, they were more likely to rate MoDOT’s overall performance as satisfactory than those who had been unsuccessful (mean scores of 2.50 vs. 1.90). This difference in means was significant at the 0.05 level. Similarly, respondents were asked if they were satisfied or not with the response provided by MoDOT in regard to the response meeting their needs (Figure 4.5). Except for respondents answering “extremely satisfied,” the pattern of responses is as expected: as the number of respondents who were satisfied with the response they got from MoDOT when they sought information or assistance increases, their level of overall satisfaction also increases.

These results suggest a possible interpretation: respondents in this survey were fairly thoughtful and discriminating in their judgments. Specifically, these results suggest they were able to separate a general judgment regarding overall performance from specific instances in which they considered how Missouri’s highways compared to those in other states. Additionally, age and education both made a difference in the pattern of responses to overall satisfaction questions. The number of miles driven annually did not make a clear difference in the response pattern.

Figure 4.5: Mean Levels of Overall Satisfaction with MoDOT and Available Transportation Options Contrasted with Satisfaction in Meeting Needs after Direct MoDOT Contact



Current Satisfaction with Aspects of MoDOT's Transportation Work

Survey respondents were asked “How satisfied are you with MoDOT’s current performance in [item]” on thirty-four items related to aspects of the department’s transportation work on a four-point scale (1= extremely dissatisfied, 2= dissatisfied, 3= satisfied and 4= extremely satisfied). No midpoint rating was provided to encourage respondents to make a rating in one direction or another. The thirty-four items covered topics on signage and signals, bridges, road maintenance, bicycle and pedestrian issues, railroads, safety and customer service as presented in Table 4.4. Using these responses, average rating scores were computed as indicators for each of the thirty-four areas of performance. The same procedure was followed, using the same items, to secure information from respondents regarding their expectations for future priorities to be placed on these items by MoDOT. The scores are presented in graphic form for better analysis of areas in which MoDOT performance may be managed and also analyzed for patterns correlating with respondent characteristics.

MoDOT constituents surveyed in this study were moderately satisfied in their perceptions of current agency performance. As shown in Table 4.4, the mean rating for all but seven of the thirty-four items in the survey was above 2.50, meaning that those who rated current performance satisfactory or extremely satisfactory did so more frequently than those who rated current performance as unsatisfactory.³ However, the highest ranked item, Item #1, received a rating of 2.98 just below the level of “satisfied.” Besides Item #1, twenty-five other performance items received a mean score between 3.00 and 2.50. In other words, these results indicate that most of the respondents were only slightly more satisfied than dissatisfied with the performance of MoDOT with regard to the specific areas of performance.

As shown in Table 4.4, respondents in the total sample rated Item #1 “using electronic message boards to advise drivers of delays or construction areas,” highest in satisfactory performance. The four other items ranked in the top five statewide include: “placing yellow warning signs to assure sufficient response time” (Item #2), “removing snow and ice efficiently” (Item #3), “having signs that can be easily seen at night or in bad weather” (Item #4), and “providing lanes that are wide enough for safe driving” (Item #7). MoDOT activities related to promoting safety appear to receive the most satisfactory ratings.

³ Each item was assigned a number as shown in Table 1.1. The number assigned to an item is used throughout all the tables in this report. Thus, item number one is always “using electronic message boards to advise drivers of delays or construction areas” and item number thirty-four is always “maintaining the pavement so it provides a smooth ride.”

The item with which respondents were least satisfied was Item #34 “maintaining the pavement so it provides a smooth ride.” This result was nearly matched by ratings given to Item #32, “repairing pavement surface promptly.” The fourth least satisfactory item was Item #31 “using public funds in a cost-effective manner.” The third and fifth least satisfactory items were Item #33, “distributing transportation funds fairly to all areas of the state” and Item # 30 “providing pavement that lasts a long time.” Therefore, three out of the five least satisfactorily rated items deal with pavement maintenance. The remaining two of five least satisfactorily rated items deal with fiscal responsibility, as constituents view it.

The thirty-four items were also ranked according to the percentage of respondents responding as either satisfied or extremely satisfied with current performance. These results are shown in Table 4.5. These results indicate that, for all but four of the items in the survey, more than half the respondents surveyed rated the items regarding MoDOT’s current performance “satisfied” or “extremely satisfied.” Consistent with the results of ranking by mean rating in Table 4.4, this table further illustrates the level of respondent satisfaction with MoDOT’s current performance. Many of the lowest rated items of performance deal with pavement maintenance issues with an exception found in item (#33), “distributing transportation funds fairly to all areas of the state.”

There are many significant subgroup differences in the mean current satisfaction scores for all of the thirty-four items, especially as it regards age, education, years lived in Missouri and the number of miles driven annually. A summary table of these items with significant subgroup differences can be found in Table 4.6. For some of the items reflecting aspects of MoDOT’s work, all the respondent characteristics examined make a significant difference, e.g., Item # 2, “placing yellow warning signs to assure sufficient response time.” In others, only two or three make a difference. In other words, for three of the respondent categories—age, education, and years lived in Missouri, the respondents’ responses were significantly related to their characteristic. Only gender and miles driven annually do not appear to have such a broad effect. It should be noted that when there are no significant differences among respondents on a specific item of performance, it can be concluded that the ratings of the general population are essentially the same. So, the fact that there are many cases in which the responses do show significant differences means that respondent characteristics are important factors to consider. Another factor to consider is the large sample size (4,000) which means that, in most cases it is highly likely that statistically significant differences will be found. So, a finding of “no significant

difference,” is somewhat unexpected and notable. Appendix B contains detailed figures and tables with additional data on the differences between subgroups.

The ratings of current satisfaction items were examined to determine if there were any underlying patterns (factors) in the responses provided. This analysis returned results as indicated in Table 4.7. The method employed is called “factor analysis,” and uses multiple mathematical comparisons in an iterative procedure to determine if any of the individual items are related to any others in some consistent pattern. Using this procedure we determined that there are four underlying patterns or factors represented in the responses to the current satisfaction items (Table 4.7). These groups of items (factors) seem to reflect ideas about: (1) safety, (2) responsive and responsible performance, (3) alternate transportation, and (4) relationships with constituents. These four underlying factors account for over fifty percent of the variance in the overall rating responses. With regard to current satisfaction with MoDOT’s performance, these four factors likely capture much of what were respondents’ concerns and may “drive” opinions overall.

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Table 4.4: Ranking of Mean Level of Current Satisfaction*(Extremely Dissatisfied = 1, Extremely Satisfied = 4)*

Item #	Item Description	Mean
1	Using electronic message boards to advise drivers of delays or construction areas	2.98
2	Placing yellow warning signs to assure sufficient response time	2.93
3	Removing snow/ice efficiently	2.92
4	Having signs that can be easily seen at night or in bad weather	2.88
7	Providing lanes that are wide enough for safe driving	2.85
9	Building bridges that are wide enough to feel safe	2.84
5	Building bridges that last a long time	2.83
6	Providing useful information about construction, repairs or road conditions	2.83
8	Communicating with the public in easy to understand language	2.83
10	Providing the ability to see far ahead on highways and have unobstructed views at intersections	2.83
12	Lighting interchanges and bridges	2.83
11	Striping center lines and road edges to ensure safety	2.82
13	Providing crosswalks and signals for pedestrians to cross the highway safely	2.74
14	Treating highway surfaces to resist skidding in wet weather	2.72
16	Providing enough passing opportunities on two-lane highways	2.70
17	Providing pavement markings that can be easily seen in wet weather	2.65
15	Managing traffic flow in construction zones to minimize delays to drivers	2.62
19	Building new highways to meet future demand	2.62
25	Providing shoulders that are wide enough to pull off the road safely	2.60
18	Providing passenger light rail routes that meet your needs	2.58
20	Providing the public with adequate opportunities for input in project planning	2.58
22	Honoring commitments to provide and maintain Missouri's transportation system	2.58
21	Providing sufficient transportation for those who don't or can't drive	2.53
23	Planning a project in a reasonable amount of time	2.53
26	Providing Amtrak passenger rail service to meet your needs	2.52
27	Improving existing highways to meet increasing traffic demands	2.52
28	Acting on recommendations from the public	2.52
24	Completing road and bridge construction and repairs in a timely manner	2.49
29	Providing pedestrian/bicycle pathways on or next to highways that are safe	2.47
30	Providing pavement that lasts a long time	2.41
31	Using public funds in a cost effective manner	2.41
33	Distributing transportation funds fairly to all areas of the state	2.38
32	Repairing pavement surface promptly	2.32
34	Maintaining the pavement so it provides a smooth ride	2.31

Table 4.5: Percentage of Respondents Indicating "Satisfied" or "Extremely Satisfied" with Current MoDOT Performance Statewide

(1=Extremely Dissatisfied; 4=Extremely Satisfied)

Item #	Item Description	Percent
2	Placing yellow warning signs to assure sufficient response time	88.6
1	Using electronic message boards to advise drivers of delays or construction areas	85.8
3	Removing snow/ice efficiently	83.0
4	Having signs that can be easily seen at night or in bad weather	82.9
7	Providing lanes that are wide enough for safe driving	82.0
8	Communicating with the public in easy to understand language	81.3
12	Lighting interchanges and bridges	81.1
9	Building bridges that are wide enough to feel safe	80.8
6	Providing useful information about construction, repairs or road conditions	79.9
5	Building bridges that last a long time	79.8
10	Providing the ability to see far ahead on highways and have unobstructed views at intersections	79.3
11	Striping center lines and road edges to ensure safety	78.5
13	Providing crosswalks and signals for pedestrians to cross the highway safely	74.0
14	Treating highway surfaces to resist skidding in wet weather	71.5
16	Providing enough passing opportunities on two-lane highways	71.5
17	Providing pavement markings that can be easily seen in wet weather	65.7
15	Managing traffic flow in construction zones to minimize delays to drivers	65.4
19	Building new highways to meet future demand	64.6
18	Providing passenger light rail routes that meet your needs	62.7
22	Honoring commitments to provide and maintain Missouri's transportation system	62.4
25	Providing shoulders that are wide enough to pull off the road safely	61.6
20	Providing the public with adequate opportunities for input in project planning	59.9
28	Acting on recommendations from the public	57.9
23	Planning a project in a reasonable amount of time	57.7
21	Providing sufficient transportation for those who don't or can't drive	57.6
26	Providing Amtrak passenger rail service to meet your needs	57.3
24	Completing road and bridge construction and repairs in a timely manner	56.3
27	Improving existing highways to meet increasing traffic demands	55.9
29	Providing pedestrian/bicycle pathways on or next to highways that are safe	52.3
31	Using public funds in a cost effective manner	50.3
30	Providing pavement that lasts a long time	48.5
33	Distributing transportation funds fairly to all areas of the state	48.5
34	Maintaining the pavement so it provides a smooth ride	42.2
32	Repairing pavement surface promptly	41.5

Table 4.6: Significance of Means between Current Satisfaction Ratings and Respondent Characteristics

Item #	Item Description	Years Lived in MO	Miles Driven Annually	Age	Education	Gender
1	Using electronic message boards to advise drivers of delays or construction areas	0.0015	0.0039	0.1014	0.0004	0.0258
2	Placing yellow warning signs to assure sufficient response time	0.0022	0.0085	0.0087	0.0042	0.0036
3	Removing snow/ice efficiently	0.0001	0.0006	0.0000	0.0025	0.0000
4	Having signs that can be easily seen at night or in bad weather	0.0254	0.0001	0.0014	0.1530	0.0000
5	Building bridges that last a long time	0.0000	0.0560	0.0000	0.0001	0.5758
6	Providing useful information about construction, repairs or road conditions	0.0000	0.4766	0.0811	0.0013	0.4269
7	Providing lanes that are wide enough for safe driving	0.0014	0.0746	0.0252	0.1151	0.1904
8	Communicating with the public in easy to understand language	0.0000	0.0813	0.0000	0.0090	0.0999
9	Building bridges that are wide enough to feel safe	0.0000	0.2560	0.0143	0.0002	0.1742
10	Providing the ability to see far ahead on highways and have unobstructed views at intersections	0.0000	0.0079	0.0000	0.6187	0.0023
11	Striping center lines and road edges to ensure safety	0.0000	0.1410	0.0006	0.0143	0.0011
12	Lighting interchanges and bridges	0.0003	0.0790	0.0000	0.0771	0.0347
13	Providing crosswalks and signals for pedestrians to cross the highway safely	0.0000	0.0108	0.1221	0.0000	0.0006
14	Treating highway surfaces to resist skidding in wet weather	0.0017	0.4404	0.0000	0.0001	0.0215
15	Managing traffic flow in construction zones to minimize delays to drivers	0.0000	0.0673	0.0000	0.0000	0.2157
16	Providing enough passing opportunities on two-lane highways	0.0001	0.0222	0.0000	0.0000	0.8860
17	Providing pavement markings that can be easily seen in wet weather	0.0008	0.0103	0.0001	0.0000	0.3481
18	Providing passenger light rail routes that meet your needs	0.0000	0.0129	0.0000	0.0000	0.6590
19	Building new highways to meet future demand	0.0000	0.0001	0.0000	0.0000	0.0129
20	Providing the public with adequate opportunities for input in project planning	0.0001	0.9298	0.0701	0.0000	0.0149
21	Providing sufficient transportation for those who don't or can't drive	0.0015	0.8349	0.0000	0.0000	0.0021
22	Honoring commitments to provide and maintain Missouri's transportation system	0.0000	0.0926	0.0000	0.0000	0.0001
23	Planning a project in a reasonable amount of time	0.0001	0.0614	0.0000	0.0000	0.2021
24	Completing road and bridge construction and repairs in a timely manner	0.0000	0.1475	0.0002	0.0000	0.0000
25	Providing shoulders that are wide enough to pull off the road safely	0.0001	0.4258	0.0000	0.0113	0.0092
26	Providing Amtrak passenger rail service to meet your needs	0.0000	0.0016	0.0000	0.0000	0.3990
27	Improving existing highways to meet increasing traffic demands	0.0000	0.0000	0.0000	0.0000	0.0016
28	Acting on recommendations from the public	0.0000	0.1540	0.0094	0.0000	0.2360
29	Providing pedestrian/bicycle pathways on or next to highways that are safe	0.0000	0.0386	0.1533	0.0000	0.0632
30	Providing pavement that lasts a long time	0.0000	0.0336	0.0000	0.0000	0.2291
31	Using public funds in a cost effective manner	0.0000	0.3025	0.0000	0.0000	0.1111
32	Repairing pavement surface promptly	0.0001	0.0217	0.0000	0.0000	0.9250
33	Distributing transportation funds fairly to all areas of the state	0.0000	0.0712	0.0000	0.0000	0.0782
34	Maintaining the pavement so it provides a smooth ride	0.0000	0.0000	0.0000	0.0000	0.2487

Note: Table cells contain the computed levels of significance (chi square procedure) and shaded cells represent relationships that are significant at 0.05 or higher.

Table 4.7: Factors Influencing Ratings of Perceived Satisfaction with Current MoDOT Performance

Item #	Item Description	Factor			
		Safety	Responsive & Responsible Performance	Alternate Transportation	Relationships with Constituents
11	Lighting interchanges and bridges	0.679	0.152	0.123	0.222
9	Building bridges that are wide enough to feel safe	0.671	0.329	0.129	0.023
11	Striping center lines and road edges to ensure safety	0.663	0.098	0.222	0.246
4	Having signs that can be easily seen at night or in bad weather	0.643	0.150	0.074	0.228
5	Building bridges that last a long time	0.636	0.302	0.106	0.280
7	Providing lanes that are wide enough for safe driving	0.634	0.389	0.157	0.013
3	Removing snow/ice efficiently	0.617	0.147	0.171	0.115
14	Treating highway surfaces to resist skidding in wet weather	0.600	0.338	0.221	0.291
10	Providing the ability to see far ahead on highways and have unobstructed views at intersections	0.596	0.225	0.144	0.200
25	Providing shoulders that are wide enough to pull off the road safely	0.530	0.401	0.199	0.151
32	Repairing pavement surface promptly	0.317	0.748	0.157	0.061
34	Maintaining the pavement so it provides a smooth ride	0.363	0.701	0.122	0.155
27	Improving existing highways to meet increasing traffic demands	0.131	0.687	0.245	0.197
31	Using public funds in a cost effective manner	0.216	0.631	0.275	0.343
22	Honoring commitments to provide and maintain Missouri's transportation system	0.207	0.619	0.292	0.273
33	Distributing transportation funds fairly to all areas of the state	0.288	0.610	0.286	0.268
30	Providing pavement that lasts a long time	0.347	0.597	0.219	0.189
26	Providing Amtrak passenger rail service to meet your needs	0.125	0.228	0.820	0.123
18	Providing passenger light rail routes that meet your needs	0.199	0.217	0.815	0.086
21	Providing sufficient transportation for those who don't or can't drive	0.241	0.180	0.667	0.334
29	Providing pedestrian/bicycle pathways on or next to highways that are safe	0.219	0.252	0.574	0.108
8	Communicating with the public in easy to understand language	0.220	0.251	0.208	0.700
6	Providing useful information about construction, repairs or road conditions	0.356	0.160	0.092	0.693
20	Providing the public with adequate opportunities for input in project planning	0.184	0.400	0.317	0.612
15	Managing traffic flow in construction zones to minimize delays to drivers	0.286	0.385	0.138	0.549

Four factors account for 54 percent of total variance in the twenty-five indicators of performance.

Future Attention

Survey respondents were next asked to respond to the question “How much attention should MoDOT place on [item] in the future?” for the same thirty-four items on a four-point scale (1= a lot less attention, 2= less attention, 3= more attention and 4= a lot more attention). In general, those aspects of transportation work that MoDOT constituents feel the agency should give more attention in the future addressed maintenance of transportation infrastructure (e.g., roads and bridges).

Table 4.8 presents a ranking by the percentage of respondents answering “more” or “a lot more” attention (highest to lowest) for each of these thirty-four items. Items with identical or “tie” mean scores were assigned the next number in sequence. As seen in Table 4.8, “honoring commitments to provide and maintain Missouri’s transportation system,” (Item # 22), “repairing pavement surface promptly” (Item #32), “maintaining the pavement so it provides a smooth ride” (Item #34), “providing pavement that lasts a long time” (Item #30), “using public funds in a cost-effective manner” (Item 31), and “improving existing highways to meet increasing traffic demands” (Item #27) all ranked very high among respondents who indicated that MoDOT should place “more” or “a lot more” future attention on their performance in these areas. Of somewhat lower priority appears to be such items as Item #26, “providing Amtrak passenger rail service to meet your needs,” and Item #29, “providing pedestrian/bicycle pathways on or next to highways that are safe.” As can be seen, none of the thirty-four items fell below a seventy percent response rate for future attention as perceived by respondents.

Table 4.9 lists these same items and ranks them according to the mean response given to each item. In this table, it can be seen that Item #32, “repairing pavement surface promptly;” Item #31, “using public funds in a cost-effective manner;” and Item #30, “providing pavement that lasts a long time,” scored the highest of all items among respondents in their perceptions of the need for MoDOT to provide “more” or “a lot more” future attention to these thirty-four items. In fact, the ratings given to all but five of the thirty-four items are above 3.0 on a 4-point scale, meaning that respondents generally were quite strongly representing their perceptions about where future attention should be placed. Unfortunately, placing much more attention on any of these items will likely require some difficult decisions by MoDOT about resource allocation.

Table 4.8: Percentage of Survey Respondents Indicating a Desire for "More" or "A lot More" Future Attention on Performance Items

(A lot Less =1, A lot More = 4)

Item #	Item Description	Percent
32	Repairing pavement surface promptly	96.2
31	Using public funds in a cost effective manner	95.7
27	Improving existing highways to meet increasing traffic demands	95.2
30	Providing pavement that lasts a long time	94.9
34	Maintaining the pavement so it provides a smooth ride	94.9
22	Honoring commitments to provide and maintain Missouri's transportation system	94.9
24	Completing road and bridge construction and repairs in a timely manner	93.9
33	Distributing transportation funds fairly to all areas of the state	92.7
28	Acting on recommendations from the public	91.9
23	Planning a project in a reasonable amount of time	91.6
15	Managing traffic flow in construction zones to minimize delays to drivers	90.6
14	Treating highway surfaces to resist skidding in wet weather	89.9
20	Providing the public with adequate opportunities for input in project planning	89.7
17	Providing pavement markings that can be easily seen in wet weather	89.6
19	Building new highways to meet future demand	89.5
5	Building bridges that last a long time	89.3
25	Providing shoulders that are wide enough to pull off the road safely	87.1
21	Providing sufficient transportation for those who don't or can't drive	86.9
6	Providing useful information about construction, repairs or road conditions	86.5
11	Striping center lines and road edges to ensure safety	85.7
10	Providing the ability to see far ahead on highways and have unobstructed views at intersections	85.0
7	Providing lanes that are wide enough for safe driving	85.0
4	Having signs that can be easily seen at night or in bad weather	85.0
9	Building bridges that are wide enough to feel safe	84.9
3	Removing snow/ice efficiently	84.5
2	Placing yellow warning signs to assure sufficient response time	83.5
8	Communicating with the public in easy to understand language	83.4
1	Using electronic message boards to advise drivers of delays or construction areas	82.8
13	Providing crosswalks and signals for pedestrians to cross the highway safely	82.4
12	Lighting interchanges and bridges	82.0
16	Providing enough passing opportunities on two-lane highways	81.2
18	Providing passenger light rail routes that meet your needs	77.8
29	Providing pedestrian/bicycle pathways on or next to highways that are safe	75.9
26	Providing Amtrak passenger rail service to meet your needs	71.4

It is useful to consider the differences between the ratings given MoDOT's performance regarding current satisfaction versus future attention (i.e., compare Table 4.4 and Table 4.9). A simple investigation of the differences in these means indicates that respondents were generally satisfied with current performance by MoDOT, but weakly so, and their responses and the ratings for desired levels of future attention indicate that respondents think the agency should devote more attention to nearly every aspect of operations. Clearly, respondents believe that even better performance is possible than at present. An investigation of the computed differences (i.e., discrepancies) can help sort out where some possible priorities may lie.

As with the responses to ratings of current satisfaction items, the ratings of future attention items were analyzed to determine if there were any underlying patterns (factors) in the responses provided. This analysis returned results as indicated in Table 4.10. Like the satisfaction items, there are four underlying patterns in the responses to the future attention items. These are similar to the patterns found in the previous investigation (but not identical) and seem to reflect ideas about: (1) safety, (2) responsive and responsible performance, (3) alternate transportation, and (4) recognition of future infrastructure expansion needs. These four underlying factors account for over fifty percent of the variance in the rating responses. With regard to future attention that MoDOT should pay to its performance, these four factors likely capture much of what are respondents' concerns.

There are a number of significant subgroup differences in overall mean future attention scores for the thirty-four items. A summary table of these items with significant subgroup differences can be found in Table 4.11. Characteristics like years lived in Missouri, education and gender were significant with regard to almost every performance area while miles driven annually and age also made some significant difference in many of the thirty-four items. In one case, ratings of Item 23, "planning a project in a reasonable amount of time," only two of the respondent characteristics display significant differences (years lived in Missouri and miles driven annually). As with the satisfaction ratings, this analysis indicates that for nearly all the items, respondent characteristics matter with regard to their ratings. Appendix B contains detailed figures and tables with additional data on the differences between subgroups.

Table 4.9: Ranking of Mean Level of Future Attention Statewide
(A Lot Less =1, A Lot More= 4)

Item #	Item Description	Mean
32	Repairing pavement surface promptly	3.34
31	Using public funds in a cost effective manner	3.34
30	Providing pavement that lasts a long time	3.32
34	Maintaining the pavement so it provides a smooth ride	3.30
27	Improving existing highways to meet increasing traffic demands	3.28
24	Completing road and bridge construction and repairs in a timely manner	3.27
33	Distributing transportation funds fairly to all areas of the state	3.27
22	Honoring commitments to provide and maintain Missouri's transportation system	3.22
23	Planning a project in a reasonable amount of time	3.18
28	Acting on recommendations from the public	3.18
15	Managing traffic flow in construction zones to minimize delays to drivers	3.18
19	Building new highways to meet future demand	3.16
17	Providing pavement markings that can be easily seen in wet weather	3.15
21	Providing sufficient transportation for those who don't or can't drive	3.15
20	Providing the public with adequate opportunities for input in project planning	3.14
14	Treating highway surfaces to resist skidding in wet weather	3.14
25	Providing shoulders that are wide enough to pull off the road safely	3.14
5	Building bridges that last a long time	3.13
11	Striping center lines and road edges to ensure safety	3.08
4	Having signs that can be easily seen at night or in bad weather	3.05
9	Building bridges that are wide enough to feel safe	3.04
10	Providing the ability to see far ahead on highways and have unobstructed views at intersections	3.04
7	Providing lanes that are wide enough for safe driving	3.03
3	Removing snow/ice efficiently	3.03
8	Communicating with the public in easy to understand language	3.02
6	Providing useful information about construction, repairs or road conditions	3.02
13	Providing crosswalks and signals for pedestrians to cross the highway safely	3.01
18	Providing passenger light rail routes that meet your needs	3.01
16	Providing enough passing opportunities on two-lane highways	3.00
1	Using electronic message boards to advise drivers of delays or construction areas	2.97
12	Lighting interchanges and bridges	2.97
2	Placing yellow warning signs to assure sufficient response time	2.97
29	Providing pedestrian/bicycle pathways on or next to highways that are safe	2.96
26	Providing Amtrak passenger rail service to meet your needs	2.90

Table 4.10: Factors Influencing Ratings of Future Attention Regarding MoDOT Performance

Item #	Item Description	Factor			
		Safety	Responsive & Responsible Performance	Alternate Transportation	Future Infrastructure Expansion
7	Providing lanes that are wide enough for safe driving	0.753	0.217	0.043	0.012
9	Building bridges that are wide enough to feel safe	0.695	0.135	0.087	0.206
16	Providing enough passing opportunities on two-lane highways	0.673	0.251	0.074	-0.107
10	Providing the ability to see far ahead on highways and have unobstructed views at intersections	0.662	0.290	0.238	0.064
4	Having signs that can be easily seen at night or in bad weather	0.658	0.116	0.239	0.192
25	Providing shoulders that are wide enough to pull off the road safely	0.634	0.135	0.156	0.177
2	Placing yellow warning signs to assure sufficient response time	0.618	0.107	0.262	0.291
20	Providing the public with adequate opportunities for input in project planning	0.188	0.670	0.339	-0.097
28	Acting on recommendations from the public	0.206	0.659	0.223	-0.073
31	Using public funds in a cost effective manner	0.130	0.640	0.027	0.115
34	Maintaining the pavement so it provides a smooth ride	0.197	0.623	-0.018	0.305
32	Repairing pavement surface promptly	0.201	0.616	-0.017	0.303
22	Honoring commitments to provide and maintain Missouri's transportation system	0.142	0.611	0.074	0.198
30	Providing pavement that lasts a long time	0.164	0.562	0.096	0.360
26	Providing Amtrak passenger rail service to meet your needs	0.147	0.073	0.858	0.082
18	Providing passenger light rail routes that meet your needs	0.231	0.144	0.781	0.074
21	Providing sufficient transportation for those who don't or can't drive	0.220	0.123	0.720	0.181
27	Improving existing highways to meet increasing traffic demands	0.118	0.301	0.170	0.750
19	Building new highways to meet future demand	0.220	0.194	0.134	0.741

Four factors account for 56 percent of total variance in these nineteen indicators of performance.

Table 4.11: Significance of Means between Future Attention Ratings and Respondent Characteristics

Item #	Item Description	Years Lived in MO	Miles Driven Annually	Age	Education	Gender
1	Using electronic message boards to advise drivers of delays or construction areas	0.0000	0.1797	0.0610	0.0078	0.0004
2	Placing yellow warning signs to assure sufficient response time	0.0000	0.0001	0.0130	0.0000	0.0000
3	Removing snow/ice efficiently	0.0000	0.0005	0.0000	0.0000	0.0000
4	Having signs that can be easily seen at night or in bad weather	0.0000	0.0003	0.0002	0.0000	0.0000
5	Building bridges that last a long time	0.0000	0.0000	0.0000	0.0055	0.0030
6	Providing useful information about construction, repairs or road conditions	0.0000	0.0001	0.0263	0.0000	0.0047
7	Providing lanes that are wide enough for safe driving	0.0000	0.0000	0.0009	0.0000	0.0003
8	Communicating with the public in easy to understand language	0.0000	0.0001	0.0000	0.0004	0.0723
9	Building bridges that are wide enough to feel safe	0.0000	0.0000	0.0000	0.0002	0.0000
10	Providing the ability to see far ahead on highways and have unobstructed views at intersections	0.0000	0.0005	0.0000	0.0000	0.0000
11	Striping center lines and road edges to ensure safety	0.0000	0.0143	0.0010	0.0002	0.0000
12	Lighting interchanges and bridges	0.0000	0.0057	0.0002	0.0132	0.0000
13	Providing crosswalks and signals for pedestrians to cross the highway safely	0.0000	0.0000	0.6882	0.0000	0.0000
14	Treating highway surfaces to resist skidding in wet weather	0.0030	0.0015	0.0574	0.0000	0.0000
15	Managing traffic flow in construction zones to minimize delays to drivers	0.0000	0.0003	0.0000	0.0363	0.0008
16	Providing enough passing opportunities on two-lane highways	0.0000	0.0002	0.0000	0.0054	0.0034
17	Providing pavement markings that can be easily seen in wet weather	0.0000	0.0000	0.6877	0.0144	0.0000
18	Providing passenger light rail routes that meet your needs	0.0017	0.0022	0.2659	0.0081	0.0000
19	Building new highways to meet future demand	0.0046	0.0000	0.0005	0.2830	0.9560
20	Providing the public with adequate opportunities for input in project planning	0.0023	0.0098	0.0945	0.0000	0.0000
21	Providing sufficient transportation for those who don't or can't drive	0.0210	0.0001	0.3594	0.0426	0.0000
22	Honoring commitments to provide and maintain Missouri's transportation system	0.0000	0.0006	0.0000	0.0000	0.7076
23	Planning a project in a reasonable amount of time	0.0005	0.0044	0.0916	0.1002	0.9108
24	Completing road and bridge construction and repairs in a timely manner	0.0004	0.0000	0.0054	0.0000	0.0013
25	Providing shoulders that are wide enough to pull off the road safely	0.0000	0.0186	0.0000	0.0000	0.0005
26	Providing Amtrak passenger rail service to meet your needs	0.0000	0.0000	0.4853	0.0100	0.0000
27	Improving existing highways to meet increasing traffic demands	0.0000	0.0141	0.0070	0.0027	0.0200
28	Acting on recommendations from the public	0.0000	0.0522	0.2655	0.0051	0.0000
29	Providing pedestrian/bicycle pathways on or next to highways that are safe	0.0000	0.0000	0.1091	0.0000	0.0000
30	Providing pavement that lasts a long time	0.0000	0.0000	0.0001	0.0047	0.0222
31	Using public funds in a cost effective manner	0.0000	0.1189	0.0000	0.0000	0.2389
32	Repairing pavement surface promptly	0.0000	0.0000	0.0000	0.0004	0.0770
33	Distributing transportation funds fairly to all areas of the state	0.0000	0.0981	0.0000	0.0585	0.0000
34	Maintaining the pavement so it provides a smooth ride	0.0000	0.0019	0.0000	0.0005	0.2855

Note: Table cells contain the computed levels of significance (using chi-square procedure), and shaded cells represent relationships that are significant at 0.05 or higher.

