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Evaluating the Perceptions and Behaviors of Ali-Scout Users in a Naturalistic Setting

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16. Abstract

The purpose of this User Perceptions and Behaviors evaluation component of FAST-TRAC is to understand how users perceive and value the in-vehicle navigation system, Ali-Scout, and to determine how the system is used in the Oakland County study area. Specifically, we want to know whether the system helps drivers navigate and reduces their travel times, whether drivers like all or parts of the system, their beliefs about the costs and benefits of the system, whether they would purchase the navigation system, and if so, what they would be willing to pay for it. Importantly, this study also assesses the differential effects on perceived Ali-Scout system utility of providing "static" contrasted with "dynamic" route guidance advice to users.

The study took place between July 1995 and December 1996 and included a total of 369 subjects with Ali-Scout units installed in vehicles they were driving. The general procedure followed for each subject's participation was: recruitment, participation in a short training session, distribution of a set of training materials developed for the project, and driving the Ali-Scout equipped vehicle. The subjects were twice asked to complete a survey, the first one month after Ali-Scout installation (during the time period covered by "static" route guidance advice), and the second during the time period covered by "dynamic" route guidance advice.

This report presents results from each of the two surveys and compares results from the static guidance period with those from the dynamic guidance period.

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INTRODUCTION

The purpose of the User Perceptions and Behaviors evaluation component of FAST-TRAC is to understand how users perceive and value the in-vehicle navigation system, Ali-Scout, and to determine how the system is used in the Oakland County study area. Specifically, we want to know whether the system helps drivers navigate and reduces their travel times, whether drivers like all or parts of the system, their beliefs about the costs and benefits of the system, whether they would purchase the navigation system, and if so, what they would be willing to pay for it. Importantly, this study also assesses the differential effects on perceived Ali-Scout system utility of providing "static" contrasted with "dynamic" route guidance advice to users.

The study took place between July 1995 and December 1996 and included a total of 369 subjects with Ali-Scout units installed in vehicles they were driving. The general procedure followed for each subject's participation was: recruitment, participation in a short training session, distribution of a set of training materials developed for the project, and driving the Ali-Scout equipped vehicle. The subjects were twice asked to complete a survey, the first one month after Ali-Scout installation (during the time period covered by "static" route guidance advice), and the second during the time period covered by "dynamic" route guidance advice.

The Ali-Scout System

Ali-Scout is an in-vehicle navigation-assistance system (INAS) manufactured by Siemens Corporation and designed to determine the fastest route between a vehicle's current position and a user-entered destination, and to guide the driver with turn-by-turn instructions to the destination. As is shown in Figure 1 below, the Ali-Scout system consists of both in-vehicle and out-of-vehicle components. The in-vehicle components include an electronic compass for determining the vehicle's heading, an infrared transceiver for receiving route information and broadcasting link travel time information,

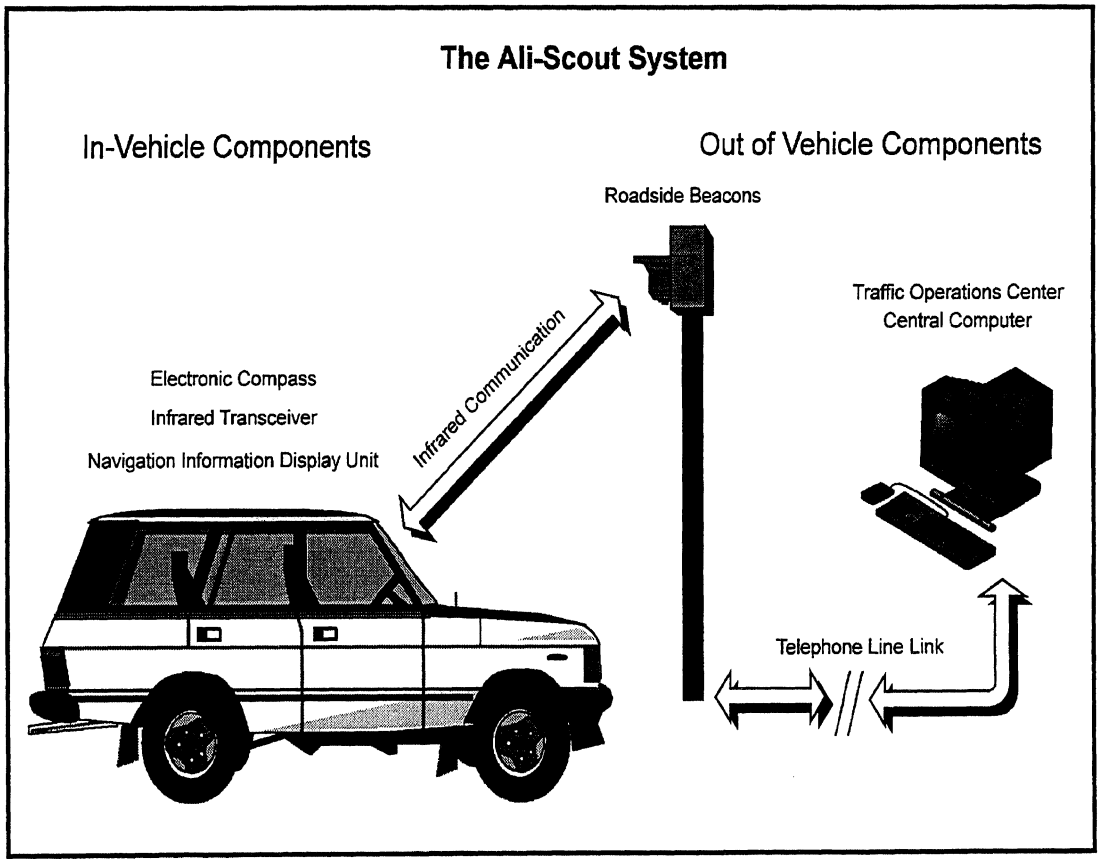


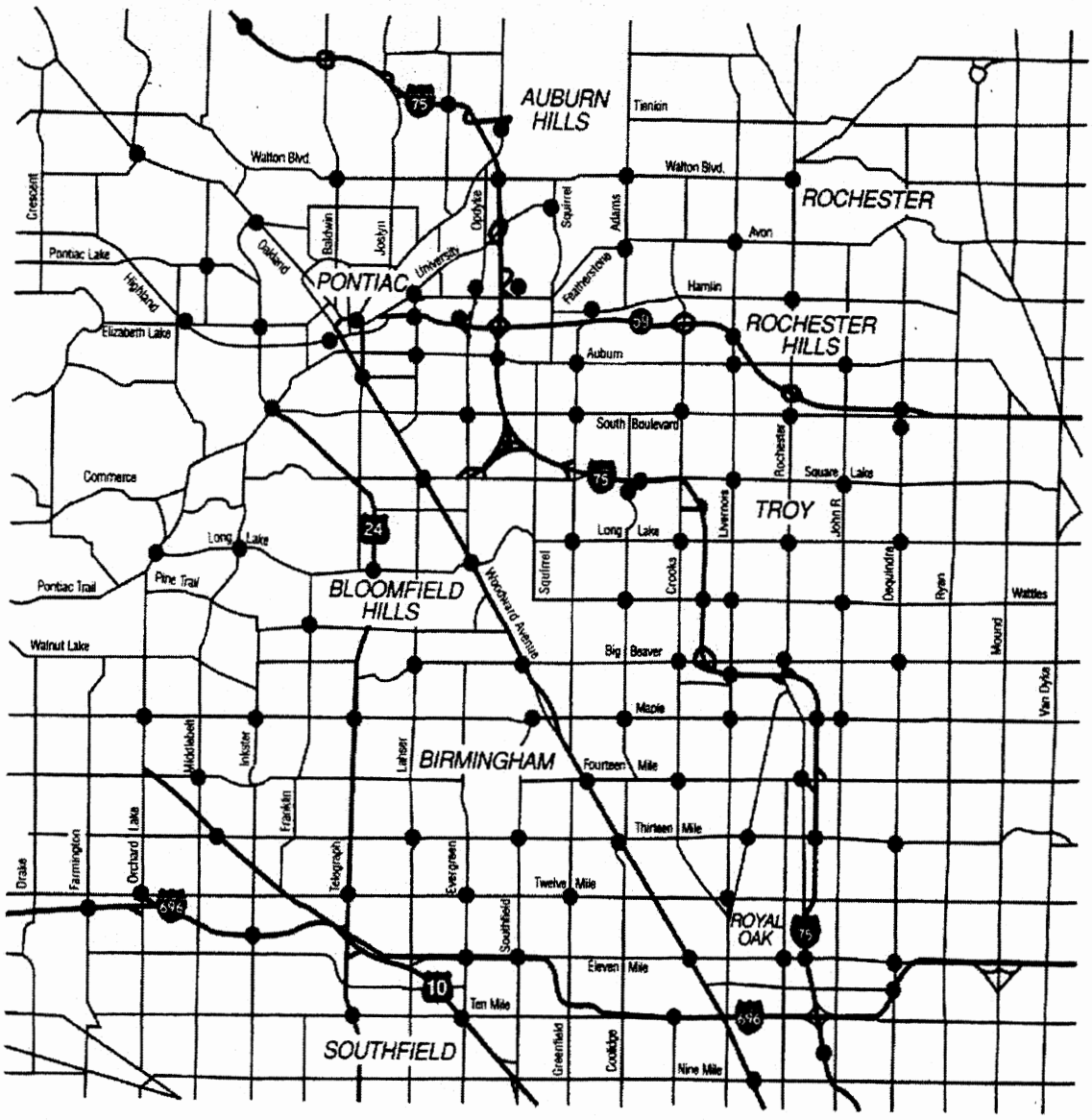
Figure 1: Illustration of Ali-Scout system components

and an information display unit for visually and verbally giving driving maneuver instructions and for accepting destination information from the user. The out-of-vehicle components include beacons placed strategically at intersections for receiving vehicle link travel times and broadcasting calculated routes and a central computer located at a traffic operations

center, run by the Road Commission for Oakland County, for performing route calculations and maintaining a link travel-time data base. Communication between the beacons and the central computer is through dedicated telephone lines. A map of the FAST-TRAC project area and beacon locations can be found in Figure 2.

Both the in-vehicle and out-of-vehicle components work together to provide users with the fastest route. With the Ali-Scout system, the fastest route can be determined by using speed limits and distances (static route guidance) or by using this information combined with information about recurrent traffic congestion (dynamic route guidance). New information about traffic congestion on specific road links at specific times is uploaded to the central computer from Ali-Scout-equipped vehicles each time the vehicles pass a beacon. The link travel times are averaged into the link travel time data base to be used in the calculation of routes for vehicles traveling the same link at the same day of week and time. Thus, the recurrent traffic congestion information used by the Ali-Scout system comes from a moving average of travel times reported on the links on similar days and at similar times. Ali-Scout alone cannot determine nonrecurrent congestion. The Ali-Scout (FAST-TRAC area) road network does not include local and neighborhood streets. Thus, the Ali-Scout recommended routes do not take neighborhood shortcuts or divert traffic through neighborhoods.

Ali-Scout can hold up to 80 destinations in memory. Previously entered destinations can be used by simply scrolling through a list and selecting one. Destinations are programmed into the Ali-Scout unit using an alphanumeric keyboard that swings down from the bottom of the unit. The destination location is defined using latitude and longitude coordinates. Coordinates for locations within the FAST-TRAC project area can be determined in several ways. If the user knows the address of the destination, he or she can obtain the coordinates by looking in an address ranges list in the Ali-Scout manual. This list shows streets and addresses along with their corresponding latitude and longitude coordinates. If the user wants to go to a public place such as a restaurant, bank, or store, he or she can look up its coordinates in a list of points of interest. Users can also obtain



•

— Beacon Location

Figure 2: Map of the Ali-Scout instrumented area

a destination's coordinates by locating the destination on a map in the Ali-Scout manual and then reading the latitude and longitude off the ordinate and abscissa of a grid drawn over the map. Finally, Ali-Scout allows the user to assign their current location as a destination such as a home or work destination. In this case, the coordinates are already known by Ali-Scout and only a name for the destination is entered. For convenience, the Ali-Scout unit can be removed from the vehicle and programmed with destinations elsewhere.

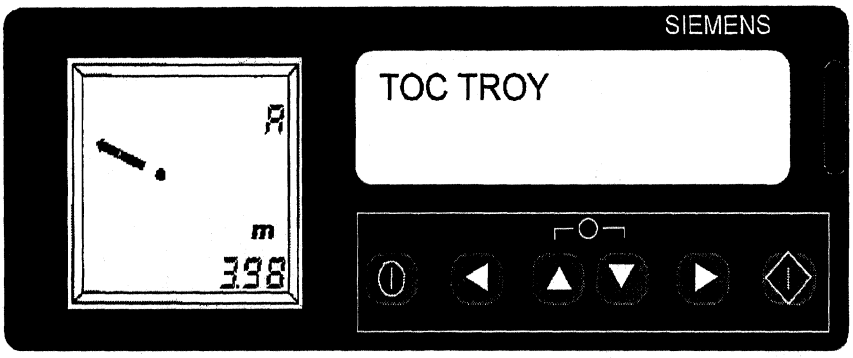


Figure 3: Illustration Ali-Scout unit in "autonomous mode" showing distance and direction to destination (TOC TROY).

For every trip taken with Ali-Scout, two conceptually distinct kinds of guidance are used. After a destination is entered into the Ali-Scout unit, guidance begins in what Siemens Corporation calls "autonomous mode." In this mode, only Euclidian distance and direction-to-the-destination information is displayed (i.e., "as-the-crow-flies" information) without any turns being recommended. Figure 3 shows an example autonomous-mode guidance display. As drivers proceed towards their destinations, they eventually pass a roadside beacon where communication takes place and a calculated route is downloaded to the vehicle's Ali-Scout unit. The system then changes to "guided mode," where the drivers are is given turn-by-turn instructions as the drive. An example driving maneuver icon for Ali-Scout is shown in Figure 4. Turn-by-turn instructions are given, until the vehicle is within about one-half mile of the destination. At this point, Ali-Scout reverts back to autonomous-mode guidance and the driver must look for the exact destination. Ali-Scout will also revert to autonomous-mode guidance if the driver does not make a recommended maneuver or communication at a beacon is disrupted (e.g., the beacon is not functioning or the infrared signal was blocked). When this occurs, Ali-Scout remains in autonomous mode until another beacon is passed and communications are reestablished.

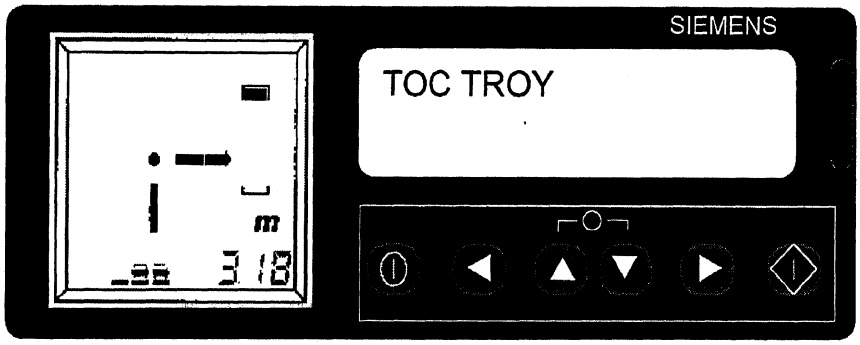


Figure 4: Illustration Ali-Scout unit showing a right-turn maneuver icon, recommended lane, distance, and countdown bar showing relative distance to the maneuver.

Subject Selection and Hand-Off Procedures

The minimum selection criteria for a person to participate in this study were: (1) the person drove in the study area, and (2) the person's vehicle was one from a set of specified platforms (selected to reduce problems associated with installing the Ali-Scout unit in a large number of vehicle platforms). We would have liked to have been able to include some demographic characteristics (such as gender and age) as subject selection criteria; however, an insufficient number of volunteers satisfied the first two criteria to reject potential subjects to meet additional subject categorization. Therefore, any person who volunteered, drove regularly in the study area, and had an appropriate vehicle was invited to participate in the study.

Several methods were used for recruiting potential subjects. Large employers in the test area were contacted and asked to permit an invitation and recruitment survey to be distributed to their employees. Completed surveys were collected at the employment site. A list of employers and the recruitment materials can be found in Appendix A.

A one-eighth-page ad was run in the Oakland Press for two days in July 1995. On the first day, the ad was run in the "Wheels" section and on the second day it ran in the "Travel" section. The ad listed the criteria for participation, including a list of candidate vehicles, and asked interested persons to complete a short form and mail it to UMTRI.

Copies of the same ad that ran in the Oakland Press were left at Secretary of State (driver and vehicle licencing) offices in the test area. People interested in participating were asked to fill out the form and mail it to UMTRI.

Several newspaper, television, and radio stories initiated by publicity personnel at the Road Commission of Oakland County (RCOC) ran in late summer and the fall of 1995. These stories described the FAST-TRAC project and asked for volunteers willing to have the Ali-Scout system installed in their vehicle. Copies of the ad and newspaper articles generated by the project can be found in Appendix B. In addition, project staff would occasionally get a request for an Ali-Scout unit from a legislator, city-council person, mayor, police chief, etc. These requests were forwarded to RCOC, and in most cases an Ali-Scout unit was installed in their vehicles. About 40 persons participated in this "VIP" user group, and did not participate in the users' survey.

Each volunteer who fit the driving area and vehicle criteria was called by project staff. At that time, the nature of the study and the installation procedure were explained to the volunteer. They were asked if they still had the vehicle they reported in the application and if they still wanted to participate. The list of persons who expressed a desire to participate at this point was forwarded to the company responsible for installing the Ali-Scout units, APX International. APX contacted the subjects and set up installation appointments. At the installation appointment, but prior to installation, subjects were given a package of information about the project and the Ali-Scout unit and requested to sign an Informed-consent form. These materials can be found in Appendix C (with the exception of the Ali-Scout manual and training videotape).

During the project, subjects could call a telephone "hotline" set up to answer questions about Ali-Scout operation, system problems, etc. The hotline could be reached via phone, fax, and e-mail. The hotline was monitored during business hours. Calls made outside business hours were recorded and were returned as soon as possible. Subjects also received a newsletter mailed out by the RCOC that gave updates about system

performance. Copies of the newsletters distributed during this project can be found in Appendix D.

Subject Demographics

The demographic information from each subject showed that those who participated in the study were a somewhat homogeneous group (72.3 percent male). Of those reporting an age, the mean age was 41.6 years (standard deviation, SD = 11.2). Subjects were, in general, more affluent than the general population. Of those subjects who reported an income, 10.8 percent reported an income below $45,000, 13.8 percent reported an income between $45,000 and $54,999, 12.3 percent reported an income between $55,000 and $64,000, 13.1 percent reported an income between $65,000 and $79,999, 18.8 percent reported an income between $80,000 and $99,999, and 31.2 percent reported a household income of $100,000 or more. Study participants generally were quite well educated. Of those reporting their highest education level, 7.7 percent indicated a high school diploma or equivalent, 27.2 percent reported some college, 26.8 percent reported a bachelor's degree, 12.5 percent reported some graduate school, and 25.4 percent reported that they had completed graduate school.

Ali-Scout USER SURVEYS

Study participants were asked to complete the survey twice during their participation (a copy of the survey instrument can be found in Appendix E). The survey was first administered after one month of participation (during static route guidance), and the second during the later time period in which dynamic route guidance had been provided for four months (i.e., system went "dynamic" May 1, 1996; survey 2 was distributed in August). Both surveys were mailed to subjects with a stamped, preaddressed envelope. Subjects were asked to fill out the surveys at their earliest convenience and then mail them back to UMTRI in the envelopes provided by UMTRI.

Survey Results

As mentioned previously, 369 people participated in this component of the study. Of these individuals, 291 completed survey one and 176 completed survey two. The complete univariate results for both surveys are presented in Appendix F. For each question, responses from survey one are presented on the left and survey-two responses for the same question are presented on the right. Included in these tables are the numbers and percentages of people answering each question.

Driving and Commuting

Overall, about one third of the respondents did not live in the Oakland County study area (i.e., Troy, Rochester Hills, Auburn Hills, Pontiac, Bloomfield Hills, and Birmingham). Of those who lived in the study area, most were long-term residents (mean = 14.9 years; SD = 13.0) who drove in the study area five times a week or more and considered themselves to be very familiar with the road network in the area.

Nearly every respondent was employed full-time and 77 percent worked in the study area. About 30 percent reported that in the past three months they drove four or more routes to work or school. Mean, self-reported, morning-commute times were 27.13 minutes (SD = 13.44). About two-thirds of subjects reported they listen to traffic reports during their morning commute. Subjects reported a wide range of traffic congestion experienced, but reported infrequent encounters with traffic incidents. About 62 percent reported they encounter traffic incidents once a month or less. Nearly every respondent, however, indicated that he/she would be willing to divert to avoid an incident or congestion. Finally, over two-thirds of the subjects believed that there was considerable congestion (codes 5-7) in the Oakland County study area during the morning commute hours. There was no significant or meaningful difference between surveys on any of these items.

In general, study participants reported traveling out of town frequently. Almost 90 percent had taken two or more out-of-town vacations in the last year, while 35 percent had taken five or more vacations in the last year. Further, about 70 percent of respondents had

taken at least one out-of-town business trip in the last year. Respondents reported that they are, in general, confident when wayfinding in unfamiliar environments. Well over half of the respondents reported using maps at most only once every two to six months. Only about 4 percent of the respondents had used an electronic guidance system before using the Ali-Scout device.

Technology

In general, respondents considered themselves to be familiar and comfortable with technology. All but 5 percent of respondents had experience with personal computers. Over one-half reported extensive experience. All but two respondents had experience with video cassette recorders. Most people reported significant experience with facsimile machines, car phones, and pocket calculators. While about 40 percent of respondents reported extensive experience with electronic pagers, another 40 percent reported no experience with them. Over 90 percent of respondents indicated that they were either somewhat or very interested in news items concerning new technology. About half the respondents reported using new technology to be neither easy nor difficult, and about 40 percent believed that new technology was either somewhat or very easy to use. Finally, over 90 percent reported that new technology was either somewhat or very enjoyable to use.

Ali-Scout Operation and Displays

Frequency of Use

Over ninety percent of people reported using Ali-Scout at least some of the time in each survey; only five persons reported never using Ali-Scout. However, one-way repeated-measures analysis of variance (ANOVA) shows that Ali-Scout was used less frequently during the second (i.e., dynamic guidance) period (mean static=5.40, mean dynamic=4.62; $F(1,155)=48.55$, $p<.0001$).

Subjects who answered that they did not use Ali-Scout all of the time were asked to explain why they sometimes did not use the system (people could give more than one

reason). The responses were interpreted and categorized. In order of frequency, the reasons given were:

Survey 1 — Static

- I knew the way (61.5 percent)
- Many trips are very short (55.0 percent)
- I did not think Ali-Scout provided the fastest route (41.3 percent)
- Too much trouble to program the destinations (32.1 percent)
- I did not think Ali-Scout provided accurate guidance (30.7 percent)

Survey 2 — Dynamic

- I knew the way (64.4 percent)
- Many trips are very short (51.4 percent)
- Too much trouble to program the destinations (45.2 percent)
- I did not think Ali-Scout provided the fastest route (41.1 percent)
- I did not think Ali-Scout provided accurate guidance (25.3 percent)

Entering and Selecting Destinations

Subjects were asked to rank the four methods of entering new destinations in order of how frequently they were used. In general, we found that people used the map and current location methods most frequently followed by the points of interest, and address-range methods, respectively. These rankings did not differ significantly between static and dynamic survey periods. For each method, participants indicated on a seven-point scale how difficult they thought the method was to use. In general, they reported that the current-location and points-of-interest methods were easy to use, and that the address-ranges and map methods were difficult to use. There was little difference on these items between surveys.

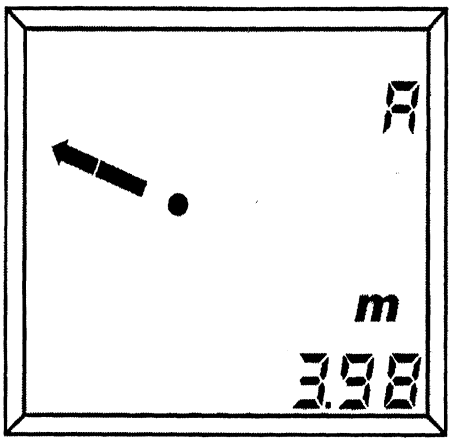
Subjects were asked to indicate the percentage of Ali-Scout trips in which they used a destination already stored in memory. The mean reported percentage was higher for survey one than survey two (mean static=67.7 percent, mean dynamic=60.8 percent; $F(1,151)=5.21$, $p<.05$). In addition, most subjects thought that the destination memory feature was easy to use, with more than one-half in each survey indicating that it was "very easy to use."

Keyboard

Subjects were asked several questions related to the Ali-Scout keyboard. On seven-point scales, subjects were asked to indicate their level of difficulty in learning and using the Ali-Scout keyboard, whether they thought it functioned properly, and their overall impression. Level of difficulty for learning and using the keyboard was judged using a scale that was anchored by the labels "very difficult" for one and "very easy" for seven, with a response of four indicating that it was neither difficult nor easy. We found that more than one-half indicated the keyboard was easy to learn (i.e., they indicated either five, six, or seven), about 25 percent thought it was difficult (i.e., they indicated one, two, or three), while the rest thought it was neither easy nor difficult (i.e., indicated four) or did not answer the question. There was no difference between static and dynamic-guidance periods.

Subject responses were mixed about the level of difficulty in using the keyboard. Respondents indicated less difficulty at survey one than during the survey two time period (mean static=4.5, mean dynamic=4.2; $F(1,142)=4.98$, $p<.05$). Keyboard functionality was rated by having subjects indicate the proportion of time the Ali-Scout keyboard functioned properly using a scale anchored by the label "never" for one and "always" for seven. The results showed that the keyboards worked more often than not, and worked better during the initial, static phase (mean static=5.7, mean dynamic=5.4; $F(1,145)=4.38$, $p<.05$). Finally, subjects indicated their overall impression of the keyboard using a scale anchored with the labels "strongly disliked" for one and "strongly liked" for seven. The results showed that 52.7 percent in survey one (static) and 47.7 percent in survey two (dynamic) indicated they liked it at some level (i.e., they responded five, six or seven). Respondents liked the keyboard more in the static than dynamic time period (mean static=4.7, mean dynamic=4.2; $F(1,145)=15.09$; $p<.001$).

Autonomous Mode

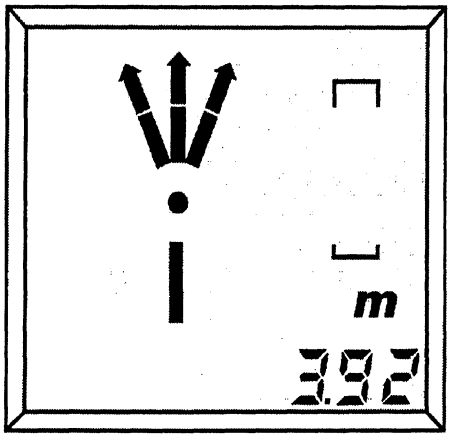


Subjects were asked several questions about the Ali-Scout system's autonomous, or "crow-fly," navigation feature. They were first asked to identify what information the display (seen at the left) is showing. Over 98 percent of respondents correctly identified the correct response, "The distance and direction to the destination you entered." On seven-point scales, subjects were asked to rate their level of difficulty for understanding autonomous-mode information, the amount of detail, level of distraction, perceived accuracy of guidance, whether it helped them find destinations, whether it functioned properly, and their overall impression. The scale for rating the level of difficulty in understanding autonomous-mode information was anchored by the labels "very difficult" for one and "very easy" for seven, with a response of four indicating that it was neither difficult nor easy to understand. On average, respondents thought this display was easy to understand (mean static=6.4, mean dynamic=6.3). Distraction while driving was rated using a scale anchored by the labels "very distracting" for one and "not at all distracting" for seven. On average, respondents found this display was not distracting (mean static=6.2, mean dynamic=6.0). Accuracy of guidance was rated using a scale anchored by the labels "very inaccurate" for one and "very accurate" for seven. On average, respondents found the system was more accurate than inaccurate (mean static=4.7, mean dynamic=4.8).

Subjects judged whether the autonomous mode display functioned properly by indicating how often they thought the autonomous mode display "functioned properly." The scales were anchored by the labels "never" for one and "always" for seven. On average respondents reported the display functioned properly more often than not (mean static=5.2, mean dynamic=5.2). Subjects reported their overall impression of the autonomous mode using a scale anchored by the labels "strongly disliked" for one and

"strongly liked" for seven, with a response of four indicating that they neither liked nor disliked the feature. On average, respondents liked the display more than they disliked it (mean static=5.0, mean dynamic=5.0).

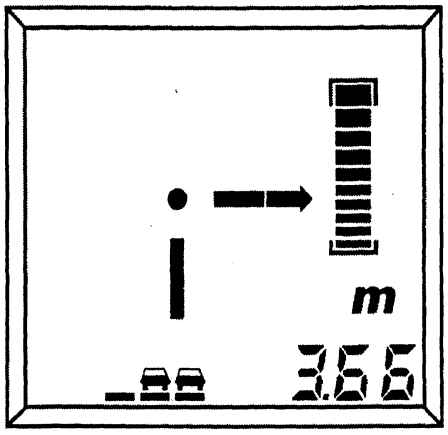
Follow-Main-Road Display



Subjects were asked several questions about the Ali-Scout *follow-main-road* display. They were first asked to identify what information the display (seen at the left) was showing. Surprisingly, only about 80 percent of respondents in each survey correctly identified this display as "continue in the direction you are going." On seven-point scales, subjects were asked to rate the level of difficulty for understanding the graphic, perceived accuracy of guidance, and their overall impression of the display. The scale for rating the level of difficulty in understanding the follow-main-road display was anchored by the labels "very difficult" for one and "very easy" for seven, with a response of four indicating that it was neither difficult nor easy to understand. On average, respondents thought this display was easy to understand (mean static=6.2, mean dynamic=6.2). Accuracy of guidance was rated using a scale anchored by the labels "very inaccurate" for one and "very accurate" for seven. On average, respondents found the system was more accurate than inaccurate (mean static=5.7, mean dynamic=5.4).

Subjects reported their overall impression of the follow-main-road display using a scale anchored by the labels "strongly disliked" for one and "strongly liked" for seven, with a response of four indicating that they neither liked nor disliked the feature. On average, respondents liked the display more than they disliked it, and liked it more during the static phase than the dynamic (mean static=5.6, mean dynamic=5.3; $F(1,149)=6.02$, $p<.05$).

Prepare-Maneuver Display

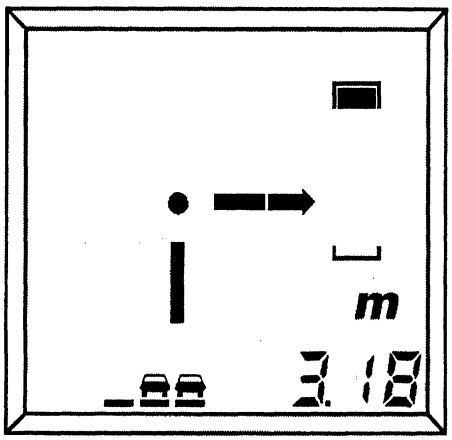


Subjects were asked several questions about the Ali-Scout *prepare-maneuver* display. They were first asked to identify what information the display (seen at the left) is showing. About 90 percent of respondents correctly identified the correct response, "Move into the right lanes, you will be turning to the right soon." On seven-point scales, subjects were asked to rate their level of difficulty for understanding the display, the amount of detail, advance warning provided, distraction while driving, perceived accuracy of guidance, and their overall impression. The scale for rating the level of difficulty in understanding prepare-maneuver information was anchored by the labels "very difficult" for one and "very easy" for seven, with a response of four indicating that it was neither difficult nor easy to understand. On average, respondents thought this display was easy to understand (mean static=6.3, mean dynamic=6.2). Amount of detail shown was anchored by "insufficient" for one and "sufficient" for seven. On average, respondents reported they thought the display was sufficient (mean static=6.3, mean dynamic=6.1). The extent to which adequate warning for the maneuver was provided was anchored by the labels "not enough" for one and "too much" for seven, with a response of four indicating the warning provided was about right. On average, respondents reported they thought the warning was about right (mean static=4.1, mean dynamic=4.2).

Distraction while driving was rated using a scale anchored by the labels "very distracting" for one and "not at all distracting" for seven. On average, respondents found this display was not distracting (mean static=5.7, mean dynamic=5.6). Accuracy of guidance was rated using a scale anchored by the labels "very inaccurate" for one and "very accurate" for seven. On average, respondents found the system was more accurate than inaccurate (mean static=5.5, mean dynamic=5.4). Subjects reported their overall

impression of the prepare-maneuver display using a scale anchored by the labels "strongly disliked" for one and "strongly liked" for seven, with a response of four indicating that they neither liked nor disliked the feature. On average, respondents liked the display more than they disliked it, and liked it more during the static than the dynamic phase (mean static=5.6, mean dynamic=5.3; $F(1,149)=6.02$, $p<.05$).

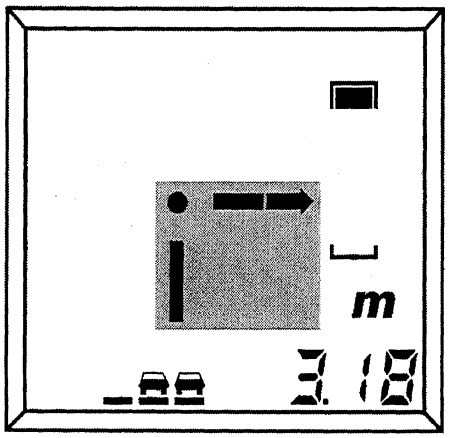
Execute-Maneuver Display



Subjects were asked several questions about the Ali-Scout *execute-maneuver* display. They were first asked to identify what information the display (seen at the left) is showing. Over 90 percent of respondents correctly identified the correct response, "Move into the right lanes, you will be turning to the right in 3.18 miles." On seven-point scales, subjects were asked to rate their level of difficulty for understanding the display, the amount of detail, advance warning provided, distraction while driving, perceived accuracy of guidance, and their overall impression. The scale for rating the level of difficulty in understanding the execute-maneuver information was anchored by the labels "very difficult" for one and "very easy" for seven, with a response of four indicating that it was neither difficult nor easy to understand. On average, respondents thought this display was easy to understand (mean static=6.3, mean dynamic=6.2). Amount of detail shown was anchored by "insufficient" for one and "sufficient" for seven. On average, respondents reported they thought the display was sufficient, and more so during the static than the dynamic phase (mean static=6.3, mean dynamic=6.1; $F(1,145)=5.41$, $p<.05$). The extent to which adequate warning for the maneuver was provided was also anchored by "insufficient" for one and "sufficient" for seven. On average, respondents reported they thought the warning was sufficient (mean static=5.6, mean dynamic=5.5).

Distraction while driving was rated using a scale anchored by the labels "very distracting" for one and "not at all distracting" for seven. On average, respondents found this display was not distracting (mean static=5.9, mean dynamic=5.7). Accuracy of guidance was rated using a scale anchored by the labels "very inaccurate" for one and "very accurate" for seven. On average, respondents found the system was more accurate than inaccurate (mean static=5.6, mean dynamic=5.5). Subjects reported their overall impression of the execute-maneuver display using a scale anchored by the labels "strongly disliked" for one and "strongly liked" for seven, with a response of four indicating that they neither liked nor disliked the feature. On average, respondents liked the display more than they disliked it (mean static=5.6, mean dynamic=5.5).

Turn-Arrow Display

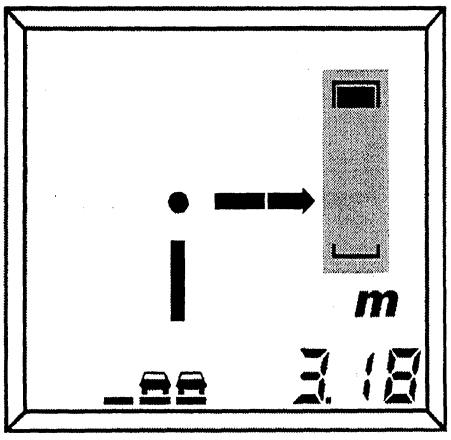


Subjects were asked several questions about the Ali-Scout turn-arrow display. On seven-point scales, subjects were asked to rate their level of difficulty for understanding the display, the amount of detail, advance warning provided, distraction while driving, perceived accuracy of guidance, and their overall impression. The scale for rating the level of difficulty in understanding the turn-arrow display was anchored by the labels "very difficult" for one and "very easy" for seven, with a response of four indicating that it was neither difficult nor easy to understand. On average, respondents thought this display was easy to understand, and more so during the static than the dynamic phase (mean static=6.5, mean dynamic=6.3; $F(1,145)=5.02$, $p<.05$). Amount of detail shown was anchored by "insufficient" for one and "sufficient" for seven. On average, respondents reported they thought the display was sufficient (mean static=6.4, mean dynamic=6.3). The extent to which adequate warning for the maneuver was provided was also anchored by "not enough" for one and "too much" for seven, with a response of four indicating that it was about right. On average,

respondents reported they thought the warning was about right, leaning more toward too much during the dynamic than static phase (mean static=4.4, mean dynamic=4.6; $F(1,145)=3.98$, $p<.05$).

Distraction while driving was rated using a scale anchored by the labels "very distracting" for one and "not at all distracting" for seven. On average, respondents found this display was not distracting (mean static=6.0, mean dynamic=5.9). Accuracy of guidance was rated using a scale anchored by the labels "very inaccurate" for one and "very accurate" for seven. On average, respondents found the system was more accurate than inaccurate (mean static=5.7, mean dynamic=5.5). Subjects reported their overall impression of the turn arrow display using a scale anchored by the labels "strongly disliked" for one and "strongly liked" for seven, with a response of four indicating that they neither liked nor disliked the feature. On average, respondents liked the display more than they disliked it, and liked it more during the static than the dynamic phase (mean static=5.7, mean dynamic=5.5; $F(1,145)=6.25$, $p<.05$).

Countdown-Bar Display

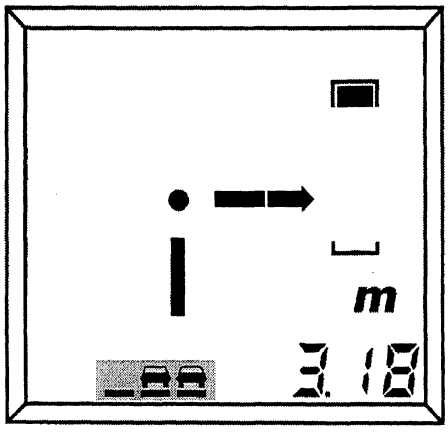


Subjects were asked several questions about the Ali-Scout countdown-bar display. They were first asked to identify what information the display (seen at the left) is showing. Over 90 percent of respondents correctly identified the correct response, "Relative distance to right turn." On seven-point scales, subjects were asked to rate their level of difficulty for understanding the display, the amount of detail, advance warning provided, distraction while driving, perceived accuracy of guidance, and their overall impression. The scale for rating the level of difficulty in understanding the countdown bar display was anchored by the labels "very difficult" for one and "very easy" for seven, with a response of four indicating

that it was neither difficult nor easy to understand. On average, respondents thought this display was easy to understand, and more so during the static than dynamic phase (mean static=6.4, mean dynamic=6.2; $F(1,142)=4.72$, $p<.05$). Amount of detail shown was anchored by "insufficient" for one and "sufficient" for seven. On average, respondents reported they thought the display was sufficient, and more so during the static than dynamic phase (mean static=6.2, mean dynamic=6.0; $F(1,144)=4.37$, $p<.05$). The extent to which adequate warning for the maneuver was provided was also anchored by "not enough" for one and "too much" for seven, with a response of four indicating that it was about right. On average, respondents reported they thought the warning was about right (mean static=4.4, mean dynamic=4.6).

