Technical Report SP88-05

OPERATION B.U.S.

SURVEY REPORT

Strategic Planning Department

December, 1988

SP88-05

OPERATION B.U.S. SURVEY REPORT

RIDER RESPONSE TO IMPROVED VEHICLE MAINTENANCE

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OPERATION B.U.S. SURVEY REPORT

EXECUTIVE SUMMARY

The Operation B.U.S. survey was undertaken in response to a request from the CTA Engineering and Maintenance Division. It was designed to measure the effectiveness of a special maintenance program in place at Archer, North Park and 69th Street garages. A system-wide survey of bus passengers was conducted.

The survey results confirm the effectiveness of this enhanced maintenance program. Riders who were surveyed consistently ranked the Operation B.U.S. program vehicles higher on eight of fifteen bus vehicle characteristics. The remaining seven characteristics were not significantly different between buses within the program and typical CTA fleet buses.

The rated vehicle features are as follows:

Significantly Better

The seats are clean and in good repair
The windows work (go up and down)
The bus ride is smooth
There is no graffiti on this bus
This bus driver is professional
The floors are clean
The air temperature is comfortable
The bus has suitable ventilation

No Significant Difference

The glass in the windows is unbroken or uncracked
The rear door's touch bar works
The lighting is adequate for reading
The bus roof doesn't leak
The destination signs are clearly visible
The destination signs specify the correct route
The stop signal cord rings when pulled

Figures 1 and 2 summarize the average ratings (on a scale of 1 to 5, where 1 represents strongly agree and 5 represents strongly disagree) given to the eight significantly different vehicle factors. Figure 3 summarizes the average overall rating of program and non-program buses on a similar 5-point scale.

These results strongly support the Operation B.U.S. program. Based on passenger reactions to the improvements in buses resulting from Operation B.U.S., the program should be extended to all garages, and considered as part of the marketing program.

Figure 1
RIDER RATINGS OF OPERATION B.U.S.

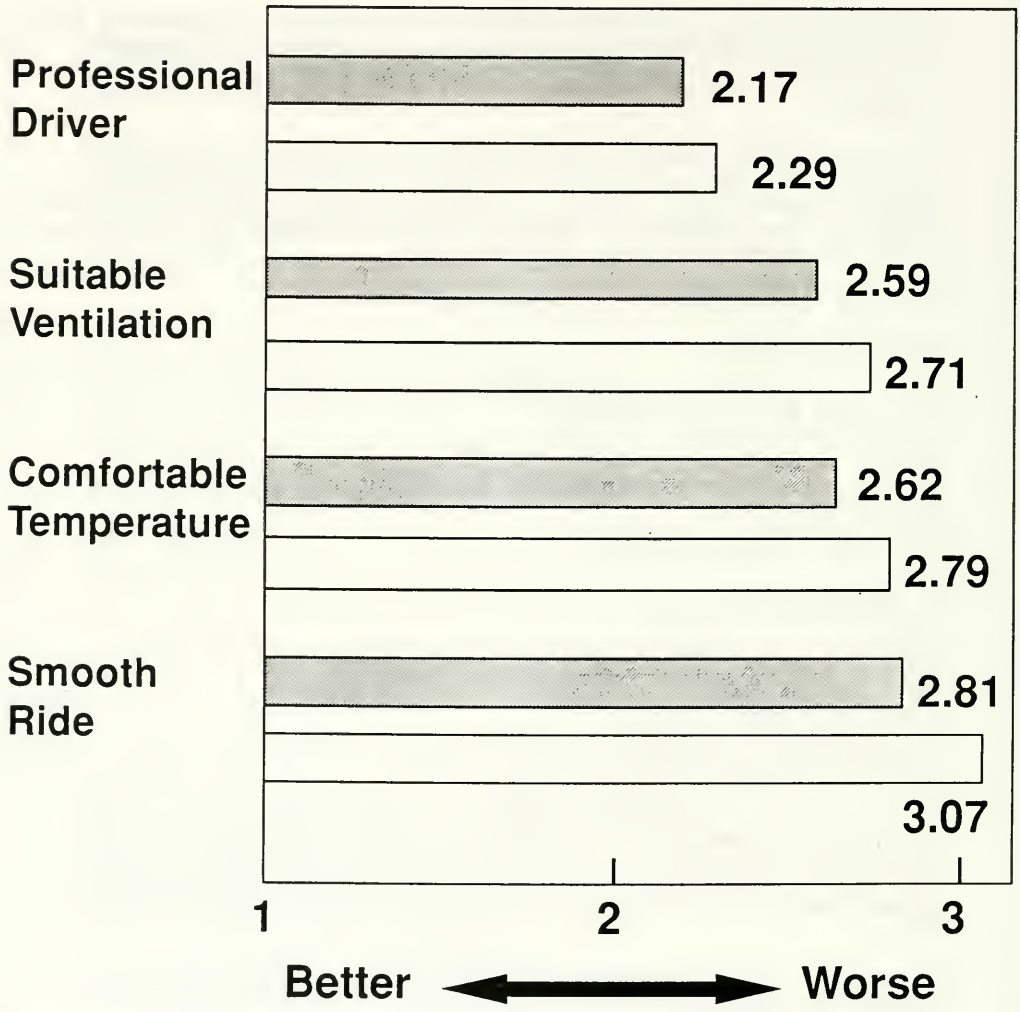

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Figure 1(continued)
RIDER RATINGS OF OPERATION B.U.S.