Summary

Respondents to the TCS were asked for their perceptions regarding an overall rating of MoDOT performance and with their available transportation options. Respondents were also asked to rate their perceived satisfaction with thirty-four different aspects of MoDOT's work and the amount of future attention they believe MoDOT should give to these same thirty-four items. Taken together, these different views of performance provide a broad assessment of the way Missouri citizens view the department and its priorities for the future.

First, both overall satisfaction with the department and the ratings respondents provided regarding their assessment of current performance indicate a fairly moderate level of satisfaction. The majority of respondents rated MoDOT's overall performance and their available transportation options as satisfactory. Most of the thirty-four specific performance items were rated as satisfactory with regard to current performance, but only moderately. There were many significant differences in these results among the various demographic categories used to analyze the data. Respondents with a high school education level and those 35-44 years of age generally gave MoDOT higher satisfaction ratings than did respondents with more or less education or younger or older than this group. Analyzed as a group, the thirty-four performance areas may be strongly influenced by four broad factors: safety, responsive and responsible performance, alternative transportation, and relationships with constituents.

Second, as current ratings of satisfaction were relatively modest, citizens perceive that the current performance status should be improved. All the thirty-four items related to MoDOT's specific work aspects were rated as needing more (or a lot more) attention in the future. In fact, nearly all the mean ratings for the thirty-four items were above three indicating at least "more" attention should be given these areas of work. There were some significant differences in these findings among the demographic categories used for data analysis. Those demographic categories where there were many significant differences included annual miles driven, education and gender categories. When analyzed as a group, the thirty-four performance areas seem to be strongly influenced by four factors with regard to the needs for future attention: safety, responsive and responsible performance, alternative transportation and recognition of future expansion needs.

Chapter 5: Analyzing Discrepancies to Guide Performance Management

Discrepancy analysis is commonly used in helping make decisions about priorities for improving the performance of organizations. As managers survey the broad scope of their activities and responsibilities, they often find it difficult to assemble information that is relevant to the decisions posed by performance management requirements. Re-engineering the organization usually begins with a full understanding of the management and implementation processes currently being used and their impact. These impacts include how the audience served evaluates the outcomes of those processes. Besides objective measures of performance in producing such services, perceptual data from constituents that quantify their evaluation of these services in comparison to their expectations is very helpful. In addition, such data can be useful for comparison to benchmarks to determine if progress is being made and is being perceived in the experiences of constituents. The discrepancy between evaluation of current status (satisfaction) and expectations of performance in the future is the indicator on which to focus in this chapter. The overall results of computing discrepancy scores are discussed here (based on the equation in Figure 1.1 reproduced below), as well as the broader implications that can be drawn from analysis of this computation.

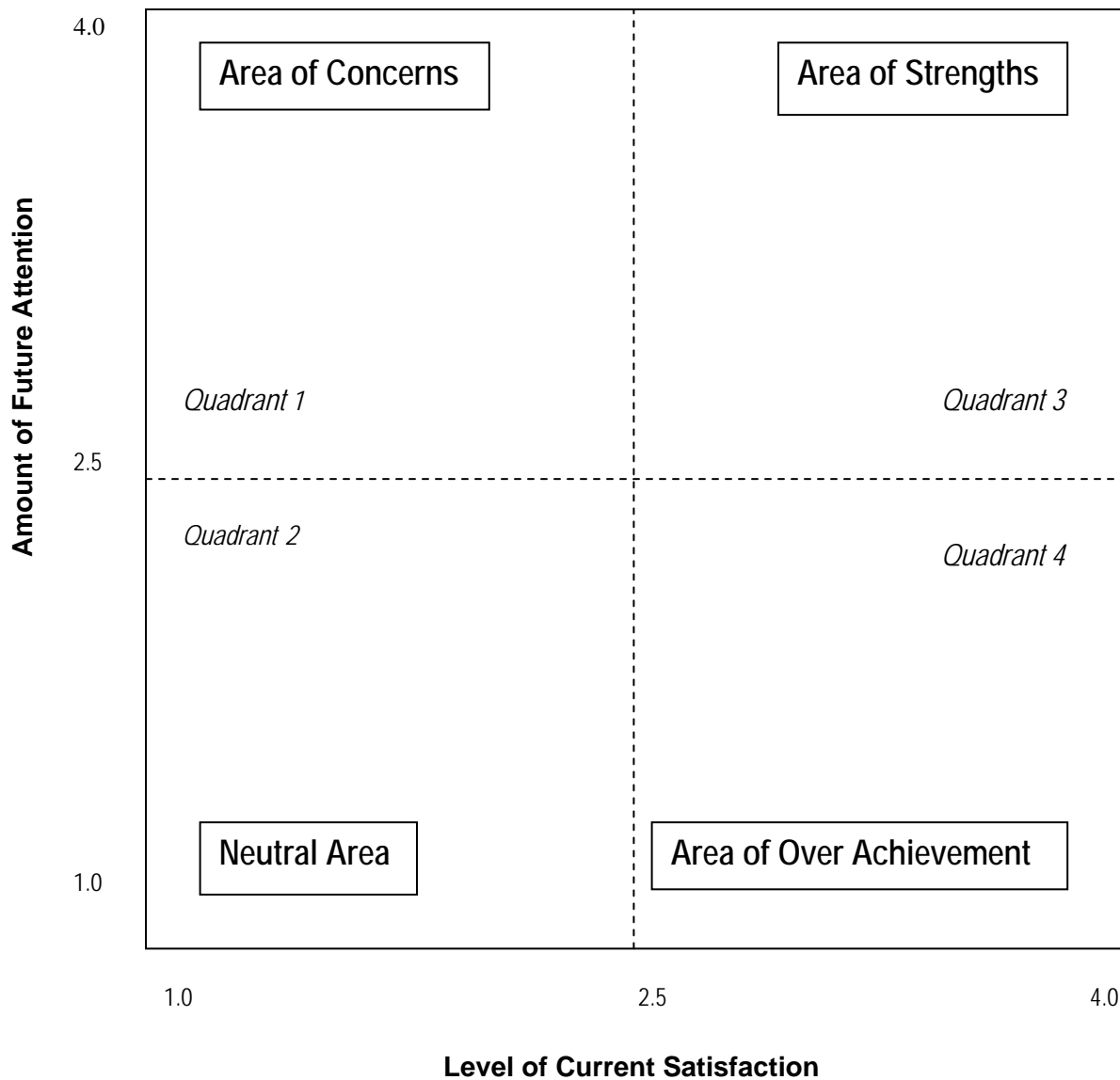
$$\text{DISCREPANCY} = \begin{array}{l} \text{(Level of current satisfaction in area)} \text{ —} \\ \text{(Level of future priority to assign to area)} \end{array}$$

Discrepancy Analysis

Figure 5.1 represents a graphical view used to plot the results of the multi-item discrepancy analysis conducted in the TCS for MoDOT. Each axis of the graphic plot represents one of the two dimensions of constituent perception investigated in this study. The vertical axis of the graphic presents the plot of the average ratings for the amount of future attention constituents expected MoDOT to give to different areas of performance. The horizontal axis represents the average ratings given to current satisfaction for each of the same items. Since both satisfaction and future attention perceptions were measured on a four-point scale (1-4), the value of 2.50 represents the midpoint value of each axis and scale.

When the ratings given to current satisfaction and desired future priority for each item are plotted in this graphic, the items can be arranged into four quadrants. In Quadrant 1, where future attention ratings exceed current levels of satisfaction, MoDOT should be concerned that constituents perceive performance is not as high as expected. In Quadrant 4 where ratings of current satisfaction exceed expected levels of future attention, MoDOT is considered to be

Figure 5.1: Analytical Framework for Understanding Discrepancy Scores



overachieving in its performance. In Quadrant 3, the comparison of ratings of future attention and current satisfaction generally indicate that MoDOT is a strong performer. Which quadrant

the rating falls in depends upon the absolute rating given to expected future attention; higher ratings show strength while lower average ratings show over-achievement. Where ratings for future attention and current satisfaction are both comparatively low (Quadrant 2), the agency should consider constituent attitudes to be mostly neutral about the specific areas rated.

By using this graphic display, agency managers can determine where resources may be directed to improve performance. Assuming no new resources are available, current resource levels devoted to areas of strength or over-achievement could be redirected to areas of concern. Alternatively, new resources could be primarily directed toward areas of concern while efforts continue in those areas where the agency's performance is considered to be strongest. The specific nature of the area rated should also be considered; in some cases, education efforts may be necessary to change constituent perceptions or changes in procedures could make a difference with few additional resources required. Finally, perceptual information should always be combined with other performance indicators to assist management decision making. For example, a performance audit could determine the actual (average) time from project initiation to completion and compare these data to constituent perceptions of this area of performance. If the agency was perceived as strong in this area, a management priority would be maintaining performance on this aspect of work.

Discrepancy Analysis of TCS Data

Discrepancy information is presented in three ways in the following discussion. First the information is presented in tabular form, next in graphic form and finally in a different tabular form that permits the study of differences in the discrepancy ratings by respondent characteristic. Each form of presentation provides some additional information to consider in decision making. Readers should note that the computation of differences (discrepancy analysis) uses a computer-based system that eliminates all cases from the calculation of the mean where either the response to the question on current satisfaction or desired level of future attention is considered missing. This means that subtracting the figures for each performance item in Tables 4.4 and 4.9 will not provide the same result as the figures in Table 5.1. The use of this procedure is consistent with the procedures used in the 2000 CSQS study.

Table 5.1 presents the thirty-four items contained in the survey ranked by the size of the discrepancy. The size and sign of the discrepancy is important. As shown in the computation

method in Figure 1.1, when the respondents' ratings for expectation of future attention are larger than their ratings of current satisfaction, the discrepancy sign is negative. These results show

Table 5.1: Mean Values of Differences between Current Satisfaction and Future Priority Responses

Item No.	Item Description	Mean
32	Repairing pavement surface promptly	-1.0609
34	Maintaining the pavement so it provides a smooth ride	-1.0261
33	Distributing transportation funds fairly to all areas of the state	-1.0052
31	Using public funds in a cost effective manner	-0.9799
30	Providing pavement that lasts a long time	-0.9370
24	Completing road and bridge construction and repairs in a timely manner	-0.8296
27	Improving existing highways to meet increasing traffic demands	-0.7877
28	Acting on recommendations from the public	-0.7270
21	Providing sufficient transportation for those who don't or can't drive	-0.7164
23	Planning a project in a reasonable amount of time	-0.7104
22	Honoring commitments to provide and maintain Missouri's transportation system	-0.6894
26	Providing Amtrak passenger rail service to meet your needs	-0.6257
20	Providing the public with adequate opportunities for input in project planning	-0.6131
15	Managing traffic flow in construction zones to minimize delays to drivers	-0.6099
18	Providing passenger light rail routes that meet your needs	-0.5907
29	Providing pedestrian/bicycle pathways on or next to highways that are safe	-0.5889
19	Building new highways to meet future demand	-0.5722
25	Providing shoulders that are wide enough to pull off the road safely	-0.5666
17	Providing pavement markings that can be easily seen in wet weather	-0.5352
14	Treating highway surfaces to resist skidding in wet weather	-0.4443
16	Providing enough passing opportunities on two-lane highways	-0.3432
13	Providing crosswalks and signals for pedestrians to cross the highway safely	-0.3134
5	Building bridges that last a long time	-0.3133
11	Striping center lines and road edges to ensure safety	-0.2847
10	Providing the ability to see far ahead on highways and have unobstructed views at intersections	-0.2248
9	Building bridges that are wide enough to feel safe	-0.2181
8	Communicating with the public in easy to understand language	-0.2134
6	Providing useful information about construction, repairs or road conditions	-0.2018
7	Providing lanes that are wide enough for safe driving	-0.1929
4	Having signs that can be easily seen at night or in bad weather	-0.1820
12	Lighting interchanges and bridges	-0.1639
3	Removing snow/ice efficiently	-0.1404
2	Placing yellow warning signs to assure sufficient response time	-0.0486
1	Using electronic message boards to advise drivers of delays or construction areas	0.0013

that all but one of the thirty-four items have negative discrepancies, ranging from 0.00 to -1.06. Looking at the table reveals that nineteen of the items have a discrepancy value of -0.50 or higher.

In other words, the MoDOT constituents who participated in the survey feel that overall the agency has room for improvement, and in some items, there is substantial room for improvement. These latter items include many of the same items discussed in Chapter 4 where the ratings for the amount of future attention to be given these areas was discussed — areas of highway maintenance, fiscal decision making and alternative forms of travel. In fact, seven of the ten highest discrepancy items addresses responsive and responsible maintenance concerns. The items on the lower end of the distribution of discrepancies relate to safety needs. Figure 5.2 portrays this table of information in a graphic form to enhance understanding.

The graphic display presented in Figure 5.2 is reproduced with the actual plots for the entire state survey population results in Figure 5.3. The graphic display demonstrates the nature of the overall response pattern. Respondents generally rated the desired level of future attention higher than current satisfaction with differences in these scores ranging from just over -1.0 to 0.00. The exact differences calculated are identified in Table 5.1 and discussed above. It should be noted that the differences calculated do not indicate the level of responses provided by respondents. That is, a difference of -1.0 can be achieved using any number of combinations of ratings and a difference between 2.0 and 1.0 produces the same difference score as 4.0 minus 3.0. So, these responses were plotted in two-dimensions resulting in Figure 5.3.

Nearly all of the thirty-four items in the survey are plotted in the “Strengths” quadrant in Figure 5.3. Clearly, the respondents surveyed for this study perceive MoDOT to be relatively strong in producing expected levels of performance as the levels of current satisfaction and ratings for future attention appear to be very consistent (as was demonstrated in Chapter 4). Seven of the thirty-four items of performance are plotted in the “Concerns” quadrant. These represent areas in which current satisfaction is relatively low and desired levels of future attention is relatively high. Most of these items are found at the top of the list in Table 5.1 and to the right end of the graphic display in Figure 5.2. In sum, it appears that constituents feel that, for the kinds of things they see and experience daily on the highways and in other transportation experiences, MoDOT has quite a few strengths, or performance areas where both current

satisfaction and desired future attention is high. Obviously, MoDOT management can use this information to help guide future performance management decisions.

Further analysis of the discrepancy indicators was conducted to determine if subgroup factors had any effect on the pattern of responses. Table 5.2 presents a summary of all significant subgroup differences identified for each of the thirty-four performance items. All characteristics of respondents investigated seem to make some difference regarding the discrepancy indicators and some, like years lived in Missouri and age, make a significant difference in nearly all the resulting differences. Other respondent characteristics, including gender, miles driven annually and education, seemed to make less difference in the responses given, although there were many instances where these characteristics are associated with significant differences in the discrepancy rating. As with the current satisfaction and future attention ratings discussed in Chapter 4, in those items where a specific respondent characteristic does not make a significant difference, one can assume the characteristic does not affect the responses given to the survey.

Summary

As indicated elsewhere in this report, discrepancy analysis is useful for helping decision-makers judge their agency's performance. In the eyes of respondents, the discrepancy between their perceived satisfaction with current performance and their expectations for future performance can provide useful guides to assist agency managers and staff. These data are not sufficient, however, for making decisions given the complexities of situations faced by decision-makers, both technical and political. The discrepancy information provided by constituents regarding performance can be very helpful in priority setting when matched with performance data such as related agency records in meeting technical specifications and cost-effectiveness of management procedures.

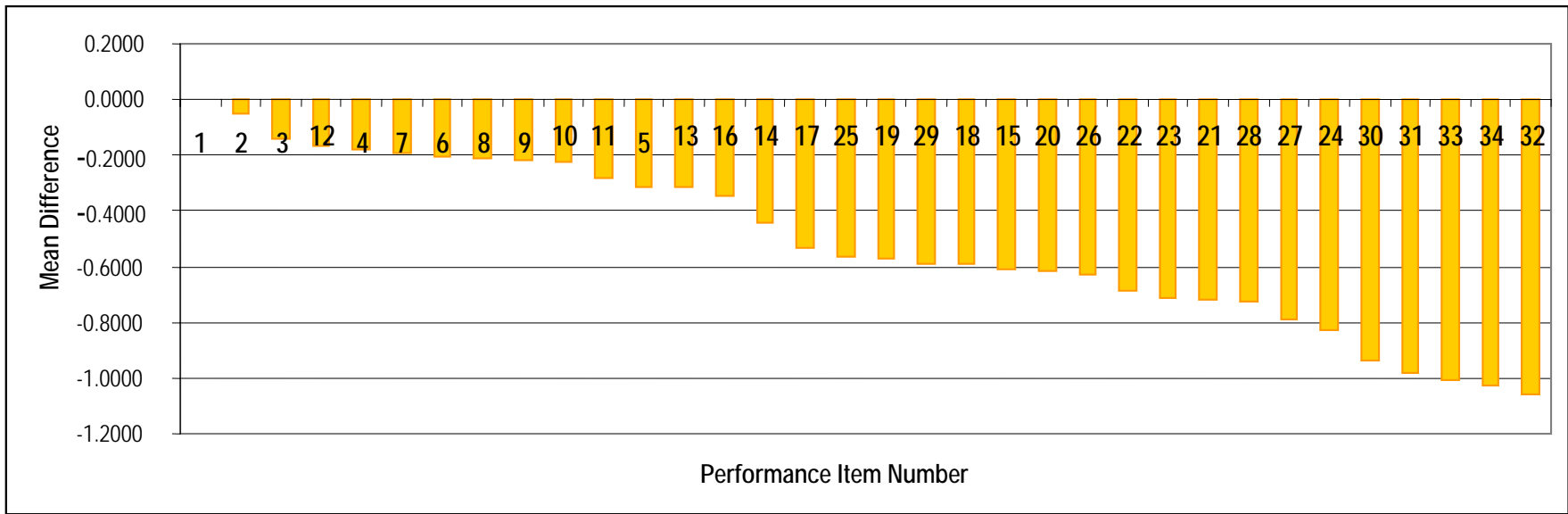
The results of the analysis of discrepancy information computed from these survey data indicate that, MoDOT's performance in many aspects of its work is considered strong, and perceived discrepancies are small. Seven of the thirty-four items included in the survey indicated, when plotted on a decision matrix, aspects of MoDOT's performance that could be considered serious concerns. These items fell in the "concerns" quadrant with the remaining items placed in the "strengths" quadrant.

The specific items included in the "concerns" quadrant related to maintenance of durable pavement surfaces, timeliness of repairs and construction planning, and the procedures used in

managing resources in the broad context. Even though most constituents are unlikely to be very familiar with the agency's policies and procedures at the highest levels of decision making and have information only from mass media, these kinds of items were most often of concern to respondents who participated in the survey. Those work aspects most likely to be carried out at the district level directly affect constituents and those aspects constituents typically rated as agency "strengths." Nevertheless, MoDOT now has indicators consistent with specific benchmarks established in 2000 to use in measuring progress in changing perceptions where it appears necessary or desirable and has a better idea of specific measures that could be taken to address concerns.

Further, conclusions that one may draw from the discrepancy analysis are that (1) respondents generally feel that MoDOT has lots of areas of performance that are strong, and (2) those respondents that are likely to be the primary stakeholders in agency performance — those who pay the majority of the taxes — tend to feel MoDOT can perform better yet. There are some clues as to how this potential problem may be addressed in Chapter 6. However, it appears clear that MoDOT faces a substantial challenge in changing the perceptions of its most critical stakeholders -- those constituents who feel they provide the majority of the financial resources and the best informed about transportation affairs and infrastructure conditions.

Figure 5.2: Comparison of Differences—Current Satisfaction and Future Attention by Size of Difference (Discrepancy)



Item #	Performance Indicator	Item #	Performance Indicator	Item #	Performance Indicator
1	Using electronic message boards to advise drivers of delays or construction areas	13	Providing crosswalks and signals for pedestrians to cross the highway safely	25	Providing shoulders that are wide enough to pull off the road safe
2	Placing yellow warning signs to assure sufficient response time	14	Treating highway surfaces to resist skidding in wet weather	26	Providing Amtrak passenger rail service to meet your needs
3	Removing snow/ice efficiently	15	Managing traffic flow in construction zones to minimize delays to drivers	27	Improving existing highways to meet increasing traffic demands
4	Having signs that can be easily seen at night or in bad weather	16	Providing enough passing opportunities on two lane highways	28	Acting on recommendations from the public
5	Building bridges that last a long time	17	Providing pavement markings that can be easily seen in wet weather	29	Providing pedestrian/bicycle pathways on or next to highways that are safe
6	Providing useful information about construction, repairs or road conditions	18	Providing passenger light rail routes that meet your needs	30	Providing pavement that lasts a long time
7	Providing lanes that are wide enough for safe driving	19	Building new highways to meet future demand	31	Using public funds in a cost-effective manner
8	Communicating with the public in easy-to-understand language	20	Providing the public with adequate opportunities for input in project planning	32	Repairing pavement surface promptly
9	Building bridges that are wide enough to feel safe	21	Providing sufficient transportation for those who don't or can't drive	33	Distributing transportation funds fairly to all areas of the state
10	Providing the ability to see far ahead on highways and have unobstructed views at intersections	22	Honoring commitments to provide and maintain Missouri's transportation system	34	Maintaining the pavement so it provides a smooth ride
11	Striping center lines and road edges to ensure safety	23	Planning a project in a reasonable amount of time		
12	Lighting interchanges and bridges	24	Completing road and bridge construction and repairs in a timely manner		

Figure 5.3: Plot of Current Satisfaction and Future Attention Scores

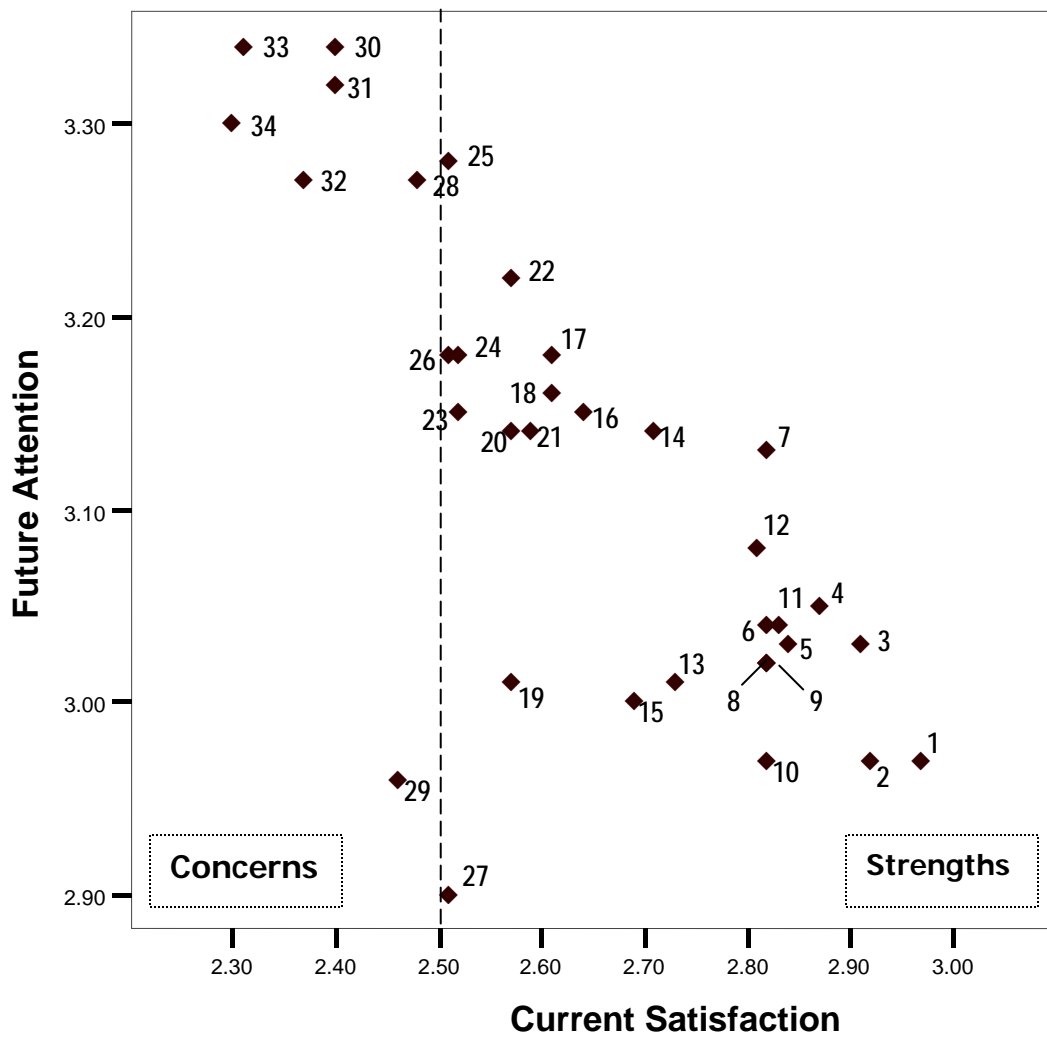


Table 5.2: Comparison Respondent Characteristics and Discrepancies Show Indications of Significance

Item #	Item Description	Miles Driven Annually	Years Lived in MO	Gender	Education	Age
1	Using electronic message boards to advise drivers of delays or construction areas	0.0020	0.0000	0.6779	0.0392	0.0840
2	Placing yellow warning signs to assure sufficient response time	0.0017	0.0000	0.0000	0.0014	0.0092
3	Removing snow/ice efficiently	0.0024	0.0000	0.0000	0.0000	0.0000
4	Having signs that can be easily seen at night or in bad weather	0.0000	0.0004	0.0000	0.0005	0.0002
5	Building bridges that last a long time	0.0086	0.0000	0.4418	0.0038	0.0000
6	Providing useful information about construction, repairs or road conditions	0.2991	0.0000	0.1600	0.0000	0.0358
7	Providing lanes that are wide enough for safe driving	0.0824	0.0000	0.0054	0.0331	0.0001
8	Communicating with the public in easy to understand language	0.2095	0.0000	0.9497	0.0099	0.0000
9	Building bridges that are wide enough to feel safe	0.1922	0.0002	0.0018	0.3817	0.0000
10	Providing the ability to see far ahead on highways and have unobstructed views at intersections	0.0004	0.0000	0.0000	0.0226	0.0000
11	Striping center lines and road edges to ensure safety	0.1113	0.0000	0.0000	0.0393	0.0000
12	Lighting interchanges and bridges	0.0327	0.0000	0.0000	0.8114	0.0000
13	Providing crosswalks and signals for pedestrians to cross the highway safely	0.0000	0.0000	0.0000	0.1000	0.6123
14	Treating highway surfaces to resist skidding in wet weather	0.1332	0.0022	0.0000	0.0030	0.0000
15	Managing traffic flow in construction zones to minimize delays to drivers	0.1811	0.0000	0.0128	0.0000	0.0000
16	Providing enough passing opportunities on two-lane highways	0.0165	0.0000	0.1324	0.1171	0.0000
17	Providing pavement markings that can be easily seen in wet weather	0.1618	0.0066	0.0037	0.3510	0.0203
18	Providing passenger light rail routes that meet your needs	0.1646	0.0000	0.0260	0.0000	0.0000
19	Building new highways to meet future demand	0.0007	0.0003	0.0272	0.0000	0.0000
20	Providing the public with adequate opportunities for input in project planning	0.5538	0.0000	0.0001	0.0008	0.0020
21	Providing sufficient transportation for those who don't or can't drive	0.1960	0.0051	0.0000	0.0000	0.0005
22	Honoring commitments to provide and maintain Missouri's transportation system	0.3300	0.0000	0.0067	0.0000	0.0000
23	Planning a project in a reasonable amount of time	0.4619	0.0023	0.2661	0.0000	0.0000
24	Completing road and bridge construction and repairs in a timely manner	0.4302	0.0023	0.0000	0.0000	0.0010
25	Providing shoulders that are wide enough to pull off the road safely	0.1954	0.0000	0.0017	0.3480	0.0000
26	Providing Amtrak passenger rail service to meet your needs	0.0740	0.0000	0.0000	0.0000	0.0020
27	Improving existing highways to meet increasing traffic demands	0.0000	0.0000	0.4632	0.0000	0.0000
28	Acting on recommendations from the public	0.3875	0.0000	0.0001	0.1004	0.0030
29	Providing pedestrian/bicycle pathways on or next to highways that are safe	0.0015	0.0000	0.0000	0.0000	0.0779
30	Providing pavement that lasts a long time	0.3246	0.0000	0.0709	0.0000	0.0000
31	Using public funds in a cost effective manner	0.0871	0.0000	0.1311	0.0000	0.0000
32	Repairing pavement surface promptly	0.3928	0.0002	0.4064	0.0000	0.0000
33	Distributing transportation funds fairly to all areas of the state	0.0441	0.0000	0.0006	0.0012	0.0000
34	Maintaining the pavement so it provides a smooth ride	0.0050	0.0000	0.6418	0.0000	0.0000

Note: Table cells contain the computed levels of significance (using chi-square), and shaded cells represent relationships that are significant at 0.05 or higher.