Distraction while driving was rated using a scale anchored by the labels "very distracting" for one and "not at all distracting" for seven. On average, respondents found this display was not distracting (mean static=5.9, mean dynamic=5.7). Accuracy of guidance was rated using a scale anchored by the labels "very inaccurate" for one and "very accurate" for seven. On average, respondents found the system was more accurate than inaccurate (mean static=5.7, mean dynamic=5.5). Subjects reported their overall impression of the countdown-bar display using a scale anchored by the labels "strongly disliked" for one and "strongly liked" for seven, with a response of four indicating that they neither liked nor disliked the feature. On average, respondents liked the display more than they disliked it (mean static=5.7, mean dynamic=5.5).

Lane-Recommendation Display

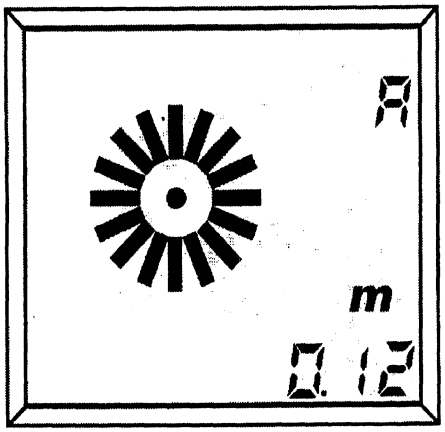


Subjects were asked several questions about the Ali-Scout lane-recommendation display. They were first asked to identify what information the display (seen at the left) is showing. About 90 percent of respondents correctly identified the correct response, "Move into one of the two right lanes." On

seven-point scales, subjects were asked to rate their level of difficulty for understanding the display, the amount of detail, advance warning provided, distraction while driving, perceived accuracy of guidance, and their overall impression. The scale for rating the level of difficulty in understanding the countdown bar display was anchored by the labels "very difficult" for one and "very easy" for seven, with a response of four indicating that it was neither difficult nor easy to understand. On average, respondents thought this display was easy to understand, and more so during the static than dynamic phase (mean static=6.3, mean dynamic=6.1; $F(1,143)=5.79$, $p<.05$). Amount of detail shown was anchored by "insufficient" for one and "sufficient" for seven. On average, respondents reported they thought the display was sufficient, and more so during the static than dynamic phase (mean static=6.3, mean dynamic=6.0; $F(1,144)=4.86$, $p<.05$). The extent to which adequate warning for the maneuver was provided was also anchored by "not enough" for one and "too much" for seven, with a response of four indicating that it was about right. On average, respondents reported they thought the warning was about right (mean static=4.5, mean dynamic=4.5).

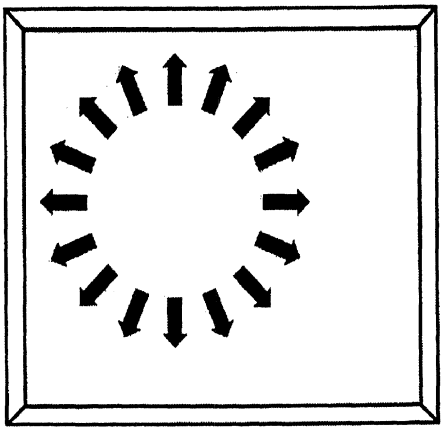
Distraction while driving was rated using a scale anchored by the labels "very distracting" for one and "not at all distracting" for seven. On average, respondents found this display was not distracting (mean static=5.8, mean dynamic=5.7). Accuracy of guidance was rated using a scale anchored by the labels "very inaccurate" for one and "very accurate" for seven. On average, respondents found the system was more accurate than inaccurate, and more so during the dynamic than static phase (mean static=5.7, mean dynamic=6.0; $F(1,162)=5.39$, $p<.05$). Subjects reported their overall impression of the countdown bar display using a scale anchored by the labels "strongly disliked" for one and "strongly liked" for seven, with a response of four indicating that they neither liked nor disliked the feature. On average, respondents liked the display more than they disliked it (mean static=5.6, mean dynamic=5.5).

Left-Recommended-Route Display



Subjects were asked several questions about the Ali-Scout left-recommended-route display. On seven-point scales, subjects were asked to rate their level of difficulty for understanding the display, distraction while driving, and their overall impression. The scale for rating the level of difficulty in understanding the countdown bar display was anchored by the labels "very difficult" for one and "very easy" for seven, with a response of four indicating that it was neither difficult nor easy to understand. On average, respondents thought this display was easy to understand (mean static=5.4, mean dynamic=5.4). Distraction while driving was rated using a scale anchored by the labels "very distracting" for one and "not at all distracting" for seven. On average, respondents found this display was not distracting (mean static=5.6, mean dynamic=5.5). Subjects reported their overall impression of the left-recommended-route display using a scale anchored by the labels "strongly disliked" for one and "strongly liked" for seven, with a response of four indicating that they neither liked nor disliked the feature. On average, respondents liked the display a bit more than they disliked it (mean static=4.7, mean dynamic=4.6).

Destination-Zone Display



Subjects were asked several questions about the Ali-Scout destination-zone display and the switch over into autonomous mode from guided mode when a destination zone is reached. On seven-point scales, subjects were asked to rate their level of difficulty for understanding the display, accuracy of guidance, their overall impression, how often they were close enough

to their final destination, and how often they had trouble finding their final destination. The scale for rating the level of difficulty in understanding the destination-zone display was anchored by the labels "very difficult" for one and "very easy" for seven, with a response of four indicating that it was neither difficult nor easy to understand. On average, respondents thought this display was easy to understand (mean static=5.6, mean dynamic=5.4). Accuracy of guidance was rated using a scale anchored by the labels "very inaccurate" for one and "very accurate" for seven, with a response of four indicating it was neither accurate nor inaccurate. On average, respondents found this display was more accurate than not, and more so during the static than dynamic phase (mean static=4.8, mean dynamic=4.3; $F(1,148)=8.93$, $p<.01$). Subjects reported their overall impression of the switch over to autonomous mode in destination-zone display using a scale anchored by the labels "strongly disliked" for one and "strongly liked" for seven, with a response of four indicating that they neither liked nor disliked the feature. On average, respondents liked the display a bit more than they disliked it, and more so during the static than dynamic phase (mean static=4.8, mean dynamic=4.4; $F(1,148)=8.17$, $p<.01$).

Subjects were asked to rate how often they thought the switch over to autonomous mode in destination-zone display came up when they were close enough to their final destination using a scale anchored by the labels "always" for one, and "never" for seven. On average, respondents thought they got close to their destination some of the time (mean static=3.7, mean dynamic=3.9). Subjects were asked to rate how often they had difficulty finding their final destination after entering the destination zone using a scale anchored by the labels "always had difficulty" for one, and "never had difficulty" for seven. On average, respondents thought they had little difficulty finding their final destination after entering the destination zone, and more so during the static than dynamic phase (mean static=5.5, mean dynamic=5.1; $F(1,146)=11.65$, $p<.001$).

The Ali-Scout system as a whole

Visual Display

Subjects were asked several questions about the Ali-Scout visual display as a whole. On seven-point scales, subjects were asked to rate their level of difficulty for reading the display while driving and while the vehicle was stationary, their level of difficulty for understanding the display, the sufficiency of advanced warning provided by the visual display, the accuracy of guidance provided, whether they believed the display helped them find their way, their overall impression of the visual displays, and their level of distraction for the visual display at night, during the day, during heavy traffic, during light traffic, on the freeway, and on non-freeways. The scale for rating the level of difficulty for reading and understanding the visual display was anchored by the labels "very difficult" for one and "very easy" for seven, with a response of four indicating that it was neither difficult nor easy to understand. On average, respondents reported little difficulty reading the display when the vehicle was moving, (mean static=6.0, mean dynamic=5.7; $F(1,148)=7.74$, $p<.05$) or when stationary (mean static=6.5, mean dynamic=6.2; $F(1,144)=14.22$, $p<.001$), but reported more difficulty during the dynamic phase whether moving or stationary. Further, respondents reported that they thought the visual display was easy to understand (mean static=6.0, mean dynamic=5.9).

Sufficiency of advance warning provided was anchored by "insufficient" for one and "sufficient" for seven. On average, respondents reported they thought the display was sufficient (mean static=5.1, mean dynamic=5.1). The extent to which guidance was accurate was also anchored by "insufficient" for one and "sufficient" for seven. On average, respondents reported they thought the guidance was sufficient (mean static=4.7, mean dynamic=4.7). Subjects judged whether the display helped them find their destinations using a scale anchored "always" for one and "never" for seven. On average, respondents reported the visual displays helped them find their destinations about one-half the time (mean static=4.0, mean dynamic=4.2). Subjects reported their overall impression of the visual display using a scale anchored by the labels "strongly disliked" for one and "strongly liked" for seven, with a response of four indicating that they neither liked nor

disliked the display. On average, respondents reported they liked the visual displays (mean static=4.9, mean dynamic=4.7).

Level of distraction was judged using a scale anchored by the labels "very distracting" for one and "not at all distracting" for seven. The results showed:

(1) the visual display was not distracting at night (mean static=6.0, mean dynamic=5.9),

(2) the display was not distracting during daylight hours, and was less distracting in daylight during the static than dynamic phase (mean static=6.3, mean dynamic=6.1; $F(1,148)=8.29$, $p<.05$),

(3) it was not distracting in heavy traffic (mean static=6.0, mean dynamic=5.8),

(4) it was not distracting in light traffic, and less distracting here during the static than dynamic phase (mean static=6.3, mean dynamic=6.1; $F(1,145)=10.66$, $p<.05$),

(5) it was not distracting on freeways, and less distracting here during the static than dynamic phase (mean static=6.3, mean dynamic=6.1; $F(1,145)=7.92$, $p<.01$),

(6) it was not distracting on non-freeway roads, and less distracting here during the static than dynamic phase (mean static=6.2, mean dynamic=5.9; $F(1,145)=9.19$, $p<.01$).

Voice Guidance

Subjects were asked several questions about the Ali-Scout voice guidance feature. On seven-point scales, subjects were asked to rate their level of difficulty for hearing and understanding the voice commands, the sufficiency of information and advanced warning, their level of distraction with the voice commands, whether they liked the sound of the voice, and their overall impression. The scale for rating the level of difficulty in hearing and understanding the voice guidance commands was anchored by the labels "very difficult" for one and "very easy" for seven, with a response of four indicating that it was neither difficult nor easy to understand. On average, respondents found the voice guidance easy to hear, (mean static=6.4, mean dynamic=6.1; $F(1,149)=8.64$, $p<.01$), and understand (mean static=6.3, mean dynamic=6.0; $F(1,147)=7.09$, $p<.01$), and easier during the static than dynamic period. Subjects judged the sufficiency of information and advance warning

using a scale anchored by the labels "insufficient" for one and "sufficient" for seven, with a response of four indicating neither sufficient nor insufficient. Respondents found the amount of information to be sufficient (mean static=5.8, mean dynamic=5.9), and the advance warning to be sufficient (mean static=5.3, mean dynamic=5.3).

Level of distraction was judged using a scale anchored by the labels "very distracting" for one and "not at all distracting" for seven. Respondents found the voice guidance to be not too distracting, and less distracting during the static phase than the dynamic phase (mean static=5.9, mean dynamic=5.5; $F(1,147)=9.85$, $p<.01$). Subjects rated how much they liked the sound of the voice in voice guidance using a scale anchored by the labels "disliked" for one and "liked" for seven. Respondents liked the sound of the voice (mean static=4.8, mean dynamic=4.7), and liked the voice guidance overall, and liked it more during the static than dynamic phase (mean static=5.5, mean dynamic=5.2; $F(1,145)=8.47$, $p<.01$).

Ali-Scout Recommendations to Turn

Subjects were asked several questions about the turn recommendations (visual and voice) of Ali-Scout. Using seven-point scales, subjects judged their frequency of following the recommendation, their reasons for not following the recommendations, and their preference for voice and/or visual recommendations. Subjects judged the frequency of following turn recommendations using a scale anchored by the labels "never" for one and "always" for seven, with a response of four indicating they followed the recommendations about one-half of the time. The study showed that, on average, respondents followed Ali-Scout's turn advice more often than not (mean static=4.7, mean dynamic=4.6).

Subjects were then asked to consider all the times they did not follow a recommendation and indicate how frequently various factors were part of their reason not to follow the turn recommendation using seven-points scales anchored by the labels "never" for one and "always" for seven, with a response of four indicating the factor was involved about one-half of the time.

Respondents reported:

(1) often knowing alternate routes (mean static=5.3, mean dynamic=5.3),

(2) seldom thinking the recommendation would take them away from their destination (mean static=3.7, mean dynamic=3.9),

(3) occasionally needing to make stops (mean static=3.8, mean dynamic=4.0),

(4) seldom thinking the recommendation would lead them into congestion, but they report more problems with congestion during the dynamic than static period (mean static=3.5, mean dynamic=3.8; $F(1,140)=5.06$, $p<.05$),

(5) seldom was the recommendation provided too late (mean static=2.4, mean dynamic=2.6),

(6) seldom was a turn recommended that was not clear to the driver, but this occurred more often during the dynamic than static phase (mean static=2.1, mean dynamic=2.4; $F(1,136)=3.95$, $p<.05$), and

(7) seldom not turning because their was insufficient room to merge safely, but did so more often during the dynamic than static phase (mean static=2.6, mean dynamic=3.1; $F(1,139)=11.39$, $p<.01$).

Modality for Route Guidance Recommendations

Subjects were asked to think about the visual and voice displays in Ali-Scout and indicate their preferred means for getting Ali-Scout recommendations. The results showed that over 80 percent of respondents to each survey reported they preferred receiving route guidance using voice and visual information together.

Achievement of System Wide Goals

Subjects were asked several questions about what impact they thought the Ali-Scout system had on travel time, congestion, safety, and fuel consumption in the Oakland County Study Area. Subjects judged these items using seven-point scales anchored with the labels "reduced" for one and "increased" for seven. Subjects reported they thought Ali-Scout would decrease travel time (mean static=3.7, mean dynamic=3.7), not affect congestion

(mean static=4.1, mean dynamic=4.0), not affect driving safety (mean static=4.2, mean dynamic=4.0), and not affect fuel consumption (mean static=4.0, mean dynamic=4.0).

Ali-Scout Characteristics

Subjects were asked several questions about the characteristics of Ali-Scout as a whole. On seven-point scales, subjects were asked to rate their level of difficulty for learning and understanding Ali-Scout, the sufficiency of information and advance warning, the accuracy of guidance, whether they thought Ali-Scout helped them find their way, reduced their travel time and functioned properly, level of distraction, and their overall impression. The scale for rating the level of difficulty in learning and understanding Ali-Scout was anchored by the labels "very difficult" for one and "very easy" for seven, with a response of four indicating that it was neither difficult nor easy to understand. The responses showed that it was easy to learn (mean static=5.2, mean dynamic=5.1), and easy to understand (mean static=5.7, mean dynamic=5.6). Sufficiency of information and advance warning was rated using a scale anchored by the labels "insufficient" for one and "sufficient" for seven. Respondents reported that sufficient information was given (mean static=5.7, mean dynamic=5.6), and sufficient warning was provided (mean static=5.0, mean dynamic=5.2). Subjects judged accuracy of guidance using a scale anchored by the labels “very inaccurate” for one and “very accurate” for seven, with a response of four indicating neutrality for the question. Subjects reported guidance was accurate (mean static=4.6, mean dynamic=4.5).

Subjects judged whether the Ali-Scout system as a whole helped them find destinations, reduced their travel time and functioned properly by indicating their level of agreement with the statements: "the Ali-Scout system as a whole helped me find my way"; “the Ali-Scout system as a whole helped reduce my travel time”; and “the Ali-Scout system as a whole functioned properly.” These scales were anchored by the labels "strongly disagree" for one and "strongly agree" for seven, with four indicating neither agreement nor disagreement. Results show that respondents reported Ali-Scout may have helped some find their way, and more so during the static than dynamic phase (mean static=4.4, mean

dynamic=4.2; F(1,148)=4.09, p<.05), did little to reduce travel time (mean static=3.8, mean dynamic=3.7), but seemed to function properly more often than not, and better during the static than dynamic phase (mean static=4.9, mean dynamic=4.6; F(1,145)=6.65, p<.05).

Subjects also judged the level of distraction caused by the Ali-Scout system using a scale anchored by the labels "very distracting" for one and "not at all distracting" for seven. Respondents reported the system was not distracting, and less so during the static phase (mean static=5.9, mean dynamic=5.5; F(1,149)=8.97, p<.01). Finally, subjects reported their overall impression of the Ali-Scout system as a whole using a scale anchored by the labels "strongly disliked" for one and "strongly liked" for seven, with a response of four indicating neutrality. Respondents reported they liked the system, but liked it more under static than dynamic operation (mean static=5.0, mean dynamic=4.5; F(1,147)=18.62, p<.0001).

Beacon Coverage

Subjects were asked about their thoughts on the size of the area in which beacons were installed and the spacing between beacons in the beaconized area. Subjects judged the size of the beacon coverage area using a seven-point scale anchored by the labels "coverage area too small" for one and "coverage area too large" for seven. Subjects reported the coverage area is too small (mean static=1.9, mean dynamic=2.2; F(1,145)=7.05, p<.01), beacons are too far apart (mean static=2.8, mean dynamic=3.0; F(1,143)=5.83, p<.05), and seldom noticed that beacons did not function properly, but respondents reported it did not function properly more often during the dynamic than static phase (mean static=2.8, mean dynamic=3.2; F(1,143)=8.69, p<.01).

Use of the Ali-Scout System

Use by Type of Trip

Subjects were asked to rate how frequently they used Ali-Scout for their work commute, other work-related trips, recreational trips, and other personal trips. Respondents often used Ali-Scout for commuting to work, but less during the dynamic than static phase (mean static=5.5, mean dynamic=5.1; $F(1,142)=4.92$, $p<.05$), used the system less often for work-related trips (mean static=4.2, mean dynamic=4.3), used the system occasionally for recreational trips, but significantly less frequently during the second (i.e., dynamic) time period (mean static=5.0, mean dynamic=4.1; $F(1,144)=25.22$, $p<.0001$), and a similar result is seen for system use for other personal trips (mean static=5.1, mean dynamic=4.4; $F(1,144)=18.03$, $p<.0001$).

Ali-Scout Driving Compared to Driving Without Ali-Scout

Subjects answered several questions in which they were asked to rate the extent to which Ali-Scout changed their attention to various driving-related factors, changed various emotions while driving, and changed the frequency of certain driving experiences. Subjects judged their change in attention to various driving-related factors using a seven-point scale anchored by the labels "much less attention" for one and "much more attention" for seven, with a response of four indicating "no change." Results showed that, compared to driving without Ali-Scout, respondents reported little change in their attention to traffic conditions (mean static=4.5, mean dynamic=4.5), traffic signals (mean static=4.3, mean dynamic=4.3), road signs (mean static=4.1, mean dynamic=4.1), street signs (mean static=4.1, mean dynamic=4.2), street addresses (mean static=4.0, mean dynamic=4.2), speedometer (mean static=4.0, mean dynamic=4.0), mirrors (mean static=4.0, mean dynamic=4.0, or fuel gauge (mean static=4.0, mean dynamic=4.0).

Subjects judged the extent to which Ali-Scout, as compared to their driving without Ali-Scout, changed the frequency of various feelings using a seven-point scale anchored by the labels "always less with Ali-Scout" for one and "always more with Ali-Scout" for seven, with a response of four indicating no change. Results showed that when compared

to non-Ali-Scout driving, respondents were about as nervous (mean static=3.7, mean dynamic=3.7), confident (mean static=4.4, mean dynamic=4.4), confused (mean static=3.8, mean dynamic=3.6), attentive (mean static=4.4, mean dynamic=4.3), safe (mean static=4.2, mean dynamic=4.1), stressed (mean static=3.7, mean dynamic=3.7), relaxed (mean static=4.2, mean dynamic=4.0; $F(1,139)$, $p<.05$), and frustrated (mean static=3.8, mean dynamic=3.9).

Subjects judged the extent to which Ali-Scout, as compared to their driving without Ali-Scout, changed the frequency of various driving experiences using a seven-point scale anchored by the labels "always less with Ali-Scout" for one and "always more with Ali-Scout" for seven, with a response of four indicating no change. Results showed that when compared to non-Ali-Scout driving, there was little change in crashes (mean static=3.6, mean dynamic=3.5), missed stop sign (mean static=3.6, mean dynamic=3.6), ran red light (mean static=3.6, mean dynamic=3.6), ran off road (mean static=3.6, mean dynamic=3.6), and crossed lane marker (mean static=3.7, mean dynamic=3.6).

Crashes and Near Crashes

Subjects were asked if they were involved in any crashes while driving an Ali-Scout equipped vehicle. Four respondents in survey one (static) and eight respondents in survey two (dynamic) indicated that they had been involved in a crash. Those people reporting crashes were then asked to rate the extent to which they thought Ali-Scout was a factor in the crash using a scale anchored by the labels "not at all a factor" for one, "contributing factor" for two, and "the main factor" for three. In all but one case the Ali-Scout system was reported to have been "not at all a factor."

Subjects were also asked if they were involved in any near crashes while driving an Ali-Scout equipped vehicle. Twenty-four respondents in survey one (static) and 23 respondents in survey two (dynamic) indicated that they had been involved in a near-crash. Those people reporting near-crashes were then asked to rate the extent to which they thought Ali-Scout was a factor in the crash using a scale anchored by the labels "not at all

a factor" for one, "contributing factor" for two, and "the main factor" for three. In two-thirds of cases from survey one and over 80 percent of cases from survey two the Ali-Scout system was reported to have been "not at all a factor."

Valuation

Information Source

Respondents were asked to rate sources of route-guidance information for assistance in reaching destinations using seven-point scales anchored with "poor" for one and "excellent" for seven. Respondents thought a standard road map was good, and liked it better during the dynamic than static phase (mean static=5.6, mean dynamic=5.8; $F(1,152)=5.22$, $p<.05$), verbal directions from a passenger were less desirable (mean static=4.6, mean dynamic=4.8), verbal directions from other people still less desirable (mean static=3.9, mean dynamic=4.1), written directions were more desirable than verbal directions (mean static=5.1, mean dynamic=5.3), and about the same as the Ali-Scout rating which dropped from survey one (static) to survey two (dynamic; mean static=5.2, mean dynamic=4.8; $F(1,153)=13.59$, $p<.001$).

Respondents were asked to respond to an identical set of route-guidance information sources except this time they were asked to use a scale with anchor labels 1 for "definitely would not like" and 7 for "definitely would like" to use the given source of information driving to an unfamiliar area. Respondents wanted a standard road map (mean static=6.0, mean dynamic=6.2), verbal directions from a passenger were less desirable, but more desired during the dynamic than static phase (mean static=4.9, mean dynamic=5.2; $F(1,151)=10.47$, $p<.01$), verbal directions from other people still less desirable, but also more desirable during the dynamic than static phase (mean static=4.2, mean dynamic=4.5; $F(1,148)=5.09$, $p<.05$), written directions were more desirable than verbal directions (mean static=5.6, mean dynamic=5.7), and about the same as the Ali-Scout rating which dropped from survey one (static) to survey two (dynamic; mean static=5.8, mean dynamic=5.3; $F(1,152)=15.56$, $p<.0001$).

Willingness to Pay

Subjects were asked several questions related to the valuation of the Ali-Scout system. For the purpose of answering the questions, subjects were asked to assume that the Ali-Scout system was available nationwide. Given this scenario, subjects rated how useful they thought the Ali-Scout system would be for commuting trips, out-of-town vacations, out-of-town business trips, and local driving using a seven-point scale anchored with the labels "not at all useful" for one and "extremely useful" for seven. The results showed that respondents thought the system would be more useful than not for the commuting trip (mean static=5.0, mean dynamic=4.8), out of town vacation trips, but less so during the dynamic than static phase (mean static=6.3, mean dynamic=5.9; $F(1,154)=11.59$, $p<.001$), out-of-town business trips, but less so during the dynamic than static phase (mean static=6.4, mean dynamic=6.1; $F(1,152)=13.26$, $p<.001$), and less useful for local driving (mean static=4.6, mean dynamic=4.3).

Next, subjects were asked to assume that they had $2,500 to spend on options for a new vehicle. They then were presented with a list of options and costs for the options and asked to identify which options they would purchase with their $2,500. Table 1 shows

the percentage of people in each survey who indicated that they would purchase each option. The options are listed in order of frequency of selection.

Table 1: A Summary of the Percentage of People who Indicated Which Vehicle Options They Would Buy if They Had $2,500 to Spend on Options for a New Car.

Vehicle Option	Survey one	Survey two
Air Conditioning ($650)	95.9	91.4
Driver Side Air Bag ($400)	83.6	70.5
Power Locks ($250)	77.1	72.7
Power Windows ($300)	74.7	75.4
Passenger Side Air Bag ($400)	63.7	54.9
Power Mirror ($100)	50.2	45.5
CD Player ($250)	46.1	42.9
Cassette Player ($150)	41.0	42.1
Cellular Phone ($500)	30.7	33.1
Ali-Scout ($500)	29.7	21.7
Car Alarm ($300)	25.6	30.7
Sunroof ($500)	14.7	18.2
Integrated Child Safety Seat ($150)	13.7	15.4
Trip Computer ($1,000)	3.4	9.7

As a further attempt to judge subjects' valuation of Ali-Scout, subjects were asked to indicate how much they would be willing to pay for the Ali-Scout as an option on a new car. Table 2 categorizes the responses as a function of price range and percentage of people willing to pay some price within that range. As shown in Table 2, the modal response in both surveys showed a willingness to pay somewhere between $200 and $399 for the Ali-Scout device, and a willingness to pay more during the static than dynamic

phase (mean static=$285, mean dynamic=$202; F(1,151)=23.64, p<.0001).

Table 2: Dollars Willing to Pay For Ali-Scout Option on New Car.

Dollars	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
0	57	20.9	54	31.4
1-49	1	0.4	2	1.2
50-199	26	9.5	26	15.1
200-299	58	21.2	28	16.3
300-399	51	18.7	29	16.9
400-499	17	6.2	11	6.4
500-599	50	18.3	19	11.0
600-699	3	1.1	0	0.0
700-799	3	1.1	1	0.6
800-899	1	0.4	1	0.6
900-999	1	0.4	0	0.0
1000 or more	5	1.8	1	0.6

Subjects were then asked to indicate how much they would be willing to pay for the Ali-Scout system to be added to their present vehicle. Average cost respondents reported they would be willing to pay to add the system to their present car was $214 (survey one — static), and $141 (survey two — dynamic; F(1,145)=18.35, p<.0001). Subjects were asked to indicate how much they would be willing to pay for Ali-Scout as an option on a rental car per day. On average, respondents were willing to pay $6 (survey one — static) and $14 (survey two — dynamic).

Who Should Pay for Ali-Scout Infrastructure?

In order to function properly, Ali-Scout requires two additional components to support the in-vehicle equipment. These out-of-vehicle components, which comprise the

system's infrastructure, are roadside beacons for communication between Ali-Scout and the traffic operations center and a central computer to receive information, track traffic congestion, calculate Ali-Scout routes, and transmit these routes. Installation, operation, and maintenance of this infrastructure will require financial investment above the price of the in-vehicle Ali-Scout system. Subjects were asked to indicate who they thought should pay these costs by selecting from a list of entities all those who they thought should pay at least part of the cost. Table 4 shows the percentage of people who selected each entity in order of the most frequently selected entity and survey number.

Table 3: Summary of Who Respondents Thought Should Pay For the Ali-Scout Infrastructure, at Least in Part.

Entity	Survey one	Survey two
Individual Users of Ali-Scout	57.7	56.3
Commercial Users of Ali-Scout	54.6	57.4
Manufacturers of Products like Ali-Scout	52.2	50.6
State Government	54.3	48.3
Federal Government	41.6	33.5
County Government	45.7	42.1
City Government	31.7	30.1
Car Manufacturers	18.4	15.3
Other Entities	8.6	1.1

One option for funding the installation, operation, and maintenance of the Ali-Scout infrastructure is to charge users a monthly user fee for service. Subjects were asked to indicate how much they would be willing to pay per month for such a service. On average, respondents were willing to pay about $11 per month (mean static=11.4, mean dynamic=11.4).

Importance of Potential Benefits from Ali-Scout-Like Systems

Subjects were asked to consider the operation of systems similar to Ali-Scout and rate the importance of such systems on fuel savings, reduced air pollution, traffic safety, reduced highway congestion, accurate route guidance, diverting traffic into neighborhoods, ease of use, and rapid updates of road conditions. Subjects rated these factors using a seven-point scale anchored by the labels "not at all important" for one and "extremely important" for seven, with a response of four indicating that it is neither important nor unimportant. The results are shown in Table 4 as a function of the factor (in order of importance) and survey number. The values shown are the percentages of respondents who indicated that they thought the factor had some level of importance (i.e., they responded either five, six, or seven).

Table 4: Percentage of Subjects Assigning Some Level of Importance to Various Factors Related to Ali-Scout-Like Systems

Factor	Survey One	Survey Two
Quick Updates of Road Conditions	96.5	92.3
Ease of Use	91.3	85.3
Accuracy of Route Guidance	95.8	87.0
Relief of Highway Congestion	94.0	86.1
Traffic Safety	64.1	68.1
Traffic Diverted into Neighborhoods	50.6	49.7
Reduced Air Pollution	43.9	42.9
Fuel Savings	41.1	42.6

SUMMARY AND DISCUSSION

Overall

The purpose of the User Perceptions and Behaviors evaluation component of FAST-TRAC was to understand how users perceive and value the in-vehicle navigation system, Ali-Scout, and to determine how the system was used in the Oakland County study area. Specifically, we wanted to know if the system helps drivers navigate and reduce their travel times, whether drivers like all or parts of the system, their beliefs about the costs and benefits of the system, whether they would purchase the navigation system, and if so, what they would be willing to pay for it. This study also assessed differential effects on perceived Ali-Scout system utility of providing "static" contrasted with "dynamic" route-guidance advice to users. The study took place between July 1995 and December 1996 and included a total of 369 subjects with Ali-Scout units installed in vehicles they were driving. After driving an Ali-Scout equipped vehicle, subjects were twice asked to complete a survey, the first one month after Ali-Scout installation (during the time period covered by "static" route-guidance advice), and the second after four months of "dynamic" route-guidance advice.

Nearly three-quarters of the 369 subjects who participated were male. Subjects were, on average, more affluent and more highly educated than the norm in Michigan. About one-third of the respondents did not live in the Oakland County study area, but of those who lived in the study area, most were long-term residents who drove in the study area five times a week or more and considered themselves to be very familiar with the road network in the area.

Nearly every respondent was employed full-time and 77 percent worked in the study area. About 30 percent reported that in the past three months they drove four or more routes to work or school. About two-thirds of subjects reported they listen to traffic reports during their morning commute. Subjects reported experiencing a wide range of traffic congestion, but reported infrequent encounters with traffic incidents. About 62 percent

reported they encountered traffic incidents once a month or less. Nearly every respondent, however, expressed a willingness to divert to avoid an incident or congestion. Finally, over two-thirds of the subjects believed that there was considerable congestion in the Oakland County study area during the morning commute hours.

In general, study participants reported traveling out of town frequently. Respondents reported that they were, in general, confident when wayfinding in unfamiliar environments. Well over half of the respondents reported using maps, at most, only once every two to six months. Only about 4 percent of the respondents had used an electronic guidance system before using the Ali-Scout device. In addition, subjects considered themselves to be familiar and comfortable with technology.

Ali-Scout Operation and Displays

All but five subjects reported using Ali-Scout at least some of the time. The most common reason for not using Ali-Scout was that the person "knew the way" and thus did not need to use the system. People used the map and current location methods for destination entry most often, but reported that the current-location and points-of-interest methods were the easiest to use. Subjects reported using a destination stored in memory about two-thirds of the time. In general, subjects reported the system keyboard was easy to learn, was not difficult to use, and that they liked the keyboard.

The meaning of the autonomous-mode display was correctly identified by nearly every subject. Subjects reported this display was easy to understand, not distracting, accurate, that it functioned properly, and that they liked the display.

The meaning of the follow-main-road display was correctly identified by only 80 percent of subjects, a surprisingly low proportion given that this display is probably the most often seen. Subjects reported they found this display to be easy to understand, accurate, and that they liked the display.

The meaning of the prepare maneuver-display was correctly identified by about 90 percent of respondents. Subjects reported they thought this display was easy to understand, sufficiently detailed, that the warning for the upcoming maneuver was about right, that the display was not distracting, that the display was accurate, and that they liked this feature.

The meaning of the execute-maneuver display was correctly identified by over 90 percent of respondents. Subjects reported they thought this display was easy to understand, sufficiently detailed, that the warning for the maneuver was about right, that the display was not distracting, that the display was accurate, and that they liked this feature.

When asked about the turn-arrow display, subjects reported they thought the display was easy to understand, sufficiently detailed, that adequate warning for the maneuver was given, that the display was not distracting, was accurate, and that they liked the display.

The meaning of the countdown-bar display was correctly identified by over 90 percent of respondents. Subjects reported they thought the display was easy to understand, sufficiently detailed, that the warning given was about right, that the display was not distracting, that it was accurate, and that they liked the display.

The meaning of the lane-recommendation display was correctly identified by over 90 percent of respondents. Subjects reported they thought the display was easy to understand, sufficiently detailed, that the warning given was about right, that the display was not distracting, that it was accurate, and that they liked the display.

Subjects reported they thought the left-recommended-route and destination-zone displays were easy to understand, that they were not distracting, and that they liked the displays. Respondents thought the destination zone display appeared when they were

close to their actual destination only some of the time, but that they had little difficulty finding their final destination after entering the destination zone.

Ali-Scout System as a Whole

In general, subjects reported having little difficulty reading the visual display when moving or when stationary, that the visual display was easy to understand, that advance warning of maneuvers was sufficient, that the guidance was sufficient, that the visual display helped them find their destination, that the visual displays were not distracting in any of the queried situations, and that they liked the visual display overall.

In general, subjects reported having little difficulty hearing and understanding the voice commands, that the amount of guidance information was sufficient, that the voice commands were not distracting, that they liked the sound of the voice, and that they liked the voice commands overall. When asked their preference for how they would get route-guidance advice, over 80 percent of respondents reported they wanted both visual and voice information together.

With regard to Ali-Scout turn recommendations, respondents reported they followed the turn advice more often than not. When they did not take the turn advice, they most often reported knowing alternate routes. Respondents reported ignoring turn advice seldom because they thought the advice would take them the wrong way, that they had to make stops, that the advice would lead them into congestion, that the advice came too late, that the advice was unclear, or that there was insufficient room to merge.

Respondents reported they found the Ali-Scout system in general to be easy to learn and understand, that sufficient information and warning for upcoming maneuvers was given, that guidance was accurate. When asked how the Ali-Scout system helped them, subjects reported that it seemed to function properly more often than not, that it helped some to find their way, was not distracting, but did little to reduce travel time. When asked about system level impacts that Ali-Scout might have, subjects reported they thought that

Ali-Scout would decrease travel time, but would not affect congestion, driving safety, or fuel consumption. Subjects' impressions of the Ali-Scout system overall was that they liked it, but that the beacon area was too small and the beacons were spaced too far apart.

Use of the Ali-Scout System

Subjects used Ali-Scout often for commuting to work, but less so for work-related trips, recreational trips, and other personal trips. In comparison to driving without Ali-Scout, subjects reported that driving with Ali-Scout did not change their attention to traffic conditions, traffic signals, road signs, street signs, street addresses, the speedometer, mirrors, or fuel gauge. Similarly, subjects were no more or less nervous, confident, confused, attentive, safe, stressed, relaxed, or frustrated when driving with Ali-Scout than without. Subjects reported they were no more or less likely to get into a crash, miss a stop sign, run a red light, run off the road, or cross a lane marker when using Ali-Scout than without.

Valuation

Respondents rated standard maps best for route-guidance information, followed by written directions and Ali-Scout, followed by verbal directions from a passenger, then verbal directions from other people. Respondents reported that Ali-Scout would be more useful than not for commuting trips, out-of-town vacation trips, out-of-town business trips, and local driving. Given a list of options and $2,500 to spend for optional equipment, less than one-third of respondents indicated they would select Ali-Scout as an option at a cost of $500. Respondents reported they would be willing to pay between $200 to $399 to add Ali-Scout as an option to a new car, about $150 to $200 to add the system to their present car, and about $6 to $14 per day additional for the system on a rental car.

When asked who should be responsible for the infrastructure costs associated with Ali-Scout, more than half of respondents reported that the users and manufacturers of products like Ali-Scout should bear the cost. About half or fewer respondents reported they thought the infrastructure costs should be paid by government agencies, car

manufacturers or others. When asked what level of service or user fee they would be willing to pay to support the infrastructure, respondents reported they would be willing to pay about $11 per month.

Over 90 percent of respondents reported that the most important features of systems like Ali-Scout were quick updates of road conditions, ease of use, accuracy of route guidance, and relief of highway congestion. About two-thirds of respondents reported that traffic safety was an important feature, followed by concern about traffic diverted into neighborhoods, reduced air pollution, and fuel savings.

Static versus Dynamic Route Guidance

There were relatively few statistically significant differences in subject responses to the survey items between the static and dynamic periods. When there were statistically significant differences they were typically quite small, and thus should be interpreted cautiously.

Subjects reported:

- using the Ali-Scout system less frequently during the dynamic guidance period than the static guidance period
- using a destination stored in memory more often during the static than the dynamic period
- less difficulty using the keyboard during the static guidance period
- the keyboard worked more often during the static guidance period
- the keyboard was liked more during the static guidance period
- the follow-main-road display was liked more during the static guidance period
- the prepare-maneuver display was liked more during the static guidance period
- the detail provided by the execute-maneuver display was found to be better during the static guidance period

- the turn-arrow display was easier to understand and was liked more during the static guidance period
- the countdown-bar display was easier to understand and the amount of detail provided was more sufficient during the static guidance period
- the lane-recommendation display was easier to understand and the amount of detail was more sufficient during the static guidance period
- the lane-recommendation display was more accurate during the dynamic guidance period
- the destination-zone display was more accurate and better liked during the static guidance period
- they had less difficulty finding their final destination during the static guidance period
- the visual display was less difficult to read and was less distracting during the static guidance period
- the voice commands were less difficult to hear and understand and were liked more during the static guidance period
- more problems with congestion and interpreting turn instructions during the dynamic guidance period
- Ali-Scout seemed to function properly more often, be less distracting, help drivers find their way better, and was liked more during the static guidance period
- Ali-Scout was used more often for commutes to work, recreational trips, and other personal trips during the static guidance period
- the value of Ali-Scout as an information source for route guidance was higher during the static guidance period
- Ali-Scout was less useful for trips of any type during the dynamic guidance period
- the price they would pay for Ali-Scout was lower in each scenario during the dynamic guidance period.

Taken at face value, the preceding results would suggest that people were not very satisfied with the performance of the Ali-Scout system under dynamic route guidance. As mentioned earlier, we must keep in mind that the differences detected were generally quite small, and may have little practical meaning. For example, note that voice commands were reported to be liked significantly more during the static than the dynamic period. Because there was no difference in the voice command function between the static and dynamic periods, there is little reason to believe that the observed statistical difference in perceptions is directly related to static versus dynamic operation, but rather is probably related to some other factor. Results such as the one just illustrated may also be due in part to the fact that the results from the survey conducted during the dynamic guidance period are confounded with the amount of time subjects had been exposed to the Ali-Scout system. This is due in large part to practical constraints placed on the study by the nature and timing of the infrastructure implementation, and the limited size of the area in which the Ali-Scout system worked. Put simply, we cannot separate out effects that may be due to true differences in opinions about how the system operated in static versus dynamic mode from those effects caused by time or exposure to the system.