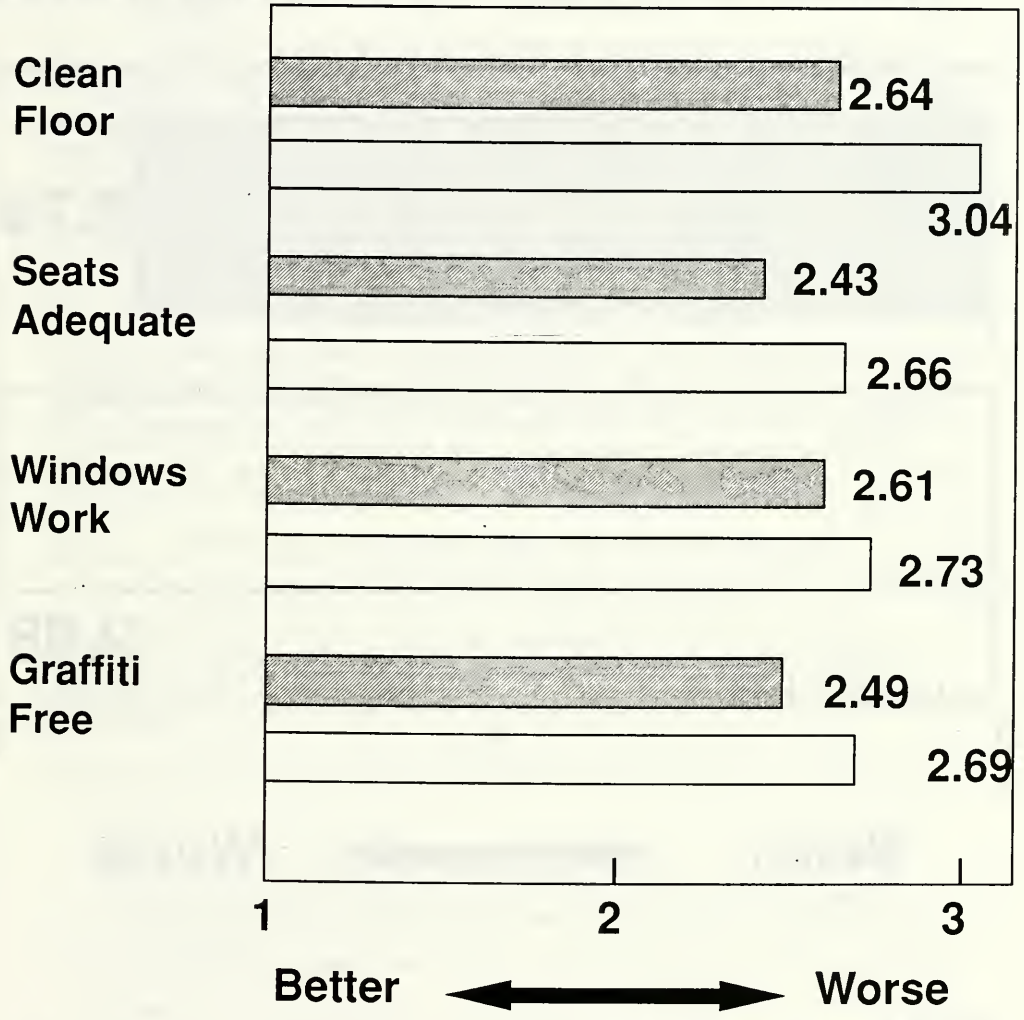

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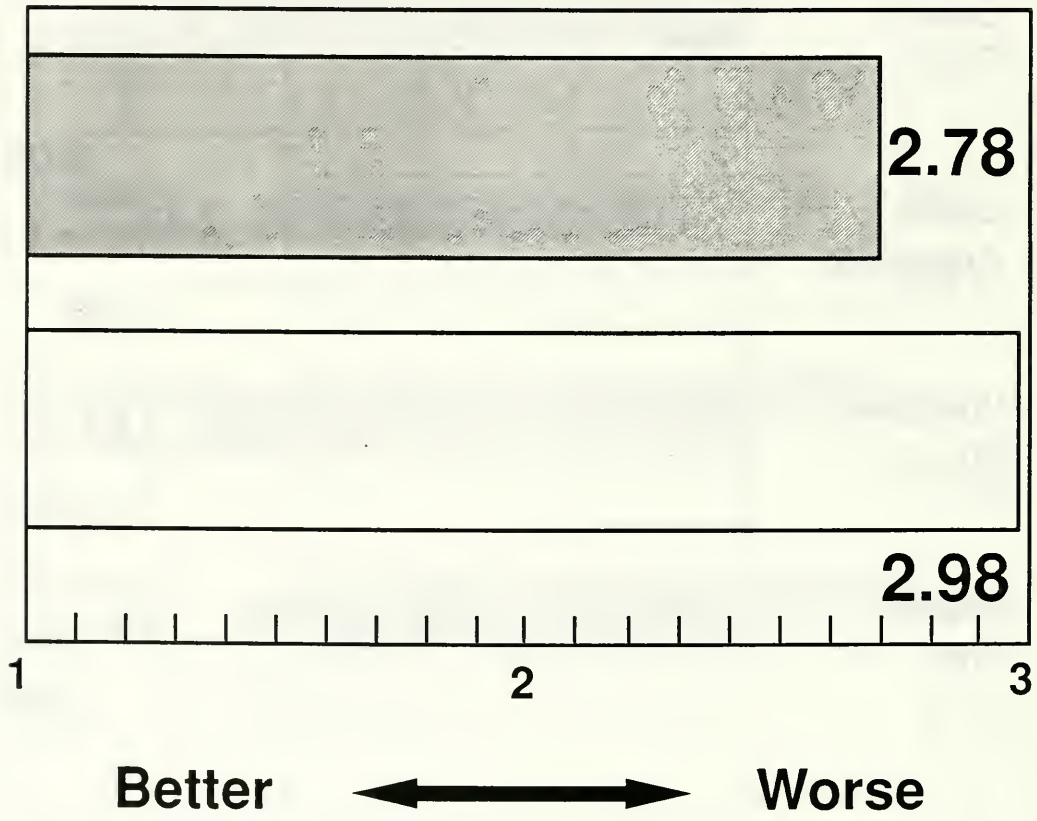
Figure 2
RIDER RATINGS OF OPERATION B.U.S. : OVERALL SATISFACTION WITH BUS SERVICE