Chapter 6: Respondents' Views on Resource Priorities and Trust in MoDOT

Respondents to the TCS were asked a number of questions regarding the current allocation of fuel tax revenues, preferences for increasing revenues for transportation and their trust in the agency to perform certain tasks. The results indicate that respondents were very concerned that maintenance of the existing system of roads and bridges receive top priority. While they do not have much guidance for the agency as to how to acquire additional resources, few respondents believe that MoDOT receives sufficient funds to do the job expected of them. Of all the fiscal tools available to the state to support additional revenues, respondents perceive that some combination of tools will be most desirable. Over sixty percent of the 4,000 respondents to the Transportation Customer Survey express trust in MoDOT to do their job.

Allocation of Fuel Tax Revenues

MoDOT staff has calculated that the average motorist in Missouri spends about \$200 annually in state fuel taxes. Survey respondents were informed of this and asked, "if they had the chance," how they would advise MoDOT to allocate the \$200 they spend each year. They were given four choices in which to allocate funds and told their allocation must total \$200. The results are shown in Table 6.1. Respondents indicated that maintenance of the current system was twice as important as new construction. Respondents allocated, on average, \$83.49 or forty-two percent of the total amount to maintenance of the existing system. New construction attracted an average of \$46.21 or twenty-three percent with safety improvements and reducing congestion each attracting less than twenty percent of the tax revenues collected. It is likely that, in practice, expenditures for both safety and traffic congestion measures are included in those expenditures planned for both maintenance and new construction by MoDOT, so that these amounts could be allocated to the amounts for maintenance and new construction. This could mean respondents felt that over sixty percent of the taxes collected should be allocated to maintenance of the current system.

The distribution of tax revenue allocations was compared to the overall satisfaction of respondents with MoDOT's performance. As shown in Figure 6.1, as the level of satisfaction declines, respondents generally allocated more funds to maintaining the current system. These additional funds were taken from those allocated to safety. The recommended allocations for

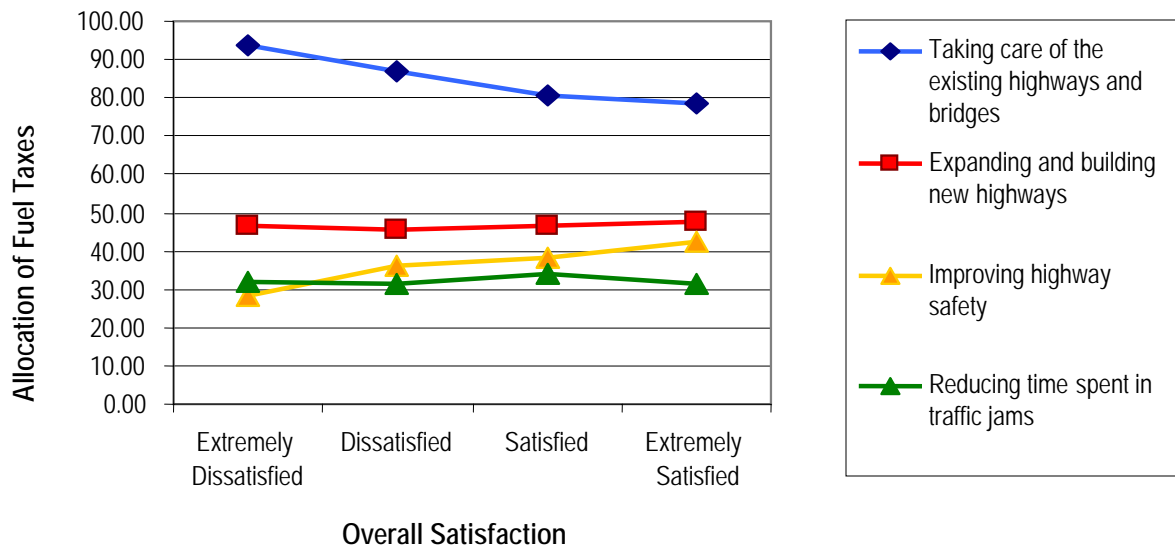
new construction and congestion management were relatively unchanged with levels of satisfaction with MoDOT’s overall performance.

Table 6.1: Respondents’ Suggested Allocation of State Fuel Tax Revenues Collected Annually (\$200 base)

Response	Mean \$ Amount
Taking care of the existing highways and bridges	\$83.49
Expanding and building new highways	\$46.21
Improving highway safety	\$37.44
Reducing time spent in traffic jams	\$32.93
Total	\$200.07

Note: Amount does not add up to \$200.00 due to rounding.

Figure 6.1: Overall Satisfaction with MoDOT Performance and Preferences for Allocation of State Fuel Taxes



On the other hand, respondent characteristics show significant differences in the responses to the question of preferred resource allocations. For example, in Figure 6.2 the effect of age on the response pattern is shown. Here there is a significant and visible difference in preferences with age showing a relationship with increasing allocations to maintaining the current system while holding constant funding for building new highways and reducing the funding for both improved safety and reducing time spent in traffic jams.

Figure 6.2: Age Differences Matter Regarding Distribution of Fuel Taxes

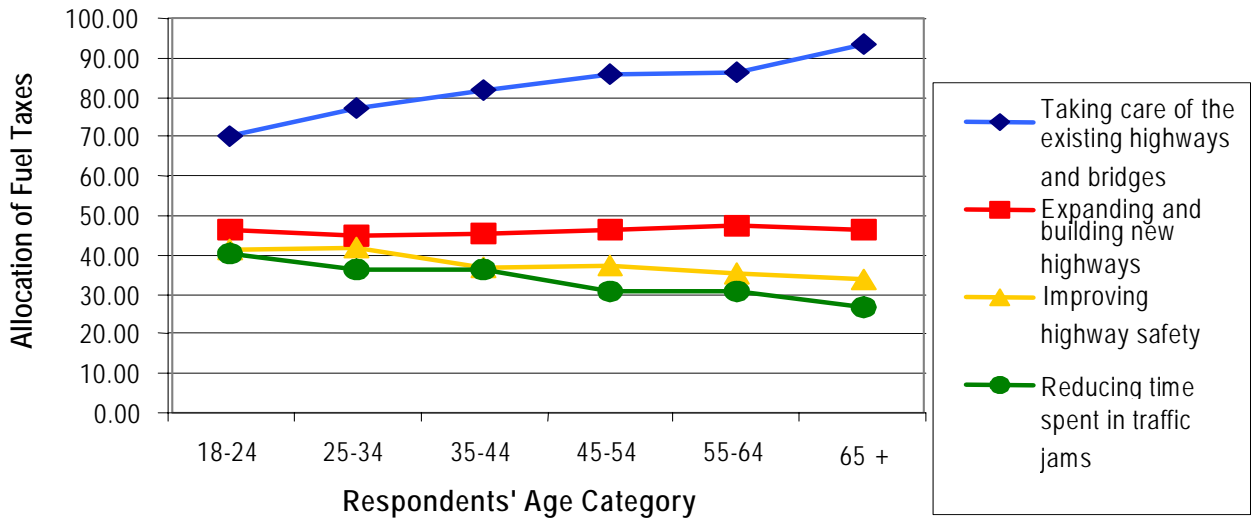


Table 6.2 shows the relationship among respondent characteristics and their preferences for allocation of fuel taxes among the four choices. These relationships can be summarized as follows:

- Age of the respondent makes a significant difference in three of the four choices.
- Respondents' education level makes a significant difference only in the responses to the amount allocated to "reducing time spent in traffic jams."
- The amount of time lived in Missouri was a significant factor in responses to three items: "taking care of the existing highways and bridges," "improving highway safety" and "reducing time spent in traffic jams."
- Miles driven annually is a significant characteristic in three of the four responses to how respondents wanted their allocation of fuel taxes to be distributed.
- Gender makes a significant difference in three of the four options for allocation of fuel taxes.

Regarding levels of education, respondents with lower levels of education tend to respond differently to the opportunity to allocate taxes than those with higher levels of education (Figure 6.3). However, there does not appear to be any specific pattern to these differences making generalization difficult. The same lack of a pattern of significant differences occurs in comparing

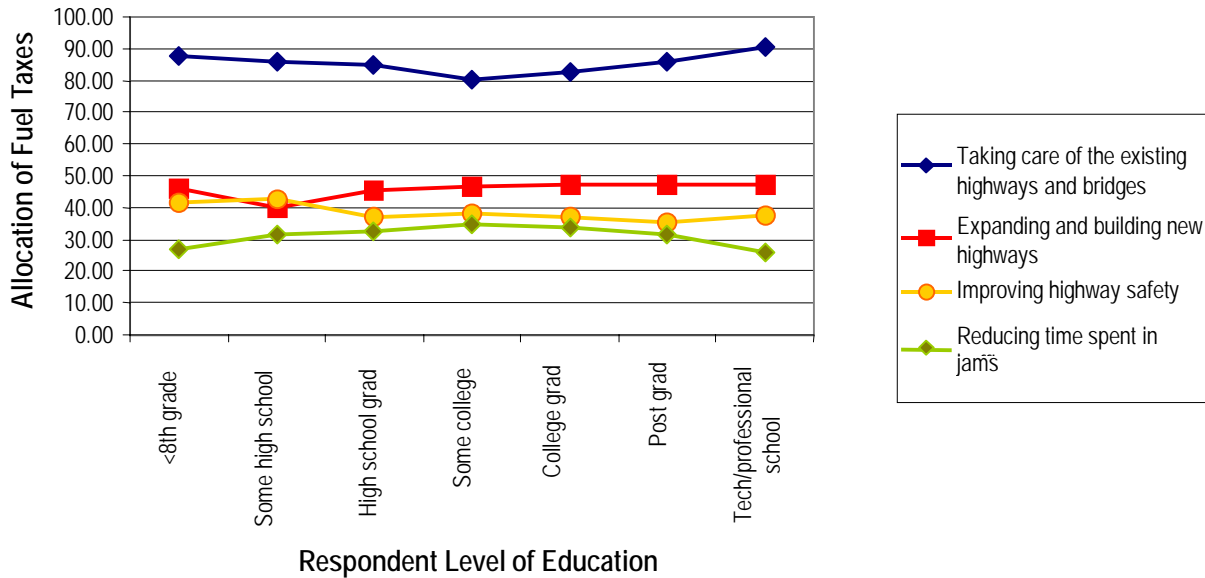
allocation choices and miles driven annually. Certainly the clearest trends in the data are those that are shown in comparisons of age and years lived in Missouri with allocation preferences. Further details may be found in the analysis provided in Appendix B.

Table 6.2: Comparing Allocations of Fuel Taxes by Respondent Characteristics

Respondent Characteristic	Mean Amounts Assigned to Options for Allocating Fuel Taxes by TCS Respondents				
	Taking care of the existing highways and bridges	Expanding and building new highways	Improving highway safety	Reducing time spent in traffic jams	TOTAL*
AGE					
18-24	\$70.45	\$46.46	\$41.56	\$40.24	\$198.71
25-34	\$77.21	\$45.17	\$42.09	\$36.14	\$200.61
35-44	\$81.61	\$45.49	\$36.65	\$36.50	\$200.25
45-54	\$85.64	\$46.31	\$37.61	\$30.81	\$200.37
55-64	\$86.54	\$47.68	\$35.12	\$30.59	\$199.93
65+	\$93.34	\$46.54	\$33.66	\$26.61	\$200.15
GENDER					
Male	\$88.67	\$47.01	\$32.63	\$31.42	\$199.73
Female	\$78.59	\$45.46	\$41.97	\$34.36	\$200.38
EDUCATION					
8 th grade or less	\$87.37	\$45.83	\$41.81	\$26.76	\$201.77
Some high school	\$85.88	\$39.72	\$42.71	\$31.23	\$199.54
High school grad	\$84.84	\$45.75	\$37.22	\$32.45	\$200.26
Some college	\$80.27	\$46.45	\$37.97	\$35.00	\$199.69
College grad	\$82.61	\$47.11	\$37.04	\$33.50	\$200.26
Post grad	\$85.79	\$47.47	\$35.36	\$31.62	\$200.24
Tech/professional school	\$90.21	\$47.01	\$37.83	\$25.89	\$200.94
YEARS LIVED IN MISSOURI					
>10 years	\$78.10	\$44.23	\$40.11	\$38.64	\$201.08
10-19 years	\$79.26	\$43.65	\$43.07	\$33.49	\$199.47
20-29 years	\$80.24	\$46.74	\$36.77	\$36.43	\$200.18
30+ years	\$86.39	\$46.93	\$36.00	\$30.64	\$199.96
MILES DRIVEN ANNUALLY					
>10,000 miles	\$85.45	\$41.80	\$40.01	\$32.95	\$200.21
10,000 – 19,999 miles	\$81.66	\$47.66	\$36.47	\$34.41	\$200.20
<20,000 miles	\$83.82	\$47.83	\$36.61	\$31.62	\$199.88

Note: Response differences are significant at .05 levels or above as indicated by the shading in the cells of the table.
 *Total does not add to \$200.00 due to rounding function and substantially different number of respondents in individual cells of table.

Figure 6.3: Respondent Education Has Limited Effect on Recommended Distribution of Fuel Taxes



Current Funding Generally Inadequate—No Consensus Regarding Sources

The level of current funding for MoDOT is a rather large amount of money in actual terms — about \$2 billion annually. This money comes from a variety of sources. To most Missourians, it likely sounds like a lot of money. However, only about thirty-six percent of the respondents overall believe that MoDOT receives enough money at present to do what is expected of it (Table 6.3). Thirty-five percent of the respondents answered “No” and almost thirty percent answered “Don’t know” to this question. This indicates that there may be substantial potential support available to mobilize in favor of increasing revenues for MoDOT’s work.

Table 6.3: Percent Respondents Believing MoDOT Receives Enough Money Presently

Response	Frequency	Percent
Yes	1,424	35.6
No	1,397	34.9
Don't know	1,171	29.3
Refused/Missing	7	0.2
Total	3,999	100.0

Total Number of respondents does not add to 4,000 due to rounding procedure used.

The responses to this question are statistically related to the number of miles driven annually as well as age and gender of the respondent and years lived in Missouri at the 0.05 level or above.

Table 6.4: Comparison of Respondent Characteristics and Perceptions That MoDOT Currently Receives Enough Money to do its Job

Respondent Characteristic	Percent Responding		
	YES	NO	DON'T KNOW
Age			
18-24	11.8	7.0	6.9
25-34	14.5	15.6	16.0
35-44	21.7	21.0	19.4
45-54	20.6	20.0	20.2
55-64	15.0	18.2	16.9
65+	16.6	18.2	20.6
Total	100.2	100	100
Gender			
Male	52.2	51.3	38.1
Female	47.8	48.7	61.9
Total	100	100	100
Education			
8 th grade or less	1.7	1.4	2.6
Some high school	5.7	3.6	5.9
High school grad	32.7	23.7	30.6
Some college	27.1	25.5	27.1
College grad	20.1	25.5	20.5
Post grad	10.3	18.0	11.2
Tech/professional school	2.4	2.3	2.1
Total	100	100	100
Years Lived In Missouri			
<10 years	10.1	11.1	13.9
10-19 years	11.2	12.2	11.0
20-29 years	17.2	16.8	16.9
30+ years	61.5	59.9	58.2
Total	100	100	100
Miles Driven Annually			
<10,000 miles	28.7	25.5	32.5
10,000 – 19,999 miles	36.3	37.3	39.0
>20,000 miles	34.9	37.2	28.5
Total	99.9	100	100

Note: Shaded cells in table denote comparisons of statistically significant differences at 0.05 level of analysis. Totals may not add to 100% due to rounding procedures used.

These differences are fully displayed in Table 6.4 in which the percent responding “Yes” and “No” and “Don’t Know” is shown.

If they answered “No” or “Don’t Know” to the question regarding their perception of whether or not MoDOT receives enough money currently to do its job, respondents were also

asked what other sources of revenue they would be most likely to support for increasing support for MoDOT. They were given a number of choices and asked to rank them, naming the most favored source first, the next most favored second and so on until they had ranked all the choices. Figure 6.4 shows the results of the top four preferences and a summary ranking. The most favored choice among the first responses was “a combination” of sources with “a dedicated sales tax” a close second. On the second response, the most favored source was an increase in the fuel tax. Increasing user fees was the most popular response on the third choice, and revenue bonds were the most popular choice in the fourth selection. By examining the results for all four rankings together (top row in the bar chart), data show that respondents do not have a clear preference for sources to increase MoDOT’s fiscal base. Some combination of sources is the most likely approach, even though this preference was chosen only slightly more often by respondents in all four rounds than the other choices combined. After the defeat of the statewide proposal in 2002 for increasing sales taxes to support MoDOT, a lot of work is likely if a suitable coalition of citizens is to be mobilized around some combination of sources that will be acceptable to a majority.

Preferred funding sources (only first responses to this question were used for these comparisons) showed differences according to different respondent characteristics based on a cross-tabulation analysis (Table 6.5).⁴ These differences can be summarized as below:

- Age differences are significantly related to preferences in funding sources with respondents aged 18-24 having a mean response lower than other age groups.
- Gender is significantly related to preferences in funding sources.
- Educational level is significantly related to differences in the responses.
- The length of time respondents had lived in Missouri was not a significant factor in the respondents’ selection of preferences.
- Responses were not significantly related to the number of miles respondents had driven annually.

⁴ Cross-tabulation analysis compares the actual number of observations in each cell of a table composed of the categories of responses and respondent characteristics with the expected number of observations in each cell of the table. If the two numbers are fairly close, the hypothesis that the two factors are unrelated is rejected.

In summary, however, there does not appear to be any specific trend that would indicate some particular group of people felt differently than other respondents regarding how new or increased revenues for supporting highway improvements can be raised. While age, gender, and educational level are significantly related to these preferences, the strength of the relationship is very small. Further details may be found in Appendix B.

Figure 6.4: Respondents' Preferences for Increasing Financial Resources for MoDOT

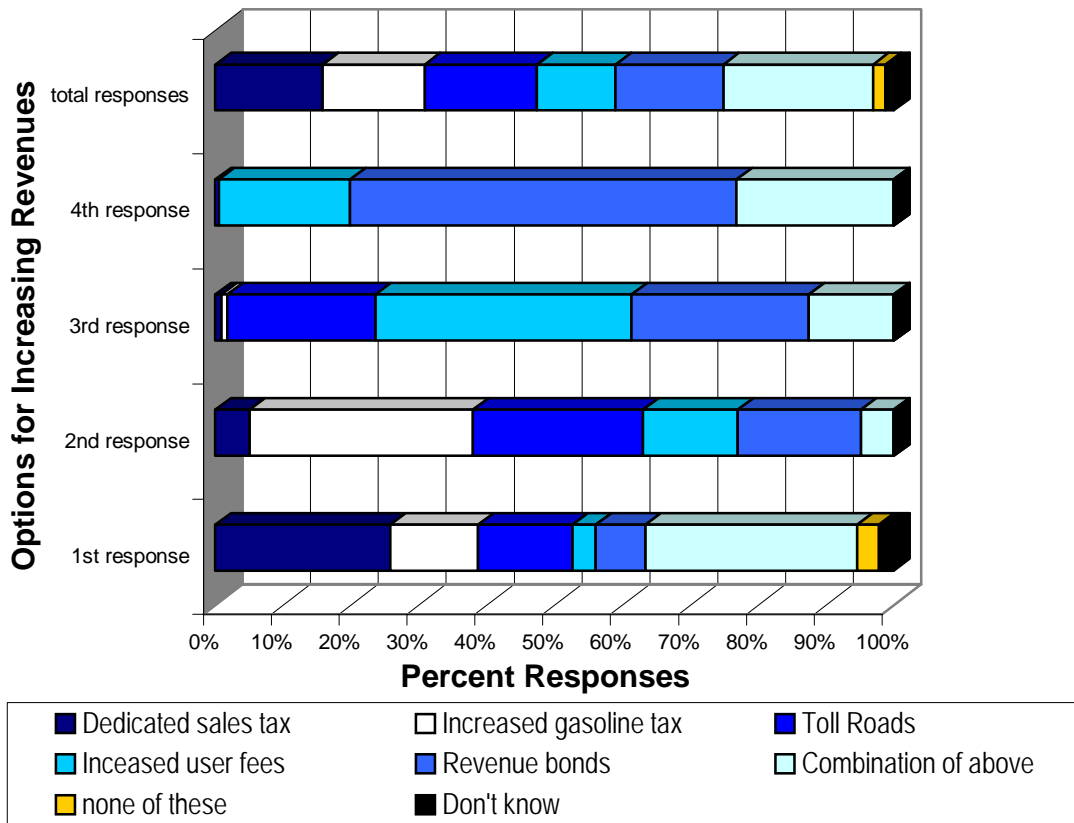


Table 6.5: Preferred Funding Sources Compared with Respondent Characteristics

Respondent Characteristic	Designated Preferred Funding Sources (Percent of Respondents)					
	Dedicated Sales Tax	Increased Fuel Tax	Toll Roads	Increased User Fees	Revenue Bonds	Combination of Methods
AGE						
18-24	10.8	1.1	6.3	16.7	5.9	6.7
25-34	16.7	13.9	15.3	12.5	16.7	16.4
35-44	17.8	20.0	23.2	31.3	22.5	22.9
45-54	20.3	17.8	16.3	12.5	17.6	23.3
55-64	17.2	23.3	23.7	6.3	17.6	16.2
65+	17.2	23.9	15.3	20.8	19.6	14.5
Total	100	100	100.1	100.1	99.9	100
GENDER						
Male	54.3	66.3	48.5	39.6	56.9	44.6
Female	45.7	33.7	51.5	60.4	43.1	55.4
Total	100	100	100	100	100	100
EDUCATION						
8 th grade or less	2.5	2.2	1.0	0.0	0.0	0.5
Some high school	3.3	1.6	3.6	6.1	2.0	4.1
High school grad	21.4	22.0	27.5	16.3	27.7	21.4
Some college	24.2	20.9	21.8	40.8	22.8	30.4
College grad	27.6	25.8	32.1	24.5	23.8	22.8
Post grad	19.8	25.3	11.9	12.2	16.8	18.4
Tech/prof school	1.1	2.2	2.1	0.0	6.9	2.3
Total	99.9	100	100	99.9	100	99.9
YEARS LIVED IN MISSOURI						
<10 years	11.1	13.8	9.3	21.3	11.8	9.9
10-19 years	12.2	9.4	11.9	12.8	7.8	15.2
20-29 years	21.1	12.7	18.0	19.1	11.8	15.4
30+years	55.6	64.1	60.8	46.8	68.6	59.5
Total	100	100	100	100	100	100
MILES DRIVEN ANNUALLY						
<10,000	20.4	26.0	22.3	29.8	37.1	26.4
10,000 – 19,999	38.3	34.9	38.3	38.3	29.9	38.3
>20,000	41.3	39.1	39.4	31.9	33.0	35.3
Total	100	100	100	100	100	100

Note: Totals may not add to exactly 100% because of rounding procedure used.

MoDOT Generally Trusted to Perform

In this survey, respondents were asked if they trusted MoDOT to perform in several different areas of responsibility. These areas are shown in Figure 6.5 along the left-hand axis. They include: “spending public funds efficiently, allocating funds fairly, providing a quality transportation system, completing highway projects on time” and other related activities. In all six areas posed to respondents, the reactions indicate over sixty percent of respondents indicate

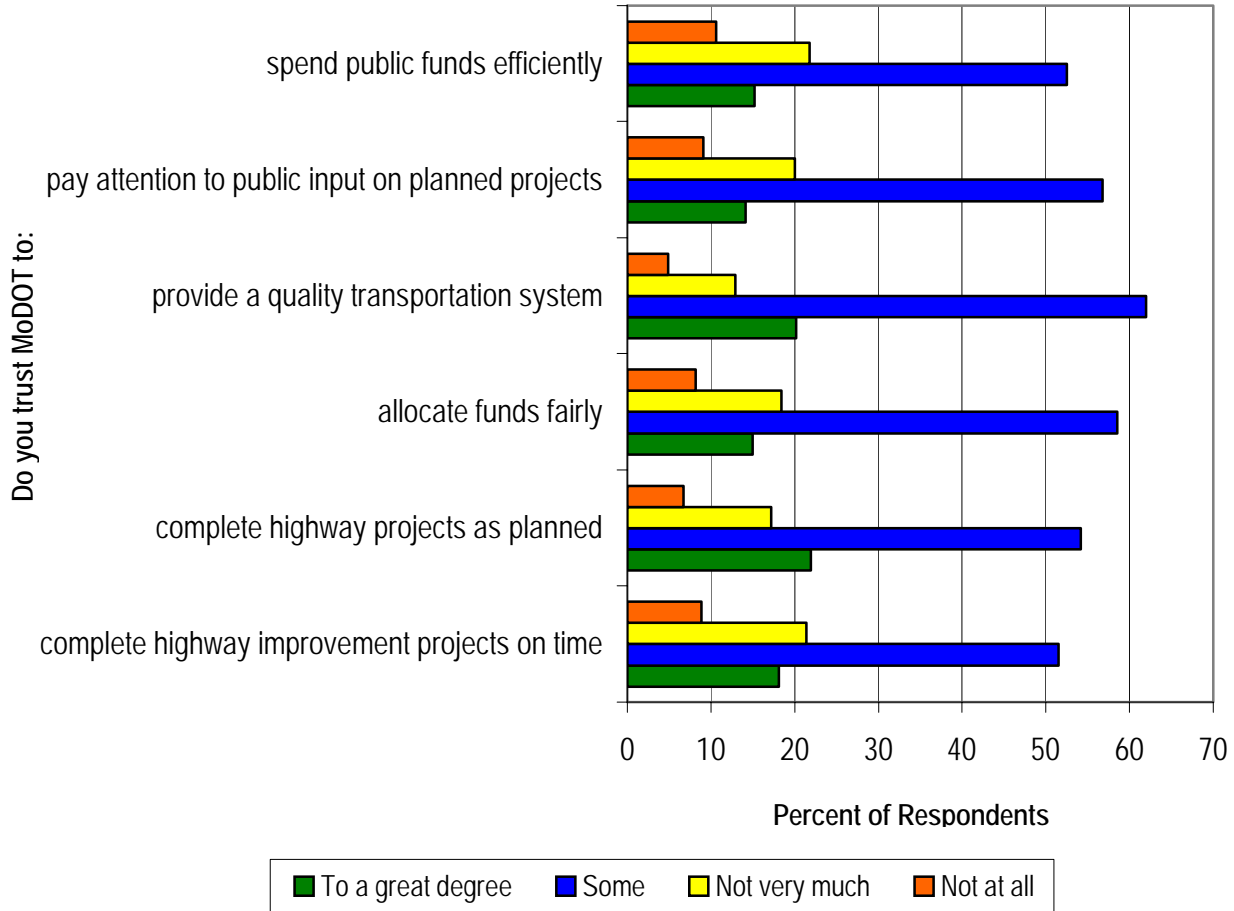
they trust MoDOT to perform at least “to some degree.” Further, the tendency is clearly toward the trusting “to a great degree” end of the distribution rather than trusting “not at all.”

Since there are six items in this set of responses dealing with trust in the agency, it was useful to determine if all of these items were inter-related and addressing the same idea as was intended. An analysis was conducted to determine this and, as desired, all the items were highly enough inter-related empirically to conclude that they collectively and individually, address the same idea: trust in the agency.

Responses to the set of questions regarding trust in MoDOT show significant differences with regard to age and education level of respondent. Trust in MoDOT is not related to the number of years a respondent has lived in Missouri. However, the higher the mileage driven annually by respondents the higher the level of trust assigned to MoDOT by the respondent for most of the six survey items. This is not true for two of the six items where mileage driven shows no significant effect. Further, when the number of miles driven is related to the composite trust factor (i.e., all six items taken together), there is no relationship at all.

It is possible that respondents who held a commercial driver’s license hold different perceptions of trust regarding MoDOT’s performance. This could be that they are more familiar with highway conditions in Missouri and in comparison to other states because they drive so many more miles than people without commercial licenses. When the responses on the six trust questions were examined by the respondents who possessed a commercial driver’s license, only two of the six showed that holding a commercial license made any significant difference: “allocate funds fairly” and “pay attention to public input.” In addition, the general pattern of responses is quite similar to that for the total sample, and all the items indicate that 60 percent or more of commercial drivers feel they can trust MoDOT “to a great degree” or “to some degree” to perform in the areas indicated.

