

SMART

Operational Field Test Evaluation: Customer Survey Report

FINAL REPORT

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Prepared by:

Richard R. Wallace, M.S.
Project Manager

Dr. Steven E. Underwood
Project Director and Co-Principal Investigator

Dr. Jonathan Levine
Co-Principal Investigator

This report presents the results of a survey of SMART's Community Transit (paratransit) customers as part of the University of Michigan's evaluation of SMART's ITS Operational Field Test. This report also is an official deliverable as described in the Statement of Work for the evaluation.

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EXECUTIVE SUMMARY

The Suburban Mobility Authority for Regional Transportation (SMART), which provides both paratransit and fixed-route service in the Detroit metropolitan area, recently has engaged in a program to update its paratransit operations--which it calls Community Transit--through the implementation of advanced public transportation systems (APTS). In particular, over the last two years SMART has been engaged in the implementation of a specific automated scheduling and dispatch (ASD) product.

Among the projected beneficiaries of APTS technology are transit customers. For SMART's program in particular, customers who call in to reserve paratransit service 2 to 6 days in advance will be affected by ASD, as this system is designed to improve the trip reservation and scheduling process. This report focuses on these customers and their attitudes toward and satisfaction with SMART Community Transit service, including any changes attributable to ASD.

Specific customer-related objectives of the SMART APTS deployment include:

- increased customer satisfaction with scheduling a paratransit trip,
- increased customer satisfaction with taking a paratransit trip,
- increased accessibility of valued destinations (e.g., work places, shopping areas),
- increased efficiency and ease of scheduling and taking a paratransit trip, and
- increased convenience of trips (e.g., more closely meeting desired pickup and drop off times).

Perhaps more important than productivity measures of APTS's affect on customers (such as number of trips per day) may be how APTS alters the quality of each customer's paratransit experience. Therefore,

measuring customers' attitudes toward and satisfaction with SMART paratransit service is an essential component of APTS evaluation.

In order to examine customers' attitudes toward and perspectives on SMART paratransit, the University of Michigan evaluation team designed and administered a sequence of telephone surveys--the initial survey administered during spring 1996 and the follow-up during spring 1997--to randomly selected samples of paratransit customers who use the advance reservation system. These surveys were designed to address a variety of factors, including customer use of SMART Community Transit, customer satisfaction with service, and a general description of paratransit customers. Furthermore, the overall survey research was designed as best as feasible to allow for measurement of changes in these factors attributable to ASD. The survey was also designed to accommodate the special needs of the population served by Community Transit.

Regarding general, largely demographic, characteristics of customers, the survey findings indicate that customers are predominantly female, older (average age is 62 years or so), and lacking in mobility options (for example, about two-thirds do not possess a drivers license). Furthermore, customers include both occasional riders for high-priority trips (e.g., medical-related destinations) and daily users (e.g., work trips), with the former most common. The survey findings also indicate an improvement in SMART's ability to serve customer trip requests after the implementation of ASD.

Questions addressing customer satisfaction revealed generally high levels of customer satisfaction at both survey time points. Comparing overall results within and between surveys, differences between counties are more pronounced than differences associated with ASD, with Oakland County in particular experiencing some significant declines in satisfaction at the time of the follow-up survey. Save for these differences associated with Oakland County, which appears to have experienced more implementation problems than other counties (especially

Wayne), ASD does not appear to be significantly associated with changes in customer satisfaction. Satisfaction also declined along some dimensions for customers who completed both the initial and follow-up survey, giving rise

to the suggestion that to some extent long-time customers may be experiencing somewhat worse service as SMART successfully serves a broader swath of the population in the post-ASD period.

INTRODUCTION

With the arrival of advanced public transportation systems (APTS), such as automated scheduling and dispatch (ASD) software, transit agencies are reexamining their paratransit operations with renewed enthusiasm. Among the first transit agencies in the U.S. to deploy ASD within paratransit operations, the Suburban Mobility Authority for Regional Transportation (SMART), which provides both paratransit and fixed-route service in the Detroit metropolitan area, recently has engaged in a program to update its paratransit operations--which it calls Community Transit--through the implementation of a specific ASD product called TrapezeTM-QV, or QuoVadis¹ as it is still commonly known.

SMART operates a fleet of about 70 paratransit vehicles within an approximately 1,200 square-mile area that includes parts of Wayne and Oakland counties and all of Macomb County. With their paratransit vehicles, SMART offers a mix of services--including general service trips (usually reserved in advance and operated as many-to-many service), Dial-A-Ride (like general service, but operated as same day service), and agency trips (carrying several clients at a time from or to a single site, such as a senior center)--that provides around 2,000 trips per day to area residents. As shown in Figure 1, APTS (ASD and automatic vehicle location) serve as tools that SMART staff use when interacting with customers and as internal tools used for creating paratransit schedules.

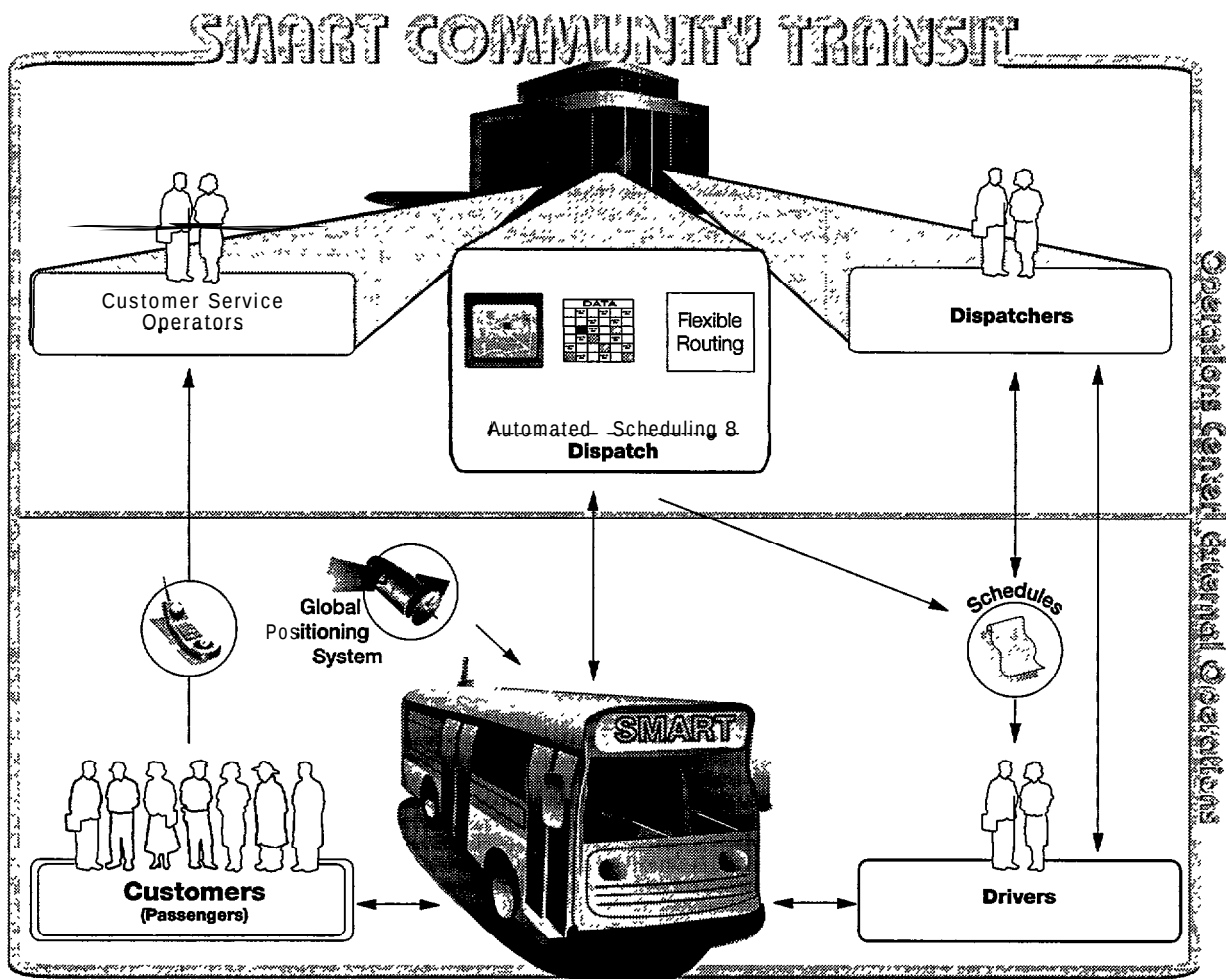
In particular, customers who call in to reserve paratransit service 2 to 6 days in advance will be affected by ASD, as this system is designed to improve the trip reservation and scheduling process. Thus, paratransit customers, especially those who call SMART in advance to reserve trips, promise to be among the primary beneficiaries of APTS. This report focuses on these customers and their attitudes toward and satisfaction with SMART Community Transit service, including any changes attributable to ASD.

