

I-95/I-395 Transit/TDM Study

Appendices

FEBRUARY 29, 2008

Developed by
I-95/I-395 Transit/TDM Technical Advisory Committee

Project Lead
Virginia Department of Rail and Public Transportation
1313 East Main Street, Suite 300
P.O. Box 590 • Richmond, VA 23218-0590
www.drpt.virginia.gov

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Appendix A – List of Acronyms

CLRP – Constrained Long-Range Transportation Plan

CMP – Congestion Management Program

CPI – Consumer price index

CR – Commuter rail

CS – Cambridge Systematics, Inc.

CTPP – Census Transportation Planning Package

DA – Drive-alone

DRPT – Virginia Department of Rail and Public Transportation

FAMPO – Fredericksburg Area Metropolitan Planning Organization

FHWA – Federal Highway Administration

FRED – Fredericksburg Regional Transit

FTA – Federal Transit Administration

GWRC – George Washington Regional Commission

HBW – Home-based work

HR – Heavy rail

HOT – High-occupancy toll

HOV – High-occupancy vehicle

KNR – Kiss-and-ride

KFH – KFH Group

LDAC – LDA Consulting

LOV – Low-occupancy vehicles

MB – Motor bus

MB-HR – Motor bus to metro

MWCOG – Metropolitan Washington Council of Governments

Non-DA – Nondrive-alone

NTD – National Transit Database

NVTA – Northern Virginia Transportation Authority

NVTC – Northern Virginia Transportation Commission

O-D – Origin-destination

PRTC – Potomac and Rappahannock Transportation Commission

ROI – Return on Investment

SIR – Southeastern Institute of Research

SOC – State of the Commute

SOV – Single-occupant vehicle

TAC – Technical Advisory Committee

TAZ – Traffic analysis zones

TDM – Transportation demand management

TERM – Transportation Emission Reduction Measure

VDOT – Virginia Department of Transportation

VMT – Vehicle-miles traveled

VRE – Virginia Railway Express

WGA – William G. Allen

WMATA – Washington Metropolitan Area Transit Authority

Appendix B

Appendix B – Transit Opportunity Maps

Transit market opportunity maps were developed to highlight the travel flows between origins within the study area and major destinations based on the MWCOG regional activity centers in order to facilitate the development of the baseline scenario and potential transit markets. The rest of the maps are provided in Appendix B. These maps served as a useful device for soliciting TAC input on existing and planned transit service (including express bus/bus rapid transit, Metrorail, and commuter rail services) and TDM programs (including slugging, carpooling, van-pooling, and park-and-ride facilities) in the I-95, I-395, I-495, and Route 1 corridors.

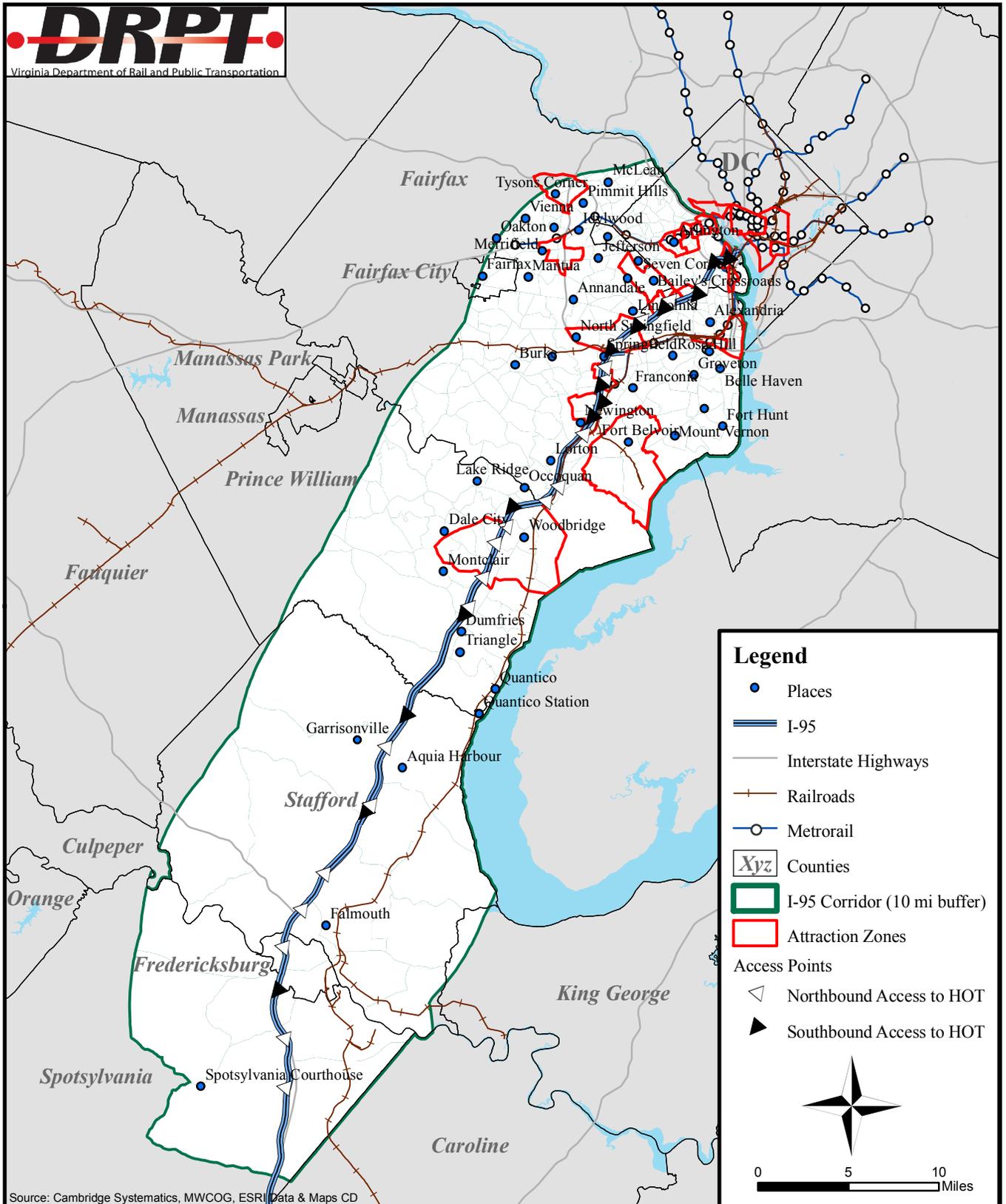
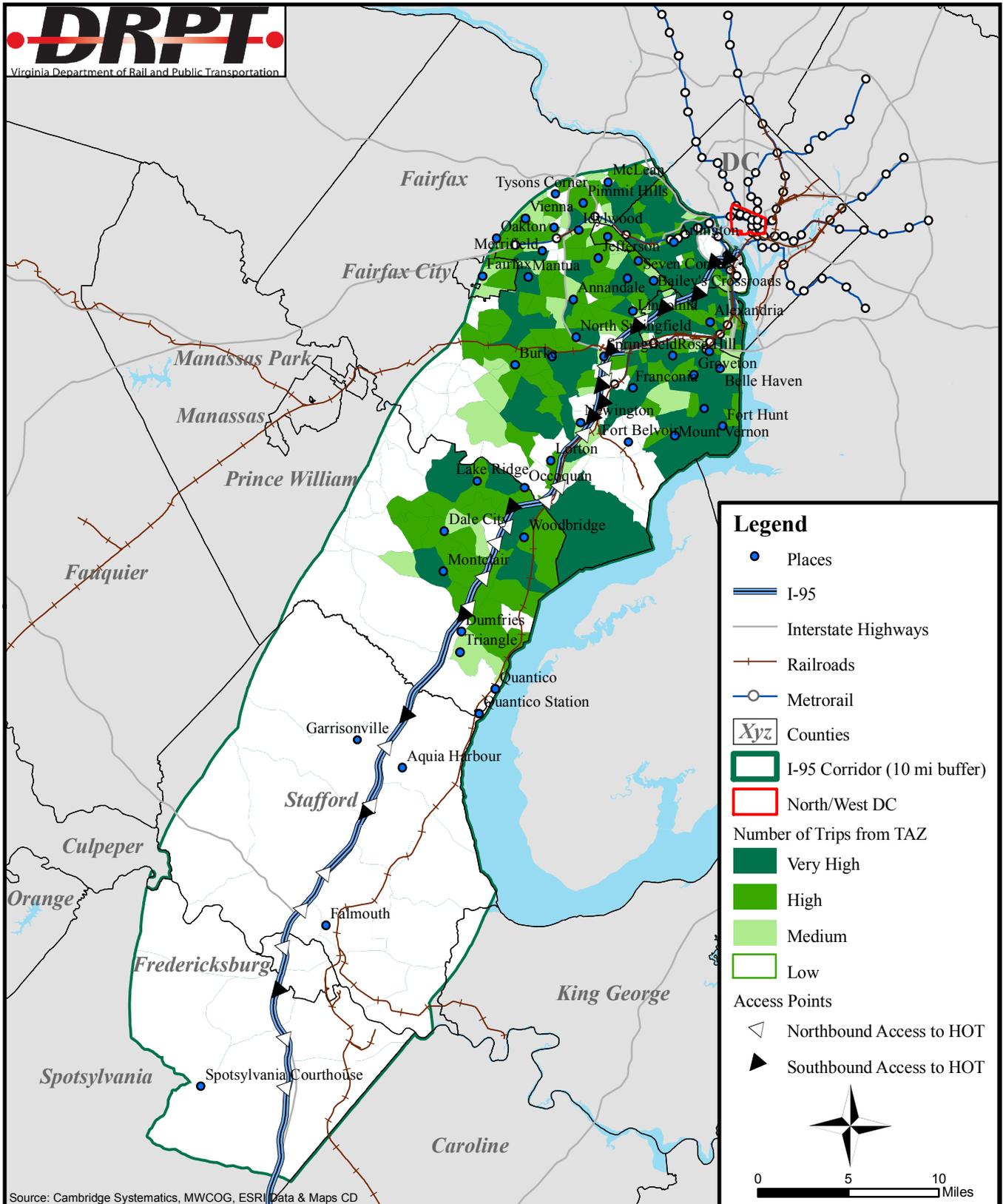


Figure 1

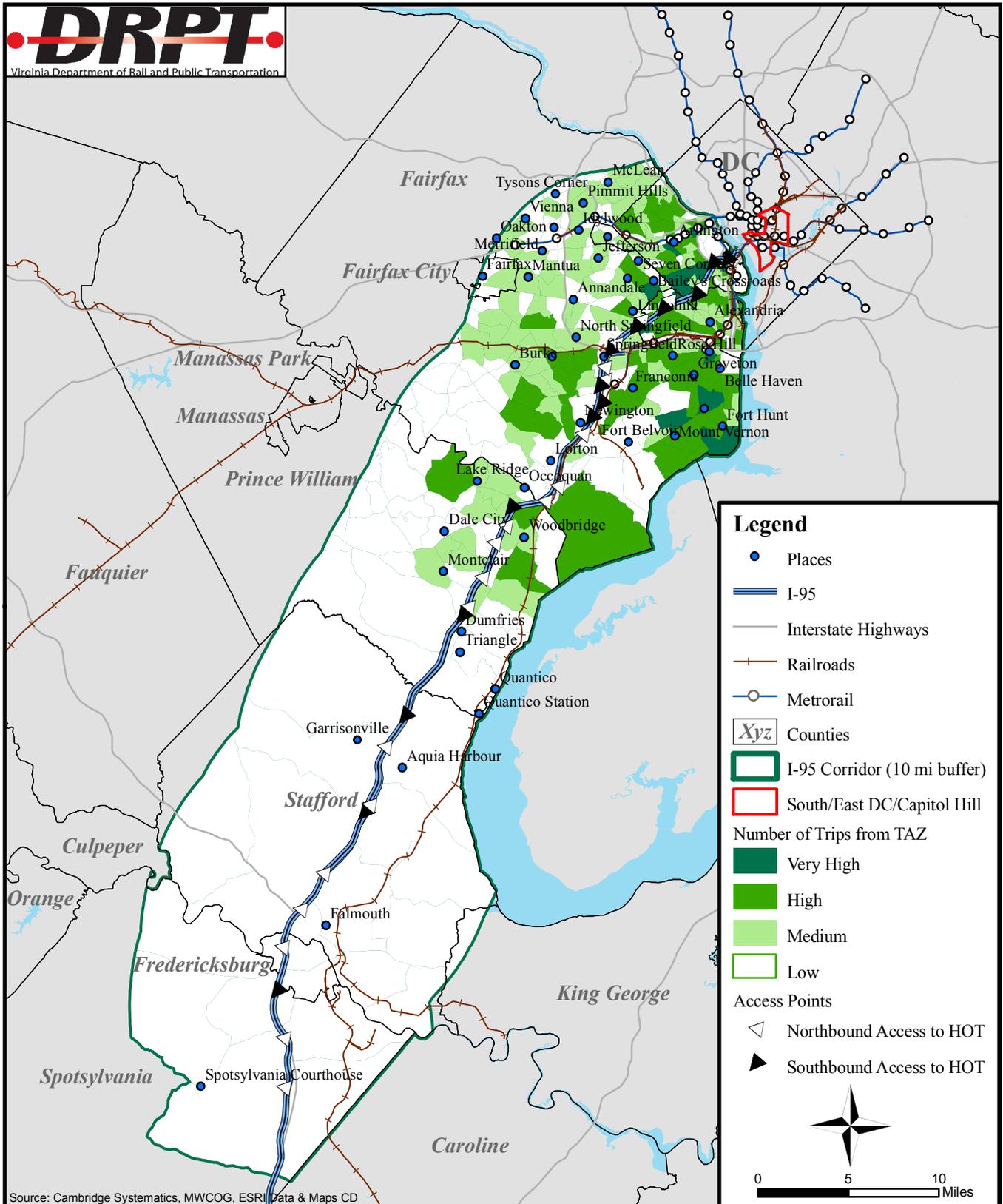
MAJOR ATTRACTION ZONES FOR 2015 PROJECTED HOME-BASED WORK TRIPS ORIGINATING IN THE I-95 CORRIDOR



Source: Cambridge Systematics, MWCOC, ESRI Data & Maps CD

Figure 2

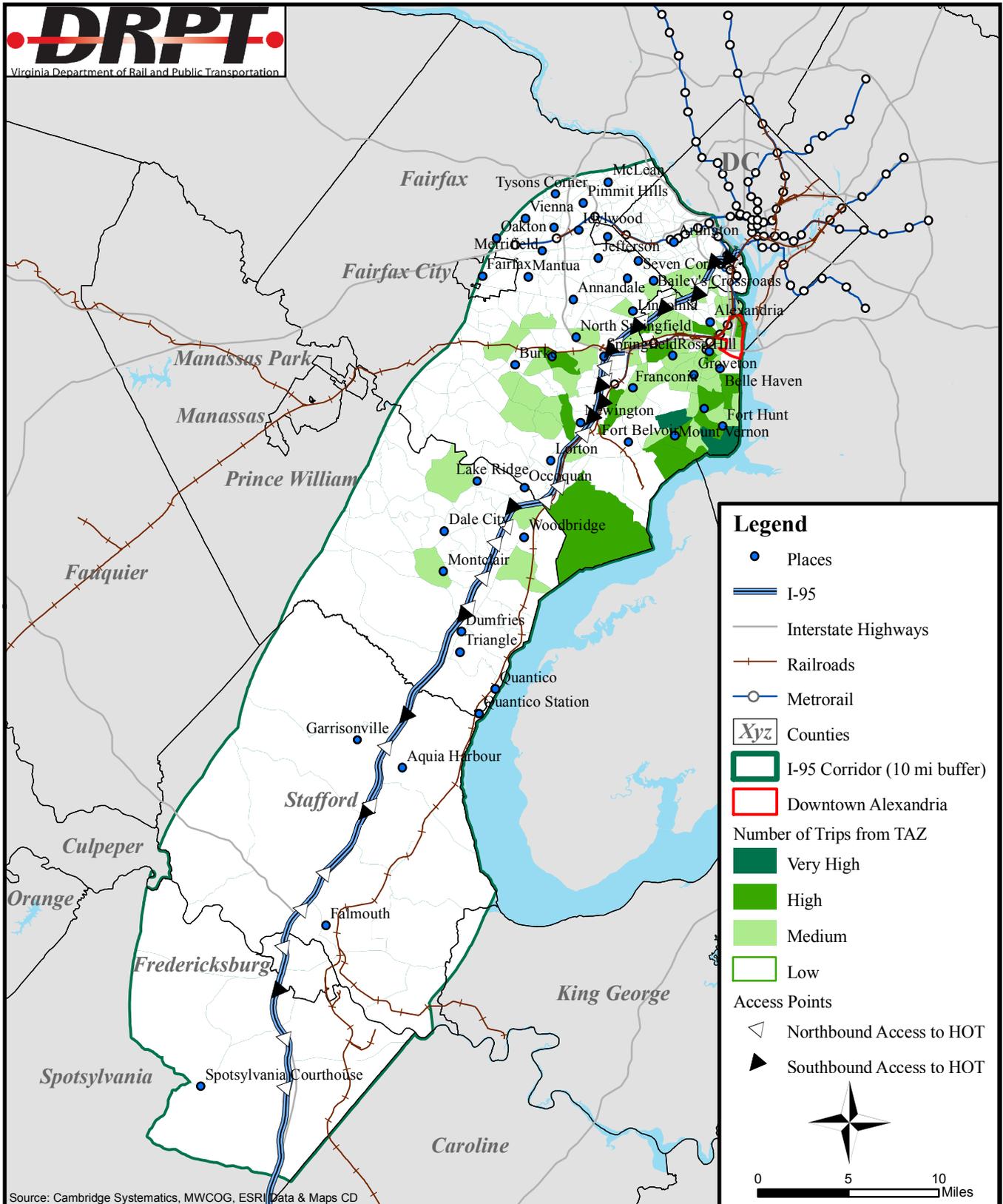
2015 PROJECTED HOME-BASED WORK TRIPS DURING
AM PEAK PERIOD FROM I-95 CORRIDOR TO NORTH/WEST DC
(without I-95/I-395 HOT Lanes)



Source: Cambridge Systematics, MWCOC, ESRI Data & Maps CD

Figure 3

2015 PROJECTED HOME-BASED WORK TRIPS DURING AM PEAK PERIOD
FROM I-95 CORRIDOR TO SOUTH/EAST DC INCLUDING CAPITOL HILL
(without I-95/I-395 HOT Lanes)



Source: Cambridge Systematics, MWCOC, ESRI Data & Maps CD

Figure 6

2015 PROJECTED HOME-BASED WORK TRIPS DURING
AM PEAK PERIOD FROM I-95 CORRIDOR TO DOWNTOWN ALEXANDRIA
(without I-95/I-395 HOT Lanes)

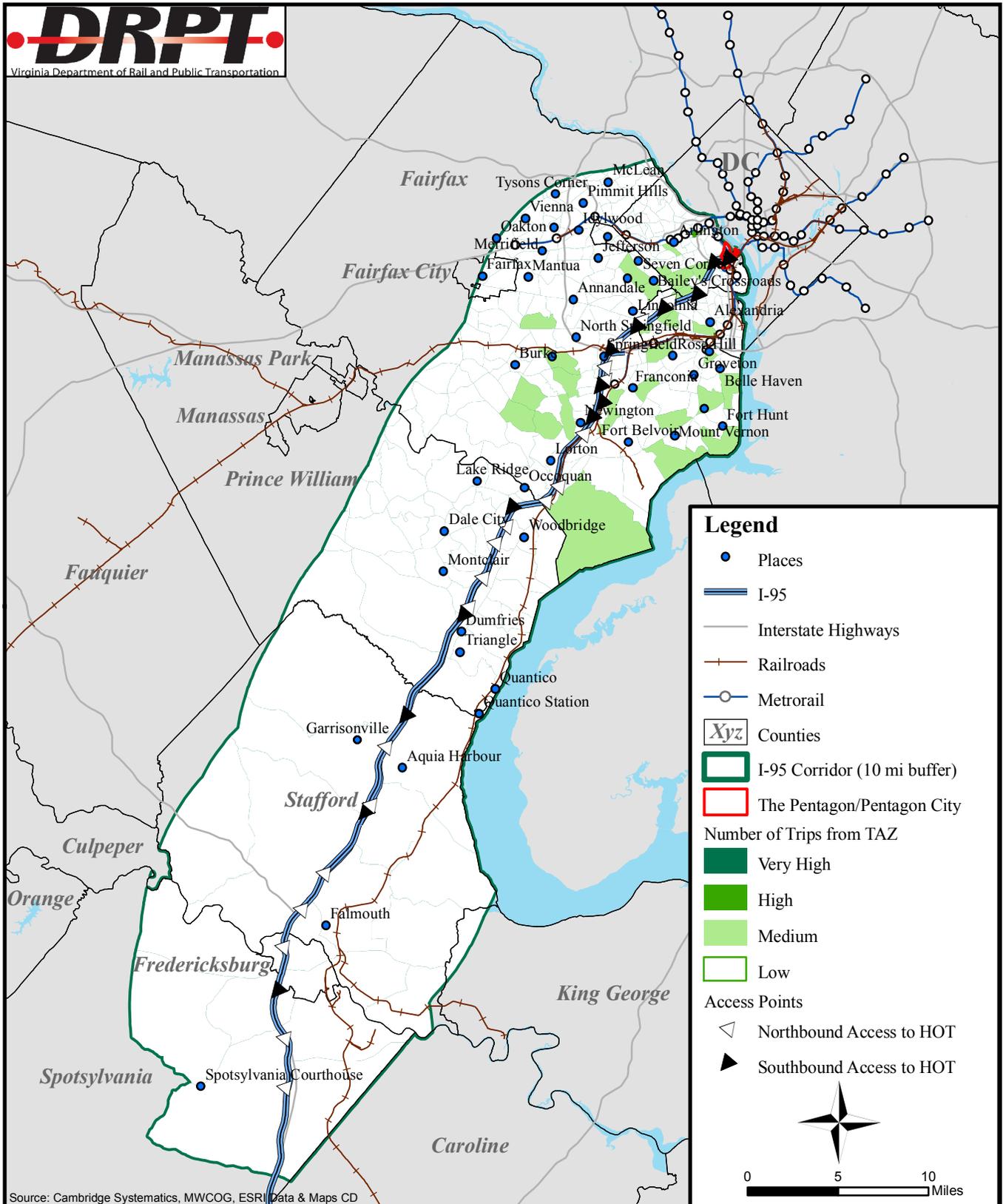
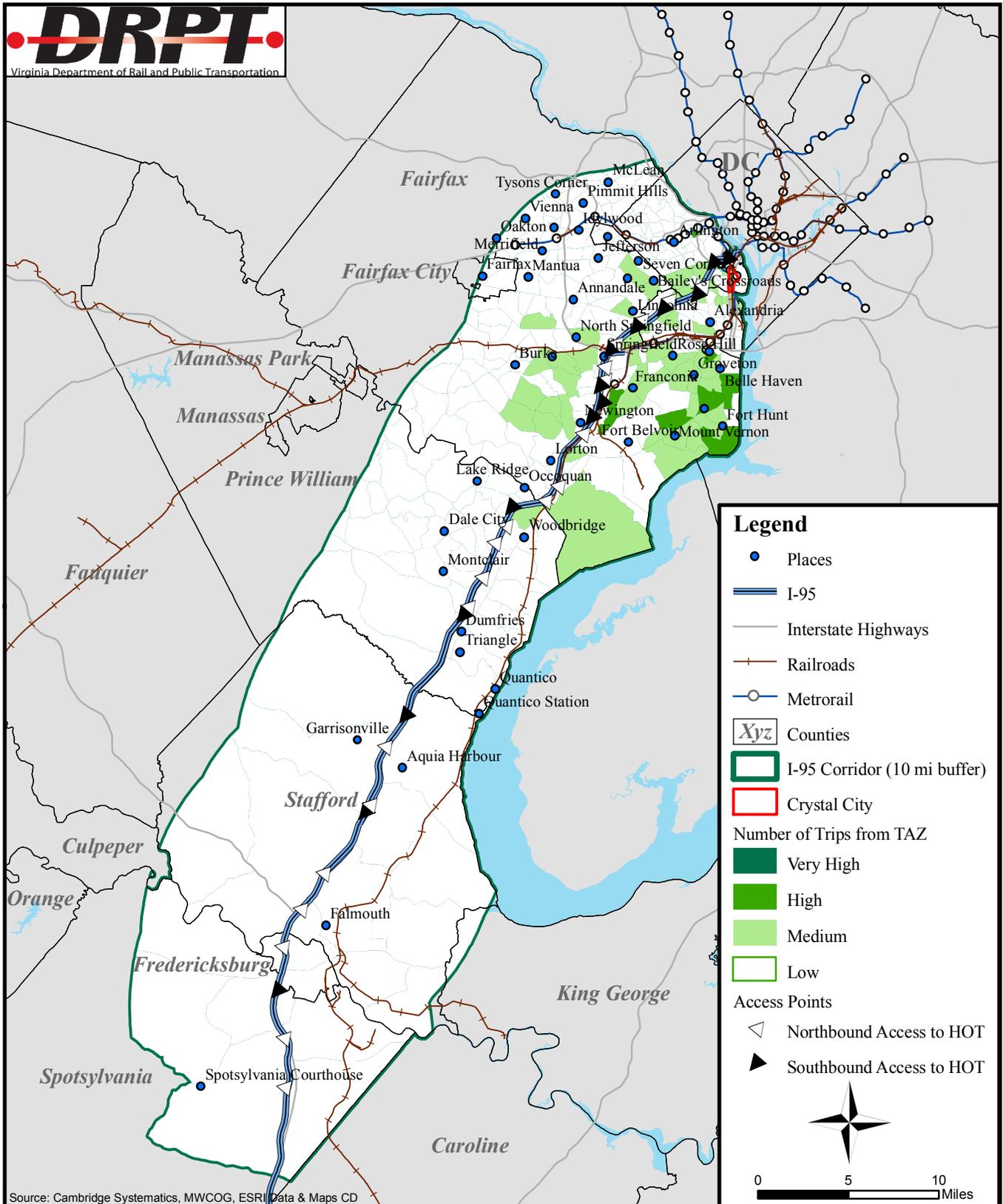


Figure 7

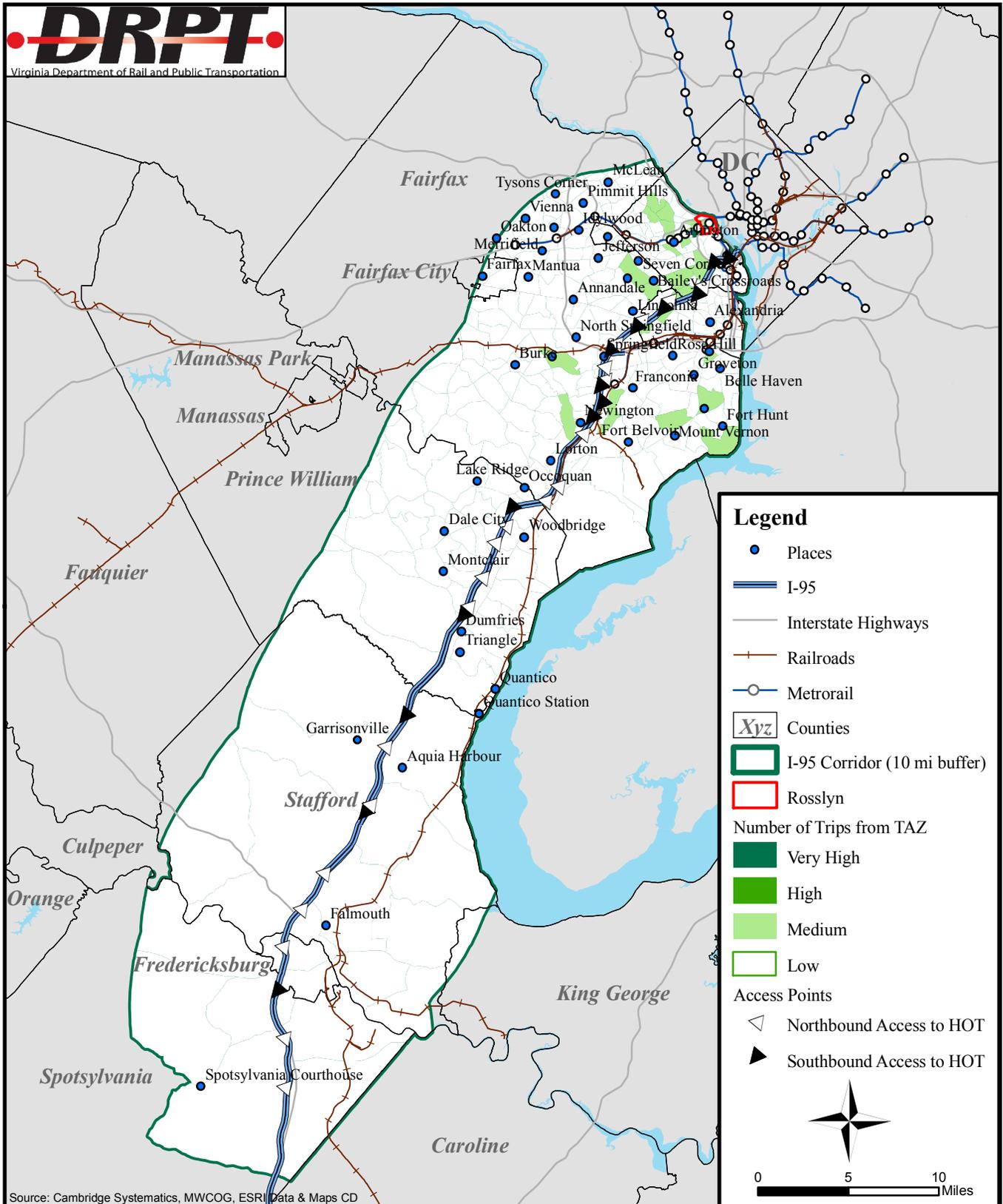
2015 PROJECTED HOME-BASED WORK TRIPS DURING AM PEAK PERIOD FROM I-95 CORRIDOR TO THE PENTAGON AND PENTAGON CITY (without I-95/I-395 HOT Lanes)



Source: Cambridge Systematics, MWCOC, ESRI Data & Maps CD

Figure 8

2015 PROJECTED HOME-BASED WORK TRIPS DURING
AM PEAK PERIOD FROM I-95 CORRIDOR TO CRYSTAL CITY
(without I-95/I-395 HOT Lanes)



Source: Cambridge Systematics, MWCOC, ESRI Data & Maps CD

Figure 10

2015 PROJECTED HOME-BASED WORK TRIPS DURING
AM PEAK PERIOD FROM I-95 CORRIDOR TO ROSSLYN
(without I-95/I-395 HOT Lanes)

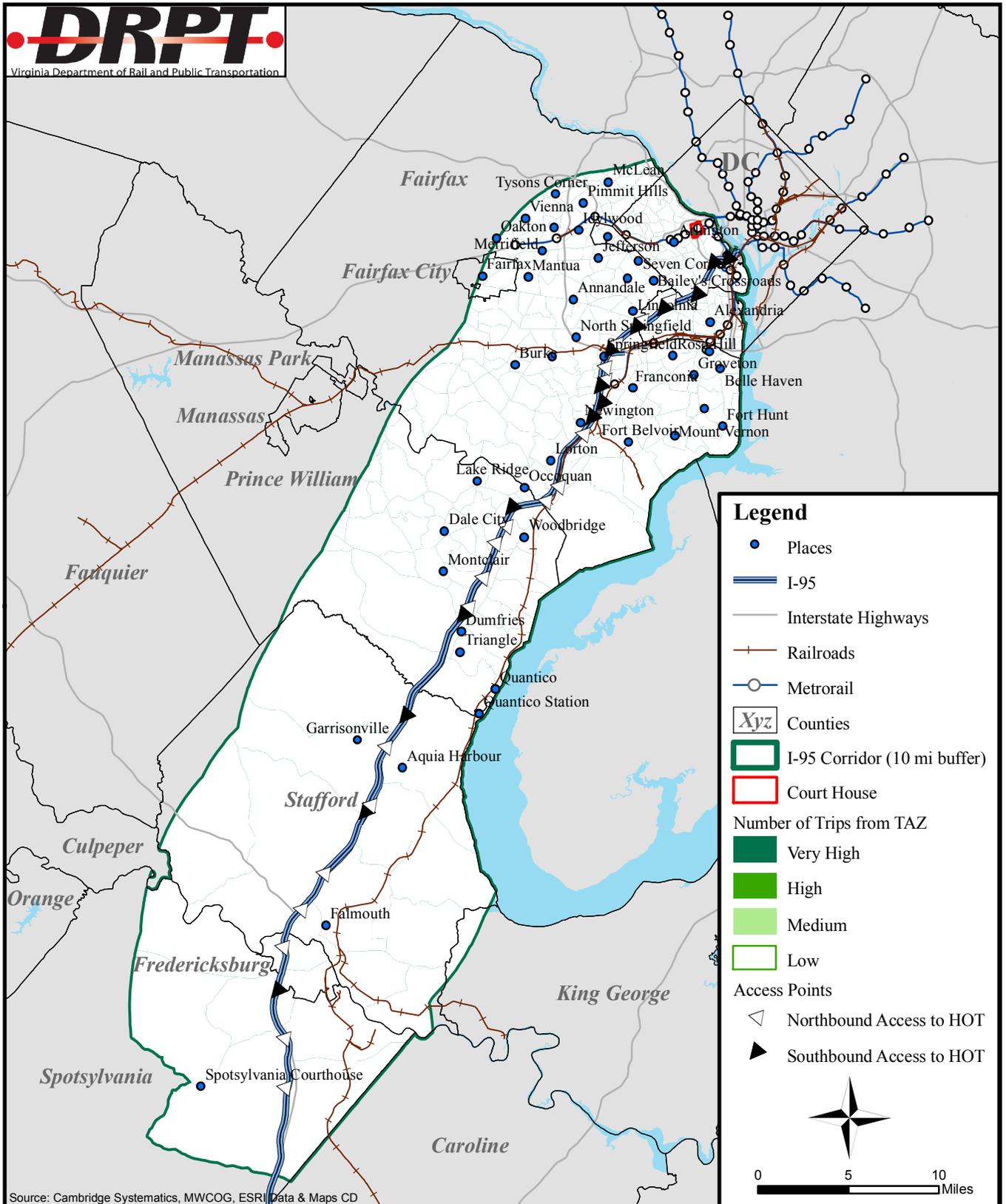
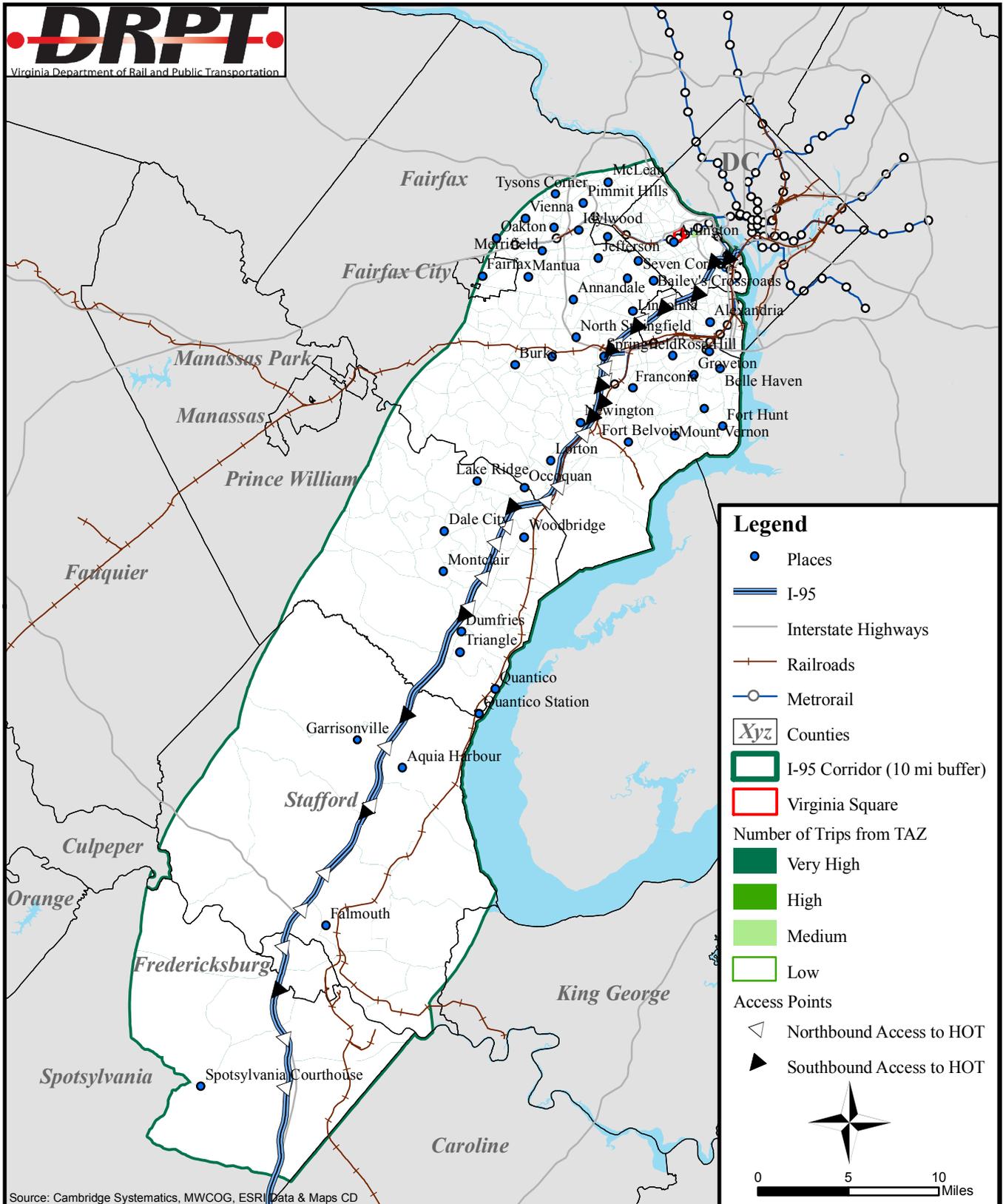


Figure 11

2015 PROJECTED HOME-BASED WORK TRIPS DURING
AM PEAK PERIOD FROM I-95 CORRIDOR TO COURT HOUSE
(without I-95/I-395 HOT Lanes)



Source: Cambridge Systematics, MWCOC, ESRI Data & Maps CD

Figure 13

2015 PROJECTED HOME-BASED WORK TRIPS DURING
AM PEAK PERIOD FROM I-95 CORRIDOR TO VIRGINIA SQUARE
(without I-95/I-395 HOT Lanes)

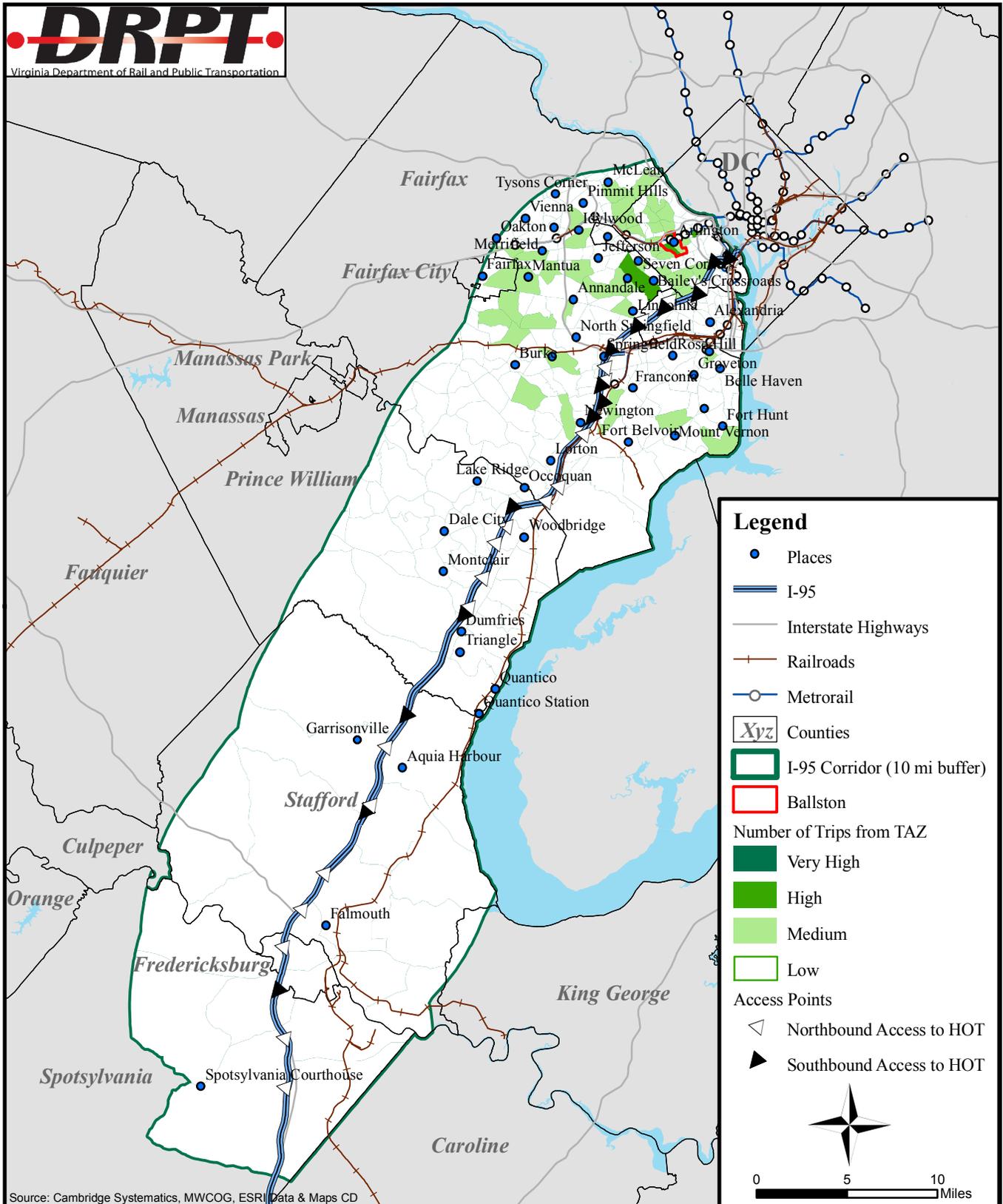
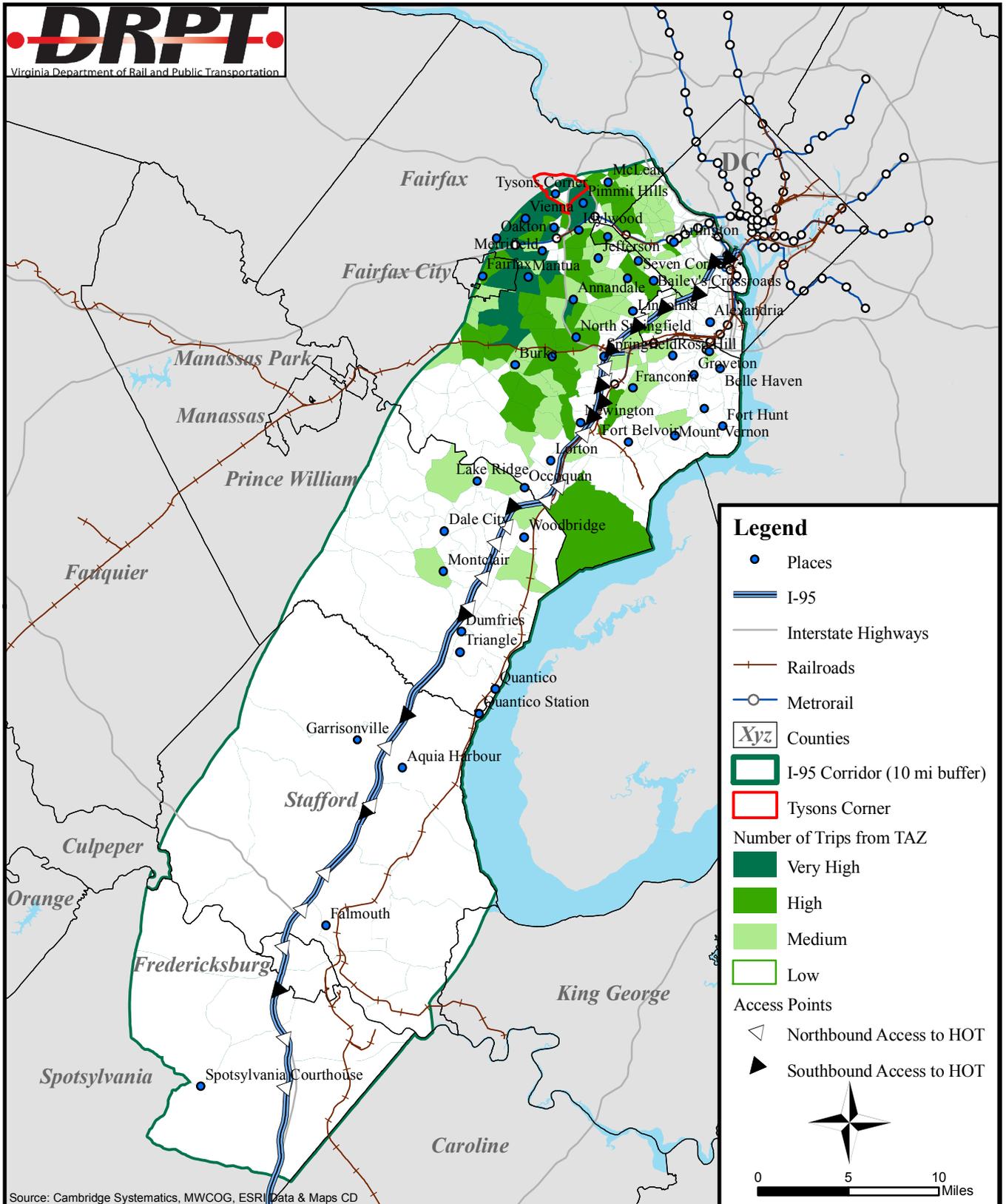


Figure 14

2015 PROJECTED HOME-BASED WORK TRIPS DURING
AM PEAK PERIOD FROM I-95 CORRIDOR TO BALLSTON
(without I-95/I-395 HOT Lanes)



Source: Cambridge Systematics, MWCOC, ESRI Data & Maps CD

Figure 15

2015 PROJECTED HOME-BASED WORK TRIPS DURING
AM PEAK PERIOD FROM I-95 CORRIDOR TO TYSONS CORNER
(without I-95/I-395 HOT Lanes)

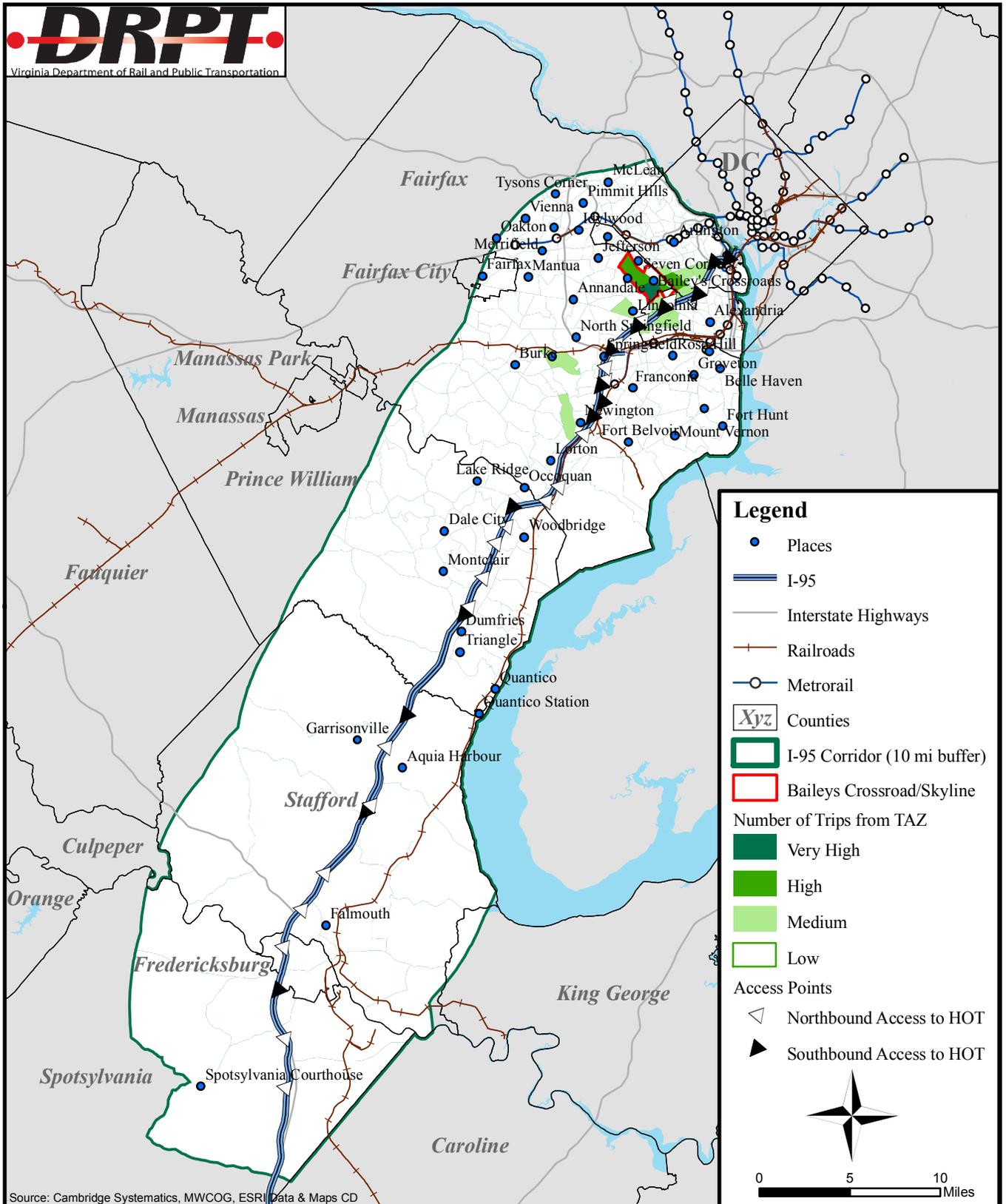
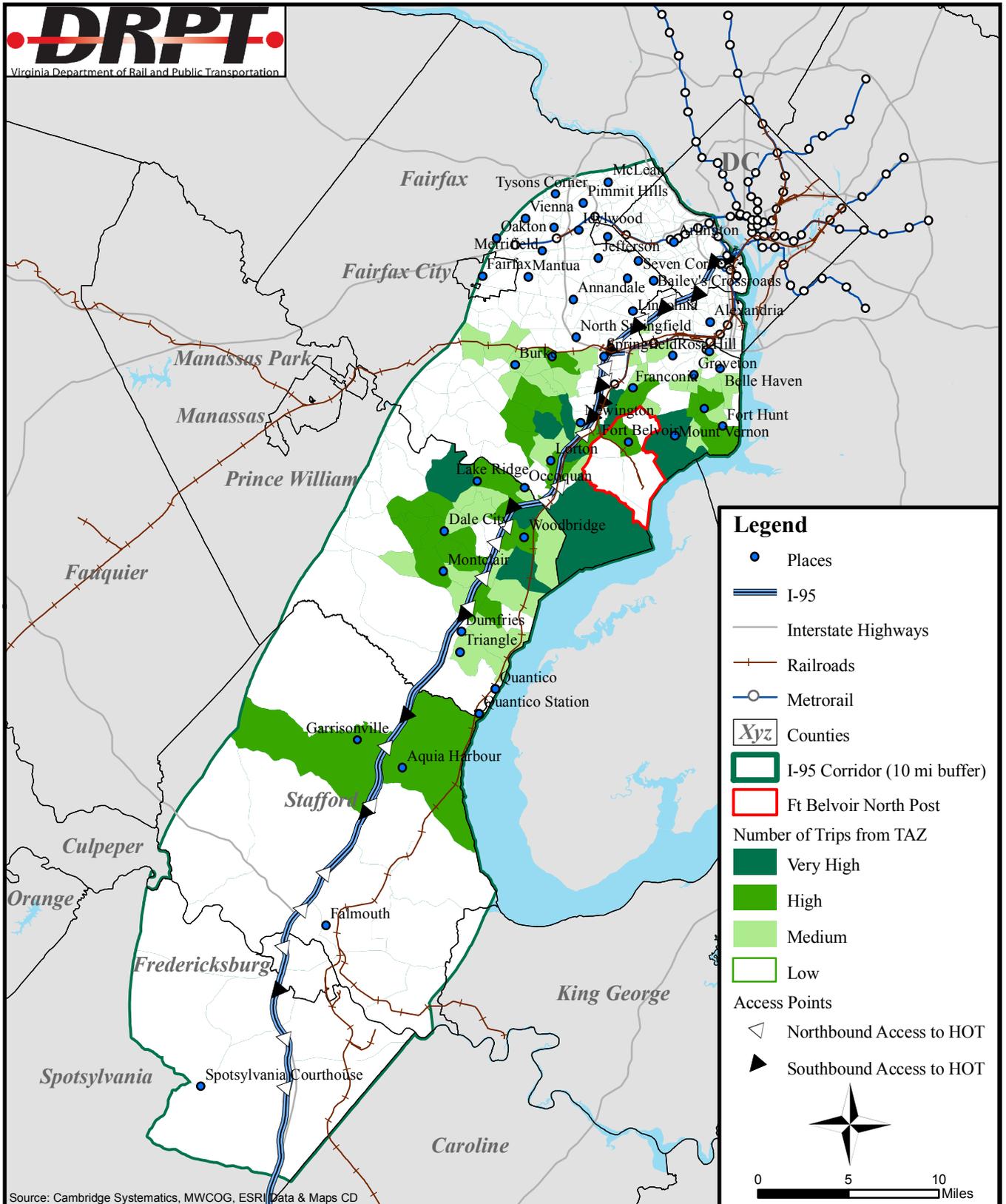


Figure 16

2015 PROJECTED HOME-BASED WORK TRIPS DURING AM PEAK PERIOD FROM I-95 CORRIDOR TO BAILEYS CROSSROAD/SKYLINE (without I-95/I-395 HOT Lanes)



Source: Cambridge Systematics, MWCOC, ESRI Data & Maps CD

Figure 20

2015 PROJECTED HOME-BASED WORK TRIPS DURING AM PEAK PERIOD FROM I-95 CORRIDOR TO FORT BELVOIR NORTH POST (without I-95/I-395 HOT Lanes)

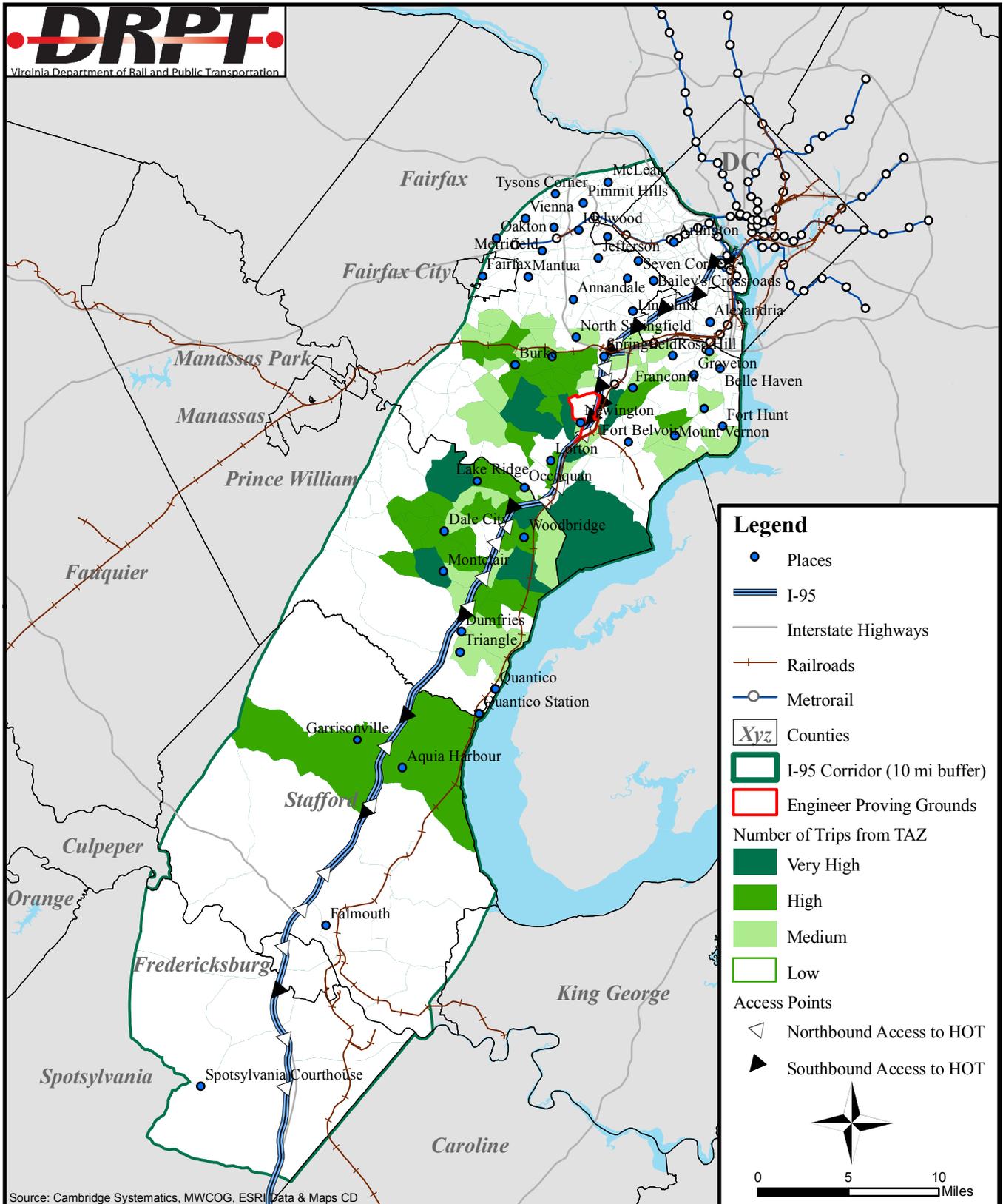


Figure 21

2015 PROJECTED HOME-BASED WORK TRIPS DURING AM PEAK PERIOD
FROM I-95 CORRIDOR TO FORT BELVOIR ENGINEER PROVING GROUNDS
(without I-95/I-395 HOT Lanes)

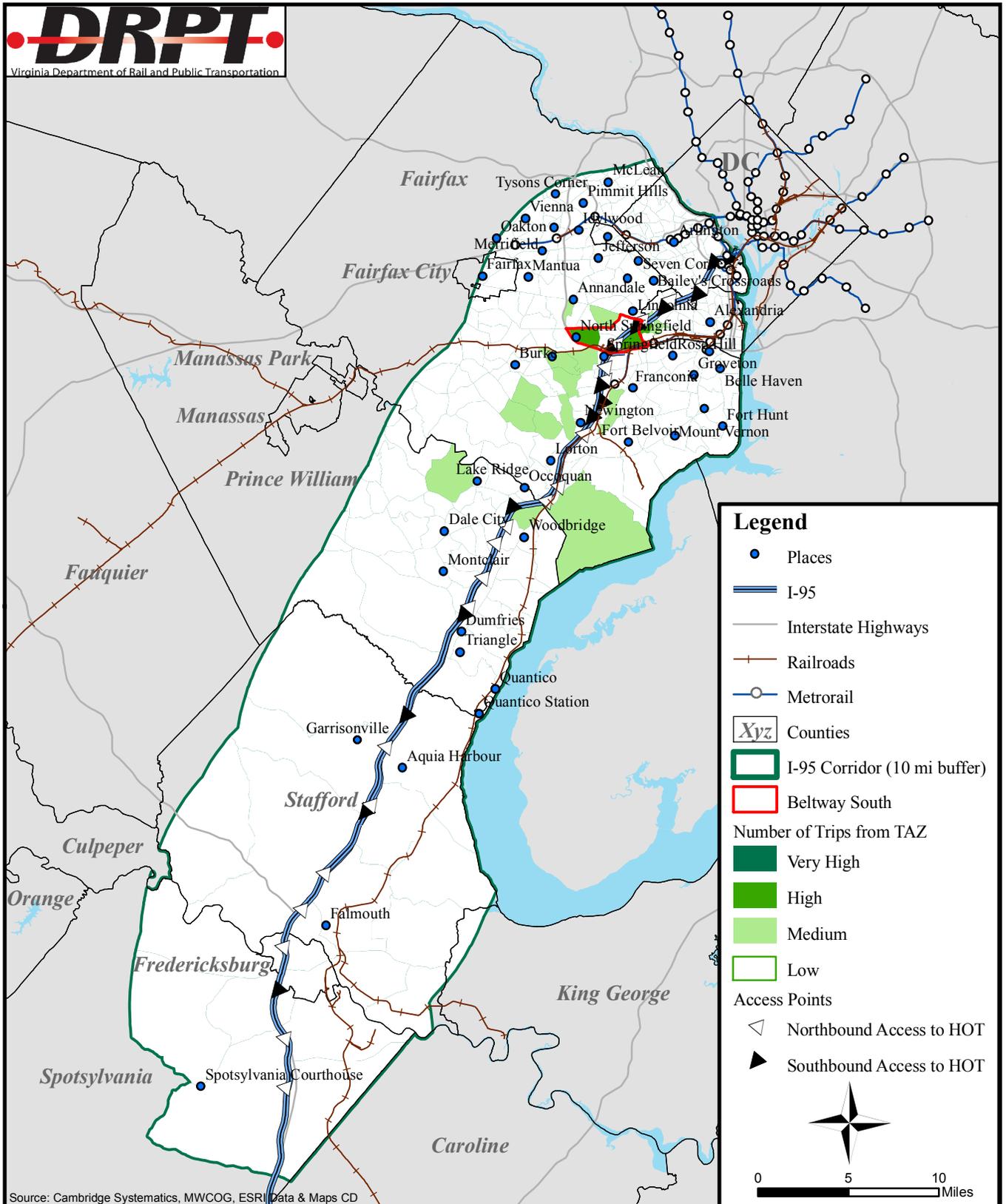
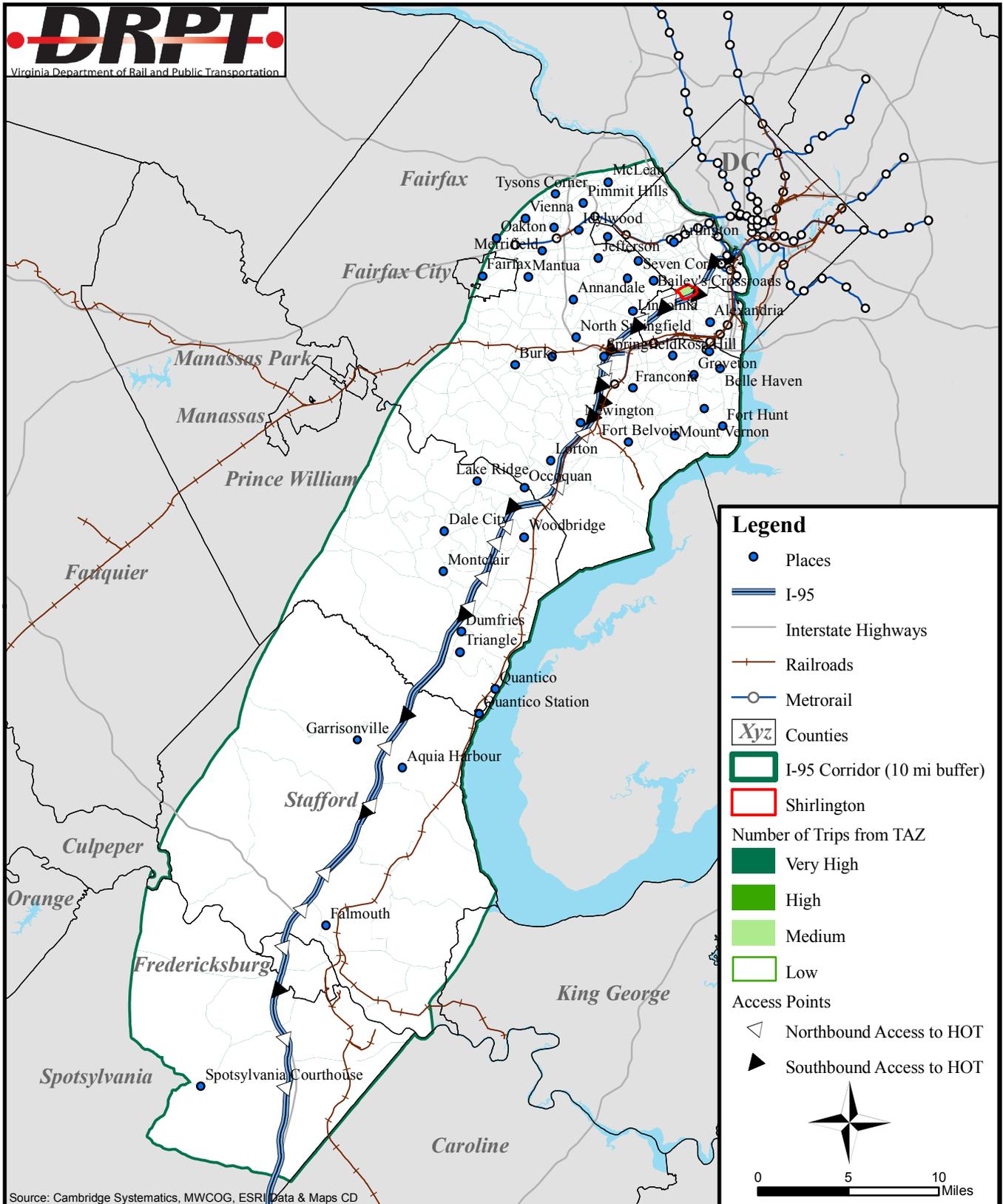


