On-Board Commuter Bus Survey

jhk & Associates

ATTITUDINAL SURVEYS AND MARKET RESEARCH FOR THE VIRGINIA RAILWAY EXPRESS

PART IV:

ON-BOARD COMMUTER BUS SURVEY

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INTRODUCTION AND STATEMENT OF OBJECTIVES

Supplemental market research activities for the VRE study also included a survey of commuter bus passengers. Such a survey is called an on-board bus survey and typically involves a self-administered survey questionnaire. JHK & Associates, Inc. (JHK) conducted the on-board bus survey in coordination with the staff from PRTC, Prince William County, Fairfax County and two bus systems, the COMMUTERIDE and the Fairfax Connector. This part of the report presents the purpose, methodology, and findings of the on-board survey.

The objective of the on-board bus survey was to collect attitudinal information and travel-related characteristics and preferences of current transit users in the VRE service area. The focus of this survey was the users of Prince William County's COMMUTERIDE buses and Fairfax County's Fairfax Connector buses serving suburban residential areas located within the service area of the proposed VRE commuter train stations.

Another objective of the on-board survey was to obtain an indication of how many commuter bus riders would switch to VRE commuter rail.

At the request of Prince William County, several additional questions were included to provide the County with some attitudinal information regarding the current bus service. This information was tabulated but not analyzed by the JHK team.

METHODOLOGY

JHK designed the survey questionnaire with the help of staff from PRTC, Prince William County, VRE, and JHK's subcontractor, Catherine Bryant & Associates. The survey was designed to be filled out by commuters while riding on the bus. A copy of the survey questionnaire is provided in Appendix IV-A of the Technical Appendices to the report.

Commuter bus riders were asked a series of questions about their bus trip and attitudes toward commuter rail service. In particular they were requested to give the purpose of their trip, their origin and destination, current travel time and fare, and demographic information. Commuter bus riders were also asked if they had heard of the VRE commuter train and if they would ride it given the proposed station locations, travel time and fare structure.

All of the COMMUTERIDE routes were surveyed and two of the Fairfax Connector routes were surveyed (the routes serving Saratoga and Lorton). A random sample of bus trips to be surveyed was developed for each of the eleven COMMUTERIDE routes and two Fairfax Connector routes. For each sampled bus trip, every passenger boarding the bus was given a survey form which they were asked to complete on the bus and leave the completed form with the driver before getting off of the bus.

The survey was conducted on Tuesday, January 15, 1991. Survey forms were distributed during the afternoon when ridership is higher relative to morning ridership. Morning ridership is lower because some of the bus commuters have the opportunity to join carpools which form within the vicinity of the bus stop. However, in the afternoon they take the commuter bus because it is difficult to find carpools for the return trip.

The return rates were excellent for this type of survey. For the COMMUTERIDE, a total of 1,540 survey forms were distributed and 1,085 completed forms were returned for a response rate of 70%. For the Fairfax Connector, a total of 490 survey forms were handed out and 320 completed were returned for a response rate of 65%. For the purpose of this study, JHK used 689 of the 1,085 total completed survey forms for COMMUTERIDE, randomly selected from each route. The 689 surveys and 320 surveys from the Fairfax Connector provided a total sample of 1,009 commuter bus riders for analysis. Exhibit IV-1 (see page IV-5) summarizes the distribution and response rate for the on-board survey.

The survey responses were keypunched and tabulated by Catherine Bryant & Associates using the Survey System software. The tabulated results of each question are

given in Appendix IV-B of the Technical Appendices. Responses are tabulated according to total number of respondents, Commuteride, Fairfax Connector, and general location where riders boarded the PM outbound bus (Downtown D.C., Pentagon, and Vienna Metrorail Station).

To further examine commuter bus riders which could be potential VRE riders, JHK geocoded the respondent's trip origin and destination to MWCOG zones for approximately 730 of the 1,009 surveys. For each geocoded survey which had valid origin and destination points (563 surveys), JHK validated the percentage who would realistically be persuaded to switch to VRE, once in operation, based on factors affecting the trip. Specifically, JHK used a logit model by computing a VRE utile, based on the respondent's origin and destination. A similar utile was generated for respondents' bus trips based on their responses to the survey questions. The utiles were generated from cost, access time, and running time factors. From the logit model, the utiles were converted into probabilities of VRE use likelihood. While 44 percent of the 1,009 survey respondents stated on the questionnaire that they would likely switch to VRE (Question 21), JHK calculated that 33 percent would switch using the logit model screening approach (on the 563 valid geocoded questionnaires).