Figure 6.5: Responses to Survey Regarding Perceived Trust in MoDOT

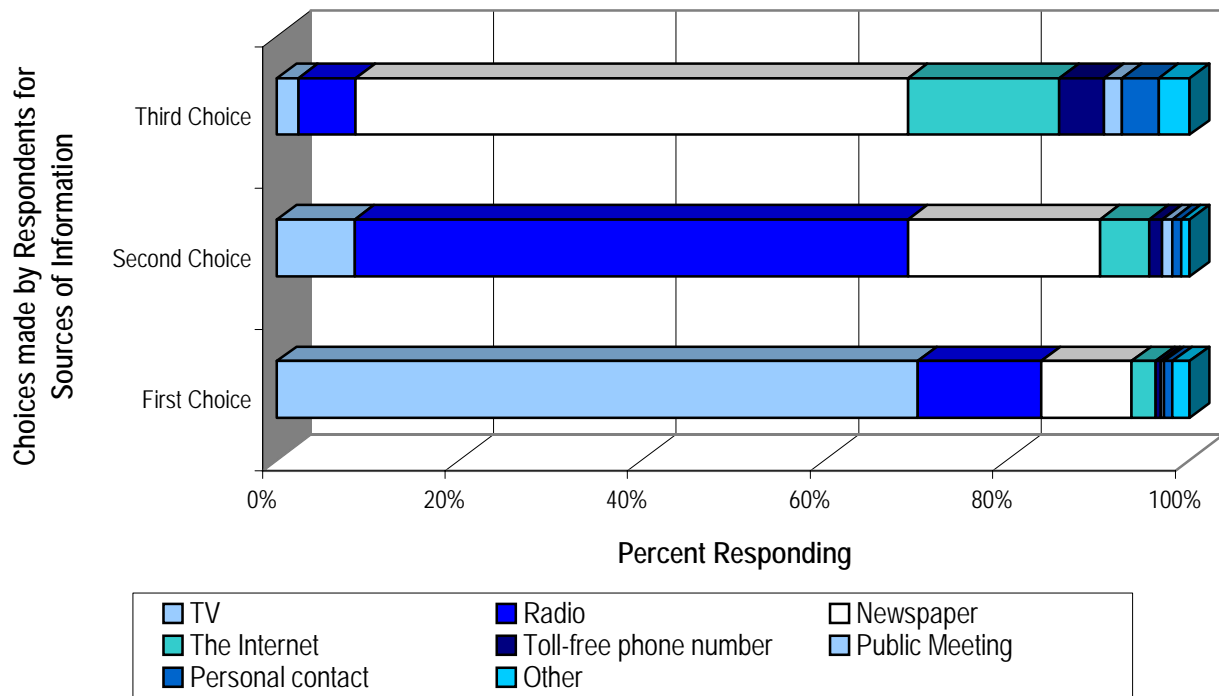


Sources of Information Used by Respondents

Missouri’s citizens can obtain information about the things in which they have an interest from a variety of sources. These sources might include: watching television, listening to radio broadcasts, reading the newspaper, searching for information on the Internet, or making a personal contact with a MoDOT employee or other civic official or using the toll-free customer service phone number to solicit information. TCS respondents were given the opportunity to indicate where they received information about MoDOT. Respondents were given a series of options, similar to the list above, and asked which source they most often used. They were also asked which sources they used in addition to their first source and were permitted to make up to seven choices, including “other” in which they were asked to supply a specific response. The responses were recorded in order of selection by respondents. The results of this procedure are presented in Figure 6.6 and show that television, radio and

newspapers are the most frequently used sources of information about MoDOT and its activities. Since only sixteen percent of respondents named more than three sources, these first three choices are highlighted in Figure 6.6. At this point in time, conventional sources of information are far more important to Missourians than newer forms of information.

Figure 6.6: Three Important Sources of Information about MoDOT Used by TCS Respondents



Distribution of Fuel Tax Revenues

It may not be well known that revenue from the fuel sales tax is distributed by statute to a number of places besides the Missouri Department of Transportation. The statute diverts about half the total revenue stream to city and county government units and other executive branch departments in equal portions (about 25 percent each). The TCS interviewers informed each respondent of this statutory requirement and asked for their opinions regarding the continuation of this procedure. The results are summarized in Table 6.6 and indicate that there is little support for continuing to distribute fuel taxes to other state agencies. At the same time, respondents indicate substantial support for continuing to distribute a portion of these revenues to city and county governments. It is reasonable to assume that, if the tax is imposed on fuel, it is considered a “dedicated tax” for transportation purposes

and that respondents recognize that MoDOT shares some of the responsibility with city and county governments for the general transportation system.

Table 6.6: Preferences Regarding Distribution of Fuel Tax Revenues

	Do you favor continuing to distribute these funds to city and county governments?	Do you favor continuing to distribute these funds to other state departments?
	Percent Responding	Percent Responding
Yes	76.1	31.4
No	15.5	57.3
Don't know	8.3	11.1
Refused	0.1	0.2
Total	100.00	100.00

Summary of Findings

The four questions from the TCS discussed in this chapter represent important concerns for MoDOT with regard to recent political events. Questions of adequacy of resources to do the job, how fuel tax money should be allocated to specific outcomes and trust in the agency to do its job well all relate to how MoDOT is perceived and what manner of political challenges agency managers face. These results show that: (1) a majority of respondents feel that maintaining the current transportation system is the most important of four outcome choices given respondents and twice as important as the next highest rated outcome (in terms of assigning a portion of the fuel taxes received); (2) that there appears to be no consensus about how to increase revenues for MoDOT's work in transportation system development and maintenance; (3) there is a general level of trust in the agency to do its assigned job by respondents; and (4) the distribution of tax money to local governments should be continued according to a large majority, but the distribution to other state agencies is not supported by respondents.

Chapter 7: Comparison of 2003 TCS with Benchmark

In 2000, a benchmark survey was conducted that was essentially identical to the TCS survey conducted in 2003. This survey, known as the Constituent Service Quality Survey (CSQS), used a telephone survey methodology to interview over 1,500 Missouri residents (over 18 years of age). While the CSQS used forty-one items in its survey of elements of work related to MoDOT performance instead of thirty-four, there are thirty-one elements of work that are the same in both surveys in the survey sections related to ratings of current satisfaction and future attention. In both the CSQS and TCS, the format for asking these questions was identical. This approach was used because it was anticipated that the basic survey would be replicated at least once, if not more often, as is being done in a number of other states (e.g., Pennsylvania). The TCS surveyed a larger number of Missouri residents, but both surveys meet a minimum standard for a confidence interval of +/- 3 percent or less and a level of significance of at least 95 percent. The TCS meets this standard for both the state and all the MoDOT districts.

In this chapter, the results of the TCS are compared with the results of the CSQS obtained in 2000 and reported to MoDOT in a previous report. These item-by-item comparisons sometimes show improvements in the perceived ratings of current satisfaction and, sometimes, no improvement or diminished ratings. Similarly, the comparisons of ratings of desired future attention show some instances are rated lower in 2003 than in 2000 and some higher. Finally, the discrepancy scores computed from the difference between the ratings of future attention and current satisfaction are compared to show areas in which perceived performance has improved or declined.

As a common reference for the following discussion, the thirty-four items included in the TCS are listed in Table 7.1 (as they were in Table 4.1) as well as the computed mean ratings for each item in 2000 and 2003. The discrepancy scores for 2000 and 2003 are similarly compared in this table. In all the graphics included in this chapter, the same numbers are used for each item, and they are listed consecutively (re: current satisfaction means in 2003) for consistent reference.

Results Show Modest Improvement in Perceived Current Satisfaction

Compared to the results of the CSQS in 2000, the means of current satisfaction in 2003 are somewhat higher in twenty-five of thirty-four items (Table 7.1). The 2000 CSQS mean scores of responses to the thirty-four performance items ranged from 2.15 to 2.99. The mean scores for the 2003 TCS ranged from 2.31 to 2.98. In those cases where the means were lower, the difference between the

two scores was less than 0.10 on the four-point scale. In those cases where the means were higher, 11 of these showed differences that were less than 0.10. The remaining items showed differences in means between 0.10 and almost 0.30 on this scale. The comparison shown in Figures 7.1 and 7.2 shows just how small the changes are in mean differences between 2000 and 2003.

An examination of the 2000 and 2003 rankings of current satisfaction items (based on mean scores) shows very small shifts (up or down) from one year to another. Twenty-five items had mean scores higher in 2003 than in 2000 (Figure 7.1) and twenty-one of the thirty-four items shifted down in rank (Table 7.2). To further test the relationship, the rank order correlations for both mean scores and rank between the CSQS and the TCS were computed (Table 7.3). This statistic shows how closely the two sets of results are related, with a correlation of zero indicating no relationship at all, and 1.0 showing perfect reproduction of the rankings from 2000 to 2003. The figures in the table indicate that the means for 2000 and 2003 are correlated at the level of 0.95 and the rankings are also correlated at a (very high) level of 0.94 (both correlations are statistically significant at the 0.01 level). These figures indicate a high relationship between the means (and the order of their presentation from highest to lowest, and a similarly high relationship between the item rankings (based on mean scores). In other words, there is very little difference in the two sets of item rankings and, as shown in Figure 7.1 and Table 7.1, only small differences in the means, meaning that only small improvements in perceived current satisfaction with MoDOT's performance were measured. However small, the majority of changes measured are in the desired direction: satisfaction levels are increasing.

Comparisons of Ratings of Desired Future Attention, 2000-2003

The comparisons of means and item rankings (according to their means) for ratings of desired future attention is also shown in Table 7.1 and Table 7.2. The desired direction of change in this case is the opposite of that for current satisfaction ratings. The results displayed in Table 7.1 show that fourteen of the thirty-four items show changes in the desired direction, while fourteen of the thirty-four items showed changes in the other direction. In almost all cases, the differences are small. This is shown graphically in Figure 7.2. In the case of the item rankings (based on their means), nine items showed changes in the desired direction, and, as before, the changes in rank are usually small in degree. Similar to the results for rankings of current satisfaction, the change in item rankings between 2000 and 2003 are also small, and when the rank order correlation is computed, the correlations are very high for the rankings and more modest for the means. Again, very little significant difference can

be claimed between the two periods. The direction of change in both means and rankings is, however, in the desired direction.

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Table 7.1: Results of 2000 and 2003 Surveys Compared by Means for Performance Items

Item #	Item Description	Current Satisfaction		Future Attention		Discrepancy Scores	
		2000 Mean	2003 Mean	2000 Mean	2003 Mean	2000 Mean	2003 Mean
1	Using electronic message boards to advise drivers of delays or construction areas	2.93	2.98	2.94	2.97	-0.02	0.00
2	Placing yellow warning signs to assure sufficient response time	2.99	2.93	3.01	2.97	-0.02	-0.05
3	Removing snow/ice efficiently	2.81	2.92	3.18	3.03	-0.37	-0.14
4	Having signs that can be easily seen at night or in bad weather	2.91	2.88	3.18	3.05	-0.27	-0.18
5	Building bridges that last a long time	2.85	2.83	3.27	3.13	-0.42	-0.31
6	Providing useful information about construction, repairs or road conditions	2.78	2.83	2.99	3.02	-0.21	-0.20
7	Providing lanes that are wide enough for safe driving	2.93	2.85	3.08	3.03	-0.15	-0.19
8	Communicating with the public in easy to understand language	2.80	2.83	2.98	3.02	-0.18	-0.21
9	Building bridges that are wide enough to feel safe	2.87	2.84	3.11	3.04	-0.24	-0.22
10	Providing the ability to see far ahead on highways and have unobstructed views at intersections	n/a	2.83	n/a	3.04	n/a	-0.22
11	Striping center lines and road edges to ensure safety	2.77	2.82	3.14	3.08	-0.37	-0.28
12	Lighting interchanges and bridges	2.74	2.83	3.05	2.97	-0.32	-0.16
13	Providing crosswalks and signals for pedestrians to cross the highway safely	2.55	2.74	2.99	3.01	-0.45	-0.31
14	Treating highway surfaces to resist skidding in wet weather	2.53	2.72	3.20	3.14	-0.68	-0.44
15	Managing traffic flow in construction zones to minimize delays to drivers	n/a	2.62	n/a	3.18	n/a	-0.61
16	Providing enough passing opportunities on two-lane highways	2.60	2.70	2.98	3.00	-0.38	-0.34
17	Providing pavement markings that can be easily seen in wet weather	2.53	2.65	3.25	3.15	-0.61	-0.54
18	Providing passenger light rail routes that meet your needs	n/a	2.58	n/a	3.01	n/a	-0.59
19	Building new highways to meet future demand	2.53	2.62	3.15	3.16	-0.73	-0.57
20	Providing the public with adequate opportunities for input in project planning	2.31	2.58	3.04	3.14	-0.73	-0.61
21	Providing sufficient transportation for those who don't or can't drive	2.50	2.53	3.09	3.15	-0.61	-0.72
22	Honoring commitments to provide and maintain Missouri's transportation system	2.51	2.58	3.27	3.22	-0.75	-0.69
23	Planning a project in a reasonable amount of time	2.34	2.53	3.15	3.18	-0.82	-0.71
24	Completing road and bridge construction and repairs in a timely manner	2.33	2.49	3.26	3.27	-0.94	-0.83
25	Providing shoulders that are wide enough to pull off the road safely	2.51	2.60	3.13	3.14	-0.62	-0.57
26	Providing Amtrak passenger rail service to meet your needs	2.38	2.52	2.73	2.90	-0.46	-0.63
27	Improving existing highways to meet increasing traffic demands	2.46	2.52	3.28	3.28	-0.82	-0.79
28	Acting on recommendations from the public	n/a	2.52	n/a	3.18	n/a	-0.73
29	Providing pedestrian/bicycle pathways on or next to highways that are safe	2.08	2.47	2.71	2.96	-0.67	-0.59
30	Providing pavement that lasts a long time	2.29	2.41	3.34	3.32	-1.06	-0.94
31	Using public funds in a cost effective manner	2.29	2.41	3.37	3.34	-1.06	-0.98
32	Repairing pavement surface promptly	2.15	2.32	3.31	3.34	-1.17	-1.06
33	Distributing transportation funds fairly to all areas of the state	2.30	2.38	3.28	3.27	-0.98	-1.01
34	Maintaining the pavement so it provides a smooth ride	2.22	2.31	3.27	3.30	-1.05	-1.03

Note: As noted in the text (p. 51), subtracting the mean scores for current satisfaction and desired future attention shown above will not yield the same difference as that reported in the discrepancy column because of the method used in the calculation.

Table 7.2: Results of 2000 and 2003 Surveys Compared by Ranking of Means for Performance Items

Item #	Item Description	Current Satisfaction		Future Attention		Discrepancy Scores	
		2000 Rank	2003 Rank	2000 Rank	2003 Rank	2000 Rank	2003 Rank
1	Using electronic message boards to advise drivers of delays or construction areas	2	1	28	30	30	34
2	Placing yellow warning signs to assure sufficient response time	1	2	23	32	29	33
3	Removing snow/ice efficiently	7	3	13	24	22	32
4	Having signs that can be easily seen at night or in bad weather	4	4	12	20	24	30
5	Building bridges that last a long time	6	5	8	18	19	23
6	Providing useful information about construction, repairs or road conditions	9	8	25	26	26	28
7	Providing lanes that are wide enough for safe driving	3	7	20	23	28	29
8	Communicating with the public in easy to understand language	8	6	27	25	27	27
9	Building bridges that are wide enough to feel safe	5	9	18	21	25	26
10	Providing the ability to see far ahead on highways and have unobstructed views at intersections	n/a	12	n/a	22	n/a	25
11	Striping center lines and road edges to ensure safety	10	11	16	19	21	24
12	Lighting interchanges and bridges	11	10	21	31	23	31
13	Providing crosswalks and signals for pedestrians to cross the highway safely	13	13	24	27	18	22
14	Treating highway surfaces to resist skidding in wet weather	16	14	11	16	12	20
15	Managing traffic flow in construction zones to minimize delays to drivers	n/a	15	n/a	11	n/a	14
16	Providing enough passing opportunities on two-lane highways	12	16	26	29	20	21
17	Providing pavement markings that can be easily seen in wet weather	14	17	10	13	16	19
18	Providing passenger light rail routes that meet your needs*	31	25	31	28	31	15
19	Building new highways to meet future demand	15	19	14	12	11	17
20	Providing the public with adequate opportunities for input in project planning	24	18	22	15	10	13
21	Providing sufficient transportation for those who don't or can't drive	19	21	19	14	15	9
22	Honoring commitments to provide and maintain Missouri's transportation system	17	22	6	8	9	11
23	Planning a project in a reasonable amount of time	22	23	15	9	8	10
24	Completing road and bridge construction and repairs in a timely manner	23	24	9	6	6	6
25	Providing shoulders that are wide enough to pull off the road safely	18	20	17	17	14	18
26	Providing Amtrak passenger rail service to meet your needs	21	28	29	34	17	12
27	Improving existing highways to meet increasing traffic demands	20	26	4	5	7	7
28	Acting on recommendations from the public	n/a	27	n/a	10	n/a	8
29	Providing pedestrian/bicycle pathways on or next to highways that are safe	30	29	30	33	13	16
30	Providing pavement that lasts a long time	27	31	2	3	2	5
31	Using public funds in a cost effective manner	26	30	1	2	3	4
32	Repairing pavement surface promptly	29	32	3	1	1	1
33	Distributing transportation funds fairly to all areas of the state	25	33	5	7	5	3
34	Maintaining the pavement so it provides a smooth ride	28	34	7	4	4	2

Note: This item was only asked in the St. Louis district in 2000 CSQS, so rankings shifted considerably between the two surveys.

Figure 7.1: Comparisons of Means for Current Satisfaction Ratings, 2000 and 2003

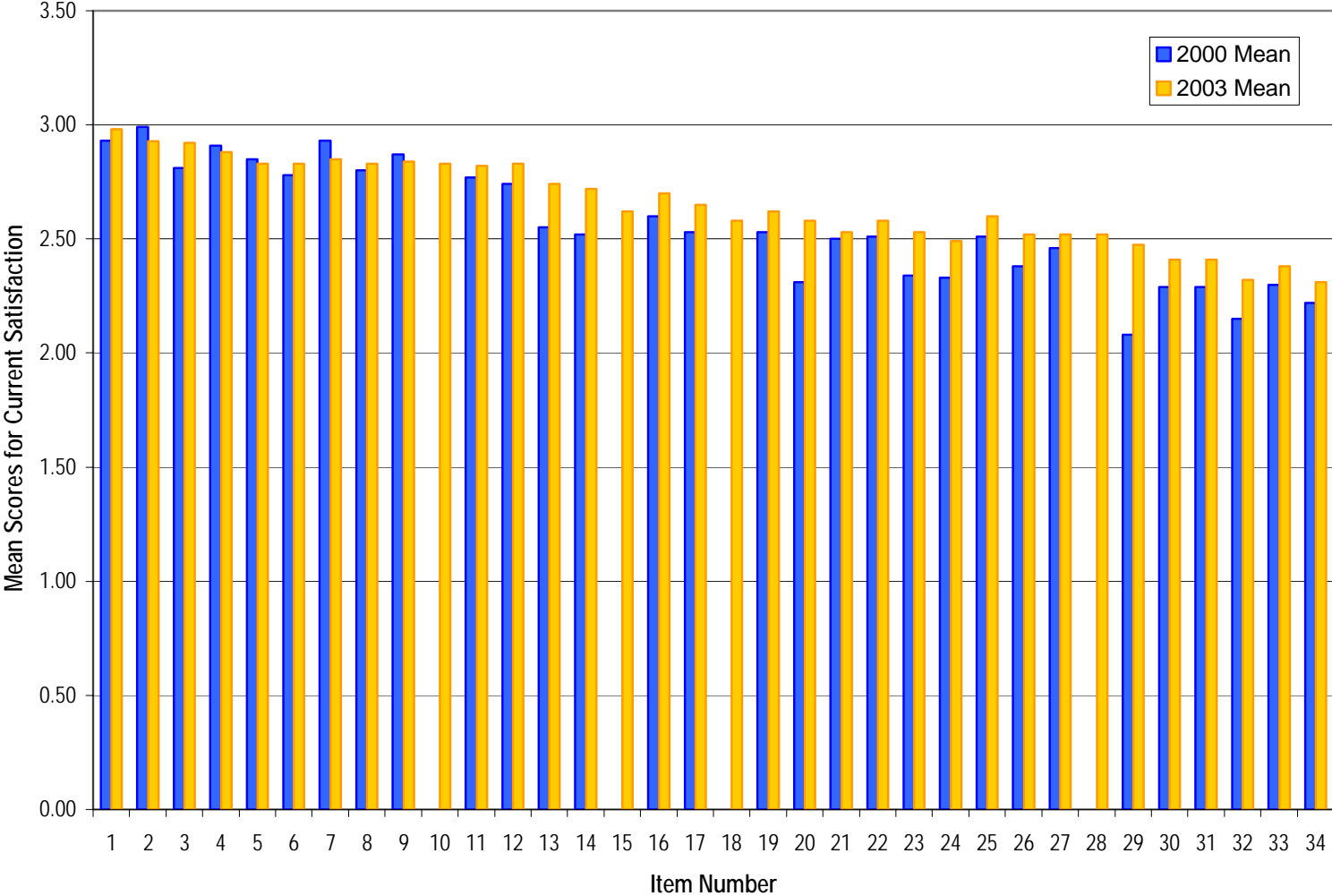


Table 7.3: Mean Values and Rank Order Correlations Indicate Little Change 2000 to 2003

	Bivariate Correlations	
	2000/2003 Mean Values	2000/2003 Rank Order
Current Satisfaction	0.95	0.94
Future Attention	0.69	0.89
Discrepancy Scores	0.96	0.87

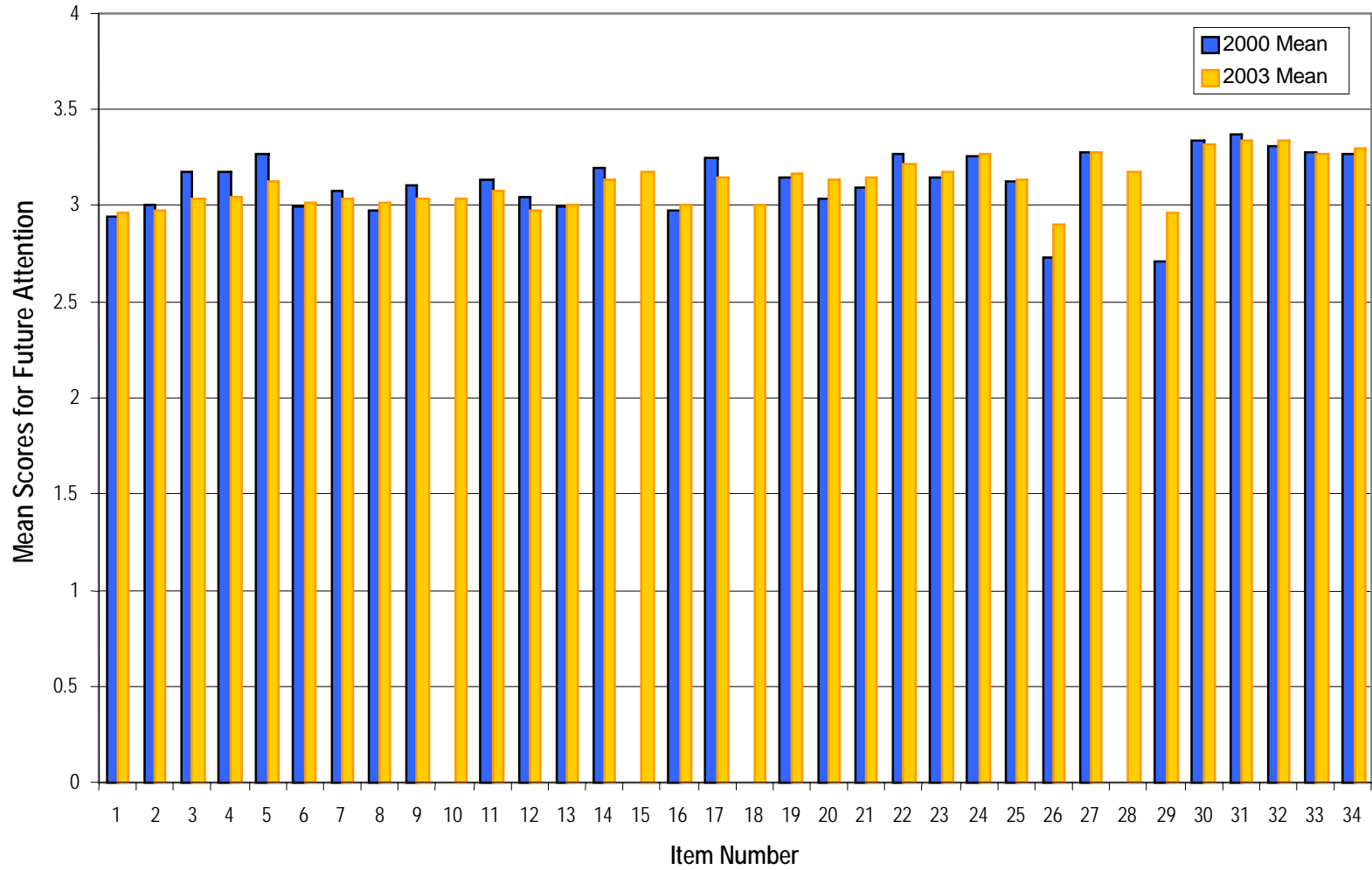
**Pearson correlation, significant at the 0.01 levels*

Table 7.3 shows the correlations for the mean scores and rank order for 2000 and 2003. The correlation of discrepancy means from the two surveys is 0.96, and the correlation of rankings is 0.87. These results differ from the current satisfaction and future attention results by only small amounts (except for the 2000/2003 mean values for desired future attention) with the same implication to be drawn — in the preferences of survey respondents, the relative changes in priorities for future attention do not shown much difference.

Discrepancy Scores Show Modest Improvements

Discrepancy scores obtained by subtracting the means for desired levels of future attention from current satisfaction item means show modest improvements from 2000 to 2003 in twenty-four of thirty-four items (four of which are not included in the 2000 survey). As indicated in Table 7.1, eleven of the thirty-four items show changes (2000 vs. 2003) in the mean scores above 0.10 while the rest are smaller than 0.10. On a four-point scale, these differences are not large even though many of them are showing improvement in perceived performance. Table 7.2 shows the ranking of items by discrepancy score, and small changes are noted from 2000 to 2003. In this instance, it is also desirable that the discrepancy scores on the same items show smaller values for 2003 than for 2000, demonstrating “progress in achieving improved performance.” As indicated in Chapter 5, most all the discrepancy scores can be placed in that area of the distribution designated as “strengths.” Further, as indicated in Table 7.3, the rank order correlations between the two lists are very high for both the mean computed differences and the rank order listing. The correlation between means of the difference scores themselves is 0.96, and the correlation between rankings is 0.87. The high correlations indicate the 2000 and 2003 lists are very similar, almost identical. The differences that do exist are rather small in size, but indicate that MoDOT may be improving its performance in small ways that can be perceived by the Missourians that participated in this survey.

Figure 7.2: Comparisons of Means for Future Attention Ratings 2000 and 2003



Preservation and Maintenance Increasingly Important

In the 2000 CSQS study respondents were asked “If you had the opportunity to advise the Missouri Department of Transportation and could divide its budget between two items, what percentage of current funding would you recommend they spend on preserving and maintaining the existing highways and infrastructure (and what would you spend on) expanding and building new highways?” (In this discussion, the first option is referred to as “preservation” and the second alternative as “expansion.”) Statewide, citizens expressed preference in 2000 for an emphasis on preservation, with the average response specifying 58 percent of resources for preserving and maintaining to 42 percent for expanding and building new highways.

In the 2003 TCS the question was presented to respondents in a different fashion. The question asked respondents to allocate \$200, the estimated average fuel tax expenditure per licensed driver, among four options instead of two. However, two of these options relate directly to “preservation” and “expansion”: “taking care of the existing highways and bridges” and “expanding and building new highways.” Given four options to choose from in 2003 respondents continued to allocate more funds for maintenance and preservation of existing highways. Almost \$84.00 (42%) was allocated by respondents to “taking care of the existing highways and bridges” compared to \$46.00 (23%) for “expanding and building new highways.” The amounts allocated to these two activities are important to consider when comparing these results to those obtained in 2000 and clearly shows that respondents give greater priority to preservation and maintenance over new construction.

Mass Media Remains Important as Source for Information

Traditionally people have relied upon television, radio and newspaper for their information about governmental activities. In the 2000 CSQS and the 2003 TCS respondents were asked what sources were important to them for information about MoDOT and its activities. In 2000 television (42%), newspapers (33%) and radio (16%) were the most important sources. In 2003 the order changes, but respondents listed the same three sources as the first choice: television (70%), radio (13%) and newspapers (10%). Most strikingly, the proportion of people relying on television for their information about MoDOT has nearly doubled, at the expense of other media forms. While radio was the second choice selected by sixty percent of respondents in 2003 and newspapers was the clear third choice, again by sixty percent of

respondents, this large increase is worth noting. Other sources such as the Internet, toll-free customer service hot lines, and personal contacts remain very small in their relative importance.