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OPERATION B.U.S. SURVEY REPORT
Rider Response To Improved Vehicle Maintenance

1. PURPOSE

Operation B.U.S. Survey was conducted between April 27, 1988 and May 26, 1988. It was undertaken as a result of a request from the Engineering and Maintenance Division. Operation B.U.S., Better Ultimate Service, is a vehicle maintenance program with specific maintenance standards. The buses in the program are not put on the street unless they meet the standards for cleanliness and proper repair. The goal of this survey was to measure the differences perceived by riders between Operation B.U.S. vehicles and vehicles in the rest of the fleet, on the features that the Operation B.U.S. program includes in Level II standards. Buses from all nine garages were included in the survey; three of the nine garages were part of the program.

1.1 Operation B.U.S. Program

In CTA's continuing effort to upgrade the safety, cleanliness and overall reliability of Authority buses, the Operations Division, in conjunction with the Engineering and Maintenance Division, has adopted Operation B.U.S. Operation B.U.S. improves the quality of all buses in service by preventing entry-into-service (pullout) of buses which do not meet Level II inspection criteria. Operation BUS includes inspection of specific items on each bus at the garage, before and after each service run.

Level II vehicles are identified by special decals on each side of bus. If any of the Level II criteria are not met prior to pullout, the bus must be referred to maintenance personnel for immediate repair or bus substitution.

Buses that develop defects in service are reported by the bus operator in accordance with the Bus Operator's Guide to Equipment Trouble. Defects are reported by each operator on the DEFECTIVE BUS card, following established procedures. Conditions imperiling safety are reported by bus radio to the bus controller.

The goals and objectives define the exact targets the program will achieve.

Goals --

To consistently provide the required buses for service.
To assure all buses in service are graffiti free, both inside and out.
To assure vehicle reliability, good appearance and overall efficient operation.
To assure vehicles meet the highest possible operational safety standards.

Objectives --

Implement a preventive maintenance inspection interval of 4000 miles.
Eliminate deferred maintenance.
Adhere to planned maintenance intervals.

Increase material availability through improved inventory control and accountability.
Maintain buses at or above Level II criteria.
Assign full accountability for maintenance at proper level of supervision at each garage.
Provide data for zero base budget.

The criteria for each bus in the Operation B.U.S. program, Level II, are applied as the bus pulls out of the garage each day. Twenty-one features are checked.

Graffiti - None allowed
Body - No loose compartment doors; no extreme damage allowed below rub rail; only slight damage allowed above rail
Exterior - Washed, including front and rear
Marker lights - All must be working
Passenger stop request - Must work properly in all positions
Windows - Properly secured in all positions
Headlights - All must be working with HI and LO beam
Stoplights - All must be working
Turn signals including hazard flashers - All must be working
Taillights - All must be working
Horn - Working
Mirrors - All interior/exterior in place and secure
Windshield wipers - Both left and right workable
Fuel tank cap - In place and tight
Destination sign - Present and workable
Seats - No cuts; dry and clean to touch
Fire extinguisher - Must have one
Roof hatch - Present; closed and secured
Floors - Must appear swept; clean driver's area
Rear door - Touch bar must function; exit light and operator's indicator light must operate
Run number box - Must be lighted and readable

1.2 Survey Project Scope

To determine rider reaction to Operation B.U.S. vehicles, specifically whether or not the buses were perceived to be better, cleaner, more reliable than typical fleet vehicles, it was necessary to sample riders on both types of vehicles and compare them to each other.

Certain requirements of Level II buses would be relatively obvious to the average passenger; these were the features selected for the rider survey.

From the 21 criteria, those that passengers are the most likely to be familiar with and able to evaluate from their position aboard the bus were selected to measure the effectiveness of Operation BUS. For example, the run number and taillights are not features which a passenger may check from a seated or standing position on the bus. A typical passenger may not be familiar with the run number box; therefore it was not a good feature to include in the survey.

Because other garages were scheduled for inclusion in the Operation B.U.S. program in 1989 or later, all bus riders were included. Thus the needs of the present evaluation could be met, as well as providing before/after data for later expansion of the program.

2.0 APPROACH

2.1 Method Overview

The study was designed to capture the differences in passenger perception of buses in the Operation B.U.S. program and other buses not in the program. It was descriptive in nature and utilized a cross-sectional field survey approach. An onboard survey was conducted system-wide. The sample was drawn from the vehicle pullout schedule.

There were 10,000 surveys distributed in order to receive at least 1,100 completed surveys. The distribution number was high for several reasons. It was uncertain how rapidly surveys would be accepted and completed during peak and off-peak riding. Since surveys had to be completed onboard buses, oversampling was necessary to account for uncompleted surveys due to short trips. In fact, a much higher response rate occurred.

From these responses further data set development occurred. Due to the sample being taken in two parts, a primary and supplemental sample, there was a data set division. There was a division between program and non-program vehicles. Finally, since the survey had to be completed on board the bus, the completion rate split the respondents into two different data divisions: those who completed the demographics section of the survey and those who did not.