Figure 22

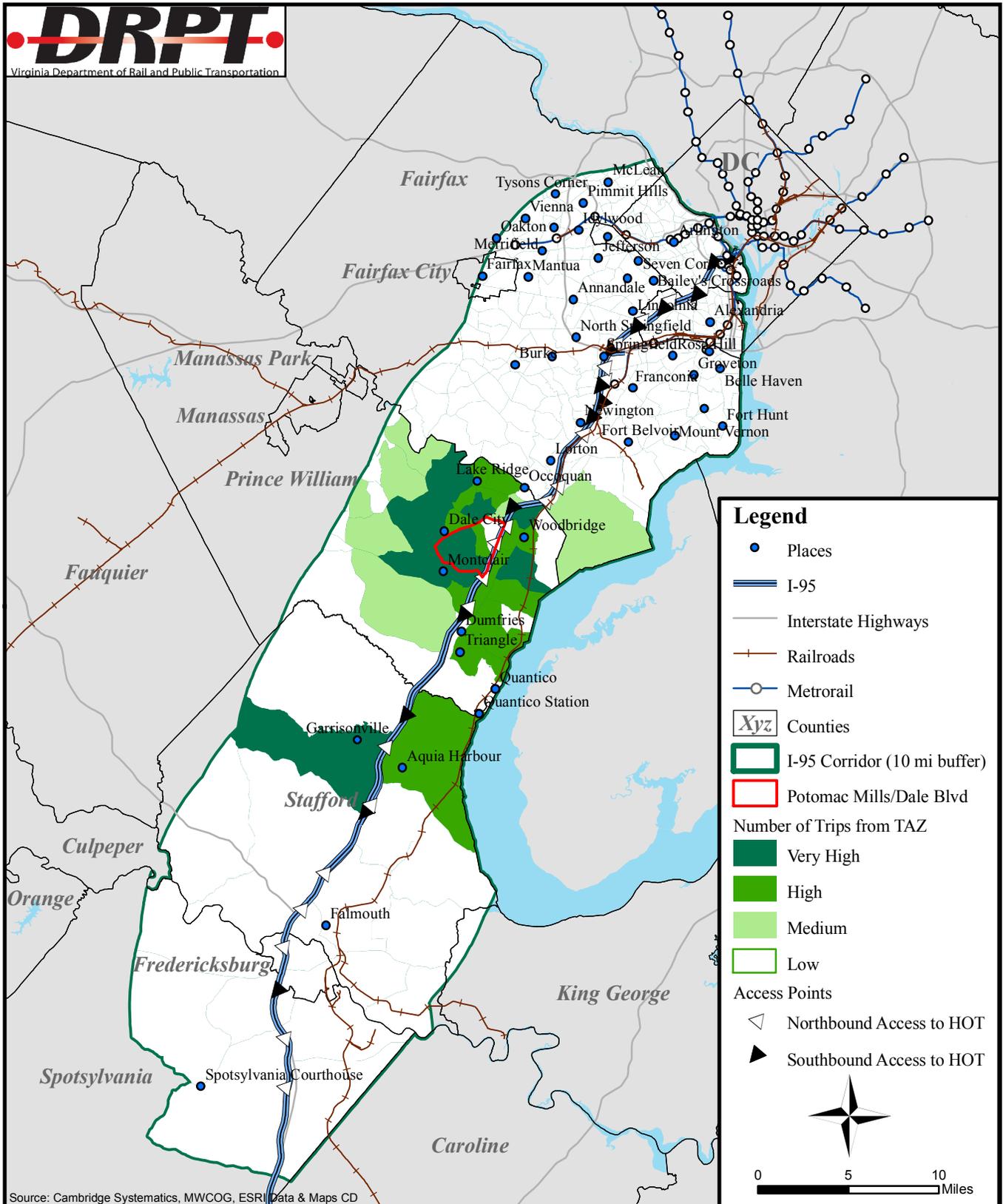
2015 PROJECTED HOME-BASED WORK TRIPS DURING
AM PEAK PERIOD FROM I-95 CORRIDOR TO BELTWAY SOUTH
(without I-95/I-395 HOT Lanes)



Source: Cambridge Systematics, MWCOC, ESRI Data & Maps CD

Figure 23

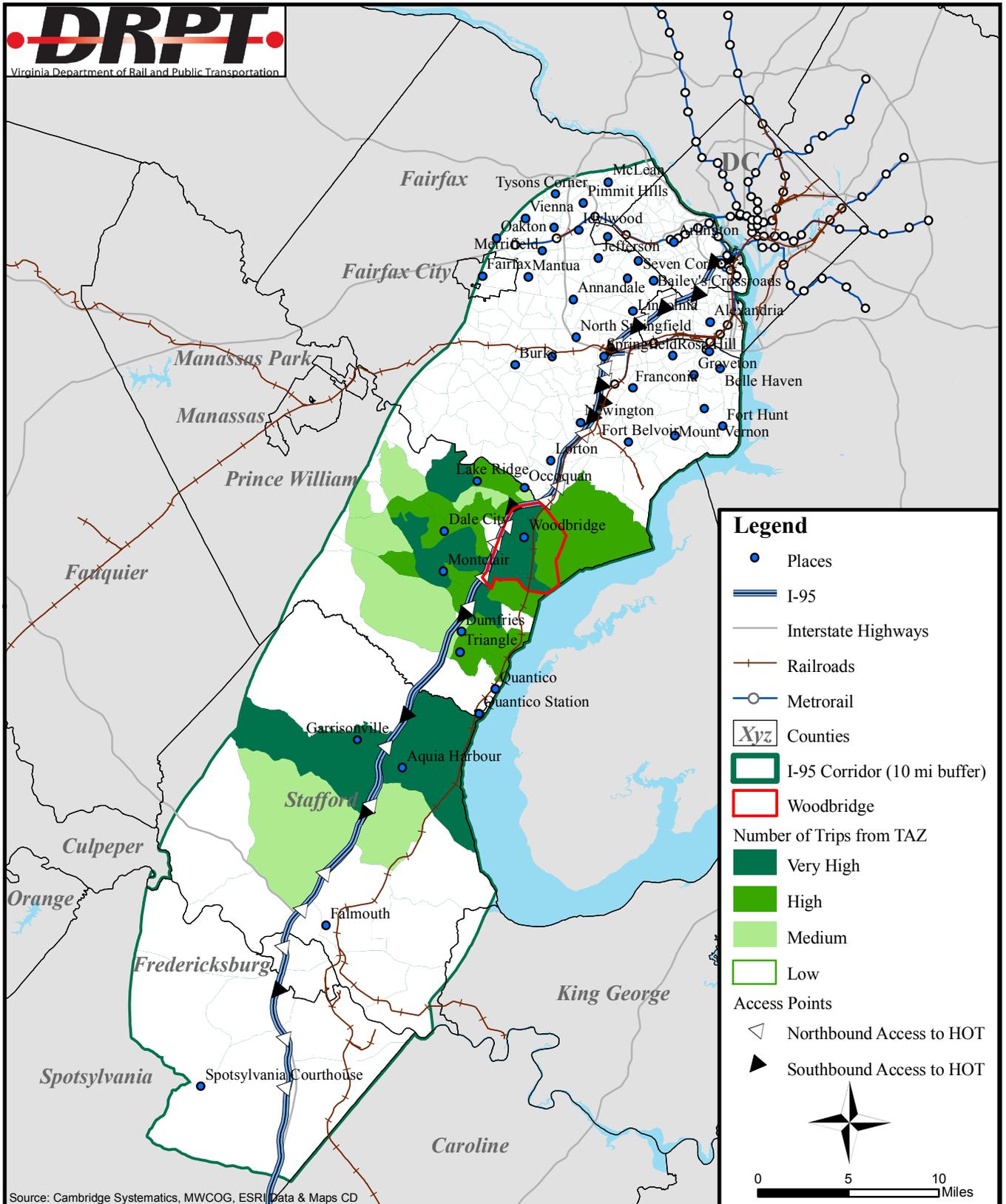
2015 PROJECTED HOME-BASED WORK TRIPS DURING
AM PEAK PERIOD FROM I-95 CORRIDOR TO SHIRLINGTON
(without I-95/I-395 HOT Lanes)



Source: Cambridge Systematics, MWCOC, ESRI Data & Maps CD

Figure 24

2015 PROJECTED HOME-BASED WORK TRIPS DURING AM PEAK PERIOD FROM I-95 CORRIDOR TO POTOMAC MILLS/DALE BLVD (without I-95/I-395 HOT Lanes)



Source: Cambridge Systematics, MWCOC, ESRI Data & Maps CD

Figure 25

2015 PROJECTED HOME-BASED WORK TRIPS DURING
AM PEAK PERIOD FROM I-95 CORRIDOR TO WOODBRIDGE
(without I-95/I-395 HOT Lanes)

Appendix C

I-95/I-395 HOT Lanes Transit/TDM Study

November 29, 2007



Study Purpose

This research is part of a project that is designed to provide the Commonwealth and other transportation leaders and decision makers with recommendations on a comprehensive approach to the future provision of transit and transportation demand management (TDM) services and programs in the I-95/I-395 corridor. Southeastern Institute of Research and Cambridge Systematics are working with the Department of Rail and Public Transportation (DRPT), Virginia Department of Transportation (VDOT), and Transit/TDM Advisory Committee (TAC) to use these findings to develop a comprehensive alternative transportation plan to reduce congestion through the increased use of enhanced transit and TDM services in the corridor.

Objectives and Methodology

Study Objectives

- Profile current travel patterns by modes on the I-95/I-395 corridor.
- Measure the current level of awareness, familiarity, and beliefs regarding high-occupancy toll (HOT) lanes.
- Assess the propensity of commuters to change their commute behavior in response to HOT Lanes availability.
- Identify the relative appeal of specific enhancements and programs (transit/TDM alternatives) needed to be in place to increase the likelihood of using non-single-occupant vehicle (SOV) modes.
- Assess the relative impact of alternatives to help calibrate subsequent modeling activities.

Study Methodology

- An online survey was designed and conducted in order to meet the objectives of this research.
- The survey topics guide and survey instrument were developed with input from TAC members.
- The 20+ minute online survey was programmed and tested prior to launch. The survey questionnaire included elaborate skip patterns to accommodate multiple modes and origin/destination (O/D) patterns.
- Questionnaire included scaled attitude and opinion questions, open-ended questions, and “scenario testing” where additional HOT lanes price points and time savings scenarios were tested. These questions were designed for use by Cambridge Systematics in developing statistical demand projection models.
- A \$5 Starbuck’s gift card was offered to respondents as a “thank you” incentive.

Study Methodology

- In order to qualify for this study, respondents had to commute along I-95/I-395 corridor
 - Their regular commute must occur during morning peak travel times
 - They must be headed north
 - They must reside in a predetermined study area defined by zip codes. Residents of the study area are most likely to be traveling in the I-95/I-395 corridor in the area of the HOT lanes.
- The sample consists of commuters across a variety of transportation modes:
 - SOV (gasoline engine and hybrid)
 - Formal carpool
 - Vanpool
 - Informal carpool (slug)
 - Commuter bus
 - Virginia Railway Express (VRE)/Metrorail

Study Methodology

- A sample size quota of 200 was targeted for each transportation mode with the exception of SOV commuters. SOV sample quota was 500.
- Sample sizes of 200 and 500 have margins of error of +/- 6.9 percentage points and +/- 4.4 percentage points, respectively, at the 95% confidence level.

Study Methodology

- Research respondents are classified according to their primary commute mode
- Mode classification is based on primary commute mode, using this question:

Please think of your travel in the I-95/I-395 corridor during a typical week, Monday through Friday. In the table below, please enter the number of weekdays you typically use each of the listed types of transportation as your **primary** mode for your **morning** commute. If you use more than one type on a single day (e.g., walk to the bus stop, then ride the bus), please count only the type you use for the **longest distance part** of your commute trip. (If you do not use a particular form of transportation for your morning commute, please enter a 0 for that form of transportation.)

- For this analysis, mode of usage is further classified:
 - For those who commute 5 days a week, the mode they use 3 or more days is defined as the “primary” mode
 - For those who commute 3 or 4 days a week, the mode they use at least 2 days a week is defined as the “primary” mode

Study Methodology

- Each commute mode is defined specifically
 - SOV: Commute in a single occupant vehicle
 - Carpool:
 - 2-person Carpool: Commute in a pre-arranged carpool with 1 other person either as the driver or as a passenger
 - Carpool 3+: Commute in a pre-arranged carpool with 2 or more other people either as the driver or as a passenger
 - Vanpool: Commute in a vanpool
 - Sluggo: Commute in an informal carpool - picking up or being picked up as passengers to use the HOV lanes
 - Bus: Ride a bus
 - In some parts of the analysis, commuters are also defined in terms of whether or not they ride an express bus. An express bus is defined in this way: "An express bus service is a motorcoach or bus, generally traveling longer distance with limited stops, taking commuters to their work areas." Respondents classified themselves as riding an express bus or not.
 - VRE: Ride the Virginia Railway Express
 - Metrorail: Ride Metrorail

Study Methodology

- Each mode was targeted specifically in order to ensure representation in the survey sample
 - Residents (SOvers and other modes): Mailed 75,000 postcards announcing this study to residents living across the study area
 - Carpoolers: Emailed an online survey invitation and link to the Metropolitan Washington Council of Governments' (MWCOC) Guaranteed Ride Home (GRH) service database registrants who live in the study area. Mailed postcard invitations to other carpool lists
 - Vanpoolers: In addition to GRH database, reached vanpoolers by mail invitations to available lists of Virginia vanpool drivers who originate from the study area
 - Sluggers: Some slugs entered via resident postcard mailing and others through announcement on slug-lines.com
 - Bus: Emailed an online survey invitation to list provided by Potomac and Rappahannock Transportation Commission (PRTC). Other bus riders participated via postcard mailing
 - VRE: Posted survey invitation in VRE's electronic newsletter

Study Methodology

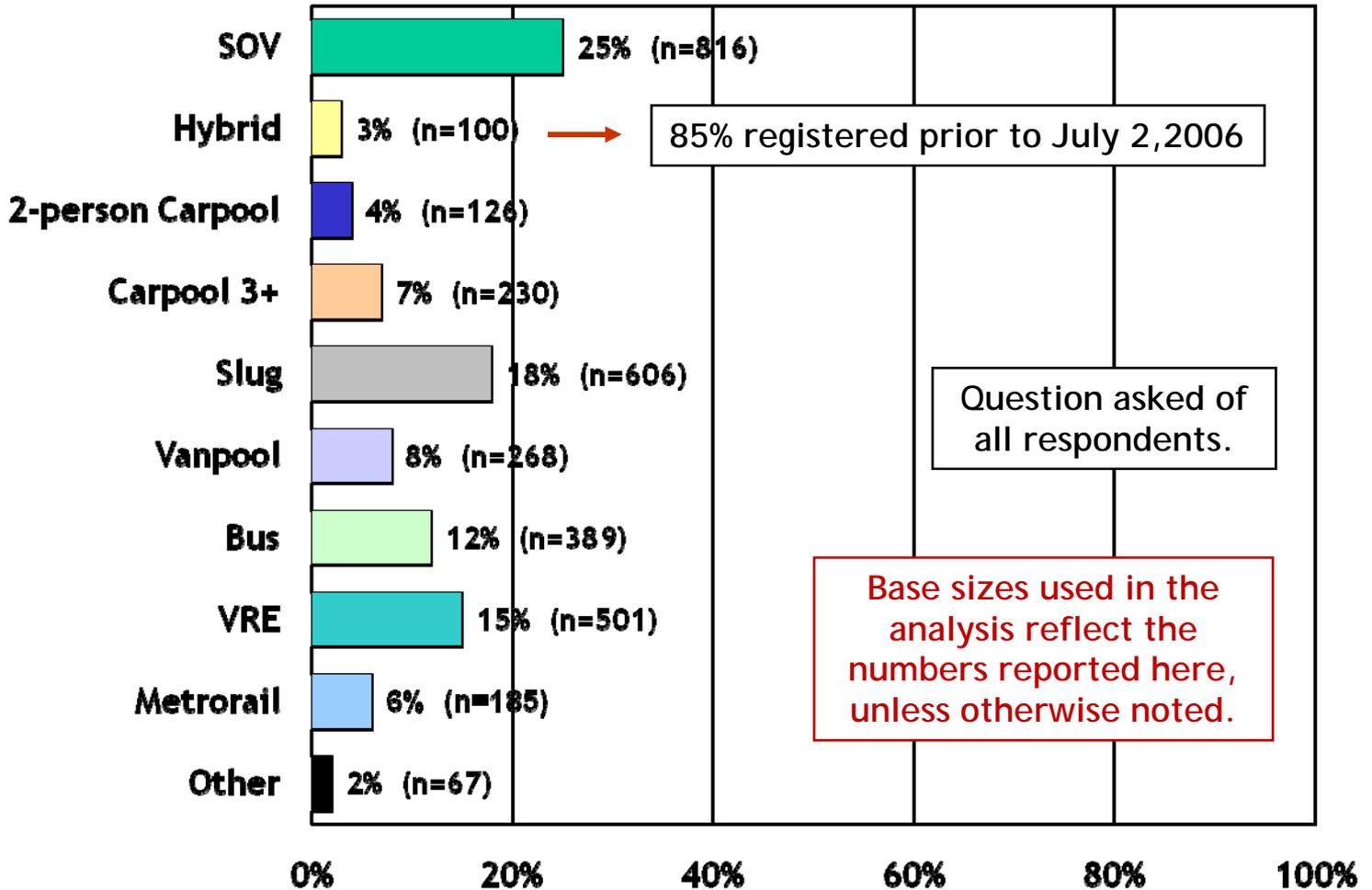
Number of Qualified Respondents for Each Commute Mode:
Primary Commute Mode

<u>Mode Group</u>	<u>Quota Target</u>	<u>Number of completed Interviews</u>
SOV	500	
Drive alone (gas-powered)		816
Drive alone (hybrid)		100
Total carpool		
Formal carpool	200	356
Slug	200	606
Vanpool	200	268
Bus	200	389
Train	200	686
Other	<u>0</u>	<u>67</u>
Total	1,500	3,288

Formal carpool:
2-person n = 126
3 or more n = 230

Train:
VRE n = 501
Metrorail n = 185

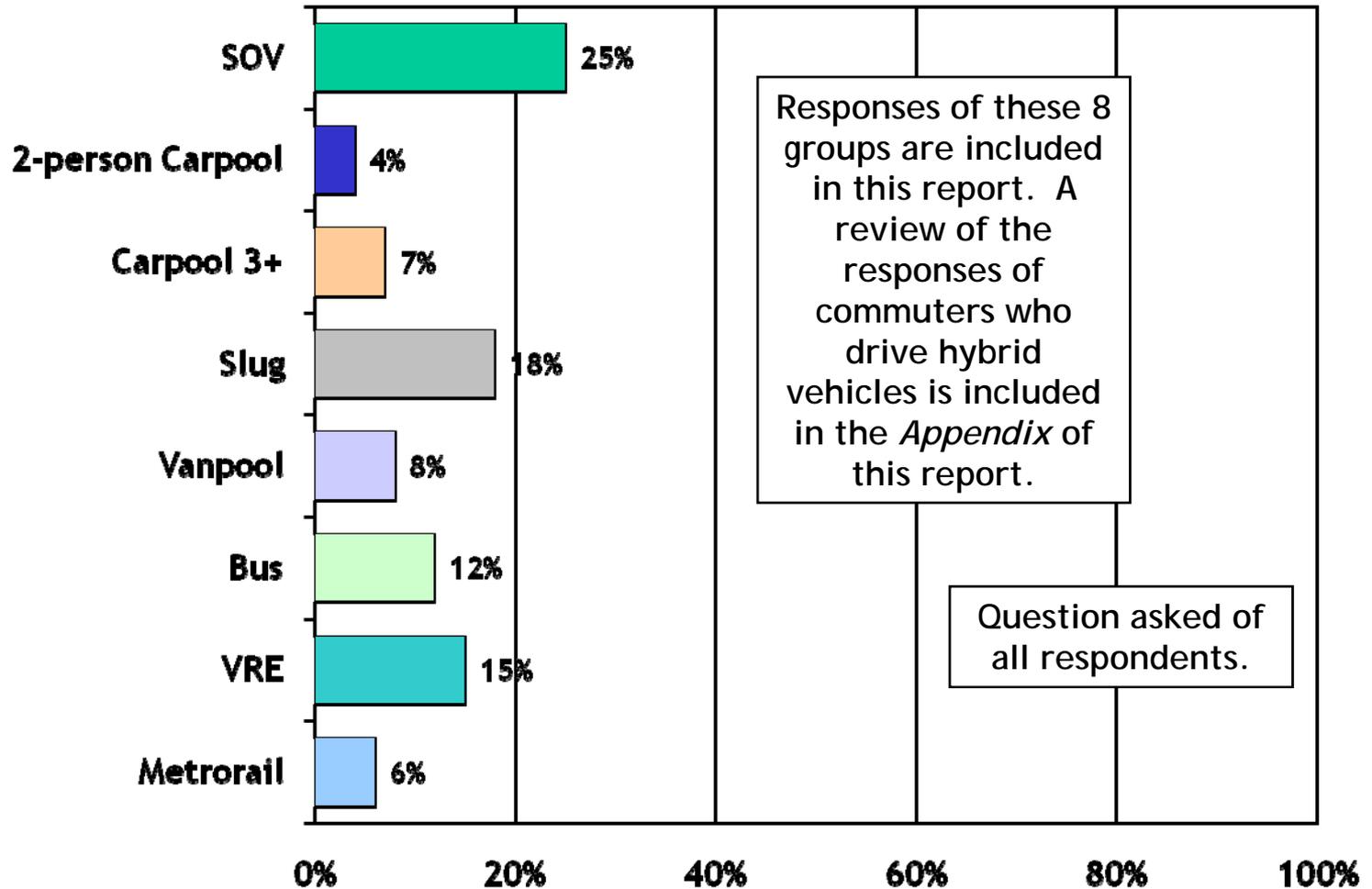
Mode Distribution by Proportion of Sample



Q6. Please think of your travel in the I-95/I-395 corridor during a typical week, Monday through Friday. In the table below, please enter the number of weekdays you typically use each of the listed types of transportation as your primary mode for your morning commute.

Focus of Report

Q6. Please think of your travel in the I-95/I-395 corridor during a typical week, Monday through Friday. In the table below, please enter the number of weekdays you typically use each of the listed types of transportation as your primary mode for your morning commute.



Detailed Observations

Outline of Report

I. Profile of Commuters



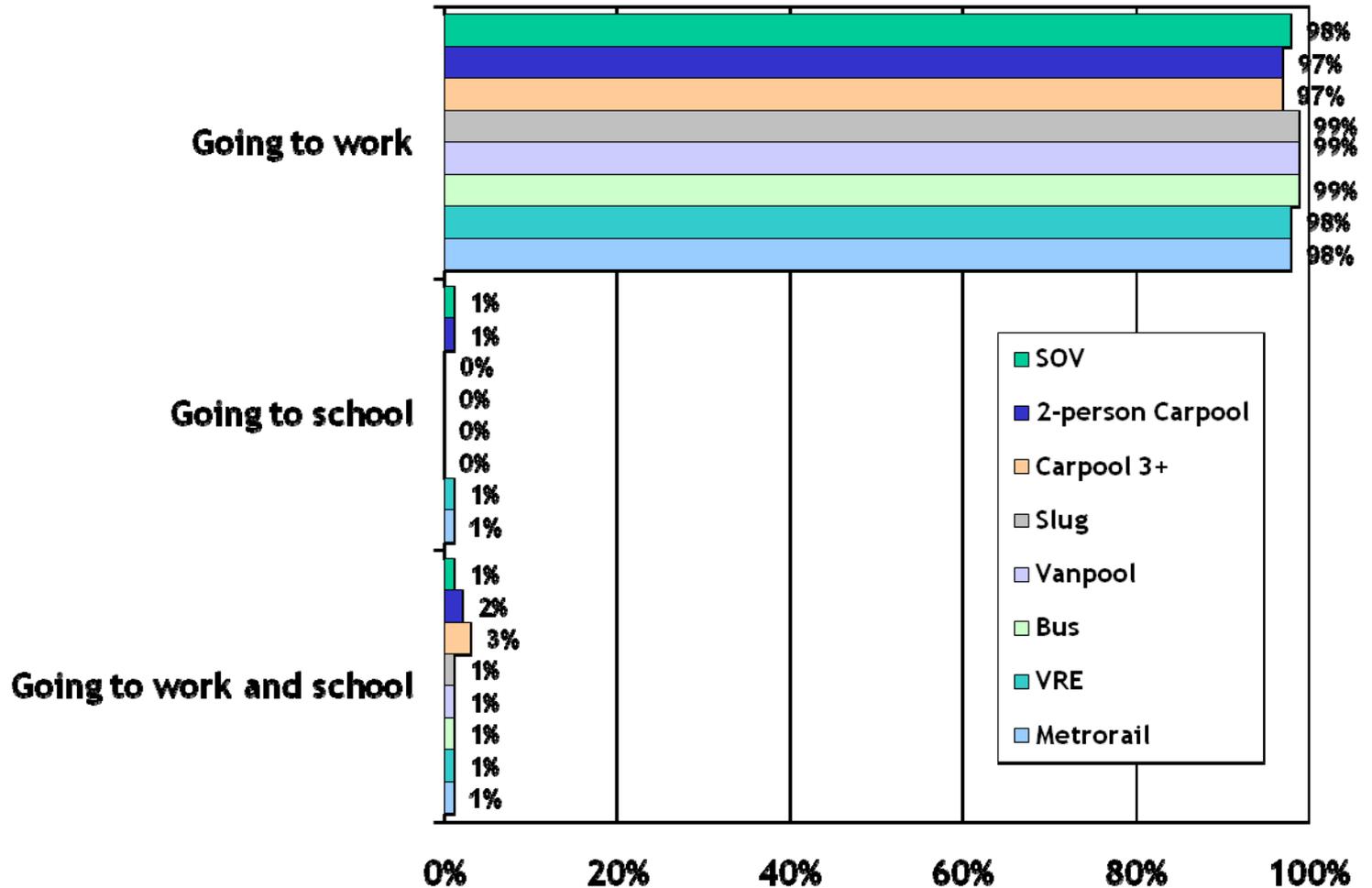
- Commute patterns and behaviors
- Attitudes that influence choices
- HOV lanes

II. HOT Lanes

III. Transit and TDM Improvements

Typically, Commuters Are Going to Work

Question asked of all respondents.

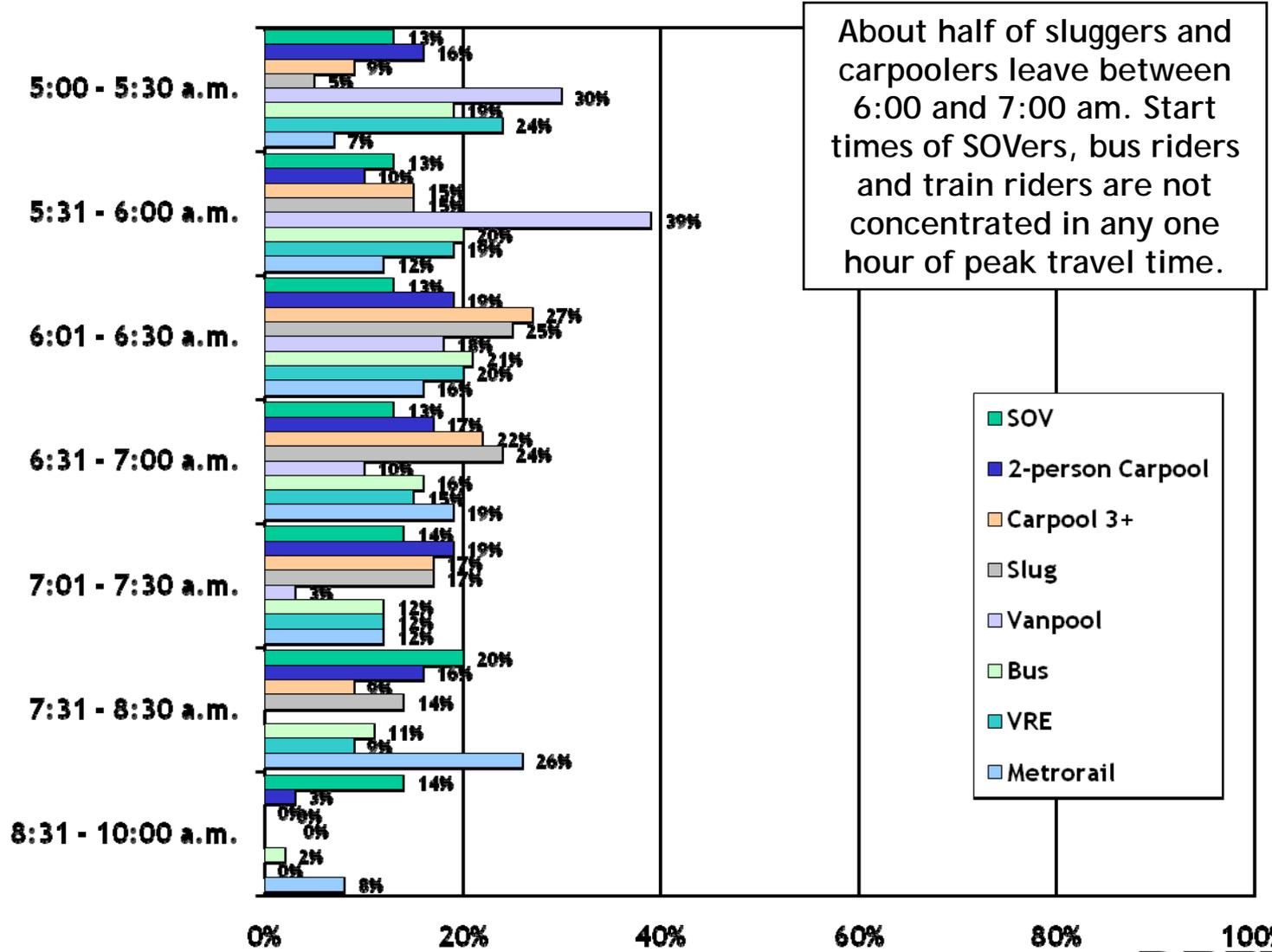


Q3. What is the main purpose of your morning travel in the I-95/I-395 corridor?

Vanpoolers Have the Earliest Commutes - 69% of Vanpoolers Leave between 5:00 and 6:00 a.m.

Question asked of all respondents.

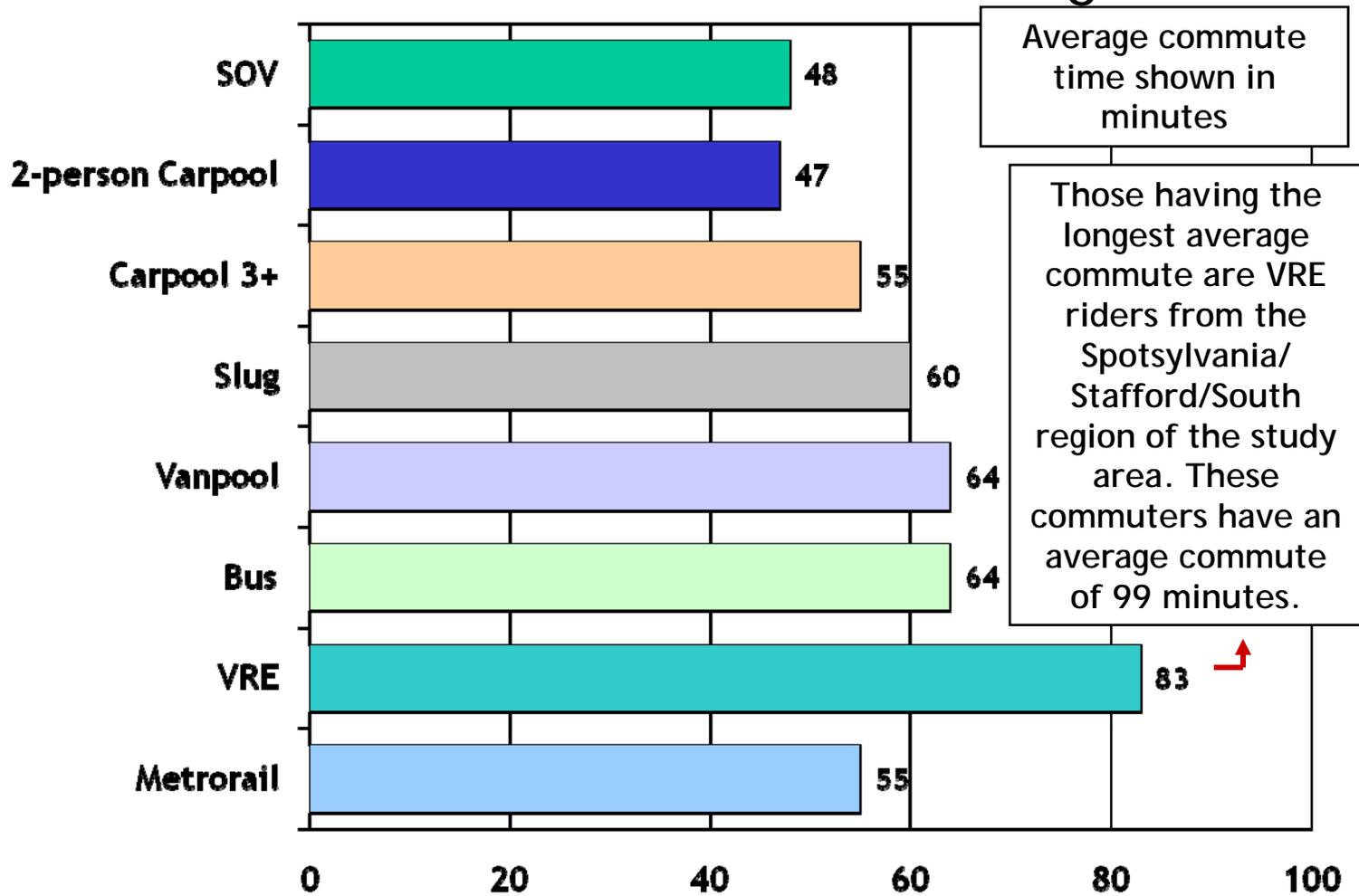
Q5. About what time do you typically begin your commute (i.e., leave your house) in the I-95/I-395 corridor in the morning?



About half of slugs and carpoolers leave between 6:00 and 7:00 am. Start times of SOVs, bus riders and train riders are not concentrated in any one hour of peak travel time.

- SOV
- 2-person Carpool
- Carpool 3+
- Slug
- Vanpool
- Bus
- VRE
- Metrorail

VRE Riders Have the Longest Commutes - SOV's and 2-Person Carpools Spend the Least Time Commuting



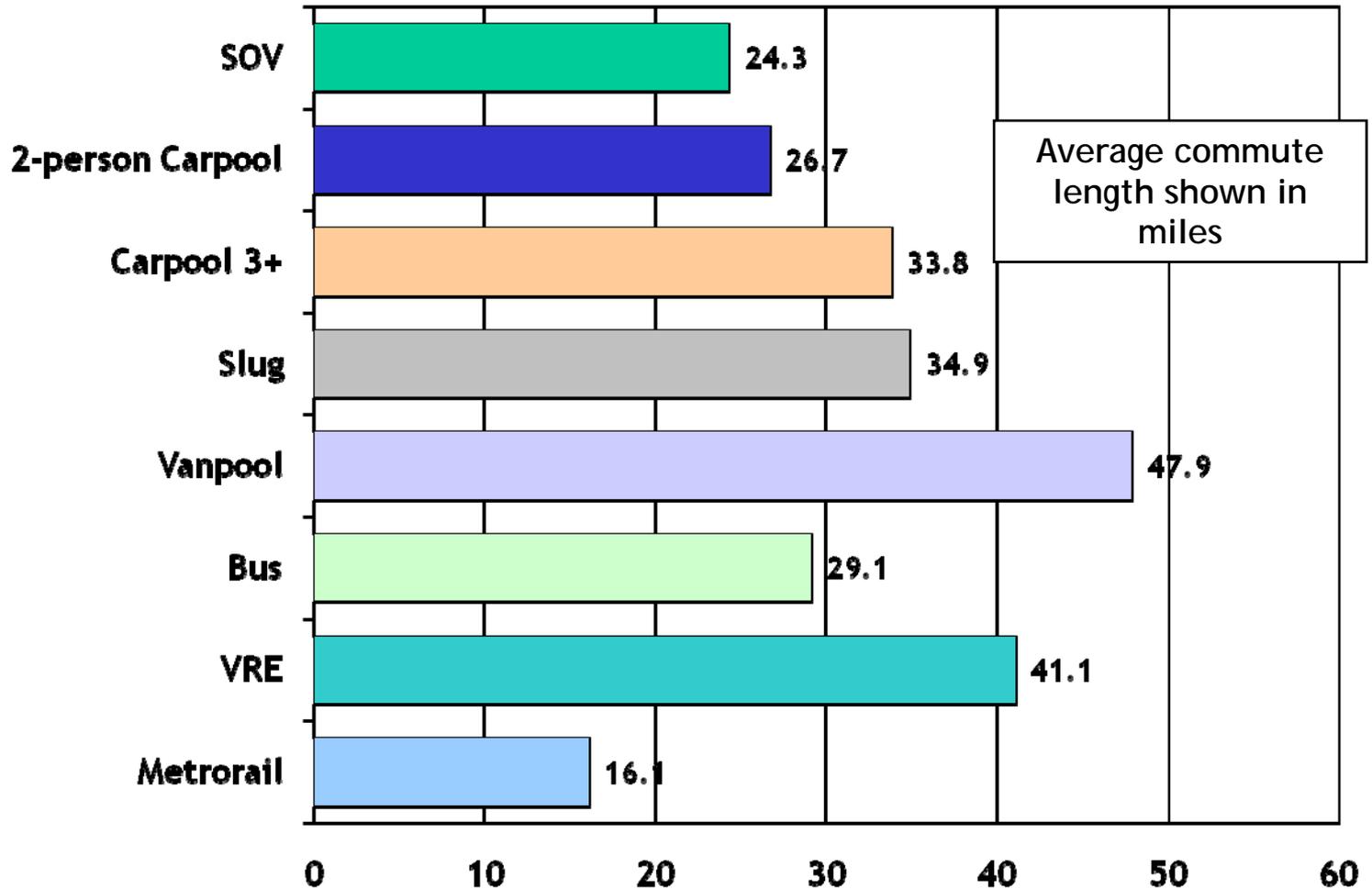
Question asked of all respondents.

Q17. On average, how many minutes long is your total commute, door to door?

Vanpoolers Have the Longest Commute in Terms of Miles - Metrorail Riders Have the Shortest

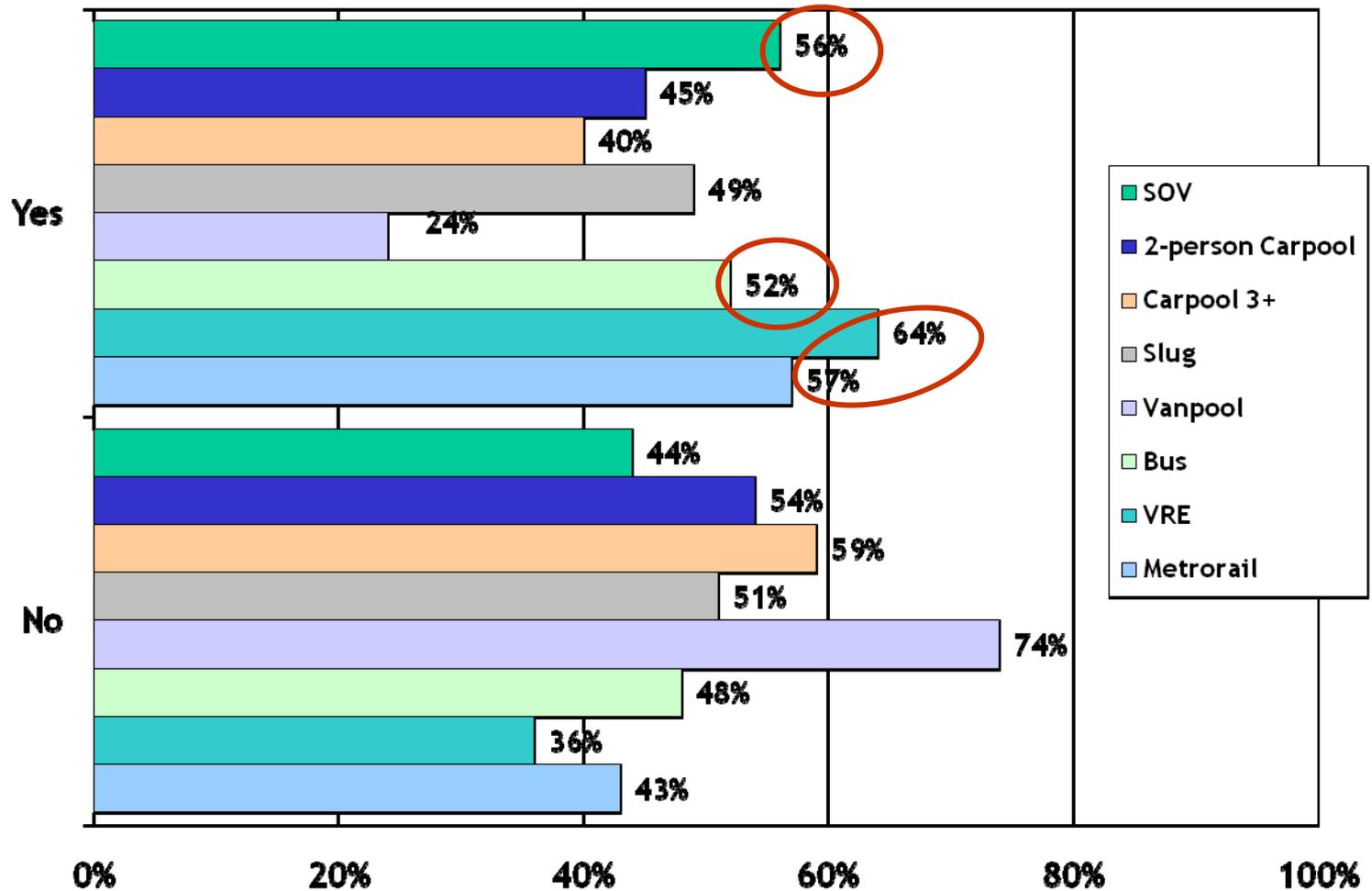
Carpoolers in 3+ carpools, sluggers, vanpoolers, VRE riders and bus riders from Spotsylvania/Stafford/South locations in the study area all commute an average of more than 50 miles on their morning commute.

Question asked of all respondents.



Q18. About how many miles long is your total morning commute, door to door?

Train Riders, SOVers, and Bus Riders Are Most Likely to Have Flexibility in their Schedules



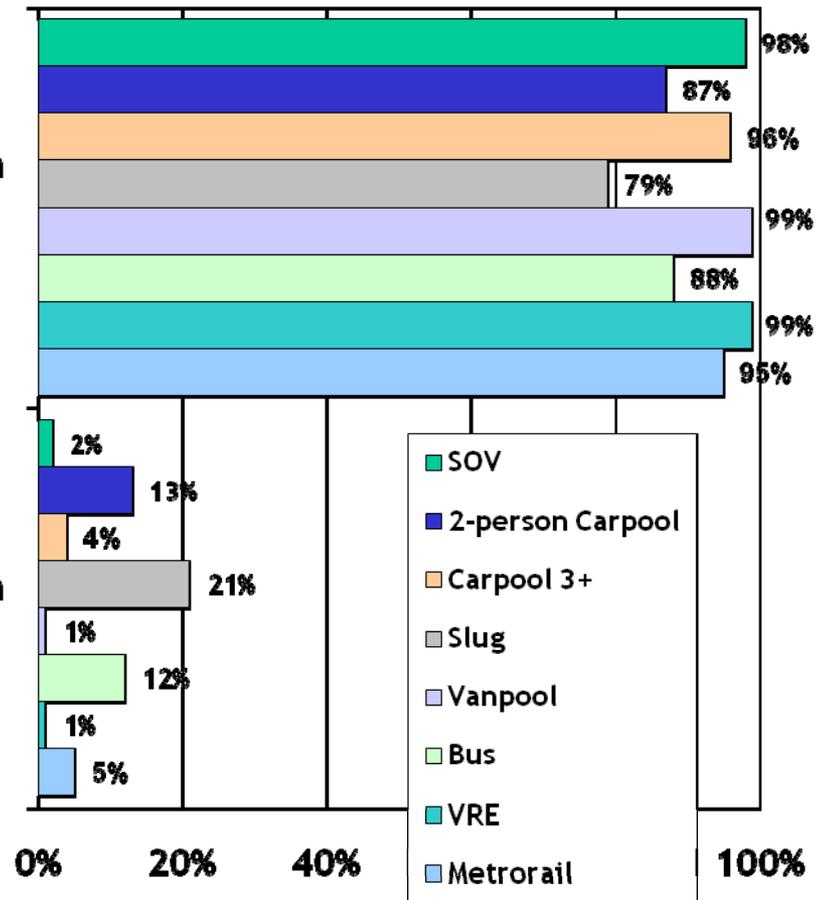
Question asked of all respondents.

Q5a. Do you have flexibility in your daily departure time (that is, can you vary your arrival time at work/school)?

Sluggers Are Most Likely to Use a Different Mode of Transportation for their Afternoon Commute

Yes, typically use same transportation mode for morning and afternoon commute

No, typically afternoon transportation mode is not the same



Question asked of all respondents.

Q19. Again, please think of your travel in the I-95/I-395 corridor during a typical week, Monday through Friday. Do you typically use the same mode of transportation for your afternoon commute as you do for your morning commute?

Most Often, Morning Sluggers Who Do Not Slug Home in the Afternoon Use an Alternate Mode Because Slug Lines Are Not Available or Convenient in the Afternoon

Some find that riding the bus is less stressful than slugging.

Due to small base size for SOVers, carpoolers, vanpoolers and train riders, responses to this question shown only for sluggers (this page) and bus riders (following page).

Sluggers who use different transportation for afternoon commute

Lack of slug lines in afternoon	30%
Bus less stressful than slugging	14%
Slug lines not available near work	11%
Rely on a combination of methods	11%
Evening bus works well	8%
Work schedule	7%
Drive home after 6:00 p.m. so don't need slugs	7%
Bus often late in mornings	6%
Take bus or slug, whichever is available first	5%
Carpool scheduling issues	4%

Note: Only most frequent mentions are shown.

Q27. Earlier, you indicated that you use a different commute mode(s) in the afternoons than you do in the mornings. Why do you use a different commute mode(s) in the afternoon?

Bus Riders Use a Different Mode of Transportation in the Afternoons to Save Time and/or Money

Bus riders who use different transportation for afternoon commute

Saves time	23%
Saves money	20%
Take bus or slug, whichever is available first	14%
Flexibility	11%
Rely on a combination of methods	9%
Convenience	9%
Work schedule	9%
Carpool scheduling issues	7%
Lack of slug lines in evening	7%
Ride with spouse one-way	5%

Note: Only most frequent mentions are shown.

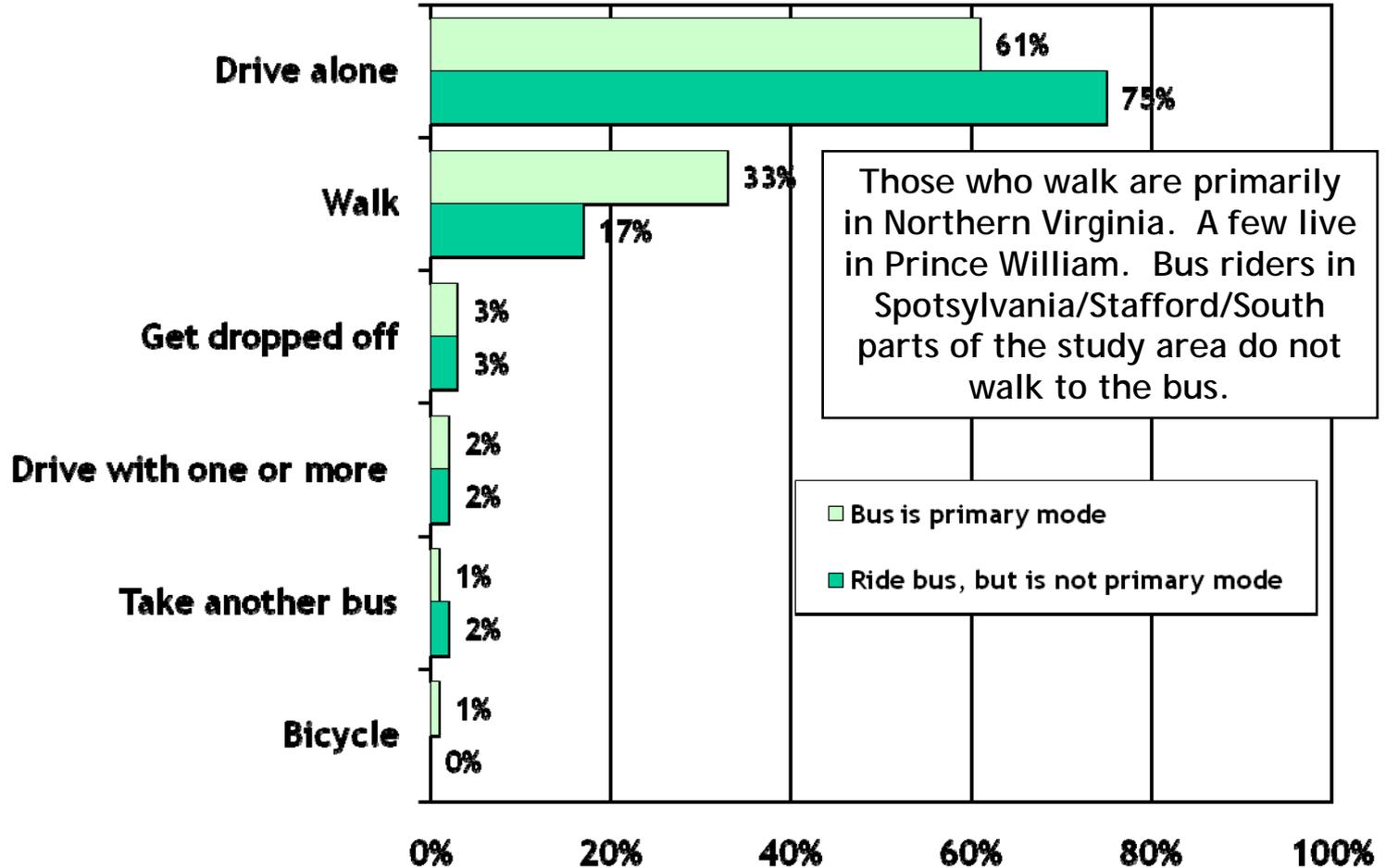
Q27. Earlier, you indicated that you use a different commute mode(s) in the afternoons than you do in the mornings. Why do you use a different commute mode(s) in the afternoon?

Due to small base size for SOVs, carpoolers, vanpoolers and train riders, responses to this question shown only for sluggers (previous page) and bus riders (this page).

Bus is primary mode, n=389
 Ride bus, but is not primary mode, n=129

Most Often, Bus Riders Drive Alone to the Bus - A Few Walk

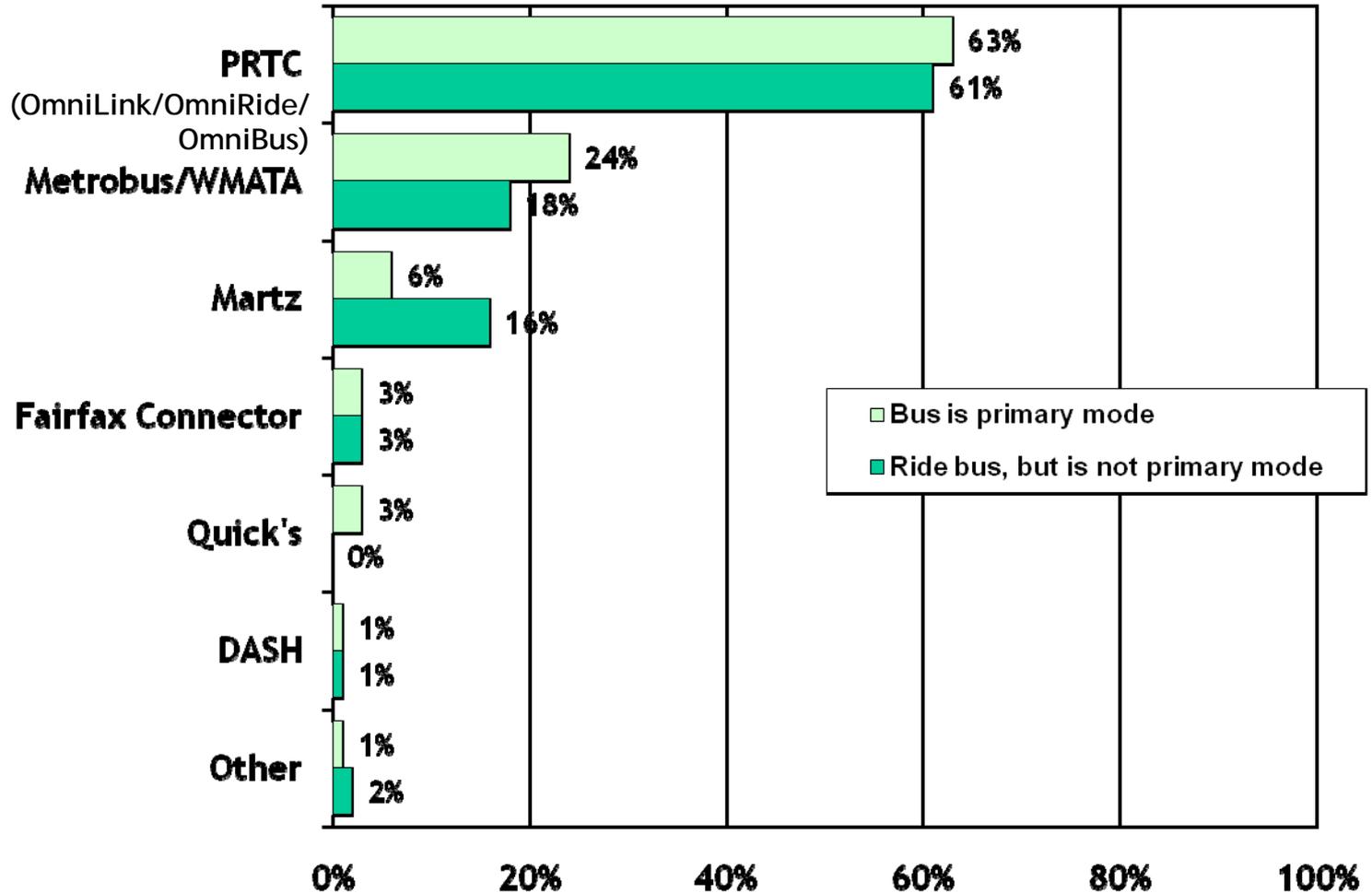
Question asked of all who ride bus.



Q8. How do you get to the bus service that you use for your morning commute?

Bus is primary mode, n=389
 Ride bus, but is not primary mode, n=129

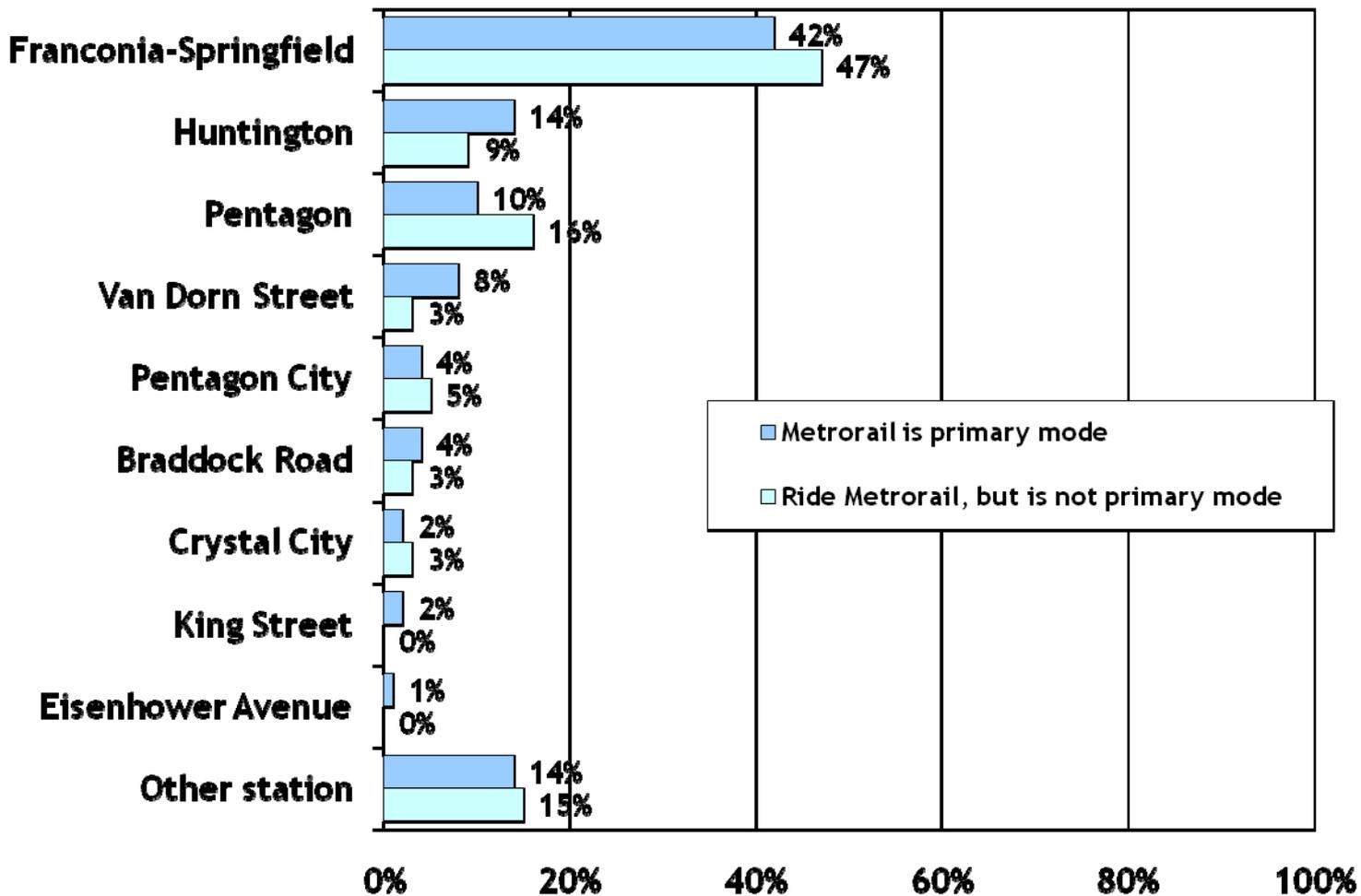
Predominantly, Bus Riders in the Study Ride PRTC Buses - Both Those for Whom Bus Is Their Primary Mode as well as Other Bus Riders



Q7. Please identify the specific bus line that you use for your morning commute.

Metrorail is primary mode, n=185
 Ride Metrorail but is not primary mode, n=75

The Largest Proportion of Metrorail Respondents Begin Their Metrorail Trip at Franconia-Springfield - But, Other Stations Are Also Represented



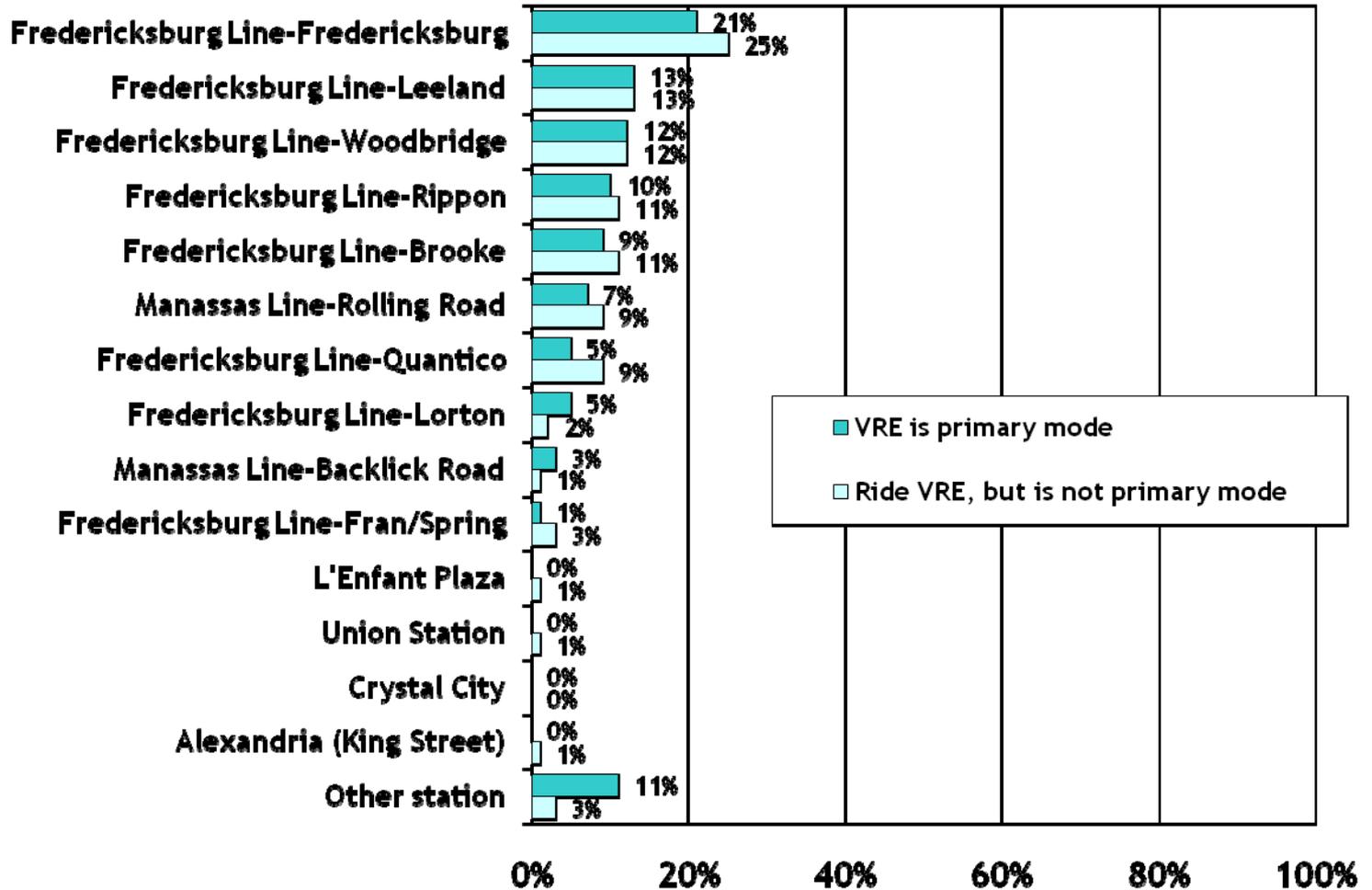
Question asked of all who ride Metrorail.

Q7A-1. At what Metrorail station do you typically begin the rail portion of your commute?