Through the use of APTS, SMART seeks to achieve a variety of goals, such as reducing operating costs and improving service (Lister, et al. 1995). Specific customer-related objectives of the SMART OFT include:

- increased customer satisfaction with scheduling a paratransit trip,
- increased customer satisfaction with taking a paratransit trip,
- increased accessibility of valued destinations (e.g., work places, shopping areas),
- increased efficiency and ease of scheduling and taking a paratransit trip, and
- increased convenience of trips (e.g., more closely meeting desired pickup and drop off times).

1. TrapezeTM-QV is a registered trademark of Trapeze Software Inc. The most recent version of this software, which SMART will soon obtain, is marketed under the name TrapezeTM-PASS.

Figure 1. The Paratransit Customer and SMART



For a transit operator, customers may well be the most important group of people that will be affected by system changes, such as the deployment of APTS. Transit operators such as SMART would like to see APTS improve their service from the customers' perspective. Perhaps more important than systemwide productivity measures of APTS's affect on customers (such as number of trips per day) may be how APTS alters customers' perceptions of their paratransit experiences. Increasing the number of customers per day, for example, at the expense of more unpleasant trips is not a desirable outcome.

Conversely, APTS may well be considered successfully implemented if they increase the satisfaction of paratransit customers, but do not lead to increases in the total number of customers served or trips provided. Therefore, measuring customers' attitudes toward and satisfaction with SMART paratransit service, along with their self-reported use of the service, is an essential component of APTS evaluation. System productivity measures are discussed in other evaluation reports, especially the Operations Database Report, the Telephone Reservation System Report, and the Schedule Adherence Report.

METHOD

In order to examine customers' attitudes toward and perspectives on SMART paratransit, the University of Michigan evaluation team designed and administered a sequence of telephone surveys (pretest-posttest) to randomly selected samples of paratransit customers who use the advance reservation system. While survey research is an appropriate method for obtaining measures of attitude and satisfaction, employing such techniques with paratransit customers during a phased technology implementation schedule during which interruptions to service must be kept to a minimum requires careful planning and consideration of two key research design issues. First, as discussed by Lave, Rose, and Sugrue (1992), members of this population may have difficulty with some survey tasks, such as those requiring recall, and elderly respondents in particular may be unwilling to complete a long survey instrument. As a result, we chose a survey research firm with substantial experience working with such populations to conduct the interviews and kept the length of the survey to an absolute minimum (about 30 questions; see Appendices A and B for exact survey questions and protocols). On the positive side, the survey population represents a motivated group of respondents, and motivated respondents can contribute to a high survey response rate.

The second important research design issue concerns SMART's ARTS implementation schedule. Based on considerations of experimental control, ideally the evaluators would select a random sample of paratransit riders to receive service based on ARTS technology, while the remainder would continue to access the old system. Due to both operational (inadequacies in the phone system) and understandable policy reasons (i.e., unwillingness to

deny some customers access to the new system), however, such a design was deemed unfeasible from the start. Further complicating the survey research design, in the midst of the project SMART substantially altered its paratransit operations and service area due to the effects of a property tax millage that they sought (and received) from the voters in their region. Most important, some communities that were within SMART's service area at the beginning of the ITS project were eliminated from this area in the wake of the Spring 1995 millage election. These opt-out communities, however, lost their service in May 1995, well before administration of the customer surveys discussed in this report.

Given these constraints, a modified pretest-posttest design was left as the most viable option. The modification arises for two main reasons. First, SMART had already implemented Quo Vadis within the scheduling operations of one county (Macomb) within its service area at the time of the millage election (May 1995). Second, at the time of the follow-up survey SMART no longer provided general paratransit service within the city of Detroit, meaning that Detroit residents could not be included in the follow-up interviews. Thus, the resultant survey research design is not purely a pretest-posttest, because Macomb County customers were subject to Quo Vadis at both survey time points, and Detroit customers were surveyed only in the initial survey, because they were no longer eligible for general paratransit service when the second survey was administered (though they remain eligible for ADA based service). As a result of these modifications, in this report we will use the phrases "initial survey" and "follow-up survey" instead of pretest and posttest, respectively (see Figure 2).

Figure 2. Research Design

Jurisdiction	Events			
	Spring 1995	March 1996	May 1996	March 1997
Macomb	Millage+QV	Initial Survey		Follow-up Survey
Oakland	Millage	Initial Survey	QV	Follow-up Survey
Wayne	Millage	Initial Survey	QV	Follow-up Survey
Detroit	Millage	Initial Survey	QV	

To select respondents for the initial survey, the evaluators obtained from SMART a list of all names included in their paratransit database. At the time of this survey (April 1996), this list included all customers who had phoned in to reserve paratransit service through SMART's 2- or 6-day advance reservation system. This population was chosen for the sampling frame because one of the primary hypothesized benefits of ASD is an improved (e.g., faster, greater success rate) trip reservation process. Upon dialing the phone number of a sampled customer, interviewers screened out those who had not called to reserve a paratransit trip in the four weeks prior to the interview. Restricting the respondent pool to those who had used SMART Community Transit in the last four weeks was done both to obtain responses only about SMART's most current service and to reduce the effects of recall bias (Converse and Presser 1986).