These non-respondents were separated from those who completed all or all but one of the demographic questions, to determine if a bias effect would occur if demographics non-respondents were dropped from the analysis. Results indicated that all four groups, program, non-program, and the two demographic groups, were similar in their responses relating to frequency of ridership, purpose of trip, and demographic categories. This suggested that the incomplete responses could be deleted from further analysis. Elimination of the incomplete responders left 2,636 complete responders in the primary sample as the basis for analysis.

2.2 Sample Selection

The sample was randomly selected from the bus schedule of all vehicle pullout times, from all garages. (Vehicle Pullout Sheets are prepared routinely by the CTA Schedules Section.) The random factors were pullout time, garage, and day of week, for the primary sample. No trips were selected between midnight and 0600 hours.

The supplemental survey sampled pullouts from routes suspected to have higher-than-average share of Hispanic riders. A method to increase the response rate among Spanish-speaking riders was tested in the supplement.

There were 6,585 responses in the primary and supplemental surveys combined. Of these, 4,390 were in the primary sample, selected as the focus for this analysis. Of those, 2,636 responded to all or all but one of the demographic questions, yielding twice as many usable surveys as expected.

2.3 Attitude Scales and Measures

To measure the ratings of vehicle characteristics, a five-level scale was used. Each feature was ranked from strongly agree to strongly disagree, with a midpoint response of neither agree nor disagree. This was used to indicate degrees of satisfaction with each characteristic.

2.4 Questionnaire Design

Questionnaire design was an important part of this research; attention was paid to the details of questionnaire layout and construction. The survey forms had to be physically manageable, so that passengers seated or standing could readily complete them. They included questions on ridership habits, such as frequency and satisfaction, the demographic characteristics of the passenger, the most and least liked features of bus riding and most importantly the perceived conditions of the actual bus. Data on ridership habits were necessary to determine if oversampling of frequent riders occurred. Demographics were included for two reasons: to test for bias and increase our knowledge of CTA markets.

The approach to questionnaire layout was to work from general questions about ridership habits, to the specific rider reactions to the bus being ridden, to specific questions about riders themselves in the demographic information.

The questions were highly structured with little opportunity for open-ended response. This reduced response variation in self-administered questionnaires.

There were two English versions and one Spanish version. In the English version the list of vehicle characteristics numbered fifteen. Because this was a large number and long list, a response bias was expected. An adjustment was made by breaking the list in half, after the ninth characteristic, and making the following one number 1 in the second series of English language surveys. The remainder of the survey was the same.

2.5 Administration

Each interviewer boarded a bus with 100 surveys to distribute to each rider, and then stayed with the bus. Interviewers were instructed to encourage respondents but to accept refusals gracefully. Each interviewer remained on the bus until they had distributed and received back each of the 100 surveys, or until they had been on board the vehicle for three hours. Generally, surveyors were on board the vehicles between 1-3 hours. No surveys were left behind on the vehicle. Because the success of the research depended on passenger's awareness of the specific bus on which they were surveyed, the survey had to be completed onboard. The survey-taker was required to record the actual condition of the sampled bus.

The preliminary sample was taken between 4/27/88 and 5/4/88. The supplemental sample was taken between 5/21/88 and 5/26/88. All Spanish-language surveys were given out during this time.

2.6 Weighting

Weighting was used to adjust for several factors in the sample design. First weights were developed for the peak and off-peak period differences in response. The actual bus ridership split between peak and off-peak is 50-50. The survey oversampled the off-peak with a 25-75 split (Table 1).

Table 1. Sample Weights By Time of Day

Time of Day	Weight
Peak	2.00
Off Peak	0.667

Because the sample design could not account for frequency of ridership, it was likely that frequent riders were oversampled. Weights based upon reported trip frequency were used to balance the frequent rider imbalance (Table 2).

Table 2. Sample Weights By Ridership Frequency

Ridership Frequency	Weights
About twice per day	0.1
Four to six times per week	0.2
Less than four times per week	0.5

The initial weights were the product of time of day and ridership frequency. A formula based on the work of Frank Koppelman was used. The initial weights were adjusted by the ratio of sample size to the sum of the initial weights (Table 3). Survey results are reflective of people riding, rather than boardings.

3. RESULTS

Analysis was broken into several parts, including frequencies of response, program vs. non-program bus riders, aspects of service most and least liked, ratings of the characteristics and their significance, and rider demographic profiles. The analysis was performed on the final sample, using primary sample, complete surveys.

3.1 Highlights of Responses

The riders responding to this survey provided a wealth of information about their attitudes toward CTA bus service, riding habits, and themselves. Key descriptions are highlighted for all complete responders, then for those riding buses in the Operation B.U.S. program separately from those on non-program buses.

Table 3. Final Sample Weights

Time of Day	Weekday Riding Frequency	Observations	Final Weight	Weighted Observations
Peak	Twice/day	325	1.0737	348.965
	4-6/week	264	2.1475	566.935
	4/week	56	5.3687	300.647
Off-Peak	Twice/day	770	0.3581	275.729
	4-6/week	885	0.7162	633.828
	4/week	220	1.7905	393.901
TOTAL		2520	-	2520.01
Missing[a]		116		-
TOTAL RESPONSES		2636	-	-

3.1.1 Frequencies for Complete Respondents, All Buses (Program and Non-Program)

Of all respondents, 24.8% reported riding CTA about twice per day, while 47.6% rode 4-6 times per week, and 27.6% rode less than 4 times per week.