VRE is primary mode, n=501
 Ride VRE, but is not primary mode, n=92

VRE Respondents Start Their Rail Trips at a Variety of Locations - Most Often at Fredericksburg

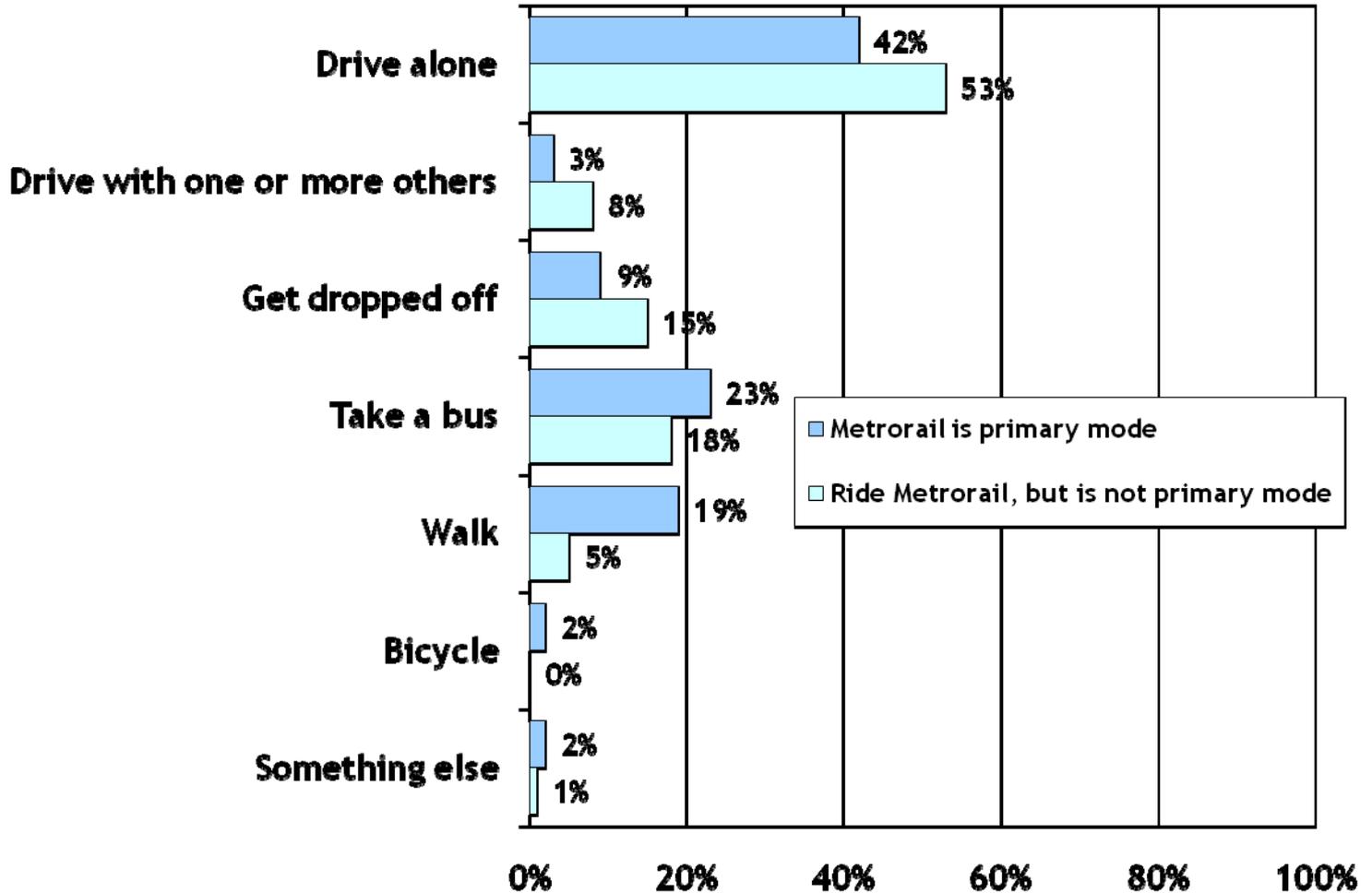
Question asked of all who ride VRE/train.



Q7B-1. At what train station do you typically begin the rail portion of your commute?

Metrorail is primary mode, n=185
Ride Metrorail, but is not primary mode, n=75

About Half of Those Who Ride Metrorail Drive to the Train



Question asked of all who ride Metrorail.

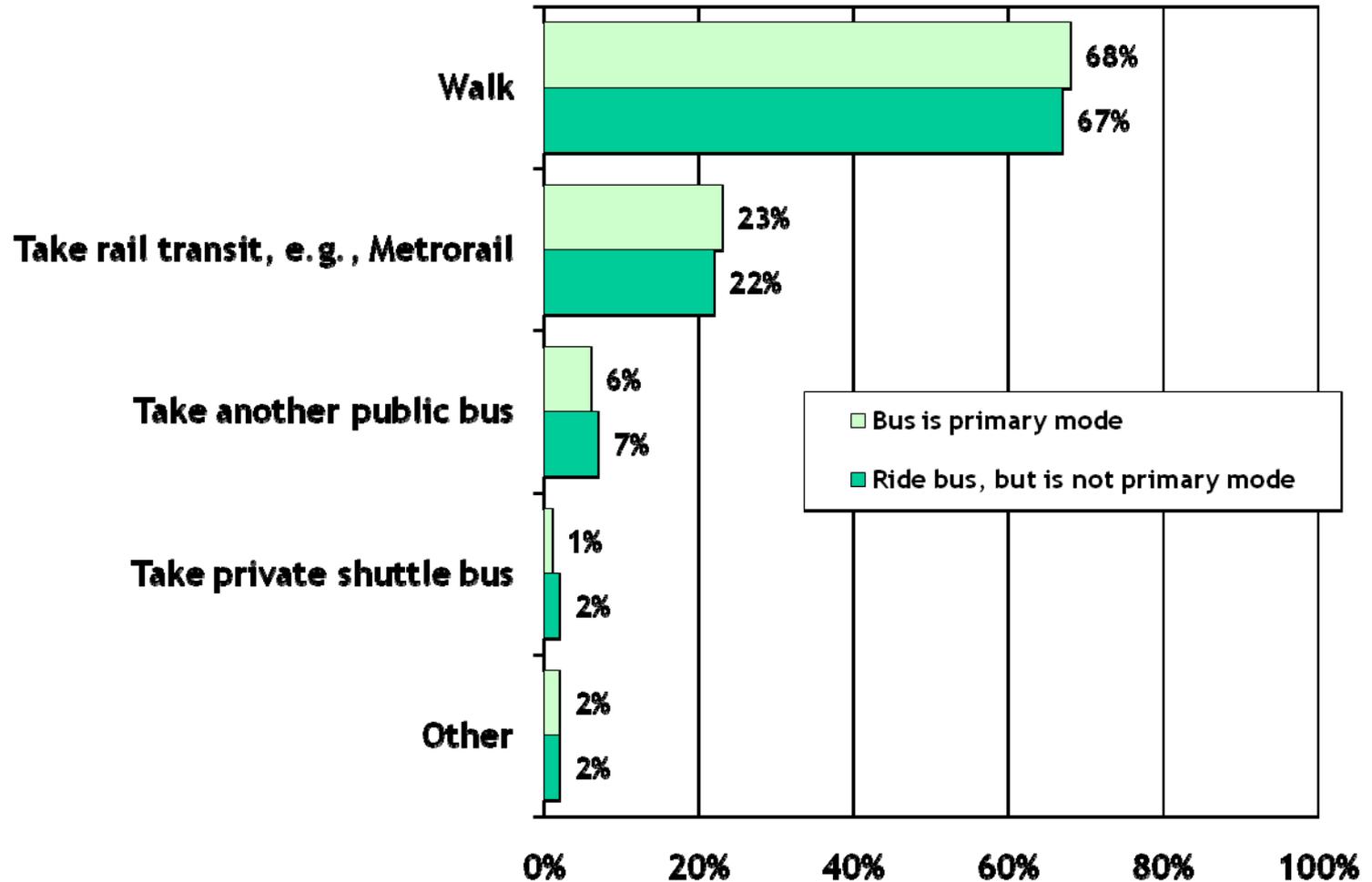
Q8A-1. How do you get to the train (Metrorail) for your morning commute?

Bus is primary mode, n=389
Ride bus, but is not primary mode, n=129

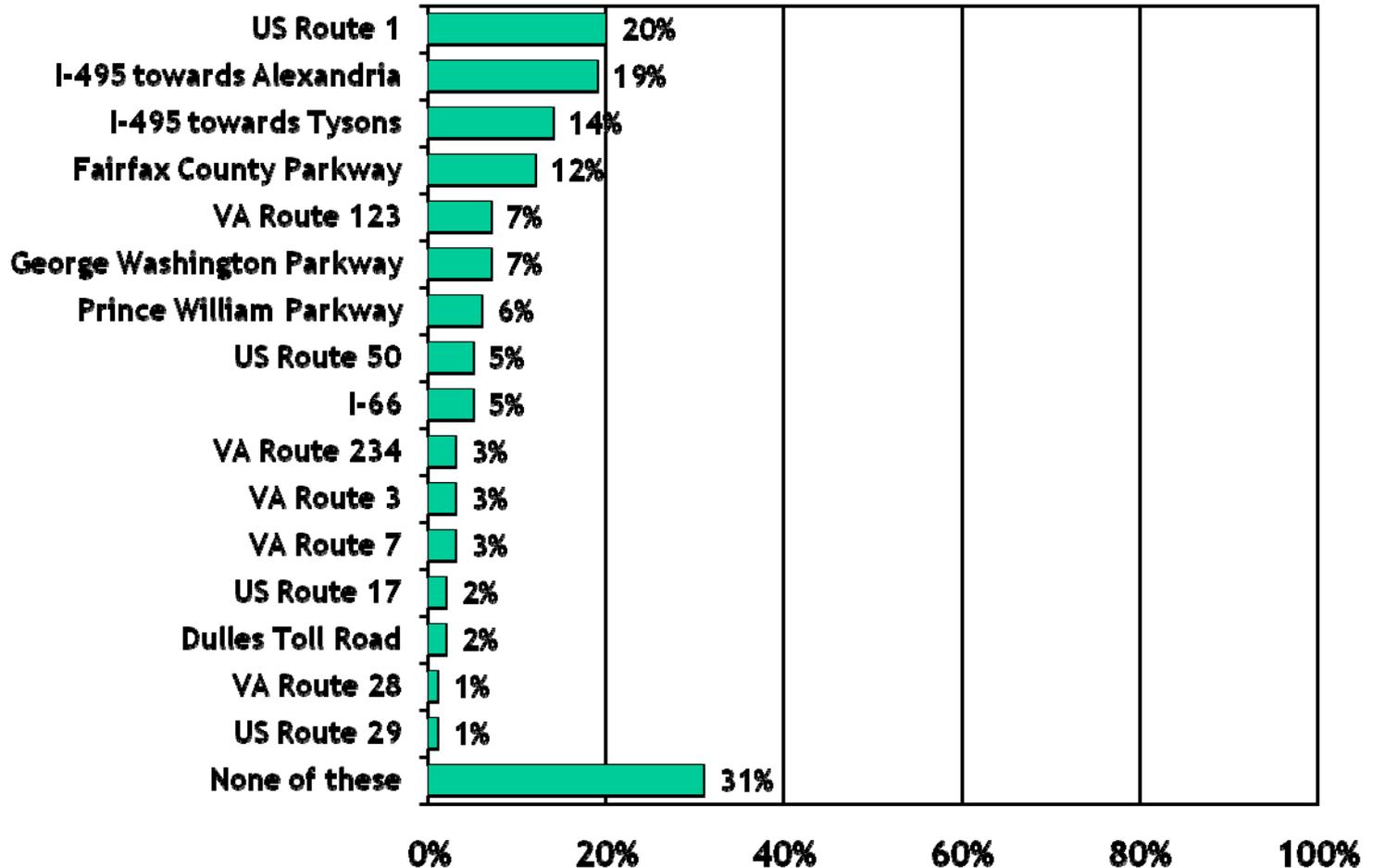
Question asked of all who ride bus.

Q8B-1. How do you typically get from the bus drop-off to the final destination of your morning commute (if more than one method used, please indicate the one you use for the longest distance)?

Most Often, Bus Riders Walk from the Drop-off Point



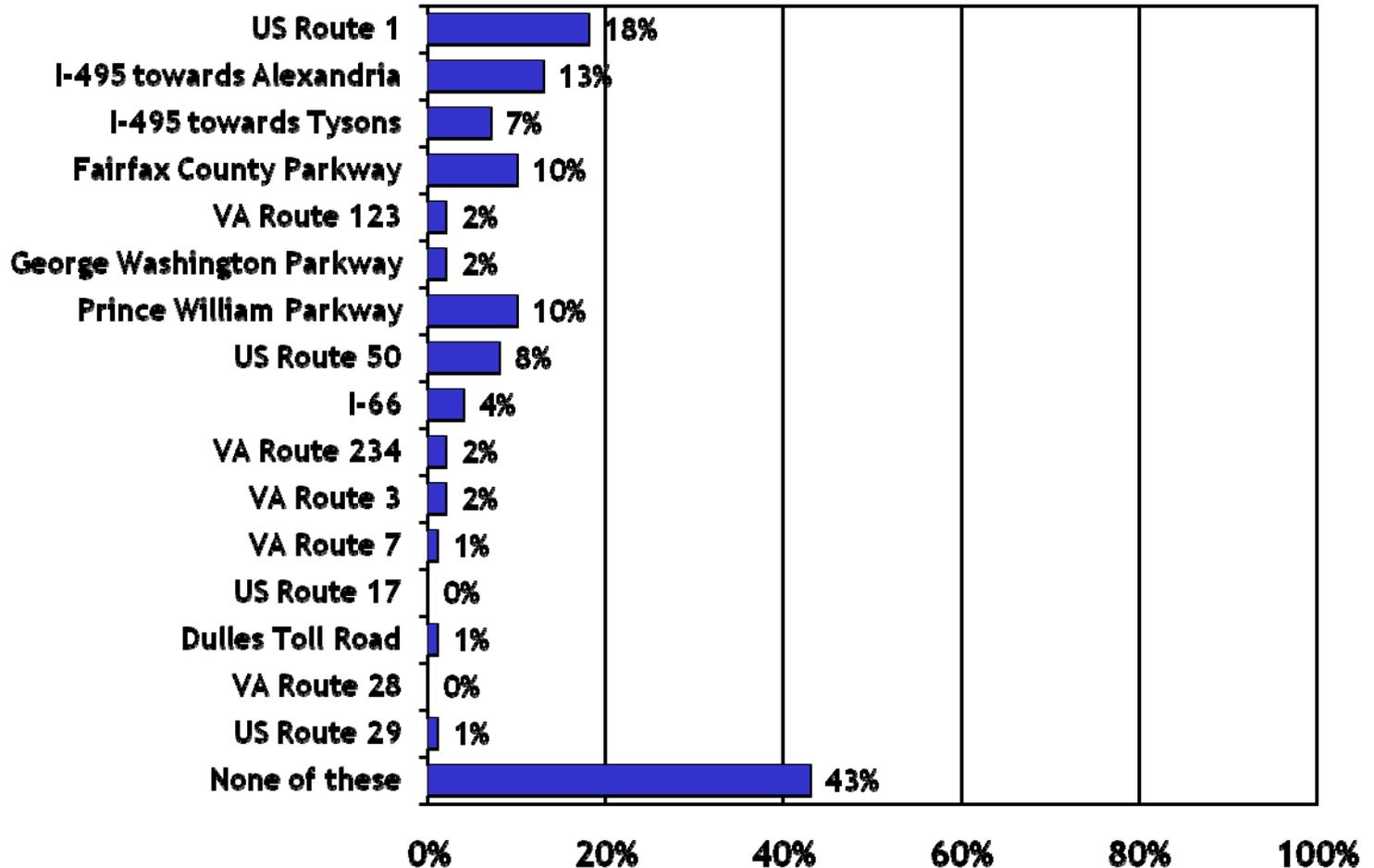
In Addition to I-95/I-395, SOVers Are Most Often Traveling US Route 1, I-495, and Fairfax County Parkway



Question asked of all respondents. Only SOVers reported in graph.

Q10. In addition to I-95/I-395, what other major highways, if any, do you typically travel on your regular morning commute?

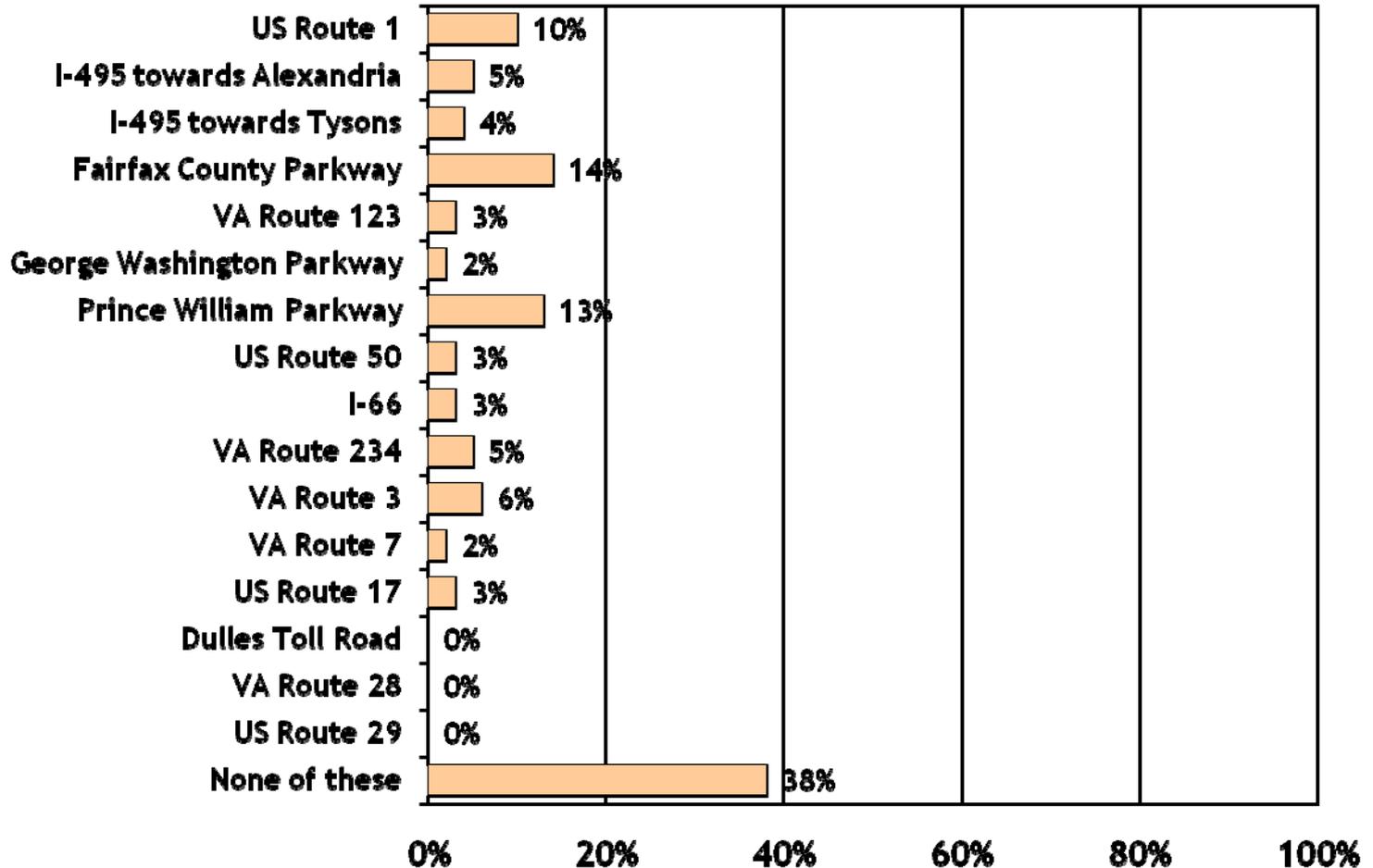
Nearly Half - 43% - of 2-Person Carpools Do Not Travel Any of the Other Roadways Listed



Question asked of all respondents. Only carpools of 2 persons are reported in graph.

Q10. In addition to I-95/I-395, what other major highways, if any, do you typically travel on your regular morning commute?

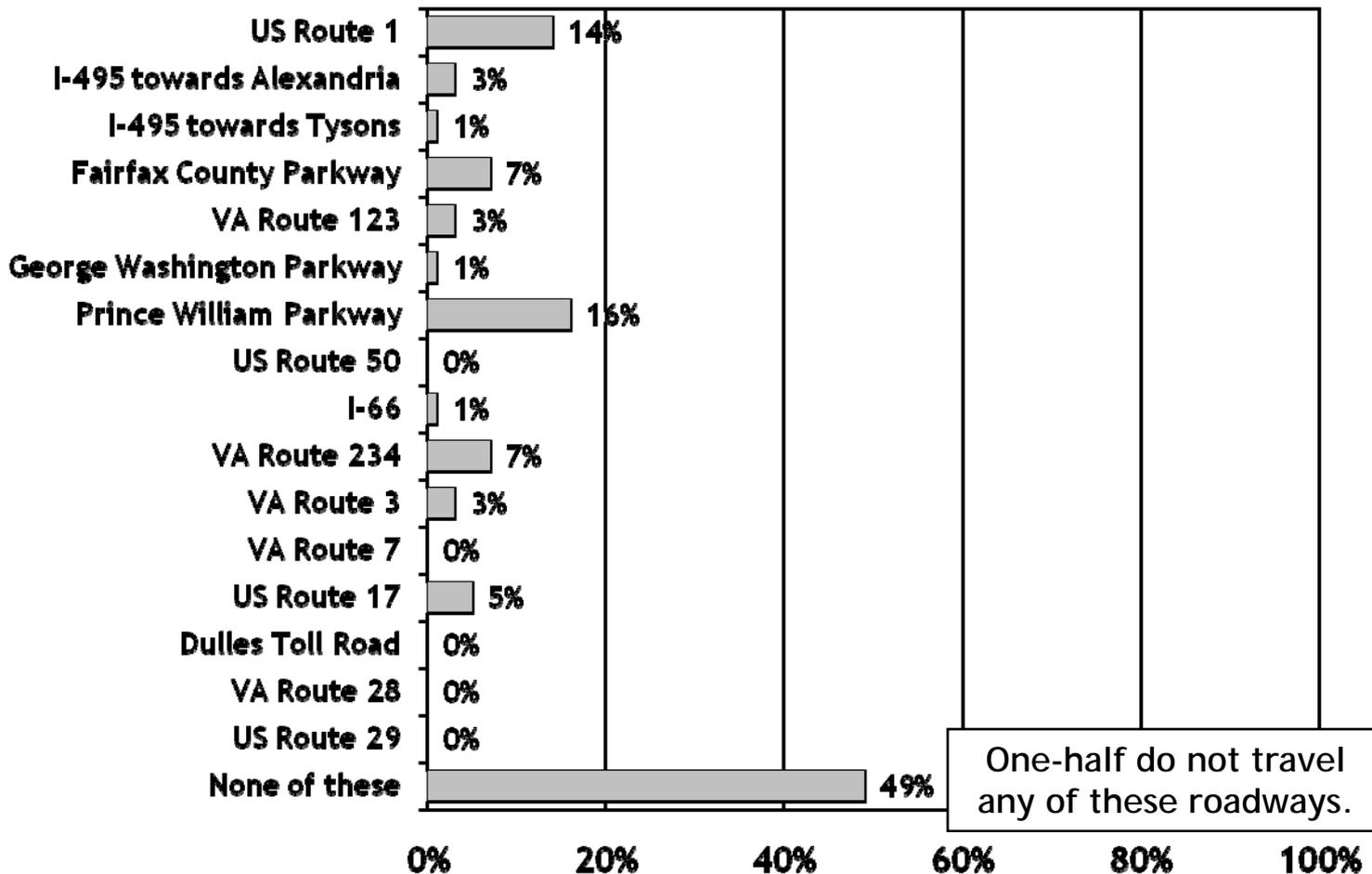
In Addition to I-95/I-395, Carpoolers in Carpools of 3 or More Are Most Likely to Travel on Fairfax County Parkway, US Route 1, and Prince William Parkway



Question asked of all respondents. Only carpools of 3 or more persons reported in graph.

Q10. In addition to I-95/I-395, what other major highways, if any, do you typically travel on your regular morning commute?

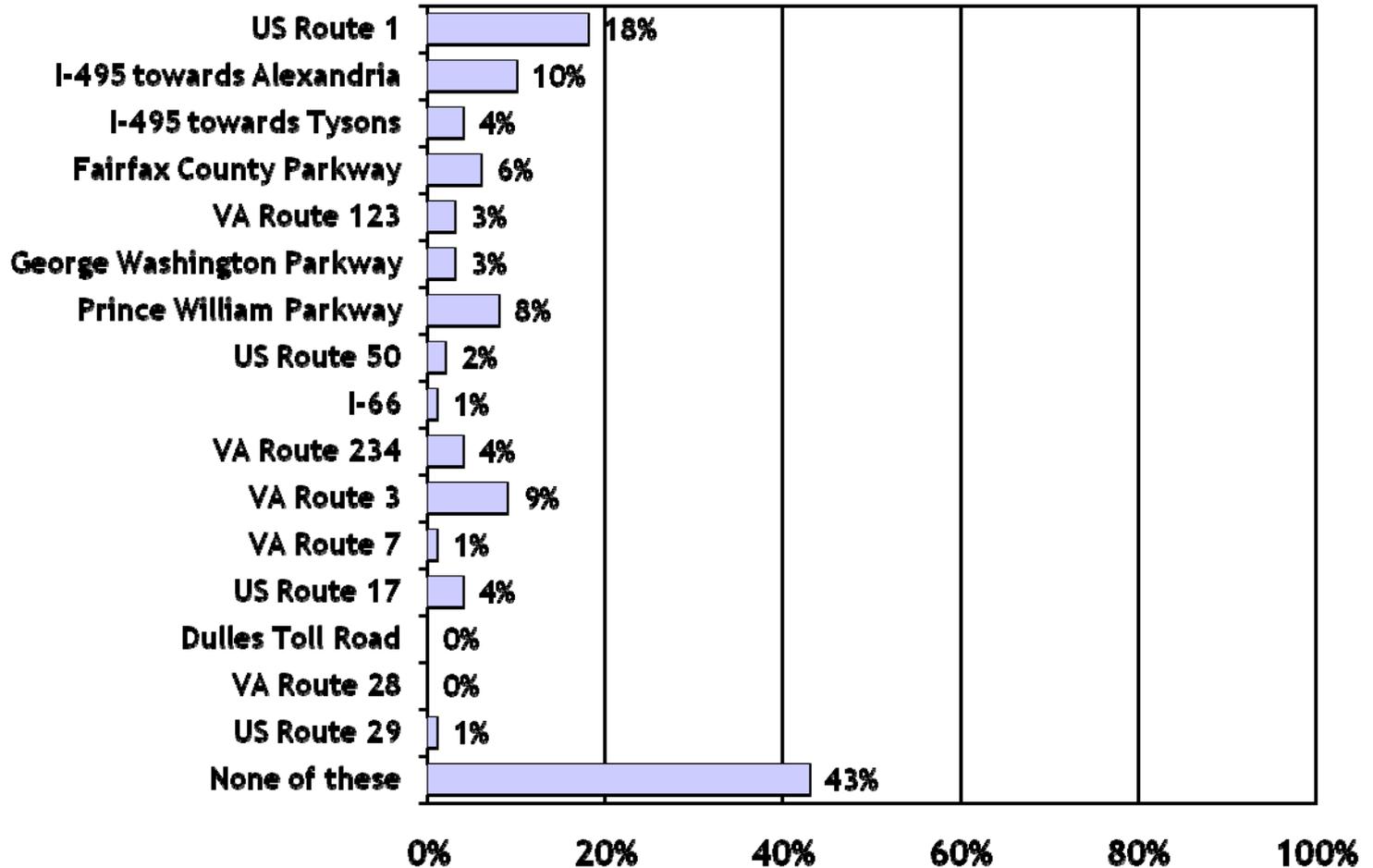
In Addition to I-95/I-395, Sluggers Are Most Likely to Travel on the Prince William Parkway and US Route 1



Question asked of all respondents. Only sluggers reported in graph.

Q10. In addition to I-95/I-395, what other major highways, if any, do you typically travel on your regular morning commute?

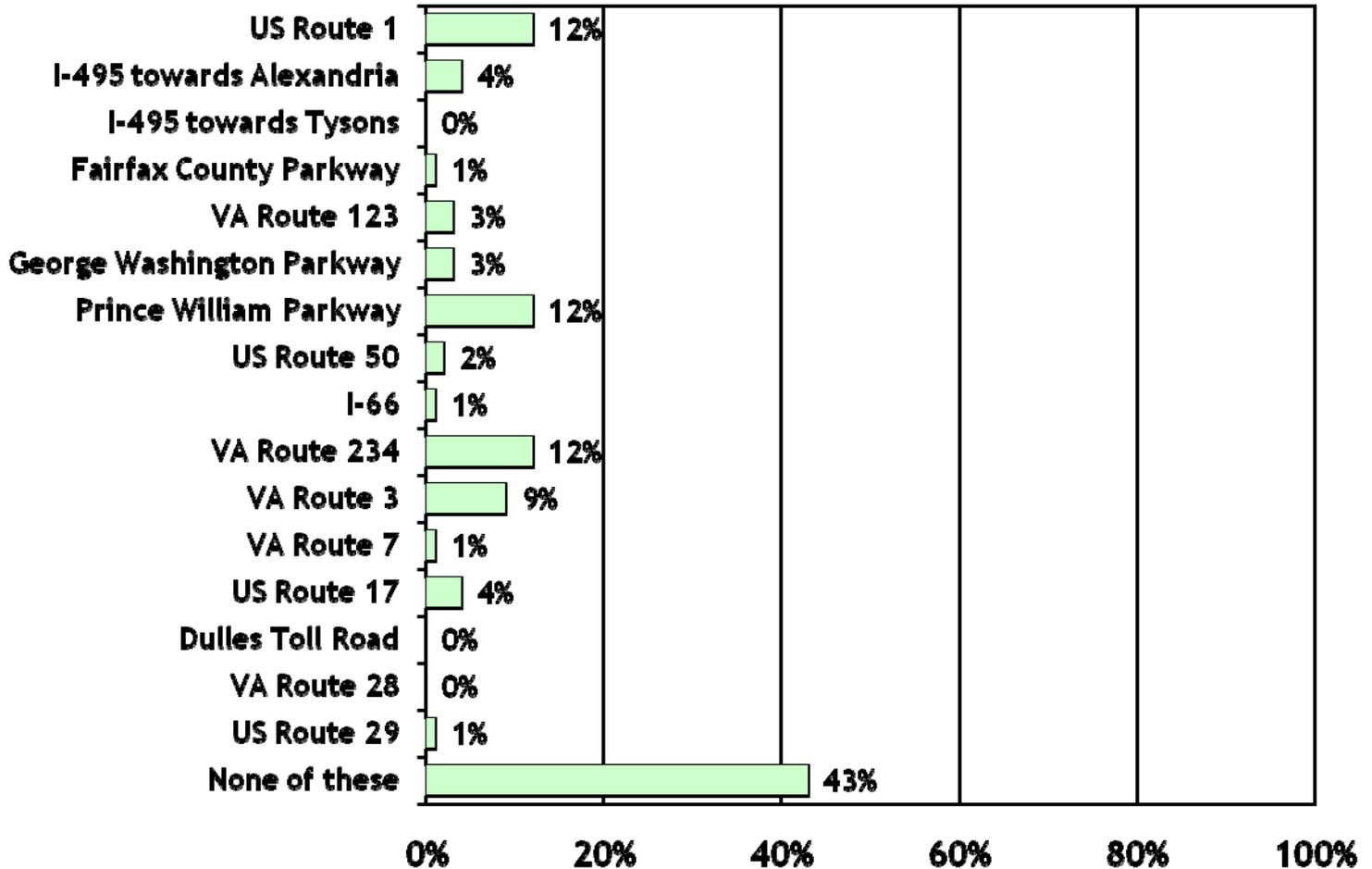
In Addition to I-95/I-395, Vanpoolers Most Often Travel US Route 1



Question asked of all respondents. Only vanpoolers reported in graph.

Q10. In addition to I-95/I-395, what other major highways, if any, do you typically travel on your regular morning commute?

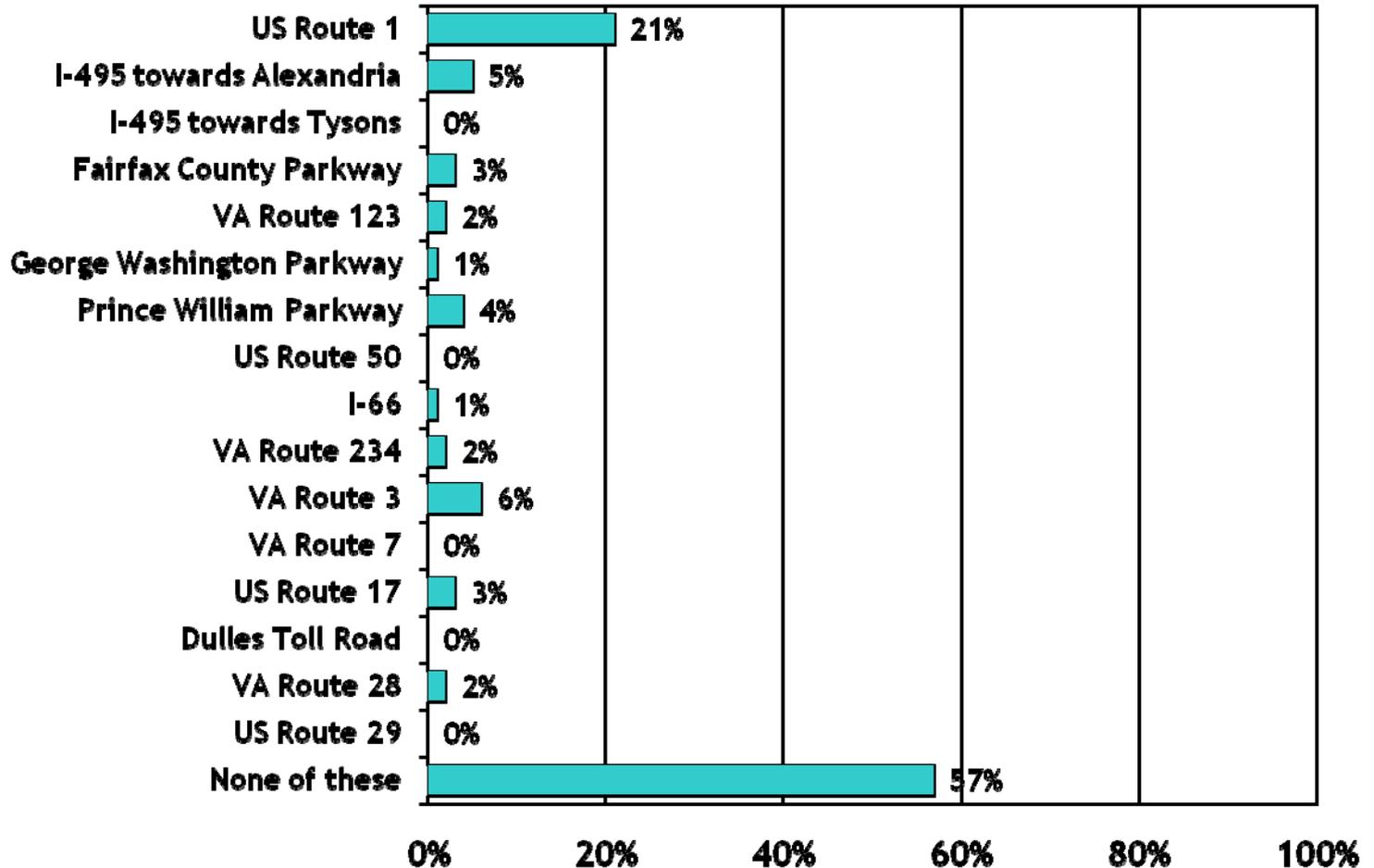
12% of Bus Riders on I-95/I-395 Also Commute on US Route 1, Prince William Parkway, and VA Route 234



Question asked of all respondents. Only bus riders reported in graph.

Q10. In addition to I-95/I-395, what other major highways, if any, do you typically travel on your regular morning commute?

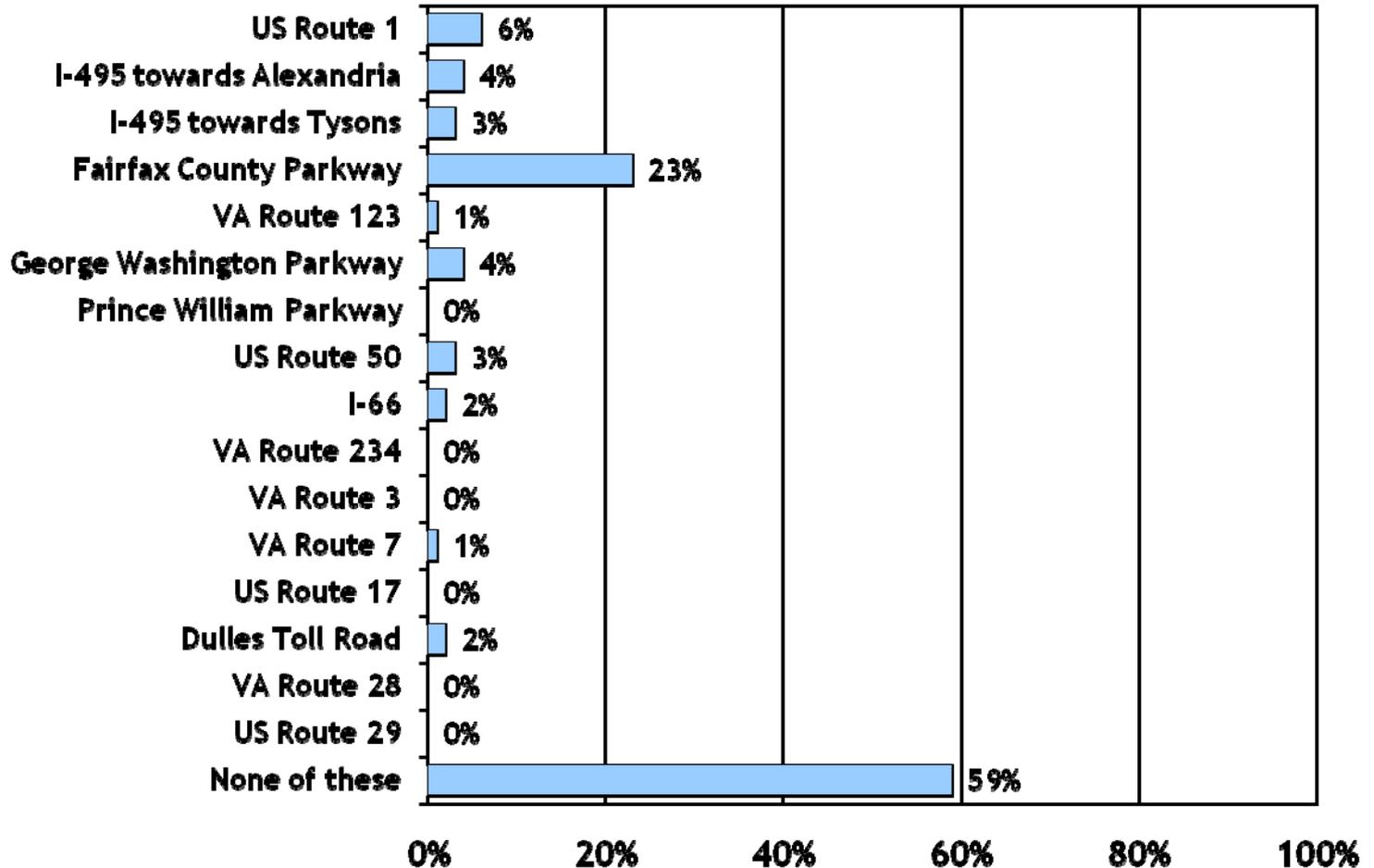
More than Half of VRE Riders Use None of the Other Routes Listed on Their Morning Commute



Question asked of all respondents. Only VRE riders reported in graph.

Q10. In addition to I-95/I-395, what other major highways, if any, do you typically travel on your regular morning commute?

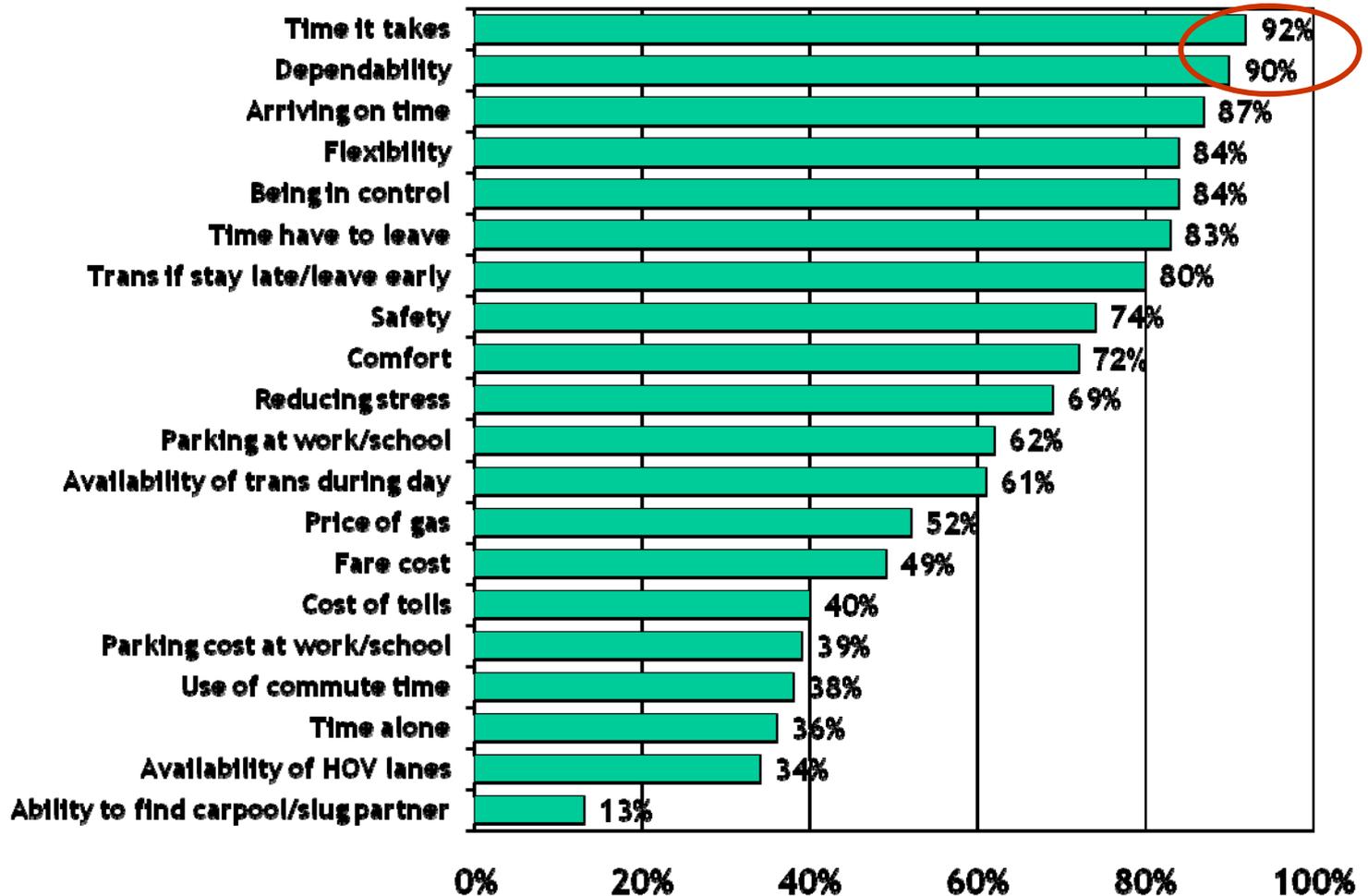
Nearly a Quarter of Metrorail Riders Travel on Fairfax County Parkway



Question asked of all respondents. Only Metrorail riders reported in graph.

Q10. In addition to I-95/I-395, what other major highways, if any, do you typically travel on your regular morning commute?

The Time They Have to Leave in the Morning and the Time Required for Their Commute Are Especially Important to SOVers in Deciding How to Commute

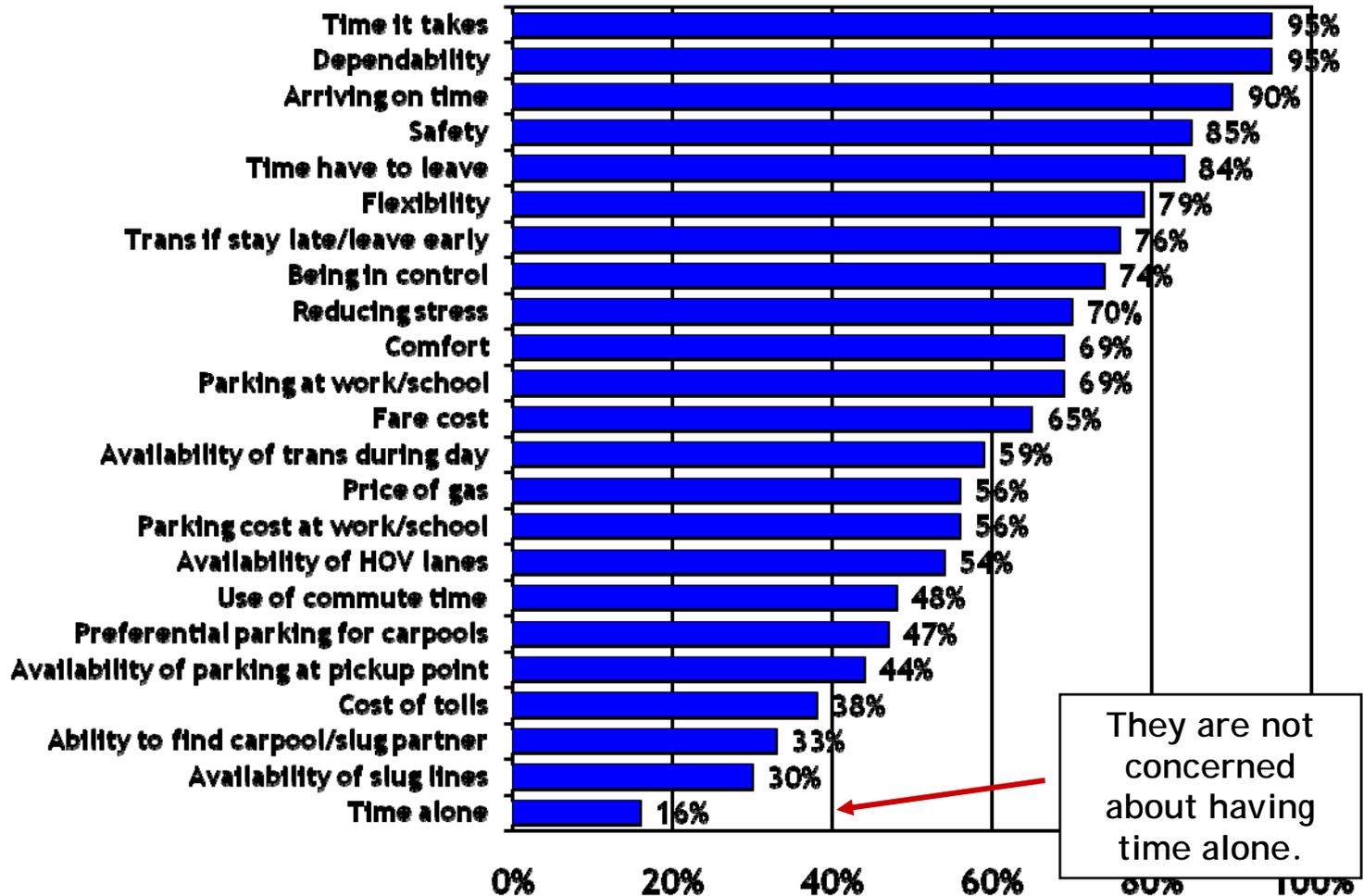


Proportions represent SOVers. Values reported are total scores "4" and "5" where "5" means that the attribute is "very important."

Q23. Next, think about what factors are important to you when deciding how you will commute. How important to you are the following factors in choosing how you commute on your morning commute trip?

Proportions represent 2-person carpools. Values reported are total scores "4" and "5" where "5" means that the attribute is "very important."

The Time It Takes to Get to Their Destination, Dependability, and Arriving on Time Are Most Important to Commuters Who Travel in a Carpool with One Other Person



They are not concerned about having time alone.

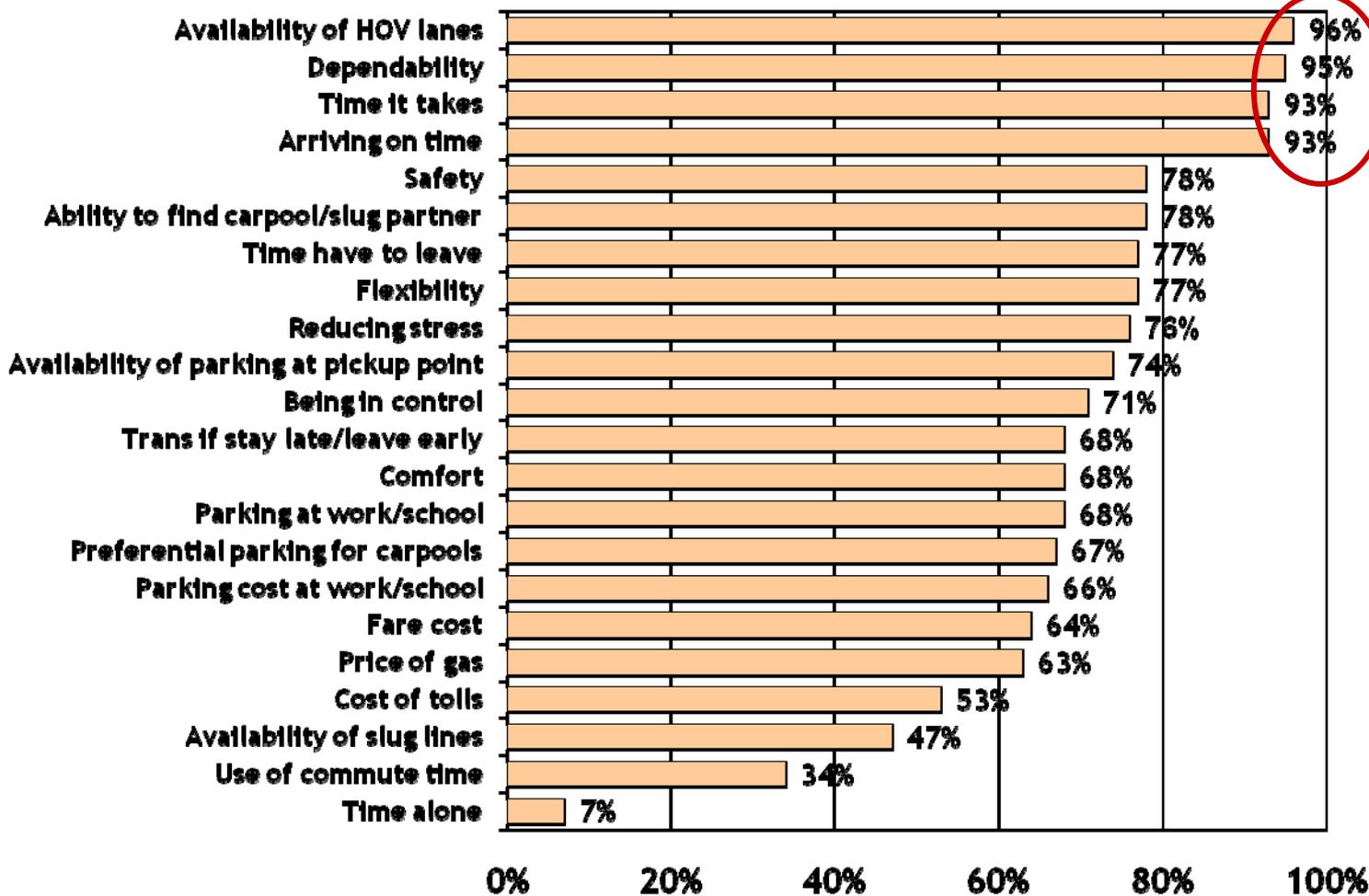
Q23. Next, think about what factors are important to you when deciding how you will commute. How important to you are the following factors in choosing how you commute on your morning commute trip?

The HOV Lanes, Dependability, the Time It Takes, and Arriving on Time Are Most Important to Commuters in Carpools of 3 or More Persons

Proportions represent carpools of 3 or more.

Values reported are total scores "4" and "5" where "5" means that the attribute is "very important."

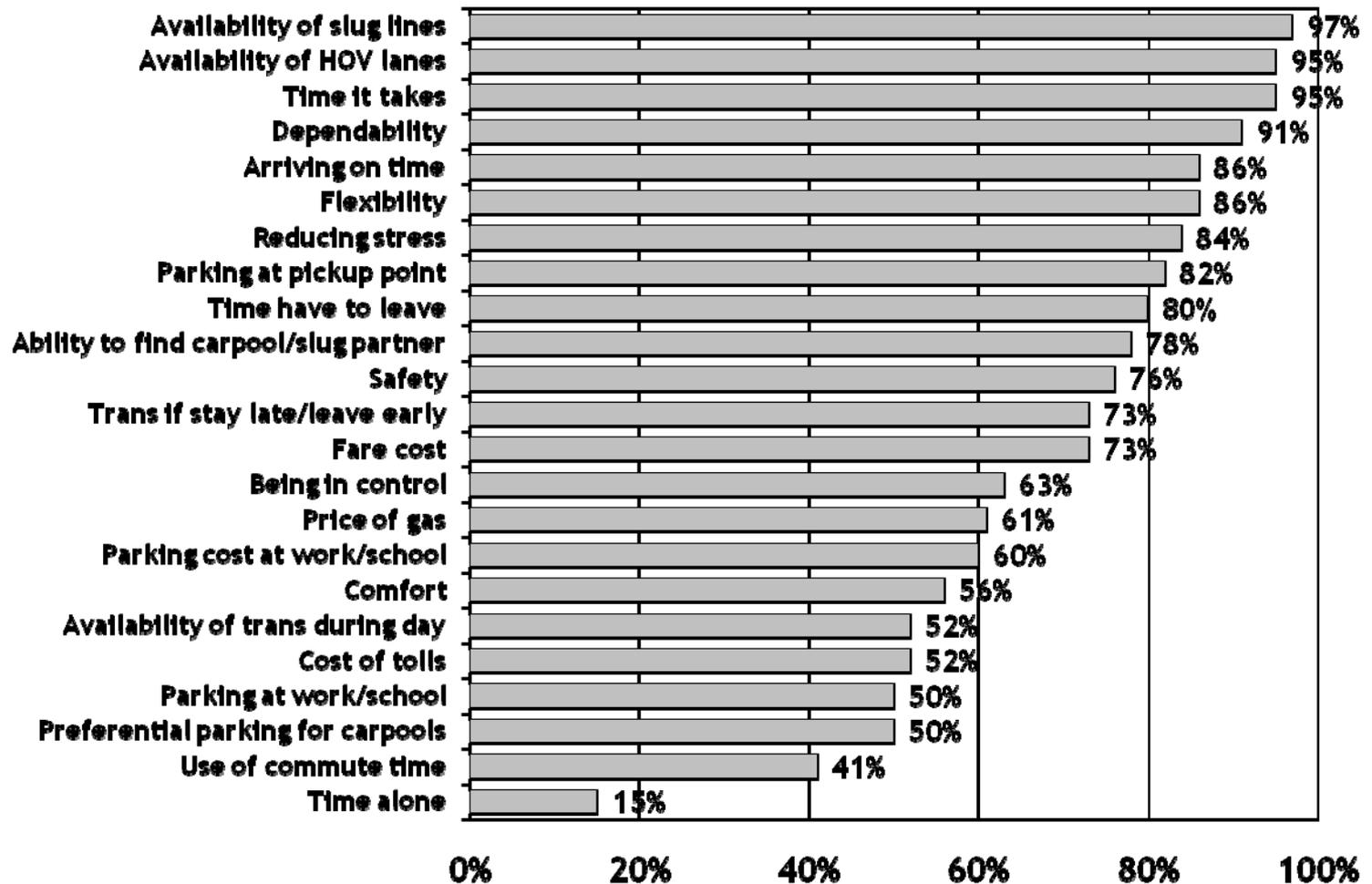
Q23. Next, think about what factors are important to you when deciding how you will commute. How important to you are the following factors in choosing how you commute on your morning commute trip?



For Sluggers, A Slugging Support System Is Important: Availability of Slug Lines and HOV Lanes; They Also Consider the Time Required for Their Commute and Dependability

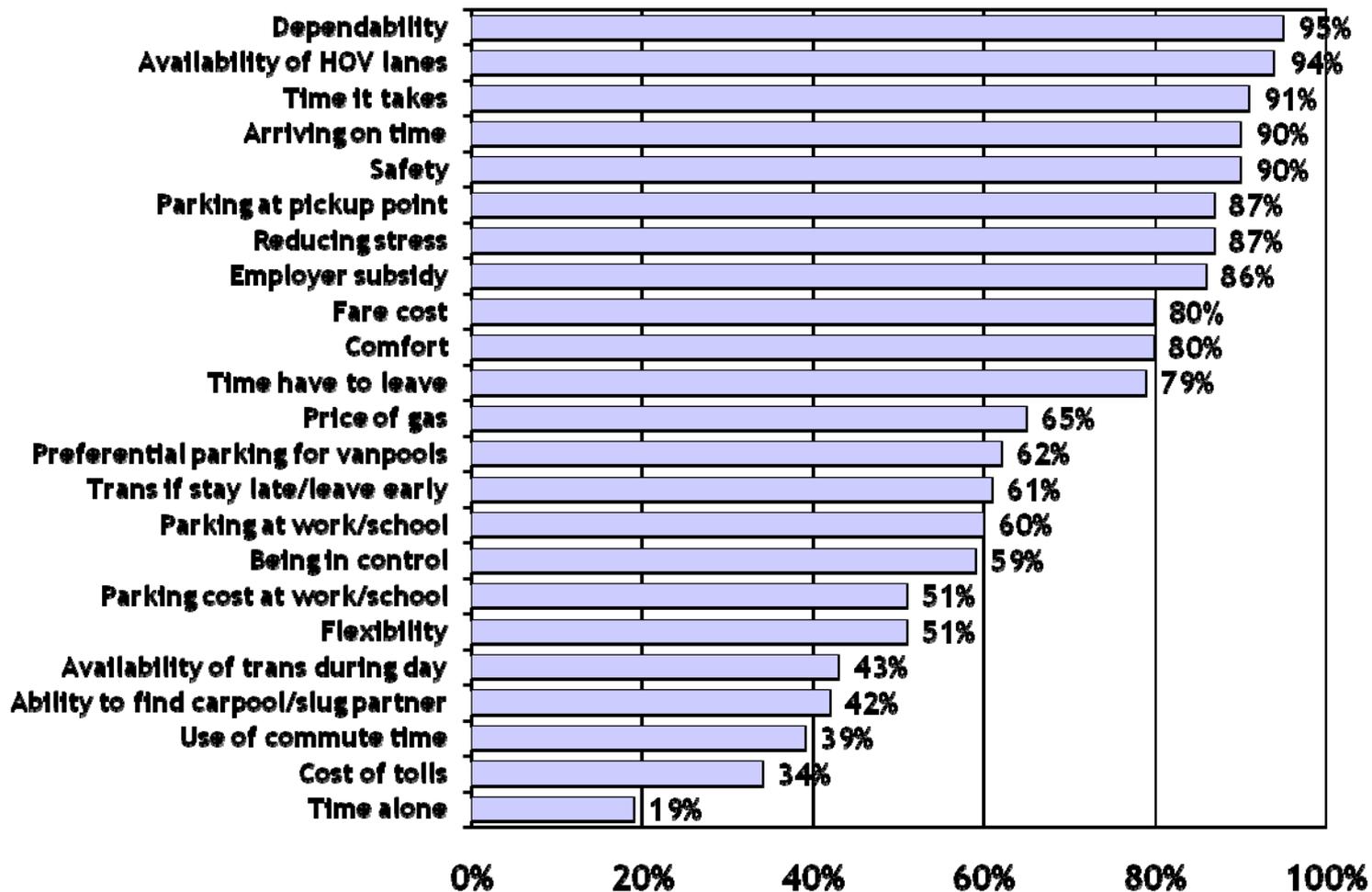
Proportions represent sluggers. Values reported are total scores "4" and "5" where "5" means that the attribute is "very important."

Q23. Next, think about what factors are important to you when deciding how you will commute. How important to you are the following factors in choosing how you commute on your morning commute trip?



Dependability and the HOV Lanes Are Important to Vanpoolers – and Help them Meet Other Criteria that Are Important to Them: Time It Takes, Arriving on Time and Safety

Proportions represent vanpoolers. Values reported are total scores “4” and “5” where “5” means that the attribute is “very important.”

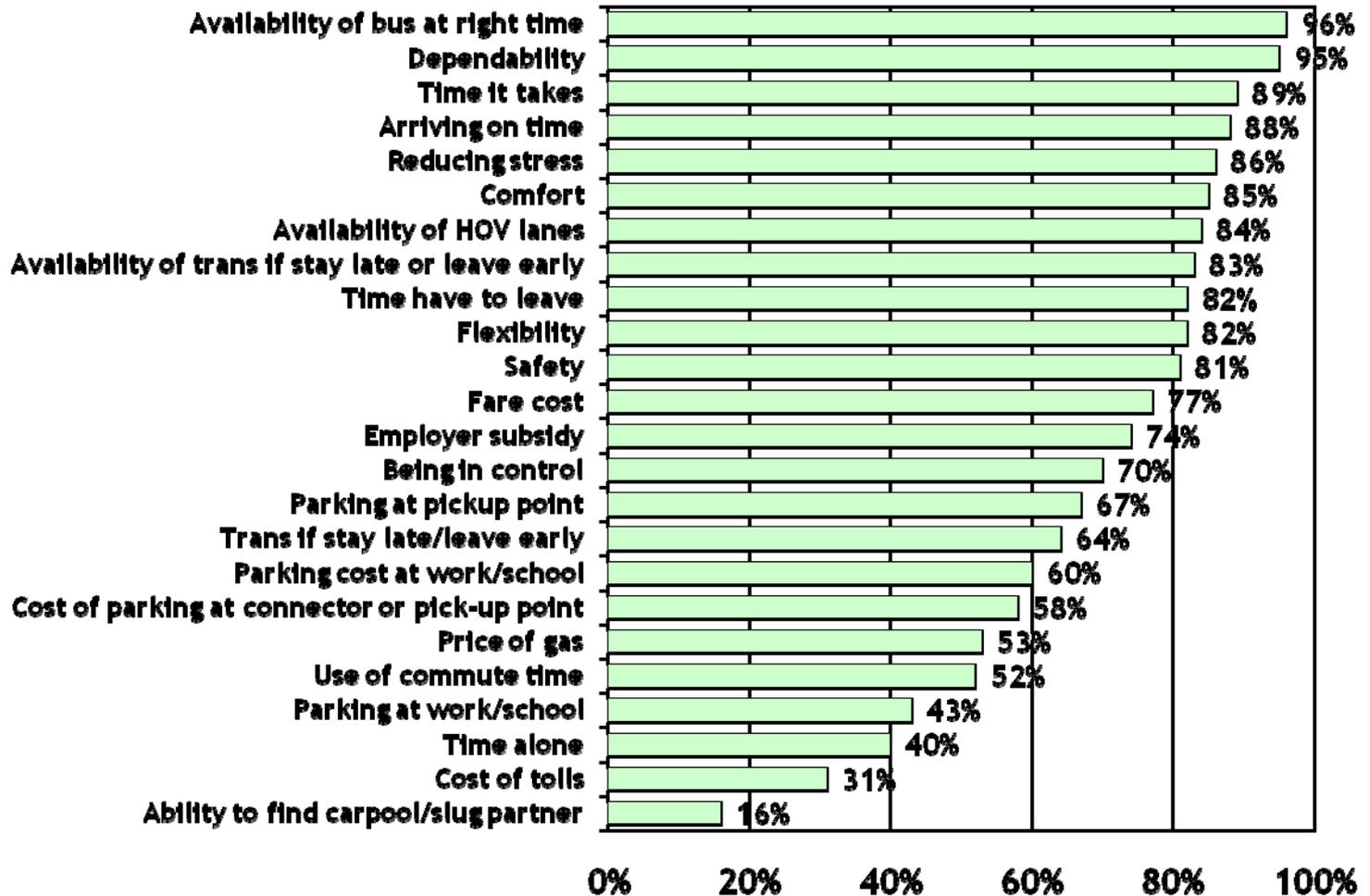


Q23. Next, think about what factors are important to you when deciding how you will commute. How important to you are the following factors in choosing how you commute on your morning commute trip?

The Decision to Ride the Bus Revolves Around the Bus Schedule (It Comes at the "Right" Time) and Dependability

Proportions represent bus riders.