In conclusion, it would appear that users like and find value for in-vehicle, route-guidance systems like Ali-Scout. Not surprisingly, results show that the most desired system attributes are that the system update current road conditions quickly, that it be easy to use, and that it be accurate. Respondents reported that Ali-Scout fit the bill for ease of use and accuracy, but there seemed to be general disappointment about the ability of Ali-Scout to update current road conditions quickly.

Appendix A

Employers Contacted and Recruitment Materials

Employers Contacted:

- Chrysler Corporation
- Quasar
- Vultron
- Parke-Davis
- Cardell
- Lectron
- Hi-Tech Mold
- Oakland University
- ITT
- General Motors
- Siemens

YOUR TEST PROGRAM INVITATION

- **Would you be interested in testing an innovative vehicle navigation system (worth over $1000) in your car over the next year or so-- at no cost to you?**

- **Would you be interested in using a high-tech device which directs you to new Oakland County destinations and steers you around traffic tie-ups?**

- **Would you be interested in becoming one of only 800 drivers selected to participate in the first test of such a system anywhere in the U.S.?**

- **Would you be interested in assisting your Road Commission for Oakland County in becoming a national leader in coping with congestion through your participation?**

If yes, we invite you to volunteer to become one of the participants in the FAST-TRAC Operation Field Test program, sponsored by the Road Commission for Oakland County, the Federal Highway Administration and the Michigan Department of Transportation. FAST-TRAC stands for Faster And Safer Travel through Traffic Routing and Advance Controls. FAST-TRAC is a combination of two systems: (1) A computer controlled traffic light system being installed at several hundred intersections; and (2) the ALI-SCOUT car navigation and dynamic route guidance system.

Your personal role would be to help the University of Michigan evaluate the ALI-SCOUT system. ALI-SCOUT routes you to destinations you have selected and programmed within Oakland County. It uses a computer controlled display installed on your instrument panel which may be easier to follow than a map. It also keeps track of traffic tie-ups by communicating with strategically placed roadside beacons. This allows it to direct you around such tie-ups.

We have included the following information in this package:

1. A Fact Sheet of questions and answers which explain more about the program and your prospective involvement.

2. A survey for you to volunteer information about yourself if you are interested in participating in the program.

If you have any further questions about FAST-TRAC or your role, please call Lidia or Dave at the University of Michigan FAST-TRAC project office at (810/619-9271) or e-mail us at *dwe@tdc.umtri.umich.edu*. Thank you.

Oakland County Travel Survey

Please answer the following questions by marking your answers directly on this survey. You will need to refer to the map of Southeast Oakland County in order to answer question six. Please fold the survey as instructed on the back and return.

1. What time of day do you usually start work? *(Check one and fill in your work hours)*

day shift _____ (Hour) : _____ (Min)

evening shift _____ (Hour) : _____ (Min)

night shift _____ (Hour) : _____ (Min)

rotating shift _____ (Hour) : _____ (Min), _____ (Hour) : _____ (Min), _____ (Hour) : _____ (Min)

2. What time do you usually leave home for work? _____ (Hour) : _____ (Min) AM or PM

3. What time do you usually arrive at the parking lot or bus stop at work?

_____ (Hour) : _____ (Min) AM or PM

4. How do you usually get to work? *(Check one)*

- ☐ Drive Alone
- ☐ Carpool
- ☐ Take Transit
- ☐ Other

(If you do not drive your own car to work, please go to Question 11.)

5. How many days do you drive to work each week? _____

6. Within Southeast Oakland County, what roads do you usually take on your way to work?

a. Please write down the names of the roads you take on your most frequently used route to work. Make sure that they are listed in the order in which you drive them to work.

_____

_____

b. Please draw your most frequently used route to work on the map provided on the next page. Please use a colored pen or pencil to mark your route.

Appendix B
Newspaper Advertisement and Articles

Interested in Using a High-Tech Navigation System in Your Car-- at no cost to you?

The University of Michigan Transportation Research Institute is testing an innovative navigation system and is looking for people to volunteer to participate in this test. If you volunteer and are selected you will be asked to:

- ✔ have the system installed in your vehicle for at least one year
- ✔ fill out periodic surveys
- ✔ participate in periodic interviews

Since this is a test, we are looking for people who satisify the following special requirements:

- ✔ have a valid driver's license.
- ✔ live or work in one of the following communities: *Troy, Pontiac, Rochester Hills, Auburn Hills, Bloomfield Hills, or Birmingham.*
- ✔ be over 18 years of age.
- ✔ be sure that you will have your vehicle for the next 18 months.
- ✔ own or lease one of the following vehicles (model year 1990 or newer):
  - ➳ *Chrysler Neon, Caravan, Grand Cherokee, Cirrus, Stratus, Intrepid, Concorde, Vision, or Voyager.*
  - ➳ *Ford Taurus, Escort, or F-Series Truck*
  - ➳ *Mercury Sable*
  - ➳ *General Motors Grand Am, Bonneville, Saturn, C/K Series Truck, Jimmy, Blazer, or S-10 truck.*

If you satisfy these criteria and want to help us evaluate this exciting navigation device, please fill out the reply slip and mail it to the address shown.

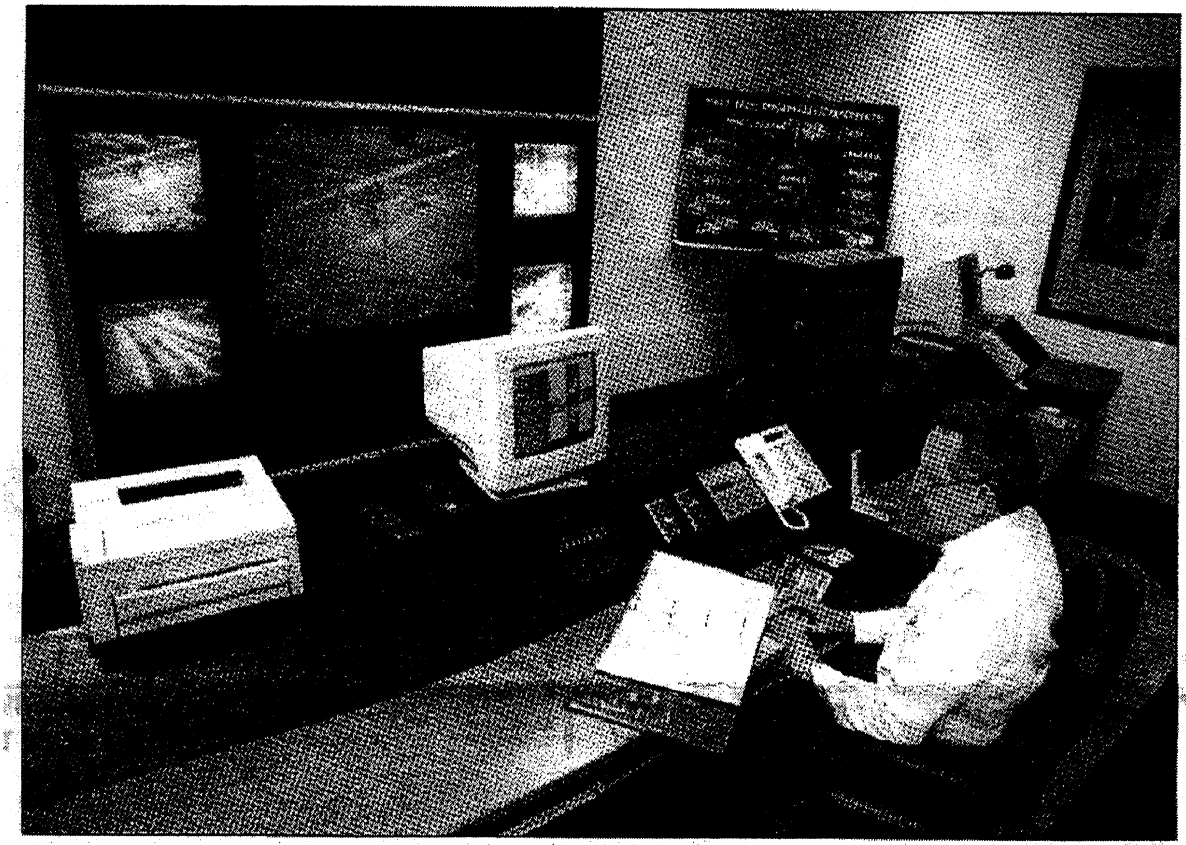
Full Name _____ Age _____ Phone _____

Street Address _____

City _____ State _____ Zip _____

Vehicle make _____ Vehicle model _____ Vehicle year _____

Please mail to:
The University of Michigan Transportation Research Institute
Attn: FAST-TRAC Project Coordinator
Social and Behavioral Analysis Division
2901 Baxter Rd., Ann Arbor, MI 48109-2150



Todd McInturf / The Detroit News

Les Akey monitors traffic at Troy's main intersections from a computer room in the Oakland County roads building.

Just leave the driving to Ali-Scout

Oakland County looks for 700 volunteer drivers to test high-tech traffic info guidance system.

By Bruce L. McLaughlan
The Detroit News

How much would you pay for an expert to guide you through Oakland County's most congested roads? Someone who could tell you which lane to use, and where to turn to reach your destination by the quickest route?

What if it were free?

Oakland County's 3-year-old high-tech traffic management program is looking for 700-plus drivers to help test a traffic information system that rides along in the car, sending and receiving signals from infrared sensors installed at key intersections and along freeways.

Unlike satellite-based navigators, the Ali-Scout system speaks up when it's time to turn — either to reach your destination directly, or detour around trouble spots on your route.

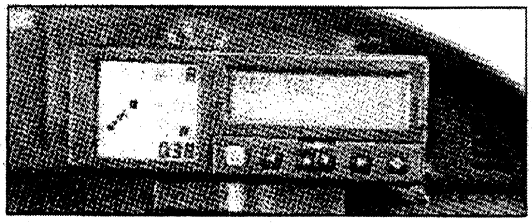
Volunteers must meet certain criteria — they must live or work in an area where sensors are installed, be driving one of a list of late-model cars and be willing to devote 18 months to the test.

The study is the latest development in Oakland County's first-in-the-nation FAST-TRAC system, a federally funded project to test ways of easing congestion without building new roads.

At the same time, the county road commission is broadening the coverage of its computerized intersection monitors. Under the system, which went on-line in 1992, cameras note when cars are waiting at an intersection, and adjust signals based on need.

Les Akey, chief engineer for the project, said the monitors — which use cameras mounted at the intersection — already are in place

Please see PILOT, Page 4B



Sign up for a free trial

To get a free ride with the Ali-Scout computer system — which normally would cost about $500 — you must be a licensed driver over age 18, and live or work in Auburn Hills, Berkley, Birmingham, Bloomfield Hills, Clawson, Ferndale, Hazel Park, Huntington Woods, Madison Heights, Oak Park, Pontiac, Rochester Hills, Royal Oak or Troy.

In addition, you must own or lease one of the following vehicles, 1990 or newer:

- Chrysler: Neon, Caravan, Grand Cherokee, Cirrus, Stratus, Intrepid, Concorde, Vision or Voyager
- Ford: Taurus, Mercury Sable, Escort or F-Series truck
- General Motors: Grand Am, Bonneville, Saturn, C/K truck, Jimmy, Blazer or S-10 truck

To apply, contact:

The University of Michigan Transportation Research Institute

Attn: FAST-TRAC Project Coordinator

Social and Behavioral Analysis Division

2901 Baxter Road

Ann Arbor, Mich. 48109-2150

PILOT

Continued from Page 1B

through Rochester Hills, Auburn Hills, most of Troy and an area around the Silverdome in Pontiac.

New cameras are being installed along Orchard Lake Road from 11 Mile to Long Lake; along Pontiac Trail in Walled Lake; Novi Road from Grand River Avenue to 12 Mile near Twelve Oaks Mall; and in the city of South Lyon.

The road commission will go to the village of Milford for approval next month, and plans to install monitors along Southfield Road in Southfield north to 14 Mile.

The biggest improvements are seen in intersections with computerized left-turn signals: When no cars are waiting, the green turn signal remains dormant. That means straight-through drivers don't sit fuming, waiting for the lights to change.

Separate Ali-Scout roadside controls communicate with any computer-equipped cars that pass by, adjusting their route information based on traffic.

Watching the whole system run is a 10-person department that includes engineers and traffic experts who can change the signals manually if anything goes wrong.

"Being the first in the nation means there's going to be some bumps in the road," said Brian J. Whiston, a spokesman for the department.

Those out where the rubber meets the road — drivers who live and work in the county — have offered suggestions and complaints that get back to the engineers.

"The system is constantly gathering data, which helps us make further improvements as we move toward optimum efficiency," Akey said. "In addition to signal data, we consider and often incorporate things we learn from the motoring public."

Steven Brown, a senior engineer for Siemens Automotive, which makes the Ali-Scout in-car system, said 40 intersections are covered by the interactive infrared sensors now, mainly in Troy. The system is being expanded to Bloomfield Hills, Birmingham and Auburn Hills, with 60 more intersections to be installed by year's end.

Also new on the county's high-tech traffic frontier:

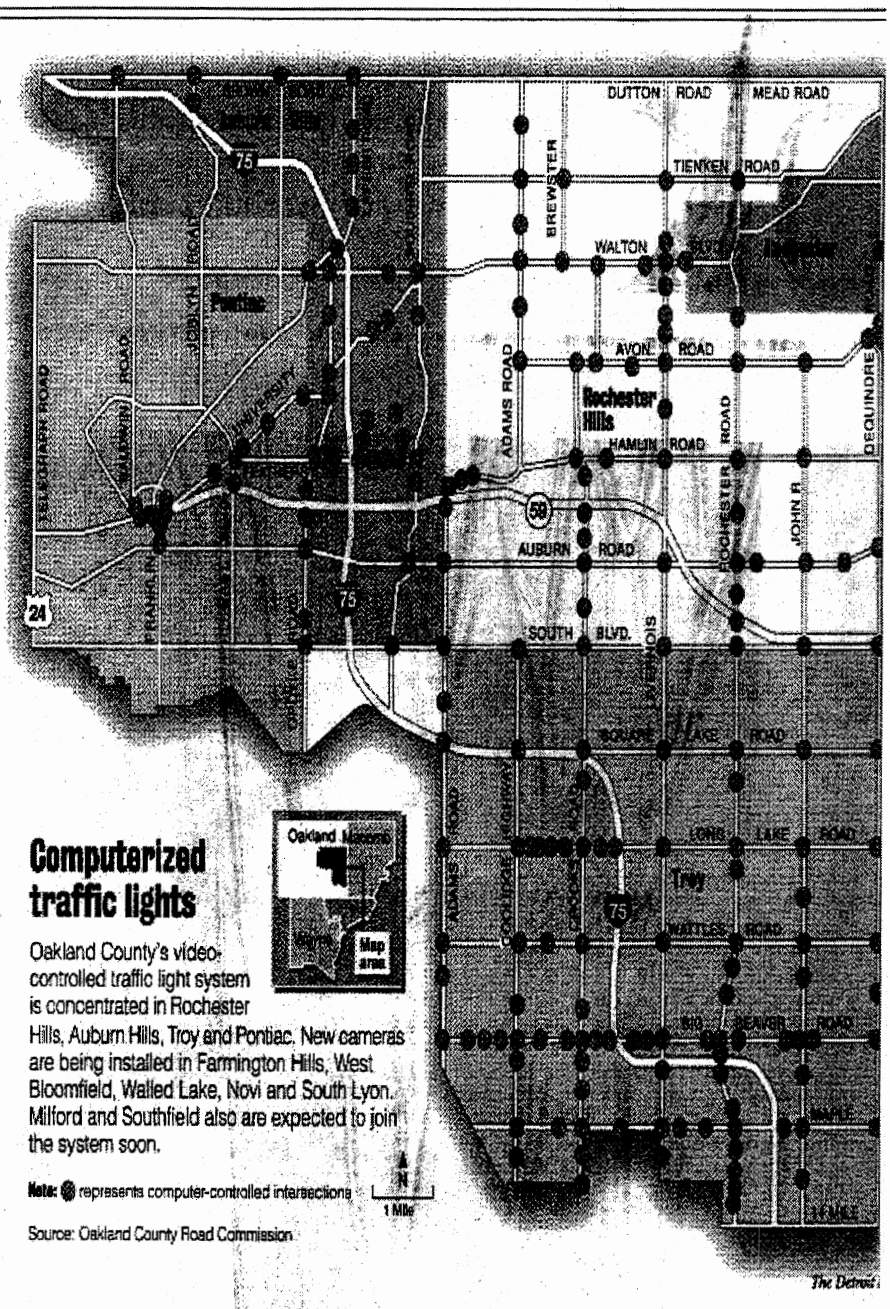
■ Whiston said department officials are meeting Monday with Chrysler executives to pitch a video traffic map that would tell employees at a glance about tie-ups before they leave work to drive home. As many as 500 TV screens at the company's Technology Center could be tapped.

■ A similar traffic map soon may be available on Rochester Hills' cable channel through carrier TCI Cable. It could provide traffic information around-the-clock. "Within minutes of an accident, you're going to know," Whiston said.

■ The in-car computer system is being pitche police and fire vehicles, ambulances, delivery panies and other carriers who have to get the a hurry.

■ The state Department of Transportation is i ested in installing the infrared communication tem along freeway systems beyond Oakland C ty. That could let drivers with Ali-Scout com ers avoid traffic tie-ups statewide.

Taken together, the programs make Oak County "the Silicon Valley of the transport world," Whiston said.



Computerized traffic lights

Oakland County's video-controlled traffic light system is concentrated in Rochester Hills, Auburn Hills, Troy and Pontiac. New cameras are being installed in Farmington Hills, West Bloomfield, Walled Lake, Novi and South Lyon. Milford and Southfield also are expected to join the system soon.

Note: ⊛ represents computer-controlled intersections

Source: Oakland County Road Commission

The Detroit

Drivers needed for U-M testing

By CHARLES CRUMM

Of The Oakland Press

TROY — The University of Michigan is looking for a few good drivers.

Actually, you don't have to be a good driver, but you do have to drive a late-model car regularly through Troy and be willing to test an in-car guidance system for a year.

"We're looking for a few hundred," said Beata Lamparski, who works in planning and development for the Oakland County road commission. "We'll probably sift through several times that."

The Oakland Press/AMY E. POWERS

Brian Whiston of Oakland County road commission displays an in-car guidance device

The U of M Transportation Research Institute is testing how well the Ali-Scout guidance system by Siemens interacts with the road commission's computerized traffic signal system in Troy called SCATS.

The formal evaluation is expected to last a year.

The Siemens device uses information from the signals to guide motorists along the least congested routes. UMTRI hopes to have its volunteers in place by October 1.

Interested volunteers may contact Dave Eby or Lydia Kostyniuk at UMTRI by phone at 313-763-2466 ext. 2150, or by mail at 2901 Baxter Road, Ann Arbor 48109, or by E-mail at dwe@tdc.umtri.umich.edu.

"We're particularly looking for people who travel through Troy north and south," Lamparski said. "We're trying to get enough drivers to test the interaction between SCATS and the route guidance system."

Five years ago, the road commission envisioned a computerized traffic light system and the availability of the guidance system throughout the county.

To date, the computerized traffic signals operate in Troy, Auburn Hills, Rochester Hills, and part of Pontiac as a result of $70 million in federal grants.

The signal system uses cameras that feed information to computers to adjust signals to changes in traffic flow.

It has had mixed success since its installation in Troy two years ago, winning praise from some motorists and condemnation from others.

In the face of numerous complaints, the road commission recently restored a blinking red left turn light at some intersections to reduce backups.

Appendix C
Handoff Materials and Informed Consent

UMTRI The University of Michigan
Transportation Research Institute
2901 Baxter Road, Ann Arbor, Michigan 48109-2150

Welcome to the FAST-TRAC Project

You have been asked to participate as a subject in the FAST-TRAC project taking place in Oakland County, Michigan. FAST-TRAC, which stands for "Faster And Safer Travel through Traffic Routing and Advanced Controls," is one of many projects nationwide where intelligent transportation systems (ITS) are being tested. Your participation will provide us with invaluable information about the various components of FAST-TRAC, particularly the in-vehicle ALI-SCOUT device.

As a participant in FAST-TRAC, you will be driving a vehicle equipped with an experimental device capable of providing you with route guidance to destinations that you enter. As part of our evaluation, you will be asked periodically to fill out a questionnaire. Additionally, you may be asked to participate in one-on-one and/or group interviews. While your participation in these activities is extremely beneficial to the evaluation, your participation in any of the activities is voluntary.

In your "packet" of ALI-SCOUT information you will find a user's manual, a VHS video cassette that provides an introduction to using ALI-SCOUT, and an information sheet. The manual and video should be looked at as soon as is convenient– they contain information that is essential for using ALI-SCOUT. In fact, we recommend that you watch the video with both the user's manual and the ALI-SCOUT Display Unit in front of you.

Before you can be a participant in any of the FAST-TRAC project activities, you must sign the informed consent form. This form simply tells you what we expect from you and what you can expect from us. You should read the form carefully. You are under no obligation to sign the form. However, without your informed consent we cannot include you in the FAST-TRAC project.

If you have any questions regarding the FAST-TRAC project, the activities that are requested of you, the ALI-SCOUT evaluation, or the operation of ALI-SCOUT please contact the FAST-TRAC Coordinator at 810-619-9174 (phone), 313-936-1076 (FAX), or FAST-TRAC@umich.edu (Internet).

UMTRI The University of Michigan
Transportation Research Institute
2901 Baxter Road, Ann Arbor, Michigan 48109-2150

INFORMED CONSENT FORM

Natural Use Study

The purpose of this experiment is determine what you think about and how you use an in-vehicle navigation system called ALI-SCOUT. This system displays navigation information visually and out loud. Your participation involves driving a vehicle equipped with ALI-SCOUT for one year. During this time you will be requested to periodically complete a questionnaire. Additionally, you may be asked to participate in a phone, personal and/or group interview during or after the study. While your participation in all phases of the study will be extremely useful, your participation will be completely voluntary.

The results from this study will be published, but your name will not appear on any of the reports. All information that you give us will be kept strictly confidential.

The requirements for participation are that you have a valid driver license and a willingness to complete the questionnaires and voice your opinion in interviews. If you decide to participate and later do not want to continue, you may withdraw without any penalty.

At no time should you do anything unsafe while driving the car. The in-vehicle system could be distracting, but it is under your control. As such, the only risks associated with this study are those associated with your normal driving.

I have read and understand the information presented above. I understand my participation in this study is entirely voluntary and I may withdraw at any time without a penalty.

Print name: _____

Signature: _____

Date: _____

FAST-TRAC DRIVER PARTICIPATION QUESTIONS

1. *Why is my participation in FAST-TRAC important?*

   You will be one of a very few people in the country who are able to test a system which helps them easily find their way to new destinations without the use of a map and directs them around traffic tie-ups. You will contribute importantly to Oakland County's understanding of the costs and benefits of applying such systems in this County.

2. *What is involved in my participation?*

   You will be expected to:
   - view a video and read an instruction manual to learn how to use the system;
   - bring your car to a nearby service center for a one-day installation of the ALI-SCOUT system;
   - complete a questionnaire once a month, and;
   - possibly participate in a phone or group interview.

3. *How long do I have to participate?*

   We want test drivers who will agree to participate for one year if possible.

4. *What is the ALI-SCOUT system worth? What if it gets stolen?*

   The system to be installed in your car is valued in excess of $1000. The display unit is removable when you leave your car. The device has no value to a non-participant if stolen. Of course, you are not liable if theft should occur.

5. *Will installation of ALI-SCOUT in my car damage it in any way or affect its resale value?*

   The installation will be professionally done and will not damage your car in any way. The installers will provide insurance against any inadvertent damage.

6. *Will I be trained in how to use the system?*

   Part of the evaluation of the system is the ease/difficulty driver subjects have with learning to use the system. You will be given brief instructions, supplemented with a video and instruction manual. The system is easy to learn.

7. *What if I have problems I can't figure out? What if the system quits working?*

   A "help" line will be maintained which will answer any questions you have and assist you in the event your unit might have to be replaced.

8. *Can I let spouse, family members and/or neighbors try the system?*

   Of course.

9. *Must I use the system everyday, for all my trips?*

   Since the central computer is keeping track of all trips to build a central database on travel times within Oakland County, it is to the project's and the County's benefit that you turn it on for all trips. We would like you to use it for all trips, but realize that may not always be convenient.

10. *Will the computer keep a record of my trips and driving behavior?*

    System operation is anonymous. It keeps track of travel in general but does not identify individual drivers.

11. *Is driving with this system safe? Will the installation of the system interfere with the operation of the airbag(s) in my car?*

    The ALI-SCOUT system is designed to require only infrequent, brief glances at its display unit. The display unit installations will be designed specifically for a selected set of car types and installed equipment will not interfere with airbag operation.

12. *Where else is this type of system being tested?*

    FAST-TRAC is one of two current field tests in the U.S. The other test is in Chicago and uses a different type of system designed by Motorola. ALI-SCOUT is also being tested in Germany under the name Euro-Scout.

13. *Can I take the system with me up north or on vacation?*

    The ALI-SCOUT system operates by communicating with a series of roadside beacons which are currently installed only in Southeast Oakland County. Therefore, the system will not operate outside of the beacon area.

14. *If I volunteer, will I be selected to participate?*

    Maybe. Several hundred volunteers will be selected to participate. Selection will be based on the type of car you drive, your route to work, as well as to give a good mix of demographics. If you are selected, you will hear from us by October 1, 1995.

Appendix D
Road Commission for Oakland County FAST-TRAC Newsletters

FAST BULLETIN TRAC

ROAD COMMISSION for OAKLAND COUNTY

Volume 1 Issue 6 December 1995

Letter from the Managing Director

With this latest edition of the FAST-TRAC Bulletin, I welcome new readers who have volunteered their vehicles to help test Siemens Automotive's Ali-Scout system. You are part of a very exciting program that will help shape traffic management in Oakland County and elsewhere.

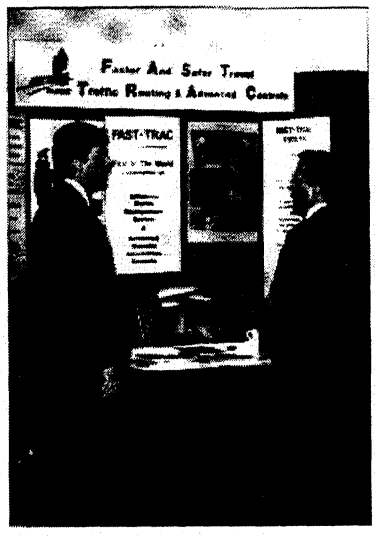
During this Ali-Scout testing period, the Road Commission will publish the FAST-TRAC Bulletin monthly, rather than every other month as in the past. Future editions will feature maps and updates of the Ali-Scout expansion along with useful information and operational tips for motorists with equipped vehicles.

For information about the Ali-Scout program, volunteers may call the driver hotline at (810) 619-9174.

Again, I thank you for your participation.

Sincerely

Brent O. Bair



More than 100 transportation officials and law enforcement professionals from across the nation met at Detroit's Westin Hotel October 5 for the Michigan Incident Management Conference sponsored by Michigan Department of Transportation. The conference showed how systems such as FAST-TRAC lead to safer driving and faster emergency vehicle response.

Milford Village Council says yes to FAST-TRAC

The Milford Village Council has approved a motion to equip six intersections with FAST-TRAC. The Road Commission will begin installing the system in May or June of 1996 at the intersection of Milford Road and General Motors Road.

"Milford has shown a pattern of growth, especially during the past five years," Milford Village Manager Arthur Shufflebarger said. "FAST-TRAC has given Milford the opportunity to make traffic flow more easily and more safely.

"The following additional intersections are scheduled for FAST-TRAC installation during the fall of 1996:

- Highland and Milford
- Main and Huron
- Main and Liberty
- Main and Commerce
- Summit and Commerce

"We are happy to welcome Milford to our quickly growing FAST-TRAC family," Road Commission Managing Director Brent O. Bair said. "We are confident Milford's citizens will experience fewer delays in traffic flow than with existing pre-timed traffic signals."

FAST-TRAC to make evening rush easier for homeward bound Chrysler Tech Center employees

Chrysler Technical Center employees no longer have to depend on sketchy traffic reports to determine the best route home after work. A demonstration project using information from FAST-TRAC will show them where traffic congestion might cause delays.

The project is the result of a partnership among Chrysler Corp., the Road Commission for Oakland County, AWA Traffic Systems America and the Traffic Improvement Association of Oakland County (TIA).

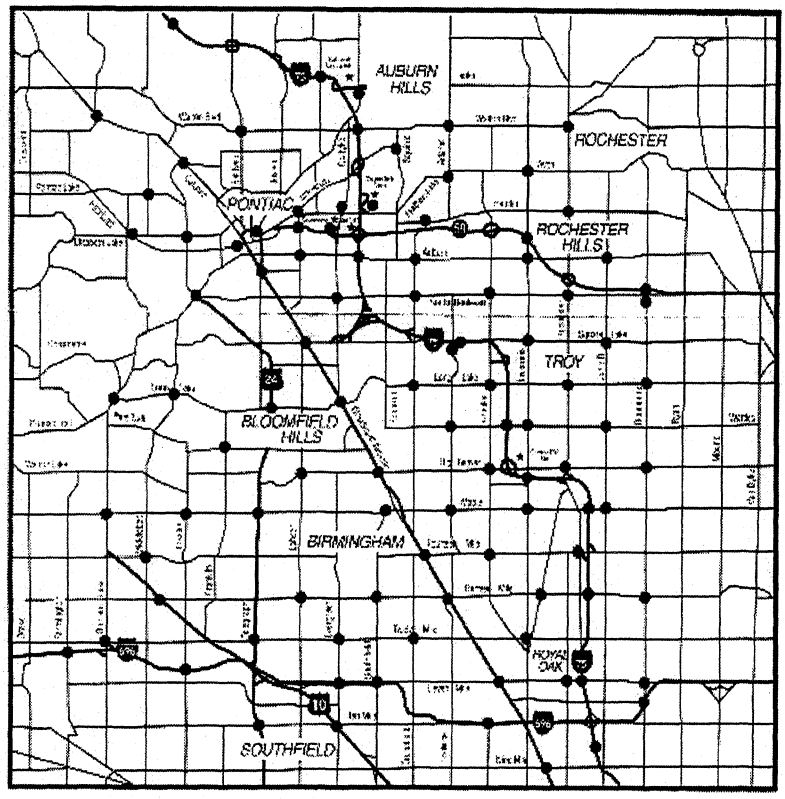
"This is an excellent use of the FAST-TRAC system," Road Commission Managing Director Brent O. Bair said. "We will try similar projects as we discover additional ways to use the wealth of information this technology can provide."

Television monitors throughout the Technical Center will show color-coded street maps of Auburn Hills, Troy and Rochester Hills. Maps will be updated at 15-minute intervals during morning and afternoon drive time.

For more information on this project or to find out about implementing a similar program for your organization, call the Road Commission's Brian Whiston at (810) 528-1451.

Oakland County motorists eager to participate in Ali-Scout expansion

Hundreds of drivers in Oakland County have volunteered to equip their vehicles with Siemens Automotive's Ali-Scout dynamic route guidance system. Still, Siemens, the Road Commission and the University of Michigan seek additional participants for the project's expansion to almost 800 vehicles.



The shaded areas above represent current Ali-Scout beacon locations.

"This is a pivotal phase for of the FAST-TRAC project," said Jim Barbaresso, the Road Commission's director of planning and development. "The larger sample of volunteers will dramatically improve the system's quality and accuracy. This system is only as strong as the data it receives."

Ali-Scout uses an in-vehicle navigational device and roadside infrared beacons to guide motorists to their destinations based on current traffic conditions. By the end of 1995, the system will have about 100 beacons and cover more than 250 square miles throughout southeast Oakland County.

Drivers "tell" Ali-Scout where they wish to go by either entering a code or choosing a pre-programmed destination. An infrared link between the onboard system and roadside beacons exchanges information about vehicle location, speed and traffic conditions. The system determines the best route and transmits it to the driver through voice messages and an in-vehicle display.

Despite tremendous response to print and broadcast media coverage, the University of Michigan seeks motorists who regularly drive streets north of Ten Mile Road through Troy, Rochester Hills and Auburn Hills.

ROAD COMMISSION for OAKLAND COUNTY

31001 Lahser
Beverly Hills, MI 48025

HAPPY HOLIDAYS 480/483 DCR#1 12/15/95

FAST BULLETIN TRAC

ROAD COMMISSION for OAKLAND COUNTY

Volume 2 Issue 1 January 1996

Letter from the Managing Director

Welcome to 1996! With this new year come many exciting benefits from the FAST-TRAC project. As planned, FAST-TRAC is becoming a complete Transportation Information Management System (TIMS). What does this mean for you? Quite a lot.

Ultimately, Oakland County residents and motorists will have direct access to traffic information from their home, the office and their car. Motorists in FAST-TRAC communities will have access to reliable, up-to-the-minute traffic information through cable television, and kiosks at offices and shopping centers.

For example, real-time traffic data from FAST-TRAC will soon be displayed on video monitors throughout the Chrysler Technology Center. Employees will be able to determine the best routes home and avoid traffic congestion and tie-ups.

Rochester Hills residents with cable television will be able to make informed travel decisions by turning to the FAST-TRAC Traffic Channel. Combining maps and text messages, the channel will alert viewers of traffic conditions throughout Oakland County. Other communities can also join the project.

As for safety, FAST-TRAC is continuing to reduce serious accidents. In addition, the system will provide traffic data to local police, fire and EMS units to improve response times for emergencies and traffic accidents.

Although we're very enthusiastic about the advancements of FAST-TRAC, the success of this effort depends on continuous monitoring and evaluation. Please give us your feedback about the system in writing, or call the Traffic Operations Center at (810) 528-1451 with your comments or questions.

Sincerely

Brent O. Bair

Cooperative efforts lead to relocation of FAST-TRAC information hub

Road Commission and Oakland County officials have finalized plans to build an expanded FAST-TRAC Traffic Operations Center (TOC) on the Oakland County campus in Waterford.

"Moving the TOC (which is currently located in Troy) to the Information Technology Building is an ideal arrangement since the TOC is so compatible with the high-tech facility," said Brent O. Bair, managing director of the Road Commission. "This cooperative effort demonstrates what can be accomplished when two governmental agencies work together. As a result, customers will benefit from enhanced services as taxpayer money is used more efficiently."

The new facility will allow the Road Commission to provide transit routes and schedules, along with data on road closures and traffic incidents, to county employees, residents and visitors. FAST-TRAC will also be linked with the Michigan Department of Transportation's (MDOT) freeway operations center.

Argentine officials visit the FAST-TRAC Traffic Operations Center to learn more about the system. Pictured above are Dr. Julio Alak, mayor of La Plata, the of province of Buenos Aires (left), Troy Mayor Jeanne Stine, Argentine State Representative Carlos Bunicatto and Rochester Hills Mayor Ken Snell.

Argentine officials embrace FAST-TRAC

Road Commission officials recently hosted Argentine dignitaries considering implementing a FAST-TRAC-like system in La Plata, the capital and the largest city in the province of Buenos Aires.

Dr. Julio Alak, mayor of La Plata, toured the FAST-TRAC Traffic Operations Center and discussed technical issues with Road Commission engineers.

"We are very pleased with the FAST-TRAC system," said Alak. "It is our hope that future deployment of this system in La Plata will resolve some of our traffic safety and progression problems."

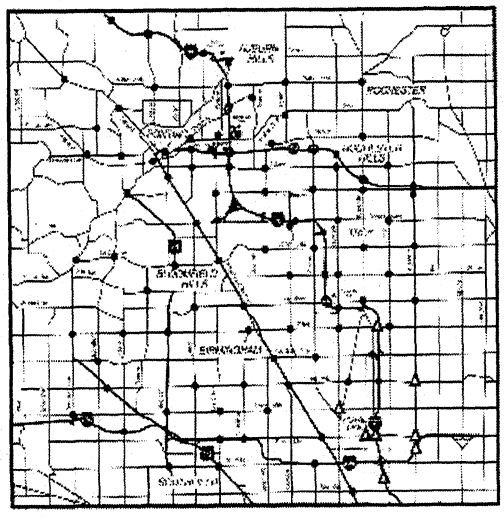
Road Commission Managing Director Brent O. Bair added, "International interest in FAST-TRAC demonstrates the utility of the system. FAST-TRAC offers traffic solutions that are applicable not only here in Oakland County, but around the world as well."

Ali-Scout Update

Some 400 volunteers are presently being guided through Oakland County's road system using the Ali-Scout guidance system with approximately 90 infra-red beacons. Ali-Scout is currently operating in "static" mode. This means the Ali-Scout Central Office Computer is determining route recommendations based on pre-programmed information. "Static" guidance implies that the computer will always supply the same route recommendation for any trips with the same origins and destinations.

Since December 1, 1995, Ali-Scout's Central Office computer has been accumulating "dynamic" information. As a result, the actual driving times of volunteers' vehicles over beacon-to-beacon links has been electronically stored - all anonymously, of course. This trip information is being used to build a more accurate and dynamic database. This is why it is so important to have Ali-Scout-equipped vehicles operating over many routes at all times of the day, and why the trip information of every volunteer is so important.

Once a sufficient initial dynamic database has been accumulated, Ali-Scout will be switched to dynamic operation. Recommendations will then be more accurate and the database will continue to grow.



This map shows the current status of Ali-Scout beacon locations. Ali-Scout is part of the Traveler Information portion of FAST-TRAC.

- *Represent operational Ali-Scout beacon locations.*
- *Represent Ali-Scout beacon locations soon to be operational.*

South Lyon welcomes FAST-TRAC

State-of-the-art technology has arrived in "Small Town America." On December 11, 1995, FAST-TRAC was officially switched on in the city of South Lyon.

"Becoming the first small community to acquire the system, South Lyon has turned to technology to solve its traffic problems and to improve safety for motorists," said Brian Whiston, public relations coordinator for the FAST-TRAC project.

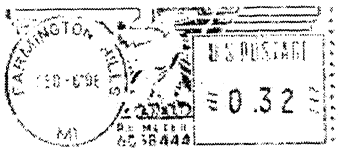
Installed at selected intersections along Pontiac Trail, which runs through South Lyon's downtown area, FAST-TRAC will help reduce the time drivers spend at intersections, minimize traffic tie-ups and improve mobility to and from the city's major events (such as high school football games).

"Prior to deployment of the system, research teams collected reams of traffic data," said Whiston. "This information will be useful for measuring traffic improvements now that the system is fully operational in South Lyon."

The next community scheduled to receive FAST-TRAC is Milford Village. Installation will begin later this year.

ROAD COMMISSION for OAKLAND COUNTY

31001 Lahser
Beverly Hills, MI 48025



FAST-TRAC FAST BULLETIN TRAC
ROAD COMMISSION for OAKLAND COUNTY

Volume 2 Issue 2 June 1996

Letter from the Managing Director

Since becoming operational in June 1992, FAST-TRAC has evolved considerably. To the public, noticeable characteristics include enhanced vehicle detection and FAST-TRAC TV. We can also trace the true success of FAST-TRAC to the work that goes on behind the scenes. In particular, it is the cooperative efforts and the partnerships among public and private entities that contribute so greatly to the success of FAST-TRAC and intelligent transportation in general.