For the follow-up survey, we sought both to reinterview eligible respondents from the first wave (i.e., those who had called in the four weeks prior to the survey date) and to gain a representative snapshot of overall customer attitudes at the time of the second

survey (March-April 1997)². To accomplish the latter, the initial sample was supplemented by both new customers--those not in the database during April 1996--and long-time customers who were not sampled for the initial survey. In this way, both waves of the survey are representative of overall customer attitudes and opinions at the time of survey administration, and a subset of respondents can be examined to see how *individual* attitudes and opinions changed between surveys (i.e., before and after Quo Vadis implementation).

The customer survey serves the primary purpose of providing the evaluators and SMART with an understanding of customer perspectives on SMART paratransit service, and how these have changed since implementation of ASD. Therefore, we included in the survey questions designed to measure the demographic characteristics of paratransit customers, how customers use the service, and what factors contribute to customer satisfaction. Of course, relationships and interactions between these areas of inquiry also are of interest, given APTS' potential to alter such dynamics.

2. By administering both surveys at roughly the same time of the year--spring--we also sought to reduce or eliminate seasonal effects that could have resulted from conducting the surveys at different times of the year (e.g., summer v. winter).

RESULTS

In presenting the results of the customer surveys, we are interested both in overall responses for each wave of the survey and changes between waves, as well as in changes in attitudes and self-reported satisfaction for customers who were interviewed for both the initial and the follow-up survey. Thus, the survey results discussed below sometimes rely on only one of the two surveys and sometimes on both. Care has been taken in each section to clearly indicate the sample used to arrive at particular results.

Survey Response

Using the above research design, 272 interviews with SMART paratransit customers were completed in late April 1996. In addition, at this time 37 interviews were partially completed. For the purposes of this survey, partially completed interviews are those in which sampled respondents had called to reserve paratransit service within the four-week window, but SMART was unable to meet their trip requests. Therefore, these respondents were able to complete only a part of the survey instrument, because part of the survey deals with trip experiences. These figures also suggest that on a monthly basis SMART failed to serve about 12 percent of would be customers during March-April 1996. Put more positively, even without Quo Vadis (except in Macomb County), SMART successfully served nearly 90 percent of potential paratransit customers, though not every trip requested by these customers was met. Considering

both completed and partially completed interviews, the survey team achieved an 87 percent response rate for the initial survey. Tables 1a and 1b display the number of completed and partially completed interviews for each county in SMART's service area for the initial (1a) and follow-up (1b) surveys. (Because SMART treats Detroit separately in terms of service provision, Detroit and the rest of Wayne County are shown separately; this convention will be followed throughout the report.)

For the follow-up survey, which was completed in March 1997, a smaller total sample size was achieved (n=186), due in large part to elimination of the Detroit strata from the research design. For this survey, the response rate also declined somewhat (to 80.5 percent), mainly because of a low cooperation rate among long-time customers who were selected for the follow-up, but not for the initial survey. Only 5.9 percent of respondents to the follow-up survey fell into the partially complete category, suggesting an improvement in SMART's ability to provide paratransit service to a range of customers who call in to reserve Community Transit service. Because both surveys were administered after the opt-out effects of the millage, we can attribute at least part of this gain to Quo Vadis. Again, however, improvements in the percentage of potential customers, receiving service aside, not all trips requested by customers were met, as will be discussed below in more detail.

Table 1a. Initial Survey Response by Jurisdiction

Status	Number of Respondents (n=309)			
	Macomb County	Oakland County	Wayne County	Detroit
Complete	72	67	73	60
Partial	3	14	6	14

Table 1 b. Follow-up Survey Response by Jurisdiction

Status	Number of Respondents (n=186)		
	Macomb County	Oakland County	Wayne County
Complete	61	48	66
Partial	4	5	2

Paratransit Customer Demographics

Examining the data for the initial survey, we find that SMART paratransit riders are overwhelmingly female, with women accounting for 81.2 percent of those surveyed; as expected, this result held in the follow-up survey, with women accounting for 83.8 percent of these respondents. While the percentage of female respondents varied somewhat between jurisdictions, in each over 75 percent were female for both waves of the survey (see Tables 2a and 2b). The slight increase in the percentage of female respondents at the time of the follow-up survey, while not statistically significant overall, appears to derive primarily from an increase in the percentage of female respondents within Macomb County.

Paratransit riders also tend toward the higher end of the age distribution, as respondents had a mean age of 62.3 years (n=293) for the initial survey and 63.0 (n=173) for the follow-up survey (see Table 3). While some differences between jurisdictions appear for each survey, they fail to reach statistical significance at the 0.05 level based on analysis of variance (ANOVA) tests. The small observed age difference between surveys also is not statistically significant, suggesting that in terms of customers' age SMART served about the same population at both survey time points. Indeed, visual inspection of the data suggests that the slight age increase in the second wave is due to the elimination of Detroit from the study, as Detroit residents appeared to be slightly younger during the initial survey, albeit not statistically significantly younger.

Table 2a. Sex by Jurisdiction for Initial Survey

Sex	Percentage of Respondents			
	Macomb county	Oakland County	Wayne County	Detroit
Female	78.7	80.2	82.1	83.8
Male	21.3	19.8	17.9	16.2

Table 2b. Sex by Jurisdiction for Follow-up Survey

Sex	Percentage of Respondents		
	Macomb County	Oakland County	Wayne County
Female	87.7	84.9	79.1
Male	12.3	15.1	20.9

Table 3. Age by Jurisdiction

Age	Percentage of Respondents to Initial Survey			
	Macomb County (n=73)	Oakland County (n=75)	Wayne County (n=76)	Detroit (n=69)
Less than 30	0.0	12.0	5.3	4.3
30 to 39	6.8	12.0	13.2	14.5
40 to 49	12.3	9.3	14.5	17.4
50 to 59	11.0	6.7	5.3	11.6
60 to 69	16.4	10.7	10.5	18.8
70 to 79	35.6	25.3	27.6	17.4
80 or more	17.8	24.0	23.7	15.9
Mean (Initial) ^a	65.8	61.2	63.2	58.8
Mean (Follow-up) ^b	65.1	62.2	61.8	N/A

ANOVA Results: $F_{\text{between}} = 1.80$ ($p = 0.15$).^bANOVA Results: $F_{\text{between}} = 0.53$ ($p = 0.59$).

Finally, both surveys show that respondents have low household incomes compared to the median incomes for their places of residence, as illustrated in Table 4a for the initial survey. Income differences between jurisdictions also fail to reach significance at the 0.05 level ($\chi^2=12$, $p=0.166$), but the data at least suggest that Detroit riders were poorer than the others, reflecting the general income pattern in the region. As shown in Table 4b, the three counties included in the follow-up survey remain quite simi-

lar; in fact, with Detroit removed the remaining customer base shows a more homogeneous income distribution.