The following section presents the key findings from the on-board survey results. The tabulated responses for each question in the survey plus several cross-tabulations are provided in Appendix IV-B.

KEY FINDINGS FROM THE ON-BOARD COMMUTER BUS SURVEY

Exhibits IV-2 through IV-11 summarize the responses to questions regarding trip purpose, mode of access and egress to the bus stop, type of fare paid, frequency of use, tendency to ride/drive a car instead of taking the bus, awareness of the VRE, likelihood of using VRE, and age and income characteristics. Based on the responses from the sample of 1,009 commuter bus riders responding, the key findings are:

- 97% were riding the bus home from work.
- 58% of all respondents walked while 24% used Metrorail to get to the bus stop in the evening; COMMUTERIDE riders had a higher percentage (68%) of those walking.
- Almost 49% of all respondents walked from the bus stop to home or their evening destination while 39% drove alone in their car. The percentage of COMMUTERIDE riders driving alone is slightly higher (45%) and the percentage of Fairfax riders walking is higher (63%).
- 83% spent 15 minutes or less getting to the bus in the evening and 90% spent 15 minutes or less getting to their evening destination from the bus stop.
- 30% spent between 46 and 60 minutes riding on the commuter bus.
- 60% used a multiple ride ticket; 87% of the COMMUTERIDE riders used a multiple ride ticket while only 5% of the Fairfax riders used a multiple ride ticket.
- 88% rode the bus four or more times a week; this is about the same for both COMMUTERIDE and Fairfax Connector riders.
- 65% were between 35 and 64 years old.
- 44% reported household incomes between $30,000 and $60,000 while 28% have household incomes between $60,001 and $100,000.
- 83% had heard of the VRE before the survey; more COMMUTERIDE riders were aware of the VRE than the Fairfax Connector riders.
- Given information on proposed stations, fares and travel times, 17% of the bus riders said they were likely to ride VRE and 25% said they were somewhat likely to ride VRE. JHK used a logit model screening approach to identify the truly probable riders and estimated that 33% of the bus riders are likely or somewhat likely to use VRE (instead of the surveyed 44%).

Exhibit IV-1
On-Board Survey Distribution and Response

	Surveys Distributed		Surveys Returned		Surveys Analyzed	
	#	%	#	%	#	%
COMMUTERIDE	1,540	76	1,085	77	689	68
Fairfax Connector	490	24	320	23	320	32
Total	2,030	100	1,405	100	1,009	100

Note: Prince William County is keypunching the remaining 396 completed surveys which will be tabulated solely for Prince William County's use at a later date.

Exhibit IV-2
Passenger Response by Bus Trip Origin

	#	%
Downtown D.C.	348	34
Pentagon	594	59
Vienna Metrorail Station	67	7
Total	1,009	100

Exhibit IV-3
Passenger Trip Origin

(Where are you coming from?)

	COMMUTERIDE		Fairfax Connector		Total Combined	
	#	%	#	%	#	%
Workplace	666	96.7	317	99.1	983	97.4
Home	18	2.6	2	0.6	20	2.0
School	3	0.4	0	0.0	3	0.3
Other	2	0.3	1	0.3	3	0.3
Total	689	100.0	320	100.0	1,009	100.0

Exhibit IV-4
Mode of Access to Outbound PM Bus

(How did you get to the bus where you boarded?)

	COMMUTERIDE		Fairfax Connector		Total Combined	
	#	%	#	%	#	%
Walk	471	68.4	114	35.6	585	58.0
Metrorail	71	10.3	174	54.4	245	24.3
Auto Driver	118	17.3	18	5.6	136	13.5
Auto Passenger	13	1.9	2	0.6	15	1.5
Bus	6	0.9	8	2.5	14	1.4
Other	6	0.9	0	0.0	6	0.6
Refused	4	0.6	4	1.3	8	0.8
Total	689	100.0	320	100.0	1,009	100.0

Exhibit IV-5
Mode of Egress from Outbound PM Bus

(After getting off the bus, how will you get to your final destination?)