Benchmark Comparisons Show Modest Improvements, 2000 - 2003

As shown in this chapter, the comparison of the 2003 survey results with the benchmark study of 2000 show modest improvements. The changes, while in the desired direction in a majority of instances, are generally small in size. Since only three years have passed since the benchmark was established, only modest improvements should be expected. Means and rankings (based on percentage of respondents answering “satisfied” and “extremely satisfied”) of thirty-four items reflecting the work MoDOT does to maintain and improve the transportation system regarding perceived levels of current satisfaction and desired future attention show small differences between the benchmark of 2000 and the 2003 results. These differences are generally in the right direction. Similarly, the discrepancy score differences between the two surveys are small, but they are generally in the right direction (Figure 7.3). Are these statistically important differences? That cannot be determined as the two surveys were conducted with different individuals. Are these differences important enough to get the attention of MoDOT management? The answer to this question undoubtedly depends on the attitude of managers and the Missouri Highways and Transportation Commission toward the results.

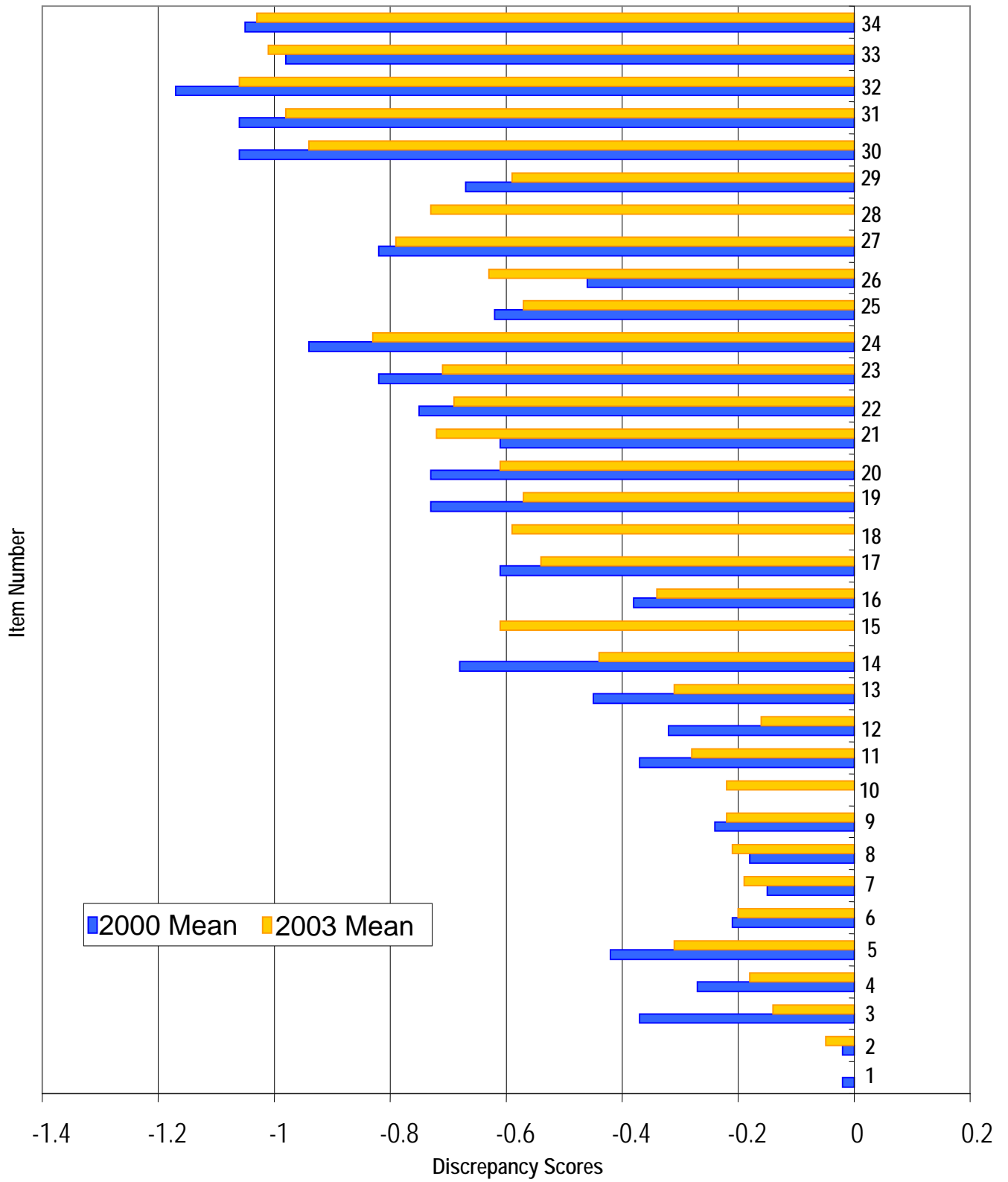
Benchmarking performance as perceived by the constituents of MoDOT is an important process for helping management decide upon actions that may possibly improve both perceived and actual performance. Most of the literature dealing with improving the performance of public agencies places considerable importance on “customer satisfaction” information as one measure of performance. While this information should be matched with more objective indicators before managers make decisions involving priority shifts or allocation of resources to specific areas of agency activity, most observers recommend significant attention be given to the indicators of customer satisfaction such as those reported in this report.

MoDOT has taken this general perspective seriously and conscientiously pursued the measurement of customer satisfaction, as well as perceptions of desired level of future attention to be given to a number of areas of work performed by the agency. Separate surveys conducted of Missouri citizens in 2000 and 2003 have assessed the perceptions of current satisfaction and desired future attention. Further, these results were used to compute difference scores (representing discrepancies between current and future levels of performance) that help

management assess its future actions. The comparisons indicate that, based on customer perceptions, MoDOT's performance is improving in appropriate ways, many times giving emphasis to those areas of concern identified by customers in these surveys.

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Figure 7.3: Comparisons of Discrepancy Scores, 2000 and 2003



Appendix A.1

Transportation Customer Survey Methodology

2003

MISSOURI

DEPARTMENT OF TRANSPORTATION

Conducted by
Schulman, Ronca and Bucuvalas, Inc.
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Silver Spring, MD 20906
301-608-3883

Project Directors: John M. Boyle, Ph.D.

Overview

The Department of Rural Sociology at the University of Missouri-Columbia commissioned the national survey research organization, Schulman, Ronca and Bucuvalas, Inc. (SRBI) to conduct the 2003 Transportation Customer Survey (TCS) for the Missouri Department of Transportation (MoDOT). The survey asked respondents about their usage of different methods of transportation; satisfaction with and future recommendations for specific aspects of the state transportation system; recent contacts with MODOT; sources of transportation information; opinions about the allocation of the state fuel tax to state and local governments; and a comparison of Missouri highways compared with those in other states to which the respondent had traveled within the past 12 months. Questions about respondent demographic characteristics were also asked in the interview.

The survey was conducted with a statewide sample of 4,012 adults in the state of Missouri. Approximately 400 interviews were completed in each of 10 geographic regions of the state: Central, Kansas City, North Central, Northeast, Northwest, St. Louis, Southwest, Springfield area, South Central and Southeast. Interviewing was conducted between May 14 and June 8, 2003, with an average length of 20.1 minutes. The questionnaire was translated into Spanish and 12 interviews were completed in Spanish where respondents were unable to complete the survey in English.

The sampling area to be covered by the survey was geographically defined as the entire state of Missouri. Within the geographically defined boundaries of the sample, a series of replicate simple random samples of working residential telephone banks was drawn. Two digits were randomly generated and appended to the residential bank number to produce a full 10 random digit telephone number.

The random digit sample was loaded by replicate into a sample management system. These numbers were then systematically dialed by telephone interviewers located in SRBI's central telephone interviewing facilities. The interviewing protocol called for a total of five contact attempts at sampled numbers to determine whether a household had been reached. Contact attempts were made during the hours that persons are most likely to be home – from 5:30 p.m. to 9:30 p.m. on weekdays and from 10:00 a.m. to 9:30 p.m. on weekends. If no contact had been made after five attempts, the number was dropped.

If contact was made with an eligible household, one adult was selected as the designated respondent for the survey using the most recent birthday screen. If the designated respondent was not available to conduct the interview, additional attempts were made to reach and interview the designated respondent. Attempts were made to convert initial refusals beginning 25 hours after the refusal. The sampling and interviewing procedures were identical for all samples in the survey.

Sample Design

Because the surveys were conducted by telephone, the study procedures called for the construction of a geographically defined sampling frame of telephone households from which an unbiased population sample could be derived. The sample was stratified by district with equal allocation of completed interviews across the 10 regions, yielding 400 interviews in each of the 10 districts in the state. This approach improved the precision of the sample estimates in eight of the 10 districts where the equal allocation sample is larger than would be expected from a proportionate sample. However, the estimates of statewide totals require geographic sample weights to correct for disproportionate sampling.

A probability sample was constructed for the state of Missouri using a multi-stage procedure. The first-stage sample involved the allocation of sample within the 10 specified geographical districts of the state. The second-stage employed a systematic selection of assigned telephone banks within the geographically stratified first-stage sample design. The third-stage in the sampling procedure was to conduct a random digit dialing (RDD) sampling of telephone households within the telephone banks selected in the second- stage. The fourth-stage required the identification and selection of one eligible respondent within each sampled household, so the household sampling frame yielded a population sample of the eligible population.

Sample Construction

Most of the statistical formulas associated with sampling theories are based upon the assumption of simple-random sampling. Specifically, the statistical formulas for specifying the sampling precision (estimates of sampling variance), given particular sample sizes, are premised on simple-random sampling. Unfortunately, random sampling requires that all of the

elements in the population have an equal chance of being selected. Since no enumeration of the total population of any state is available, all surveys of the general public are based upon an approximation of the actual population and a process closely resembling true random sampling generates survey samples.

The samples were based on a modified stratified random digit dialing method, using an area probability/RDD sample rather than a single-stage/RDD sample. There are several important advantages to using an area probability base: (1) it draws the sample proportionate to the geographic distribution of the target population rather than the geographic distribution of telephone households, which is vital to constructing unbiased population estimates from telephone surveys; (2) it allows greater geographic stratification of the sample to control for known geographic differences in non-response rates; and (3) it facilitates the use of Census estimates of population characteristics to weight the completed sample to correct for other forms of sampling bias.

The initial stage of the sample construction process required the development of a geographically stratified sample for Missouri, based upon the distribution of the target population for this survey, i.e., the adult population of the state of Missouri.

A sample of assigned telephone banks was randomly selected from an enumeration of the Working Residential Hundreds Blocks of the active telephone exchanges within the region. The Working Hundreds Blocks were defined as each block of 100 potential telephone numbers within an exchange that included three or more residential listings. (Exchanges with one or two listings were excluded because in most cases such listings represent errors in the published listings.)

In the third-stage sample, computer randomly generated a two-digit number for each Working Residential Hundreds Block selected in the second-stage sample. This third-stage sampling process is the random digit-dialing (RDD) component. Every telephone number within the Hundreds Block has an equal probability of selection, regardless of whether listed or unlisted.

SRBI interviewers to determine which were currently working residential household phone numbers then dialed the third-stage RDD sample of telephone numbers. Non-working numbers and non-residential numbers were immediately replaced by other RDD numbers selected within the same stratum in the same fashion as the initial number. Ineligible households (e.g., no adult in the household, language barriers other than Spanish) were also immediately replaced. Non-answering numbers were not replaced until the research protocol (in this study, a five-call protocol) was exceeded. However, one or more open numbers per case were permitted in order to permit the survey to be completed within a reasonable period.

Selection of Respondent within Household

The multi-stage sampling process described in the previous section yielded an unbiased sample of households with telephones, drawn from the 10 geographic regions of the state.

A systematic selection procedure was used to select one designated respondent for each household sampled. The "most recent/next birthday method" was used for within household selection among multiple eligibles. The Within Household Selection Procedure is presented in Figure A-1. The CATI system alternated the "most recent" and "next" birthday specification for the selected respondent to avoid a temporal bias for birthdays before (or after) the field period.

Initial Contact

Initial telephone contact was attempted during the hours of the day and days of the week that have the greatest probability of respondent contact. The primary interviewing period was from 5:30 p.m. to 9:30 p.m. on weekdays, from 9:00 a.m. to 9:30 p.m. on Saturdays and from 10:00 a.m. to 9:30 p.m. on Sundays (all times are local time).

If the interview was not conducted at the time of initial contact, the interview was rescheduled at a time convenient to the respondent. Although initial contact attempts were made on evenings and weekends, daytime interviews were scheduled when necessary. If four telephone contacts on the night and weekend shifts did not elicit a respondent contact, the fifth contact was attempted on a weekday.

Interviewers attempted a minimum of five calls to each telephone number. When the household was reached, the interviewer asked to speak to an adult to screen the household for eligibility and to determine the designated respondent. When the designated respondent was reached but an interview at that time was inconvenient or inappropriate, interviewers set up appointments with respondents. When contact was made with the household, but not the designated respondent(s), interviewers probed for appropriate callback times and attempted to set up an appointment.

**Figure A-1: Within Household Selection Procedure
Adult Cross-Section**

State: _____ County: _____ Metro Status: _____
Date: _____ CATI ID: _____
Interviewer: _____
Telephone Number: _____
Time Start: _____ Time End: _____ TOTAL TIME: _____

INTRODUCTION TO BE ADMINISTERED TO ANY HOUSEHOLD MEMBER

Hello, my name is _____ and I am calling from SRBI, the national research organization. We are assisting the University of Missouri and the Missouri Department of Transportation in a study of citizen opinion about the quality of the transportation system in Missouri and what future transportation needs might be. (I would like to assure you that we are not selling anything.) .

- A. In order to select just one person to interview for the study, could I speak to the person in your household, 18 or older, who (has had the most recent/will have the next) birthday?
Respondent is the person.....1
Other respondent comes to phone.....2
Respondent is not available.....3
Refused.....4

If Respondent is not available:

ARRANGE CALLBACK AND RECORD IT, ALONG WITH THE RESPONDENT'S FIRST NAME OR HH POSITION, ON THE SAMPLE SHEET. ATTACH THIS SHEET TOP. TO SAMPLE AFTER FILLING OUT APPLICABLE RESPONDENT INFO AT THE CONCLUSION.

Refusal Conversion

The process of converting terminations and refusals, once they had occurred, involved the following steps. First, there was a diagnostic period, when refusals and terminations were reported on a daily basis and the Project Director and Operations Manager reviewed them after each shift to see if anything unusual was occurring. Second, the Project Director and his staff developed a refusal conversion script. Third, the refusal conversion effort was fielded with re-interview attempts scheduled two to three days after the initial refusal. Finally, the Project Director and Operations Manager received the outcomes of the refusal conversion efforts on a daily basis.

Field Outcomes

The status of cases as of the end of the field period are reported using the categories defined in Figure A-2.

Using the codes presented in Figure A-2, the disposition for the Missouri Department of Transportation Transportation Customer Survey (TCS) from Figure A-3 would be interpreted as follows:

- A total of 38,818 randomly selected telephone numbers were sampled;
- Forty-six percent of the numbers were not active residential phone numbers, including 35 percent not-in-service, 6 percent business or non-residential, and 5 percent computer or fax tones;
- Six percent of the numbers were ring no answer or busy on their last attempt;
- Four percent were answering machines; and
- One percent was a household in which the designated respondent was not interview able (away for an extended period, incapacitated or deaf).

At the close of the field period, 5,214 cases (about 13 percent) were in callback status.

The participation rate represents one of the most critical measures of potential sample bias because it indicates the degree of self-selection by potential respondents into or out of the survey. The participation rate is calculated as the number of completed interviews (including respondents who screen out as ineligible and those who quota-out for gender, set at 52 percent female and 48 percent male) divided by the combined total number of completed interviews, terminated interviews and refusals to interview. (The inclusion of screen-outs in the numerator and denominator are mathematically equivalent to discounting the refusals by the estimated rate of non-eligibility among refusals.) The participation rate in Figure A-3 is based on the following elements:

- 4,010 completed interviews (there were two additional completed interviews which were not recorded by the sample management system and are excluded from this table)
- 620 cases not interviewed because the gender quota had been met, and
- 303 refusals to be interviewed.

Figure A-2: Sample Disposition Categories

NIS/Disconnected Incomplete/Line Prob	The number was not in service, had been disconnected or yielded a recording indicating that it was no longer an active number.
Business/Gov't/ Non-residential	The number yielded a contact with a business, government agency, pay telephone or other non-residential unit.
Fax/Modem	The number yielded an electronic tone indicating a fax machine or data line.
Dialer - NIS/DIS/bad #	Automated dialer used to pre-screen numbers that are no longer in service or disconnected prior to that number being included in the sample.
No answer	The number rang, but no one answered.
Busy	A busy signal was encountered.
Answering machine	An answering machine was reached at the telephone number.
Language	The interview could not be completed because of language barriers.
Health/hearing prob	The interview could not be completed because designated respondent was in poor health or unable to hear.
Away for duration	The designated respondent was out of the area for the entire field period.
Callback	Contact was made with the household, but not necessarily the designated respondent. By the end of the field period, the case had neither yielded a refusal nor completed interview.
Callback to complete	The interview was interrupted, but not terminated. The field period ended before the full interview could be completed.
Refusal -- Initial	Someone in the household refused to participate in the study.
Refusal – 2 nd /Hard	During a refusal conversion attempt, a hard or second refusal to participate in the study was encountered.
Quota Out	An interview was not completed because the quota for gender or state had already been met in this area.
Terminate/Abandoned	A respondent began the interview but refused to finish.
Complete	An interview was completed with the designated respondent.

Based on the standard calculations of participation rate, the participation rate for the survey was 67.1 percent.



Figure A-3: Final Sample Disposition

	<u>Central</u>		<u>Kansas City</u>		<u>North Central</u>		<u>North East</u>		<u>North West</u>		<u>South Central</u>	
	<i>Dialed%</i>		<i>Dialed%</i>		<i>Dialed%</i>		<i>Dialed%</i>		<i>Dialed%</i>		<i>Dialed%</i>	
TOTAL NUMBERS DIALED	3637	100.0%	3983	100.0%	3715	100.0%	3787	100.0%	4030	100.0%	3654	100.0%
BAD NUMBERS (out of frame)	1586	43.6%	1754	44.0%	1764	47.5%	2032	53.7%	2113	52.4%	1737	47.5%
BUSINESS/GOVERNMENT NUMBER/NON-RESIDENT	248	6.8%	312	7.8%	168	4.5%	148	3.9%	143	3.5%	152	4.2%
Cell Phone	0	0.0%	4	0.1%	1	0.0%	4	0.1%	2	0.0%	1	0.0%
Fax/Modem Number/Computer Tone	179	4.9%	206	5.2%	155	4.2%	162	4.3%	136	3.4%	132	3.6%
Incomplete Call/Line Problems (Temporary)	53	1.5%	18	0.5%	89	2.4%	57	1.5%	60	1.5%	30	0.8%
Not In Service / Disconnected	1106	30.4%	1214	30.5%	1351	36.4%	1661	43.9%	1772	44.0%	1422	38.9%
TOTAL GOOD NUMBERS (total sample frame)	2051	56.4%	2229	56.0%	1951	52.5%	1755	46.3%	1917	47.6%	1917	52.5%
<u>NO CONTACT</u>	<u>384</u>	<u>10.6%</u>	<u>187</u>	<u>4.7%</u>	<u>321</u>	<u>8.6%</u>	<u>269</u>	<u>7.1%</u>	<u>252</u>	<u>6.3%</u>	<u>346</u>	<u>9.5%</u>
Live Non-Contacts	384	10.6%	187	4.7%	321	8.6%	269	7.1%	252	6.3%	346	9.5%
Busy	6	0.2%	4	0.1%	12	0.3%	5	0.1%	9	0.2%	7	0.2%
Fax/Modem/Computer tone (live)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
No answer	320	8.8%	123	3.1%	228	6.1%	197	5.2%	173	4.3%	260	7.1%
Live Non Contacts - OVER MAX (max set to 6)	58	1.6%	60	1.5%	81	2.2%	67	1.8%	70	1.7%	79	2.2%
TOTAL CONTACTS	1667	45.8%	2042	51.3%	1630	43.9%	1486	39.2%	1665	41.3%	1571	43.0%
<u>CONTACTS - NOT SCREENED</u>	<u>1093</u>	<u>30.1%</u>	<u>1387</u>	<u>34.8%</u>	<u>1020</u>	<u>27.5%</u>	<u>934</u>	<u>24.7%</u>	<u>1063</u>	<u>26.4%</u>	<u>988</u>	<u>27.0%</u>
Dead - Not Screened	124	3.4%	223	5.6%	174	4.7%	151	4.0%	181	4.5%	131	3.6%
Away for duration	3	0.1%	1	0.0%	1	0.0%	3	0.1%	2	0.0%	6	0.2%
Bad Updated Phone	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Callback - CALL BLOCKING (over max)	5	0.1%	17	0.4%	2	0.1%	2	0.1%	2	0.0%	0	0.0%
CHILD/TEEN PHONE	8	0.2%	6	0.2%	1	0.0%	2	0.1%	4	0.1%	0	0.0%
Foreign Language - NON-SPANISH	5	0.1%	4	0.1%	0	0.0%	0	0.0%	0	0.0%	2	0.1%
Health Problems - LONG TERM	15	0.4%	27	0.7%	21	0.6%	33	0.9%	25	0.6%	19	0.5%
Hearing Problems	21	0.6%	13	0.3%	26	0.7%	16	0.4%	21	0.5%	21	0.6%
Possible Unassigned Number/No Answer All Attempts	67	1.8%	155	3.9%	123	3.3%	95	2.5%	127	3.2%	83	2.3%
Live - Not Screened	306	8.4%	288	7.2%	187	5.0%	192	5.1%	208	5.2%	187	5.1%
Answering Machine/Voice Mail	252	6.9%	123	3.1%	120	3.2%	136	3.6%	134	3.3%	154	4.2%
CallBack - CALL BLOCKING	5	0.1%	10	0.3%	2	0.1%	1	0.0%	1	0.0%	0	0.0%
Live Not Screened - OVER MAX (max set to 6)	49	1.3%	155	3.9%	65	1.7%	55	1.5%	73	1.8%	33	0.9%
Callback - Not Screened	465	12.8%	610	15.3%	479	12.9%	421	11.1%	487	12.1%	488	13.4%
Callback - APPOINTMENTS	40	1.1%	32	0.8%	19	0.5%	29	0.8%	29	0.7%	41	1.1%
Callback - UNSPECIFIED	135	3.7%	106	2.7%	114	3.1%	96	2.5%	90	2.2%	115	3.1%
CALLBACK - WITH RESPONDENT	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
CB1 QUALIFIED RESP / BIRTHDAY SCREEN	22	0.6%	13	0.3%	15	0.4%	20	0.5%	21	0.5%	23	0.6%
CB2 QUALIFIED RESP REFUSED TO PARTICIPATE	4	0.1%	2	0.1%	5	0.1%	3	0.1%	3	0.1%	3	0.1%
HUNG-UP	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Health Problems - SHORT TERM	0	0.0%	2	0.1%	3	0.1%	0	0.0%	3	0.1%	2	0.1%
Foreign Language - SPANISH	2	0.1%	1	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Callbacks Not Screened - OVER MAX (max set to 6)	262	7.2%	454	11.4%	323	8.7%	273	7.2%	341	8.5%	304	8.3%



	<u>Central</u>		<u>Kansas City</u>		<u>North Central</u>		<u>North East</u>		<u>North West</u>		<u>South Central</u>	
	<i>Dialed%</i>		<i>Dialed%</i>		<i>Dialed%</i>		<i>Dialed%</i>		<i>Dialed%</i>		<i>Dialed%</i>	
Refusals - Not Screened	198	5.4%	266	6.7%	180	4.8%	170	4.5%	187	4.6%	182	5.0%
Refusal - CALL BLOCKING	1	0.0%	10	0.3%	2	0.1%	1	0.0%	2	0.0%	4	0.1%
Refusal - SOFT	50	1.4%	48	1.2%	51	1.4%	51	1.3%	31	0.8%	54	1.5%
HUNG-UP	42	1.2%	40	1.0%	35	0.9%	32	0.8%	40	1.0%	47	1.3%
Second Soft Refusal	18	0.5%	22	0.6%	16	0.4%	17	0.4%	23	0.6%	13	0.4%
Refusal - HARD (Do Not Callback)	50	1.4%	57	1.4%	34	0.9%	29	0.8%	42	1.0%	29	0.8%
Refusals Not Screened- OVER MAX (max set to 5)	37	1.0%	89	2.2%	42	1.1%	40	1.1%	49	1.2%	35	1.0%
<u>CONTACTS - SCREENED</u>	574	15.8%	655	16.4%	610	16.4%	552	14.6%	602	14.9%	583	16.0%
Screen-Outs	61	1.7%	64	1.6%	50	1.3%	47	1.2%	52	1.3%	53	1.5%
NO 18+ IN HOUSEHOLD	14	0.4%	13	0.3%	7	0.2%	9	0.2%	4	0.1%	9	0.2%
SCREEN-OUT S2--YES/REFUSED WORKS FOR MoDOT	26	0.7%	11	0.3%	15	0.4%	17	0.4%	22	0.5%	12	0.3%
SCREEN-OUT REFUSED BIRTHDAY SCREEN	17	0.5%	27	0.7%	21	0.6%	15	0.4%	19	0.5%	25	0.7%
SCREEN-OUT QUALIFIED RESPONDENT REFUSED TO PARTICIPATE	4	0.1%	13	0.3%	7	0.2%	6	0.2%	7	0.2%	7	0.2%
Quota-Outs	35	1.0%	76	1.9%	72	1.9%	35	0.9%	53	1.3%	59	1.6%
Q/O MALE/CENTRAL	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Q/O FEMALE/CENTRAL	35	1.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Q/O MALE/KANSAS CITY	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Q/O FEMALE/KANSAS CITY	0	0.0%	76	1.9%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Q/O MALE/NORTH CENTRAL	0	0.0%	0	0.0%	1	0.0%	0	0.0%	0	0.0%	0	0.0%
Q/O FEMALE/NORTH CENTRAL	0	0.0%	0	0.0%	71	1.9%	0	0.0%	0	0.0%	0	0.0%
Q/O MALE/NORTHEAST	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Q/O FEMALE/NORTHEAST	0	0.0%	0	0.0%	0	0.0%	35	0.9%	0	0.0%	0	0.0%
Q/O MALE/NORTHWEST	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Q/O FEMALE/NORTHWEST	0	0.0%	0	0.0%	0	0.0%	0	0.0%	53	1.3%	0	0.0%
Q/O MALE/SOUTH CENTRAL	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Q/O FEMALE/SOUTH CENTRAL	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	59	1.6%
Q/O MALE/SOUTHEAST	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Q/O FEMALE/SOUTHEAST	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Q/O MALE/SOUTHWEST	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Q/O FEMALE/SOUTHWEST	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Q/O MALE/SPRINGFIELD	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Q/O FEMALE/SPRINGFIELD	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Q/O MALE/ST. LOUIS	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Q/O FEMALE/ST. LOUIS	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Qualified Refusals	27	0.7%	35	0.9%	34	0.9%	23	0.6%	31	0.8%	22	0.6%
Mid-Interview Term	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Qualified Soft Refusal - 1	12	0.3%	10	0.3%	16	0.4%	14	0.4%	14	0.3%	13	0.4%
Qualified Second Soft Refusal - 1	4	0.1%	3	0.1%	7	0.2%	3	0.1%	6	0.1%	1	0.0%
Qualified Hard Refusal - 1	6	0.2%	14	0.4%	9	0.2%	3	0.1%	8	0.2%	7	0.2%
Qualified Refusals - OVER MAX (max set to 6)	5	0.1%	8	0.2%	2	0.1%	3	0.1%	3	0.1%	1	0.0%



	<u>Central</u>		<u>Kansas City</u>		<u>North Central</u>		<u>North East</u>		<u>North West</u>		<u>South Central</u>	
	<i>Dialed%</i>		<i>Dialed%</i>		<i>Dialed%</i>		<i>Dialed%</i>		<i>Dialed%</i>		<i>Dialed%</i>	
Qualified Callbacks	51	1.4%	79	2.0%	52	1.4%	48	1.3%	65	1.6%	48	1.3%
Abandoned Interview	0	0.0%	1	0.0%	1	0.0%	0	0.0%	0	0.0%	2	0.1%
Qualified Callback - 1	16	0.4%	17	0.4%	15	0.4%	12	0.3%	27	0.7%	16	0.4%
Qualified Spanish Callback - 1	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Qualified Callbacks - OVER MAX (max set to 6)	35	1.0%	61	1.5%	36	1.0%	36	1.0%	38	0.9%	30	0.8%
Total Completes	400	11.0%	401	10.1%	402	10.8%	399	10.5%	401	10.0%	401	11.0%
Proceed with interview/Completed Interview	400	11.0%	401	10.1%	402	10.8%	399	10.5%	401	10.0%	401	11.0%
Survey Incidence (Screening Incidence)	89.4%		90.2%		91.8%		91.5%		91.4%		90.9%	
List Incidence (Dialing Incidence)	14.1%		14.8%		15.1%		13.3%		13.6%		14.5%	
Cooperation Rate 1	68.8%		64.3%		71.0%		71.4%		69.9%		71.5%	
Cooperation Rate 2	64.2%		58.7%		66.3%		66.6%		64.1%		67.1%	
Totals Refusals	11.0%		13.5%		11.0%		11.0%		11.4%		10.6%	
Response Rate 1	24.2%		24.3%		26.9%		27.4%		26.4%		26.8%	
Response Rate 2	32.1%		29.7%		36.0%		36.0%		34.1%		35.6%	