- 58.6% reported riding once per weekend, 23.5% rode one weekend per month, and 16.4% never ride on weekends.
- 53.5% of all trips were work or school trips, 13.1% were shopping trips and 27.5% were to or from some other place.
- 44.3% of all riders reported that they are satisfied with CTA service. 32.1% reported levels of dissatisfaction. 22.1% had neutral feelings.
- If the feature of service which each respondent disliked were changed, 80.0% of all respondents reported that they would be likely to ride CTA more than they now do.
- 68.0% of all riders reported that they would like more buses like the one that they were riding to be added to the CTA fleet.
- 60.3% of all respondents were female, and 39.6% were male.
- 10.1% of all respondents were hispanic, 50.6% were black, 33.1% were white, and 6.3% were of some other ethnic background.
- 12.0% of all respondents were between 12-17, 22.9% were between 18-24, 29.6% from 25-34, 16.2% 35-44, 14.9% 45-64, 4.4% were over 65.

[a] Response missing for one of the two factors used for weighting (time of day or weekday ridership frequency).

- ◇ 17.0% had 1 person in their household, 21.7% had 2, 17.0% had 3, 19.3% had 4, 11.3% had 5, 5.9% had 6, and 7.6% had 7 or more persons per household.

- ◇ 33.8% reported having no vehicle available for use in their household; thus, 66% had one or more vehicles available. 36.9% reported having one. 19.4% reported two, 5.8% reported three, 2.4% reported four, 0.7% reported five, 0.5% reported six, 0.6% reported seven or more.

- ◇ 17.6% reported household income of under $10,000, 26.0% from $10,000-$20,000, 23.5% $20,001-$30,000, 13.6% from $30,001-$40,000, 9.8% from $40,001-$50,000, and 9.6% over $50,000.

3.1.2. Demographic Description of Riders on Program Vs. Non-Program Buses

Riders on Operation B.U.S. vehicles were generally similar to those on buses not on the program. Although the routes served by the three garages included in the program (Archer, North Park, and Sixty-Ninth) are in three different parts of the service area, the cross-section of riders carried varies from that systemwide "average rider" in only small degrees.

Riders on buses in the Operation B.U.S. program or not were more likely to be female (59.3% and 61.3%, respectively) than male. The majority of the riders were in the 18-34 years old age group (50.0% Operation B.U.S., 54.6% not in program). The race of respondent varied slightly, as blacks were only 47.0% of Operation B.U.S. riders, but 53.7% of riders on non-program buses. The remainder of Operation B.U.S. riders were white (37.1%), hispanic (9.2%), or other (6.6%). For riders on non-program vehicles, riders were white (29.6%), hispanic (10.8%), or other (5.9%) (Table 4).

Table 4. Characteristics of Riders On Buses
In Operation B.U.S. Program or Not In Program

Rider Characteristics	% of Riders on Bus Operation B.U.S. Program	 Not In Program
Gender		
Male	40.7	38.7
Female	59.3	61.3
Race/Ethnic		
Black	47.0	53.7
White	37.1	29.6
Hispanic	9.2	10.8
Other	6.6	5.9
Age (years)		
12-17	11.2	12.7
18-34	50.0	54.6
35-64	33.2	29.3
65+	5.6	3.4

Median income fell in the $20,000-30,000 range for both groups of riders. Household median income was approximately $21,600 for riders of Operation B.U.S. program vehicles, and $23,700 for those on non-program vehicles. (Table 5). Household size was slightly larger for riders on Operation B.U.S. vehicles (3.41 persons/household) than for those on non-program vehicles (3.28) (Table 6).

Table 5. Household Income For Riders on Buses In Operation B.U.S. Program or Note In Program

Household Income	% of Riders on Bus	
	Operation B.U.S. Program	Not in Program
<$10,000	18.0	17.3
$10,001-$30,000	50.6	48.4
$30,001-$50,000	23.2	23.7
Over $50,000	8.2	10.7

Table 6. Household Size for Riders On Buses In Operation B.U.S. Program or Not In Program

Household Size (Persons)	% of Riders on Bus	
	Operation B.U.S. Program	Not in Program
1	15.6	18.3
2	21.4	22.1
3	16.3	17.6
4	20.3	18.6
5+	26.4	23.4
Average (persons)	3.41	3.28

The likelihood of having at least one vehicle available to the household was very similar for both groups of riders -- 65.9% of Operation B.U.S. riders had at least one vehicle available, compared to 66.5% of riders on non-program buses (Table 7). On average, including carless households, Operation B.U.S. riders had 1.132 household vehicles compared to 1.142 for riders of non-program vehicles, a difference of just under 1%.

Table 7. Vehicles Available To Households of Riders on Buses in Operation B.U.S. or Not In Program

Vehicles Available	% of Riders on Bus	
	Operation B.U.S. Program	Not In Program
0	34.1	33.5
1	37.7	36.1
2	18.6	20.1
3+	9.6	10.3
Average	1.132	1.142

In summary, the riders of Operation B.U.S. vehicles had slightly lower income, lower share of black riders and higher sharer of white riders, slightly larger

households, and were a little older than those riders on non-program buses. The share of riders who were female and number of vehicles per household were very nearly the same in both groups.

These slight socio-demographic differences are not likely to be a factor influencing the relative ratings of bus service/vehicle quality between the two groups.

3.1.3 Travel Habits and Attitudes Of Riders On Program Vs. Non-Program Buses

Ridership frequency was generally similar between riders on buses in Operation B.U.S. and those on buses not in the program. About 90% rode CTA buses at least four days each week, and about two-thirds rode once each weekend. Riders on Operation B.U.S. vehicles were a little more likely to ride twice every day (45.6% vs. 41.9%), while riders on buses not in the program were a little more likely to ride at least once each weekend (69.6% vs. 64.0% for Operation B.U.S. riders) (Tables 8 and 9).