	COMMUTERIDE		Fairfax Connector		Total Combined	
	#	%	#	%	#	%
Walk	289	41.9	203	63.4	492	48.8
Auto Driver	311	45.1	79	24.7	390	38.7
Auto Passenger	45	6.5	12	3.8	57	5.6
Metrorail	28	4.1	17	5.3	45	4.5
Bus	6	0.9	1	0.3	7	0.7
Taxi	2	0.3	0	0.0	2	0.2
Other	2	0.3	5	1.6	7	0.7
Refused	6	0.9	3	0.9	9	0.9
Total	689	100.0	320	100.0	1,009	100.0

Exhibit IV-6
Type of Fare Paid

Fare Type	COMMUTERIDE #	COMMUTERIDE %	Fairfax Connector #	Fairfax Connector %	Total Combined #	Total Combined %
10-ride Ticket	589	85.5	15	4.7	604	59.9
One-Way with Rail Transfer	5	0.7	179	55.9	184	18.2
One-Way without Rail Transfer	65	9.4	102	31.9	167	16.6
Round Trip	14	2.0	6	1.9	20	2.0
Other	7	1.0	10	3.1	17	1.7
Elderly/Handicapped	1	0.1	2	0.6	3	0.3
No Response	8	1.2	6	1.9	14	1.4
Total Responding	689	100.0	320	100.0	1,009	100.0

Exhibit IV-7
Frequency of Commuter Bus Trip

Frequency Per Week	COMMUTERIDE #	COMMUTERIDE %	Fairfax Connector #	Fairfax Connector %	Total Combined #	Total Combined %
Four or More Days	608	88.2	284	88.8	892	88.4
One to Three Days	41	6.0	22	6.9	63	6.2
Less Than One Day	32	4.6	8	2.5	40	4.0
Refused	8	1.2	6	1.9	14	1.4
Total Responding	689	100.0	320	100.0	1,009	100.0

Exhibit IV-8
Tendency to Ride/Drive A Car Instead of Bus

Frequency Per Week	COMMUTERIDE #	COMMUTERIDE %	Fairfax Connector #	Fairfax Connector %	Total Combined #	Total Combined %
Four or More Days	61	8.9	22	6.9	83	8.2
One to Three Days	97	14.1	51	15.9	148	14.7
Less Than One Day	307	44.6	143	44.7	450	44.6
Never	214	31.1	99	30.9	313	31.0
Refused	10	1.5	5	1.6	15	1.5
Total Responding	689	100.0	320	100.0	1,009	100.0

Exhibit IV-9
Awareness of VRE Commuter Train

	COMMUTERIDE #	COMMUTERIDE %	Fairfax Connector #	Fairfax Connector %	Total Combined #	Total Combined %
Yes	609	88.4	226	70.6	835	82.8
No	70	10.2	89	27.8	159	15.8
Refused	10	1.5	5	1.6	15	1.5
Total	689	100.0	320	100.0	1,009	100.0

Exhibit IV-10
Future VRE Use Intent by Age Category

	VRE Ridership--Future Use Intent							
	Very Likely		Somewhat Likely		Not Likely		Total	
Age Category	#	%	#	%	#	%	#	%
18 to 34	65	38.0	92	35.9	154	28.2	322	31.9
35 to 64	100	58.5	160	62.5	383	70.0	654	64.8
65 or Older	3	1.8	1	0.4	2	0.4	6	0.6
Refused	3	1.8	3	1.2	8	1.5	27	2.7
Total Responding	171	100.0	256	100.0	547	100.0	1,009	100.0
% of Total Responses	17.0		25.4		54.2			

Exhibit IV-11
Future VRE Use Intent by Income Category

	VRE Ridership--Future Use Intent							
	Very Likely		Somewhat Likely		Not Likely		Total	
Income Category	#	%	#	%	#	%	#	%
Under $30,000	35	20.5	42	16.4	80	14.6	165	16.4
$30,001 to $60,000	71	41.5	121	47.3	242	44.2	440	43.6
$60,001 to 100,000	44	25.7	70	27.3	163	29.8	280	27.8
Over $100,000	7	4.1	11	4.3	25	4.6	45	4.5
Refused	14	8.2	12	4.7	37	6.8	79	7.8
Total Responding	171	100.0	256	100.0	547	100.0	1,009	100.0