	<u>South East</u>		<u>South West</u>		<u>Springfield</u>		<u>St. Louis</u>		<u>Total</u>	
	<i>Dialed%</i>		<i>Dialed%</i>		<i>Dialed%</i>		<i>Dialed%</i>		<i>Dialed%</i>	
TOTAL NUMBERS DIALED	3474	100.0%	3953	100.0%	3648	100.0%	4937	100.0%	38818	100.0%
BAD NUMBERS (out of frame)	1130	32.5%	1903	48.1%	1754	48.1%	2186	44.3%	17959	46.3%
BUSINESS/GOVERNMENT NUMBER/NON-RESIDENT	219	6.3%	183	4.6%	204	5.6%	363	7.4%	2140	5.5%
Cell Phone	1	0.0%	2	0.1%	4	0.1%	2	0.0%	21	0.1%
Fax/Modem Number/Computer Tone	178	5.1%	178	4.5%	200	5.5%	283	5.7%	1809	4.7%
Incomplete Call/Line Problems (Temporary)	28	0.8%	105	2.7%	5	0.1%	21	0.4%	466	1.2%
Not In Service / Disconnected	704	20.3%	1435	36.3%	1341	36.8%	1517	30.7%	13523	34.8%
TOTAL GOOD NUMBERS (total sample frame)	2344	67.5%	2050	51.9%	1894	51.9%	2751	55.7%	20859	53.7%
NO CONTACT	355	10.2%	332	8.4%	223	6.1%	458	9.3%	3127	8.1%
Live Non-Contacts	355	10.2%	332	8.4%	223	6.1%	458	9.3%	3127	8.1%
Busy	24	0.7%	4	0.1%	5	0.1%	2	0.0%	78	0.2%
Fax/Modem/Computer tone (live)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
No answer	272	7.8%	233	5.9%	141	3.9%	393	8.0%	2340	6.0%
Live Non Contacts - OVER MAX (max set to 6)	59	1.7%	95	2.4%	77	2.1%	63	1.3%	709	1.8%
TOTAL CONTACTS	1989	57.3%	1718	43.5%	1671	45.8%	2293	46.4%	17732	45.7%
CONTACTS - NOT SCREENED	1319	38.0%	1057	26.7%	1104	30.3%	1610	32.6%	11575	29.8%
Dead - Not Screened	208	6.0%	156	3.9%	184	5.0%	109	2.2%	1641	4.2%
Away for duration	1	0.0%	8	0.2%	1	0.0%	1	0.0%	27	0.1%
Bad Updated Phone	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Callback - CALL BLOCKING (over max)	11	0.3%	0	0.0%	0	0.0%	28	0.6%	67	0.2%
CHILD/TEEN PHONE	5	0.1%	3	0.1%	5	0.1%	2	0.0%	36	0.1%
Foreign Language - NON-SPANISH	2	0.1%	2	0.1%	0	0.0%	15	0.3%	30	0.1%
Health Problems - LONG TERM	27	0.8%	24	0.6%	23	0.6%	27	0.5%	241	0.6%
Hearing Problems	33	0.9%	22	0.6%	24	0.7%	13	0.3%	210	0.5%
Possible Unassigned Number/No Answer All Attempts	129	3.7%	97	2.5%	131	3.6%	23	0.5%	1030	2.7%
Live - Not Screened	237	6.8%	186	4.7%	240	6.6%	425	8.6%	2456	6.3%
Answering Machine/Voice Mail	179	5.2%	120	3.0%	146	4.0%	348	7.0%	1712	4.4%
CallBack - CALL BLOCKING	23	0.7%	1	0.0%	0	0.0%	41	0.8%	84	0.2%
Live Not Screened - OVER MAX (max set to 6)	35	1.0%	65	1.6%	94	2.6%	36	0.7%	660	1.7%
Callback - Not Screened	559	16.1%	502	12.7%	502	13.8%	701	14.2%	5214	13.4%
Callback - APPOINTMENTS	70	2.0%	25	0.6%	21	0.6%	140	2.8%	446	1.1%
Callback - UNSPECIFIED	166	4.8%	92	2.3%	110	3.0%	258	5.2%	1282	3.3%
CALLBACK - WITH RESPONDENT	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
CB1 QUALIFIED RESP / BIRTHDAY SCREEN	31	0.9%	23	0.6%	15	0.4%	52	1.1%	235	0.6%
CB2 QUALIFIED RESP REFUSED TO PARTICIPATE	2	0.1%	1	0.0%	5	0.1%	13	0.3%	41	0.1%
HUNG-UP	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Health Problems - SHORT TERM	4	0.1%	2	0.1%	1	0.0%	6	0.1%	23	0.1%
Foreign Language - SPANISH	0	0.0%	0	0.0%	1	0.0%	0	0.0%	4	0.0%
Callbacks Not Screened - OVER MAX (max set to 6)	286	8.2%	359	9.1%	349	9.6%	232	4.7%	3183	8.2%



	<u>South East</u>		<u>South West</u>		<u>Springfield</u>		<u>St. Louis</u>		<u>Total</u>	
	<i>Dialed%</i>		<i>Dialed%</i>		<i>Dialed%</i>		<i>Dialed%</i>		<i>Dialed%</i>	
Refusals - Not Screened	315	9.1%	213	5.4%	178	4.9%	375	7.6%	2264	5.8%
Refusal - CALL BLOCKING	8	0.2%	1	0.0%	0	0.0%	14	0.3%	43	0.1%
Refusal - SOFT	83	2.4%	56	1.4%	36	1.0%	78	1.6%	538	1.4%
HUNG-UP	125	3.6%	55	1.4%	30	0.8%	169	3.4%	615	1.6%
Second Soft Refusal	10	0.3%	25	0.6%	21	0.6%	14	0.3%	179	0.5%
Refusal - HARD (Do Not Callback)	43	1.2%	35	0.9%	40	1.1%	61	1.2%	420	1.1%
Refusals Not Screened- OVER MAX (max set to 5)	46	1.3%	41	1.0%	51	1.4%	39	0.8%	469	1.2%
CONTACTS - SCREENED	670	19.3%	661	16.7%	567	15.5%	683	13.8%	6157	15.9%
Screen-Outs	60	1.7%	77	1.9%	47	1.3%	91	1.8%	602	1.6%
NO 18+ IN HOUSEHOLD	8	0.2%	5	0.1%	7	0.2%	13	0.3%	89	0.2%
SCREEN-OUT S2--YES/REFUSED WORKS FOR MoDOT	10	0.3%	13	0.3%	6	0.2%	10	0.2%	142	0.4%
SCREEN-OUT REFUSED BIRTHDAY SCREEN	35	1.0%	41	1.0%	27	0.7%	56	1.1%	283	0.7%
SCREEN-OUT QUALIFIED RESPONDENT REFUSED TO PARTICIPATE	7	0.2%	18	0.5%	7	0.2%	12	0.2%	88	0.2%
Quota-Outs	103	3.0%	83	2.1%	19	0.5%	85	1.7%	620	1.6%
Q/O MALE/CENTRAL	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Q/O FEMALE/CENTRAL	0	0.0%	0	0.0%	0	0.0%	0	0.0%	35	0.1%
Q/O MALE/KANSAS CITY	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Q/O FEMALE/KANSAS CITY	0	0.0%	0	0.0%	0	0.0%	0	0.0%	76	0.2%
Q/O MALE/NORTH CENTRAL	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	0.0%
Q/O FEMALE/NORTH CENTRAL	0	0.0%	0	0.0%	0	0.0%	0	0.0%	71	0.2%
Q/O MALE/NORTHEAST	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Q/O FEMALE/NORTHEAST	0	0.0%	0	0.0%	0	0.0%	0	0.0%	35	0.1%
Q/O MALE/NORTHWEST	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Q/O FEMALE/NORTHWEST	0	0.0%	0	0.0%	0	0.0%	0	0.0%	53	0.1%
Q/O MALE/SOUTH CENTRAL	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Q/O FEMALE/SOUTH CENTRAL	0	0.0%	0	0.0%	0	0.0%	0	0.0%	59	0.2%
Q/O MALE/SOUTHEAST	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Q/O FEMALE/SOUTHEAST	103	3.0%	0	0.0%	0	0.0%	0	0.0%	103	0.3%
Q/O MALE/SOUTHWEST	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Q/O FEMALE/SOUTHWEST	0	0.0%	83	2.1%	0	0.0%	0	0.0%	83	0.2%
Q/O MALE/SPRINGFIELD	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Q/O FEMALE/SPRINGFIELD	0	0.0%	0	0.0%	19	0.5%	0	0.0%	19	0.0%
Q/O MALE/ST. LOUIS	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Q/O FEMALE/ST. LOUIS	0	0.0%	0	0.0%	0	0.0%	85	1.7%	85	0.2%
Qualified Refusals	31	0.9%	37	0.9%	40	1.1%	23	0.5%	303	0.8%
Mid-Interview Term	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Qualified Soft Refusal - 1	18	0.5%	14	0.4%	14	0.4%	12	0.2%	137	0.4%
Qualified Second Soft Refusal - 1	1	0.0%	7	0.2%	2	0.1%	4	0.1%	38	0.1%
Qualified Hard Refusal - 1	9	0.3%	14	0.4%	17	0.5%	5	0.1%	92	0.2%
Qualified Refusals - OVER MAX (max set to 6)	3	0.1%	2	0.1%	7	0.2%	2	0.0%	36	0.1%



	South East		South West		Springfield		St. Louis		Total	
	<i>Dialed%</i>		<i>Dialed%</i>		<i>Dialed%</i>		<i>Dialed%</i>		<i>Dialed%</i>	
Qualified Callbacks	73	2.1%	62	1.6%	61	1.7%	83	1.7%	622	1.6%
Abandoned Interview	1	0.0%	0	0.0%	2	0.1%	0	0.0%	7	0.0%
Qualified Callback - 1	43	1.2%	21	0.5%	17	0.5%	44	0.9%	228	0.6%
Qualified Spanish Callback - 1	0	0.0%	1	0.0%	0	0.0%	0	0.0%	1	0.0%
Qualified Callbacks - OVER MAX (max set to 6)	29	0.8%	40	1.0%	42	1.2%	39	0.8%	386	1.0%
Total Completes	403	11.6%	402	10.2%	400	11.0%	401	8.1%	4010	10.3%
Proceed with interview/Completed Interview	403	11.6%	402	10.2%	400	11.0%	401	8.1%	4010	10.3%
Survey Incidence (Screening Incidence)	91.0%		88.4%		91.7%		86.7%		90.2%	
List Incidence (Dialing Incidence)	17.6%		14.8%		14.3%		12.0%		14.3%	
Cooperation Rate 1	62.1%		69.2%		68.1%		59.2%		67.1%	
Cooperation Rate 2	57.5%		64.3%		62.6%		54.5%		62.1%	
Totals Refusals	14.8%		12.2%		11.5%		14.5%		12.3%	
Response Rate 1	24.1%		27.4%		24.6%		21.0%		25.1%	
Response Rate 2	31.8%		36.0%		31.3%		26.4%		32.5%	

Sample Weighting

The characteristics of a perfectly drawn sample of a population will vary from true population characteristics only within certain limits of sample variability (i.e., sampling error). Unfortunately, social surveys do not permit perfect samples. The sampling frames available to survey research are less than perfect. The absence of perfect cooperation from sampled units means that the completed sample will differ from the drawn sample. In order to correct these known problems of sample bias, the achieved sample is weighted to certain characteristics of the total population.

The weighting plan for the Missouri Department of Transportation survey was a multi-stage sequential process of weighting the achieved sample to correct for sampling and non-sampling biases in the final sample. The first step in the weighting was designed to correct the cases in the completed sample for known selection biases in the sampling procedures. At the household selection stage, a random digit dialing process will give households with more than one telephone number an unequal likelihood of selection. Nationally, about 10 percent of households selected by random digit dialing will have more than one telephone number. This selection bias was corrected by giving each household a first-stage weight of 0.5 if there were two or more different telephone numbers in the household.

The second step in the weighting process was to correct for selection procedures that yielded unequal probability of selection within sampled households. Although the survey was designed as a population survey, only one eligible person per household could be interviewed (because multiple interviews per household are burdensome and introduce additional design effects into the survey estimates). A respondent's probability for selection is inversely related to the size (number of other eligible adults) of the household. Hence, the second-stage weight was equal to the number of eligible respondents within the household.

The previous steps in the sample weighting process were designed to correct the achieved sample for known biases in sample selection. There is also a self-selection bias in sample surveys in which participation is voluntary. The primary self-selection biases involve age, gender and race. A third procedure weighted the sample to the cell distribution of the population by age and gender, using the Census Population Projections for Age and Sex for 2002 (available at www.census.gov). After these corrections were made, no further weighting by other Census characteristics was considered necessary or desirable.

The final step in the weighting process was designed to correct for the fact that the total number of cases in the weighted sample was larger than the unweighted sample size because of the use of the number of eligibles weight. In order to avoid misinterpretation of sample size, the total number of cases in the weighted sample to yield a sample-size weight divided the total number of cases in the unweighted sample. The weight adjusts the completed interviews in the achieved sample to correct for known sampling and participation biases.

Figure A-4: Sample Weights

**Missouri Population 18 and Over - 2000 Census
by Missouri Department of Transportation District**

District	Population 18 and Over		Proportionate Sampling	Equal Allocation	Sample Weight
	Number	Percent	SRS	Sample	
Northwest	152,952	3.7	147	401	0.366
Northcentral	135,488	3.3	130	402	0.323
Northeast*	148,247	3.6	142	400	0.356
Kansas City*	830,286	19.9	797	402	1.982
Central	344,975	8.3	331	400	0.828
St. Louis	1,431,466	34.3	1374	401	3.426
Southwest	242,861	5.8	233	402	0.580
Springfield	394,075	9.5	378	400	0.946
Southcentral	191,869	4.6	184	401	0.459
Southeast	295,300	7.1	283	403	0.703
TOTAL	4,167,519	100.0	4000	4012	

*Note: The numbers for the equal allocation sample include one interview in each district that was conducted in Spanish by the interviewer and coded by hand rather than by the automated system used by SRBI. This means these two numbers are slightly different than those in Figure A-3, which includes only the automatically coded interviews.

Precision of Sample Estimates

The objective of the sampling procedures used on this study was to produce unbiased samples of the target populations. An unbiased sample shares the same properties and characteristics of the total population from which it is drawn, subject to a certain level of sampling error. This means that with a properly drawn sample statements can be made about the properties and characteristics of the total population within certain specified limits of certainty and sampling variability.

The confidence interval for sample estimates of population proportions, using simple random sampling without replacement, is calculated by the following formula.

$$\text{var}(x) = z^2 \frac{(p \cdot q)}{n}$$

Where:

- var (x) = the expected sampling error of the mean of some variable, expressed as a proportion
- p = some proportion of the sample displaying a certain characteristic or attribute
- q = (1 - p)
- z = the standardized normal variable, given a specified confidence level (1.96 for samples of this size).
- n = the size of the sample

The sample size for the survey is large enough to permit estimates for sub-samples of particular interest. Figure A-5, on the next page, presents the expected size of the sampling error for specified sample sizes of 1,200 and less, at different response distributions on a categorical variable. As the figure shows, larger samples produce smaller expected sampling variances, but there is a constantly declining marginal utility of variance reduction per sample size increase.

**Figure A-5: Expected Sampling Error
At The 95 Percent Confidence Level (Plus Or Minus)
(Simple Random Sample)**

Percentage of the Sample or Sub-Sample Giving
a Certain Response or Displaying a Certain
Characteristic for Percentages Near:

<u>Size of Sample or Sub-Sample</u>	<u>10 or 90</u>	<u>20 or 80</u>	<u>30 or 70</u>	<u>40 or 60</u>	<u>50</u>
1,200	1.7	2.3	2.6	2.8	2.8
1,000	1.9	2.5	2.8	3.0	3.1
900	2.0	2.6	3.0	3.2	3.3
800	2.1	2.8	3.2	3.4	3.5
700	2.2	3.0	3.4	3.6	3.7
600	2.4	3.2	3.7	3.9	4.0
500	2.6	3.5	4.0	4.3	4.4
400	2.9	3.9	4.5	4.8	4.9
300	3.4	4.5	5.2	5.6	5.7
200	4.2	5.6	6.4	6.8	6.9
150	4.8	6.4	7.4	7.9	8.0
100	5.9	7.9	9.0	9.7	9.8
75	6.8	9.1	10.4	11.2	11.4
50	8.4	11.2	12.8	13.7	14.0

NOTE: Entries are expressed as percentage points (+ or -).

There is relatively little difference in sample estimates between a simple random sample and a stratified proportionate sample. However, the appropriate statistical formula for calculating the allowance for sampling error (at a 95 percent confidence interval) for this type of stratified sample is:

$$ASE = 1.96 \sqrt{\frac{2}{g} \sum_h [W_h^2 \{(1-f_h) (s_h^2/n_h - 1)\}]}$$

Where:

- ASE = allowance for sampling error at the 95 percent confidence level;
- h = a sample stratum;
- g = number of sample strata;
- W_h = stratum h as a proportion of total population;
- f_h = the sampling fraction for group h -- the number in the sample divided by the number in the universe;
- s²_h = the variance in the stratum h -- for proportions this is equal to p_h (1.0 - p_h);
- n_h = the sample size for the stratum h.

While the earlier figure provides a useful approximation of the magnitude of expected sampling error, precise calculation of allowances for sampling error requires the use of this formula.

Estimating Statistical Significance

The estimates of sampling precision presented in the previous section yield confidence bands around the sample estimates, within which the true population value should lie. This type of sampling estimate is appropriate when the goal of the research is to estimate a population distribution parameter. However, the purpose of some surveys is to provide a comparison of population parameters estimated from independent samples (e.g. annual tracking surveys) or between subsets of the same sample. In such instances, the question is not simply whether or not there is any difference in the sample statistics that estimate the population parameter, but rather is the difference between the sample estimates statistically significant (i.e., beyond the expected limits of sampling error for both sample estimates).

To test whether or not a difference between two sample proportions is statistically significant, a rather simple calculation can be made. Call the total sampling error (i.e., var (x) in the previous formula) of the first sample s1 and the total sampling error of the second sample s2. Then, the sampling error of the difference between these estimates is sd, which is calculated as:

$$sd = \sqrt{s1^2 + s2^2}$$

Any difference between observed proportions that exceeds sd is a statistically significant difference at the specified confidence interval. Note that this technique is mathematically equivalent to generating standardized tests of the difference between proportions.

An illustration of the pooled sampling error between sub-samples for various sizes is presented in Figure A-6. This figure can be used to indicate the size of difference in proportions between drivers and non-drivers or other sub-samples that would be statistically significant.

Figure A-6: Pooled Sampling Error—Expressed As Percentages For Given Sample Sizes (Assuming P=Q)										
Sample Size	(Expressed in Percents)									
1000	10.3	7.6	6.5	5.8	5.4	5.1	4.8	4.7	4.5	4.4
900	10.4	7.7	6.5	5.9	5.5	5.2	4.9	4.8	4.6	
800	10.4	7.8	6.6	6.0	5.6	5.3	5.1	4.9		
700	10.5	7.9	6.8	6.1	5.7	5.5	5.2			
600	10.6	8.0	6.9	6.3	5.9	5.7				
500	10.8	8.2	7.2	6.6	6.2					
400	11.0	8.5	7.5	6.9						
300	11.4	9.0	8.0							
200	12.1	9.8								
100	13.9									
	100	200	300	400	500	600	700	800	900	1000
Sample Size										

Appendix A.2

Study #9874
May 14, 2003

FINAL

TRANSPORTATION CUSTOMER SATISFACTION SURVEY (Missouri 2003)

State: _____ County: _____ Metro Status: _____

Date: _____ CATI ID: _____

Interviewer: _____

Telephone Number: _____

Time Start: _____ Time End: _____ TOTAL TIME: _____

Hello, my name is _____ and I am calling from SRBI, the national research organization. We are assisting the University of Missouri and the Missouri Department of Transportation in a study of citizen opinion about the quality of the transportation system in Missouri and what future transportation needs might be. (I would like to assure you that we are not selling anything.) .

DUMMY QUESTION FOR BIRTHDAY QUESTIONS

Has had the most recent.....1
Will have the next.....2

- B. In order to select just one person to interview for the study, could I speak to the person in your household, 18 or older, who (has had the most recent/will have the next) birthday?
- Respondent is the person.....1 **SKIP TO S1**
Other respondent comes to phone.....2
Respondent is not available.....3 **ARRANGE CALLBACK**
Refused.....4

INT1 (Repeat only if new respondent) Hello, my name is _____ and I am calling from SRBI, the national research organization. We are assisting the University of Missouri and the Missouri Department of Transportation in a study of citizen opinion about the quality of the transportation system in Missouri and what future transportation needs might be. (I would like to assure you that we are not selling anything.)

BS1 (Read to all) This survey will cover all types of transportation topics, not just highways and roads. Your participation is entirely voluntary and your responses are entirely confidential. . Your participation in this survey will assist MoDOT (pronounced "Moe Dot") in establishing future priorities and enable MoDOT to better use its resources.

(If asked about survey length) This Survey will take approximately 20 minutes.

D4. RECORD GENDER FROM OBSERVATION

Male.....1
Female.....2
Unsure.....3

Screening Questions

I need to ask you a few brief questions about your household.

S1. How many adults in your household, including yourself, are you age 18 or older?
(RECORD#)_____

S1a. How many of these adults are...

Men (RECORD#)_____

Women (RECORD#)_____

S2. Are you or any immediate family member a MoDOT employee?

YES.....1 **THANK AND END**

NO.....2 **CONTINUE**

REFUSED.....3 **THANK AND END**

Service Usage

Next I will ask you some questions about your use of different methods of transportation and the trips you normally take.

Q1. Approximately how many miles do you drive per year? Include both miles driven for business and pleasure. (Your best estimate is fine.)

_____ # miles driven

Q2. Do you do any commercial or professional driving?

Yes.....1

No.....2 **SKIP TO Q3**

Q2a. What type of commercial or professional driving do you do? (**READ LIST AND MULTIPLE RECORD**)

Taxi, limo, chauffeur.....1

Truck.....2

School bus.....3

Public transit bus.....4

Van, shuttle or delivery service.....5

Other _____.....6

(DO NOT READ, only code if offered)

Q3. Please tell me if you drive or make trips for any of the following reasons.

Do you drive or make trips **READ LIST AND MULTIPLE RECORD**

a. commuting to and from work or school.....1

b. for work related trips such as sales
calls or driving to meetings
and appointments.....2

c. for personal and family errands and
trips (e.g. grocery shopping, doctor
appointments, take kids to daycare).....3

- d. pleasure or recreational
(e.g. vacation, visit friends or relatives).....4
- e. farm or agricultural related trips.....5
- f. Any other reason (SPECIFY).....6

Q4. Now I'd like to discuss your satisfaction with different aspects of Missouri's transportation system. Some of my questions apply specifically to state highways – those known by numbers or letters – (e.g. Highway 50 or Route C.) Other questions refer to airports, trains and other methods of transportation. Using a scale of “extremely satisfied”, "satisfied", "dissatisfied" and “extremely dissatisfied,” how satisfied are you with MoDOT's **CURRENT** performance with the following areas. If you have no opinion or no experience with an item, you can say “not sure.”

(ROTATE LISTS OF CHARACTERISTICS)

(REPEAT INTRO STATEMENT AS NECESSARY OR WHEN RESPONDENT ASKS FOR A QUESTION TO BE REPEATED)

How satisfied are you with MoDOT's current performance in... Are you....

	Ext Dis	Dis Sat	Sat	Ext. Sat	NOT SURE
a. Placing yellow warning signs to assure sufficient response time	1	2	3	4	5
b. Providing passenger light rail routes, that meet your needs (if asked, such as MetroLink in St. Louis)	1	2	3	4	5
c. Providing pedestrian/bicycle pathways on or next to highways that are safe	1	2	3	4	5
d. Completing road and bridge construction and repairs in a timely manner	1	2	3	4	5
e. Providing lanes that are wide enough for safe driving	1	2	3	4	5
f. Removing snow/ice efficiently	1	2	3	4	5
g. Providing the public with adequate opportunities for input in project planning	1	2	3	4	5
h. Distributing transportation funds fairly to all areas of the state	1	2	3	4	5
i. Using electronic message boards to advise drivers of delays or construction areas	1	2	3	4	5
j. Building bridges that last a long time	1	2	3	4	5
k. Providing Amtrak passenger rail service to meet your needs	1	2	3	4	5
l. Providing crosswalks and signals for pedestrians to cross the highway safely	1	2	3	4	5
m. Providing sufficient transportation for those who don't or can't drive	1	2	3	4	5
n. Managing traffic flow in construction zones to minimize delays to drivers	1	2	3	4	5
o. Providing the ability to see far ahead on highways and have unobstructed views at intersections	1	2	3	4	5
p. Maintaining the pavement so it provides a smooth ride	1	2	3	4	5
q. Repairing pavement surface promptly	1	2	3	4	5
r. Building new highways to meet future demand	1	2	3	4	5
s. Honoring commitments to provide and maintain Missouri's transportation system	1	2	3	4	5
t. Using public funds in a cost-effective manner	1	2	3	4	5
u. Providing enough passing opportunities on two-lane highways	1	2	3	4	5
v. Striping center lines and road edges to ensure safety	1	2	3	4	5
w. Communicating with the public in easy to understand language	1	2	3	4	5

x. Building bridges that are wide enough to feel safe	1	2	3	4	5
y. Providing useful information about construction, repairs or road conditions	1	2	3	4	5
z. Providing pavement that lasts a long time	1	2	3	4	5
aa. Improving existing highways to meet increasing traffic demands	1	2	3	4	5
bb. Planning a project in a reasonable amount of time	1	2	3	4	5
cc. Having signs that can be easily seen at night or in bad weather	1	2	3	4	5
dd. Providing shoulders that are wide enough to pull off the road safely	1	2	3	4	5
ee. Acting on recommendations from the public	1	2	3	4	5
ff. Lighting interchanges and bridges	1	2	3	4	5
gg. Providing pavement markings that can be easily seen in wet weather	1	2	3	4	5
hh. Treating highway surfaces to resist skidding in wet weather	1	2	3	4	5

Q5. Now I'm going to read the list again. But this time I would like you to think about how much attention MoDOT should place on these items in the ***FUTURE***. Please remember that these questions apply only to state highways and roads marked with numbers or letters. Should each of the following receive "a lot more", "more", "less", or "a lot less" attention from MoDOT in the future? If you have no opinion or no experience with an item, you can say "not sure."

(ROTATE LISTS OF CHARACTERISTICS)

(REPEAT INTRO STATEMENT AS NECESSARY OR WHEN RESPONDENT ASKS FOR A QUESTION TO BE REPEATED)

In the future, how much attention should MoDOT place on improving its performance in...

(Note: change to four-point scale as shown)

	A lot less	Less	More	A lot more	NOT SURE
a. Placing yellow warning signs to assure sufficient response time	1	2	3	4	5
b. Providing passenger light rail routes that meet your needs (if asked - such as MetroLink in St. Louis)	1	2	3	4	5
c. Providing pedestrian/bicycle pathways on or next to highways that are safe	1	2	3	4	5
d. Completing road and bridge construction and repairs in a timely manner	1	2	3	4	5
e. Providing lanes that are wide enough for safe driving	1	2	3	4	5
f. Removing snow/ice efficiently	1	2	3	4	5
g. Providing the public with adequate opportunities for input in project planning	1	2	3	4	5
h. Distributing transportation funds fairly to all areas of the state	1	2	3	4	5
i. Using electronic message boards to advise drivers of delays or construction areas	1	2	3	4	5
j. Building bridges that last a long time	1	2	3	4	5
k. Providing Amtrak passenger rail service to meet your needs	1	2	3	4	5
l. Providing crosswalks and signals for pedestrians to cross the highway safely	1	2	3	4	5
m. Providing sufficient transportation for those who don't or can't drive	1	2	3	4	5
n. Managing traffic flow in construction zones to minimize delays to drivers	1	2	3	4	5
o. Providing the ability to see far ahead on highways and have unobstructed views at intersections	1	2	3	4	5
p. Maintaining the pavement so it provides a smooth ride	1	2	3	4	5
q. Repairing pavement surface promptly	1	2	3	4	5
r. Building new highways to meet future demand	1	2	3	4	5
s. Honoring commitments to provide and maintain Missouri's transportation system	1	2	3	4	5
t. Using public funds in a cost-effective manner	1	2	3	4	5
u. Providing enough passing opportunities on two-lane highways	1	2	3	4	5
v. Striping center lines and road edges to ensure safety	1	2	3	4	5

w. Communicating with the public in easy to understand language	1	2	3	4	5
x. Building bridges that are wide enough to feel safe	1	2	3	4	5
y. Providing useful information about construction, repairs or road conditions	1	2	3	4	5
z. Providing pavement that lasts a long time	1	2	3	4	5
aa. Improving existing highways to meet increasing traffic demands	1	2	3	4	5
bb. Planning a project in a reasonable amount of time	1	2	3	4	5
cc. Having signs that can be easily seen at night or in bad weather	1	2	3	4	5
dd. Providing shoulders that are wide enough to pull off the road safely	1	2	3	4	5
ee. Acting on recommendations from the public	1	2	3	4	5
ff. Lighting interchanges and bridges	1	2	3	4	5
gg. Providing pavement markings that can be easily seen in wet weather	1	2	3	4	5
hh. Treating highway surfaces to resist skidding in wet weather	1	2	3	4	5

Q7. How satisfied are you overall with MoDOT’s efforts to provide a quality transportation system in Missouri? Overall, are you

- Extremely satisfied.....1
- Satisfied.....2
- Dissatisfied.....3
- Extremely dissatisfied.....4

Q8. How satisfied are you with your available transportation options for getting where you want to go? Are you

- Extremely satisfied.....1
- Satisfied.....2
- Dissatisfied.....3
- Extremely dissatisfied.....4

Q9. In the past 12 months, have you traveled in states other than Missouri?