Viewed broadly, these demographic findings generally match those found for paratransit riders elsewhere (e.g., Argilla 1974), though SMART appears to serve fewer young riders than found in past studies of other transit agencies. On the other hand, past studies are rather dated, and the composition of paratransit users nationwide may have changed since the 1970s.

Table 4a. Household Income by Jurisdiction (Initial Survey)

Household Income	Percentage of Respondents			
	Macomb County (n=55)	Oakland County (n=58)	Wayne County (n=59)	Detroit (n=63)
Less than \$5,000	20.0	17.2	25.4	36.5
\$5,000 to \$10,000	40.0	43.1	39.0	38.1
\$10,000 to \$15,000	21.8	15.5	20.3	15.9
\$15,000 to \$25,000	9.1	10.3	5.1	4.8
\$25,000 to \$35,000	3.6	6.9	0.0	4.8
\$35,000 to \$50,000	1.8	5.2	5.1	0.0
\$50,000 or more	3.6	1.7	5.1	0.0
Median Income^a	\$38,931	\$43,407	\$27,997	\$18,742

1990 US Census

Table 4b. Household Income by Jurisdiction (Follow-up Survey)

Household Income	Percentage of Respondents		
	Macomb County (n=37)	Oakland County (n=36)	Wayne County (n=48)
Less than \$5,000	27.0	27.8	22.9
\$5,000 to \$10,000	27.0	30.6	37.5
\$10,000 to \$15,000	18.9	11.1	25.0
\$15,000 to \$25,000	10.8	11.1	8.3
\$25,000 to \$35,000	2.7	8.3	4.2
\$35,000 to \$50,000	8.1	8.3	2.1
\$50,000 or more	5.4	2.8	0.0
Median Income^a	\$38,931	\$43,407	\$27,997

1990 US Census

Use of SMART Paratransit Service

Counting both complete and partial interviews, respondents to the initial survey called SMART to reserve paratransit service an average of 5.11 times each in the four weeks preceding their interviews. During these calls, they requested an average of 5.25 trips each, and SMART was able to schedule an

average of 4.43 trips per person (84.4 percent of requested trips). Only one of these (trips requested) varied significantly (and this only at the 0.10 level) across jurisdictions, and in all three cases jurisdiction accounted for less than 2.2 percent of the variance, suggesting that quantity of service per person varies

little from jurisdiction to jurisdiction. As can be seen in Table 5a, customers in Oakland County received the most service at the time of the initial survey, while those in Detroit received the least. Multiple comparisons based on Bonferroni tests (which control for overall error) show that none of the counties are significantly different from one another on these three service variables at the 0.05 level.

According to the follow-up survey, Oakland County customers still receive the most service (Table 5b), though again differences between counties fail to reach statistical significance. For both Oakland and Wayne, the amount of service requested and scheduled increased from the initial to the follow-up survey,

while Macomb County experienced a slight decline. Because Macomb already was using Quo Vadis at the time of the initial survey and opt-out communities had long since lost service, these results provide some weak support for the hypothesis that Quo Vadis allows for denser scheduling of customer trips. Strengthening this support, respondents to the follow-up survey in all three counties reported a higher percentage of trip requests successfully scheduled (90.0 percent v. 82.6 percent overall). As with the initial survey, no statistically significant differences across counties were found for the follow-up survey on these measures.

Table 5a. Quantity of Service per Respondent by Jurisdiction (Initial Survey)

Event	Mean Number of Events per Respondent			
	Macomb County (n=73 ^a)	Oakland County (n=79)	Wayne County (n=76 ^a)	Detroit (n=72 ^a)
Times Called^b	4.41	7.69	4.55	3.60
Trips Requested^c	5.40	6.84	4.58	4.07
Trips Scheduled ^d	4.96	5.10	4.28	3.28
Percent Requests Met^e	86.9%	74.6%	93.4%	80.6%

^aSample sizes varied by one or two across response items for these jurisdictions.

^bANOVA Results: $F_{\text{between}} = 1.38$ (p=0.25); $\eta^2 = 0.014$.

^cANOVA Results: $F_{\text{between}} = 2.16$ (p=0.093); $\eta^2 = 0.021$.

^dANOVA Results: $F_{\text{between}} = 1.26$ (p=0.29); $\eta^2 = 0.013$.

^eDefined as trips scheduled divided by trips requested times 100 percent.

Table 5b. Quantity of Service per Respondent by Jurisdiction (Follow-up Survey)

Event	Mean Number of Events per Respondent		
	Macomb County (n=62 ^d)	Oakland County (n=50 ^d)	Wayne County (n=65 ^d)
Times Called ^b	4.32	6.68	4.97
Trips Requested ^c	5.00	7.42	5.95
Trips Scheduled ^d	4.67	6.52	5.75
Percent Requests Met ^e	93.4%	87.9%	96.6%

^aSample sizes varied by one or two across response items for these jurisdictions.

^bANOVA Results: $F_{\text{between}} = 1.27$ ($p=0.28$); $\eta^2 = 0.014$.

^cANOVA Results: $F_{\text{between}} = 0.99$ ($p=0.37$); $\eta^2 = 0.011$.

^dANOVA Results: $F_{\text{between}} = 0.59$ ($p=0.55$); $\eta^2 = 0.007$.

^eDefined as trips scheduled divided by trips requested times 100 percent.

Examining use of service across surveys statistically (ANOVA), we find that neither county nor Quo Vadis (in place or not) has a significant effect (at the 0.10 level) on trips requested or scheduled, but both have a significant effect on percent of trip requests met. While county is the larger of the two effects ($p=0.027$), Quo Vadis also is significant ($p=0.057$), with a higher percentage of trip requests met using Quo Vadis³. Interactions between these two factors, however, cannot be tested, because Macomb County had Quo Vadis at both time points. If we exclude Macomb County customers from the analysis, the result changes little and the interaction between Quo Vadis and county is not significant.

If counties differ mainly due to service characteristics and Quo Vadis implementation, and therefore try to predict trips scheduled from trips requested, Quo Vadis, and a variable for Macomb (because Macomb had Quo Vadis at both time points), we find that Quo

Vadis has a significant effect on trips scheduled ($p=0.032$). Specifically, accounting first for trips requested and Macomb, Quo Vadis is associated with an increase in trips scheduled of about 0.75 trips per customer for the four-week period asked about in the survey.

The survey results show that respondents use Community Transit to access a wide variety of destinations, including work, medical related destinations (e.g., doctors' offices), school, shopping areas, and senior centers. While more respondents to the initial survey reported taking SMART paratransit to medical-related destinations ($n=158$) than to any other destination type (not odd given respondents' demographic characteristics), followed by shopping areas ($n=77$), work and school were the destinations for which respondents reported the most trips per person for those traveling to a particular destination type. These results, displayed in Table 6a, suggest that

3. Given SMART's Quo Vadis implementation schedule in relation to the surveys, the Quo Vadis and county variables are inherently correlated, and part of the county effect is attributable to Quo Vadis.