Table 8. Weekday Riding Frequency For Bus Riders

Frequency	% of Riders On Bus	
	Operation B.U.S. Program	Not In Program
2/day	45.6	41.9
4-6/week	42.5	47.8
<4/week	11.9	10.3

Table 9. Weekend Riding Frequency For Bus Riders

Frequency	% of Riders on Bus	
	Operation B.U.S. Program	Not In Program
1/weekend	64.0	69.6
1/month	23.3	19.1
Never	12.6	11.3

The shares of riders by reason for bus travel were similar for work (40.9% vs. 40.1%). Differences arose in other types of trips, where riders on Operation B.U.S. vehicles were more likely to be riding to school and less likely to be shopping or riding to other places than those on non-program buses (Table 10).

Table 10. Purpose of Trip on CTA Bus

Purpose	% of Riders on Bus	
	Operation B.U.S. Program	Not In Program
Work	40.9	40.1
School	22.8	15.6
Shopping	12.1	15.1
Other	24.1	29.2

Attitudes toward CTA bus service differed consistently between riders on Operation B.U.S. vehicles and those on vehicles not in the program. Overall satisfaction was scored at 2.780 for Operation B.U.S. riders, with significantly less satisfaction for riders on non-program vehicles, at 2.976 mean rating (where 1=very satisfied and 5=unsatisfied). The lower Operation B.U.S. mean score was due to the higher share saying they were very or somewhat satisfied with CTA bus service (Table 11), a total of 47.6% for both categories vs. 42.7% of riders on buses not in the program.

Table 11. Attitudes Toward CTA Bus Service

Attitudes	% of Riders on Bus: Operation B.U.S. Program	Not In Program
Overall Satisfaction with Bus Service		
Satisfied	47.6	42.7
Neutral	23.1	21.7
Not satisfied	29.2	35.6
Want More Buses Like This	72.5	64.1
Most Liked (Top Three)	Routing 67.4	Routing 73.9
	Frequency 10.8	Frequency 10.2
	Courtesy 7.4	Courtesy 4.7
Most Disliked (Top Three)	Frequency 36.0	Frequency 44.6
	Safety 19.7	Routing 14.8
	Routing 14.1	Safety 10.7
Ride More if Disliked Feature Changed		
Likely	78.5	81.2
Not Likely	21.5	18.8

Most respondents wanted more buses generally. Riders of Operation B.U.S. vehicles were significantly more positive in this assertion, with 72.5% wanting "more buses like this one" (vs. 64.1% for non-program vehicle riders).

Consistent with the above view, the most frequently disliked feature of CTA bus service was frequency of service. If the most disliked feature were improved, four in five riders were likely to ride more (two of those four were "very likely"). Routing is the most liked service feature by over two-thirds of respondents in both groups. There were no patterns in the relatively small differences in these three measures, as the same features were in the top three in each routing. Courtesy was cited as most liked by a higher share of riders on Operation B.U.S. vehicles (74% vs. 47% for not in program), but safety was cited as "most disliked" by 19.7% of Operation B.U.S. riders, compared to 14.8% of riders on non-program buses.

3.2 Comparison Of Best- and Least-Liked Features For Respondents

Respondents indicated which aspects of CTA bus service they liked or disliked the most. Different aspects were winners and losers in their rating: routing was liked most by over 60% of respondents, while frequency of service was disliked most, but was selected by only 40% of respondents. About 8-10% of riders had the opposite opinion, that frequency of service was most liked and routing most disliked.

3.2.1 Aspect Liked Most

One aspect of service clearly preferred by most respondents was routing (Table 12). This was indicated by 71.0% of the respondents who reported one and only one aspect of service which they liked most.

Table 12. Aspect of Bus Service liked Most By Riders

Aspect	Share Who Liked It (%)
Routing	71.0
Frequency of service	10.5
Driver courtesy	5.9
Safety of waiting areas/riding	3.9
Information availability	2.6
Travel time	1.9
Comfort of buses	1.4
Seat availability	1.2
Heat/air conditioning	0.8
Other	0.7

3.2.1 Aspect Disliked Most

As with the aspect liked most, the aspect liked least produces one clear, but not as dominant, winner. The frequency of service was disliked most by respondents who chose only one response as the aspect disliked most.

Table 13. Aspect of Bus Service Disliked Most By Riders

Aspect	Share Who Disliked It (%)
Frequency of service	40.6
Safety of waiting areas/riding	14.9
Routing	14.5
Heat/air conditioning	8.6
Seat availability	6.8
Comfort of buses	6.2
Travel time	5.9
Other	2.6

Two aspects were not mentioned by any survey respondents -- driver courtesy and information availability.

3.3 Ratings of Specific Operation B.U.S. Features

Various features of the buses were listed on the surveys. Passengers were asked to look at the bus that they were riding on this trip and to report the condition of fifteen features by indicating agreement on a scale for each statement of the condition of each feature. These features were for the most part specific criteria from the Operation B.U.S. Bulletin.

The windows work (go up and down)
There is no graffiti on this bus
This bus driver is professional
The bus roof doesn't leak (if raining or snowing)
The floors are clean
The destination signs are clearly visible
The destination signs specify the correct route
The seats are clean and in good repair
The stop signal cord rings when pulled
The glass in the windows is unbroken or uncracked
The rear door's touch bar works
The lighting is adequate for reading
The air temperature is comfortable
This bus has suitable ventilation
This bus ride is smooth.

For the primary sample with the incomplete surveys deleted, differences between the means of the groups on Operation B.U.S. vehicles and typical vehicles were calculated and tested for direction and statistical significance.

All of the differences in means were found to be in favor of Operation B.U.S. vehicles except two. (1) The glass in the windows is unbroken or uncracked. Operation B.U.S. riders scored 2.23 while non-program riders rated it 2.22. This was not a significant difference. (2) The rear door's touch bar works. This feature was scored with a mean of 2.29 for the Operation B.U.S. vehicle passengers while the passengers of typical vehicles attributed a mean score of 2.24 to their vehicles, not significantly different.