- Yes.....1
- No.....2 **SKIP TO Q10**

Q9a. In what other states? RECORD RESPONSE _____(CONTINUE WITH Q9b)

Q9b. Overall, are highway conditions in Missouri, better, worse or about the same as the highway conditions in this (these) other state(s)?

- Better.....1
- Worse.....2
- About the same.....3

Q10. Have you personally contacted MoDOT about any issue within the past 12 months?

- Yes.....1
- No.....2 **SKIP TO Q11**

Q10a. Why did you contact MoDOT? **(READ AND MULTIPLE RECORD)**

- Get a Permit (Specify type of permit).....1
- Obtain road condition information.....2
- Obtain detour or construction area information.....3
- Inform MoDOT of a problem.....4
- Learn more about a specific project.....5
- Use “Motorist Assist” (KC or St. Louis areas).....6
- Participate in a project planning process.....7
- Request assistance with a transportation problem....8
- Register a complaint.....9
- Other (Specify).....10

Q10b. Overall, were you successful in obtaining the information or a solution?

- Yes.....1
- No.....2
- Don’t Know.....3
- Refused.....4

Q10c. How would you rate your satisfaction with the.....? Were you :

- Q10c_1 Courtesy of MoDOT employee
- Extremely satisfied.....1
 - Satisfied.....2
 - Dissatisfied.....3
 - Extremely dissatisfied.....4

- Q10c_2 Accuracy of information
- Extremely satisfied.....1
 - Satisfied.....2
 - Dissatisfied.....3
 - Extremely dissatisfied.....4

- Q10c_3 Timeliness of response
- Extremely satisfied.....1
 - Satisfied.....2
 - Dissatisfied.....3
 - Extremely dissatisfied.....4

- Q10c_4 Response meeting your need
- Extremely satisfied.....1
 - Satisfied.....2
 - Dissatisfied.....3
 - Extremely dissatisfied.....4

Q11. From what news or information sources do you receive your transportation information? (READ LIST AND MULTIPLE RECORD).

- TV.....1
- Radio.....2
- Newspaper.....3
- the Internet/website.....4
- Toll-free customer service phone number...5
- Public meeting.....6
- Personal contact with MoDOT employee....7
- Other (SPECIFY)_____8

Q12. It has been estimated that the average motorist in Missouri spends about \$200 annually in gas taxes. If you had the opportunity to advise MoDOT, how much of this amount would you recommend they spend on each of the following: Let me read through the list first and then I will go back to ask you how much of the \$200 you would spend on each of the four categories (*Read through the list before taking responses.*)

- a. Taking care of the existing highways and bridges _____(0-200)
- b. Expanding and building new highways _____(0-200)
- c. Improving highway safety _____(0-200)
- d. Reducing time spent in trafficjams _____(0-200)

TOTAL \$ (Must total \$200)

Q 13. Do you think MoDOT receives enough money at present to take care of existing roads and transportation facilities and build new facilities?

- Yes.....1 **SKIP TO Q14**
- No.....2 **CONTINUE WITH Q13a**

Q 13a. Which of the following measures would you vote to support to increase funding to MODOT? (*Instructions to Interviewer: Read complete list of options below before taking responses.*) **READ LIST AND MULTIPLE RECORD**

- a. dedicated sales tax.....1
- b. increased fuel tax (user tax).....2
- c. toll roads (requiring a constitutional amendment)...3
- d. increased user fees (e.g., registration fees).....4
- e. revenue bonds.....5
- f. some combination of the above methods.....6
- g. none of these.....7

- 45-54.....4
- 55-64.....5
- 65 or older.....6
- Don't Know.....7
- REFUSED.....8

- D5. Are you or anyone who relies on you for transportation disabled?
- Yes.....1
 - No.....2
 - Refused.....3

- D6. Which of the following categories describes your employment status? (**READ AND MULTIPLE RECORD**)
- Employed full-time.....1
 - Employed part-time.....2
 - A student.....3
 - Homemaker.....4
 - Currently laid off, on strike or unemployed.....5
 - Retired6
 - Something else/other (Record Response _____)....7
 - Don't know.....8
 - Refused.....9

IF D6 EQUALS 1 OR 2 ASK D6a

D6a. What is your occupation? (RECORD)_____

- D8. Do you currently hold a valid driver's license?
- Yes.....1
 - No.....2
 - Don't know.....3
 - Refused.....4

That is all the questions I have for you. The Missouri Department of Transportation thanks you for your time and input.

- D9: Interview was conducted in
- 1... English
 - 2....Spanish

Appendix B

Detailed Data Summary for Transportation Customer Survey 2003

Summary of Data for Each of 34 Performance Items

The following tables provide statewide summaries on current performance and future attention, as well as discrepancy scores, for each of the 34 performance items assessed in the TCS. In addition, the tables contain the following information.

“T-Test”— tests of significant differences were run between the means of current satisfaction, future attention and discrepancy scores for each of the respondent characteristics on which data were collected. The results are presented in tabular form with shaded table cells indicating where the t-test score showed a level of significance higher than 0.05. These subgroup comparisons indicate the respondent subgroups among which there were significant differences regarding the categories of response chosen in the survey. If all the respondents had answered in the same fashion regardless of their age, gender, level of education and so forth, all the table cells would be un-shaded. This result would indicate that all respondents basically responded the same way. Where there are shaded cells indicated, the categories of respondents are indicated as to where the subgroup differences exist.

Table B.1: Significant Differences among 34 MoDOT Performance Items Compared to Gender

Item #	Item Description	Mean Current Satisfaction Score		Mean Future Attention Score		Mean Discrepancy Score	
		Male	Female	Male	Female	Male	Female
1	Using electronic message boards to advise drivers of delays or construction areas	2.96	3.01	2.93	3.01	0.01	-0.01
2	Placing yellow warning signs to assure sufficient response time	2.95	2.91	2.89	3.03	0.04	-0.13
3	Removing snow/ice efficiently	2.98	2.87	2.96	3.09	-0.01	-0.26
4	Having signs that can be easily seen at night or in bad weather	2.93	2.83	2.97	3.12	-0.05	-0.30
5	Building bridges that last a long time	2.83	2.84	3.10	3.16	-0.30	-0.33
6	Providing useful information about construction, repairs or road conditions	2.82	2.84	2.99	3.05	-0.18	-0.22
7	Providing lanes that are wide enough for safe driving	2.86	2.84	2.99	3.06	-0.15	-0.23
8	Communicating with the public in easy to understand language	2.81	2.84	3.00	3.04	-0.21	-0.21
9	Building bridges that are wide enough to feel safe	2.85	2.83	2.99	3.08	-0.16	-0.27
10	Providing the ability to see far ahead on highways and have unobstructed views at intersections	2.85	2.80	2.98	3.08	-0.14	-0.30
11	Striping center lines and road edges to ensure safety	2.85	2.79	3.03	3.12	-0.20	-0.36
12	Lighting interchanges and bridges	2.85	2.81	2.91	3.03	-0.08	-0.24
13	Providing crosswalks and signals for pedestrians to cross the highway safely	2.78	2.71	2.91	3.10	-0.19	-0.43
14	Treating highway surfaces to resist skidding in wet weather	2.74	2.69	3.07	3.20	-0.35	-0.53
15	Managing traffic flow in construction zones to minimize delays to drivers	2.63	2.60	3.15	3.21	-0.56	-0.65
16	Providing enough passing opportunities on two-lane highways	2.70	2.70	2.97	3.03	-0.31	-0.37
17	Providing pavement markings that can be easily seen in wet weather	2.66	2.64	3.10	3.20	-0.48	-0.59
18	Providing passenger light rail routes that meet your needs	2.57	2.58	2.90	3.10	-0.52	-0.65
19	Building new highways to meet future demand	2.59	2.65	3.16	3.16	-0.61	-0.53
20	Providing the public with adequate opportunities for input in project planning	2.61	2.55	3.09	3.18	-0.53	-0.70
21	Providing sufficient transportation for those who don't or can't drive	2.58	2.49	3.02	3.27	-0.53	-0.88
22	Honoring commitments to provide and maintain Missouri's transportation system	2.53	2.62	3.23	3.22	-0.74	-0.64
23	Planning a project in a reasonable amount of time	2.54	2.51	3.19	3.18	-0.69	-0.73
24	Completing road and bridge construction and repairs in a timely manner	2.55	2.44	3.24	3.30	-0.74	-0.91
25	Providing shoulders that are wide enough to pull off the road safely	2.63	2.58	3.10	3.17	-0.51	-0.62
26	Providing Amtrak passenger rail service to meet your needs	2.53	2.50	2.74	3.06	-0.48	-0.75
27	Improving existing highways to meet increasing traffic demands	2.48	2.55	3.26	3.30	-0.80	-0.78
28	Acting on recommendations from the public	2.53	2.50	3.14	3.22	-0.64	-0.81
29	Providing pedestrian/bicycle pathways on or next to highways that are safe	2.50	2.45	2.86	3.04	-0.48	-0.69
30	Providing pavement that lasts a long time	2.43	2.40	3.30	3.34	-0.90	-0.97
31	Using public funds in a cost effective manner	2.39	2.43	3.35	3.33	-1.01	-0.95
32	Repairing pavement surface promptly	2.32	2.32	3.33	3.36	-1.05	-1.07
33	Distributing transportation funds fairly to all areas of the state	2.41	2.36	3.22	3.32	-0.92	-1.09
34	Maintaining the pavement so it provides a smooth ride	2.30	2.33	3.29	3.31	-1.03	-1.02

Shading indicates statistically significant (at .05) difference among categories. Discrepancy scores are computed using a procedure that eliminates a respondent if they failed to answer either of the questions on level of current satisfaction or desired future attention, so it is often the case that subtracting the two scores for one performance item will not give the same outcome as the computer-based computation procedure, due to the larger number of missing cases used in the denominator for computation of mean discrepancy scores for the performance items. This procedure was used for calculating discrepancy scores in all Appendix B tables.

Table B.2a: Significant Differences—Current Satisfaction Means Compared to Respondent’s Age for MoDOT Performance Items

Item #	Item Description	Mean Current Satisfaction Score by Age Category					
		18-24	25-34	35-44	45-54	55-64	65+
1	Using electronic message boards to advise drivers of delays or construction areas	2.99	2.98	2.99	2.94	3.04	2.97
2	Placing yellow warning signs to assure sufficient response time	2.97	2.93	2.93	2.89	2.90	2.97
3	Removing snow/ice efficiently	2.87	2.88	2.94	2.87	2.92	3.02
4	Having signs that can be easily seen at night or in bad weather	2.96	2.94	2.87	2.85	2.86	2.85
5	Building bridges that last a long time	2.94	2.95	2.84	2.78	2.76	2.79
6	Providing useful information about construction, repairs or road conditions	2.85	2.87	2.84	2.78	2.85	2.82
7	Providing lanes that are wide enough for safe driving	2.92	2.87	2.86	2.81	2.83	2.86
8	Communicating with the public in easy to understand language	2.87	2.92	2.84	2.77	2.78	2.83
9	Building bridges that are wide enough to feel safe	2.86	2.90	2.84	2.81	2.79	2.84
10	Providing the ability to see far ahead on highways and have unobstructed views at intersections	2.89	2.88	2.88	2.77	2.78	2.80
11	Striping center lines and road edges to ensure safety	2.89	2.85	2.86	2.76	2.78	2.83
12	Lighting interchanges and bridges	2.90	2.88	2.85	2.75	2.78	2.86
13	Providing crosswalks and signals for pedestrians to cross the highway safely	2.72	2.76	2.71	2.71	2.78	2.77
14	Treating highway surfaces to resist skidding in wet weather	2.81	2.78	2.68	2.66	2.66	2.78
15	Managing traffic flow in construction zones to minimize delays to drivers	2.55	2.61	2.55	2.57	2.59	2.84
16	Providing enough passing opportunities on two-lane highways	2.81	2.78	2.70	2.64	2.64	2.70
17	Providing pavement markings that can be easily seen in wet weather	2.78	2.69	2.61	2.60	2.63	2.68
18	Providing passenger light rail routes that meet your needs	2.90	2.61	2.53	2.54	2.43	2.61
19	Building new highways to meet future demand	2.90	2.73	2.65	2.56	2.45	2.60
20	Providing the public with adequate opportunities for input in project planning	2.66	2.62	2.59	2.54	2.53	2.58
21	Providing sufficient transportation for those who don't or can't drive	2.71	2.62	2.52	2.40	2.48	2.57
22	Honoring commitments to provide and maintain Missouri's transportation system	2.79	2.67	2.57	2.49	2.44	2.62
23	Planning a project in a reasonable amount of time	2.68	2.56	2.54	2.41	2.48	2.60
24	Completing road and bridge construction and repairs in a timely manner	2.51	2.53	2.48	2.42	2.46	2.59
25	Providing shoulders that are wide enough to pull off the road safely	2.75	2.69	2.62	2.53	2.55	2.57
26	Providing Amtrak passenger rail service to meet your needs	2.76	2.57	2.56	2.43	2.42	2.49
27	Improving existing highways to meet increasing traffic demands	2.84	2.60	2.49	2.42	2.41	2.54
28	Acting on recommendations from the public	2.63	2.57	2.50	2.47	2.47	2.55
29	Providing pedestrian/bicycle pathways on or next to highways that are safe	2.48	2.48	2.45	2.42	2.50	2.53
30	Providing pavement that lasts a long time	2.51	2.40	2.39	2.33	2.39	2.54
31	Using public funds in a cost effective manner	2.63	2.46	2.42	2.32	2.34	2.45
32	Repairing pavement surface promptly	2.37	2.30	2.28	2.25	2.30	2.47
33	Distributing transportation funds fairly to all areas of the state	2.68	2.49	2.34	2.24	2.27	2.44
34	Maintaining the pavement so it provides a smooth ride	2.36	2.33	2.23	2.22	2.33	2.46

Shading indicates statistically significant (at .05) difference between category and 45 to 54 age group.

Table B.2b: Significant Differences—Means for Desired Future Attention Compared to Respondent’s Age for MoDOT Performance Items

Item #	Item Description	Mean Future Attention Score by Age Category					
		18-24	25-34	35-44	45-54	55-64	65+
1	Using electronic message boards to advise drivers of delays or construction areas	2.96	2.98	2.97	3.03	2.93	2.94
2	Placing yellow warning signs to assure sufficient response time	2.94	2.92	2.94	2.96	3.01	3.02
3	Removing snow/ice efficiently	3.09	3.07	2.98	3.08	3.04	2.92
4	Having signs that can be easily seen at night or in bad weather	2.96	3.02	3.00	3.05	3.12	3.10
5	Building bridges that last a long time	2.94	3.12	3.13	3.17	3.16	3.17
6	Providing useful information about construction, repairs or road conditions	2.95	3.05	3.02	3.06	3.02	2.98
7	Providing lanes that are wide enough for safe driving	2.91	3.03	3.00	3.07	3.06	3.05
8	Communicating with the public in easy to understand language	2.87	2.99	2.97	3.10	3.06	3.07
9	Building bridges that are wide enough to feel safe	2.93	2.98	3.01	3.04	3.10	3.12
10	Providing the ability to see far ahead on highways and have unobstructed views at intersections	2.94	2.96	3.00	3.06	3.10	3.11
11	Striping center lines and road edges to ensure safety	2.98	3.05	3.04	3.12	3.11	3.13
12	Lighting interchanges and bridges	2.83	2.94	2.96	3.00	3.01	3.01
13	Providing crosswalks and signals for pedestrians to cross the highway safely	3.02	3.01	3.02	2.98	3.00	3.04
14	Treating highway surfaces to resist skidding in wet weather	3.09	3.13	3.13	3.18	3.17	3.10
15	Managing traffic flow in construction zones to minimize delays to drivers	3.30	3.21	3.18	3.23	3.14	3.07
16	Providing enough passing opportunities on two-lane highways	2.86	2.90	2.93	3.07	3.07	3.12
17	Providing pavement markings that can be easily seen in wet weather	3.11	3.15	3.15	3.16	3.18	3.16
18	Providing passenger light rail routes that meet your needs	2.92	3.00	3.06	3.01	3.01	2.99
19	Building new highways to meet future demand	3.05	3.17	3.15	3.20	3.23	3.13
20	Providing the public with adequate opportunities for input in project planning	3.10	3.08	3.17	3.17	3.12	3.14
21	Providing sufficient transportation for those who don't or can't drive	3.17	3.19	3.12	3.16	3.16	3.11
22	Honoring commitments to provide and maintain Missouri's transportation system	3.05	3.23	3.25	3.29	3.24	3.17
23	Planning a project in a reasonable amount of time	3.10	3.18	3.19	3.21	3.21	3.16
24	Completing road and bridge construction and repairs in a timely manner	3.35	3.29	3.27	3.30	3.25	3.21
25	Providing shoulders that are wide enough to pull off the road safely	3.04	3.06	3.11	3.18	3.21	3.17
26	Providing Amtrak passenger rail service to meet your needs	2.95	2.89	2.90	2.85	2.96	2.92
27	Improving existing highways to meet increasing traffic demands	3.25	3.28	3.29	3.32	3.32	3.21
28	Acting on recommendations from the public	3.17	3.20	3.21	3.19	3.15	3.15
29	Providing pedestrian/bicycle pathways on or next to highways that are safe	3.03	2.97	3.00	2.93	2.90	2.95
30	Providing pavement that lasts a long time	3.31	3.33	3.35	3.38	3.29	3.24
31	Using public funds in a cost effective manner	3.35	3.36	3.33	3.42	3.33	3.25
32	Repairing pavement surface promptly	3.35	3.35	3.38	3.39	3.32	3.24
33	Distributing transportation funds fairly to all areas of the state	3.17	3.28	3.27	3.38	3.25	3.19
34	Maintaining the pavement so it provides a smooth ride	3.33	3.34	3.35	3.34	3.24	3.21

Shading indicates statistically significant (at .05) difference between category and 45 to 54 age group.

Table B.2c: Significant Differences—Means for Discrepancy Scores Compared to Respondent’s Age for MoDOT Performance Items

Item #	Item Description	Mean Discrepancy Score by Age Category					
		18-24	25-34	35-44	45-54	55-64	65+
1	Using electronic message boards to advise drivers of delays or construction areas	0.01	-0.01	0.01	-0.09	0.08	0.02
2	Placing yellow warning signs to assure sufficient response time	0.05	-0.01	-0.01	-0.08	-0.15	-0.05
3	Removing snow/ice efficiently	-0.25	-0.23	-0.06	-0.25	-0.15	0.07
4	Having signs that can be easily seen at night or in bad weather	-0.02	-0.11	-0.13	-0.22	-0.28	-0.25
5	Building bridges that last a long time	-0.01	-0.17	-0.29	-0.40	-0.43	-0.41
6	Providing useful information about construction, repairs or road conditions	-0.11	-0.18	-0.20	-0.29	-0.20	-0.15
7	Providing lanes that are wide enough for safe driving	0.01	-0.18	-0.15	-0.28	-0.26	-0.20
8	Communicating with the public in easy to understand language	-0.01	-0.06	-0.12	-0.35	-0.32	-0.30
9	Building bridges that are wide enough to feel safe	-0.09	-0.09	-0.19	-0.26	-0.33	-0.29
10	Providing the ability to see far ahead on highways and have unobstructed views at intersections	-0.08	-0.07	-0.13	-0.31	-0.35	-0.33
11	Striping center lines and road edges to ensure safety	-0.12	-0.23	-0.19	-0.38	-0.38	-0.33
12	Lighting interchanges and bridges	0.06	-0.09	-0.11	-0.28	-0.29	-0.16
13	Providing crosswalks and signals for pedestrians to cross the highway safely	-0.33	-0.29	-0.37	-0.31	-0.29	-0.27
14	Treating highway surfaces to resist skidding in wet weather	-0.28	-0.37	-0.48	-0.54	-0.56	-0.32
15	Managing traffic flow in construction zones to minimize delays to drivers	-0.75	-0.63	-0.68	-0.71	-0.60	-0.27
16	Providing enough passing opportunities on two-lane highways	-0.07	-0.16	-0.27	-0.47	-0.48	-0.47
17	Providing pavement markings that can be easily seen in wet weather	-0.37	-0.49	-0.57	-0.59	-0.59	-0.51
18	Providing passenger light rail routes that meet your needs	-0.10	-0.51	-0.74	-0.66	-0.80	-0.49
19	Building new highways to meet future demand	-0.17	-0.45	-0.54	-0.66	-0.81	-0.59
20	Providing the public with adequate opportunities for input in project planning	-0.45	-0.48	-0.61	-0.72	-0.70	-0.60
21	Providing sufficient transportation for those who don't or can't drive	-0.47	-0.67	-0.70	-0.88	-0.82	-0.63
22	Honoring commitments to provide and maintain Missouri's transportation system	-0.29	-0.58	-0.71	-0.86	-0.84	-0.58
23	Planning a project in a reasonable amount of time	-0.46	-0.69	-0.68	-0.86	-0.82	-0.60
24	Completing road and bridge construction and repairs in a timely manner	-0.88	-0.82	-0.81	-0.94	-0.87	-0.67
25	Providing shoulders that are wide enough to pull off the road safely	-0.32	-0.39	-0.51	-0.69	-0.72	-0.64
26	Providing Amtrak passenger rail service to meet your needs	-0.37	-0.45	-0.64	-0.70	-0.83	-0.61
27	Improving existing highways to meet increasing traffic demands	-0.41	-0.69	-0.82	-0.92	-0.95	-0.71
28	Acting on recommendations from the public	-0.50	-0.67	-0.79	-0.81	-0.77	-0.67
29	Providing pedestrian/bicycle pathways on or next to highways that are safe	-0.61	-0.56	-0.69	-0.64	-0.54	-0.48
30	Providing pavement that lasts a long time	-0.82	-0.95	-1.00	-1.09	-0.92	-0.75
31	Using public funds in a cost effective manner	-0.74	-0.97	-0.96	-1.18	-1.05	-0.82
32	Repairing pavement surface promptly	-1.00	-1.09	-1.13	-1.17	-1.07	-0.81
33	Distributing transportation funds fairly to all areas of the state	-0.52	-0.94	-1.05	-1.28	-1.13	-0.81
34	Maintaining the pavement so it provides a smooth ride	-1.02	-1.04	-1.13	-1.15	-0.95	-0.80

Shading indicates statistically significant (at .05) difference between category and 45 to 54 age group.

Table B.3: Significant Differences among Means of 34 MoDOT Performance Items Compared to Educational Levels

Item #	Item Description	Current Satisfaction Score		Future Attention Score		Discrepancy Score	
		<HS	>HS	<HS	>HS	<HS	>HS
1	Using electronic message boards to advise drivers of delays or construction areas	2.98	3.03	2.97	3.07	0.01	-0.07
2	Placing yellow warning signs to assure sufficient response time	2.93	2.94	2.96	3.10	-0.04	-0.17
3	Removing snow/ice efficiently	2.93	2.83	3.02	3.17	-0.12	-0.43
4	Having signs that can be easily seen at night or in bad weather	2.88	2.89	3.04	3.15	-0.17	-0.30
5	Building bridges that last a long time	2.83	2.91	3.12	3.25	-0.31	-0.35
6	Providing useful information about construction, repairs or road conditions	2.83	2.85	3.01	3.17	-0.19	-0.36
7	Providing lanes that are wide enough for safe driving	2.85	2.86	3.01	3.22	-0.18	-0.38
8	Communicating with the public in easy to understand language	2.83	2.76	3.01	3.20	-0.20	-0.44
9	Building bridges that are wide enough to feel safe	2.83	2.94	3.03	3.16	-0.22	-0.23
10	Providing the ability to see far ahead on highways and have unobstructed views at intersections	2.83	2.82	3.03	3.14	-0.22	-0.34
11	Striping center lines and road edges to ensure safety	2.82	2.90	3.07	3.19	-0.28	-0.30
12	Lighting interchanges and bridges	2.83	2.89	2.96	3.09	-0.16	-0.24
13	Providing crosswalks and signals for pedestrians to cross the highway safely	2.74	2.82	2.99	3.22	-0.30	-0.44
14	Treating highway surfaces to resist skidding in wet weather	2.71	2.77	3.13	3.24	-0.44	-0.48
15	Managing traffic flow in construction zones to minimize delays to drivers	2.61	2.72	3.18	3.23	-0.61	-0.57
16	Providing enough passing opportunities on two-lane highways	2.69	2.77	2.99	3.15	-0.34	-0.40
17	Providing pavement markings that can be easily seen in wet weather	2.64	2.84	3.14	3.27	-0.54	-0.46
18	Providing passenger light rail routes that meet your needs	2.56	2.81	3.00	3.05	-0.61	-0.34
19	Building new highways to meet future demand	2.61	2.86	3.17	3.13	-0.58	-0.37
20	Providing the public with adequate opportunities for input in project planning	2.56	2.77	3.13	3.17	-0.62	-0.49
21	Providing sufficient transportation for those who don't or can't drive	2.51	2.75	3.14	3.25	-0.73	-0.55
22	Honoring commitments to provide and maintain Missouri's transportation system	2.56	2.75	3.22	3.24	-0.70	-0.52
23	Planning a project in a reasonable amount of time	2.52	2.67	3.19	3.18	-0.72	-0.57
24	Completing road and bridge construction and repairs in a timely manner	2.48	2.66	3.27	3.30	-0.84	-0.69
25	Providing shoulders that are wide enough to pull off the road safely	2.59	2.75	3.13	3.25	-0.57	-0.54
26	Providing Amtrak passenger rail service to meet your needs	2.50	2.74	2.89	3.05	-0.64	-0.47
27	Improving existing highways to meet increasing traffic demands	2.50	2.81	3.28	3.29	-0.81	-0.49
28	Acting on recommendations from the public	2.51	2.66	3.18	3.24	-0.73	-0.68
29	Providing pedestrian/bicycle pathways on or next to highways that are safe	2.46	2.62	2.94	3.17	-0.59	-0.59
30	Providing pavement that lasts a long time	2.40	2.65	3.32	3.35	-0.95	-0.75
31	Using public funds in a cost effective manner	2.40	2.62	3.35	3.29	-1.00	-0.72
32	Repairing pavement surface promptly	2.31	2.50	3.34	3.33	-1.07	-0.87
33	Distributing transportation funds fairly to all areas of the state	2.36	2.69	3.26	3.34	-1.02	-0.75
34	Maintaining the pavement so it provides a smooth ride	2.30	2.56	3.30	3.34	-1.04	-0.84

Shading indicates statistically significant difference at .05.