Table 6a. Paratransit Destinations by Jurisdiction (Initial Survey)

Destination	Trip Frequency							
	Macomb County		Oakland County		Wayne County		Detroit	
	Riders Using	Ave. Times	Riders Using	Ave. Times	Riders Using	Ave. Times	Riders Using	Ave. Times
Medical	38	2.59	41	2.45	41	3.10	38	2.66
Shopping	33	3.58	21	2.25	19	2.89	4	6.50
Work	10	12.2	18	12.2	9	14.8	5	12.3
School	5	8.40	5	11.4	6	10.5	3	9.33
Senior Center	8	4.00	2	2.00	10	2.5	0	N/A
Recreation	7	3.17	7	5.14	5	3.40	3	12.0
Beauty Salon	13	2.42	4	3.00	11	1.64	1	1.00
Other	8	3.00	6	4.75	9	2.33	4	6.75

Table 6b. Paratransit Destinations by Jurisdiction (Follow-up Survey)

Destination	Trip Frequency					
	Macomb County		Oakland County		Wayne County	
	Riders using	Ave. Times	Riders using	Ave. Times	Riders using	Ave. Times
Medical	29	2.28	26	2.80	36	2.77
Shopping	27	3.15	13	2.83	17	2.71
work	7	10.0	15	15.2	11	10.3
School	3	4.33	0	N/A	5	11.2
Senior Center	6	2.50	3	2.00	6	3.83
Recreation	5	4.80	6	4.67	3	2.00
Beauty Salon	10	2.80	7	3.29	5	1.40
Other	11	4.54	8	2.29	14	5.00

These results, as expected, suggest a certain degree of transit dependence on the part of Community Transit customers. Examining personal mobility indicators from the surveys, this conclusion is supported and further illuminated. First, as shown in Tables 7a and 7b, we see that about two-thirds of Community Transit customers do not possess a driver license (no significant differences between surveys). Second, more than 70 percent of customers reported not having a car available for any of

their Community Transit trips, while only about 15 percent had a car available for half or more of their Community Transit trips (see Tables 8a and 8b).

Table 7a. Driver License by Jurisdiction (Initial Survey)

Have License?	Percentage (n=75-81)			
	Macomb	Oakland	Wayne	Detroit
Yes	36.0	34.6	32.1	28.4
No	64.0	65.4	67.9	71.6

**Table 7b. Driver License by Jurisdiction
(Follow-up Survey)**

Have License?	Percentage (n=53-68)		
	Macomb	Oakland	Wayne
Yes	35.4	37.7	32.4
No	64.6	62.3	67.6

**Table 8a. Car Availability by Jurisdiction
(Initial Survey)**

Percent of trips for which car was available	Percentage of Respondents (n=71-76)			
	Macomb	Oakland	Wayne	Detroit
None	73.0	68.4	60.6	69.9
Less than 25%	8.1	3.9	21.1	11.0
25% to 49.9%	5.4	7.8	7.0	6.8
50% to 74.9%	2.7	6.6	4.2	5.5
75% or More	10.8	12.2	7.0	6.8

**Table 8b. Car Availability by Jurisdiction
(Follow-up Survey)**

Percent of trips for which car was available	Percentage of Respondents (n=51-65)		
	Macomb	Oakland	Wayne
None	70.7	66.7	80.0
Less than 25%	6.9	7.8	7.7
25% to 49.9%	6.9	3.9	1.5
50% to 74.9%	5.2	3.9	4.6
75% or More	10.3	17.6	6.2

In addition of these measures, we also asked respondents whether or not they had any disabilities that prevented them from driving a car, riding as a passenger in a car, or riding a fixed route bus (see Tables 9a and 9b).

While more than half report having a disability that prevents them from driving, the vast majority (more than 90 percent) are capable or riding as a passenger in either a car or a fixed-route bus. The percentage that cannot drive differs significantly by county (for initial, $\chi^2 = 19.4$, $p < 0.001$; for follow-up, $\chi^2 = 7.17$, $p = 0.03$), with Oakland respondents the least.⁴ For the initial survey, inability to ride fixed-route bus also varies significantly by jurisdiction ($\chi^2 = 9.21$, $p = 0.03$). We also observe a large decline in inability to ride a fixed-route bus between surveys, but clear explanations for this change are lacking in the data. It may, however, be due to changing perceptions of the accessibility of fixed-route buses caused by the addition of more lifts and publicity brought about by the Americans with Disabilities Act, which while passed in 1991 was not required to be fully implemented until January 1997.

**Table 9a. Customer Mobility by Mode
(Initial Survey)**

Disability Status	Percent of Respondents (n=72-79)			
	Macomb	Oakland	Wayne	Detroit
Prevents Driving a Car	62.5	32.9	64.1	55.4
Prevents Riding as Car Passenger	5.6	7.6	2.6	6.8
Prevents Riding Fixed-Route Bus	15.3	12.7	25.6	29.7
No Limitations	27.8	58.2	28.2	32.4

4. Because the "no limitations" condition proves to be essentially the inverse of the "prevents driving" condition, no statistical tests of this measure were made.

**Table 9b. Customer Mobility by Mode
(Follow-up Survey)**

Disability status	Percent of Respondents (n=51-68)		
	Macomb	Oakland	Wayne
Prevents Driving a Car	66.1	41.2	57.4
Prevents Riding as Car Passenger	4.8	5.9	7.4
Prevents Riding Fixed-Route Bus	8.1	5.9	7.4
No Limitations	33.9	58.8	39.7

Customer Satisfaction with SMART Paratransit

Gauging customer satisfaction with paratransit service was one of our primary motives for administering the customer survey. Because APTS has the potential to affect both customers' experiences when making reservations for trips (i.e., by changing the manner in which customer-service operators reserve trips) and their experience of the trip itself (e.g., by altering paratransit schedules), the evaluators designed the survey instrument to obtain satisfaction measures of both of these experiences. In addition, customers were asked to provide an overall rating of paratransit service. This survey design also allows us to determine if both really are important components of customer satisfaction. For all of the questions addressing customer satisfaction, respondents selected their responses from a five-point Likert scale, in which "very good" was coded "1" and "very poor" was coded "5." As a further precaution to address the needs of the surveyed population, SMART staff familiar with the paratransit customer base participated in the wording of these questions.

Taken as a whole, this set of questions revealed a large degree of customer satisfaction among survey respondents. For none of the eight questions concerning satisfaction with SMART service did the mean answer exceed 2.31 for any of the four jurisdictions on the initial survey. Because 3.0 is the midpoint of the scale, representing the breakpoint between positive and negative responses, this indi-

cates that customers are at least somewhat satisfied with all the elements of service that they were asked about. For the follow-up survey, a similar pattern emerged, with satisfaction ratings ranging from 1.36 to 2.34. Comparisons between the two surveys are discussed below.