Eight of the differences between the ratings by program and non-program bus riders were found to be significant. Seven were not (Table 14). Appendix B contains the ratings, sample size, and statistics of the differences.

Table 14. Difference In Riders Ratings of Vehicle Features

Operation B.U.S. Rated Significantly Better	No Significant Difference in Rating
The air temperature is comfortable.	The stop cord rings.
The seats are clean, in good repair.	The windows are unbroken.
This bus driver is professional.	The lighting is adequate for reading.
The floors are clean.	The rear door touch bar works.
There is no graffiti on this bus.	The bus roof doesn't leak.
This bus rider is smooth.	The destination signs are correct.
This bus has suitable ventilation.	The destination signs are visible.
The windows work.	

3.4 Rider Demographic Profiles

In addition to information on the riders' reactions to Operation B.U.S., this survey provided a profile of CTA bus riders generally. Demographic and travel information were organized to describe male and female bus riders.

The average male rider is slightly younger at 31.5 years than the average female at 33.0 (Table 15). The majority of riders is between 18 and 34 years of age (Table 16). A larger share of male riders are school age, while there is a higher share of females in the 35-64 year group.

The average rider comes from a household of 3.33 people. This average is the same for males and females, although the distribution of sizes is not the same. More males come from 1 person and 5+ person households, while more females are likely to come from 2, 3, or 4 person households.

Male riders are from households with substantially more autos than households for the female riders (1.22 vs. 1.09), even though the share of carless households is the same for each -- one-third.

Table 15. Demographic Profile of CTA Bus Riders

Characteristic	MALE	FEMALE
Age (years)	31.5	33.0
Household size (persons/household)	3.32	3.34
Vehicles available	1.22	1.09
Household Income		
Average	$26,700	$24,800
Median	$22,860	$22,670

The household income for the average male rider was about 8% higher (either median or average) than for female riders. The median of $22,900 for males is lower than the metropolitan area median. Just under half of riders' households had incomes between $10,000 and $30,000 annually. While 25.5% of males came from households with incomes exceeding $40,000, only 15.5% of female riders did.

Over 12% of male riders were Hispanic, compared to 8% of females. About half of bus riders were black for both genders. Of females, 34.9% were white, compared to 31.3% for males.

Table 16. Demographic Characteristics of CTA Bus Riders
(% of Respondents)

Characteristic	Male	Female
Age		
12-17	15.2	10.0
18-34	51.8	52.7
35-64	28.4	32.8
65+	4.5	4.4
Vehicles Available		
0	33.1	33.9
1	37.2	36.9
2	16.9	21.0
3+	12.8	8.2
Household Income		
<$10,000	16.6	18.4
$10,001-30,000	47.9	49.7
$30,001-50,000	23.2	24.2
Over $50,000	12.3	7.7
Race		
Hispanic	12.5	7.9
Black	49.5	51.2
White	31.3	34.9
Other	6.7	6.0
Household Size		
1	20.3	15.3
2	19.6	22.9
3	15.5	17.9
4	18.1	20.6
5+	26.5	23.3

Male and female riders rode CTA buses for different kinds of trips (Table 17). Although work was the single largest category for each (37.0% for males, 43.6% for females), males were more likely to be traveling to or from school than were females (21.2% vs. 14.9%). Shopping and other trip purposes were very similar, accounting for 41.0% of male riders' trips and 41.5% of female riders' trips.

Table 17. Reason for Bus Travel
(% of Respondents)

Purpose of Trip	Male	Female
Work	37.0	43.6
School	21.2	14.9
Shopping	12.4	14.0
Other	28.6	27.5

Satisfaction with CTA bus service overall did not differ between male and female riders, with average scores of 2.9 in each case (just a bit better than "neutral") (Table 18). Differences on the specific Operation B.U.S. features occurred for seven of the fifteen listed in the introduction. For each of the seven, female riders gave more positive (i.e., closer to 1.0) scores than did male riders. The features on which males and females differed were evenly split between the list of features rated significantly better for Operation B.U.S. vehicles and the list of features rated no different (Table 14). This indicated that gender was not a factor in the differences observed for Operation B.U.S.

Table 18. Satisfaction With CTA Bus Service
(% of Respondents)

Degree of Satisfaction	Male	Female
Satisfied	44.5	45.5
Neutral	23.7	21.7
Not Satisfied	31.8	32.8
Average Score (1=very satisfied, 5=unsatisfied)	2.897	2.885

Weekday and weekend ridership frequencies were the same for male and female riders (Table 19). About one-fourth rode twice every weekday, just under half rode 4-6 times each week, and over a quarter rode less than 4 times each week. On weekends, about 60% rode once each weekend, while about 17% never rode CTA on weekends. The remainder rode about one weekend per month.

Table 19. Travel Habits of CTA Bus Riders
(% of Respondents)

Riding Frequency	Male	Female
Weekday Rides		
2/day	25.7	23.9
4-6/week	47.2	48.4
Less than 4/week	27.1	27.7
Weekend Rides		
1/weekend	60.8	59.0
1/month	22.0	24.7
Never	17.2	16.3

4.0 CONCLUSIONS AND RECOMMENDATIONS

Survey evidence indicates that Operation B.U.S. buses are preferred by passengers to typical buses, when they are asked to rate specific vehicle quality criteria.

Passengers would like more buses in general. At least 65% of both program and non-program respondents wanted more buses in service and "frequency of service" was the most disliked service feature by 36-45% of respondents.

Passengers are willing to ride more often if buses are well-maintained.