We have seen just how great the contributions of FAST-TRAC partners are at the Sixth Annual ITS-America Conference in April. FAST-TRAC partners joined in Houston to demonstrate their many contributions toward the advancement of Intelligent Transportation System technology. Also, we were excited to be involved in May's ITS Michigan First Annual Meeting and Conference in Detroit. Both conventions made evident Michigan' s role as a national leader in the research, development and deployment of Intelligent Transportation Systems.

Every partner is to be commended for its dedication toward the advancement and continuing enhancement of FAST-TRAC. The system has developed and progressed because of the integration of expertise, experience and foresight from all public and private industry partners. As a result, we celebrate the fourth anniversary of FAST-TRAC with pride that it is a model for success for the worldwide transportation industry.

Sincerely

Brent O. Bair

Fast TRACKS:

- FAST-TRAC has a new look. While FAST-TRAC engineers have been busy advancing the system, our public information strategists have been hard at work designing a new FAST-TRAC logo. The result is illustrated below.

FAST-TRAC

The new FAST-TRAC logo was designed to enhance the identity of the system while representing its advanced technologies more accurately.

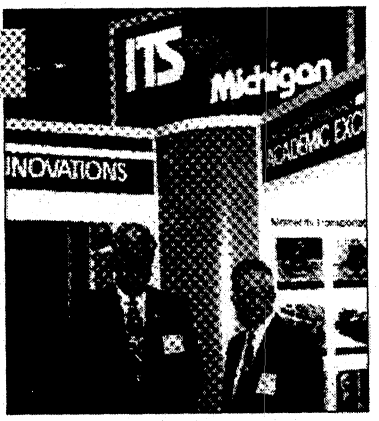
- Jim Barbaresso, planning and development department director and FAST-TRAC manager has joined Rockwell International after 18 years of service to the Road

(continued on back side)

State and National Audiences Get a Look at FAST-TRAC TV

Live demonstrations of FAST-TRAC TV at ITS America's Sixth Annual Meeting in Houston in April and the ITS Michigan First Annual Meeting and Conference in Detroit in May had attendees fascinated with the system's progress. Road Commission officials were on hand to explain to media and other interested parties how FAST-TRAC TV works and how they expect the system to evolve further.

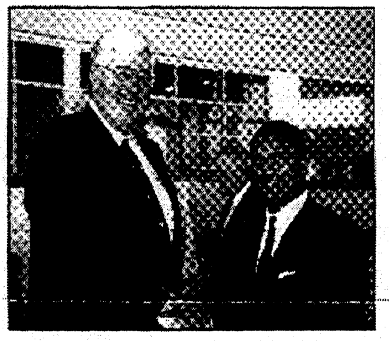
Brent Bair, RCOC managing director, explains FAST-TRAC TV at the ITS Michigan Conference in Detroit.



Bair and Ivy Renga, Chrysler Corporation manager of IVHS programs, greet attendees at the ITS Michigan exhibit at ITS America's Sixth Annual Meeting in Houston.

Tune In, Turn On, Drive [illegible]

Federal Highway Administrator Rodney Slater joined officials from Chrysler Corporation, the Road Commission for Oakland County, the Traffic Improvement Association and AWA Traffic Systems America for the unveiling of FAST-TRAC TV with an April news conference. The traffic channel is designed to ease the commute home for Chrysler Technology Center (CTC) employees, suppliers and visitors.



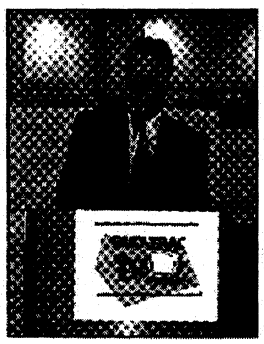
RCOC Managing Director Brent Bair welcomes Federal Highway Administrator Rodney Slater to the FAST-TRAC TV news conference.

FAST-TRAC TV features computer-generated maps and text messages designed to alert employees of traffic tie-ups and slow downs on Oakland County roads. It is broadcast on CTC's Chrysler Employee Network between 3 p.m. and 6 p.m.

"There are nearly 10,000 people working at Chrysler's Technology Center," said Ivy Renga, manager of IVHS programs for Chrysler. "By offering FAST-TRAC TV as a service to employees, we are working to ease their commute home."

Using information from SCATS traffic signals, FAST-TRAC's traffic management system, television monitors throughout the Chrysler Technology Center display color-coded street maps of Pontiac, Auburn Hills, Troy, Rochester Hills and South Lyon. These maps, updated continuously, indicate where traffic congestion might cause delays. Text messages provide traffic information about reported major accidents and conditions on area freeways.

"FAST-TRAC is quickly becoming a complete transportation information management system," said Brent Bair, the Road Commission's managing director. "By year's end, motorists will have direct access to traffic information through cable television, home computers, kiosks located throughout the county, and a variety of other media."



Chrysler IVHS Program Manager Ivy Renga opens the FAST-TRAC TV news conference at the Chrysler Technical Center in Auburn Hills.

Fast Tracks *(continued from front side)*

Commission, Brian Whiston, now assistant to the director for FAST-TRAC operations, will handle media, government and community relations, and oversee daily operations of the Traffic Operations Center. Beata Lamparski, now assistant to the director for FAST-TRAC administration, will be responsible for all FAST-TRAC contracts, budgets and compliance activities.

- ITS Michigan has submitted an application to the Federal Highway Administration for consideration as a participant in the Intelligent Transportation Systems model deployment. The goal of the initiative, dubbed Operation Timesaver, is to reduce the travel time of Americans by at least 15 percent by deploying a complete intelligent transportation infrastructure (ITI) in 75 metropolitan areas.

- Road Commission Managing Director Brent Bair will be program chairman for the ITS America conference being held in Detroit in 1998. He will also serve as vice chairman for the 1997 conference.

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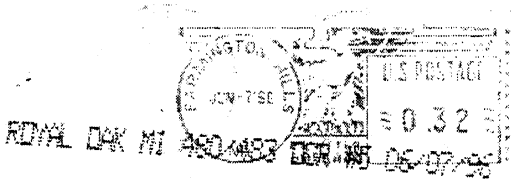
FAST-TRAC: Advanced Technology To Keep You Moving



FAST BULLETIN
FAST-TRAC
ROAD COMMISSION for OAKLAND COUNTY
TRAC

Volume 2 Issue 3 July 1996

Letter from the Managing Director

This past month, a couple of interesting things happened in Troy. While moving the FAST-TRAC system components to a new Troy location, we had a problem with telephone lines. As a result, signals at 31 Troy intersections reverted to pre-timed patterns, the system in place before FAST-TRAC. Our engineers began working to correct the problem immediately, and within a few days the system was up and running properly again.

While the signals were operating according to pre-timed patterns, Road Commission operators fielded call after call from drivers complaining traffic was not moving as well as normal. Although the circumstances were unfortunate, I was pleased to learn how many drivers in Troy realize the benefits of the adaptive system.

A couple of weeks ago, however, Road Commission officials were invited to a meeting of the Troy city council to review the system. Several council members mentioned specific intersections that might be improved. Those sites are under review and, if it is appropriate, we will adjust them. Fortunately, the system gives us the flexibility to do so.

The Road Commission depends on information from the people who use FAST-TRAC to improve the system. Although we have come a long way during the past three years, we are still looking for ways to help Troy and all FAST-TRAC communities get the most from the system.

It is extremely important to hear comments about FAST-TRAC. That is the only way the Road Commission will reach its goal of making ours a traffic management system that works even more effectively.

With these issues in mind, I encourage anyone who has comments about FAST-TRAC to send them to:

FAST-TRAC Comments
C/O Brian Whiston
Road Commission for Oakland County
100 W. Big Beaver Road, Suite 560
Troy, MI 48084

You may also send comments by way of e-mail to 103506,3046 on CompuServe. We will address comments in future editions of FAST-TRAC Bulletin.

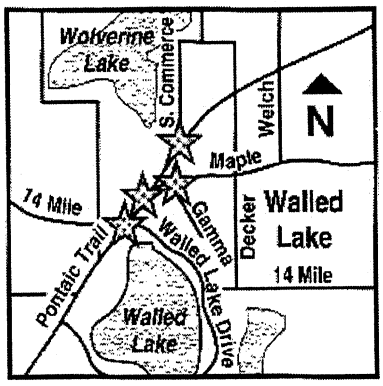
Sincerely,

Brent O. Bair

Next Stop for FAST-TRAC: Walled Lake

The Road Commission is proud to welcome Walled Lake as the latest community to implement FAST-TRAC. The system should be operational by mid-summer. The following Walled Lake intersections will be equipped:

- *Pontiac Trail and Walled Lake Drive*
- *Pontiac Trail and South Commerce*
- *Pontiac Trail and Maple*
- *Gamma and Maple*



FAST TRACKS:

- ***FAST-TRAC spokesman Brian Whiston*** continues to address community groups, businesses and the general public regarding the FAST-TRAC system. Says Whiston, "Reaching out to communities and seeking public response are critical components of our public information and education efforts." To schedule a FAST-TRAC presentation in your community call Brian at (810) 528-1451.

- ***Rochester Hills will be the first city*** to be able to access FAST-TRAC TV through a local cable company. The Road Commission, TCI Cable and the City of Rochester Hills are working to make FAST-TRAC information available to drivers in their homes. Similar programs in other FAST-TRAC communities will follow.

- ***To improve the quality of information FAST-TRAC provides***, the Traffic Improvement Association of Oakland County will provide the Road Commission with two part-time employees to handle traffic information. The new staff members will monitor situations such as traffic incidents and construction and disseminate the information through FAST-TRAC TV. When it is appropriate to do so, engineers will use the data to adjust signal timing.

CAUTION **Road Crews GIVE 'EM A BRAKE!**

Please use caution when entering construction zones, and slow down when you see Road Commission crews working on traffic signals.

FAST-TRAC Goes to Class

Reason tells us it is easier to prevent bad habits than break them after they have formed. Road Commission officials, accordingly, are taking the initiative to teach young drivers basic tips for driving in communities with the FAST-TRAC system.

FAST-TRAC spokesman Brian Whiston addressed more than 500 students in driver education classes June 17 at Troy Athens High School. Road Commission officials are also scheduled to address summer sessions for the Pontiac and Novi school districts.

"Existing driving habits are one of our biggest challenges," Whiston said. "For instance, some drivers try to predict traffic signal patterns. Besides the obvious safety issues involved, we have to teach drivers that FAST-TRAC adapts to them - not the other way around."

Road Commission officials remind drivers that:

- Signals at FAST-TRAC intersections are no longer predictable. Lights change according to traffic flow.
- When turning right on red, yield to oncoming traffic and pedestrians.
- Remember to stop your car behind the thick white line so FAST-TRAC can detect your vehicle.
- During construction season remember to slow down when you see crews working.
- Pedestrians must press the crosswalk button to receive a "Walk" signal.
- When turning left on a blinking red light, come to a complete stop. Finish turning after traffic is clear.

For information about scheduling a Road Commission representative to address a driver education class, please call Rob Elston at (810) 851-3993.

Oakland County's ATIS is nation's largest

With some 500 drivers participating in the ALI-SCOUT guidance system field test, Oakland County is the site of the largest test of an Advanced Traffic Management System (ATMS) in the nation. We sincerely thank each volunteer.

On May 1, the Road Commission upgraded the ALI-SCOUT software and activated the Dynamic Route Guidance function. Each of the 100 infrared guidance beacons is also fully operational.

Since December, ALI-SCOUT has been building a dynamic database of actual driving times between specific beacons. Therefore, routing recommendations more accurately reflect actual traffic conditions.

Please remember it takes time to collect traffic information – especially with 500 test vehicles. Nevertheless, we continue to learn what potential users in Oakland County and beyond – of commercial ATIS systems need and want.

The following Ali-Scout beacons are temporarily out of operation:

- ***Farmington and Interstate 696***
- ***Crooks and Big Beaver***

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FAST-TRAC

FAST-TRAC: Advanced Technology To Keep You Moving

FAST-TRAC FAST BULLETIN TRAC
ROAD COMMISSION for OAKLAND COUNTY

Volume 2 Issue 4 August 1996

Letter from the Managing Director

Last month, during the Olympics, CNN aired a story about Atlanta's intelligent transportation system. The report focused on the tremendous congestion the influx of world travelers had caused on the city's roads.

Traffic backups during the Olympic games were exacerbated by motorists using side streets in an attempt to avoid congestion at intersections. Rather than evading traffic, they found themselves trapped at the first main street they encountered.

After a profile on the gridlock situation, the reporter asked a transportation official about the system. His reply? The system in Atlanta cannot make traffic congestion disappear. Its goal is to manage congestion so traffic can move in the most efficient way possible. The Atlanta system, the official said, was working properly – motorists and the media simply had inaccurate perceptions about that system's capabilities.

We appear to have similar misperceptions in Oakland County.

Population in Oakland County has grown considerably since the beginning of this decade. Also, more motorists from elsewhere are commuting to and through our county than in the past. As a result, traffic volume has increased as well. Like the Atlanta system, FAST-TRAC manages traffic flow by allocating unused green time in response to traffic demands – it cannot dissipate traffic, nor can it add lanes to a road. In, for example, a situation where dozens of cars are merging from two lanes to one, traffic naturally bottlenecks. The only solution to that problem is to widen the roads.

A recent study of FAST-TRAC in South Lyon proves the system is performing as it should. It showed fewer cars stopping for red lights at intersections as well as shorter delays when they do stop. For more information on this research, see the article in this edition of FAST-TRAC bulletin.

FAST-TRAC is working, and we are listening to the motorists who drive the system to continue to improve it. The flexibility of FAST-TRAC is its greatest asset – it made a difference in the area near the Pontiac Silverdome during the World Cup two summers ago. But it did not make the traffic disappear.

Finally, I extend a welcome to Richard Skarritt — the newest member of the Board of Road Commissioners. Richard, who replaces the retiring John E. Olsen, joins board members Rudy D. Lozano and Richard V. Vogt on the Board. Congratulations.

Sincerely,

Brent O. Bair

South Lyon motorists have shorter waits at FAST-TRAC intersections

The first application of an intelligent transportation system in a small town appears to be working out quite nicely. A recent study of two South Lyon intersections equipped with FAST-TRAC technologies has shown decreases in vehicle delay times by as much as 10.5 percent.

Researchers from Michigan State University measured delays at Pontiac

(continued on back side)

Fast-Trac spokesman Brian Whiston describes FAST-TRAC to a driver education class at Troy Athens high school. Road Commission representatives also met with students in Novi, Pontiac and West Bloomfield.

FAST TRACKS:

Attention All-Scout Volunteers!
Because the Road Commission's Traffic Operations Center is moving to Waterford, there will be no dynamic route guidance between August 26 and November 1. Beacons will continue to provide route guidance information based on historical data.

- **FAST-TRAC continues to expand throughout Oakland County.** Future projects include intersections in Southfield, Wixom and Hazel Park. Major corridors will include Haggerty, Livernois and Dequindre.

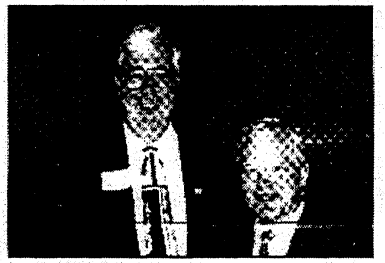
- **WJBK-TV 2 featured FAST-TRAC spokesman Brian Whiston** in a live interview with anchor Rich Fisher during its On the Move segment July 18. The piece profiled FAST-TRAC as a flexible way to manage Oakland County's growing volume of traffic. Also airing stories about the system during July: WXYZ-TV 7 and WKBD-TV 50.

- **In the largest corridor deployment of FAST-TRAC yet,** the Road Commission has begun installing the system along Orchard Lake Road in West Bloomfield and Farmington Hills. More than 22 intersections should be operational this fall.

CAUTION **Road Crews GIVE 'EM A BRAKE!**

Mr. Bair Goes to Washington

Road Commission officials last month demonstrated FAST-TRAC in Washington, D.C., before members of Congress including U.S. Reps. Dale Kildee (D-Flint) and Joe Knollenberg (R-Bloomfield Hills). The invitation came from Friends of



L-R: Brent O. Bair, Managing Director, Road Commission for Oakland County and Rep. Joe Knollenberg (R-Bloomfield Hills).

Intelligent Transportation Society (FITS), a group of public and private organizations committed to educating individuals about how technology can solve many of the nation's transportation problems.

"The meeting was a perfect opportunity to let our representatives see our new technology in action," Road Commission Managing Director Brent O. Bair said. "They were able to see how FAST-TRAC is working in several communities to make a real difference in traffic patterns."

Road Commission officials

L-R: Adam Gluck, Legislative Assistant to Rep. Dale Kildee; Beata Lamparski, Assistant to the Director for FAST-TRAC Administration, Road Commission for Oakland County; Brent Bair, Managing Director, Road Commission for Oakland County; Rep. Dale Kildee (D-Flint); Tom Bulger, President, Friends of Intelligent Transportation Society.

demonstrated SCATS adaptive traffic signals, the Ali-Scout navigational device, the Autoscope vehicle detection device and FAST-TRAC TV.

South Lyon motorists (continued from front)

Trail/9 Mile Road and Pontiac Trail/11 Mile Road before and after the installation of the system in 1995. Average delay at Pontiac Trail/9 Mile Road decreased from 20.54 seconds per vehicle (SPV) to 18.29 spv (10.5 percent); average waiting time at Pontiac Trail/11 Mile Road fell from 20.37 spv to 18.62 spv (8.6 percent).

"Two things are important about this study," said Brian Whiston, the Road Commission for Oakland County's assistant to the director for FAST-TRAC operations. "Fewer vehicles are needing to stop at both FAST-TRAC intersections, and when they do stop, motorists are spending less time waiting at those intersections."

At the Pontiac Trail Road/9 Mile Road intersection, the percentage of southbound vehicles per hour stopped fell from 54.7 percent to 43.2 percent. At Pontiac Trail Road/ 11 Mile Road, the percentage dropped from 45.87 percent stopped vehicles to 41.57 percent.

The results of this study are based on observations of about 1,000 vehicles at each intersection before and after the installation of FAST-TRAC technologies. Researchers reported the changes in traffic patterns to be statistically significant – not the result of random variations in traffic patterns nor vehicular delay.

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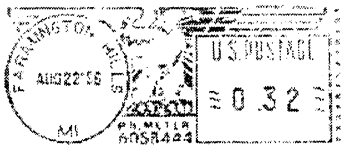


FAST-TRAC FAST BULLETIN ROAD COMMISSION for OAKLAND COUNTY TRAC

Volume 2 Issue 5 September/October 1996

Letter from the Managing Director

The long-awaited and much-publicized opening of Troy's fabulous Somerset Collection took place in August. Along with the anticipated fanfare, store officials had a challenging task of servicing over 385,000 visitors during the first weekend.

We're pleased to announce that Somerset officials Nate Forbes and Tom Miles gave FAST-TRAC a raving thumbs-up. Both said the system did an excellent job in moving over a quarter-million commuters through what could have been a potential traffic nightmare in Troy.

In addition to kudos from Somerset officials, we received strong support of the system from Miles McFee, manager of Novi's Twelve Oaks Mall.

Our goal for FAST-TRAC is to keep traffic throughout Oakland County communities moving at a safe and steady pace. Somerset's successful outcome proved that Troy's investment in FAST-TRAC was certainly worthwhile. So was Novi's.

I still hold firm that FAST-TRAC is an effective system. Of course, like any major initiative, we face scrutiny from community groups and citizens. A primary goal for us at the Road Commission for Oakland County is to educate residents about FAST-TRAC's vast capabilities. With any new computerized technology, there are unforeseen glitches that take time to correct. Let me assure you that we're continually making enhancements so motorists can ultimately get maximum benefits from the system.

As time progresses, many motorists will say FAST-TRAC makes their commute faster and easier, while others will not. For example, those traveling north-south, where traffic is generally heavier, will get greater benefits from the system because that directional traffic flow will allocate more green time. By contrast, those who travel east-west, where traffic is generally lighter, will be allocated less green time.

People who criticize the system often lose sight of the safety issues. FAST-TRAC has done quite well in managing traffic in heavily traveled areas. The number of serious injury accidents is down and streets are safer, thanks to the implementation of SCATS.

The bottom line, FAST-TRAC is a complicated system, but works well to address the needs of Oakland County. Our system will never make traffic challenges go away. It'll just make the situation more manageable.

Sincerely,

Brent O. Bair

FAST-TRAC KEEPS MOVING ALONG

Road Commission for Oakland County workers have been hard at work installing FAST-TRAC at 22 intersections on or near Orchard Lake Road in Farmington Hills, Farmington and West Bloomfield. This is the largest corridor deployment since FAST-TRAC started in 1992. The system is currently operational in Troy, Rochester Hills, Auburn Hills, Pontiac, South Lyon, Walled Lake and Novi. After total completion, the system will manage over 1,000 intersections in Oakland County. Managing Director Brent Bair said motorists traveling along Orchard Lake Road will notice positive changes in the way traffic flows

(continued on back side)

FAST TRACKS

- **The Road Commission's Traffic Operations Center recently moved to Waterford, just as a reminder, there will be no dynamic route guidance through November 1. Roadside beacons will continue to guide motorists using static data.**

- **The FAST-TRAC system became operational** in Walled Lake in August. Road Commission official Brian Whiston was on hand for the kick-off of the system's newest community. So far, preliminary trials of the newest installation have been very positive.

- **FAST-TRAC officials recently attended the Third Annual World Congress on Intelligent Transport Systems** in Orlando, Florida. This year's conference focused on future computer, electronic and communications technologies that will make travel safer, easier and more "intelligent."

- **We're ready to hit the speakers circuit.** Know of a community or business group that would like more information about FAST-TRAC, or would like to tour our new Traffic Operations Center? Give us a call at (810) 858-7250. We would be more than happy to arrange a presentation or visit.

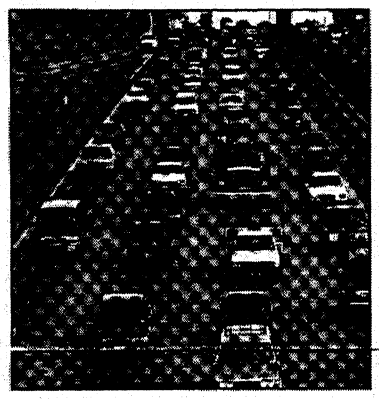
(continued on back side)

CAUTION **Road Crews GIVE 'EM A BRAKE!**

Fast-trac keeps moving

(continued from front)

along that corridor during peak and off-peak hours. FAST-TRAC becomes operational at the following intersections in November:



- Orchard Lake Road & Eleven Mile Road
- Orchard Lake Road & OCC Drive
- Orchard Lake Road & I-696 Eastbound Off Ramp
- Orchard Lake Road & I-696 Westbound Off Ramp
- Orchard Lake Road & Twelve Mile Road
- Orchard Lake Road & Bristol Lane
- Orchard Lake Road & Thirteen Mile Road
- Orchard Lake Road & K-Mart Drive
- Orchard Lake Road & Green Road
- Orchard Lake Road & Fourteen Mile Road
- Orchard Lake Road & Northwestern Highway
- Orchard Lake Road - 1/4 Mile South of Maple Road
- Orchard Lake Road & Boardwalk
- Orchard Lake Road & Maple Road
- Orchard Lake Road & Orchard Mall
- Orchard Lake Road & Nicholas
- Orchard Lake Road & Walnut Lake Road
- Orchard Lake Road & Lone Pine Road
- Orchard Lake Road & Pontiac Trail
- Orchard Lake Road & Long Lake Road
- Northwestern Highway & Fourteen Mile Road
- Maple Road & Daily Road

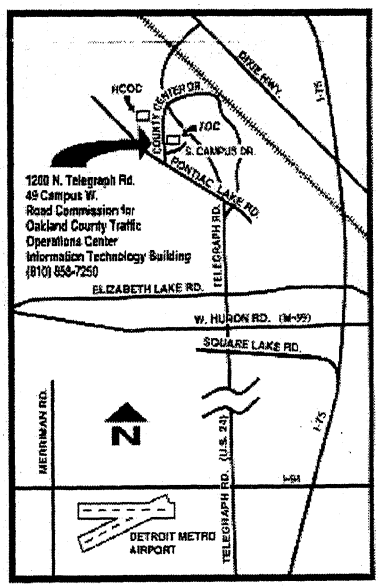
Fast-trac *(continued from front)*

• New, large detailed road maps are available for $1 at Road Commission offices at 2420 Pontiac Lake in Waterford and 31001 Lahser in Beverly Hills. To order a map, call (810) 645-2000, 8 a.m. to 4:45 p.m. weekdays.

Traffic Operations Center — on the move

The Traffic Operation Center of the Road Commission for Oakland County has moved in more than one way. After spending five years in Troy, we packed up and relocated to a new home. Our new address is 1200 N. Telegraph Road in the Information Technology Building, which is part of the Oakland County business complex in Waterford.

The Traffic Operations Center houses the central computers and communications equipment that manages and monitors FAST-TRAC. The new center, which directly links to the County's existing computer infrastructure, is a centralized point to monitor roads, traffic patterns and dispatch emergency crews.



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FAST-TRAC

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Appendix E
Survey Instrument

ALI-SCOUT USER SURVEY

UMTRI

Social and Behavioral Analysis Division

FAST-TRAC PROJECT
OAKLAND COUNTY, MICHIGAN

NAME: _____

DATE: _____

A. Driving and Commuting

In this section, we would like to learn about your familiarity with the Oakland County Study Area, your driving experience, and your commuting patterns.

A1. How many vehicles does your household own or lease?

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 or more

The FAST-TRAC Project, in which you are a participant, has been implemented in the following Oakland County communities: Troy, Rochester Hills, Auburn Hills, Pontiac, Bloomfield Hills, and Birmingham. In the following questions, the Oakland County Study Area refers to these communities.

A2. Do you live in the Oakland County Study Area?

☐ Yes ☐ No

If yes, how long _____ year(s) and _____ month(s)

A3. In the last one month, how regularly did you drive within the Oakland County Study Area? Please circle the most appropriate number on the scale provided.

5 times a week or more						**Once a month or less**
1	2	3	4	5	6	7

A4. How familiar are you with the road network in the Oakland County Study Area?

Very unfamiliar						**Very familiar**
1	2	3	4	5	6	7

A5. Do you currently work in the Oakland County Study Area?

☐ Yes ☐ No

A6. What is the postal zip code of your workplace? _____

A7. Please place an *X* in the box that best describes your **current employment status**.

☐ Employed full-time ☐ Retired

☐ Employed part-time ☐ Unemployed

☐ Full-time student ☐ Other (please specify) _____

*(If you answered **retired, unemployed** or **other** please skip to question **A14.**)*

A8. In the past three months, how many routes have you driven from your home to work (or school)?

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 or more

A9. On average how many minutes does it take you to drive from home to work (or school) during your morning commute?

_____ minutes

A10. During your morning commute, do you generally listen to traffic reports?

☐ Yes ☐ No

A11. In general, how often do you encounter heavy traffic congestion during your morning commute?

5 times a week or more						**Once a month or less**
1	2	3	4	5	6	7

A12. In general, how often do you encounter traffic incidents (like accidents) during your morning commute?

5 times a week or more						**Once a month or less**
1	2	3	4	5	6	7

A13. Are you willing to divert from the route that you normally use to commute from home to work (or school) to avoid congestion or a traffic incident?

☐ Yes ☐ No

A14. In your opinion, what is the general level of traffic congestion in the Oakland County Study Area during your morning commute?

No Congestion						**Heavy Congestion**
1	2	3	4	5	6	7

A15. How many out-of-town vacation trips did you make in the last 12 months?

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 or more

A16. How many out-of-town business trips did you make in the last 12 months?

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 or more

A17. When driving in unfamiliar areas, are you generally confident or unconfident in finding your way around?

Very unconfident						**Very confident**
1	2	3	4	5	6	7

A18. How frequently do you use road maps?

☐ At least once a week ☐ Once a year

☐ 1-3 times per month ☐ Less than once a year

☐ Once every 2-6 months

A19. Prior to your experience with ALI-SCOUT, had you ever before driven a vehicle equipped with an electronic route-guidance system?

☐ Yes ☐ No *(If no, please skip to question **B1.**)*

A20. Which system did you use?

_____

B. Technology

FAST-TRAC represents a test of new technology. In the following questions, we would like to learn about your experience with and interest in new technology.

B1. Indicate the amount of experience that you have had using the following technologies by circling the most appropriate number on the scale provided. On this scale, 1 means none and 7 means extensive experience.

	None						Extensive
a. Personal Computers	1	2	3	4	5	6	7
b. VCRs	1	2	3	4	5	6	7
c. Electronic Pager	1	2	3	4	5	6	7
d. Cellular Car Phones	1	2	3	4	5	6	7
e. Fax Machines	1	2	3	4	5	6	7
f. Pocket Calculator	1	2	3	4	5	6	7

B2. In general, how interested are you in news items concerning new technology?

- ☐ Not at all interested
- ☐ Not very interested
- ☐ Somewhat interested
- ☐ Very interested

B3. In general, do you find new technology easy or difficult to use?

- ☐ Very difficult
- ☐ Somewhat difficult
- ☐ Neither difficult nor easy
- ☐ Somewhat easy
- ☐ Very easy

B4. In general, how enjoyable do you find using new technology?

- ☐ Not at all enjoyable
- ☐ Not very enjoyable
- ☐ Somewhat enjoyable
- ☐ Very enjoyable

C. Ali-Scout Operation and Displays

As a participant in the FAST-TRAC Project, you have been driving a vehicle equipped with an electronic route-guidance system called ALI-SCOUT. In this section, we would like to learn what you think about the different parts of the system.

C1. Since you have had an ALI-SCOUT equipped vehicle, how often have you used ALI-SCOUT for trips in which you drove in the Oakland County Study Area? Please circle the most appropriate number on the scale provided.

Never						**Always**
1	2	3	4	5	6	7

If you did not answer always, we would like to learn why you sometimes did not use the system.

- ☐ Many trips are very short.
- ☐ Too much trouble to program the destinations.
- ☐ I did not think ALI-SCOUT provided the fastest route.
- ☐ I did not think ALI-SCOUT provided accurate guidance.
- ☐ I knew the way.
- ☐ Other, please specify _____

*(If you **never** used ALI-SCOUT, please skip to question **F1**, page 27).*

C2. The ALI-SCOUT system offers several options for entering new destinations. These options are:

Address Ranges--obtaining coordinates by using the address ranges section of the Ali-Scout manual,

Points of Interest--obtaining coordinates by using the points of interest section of the ALI-SCOUT manual,

Map--obtaining coordinates by referring to the map included in the ALI-SCOUT manual, and

Current Location--entering the current location of your vehicle.

We are interested in knowing which of these options you used most often for entering new destinations. Please rank them from one (most frequent) to four (least frequent) according to how often you used them.

Address Ranges _____
Points of Interest _____
Map _____
Current Location _____

C3. ALI-SCOUT stores up to 80 destinations in memory. Of all the trips that you took with ALI-SCOUT, how often did you select a destination from ALI-SCOUT's memory? Please circle the most appropriate point on the scale below.

0% 50% 100%

|_____|_____|_____|_____|_____|_____|_____|_____|_____|_____|

C4. Entering and Selecting Destinations

We also are interested in knowing how easy or difficult you found each method of entering and selecting destinations. Please rate each of the five methods by circling the most appropriate number on the scales provided. *(If you did not use a particular method, then place an X in the box.)*

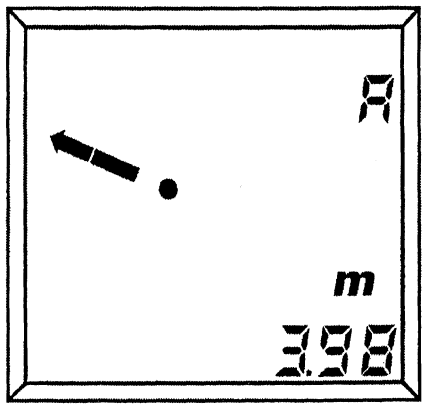
	Did not use	Very difficult to use						Very easy to use
a. Destination Memory	☐	1	2	3	4	5	6	7
b. Address Ranges	☐	1	2	3	4	5	6	7
c. Points of Interest	☐	1	2	3	4	5	6	7
d. Map	☐	1	2	3	4	5	6	7
e. Current Location	☐	1	2	3	4	5	6	7

C5. In order to enter and select destinations using ALI-SCOUT, you must use the system's keyboard. Please rate the following characteristics of the ALI-SCOUT system's **Input Keyboard** by circling the most appropriate number on the scales provided.

	Very difficult						**Very easy**
a. Easy or Difficult to Learn	1	2	3	4	5	6	7
b. Easy or Difficult to Use	1	2	3	4	5	6	7
	Never						**Always**
c. Functioned Properly	1	2	3	4	5	6	7
	Strongly disliked						**Strongly liked**
d. Overall Impression	1	2	3	4	5	6	7

C6. This is an example of the ALI-SCOUT system's **Autonomous Mode** (crow-fly direction) display. What information is this display showing (select only one answer by placing an *X* in the box provided)?

- ☐ The distance and direction to the destination you entered
- ☐ Get ready to turn left
- ☐ Continue in the direction you are going
- ☐ You are near your destination

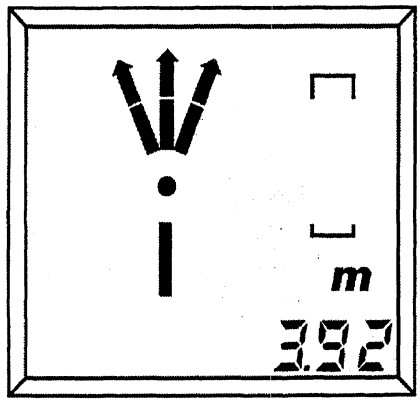


C7. Please rate the following characteristics of the ALI-SCOUT system's **Autonomous Mode** (crow-fly direction) by circling the most appropriate number on the scales provided.

a. Easy or Difficult to Understand	**Very difficult** 1	2	3	4	5	6	**Very easy** 7
b. Distraction While Driving	**Very distracting** 1	2	3	4	5	6	**Not at all distracting** 7
c. Accuracy of Guidance	**Very inaccurate** 1	2	3	4	5	6	**Very accurate** 7
d. Functioned Properly	**Never** 1	2	3	4	5	6	**Always** 7
e. Overall Impression	**Strongly disliked** 1	2	3	4	5	6	**Strongly liked** 7

C8. The following is an example of the ALI-SCOUT system's **Follow Main Road** display. What information is this display showing (select only one answer by placing an *X* in the box provided)?

- ☐ Take one of these three roads
- ☐ Continue in the direction you are going
- ☐ You are near your destination
- ☐ The distance and direction to the destination you entered

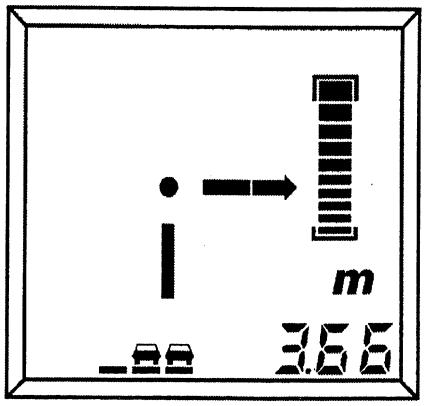


C9. Please rate the following characteristics of the ALI-SCOUT system's **Follow Main Road** display by circling the most appropriate number on the scales provided.

	Very difficult						**Very easy**
a. Easy or Difficult to Understand	1	2	3	4	5	6	7
	Very Inaccurate						**Very accurate**
b. Accuracy of Guidance	1	2	3	4	5	6	7
	Strongly disliked						**Strongly liked**
c. Overall Impression	1	2	3	4	5	6	7

C10. The following is an example of the ALI-SCOUT system's **Prepare Maneuver** display. What information is this display showing (select only one answer by placing an *X* in the box provided)?

- ☐ Make a right turn now
- ☐ Final destination is nearby and to the right
- ☐ Move into the right lanes, you will be turning to the right soon
- ☐ Distance and direction to the destination you entered

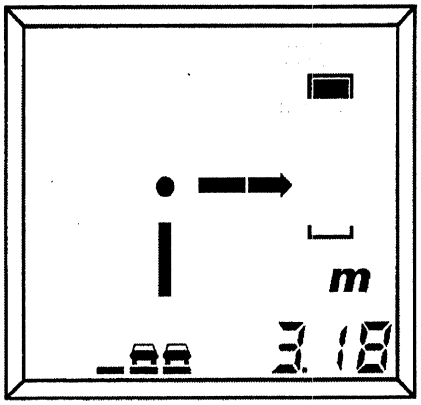


C11. Please rate the following characteristics of the ALI-SCOUT system's **Prepare Maneuver** display.

	Very difficult						**Very easy**
a. Easy or Difficult to Understand	1	2	3	4	5	6	7
	Insufficient						**Sufficient**
b. Amount of Detail Shown	1	2	3	4	5	6	7
	Not enough						**Too much**
c. Advance Warning Provided	1	2	3	4	5	6	7
	Very distracting						**Not at all distracting**
d. Distraction While Driving	1	2	3	4	5	6	7
	Very inaccurate						**Very accurate**
e. Accuracy of Guidance	1	2	3	4	5	6	7
	Strongly disliked						**Strongly liked**
f. Overall Impression	1	2	3	4	5	6	7

C12. The following is an example of the ALI-SCOUT system's **Execute Maneuver** display. What information is this display showing (select only one answer by placing an *X* in the box provided)?

- ☐ Make a right turn now
- ☐ Final destination is nearby and to the right
- ☐ Move into the right lanes, you will be turning to the right in 3.18 miles
- ☐ Distance and direction to the destination you entered

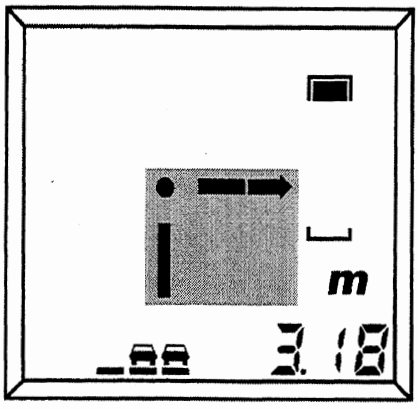


C13. Please rate the following characteristics of the ALI-SCOUT system's **Execute Maneuver** display.

	Very difficult						**Very easy**
a. Easy or Difficult to Understand	1	2	3	4	5	6	7
	Insufficient						**Sufficient**
b. Amount of Detail Shown	1	2	3	4	5	6	7
c. Advance Warning Provided	1	2	3	4	5	6	7
	Very distracting						**Not at all distracting**
d. Distraction While Driving	1	2	3	4	5	6	7
	Very inaccurate						**Very accurate**
e. Accuracy of Guidance	1	2	3	4	5	6	7
	Strongly disliked						**Strongly liked**
f. Overall Impression	1	2	3	4	5	6	7

The Prepare Maneuver and Execute Maneuver displays contain several components, including a turn arrow, a countdown bar, and a lane recommendation. In the next few items, we would like to learn what you thought of each of these components.

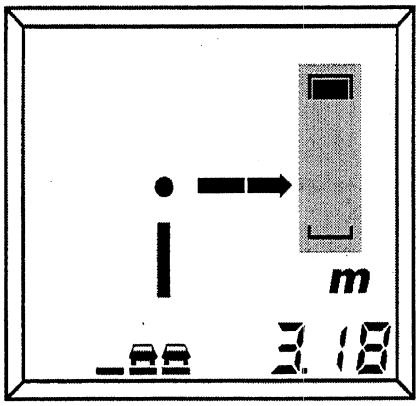
C14. Please rate the following characteristics of the Turn Arrow information (the shaded region in the figure below) provided by ALI-SCOUT.