As can be seen from Tables 10a and 10 b(which summarize the results from this part of the survey), however, some service elements are viewed more positively than are others. Of the eight items asked about, "politeness of the bus driver" received the best average satisfaction rating on both surveys (1.39 for the initial and 1.40 for the follow-up), while "the speed that calls [to make reservations] were answered" received the worst (though by no means poor) average satisfaction rating on both surveys (2.24 and 2.16). Comparing across jurisdictions, no statistically significant findings of differences for any of these items (using one-way ANOVA) were found for the initial survey, with one exception. Specifically, for the initial survey ratings of satisfaction with travel time were found to be statistically significant ($F = 3.58$; $p = 0.014$), with Bonferroni tests revealing a significant difference at the 0.05 level between Macomb and Detroit; this result corresponds well with the preliminary analysis of actual travel time data which shows longer travel times for paratransit service within Detroit (an average of about 44 minutes per trip, compared to only 17 minutes per trip in Macomb). None of the other ANOVAs resulted in a p-value lower than 0.3, indicating general agreement among customers regarding satisfaction with SMART's paratransit service. Happily for SMART, this agreement leans strongly in the direction of positive customer satisfaction.

For the follow-up survey, two satisfaction measures—overall service and politeness of operator—proved significantly different (at the 0.05 level) across counties. For both measures, respondents from Oakland County reported less satisfaction, especially compared to Macomb County. Also, for both measures Macomb and Wayne showed increased satisfaction in the follow-up survey, while Oakland experienced a decline in satisfaction. Given that Oakland and Wayne received Quo Vadis at about the same time,

these results would appear to be due to traits particular to Oakland County service (e.g., functions of individual operators and customers) and not to the system. Possibly, Oakland County operators experienced more difficulties learning the new system, resulting in less polite service.

As with the initial survey, satisfaction as a whole is high in the follow-up survey. Using ANOVA to compare the two surveys statistically, with Quo Vadis (in place or not) and county as predictors, we find that Quo Vadis is not significantly associated with any of the satisfaction measures individually (at the 0.10 level). On the other hand, county is significantly associated with both satisfaction with overall service ($p=0.022$) and travel time ($p=0.081$), and nearly so with politeness of operator ($p=0.102$). In all three instances, we find that Oakland County customers reported less satisfaction than did others. Again, this effect would seem attributable to specific

characteristics of either Oakland County customer service operators or Oakland County customers. These findings also suggest strongly that Quo Vadis implementation has been proceeding less smoothly within Oakland County, especially as compared to Wayne County, which received Quo Vadis at roughly the same time as Oakland.

If, as done above, we assume that counties differ mostly in terms of service characteristics and Quo Vadis implementation, we find, after controlling for trips requested, trips scheduled, whether or not a customer had hung-up when trying to make a reservation, and Macomb (again, because this county was different in the timing of Quo Vadis implementation), that Quo Vadis has no significant effects on customer satisfaction. Thus, overall, Quo Vadis has not caused statistically significant gains in satisfaction, but neither has it caused any decline.

Table 10a. Customer Satisfaction by Jurisdiction (Initial Survey)

	Satisfaction							
	Macomb County		Oakland County		Wayne County		Detroit	
Satisfaction with: (Overall Mean)	Mean	S.D. ^b	Mean	S.D.	Mean	S.D.	Mean	S.D.
Overall Service (1.77)	1.64	0.96	1.93	1.06	1.69	0.97	1.83	0.91
Speed Calls Answered (2.24)	2.27	1.07	2.31	1.01	2.13	1.00	2.25	1.08
Speed Request Handled (2.04)	1.92	0.92	2.03	0.91	2.05	1.01	2.16	0.91
Politeness of Operator (1.81)	1.84	1.02	1.85	1.07	1.70	0.94	1.86	0.91
Politeness of Bus Driver (1.39)	1.27	0.56	1.43	0.84	1.38	0.68	1.49	0.60
Promptness of Arrival at Pick-up (1.75)	1.70	0.86	1.85	1.03	1.61	0.74	1.86	0.94
Promptness of Arrival at Destination (1.72)	1.60	0.73	1.82	0.94	1.71	0.83	1.77	0.89
Travel Time (1.75)	1.52	0.74	1.89	0.91	1.66	0.88	1.95	0.85

Sample sizes ranged from 57 to 81 per jurisdiction per question.

^b Standard Deviation

Table 10b. Customer Satisfaction by Jurisdiction (Follow-up Survey)

	Satisfaction Ratings ^a					
	Macomb County		Oakland County		Wayne County	
Satisfaction with: (Overall Mean)	Mean	S.D. ^b	Mean	S.D.	Mean	S.D.
Overall Service(1.71)	1.56	0.81	1.98	1.05	1.67	0.81
Speed Calls Answered (2.16)	2.10	1.04	2.34	1.07	2.06	0.90
Speed Request Handled (2.13)	2.12	1.04	2.22	0.99	2.08	0.92
Politeness of Operator (1.75)	1.58	0.73	2.02	1.15	1.71	0.95
Politeness of Bus Driver (1.40)	1.38	0.71	1.36	0.53	1.45	0.71
Promptness of Arrival at Pick-up (1.81)	1.70	0.85	1.83	1.07	1.90	0.99
Promptness of Arrival at Destination (1.73)	1.70	0.79	1.83	0.84	1.67	0.87
Travel Time (1.70)	1.69	0.88	1.81	0.68	1.62	0.75

Sample sizes ranged from 47 to 66 per county per question.

^b Standard Deviation.

If we examine only customers who completed both surveys in an attempt to capture changed attitudes of those who rode and responded at both time points, the sample size declines to about 80, because we exclude all of Detroit and all of those who answered only one survey⁵. Based on these repeated measures⁶ analyses (ANOVA), only satisfaction with request handling speed ($p=0.078$) and satisfaction with promptness of arrival at pickup point ($p=0.040$) changed significantly between surveys. For both measures, satisfaction declined with the follow-up

survey, and county was not a significant factor in the changed responses. If we employ regression analysis with dummy variables to account for county and use satisfaction at the time of the initial survey as a predictor of satisfaction on the follow-up, along with self-reported service quality (time spent on bus per trip and whether or not one had hung up while attempting to make a trip reservation), we still find no significant effects due to county. Thus, we conclude that satisfaction was largely unaffected by Quo Vadis for repeat respondents.

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5. While not related directly to the study at hand, our experience with conducting the follow-up survey indicates that SMART Community Transit customers do not call for service in every period. Thus, some respondents from the initial survey had not ridden in the previous four weeks at the time of the follow-up survey. This, too, decreased the sample size available for the repeated measures analysis.
 6. Such analyses are referred to as repeated measures because the same respondents provide measures on the same variables (in this case, aspects of customer satisfaction) at more than point in time. In analyzing data of this variety we focus on changes in responses, rather than on the responses themselves.