The general ridership is completely unaware of the Operation B.U.S. program as a specific CTA program, consistent with the lack of advertising of the meaning of the decals on the buses.

Non-program bus riders tended to ride a little less frequently than those on Operation B.U.S. vehicles. However, if the feature of service which non-program bus riders least liked were changed, they were more likely than those riding Operation B.U.S. vehicles to report increasing their ridership.

Program and non-program respondents showed similar demographic composition.

The comparison of means for eight rating factors, by riders on Operation B.U.S. program and non-program buses, suggests strongly that the program is effective and should be extended to all garages.

CTA BUS SURVEY

№ 09634

We are interested in your views about the buses you ride. Please help us provide better service by giving us some information about this particular bus.

1. **What is the route number or street location of this bus?**

   _____

2. **How often do you usually ride a CTA bus during the week? (Please check only one.)**
   a. ☐ About two times per day
   b. ☐ Four to six times per week
   c. ☐ Less than four times per week

3. **How often do you usually ride a CTA bus on weekends? (Please check only one.)**
   a. ☐ At least once per weekend
   b. ☐ At least once per month
   c. ☐ Never

4. **What is the main reason you are riding this bus now? (Please check only one.)**
   a. ☐ to or from work
   b. ☐ to or from shopping
   c. ☐ to or from school
   d. ☐ to or from some other place

5. **Which of the following best describe how satisfied you have been with riding CTA buses?**
   a. ☐ Very satisfied
   b. ☐ Somewhat satisfied
   c. ☐ Neutral
   d. ☐ Somewhat unsatisfied
   e. ☐ Unsatisfied

6. **What *ONE ASPECT* do you like most about CTA bus service, and which do you dislike most? (Please check only one in each column.)**

	Like Most	Dislike Most
a. Routing, where the buses run	☐	☐
b. Frequency of service, how often the buses run	☐	☐
c. Safety of waiting areas or while riding	☐	☐
d. Comfort of buses	☐	☐
e. Driver courtesy, helpfulness	☐	☐
f. Information available on bus schedules	☐	☐
g. Travel time, fast/slow	☐	☐
h. Seat availability	☐	☐
i. Heat/air conditioning	☐	☐
j. Other_____	☐	☐

7. **If (the least liked aspect from question 6) were improved, how likely would you be to ride the bus more than you do now?**
   a. ☐ Very likely
   b. ☐ Somewhat likely
   c. ☐ Somewhat unlikely
   d. ☐ Very unlikely

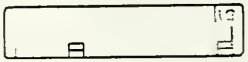
8. **Listed below are statements describing the condition of this bus. Please check the response that best describes how much you agree with each statement based on the following scale.**

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
a. There is no graffiti on this bus.	☐	☐	☐	☐	☐
b. This bus driver is professional.	☐	☐	☐	☐	☐
c. The bus roof doesn't leak (if raining or snowing).	☐	☐	☐	☐	☐
d. The floors are clean.	☐	☐	☐	☐	☐
e. The destination signs are clearly visible.	☐	☐	☐	☐	☐
f. The destination signs specify the correct route.	☐	☐	☐	☐	☐
g. The seats are clean and in good repair.	☐	☐	☐	☐	☐
h. The windows work. (go up and down)	☐	☐	☐	☐	☐
i. The stop signal cord rings when pulled.	☐	☐	☐	☐	☐
j. The glass in the windows is unbroken or uncracked.	☐	☐	☐	☐	☐
k. The rear door's touch bar works.	☐	☐	☐	☐	☐
l. The lighting is adequate for reading.	☐	☐	☐	☐	☐
m. The air temperature is comfortable.	☐	☐	☐	☐	☐
n. This bus has suitable ventilation.	☐	☐	☐	☐	☐
o. This bus ride is smooth	☐	☐	☐	☐	☐

9. **Would you like more buses like this one in the CTA fleet?**
   - ☐ Yes
   - ☐ No

10. **Was there any sign or decal on this bus to indicate that it belonged to a special program?**
   - ☐ Yes, Please indicate: _____
   - ☐ No, there was none.
   - ☐ I did not look for one.

11. Please indicate where you are standing or seated in the bus by placing an "X" in the approximate area of the diagram.

Back  Front

(Check one)
☐ Standing
☐ Seated

Thank you for your help. We would like to know a few things about you. This will help us to ensure that our survey represents all groups of riders.

12. **Are you:** a. ☐ Male or b. ☐ Female

13. **Are you:**
   - a. ☐ Hispanic
   - b. ☐ Black
   - c. ☐ American Indian
   - d. ☐ Asian
   - e. ☐ White
   - f. ☐ Other _____

14. **Is your age:**
   - a. ☐ 12 - 17
   - b. ☐ 18 - 24
   - c. ☐ 25 - 34
   - d. ☐ 35 - 44
   - e. ☐ 45 - 64
   - f. ☐ 65 or over

15. **How many people live in your household?** _____

16. **How many vehicles (car, van, or other) are available to you and member of your household? (Circle one)**

0 1 2 3 4 5 6 7 8 9

17. **What was your combined household income last year (1987)?**
   - a. ☐ Under $10,000
   - b. ☐ $10,001-$20,000
   - c. ☐ $20,001-$30,000
   - d. ☐ $30,001-$40,000
   - e. ☐ $40,001-$50,000
   - f. ☐ over $50,000

18. **In your opinion, what could be done to improve the quality of this bus ride or service?**

_____

_____

_____

_____

_____

_____

_____

If you would like to be included in further surveys on bus riding, please provide us with your name and address on the following lines.

Name: _____

Address: _____

_____

Daytime Phone: _____

Thank you for your time and cooperation.