#SAFE Evaluation

Final Report – 2003

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Introduction

The purpose of this evaluation is to investigate system users' perceptions of the effectiveness of the cellular-based #SAFE system (Surveys I – IV) and the 511 system (Survey V) that provide road conditions and weather forecasts to North and South Dakota travelers. The results of the analysis will be used to improve the quality of services rendered, as well as to gain insight into the possible development of an alternative long-term, user-fee supported program to provide this information.

Survey Design

The specific objectives of the survey were to assess the availability, accuracy and effectiveness of the system, as well as to determine users' willingness to pay and #SAFE and 511 awareness. The various sections of the survey solicited the following types of information.

- Basic travel characteristics
- Travel information needs
- Amount and/or likelihood of #SAFE and 511 use
- Qualitative assessment of #SAFE and 511 systems
- Willingness to pay (Surveys I & II)
- Demographic information

Five surveys were conducted as a part of the evaluation process. The first survey (Survey I) was mailed to a geographically diverse group of cellular telephone users in North and South Dakota on July of 2000. This survey was sent only to cellular users because the #SAFE system is only available to cellular users. The second survey (Survey II), essentially a modification of the Survey I, was mailed out in January 2001. The third survey (Survey III) was designed specifically for querying North and South Dakota maintenance officials. The fourth survey (Survey IV) was mailed out in April 2002. Survey IV was also mailed and handed out to commercial vehicle operators. The fifth survey (Survey V) was an analysis of the 511 system. It was mailed out in April 2003. Since Survey IV asks questions about the www.safetravelusa.com and (701)777-6133, the participants did not have to be exclusively cellular users. Likewise in Survey V, both cellular and land based phone systems can access the 511 system, so participants did not have to be cellular users. Each of the survey questions and designs used in this study are shown in Appendix A.

Three types of response options were used throughout the surveys: multiple choice, open-ended questions and ordinal ratings. The multiple-choice questions each contained between 4 and 10 response categories. A single open-ended question was asked on Survey II pertaining to why respondents don't use or rarely use #SAFE. An open-ended question in Survey V asked users for input as to other features they would like on the travel information phone system. For the rated responses, survey respondents were instructed to select one of three values (Survey I) or one of five values (Surveys II, III, IV and V) they felt best represented their behavior or opinion

regarding a particular topic. The ordinal nature of such a scale allows conclusions to be drawn on a relative basis only. Differences between response values cannot be quantified because each respondent's assessment of the intervals between the response categories will vary. In general, results from specific questions on this survey are qualitative and are intended to make general improvements and modifications to the #SAFE and 511 systems. More specific details and recommendations would need to come from additional investigations.

Survey Design Evolution

The #SAFE survey administered in January 2001 (Survey II) featured several changes from the original survey (July 2000). These changes were made to provide greater detail and more information related directly to #SAFE. The revisions did not change the questions, but rather the possible answers or the clarity of each answer. The same can be said regarding the April 2002 (Survey IV) survey.

The scale of all ordinal questions increased from three (Survey I) to five (Surveys II, III, IV and V) possible responses. This was done to provide greater detail to each of the responses. Providing five choices allowed respondents to evaluate the #SAFE and 511 systems with greater precision. Another general change to the survey was placing *(#7233)* following #SAFE. This clarification was added based on comments from Survey I. Several Survey II respondents used #7233 as a response to specified others when #SAFE was a possible choice.

Question 4 (Survey I), regarding the likelihood of respondents to use #SAFE during specific weather conditions, was removed from Surveys II and IV. Based on responses from Survey I, the results to this question were predictable. In general, the more adverse the weather condition, the more likely people were to use #SAFE. Due to this trend, it was not necessary to ask the question on the subsequent surveys. The removal of this question also provided more space, allowing the number of responses to all ordinal questions to increase.

A new question (Question 5 on Survey II) was the only addition to the original survey. This open-ended question allowed respondents to briefly state the main reasons for not using the #SAFE system. Since many on Survey I indicated that they had not used #SAFE and a high percentage of respondents skipping the question regarding never using #SAFE, Question 5 was to get direct feedback from respondents regarding their personal reasons for not using or rarely using the #SAFE system. This question was removed from Survey IV since responses to this question on Survey II adequately revealed the reasons for not using the #SAFE system.

Question 6 was intended to ask when respondents access the #SAFE system. A respondent answering this question either should have accessed the system before starting a trip or while on the road. It was later determined that the option of "neither" is unnecessary. Therefore, the response of "neither" was removed from the question regarding when #SAFE was typically accessed. Results from Survey II, where "neither" was not an option, showed an increase in the number of respondents who indicated using #SAFE while on the road.

Question 7 (Surveys I and II) asked users to indicate which seasons they used the #SAFE system. Due to the predictability of responses, this question was removed on subsequent surveys.

Question 12 (Surveys I and II) asked users to evaluate the Ease of Use of certain features of the #SAFE system. This question was removed from subsequent surveys because some of the features of the system changed and responses received were very predictable.

Survey IV evaluated two other sources of traveler information in addition to #SAFE: a telephone information number, (701) 777-6133 and an Internet website, www.safetravelusa.com. These sources of information were added because they provided additional means to access the same information as the #SAFE number.

Based on the responses on Question 16 of Survey I, the option of "This Survey" was changed to "Not aware of #SAFE before now". This change was made to improve the clarity of the question. Later, this question was modified on Survey IV to include how respondents were made aware of (701) 777-6133 and www.safetravelusa.com. "Not aware" was removed as a possible response since survey participants were asked if they knew of the additional resources on the previous question.