Table B.4: Significant Differences among 34 MoDOT Performance Items Compared to Average Number of Miles Driven

Item #	Item Description	Current Satisfaction Score			Future Satisfaction Score			Discrepancy Score		
		<10,000	10,000-19,999	>20,000	<10,000	10,000-19,999	>20,000	<10,000	10,000-19,999	>20,000
1	Using electronic message boards to advise drivers of delays or construction areas	2.94	2.98	3.02	3.00	2.98	2.95	-0.09	0.00	0.06
2	Placing yellow warning signs to assure sufficient response time	2.90	2.92	2.96	3.00	2.96	2.95	-0.12	-0.06	0.01
3	Removing snow/ice efficiently	2.86	2.96	2.93	3.08	3.01	3.00	-0.25	-0.09	-0.12
4	Having signs that can be easily seen at night or in bad weather	2.83	2.88	2.92	3.10	3.05	3.01	-0.29	-0.20	-0.09
5	Building bridges that last a long time	2.81	2.82	2.86	3.16	3.15	3.10	-0.38	-0.34	-0.25
6	Providing useful information about construction, repairs or road conditions	2.83	2.85	2.82	3.04	3.01	3.02	-0.23	-0.17	-0.21
7	Providing lanes that are wide enough for safe driving	2.82	2.86	2.87	3.04	3.01	3.03	-0.25	-0.17	-0.17
8	Communicating with the public in easy to understand language	2.84	2.85	2.80	3.05	3.01	3.02	-0.24	-0.17	-0.23
9	Building bridges that are wide enough to feel safe	2.84	2.82	2.85	3.06	3.04	3.02	-0.21	-0.26	-0.19
10	Providing the ability to see far ahead on highways and have unobstructed views at intersections	2.81	2.80	2.86	3.08	3.04	3.00	-0.29	-0.26	-0.15
11	Striping center lines and road edges to ensure safety	2.85	2.80	2.82	3.06	3.08	3.10	-0.22	-0.32	-0.30
12	Lighting interchanges and bridges	2.82	2.81	2.85	3.02	2.96	2.95	-0.22	-0.18	-0.11
13	Providing crosswalks and signals for pedestrians to cross the highway safely	2.70	2.75	2.77	3.11	2.99	2.96	-0.47	-0.27	-0.25
14	Treating highway surfaces to resist skidding in wet weather	2.72	2.70	2.73	3.19	3.11	3.12	-0.49	-0.45	-0.41
15	Managing traffic flow in construction zones to minimize delays to drivers	2.66	2.60	2.61	3.18	3.19	3.18	-0.55	-0.64	-0.62
16	Providing enough passing opportunities on two-lane highways	2.75	2.68	2.69	3.03	3.03	2.96	-0.30	-0.42	-0.31
17	Providing pavement markings that can be easily seen in wet weather	2.70	2.61	2.65	3.19	3.16	3.12	-0.54	-0.58	-0.50
18	Providing passenger light rail routes that meet your needs	2.62	2.52	2.61	3.06	3.02	2.95	-0.54	-0.66	-0.56
19	Building new highways to meet future demand	2.70	2.57	2.61	3.12	3.17	3.19	-0.46	-0.62	-0.60
20	Providing the public with adequate opportunities for input in project planning	2.58	2.57	2.58	3.16	3.11	3.14	-0.64	-0.59	-0.62
21	Providing sufficient transportation for those who don't or can't drive	2.54	2.52	2.54	3.24	3.11	3.11	-0.78	-0.67	-0.70
22	Honoring commitments to provide and maintain Missouri's transportation system	2.61	2.58	2.55	3.24	3.21	3.22	-0.69	-0.65	-0.72
23	Planning a project in a reasonable amount of time	2.57	2.53	2.50	3.20	3.18	3.18	-0.68	-0.70	-0.74
24	Completing road and bridge construction and repairs in a timely manner	2.53	2.47	2.49	3.29	3.28	3.25	-0.83	-0.86	-0.80
25	Providing shoulders that are wide enough to pull off the road safely	2.58	2.62	2.60	3.16	3.10	3.15	-0.60	-0.52	-0.58
26	Providing Amtrak passenger rail service to meet your needs	2.55	2.43	2.57	3.04	2.87	2.85	-0.68	-0.68	-0.53
27	Improving existing highways to meet increasing traffic demands	2.61	2.52	2.45	3.25	3.28	3.30	-0.67	-0.78	-0.87
28	Acting on recommendations from the public	2.55	2.53	2.49	3.22	3.16	3.18	-0.74	-0.69	-0.75
29	Providing pedestrian/bicycle pathways on or next to highways that are safe	2.43	2.47	2.51	3.02	3.00	2.87	-0.68	-0.64	-0.49
30	Providing pavement that lasts a long time	2.46	2.38	2.41	3.31	3.31	3.34	-0.89	-0.95	-0.95
31	Using public funds in a cost effective manner	2.45	2.39	2.41	3.31	3.34	3.36	-0.90	-1.00	-1.02
32	Repairing pavement surface promptly	2.37	2.31	2.30	3.33	3.35	3.35	-1.02	-1.07	-1.08
33	Distributing transportation funds fairly to all areas of the state	2.41	2.41	2.34	3.32	3.21	3.29	-1.02	-0.92	-1.06
34	Maintaining the pavement so it provides a smooth ride	2.40	2.30	2.27	3.28	3.30	3.32	-0.93	-1.03	-1.08

Shading indicates statistically significant (at .05) difference between category and 10,000 to 19,999-miles category

Table B.5: Significant Differences of Means For Commercial vs. Non-Commercial Drivers for 34 MoDOT Performance Items

Item #	Item Description	Current Satisfaction Score		Future Attention Score		Discrepancy Score	
		Comm. Driver	Non-comm.Driver	Comm. Driver	Non-comm.Driver	Comm. Driver	Non-comm.Driver
1	Using electronic message boards to advise drivers of delays or construction areas	3.01	2.98	2.97	2.97	0.03	0.00
2	Placing yellow warning signs to assure sufficient response time	2.91	2.93	2.99	2.96	-0.09	-0.04
3	Removing snow/ice efficiently	2.99	2.91	3.02	3.03	-0.04	-0.15
4	Having signs that can be easily seen at night or in bad weather	2.91	2.88	3.06	3.05	-0.19	-0.18
5	Building bridges that last a long time	2.82	2.83	3.14	3.13	-0.35	-0.31
6	Providing useful information about construction, repairs or road conditions	2.84	2.83	3.09	3.01	-0.27	-0.19
7	Providing lanes that are wide enough for safe driving	2.76	2.86	3.07	3.02	-0.34	-0.18
8	Communicating with the public in easy to understand language	2.76	2.84	3.04	3.02	-0.32	-0.20
9	Building bridges that are wide enough to feel safe	2.85	2.84	3.04	3.04	-0.21	-0.22
10	Providing the ability to see far ahead on highways and have unobstructed views at intersections	2.82	2.83	3.07	3.03	-0.28	-0.22
11	Striping center lines and road edges to ensure safety	2.79	2.82	3.10	3.08	-0.34	-0.28
12	Lighting interchanges and bridges	2.81	2.83	2.94	2.98	-0.17	-0.16
13	Providing crosswalks and signals for pedestrians to cross the highway safely	2.73	2.75	3.01	3.01	-0.33	-0.31
14	Treating highway surfaces to resist skidding in wet weather	2.66	2.72	3.11	3.14	-0.49	-0.44
15	Managing traffic flow in construction zones to minimize delays to drivers	2.59	2.62	3.16	3.19	-0.63	-0.61
16	Providing enough passing opportunities on two-lane highways	2.66	2.70	3.00	3.00	-0.36	-0.34
17	Providing pavement markings that can be easily seen in wet weather	2.57	2.66	3.19	3.15	-0.66	-0.52
18	Providing passenger light rail routes that meet your needs	2.59	2.58	2.83	3.03	-0.43	-0.61
19	Building new highways to meet future demand	2.64	2.62	3.13	3.17	-0.53	-0.58
20	Providing the public with adequate opportunities for input in project planning	2.49	2.59	3.21	3.13	-0.77	-0.59
21	Providing sufficient transportation for those who don't or can't drive	2.62	2.52	3.06	3.16	-0.51	-0.74
22	Honoring commitments to provide and maintain Missouri's transportation system	2.53	2.58	3.27	3.22	-0.77	-0.68
23	Planning a project in a reasonable amount of time	2.44	2.54	3.18	3.19	-0.81	-0.70
24	Completing road and bridge construction and repairs in a timely manner	2.45	2.50	3.30	3.27	-0.89	-0.82
25	Providing shoulders that are wide enough to pull off the road safely	2.56	2.61	3.21	3.13	-0.68	-0.55
26	Providing Amtrak passenger rail service to meet your needs	2.52	2.52	2.72	2.92	-0.50	-0.64
27	Improving existing highways to meet increasing traffic demands	2.44	2.53	3.30	3.28	-0.88	-0.78
28	Acting on recommendations from the public	2.41	2.53	3.27	3.17	-0.93	-0.70
29	Providing pedestrian/bicycle pathways on or next to highways that are safe	2.40	2.48	2.90	2.96	-0.57	-0.59
30	Providing pavement that lasts a long time	2.28	2.43	3.39	3.31	-1.14	-0.91
31	Using public funds in a cost effective manner	2.31	2.42	3.44	3.33	-1.18	-0.95
32	Repairing pavement surface promptly	2.21	2.33	3.46	3.33	-1.28	-1.03
33	Distributing transportation funds fairly to all areas of the state	2.29	2.40	3.30	3.27	-1.10	-0.99
34	Maintaining the pavement so it provides a smooth ride	2.12	2.34	3.39	3.29	-1.31	-0.99

Shading indicates significant differences at .05 level.

Table B.6: Significance of Age Categories on Ratings of Current Satisfaction

Item #	Item Description	Age Categories				
		18-24	25-34	35-44	55-64	65+
1	Using electronic message boards to advise drivers of delays or construction areas				*	
2	Placing yellow warning signs to assure sufficient response time	*				*
3	Removing snow/ice efficiently					*
4	Having signs that can be easily seen at night or in bad weather	*	*			
5	Building bridges that last a long time	*	*			
6	Providing useful information about construction, repairs or road conditions		*			
7	Providing lanes that are wide enough for safe driving	*				
8	Communicating with the public in easy to understand language	*	*	*		
9	Building bridges that are wide enough to feel safe		*			
10	Providing the ability to see far ahead on highways and have unobstructed views at intersections	*	*			
11	Striping center lines and road edges to ensure safety	*	*	*		
12	Lighting interchanges and bridges	*	*	*		*
13	Providing crosswalks and signals for pedestrians to cross the highway safely					
14	Treating highway surfaces to resist skidding in wet weather	*	*			*
15	Managing traffic flow in construction zones to minimize delays to drivers					*
16	Providing enough passing opportunities on two-lane highways	*	*			
17	Providing pavement markings that can be easily seen in wet weather	*	*			
18	Providing passenger light rail routes that meet your needs	*				
19	Building new highways to meet future demand	*	*	*	*	
20	Providing the public with adequate opportunities for input in project planning					
21	Providing sufficient transportation for those who don't or can't drive	*	*	*		*
22	Honoring commitments to provide and maintain Missouri's transportation system	*	*			*
23	Planning a project in a reasonable amount of time	*	*	*		*
24	Completing road and bridge construction and repairs in a timely manner		*			*
25	Providing shoulders that are wide enough to pull off the road safely	*	*	*		
26	Providing Amtrak passenger rail service to meet your needs	*				
27	Improving existing highways to meet increasing traffic demands	*	*			*
28	Acting on recommendations from the public	*				
29	Providing pedestrian/bicycle pathways on or next to highways that are safe					*
30	Providing pavement that lasts a long time	*				*
31	Using public funds in a cost effective manner	*	*			*
32	Repairing pavement surface promptly	*				*
33	Distributing transportation funds fairly to all areas of the state	*	*			*
34	Maintaining the pavement so it provides a smooth ride	*	*		*	*

Shaded area indicates statistical significance at the 0.05 level between comparison age group (45-54) and category.

Table B.7: Significance of Age Categories on Ratings of Future Attention

Item #	Item Description	Age Category				
		18-24	25-34	35-44	55-64	65+
1	Using electronic message boards to advise drivers of delays or construction areas				*	*
2	Placing yellow warning signs to assure sufficient response time					
3	Removing snow/ice efficiently			*		*
4	Having signs that can be easily seen at night or in bad weather					
5	Building bridges that last a long time	*				
6	Providing useful information about construction, repairs or road conditions	*				
7	Providing lanes that are wide enough for safe driving	*				
8	Communicating with the public in easy to understand language	*	*	*		
9	Building bridges that are wide enough to feel safe	*				
10	Providing the ability to see far ahead on highways and have unobstructed views at intersections	*	*			
11	Striping center lines and road edges to ensure safety	*		*		
12	Lighting interchanges and bridges	*				
13	Providing crosswalks and signals for pedestrians to cross the highway safely					
14	Treating highway surfaces to resist skidding in wet weather					*
15	Managing traffic flow in construction zones to minimize delays to drivers				*	*
16	Providing enough passing opportunities on two-lane highways	*	*	*		
17	Providing pavement markings that can be easily seen in wet weather					
18	Providing passenger light rail routes that meet your needs					
19	Building new highways to meet future demand	*				
20	Providing the public with adequate opportunities for input in project planning					
21	Providing sufficient transportation for those who don't or can't drive					
22	Honoring commitments to provide and maintain Missouri's transportation system	*				*
23	Planning a project in a reasonable amount of time	*				
24	Completing road and bridge construction and repairs in a timely manner					*
25	Providing shoulders that are wide enough to pull off the road safely	*	*			
26	Providing Amtrak passenger rail service to meet your needs					
27	Improving existing highways to meet increasing traffic demands					*
28	Acting on recommendations from the public					
29	Providing pedestrian/bicycle pathways on or next to highways that are safe					
30	Providing pavement that lasts a long time				*	*
31	Using public funds in a cost effective manner			*	*	*
32	Repairing pavement surface promptly					*
33	Distributing transportation funds fairly to all areas of the state	*	*	*	*	*
34	Maintaining the pavement so it provides a smooth ride				*	*

Shaded area indicates statistical significance at the 0.05 level between comparison age group (45-54) and category.

Table B.8: Significance of Age Categories on Discrepancy Scores

Item #	Item Description	Age Category				
		18-24	25-34	35-44	55-64	65+
1	Using electronic message boards to advise drivers of delays or construction areas				*	
2	Placing yellow warning signs to assure sufficient response time					
3	Removing snow/ice efficiently			*		*
4	Having signs that can be easily seen at night or in bad weather	*				
5	Building bridges that last a long time	*	*			
6	Providing useful information about construction, repairs or road conditions	*				*
7	Providing lanes that are wide enough for safe driving	*		*		
8	Communicating with the public in easy to understand language	*	*	*		
9	Building bridges that are wide enough to feel safe	*	*			
10	Providing the ability to see far ahead on highways and have unobstructed views at intersections	*	*	*		
11	Striping center lines and road edges to ensure safety	*	*	*		
12	Lighting interchanges and bridges	*	*	*		
13	Providing crosswalks and signals for pedestrians to cross the highway safely					
14	Treating highway surfaces to resist skidding in wet weather	*	*			*
15	Managing traffic flow in construction zones to minimize delays to drivers					*
16	Providing enough passing opportunities on two-lane highways	*	*	*		
17	Providing pavement markings that can be easily seen in wet weather	*				
18	Providing passenger light rail routes that meet your needs	*				
19	Building new highways to meet future demand	*	*		*	
20	Providing the public with adequate opportunities for input in project planning	*	*			
21	Providing sufficient transportation for those who don't or can't drive	*	*			*
22	Honoring commitments to provide and maintain Missouri's transportation system	*	*	*		*
23	Planning a project in a reasonable amount of time	*	*	*		*
24	Completing road and bridge construction and repairs in a timely manner					*
25	Providing shoulders that are wide enough to pull off the road safely	*	*	*		
26	Providing Amtrak passenger rail service to meet your needs	*				
27	Improving existing highways to meet increasing traffic demands	*	*			*
28	Acting on recommendations from the public	*				
29	Providing pedestrian/bicycle pathways on or next to highways that are safe					
30	Providing pavement that lasts a long time	*			*	*
31	Using public funds in a cost effective manner	*	*	*		*
32	Repairing pavement surface promptly	*				*
33	Distributing transportation funds fairly to all areas of the state	*	*	*		*
34	Maintaining the pavement so it provides a smooth ride				*	*

Shaded area indicates statistical significance at the 0.05 level between comparison age group (45-54) and category.

Table B.9: Significant Differences in Ratings of Current Satisfaction with MoDOT Performance Compared to Annual Mileage Driven by Respondents

Item #	Item Description	<10,000	>20,000
1	Using electronic message boards to advise drivers of delays or construction areas		
2	Placing yellow warning signs to assure sufficient response time		
3	Removing snow/ice efficiently	*	
4	Having signs that can be easily seen at night or in bad weather		
5	Building bridges that last a long time		
6	Providing useful information about construction, repairs or road conditions		
7	Providing lanes that are wide enough for safe driving		
8	Communicating with the public in easy to understand language		
9	Building bridges that are wide enough to feel safe		
10	Providing the ability to see far ahead on highways and have unobstructed views at intersections		*
11	Striping center lines and road edges to ensure safety		
12	Lighting interchanges and bridges		
13	Providing crosswalks and signals for pedestrians to cross the highway safely		
14	Treating highway surfaces to resist skidding in wet weather		
15	Managing traffic flow in construction zones to minimize delays to drivers		
16	Providing enough passing opportunities on two-lane highways	*	
17	Providing pavement markings that can be easily seen in wet weather	*	
18	Providing passenger light rail routes that meet your needs	*	*
19	Building new highways to meet future demand	*	
20	Providing the public with adequate opportunities for input in project planning	*	
21	Providing sufficient transportation for those who don't or can't drive		
22	Honoring commitments to provide and maintain Missouri's transportation system		
23	Planning a project in a reasonable amount of time		
24	Completing road and bridge construction and repairs in a timely manner		
25	Providing shoulders that are wide enough to pull off the road safely		
26	Providing Amtrak passenger rail service to meet your needs	*	*
27	Improving existing highways to meet increasing traffic demands	*	*
28	Acting on recommendations from the public		
29	Providing pedestrian/bicycle pathways on or next to highways that are safe		
30	Providing pavement that lasts a long time	*	
31	Using public funds in a cost effective manner		
32	Repairing pavement surface promptly		
33	Distributing transportation funds fairly to all areas of the state		
34	Maintaining the pavement so it provides a smooth ride	*	

Shaded area indicates statistically significant (at 0.05) difference between category and 10,000 to 19,999-mile category.

Table B.10: Significant Differences in Ratings of Future Attention Compared to Annual Mileage Driven by Respondents

Item #	Item Description	<10,000	>20,000
1	Using electronic message boards to advise drivers of delays or construction areas		
2	Placing yellow warning signs to assure sufficient response time		
3	Removing snow/ice efficiently	*	
4	Having signs that can be easily seen at night or in bad weather		
5	Building bridges that last a long time		
6	Providing useful information about construction, repairs or road conditions		
7	Providing lanes that are wide enough for safe driving		
8	Communicating with the public in easy to understand language		
9	Building bridges that are wide enough to feel safe		
10	Providing the ability to see far ahead on highways and have unobstructed views at intersections		
11	Striping center lines and road edges to ensure safety		
12	Lighting interchanges and bridges	*	
13	Providing crosswalks and signals for pedestrians to cross the highway safely	*	
14	Treating highway surfaces to resist skidding in wet weather	*	
15	Managing traffic flow in construction zones to minimize delays to drivers		
16	Providing enough passing opportunities on two-lane highways		*
17	Providing pavement markings that can be easily seen in wet weather		
18	Providing passenger light rail routes that meet your needs		
19	Building new highways to meet future demand		
20	Providing the public with adequate opportunities for input in project planning		
21	Providing sufficient transportation for those who don't or can't drive	*	
22	Honoring commitments to provide and maintain Missouri's transportation system		
23	Planning a project in a reasonable amount of time		
24	Completing road and bridge construction and repairs in a timely manner		
25	Providing shoulders that are wide enough to pull off the road safely		
26	Providing Amtrak passenger rail service to meet your needs	*	
27	Improving existing highways to meet increasing traffic demands		
28	Acting on recommendations from the public		
29	Providing pedestrian/bicycle pathways on or next to highways that are safe		*
30	Providing pavement that lasts a long time		
31	Using public funds in a cost effective manner		
32	Repairing pavement surface promptly		
33	Distributing transportation funds fairly to all areas of the state	*	*
34	Maintaining the pavement so it provides a smooth ride		

Shaded area indicates statistically significant (at 0.05) difference between category and 10,000 to 19,999-mile category.

Table B.11: Significant Differences in Discrepancy Scores Compared to Annual Mileage Driven by Respondents

Item #	Item Description	<10,000	>20,000
1	Using electronic message boards to advise drivers of delays or construction areas		
2	Placing yellow warning signs to assure sufficient response time		
3	Removing snow/ice efficiently	*	
4	Having signs that can be easily seen at night or in bad weather		*
5	Building bridges that last a long time		
6	Providing useful information about construction, repairs or road conditions		
7	Providing lanes that are wide enough for safe driving		
8	Communicating with the public in easy to understand language		
9	Building bridges that are wide enough to feel safe		
10	Providing the ability to see far ahead on highways and have unobstructed views at intersections		*
11	Striping center lines and road edges to ensure safety		
12	Lighting interchanges and bridges		
13	Providing crosswalks and signals for pedestrians to cross the highway safely	*	
14	Treating highway surfaces to resist skidding in wet weather		
15	Managing traffic flow in construction zones to minimize delays to drivers		
16	Providing enough passing opportunities on two-lane highways		*
17	Providing pavement markings that can be easily seen in wet weather		
18	Providing passenger light rail routes that meet your needs		
19	Building new highways to meet future demand	*	
20	Providing the public with adequate opportunities for input in project planning		
21	Providing sufficient transportation for those who don't or can't drive		
22	Honoring commitments to provide and maintain Missouri's transportation system	*	
23	Planning a project in a reasonable amount of time		
24	Completing road and bridge construction and repairs in a timely manner		
25	Providing shoulders that are wide enough to pull off the road safely		
26	Providing Amtrak passenger rail service to meet your needs		
27	Improving existing highways to meet increasing traffic demands	*	
28	Acting on recommendations from the public		
29	Providing pedestrian/bicycle pathways on or next to highways that are safe		*
30	Providing pavement that lasts a long time		
31	Using public funds in a cost effective manner		
32	Repairing pavement surface promptly		
33	Distributing transportation funds fairly to all areas of the state		*
34	Maintaining the pavement so it provides a smooth ride		

Shaded area indicates statistically significant (at 0.05) difference between category and 10,000 to 19,999-mile category.

Table B.12: Significant Differences in Mean Ratings of Current Satisfaction Compared to Number of Years Lived in Missouri of Respondents

Item #	Item Description	Number of Years Lived in Missouri		
		<5 years	5-10 years	11-20 years
1	Using electronic message boards to advise drivers of delays or construction areas			
2	Placing yellow warning signs to assure sufficient response time			
3	Removing snow/ice efficiently		*	
4	Having signs that can be easily seen at night or in bad weather			
5	Building bridges that last a long time	*		
6	Providing useful information about construction, repairs or road conditions			
7	Providing lanes that are wide enough for safe driving		*	
8	Communicating with the public in easy to understand language	*		
9	Building bridges that are wide enough to feel safe			
10	Providing the ability to see far ahead on highways and have unobstructed views at intersections			
11	Striping center lines and road edges to ensure safety	*		
12	Lighting interchanges and bridges			
13	Providing crosswalks and signals for pedestrians to cross the highway safely			
14	Treating highway surfaces to resist skidding in wet weather			
15	Managing traffic flow in construction zones to minimize delays to drivers			
16	Providing enough passing opportunities on two-lane highways			
17	Providing pavement markings that can be easily seen in wet weather			
18	Providing passenger light rail routes that meet your needs			
19	Building new highways to meet future demand			
20	Providing the public with adequate opportunities for input in project planning			
21	Providing sufficient transportation for those who don't or can't drive			
22	Honoring commitments to provide and maintain Missouri's transportation system			
23	Planning a project in a reasonable amount of time			
24	Completing road and bridge construction and repairs in a timely manner			
25	Providing shoulders that are wide enough to pull off the road safely		*	
26	Providing Amtrak passenger rail service to meet your needs			
27	Improving existing highways to meet increasing traffic demands	*		*
28	Acting on recommendations from the public	*		
29	Providing pedestrian/bicycle pathways on or next to highways that are safe			
30	Providing pavement that lasts a long time			*
31	Using public funds in a cost effective manner	*		
32	Repairing pavement surface promptly			
33	Distributing transportation funds fairly to all areas of the state	*		*
34	Maintaining the pavement so it provides a smooth ride			

Highlighted cells indicate significant difference at 0.05 level from those living in MO for >20 Years

Table B.13: Significant Differences in Mean Ratings of Future Attention Compared to Number of Years Lived in Missouri of Respondents

Item #	Item Description	Number of Years Lived in Missouri		
		<5 years	5-10 years	11-20 years
1	Using electronic message boards to advise drivers of delays or construction areas			
2	Placing yellow warning signs to assure sufficient response time			*
3	Removing snow/ice efficiently			
4	Having signs that can be easily seen at night or in bad weather			*
5	Building bridges that last a long time			*
6	Providing useful information about construction, repairs or road conditions			
7	Providing lanes that are wide enough for safe driving			*
8	Communicating with the public in easy to understand language			*
9	Building bridges that are wide enough to feel safe			
10	Providing the ability to see far ahead on highways and have unobstructed views at intersections	*		*
11	Striping center lines and road edges to ensure safety			
12	Lighting interchanges and bridges			
13	Providing crosswalks and signals for pedestrians to cross the highway safely			
14	Treating highway surfaces to resist skidding in wet weather			
15	Managing traffic flow in construction zones to minimize delays to drivers			
16	Providing enough passing opportunities on two-lane highways	*		*
17	Providing pavement markings that can be easily seen in wet weather			
18	Providing passenger light rail routes that meet your needs			
19	Building new highways to meet future demand			*
20	Providing the public with adequate opportunities for input in project planning			
21	Providing sufficient transportation for those who don't or can't drive			
22	Honoring commitments to provide and maintain Missouri's transportation system	*		*
23	Planning a project in a reasonable amount of time			
24	Completing road and bridge construction and repairs in a timely manner			
25	Providing shoulders that are wide enough to pull off the road safely	*		
26	Providing Amtrak passenger rail service to meet your needs			
27	Improving existing highways to meet increasing traffic demands	*		
28	Acting on recommendations from the public		*	
29	Providing pedestrian/bicycle pathways on or next to highways that are safe		*	
30	Providing pavement that lasts a long time			
31	Using public funds in a cost effective manner			
32	Repairing pavement surface promptly			
33	Distributing transportation funds fairly to all areas of the state	*		*
34	Maintaining the pavement so it provides a smooth ride			

Highlighted cells indicate significant difference at 0.05 level from those living in MO for >20 Years

Table B.14: Significant Differences in Mean Discrepancy Scores Compared to Number of Years Lived in Missouri of Respondents

Item #	Item Description	Number of Years Lived in Missouri		
		<5 years	5-10 years	11-20 years
1	Using electronic message boards to advise drivers of delays or construction areas			
2	Placing yellow warning signs to assure sufficient response time			
3	Removing snow/ice efficiently		*	
4	Having signs that can be easily seen at night or in bad weather			
5	Building bridges that last a long time	*		*
6	Providing useful information about construction, repairs or road conditions			
7	Providing lanes that are wide enough for safe driving			
8	Communicating with the public in easy to understand language	*		
9	Building bridges that are wide enough to feel safe			
10	Providing the ability to see far ahead on highways and have unobstructed views at intersections			*
11	Striping center lines and road edges to ensure safety	*		
12	Lighting interchanges and bridges			
13	Providing crosswalks and signals for pedestrians to cross the highway safely		*	
14	Treating highway surfaces to resist skidding in wet weather			
15	Managing traffic flow in construction zones to minimize delays to drivers			
16	Providing enough passing opportunities on two-lane highways	*		*
17	Providing pavement markings that can be easily seen in wet weather			
18	Providing passenger light rail routes that meet your needs			
19	Building new highways to meet future demand			*
20	Providing the public with adequate opportunities for input in project planning	*		
21	Providing sufficient transportation for those who don't or can't drive			
22	Honoring commitments to provide and maintain Missouri's transportation system			*
23	Planning a project in a reasonable amount of time			
24	Completing road and bridge construction and repairs in a timely manner			
25	Providing shoulders that are wide enough to pull off the road safely	*	*	
26	Providing Amtrak passenger rail service to meet your needs			
27	Improving existing highways to meet increasing traffic demands	*		*
28	Acting on recommendations from the public	*	*	
29	Providing pedestrian/bicycle pathways on or next to highways that are safe		*	
30	Providing pavement that lasts a long time			*
31	Using public funds in a cost effective manner			
32	Repairing pavement surface promptly			
33	Distributing transportation funds fairly to all areas of the state	*		*
34	Maintaining the pavement so it provides a smooth ride			

Highlighted cells indicate significant difference at 0.05 level from those living in MO for >20 Years

Appendix C

Stakeholders Interviewed for Transportation Customer Survey 2003

Stakeholder List

Mr. Jerry Blair, Director of Transportation, East-West Gateway Coordinating Council
Mr. Mell Henderson, Director of Transportation, Mid-America Regional Council
Mr. Fred May, Director, Springfield Planning and Development
Mr. Duane Kraft, Associated General Contractors of Missouri
Ms. Linda Yaeger, Executive Director, OATS
Mr. Gary Markenson, Executive Director, Missouri Municipal League
Mr. Charlie Kruse, President, Missouri Farm Bureau Federation
Mr. Dave Smith, Director, Governmental Affairs, Missouri Transportation and Development Council
Mr. Dick Burke, Executive Director, Missouri Association of Counties
Mr. Larry E. Salci, Executive Director, Bi-State Development Agency
Mr. Mark Huffer, General Manager, Kansas City Area Transportation Authority
Mr. Steve Olsen, Fire Chief, Boone County, Missouri
Mr. Harry Rogers, Chair, Missouri Association of Councils of Government
Mr. Andy Clements, St. Joseph Public Works Department
Mr. Bob Crandell, Missouri Pilots Association
Mr. Bob Dickens, Aircraft Owners and Pilots Association
Ms. Carolyn Morris, Missouri State Aviation Council
Mr. Tom Yarbrough, Trailnet
Mr. Jim Anderson, Commissioner, Missouri Highways and Transportation Commission
Mr. W.L. Orscheln, Commissioner, Missouri Highways and Transportation Commission

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Listing of 34 Items Included in the Survey⁵

Item #	Item Description
1	Using electronic message boards to advise drivers of delays or construction areas
2	Placing yellow warning signs to assure sufficient response time
3	Removing snow/ice efficiently
4	Having signs that can be easily seen at night or in bad weather
5	Building bridges that last a long time
6	Providing useful information about construction, repairs or road conditions
7	Providing lanes that are wide enough for safe driving
8	Communicating with the public in easy to understand language
9	Building bridges that are wide enough to feel safe
10*	Providing the ability to see far ahead on highways and have unobstructed views at intersections
11	Striping center lines and road edges to ensure safety
12	Lighting interchanges and bridges
13	Providing crosswalks and signals for pedestrians to cross the highway safely
14	Treating highway surfaces to resist skidding in wet weather
15*	Managing traffic flow in construction zones to minimize delays to drivers
16	Providing enough passing opportunities on two-lane highways
17	Providing pavement markings that can be easily seen in wet weather
18	Providing passenger light rail routes that meet your needs
19	Building new highways to meet future demand
20	Providing the public with adequate opportunities for input in project planning
21	Providing sufficient transportation for those who don't or can't drive
22	Honoring commitments to provide and maintain Missouri's transportation system
23	Planning a project in a reasonable amount of time
24	Completing road and bridge construction and repairs in a timely manner
25	Providing shoulders that are wide enough to pull off the road safely
26	Providing Amtrak passenger rail service to meet your needs
27	Improving existing highways to meet increasing traffic demands
28*	Acting on recommendations from the public
29	Providing pedestrian/bicycle pathways on or next to highways that are safe
30	Providing pavement that lasts a long time
31	Using public funds in a cost-effective manner
32	Repairing pavement surface promptly
33	Distributing transportation funds fairly to all areas of the state
34	Maintaining the pavement so it provides a smooth ride

Note: New performance items for TCS 2003 are marked with an asterisk.

⁵ Table position: Inside Back Cover