CONCLUSION

Overall we find no statistically significant changes in customer attitudes between the two surveys due to Quo Vadis, but those respondents who answered both surveys did report a decline in satisfaction on two accounts. Given the findings that SMART is able to accommodate more potential customers with Quo Vadis and a higher percentage of trip requests made by these customers, the results of the repeated measures analyses suggest that changes to service between the two surveys may have had an adverse effect on the satisfaction of long-time customers, but have not had such an effect on the total pool of customers. That is, it appears that service to long-time users may have, or at least so these cus-

tomers believe, declined in exchange for broadening the customer base and meeting a higher percentage of trip demand.

Future Directions for Evaluation

In Phase Two of the evaluation, the University of Michigan intends to administer another customer survey in order to further track customer attitudes and opinions over time. Also, this survey will allow us to measure changes due to the addition of automatic vehicle location (AVL) to the APTS mix. At this time, we also intend to extend this survey work to linehaul customers in order to gauge effects of the AVL system on linehaul customers.

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APPEDIX A:

INITIAL CUSTOMER SURVEY

INITIAL SMART CUSTOMER TELEPHONE SURVEY

SPRING 1996

Hello. May I please speak to [name of selected respondent].

_____ Yes

_____ No. Then when is a good time to reach him/her? _____

[After respondent is on the line.] Hello. This is _____ and I am calling on behalf of the University of Michigan. We are working together with SMART--your bus company--to learn what you think of several aspects of SMART's Connector Service. We may have contacted you before, and now we are contacting you again as part of our ongoing effort to monitor the quality of the Connector Service, which we now call Community Transit Service.

This survey will take only a few minutes. Your participation in this survey is completely voluntary, and we assure you that your answers will be kept confidential.

Q1. In the last four weeks, did you call SMART to reserve Connector--now known as Community Transit--service?

_____ Yes

_____ No (Skip to END.)

Q2. How many times did you call during the last four weeks?

_____ times

Q3. For any of the calls that you made during the last four weeks, did you hang up before being helped, by a SMART telephone operator?

_____ Yes

_____ No (Skip to Q6.)

Q4. How many times did you hang up?

_____ times

Q5. For which of the following reasons did you hang up?

_____ Waited too long

_____ Disliked Operator

_____ Other (please specify: _____)

Q6. Please tell us how many trips you requested during the last four weeks.

_____ trips requested

Q7. And of those, how many trips did SMART actually schedule for you?

_____ trips scheduled

QS. So, you were denied “X” trip requests during the last four weeks? [X is trips requested minus trips scheduled.]

_____ trips denied

Q9. We also would like to learn what types of destinations you reach using SMART. From the list that I will read you, please tell us if you took SMART to that destination in the last four weeks.

_____ Doctor/Medical	_____ times
_____ Work	_____ times
_____ Shopping	_____ times
_____ Recreation or Leisure	_____ times
_____ Nutrition/Senior Activity Center	_____ times
_____ School	_____ times
_____ Beauty Salon/Barbershop/Hair Dresser	_____ times
_____ Other (Please specify:_____)	_____ times

Now we would like to ask you about your opinions of SMART service during the last four weeks. I am going to ask you about several aspects of SMART service, and I would like you to rate each of these as very good, good, fair, poor, or very poor. For each item, remember to think about the service that you received in the last four weeks.

	Very Good	Good	Fair	Poor	Very Poor
Q10. How Was SMART’s Service Overall	o1	o2	o3	o4	o5
Q11. How Was the Speed that SMART Answered Your Phone Calls	o1	o2	o3	o4	o5
Q12. How Was the Speed That Your Request Was Handled after the Telephone Operator Picked-up the Phone	o1	o2	o3	o4	o5
Q13. How Was the Politeness of the SMART Telephone Operator	o1	o2	o3	o4	o5
Q14. How Was the Politeness of the SMART Bus Driver	o1	o2	o3	o4	o5
Q15. How Was the Promptness of SMART’s Arrival at Your Pick-up Point	o1	o2	o3	o4	o5

- Q16. How Was the Promptness with Which You Arrived at Your Destination(s) o1 o2 o3 o4 o5
- Q17. How Was Your Travel Time on the Bus o1 o2 o3 o4 o5

If you needed a transfer with any of these trips that you took with SMART in the last 4 weeks:

- Q18. How Easy or Difficult was Scheduling a Transfer
0 = Did not need to transfer Very Easy Very Difficult
 o0 o1 o2 o3 o4 o5
- Q19. How Easy or Difficult was the Transfer between Community Transit Vehicles
 o0 o1 o2 o3 o4 o5

420. Now I am going to read you a list of possible improvements to SMART Community Transit (Connector) service. After I have finished reading the list, please identify the three potential improvements that you would most like to see adopted. [Rotate the answers.]

- A. Speeding up the reservation system
- B. Having driver meet you at your door, rather than at the curb
- C. Buses arriving at scheduled time more often
- D. Accommodating more same-day trip requests
- E. Extending service hours to evenings and weekends
- F. Accommodating more advance trip requests
- G. Better match between requested and given pickup time
- H. Allowing farther travel distances

Which of these 3 possible service improvements would you most like SMART to adopt?

#1 _____
 #2 _____
 #3 _____

421. Is there a service improvement that I did not mention that would be important to you? If so, what?

422. Do you currently have a drivers' license?

_____ Yes
 _____ No

Q23. Whether you drove or were a passenger, for what percent of the trips that you made during the last month did you have a car available for your use? Would you say: [read options]

- ☐ ¹ None of the trips
☐ ² Less than 25% of the trips
☐ ³ 25% to 50% of the trips
☐ ⁴ 50%-75% of the trips
☐ ⁵ More than 75% of the trips

Q24. Do you have any physical, medical, or other reasons that prevent you from:

- A. Driving a car? ☐ Yes ☐ No
 B. Riding as a passenger in a car? ☐ Yes ☐ No
 C. Riding a fixed-route bus? ☐ Yes ☐ No

Q25. Now we would like to learn a little bit about you, to help us understand the results of this survey. Please tell us which year you were born in?

Q26. Are you male or female?

- ☐ Male
☐ Female

Q27. Next, I am going to read you a list of income ranges. Please tell me when I have reached the range that includes your household income.

- ☐ Less than \$5,000[really \$4,999]
☐ \$5,000 to \$10,000[really \$9,999]
☐ \$10,000 to \$15,000[really \$14,999]
☐ \$15,000 to \$25,000[really \$24,999]
☐ \$25,000 to \$35,000[really \$34,999]
☐ \$35,000 to \$50,000[really \$49,999]
☐ \$50,000 or more

Q28. Now, we would like to give you a chance to make any other comments that you would like to make about SMART connector service. We are particularly interested in knowing about problems that you have experienced or changes that you would like to see.

That completes the interview. Your responses will help us understand how customers are affected by service changes. We may be in touch with you yet again in the next few months to see how any changes may be affecting you. Again, we thank you for your participation and remind you that your responses will be kept confidential.