	Very difficult						**Very easy**
a. Easy or Difficult to Understand	1	2	3	4	5	6	7
	Insufficient						**Sufficient**
b. Amount of Detail Shown	1	2	3	4	5	6	7
	Not enough						**Too much**
c. Advance Warning Provided	1	2	3	4	5	6	7
	Very distracting						**Not at all distracting**
d. Distraction While Driving	1	2	3	4	5	6	7
	Very inaccurate						**Very accurate**
e. Accuracy of Guidance	1	2	3	4	5	6	7
	Disliked						**Liked**
f. Overall Impression	1	2	3	4	5	6	7

C15. The Countdown Bar of the Prepare Maneuver and Execute Maneuver displays is shaded in the figure below. What information is the shaded portion of the display showing (select only one answer by placing an *X* in the box provided)?

- ☐ Relative distance to the right turn
- ☐ Amount of fuel in the gas tank
- ☐ Distance and direction to the destination you entered
- ☐ Shows the portion of trip completed

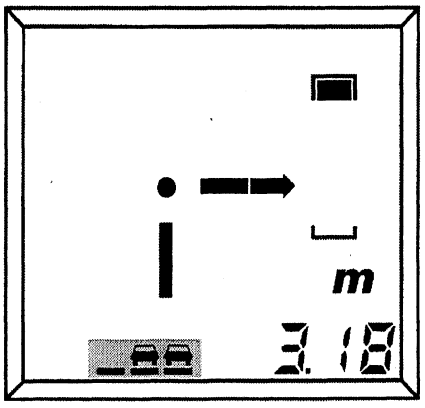


C16. Please rate the following characteristics of the Countdown Bar information provided by ALI-SCOUT.

	Very difficult						**Very easy**
a. Easy or Difficult to Understand	1	2	3	4	5	6	7
	Insufficient						**Sufficient**
b. Amount of Detail Shown	1	2	3	4	5	6	7
	Not enough						**Too much**
c. Advance Warning Provided	1	2	3	4	5	6	7
	Very distracting						**Not at all distracting**
d. Distraction While Driving	1	2	3	4	5	6	7
	Very inaccurate						**Very accurate**
e. Accuracy of Guidance	1	2	3	4	5	6	7
	Strongly disliked						**Strongly liked**
f. Overall Impression	1	2	3	4	5	6	7

C17. The Lane Recommendation portion of the Prepare Maneuver and Execute Maneuver displays is shaded in the figure below. What information is the shaded portion of the display showing (select only one answer by placing an *X* in the box provided)?

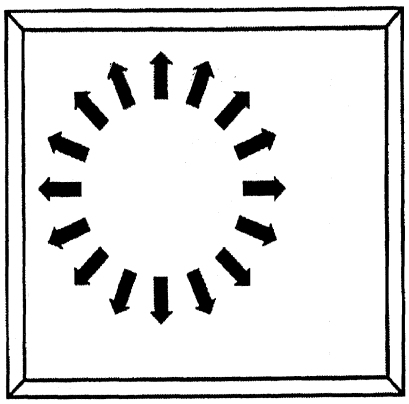
- ☐ Make a right turn now
- ☐ Move into one of the two right lanes
- ☐ There are two cars to your right
- ☐ Move into the left lane



C18. Please rate the following characteristics of the Lane Recommendation information provided by ALI-SCOUT.

	Very difficult						**Very easy**
a. Easy or Difficult to Understand	1	2	3	4	5	6	7
	Insufficient						**Sufficient**
b. Amount of Detail Shown	1	2	3	4	5	6	7
	Not enough						**Too much**
c. Advance Warning Provided	1	2	3	4	5	6	7
	Very distracting						**Not at all distracting**
d. Distraction While Driving	1	2	3	4	5	6	7
	Very inaccurate						**Very accurate**
e. Accuracy of Guidance	1	2	3	4	5	6	7
	Strongly disliked						**Strongly liked**
f. Overall Impression	1	2	3	4	5	6	7

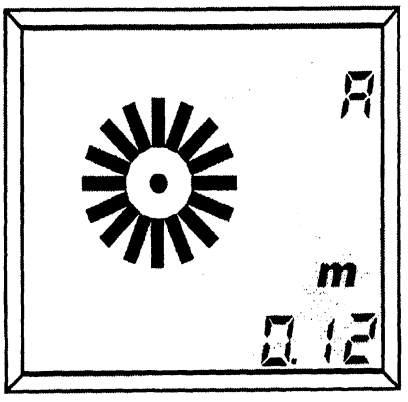
C19. During normal use of ALI-SCOUT, you may leave guided mode (for example, if you ignore a route instruction or if you pass a beacon that is not operating). In such situations, ALI-SCOUT displays the **Left Recommended Route** display shown on the figure below.



Please rate the following characteristics of the ALI-SCOUT system's **Left Recommended Route** display.

	Very difficult						**Very easy**
a. Easy or Difficult to Understand	1	2	3	4	5	6	7
	Very distracting						**Not at all distracting**
b. Distraction While Driving	1	2	3	4	5	6	7
	Strongly disliked						**Strongly liked**
c. Overall Impression	1	2	3	4	5	6	7

C20. When you get close to your destination, ALI-SCOUT enters the destination zone and returns to autonomous mode. At that time the ALI-SCOUT displays a **Switch over to Autonomous Mode in the Destination Zone** display, shown below.



Please rate the following characteristics of the ALI-SCOUT system's **Switch over to Autonomous Mode in the Destination Zone** display.

	Very difficult						**Very easy**
a. Easy or Difficult to Understand	1	2	3	4	5	6	7
	Very inaccurate						**Very accurate**
b. Accuracy of Guidance	1	2	3	4	5	6	7
	Strongly disliked						**Strongly liked**
c. Overall Impression	1	2	3	4	5	6	7

C21. In general, how often did you feel that you were close enough to your final destination when ALI-SCOUT switched to the autonomous mode in the destination zone? Circle the most appropriate number on the scale provided.

Always						**Never**
1	2	3	4	5	6	7

C22. After entering the destination zone, how often did you have difficulty finding your final destination?

Always had difficulty						**Never had difficulty**
1	2	3	4	5	6	7

D. The ALI-SCOUT System

In this set of questions we would like to know what you think of the ALI-SCOUT system overall.

D1. Visual Displays and Concepts

We would like to know your overall assessment of ALI-SCOUT's **visual displays and concepts**. Please rate the listed characteristics of ALI-SCOUT by circling the most appropriate number on the scales provided.

	Very difficult						**Very easy**
a. Easy or Difficult to Read (Driving)	1	2	3	4	5	6	7
b. Easy or Difficult to Read (Still)	1	2	3	4	5	6	7
c. Easy or Difficult to Understand	1	2	3	4	5	6	7
	Insufficient						**Sufficient**
d. Advance Warning Provided	1	2	3	4	5	6	7
e. Accuracy of Guidance	1	2	3	4	5	6	7
	Always						**Never**
f. Helped Me Find My Way	1	2	3	4	5	6	7
	Strongly disliked						**Strongly liked**
g. Overall Impression	1	2	3	4	5	6	7

D2. In general, were ALI-SCOUT's visual displays distracting:

	Very distracting						**Not at all distracting**
a. At night	1	2	3	4	5	6	7
b. During daylight hours	1	2	3	4	5	6	7
c. In heavy traffic	1	2	3	4	5	6	7
d. In light traffic	1	2	3	4	5	6	7
e. When traveling along freeways	1	2	3	4	5	6	7
f. Traveling along other roads	1	2	3	4	5	6	7

D3. Voice Guidance

For this question, we would like to know your overall assessment of the ALI-SCOUT system's Voice Guidance feature. Please circle the most appropriate number on the scale provided.

	Very difficult						**Very easy**
a. Easy or Difficult to Hear	1	2	3	4	5	6	7
b. Easy or Difficult to Understand	1	2	3	4	5	6	7
	Insufficient						**Sufficient**
c. Amount of Information Given	1	2	3	4	5	6	7
d. Advance Warning Provided	1	2	3	4	5	6	7
	Very distracting						**Not at all distracting**
e. Distraction While Driving	1	2	3	4	5	6	7
	Strongly disliked						**Strongly liked**
f. Sound of the Voice	1	2	3	4	5	6	7
g. Overall Impression	1	2	3	4	5	6	7

D4. Considering both visual and verbal information, how often did you follow ALI-SCOUT's recommendations to turn?

Never						**Always**
1	2	3	4	5	6	7

*(If always, please skip to question **D6.**)*

D5. ALI-SCOUT Recommendations

Considering all of the times that you **did not take the recommended turn**, how often were each of the following items part of your reason not to follow the recommended turn? (Answer by circling the most appropriate number on the scale provided just below each item.)

a. I knew of a faster route:

Never **Always**

1 2 3 4 5 6 7

b. I believed that the recommended turn would take me away from my destination:

Never **Always**

1 2 3 4 5 6 7

c. I needed to make stops along the way to my destination:

Never **Always**

1 2 3 4 5 6 7

d. I believed that the recommended turn would lead me into traffic congestion:

Never **Always**

1 2 3 4 5 6 7

e. Ali-Scout provided the suggested turn too late:

Never **Always**

1 2 3 4 5 6 7

f. The recommended turn was not clear to me:

Never **Always**

1 2 3 4 5 6 7

g. Not enough room to merge:

Never **Always**

1 2 3 4 5 6 7

h. Other (please write in): _____

Never **Always**

1 2 3 4 5 6 7

D6. Which was your preferred way for receiving ALI-SCOUT's route guidance information?

☐ Voice alone ☐ Voice and visual together

☐ Visual alone ☐ No preference

D8. In your opinion, how did the ALI-SCOUT system change the following factors of your driving in the Oakland County Study Area?

	Reduced						**Increased**
a. Travel time	1	2	3	4	5	6	7
b. Congestion Avoidance	1	2	3	4	5	6	7
c. Driving safety	1	2	3	4	5	6	7
d. Fuel consumption	1	2	3	4	5	6	7

D9. Please rate the following characteristics of the **ALI-SCOUT** system as a whole.

	Very difficult						**Very easy**
a. Easy or Difficult to Learn	1	2	3	4	5	6	7
b. Easy or Difficult to Understand	1	2	3	4	5	6	7
	Insufficient						**Sufficient**
c. Amount of Information Given	1	2	3	4	5	6	7
d. Advance Warning Provided	1	2	3	4	5	6	7
	Very inaccurate						**Very accurate**
e. Accuracy of Guidance	1	2	3	4	5	6	7
	Strongly disagree						**Strongly agree**
f. Helped Me Find My Way	1	2	3	4	5	6	7
g. Reduced My Travel Time	1	2	3	4	5	6	7
h. Functioned Properly	1	2	3	4	5	6	7
	Very distracting						**Not at all distracting**
I. Distraction While Driving	1	2	3	4	5	6	7
	Strongly disliked						**Strongly liked**
j. Overall Impression	1	2	3	4	5	6	7

The next few questions are concerned with roadside beacons. In order to operate properly, the in-vehicle components of ALI-SCOUT, must communicate with roadside beacons. As a result, the system cannot guide you to destinations beyond the beacon coverage area.

D10. In your use of the ALI-SCOUT system, what did you think of the size of the beacon coverage area for your driving needs?

Coverage area too small						**Coverage area too large**
1	2	3	4	5	6	7

D11. Thinking only of the area in which beacons were installed, what did you think of the spacing between the beacons?

Beacons too far apart						**Beacons too close**
1	2	3	4	5	6	7

D12. How often did you notice that the beacons did not function properly?

Never						**Always**
1	2	3	4	5	6	7

E. Use of the ALI-SCOUT System

In this section, we would like to know how you used ALI-SCOUT as part of your driving and trip-making.

E1. How often did you use ALI-SCOUT for the following types of trips? Circle the most appropriate number in the scales provided.

	Never						**Always**
a. Commuting to work	1	2	3	4	5	6	7
b. Work-related trips (non-commuting)	1	2	3	4	5	6	7
c. Recreational trips	1	2	3	4	5	6	7
d. Other personal trips	1	2	3	4	5	6	7

For the next few questions, please compare your driving <u>without</u> an ALI-SCOUT system to your driving <u>with</u> the ALI-SCOUT system.

E2. Please indicate the extent to which driving with ALI-SCOUT changed your attention to:

	Much less attention						**Much more attention**
a. Traffic Conditions	1	2	3	4	5	6	7
b. Traffic Signals	1	2	3	4	5	6	7
c. Road Signs (such as 55 MPH)	1	2	3	4	5	6	7
d. Street Signs (such as Main St.)	1	2	3	4	5	6	7
e. Street Addresses	1	2	3	4	5	6	7
f. Speedometer	1	2	3	4	5	6	7
g. Mirrors (such as Rearview)	1	2	3	4	5	6	7
h. Fuel Gauge	1	2	3	4	5	6	7

E3. Please indicate the extent to which driving with the ALI-SCOUT system, compared to driving without ALI-SCOUT, made you feel:

	Always less with ALI-SCOUT						**Always more with ALI-SCOUT**
a. Nervous	1	2	3	4	5	6	7
b. Confident	1	2	3	4	5	6	7
c. Confused	1	2	3	4	5	6	7
d. Attentive	1	2	3	4	5	6	7
e. Safe	1	2	3	4	5	6	7
f. Stressed	1	2	3	4	5	6	7
g. Relaxed	1	2	3	4	5	6	7
h. Frustrated	1	2	3	4	5	6	7

E4. Again, compared to driving without ALI-SCOUT, please indicate the extent to which you had the following experiences while driving with ALI-SCOUT:

	Always less with ALI-SCOUT						**Always more with ALI-SCOUT**
a. Crashes	1	2	3	4	5	6	7
b. Missed Stop Signs	1	2	3	4	5	6	7
c. Ran Red Light	1	2	3	4	5	6	7
d. Ran Off Road	1	2	3	4	5	6	7
e. Crossed Lane Marker	1	2	3	4	5	6	7

The next few questions deal with your crash and near-crash involvement while driving the ALI-SCOUT equipped vehicle. These questions are only for analytical purposes, and your responses will be held in the strictest confidence.

E5. Were you involved in any crashes while driving with the ALI-SCOUT system?

☐ Yes ☐ No (If no, please skip ahead to question **E8.**)

E6. In your opinion, did ALI-SCOUT contribute to this (these) crash(es)?

☐ Not at all

☐ Contributing factor

☐ The main factor

E7. If ALI-SCOUT was a contributing or main factor in this (these) crashes, please explain how ALI-SCOUT contributed to the crash.

_____

_____

E8. Were you ever involved in what you consider to be a near-crash while driving with the ALI-SCOUT system?

☐ Yes ☐ No

*(If **no**, please skip ahead to question **F1.**)*

E9. In your opinion, to what extent was ALI-SCOUT a contributing factor to this (these) near-crash(es)?

☐ Not at all

☐ The main factor

☐ A contributing factor

E10. In the space provided, please explain how ALI-SCOUT did or did not contribute to this (these) near-crash(es).

_____

_____

F. Valuation

In the following questions, we would like to learn how much you, an experienced user, value the ALI-SCOUT system.

F1. For assistance in reaching your destinations, how do you rate the following sources of route-guidance information?

	Poor						**Excellent**
a. Standard road map	1	2	3	4	5	6	7
b. Verbal directions from passenger	1	2	3	4	5	6	7
c. Verbal directions from other people	1	2	3	4	5	6	7
d. Written directions	1	2	3	4	5	6	7
e. ALI-SCOUT	1	2	3	4	5	6	7

F2. If you were about to drive to an unfamiliar area, which of the following sources of route-guidance information would you like to use?

	Definitely would not like						**Definitely would like**
a. Standard road map	1	2	3	4	5	6	7
b. Verbal directions from passenger	1	2	3	4	5	6	7
c. Verbal directions from other people	1	2	3	4	5	6	7
d. Written directions	1	2	3	4	5	6	7
e. ALI-SCOUT	1	2	3	4	5	6	7

F3. For the following items, assume that the ALI-SCOUT system was available nationwide. Given this scenario, how useful do you think the ALI-SCOUT system would be for:

	Not at all useful						**Extremely useful**
a. The commuting trip?	1	2	3	4	5	6	7
b. Out-of-town vacation trips?	1	2	3	4	5	6	7
c. Out-of-town business trips?	1	2	3	4	5	6	7
d. Local driving (non-work, e.g., for shopping)?	1	2	3	4	5	6	7

F4. If you had $2,500 to spend on options for a new car, how would you allocate your budget? Please place an *X* in the box(es) next to the option(s) that you would purchase. (Remember, you have only $2,500 to spend.)

- ☐ Car Alarm ($300)
- ☐ Cellular Phone ($500)
- ☐ Sunroof, Power ($500)
- ☐ Power Windows ($300)
- ☐ Cassette Player ($150)
- ☐ Air Conditioning ($650)
- ☐ Air Bag, Driver's Side ($400)
- ☐ Trip Computer ($1,000)
- ☐ Power Mirror ($100)
- ☐ ALI-SCOUT ($500)
- ☐ Power Locks ($250)
- ☐ CD Player ($250)
- ☐ Integrated Child Safety Seat ($150)
- ☐ Air Bag, Passenger's Side ($400)

F5. How much would you be willing to pay for the ALI-SCOUT system as an option on a new car?

$_____

F6. How much would you be willing to pay to add the ALI-SCOUT system to your present car?

$_____

F7. How much extra per day would you be willing to pay for the ALI-SCOUT system as an option on a rental car?

$_____

F8. In order to function properly, ALI-SCOUT requires two additional components to support the in-vehicle equipment. These out-of-vehicle components are:

(1) Roadside Beacons

Each beacon consists of a transmitter, receiver, and control unit for communicating with ALI-SCOUT's in-vehicle equipment. Beacons are located at selected intersections.

(2) Central Computer

Located in a traffic control facility, the central computer is the brain of the system--receiving, transmitting, and integrating information from throughout the study area. Each beacon is linked to the central computer.

Installation, operation, and maintenance of these out-of-vehicle components will require financial investment above and beyond the price of the in-vehicle devices. In your opinion, who should pay to install, operate, and maintain the beacons and central computer? (Place an *X* in the box next to all entities that you think should pay at least a part of this cost.)

- ☐ Federal government
- ☐ State government
- ☐ Individual users of ALI-SCOUT
- ☐ Commercial users of ALI-SCOUT
- ☐ Manufacturers of products such as ALI-SCOUT
- ☐ County government
- ☐ City government
- ☐ Car manufacturers
- ☐ Other (please specify): _____

F9. Of those entities that you marked in question **F8**, we are interested in knowing who you think should bear the <u>primary cost</u>. In the space provided, write in the entity that you think should pay the primary cost.

_____

F10. One option for funding the installation, operation, and maintenance of the beacons and central computer is to charge users a monthly fee to receive information (such as route guidance) from the system. This monthly fee would cover both services received and maintenance of the system. If you owned an ALI-SCOUT in-vehicle device, how much **per month** would you be willing to pay to receive the information provided by the beacons and central computer?

$_____

F11. In your opinion, how important are each of the following factors to the operation of systems such as ALI-SCOUT?

	Not at all important						**Extremely important**
a. Fuel savings	1	2	3	4	5	6	7
b. Reduced air pollution	1	2	3	4	5	6	7
c. Traffic safety	1	2	3	4	5	6	7
d. Relief of highway congestion	1	2	3	4	5	6	7
e. Accurate route guidance	1	2	3	4	5	6	7
f. Traffic diverted into neighborhoods	1	2	3	4	5	6	7
g. Ease of use	1	2	3	4	5	6	7
h. Quick updates of road conditions	1	2	3	4	5	6	7

F12. We are interested in knowing how you would like to see ALI-SCOUT improved. In the space provided, please tell us two changes that you would like to see made in the system.

1. _____

_____

2. _____

_____

G. Demographics

To help us analyze the results of this survey, please answer the following questions about your background. Your answers to these questions will be kept strictly confidential.

G1. Please write your date of birth in the space provided.

Month _____ Day _____ Year _____

G2. Please indicate your gender by placing an *X* in the appropriate box.

☐ Male ☐ Female

G3. What is the highest level of education that you have completed? (Place an *X* in the most appropriate box.)

☐ Less Than High School Diploma (or equivalent)

☐ High School Diploma (or equivalent)

☐ Some College

☐ Bachelor's Degree

☐ Some Graduate School

☐ Graduate Degree

G4. Including yourself, how many people live in your household?

_____ People Living in Household

G5. Including yourself, how many licensed drivers live in your household?

_____ Licensed Drivers

G6. What was your household's income last year (before taxes)? (Place an *X* in the most appropriate box.)

- ☐ Less than $15,000
- ☐ $ 15,000 to $ 24,999
- ☐ $ 25,000 to $ 34,999
- ☐ $ 35,000 to $ 44,999
- ☐ $ 45,000 to $ 54,999
- ☐ $ 55,000 to $ 64,999
- ☐ $ 65,000 to $ 79,999
- ☐ $ 80,000 to $ 99,999
- ☐ $ 100,000 or more

☺ *Thank you for participating in this survey. The information that you have provided will be of great value in our efforts to measure how the technologies involved in the FAST-TRAC Project have affected the transportation system in Oakland County and how they might affect the future of transportation in Oakland County and beyond. Please use the remainder of this page for any additional comments that you would like to make about the ALI-SCOUT system or the FAST-TRAC Project.*

Appendix F

Univariate Analysis Results and Comments

A. Driving and Commuting

In this section, we would like to learn about your familiarity with the Oakland County Study Area, your driving experience, and your commuting patterns.

A1. How many vehicles does your household own or lease?

Number of Vehicles	Survey No. 1	
	Frequency	Percent
One	37	12.7
Two	161	55.1
Three	56	19.2
Four	27	9.2
Five or more	11	3.8

The FAST-TRAC Project, in which you are a participant, has been implemented in the following Oakland County communities: Troy, Rochester Hills, Auburn Hills, Pontiac, Bloomfield Hills, and Birmingham. In the following questions, the Oakland County Study Area refers to these communities.

A2. Do you live in the Oakland County study area?

Live in Oakland County	Survey No. 1	
	Frequency	Percent
Yes	183	63.1
No	107	36.9

A2. If yes, how long have you lived in the Oakland County study area?

Years Lived in Oakland County	Survey No. 1	
	Frequency	Percent
Less than 1 year	15	8.2
1 year	8	4.4
2 years	12	6.6
3 years	6	3.3
4 years	9	4.9
5 years	11	6.0
6 years	7	3.8
7 years	7	3.8
8 years	11	6.0
9 years	2	1.1
10 or more years	94	51.6

A3. In the last one month, how regularly did you drive within the Oakland County Study Area? Please circle the most appropriate number on the scale provided.

5 times a week or more — Once a month or less

1 2 3 4 5 6 7

Frequency of Driving in Oakland County Study Area	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	250	85.9	146	85.4
2	17	5.8	5	2.9
3	8	2.8	6	3.5
4	4	1.4	2	1.2
5	3	1.0	4	2.3
6	4	1.4	2	1.2
7	5	1.7	6	3.5

A4. How familiar are you with the road network in the Oakland County study area? Please circle the most appropriate number on the scale provided.

Very unfamiliar 1 2 3 4 5 6 Very familiar 7

Familiarity with Road Network in Oakland County Study Area	Survey No. 1	
	Frequency	Percent
1	32	11.0
2	12	4.1
3	22	7.5
4	33	11.3
5	48	16.4
6	53	18.2
7	92	31.5

A5. Do you currently work in the Oakland County study area?

Currently Work in Oakland County Study Area	Survey No. 1	
	Frequency	Percent
Yes	224	77.5
No	65	22.5

A6. What is the postal zip code of your workplace?

Workplace Zip Code	Survey No. 1	
	Frequency	Percent
48000-48099	131	48.7
48100-48199	4	1.5
48200-48299	15	5.6
48300-48399	119	44.2

A7. Please place an X in the box that best describes your current employment status?

Current Employment Status	Survey No. 1	
	Frequency	Percent
Employed Full-time	263	93.3
Employed Part-time	6	2.1
Full-time student	1	0.4
Retired	4	1.4
Unemployed	0	0.0
Other	8	2.8

(If you answered retired, unemployed, or other please skip to question A14.)

A8. In the past three months, how many routes have you driven from your home to work (or school)?

Number of Routes Driven to Work or School	Survey No. 1	
	Frequency	Percent
One	23	8.4
Two	57	20.8
Three	86	31.4
Four	26	9.5
Five or More	82	29.9

A9. On average how many minutes does it take you to drive from home to work (or school) during your morning commute?

Average Minutes to Work or School for Morning Commute	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
0-9	19	7.0	22	13.1
10-14	19	7.0	13	7.7
15-19	33	12.1	19	11.3
20-24	48	17.6	29	17.3
25-29	36	13.2	19	11.3
30-34	38	13.9	18	10.7
35-39	23	8.4	13	7.7
40-44	15	5.5	10	6.0
45-49	17	6.2	14	8.3
50-54	15	5.5	9	5.4
55-59	3	1.1	0	0.0
60 or more	7	2.6	2	1.2

A10. During your morning commute, do you generally listen to traffic reports?

Listen to Traffic Reports During Morning Commute	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
Yes	180	65.9	107	64.5
No	93	34.1	59	35.5

A11. In general, how often do you encounter heavy traffic congestion during your morning commute?

5 times a week or more — Once a month or less

1 2 3 4 5 6 7

Ratings for Encounters With Traffic Congestion During Morning Commute	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	44	16.1	26	16.3
2	41	15.0	21	13.1
3	33	12.0	23	14.4
4	49	17.9	23	14.4
5	39	14.2	23	14.4
6	28	10.2	14	8.8
7	40	14.6	30	18.8

A12. In general, how often do you encounter traffic incidents (like accidents) during your morning commute?

5 times a week or more — Once a month or less

1 2 3 4 5 6 7

Ratings for Encounters with Traffic Incidents During Morning Commute	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	4	1.5	2	1.2
2	10	3.7	2	1.2
3	25	9.2	13	8.1
4	32	11.7	12	7.5
5	31	11.4	22	13.7
6	70	25.6	38	23.6
7	101	37.0	72	44.7

A13. Are you willing to divert from the route that you normally use to commute from home to work (or school) to avoid congestion or a traffic incident?

Willing to Divert to Avoid Traffic Congestion or Incident	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
Yes	265	95.7	158	96.3
No	12	4.3	6	3.7

A14. In your opinion, what is the general level of traffic congestion in the Oakland County Study Area during your morning commute?

No Congestion 1 2 3 4 5 6 7 Heavy Congestion

Ratings for Level of Traffic Congestion in Oakland County Study Area	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	10	3.6	6	3.7
2	20	7.3	17	10.4
3	32	11.6	18	11.0
4	42	15.2	31	19.0
5	75	27.2	41	25.2
6	58	21.0	31	19.0
7	39	14.1	19	11.7

A15. How many out-of-town vacation trips did you make in the last 12 months?

Number of Out-of-Town Vacation Trips in Last 12 Months	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
0	13	4.6	10	6.0
1	22	7.9	11	6.6
2	53	18.9	28	16.9
3	54	19.3	41	24.7
4	40	14.3	23	13.9
5 or more	98	35.0	53	31.9

A16. How many out-of-town business trips did you make in the last 12 months?

Number of Out-of-Town Business Trips in Last 12 Months	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
0	90	31.7	52	31.9
1	28	9.9	18	11.0
2	34	12.0	20	12.3
3	24	8.5	11	6.8
4	13	4.6	12	7.4
5 or more	95	33.5	50	30.7

A17. When driving in unfamiliar areas, are you generally confident or unconfident in finding your way around?

Very Unconfident 1 2 3 4 5 6 7 Very Confident

Ratings for Confidence in Finding Way in Unfamiliar Area	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	15	5.3	9	5.5
2	30	10.6	10	6.1
3	42	14.9	25	15.2
4	35	12.4	29	17.7
5	67	23.8	40	24.4
6	62	22.0	35	21.3
7	31	11.0	16	9.8

A18. How frequently do you use road maps?

Frequency of Road Map Use	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
At Least Once a Week	39	13.7	27	16.1
1-3 Times per Month	84	29.5	46	27.4
Once Every 2-6 Months	124	43.5	77	45.8
Once a Year	25	8.8	13	7.7
Less Than Once a Year	13	4.6	5	3.0

A19. Prior to your experience with Ali-Scout, had you ever before driven a vehicle equipped with an electronic route-guidance system?

Prior Experience with Electronic Guidance System	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
Yes	11	3.8	4	2.4
No	276	96.2	163	97.6

A20. If yes, which system did you use?

- Boat Loran & GPS
- Dello Navstar
- Never Lost
- Guidestar Telepath
- Telepath 100
- Telepath 100
- a GPS
- Garmin GPS 40 Boat
- Rockwell

B. Technology

FAST-TRAC represents a test of new technology. In the following questions, we would like to learn about your experience with and interest in new technology.

B1. Indicate the amount of experience that you have had using the following technologies by circling the most appropriate number on the scale provided. On this scale, 1 means none and 7 means extensive experience.

B1a. Personal Computers

None Extensive
1 2 3 4 5 6 7

Amount of Experience	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	13	4.6	6	3.7
2	15	5.3	6	3.7
3	9	3.2	6	3.7
4	32	11.3	19	11.6
5	37	13.1	20	12.2
6	42	14.8	28	17.1
7	135	47.7	79	48.2

B1b. VCRs

None Extensive
1 2 3 4 5 6 7

Amount of Experience	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	2	0.7	0	0.0
2	6	2.1	6	3.7
3	13	4.6	2	1.2
4	28	9.8	24	14.7
5	46	16.1	27	16.6
6	63	22.1	25	15.3
7	127	44.6	79	48.5

B1c. Electronic Pager

None Extensive
1 2 3 4 5 6 7

Amount of Experience	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	92	32.5	51	31.5
2	25	8.8	15	9.3
3	13	4.6	4	2.5
4	17	6.0	14	8.6
5	21	7.4	16	9.9
6	38	13.4	13	8.0
7	77	27.2	49	30.3

B1d. Cellular Car Phones

None Extensive
1 2 3 4 5 6 7

Amount of Experience	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	43	15.1	25	15.2
2	19	6.7	13	7.9
3	20	7.0	7	4.3
4	27	9.5	13	7.9
5	28	9.9	21	12.8
6	43	15.1	18	11.0
7	104	36.6	67	40.9

B1e. Fax Machines

None Extensive
1 2 3 4 5 6 7

Amount of Experience	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	24	8.5	10	6.1
2	7	2.5	4	2.5
3	12	4.2	5	3.1
4	30	10.6	11	6.8
5	40	14.1	17	10.4
6	40	14.1	32	19.6
7	131	46.1	84	51.5

B1f. Pocket Calculator

None Extensive
1 2 3 4 5 6 7

Amount of Experience	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	2	0.7	3	1.8
2	5	1.8	0	0.0
3	8	2.8	4	2.4
4	16	5.6	7	4.3
5	17	6.0	16	9.8
6	39	13.7	25	15.2
7	198	69.5	109	66.5

B2. In general, how interested are you in news items concerning new technology?

Level of Interest in News Item about Technology	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
Not at all Interested	1	0.4	1	0.6
Not Very Interested	6	2.1	5	3.1
Somewhat Interested	71	24.7	52	31.7
Very Interested	209	72.9	106	64.6

B3. In general, do you find new technology easy or difficult to use?

Ease or Difficulty of Using of New Technology	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
Very Difficult	2	0.7	0	0.0
Somewhat Difficult	33	11.4	21	12.7
Neither Difficult nor Easy	135	46.7	73	44.2
Somewhat Easy	55	19.0	37	22.4
Very Easy	64	22.2	34	20.6

B4. In general, how enjoyable do you find using new technology?

Enjoyment in Using New Technology	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
Not at all Enjoyable	1	0.4	1	0.6
Not Very Enjoyable	5	1.7	2	1.2
Somewhat Enjoyable	102	35.5	76	45.8
Very Enjoyable	179	62.4	87	52.4

C. Ali-Scout Operation and Displays

As a participant in the FAST-TRAC Project, you have been driving a vehicle equipped with an electronic route-guidance system called Ali-Scout. In this section, we would like to learn what you think about the different parts of the system.

C1. Since you have had an Ali-Scout equipped vehicle, how often have you used Ali-Scout for trips in which you drove in the Oakland County Study Area? Please circle the most appropriate number on the scale provided.

Never Always
1 2 3 4 5 6 7

Ratings for Frequency of Use of Ali-Scout	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	5	1.7	5	3.0
2	21	7.3	28	16.8
3	24	8.3	17	10.2
4	25	8.7	24	14.4
5	61	21.2	26	15.6
6	82	28.5	46	27.5
7	70	24.3	21	12.6

C1A. If you did not answer always, we would like to learn why you sometimes did not use the system.

Frequency of Reasons Given	Survey No. 1 (n=218)		Survey No. 2 (n=146)	
	Frequency	Percent	Frequency	Percent
Many trips are very short	120	55.0	75	51.4
Too much trouble to program the destinations	70	32.1	66	45.2
I did not think Ali-Scout provided fastest route	90	41.3	60	41.1
I did not think Ali-Scout provided accurate guidance	67	30.7	37	25.3
I knew the way	134	61.5	94	64.4
Other	27	12.4	20	13.7

C2. The Ali-Scout system offers several options for entering new destinations. These options are:

Address Ranges--obtaining coordinates by using the address ranges section of the Ali-Scout manual,

Points of Interest--obtaining coordinates by using the points of interest section of the Ali-Scout manual,

Map--obtaining coordinates by referring to the map included in the Ali-Scout manual, and

Current Location--entering the current location of your vehicle.

We are interested in knowing which of these options you used most often for entering new destinations. Please rank them from one (most frequent) to four (least frequent) according to how often you used them.

Address Ranges

Most Frequent 1 2 3 Least Frequent 4

Ratings for Frequency of Use of Address Range	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	33	13.1	20	15.2
2	51	20.2	20	15.2
3	68	27.0	43	32.6
4	100	39.7	49	37.1

Points of Interest

Most Frequent 1 2 3 Least Frequent 4

Ratings for Frequency of Use of Points of Interest	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	48	18.9	24	18.3
2	56	22.0	25	19.1
3	85	33.5	36	27.5
4	65	37.4	46	35.1

Map

Most Frequent 1 2 3 Least Frequent 4

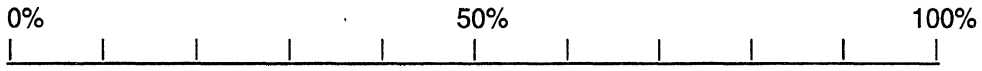
Ratings for Frequency of Use of Map	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	97	37.5	38	27.7
2	81	31.3	55	40.2
3	50	19.3	31	22.6
4	31	12.0	13	9.5

Current Location

Most Frequent 1 2 3 Least Frequent 4

Ratings for Frequency of Use of Current Location	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	85	33.5	59	44.0
2	69	27.2	31	23.1
3	36	14.2	15	11.2
4	64	25.2	29	21.6

C3. Ali-Scout stores up to 80 destinations in memory. Of all the trips that you took with Ali-Scout, how often did you select a destination from Ali-Scout's memory? Please circle the most appropriate point on the scale below.



Percent of Destinations Selected from Ali-Scout Memory	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
0-10	30	10.6	34	20.7
11-20	18	6.3	9	5.5
21-30	11	3.9	3	1.8
31-40	5	1.8	2	1.2
41-50	25	8.8	18	11.0
51-60	14	4.9	3	1.8
61-70	28	9.9	8	4.9
71-80	67	23.6	33	20.1
81-90	45	15.8	30	18.3
91-100	41	14.4	24	14.6

C4. We also are interested in knowing how easy or difficult you found each method of entering and selecting destinations. Please rate each of the five methods by circling the most appropriate number on the scales provided.

Destination Memory

Did not use	Very Difficult to Use						Very Easy to Use
0	1	2	3	4	5	6	7

Ratings for Difficulty of Entering and Selecting Destination Memory	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
0	21	7.5	1	0.7
1	3	1.1	2	1.4
2	5	1.8	7	4.7
3	8	2.8	4	2.7
4	16	5.7	12	8.1
5	26	9.2	17	11.5
6	40	14.2	29	19.6
7	163	57.8	76	51.4

Address Ranges

Did Not Use 0 | Very Difficult to Use 1 2 3 4 5 6 | Very Easy to Use 7

Ratings for Difficulty of Entering and Selecting Address Ranges	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
0	62	21.8	9	2.5
1	11	3.9	4	3.3
2	8	2.8	9	7.4
3	28	9.9	18	14.8
4	50	17.6	24	19.7
5	52	18.3	23	18.9
6	38	13.4	22	18.0
7	35	12.3	19	15.6

Points of Interest

Did not Use 0 | Very Difficult to Use 1 2 3 4 5 6 | Very Easy to Use 7

Ratings for Difficulty of Entering and Selecting Points of Interest	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
0	44	15.6	4	3.33
1	6	2.1	2	1.7
2	8	2.8	6	5.0
3	16	5.7	7	5.8
4	34	12.1	22	18.3
5	46	16.3	27	22.5
6	53	18.8	23	19.2
7	75	26.6	29	24.2

Map

Did Not Use 0 — Very Difficult to Use 1 2 3 4 5 6 — Very Easy to Use 7

Ratings for Difficulty of Entering or Selecting Map	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
0	21	7.5	1	0.7
1	5	1.8	4	2.9
2	15	5.3	8	5.8
3	30	10.6	18	13.0
4	53	18.8	26	18.8
5	58	20.6	32	23.2
6	50	17.7	24	17.4
7	50	17.7	25	18.1

Current Location

Did Not Use 0 — Very Difficult to Use 1 2 3 4 5 6 — Very Easy to Use 7

Ratings for Difficulty of Entering or Selecting Current Location	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
0	35	12.4	0	0.0
1	11	3.9	7	5.3
2	12	4.3	5	3.8
3	19	6.7	9	6.8
4	26	9.2	24	18.1
5	42	14.9	25	18.8
6	49	17.4	23	17.3
7	88	31.2	40	30.1

C5. In order to enter and select destinations using Ali-Scout, you must use the system's keyboard. Please rate the following characteristics of the Ali-Scout system's Input Keyboard by circling the most appropriate number on the scales provided.

Very Difficult 1 2 3 4 5 6 Very Easy 7

Ease or Difficulty of Learning Keyboard

Ratings for Difficulty of Learning Keyboard	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	9	3.2	6	3.8
2	23	8.1	13	8.3
3	35	12.4	19	12.1
4	57	20.1	28	17.8
5	57	20.1	35	22.3
6	59	20.9	33	21.0
7	43	15.2	23	14.7

Ease or Difficulty of Using Keyboard

Very Difficult 1 2 3 4 5 6 Very Easy 7

Ratings for Difficulty of Using Keyboard	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	12	4.3	8	5.2
2	23	8.3	18	11.8
3	38	13.7	24	15.7
4	61	22.0	28	18.3
5	58	20.9	35	22.9
6	53	19.1	27	17.7
7	32	11.6	13	8.5

Keyboard Functioned Properly

Never Always
1 2 3 4 5 6 7

Ratings for Keyboard Functioned Properly	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	1	0.4	3	1.9
2	11	3.9	9	5.7
3	19	6.7	12	7.6
4	41	14.5	19	12.1
5	47	16.6	23	14.7
6	61	21.6	41	26.1
7	103	36.4	50	31.9

Overall Impression

Strongly Disliked Strongly Liked
1 2 3 4 5 6 7

Ratings for Overall Impression of Keyboard	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	10	3.5	7	4.5
2	16	5.6	15	9.6
3	37	13.0	28	17.8
4	72	25.3	32	20.4
5	78	27.4	41	26.1
6	52	18.3	25	15.9
7	20	7.0	9	5.7

C6. This is an example of the Ali-Scout system's Autonomous Mode (crow-fly direction) display. What information is this display showing (select only one answer by placing an X in the box provided)? The correct answer is "The distance and direction to the destination you entered."