Changes to the demographic section of the survey were made. In Survey II the question related to the type of vehicle normally driven was removed. The results from the Survey I indicated that respondents mostly used automobiles (95.5%). Due to the nature of random sampling from a similar population, this question would not provide any additional information and did not need to be asked on Survey II. In spite of this, Survey IV included a demographic related to vehicle type because commercial vehicles were specifically targeted during distribution.

Survey IV also inquired about cell phone ownership in a slightly different manner. In Survey I and Survey II, one question asked how many cell phones were in the respondents' household, while another question inquired as to the cellular carriers. In Survey IV, respondents were asked if they had a cellular phone in their household, and if so, who was the service provider.

Survey IV provided for an "other" option for the respondents in regards to their current state of residence. Surveys I and II only allowed for respondents to select either North Dakota or South Dakota for their state of residence. This change was made in Survey IV to allow for the inclusion of commercial vehicle operators who may not reside in either of the states.

The change in the ordinal questions from 3 to 5 responses also requires a slight modification to the numerical values associated with Survey I ordinal questions. To directly compare the results of all the surveys, the means form the original survey must be converted to the same scale as Survey II and IV. The response of "Very" on Survey I is increased from 3 to 5, and the

response of "Somewhat" increased from a weight of 2 to 3, and the response of "Not Very" remained 1. Once the means of Survey I are normalized, comparisons can be made between the three surveys.

Survey V was designed similarly to the previous surveys. The largest difference is that Survey V focuses newly implemented 511 system. Question 5, 8 and 12 were additional questions focusing on the 511 system. Question 5 asks respondents to indicate their preference for identifying their location to access travel information. Question 8 asks whether respondents feel they have received enough information about 511 system. Question 12 asks for feedback on 511 capabilities. The #SAFE system is no longer in use and has been replaced by the 511 system. Survey V reflects this change.

Survey Administration

Survey administration was designed to target cellular telephone owners in North and South Dakota for Surveys I & II. For Survey I, a simple random sample of 3500 cellular users within North and South Dakota was purchased from US West Dex (now Qwest) Data Products Group. For Survey II, a simple random sample of 2000 cellular users was purchased. These lists of individuals were geographically diverse across the two-state region. For Survey III, the list of maintenance officials was provided by Mark Owens of the Regional Weather Information Center at the University of North Dakota – Grand Forks. It included 43 participants from North and South Dakota. Surveys IV & V were mailed to 3000 randomly selected households in North and South Dakota. Due to the inclusion of the two additional information sources, (701) 777-6133 and www.safetravelusa.com, the participants in Survey IV did not have to be cellular users as in Surveys I and II. Since the 511 system is accessible by land line as well as cellular service, Survey V participants also did not have to be exclusively cellular users. In addition, Survey IV included 530 surveys mailed to four different trucking companies in North Dakota, 380 surveys mailed to South Dakota Trucking Association members, and 397 distributed randomly to commercial vehicle operators at two truck stops in Billings, Montana.

To improve the rate of response, a drawing from those who responded to Surveys I and II before the specified due date, was offered as an incentive. The prize for each winner was $100 of free gasoline from Conoco. Surveys IV and V respondents were offered an incentive of $50 cash. There were five winners for Surveys I, II and IV and three winners for Survey V. No incentive was offered for participation in Survey III. Reducing the incentives between Surveys I & II and Surveys IV & V, from $100 to $50, appeared to reduce the response rate by almost 12%. Once the surveys were mailed, no attempt was made to encourage those who did not respond to Surveys I, II, IV and V. However, due to the small number of maintenance officials in the third survey, those who did not respond by one week prior to the specified due date were sent a reminder postcard. Those who did not respond after the postcard was sent were contacted

by telephone and asked to complete questionnaire over the telephone. Table 1 shows the numbers distributed and quantities returned for each of the surveys.

Table 1: Distribution and Return Rate Statistics for Each Survey

	No. Distributed	No. Returned	Return Rate
Survey I	3500	1128	32.2%
Survey II	2000	663	33.2%
Survey III (Maint.)	43	34	79.1%
Survey IV	4307	865	20.1%
Survey V	3000	640	21.3%

Most surveys were distributed using first class U.S. mail with the exception of Survey IV where in-person methods were used to distribute the survey to the commercial vehicle operators at the Billings, Montana truck stops. Included in the mail-out package were a cover letter, a survey, and a postage paid return envelope. For Surveys I, II, IV and V a small card to enter the incentive drawing was also included in the mail out package.

Statistics

The responses to the #SAFE surveys were analyzed using various summary statistics, including percentages, frequencies and chi-square values. Tabular results for each of the surveys are detailed in Appendix B. Results were used to determine users assessment of the system, traveler information needs, and willingness to pay for use of the system (Surveys I and II). Differences in responses were investigated between respondents in selected demographic categories using the chi-squared analysis. Since the sample size of the maintenance survey was small, the chi-squared analysis was invalid.

Respondents had the option of not responding to any question on the survey. Percentages are based on total responses obtained for each question, as opposed to the total number of survey respondents, thereby eliminating the need for an "unknown" or " no response" category for each question. In addition, if more than one option was selected for questions requiring only a single response, all responses from that individual to that particular question were omitted from the statistical analysis. This was done to avoid biasing the results by arbitrarily choosing which option among several selected by the respondent was to be included. Failure to comply with written instructions also resulted in omission of that respondent's particular response from the data analysis.