APPENDIX B

FOLLOW-UP CUSTOMER SURVEY

FOLLOW-UP SMART CUSTOMER TELEPHONE SURVEY

SPRING 1997

Hello. May I please speak to [name of selected respondent].

_____ Yes

_____ No. Then when is a good time to reach him/her? _____

[After respondent is on the line.] Hello. This is _____ and I am calling on behalf of the University of Michigan. We are working together with SMART--your bus company--to learn what you think of several aspects of SMART's Connector Service. We may have contacted you before, and now we are contacting you again as part of our ongoing effort to monitor the quality of Community Transit service, formerly known as the Connector.

This survey will take only a few minutes. Your participation in this survey is completely voluntary, and we assure you that your answers will be kept confidential. If we come to any question that you uncomfortable answering, just let me know and we will skip that question.

Q1. In the last four weeks, did you call SMART to reserve Community Transit--formerly known as the SMART Connector--service?

_____ YES

_____ NO (SKIP TO END.)

Q2. How many times did you call during the last four weeks?

_____ TIMES

Q3. For any of the calls that you made during the last four weeks, did you hang up before being helped by a SMART telephone operator?

_____ YES

_____ NO (SKIP TO Q6.)

Q4. How many times did you hang up?

_____ TIMES

Q5. For which of the following reasons did you hang up?

_____ WAITED TOO LONG

_____ DISLIKED OPERATOR

_____ OTHER (PLEASE SPECIFY: _____)

Q6. Please tell us how many trips you requested during the last four weeks.

_____ TRIPS REQUESTED

Q7. And of those, how many trips did SMART actually schedule for you?

_____ TRIPS SCHEDULED

Q8. So, you were denied "X" trip requests during the last four weeks? [X is trips requested minus trips scheduled.]

_____ TRIPS DENIED

Q9. We also would like to learn what types of destinations you reach using SMART Community Transit. From the list that I will read you, please tell us if you took Community Transit to that destination in the last four weeks.

_____ DOCTOR/MEDICAL	_____ TIMES
_____ WORK	_____ TIMES
_____ SHOPPING	_____ TIMES
_____ RECREATION OR LEISURE	_____ TIMES
_____ NUTRITION/SENIOR ACTIVITY CENTER	_____ TIMES
_____ SCHOOL	_____ TIMES
_____ BEAUTY SALON/BARBERSHOP/HAIR DRESSER	_____ TIMES
_____ OTHER (PLEASE SPECIFY: _____)	_____ TIMES

Now we would like to ask you about your **opinions** of SMART's Community Transit service during the last four weeks. I am going to ask you about several aspects of Community Transit service, and I would like you to rate each of these as very good, good, fair, poor, or very poor. For each item, remember to think about the service that you received in the last four weeks.

	VERY GOOD	GOOD	FAIR	POOR	VERY POOR
Q10. How Was SMART's Service Overall	o1	o2	o3	o4	o5
Q11. How Was the Speed that SMART Answered Your Phone Calls	o 1	o 2	o 3	o 4	o 5
Q12. How Was the Speed That Your Request Was Handled after the Telephone Operator Picked-up the Phone	o1	o2	o3	o4	o5
Q13. How Was the Politeness of the SMART Telephone Operator	o1	o2	o3	o4	o5
Q14. How Was the Politeness of the SMART Bus Driver	o1	o2	o3	o4	o5
Q15. How Was the Promptness of SMART's Arrival at Your Pick-up Point	o 1	o2	o3	o4	o5

- Q16. How Was the Promptness with Which You Arrived at Your Destination(s) o1 o2 o3 o4 o5
- Q17. How Was Your Travel Time on the Bus o1 o2 o3 o4 o5

If you needed a transfer with any of these trips that you took with SMART in the last 4 weeks:

- Q18. How Easy or Difficult was Scheduling a Transfer 0 = Did not need to transfer VERY EASY o0 o1 o2 o3 o4 o5 VERY DIFFICULT
- Q19. How Easy or Difficult was the Transfer between Community Transit Vehicles o0 o1 o2 o3 o4 o5

Q20. How many minutes do you generally spend on the bus--from pick-up to drop-off--during your typical Community Transit Trip?

_____ MINUTES

Q21. In your opinion, what percentage of the time is SMART on-time when it comes to pick you up for a Community Transit trip?

- _____ LESS THAN 25%
- _____ 26-50%
- _____ 51-75%
- _____ MORE THAN 75%

Q22. In your opinion, what percentage of the time does SMART get you to your destination on-time for Community Transit trips?

- _____ LESS THAN 25%
- _____ 26-50%
- _____ 51-75%
- _____ MORE THAN 75%

Q23. Do you currently have a drivers' license?

- _____ YES
- _____ NO

Q24. Whether you could have driven or could have been a passenger in a car, for what percent of the Community Transit trips that you made during the last four weeks did you have a car available for your use? Would you say: [read options]

- ____₁ NONE OF THE TRIPS
- ____₂ LESS THAN 25% OF THE TRIPS
- ____₃ 25% TO 50% OF THE TRIPS
- ____₄ 50%-75% OF THE TRIPS
- ____₅ MORE THAN 75% OF THE TRIPS

Q25. Do you have any physical, medical, or other reasons that prevent you from:

- | | |
|------------------------------------|------------------|
| A. Driving a car? | ____ YES ____ NO |
| B. Riding as a passenger in a car? | ____ YES ____ NO |
| C. Riding a fixed-route bus? | ____ YES ____ NO |

Q26. Now we would like to learn a little bit about you, to help us understand the results of this survey. Please tell us which year you were born in? *[No need to repeat for callbacks.]*

Q27. Are you male or female? *[No need to repeat for callbacks.]*

- ____ MALE
- ____ FEMALE

Q28. What is the highest educational level that you have completed?

- ____ DID NOT COMPLETE HIGH SCHOOL
- ____ GRADUATED FROM HIGH SCHOOL (OR GED)
- ____ SOME COLLEGE OR TECHNICAL TRAINING
- ____ GRADUATED FROM COLLEGE (BACHELORS DEGREE)
- ____ SOME GRADUATE SCHOOL
- ____ GRADUATE DEGREE (MASTERS, PH.D., M.D., ETC.)

Q29. Next, I am going to read you a list of income ranges. Please tell me when I have reached the range that includes your household income.

- ☐ LESS THAN \$5,000[REALLY \$4,999]
- ☐ \$5,000 TO \$10,000[REALLY \$9,999]
- ☐ \$10,000 TO \$15,000[REALLY \$14,999]
- ☐ \$15,000 TO \$25,000[REALLY \$24,999]
- ☐ \$25,000 TO \$35,000[REALLY \$34,999]
- ☐ \$35,000 TO \$50,000[REALLY \$49,999]
- ☐ \$50,000 OR MORE

Q30. Now, we would like to give you a chance to make any other comments that you would like to make about SMART connector service. We are particularly interested in knowing about problems that you have experienced or changes that you would like to see.

That completes the interview. Your responses will help us understand how customers are affected by service changes. Again, we thank you for your participation and remind you that your responses will be kept confidential.