	Survey No. 1		Survey No. 2	
	Frequency	**Percent**	**Frequency**	**Percent**
Distance and direction to the destination you entered	278	98.2	154	98.7
Get ready to turn left	1	0.4	0	0.0
Continue in the direction you are going	2	0.7	2	1.3
You are near your destination	2	0.7	0	0.0

C7. Please rate the following characteristics of the Ali-Scout system's Autonomous Mode (crow-fly direction) display by circling the most appropriate number on the scales provided.

Very Difficult 1 2 3 4 5 6 7 Very Easy

Ratings for Difficulty of Understanding Autonomous Mode Display	Survey No. 1		Survey No. 2	
	Frequency	**Percent**	**Frequency**	**Percent**
1	1	0.4	2	1.3
2	2	0.7	0	0.0
3	6	2.1	4	2.5
4	13	4.6	2	1.3
5	39	13.8	14	8.8
6	52	18.4	54	34.0
7	170	60.1	83	52.2

Very Distracting 1 2 3 4 5 6 7 Not at all Distracting

Ratings for Distraction by Autonomous Mode Display	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	2	0.7	2	1.3
2	5	1.8	2	1.3
3	6	2.1	7	4.4
4	19	6.7	8	5.0
5	36	12.6	19	12.0
6	79	27.7	51	32.1
7	138	48.4	70	44.0

Very Inaccurate 1 2 3 4 5 6 7 Very Accurate

Ratings for Accuracy of Guidance of Autonomous Mode Display	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	15	5.3	4	2.6
2	18	6.4	11	7.0
3	32	11.4	17	10.8
4	45	16.0	23	14.7
5	65	23.1	44	28.0
6	72	25.5	43	27.4
7	35	12.4	15	9.6

Never Always
1 2 3 4 5 6 7

Ratings for Autonomous Mode Display Functioned Properly	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	1	0.4	4	2.6
2	12	4.2	4	2.6
3	29	10.3	12	7.6
4	48	17.0	24	15.3
5	50	17.7	33	21.0
6	68	24.0	48	30.6
7	75	26.5	32	20.4

Strongly Disliked Strongly Liked
1 2 3 4 5 6 7

Ratings for Autonomous Mode Display Overall Impression	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	5	1.8	5	3.2
2	17	6.0	6	3.8
3	21	7.4	16	10.1
4	50	17.7	20	12.7
5	66	23.3	35	22.2
6	79	27.9	58	36.7
7	45	15.9	18	11.4

C8. This is an example of the Ali-Scout system's Follow Main Road display. What information is this display showing (select only one answer by placing an X in the box provided)? The correct answer is "Continue in the direction you are going."

	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
Take one of these three roads	3	1.1	4	2.5
Continue in the direction you are going	231	81.9	123	77.4
You are near your destination	6	2.1	3	1.9
The distance and direction to the destination	42	14.9	29	18.2

C9. Please rate the following characteristics of the Ali-Scout system's Follow Main Road display by circling the most appropriate number on the scales provided.

Very Difficult 1 2 3 4 5 6 7 Very Easy

Ratings for Difficulty of Understanding Main Road Display	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	2	0.7	2	1.2
2	3	1.1	1	0.6
3	6	2.1	3	1.9
4	12	4.2	9	5.6
5	41	14.4	13	8.1
6	62	21.8	50	31.1
7	159	55.8	83	51.6

Very Inaccurate 1 2 3 4 5 6 7 Very Accurate

Ratings for Accuracy of Guidance for Main Road Display	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	4	1.4	3	1.9
2	9	3.2	3	1.9
3	23	8.1	10	6.2
4	28	9.9	19	11.8
5	41	14.4	38	23.6
6	88	31.0	51	31.7
7	91	32.0	37	23.0

Strongly Disliked 1 2 3 4 5 6 7 Strongly Liked

Ratings for Main Road Display Overall Impression	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	3	1.1	3	1.9
2	8	2.8	4	2.5
3	18	6.3	19	11.9
4	31	10.9	15	9.4
5	57	20.0	23	14.4
6	95	33.3	63	39.4
7	73	25.6	33	20.6

C10. This is an example of the Ali-Scout system's Prepare Maneuver display. What information is this display showing (select only one answer by placing an X in the box provided)? The correct answer is "Move into the right lanes, you will be turning to the right soon."

	Survey No. 1		Survey No. 2	
	Frequency	**Percent**	**Frequency**	**Percent**
Make a right turn now	8	2.8	14	8.8
Final destination is nearby and to the right	3	1.1	0	0.0
Move into the right lanes, you will be turning to the right soon	269	95.4	141	88.7
The distance and direction to the destination	2	0.7	4	2.5

C11. Please rate the following characteristics of the Ali-Scout system's Prepare Maneuver display.

Very Difficult 1 2 3 4 5 6 7 Very Easy

Ratings for Difficulty of Understanding Prepare Maneuver Display	Survey No. 1		Survey No. 2	
	Frequency	**Percent**	**Frequency**	**Percent**
1	1	0.4	2	1.3
2	2	0.7	0	0.0
3	8	2.8	3	1.9
4	13	4.6	3	1.9
5	30	10.5	24	15.0
6	82	28.8	53	33.1
7	149	52.3	75	46.9

Insufficient Sufficient
1 2 3 4 5 6 7

Ratings for Amount of Detail on Prepare Maneuver Display	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	0	0.0	2	1.2
2	2	0.7	3	1.9
3	6	2.1	2	1.2
4	19	6.6	6	3.7
5	29	10.1	28	17.4
6	73	25.5	40	24.8
7	157	54.9	80	49.7

Not Enough Too Much
1 2 3 4 5 6 7

Ratings for Amount of Advance Warning Provided by Prepare Maneuver Display	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	16	5.6	7	4.4
2	14	4.9	9	5.6
3	37	13.0	20	12.5
4	123	43.2	65	40.6
5	54	19.0	37	23.1
6	36	12.6	17	10.6
7	5	1.8	5	3.1

Very Distracting 1 2 3 4 5 6 7 Not at all Distracting

Ratings for Distraction by Prepare Maneuver Display	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	5	1.8	4	2.5
2	6	2.1	2	1.3
3	12	4.2	12	7.5
4	37	12.9	14	8.8
5	51	17.8	34	21.3
6	84	29.4	44	27.5
7	91	31.8	50	31.3

Very Inaccurate 1 2 3 4 5 6 7 Very Accurate

Ratings for Accuracy of Guidance of Prepare Maneuver Display	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	4	1.4	4	2.5
2	13	4.6	5	3.1
3	28	9.9	13	8.1
4	24	8.5	13	8.1
5	53	18.7	35	21.7
6	87	30.7	54	33.5
7	74	26.2	37	23.0

Strongly Disliked 1 2 3 4 5 6 Strongly Liked 7

Ratings for Overall Impression of Prepare Maneuver Display	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	4	1.4	3	1.9
2	7	2.5	5	3.1
3	15	5.3	11	6.8
4	31	10.9	20	12.4
5	71	24.9	36	22.4
6	105	36.8	58	36.0
7	52	18.3	28	17.4

C12. This is an example of the Ali-Scout system's Execute Maneuver display. What information is this display showing (select only one answer by placing an X in the box provided)? The correct answer is "Make a right turn now."

	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
Make a right turn now	258	91.8	144	91.1
Final destination is nearby and to the right	8	2.9	6	3.8
Move into the right lanes, you will be turning to the right in 3.18 miles	11	3.9	8	5.1
Distance and direction to the destination	4	1.4	0	0.0

C13. Please rate the following characteristics of the Ali-Scout system's Execute Maneuver display.

Very Difficult 1 2 3 4 5 6 7 Very Easy

Ratings for Difficulty of Understanding Execute Maneuver Display	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	1	0.4	2	1.3
2	1	0.4	2	1.3
3	6	2.1	0	0.0
4	13	4.6	7	4.4
5	28	9.9	21	13.1
6	76	26.9	53	33.1
7	158	55.8	75	46.9

Insufficient 1 2 3 4 5 6 7 Sufficient

Ratings for Amount of Detail on Execute Maneuver Display	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	0	0.0	3	1.9
2	2	0.7	1	0.6
3	13	4.6	5	3.1
4	9	3.2	4	2.5
5	35	12.4	27	16.9
6	70	24.7	56	35.0
7	154	54.4	64	40.0

Insufficient Sufficient
1 2 3 4 5 6 7

Ratings for Sufficiency of Advance Warning Provided by Execute Maneuver Display	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	6	2.1	5	3.1
2	11	3.9	7	4.4
3	22	7.8	12	7.5
4	32	11.4	13	8.1
5	41	14.6	32	19.9
6	63	22.4	46	28.6
7	106	37.7	46	28.6

Very Distracting Not at all Distracting
1 2 3 4 5 6 7

Ratings for Distraction by Execute Maneuver Display	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	4	1.4	4	2.5
2	5	1.8	1	0.6
3	13	4.6	11	6.8
4	21	7.5	16	9.9
5	46	16.4	20	12.4
6	87	31.0	64	39.8
7	105	37.4	45	28.0

Very Inaccurate 1 2 3 4 5 6 7 Very Accurate

Ratings for Accuracy of Execute Maneuver Display	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	4	1.4	2	1.2
2	10	3.5	5	3.1
3	18	6.4	10	6.2
4	28	9.9	14	8.7
5	53	18.7	38	23.6
6	94	33.2	57	35.4
7	76	26.9	35	21.7

Strongly Disliked 1 2 3 4 5 6 7 Strongly Liked

Ratings for Overall Impression for Execute Maneuver Display	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	5	1.8	4	2.5
2	9	3.2	4	2.5
3	8	2.8	12	7.5
4	31	11.0	12	7.5
5	57	20.2	35	21.7
6	103	36.5	63	39.1
7	69	24.5	31	19.3

C14. Please rate the following characteristics of the Turn Arrow information (the shaded region in the figure below) provided by Ali-Scout.

Very Difficult 1 2 3 4 5 6 Very Easy 7

Ratings for Difficulty of Understanding Turn Arrow Information	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	0	0.0	2	1.3
2	2	0.7	1	0.6
3	4	1.4	2	1.3
4	11	3.9	6	3.8
5	24	8.5	14	8.8
6	70	24.8	46	28.9
7	171	60.6	88	55.4

Insufficient 1 2 3 4 5 6 Sufficient 7

Ratings for Amount of Detail on Turn Arrow Information	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	0	0.0	2	1.3
2	4	1.4	2	1.3
3	6	2.1	3	1.9
4	7	2.5	4	2.5
5	30	10.6	16	10.0
6	66	23.4	43	27.0
7	169	59.9	89	56.0

Not Enough 1 2 3 4 5 6 7 Too Much

Ratings for Amount of Advance Warning Provided by Turn Arrow Information	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	7	2.5	5	3.1
2	10	3.6	6	3.8
3	31	11.0	12	7.6
4	115	40.8	64	40.3
5	62	22.0	25	15.7
6	44	15.6	36	22.6
7	13	4.6	11	6.9

Very Distracting 1 2 3 4 5 6 7 Not at all Distracting

Ratings for Distraction by Turn Arrow Information	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	3	1.1	2	1.3
2	6	2.1	2	1.3
3	12	4.3	8	5.0
4	23	8.2	13	8.2
5	43	15.3	23	14.5
6	84	29.8	55	34.6
7	111	39.4	56	35.2

Very Inaccurate 1 2 3 4 5 6 7 Very Accurate

Ratings for Accuracy of Turn Arrow Information	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	2	0.7	2	1.3
2	8	2.8	3	1.9
3	14	5.0	12	7.6
4	34	12.1	13	8.2
5	51	18.1	33	20.8
6	83	29.4	58	36.5
7	90	31.9	38	23.9

Strongly Disliked 1 2 3 4 5 6 7 Strongly Liked

Ratings for Overall Impression of Turn Arrow Information	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	4	1.4	2	1.3
2	7	2.5	4	2.5
3	9	3.2	10	6.3
4	27	9.6	17	10.7
5	58	20.6	31	19.5
6	88	31.3	60	37.7
7	88	31.1	35	22.0

C15. The countdown bar of the Prepare Maneuver and Execute Maneuver displays is shaded in the figure below. What information is the shaded portion of the display showing (select only one answer by placing an X in the box provided)? The correct answer is "relative distance to the right turn."

	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
Relative distance to the right turn	275	97.9	150	98.7
Amount of fuel in the gas tank	0	0.0	0	0.0
Distance and direction to the destination you entered	5	1.8	1	0.7
Portion of the trip completed	1	0.4	1	0.7

C16. Please rate the following characteristics of the Countdown Bar information provided by Ali-Scout.

Very Difficult 1 2 3 4 5 6 7 Very Easy

Ratings for Difficulty of Understanding Countdown Bar	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	2	0.7	2	1.3
2	1	0.4	1	0.7
3	6	2.1	3	2.0
4	9	3.2	8	5.2
5	28	9.9	21	13.7
6	69	24.4	38	24.8
7	168	59.4	80	52.3

Insufficient Sufficient
1 2 3 4 5 6 7

Ratings for Amount of Detail on Countdown Bar	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	1	0.4	3	2.0
2	2	0.7	1	0.7
3	7	2.5	2	1.3
4	16	5.6	16	10.3
5	33	11.6	22	14.2
6	63	22.2	39	25.2
7	162	57.0	72	46.5

Not Enough Too Much
1 2 3 4 5 6 7

Ratings for Amount of Advance Warning Provided by Countdown Bar	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	6	2.1	5	3.2
2	11	3.9	8	5.2
3	24	8.5	9	5.8
4	121	42.8	60	38.7
5	51	18.0	30	19.4
6	59	20.9	31	20.0
7	11	3.9	12	7.7

Very Distracting 1 2 3 4 5 6 7 Not at all Distracting

Ratings for Distraction by Countdown Bar	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	4	1.4	3	1.9
2	6	2.1	1	0.7
3	16	5.7	7	4.5
4	23	8.1	19	12.3
5	40	14.1	24	15.5
6	79	27.9	50	32.3
7	115	40.6	51	32.9

Very Inaccurate 1 2 3 4 5 6 7 Very Accurate

Ratings for Accuracy of Countdown Bar	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	3	1.1	2	1.3
2	10	3.5	6	3.9
3	17	6.0	6	3.9
4	23	8.1	13	8.4
5	44	15.5	40	25.8
6	88	31.0	45	29.0
7	99	34.9	43	27.7

Strongly Disliked 1 2 3 4 5 6 Strongly Liked 7

Ratings for Overall Impression of Countdown Bar	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	4	1.4	3	2.0
2	9	3.2	3	2.0
3	10	3.5	5	3.3
4	29	10.2	19	12.5
5	46	16.2	36	23.7
6	111	39.1	50	32.9
7	75	26.4	36	23.7

C17. The lane recommendation portion of the Prepare maneuver and Execute maneuver displays is shaded in the figure below. What information is this display showing (select only one answer by placing an X in the box provided)? The correct answer is "Move into one of the two right lanes."

	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
Make a right turn now	19	6.9	17	11.4
Move into one of the two right lanes	258	92.5	130	87.3
There are two cars to your right	0	0.0	1	0.7
Move into the left lane	2	0.7	1	0.7

C18. Please rate the following characteristics of the Lane Recommendation information provided by Ali-Scout.

Very Difficult 1 2 3 4 5 6 7 Very Easy

Ratings for Difficulty of Understanding Lane Recommendation	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	2	0.7	2	1.3
2	0	0.0	0	0.0
3	10	3.5	5	3.2
4	11	3.9	8	5.2
5	38	13.4	22	14.2
6	49	17.3	38	24.5
7	173	61.1	80	51.6

Insufficient 1 2 3 4 5 6 7 Sufficient

Ratings for Amount of Detail on Lane Recommendation	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	2	0.7	3	1.9
2	1	0.4	2	1.3
3	12	4.2	2	1.3
4	10	3.5	11	7.1
5	30	10.6	20	12.9
6	65	22.9	43	27.7
7	164	57.8	74	47.7

Not Enough 1 2 3 4 5 6 Too Much 7

Ratings for Amount of Advance Warning Provided by Lane Recommendation	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	11	3.9	6	3.9
2	11	3.9	4	2.6
3	21	7.4	14	9.0
4	108	38.0	58	37.4
5	57	20.1	31	20.0
6	59	20.8	35	22.6
7	17	6.0	7	4.5

Very Distracting 1 2 3 4 5 6 Not at all Distracting 7

Ratings for Distraction by Lane Recommendation	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	2	0.7	4	2.6
2	7	2.5	2	1.3
3	20	7.1	4	2.6
4	32	11.3	19	12.3
5	39	13.8	26	16.8
6	65	23.0	44	28.4
7	118	41.7	56	36.1

Very Inaccurate 1 2 3 4 5 6 7 Very Accurate

Ratings for Accuracy of Lane Recommendation	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	3	1.1	2	1.3
2	10	3.5	1	0.6
3	15	5.3	9	5.8
4	28	9.9	19	12.3
5	43	15.2	25	16.1
6	83	29.3	55	35.5
7	101	35.7	44	28.4

Strongly Disliked 1 2 3 4 5 6 7 Strongly Liked

Ratings for Lane Recommendation Overall Impression	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	3	1.1	3	2.0
2	9	3.2	1	0.7
3	9	3.2	6	4.0
4	38	13.4	26	17.1
5	51	18.0	31	20.4
6	97	34.3	51	33.6
7	76	26.9	34	22.4

C19. During normal use of Ali-Scout, you may leave guided mode (for example, if you ignore a route instruction or if you pass a beacon that is not operating). In such situations, Ali-Scout displays the Left Recommended Route display. Please rate the following characteristics of the Ali-Scout system's Left Recommended Route display.

Very Difficult 1 2 3 4 5 6 7 Very Easy

Ratings for Difficulty of Understanding Left Recommended Route	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	5	1.8	5	3.2
2	28	9.8	9	5.7
3	25	8.7	12	7.6
4	32	11.2	21	13.4
5	27	9.4	23	14.7
6	61	21.3	27	17.2
7	108	37.8	60	38.2

Very Distracting 1 2 3 4 5 6 7 Not at all Distracting

Ratings for Distraction by Left Recommended Route	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	10	3.5	5	3.2
2	10	3.5	7	4.5
3	30	10.6	14	8.9
4	41	14.4	19	12.1
5	28	9.9	22	14.0
6	77	27.1	38	24.2
7	88	31.0	52	33.1

Strongly Disliked 1 2 3 4 5 6 7 Strongly Liked

Ratings for Overall Impression of Left Recommended Route	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	16	5.6	11	7.0
2	18	6.3	13	8.3
3	38	13.3	12	7.6
4	70	24.6	34	21.7
5	40	14.0	34	21.7
6	65	22.8	35	22.3
7	38	13.3	18	11.5

C20. When you get close to your destination, Ali-Scout enters the destination zone and returns to autonomous mode. Please rate the following characteristics of the Ali-Scout system's Switch over to Autonomous Mode in the Destination Zone display.

Very Difficult 1 2 3 4 5 6 7 Very Easy

Ratings for Difficulty of Understanding Switch to Autonomous Mode	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	2	0.7	4	2.6
2	20	7.0	8	5.1
3	23	8.1	12	7.6
4	25	8.8	18	11.5
5	47	16.5	27	17.2
6	59	20.7	32	20.4
7	109	38.3	56	35.7

Very Inaccurate 1 2 3 4 5 6 7 Very Accurate

Ratings for Switch to Autonomous Mode Accuracy	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	13	4.6	10	6.3
2	23	8.1	21	13.3
3	32	11.2	19	12.0
4	56	19.7	27	17.1
5	58	20.4	39	24.7
6	63	22.1	25	15.8
7	40	14.0	17	10.8

Strongly Disliked 1 2 3 4 5 6 7 Strongly Liked

Ratings for Switch to Autonomous Mode Overall Impression	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	13	4.6	13	8.2
2	15	5.2	11	7.0
3	34	11.9	20	12.7
4	68	23.8	33	20.9
5	49	17.1	38	24.1
6	74	25.9	31	19.6
7	33	11.5	12	7.6

C21. In general, how often did you feel that you were close enough to your final destination when Ali-Scout switched to the autonomous mode in the destination zone? Circle the most appropriate number on the scale provided.

Always Never
1 2 3 4 5 6 7

Ratings for Close Enough to Final Destination	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	14	4.9	11	6.9
2	65	22.9	25	15.7
3	60	21.1	31	19.5
4	46	16.2	29	18.2
5	50	17.6	37	23.3
6	41	14.4	16	10.1
7	8	2.8	10	6.3

C22. After entering the destination zone, how often did you have difficulty finding your final destination?

Always had Difficulty — Never had Difficulty

1 2 3 4 5 6 7

Ratings for Difficulty Finding Destination When Destination Zone Reached	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	2	0.7	4	2.6
2	9	3.2	8	5.1
3	31	11.0	11	7.0
4	30	10.6	31	19.8
5	49	17.4	32	20.4
6	91	32.3	40	25.5
7	70	24.8	31	19.8

D. The Ali-Scout System as a Whole

In this set of questions, we would like to learn what you think of the Ali-Scout system as a whole.

D1. We would like to know your overall assessment of Ali-Scout's visual displays and concepts. Please rate the listed characteristics of Ali-Scout by circling the most appropriate number on the scales provided.

Very Difficult 1 2 3 4 5 6 7 Very Easy

Ratings for Difficulty of Reading Visual Display (Driving)	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	1	0.4	1	0.6
2	6	2.1	4	2.6
3	9	3.1	6	3.8
4	15	5.2	10	6.4
5	46	16.0	32	20.4
6	114	39.7	59	37.6
7	96	33.5	45	28.7

Very Difficult 1 2 3 4 5 6 7 Very Easy

Ratings for Difficulty of Reading Visual Display (Still)	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	2	0.7	1	0.7
2	2	0.7	0	0.0
3	3	1.1	3	2.0
4	7	2.5	5	3.3
5	26	9.1	21	13.6
6	72	25.2	50	32.5
7	174	60.8	74	48.1

Very Difficult 1 2 3 4 5 6 Very Easy 7

Ratings for Difficulty of Understanding	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	1	0.4	1	0.7
2	5	1.7	1	0.7
3	12	4.2	8	5.2
4	18	6.3	5	3.2
5	43	15.0	21	13.6
6	100	34.8	70	45.2
7	108	37.6	49	31.6

Insufficient 1 2 3 4 5 6 Sufficient 7

Ratings for Sufficiency of Advance Warning Provided	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	13	4.6	9	5.7
2	16	5.6	6	3.8
3	32	11.2	15	9.4
4	28	9.8	18	11.3
5	46	16.1	33	20.8
6	88	30.8	44	27.7
7	63	22.0	34	21.4

Insufficient Sufficient
1 2 3 4 5 6 7

Ratings for Accuracy of Guidance	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	13	4.6	9	5.7
2	23	8.1	13	8.2
3	42	14.8	17	10.8
4	46	16.2	20	12.7
5	55	19.4	38	24.1
6	71	25.0	40	25.3
7	34	12.0	21	13.3

Always Never
1 2 3 4 5 6 7

Ratings for Helped Me Find My Way	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	18	6.3	7	4.4
2	50	17.5	26	16.5
3	43	15.0	17	10.8
4	57	19.9	35	22.2
5	60	21.0	33	20.9
6	43	15.0	30	19.0
7	15	5.2	10	6.3

Strongly Disliked — Strongly Liked

1 2 3 4 5 6 7

Ratings for Overall Impression	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	9	3.2	5	3.2
2	16	5.6	10	6.4
3	33	11.6	15	9.6
4	52	18.3	34	21.7
5	63	22.1	36	22.9
6	78	27.4	37	23.6
7	34	11.9	20	12.7

D2. In general, were Ali-Scout's visual displays distracting:

Very Distracting — Not at all Distracting

1 2 3 4 5 6 7

Ratings for Distraction by Visual Display at Night	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	4	1.4	2	1.3
2	4	1.4	4	2.6
3	14	4.9	5	3.2
4	19	6.6	13	8.3
5	25	8.7	23	14.7
6	98	34.3	46	29.3
7	122	42.7	64	40.8

Very Distracting 1 2 3 4 5 6 7 Not at all Distracting

Ratings for Distraction by Visual Display During Daylight Hours	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	3	1.1	2	1.3
2	1	0.4	2	1.3
3	6	2.1	4	2.6
4	13	4.6	6	3.8
5	24	8.4	23	14.7
6	95	33.2	48	30.6
7	144	50.4	72	45.9

Very Distracting 1 2 3 4 5 6 7 Not at all Distracting

Ratings for Distraction of Visual Display in Heavy Traffic	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	6	2.1	2	1.3
2	5	1.8	4	2.6
3	10	3.5	5	3.2
4	28	9.8	10	6.4
5	43	15.0	31	19.8
6	78	27.3	46	29.3
7	116	40.6	59	37.6

Very Distracting 1 2 3 4 5 6 7 Not at all Distracting

Ratings for Distraction of Visual Display in Light Traffic	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	3	1.1	2	1.3
2	2	0.7	3	1.9
3	6	2.1	4	2.6
4	11	3.9	5	3.2
5	23	8.1	20	12.9
6	94	33.1	50	32.3
7	145	51.1	71	45.8

Very Distracting 1 2 3 4 5 6 7 Not at all Distracting

Ratings for Distraction of Visual Display on Freeways	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	3	1.1	1	0.7
2	2	0.7	3	1.9
3	2	0.7	5	3.2
4	14	4.9	5	3.2
5	24	8.5	23	14.8
6	93	32.8	45	29.0
7	146	51.4	73	47.1

Very Distracting 1 2 3 4 5 6 7 Not at all Distracting

Ratings for Distraction of Visual Display on Other Roads	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	4	1.4	2	1.3
2	0	0.0	2	1.3
3	5	1.8	5	3.2
4	21	7.4	10	6.5
5	32	11.2	24	15.5
6	89	31.2	48	31.0
7	134	47.0	64	41.3

D3. For this question, we would like to know your overall assessment of the Ali-Scout system's Voice Guidance feature. Please circle the most appropriate number on the scale provided.

Very Difficult 1 2 3 4 5 6 7 Very Easy

Ratings for Difficulty of Hearing Voice Guidance	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	0	0.0	2	1.3
2	0	0.0	1	0.6
3	7	2.4	2	1.3
4	9	3.1	7	4.4
5	29	10.1	22	13.8
6	85	29.6	52	32.7
7	157	54.7	73	45.9

Very Difficult
1 2 3 4 5 6 7
Very Easy

Ratings for Difficulty of Understanding Voice Guidance	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	0	0.0	2	1.3
2	1	0.4	0	0.0
3	5	1.8	3	1.9
4	13	4.6	11	7.0
5	32	11.2	23	14.6
6	99	34.6	52	32.9
7	136	47.6	67	42.4

Insufficient
1 2 3 4 5 6 7
Sufficient

Ratings for Amount of Information Given by Voice Guidance	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	4	1.4	4	2.5
2	5	1.8	1	0.6
3	14	4.9	3	1.9
4	25	8.7	12	7.6
5	36	12.6	26	16.5
6	89	31.1	55	34.8
7	113	39.5	57	36.1

Insufficient Sufficient
1 2 3 4 5 6 7

Ratings for Sufficiency of Advance Warning Provided by Voice Guidance	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	10	3.5	7	4.4
2	16	5.6	2	1.3
3	32	11.2	16	10.1
4	26	9.1	17	10.8
5	44	15.4	29	18.4
6	71	24.8	47	29.8
7	87	30.4	40	25.3

Very Distracting Not at all Distracting
1 2 3 4 5 6 7

Ratings for Distraction by Voice Guidance	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	6	3.1	8	5.1
2	8	2.8	9	5.7
3	14	4.9	8	5.1
4	32	11.2	16	10.1
5	35	12.2	18	11.4
6	84	29.4	43	27.2
7	107	37.4	56	35.4

Strongly Disliked 1 2 3 4 5 6 7 Strongly Liked

Ratings for Sound of the Voice in Voice Guidance	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	7	2.5	8	5.1
2	11	3.9	14	9.0
3	29	10.1	14	9.0
4	86	30.1	27	17.3
5	56	19.6	30	19.2
6	63	22.0	46	29.5
7	34	11.9	17	10.9

Strongly Disliked 1 2 3 4 5 6 7 Strongly Liked

Ratings for Overall Impression of Voice Guidance	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	6	2.1	4	2.6
2	6	2.1	8	5.2
3	6	2.1	10	6.5
4	59	20.7	23	14.8
5	50	17.5	28	18.1
6	111	39.0	57	36.8
7	47	16.5	25	16.1

D4. Considering both visual and verbal information, how often did you follow Ali-Scout's recommendations to turn?

Never Always
1 2 3 4 5 6 7

Ratings for Following Recommendation to Turn	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	2	0.7	2	1.3
2	11	3.9	9	5.7
3	33	11.7	19	12.0
4	56	19.8	27	17.0
5	115	40.6	66	41.5
6	60	21.2	31	41.5
7	6	2.1	5	3.1

If always, please skip to question D6.

D5. Considering all of the times that you did not take the recommended turn, how often were each of the following items part of your reason not to follow the recommended turn? (Answer by circling the most appropriate number on the scale provided just below each item.)

Never Always
1 2 3 4 5 6 7

Ratings for Knew of Faster Route	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	13	4.6	3	1.9
2	6	2.1	5	3.2
3	13	4.6	7	4.5
4	24	8.5	12	7.7
5	72	25.6	56	36.1
6	97	34.5	48	31.0
7	56	20.0	24	15.5

Never Always
1 2 3 4 5 6 7

Ratings for Believed Recommended Turn Went Away From Destination	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	66	23.6	24	15.5
2	37	13.2	23	14.8
3	34	12.1	20	12.9
4	34	12.1	28	18.1
5	57	20.4	35	22.6
6	37	13.2	17	11.0
7	15	5.4	8	5.2

Never Always
1 2 3 4 5 6 7

Ratings for Needed To Make Stops Along Way	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	39	13.9	17	11.0
2	48	17.1	16	10.3
3	27	9.6	26	16.8
4	55	19.6	30	19.4
5	66	23.6	33	21.3
6	35	12.5	25	16.1
7	10	3.6	8	5.1

Never Always
1 2 3 4 5 6 7

Ratings for Believed Recommended Turn Would Lead Into Traffic Congestion	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	70	25.3	24	15.6
2	43	15.5	23	14.9
3	25	9.0	15	9.7
4	39	14.1	29	18.8
5	48	17.3	34	22.1
6	44	15.9	23	14.9
7	8	2.9	6	3.9

Never Always
1 2 3 4 5 6 7

Ratings for Ali-Scout Provided Suggested Turn Too Late	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	118	42.8	54	35.3
2	61	22.1	33	21.6
3	29	10.5	21	13.7
4	27	9.8	19	12.4
5	35	12.7	16	10.5
6	6	2.2	7	4.6
7	0	0.0	3	2.0

Never Always
1 2 3 4 5 6 7

Ratings for Recommended Turn Not Clear	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	134	49.1	51	33.3
2	61	22.3	46	30.1
3	22	8.1	18	11.8
4	30	11.0	16	10.5
5	18	6.6	14	9.2
6	7	2.6	5	3.3
7	1	0.4	3	2.0

Never Always
1 2 3 4 5 6 7

Ratings for Not Enough Room to Merge	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	107	38.5	38	24.8
2	63	22.7	32	20.9
3	35	12.6	20	13.1
4	35	12.6	26	17.0
5	26	9.4	25	16.3
6	12	4.3	11	7.2
7	0	0.0	1	0.7

Never Always
1 2 3 4 5 6 7

Ratings for Other	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	6	7.1	4	8.5
2	8	9.5	1	2.1
3	11	13.1	4	8.5
4	10	11.9	3	6.4
5	23	27.4	14	29.8
6	18	21.4	15	31.9
7	8	9.5	6	12.8

D6. Which was your preferred way for receiving Ali-Scout route guidance information?

Route Guidance Information Preference	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
Voice Alone	10	3.5	5	3.1
Visual Alone	12	4.2	11	6.8
Voice and Visual Together	241	84.3	133	82.6
No Preference	23	8.0	12	7.5

D8. In your opinion, how often did the Ali-Scout system help you achieve the following in the Oakland County Study Area?

Reduced Increased
1 2 3 4 5 6 7

Ratings for Ali-Scout Travel Time	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	7	2.5	3	1.9
2	17	6.0	10	6.4
3	43	15.2	37	23.6
4	184	65.0	97	61.8
5	16	5.7	4	2.6
6	11	3.9	3	1.9
7	5	1.8	3	1.9

Reduced Increased
1 2 3 4 5 6 7

Ratings for Ali-Scout Congestion Avoidance	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	5	1.8	3	1.9
2	14	5.1	7	4.5
3	31	11.2	19	12.1
4	180	65.0	101	64.3
5	31	11.2	16	10.2
6	9	3.3	8	5.1
7	7	2.5	3	1.9

Reduced Increased
1 2 3 4 5 6 7

Ratings Ali-Scout Driving Safety	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	1	0.4	3	1.9
2	9	3.2	3	1.9
3	22	7.9	16	10.2
4	206	73.8	110	70.1
5	21	7.5	14	8.9
6	15	5.4	7	4.5
7	5	1.8	4	2.6

Reduced Increased
1 2 3 4 5 6 7

Ratings for Ali-Scout Fuel Consumption	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	6	2.2	2	1.3
2	6	2.2	4	2.6
3	19	6.8	18	11.5
4	220	78.9	118	75.2
5	14	5.0	8	5.1
6	11	3.9	3	1.9
7	3	1.1	4	2.6

D9. Please rate the following characteristics of the Ali-Scout system as a whole.

Very Difficult 1 2 3 4 5 6 Very Easy 7

Ratings for Difficulty Learning Ali-Scout Characteristics	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	5	1.8	3	1.9
2	16	5.6	9	5.7
3	33	11.5	13	8.2
4	25	8.7	19	12.0
5	65	22.7	37	23.4
6	86	30.1	48	30.4
7	56	19.6	29	18.4

Very Difficult 1 2 3 4 5 6 Very Easy 7

Ratings for Difficulty Understanding Ali-Scout Characteristics	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	2	0.7	2	1.3
2	7	2.5	2	1.3
3	21	7.4	5	3.2
4	23	8.1	17	10.8
5	52	18.3	40	25.5
6	102	35.8	54	34.4
7	78	27.4	37	23.6

Insufficient Sufficient
1 2 3 4 5 6 7

Ratings for Amount of Information Given by Ali-Scout	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	8	2.8	6	3.8
2	10	3.5	2	1.3
3	17	5.9	2	1.3
4	27	9.4	22	13.8
5	46	16.0	33	20.8
6	89	31.0	48	30.2
7	90	31.4	46	28.9

Insufficient Sufficient
1 2 3 4 5 6 7

Ratings for Sufficiency of Advance Warning Provided by Ali-Scout	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	9	3.2	8	5.0
2	23	8.0	4	2.5
3	33	11.6	17	10.7
4	32	11.2	17	10.7
5	46	16.1	33	20.8
6	82	28.7	43	27.0
7	61	21.3	37	23.3

Very Inaccurate 1 2 3 4 5 6 7 Very Accurate

Ratings for Accuracy of Guidance of Ali-Scout	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	15	5.3	7	4.4
2	30	10.6	14	8.7
3	40	14.1	25	15.5
4	39	13.8	24	14.9
5	70	24.7	41	25.5
6	64	22.6	36	22.4
7	25	8.8	14	8.7

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

Ratings for Ali-Scout Helped Me Find My Way	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	17	6.0	13	8.1
2	26	9.1	13	8.1
3	30	10.5	18	11.3
4	76	26.7	41	25.6
5	67	23.5	40	25.0
6	49	17.2	26	16.3
7	20	7.0	9	5.6

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

Ratings for Ali-Scout Reduced My Travel Time	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	33	11.6	21	13.0
2	30	10.5	17	10.6
3	50	17.5	20	12.4
4	105	36.8	54	33.5
5	36	12.6	28	17.4
6	23	8.1	18	11.2
7	8	2.8	3	1.9

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

Ratings for Ali-Scout Functioned Properly	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	14	5.0	11	6.9
2	23	8.1	16	10.0
3	40	14.1	13	8.1
4	47	16.7	28	17.5
5	46	16.3	34	21.3
6	69	24.5	37	23.1
7	43	15.3	21	13.1

Very Distracting
1 2 3 4 5 6 7 Not at all Distracting

Ratings for Distraction by Ali-Scout While Driving	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	2	0.7	6	3.7
2	7	2.5	3	1.9
3	14	4.9	11	6.8
4	33	11.5	23	14.3
5	31	10.8	20	12.4
6	104	36.4	41	25.5
7	95	33.2	57	35.4

Strongly Disliked
1 2 3 4 5 6 7 Strongly Liked

Ratings for Overall Impression of Ali-Scout	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	10	3.5	9	5.6
2	20	7.1	9	5.6
3	27	9.5	18	11.3
4	44	15.6	38	23.8
5	65	23.0	40	25.0
6	81	28.6	30	18.8
7	36	12.7	16	10.0

The next few questions are concerned with roadside beacons. In order to operate properly, the in-vehicle components of Ali-Scout must communicate with roadside beacons. As a result, the system cannot guide you to destinations beyond the beacon coverage area.

D10. In your use of the Ali-Scout system, what did you think of the size of the beacon coverage area for your driving needs?

Coverage area too small — Coverage area too large

1 2 3 4 5 6 7

Ratings for Coverage Area of Ali-Scout	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	143	50.7	67	42.4
2	58	20.6	32	20.3
3	44	15.6	26	16.5
4	23	8.2	25	15.8
5	10	3.6	5	3.2
6	2	0.7	2	1.3
7	2	0.7	1	0.6

D11. Thinking only of the area in which beacons were installed, what did you think of the spacing between the beacons?

Beacons too far apart — Beacons too close

1 2 3 4 5 6 7

Ratings for Spacing of Ali-Scout Beacons	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	48	17.0	19	12.2
2	55	19.5	29	18.6
3	77	27.3	41	26.3
4	94	33.3	58	37.2
5	6	2.1	8	5.1
6	2	0.7	1	0.6
7	0	0.0	0	0.0

D11. How often did you notice that the beacons did not function properly?

Never — Always

1 2 3 4 5 6 7

Ratings for Frequency of Beacons not Functioning Properly	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	59	21.0	21	13.4
2	74	26.3	38	24.2
3	43	15.3	32	20.4
4	40	14.2	28	17.8
5	44	15.7	29	18.5
6	20	7.1	9	5.7
7	1	0.4	0	0.0

E. Use of the Ali-Scout System

In this section, we would like to know how you used Ali-Scout as part of your driving and trip-making.

E1. How often did you use Ali-Scout for the for the following types of trips? Circle the most appropriate number in the scales provided.

Never Always
1 2 3 4 5 6 7

Ratings for Frequency of Ali-Scout Use for Work Commute	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	25	8.9	20	12.8
2	22	7.9	12	7.7
3	12	4.3	8	5.1
4	12	4.3	8	5.1
5	25	8.9	18	11.5
6	49	17.5	31	19.9
7	135	48.2	59	37.8

Never Always
1 2 3 4 5 6 7

Ratings for Frequency of Ali-Scout Use for Other Work-related Trips	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	59	21.2	22	14.3
2	21	7.5	15	9.7
3	13	4.7	10	6.5
4	36	12.9	26	16.9
5	45	16.1	37	24.0
6	50	17.9	24	15.6
7	55	19.7	20	13.0

Never Always
1 2 3 4 5 6 7

Ratings for Ali-Scout Use for Recreational Trips	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	32	11.4	19	12.1
2	14	5.0	18	11.5
3	24	8.5	22	14.0
4	33	11.7	29	18.5
5	68	24.1	29	18.5
6	48	17.0	30	19.1
7	63	22.3	10	6.4

Never Always
1 2 3 4 5 6 7

Ratings for Ali-Scout Use for Other Personal Trips	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	16	5.6	11	7.0
2	16	5.6	13	8.3
3	24	8.5	17	10.8
4	43	15.1	34	21.7
5	61	21.5	36	22.9
6	66	23.2	36	22.9
7	58	20.4	10	6.4

For the next few questions, please compare your driving without an Ali-Scout system to your driving with the Ali-Scout system.