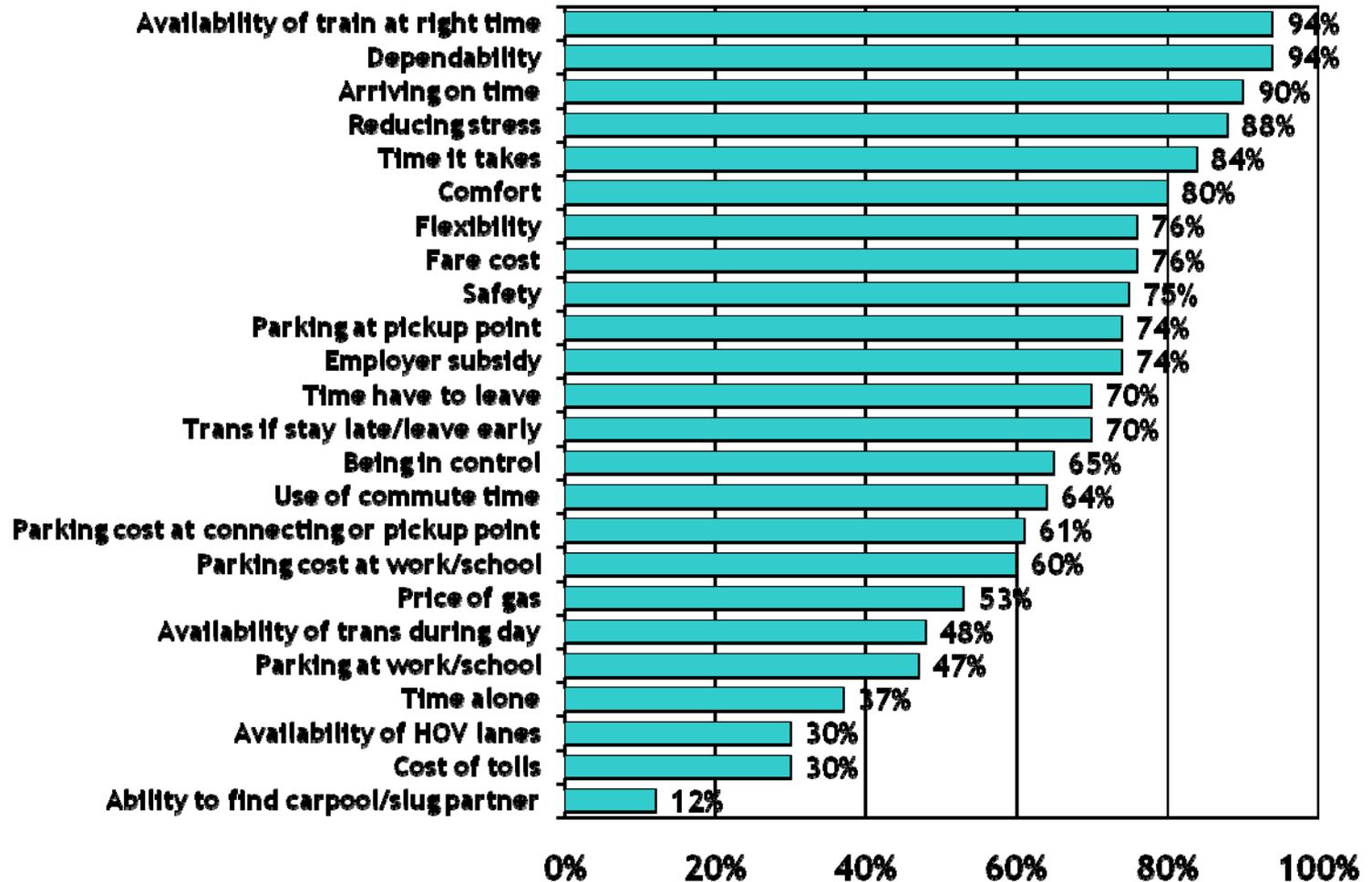
Values reported are total scores "4" and "5" where "5" means that the attribute is "very important."



Q23. Next, think about what factors are important to you when deciding how you will commute. How important to you are the following factors in choosing how you commute on your morning commute trip?

VRE Riders Place Most Importance on the Train Coming at the Right Time for Their Schedule and Dependability

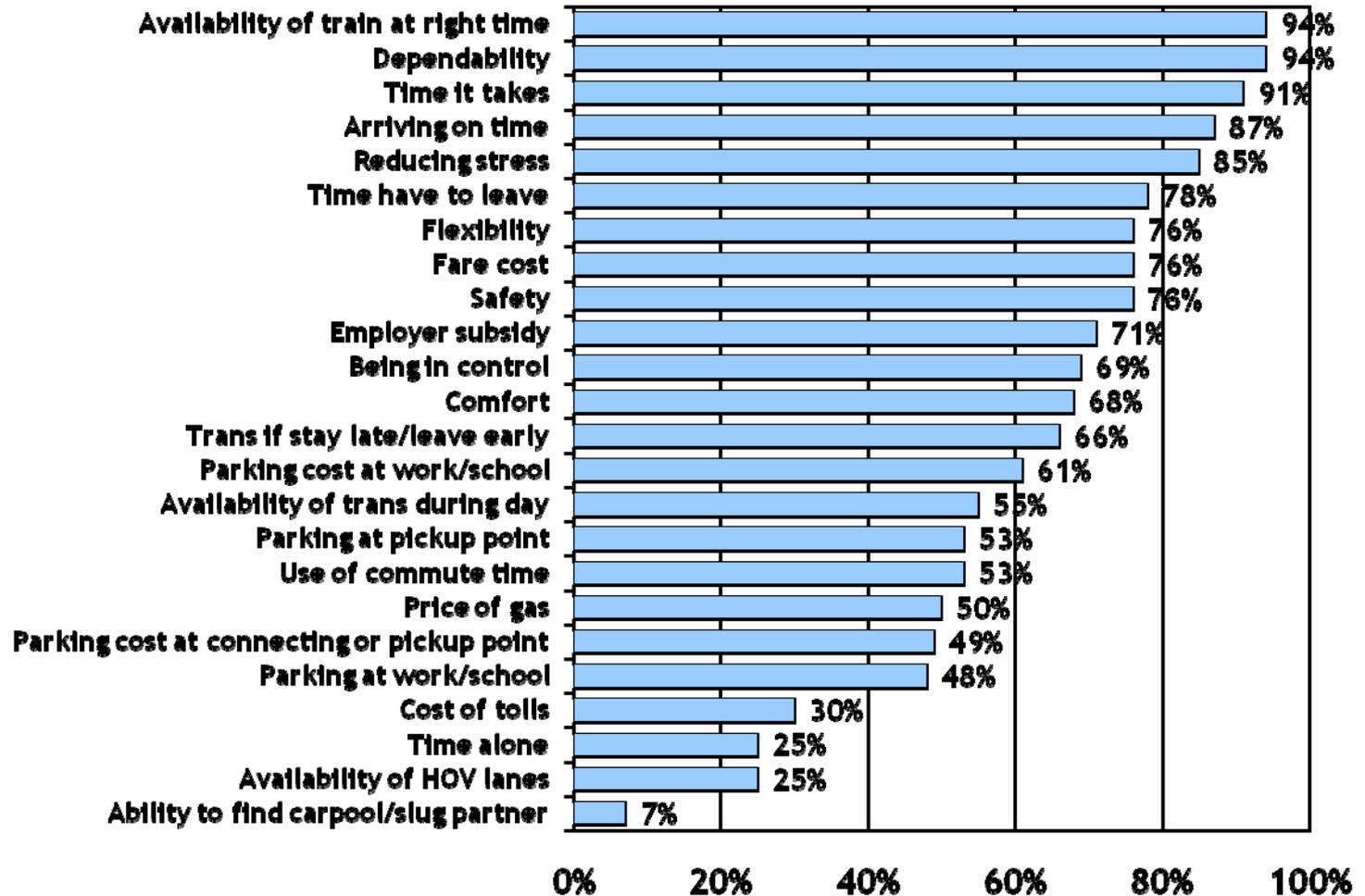
Proportions represent VRE riders. Values reported are total scores "4" and "5" where "5" means that the attribute is "very important."



Q23. Next, think about what factors are important to you when deciding how you will commute. How important to you are the following factors in choosing how you commute on your morning commute trip?

Availability of the Train at the Right Time and Dependability Are Also Important to Metrorail Riders

Proportions represent Metrorail riders. Values reported are total scores "4" and "5" where "5" means that the attribute is "very important."

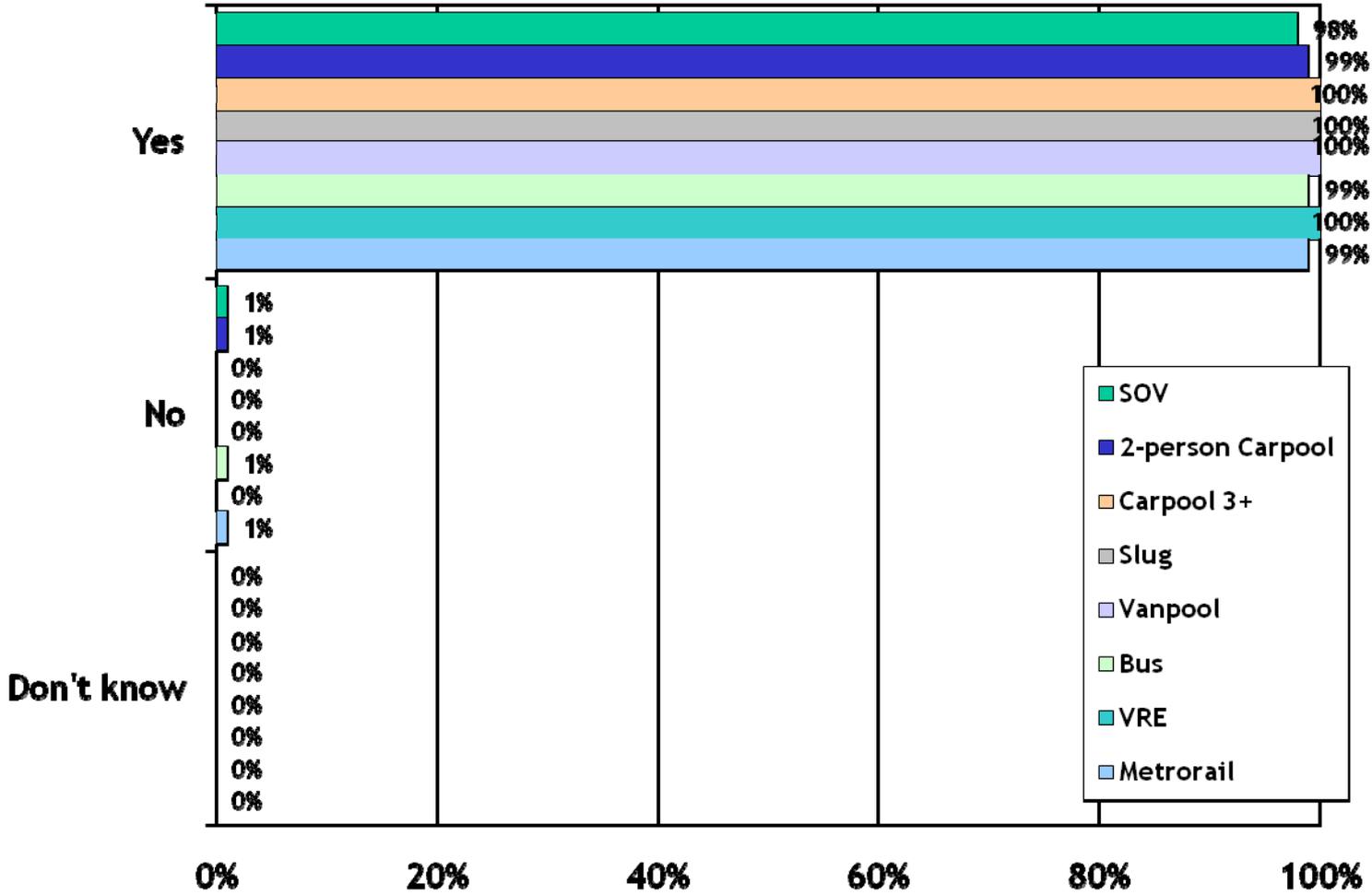


Q23. Next, think about what factors are important to you when deciding how you will commute. How important to you are the following factors in choosing how you commute on your morning commute trip?

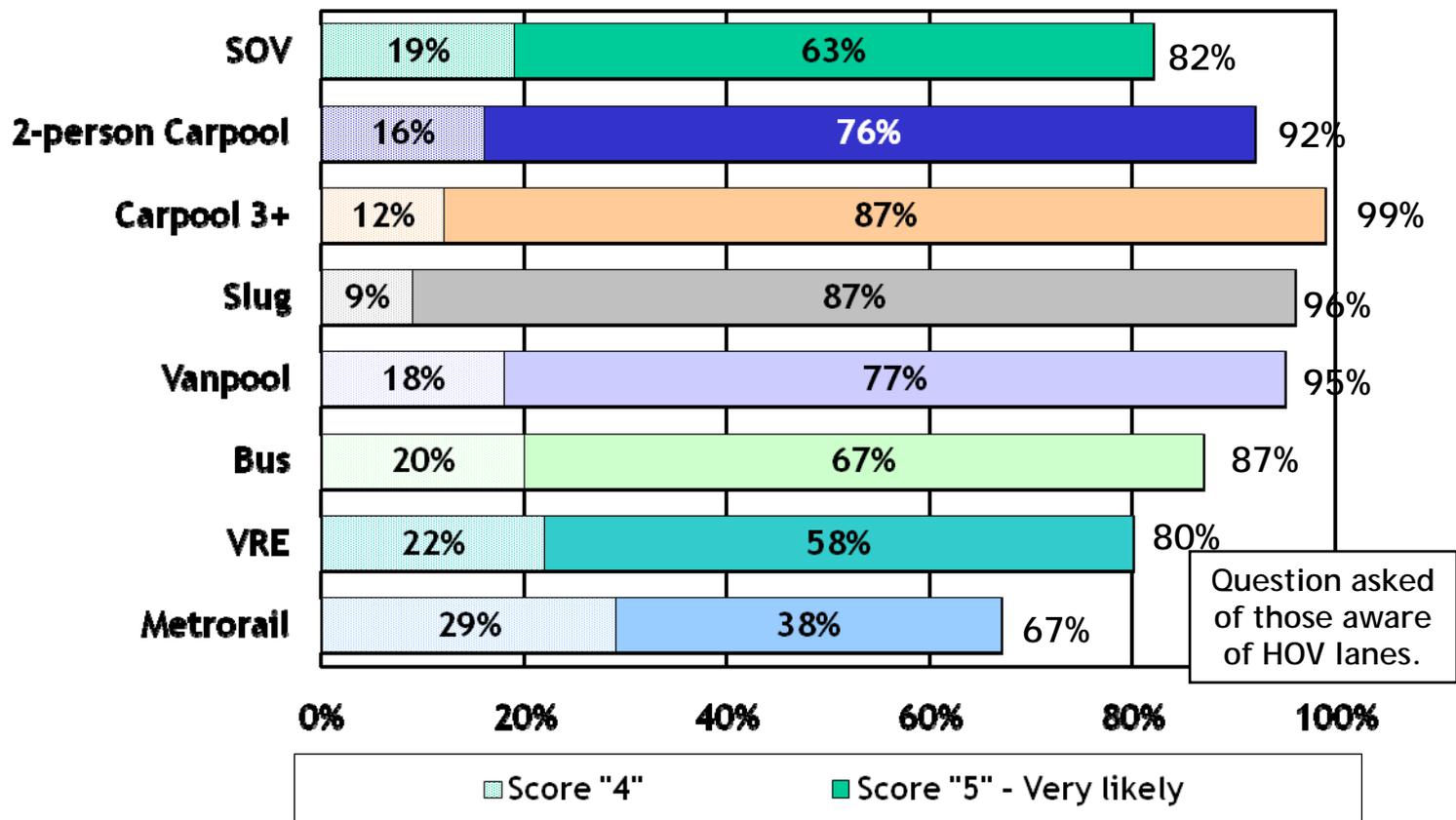
Awareness of the HOV Lanes on I-95/I-395 Is Universal

Question asked of all respondents.

Q28. Prior to this survey, were you aware of the HOV lanes?



Metrorail Riders Are Least Likely to Be Familiar with the HOV Lanes - Carpoolers, Sluggers and Vanpoolers Are Most Likely to Be Familiar



Q29. How familiar are you with the HOV lanes on I-95/I-395? By familiar we mean, do you know where the exits and entrances for the HOV lanes are? Do you know the basic hours of operation? How familiar would you say you are with the HOV lanes?

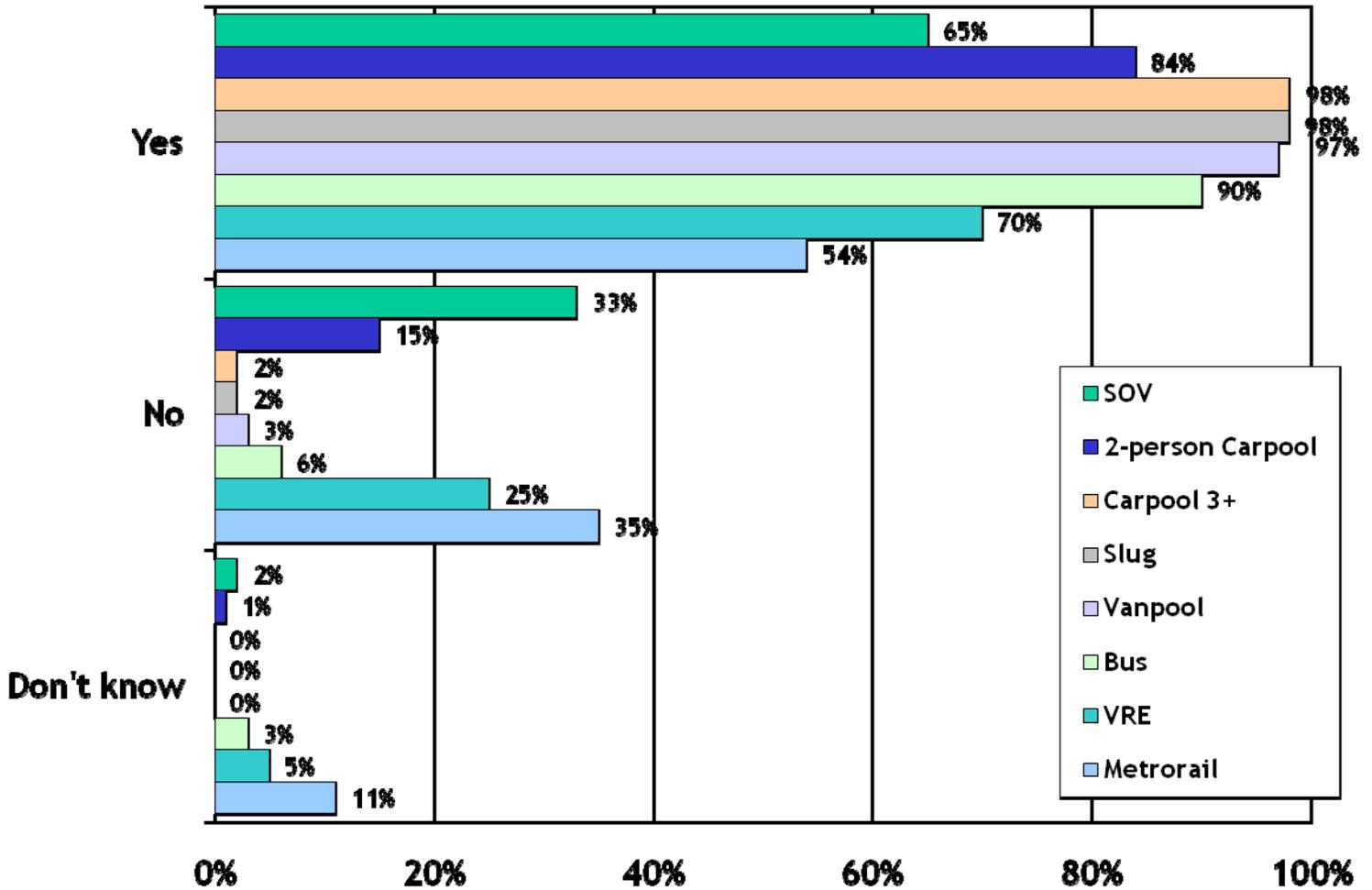
Note: When scores of "4" and "5" are reported on 1-5 scales, the patterned color always represents the proportion giving a score of "4", and the solid color always represents the proportion giving a score of "5".

SOV, n=802
 2-person carpool, n=125
 Carpool 3+, n=230
 Slug, n=605
 Vanpool, n=268
 Bus, n=387
 VRE, n=501
 Metrorail, n=183

SOV, n=802
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 Vanpool, n=268
 Bus, n=387
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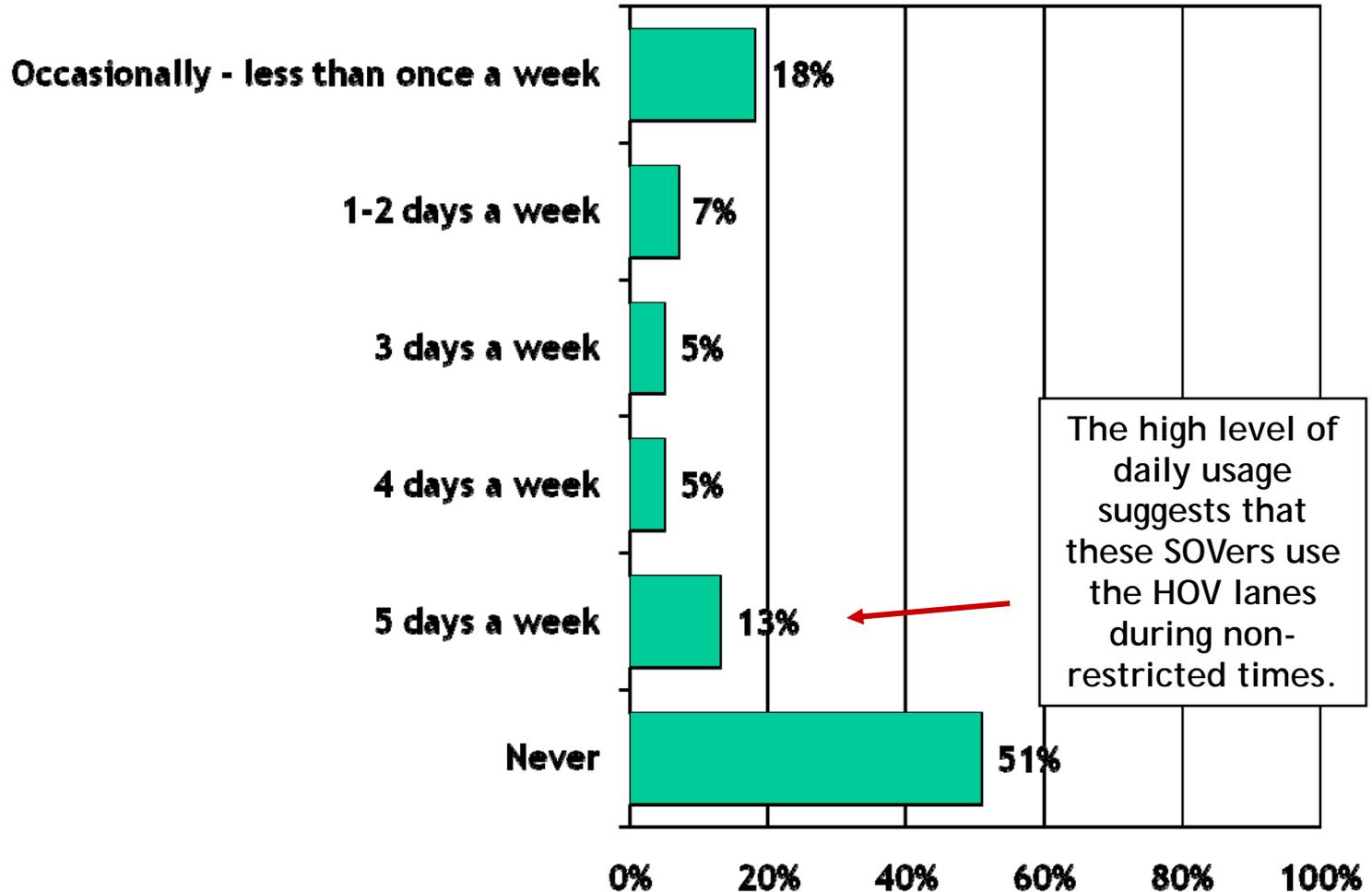
Those in a Carpool of 3 or More, Sluggers and Vanpool Riders Are Most Likely to Have a Convenient HOV Entrance - Train Riders Are Least Likely

Question asked of those aware of HOV lanes.



Q30. Is there an entrance to the HOV lanes that you currently use or could use on your morning commute?

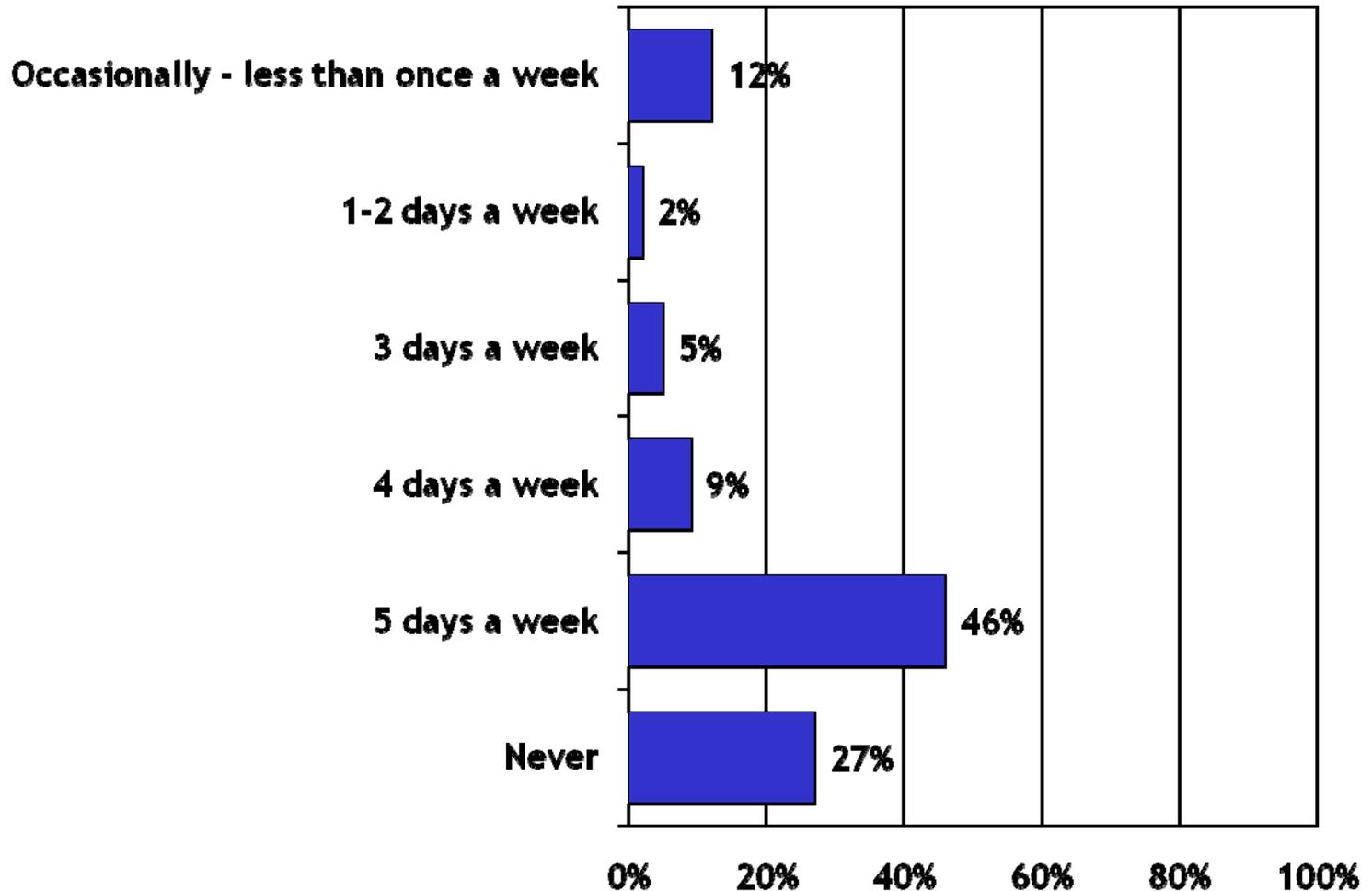
If SOVers Use the HOV Lanes, They Most Often Use the Lanes Occasionally or Everyday



Proportions represent HOV usage by SOVers.

Q31. How frequently during your weekday morning commute do you use the HOV lanes on I-95/I-395, either driving alone in your vehicle or traveling in a carpool, vanpool, or bus?

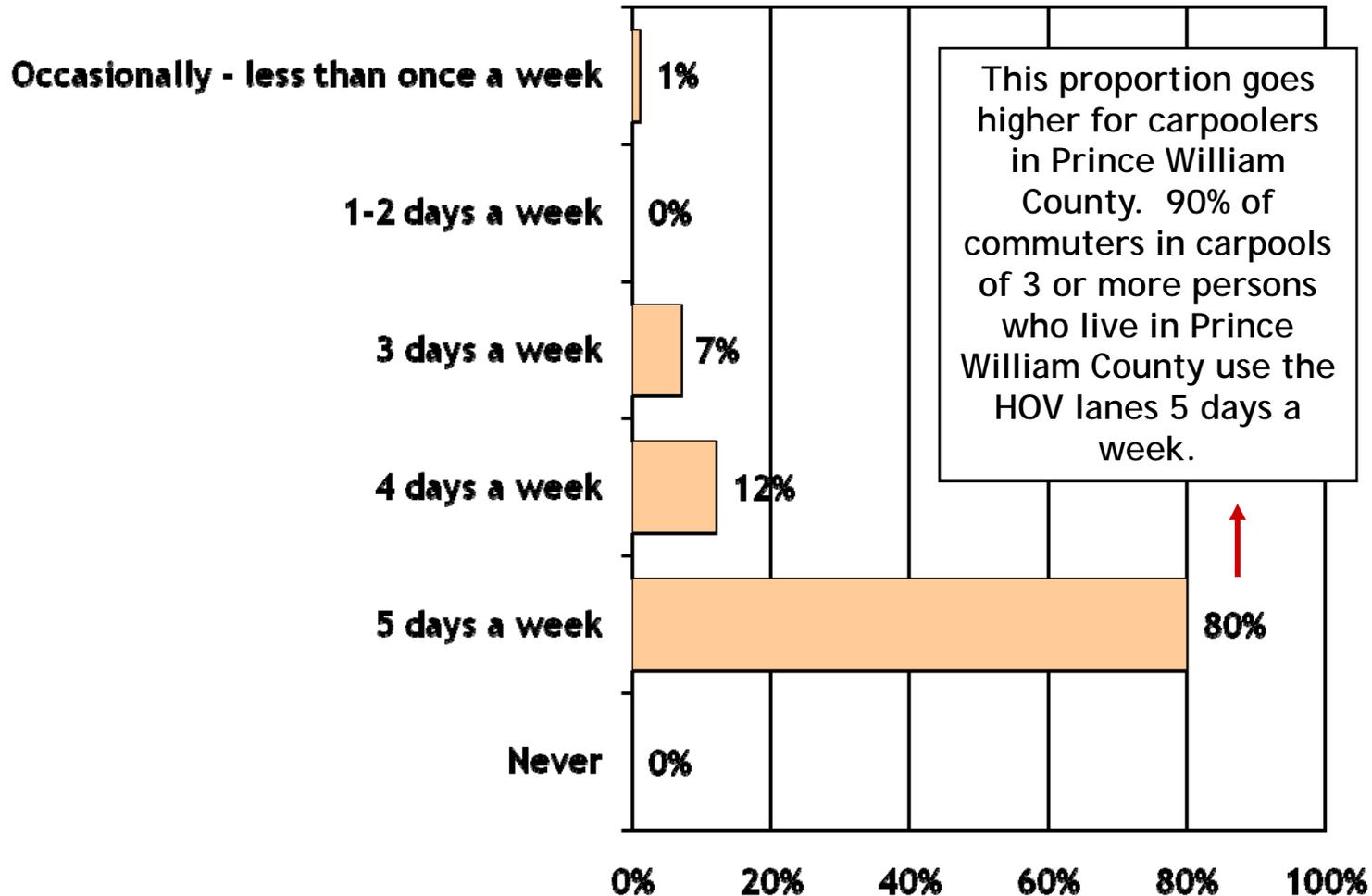
Nearly Half of Commuters in 2-Person Carpools Say that They Use the HOV Lanes 5 Days a Week



Proportions represent HOV usage by commuters in 2-person carpools.

Q31. How frequently during your weekday morning commute do you use the HOV lanes on I-95/I-395, either driving alone in your vehicle or traveling in a carpool, vanpool, or bus?

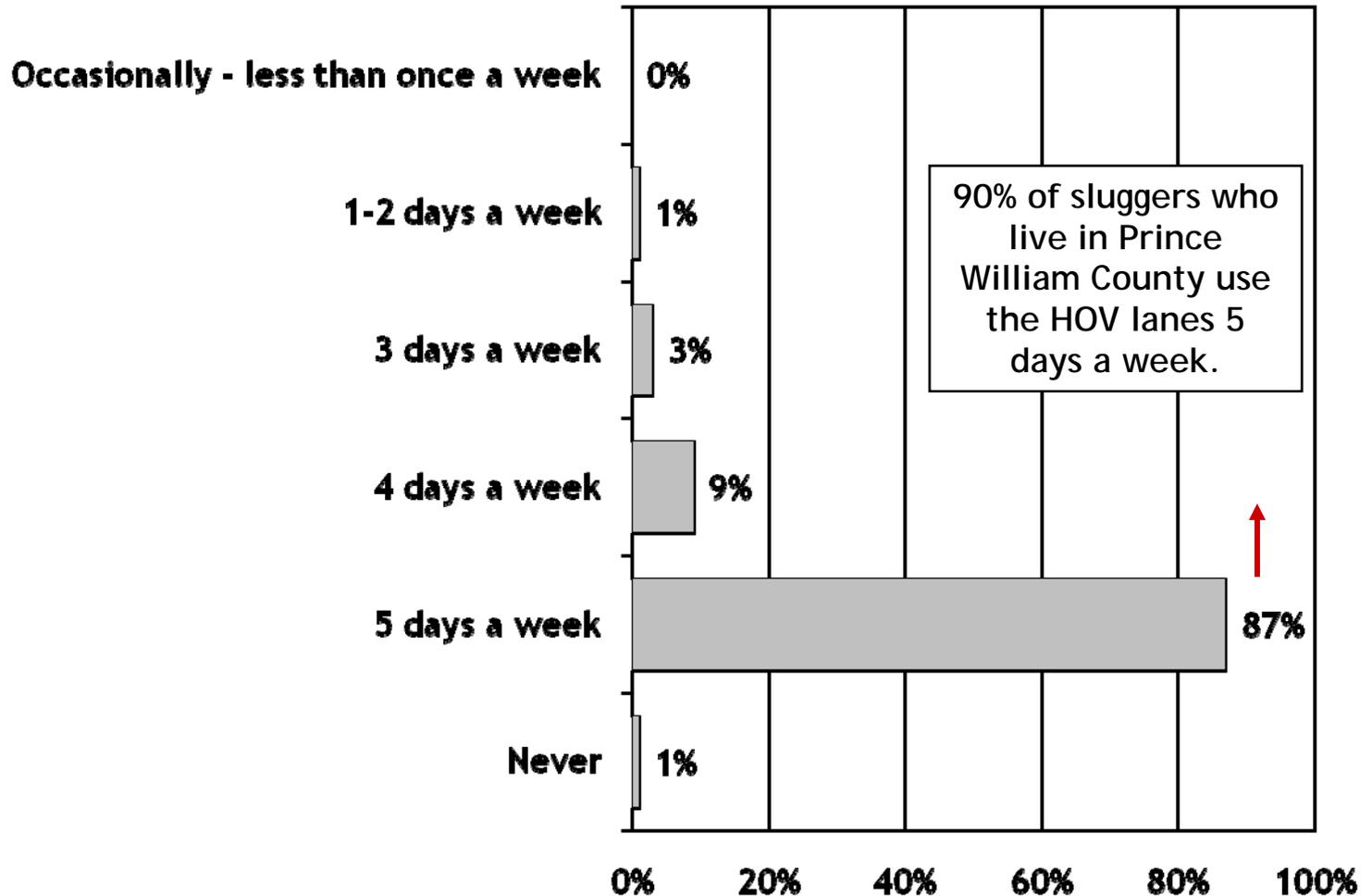
Most Commuters in Carpools of 3 or More Use the HOV Lanes 5 Days a Week



Proportions represent HOV usage by commuters in carpools of 3 or more persons.

Q31. How frequently during your weekday morning commute do you use the HOV lanes on I-95/I-395, either driving alone in your vehicle or traveling in a carpool, vanpool, or bus?

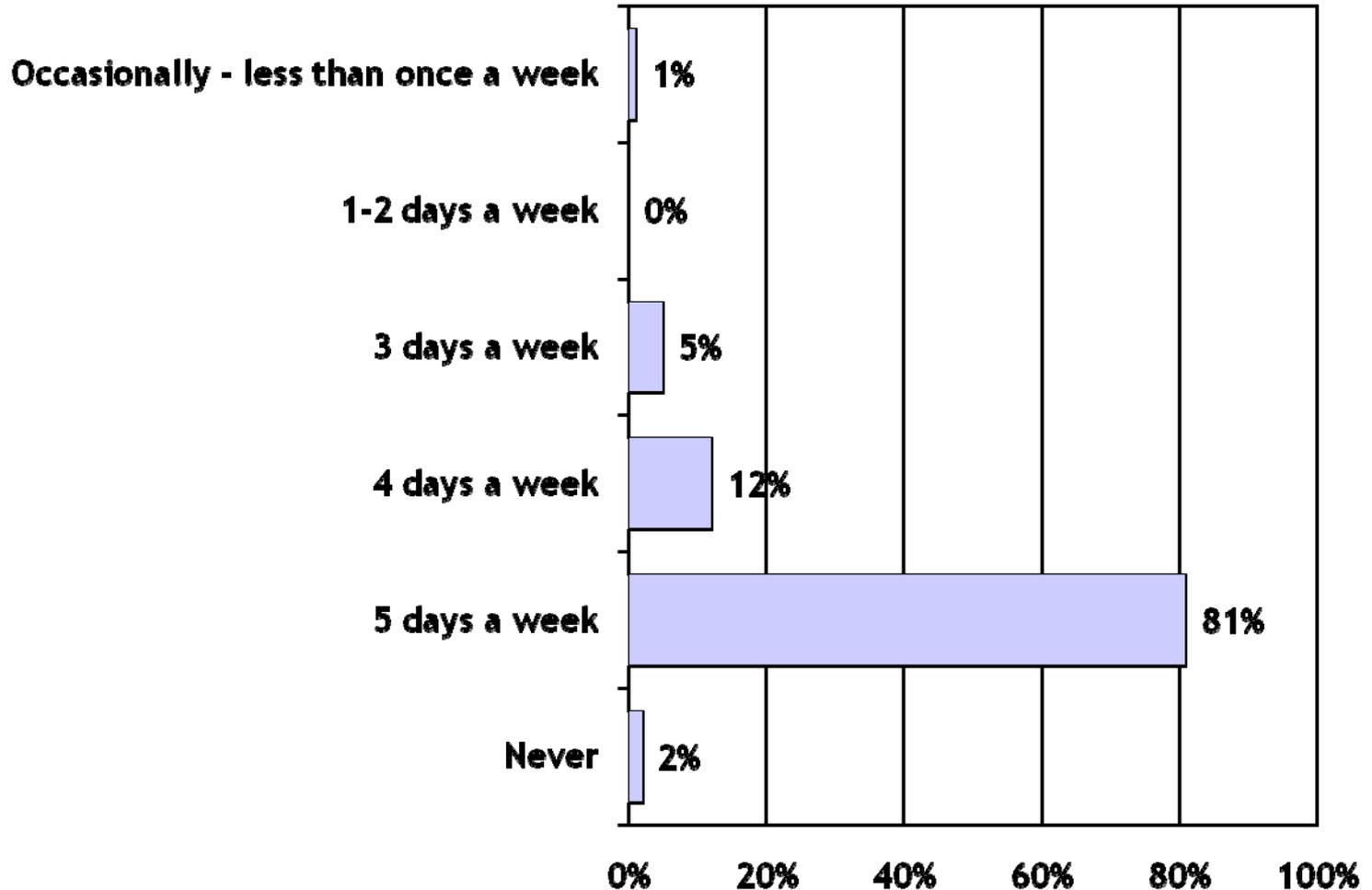
Nearly All Sluggers Use the HOV Lanes 5 Days a Week



Proportions represent HOV usage by sluggers.

Q31. How frequently during your weekday morning commute do you use the HOV lanes on I-95/I-395, either driving alone in your vehicle or traveling in a carpool, vanpool, or bus?

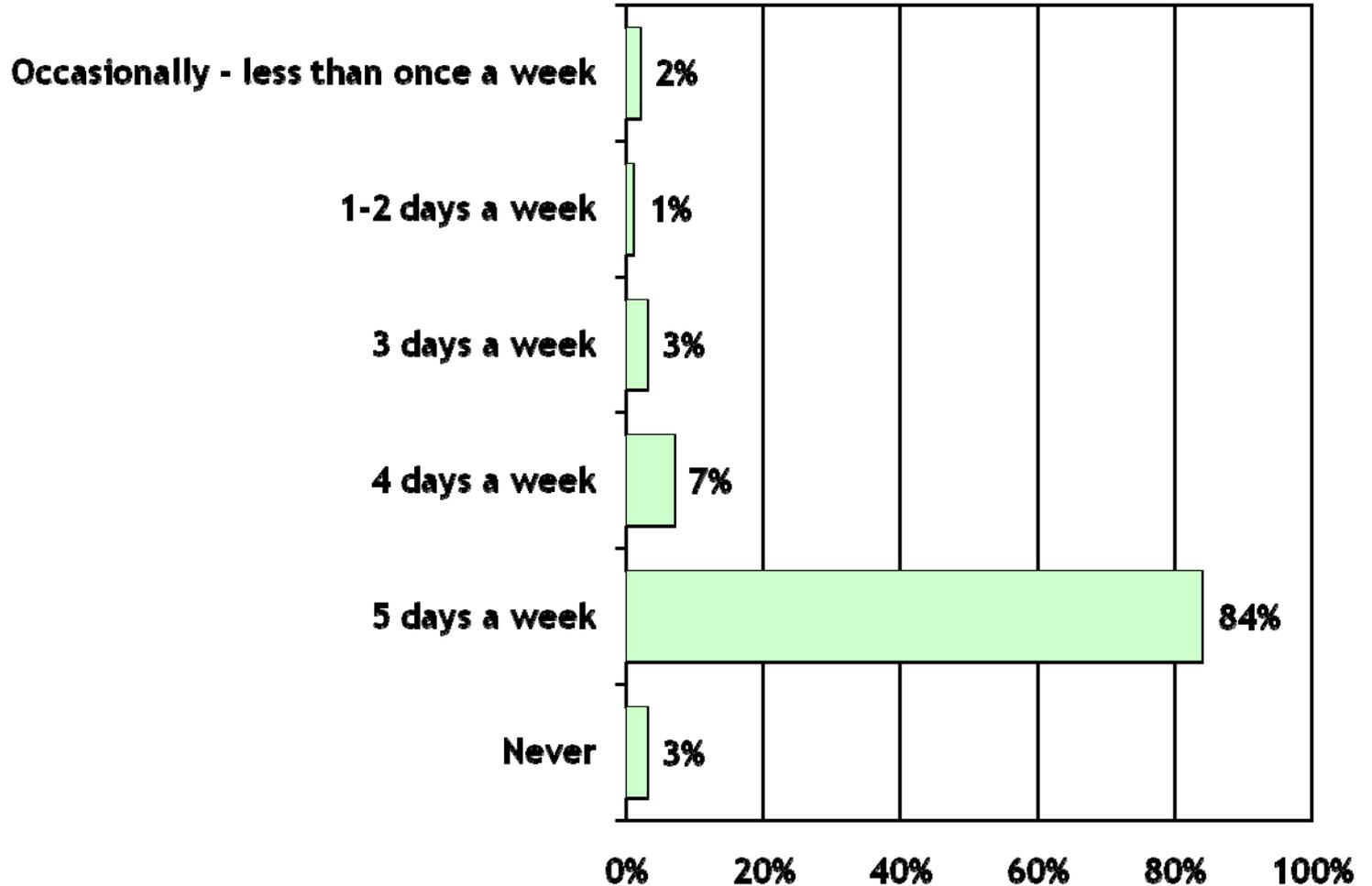
Eight Out of Ten Vanpoolers Use the HOV Lanes 5 Days a Week



Proportions
represent
HOV usage
by
vanpoolers.

Q31. How frequently during your weekday morning commute do you use the HOV lanes on I-95/I-395, either driving alone in your vehicle or traveling in a carpool, vanpool, or bus?

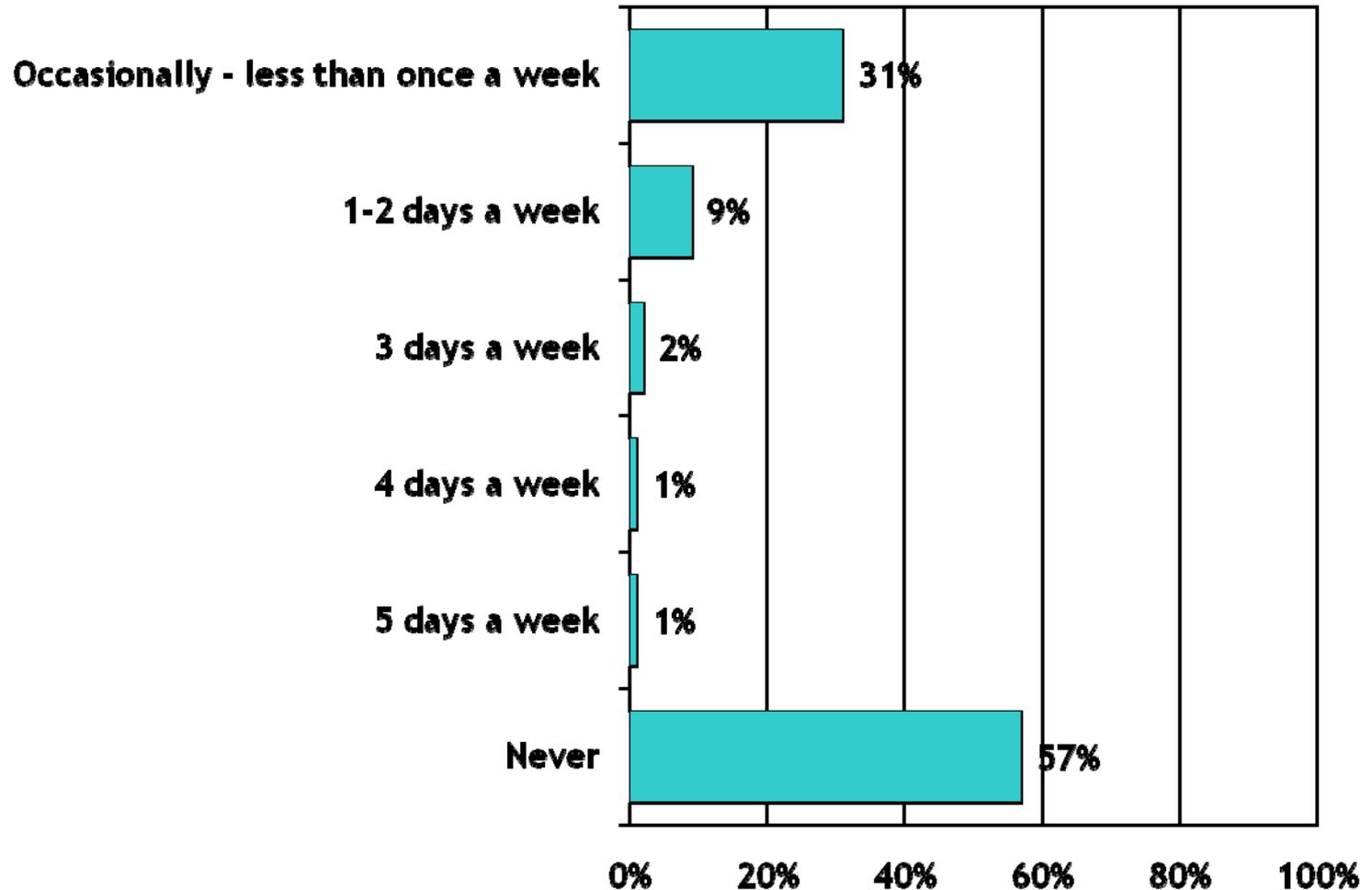
84% of Bus Riders Use the HOV Lanes 5 Days a Week



Proportions represent HOV usage by bus riders.

Q31. How frequently during your weekday morning commute do you use the HOV lanes on I-95/I-395, either driving alone in your vehicle or traveling in a carpool, vanpool, or bus?

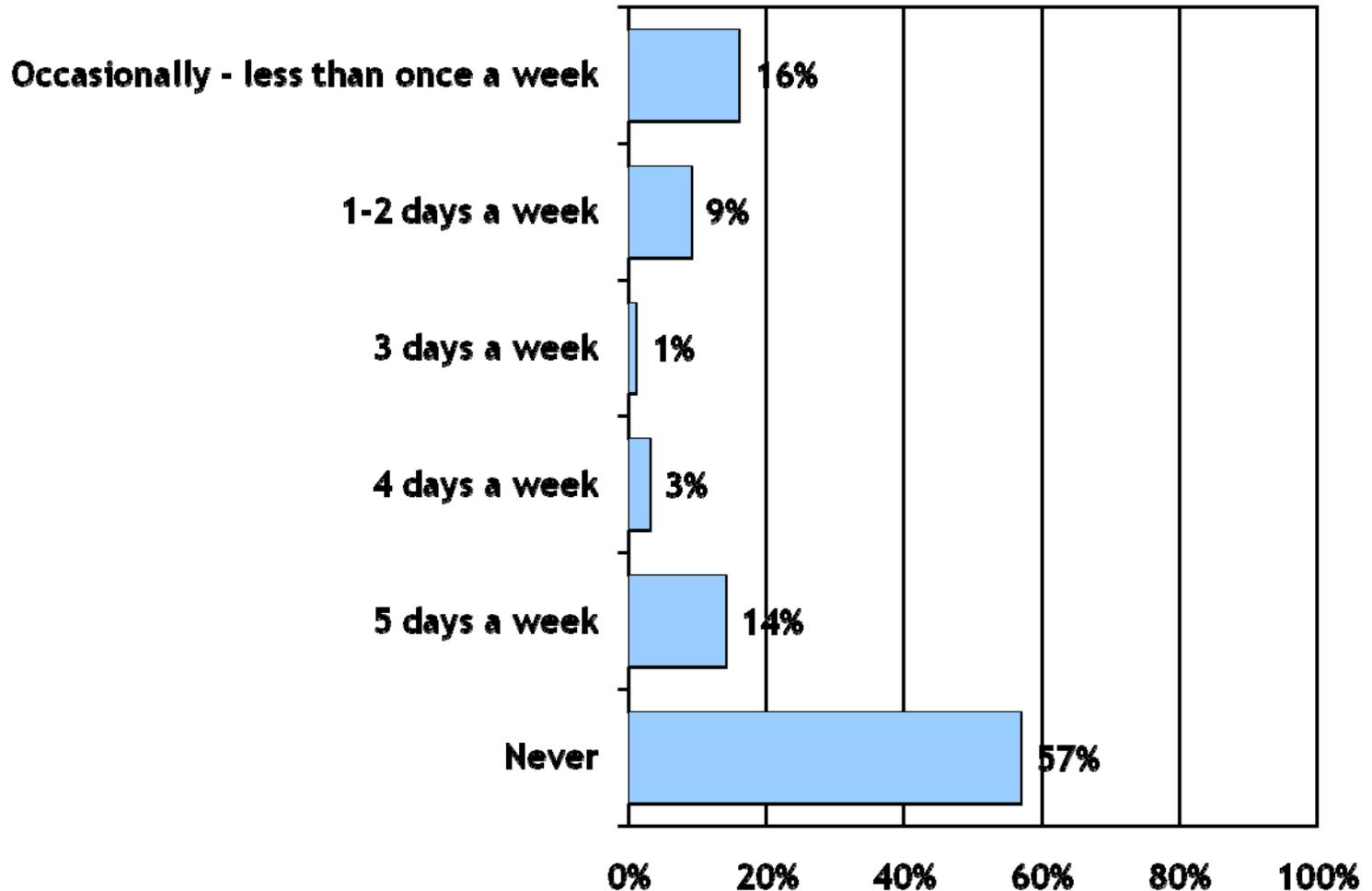
Slightly More than 40% of VRE Riders Use the HOV Lanes at Least Occasionally



Proportions represent HOV usage by VRE riders.

Q31. How frequently during your weekday morning commute do you use the HOV lanes on I-95/I-395, either driving alone in your vehicle or traveling in a carpool, vanpool, or bus?

More than Half of Metrorail Riders Never Use the HOV Lanes



Proportions represent HOV usage by Metrorail riders.

Q31. How frequently during your weekday morning commute do you use the HOV lanes on I-95/I-395, either driving alone in your vehicle or traveling in a carpool, vanpool, or bus?

Commuters Would Most often Continue to Use the Vehicle Type They Currently Use if There Were an HOV Entrance Convenient to their Commute

SOV, n=641
 2-person carpool, n=61
 Bus, n=53
 VRE, n=460
 Metrorail, n=157

Question asked of those who do not use HOV lanes.

Q33. If there were an HOV entrance conveniently accessible on your morning commute and you were to use the HOV lanes, what form of transportation would you be most likely to use? Assume that parking would be available at your "pick-up" or "connection" location.

	<u>SOV</u>	<u>2-person carpool</u>	<u>Bus</u>	<u>VRE</u>	<u>Metrorail</u>
	<u>%</u>	<u>%</u>	<u>%</u>	<u>%</u>	<u>%</u>
Prearranged carpool with 2 or more others	28	52	9	7	11
Train (VRE, Metrorail, Amtrak)	12	2	2	76	64
Slug as driver	10	2	2	4	3
Bus	5	10	79	3	8
Telework/telecommute	5	3	0	1	1
Slug as passenger	4	7	6	5	6
Vanpool as driver or passenger	3	3	0	2	1
Ride a bike	1	0	0	0	1
Walk	0	0	0	0	0
Other	32	21	2	3	6

Note: Carpools of 3 or more, slugs, and vanpools not shown due to small base sizes.

Outline of Report

I. Profile of Commuters

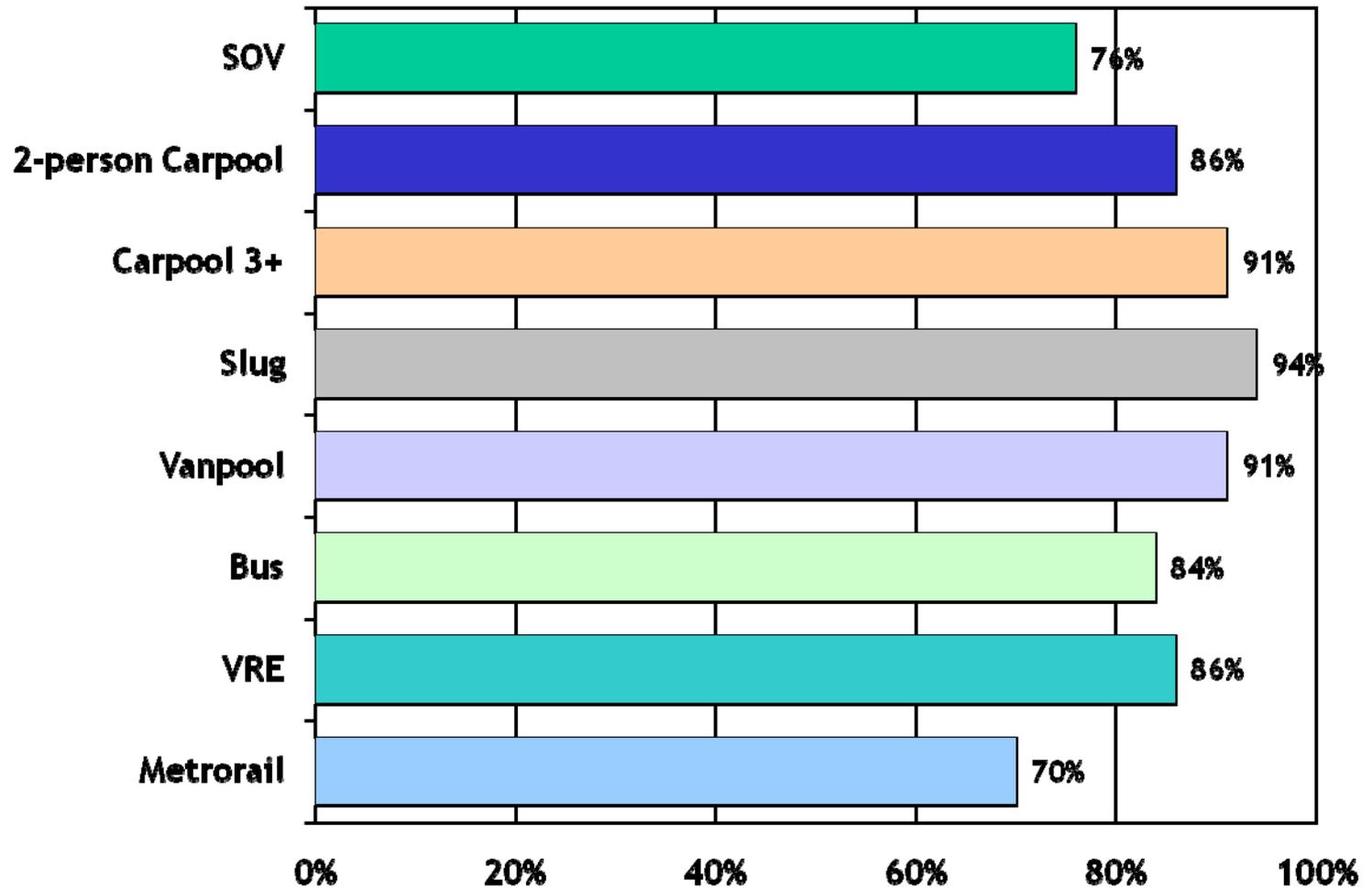
II. HOT Lanes



- Awareness
- Perceived benefits
- Anticipated usage

III. Transit and TDM Improvements

Awareness of the HOT Lanes Is High - Ranging from 70% among Metrorail Riders to 94% among Sluggers

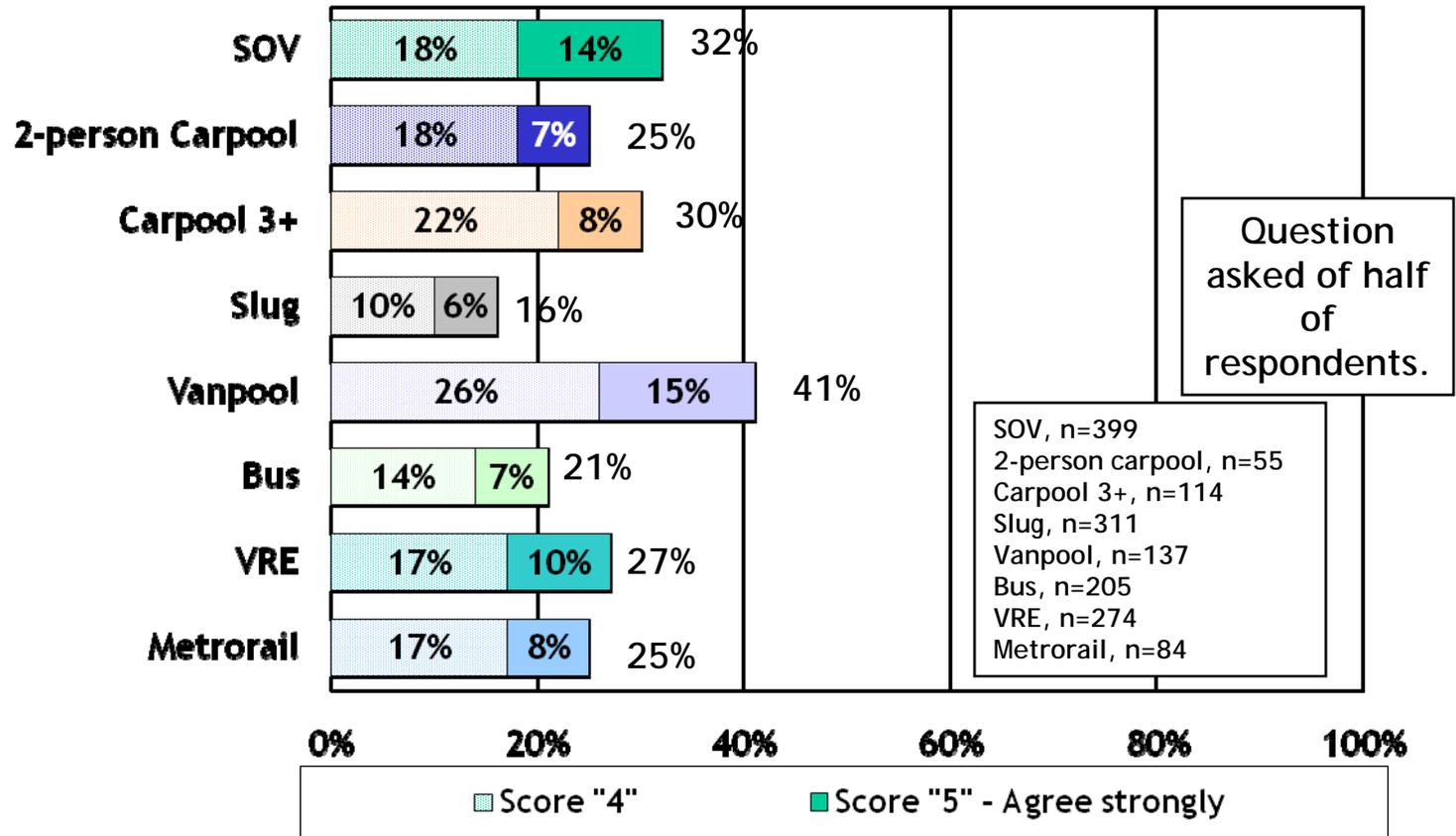


Question asked of all respondents.

Q37. Have you ever heard or read anything about the proposed construction of the High Occupancy Toll (HOT) lanes in the I-95/I-395 corridor?

Less than Half of Any Mode Agree that HOT Lanes Will Help Traffic Flow Faster in the General Purpose Lanes

HOT lanes will help traffic to flow faster in the general purpose lanes on I-95/I-395

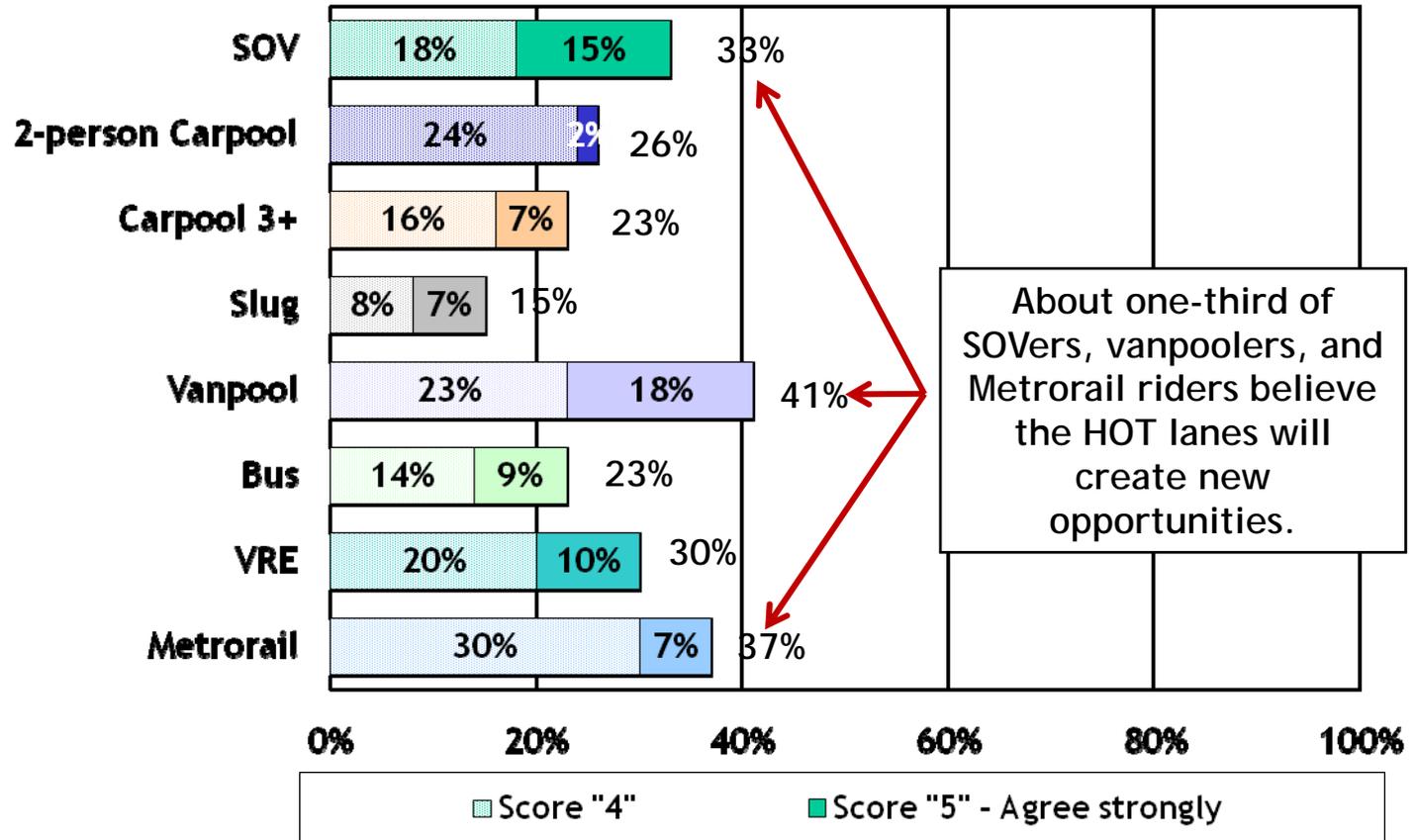


Note: When scores of "4" and "5" are reported on 1-5 scales, the patterned color always represents the proportion giving a score of "4", and the solid color always represents the proportion giving a score of "5".

Q38. Next is a list of statements about HOT lanes. Please indicate the extent to which you agree or disagree with each statement.