E2. Please indicate the extent to which driving with Ali-Scout changed your attention to:

Much less Attention 1 2 3 4 5 6 7 Much more Attention

Ratings for Ali-Scout Changed Your Attention to Traffic Conditions	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	0	0.0	3	2.0
2	6	2.1	2	1.3
3	15	5.3	8	5.2
4	164	58.2	89	58.2
5	56	19.9	29	19.0
6	27	9.6	14	9.2
7	14	5.0	8	5.2

Much less Attention 1 2 3 4 5 6 7 Much more Attention

Ratings for Ali-Scout Changed Your Attention to Traffic Signals	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	0	0.0	3	2.0
2	1	0.4	0	0.0
3	18	6.4	7	4.6
4	198	70.2	110	71.9
5	35	12.4	18	11.8
6	22	7.8	9	5.9
7	8	2.8	6	3.9

Much less Attention 1 2 3 4 5 6 7 Much more Attention

Ratings for Ali-Scout Changed Your Attention to Road Signs	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	0	0.0	3	2.0
2	3	1.1	1	0.7
3	14	5.0	5	3.3
4	233	83.2	124	81.1
5	18	6.4	15	9.8
6	10	3.6	3	2.0
7	2	0.7	2	1.3

Much less Attention 1 2 3 4 5 6 7 Much more Attention

Ratings for Ali-Scout Changed Your Attention to Street Signs	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	3	1.1	3	2.0
2	13	4.6	4	2.6
3	28	9.9	14	9.2
4	186	66.0	97	63.8
5	35	12.4	25	16.5
6	12	4.3	4	2.6
7	5	1.8	5	3.3

Much less Attention
1 2 3 4 5 6 7
Much more Attention

Ratings for Ali-Scout Changed Your Attention to Street Addresses	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	2	0.7	4	2.6
2	16	5.7	2	1.3
3	22	7.9	8	5.2
4	190	67.9	110	71.9
5	28	10.0	17	11.1
6	14	5.0	7	4.6
7	8	2.9	5	3.3

Much less Attention
1 2 3 4 5 6 7
Much more Attention

Ratings for Ali-Scout Changed Your Attention to Speedometer	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	1	0.4	3	2.0
2	4	1.4	1	0.7
3	17	6.1	7	4.6
4	230	81.9	126	82.4
5	18	6.4	12	7.8
6	8	2.9	3	2.0
7	3	1.1	1	0.7

Much less Attention 1 2 3 4 5 6 7 Much more Attention

Ratings for Ali-Scout Changed Your Attention to Mirrors	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	2	0.7	4	2.6
2	4	1.4	0	0.0
3	15	5.3	8	5.2
4	232	82.3	124	81.1
5	17	6.0	13	8.5
6	9	3.2	3	2.0
7	3	1.1	1	0.7

Much less Attention 1 2 3 4 5 6 7 Much more Attention

Ratings for Ali-Scout Changed Your Attention to Fuel Gauge	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	2	0.7	4	2.6
2	5	1.8	0	0.0
3	15	5.4	6	4.0
4	240	85.7	129	84.9
5	11	3.9	10	6.6
6	4	1.4	3	2.0
7	3	1.1	0	0.0

E3. Please indicate the extent to which driving with the Ali-Scout system, compared to driving without Ali-Scout, made you feel:

Always less with Ali-Scout 1 2 3 4 5 6 7 Always more with Ali-Scout

Ratings for Feeling Nervous With Ali-Scout	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	15	5.3	7	4.6
2	18	6.4	10	6.5
3	27	9.6	21	13.7
4	209	74.4	107	69.9
5	9	3.2	5	3.3
6	1	0.4	1	0.7
7	2	0.7	2	1.3

Always less with Ali-Scout 1 2 3 4 5 6 7 Always more with Ali-Scout

Ratings for Feeling Confident With Ali-Scout	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	4	1.4	2	1.3
2	5	1.8	5	3.3
3	18	6.4	9	5.9
4	150	53.2	82	54.0
5	64	22.7	37	24.3
6	32	11.4	13	8.6
7	9	3.2	4	2.6

Always less with Ali-Scout 1 2 3 4 5 6 7 Always more with Ali-Scout

Ratings for Feeling Confused With Ali-Scout	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	10	3.6	9	5.9
2	22	7.9	9	5.9
3	30	10.7	26	17.0
4	179	63.9	96	62.8
5	27	9.6	9	5.9
6	9	3.2	1	0.7
7	3	1.1	3	2.0

Always less with Ali-Scout 1 2 3 4 5 6 7 Always more with Ali-Scout

Ratings for Feeling Attentive With Ali-Scout	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	1	0.4	3	2.0
2	4	1.4	4	2.6
3	11	3.9	7	4.6
4	150	53.4	89	58.2
5	67	23.8	33	21.6
6	37	13.2	13	8.5
7	11	3.9	4	2.6

Always less with Ali-Scout — Always more with Ali-Scout

1 2 3 4 5 6 7

Ratings for Feeling Safe With Ali-Scout	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	2	0.7	4	2.6
2	4	1.4	3	2.0
3	10	3.6	6	3.9
4	202	71.9	112	73.2
5	39	13.9	16	10.5
6	21	7.5	9	5.9
7	3	1.1	3	2.0

Always less with Ali-Scout — Always more with Ali-Scout

1 2 3 4 5 6 7

Ratings for Feeling Stressed With Ali-Scout	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	14	5.0	8	5.2
2	18	6.4	14	9.2
3	28	10.0	18	1.8
4	194	69.3	99	64.7
5	18	6.4	10	6.5
6	6	2.1	1	0.7
7	2	0.7	3	2.0

Always less with Ali-Scout
1 2 3 4 5 6 7
Always more with Ali-Scout

Ratings for Feeling Relaxed With Ali-Scout	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	4	1.4	6	3.9
2	7	2.5	5	3.3
3	19	6.8	10	6.5
4	191	68.0	109	71.2
5	35	12.5	14	9.2
6	20	7.1	7	4.6
7	5	1.8	2	1.3

Always less with Ali-Scout
1 2 3 4 5 6 7
Always more with Ali-Scout

Ratings for Feeling Frustrated With Ali-Scout	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	13	4.6	10	6.5
2	22	7.8	9	5.9
3	23	8.2	17	11.1
4	164	58.2	84	54.9
5	30	10.6	25	16.3
6	26	9.2	5	3.3
7	4	1.4	3	2.0

E4. Again, compared to driving without Ali-Scout, please indicate the extent to which you had the following experiences while driving with Ali-Scout:

Always less with Ali-Scout 1 2 3 4 5 6 7 Always more with Ali-Scout

Ratings for Changes in Crashes With Ali-Scout	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	40	14.8	22	15.1
2	5	1.9	5	3.4
3	5	1.9	2	1.4
4	216	80.0	113	77.4
5	3	1.1	1	0.7
6	0	0.0	1	0.7
7	1	0.4	2	1.4

Always less with Ali-Scout 1 2 3 4 5 6 7 Always more with Ali-Scout

Ratings for Changes in Missed Stop Signs With Ali-Scout	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	37	13.7	15	10.2
2	7	2.6	8	5.4
3	5	1.9	4	2.7
4	211	78.2	113	76.9
5	8	3.0	4	2.7
6	2	0.7	2	1.4
7	0	0.0	1	0.7

Always less with Ali-Scout — Always more with Ali-Scout

1 2 3 4 5 6 7

Ratings for Changes in Ran Red Light With Ali-Scout	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	36	13.4	13	8.8
2	4	1.5	8	5.4
3	6	2.2	6	4.1
4	214	79.9	113	76.9
5	7	2.6	5	3.4
6	1	0.4	1	0.7
7	0	0.0	1	0.7

Always less with Ali-Scout — Always more with Ali-Scout

1 2 3 4 5 6 7

Ratings for Changes in Ran Off Road With Ali-Scout	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	37	13.7	15	10.2
2	5	1.9	9	6.1
3	4	1.5	2	1.4
4	215	79.6	115	78.2
5	7	2.6	4	2.7
6	2	0.7	1	0.7
7	0	0.0	1	0.7

Always less with Ali-Scout

Always more with Ali-Scout

1 2 3 4 5 6 7

Ratings for Changes in Crossed Lane Marker With Ali-Scout	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	35	13.0	16	10.8
2	5	1.9	8	5.4
3	4	1.5	4	2.7
4	210	78.1	111	75.0
5	14	5.2	7	4.7
6	1	0.4	1	0.7
7	0	0.0	1	0.7

The next few questions deal with your crash and near-crash involvement while driving the Ali-Scout equipped vehicle. These questions are only for analytical purposes, and your responses will be held in the strictest confidence.

E5. Were you involved in any crashes while driving with the Ali-Scout system? (If no, please skip ahead to question E8.)

Crash Involvement While Driving With Ali-Scout	**Survey No. 1**		**Survey No. 2**	
	Frequency	**Percent**	**Frequency**	**Percent**
Yes	4	1.4	8	5.0
No	275	98.6	152	95.0

E6. In your opinion, how did Ali-Scout contribute to this (these) crash(es)?

	Survey No. 1		**Survey No. 2**	
	Frequency	**Percent**	**Frequency**	**Percent**
Not at All	14	93.3	15	93.8
Contributing Factor	1	6.7	1	6.2
The Main Factor	0	0.0	0	0.0

E7. In the space provided, please explain how Ali-Scout did or did not contribute to this (these) crash(es).

Survey 1:

- I was watching for new instructions and rear ended someone.
- You have to learn not to pay to much attention to it.

Survey 2:

- Near crash turning into 1-way street wrong way
- I was paying too much attention to screen instead of the road.

E8. Were you ever involved in what you consider to be a near-crash while driving with the Ali-Scout system? (If no, please skip ahead to question F1.)

Near Crash Involvement While Driving With Ali-Scout	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
Yes	24	8.6	23	15.0
No	256	91.4	130	85.0

E9. In your opinion, to what extent was Ali-Scout a contributing factor to this (these) near-crash(es)?

	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
Not at All	17	68.0	15	83.3
Contributing Factor	6	24.0	3	16.7
The Main Factor	2	8.0	0	0.0

E10. In the space provided, please explain how Ali-Scout did or did not contribute to this (these) near-crash(es).

Survey 1:

- I was playing with the buttons.
- While learning new system & trying to read command (graphics) my attention was diverted from stopped traffic in front of me and people switching lanes.
- Looking at display took my eyes off the road, nearly causing me to rear end vehicle which had suddenly stopped.
- Near rear-end collisions on express way, wasn't looking at ALI-SCOUT.
- other person not paying attention during a lane change
- makes you more aware of what is around you
- The other driver entered the I 75 ramp without looking for traffic. Ali-Scout neither helped nor hindered the situation.
- Sudden stops - Ali-Scout can't predict (nor is it intended to)
- distraction while first installed, driving thru downtown Rochester I left early from a stop light, I was looking toward the next light - it changed so I started to go possibly the newness of Ali-Scout played a factor.
- Not a factor at all (Cell Phone was factor)
- Ali-scout contributed to the near missed because of lack of advance noticed.
- A driver nearly rear-ended me when I was at a stop light due to, probably, their inattentiveness. Ali-scout was not a factor.
- The Ali-scout did not contribute to the near accidents because they were instances when lane markings were changed on the road & the other driver did not realize it. The other incidents were always people turning left on a red light because there was no left turn signal.

Survey 2:

- Parking lot near miss - no factor
- No matter where you're driving - it doesn't change the conditions another driver may be under
- Distracted by other things. Ali-Scout was not a factor.
- Attention not on road but on Ali-Scout
- Happened when backing out of driveway
- Near crashes were more a result of human error
- Woman driver pulled out of her driveway in reverse and didn't look to see if road was clear and I had to break fast.
- I was not paying attention to Ali-Scout
- Turn into 1-way street wrong way - Royal Oak 11 mile going east turning N onto I-75 - instructed to turn too early (W. Side (left) of I-75)
- I was able to stop in time
- It wasn't on or I wasn't paying attention to it
- Other driver was not paying attention at all

F. Valuation

In the following questions, we would like to learn how much you, an experienced user, value the Ali-Scout system.

F1. For assistance in reaching your destinations, how do you rate the following sources of route-guidance information?

Poor Excellent
1 2 3 4 5 6 7

Ratings for Standard Road Map As Route Guidance Source	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	2	0.7	3	1.8
2	6	2.1	0	0.0
3	7	2.4	7	4.2
4	28	9.8	12	7.3
5	63	22.0	29	17.6
6	88	30.7	58	35.2
7	93	32.4	56	33.9

Poor Excellent
1 2 3 4 5 6 7

Ratings for Verbal Directions From Passenger As Route Guidance Source	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	10	3.5	4	2.4
2	18	6.3	8	4.9
3	30	10.5	15	9.1
4	69	24.2	39	23.6
5	77	27.0	42	25.5
6	56	19.7	45	27.3
7	25	8.8	12	7.3

Poor Excellent
1 2 3 4 5 6 7

Ratings for Verbal Directions From Other People As Route Guidance Source	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	20	7.0	6	3.7
2	28	9.8	14	8.5
3	55	19.2	29	17.7
4	80	28.0	54	32.9
5	61	21.3	37	22.6
6	32	11.2	20	12.2
7	10	3.5	4	2.4

Poor Excellent
1 2 3 4 5 6 7

Ratings for Written Directions As Route Guidance Source	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	1	0.4	2	1.2
2	7	2.5	3	1.8
3	26	9.1	7	4.3
4	43	15.1	32	19.4
5	78	27.4	48	29.1
6	86	30.2	54	32.7
7	44	15.4	19	11.5

Poor Excellent
1 2 3 4 5 6 7

Ratings for Ali-Scout As Route Guidance Source	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	7	2.5	4	2.4
2	15	5.2	11	6.6
3	19	6.6	7	4.2
4	38	13.3	37	22.3
5	77	26.9	39	23.5
6	91	31.8	52	31.3
7	39	13.6	16	9.6

F2. If you were about to drive to an unfamiliar area, which of the following sources of route-guidance information would you like to use?

Definitely Would Not Like Definitely Would Like
1 2 3 4 5 6 7

Ratings for Liking Standard Road Map As Route Guidance In Unfamiliar Area	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	4	1.4	3	1.8
2	3	1.1	2	1.2
3	7	2.5	2	1.2
4	18	6.3	7	4.2
5	37	13.0	18	10.8
6	80	28.1	44	26.4
7	136	47.7	91	54.5

Definitely Would Not Like 1 2 3 4 5 6 7 Definitely Would Like

Ratings for Liking Verbal Directions From Passenger As Route Guidance In Unfamiliar Area	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	10	3.5	4	2.4
2	24	8.5	3	1.8
3	25	8.8	12	7.3
4	54	19.1	31	18.8
5	60	21.2	35	21.2
6	57	20.1	50	30.3
7	53	18.7	30	18.2

Definitely Would Not Like 1 2 3 4 5 6 7 Definitely Would Like

Ratings for Liking Verbal Directions From Other People As Route Guidance In Unfamiliar Area	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	19	6.7	7	4.3
2	34	12.1	11	6.8
3	34	12.1	16	9.8
4	75	26.6	49	30.1
5	53	18.8	35	21.5
6	40	14.2	28	17.2
7	27	9.6	17	10.4

Definitely Would Not Like 1 2 3 4 5 6 7 Definitely Would Like

Ratings for Liking Written Directions As Route Guidance In Unfamiliar Area	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	3	1.1	0	0.0
2	4	1.4	1	0.6
3	8	2.8	5	3.0
4	49	17.3	25	15.1
5	61	21.6	36	21.7
6	87	30.7	54	32.5
7	71	25.1	45	27.1

Definitely Would Not Like 1 2 3 4 5 6 7 Definitely Would Like

Ratings for Liking Ali-Scout As Route Guidance In Unfamiliar Area	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	6	2.1	7	4.2
2	12	4.2	9	5.5
3	7	2.5	9	5.5
4	29	10.2	17	10.3
5	48	16.9	28	17.0
6	82	28.9	49	29.7
7	100	35.2	46	27.9

F3. For the following items, assume that the Ali-Scout system was available nationwide. Given this scenario, how useful do you think the Ali-Scout system would be for:

Not at all Useful — Extremely Useful
1 2 3 4 5 6 7

Ratings for Ali-Scout Usefulness for Commuting Trip	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	14	4.9	10	6.0
2	32	11.2	15	9.0
3	25	8.8	15	9.0
4	36	12.6	14	8.4
5	49	17.2	41	24.7
6	52	18.3	31	18.7
7	77	27.0	40	24.1

Not at all Useful — Extremely Useful
1 2 3 4 5 6 7

Ratings for Ali-Scout Usefulness for Out-of-town Vacation Trips	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	4	1.4	3	1.8
2	8	2.8	3	1.8
3	2	0.7	5	3.0
4	13	4.6	12	7.2
5	37	13.0	23	13.9
6	67	23.5	45	27.1
7	154	54.0	75	45.2

Not at all Useful 1 2 3 4 5 6 7 Extremely Useful

Ratings for Ali-Scout Usefulness for Out-of-town Business Trips	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	3	1.1	2	1.2
2	6	2.1	0	0.0
3	5	1.8	5	3.0
4	12	4.2	13	7.9
5	28	9.9	18	10.9
6	72	25.4	51	30.9
7	157	55.5	76	46.1

Not at all Useful 1 2 3 4 5 6 7 Extremely Useful

Ratings for Ali-Scout Usefulness for Local Driving	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	21	21.0	17	10.3
2	34	11.9	24	14.6
3	36	12.6	16	9.7
4	38	13.3	24	14.6
5	55	19.2	36	21.8
6	47	16.4	23	13.9
7	55	19.2	25	15.1

F4. If you had $2,500 to spend on options for a new car, how would you allocate your budget?

Would Purchase Car Alarm ($300)	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
Yes	75	25.6	54	30.7
No	218	74.4	122	69.3

Would Purchase Cellular Phone ($500)	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
Yes	90	30.7	58	33.1
No	203	69.3	117	66.9

Would Purchase Power Sunroof ($500)	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
Yes	43	14.7	32	18.2
No	250	85.3	144	81.8

Would Purchase Power Windows ($300)	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
Yes	219	74.7	132	75.4
No	74	25.3	43	24.6

Would Purchase Cassette Player ($150)	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
Yes	120	41.0	74	42.1
No	173	59.0	102	58.0

Would Purchase Air Conditioning ($650)	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
Yes	281	95.9	160	91.4
No	12	4.1	15	8.6

Would Purchase Air Bag, Driver's Side ($400)	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
Yes	245	83.6	124	70.5
No	48	16.4	52	29.6

Would Purchase Trip Computer ($1,000)	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
Yes	10	3.4	17	9.7
No	283	96.6	159	90.3

Would Purchase Power Mirror ($100)	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
Yes	147	50.2	80	45.5
No	146	49.8	96	54.6

Would Purchase Ali-Scout ($500)	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
Yes	87	29.7	38	21.7
No	206	70.3	137	78.3

Would Purchase Power Locks ($250)	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
Yes	226	77.1	128	72.7
No	67	22.9	48	27.3

Would Purchase CD Player ($250)	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
Yes	135	46.1	75	42.9
No	158	53.9	100	57.1

Would Purchase Integrated Child Safety Seat ($150)	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
Yes	40	13.7	27	15.4
No	253	86.4	148	84.6

Would Purchase Air Bag, Passenger's Side ($400)	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
Yes	186	63.7	96	54.9
No	106	36.3	79	45.1

F5. How much would you be willing to pay for the Ali-Scout system as an option on a new car?

Dollars Willing to Pay For Ali-Scout Option on New Car	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
0	57	20.9	54	31.4
1-49	1	0.4	2	1.2
50-199	26	9.5	26	15.1
200-299	58	21.2	28	16.3
300-399	51	18.7	29	16.9
400-499	17	6.2	11	6.4
500-599	50	18.3	19	11.0
600-699	3	1.1	0	0.0
700-799	3	1.1	1	0.6
800-899	1	0.4	1	0.6
900-999	1	0.4	0	0.0
1000 or more	5	1.8	1	0.6

F6. How much would you be willing to pay to add the Ali-Scout system to your present car?

Dollars Willing to Pay For Ali-Scout to Add to Present Car	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
0	87	33.3	82	47.7
1-49	2	0.8	1	0.6
50-199	36	13.8	33	19.2
200-299	52	19.9	22	12.8
300-399	36	13.8	15	8.7
400-499	15	5.7	8	4.7
500-599	27	10.3	7	4.1
600-699	1	0.4	2	1.2
700-799	2	0.8	2	1.2
800-899	1	0.4	0	0.0
900-999	1	0.4	0	0.0
1000 or more	1	0.4	0	0.0

F7. How much extra per day would you be willing to pay for the Ali-Scout system as an option on a rental car?

Dollars Extra per Day Willing to Pay For Ali-Scout as Option on Rental Car	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
0	64	23.5	60	34.9
>0-5	145	53.3	80	46.5
6-10	49	18.0	19	11.0
11-20	11	4.0	4	2.3
21-50	2	0.7	2	1.2
51-100	0	0.0	2	1.2
101 or more	1	0.4	5	2.9

F8. In order to function properly, Ali-Scout requires two additional components to support the in-vehicle equipment. These out-of-vehicle components are:

(1) Roadside Beacons

Each beacon consists of a transmitter, receiver, and control unit for communicating with Ali-Scout's in-vehicle equipment. Beacons are located at selected intersections.

(2) Central Computer

Located in a traffic control facility, the central computer is the brain of the system--receiving, transmitting, and integrating information from throughout the study area. Each beacon is linked to the central computer.

Installation, operation, and maintenance of these out-of-vehicle components will require financial investment above and beyond the price of the in-vehicle devices. In your opinion, who should pay to install, operate, and maintain the beacons and central computer? (Place an X in the box next to all entities that you think should pay at least a part of this cost.)

Federal Government	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
Yes	122	41.6	59	33.5
No	171	58.4	117	66.5

State Government	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
Yes	159	54.3	85	48.3
No	134	45.7	91	51.7

Individual Users	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
Yes	169	57.7	99	56.3
No	124	42.3	77	43.8

Commercial Users	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
Yes	160	54.6	101	57.4
No	133	45.4	75	42.6

Manufacturers of Products Such as Ali-Scout	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
Yes	153	52.2	89	50.6
No	140	47.8	87	49.4

County Government	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
Yes	134	45.7	74	42.1
No	159	54.3	102	58.0

City Government	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
Yes	93	31.7	53	30.1
No	200	68.3	123	69.9

Car Manufacturers	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
Yes	54	18.4	27	15.3
No	239	81.6	149	84.7

Other	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
Yes	25	8.6	2	1.1
No	267	91.4	174	98.9

Survey 1:

- Gas tax revenue
- Insurance company
- gas retail
- Corporate spanners
- Road commission
- Insurance companies
- All share
- System not necessary
- Software companies
- Insurance companies

- Its a luxury option
- State road budget

F9. Of those entities that you marked in question F8, we are interested in knowing who you think should bear the primary cost. In the space provided, write the entity that you think should pay the primary cost.

Survey 1:
Federal Government=35
State Government=45
County Government=33
City=3
Individual Users=18
Commercial Users=13
Manufacturers=71
Other (combination, nonspecific, and miscellaneous)=43

Survey 2:
Federal = 19
State = 24
Individual Users = 12
Commercial Users = 10
Manufacturer of product = 39
County = 21
City = 01
Car manufacturer = 01
Other, combination, and not specific = 25

F10. One option for funding the installation, operation, and maintenance of the beacons and central computer is to charge users a monthly fee to receive information (such as route guidance) from the system. This monthly fee would cover both services received and maintenance of the system. If you owned an Ali-Scout in-vehicle device, how much per month would you be willing to pay to receive the information provided by the beacons and central computer?

Dollars per Month Willing to Pay for Guidance Service	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
0	54	19.9	52	31.1
1-5	73	26.9	52	31.1
6-10	77	28.4	34	20.4
11-20	43	15.9	17	10.2
21-50	20	7.4	10	6.0
51-100	1	0.4	1	0.6
101 or more	3	1.1	1	0.6

F11. In your opinion, how important are each of the following factors to the operation of systems such as Ali-Scout?

Not at all Important 1 2 3 4 5 6 7 Extremely Important

Ratings for Importance of Fuel Savings	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	41	14.5	28	18.1
2	49	17.4	15	9.7
3	27	9.6	20	12.9
4	49	17.4	26	16.8
5	59	20.9	31	20.0
6	24	8.5	18	11.6
7	33	11.7	17	11.0

Not at all Important 1 2 3 4 5 6 7 Extremely Important

Ratings for Importance of Ali-Scout For Reduced Air Pollution	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	36	12.7	27	17.3
2	41	14.5	14	9.0
3	27	9.5	17	10.9
4	55	19.4	31	19.9
5	65	23.0	25	16.0
6	24	8.5	25	16.0
7	35	12.4	17	10.9

Not at all Important 1 2 3 4 5 6 7 Extremely Important

Ratings for Importance of Traffic Safety	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	14	5.0	11	7.0
2	4	1.4	2	1.3
3	13	4.6	15	9.6
4	42	15.0	22	14.0
5	55	19.6	25	15.9
6	78	27.8	38	24.2
7	75	26.7	44	28.0

Not at all Important 1 2 3 4 5 6 7 Extremely Important

Ratings for Importance of Ali-Scout For Relief of Highway Congestion	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	5	1.8	7	4.4
2	1	0.4	0	0.0
3	3	1.1	7	4.4
4	8	2.8	8	5.1
5	28	9.9	12	7.6
6	93	33.0	49	31.0
7	144	51.1	75	47.5

Not at all Important — Extremely Important

1 2 3 4 5 6 7

Ratings for Importance of Ali-Scout For Accurate Route Guidance	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	3	1.1	5	3.2
2	1	0.4	2	1.3
3	0	0.0	3	19
4	8	2.8	12	7.6
5	27	9.5	11	7.0
6	82	28.9	35	22.3
7	163	57.4	89	56.7

Not at all Important — Extremely Important

1 2 3 4 5 6 7

Ratings for Importance of Traffic Diverted Into Neighborhoods	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	22	8.1	16	10.5
2	18	6.6	7	4.6
3	33	12.2	14	9.2
4	61	22.5	40	26.1
5	52	19.2	32	20.9
6	46	17.0	24	15.7
7	39	14.4	20	13.1

Not at all Important 1 2 3 4 5 6 Extremely Important 7

Ratings for Importance of Ali-Scout For Ease of Use	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	1	0.4	4	2.6
2	2	0.7	0	0.0
3	4	1.4	3	1.9
4	18	6.4	16	10.3
5	29	10.3	23	14.7
6	91	32.2	43	27.6
7	138	48.8	67	43.0

Not at all Important 1 2 3 4 5 6 Extremely Important 7

Ratings for Importance of Ali-Scout For Quick Updates of Road Conditions	Survey No. 1		Survey No. 2	
	Frequency	Percent	Frequency	Percent
1	2	0.7	3	1.9
2	2	0.7	0	0.0
3	0	0.0	3	1.9
4	6	2.1	6	3.9
5	20	7.1	8	5.1
6	69	24.5	34	21.8
7	183	64.9	102	65.4

F12. We are interested in knowing how you would like to see Ali-Scout improved. In the space provided, please tell us two changes that you would like to see made in the system.

Survey 1:

- Cover local roads - including subdivision roads. Initialization - it should know exactly where it is when it starts, because the distance to first beacon could dictate driving w/o concern for congestion. Get all beacons working and allow for personal preference of roads, e.g. I don't like to drive on Maple Rd. or Big Beaver.
- Voice set up and command no manual set up Softer night light
- Include information (capability to guide on) for more roads - side roads, subdivision major arteries. Beacons spaced closer - every 1 mile instead of 2-3 miles.
- Must be on a much larger scale to do me any good. Would like to see the entries get a little easier.
- Entering data is a pain. And the map coordinates are not accurate enough. The dead reckoning guidance from beacons is very accurate. Not being able to change destination while in route by using keypad to enter the letter is a pain. Flipping through 80 entries is a pain while driving.
- Expand area (assumption: viable system). Female voice option
- Updates of traffic congestion and accidents. Not currently part of the test system. Would be willing to pay more for the unit and monthly service fee depending on time lines and accuracy
- A button to cancel the current instructions and find the next alternate route. Larger keypad buttons.
- Needs to be able to guide mound traffic problems. Guidance could include some smaller roads.
- Quick response time when changing roads
- Begin route guidance before you contact first beacon. Expand guidance range beyond current area.
- There needs to be Beacons at either 2 Mile & Dequindre - or at 23 Mile & Dequindre - A lot of traffic enters Oakland County there. The beacons need to be on more intersections - I have passed & many times at least 2 consecutive intersections without passing a beacon.
- Learn your routes and adjust to there. Adjust for road construction.
- The system leads me the wrong way when I know it is correct. The system display rattles and shakes while driving - This is a very annoying problem. Beacons to far apart and coverage are is too small to be practical for me.
- increase accuracy when near destination increase accuracy when out of coverage longer coverage. Operates more accurately when out of coverage zone
- Link ALI-SCOUT to real time traffic system. Easier programming of destinations. ie. One button to "Enter Name", a 2nd button to "Enter Coordinates" or "Address"
- Lead to final destination Lead through faster track
- Information on current route traffic situations & offer alternatives. Greater notification of turns
- Make it more of a traffic control system rather than navigational. Increase # of beacons and expand area into Wayne County.
- Expand beacon area & make beacons more reliable. They often didn't seem to work. be more specific on where to make turns. ex roads such as 696 service drive have hwy entrances & service drive turns very close together. I had trouble figuring which one Ali-Scot meant.
- To be in all of Oakland County & Wayne County, Macomb County. It is a great system.
- Increase the range of the unit. Not just a small area in Oakland county. Make it easier to program. Who is going to want to carry the program book around with them.
- The system has not proved to be accurate for me. I would like to see more beacons placed. I find technology very easy to use and this system is not exactly user friendly. I'd like to see ease of use improved.
- Better keyboard. Better guidance system ie. more beacons
- Wider coverage area for the road side beacons. System doesn't seem accurate for destinations very far away from beacons. (4 miles) Majority of the time it seems Ali-Scout takes us on the longest possible route to the destination. I.E. home in Oakland Twp, Lakeside Mall, clients in Centerline.

- More accurate road close information. Example: 16 mile closed at Woodward, Ali-Scout didn't know. Wider coverage area.
- System should be able to direct driver to nearest hospital & police station at push of a 'button' Temporary beacons should be place around construction sites to route you away from such problem areas.
- Have you offered this system to the airports rental car divisions? Out of towners are more likely to need this fantastic innovation?
- Road Conditions - Traffic Jams, Construction Zones, road closed. Emergency Vehicle warning - ambulance, fire truck, police
- not knowing how the system works. I would like guidance w/o having to pass beacon. For short trips I can't wait until I get to a beacon - my path is already chosen. As a thinking person, I want to be able to second guess the computer. I need to know when and where the next turn is planned when I complete a turn. (If it is a series of quick turns, I should know before they begin.) This could be done by simply saying " straight for 1/4 mile & then turn right" after a turn is complected I then know how long before I have to prepare for a turn.
- The keypad stinks, buttons are too small. Keys such as [drawing] are not intuitive. The display looks very cheap. People would not pay much for such a cheap looking device.
- Add more roadside Beacons (western Oakland County) local. Add Pages to map for all coordinates in Michigan, for major Roads.
- More accurate by use of more beacons (Royal Oak) Update system on road closures (Adams road is closed, but Ali-Scout often directs me to that road) Update system on road congestion ie accidents or non-functioning lights
- A large input keyboard - separate or P.C. interface. Optional pre-programed location library that could be down loaded to the memory. Financial support by businesses to advertise their address in these data bases.
- Switching to compass mode should be a one-touch operation. Correction of the following problems: 1) Sometimes it just fall out of guided mode unexpectedly, without announcement...This can be frustrating 2) Directions are inconsistent...Forkline of the road is sometime instructed as "turn right" other times as: " stay in one of the right -hand lanes...straight ahead" Note: sensors seem to have a hard time communicating with beacons in direct sunlight.
- Voice command indicating explanation or change of route. For example: "construction", "congestion", please turn right/left. Beacons at more intersections & along highways
- More interactive traffic information - i.e. accident ahead in left lane, move to right. Female voice option.
- Add updated accident and congestion information. Expand beacon installation to all large metro areas in Michigan and U.S. - Canada.
- Integrate "real time" road and traffic conditions into the system. Provide flexibility for deviation from the compulsory guided route
- Tie-in with GPS Program ease
- More accuracy at the final destination. Programming made easier
- Stronger Mount to eliminate vibration. Broader Usage Range
- Make the system retain actual position. I always have to reprogram. Be able to give traffic problems & alternatives it seems to be an elaborate map without the ability to give the best route.
- Improve repeatability - can't find the same location within a .10 mile reading from day to day. Expand its base - I can't get it to find "home" on Pontiac Trail or stop taking me to Lone Pine Rd when I'm north on Lone Lake Rd. searching for Pontiac Trail.
- It does not always send me the best route. i.e., Going North on I 75, it wants me to take Crooks Rd north to get to the Tienken/Adams area. Both Adams North, or University to Squirel to Walton to Adams are significantly faster. If I take University east, it would send me straight at Squirrel into the O.U. Campus, rather than No. on Squirel to Walton. When in the Autonomous Mode, and approaching a beaconed intersection, and the best route is a turn at that intersection, it can't react fast enough to tell me to make the turn.

- It is Not at all user friendly It's a pain to program. Too much time is needed to program it
- Some kind of indicator that route guidance is because of traffic conditions AHEAD. Added Info in Alpha Numeric Display like Time, Temperature of name of road your on, cycling with the Destination name.
- Expanded internal Data Base. Look up table for street Address
- More Beacons- More Locations - points of Interest
- Voice options. More Beacons
- Angle the unit more towards the driver - the display. Add an apostrophe to menu board.

- Activate the beacons in Southfield so I can start using it from home to work. More beacons & greater coverage
- Tie the satellite for navigational use outside of beacon sites. More operational beacons, more accurately reflecting the map shown in booklet. Reflect traffic situation in advice given, would be helpful.
- Allow more flexibility in the route you can drive. Allow a short detour before leaving guided mode. It would be helpful if the system updated BEFORE a major intersection so you could know which would be a Quicker (preferred) Route for that day & time. As it is now when you come to the intersection the signal is not updated until after you travel through the intersection. If that route proves to be backed up any alteration in course - you leave the guided mode, with the next update several miles if at all. (For me at this time the next update is 1.5 miles from home and then only after I pass through a major intersection (Big Beaver & Rochester)
- Easier Use of Programming. More Beacons that work
- Would like to know if a route change is due to highway congestion. After a specific location is identified, would like to be routed all the way to that location in future trips.
- Installation Could Be Better Hidden. From View. Better Consistency When Executive Maneuver Activate. It Activates Only some Area.
- Have Accurate Information Road Conditions Have More Beacons Which Actually Provide Guidance
- Far too restrictive-need more beacon Expand the area. Easier means of entering accurate destination data (LAT, LON)
- More accurate in accurate position not accurate at all changes. Coordinates by street names by cities
- Make it easier to program. Show me a saving of time or distance.
- Notice that route change from usual or anticipated be noted so as you know its to avoid traffic congestion. Better support of system off the main travel roads ie more secondary roads.
- More coverage area. Have more information about traffic & other road disturbances.
- When installed, have vendor program in several locations chosen by buyer- have BRIEF programming orientation. (I haven't programmed in many "custom" locations)
- Install more beacons.
- Anticipate traffic congestion and suggest alternate route. Expand area to include all Southeast Michigan.
- Be able to put in actual position of Destination you programed in. (Now I make up New location, find actual Numbers then change Numbers in Memory) Expand, & Put Traffic information on Display
- Easier initial programming
- not enough beacons installed yet in my travel area. Buttons too small for easy operation poor routes chosen.
- it gives me incorrect information on when to make turns. Sometimes it will suggest I make a turn to the opposite direction to where I am going.
- Smaller. More beacons! Currently useless to me
- More accurate/timely updates to traffic conditions. More direct routes when commuting

- make it work properly. It is incorrect about ½ the time. Absolutely no confidence in its accuracy. GPS is good to 50 feet. This system goes to sleep about 1/4 mile away from your destination! Not much good in a subdivision.
- I get my route information at the area near the Palace (coming from the North). If you aren't in the lane going to I-75 and the route is for I-75 info is too late. Lake Orion should be added as well as areas east of Oakland County.
- Add GPS or Loran so Ali Scout is more accurate. Add Database storage using CD-ROM or PCMCIA for Destinations or access to a central Database of Destinations.
- I'd like to see Ali-Scout cover a larger area. I'd like ts see it cover secondary streets as well main streets.
- Accuracy of route guidance is low - this is the major change required. Should have a "permanent" "off" switch. Very annoying to turn it off each time you start the car when out of the coverage area.
- Larger area of operation, especially western Oakland County & City of Detroit. Availability of female voice in speaker. My first impression was "Just what I need, another man telling me where to go!"
- Make current location feature easier to use for more accuracy. You currently have no route guidance until you reach four first beacon - sometimes your route is already selected by then. Have a memory feature that remembers the last position before the car is shut off, then you would have immediate guidance as soon as you select your destination.
- More Beacons. Knowledge of construction area.
- This system needs to be state wide. I would like to see Wayne and Macomb County in this program.
- By the time the beacon 'picks me up' on my way to work, I've already made all possible decisions about my route, making the system useless for my A.M. commute. On my way home from work, it tells me the same route each time regardless of traffic, making it useless. It would be nice to use to locate places I've never been, but it makes me look it up in the map first, so I don't need it anymore to find my way. The area is so small that I almost always already know the best route from experience.
- Hi. We have never received updates of road Conditions from this system.
- Earlier alert of upcoming exits from the freeway. It needs to be better informed about construction and its program updated better also your phones are always busy and I can't get through.
- Different "visuals" to much sameness create confusion. Need more directions more often. Get more beacons make it work get beacons on express ways.
- The current keyboard is all but useless, it is too small, need a Human Factors engineer to assist in development of Scout/Human interface. I am willing to assist[phone number]
- Learn my routes to some place. Then tell me when I need to go a different way. Use of GPS.
- To recall or be able to program a better route. To continue (not give up) when leaving guidance area it should still know the present location and offer revised guidance information. Going west on 15 mile road to the Troy Civic Center complex it always directs me to turn right at Stevenson Hwy. Stevenson to Rochester to Big Beaver is a mess way to go. I prefer to go down 15 Mile (Maple) to Livernois and turn left at 151/2 (Civic Center Dr?). Its shorter, much faster and less congested. After I pass Stevenson, instead of telling me I left guidance area, it would be nice to compute the best alternate path and have me turn right at Livernois.
- Add map display. Tie in to existing guidance system ie. Road Signs. Tell me to take I 75 to exit 53- University Ave then let me read the road signs. As I get close give me verbal prompts as it does now.
- Additional beacons to cover a larger area. Smaller in car unit - Larger Buttons for data entry.
- I haven't had the opportunity to experience a rerouting due to congestion on I-75. This is one of the primary features for commuters (who don't need basic guidance). Is it working? The user should be able to select either a male of female route guidance voice. (thru a menu on control unit)

- Change commands on this keyboard doesn't work properly sometimes, especially when driving. Turn on/off really available. A lot of times you take the car just for small trips, not been necessary ALI-SCOUT. You have to have the options to turn it on only when you really need it.
- Need more beacons. Not coordinated with Road construction.
- Accurate distance and direction. Menu selection for programming instead of book (maybe a VHS tape supply 1 or 2 digit entry.
- Beacons closer together to begin guidance sooner. Enter coordinates to degrees for more precise guidance.
- Change the size of the keypad. (Larger). do away with the address book or make it glove box size.
- Easier program/ Keyboard to hard to read & too small for use -
- Improve accuracy of guidance - system not detailed enough to a target area. Expand the coverage area. On several occasions the system could not recognize the target area and guided me to a more general destination. This occurred when the target area was off of major streets. Cranbrook Educational Community is an example.
- You must have statewide Beacon's installed for when you take trips for pleasure or business. A pleasant woman's voice on Ali Scout system.
- Time of travel. Expand use to North Oakland
- A more user-friendly method of Programming new destination & access of old destinations Projected Heads up display on windshield or other means of projection to eliminate the driver's distraction from looking away from the road
- Telling you roads showing a map

- Earlier announcement of turns More beacons more accurate
- system is not accurate....gives too many wrong directions give explanation of WHY it is sending you an alternative way
- If being re-routed would like info. As to why. Visible compass readings. Pre programed list of hospitals, police stations on an emergency many.
- My home is in Plymouth - my "at home" coordinates drifted to area 2 miles away
- Capability of recording/recognizing a driver's route or preference Add a mode of communicating road congestion or hazzard; rerouting is 'good', but a person needs to know delay time or an estimated time to reach in destination. Change to a female voice
- A 'pause' to make an extra stop or complete a missed turn. Revise programming (to include time of day, etc) Several times it's told me to get off freeway (at nite - when mostly empty - like 10 pm) & take more "direct" routes to destination (but routes were slower, w/traffic lites, more traffic, worse roads, & through more populated area - DEFINITELY take longer & less safe.)
- Accuracy. "Dest Area Reached" msg doesn't come on when I get home unless I reprogram my location each time & turns are recommended on I 75 where there are none. Choices. Sometimes I want to take the fastest route, sometimes the shortest route. My expectations were that Ali-Scout would be helpful in getting to where I was going. I feel I MUST know the route first, then Ali-Scout can be a reminder feature. When the accuracy and knowledge of roads increases, I will be able to trust it more. Also, If I drive out of county, when I return, the distances are 20 miles or more off the "as the crow flies" distance. Why?
- Increase service areas Include alternate routes due to congestion
- The system often give directions in the wrong direction (from Huron St. (M-59) & wide track in Pontiac to go to M-59 & Derquindre - gave directions SOUTH on wide track) - this would be disastrous for someone who didn't know the area. Someone trying to go to Utica would end up at the foot of Woodward.
- Make the interface more user friendly Get closer to destination before going into automous mode
- Improve range and scope around Silverdome and the Palace Move the range farther to the north
- More Beacons

- The system HAS TO become GPS based. The current beacon ? System does not provide sufficient location resolution, and response to change of destination is too slow. The current user interface (buttons, keyboard, and operating procedures) is too cumbersome an difficult to learn and use. The system has to be more accurate. Many times I was given poor or even wrong directions.
- Give information on road conditions (why does it change routes) (accidents, congestion, construction...) Wider coverage area.
- It reacts to beacon commands too late on some left turns which results in the monitor displaying "left guided mode". It needs to be more consistent in its guidance to repeat locations; it appears to be a little off sometimes. Eg. Returning home, the needle points in various different directions.
- Expand area of coverage so it could be useful in unfamiliar areas. Tie in traffic congestion or accident info. & provide alternate routes
- The maps provided in the manual have streets for accurate destination. ALI-SCOUT being able to inform driver of traffic problems etc.
- Larger area covered. Earlier warnings for merging or turning.
- System to include Lapeer County. Link system to Satellite for positioning outside of Oakland County.
- Wider coverage, of course.
- More accurate direction through residential streets. Notification of road construction & closure.
- "Actual Position" needs to be recalibrated each trip to the same location. Improve the accuracy. Match the interior components to the vehicle interior better (color, location...)
- Make it more accurate!
- Lighted or "glow in the dark" buttons Molded in colors to match interiors
- Should not have unit automatically turn on with startup of vehicle - users decides on/off Liquid crystal display stark, brutal, ugly and buttons to select with made user unfriendly due to size/shape and positive on/off clicking features
- Smaller, less conspicuous in-vehicle equipment including a directional compass. More extensive coverage area (outside Oakland County.)
- More beacons in Southfield. Alternative routing from Southfield Telegraph in the P.M.
- An actual map of destination route. Tell me why certain route recommended ie, "accident ahead" or " construction" etc
- So that the system would get me to within two house numbers on a given street & lead me to that street That the system would know the shortcuts
- Beacon coverage area is so small that the system is virtually worthless. Increase coverage area! More sensitive response to traffic congestion. Is the central computer working?
- Interaction real time with Oakland County's traffic light control system. Self diagnosing & reacting of malfunctioning roadside beacons.
- Dynamic re-route (based on up-to-minute traffic patterns, congestion, etc) Maps - Cascading levels of resolution. Display destination, present location and show SUGGESTED route. Show traffic obstacles.
- I would like to ultimately see Ali-Scout expand to be able to be used in ALL Metro Detroit counties. Based on where I now travel most frequently, the Ali-Scout serves me no purpose. I work for Detroit Edison, Located at 26801 Northwestern Hwy., Southfield. I entered the coordinates using address range procedure when I first obtained an Ali-Scout. I never changed the entered co-ordinates. Ali-Scout originally indicated that I was getting farther away from work when I was actually getting closer. My route is ALWAYS the same, I should add. Oddly, Ali-Scout now is 100% accurate with the routing from my home to work. I'm led to believe that the information Ali-Scout receives and sends isn't always accurate, and needs to be improved on.
- More effectively tie the system into real time traffic conditions and suggest route based on that. Offer more accurate route pathing for surface/secondary streets.
- Improve the mounting bracket. It rattles. Provide a shortcut button to select home or some other favorite destination without searching through the choices.

- Eliminate keying in of may coordinates enter street name - number - ; Enter main cross street names and N/S/E/W Enter points of interest by name only. More accurate "current" location programming. Advice on traffic congestion suggestion of alternate routes Female voice
- More beacons Information on road construction integrated
- Greater accuracy with long. & lat. Coordinates. System suggest routes that are out of the way or inefficient Strange phenomenon - one day the coordinates to my home are accurate, next day I come home and the system says I'm 1½ miles away from my home, they changed or there own like magic
- I do not understand how a preset location can change daily up to 1 ½ miles in any direction. I thought longitude & latitude was constant.
- The system needs to give directions to the destination - it stops ½ mile away! It needs to be more accurate - when out of the beacon area.
- Advance warning for crash & traffic backup's for reroute.
- Better advance warnings for upcoming turns & when coming up to the beacons or passing by them. I would like to see greater are coverage to include out of state of the beacons, so that I would be able to use it almost everywhere I traveled
- More Beacons! As it is now, Ali-Scout is not useful enough to provide accurate details on how to get to my location. I've followed their instructions & then it let me go into autonomous mode leaving me hanging what to do next.
- Wider range - beacons or coordinates by points of interest and/or address for the ENTIRE state of Mich!
- More advance warnings More detailed info.
- The keyboard is very confusing - I have trouble remembering the sequence of keys to get various options - Better on screen prompts would help. Easier means of inputting coordinates - its quite time consuming - especially when making a route change decision while on the road.
- Need more beacons. When using the system it is much more accurate. Growth of area. To statewide then nationwide.
- More attractive screen with colored graphics*1 Selection of male or female voices*2 Immediate availability of nearest police and/orgas station*3 Availability of weather alert add on *1 Present system looks to much like a taxi cab. *2 My Power Mac can read text files and speak in 20 different voices. *3 Safety concerns and car trouble would make this feature more sale able. *4 This could be one on several add on features with sliding rate depending on developmental difficulty.
- System accuracy is currently too low. Gets worse when I am " off system". System should adjust to individual driver's preferences. (ie what route do I prefer to use?)
- More accurate map coordinates. Ability to indicate an accident or out of ordinary congestion ahead - like stalled car in left lane, indicating get into right lane.
- accurate routing info.
- More "voice" guidance would be very helpful especially when winter driving draws MORE of your attention to the roadway. More roadside beacons - beyond Oakland County - and inside the county.
- The input keyboard is extremely inconvenient - too small. Hard to evaluate benefit for broader range of use - needs pilot for statewide or at least multi-county use.
- Ali-Scout picks the "shortest " Rt. We need to be able to press a button or 2 and get ali-scout to pick the fastest rt. According to speed limit & traffic conditions at the time of entry in the car. Many people relate well to paper MAPS, an option, (at the press of a button or 2) Have Ali Scout show a map of the general area that you plan to go. Maybe even 3 maps.
- Bigger Coverage Area. More Beacons.
- Transmit Lat/Long co-ordinates to Ali-Scout from central source for a new destination. Autonomous mode distances are fairly inaccurate 10% this should be disproved.
- State wide coverage

- Use the compass in a display somehow. All the stuff is there why not use it. I have found nothing but very basic route assistance. Once I've been there I know how to do it again what do I need Ali-Scout for? Expand the program to do the stuff listed in the FIL.
- I would like to see more roadside beacons in between the existing beacons = reduce sensitivity. Smaller beacons: Roadside "Visual" Pollution lower to the ground = eye level more attractive packaging.
- Ali-Scout picks the "shortest" rt. We need to be able to press a button or 2 and get ali-scout to pick the fastest rt. according to speed limits & traffic conditions at the time of entry in the car. Many people relate well to paper MAPS, an option, (at the press of a button or 2) Have Ali Scout show a map of the general area that you plan to go. Maybe even 3 maps. [diagram]
- Actual position or my home moves daily. Make it a least state wide if not nation wide.
- There should be at least a yearly update of the user's guide points of interest. (eliminate those that don't use exist any longer). It would be excellent if this system was a heads up display system.
- I have had the system for a month, too soon to make any recommendations.
- More beacons. (Cover a larger area.) Incandescent lights for each buttons on the Ali-Scout.
- Advanced notification of problems along guided route. Summary of the route prior to starting the journey.
- The DU could be smaller in overall size to facilitate putting in pocket or purse after removal. Simpler use instructions. With, perhaps, some examples the user could follow step by step. The process for entering destinations.
- More beacons to move accurately position vehicle. Easier pre-programming of destinations for people such as my wife.
- Much wider coverage area. Eliminate manual address inputs.
- Decrease spacing of beacons. Don't beep every time car passes beacon.
- The Ali Scout as it is functioning now is very poor. I live in an area where they have been replacing the H2O main. There are road side beacons, yet the Ali Scout NEVER directed me around the construction. At this stage of deployment I would NOT PAY for anything Ali Scout. I do believe however that it has promise if in fact you can program it better for directory around construction & traffic jams. Which it has not done.
- Increased coverage area. Warning of congestion ahead.
- More advanced warning. Reduce the spacing between beacons.
- More beacons. Display with a higher tech look
- State wide use. Make it easier to use.
- More beacons to keep destination memory accurate. More forgiving before "Left recommended route" appears.
- Accuracy in Autonomous Mode - never works currently. More beacons that work - when passing beacon - often instantly goes to Autonomous.
- Increase the number and decrease the spacing of beacons Increase the repertoire of pathways so users can select a route when they know about where they're going.
- Add traffic information. Current system only provides direction and distance. Cover larger areas. For instance: Oakland County system does not drive to DTW Airport!!!
- More beacons in a larger area.
- I do not believe the direction you have taken with this system can become a useful navigation tool.
- Change wording "Left Guided Mode"- the word "Left" is confused with DIRECTION! Use wording like "GUIDED MODE CANCELED" put a bar code reader in the corner of the detachable unit and allow the lat-long to be scanned in from a book. Put "time to arrival" info on display. Screw the lawyers. It won't encourage speeding or cause accidents. It should not be based on Time/Speed/distance calculations only--it should factor in known CURRENT speeds on the guided route as reported by the central computer, UPDATED at each beacon along the route. It should have a mode called "Learn Preferred Route" where it remembers your route and gives it for all future trips UNLESS there is a reason (accident,etc.) to deviate. When the central

computer deviates from the prescribed route due to the extraordinary reasons, ALI SCOUT should have an indicator that states a reason, or at least indicates that the default route is not being used. This key info I need as a driver to decide how to interpret ALI SCOUT.

- Add traffic information. Current system only provides direction and distance. Cover larger areas. For instance: Oakland County system does not drive to DTW Airport!!!
- More beacons in a larger area.
- Dependance on beacons is a weak point, a better location system - direct to satellite? More voice instructions such as programming
- Improved accuracy, Quicker updates Greater Coverage
- Bigger key for programming. Better instructions on "how to"
- Have voice inform how far ahead a maneuver is to be made, eg 1/4 mile. Eliminate errors, on two occasions it routed me up to 5 miles away from destination & told me I was there, although it showed I was up to five miles away & the direction to my destination.
- Capability of recording/recognizing a driver's route of preference. Add a mode of communicating road congestion or hazzard; rerouting is 'good', but a person needs to know delay them or an estimated time to reach a destination. Change to a female voice.
- Lighted key pad smaller size (bulky currently)
- Become operational off of satellites to cover the whole country. Become more accurate
- The map book should have periodic updates. To reflect long-term road construction: Big Beaver, Adams Rd., Quarton Rd. The screen should be easier to see w bright sunlight. Perhaps a filter screen or a contrast/brightness control. Also note: initial instructions are vague. I figured out coordinate entering, but it was only through experimentation and reasoning that I realized the coordinates are not absolute; one can enter a coordinate between those listed. That revelation made the unit more useful. Most of my travel is to residential addresses in Oakland Co, and I still rely on maps and a compass. The unit would be really helpful if, say I was in Chicago, and wanted to visit, say the Franklin Lloyd Workshop, and could be directed by the unit.
- I would like to see Road Conditions available on system More Beacons on Roadways
- Become operational off of satellites to cover the whole country. Become more accurate.
- Wider area of tracking
- Change input, should be able to key in a code for the location/destination. Must be more accurate, take you to the location
- The system does not seem to be able at present, to detect road construction ahead. The system leaves guided mode some distance from final destination. This results in problems such as entry from the wrong side of a subdivision because the system detects the destination as close by but does not know that there are either no entry roads or one way entry roads that particular side.
- Ali- Scout seemed to direct me in shortest distance regardless of traffic conditions. I would prefer shortest time. Simple mute button to quickly eliminate voice command when desired.
- Extended service areas - less autonomous mode
- More advance notice of up coming turns. Sometimes/w traffic it is hard to get over for a turn. More accuracy - in traveling outside the system area, the mileage changes from day to day. When I get home Ali-Scout indicates that I'm ½ mile from my destination one day and three miles the next day. Maybe the car could be driven over a measured mile after installation and some factor keyed in to make the mile measurement more accurate. Note: I didn't get involved in the program because I get lost easily and need some help. I got involved so I could play with a new techno-toy and to give you some additional input and data. In order for me to be very interested in purchasing a system like this, it would need to cover me on vacations. That would probably have to tie into GPS system. I would then be willing to pay more for the system but would have a problem with monthly on-going fe
- Route guidance is most useful in areas I'm not familiar with. For instance it would be extremely useful in a rental car when traveling away from home. 99% of my driving is in familiar territory. In areas with which I am familiar, traffic reports would be most valuable. My suggestion for improvements to ALI-SCOUT would be to allow the user to program a preferred route using the

control panel. This could be achieved simply by providing a map that shows the locations of roadside beacons with a unique number to identification number for each beacon in the order that he or she would pass it en route to the destination. ALI-SCOUT could then advise the user of traffic problems (accidents, construction...) and perhaps suggest an alternate route. Some indication of the type of traffic problem and the severity of the problem would also be helpful.

- switch between minimize and minimize distance. More accurate/precise location like Global Positioning System
- Easier to program More destinations
- More accuracy as you get closer to your destination - ½ mile is not enough More advance notice for turns Broader coverage Why not use GPS technology?
- Delete key pad. Orally tell Ali Scout Destination instead [?] numbers into computer. Not numbers actual destinations ie address or facility would suggest a more user friendly manual ie description leave a lot to the imagination.
- Wider coverage area More accurate guidance (my house is 3 blocks from a beacon but the system changes it location every time I come home.
- Should interact with the Global Positioning Satellites and Computer Programs such as DeLorme's 'Street Atlas USA'. Keypad could be simplified and should be more responsive.
- Larger coverage with more accuracy. Having 80 locations in memory is fine, but most people would use less then 10 on a regular basis. (I.e. home, work, school,...). Why not make 10 scrollable with the arrow keys, and the other 70 accessible only by keyboard.
- Ability to mount in car so that it does not interfere with vision of controls on dash. System as is seems adequate - and useful - perhaps given definition or destination coordinates.
- More "voice" communications - such as "use left lane" "congestion ahead turn right", ".5 mile to turn". An audio option to hear "road conditions", "road repair" and weather related traffic problems. This option would be similar to the radio stations reports.
- Need way to up date for road changes like on Gulf Drive Between Woodward & Telegraph Rd. Also Orchard lake at Middlebelt. Also a reporting system so could notify of Bad - Poor directions.
- Seriously take traffic congestion into consideration. For this reason I do not always use the ALI-SCOUT ROUTE. 95% to 100% of the time I know how to get to where I am going. The important thing to know is when that route is not the best way to go, because of road conditions such as flooding, slipperiness, heavy traffic due to some event.
- Easier & more accurate setting up of location coordinates. Easier addition & deletion of entries to memory.
- Advanced advice on road/traffic conditions. Improve - ease of data entry & earlier audio advice on maneuver recommendations.
- Coverage very limited. At time very inaccurate.
- More & responsive beacons. In one instance, the computer did not accept one of the co-ordinates. Cursor kept going back to # it wouldn't accept. Manual said nothing of this, & so I returned to APX to have it checked out. No problem after I was told what it did. Maybe, if this was indicated in the manual it would save time & travel. Thank You.
- I think you should have a training session simultaneously w/installing.
- Expanded area of use - western suburbs. Novi, Walled lake, etc. A little more advanced notice on turns. If traffic is heavy getting into proper lane is not always possible. One time it was a very immediate instruction to turn-no advanced warning at all.

- Updates on traffic conditions
- Beacons closer together and more reliable - often beacons don't work when I pass them - implement w. satellites! Voice direction closer to exact location.
- Wider coverage area
- Sometimes when the voice Guidance says "right turn ahead" it's actually a merge. I would like the to be distinguished.

- Eliminate the latitude/longitude system & allow user to enter address or x-streets by voice or keypad. Greater advanced warning for turns. Improve the directions given, so the computer stops getting people lost, then dumping them in what may as well be the middle of nowhere. Allow the first beacon approached to give turning instructions so that the turn can be made , rather than after you're thru the intersection (not delay in instructions from the first beacon). If an alternate route is suggested, tell me why. "Accident ahead, right turn suggested', or something similar. Have Ali-Scout be OFF unless or until the user wants it ON. Rather than ON unless the user wants it off. If I want to use it, I should turn it on, since the times I would use it are much fewer than the times I don't.
- more detailed directions Fast route not the shortest route 20043/37 Wider range - I live in Wayne county so I don't get much use of it outside work.
- Tell when routing around congestion if that's what it's doing, keypad shift didn't work, hard to delete entries
- I find keypad difficult to program settings. A better keypad would be great. I would like to have it set up so I have to turn it on - now it begins as soon as I start the engine & stays on after I shut it(engine) off, & I have to then turn it off.
- Distribute more Ali-Scouts for more updated road conditions. More beacons operating.
- to get "on guidance" you must pass a beacon. If your first turn is at the first beacon, the system will miss the turn. The "pick up" should be quicker. This is especially true on north bound I-75 at Big Beaver. The beacon is too close to the exit, so if it is your first beacon & that is your exit, you will pass it before the system picks up. To be convinced the system "reads" conditions, I would have to see it vary my route to the same destination. I am ALWAYS directed down Rochester Rd in rush hour- once directed to exit at Rochester Road when the exit was backed up over a mile onto the freeway.
- Easier to use key pad. Easier removal of destinations no longer wanted in system.
- Get rid of the confirmation beeps - at the beacons,
- Ability to pinpoint destination more accurately. (Narrow the range)
- The system needs to be more accurate-often destinations imputed to memory were lost or over written & several times ALI-SCOUT instructed me to take a route where the road was under construction. I like the "actual position" function although I had difficultly using it to fine tune a destination I had entered by map or address range method. Several times the "actual position" destination didn't get saved to memory EVEN THOUGH I followed the instruction book.
- A better way to input all destinations codes for a chain of shopping stores instead of one at a time. Boarder Area to include States or cities frequently traveled ex. "Chicago" "Ann Arbor"
- Improve advance warning. Traffic congestion notification.
- give actual updates. The system sends me down the same route if it is 2am of 5pm. No change in route no matter the time. Learn my route, then tell me when I need to go a different way.
- Easier data entry. When guided route is left, it should continue to operate-not just give until you pass another beacon.
- Get closer to destination. Less programming. Overall, this system is tedious and inaccurate. I was ready to remove it 2 days after it was installed. It's primary purpose is NOT to get the driver to a destination quickly. It's a waste of money. I hope it's not my taxes funding this joke.

- Greater accuracy of system so I can trust its directions. Easier input of one-time destinations.
- More advanced warning for getting into another lane. Larger keys for easier use or easier seeing on the key pad.
- Larger service area More beacons Also - I don't know how it could be changed - but the system takes me into my subdivision to any home the longest route.

- Give adequate notice, & accurate info re:congestion, accidents, etc. Easier to program destination - & get you
- Name roads when making turns. eg. exits etc. I sell real estate, I would like to have subdivisions streets included. P.S. Current location. If you set it, it is accurate at the beginning. But if you

take the side roads and don't follow it all the time, the distance you set at, keeps getting further & further away. I feel that shouldn't be happening.

- Voice activated instructions for new locations. In my job, I don't have time to look up co-ordinates & then program them when I have to get to a new location quickly. Although the keypad was small & the fact it was removable was a positive, I didn't find the keypad comfortable to work on (because it WAS so small). The ideal for me would be to have a system completely loaded with all co-ordinates. By voice, only, activation, a person could simply tell the Ali-Scout where they wanted to go & the Ali-Scout would automatically program the route in this way. Since my job location was located on the fringe on the present system, many of my deliveries were out of the range of the present systems.
- Expansion besides Oakland County. Right now I know the area and a lot of times it takes me out of the way.
- Accurate to within .2 miles (now is more like .5) Trip interrupt function
- I never have seen, or been given an alternative route due to congestion or? Give users the options of freeway or surface streets - especially on short trips.
- More beacons needed for greater accuracy. Broader range offered.
- bigger area for use. Key pad buttons are too small.
- Key board is really too small to easily type in better accuracy
- Route guidance not always geared to the fastest route - improve this if possible. ALI-SCOUT should be more "user-friendly" - difficulty time consuming to program non-commercial location (residences)
- recalculation of new route once the original route has been left. Increase the prepare to maneuver warning.
- Expand the system to a broader area. Screen is too cluttered - simplify it.
- I am a home care RN & need to be able to enter SPECIFIC ADDRESSES FOR DIRECTIONS - by the time I look up info after you provide & enter it, it would be quicker to use a map - more specific - other units do have this capability! ALERT SYSTEM to allow us to be notified of specific congestion or accident areas - far in advance of approaching these areas.
- I was not adequately shown how to use Ali-scout (my fault), but I find it is hard to use now Use GPS. Have a chip with the area stored and a path established with a cursor and ability to change chips.
- I would like to have Ali-Scout direct the driver closer to the destination. It would be nice if Ali-Scout didn't go to autonomous mode when I stop at a gas station or at a 7-11 on the way to destination.
- Needs to be more accurate. Beacons need to be closer.
- The exact location setting seems to vary. I park in the same spot everyday that I programmed in as a current location. Some days I'm .01 to my destination, at other times it's as much as .52. I have noticed this with other current locations I have in memory. It should get you closer to your destination before discontinuing directions and more advance notice before upcoming turns. It's not really convenient to have too many destinations in memory because it's sometimes cumbersome to scroll to the one you want.
- Key board more user friendly/perhaps walking you through programing on display pad.
- It would be nice if some kind of toggle could be installed that would remove highways/freeways that are obviously congested when other routes are available on surface streets that have no congestion.
- My system stopped working relatively soon after installation. It is "lost". I did not have time to call/stop for repairs right away (out of my area). When I did I had to wait 2 weeks for a call back then 2 more weeks for an appointment. This takes up a lot of my time. So does looking up address ranges.
- less obtrusive more accurate - It will not use x-rays
- Easier method of inputting destinations On your surveys: Question A7 - I do make a morning commute 9 miles each AM & PM to my children's school. I am on the freeway during rush hours - yet my "other" status negates any info. I may be able to provide.

- Complete all of Oakland County. A lot of my driving & home are west of Farmington Road. Instead of entering meaningless Alpha Numeric Codes, enter the street & zip code, and let Ali-Scout take you where you want go! That would be much more helpful than some square mile and trying to find the street on my own.
- Needs to be accurate. Beacons need to be closer.
- More Multiple route options. When you know a shorter route, it should know it. A Voice Activated Program. Tell module cross streets didn't enters the data.

Survey 2:

- As mentioned before, a "toggle" to disable freeways and roads such as Telegraph from the route guidance system. Everything else has been working great!
- The model equipped in my vehicle is outdated. I have seen newer, more sophisticated hardware. Testing the newer models would be more productive. Ali-Scout automatically turns on when I start the car, which in some cases is good. When I am heading toward a destination that I know the route to, I rarely change the Ali-Scout. Also, since most people commute to a set of frequent places, for example, form home to work and back home in a given day. A preset computer program could automatically switch between the two. When one destination is reached, the computer would automatically switch to the other, and it if another route is required, the change can be made manually.
- Inform the user why the unit is guiding you I a certain direction - i.e., if traffic jam ahead. Smaller equipment that support the unit.
- More accurate destination guidance. Avoidance of traffic congestion (real time).
- Easier to program. More advanced warning.
- More accurate when near a destination. Ability to key in an address not the N/S coordinates
- A more robust design. My Ali-Scout has been out of service on 3 separate occasions. Closer guidance to final destination.
- Accuracy of guided mode. Ability to go beyond beacon range (out of Oakland co.) & stay accurate
- Use street addresses - location names - not coordinates beacons to transmit traffic data (voice) as you pass (i.e. "I 75 - accident in the left lane at 9 mile") report once while passing a beacon only.
- Wider area than Oakland County. - Ali-Scout more accurate than current - easier to Program (use without Ali Scout manual)
- More traffic updates into guidance. More accurate route guidance.
- Need better updates on road closures.
- Make the unit less intrusive. More streamline. More accurate in finding your destination.
- Some way to cancel the current guided mode and prepare an alternate route. Tie in the back light on Ali-Scout to the vehicles dimmer circuitry. An easier way to enter into compass mode. Perhaps a dedicated button.
- Larger address memory/P.C. interface to download addresses. Traffic condition updates/ indicators.
- Not enough coverage. State road crews not rerouting traffic.
- Giving more warning before making turn. More accuracy in making "turn around" in the city - or getting on & off freeways
- Additional coverage area (reside in Farmington Hills)
- Indicate the direction while in guided mode (in addition to existing display). Allow user to enter a preferred route (perhaps by entering beacon numbers) and provide traffic information for that route.
- Provide destination to unit orally
- Add traffic conditions & warnings of congestion.
- Up-date of co-ordinates to allow for long-term/short term construction, road closing, etc. Filter or glare screen - hard to see under some daylight conditions.

- I don't get any updates of road conditions on my system at all. I would like to see that! Closer final destinations from the Ali-Scout.
- More beacons. My daily commute doesn't pass any. Add a PC standard QWERTY keyboard.
- More accurate. My house "moves" every day. System must take into account traffic, construction, and detours.
- Wider range. Larger screen - easier to program
- Integrate it into the dash

- More beacons. Easier to program Make easier to save current position & assign a name to it.
- Change input to - driver only needs to put in address of dest. And system then navigates. Move out to more areas. Install more beacons & or satellites. For out of town use.
- The one thing that would make Ali-Scout useful to me is the ability to get me closer to my destination. Receiving route guidance complete ½ to ½ mile from my destination is of little help in finding my way on side streets & subdivision streets. As long as it works only on main streets the system will be of little use to me.
- Simplify input of the destinations.
- The system needs to be expanded to include a much larger area. As the system area is now, it serves me absolutely no purpose. I haven't used the system in months, and have taken what I could out of my car. The unit is too large. It takes up to much room on the dashboard.
- Easier to use input keyboard - current one is too complicated and confusing - can't remember the key sequences so I often don't use it. More frequent beacons - sometimes I am halfway to my destination before passing the first beacon.
- The system is often inaccurate in that the destinations in memory seem to change from time to time. I find the technology fascinating but of minimal use.
- The coverage area is too small for me
- Add a compass.
- Additional methods of loading destinations. Improved autonomous mode accuracy.
- Accuracy & precision of instruments (beacons, central computer, displays). Programmability - provide a way to delete old destinations, more precise keyboard.
- Improve reliability of unit (mine is intermittent). Provide maps & congestion info.
- No key board. Voice activated.
- The system should be better at taking you to your destination, not across the street from it. The system should be more consistent. When I come home Ali-Scout goes from .01 to .4 randomly.
- Maintain the guided mode to the destination, not stop ½ mile away. Expand the guidance beyond Oakland County.
- Fix Dequindre. Many times Dequindre is backed up from ½ mile to 1 mile at 17 and 19 mile roads. 17 & 19 traffic isn't even backed up at all - sometimes there's NO traffic going through! Add an "accident" button that could help update the central computer database.
- The sound system is so annoying.
- Modify the central computers control of traffic signals to allow left turns only after & not before. The current system promotes drivers to speed up to lights, often crossing into on-coming traffic, to get in the left lane. Add a GPS interface to reduce the need for beacons.
- More stable mount. Lighted or glow-in-the-dark buttons
- Better accuracy. Easier programming.
- The unit did not adhere to my wind-shield & all wired are falling down into my eye site.
- More timely updates. Perhaps a voice advising why particular direction is chosen over another - ie an accident has been detected at Crooks & Long Lake, or heavy congestion near 75 & Big Beaver
- I would like to be able to choose between a male and female voice. I would like to use Ali-Scout during times of dynamic route guidance (that hasn't happened yet)
- More voice instructions. Accurate distance improvement.
- Before the system stops guidance, place the driver on the last street that the destination is on. More beacons.

- No voice - larger screen display - heads up display. Screen functions like a map and shows where you are located
- Heads up display on the windshield for safer viewing while driving. More beacons closer together to ensure your going in the right direction.
- More information on closed roads and additional routes. More routes to get around heavy traffic.
- This is a poor consumer product rental fleet & other vehicles its may be helpful. I would like you to remove it from my truck. This thing is a piece of "junk" and a waste of money I see it going the way of the 8-track tape player. As a technological way station to the trash dump you can do better
- Map of roads on screen
- Expand the coverage area. Work with rental car companies
- ease of entering destination - once [unreadable word], I probably do not need it again. Lat-lon too complicated. broader beacon coverage.
- More accurate in autonomous mode with compass and current location memory. More beacons along the express ways.
- Voice options. Better graphics.
- More "real time" information regarding traffic accidents, road closures, etc. More immediate alternate route guidance following the "left guidance mode" message.
- Update with traffic tie-ups. Include all streets not just main streets.
- When you are out of the Oakland County area your programmed destinations changes daily, my home moves every day. Make it useful out of the Oakland County area.
- I do not see the use on local roads. I see it to be an asset on vacations or areas I'm not familiar with.
- The system tells you the first option it comes to it is not the most logical - somehow let the driver know there are other options. Change the voice; very annoying.
- Some type of symbol on Display unit to let user know that Ali-Scout is suggesting an alternate route because of congestion or some other problem such as construction or an accident.
- Improve accuracy. Improve interchangeability with current traffic flow, congestion, accidents, construction
- The system itself must be expanded. Even the answers to questions such as those on page 28 are dependent on system size. Some subdivisions cannot be entered from all sides. Could this be addressed without the necessity of tightening up the grid overall (I assume that would not be effective). Perhaps characteristics of major subdivision access points could be put in individually into data base and then considered the route determination.
- More areas outside Oakland County (nationwide) . Can this system find my car if stolen(?) Like a Lo-Jack
- 1 button step to set current position or update & correct a current selection. What the reason is for a suggested change of direction to indicate why is sending off normal course. Help you know its not making an incorrect decision.
- Keyboard for entering data - keys are too small. Display screen should be larger.
- More voice guidance - less reliance on visual information. Larger area.
- Provide much larger coverage area. Set more near vision line, so you don't have to turn your head.
- Larger screen. Better visual placement.
- More extensive coverage. Support bracket modified to reduce or eliminate bumping or vibration of monitor.
- Provide more extensive beacon coverage and make more responsive to actual traffic conditions. Make controls and displays more user-friendly through use of words or more intuitive symbols.
- More beacons, more Ali-Scouts. More accurate traffic jam reports.
- More accuracy where roads took off - particularly around Rochester.
- Ease for programming - would like to put in a code for a particular intersection instead of co-ordinates. Expand area of operation.
- Put the driver on the last street before giving up guidance. More beacons.

- Active, real-time information on traffic
- When trying to get to 16 mile & VanDyke from 11 mile & Campbell. It takes me north on I-75 to 14 mile then leads me into the Oakland Mall parking lot and then says it's going out of the guidance range, Fix that. For me as the owner of a car driving mostly in my home area the only reason I want something such as the Ali-Scout is to avoid congestion and decrease travel time to and from my destinations. In the trial I've just participated in I don't see and indication that Ali-Scout is warranted on that account. The system seems to be optimized to take the shortest route without consideration to speeds, lights or signs, and turns when making its routing decisions. I can see it is great for the out-of-towner traveler who needs to get to a specific place and doesn't know the territory. In the few times that I've needed it, it's been a god send and not let me down. Unfortunately, it seems as though if this was the primary purpose of the system it could be better accomplished and at less cost in cash and privacy to communities with one of the competing systems where route information is decentralized; the cost is born by the user of the system, you don't have Big Brother looking over your shoulder and it's not dependent on any locality having an infrastructure in place to support it.

- Improve the system for short commutes. Give the system understanding of more roads, e.g. subdivision roads.
- Have to keep resetting current location at home very frustrating.
- Needs to be easier to program without using the manual. Should remember last beacon when system is turned on
- Accurate route guidance. Advanced warning.
- Ability to determine problem routes prior to departure. More beacons and more users.
- The inaccuracy in several areas I experienced soured me on this system as viable. It looks too expensive. Why not tie in with GPS with a special signal for congestion warning.
- Greater coverage area. Better keyboard.
- Easy to use controls and programming. More accurate guidance.
- The reason I wanted the Ali-Scout was to get past the palace of Auburn Hills and the Lions stadium and it didn't help at all
- I would like to see the address book eliminated. All addresses should be in the system.
- Update road conditions more frequently and more accurately. More advanced warning. More beacons.
- I would like to see the area expanded. Better programming of routes.
- Roadside beacons that are working PROPERLY - NOT OFFLINE. More voice communication between central computer systems and cars with ALI-SCOUT.
- Expand to the tri-county area, especially Macomb County. Update to include road conditions, accidents, road work, etc.
- Brighter display. Phrase "Merge (right or left) - sometimes "turn" don't really apply.
- Add in GPS
- More attractive consol (perhaps in matching colors to interior). Portable and transferrable between different family-owned cars
- More accurate to settings. Better screen.
- Simplify destination programming. Provide earlier advice.
- The only improvement I can suggest is from home to office & return - the routes change quite often & some of them are "off the wall."
- Make keyboard more user friendly. Increase accuracy of system. Actually route around traffic problems.
- Increased coverage. Accuracy improved.
- Give reason for change of course i.e. accident ahead, congestion ahead, etc. Need better method for alerting driver of a turn. Voice did not work well. Get better buttons. My unit has several buttons that stick.
- Route guidance must begin with the first beacon. Right now, if I need to turn at that first beacon, ALI-SCOUT doesn't tell me until AFTER I've passed the intersection! Tell me WHY it is diverting

me, so I know it's not sending me on a wild goose chase. Also, lay out a map or plan, so that I can decide if the thing is crazy & broken, or if I can trust it.

- Accuracy - it seems to follow the same route no matter what the traffic conditions are. A quicker way to program destinations.
- More beacons in different areas.
- Request guidance at the beginning of the trip w/o having to cross beacon. Improved response (don't lose guided mode so easily.)
- Larger area of coverage - I know the coverage area fairly well and it has not helped me at all. Improve it's accuracy. Sometimes I don't know where it's pulling the info - very inaccurate @times.
- When having to merge into a lane, the Ali-Scout says to turn. It should say merge. It would be helpful if it could actually say the name of the street you are turning on when it tells you to turn "right" or left. I was in downtown Birmingham where the streets are so short and close together that it kept telling me to turn left to get to my destination and I ended up lost. If it could possibly say the name of the street I might not have had that problem.
- To include other roads - eg. Subdivisions, not just the main roads. To let the voice direct you more, where to go and turn. Also the miles (distance) are not always accurate, I would like to actually give you the correct distance.
- Easier programming. The promised assistance around traffic congestion.
- Perhaps you should change wording to say "Turn --- when traffic clears" (instead of just "turn left/right/etc")
- Expand the area - I travel within Rochester or upstate & into Detroit. Correct the errors in directions that your company has been TOLD are in error.
- larger keyboard - it is hard to read and use because the keys are so little. Get you closer (at least the same St. as the destination) before it states "destination complete"
- Sometime the autonomous mode comes on to far from my actual destination.
- More user friendly when programming data. Equipment that is all ready programmed for every street address
- More areas.
- in heavy traffic need more warning for lane changes or turns.
- Make the instructions given during travel more accurate; there were many erroneous instructions. This detracts from the image of the system.
- More beacons to give more accurate info. Larger test area.
- I did not care for the voice - maybe one with more emotion would be better. I do not plan far enough ahead to program in new locations, so I would like to perform that function quicker and easier.
- Ability to input street addresses of intersections & let central computer look up numeric location. Ability to select preference for freeway or nonfreeway travel.
- Better system reporting. More timely.
- Accuracy improved. Buttons bigger.
- I would like praise for getting to the destination area like "Yeah - You Made It", etc. The buttons to program are pretty small.
- Size of keyboard. Size of system coverage area.
- Update the technology like the newer systems a map and less data entry are required.
- Enter specific address & directions specifically to that bldg - not gen'l area.
- Greater accuracy in the directions - I've been paying less attention to it because it has given bad directions and ended too far from the destination (sometimes 3 miles). Expanded coverage in area and dynamic function times so I know that it knows what is going on when I'm on the road. Erroneous instructions are distracting.
- Easier to program. Larger area of coverage.
- Stream line the box itself. Possibly build it into the dash board.
- My Ali-Scout did not seem to work correctly

- To be useful - there needs to be a wider range of use. Ease of use - Too much Trouble to have to look up everything in book and transfer - It also takes too long to go through the names of places you've put in to find the one you're looking for.
- I wish it could tell me "There's a stalled car in the right lane 2 miles or ½ mile, etc ahead, please make this change." I wish it could tell me "Sixteen mile seems to be running slower today, more congestion, please divert to 15 mile if possible, it is running better."
- Everyday I have congestion in same spot. I would like system to track congestion & eliminate it.
- More accurate, it has never directed me from construction areas. IE: Dequindre between 14 & 16. Map or book with bar codes to enter data
- Improved key input - keys are too small. Needs to be easier to identify specific coordinates
- More test vehicles on the road to provide updates on traffic conditions.