Those Who Believe the HOT Lanes Will Create New Transportation Opportunities Are in the Minority

HOT lanes will create new transit, vanpooling, and carpooling opportunities



About one-third of SOV, vanpoolers, and Metrorail riders believe the HOT lanes will create new opportunities.

SOV, n=399
 2-person carpool, n=55
 Carpool 3+, n=114
 Slug, n=311
 Vanpool, n=137
 Bus, n=205
 VRE, n=274
 Metrorail, n=84

Question asked of half of respondents.

Q38. Next is a list of statements about HOT lanes. Please indicate the extent to which you agree or disagree with each statement.

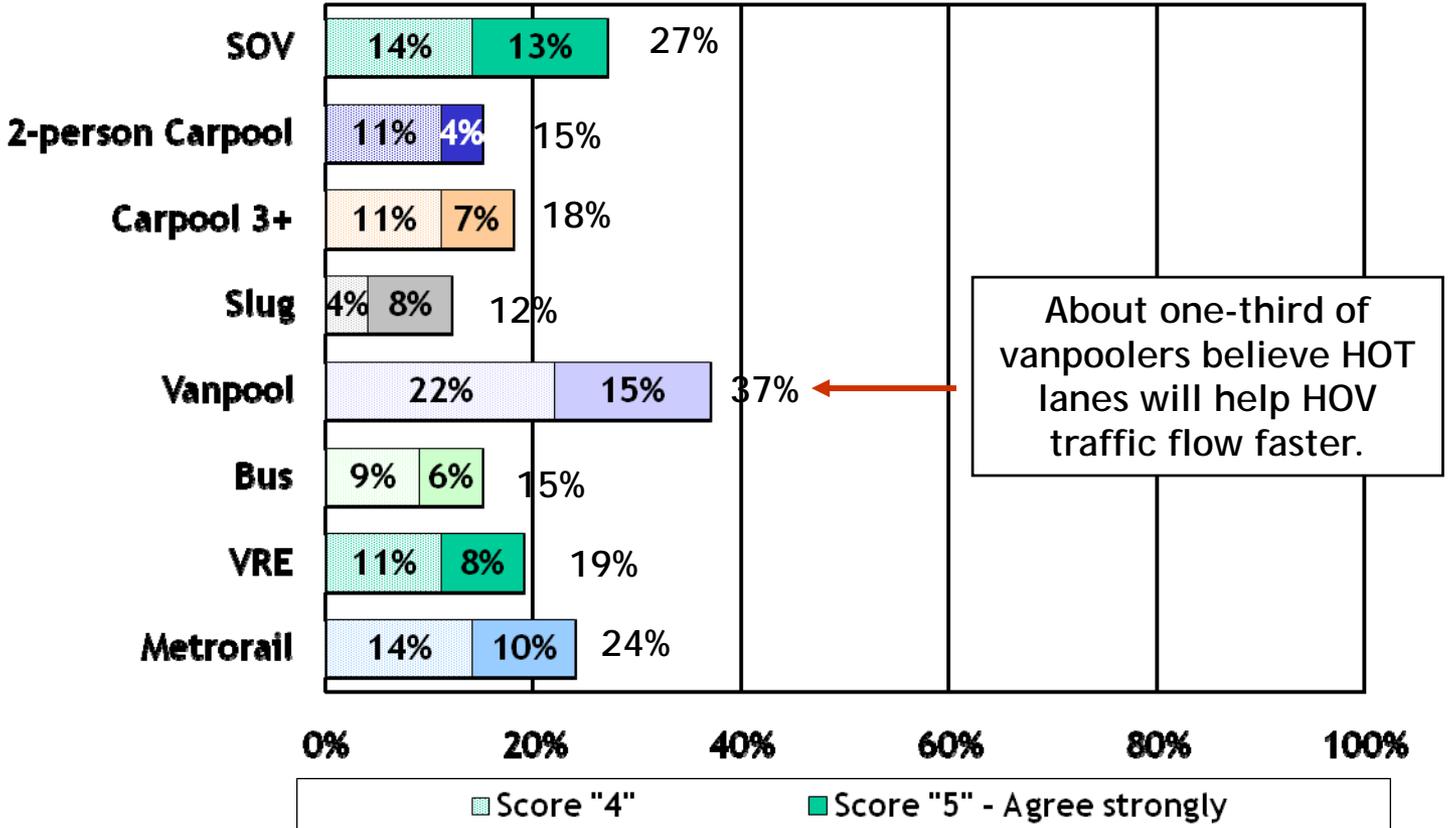
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 Bus, n=205
 VRE, n=274
 Metrorail, n=84

For the Most Part, Commuters Do Not Believe HOT Lanes Will Help Traffic Flow Faster in the HOV Lanes

HOT lanes will help traffic to flow faster in the existing HOV lanes

Question asked of half of respondents.

Q38. Next is a list of statements about HOT lanes. Please indicate the extent to which you agree or disagree with each statement.



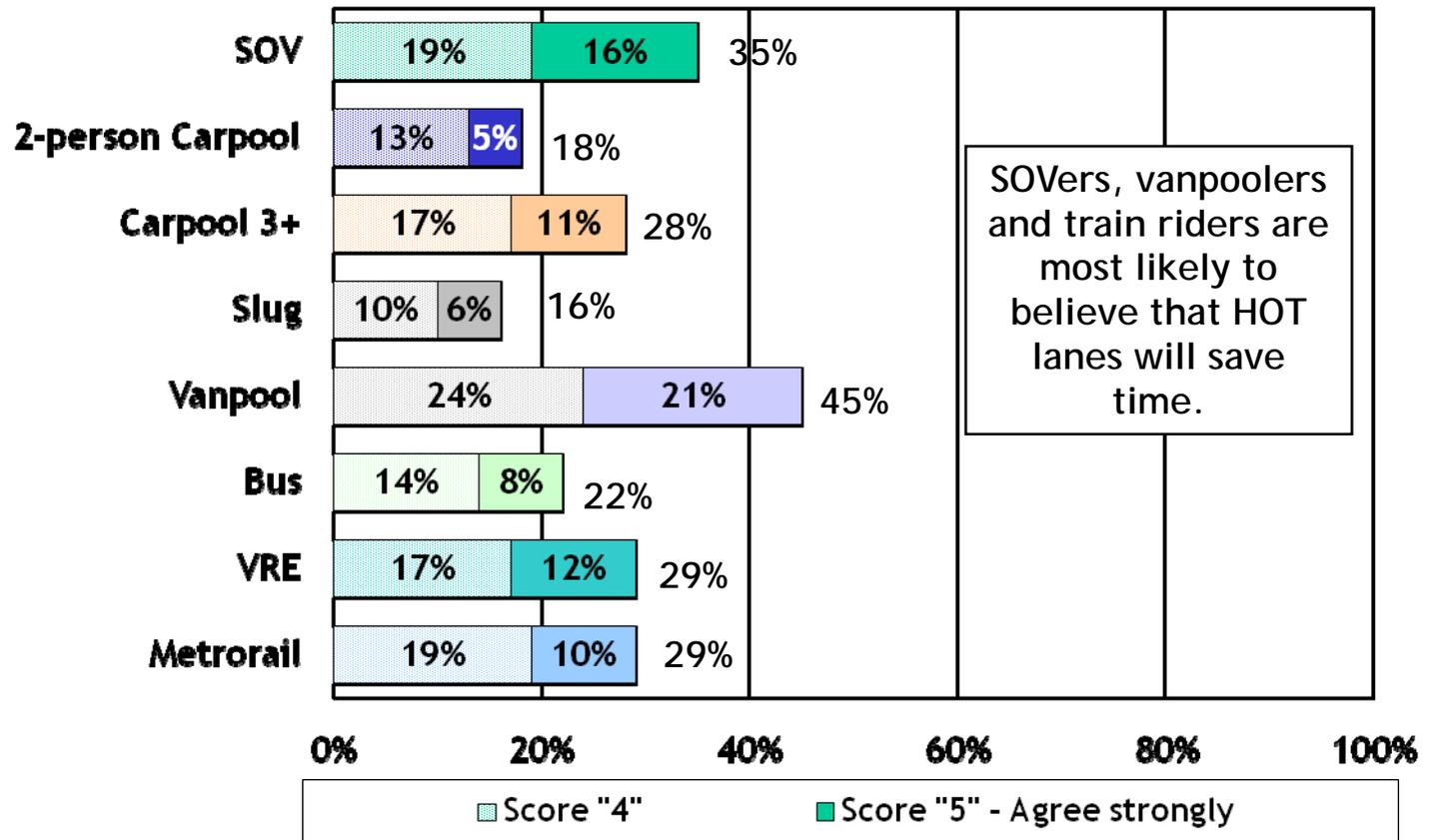
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 VRE, n=274
 Metrorail, n=84

Question asked of half of respondents.

Q38. Next is a list of statements about HOT lanes. Please indicate the extent to which you agree or disagree with each statement.

The Majority of Commuters - Across All Modes - Do Not Believe that the HOT Lanes Will Help Commuters Save Time

HOT lanes will help commuters save time on their commutes



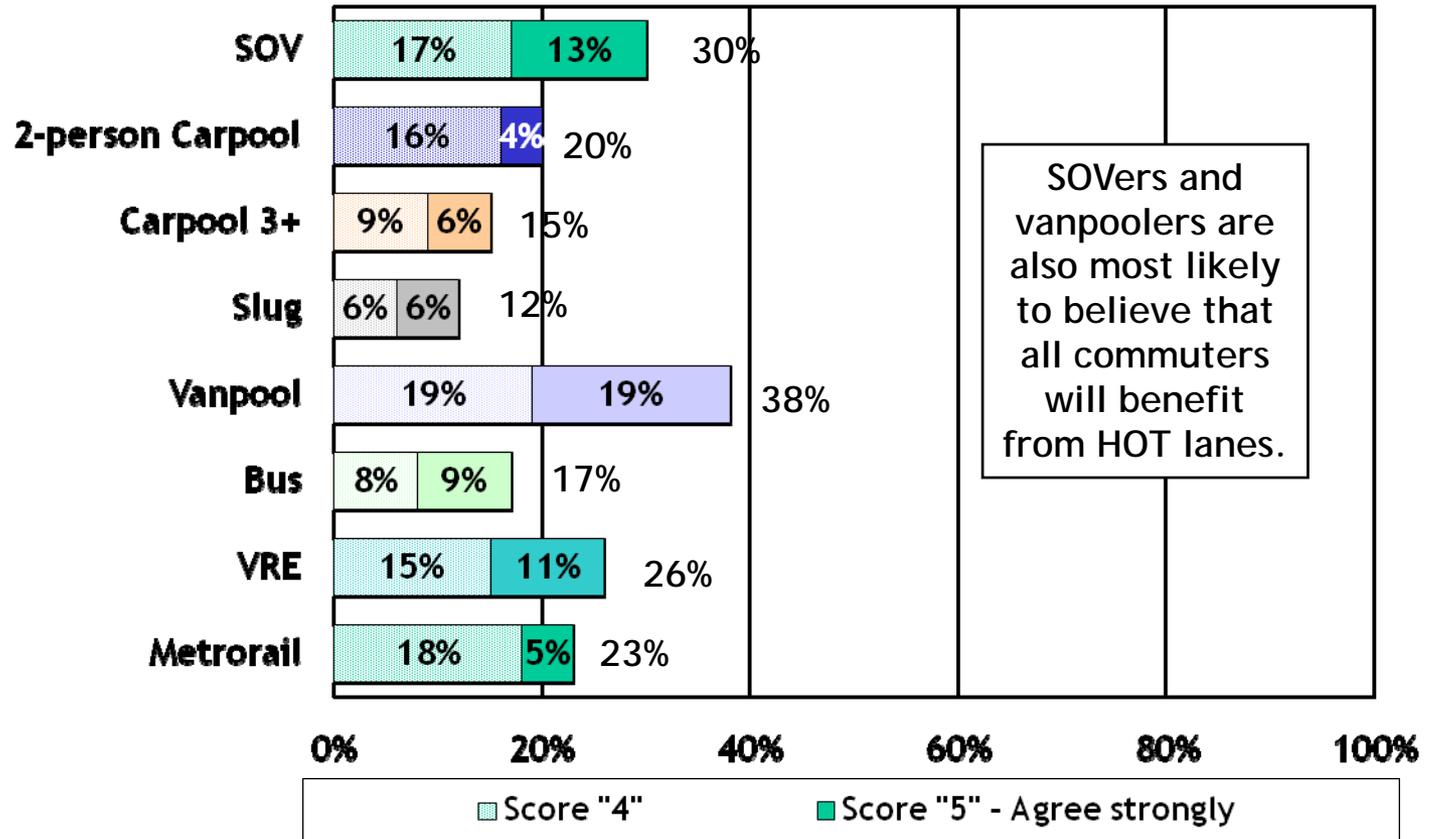
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 Vanpool, n=137
 Bus, n=205
 VRE, n=274
 Metrorail, n=84

Commuters Don't Seem to Think that HOT Lanes Will Benefit All Commuters

HOT lanes will benefit all commuters, even those who do not use them

Question asked of half of respondents.

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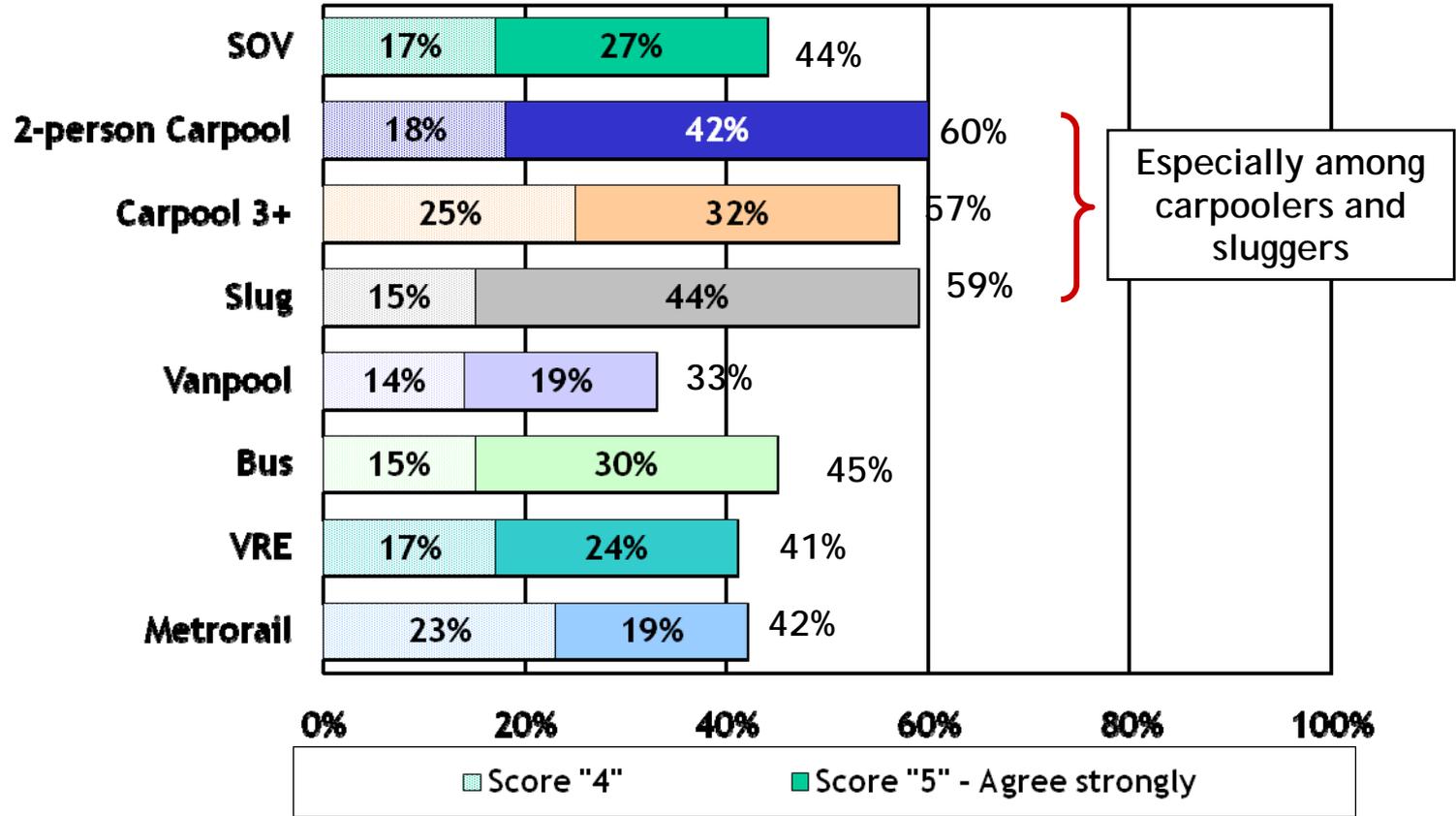
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 Carpool 3+, n=114
 Slug, n=311
 Vanpool, n=137
 Bus, n=205
 VRE, n=274
 Metrorail, n=84

There Is Concern about the Disruption Caused by Construction of the HOT Lanes

The disruption caused by the construction of HOT lanes will be worse than any eventual benefit

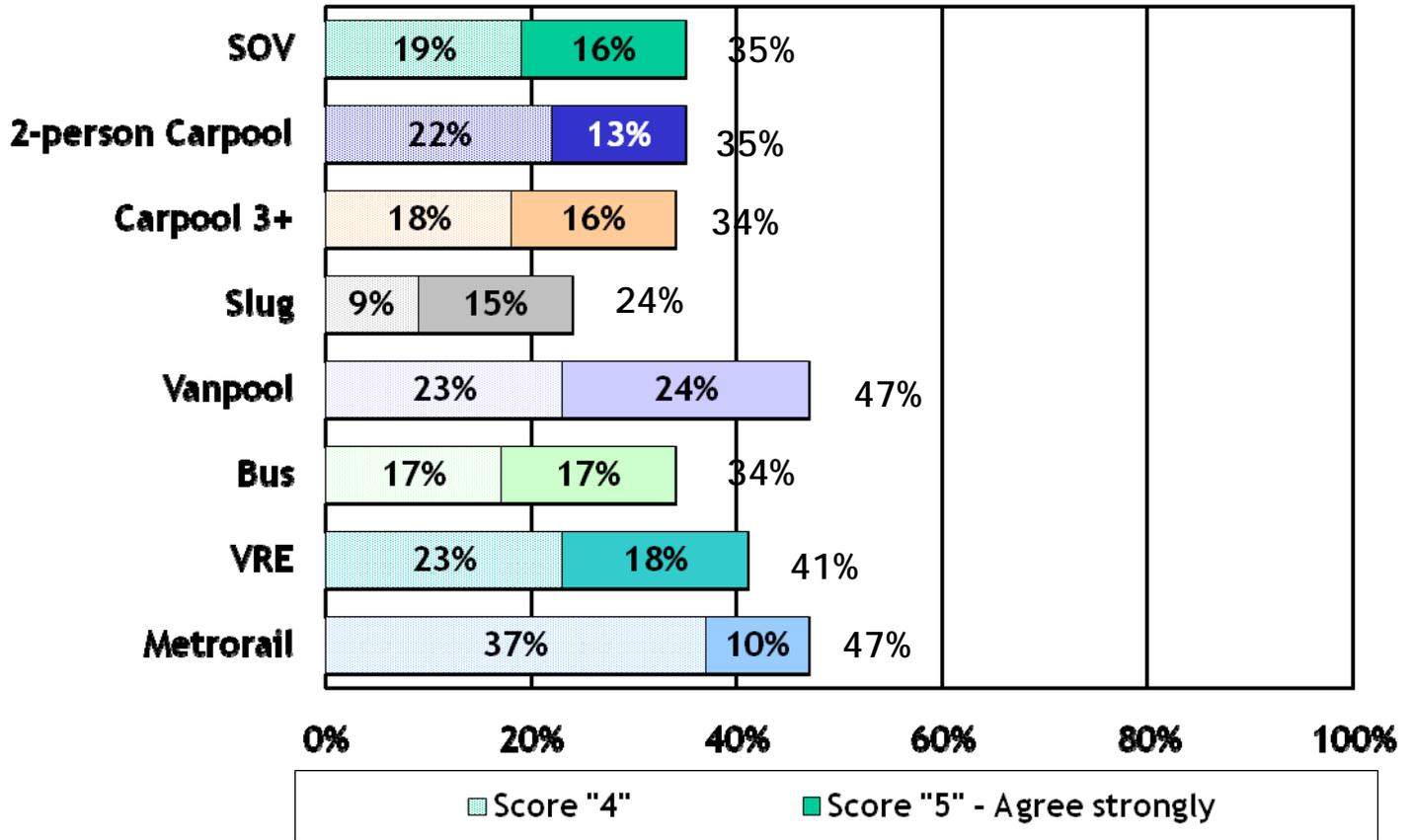
Question asked of half of respondents.

Q38. Next is a list of statements about HOT lanes. Please indicate the extent to which you agree or disagree with each statement.



A Majority Believe the HOT Lanes Will Not Make Slugging More Attractive, Especially Sluggers and Metrorail Riders

HOT lanes will encourage drivers to pick up sluggers in order to avoid paying the toll to use the HOT lanes



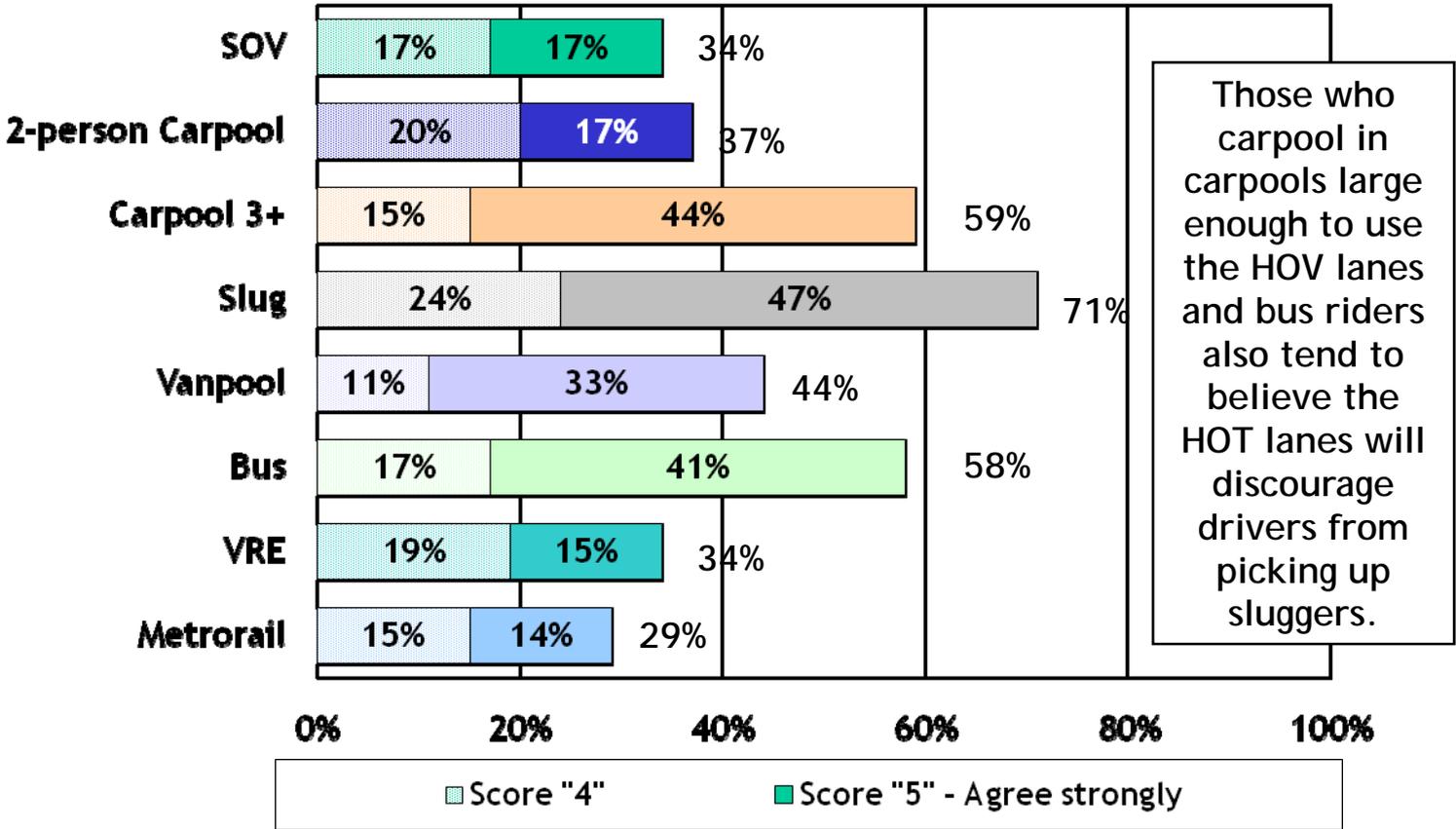
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 Bus, n=205
 VRE, n=274
 Metrorail, n=84

Question asked of half of respondents.

Q38. Next is a list of statements about HOT lanes. Please indicate the extent to which you agree or disagree with each statement.

Sluggers Tend to Believe that Drivers Will Pay the HOT Lanes Toll Rather than Pick Up Sluggers

HOT lanes will discourage drivers from picking up sluggers - drivers will simply pay the toll to use the HOT lanes



SOV, n=417
 2-person carpool, n=71
 Carpool 3+, n=117
 Slug, n=295
 Vanpool, n=131
 Bus, n=184
 VRE, n=227
 Metrorail, n=101

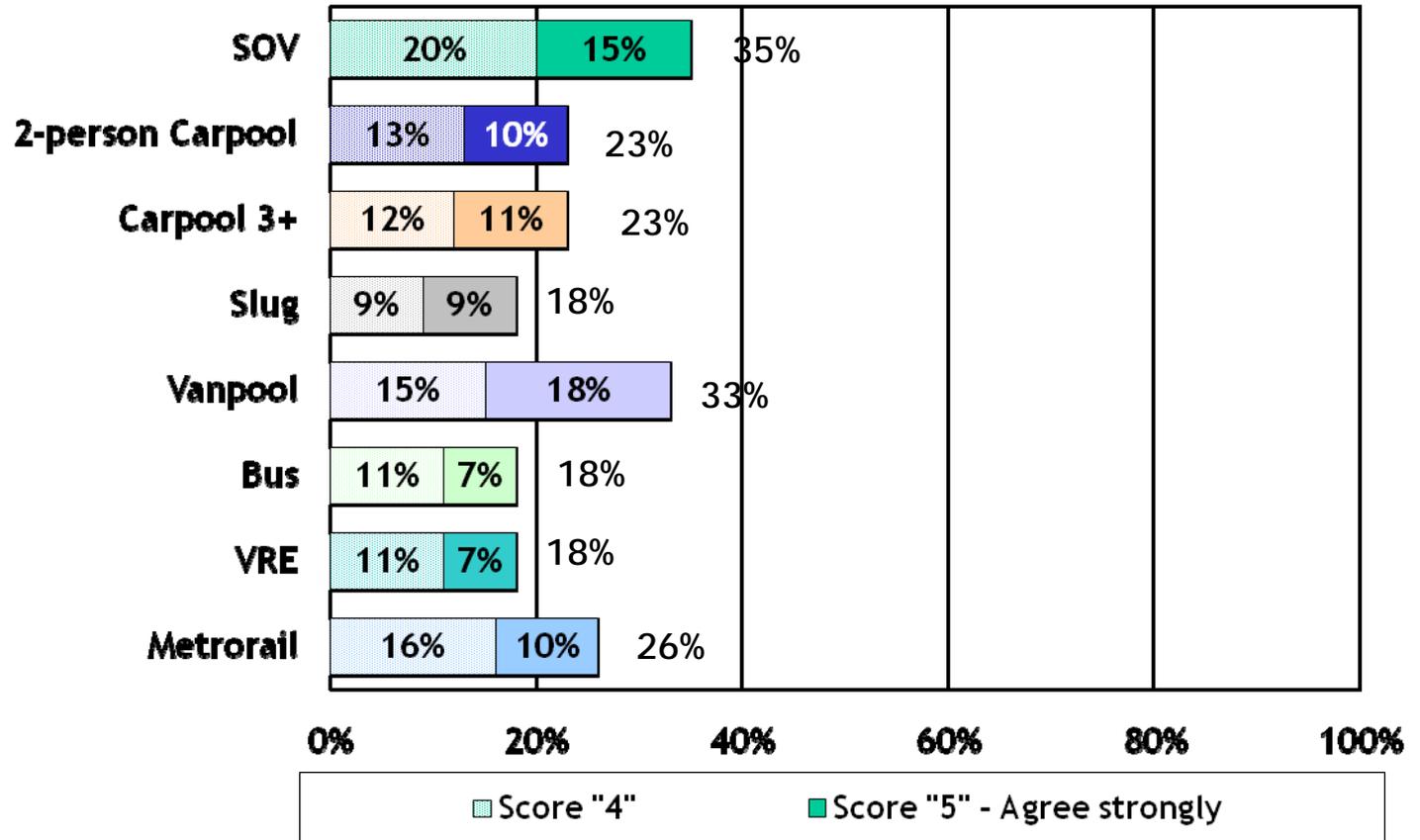
Question asked of half of respondents.

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 Slug, n=295
 Vanpool, n=131
 Bus, n=184
 VRE, n=227
 Metrorail, n=101

For the Most Part, Belief that HOT Lanes Are Important for Emergency Evacuation Is Low

HOT lanes will play a key role in the region's emergency and evacuation plans

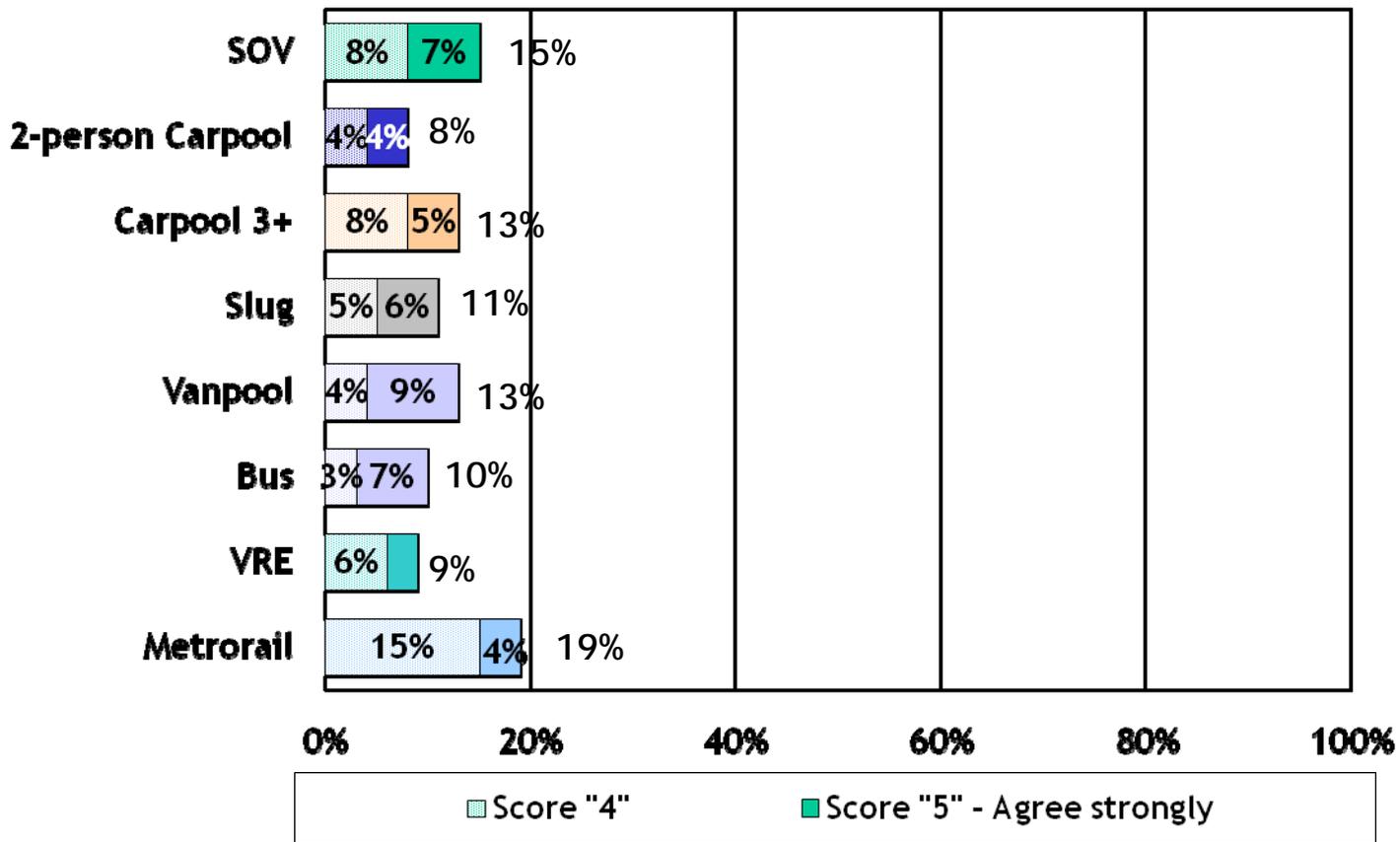


Question asked of half of respondents.

Q38. Next is a list of statements about HOT lanes. Please indicate the extent to which you agree or disagree with each statement.

There Is Little Appreciation that HOT Lanes Will Help the Environment

HOT lanes will benefit the environment because there will be fewer vehicles on the road and, thus, reduced vehicle emissions



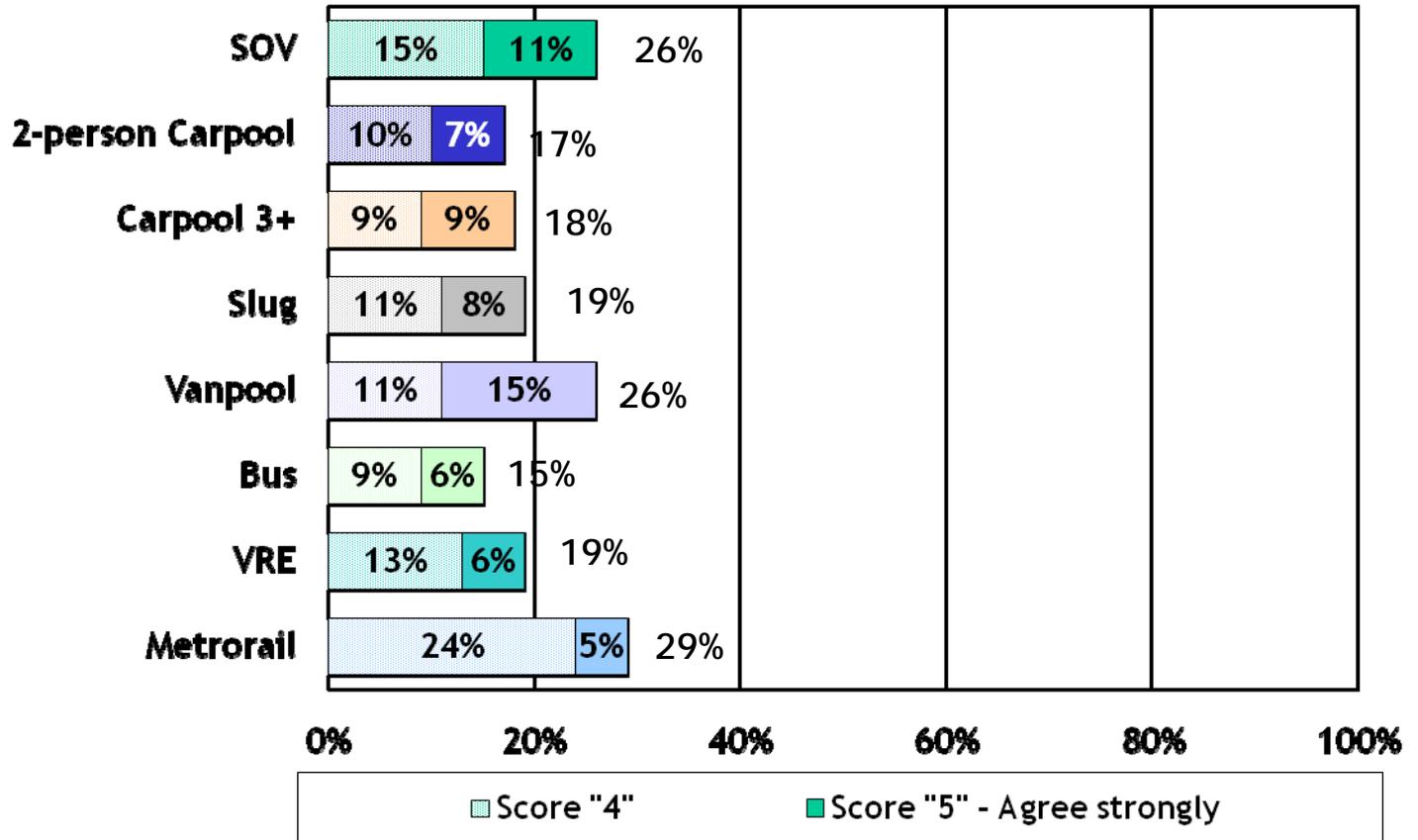
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Question asked of half of respondents.

Q38. Next is a list of statements about HOT lanes. Please indicate the extent to which you agree or disagree with each statement.

Belief that HOT Lanes Will Support the Economy Is Fairly Low

HOT lanes will help I-95/I-395 to support the region's economic vitality



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 Carpool 3+, n=117
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 Vanpool, n=131
 Bus, n=184
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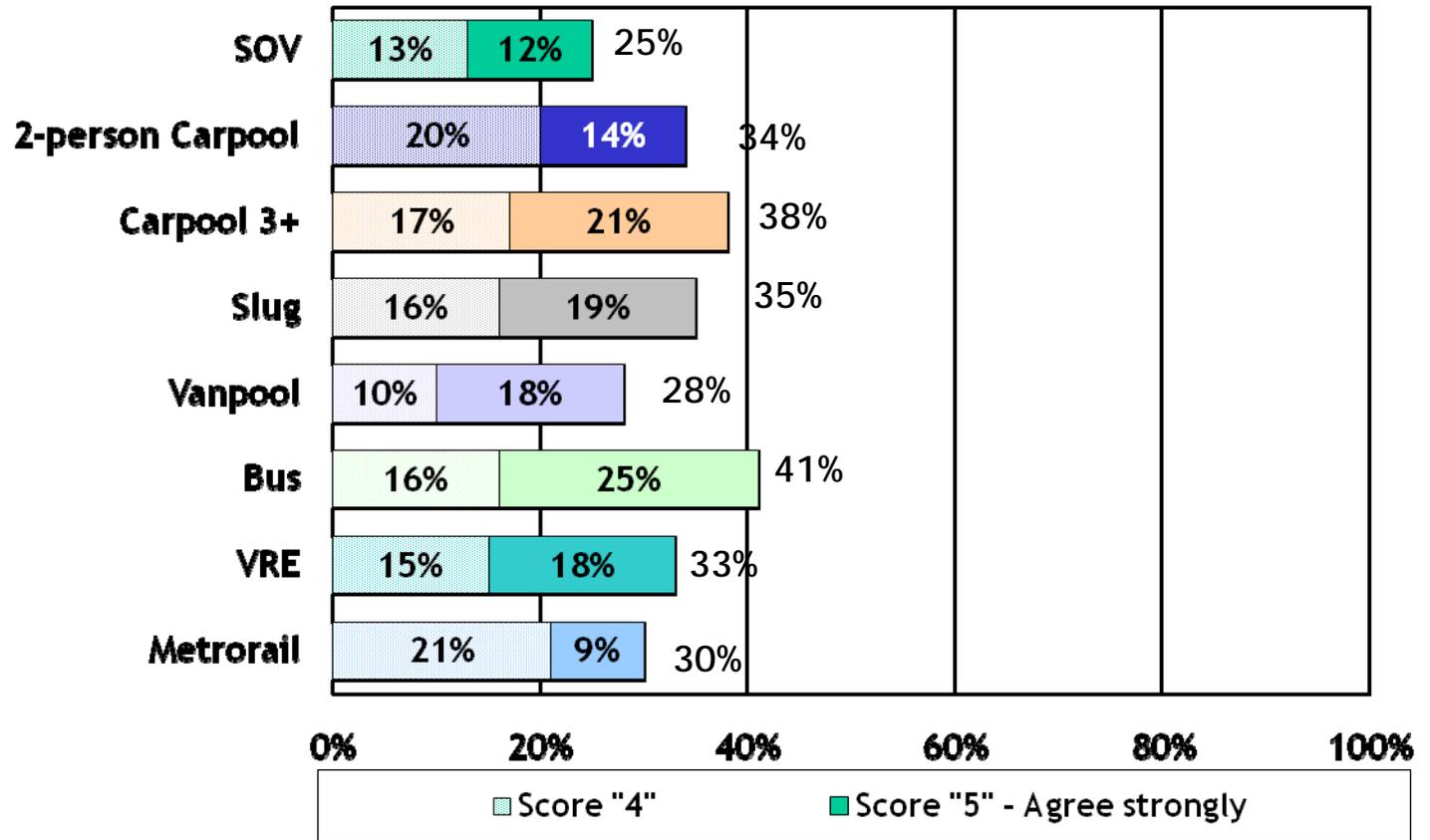
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41% of Bus Riders Believe HOT Lanes Will Bring too Much Growth and Development - 25% of SOVers Express this Concern

HOT lanes will add too much growth and development to the area

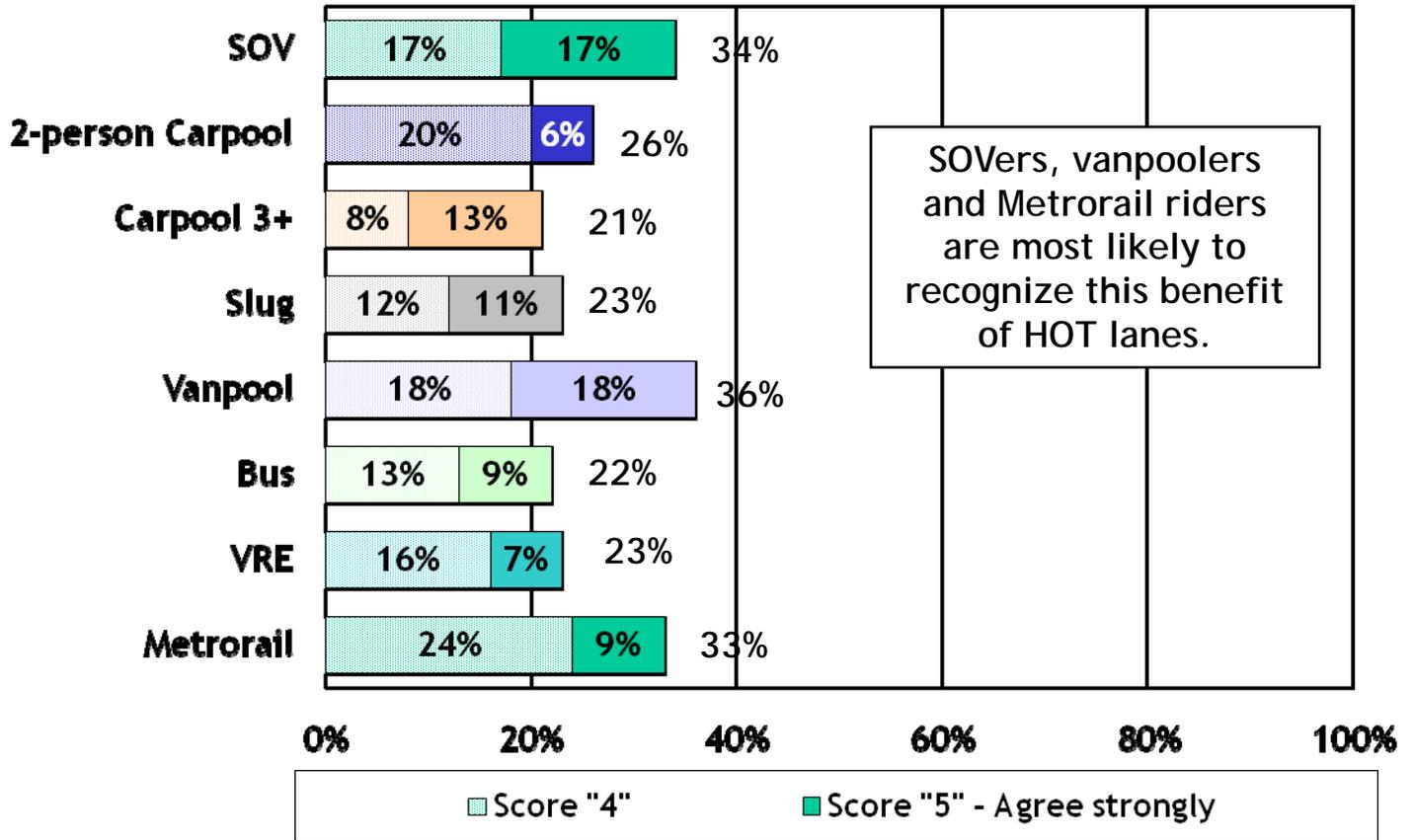
Question asked of half of respondents.

Q38. Next is a list of statements about HOT lanes. Please indicate the extent to which you agree or disagree with each statement.



For the Most Part, Commuters Do Not Seem to Believe that HOT Lanes Will Cut Commute Time and Allow More Time to Enjoy Life

HOT lanes will help commuters be able to spend less time commuting and more time doing things they enjoy



SOV, n=417
 2-person carpool, n=71
 Carpool 3+, n=117
 Slug, n=295
 Vanpool, n=131
 Bus, n=184
 VRE, n=227
 Metrorail, n=101

Question asked of half of respondents.

Q38. Next is a list of statements about HOT lanes. Please indicate the extent to which you agree or disagree with each statement.

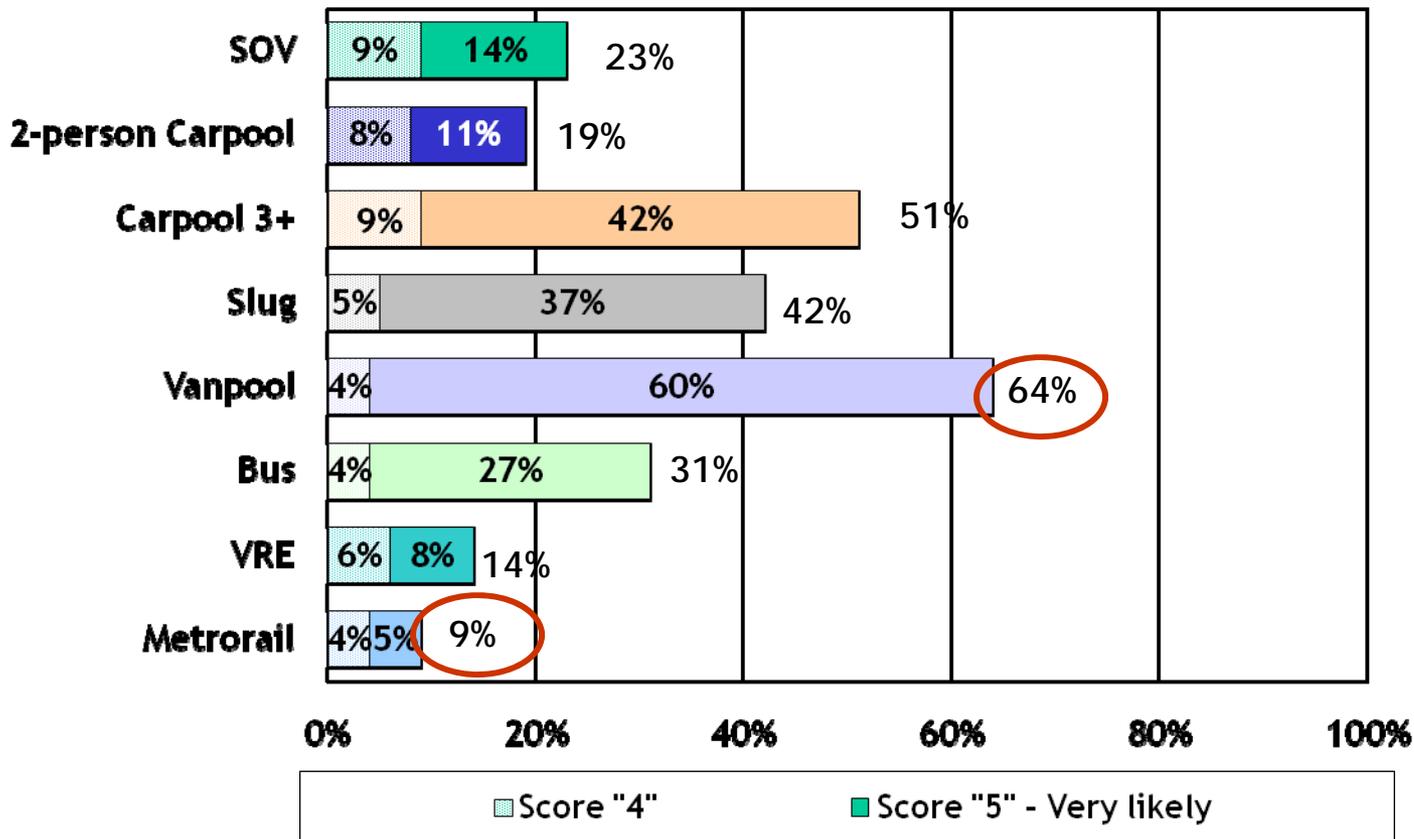
Commuters from Prince William County Tend to View the HOT Lanes More Negatively - Especially Carpoolers and Sluggers. Spotsylvania/Stafford Residents Are More Likely to See the Positives - Especially Vanpoolers

<u>SOV</u>			<u>Carpool of 3 or more</u>			<u>Slug</u>			<u>Vanpool</u>		
<u>N. Vir.</u>	<u>P. Will.</u>	<u>Spots/Staff.</u>	<u>N. Vir.</u>	<u>P. Will.</u>	<u>Spots/Staff.</u>	<u>N. Vir.</u>	<u>P. Will.</u>	<u>Spots/Staff.</u>	<u>N. Vir.</u>	<u>P. Will.</u>	<u>Spots/Staff.</u>
<i>HOT lanes will help traffic to flow faster in the existing HOV lanes</i>											
25%	27%	30%	23%	3%	27%	13%	4%	25%	NA	26%	43%
<i>HOT lanes will help commuters save time on their commutes</i>											
35%	31%	41%	35%	8%	39%	17%	7%	29%	NA	38%	49%
<i>HOT lanes will discourage drivers from picking up sluggers</i>											
34%	39%	23%	57%	76%	32%	69%	77%	61%	NA	56%	40%

Note: Proportions reported are total scores of "4" and "5" on a 5-point scale where "1" means "disagree strongly" and "5" means "agree strongly."

The list of attributes/benefits tested was divided in half so that each respondent was asked about half of the list. Thus, base sizes vary by location, mode, and attribute. Results for vanpoolers who live in Northern Virginia are not reported due to small base size.

Stated Interest in Using the HOT Lanes Is Highest among Vanpoolers (64%) and Those Commuting in Carpools of 3 or More (51%) and Lowest among Metrorail Riders (9%)



Question asked of all respondents.

Response to question does not provide information about mode change or intent to pay toll.

Q39. Assume the HOT lanes are completed and open for use. How likely would you be to use them at least occasionally for your regular commute?

Likelihood of Using the HOV Lanes Is Highest among Commuters from Spotsylvania and Stafford Counties

<i>Likelihood of Using HOT lanes</i>												
<u>SOV</u>			<u>Carpool of 3 or more</u>			<u>Slug</u>			<u>Vanpool</u>			
<u>N. Vir.</u>	<u>P. Will.</u>	<u>Spots/ Staff.</u>	<u>N. Vir.</u>	<u>P. Will.</u>	<u>Spots/ Staff.</u>	<u>N. Vir.</u>	<u>P. Will.</u>	<u>Spots/ Staff.</u>	<u>N. Vir.*</u>	<u>P. Will.</u>	<u>Spots/ Staff.</u>	
n=473	n=183	n=156	n=79	n=86	n=65	n=109	n=309	n=180	-	n=66	n=191	
20%	27%	32%	39%	43%	76%	33%	34%	63%	NA	47%	72%	

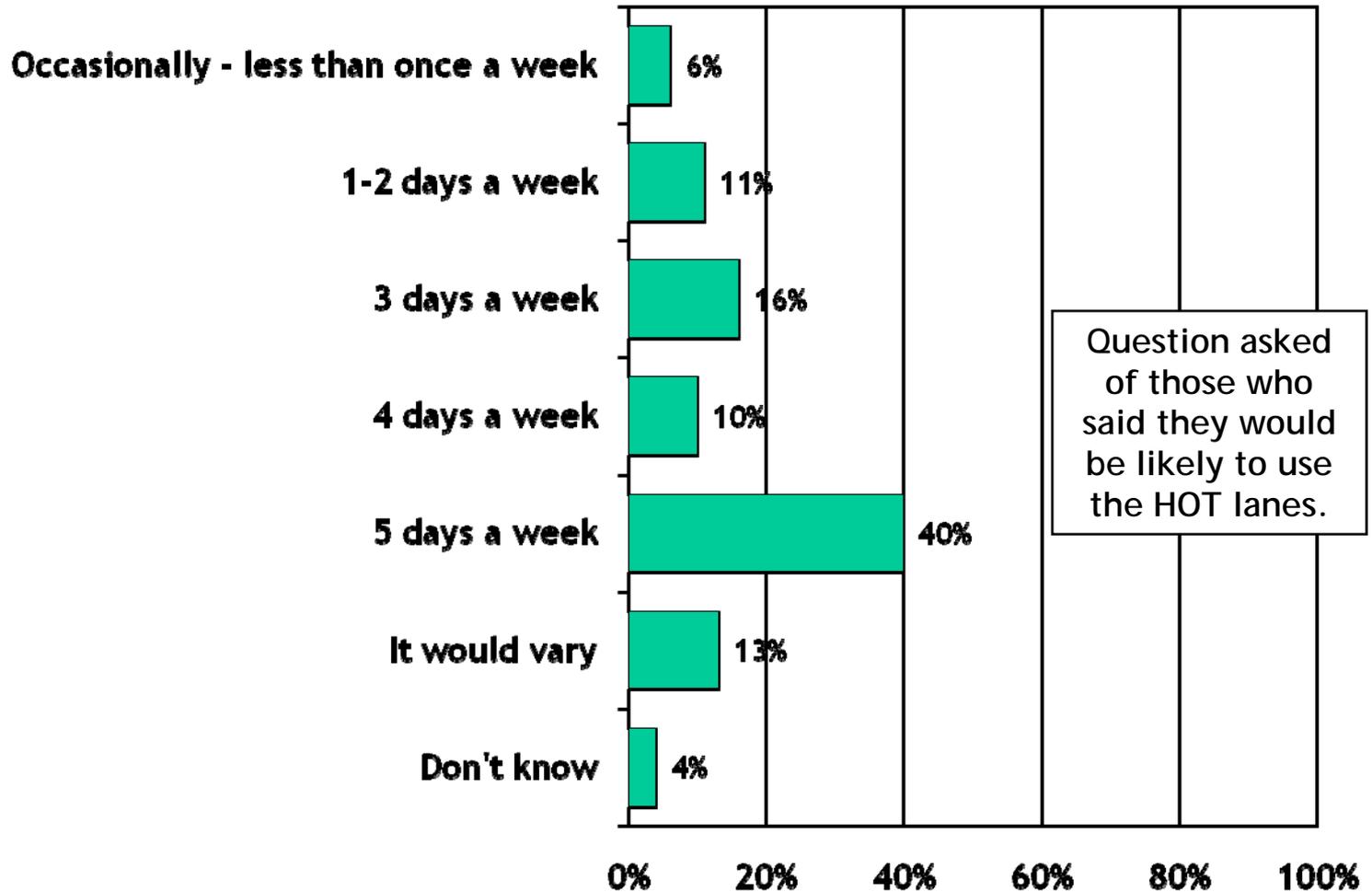
Note: Proportions reported are total scores of “4” and “5” on a 5-point scale where “1” means “not at all likely” and “5” means “very likely.”

*Vanpool for Northern Virginia not reported due to small base size.

Q39. Assume the HOT lanes are completed and open for use. How likely would you be to use them at least occasionally for your regular commute?

Response to question does not provide information about mode change or intent to pay toll.

SOvers Who Would Use the HOT Lanes Would Most Often Use Them Everyday - or at Least 3 or 4 Days a Week



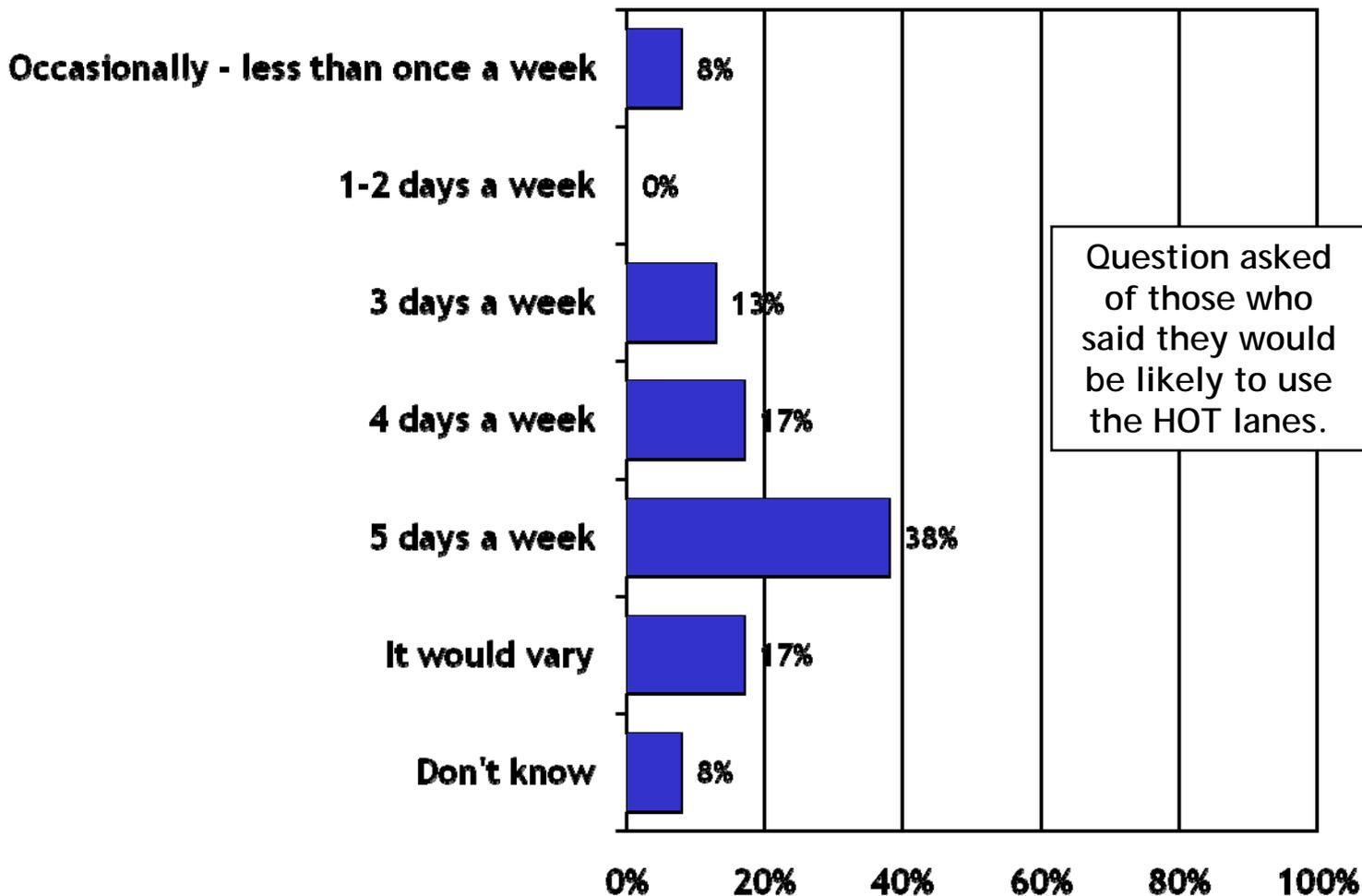
Q40. How often would you use the HOT lanes during the week, Monday through Friday?

Proportions shown represent SOvers.

Response to question does not provide information about mode change or intent to pay toll.

n=24
Base size small.
Interpret with
caution.

About One-third of Those Who Currently Commute in a Carpool of 2 Persons and Would Likely Use the HOT Lanes Would Use the Lanes 5 Days a Week



Q40. How often would you use the HOT lanes during the week, Monday through Friday?

Those Who Currently Commute in a Carpool of 3 or More Persons and Would Use the HOT Lanes Are Nearly Twice as Likely to Use the HOT Lanes 5-days a Week as Those Who Currently Commute in a Carpool of Only 2 Persons

Occasionally - less than once a week

1-2 days a week

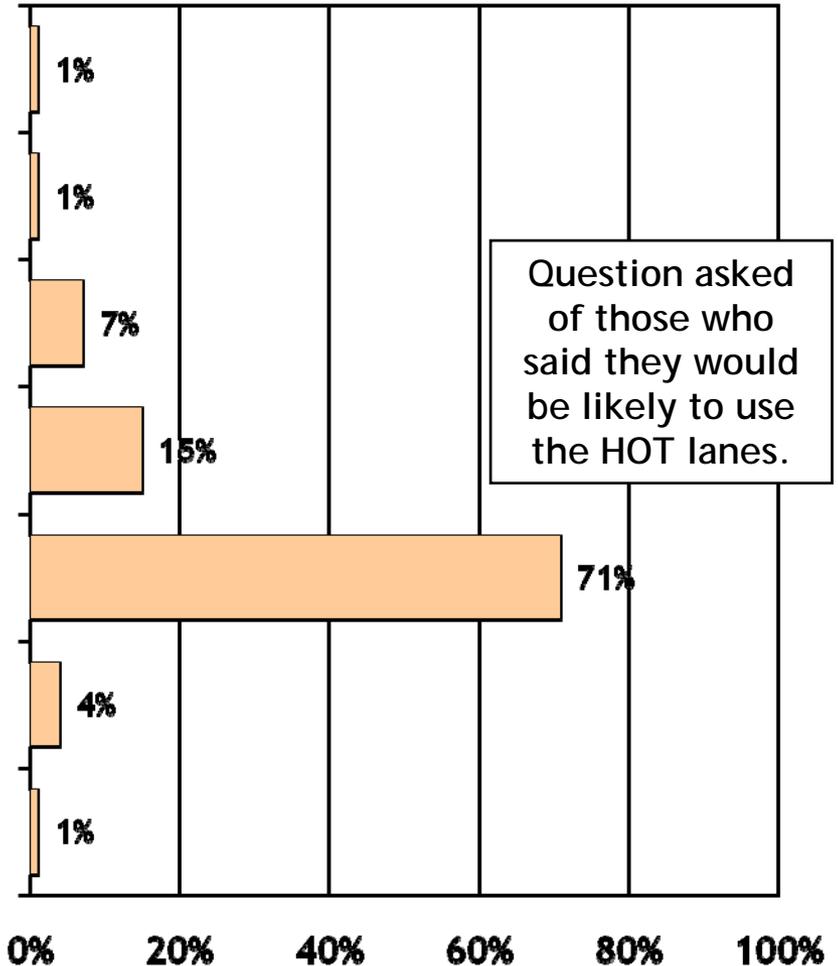
3 days a week

4 days a week

5 days a week

It would vary

Don't know

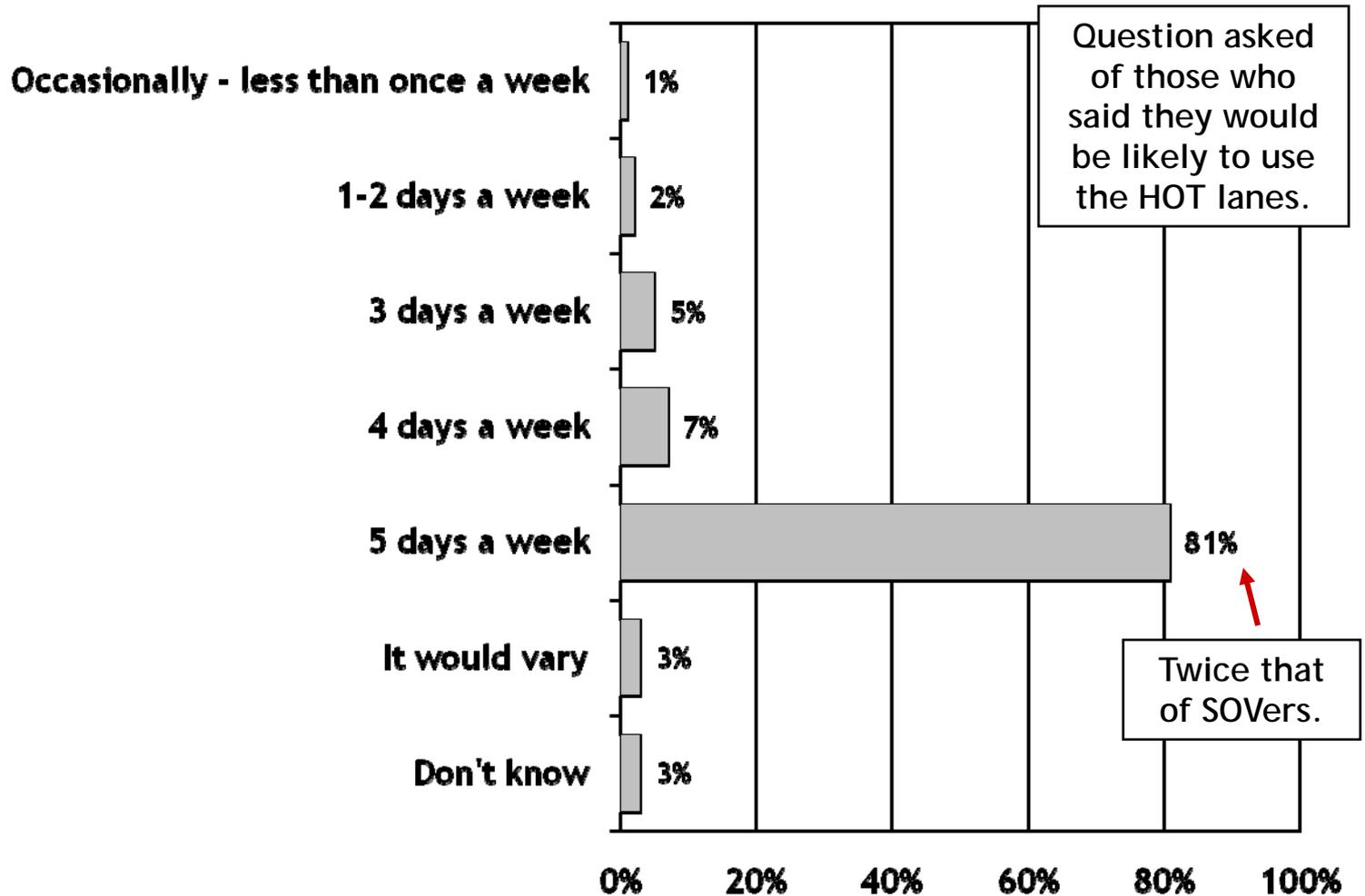


Proportions shown represent commuters in carpools of 3 or more.

Response to question does not provide information about mode change or intent to pay toll.

Q40. How often would you use the HOT lanes during the week, Monday through Friday?

Of Sluggers Who Would Likely Use the HOT Lanes, 81% Would Use the Lanes 5 Days a Week

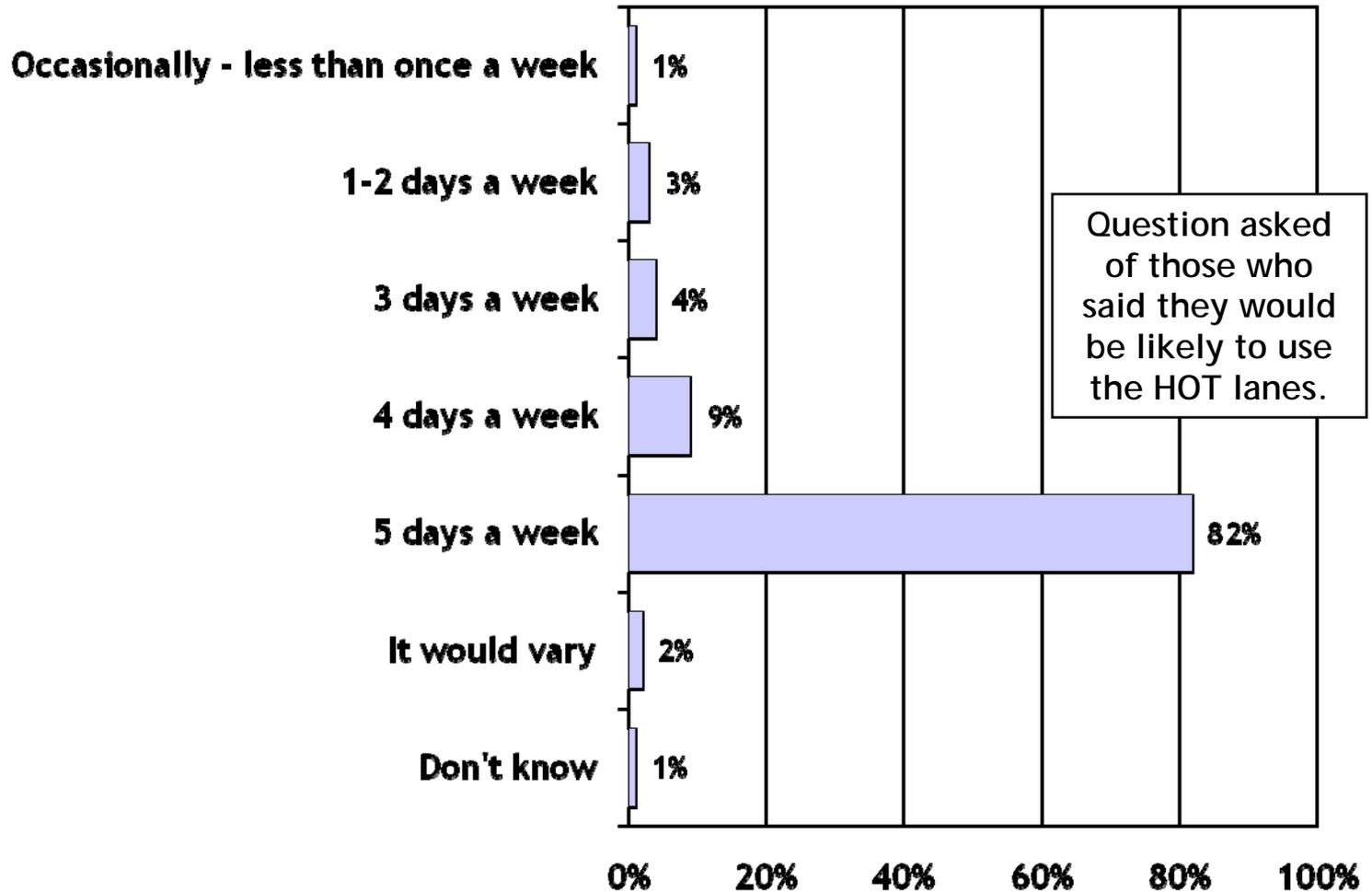


Q40. How often would you use the HOT lanes during the week, Monday through Friday?

Proportions shown represent sluggers.

Response to question does not provide information about mode change or intent to pay toll.

Vanpool HOT Lanes Users Would Also Be Regular Users

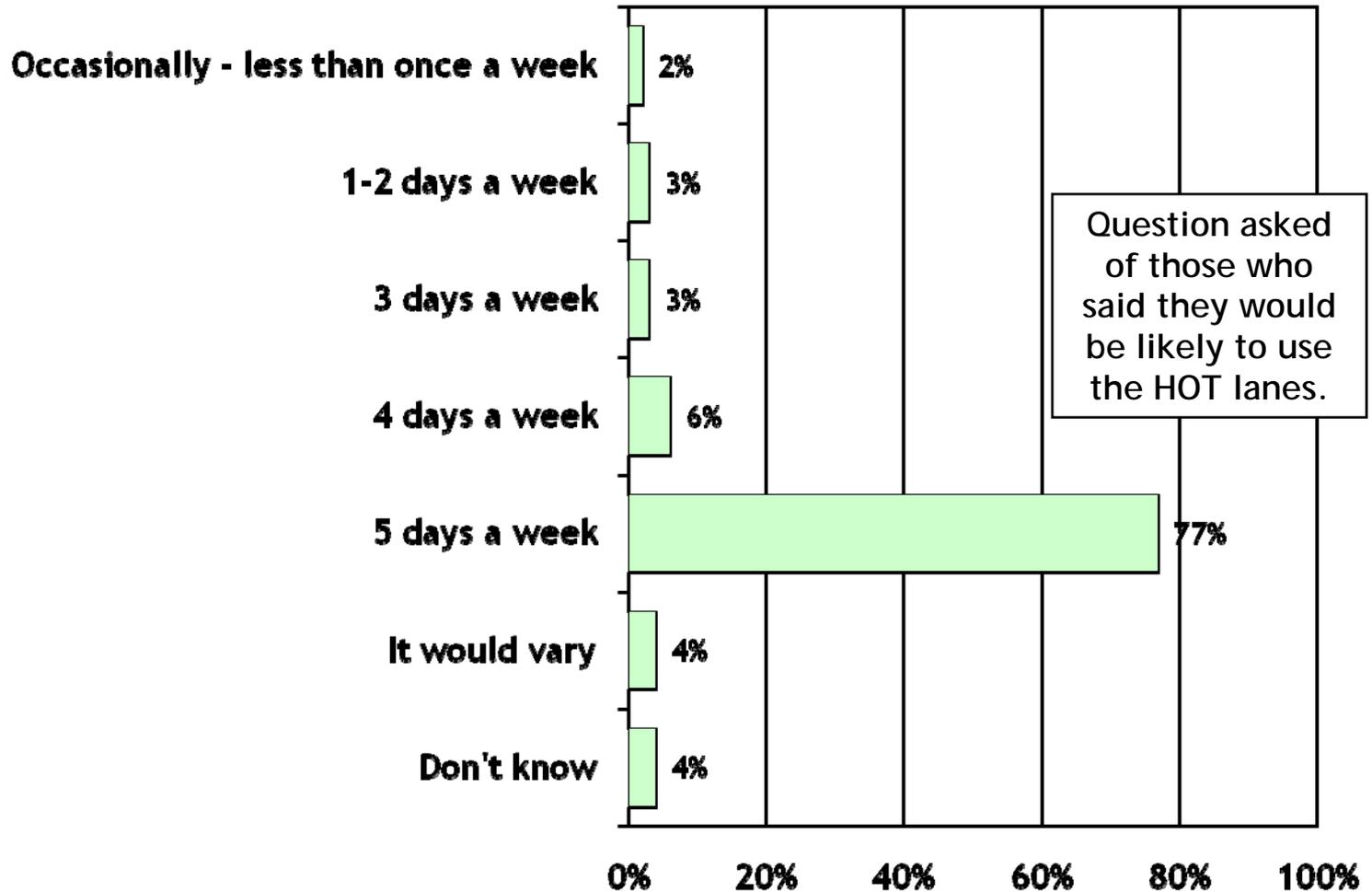


Q40. How often would you use the HOT lanes during the week, Monday through Friday?

Proportions shown represent vanpoolers.

Response to question does not provide information about mode change or intent to pay toll.

Bus Riders Who Would Likely Use the HOT Lanes Would Be Regular Users

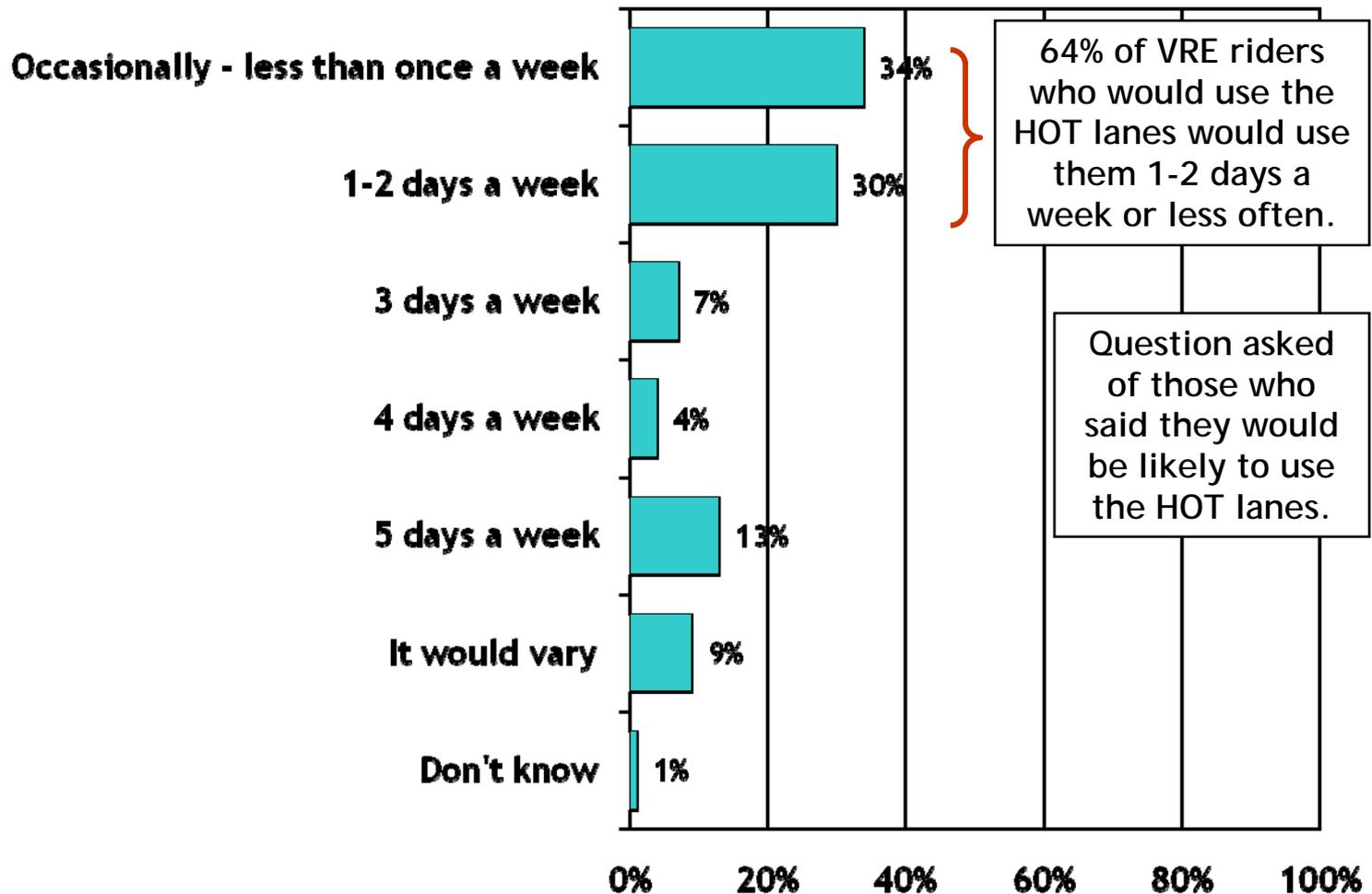


Q40. How often would you use the HOT lanes during the week, Monday through Friday?

Proportions shown represent bus riders.

Response to question does not provide information about mode change or intent to pay toll.

VRE Riders Would Be Less Frequent Users of the HOT Lanes



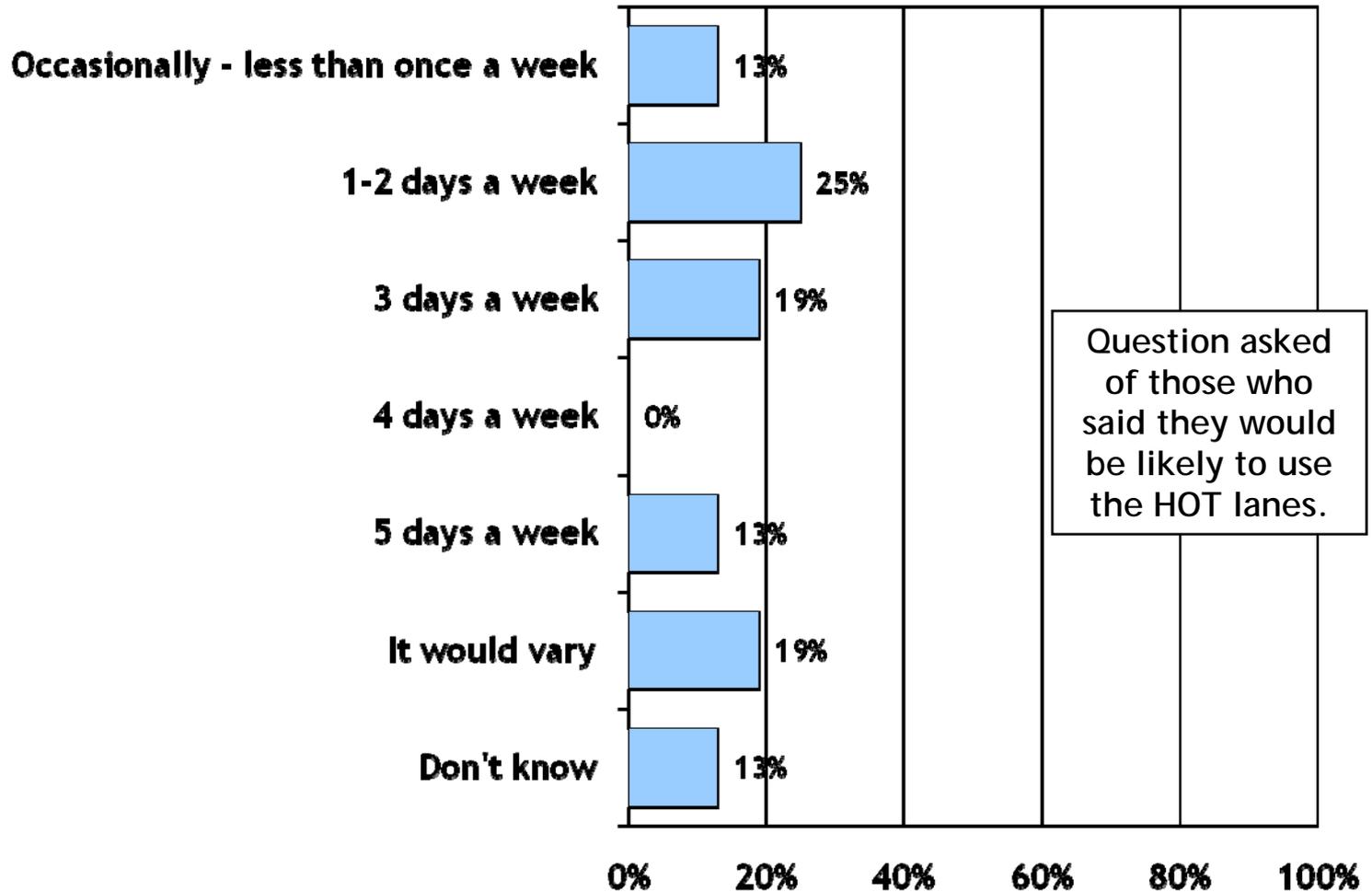
Q40. How often would you use the HOT lanes during the week, Monday through Friday?

Proportions shown represent VRE riders.

Response to question does not provide information about mode change or intent to pay toll.

n=17
Base size small.
Interpret with
caution.

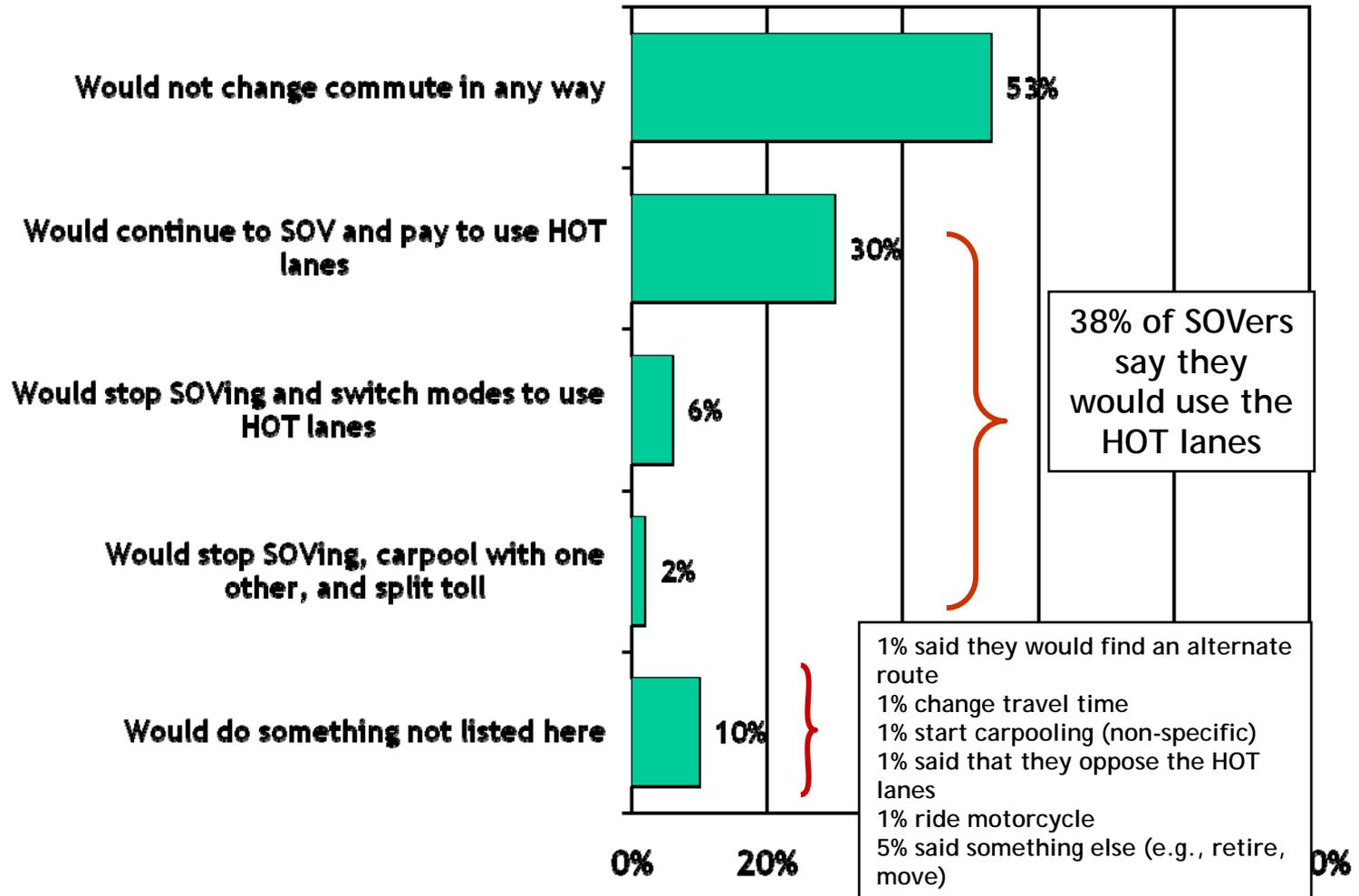
There Is No Consistent Pattern of Intended HOT Lane Use among Metrorail Riders Who Would Use the HOT Lanes



Q40. How often would you use the HOT lanes during the week, Monday through Friday?

About Half of SOVers Say They Would Make No Changes in Their Commutes When the HOT Lanes are Open

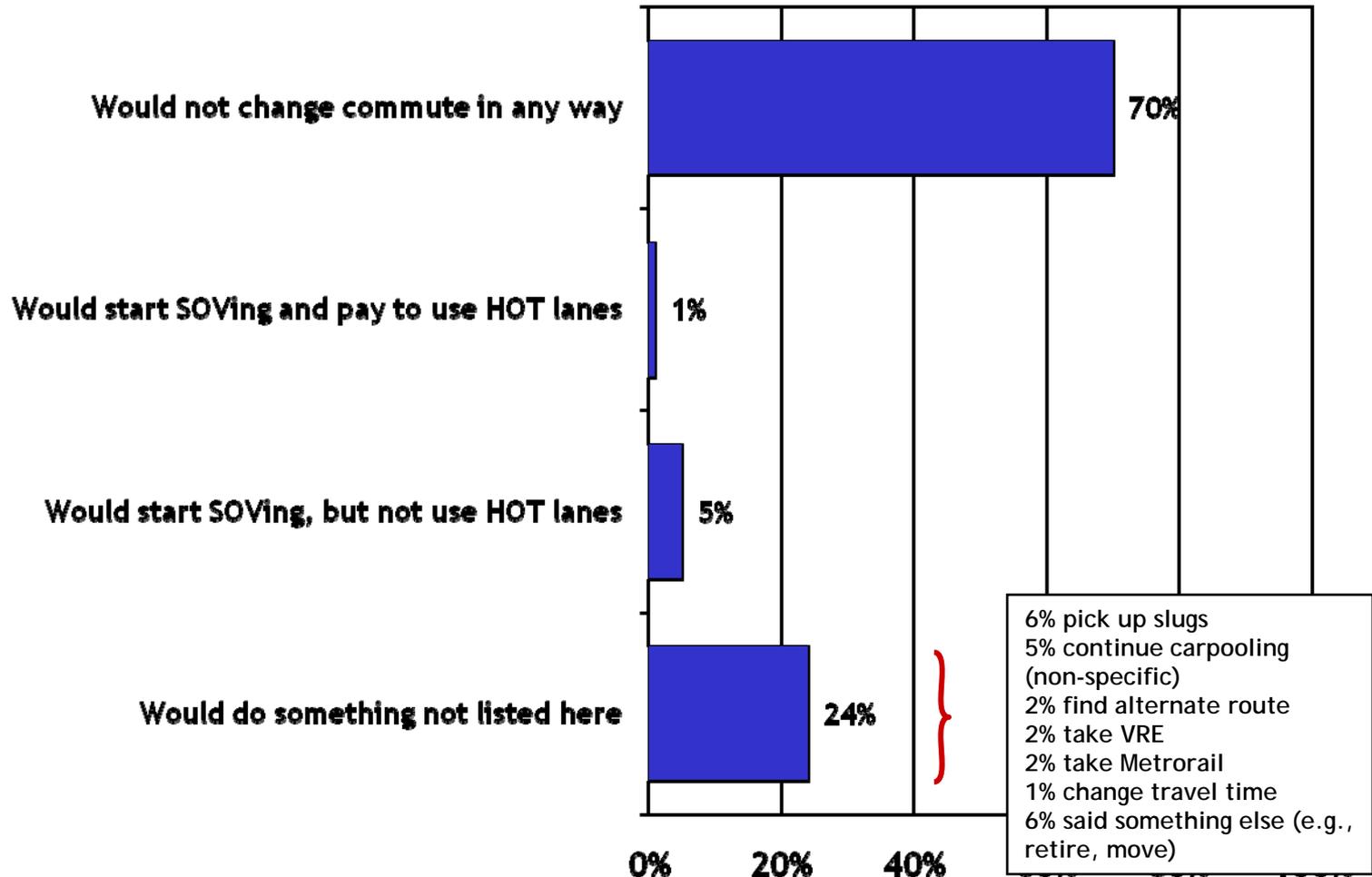
Proportions shown represent SOVers.



Q41A-B. Which of the following statements best describes how you would typically commute when the HOT lanes are completed and open for use?

Most Carpoolers Who Commute in 2-Person Carpools Would Not Change their Commute in Response to HOT Lanes

Proportions shown represent 2-person carpool commuters.

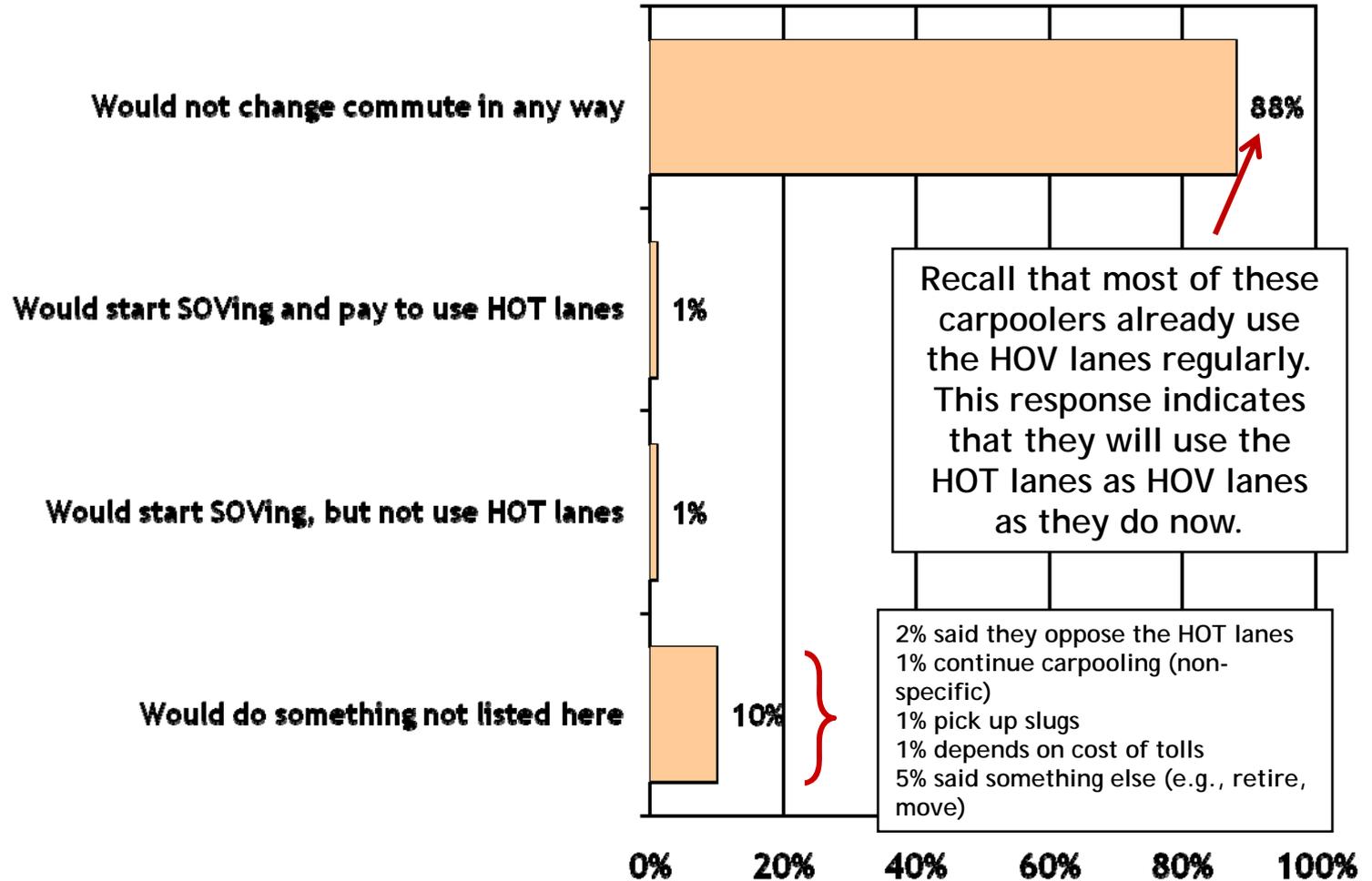


Q41A-B. Which of the following statements best describes how you would typically commute when the HOT lanes are completed and open for use?

Most Carpoolers Who Commute in Carpools of 3 or More Persons Would Not Change their Commute in Response to HOT Lanes

Proportions shown represent commuters in carpools of 3 or more.

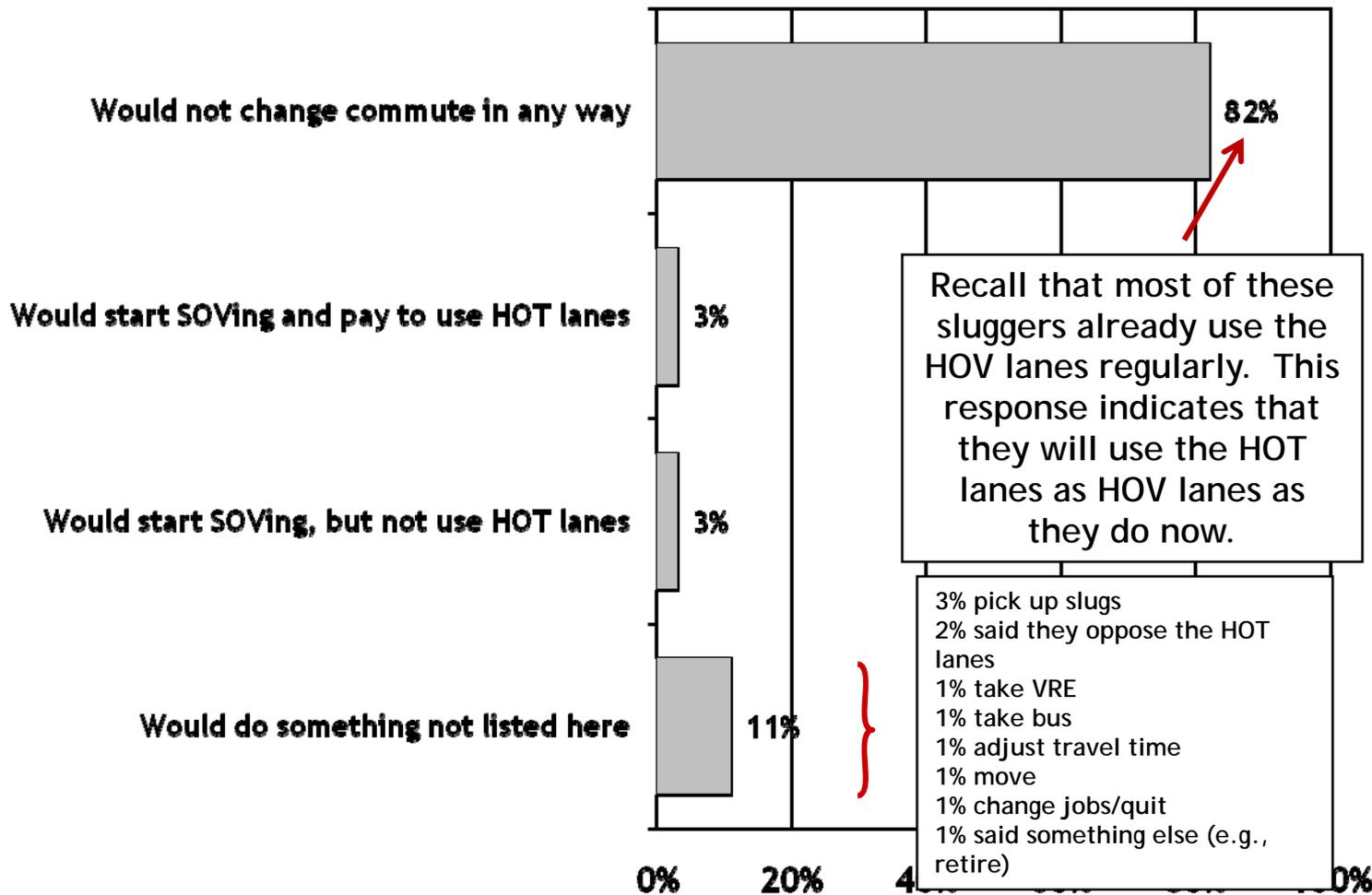
Q41A-B. Which of the following statements best describes how you would typically commute when the HOT lanes are completed and open for use?



For the Most Part, Sluggers Would Continue to Slug if HOT Lanes Were Available

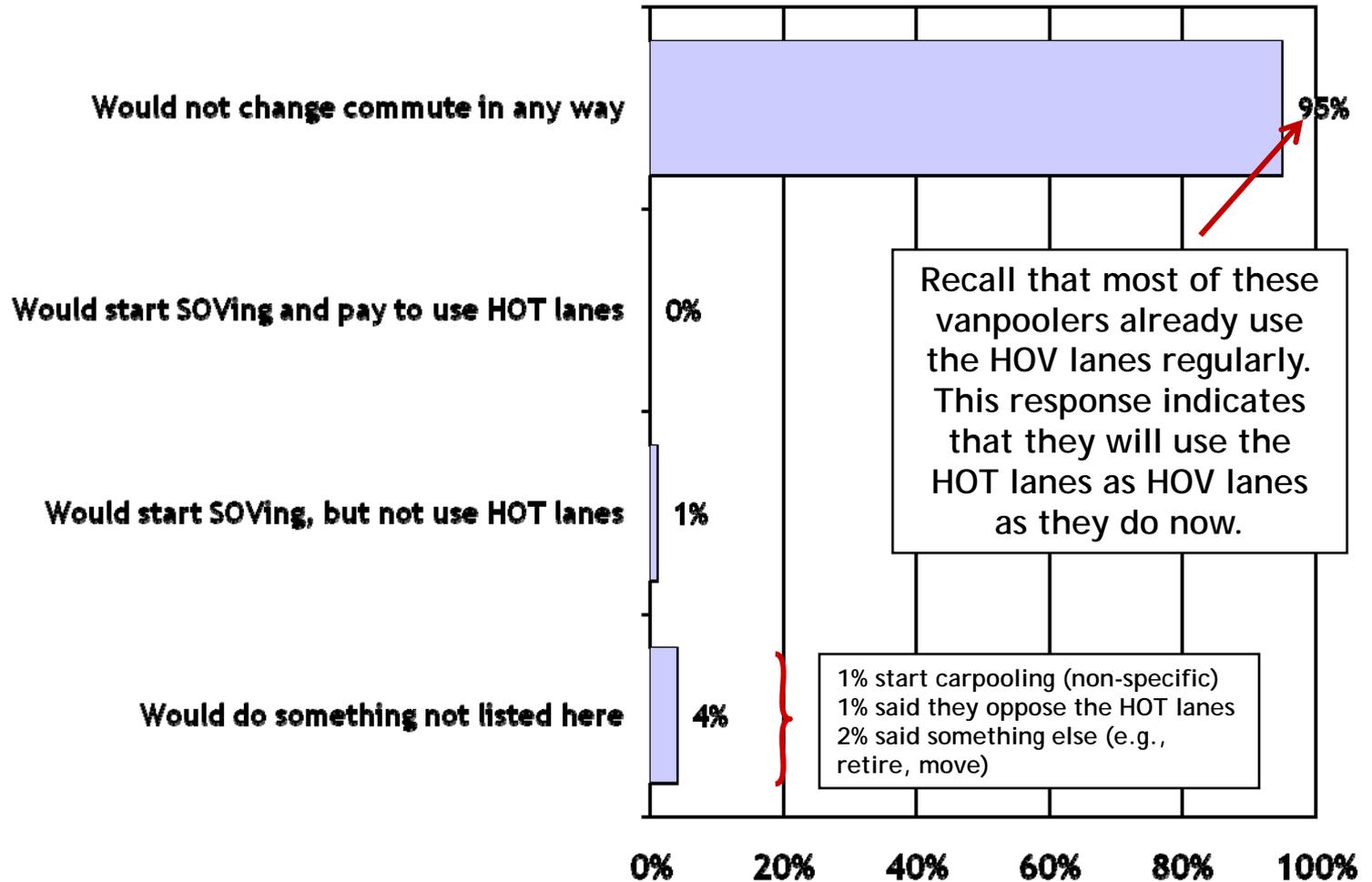
Proportions shown represent sluggers.

Q41A-B. Which of the following statements best describes how you would typically commute when the HOT lanes are completed and open for use?



Vanpoolers Would Not Change their Commute Behavior in Response to HOT Lanes

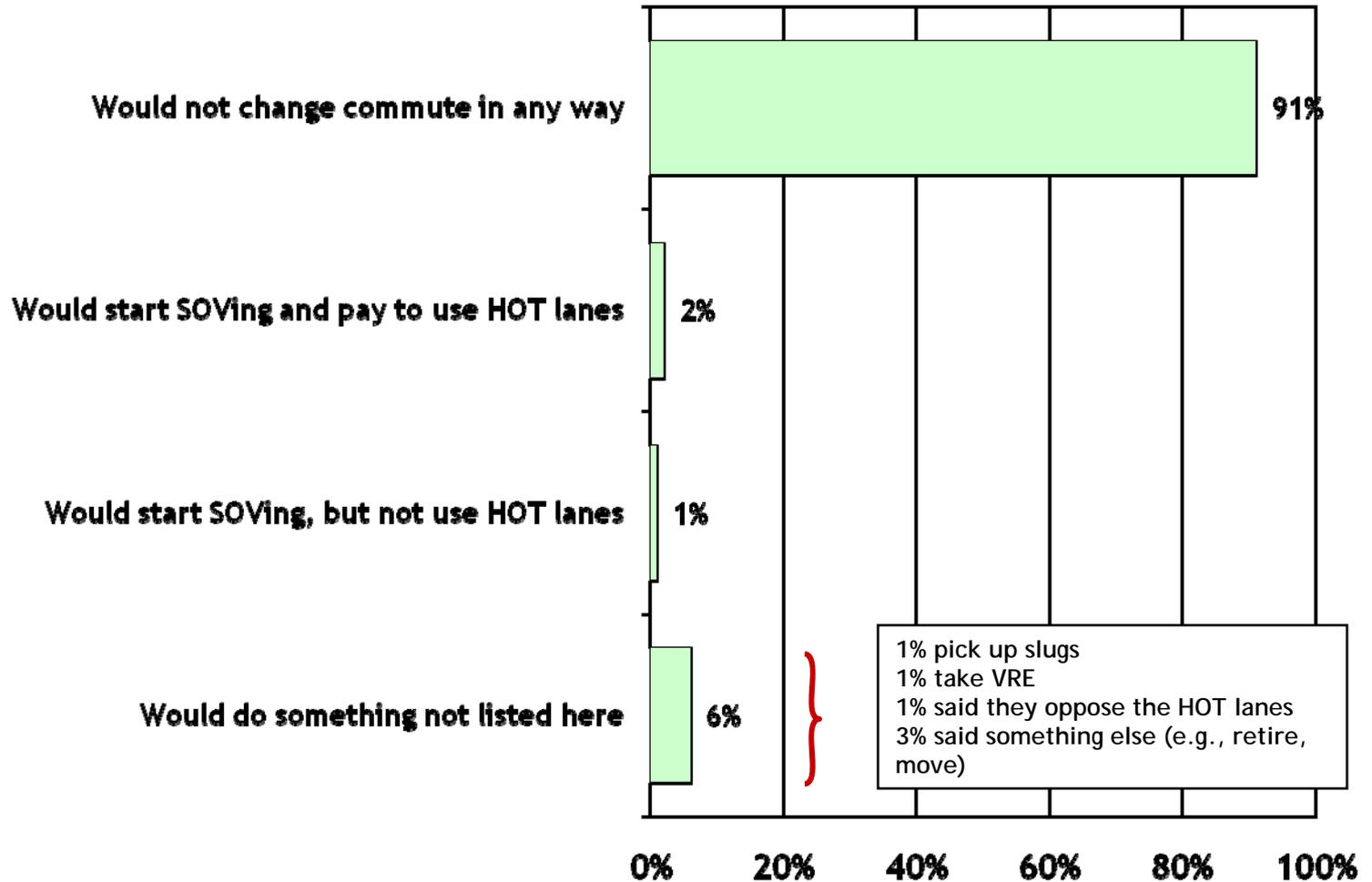
Proportions shown represent vanpoolers.



Q41A-B.
 Which of the following statements best describes how you would typically commute when the HOT lanes are completed and open for use?

Bus Riders Also Say They Would Not Change How They Commute in Response to HOT Lanes

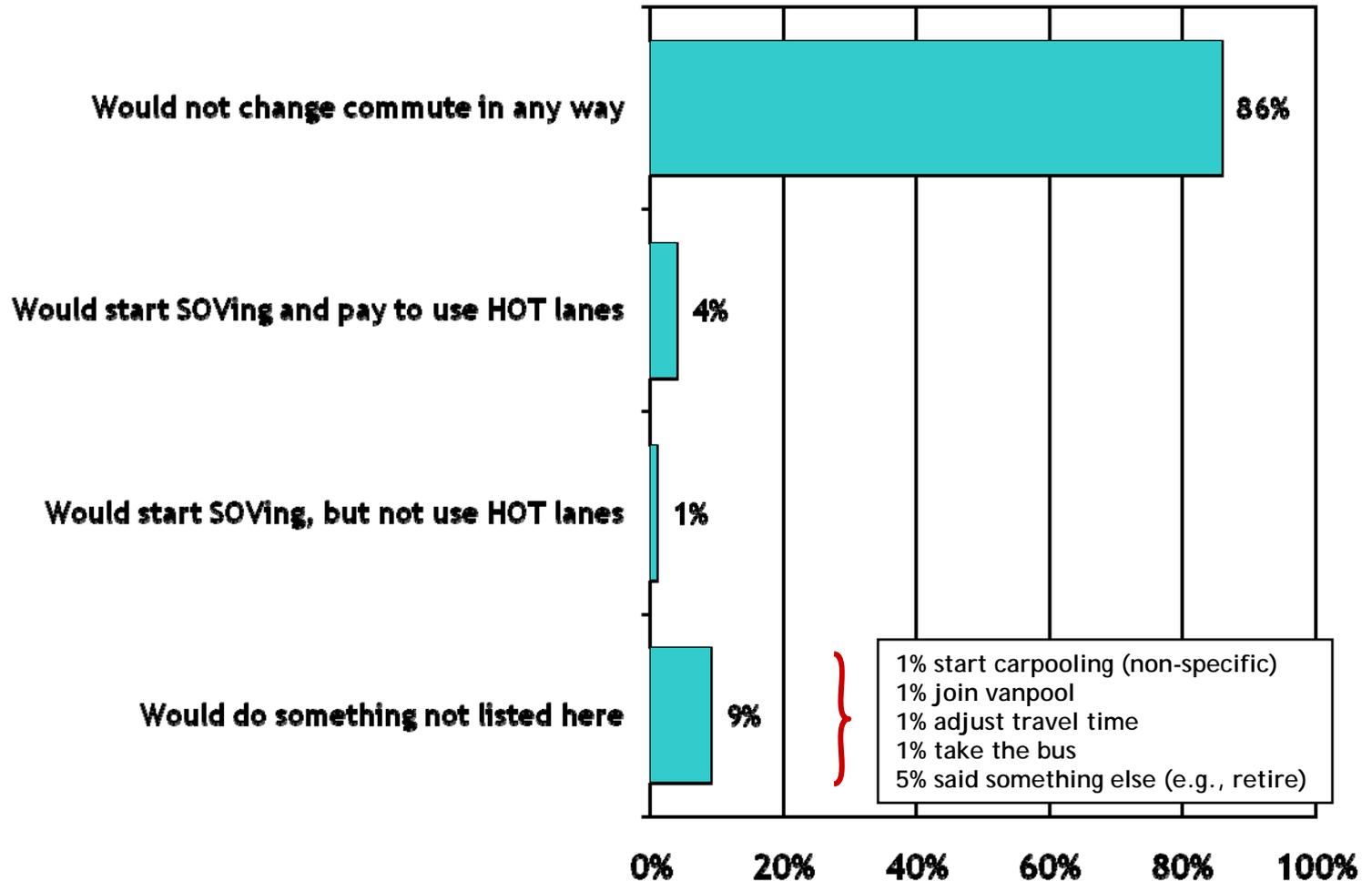
Proportions shown represent bus riders.



Q41A-B.
Which of the following statements best describes how you would typically commute when the HOT lanes are completed and open for use?

For the Most Part, VRE Riders Would Continue to Ride the Train

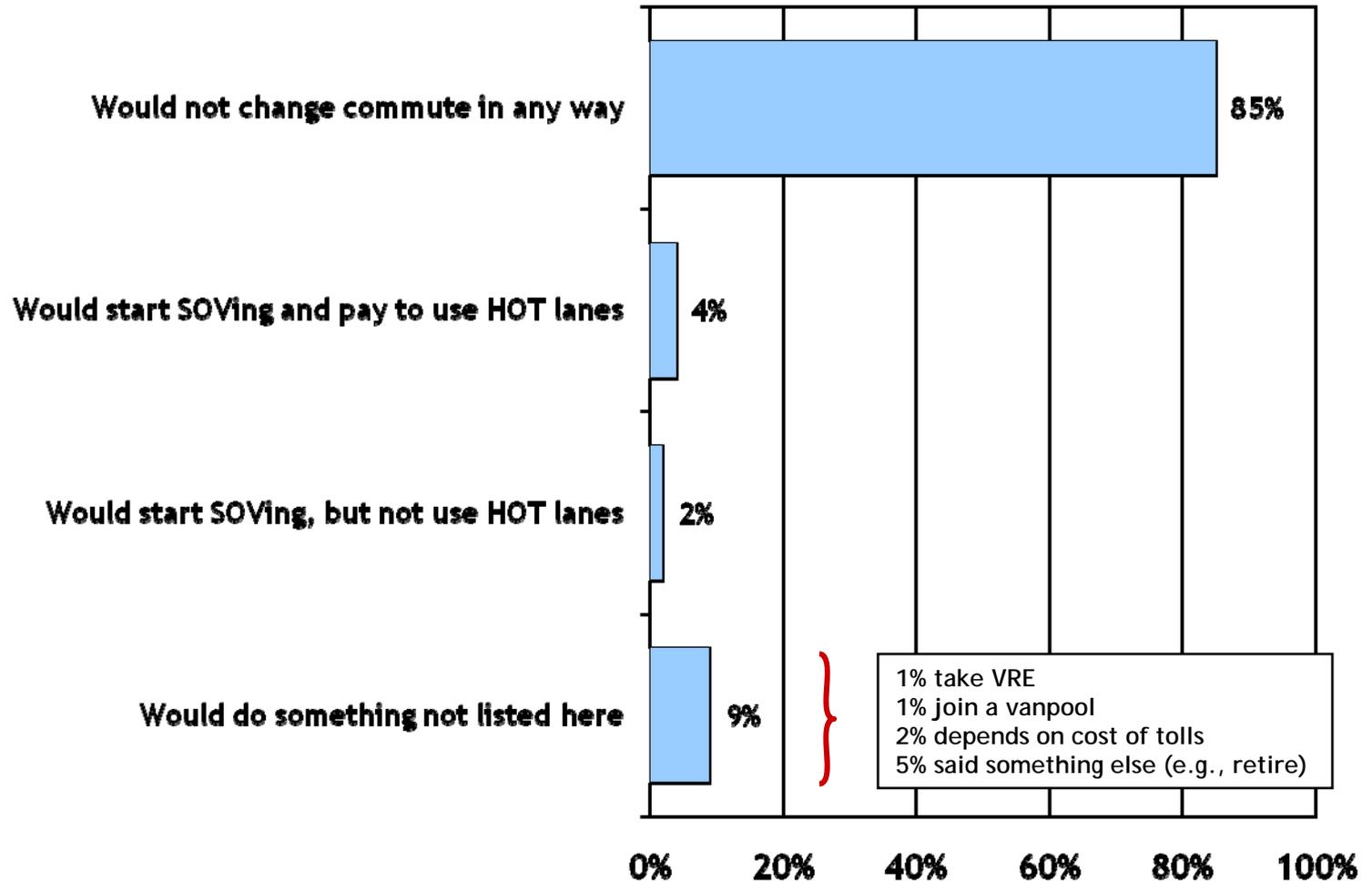
Proportions shown represent VRE riders.



Q41A-B.
Which of the following statements best describes how you would typically commute when the HOT lanes are completed and open for use?

For the Most Part, Metrorail Riders Would Continue to Ride Metrorail

Proportions shown represent Metrorail riders.



Q41A-B.
Which of the following statements best describes how you would typically commute when the HOT lanes are completed and open for use?

Outline of Report

I. Profile of Commuters

II. HOT Lanes

III. Transit and TDM Improvements



- Express Bus
- VRE
- Metrorail
- Park-and-ride
- Bus Rapid Transit
- Online Ride-matching

Demand Discount Factor

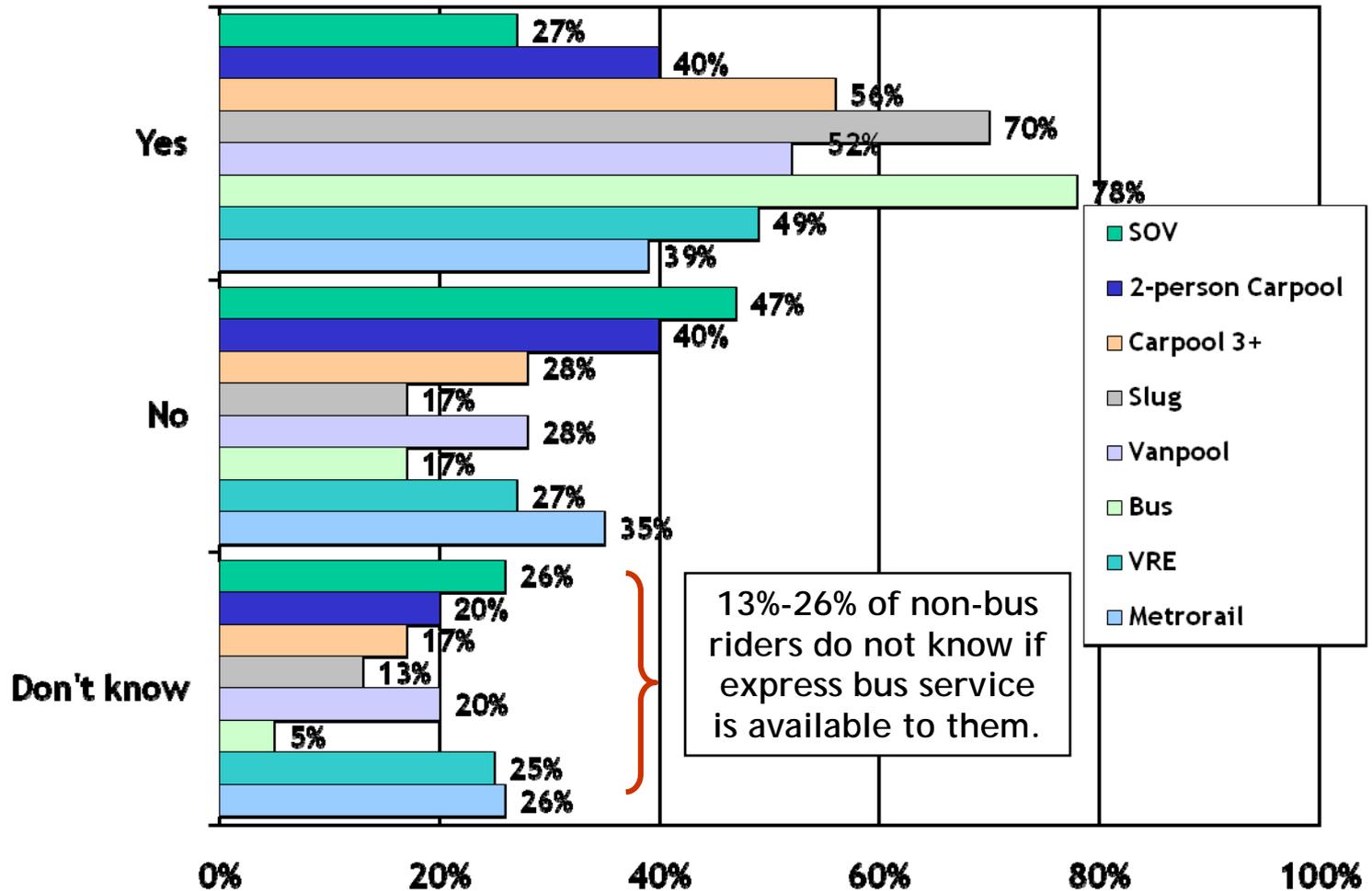
Many of the following slides report stated likelihood of usage of specific transit and TDM enhancements and alternatives. Research indicates that respondents often overstate their likelihood of usage. A demand discount factor has been developed that allows researchers to more accurately project responses.

This demand discount factor has been applied on the following measures when a 5-point “likelihood” scale is used, as appropriate.

Sluggers and Bus Riders Are Most Likely to Have Express Bus Service Available

Question asked of all respondents.

Q46. Is there express bus service reasonably available for the area where you commute? An express bus service is a motorcoach or bus, generally traveling longer distance with limited stops, taking commuters to their work areas.

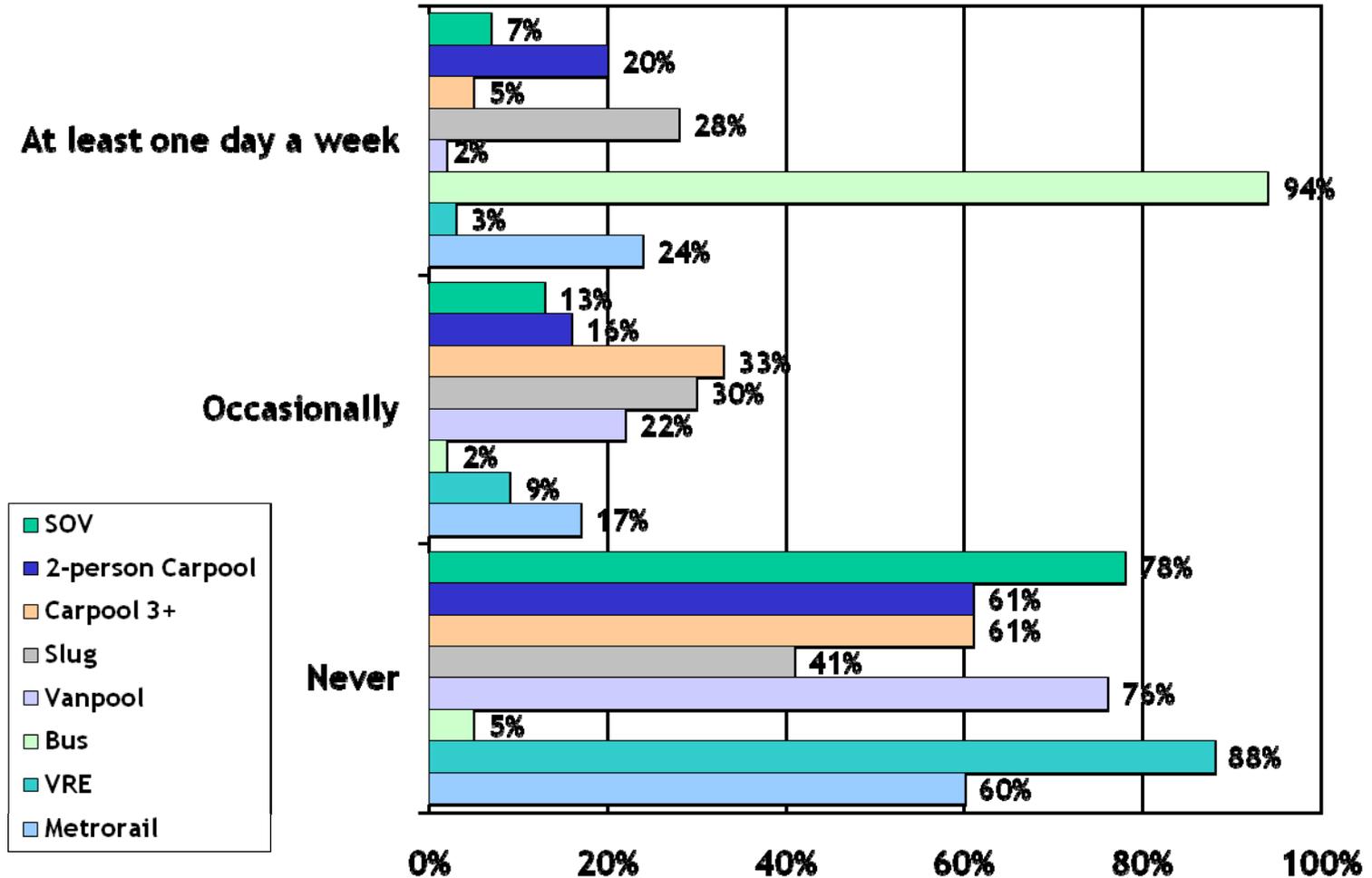


Among Non-Bus Riders, Sluggers Are Most Likely to Ride an Express Bus - But, Not All Bus Riders Say that They Ride an Express Bus; VRE Riders Tend Not to Use Express Bus Service Even When Available

SOV, n=223
 2-person carpool, n=51
 Carpool 3+, n=128
 Slug, n=424
 Vanpool, n=142
 Bus, n=306
 VRE, n=245
 Metrorail, n=72

Question asked of all respondents who said express bus service is available.

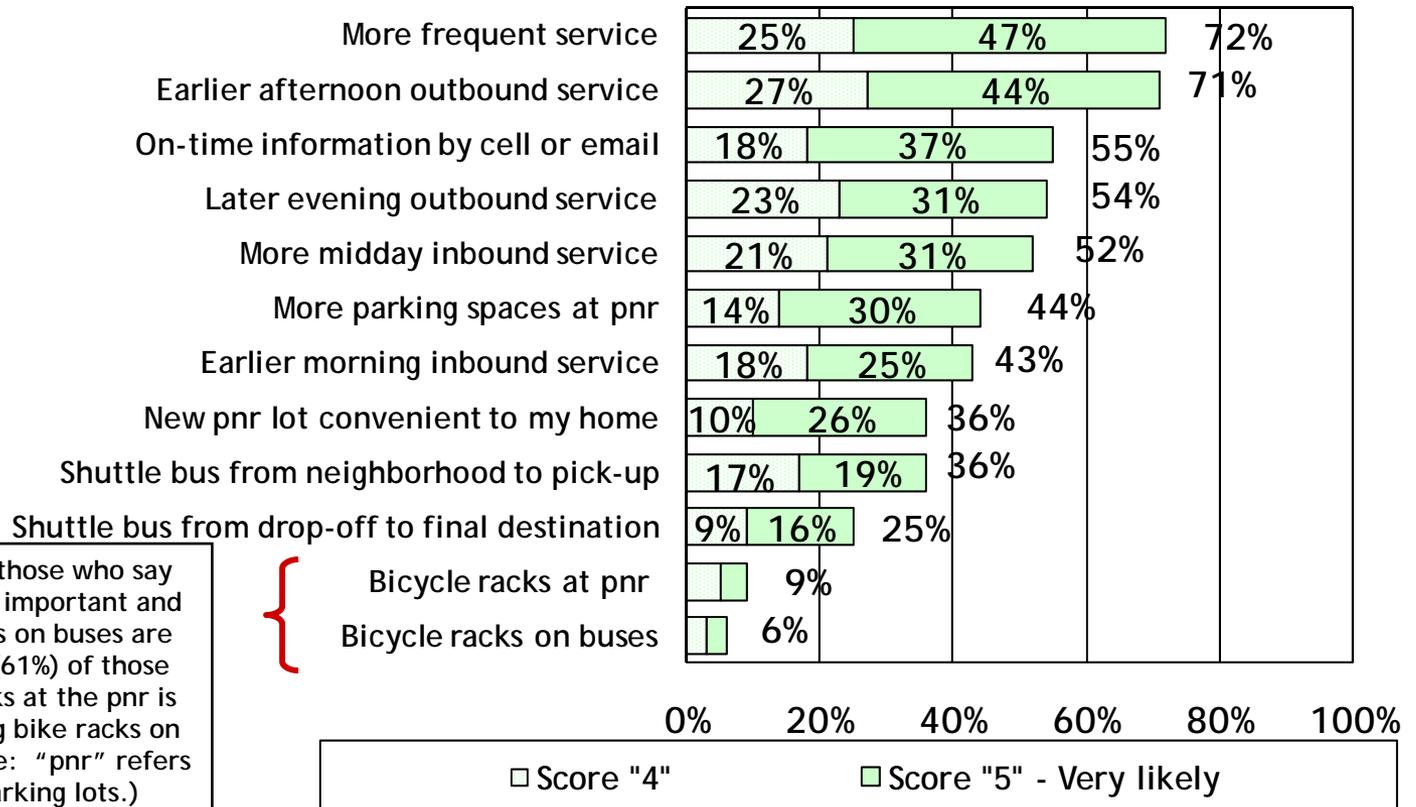
Q47. How often do you use that express bus service?



n=154, n varies slightly for each attribute (each respondent rated half of list)

More Frequent Service and Earlier Afternoon Outbound Service Increase the Appeal of Express Bus Service among Current Riders

Proportions represent responses of those who use express bus as primary mode.



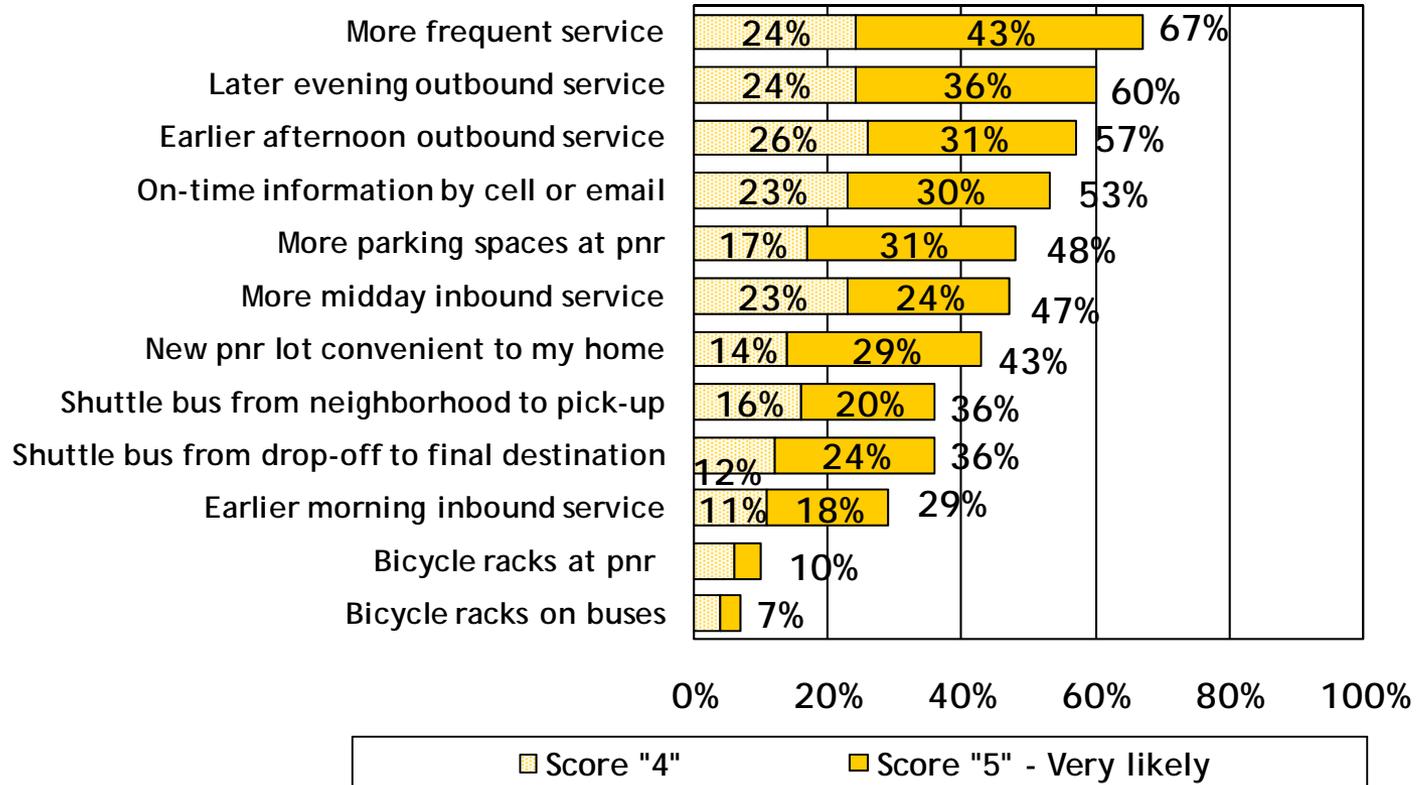
There is overlap among those who say bike racks at the pnr are important and those who say bike racks on buses are important. Two-thirds (61%) of those who say having bike racks at the pnr is important also say having bike racks on buses is important. (Note: "pnr" refers to "park-and-ride" parking lots.)

Q47A. Next is a list of potential improvements to that express bus service. Please indicate how important each improvement would be to you in helping you choose to continue riding express bus service or to increase your usage.

n=129, n varies slightly for each attribute (each respondent rated half of list)

Of the Potential Improvements Tested, More Frequent Service Would Impact the Greatest Proportion of Those Who Ride the Express Bus Although It Is Not their Primary Mode

Proportions represent responses of those who use express bus but not as primary mode.



Q47A. Next is a list of potential improvements to that express bus service. Please indicate how important each improvement would be to you in helping you choose to continue riding express bus service or to increase your usage.

Meeting the Needs of Current Riders Can Help Retain Riders and Potentially Increase Frequency of Riding

Lists indicate
strongest
opportunities
for each
company.

- PRTC
 - Earlier afternoon outbound service
 - Later evening outbound service
 - More parking at existing park-and-ride
 - More midday inbound service
 - New park-and-ride more convenient to home
 - Shuttle bus from neighborhood to pickup point
- Metrobus/Wmata
 - On-time information by cell or email
 - Earlier afternoon outbound service
 - Later evening outbound service
 - More midday inbound service
- Martz (small base size)
 - Earlier afternoon outbound service

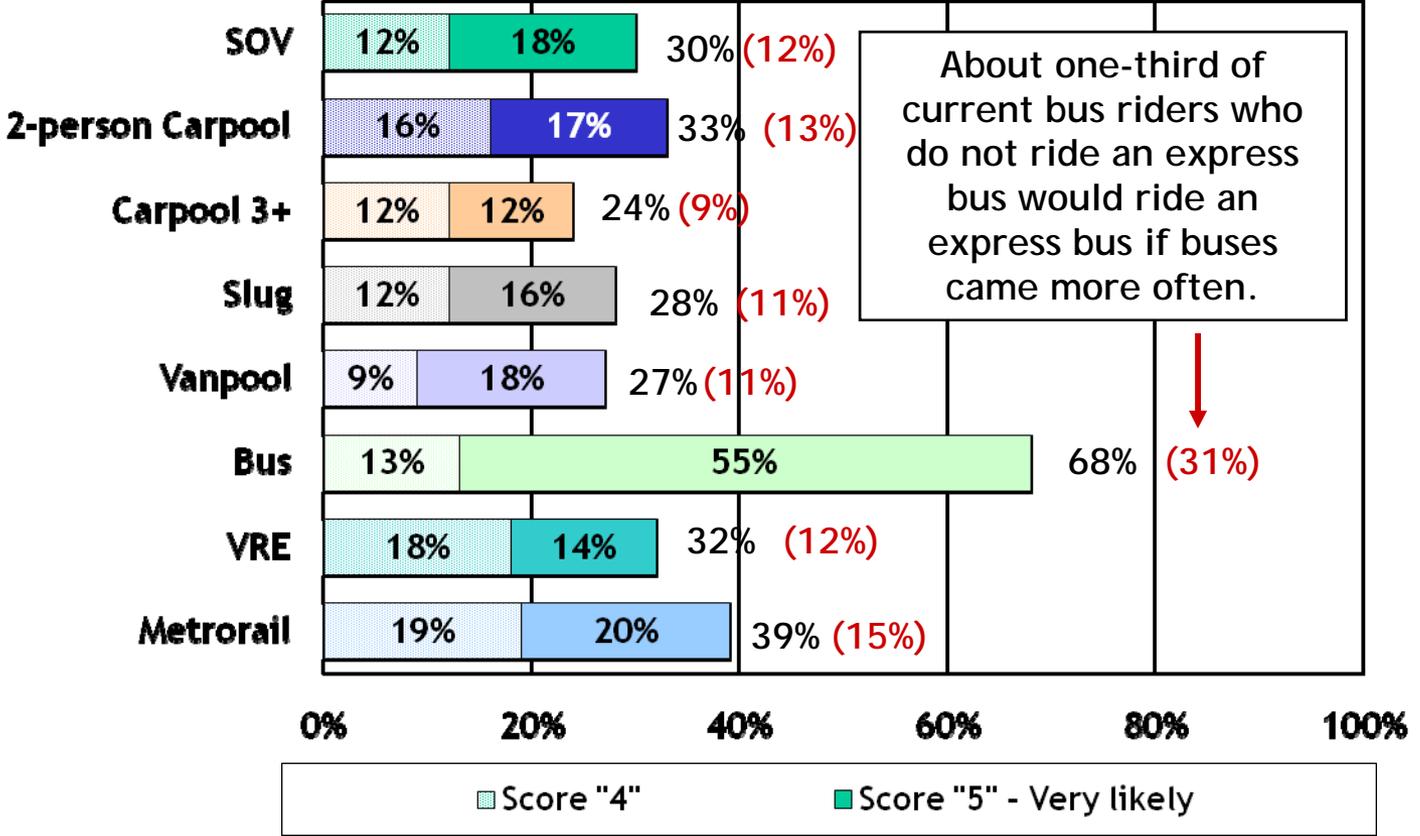
Q47A. Next is a list of potential improvements to that express bus service. Please indicate how important each improvement would be to you in helping you choose to continue riding express bus service or to increase your usage.

About One-Fourth to One-Third of Non-Bus Riders Say They Would Ride an Express Bus 1-2 Days a Week if Buses Came More Often - The Discount Demand Factor Brings This Down to about 1 out of 10

SOV, n=772
 2-person carpool, n=108
 Carpool 3+, n=181
 Slug, n=355
 Vanpool, n=234
 Bus, n=100
 VRE, n=472
 Metrorail, n=156

Values in red font indicate total scores after discount demand factor has been applied.

Question asked of all who do not use express bus service.



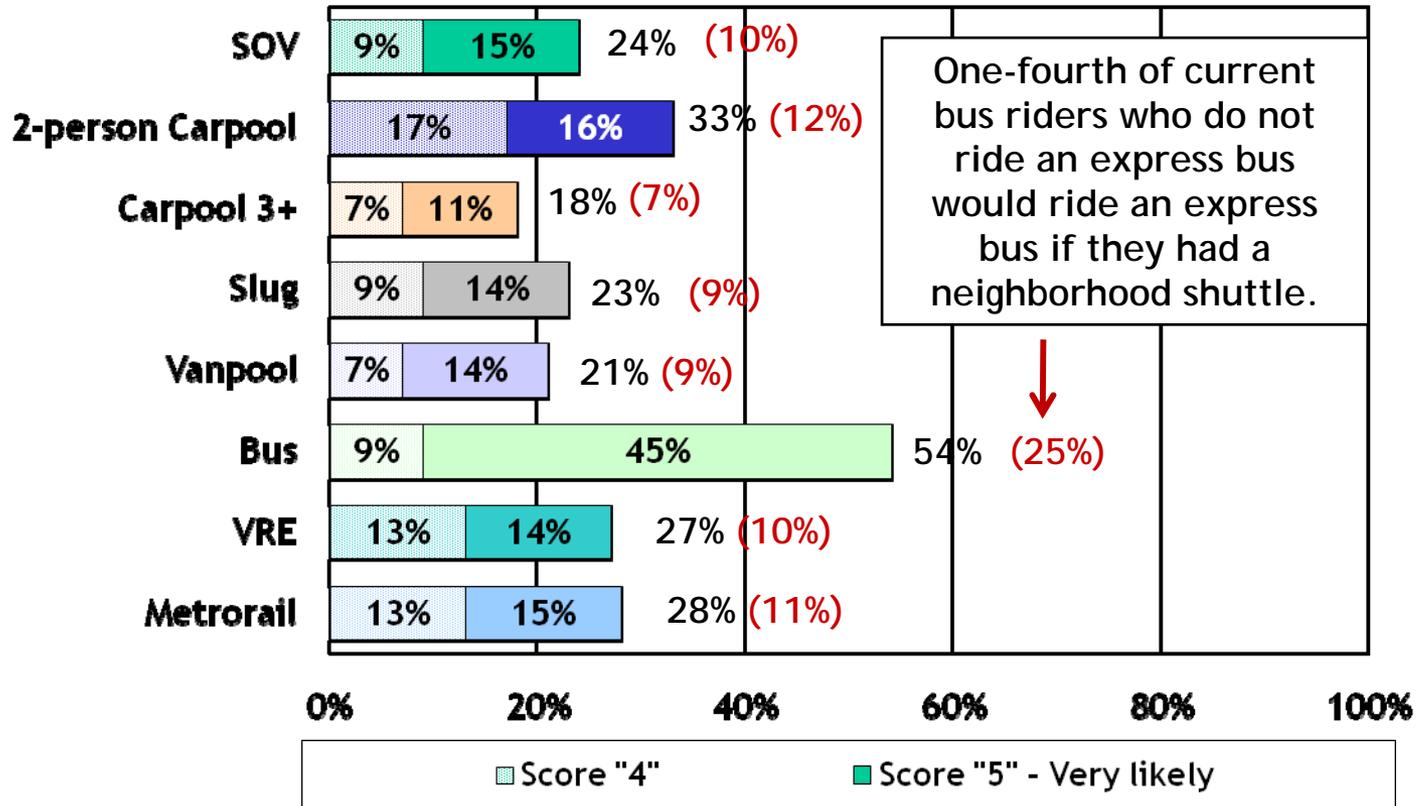
Q49. If the schedule were revised so that express buses came more often, how likely would you be to ride an express bus at least 1-2 days a week?

About One-Fourth of Non-Bus Riders Say They Would Ride an Express Bus 1-2 Days a Week if They Had a Shuttle in Their Neighborhood - With The Demand Discount Factor, Likelihood Is about 10%

SOV, n=772
 2-person carpool, n=108
 Carpool 3+, n=181
 Slug, n=355
 Vanpool, n=234
 Bus, n=100
 VRE, n=472
 Metrorail, n=156

Values in red font indicate total scores after discount demand factor has been applied.

Question asked of all who do not use express bus service.



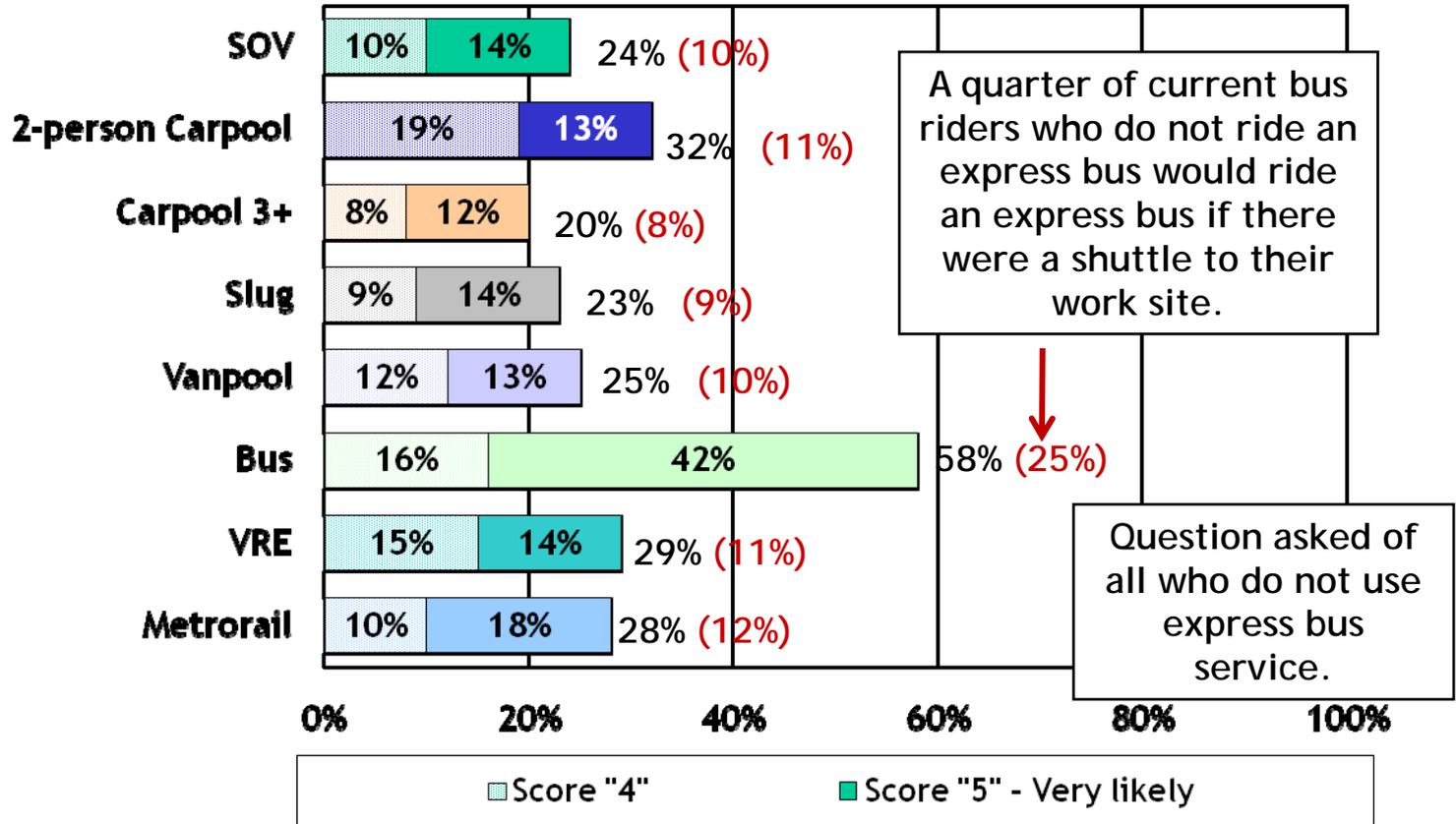
Q50. Suppose that a shuttle bus could operate frequently in your neighborhood that would circulate and connect to an express bus stop. How likely would you be to ride an express bus at least 1-2 days a week if such a feeder bus service operated?

SOV, n=772
 2-person carpool, n=108
 Carpool 3+, n=181
 Slug, n=355
 Vanpool, n=234
 Bus, n=100
 VRE, n=472
 Metrorail, n=156

About One-Fourth of Non-Bus Riders Also Say They Would Ride an Express Bus 1-2 Days a Week if They Had a Shuttle from Their Drop-off Point to Their Commute Destination

Values in red font indicate total scores after discount demand factor has been applied.

Note: The question did not specify service schedule for this shuttle. The schedule was described as "operate frequently in the morning and afternoon peak hours."



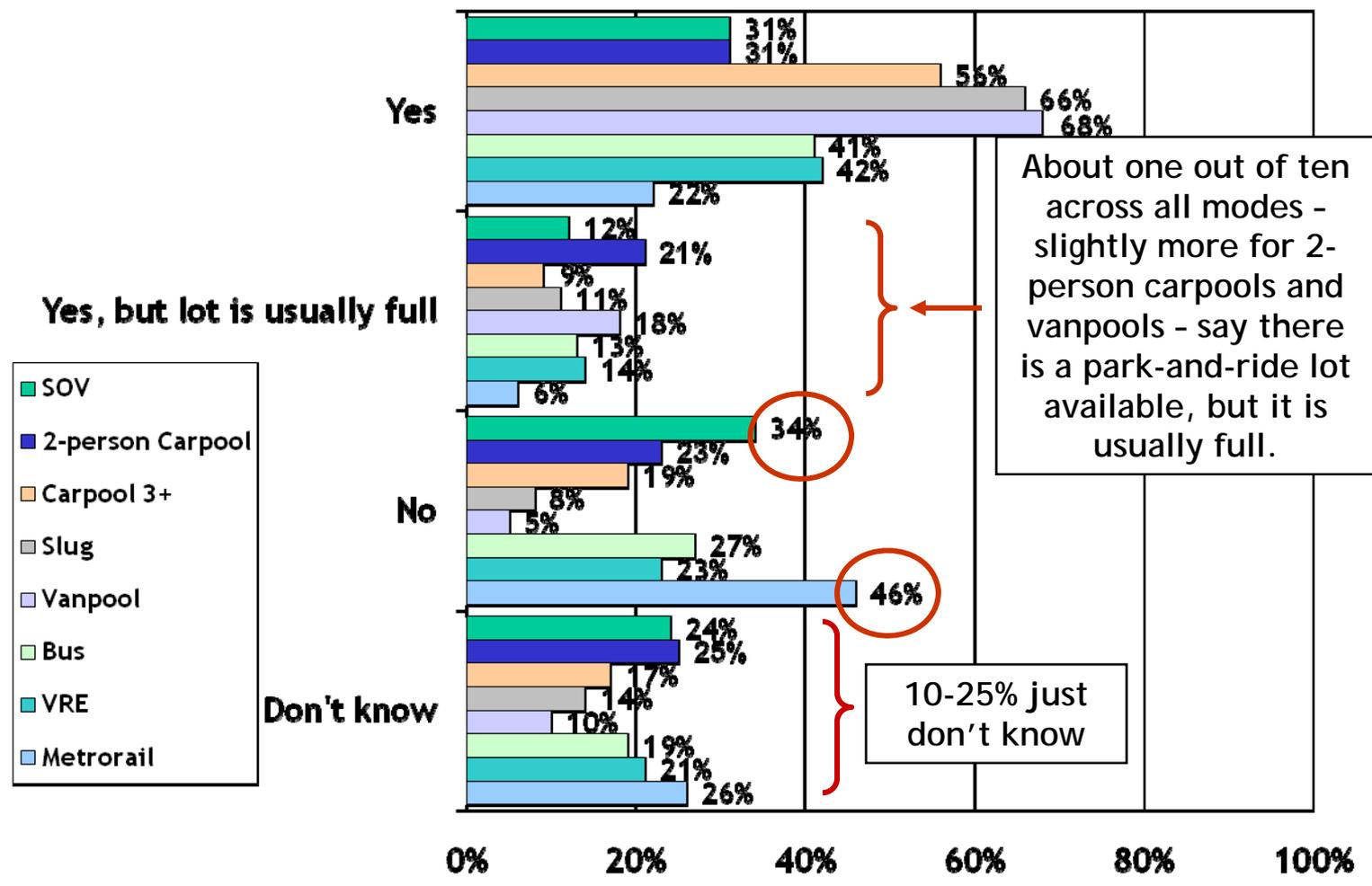
Q51. Suppose that a shuttle bus service could operate frequently in the morning and afternoon peak hours between the express bus drop-off point and your commute destination. How likely would you be to ride an express bus at least 1-2 days a week if such a shuttle bus service operated?

One-third of SOVers and Nearly Half of Metrorail Riders Say There Is No Park-and-Ride Lot Located Along Their Commute

SOV, n=772
 2-person carpool, n=108
 Carpool 3+, n=181
 Slug, n=355
 Vanpool, n=234
 Bus, n=100
 VRE, n=472
 Metrorail, n=156

Question asked of all respondents.

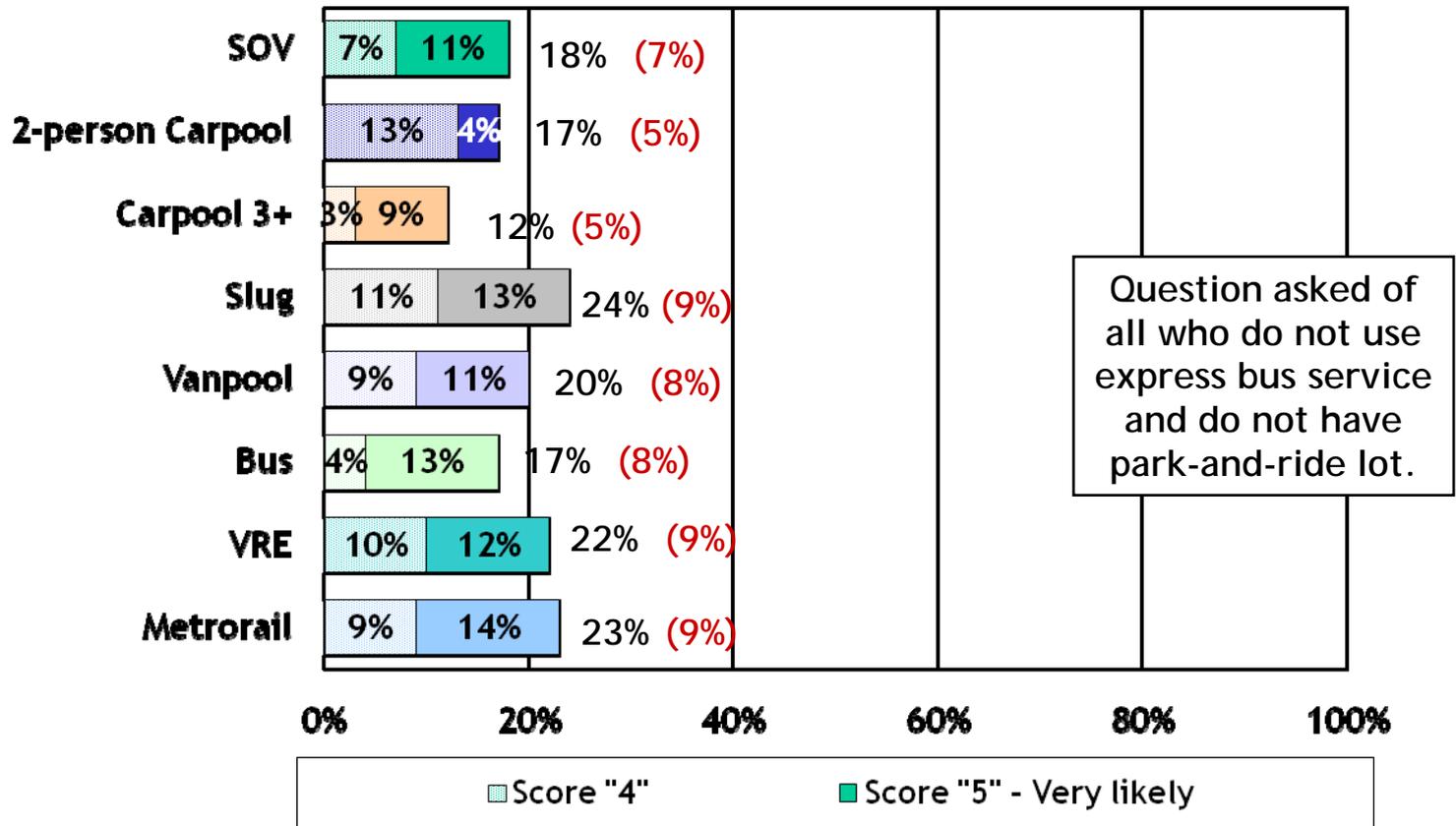
Q52. Is there a park-and-ride lot located along your commute where you could catch an express bus?



A Park-and-Ride Lot Could Attract about 5-9% of Those Who Do Not Currently Have A Park-and-Ride Lot Available

SOV, n=444
 2-person carpool, n=52
 Carpool 3+, n=64
 Slug, n=79
 Vanpool, n=35
 Bus, n=46
 VRE, n=208
 Metrorail, n=112

Values in red font indicate total scores after discount demand factor has been applied.



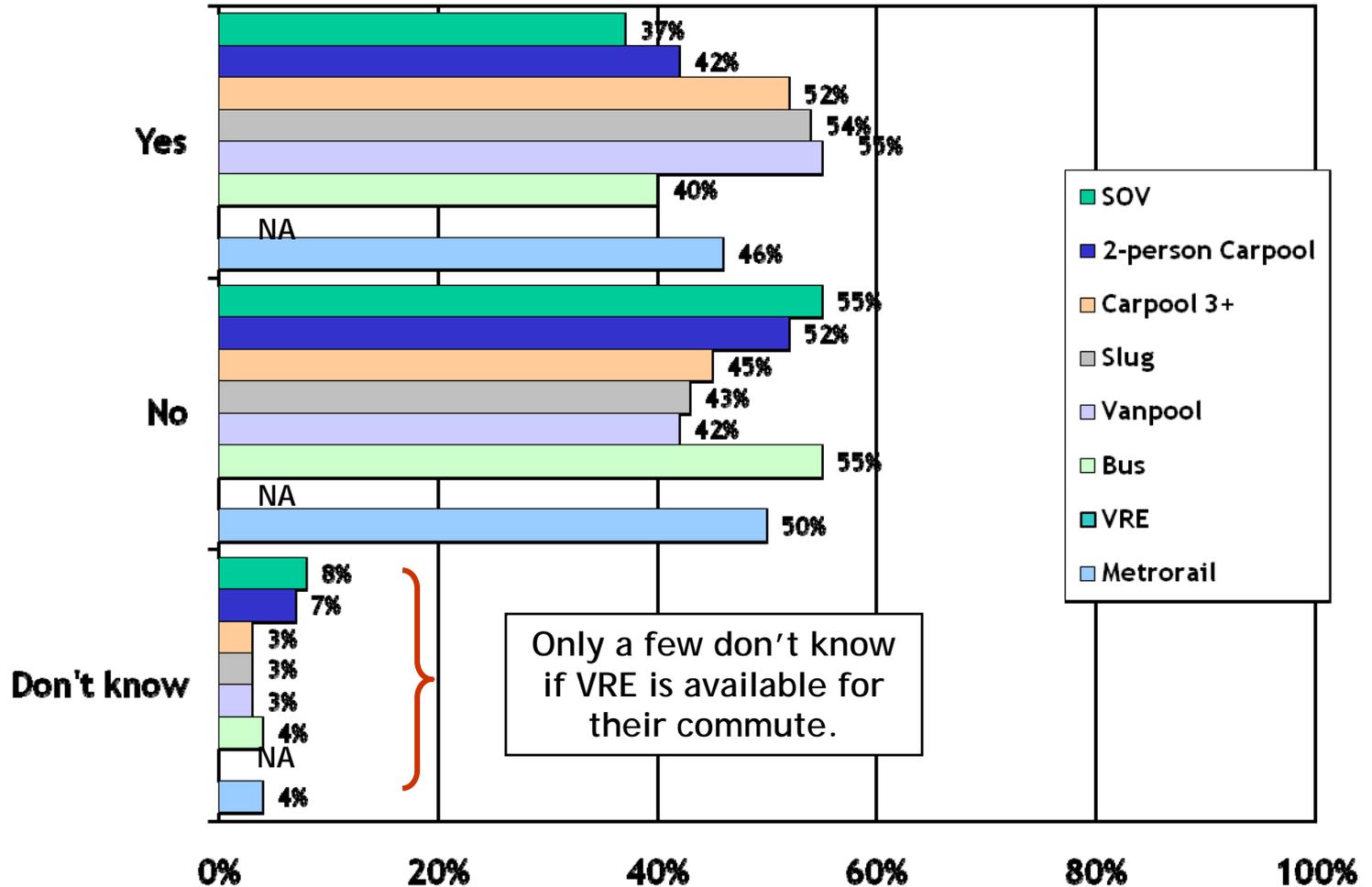
Q53. If there were a new park-and-ride lot located along your commute, how likely would you be to use it at least 1-2 days a week in order to take an express bus?

One-Third to Slightly More than One-Half of Those Who Do Not Currently Ride VRE Say That VRE Is Conveniently Available for Their Commute

SOV, n=796
 2-person carpool, n=120
 Carpool 3+, n=222
 Slug, n=580
 Vanpool, n=265
 Bus, n=382
 Metrorail, n=185

Question asked of all respondents who do not ride VRE.

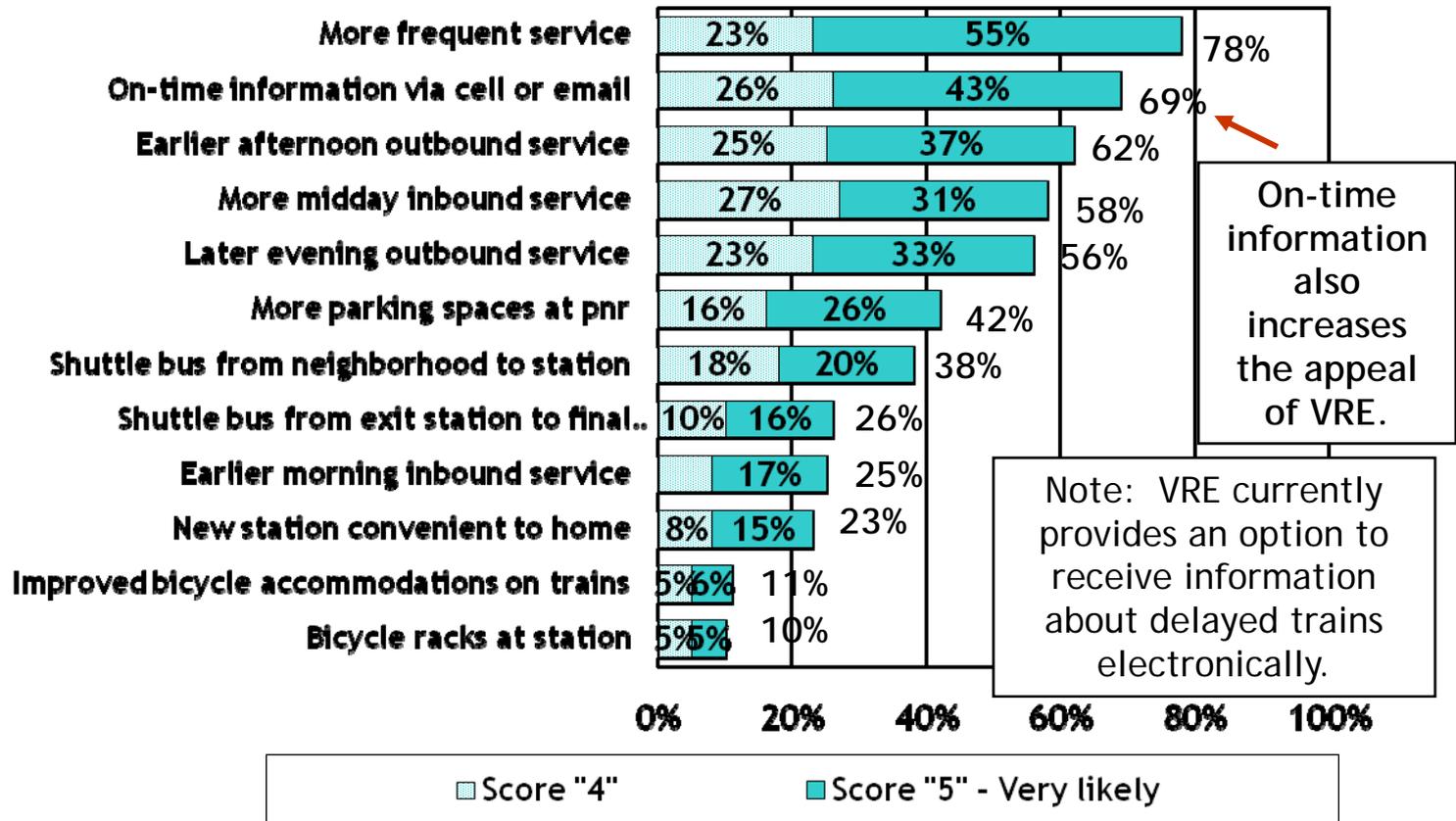
Q55-B. Is Virginia Railway Express (VRE) conveniently available for at least a portion of your commute?



n=227, n varies slightly for each attribute (each respondent rated half of list)

More Frequent Service Increases the Appeal of VRE Among Commuters for Whom VRE Is the Primary Mode

Proportions shown represent those for whom VRE is primary mode.

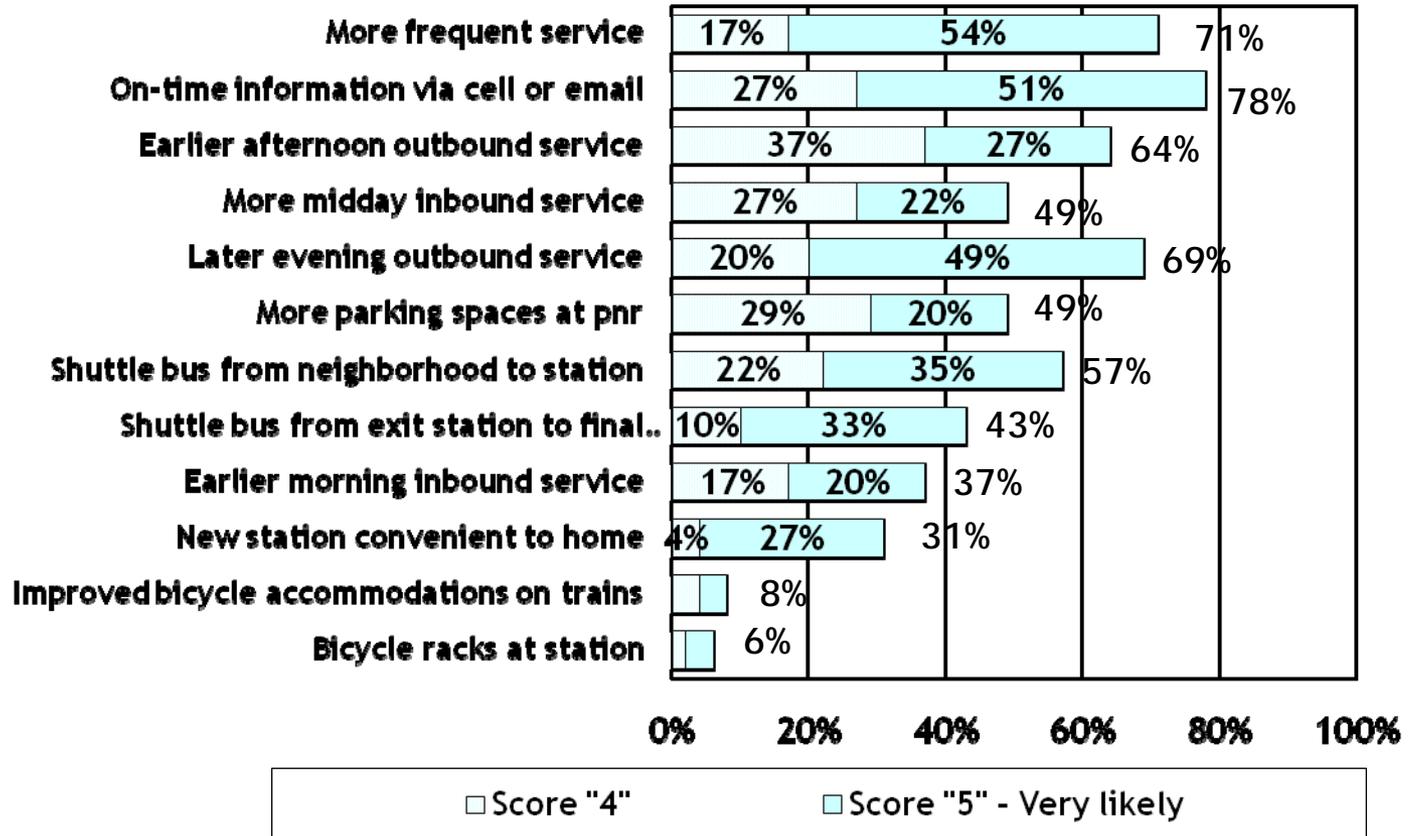


Q55-A. Earlier you indicated that you use the VRE service. Following is a list of potential improvements to that service. Please indicate how important each improvement would be to you in helping you choose to continue riding VRE or to increase your usage.

n=40, n varies slightly for each attribute (each respondent rated half of list)

On-time Information and More Frequent Service Also Increases the Appeal of VRE Among Commuters Who Ride VRE But It Is Not Their Primary Mode

Proportions shown represent those who use VRE, but it is not their primary mode.



Q55-A. Earlier you indicated that you use the VRE service. Following is a list of potential improvements to that service. Please indicate how important each improvement would be to you in helping you choose to continue riding VRE or to increase your usage.

About One-Half of those Living South of Fredericksburg Say They Would Be Likely to Ride VRE if a VRE Station Were Constructed South of Fredericksburg

Question: If a VRE station were constructed south of Fredericksburg, how likely would you be to use the Virginia Railway Express for your commute at least 1-2 days a week?

Score "5" - Very likely	42%
Score "4"	5%
Score "3"	9%
Score "2"	7%
Score "1" - Not at all likely	31%
Don't know	6%

47% say they would likely ride VRE if a station were constructed south of Fredericksburg

Note: Question asked of those who live in zip codes south of Fredericksburg.

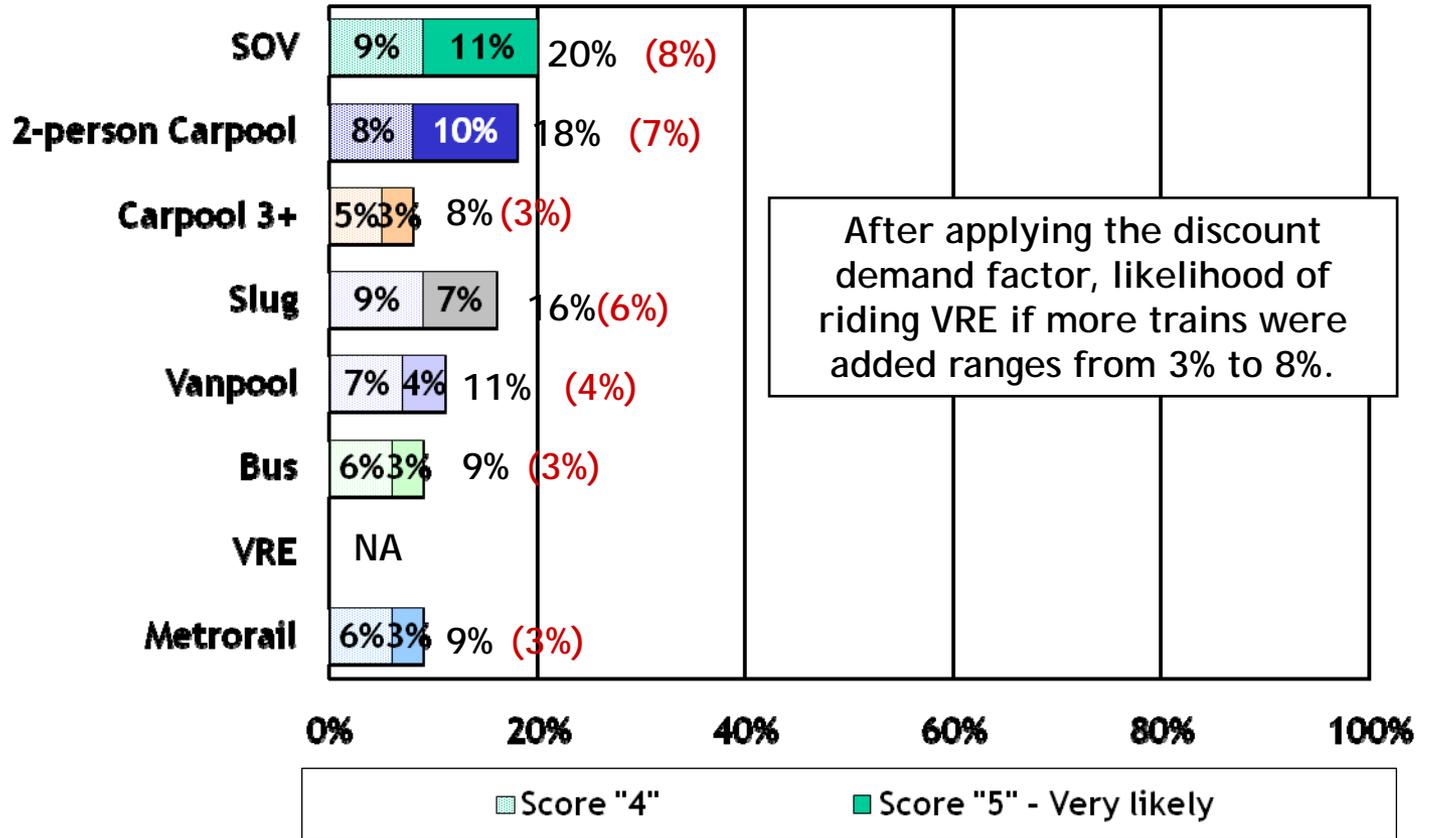
Q56. If a VRE station were constructed south of Fredericksburg, how likely would you be to use the Virginia Railway Express for your commute at least 1-2 days a week?

About 8% of SOVers with VRE Available Would Be Likely to Use VRE at Least 1-2 Days a Week if Trains Came More Often

SOV, n=796
 2-person carpool, n=120
 Carpool 3+, n=222
 Slug, n=580
 Vanpool, n=265
 Bus, n=382
 Metrorail, n=185

Values in red font indicate total scores after discount demand factor has been applied.

Question asked of all who do not ride VRE and have VRE service available.



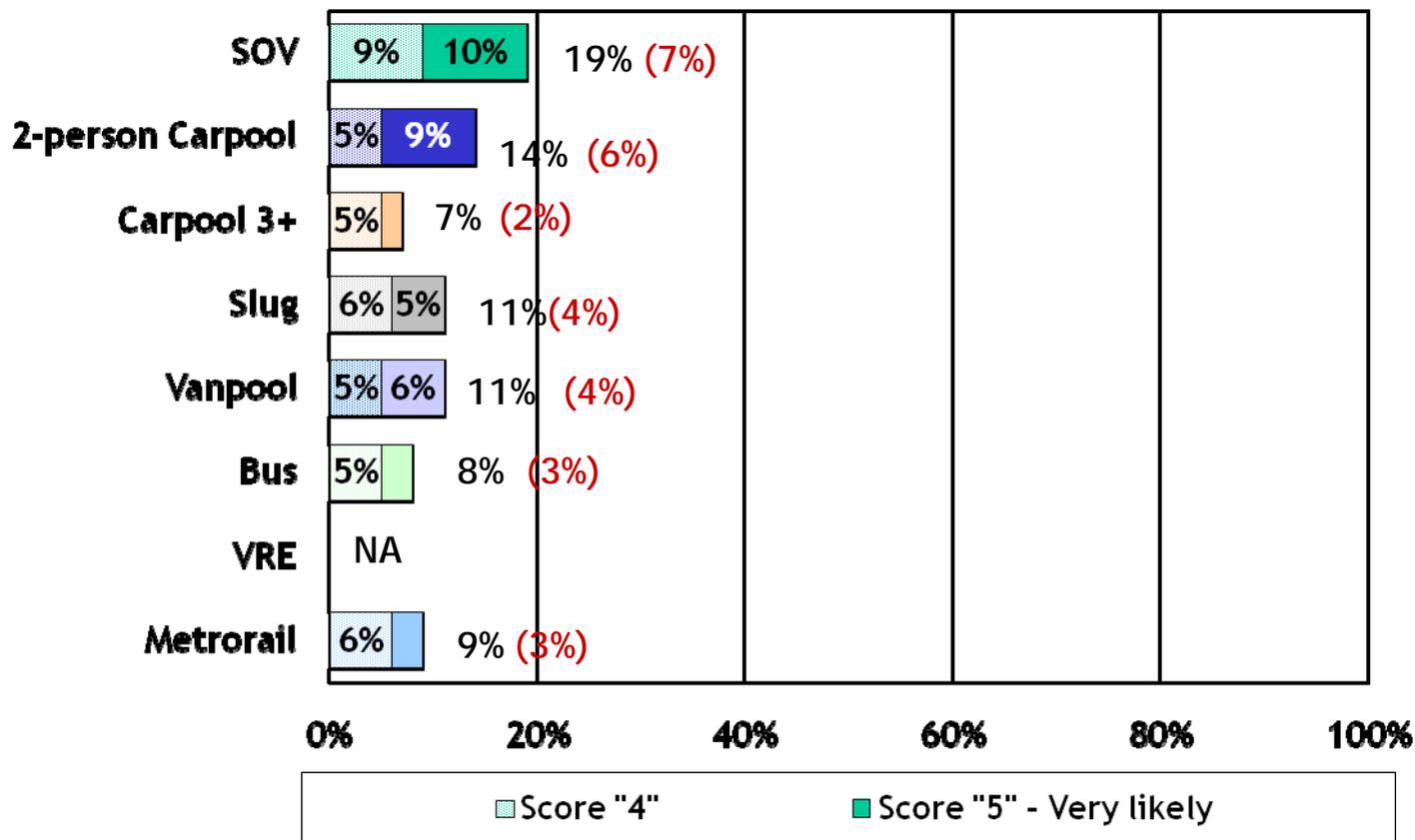
Q57. If additional VRE trains were added so that they came more often, how likely would you be to use the Virginia Railway Express for your commute at least 1-2 days a week?

SOV, n=796
 2-person carpool, n=120
 Carpool 3+, n=222
 Slug, n=580
 Vanpool, n=265
 Bus, n=382
 Metrorail, n=185

Likelihood of Riding VRE if There Were More Seats Ranges from 2% to 7%

Values in red font indicate total scores after discount demand factor has been applied.

Question asked of all who do not ride VRE and have VRE service available.

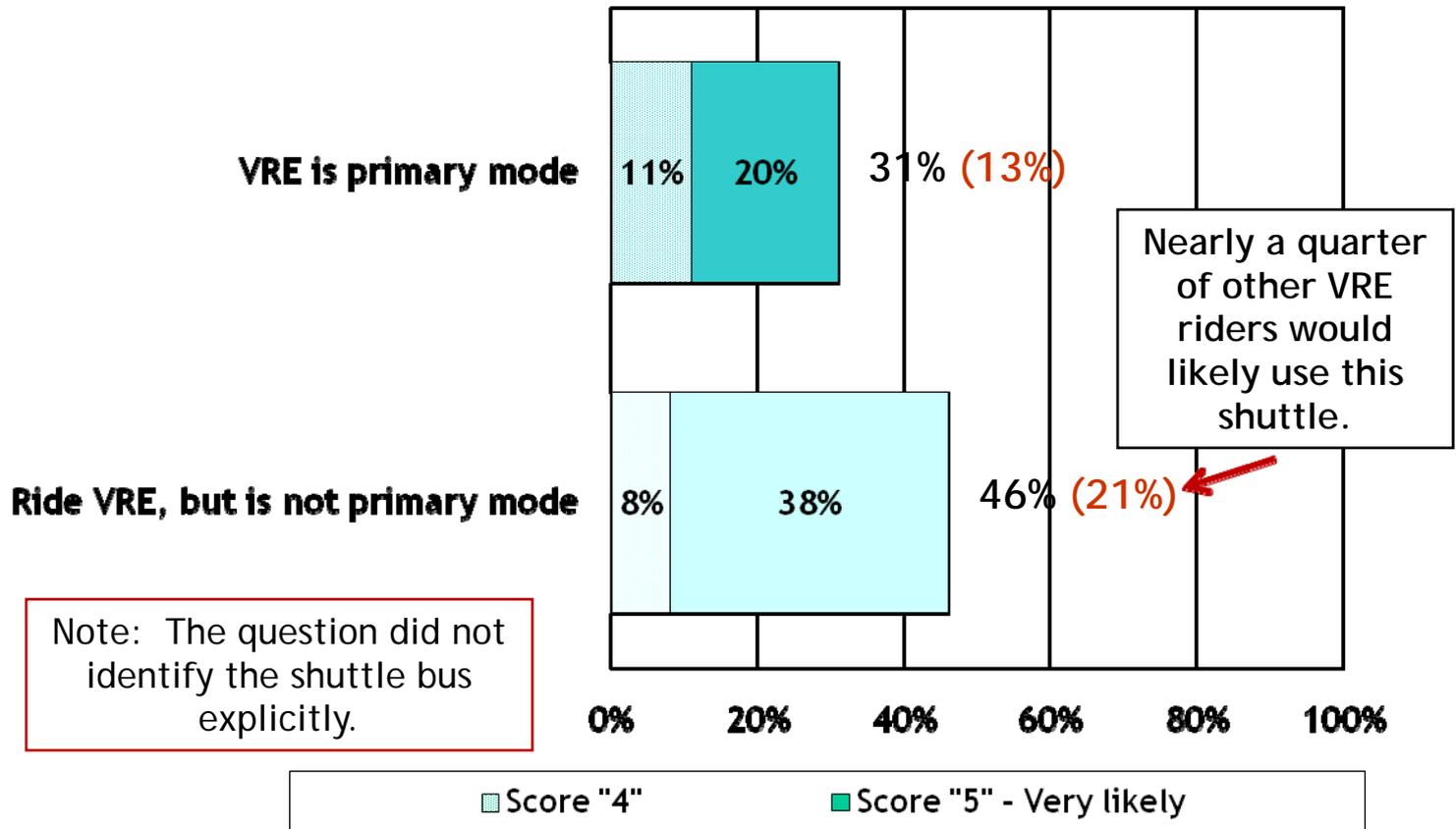


Q58. If VRE trains had more seats available, how likely would you be to use the Virginia Railway Express for your commute at least 1-2 days a week?

VRE is primary mode, n=501
Ride VRE, but is not primary mode, n=92

Values in **red font** indicate total scores after discount demand factor has been applied.

Nearly One-Third Who Use VRE as Their Primary Commute Mode Would Take a Shuttle That Runs from the VRE Station to Their Destination



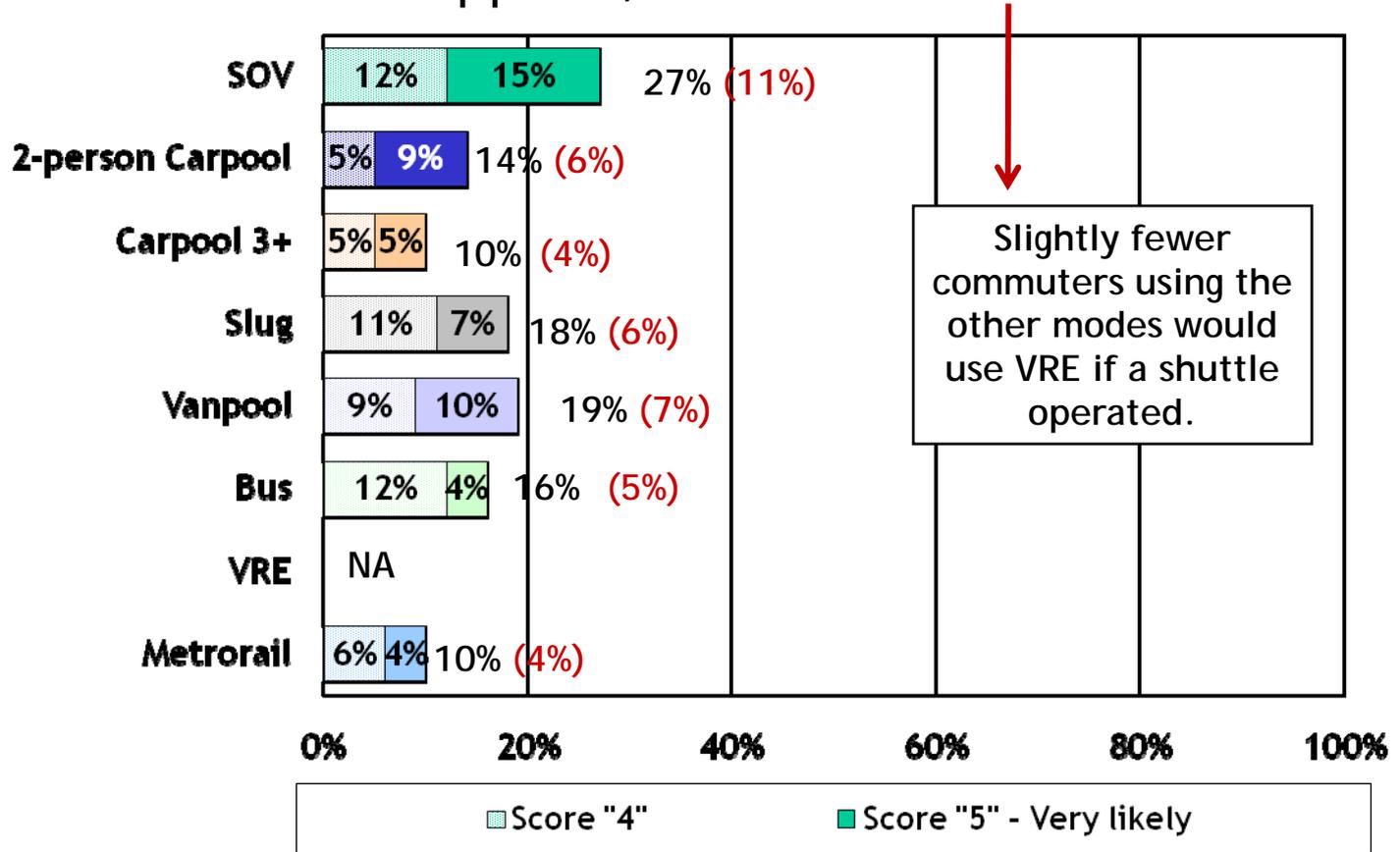
Q59. Suppose a shuttle bus service could operate frequently in the morning and afternoon peak hours between the VRE train station and your commute destination (e.g., work). How likely would you be to take this shuttle bus?

One-Fourth of SOVers Say They Would Ride VRE If a Shuttle Bus Operated to Their Commute Destination - With the Demand Discount Factor Applied, about 1 out of 10

SOV, n=796
 2-person carpool, n=120
 Carpool 3+, n=222
 Slug, n=580
 Vanpool, n=265
 Bus, n=382
 Metrorail, n=185

Values in red font indicate total scores after discount demand factor has been applied.

Question asked of all who do not ride VRE and have VRE service available.



Q60. Suppose a shuttle bus service could operate frequently in the morning and afternoon peak hours between the VRE train station and your commute destination (e.g., work). How likely would you be to ride VRE if this shuttle bus service were offered?

VRE is primary mode, n=501
Ride VRE, but is not primary mode, n=92

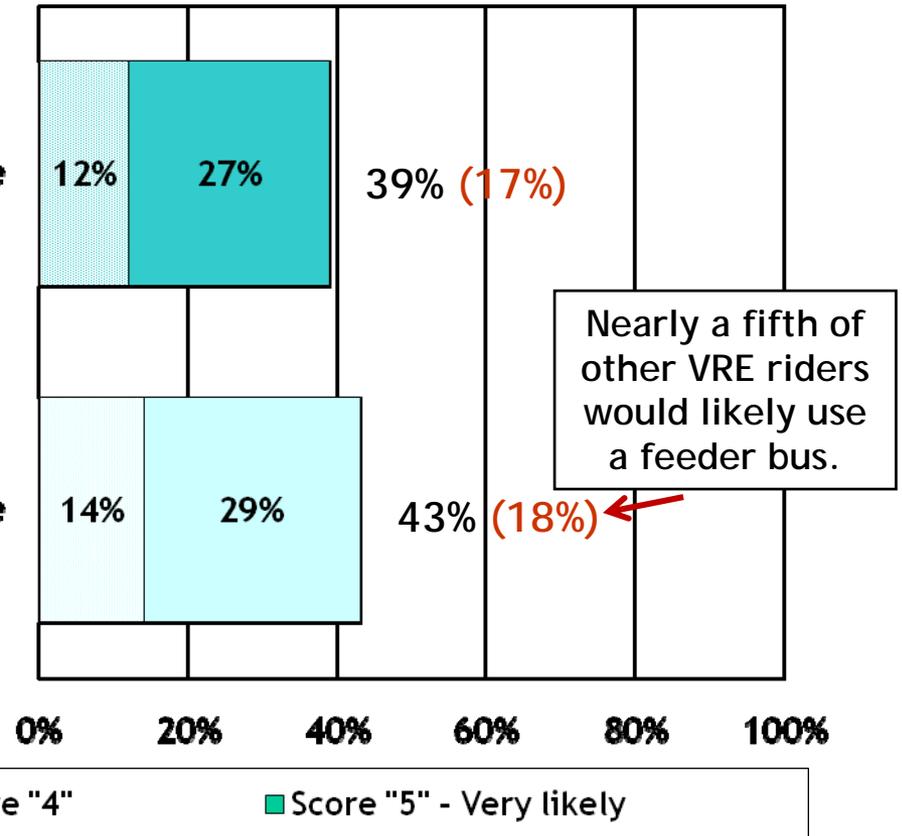
17% Who Use VRE as Their Primary Commute Mode Would Likely Use a Feeder Bus from Their Neighborhood

Question asked of those who ride VRE - as primary mode and non-primary mode.

Ride VRE, but is not primary mode

Note: The question did not provide specific information about the features and attributes of the shuttle bus.

VRE is primary mode



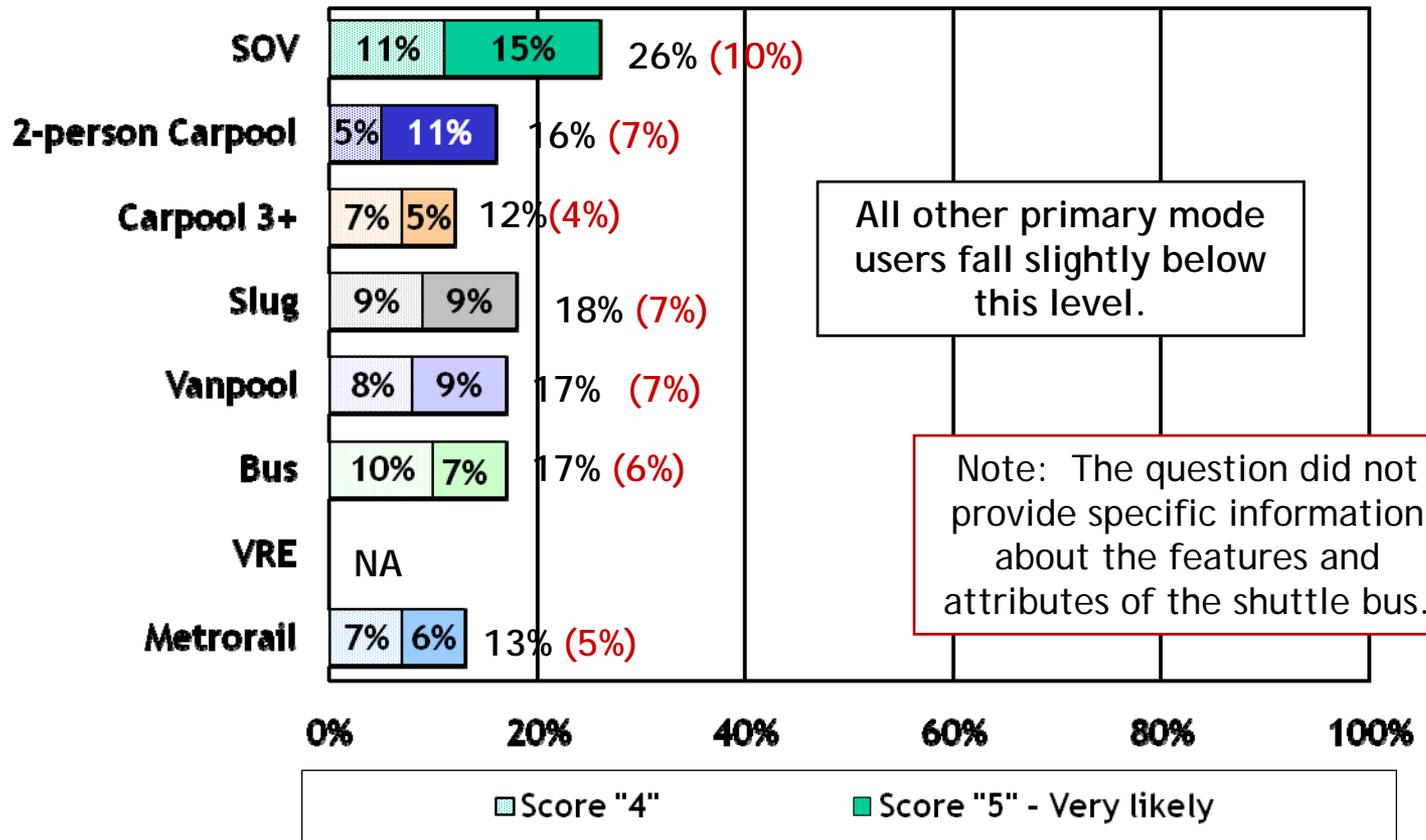
Q61. Suppose a shuttle bus could operate frequently in your neighborhood that would circulate and connect to the VRE train station. How likely would you be to use this feeder bus?

One-Fourth of SOVers Also Say They Would Ride VRE If a Feeder Bus Operated in Their Neighborhood - Which Factors to about 10%

SOV, n=796
 2-person carpool, n=120
 Carpool 3+, n=222
 Slug, n=580
 Vanpool, n=265
 Bus, n=382
 Metrorail, n=185

Values in red font indicate total scores after discount demand factor has been applied.

Question asked of all who do not ride VRE and have VRE service available.



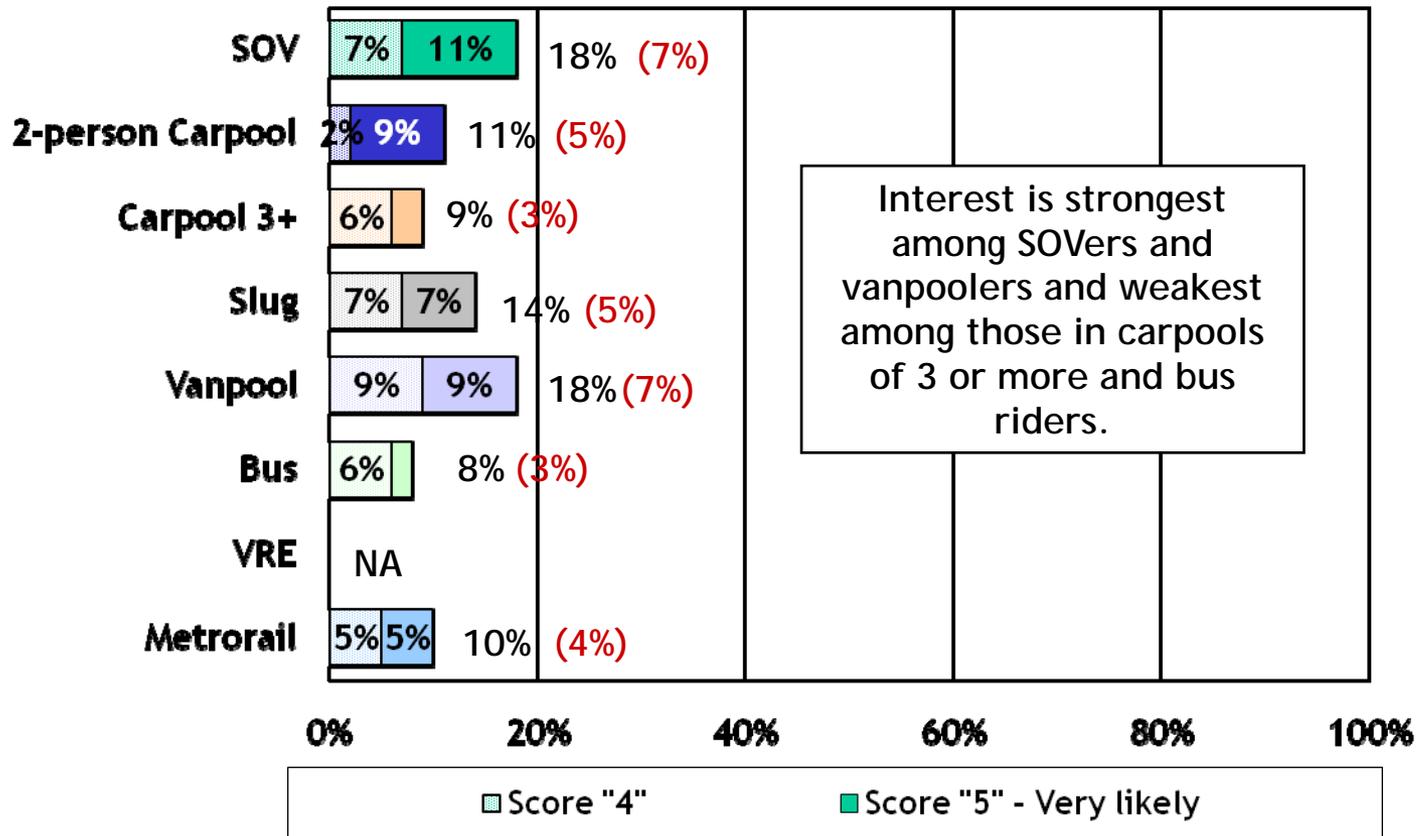
Q62. Suppose a shuttle feeder bus could operate frequently in your neighborhood that would circulate and connect to the VRE train station. How likely would you be to use this feeder bus and take VRE at least 1-2 days a week?

More Parking Increases the Stated Appeal of VRE among Slightly Less than One-Fifth of Commuters - Less than 10% when the Discount Factor Is Applied

SOV, n=796
 2-person carpool, n=120
 Carpool 3+, n=222
 Slug, n=580
 Vanpool, n=265
 Bus, n=382
 Metrorail, n=185

Values in red font indicate total scores after discount demand factor has been applied.

Question asked of all who do not ride VRE and have VRE service available.



Q63. If more parking were available at VRE train stations, how likely would you be to take VRE at least 1-2 days a week?

Stated Likelihood of VRE Use if Parking Were Available Is Concentrated in Stafford, Woodbridge, Fredericksburg, Stafford and Spotsylvania

Values represent the proportion each area of residence makes up of the total who said "4" or "5" - they would be likely to ride VRE if more parking were available at VRE train stations.

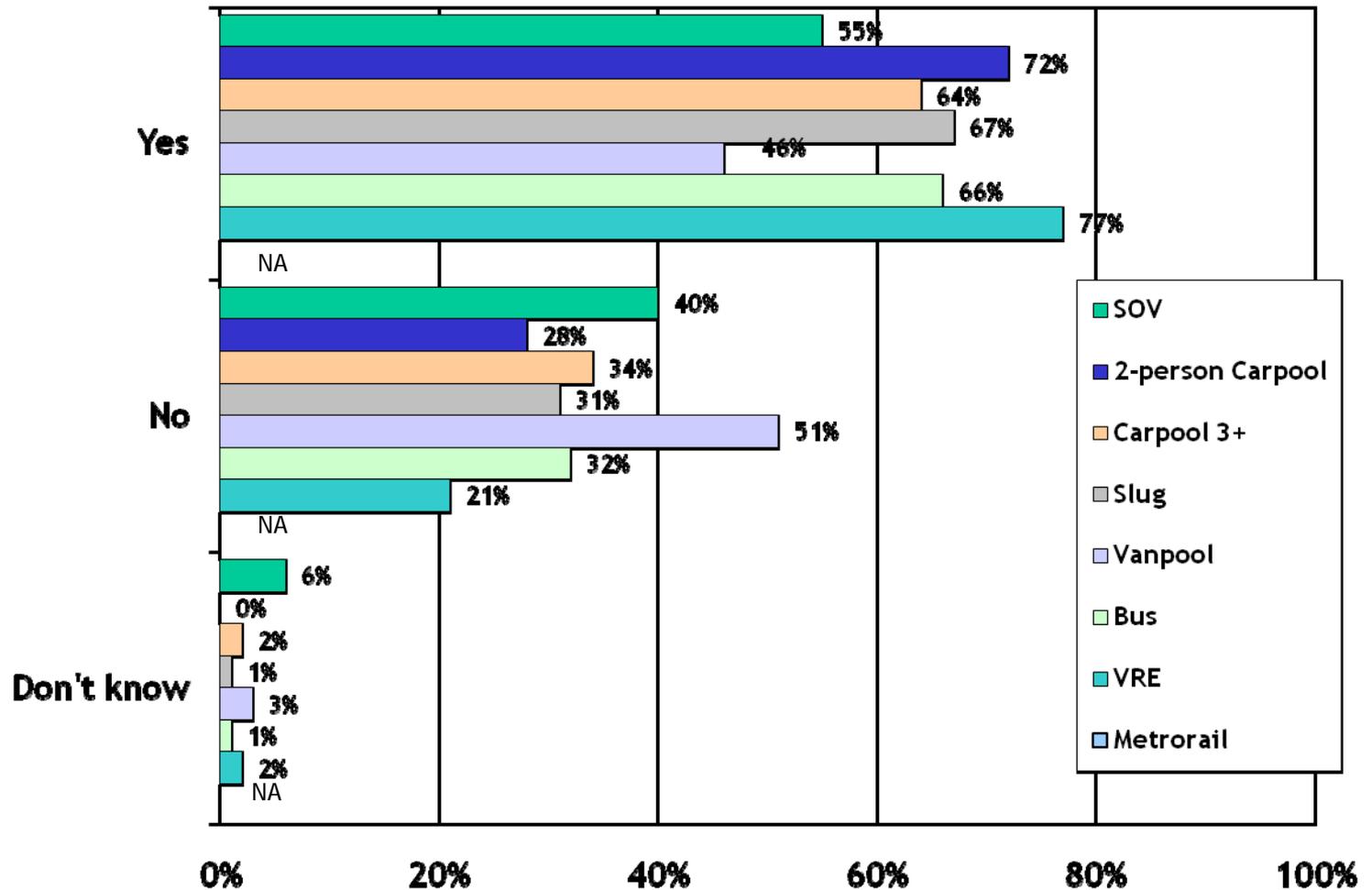
Woodbridge [zips: 22191, 22192, 22193(Dale City)]	16%
Fredericksburg (zips: 22406, 22407, 22408)	15%
Stafford (zip: 22554)	11%
Spotsylvania (zips: 22407, 22408, 22553)	10%
Springfield (zips: 22015 22152)	9%
Other Fairfax County (zips: 22015, 22039)	8%
Alexandria	5%
Lake Ridge (zip: 22192)	4%
Lorton (zip: 22079)	4%

Note: Zip codes listed indicate areas of concentrated interest. If no zips listed, no areas of concentration identified.

Q63. If more parking were available at VRE train stations, how likely would you be to take VRE at least 1-2 days a week?

Metrorail Is Available to Half to Three-Fourths of Current Non-Users

Question asked of all respondents who do not ride Metrorail.



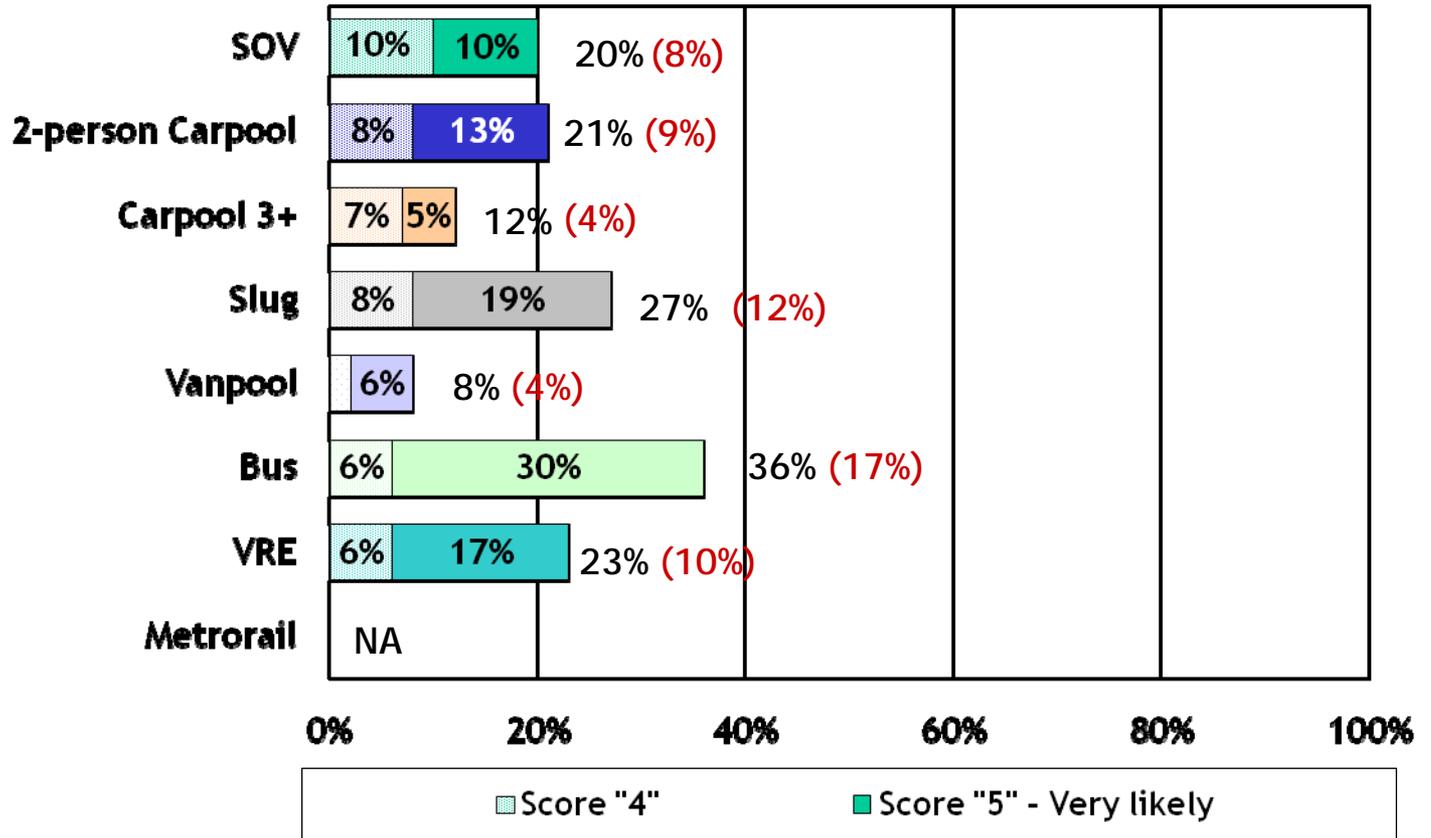
Q64. Is Metrorail available for at least a portion of your commute?

More Frequent Trains Could Enhance the Appeal of Metrorail to About One Out of Ten; Bus Riders Express the Greatest Interest

SOV, n=798
 2-person carpool, n=118
 Carpool 3+, n=228
 Slug, n=590
 Vanpool, n=268
 Bus, n=379
 VRE, n=494

Values in red font indicate total scores after discount demand factor has been applied.

Question asked of all who do not ride Metrorail and have Metrorail service available.



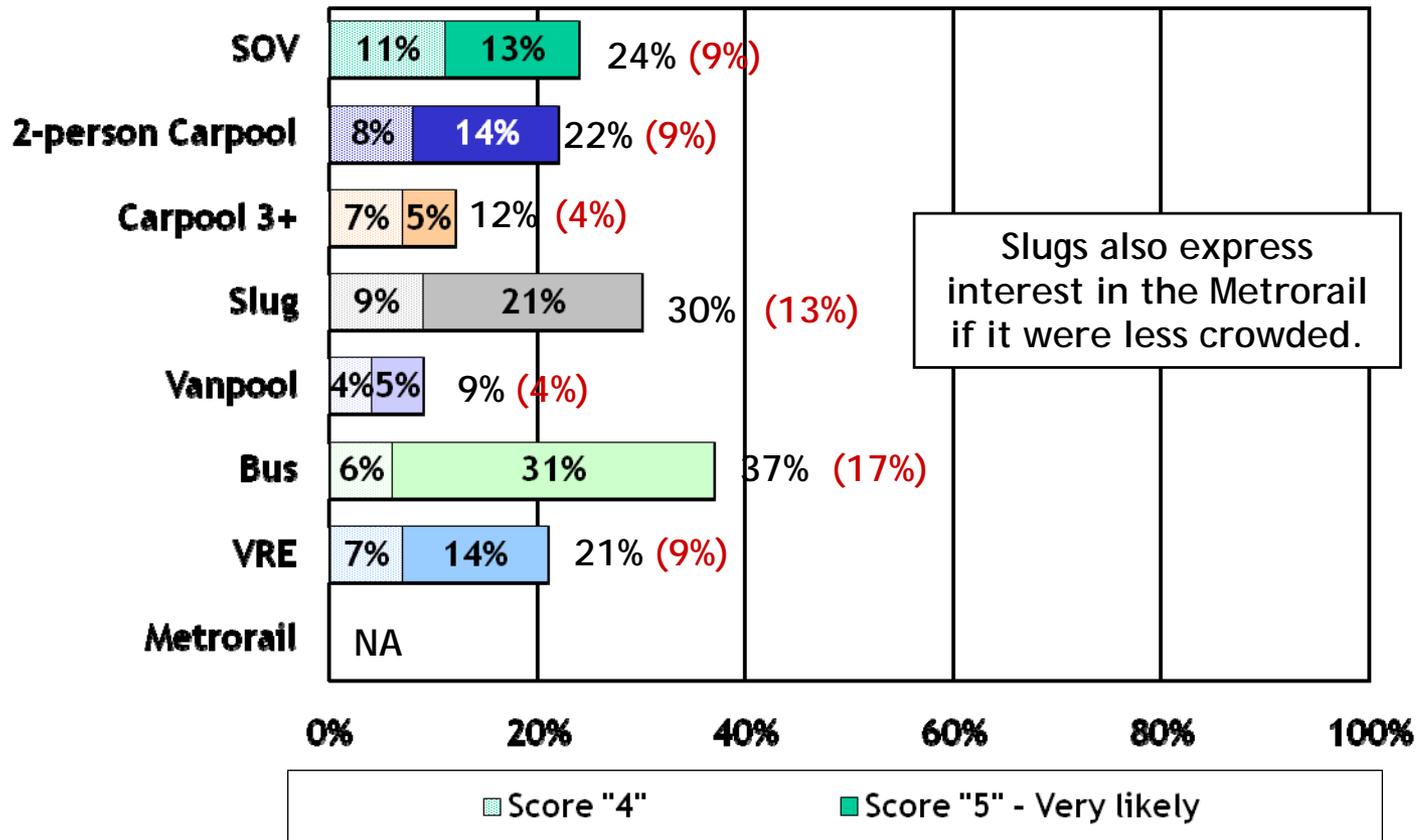
Q66. If the schedule were revised so that trains came more often, how likely would you be to use Metrorail for your commute at least 1-2 days a week?

SOV, n=798
 2-person carpool, n=118
 Carpool 3+, n=228
 Slug, n=590
 Vanpool, n=268
 Bus, n=379
 VRE, n=494

Less Crowded Trains Could Also Enhance the Appeal of Metrorail among Bus Riders

Values in red font indicate total scores after discount demand factor has been applied.

Question asked of all who do not ride Metrorail and have Metrorail service available.



Q67. If trains were less crowded, how likely would you be to use Metrorail for your commute at least 1-2 days a week?

Metrorail is primary mode, n=185
 Ride Metrorail, but is not primary mode, n=73

About One Out of Ten Who Use Metrorail as Their Primary Commute Mode Would Take a Shuttle That Runs from the Metrorail Station to Their Destination

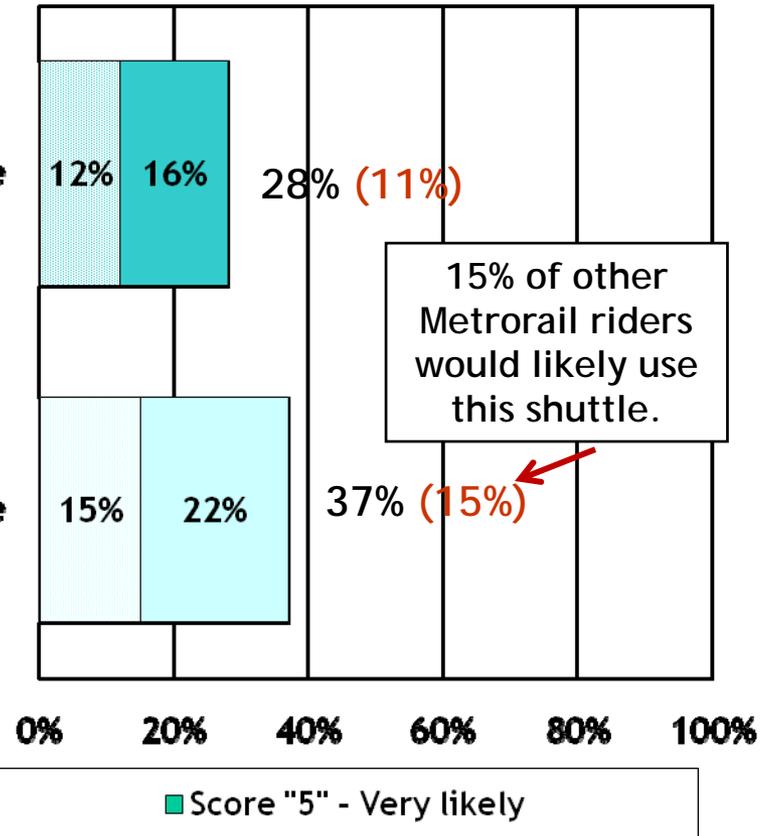
Values in **red font** indicate total scores after discount demand factor has been applied.

Ride Metrorail, but is not primary mode

Note: The question did not specify service schedule for this shuttle. The schedule was described as "operate frequently in the morning and afternoon peak hours."

Question asked of those who ride Metrorail - as primary mode and non-primary mode.

Metrorail is primary mode



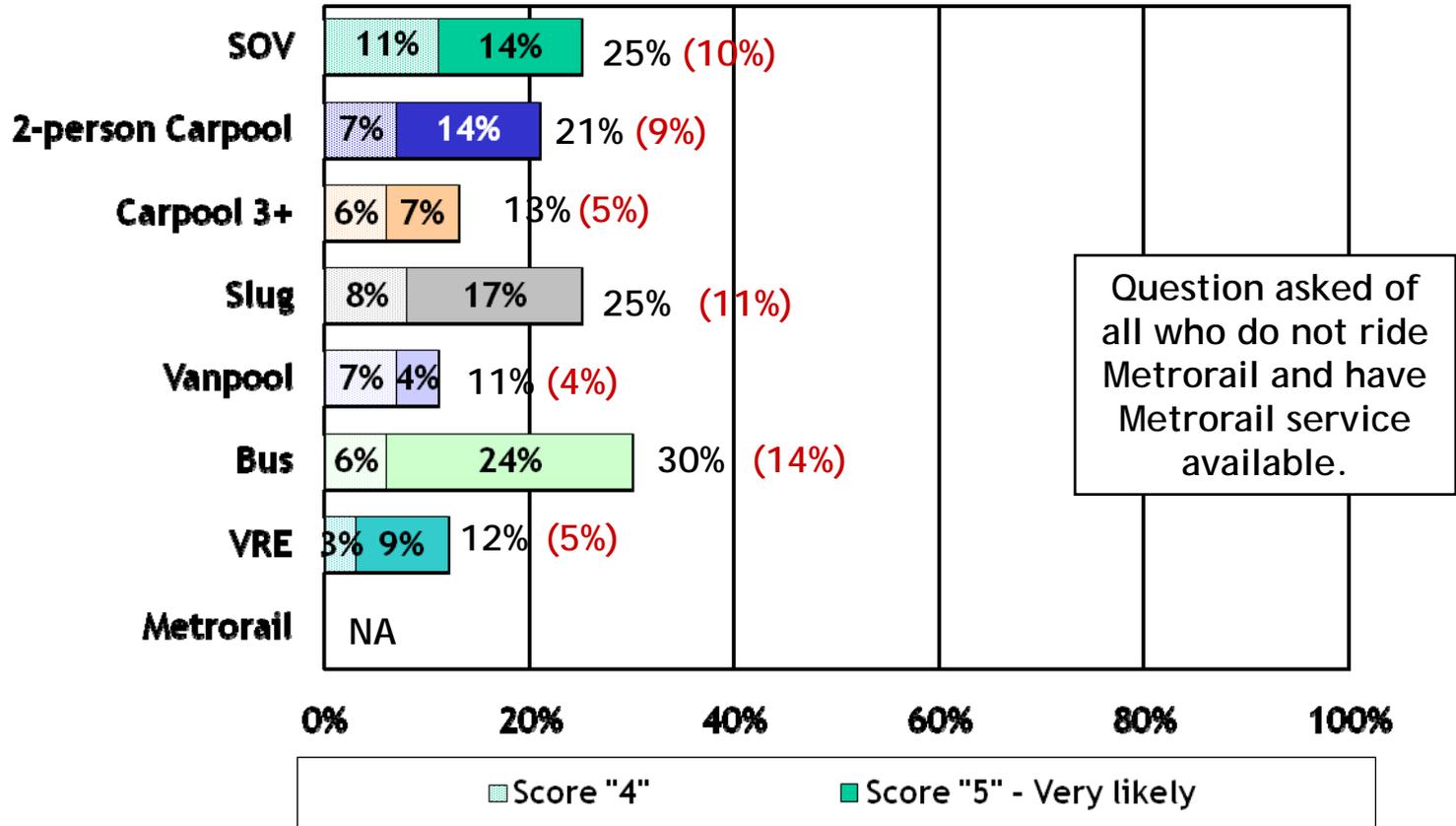
Q68. Suppose that a shuttle bus service between the Metrorail train station and your place of work could operate frequently in morning and afternoon peak hours. How likely would you be to use this shuttle bus service?

SOV, n=798
 2-person carpool, n=118
 Carpool 3+, n=228
 Slug, n=590
 Vanpool, n=268
 Bus, n=379
 VRE, n=494

Shuttle Bus to the Work Site Could Enhance the Appeal of Metrorail among about 10% of SOVers, Carpools of 2 People, and Sluggers and 14% of Bus Riders

Values in red font indicate total scores after discount demand factor has been applied.

Q69. Suppose that a shuttle bus service between the Metrorail train station and your commute destination (e.g., work) could operate frequently in morning and afternoon peak hours. How likely would you be to ride Metrorail if this shuttle bus service were offered?



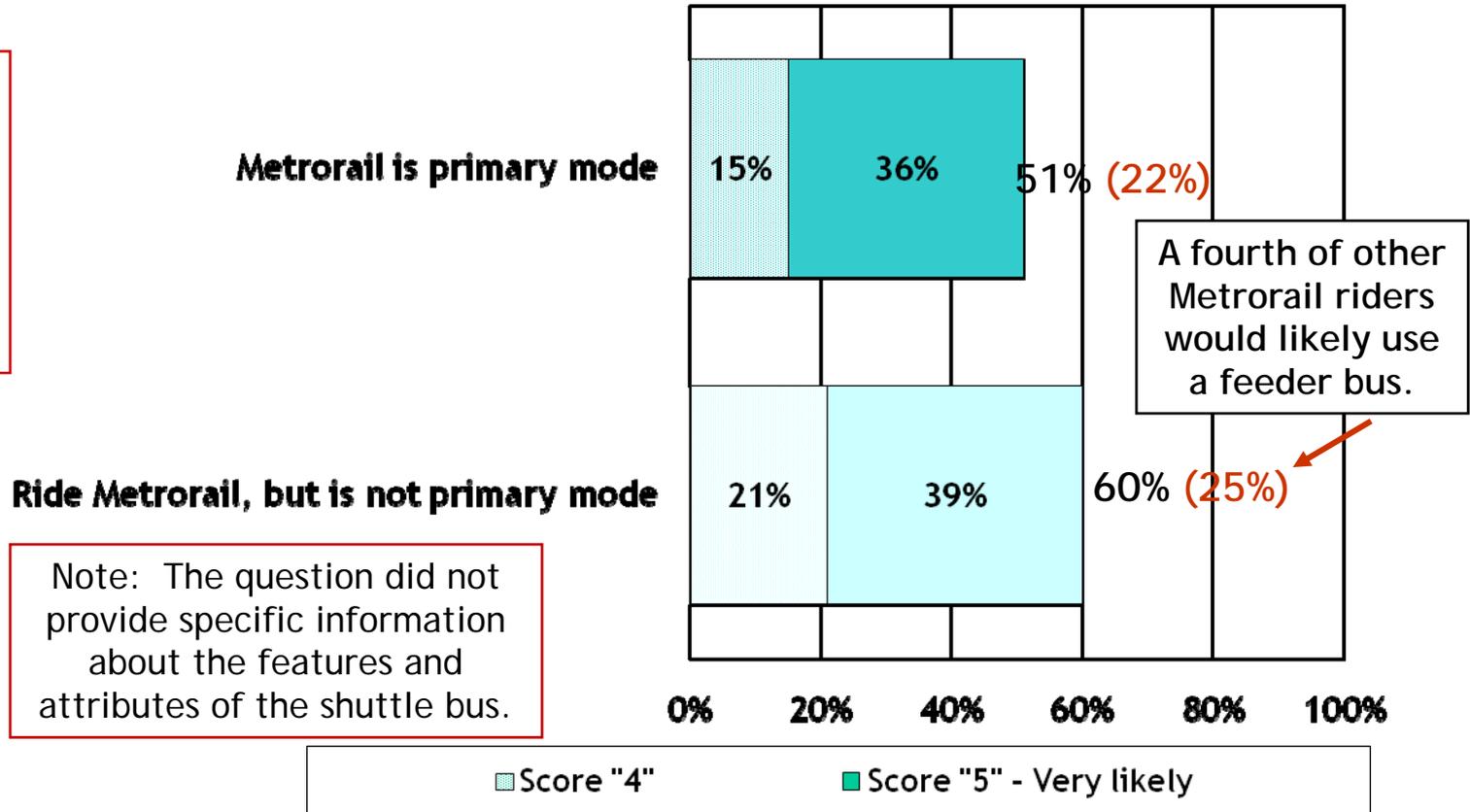
Note: The question did not specify service schedule for this shuttle. The schedule was described as "operate frequently in the morning and afternoon peak hours."

Metrorail is primary mode, n=185
 Ride Metrorail, but is not primary mode, n=73

About One-Fourth Who Take Metrorail as Their Primary Commute Mode Would Likely Use a Feeder Bus from Their Neighborhood

Values in **red font** indicate total scores after discount demand factor has been applied.

Question asked of those who ride Metrorail - as primary mode and non-primary mode.

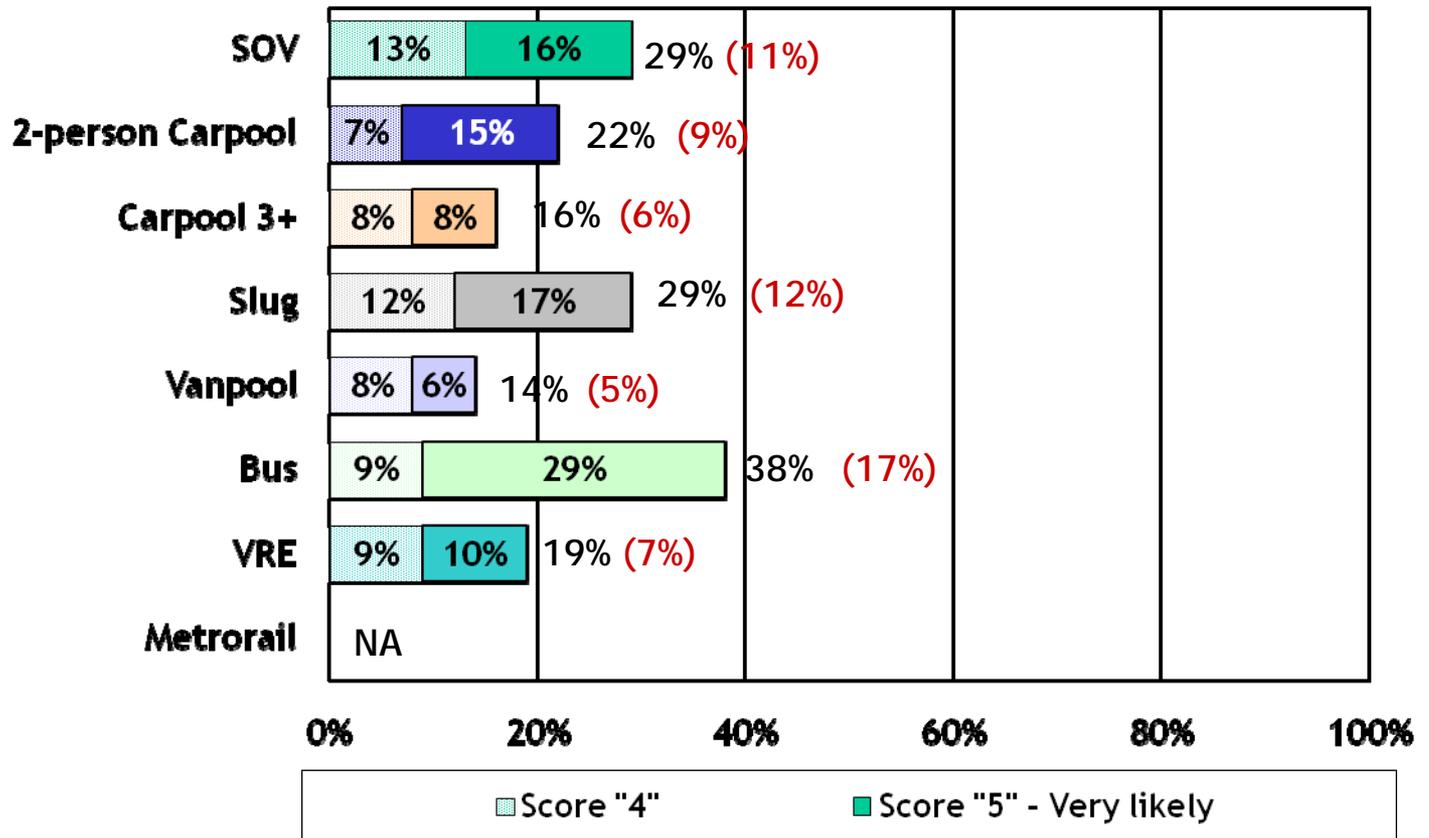


Q70. Suppose that a shuttle bus could operate frequently in your neighborhood that would circulate and connect to the Metrorail station. How likely would you be to ride this feeder bus if it operated in your neighborhood?

A Neighborhood Feeder Bus Would Most Increase the Appeal of Metrorail among SOV's, Sluggers, and, Especially, Bus Riders

SOV, n=798
 2-person carpool, n=118
 Carpool 3+, n=228
 Slug, n=590
 Vanpool, n=268
 Bus, n=379
 VRE, n=494

Values in red font indicate total scores after discount demand factor has been applied.



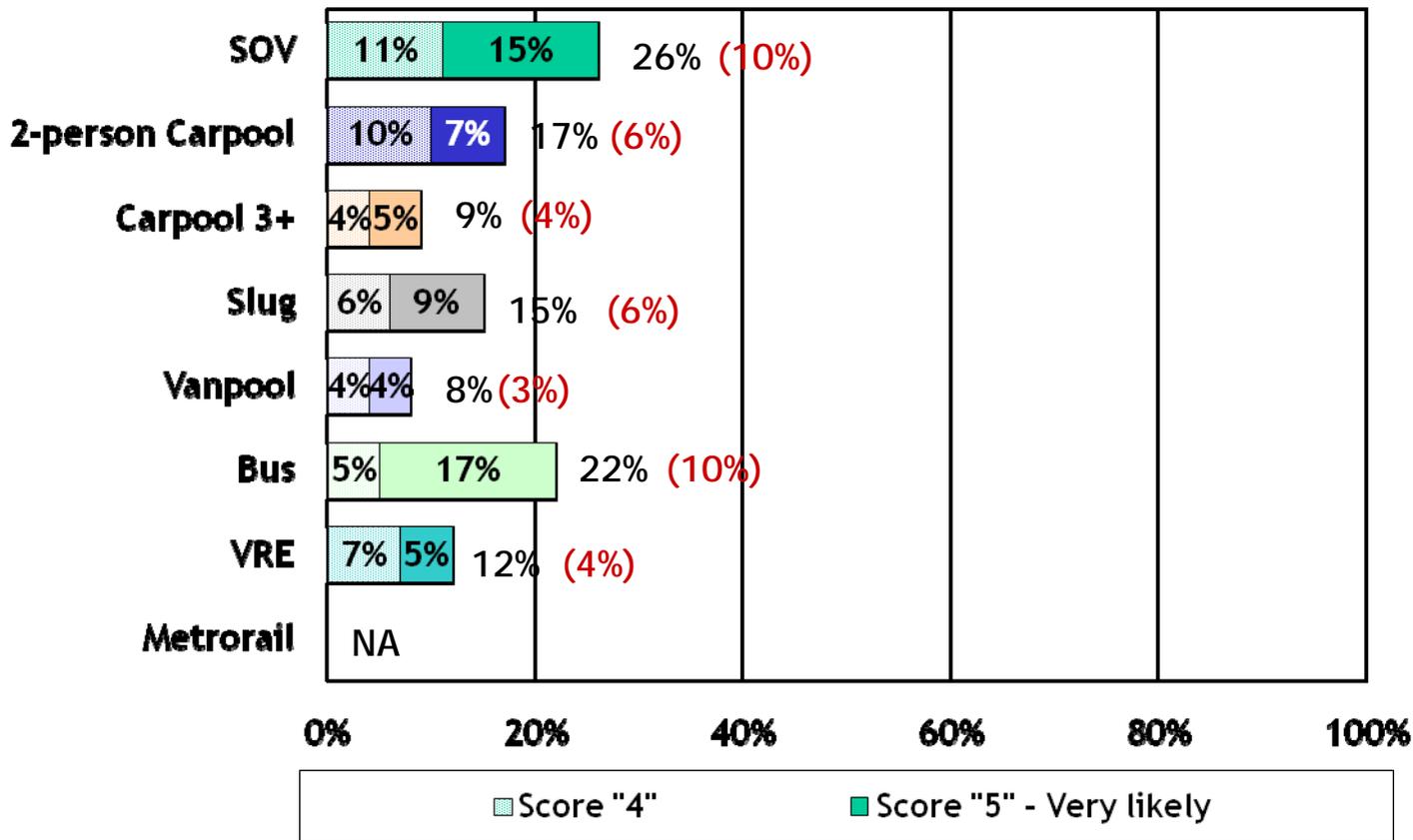
Q71. Suppose that a shuttle bus could operate frequently in your neighborhood that would circulate and connect to the Metrorail station. How likely would you be to ride Metrorail at least 1-2 days a week if a feeder bus operated in your neighborhood?

More Parking at Metrorail Stations Would Be Most Likely to Increase Appeal of Metrorail among SOVers and Bus Riders

SOV, n=798
 2-person carpool, n=118
 Carpool 3+, n=228
 Slug, n=590
 Vanpool, n=268
 Bus, n=379
 VRE, n=494

Values in red font indicate total scores after discount demand factor has been applied.

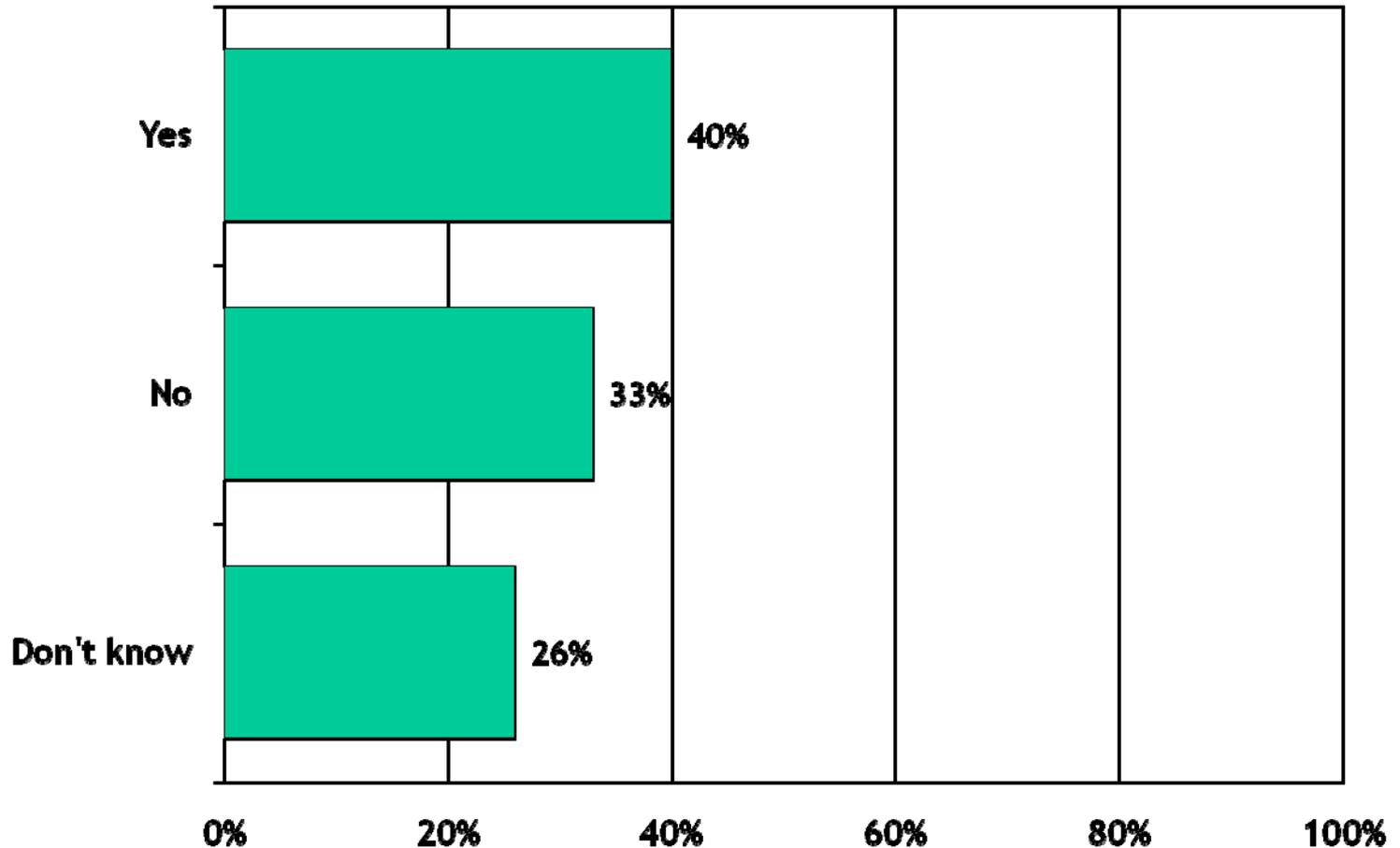
Question asked of all who do not ride Metrorail and have Metrorail service available.



Q72. If more parking were available at Metrorail stations, how likely would you be to take Metrorail at least 1-2 days a week?

40% of SOVers Currently Have a Park-and-Ride Lot or Some Other “Meeting Place” for Ridesharing Conveniently Located on their Commute

Question asked only of SOVers.



Q73. Is there a place such as a park-and-ride lot conveniently located on your commute where you could ever catch a carpool or vanpool or commuter bus?

Lack of a Park-and-Ride Lot Is Most Pronounced in Alexandria and Annandale

- Proportions Indicate Those Who Do Not Have Park-and-Ride Lot -

Alexandria (zips: 22302, 22304)	27%
Springfield (zips: 22015, 22150, 22151, 22152, 22153)	14%
Arlington (zips: 22204, 22206)	9%
Woodbridge [zips: 22191, 22192, 22193 (Dale City)]	7%
Annandale (zip: 22003)	6%
Fairfax County - Lincolnia (zip: 22312)	5%
Lorton (zip: 22079)	5%
Fairfax City (zip: 22032)	4%
Springfield (22153)	4%
Franconia (zip: 22315)	4%
Fredericksburg (zip: 22408)	4%
Stafford	3%

Note: Zip codes listed indicate areas of concentrated interest. If no zips listed, no areas of concentration identified.

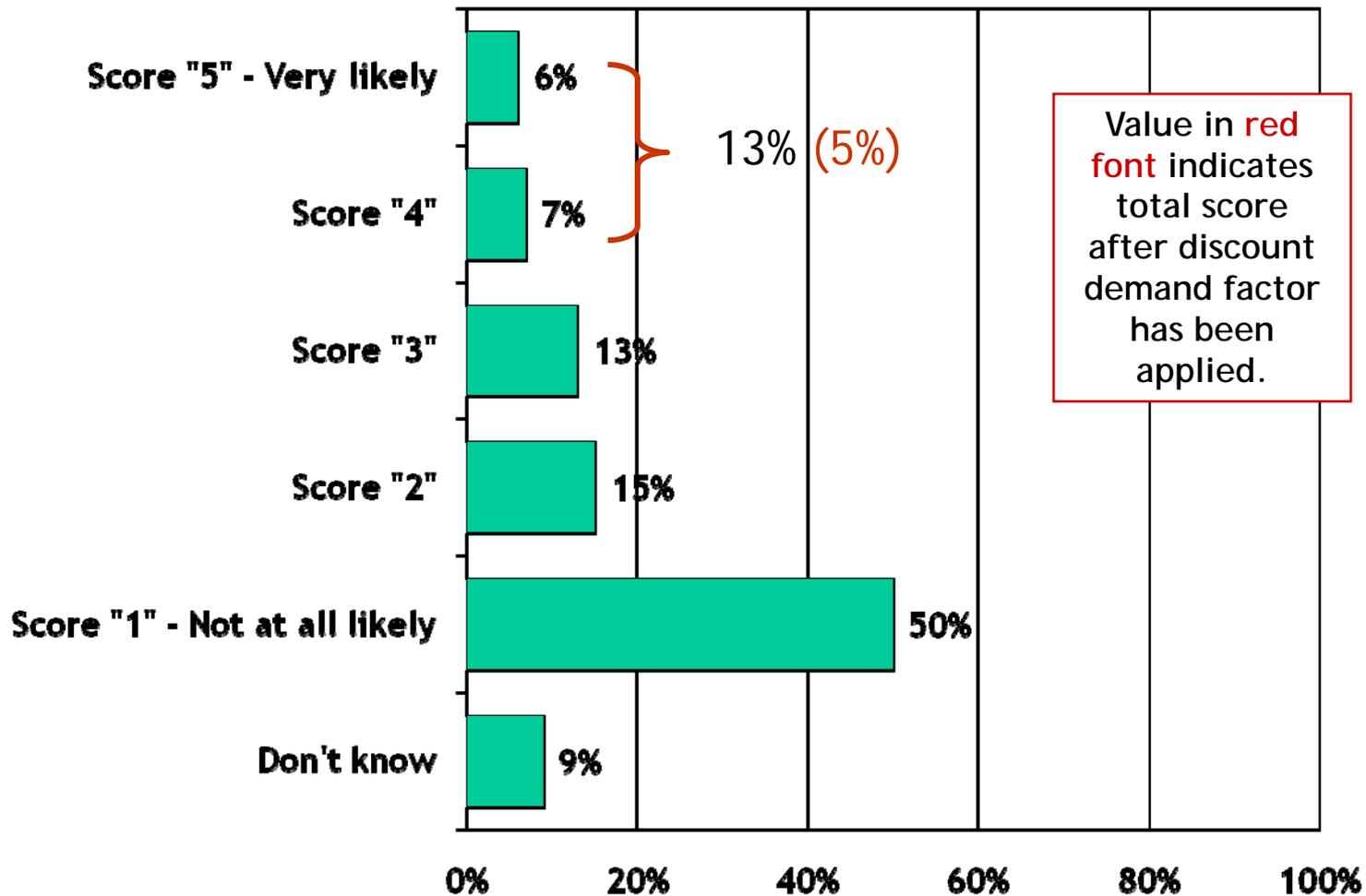
Q73. Is there a place such as a park-and-ride lot conveniently located on your commute where you could ever catch a carpool or vanpool or commuter bus?

Proportions represent SOVers who said they do not have a convenient park-and-ride lot. These locations are those that have the greatest proportion of SOVers saying that there is no convenient park-and-ride lot.

About 5% of SOVers without a Park-and-Ride Lot Would Use One if Available - and Use Another Form of Transportation at Least 1-2 Days a Week

Question asked only of SOVers not aware of a park-and-ride lot on their commute.

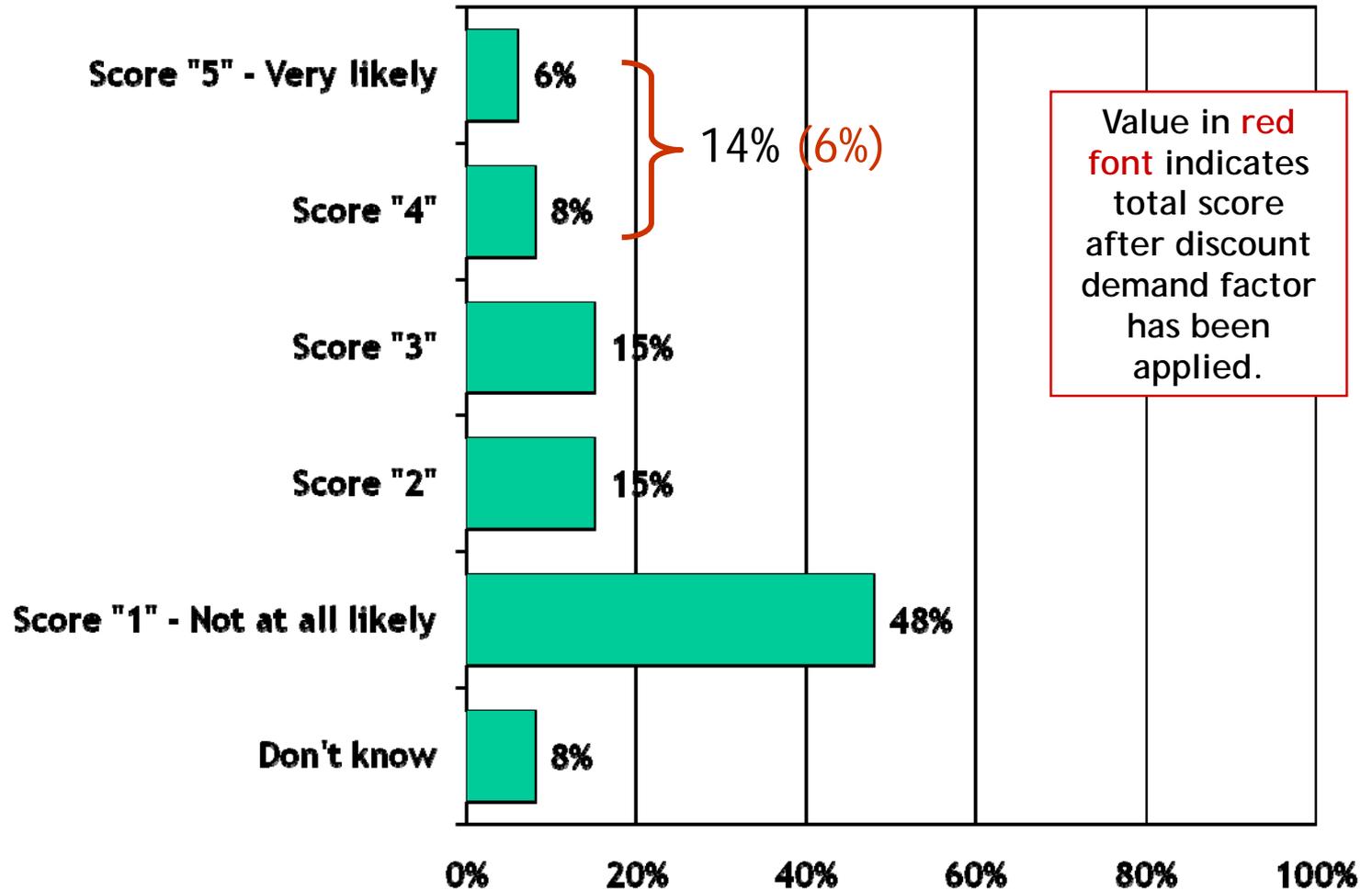
Q74. If a park-and-ride lot were conveniently located, how likely would you be to use it at least 1-2 days a week in order to use a form of transportation other than driving alone?



Question asked only of SOVers not aware of a park-and-ride lot on their commute.

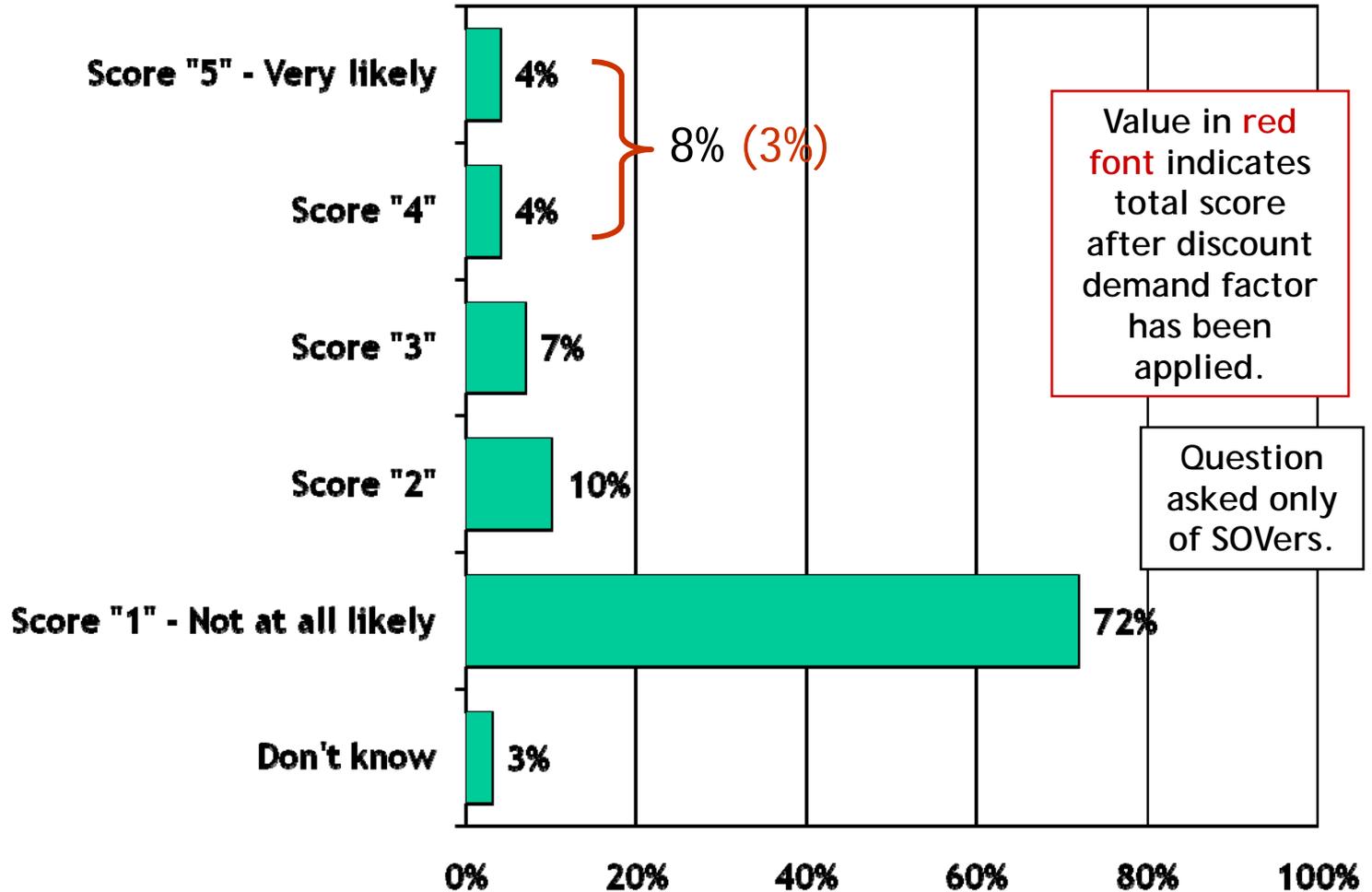
About the Same Proportion of SOVers without a Park-and-Ride Lot Would Use One if Available - In Order To Use the HOT Lanes

Q75. Suppose that HOT lanes are built and a park-and-ride lot was located convenient for your commute. How likely would you be to use the park-and-ride lot to take advantage of free travel on the HOT lanes in a bus, vanpool, or three-person carpool?



Q77. Suppose you could pay to have a reserved parking space at a convenient park-and-ride lot. The cost of parking would be up to \$5.00 per day and would be paid on a monthly basis. How likely would you be to pay for a reserved parking space at a park-and-ride lot in order to travel in a bus, vanpool, or three-person carpool and use the HOT lanes for no additional charge at least 1 or 2 days a week?

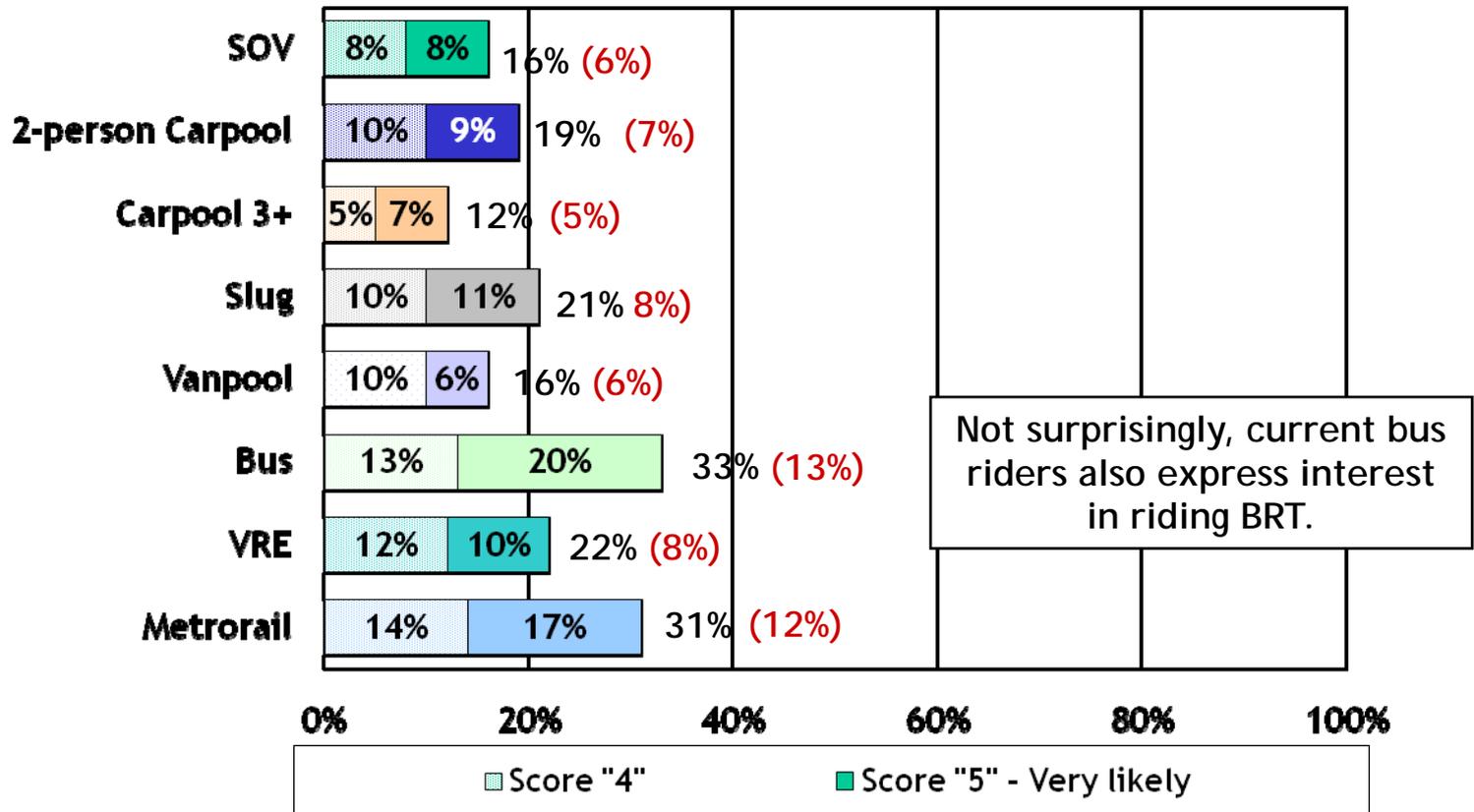
Interest in a Paid and Reserved Parking Space Is Low



Among Non-Bus Riders, Interest in BRT Is Highest among Metrorail Riders

Values in red font indicate total scores after discount demand factor has been applied.

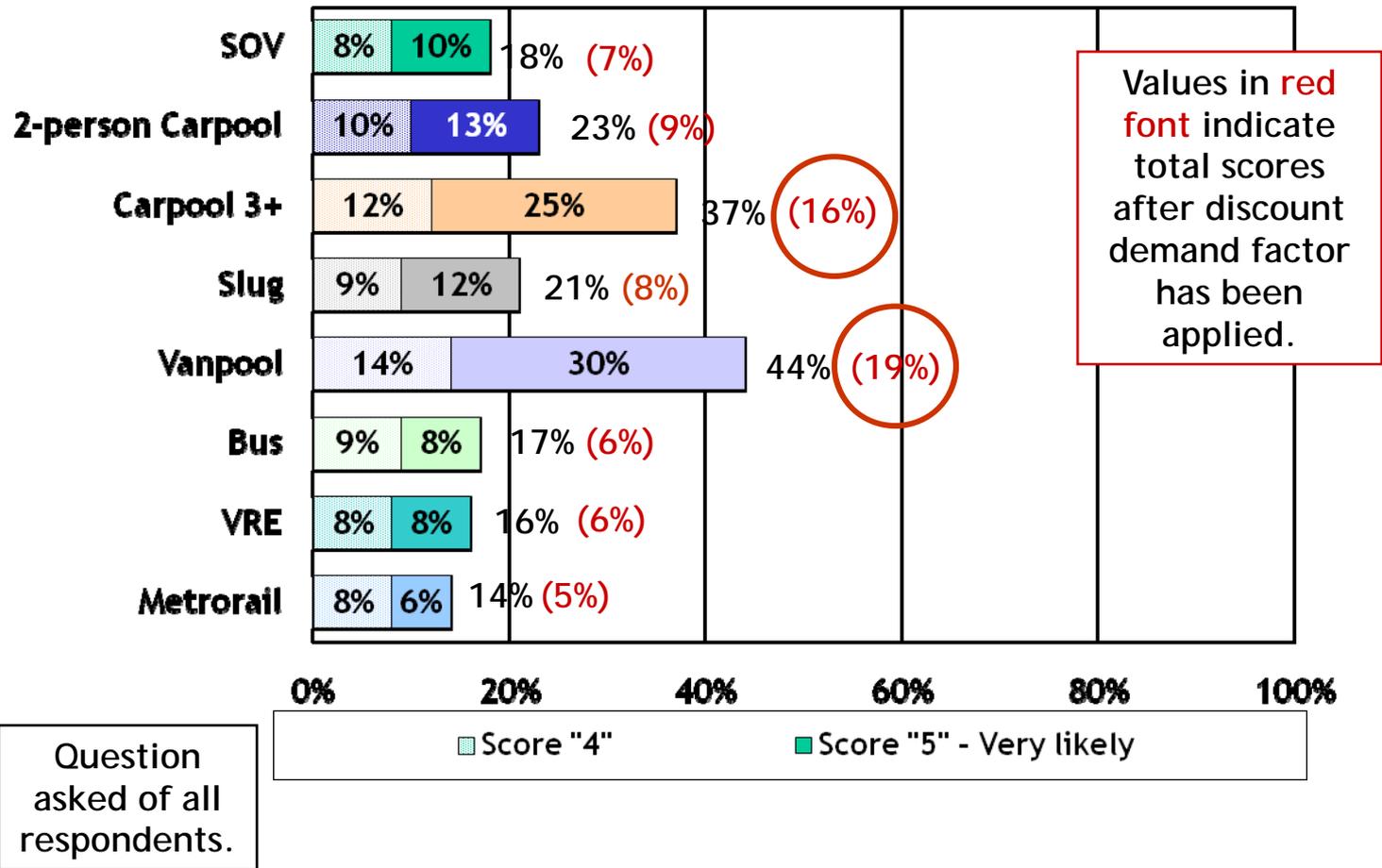
Question asked of all respondents.



Q78. Suppose that Bus Rapid Transit (BRT) service became available in the general area of your commute. BRT offers frequent express service in comfortable vehicles serving station-like stops. How likely would you be to use this bus service for your commute at least 1-2 days a week?

Q79. Suppose you could use a self-assisted, online ride-matching service to find a rideshare partner in order to use the HOT lanes. This service provides you with a list of commuters who live in your area, commute to the same area as you do and are also looking for a vanpool or carpool partner. You register for this service online and receive the information online. How likely would you be to use this type of ride-matching service if you wanted to carpool or vanpool and use the HOT lanes?

Interest in an Online Ride-Matching Service Is Highest among Carpoolers of 3 or More Persons and Vanpools - Probably Those Commuters Who Have Experienced the Need to Find Ridesharing Partners



TURF Analysis

(Total Unduplicated Reach and Frequency)

- TURF analysis is used to identify the strongest program or service and determine its potential impact.
- The impact of other programs is assessed - one program at a time - in order of their strength.
- By summing the totals, a combined estimate can be calculated.

Frequently Running Buses Is Most Likely to Convert SOVers to *Express Bus* Riders

Shuttle buses, feeder buses, and park-and-ride lots would add an additional small percentage to the total SOVers that could be converted by shorter headways. This suggests that the programs generally appeal to the same group of SOVers.

	Buses come more often	Shuttle bus to destination	Feeder bus in neighborhood	Park-and-ride lot
Total SOVers	30%	3%	1%	1%

Based on raw responses, these express bus programs would attract 35% of SOVers in total. With the discount demand factor applied, the proportion reduces to 13%.

Shuttle Buses to/from Destination Would Influence the Most SOVers to Ride *VRE*

Adding trains, increasing parking at VRE stations, providing neighborhood feeder buses, and making more seats available on the trains would attract a minimal number of new SOVers beyond what shuttle buses would add.

	Shuttle bus to/from destination	Trains added to come more often	More parking at VRE stations	Feeder bus in neighborhood	More seats available
Total SOVers	16%	3%	2%	1%	<1%

Based on raw responses, these VRE programs would attract 22% of SOVers in total. With the discount demand factor applied, the proportion reduces to 8%.

Neighborhood Feeder Buses Would Attract the Greatest Number of SOVers to *Metrorail*

Less crowded trains, more parking, shuttle to/from destination, and more frequent trains would all impact a few additional SOVers - but neighborhood feeder buses have the single greatest impact.

	Feeder bus in neighborhood	Trains less crowded	More parking at Metrorail stations	Shuttle bus to/from destination	More frequent trains
Total SOVers	23%	5%	3%	3%	1%

Based on raw responses, these Metrorail programs would attract 35% of SOVers in total. With the discount demand factor applied, the proportion reduces to 11%.

Conclusions and Implications

Conclusion and Implication

Conclusion: As other research has shown, commuters in the study area have long commutes. Commuters in carpools of 3 or more, slugs, vanpoolers, bus riders and Metrorail riders all commute about an hour each morning. If this total time doubles when the afternoon commute is included, it represents a considerable portion of their daily lives.

Implication: Don't forget the importance of time in marketing and marketing messages for HOT lanes and TDM/transit alternatives. If the option can provide a time savings, explore the development of messages that incorporate time savings benefits.

Conclusion and Implication

Conclusion: Of the potential benefits of HOT lanes tested, none is especially credible. Typically, 40% or less of commuters - regardless of their current mode - agree that HOT lanes will help traffic flow faster, create new commute opportunities, help commuters save time, or encourage drivers to pick up slugs.

Implication: In order to effectively promote or “market” HOT lanes, better understanding of the perceived benefits and how to communicate those benefits is necessary. Messages built around benefits that seem implausible are not credible or persuasive.

Conclusion and Implication

Conclusion: Response to HOT lanes varies by area of residence. The most favorable response is posted for the southern part of the study area, including Spotsylvania and Stafford County. The most negative view is reported for Prince William County. Residents of the northern parts of the study area fall between these two extremes.

Implication: Communication and marketing messages for HOT lanes may benefit from an approach that targets specific messages to specific areas. Use data mining of the data in this study to help develop specific messages to be targeted to specific areas.

Conclusion and Implication

Conclusion: Generally, vanpoolers tend to be more supportive of the HOT lanes than commuters using other primary modes. Nearly half of vanpoolers in the survey, 45%, said that they believed that the HOT lanes will help commuters save time. Additionally, two-thirds (64%) said that they will likely use the HOT lanes. This favorable view may stem from several sources: ability to continue commuting just as they are now, benefit from extension of HOV hours, as well as benefit of extension of the HOV lanes farther south.

Implication: Behavioral changes in response to the HOT lanes will probably be slight among vanpoolers. But, this group offers the opportunity to learn about generating support for the HOT lanes. Support may very well be related to the opportunity to continue the current mode of commuting, benefiting from longer HOV hours, and extension of the HOV lanes. Explore how these benefits can be used in marketing the HOT lanes.

Conclusion and Implication

Conclusion: As many as one-fourth of commuters of various modes (e.g., SOV) do not know if express bus service is available for their commute. Some may not know if bus service is available. Others may not know if “express” bus service is available because they are not familiar with the term. Even current bus riders may not know if express bus service is available to them. One-fourth of current bus riders said that either express bus service was not available or that they did not know.

Implication: There is opportunity to promote express bus service through basic communications and education. Do not assume commuters are aware of the express bus option, understand what it is, or what its benefits are. Take care not to assume that industry terminology (e.g., “express bus”) is used and understood by commuters.

Conclusion and Implication

Conclusion: More frequent express bus service, earlier afternoon outbound service and later evening outbound service could help to convince up to 69% of current riders to continue or increase their ridership. Bicycle racks at park-and-ride lots or on buses have limited appeal.

Implication: Explore ways to offer more frequent express bus service, especially earlier outbound service in the afternoon and later evening outbound service. While bicycle racks may have limited impact on current riders, they may be easy to implement - and less costly than adding service. However, do not expect them to be primary reasons to continue or increase ridership. The role of bicycle racks may be more related to communications and imagery building for the transit provider - e.g., the bus company meets the needs of riders, provides flexibility, helps the environment, and so forth.

Conclusion and Implication

Conclusion: More frequent buses, a neighborhood feeder bus, and a shuttle to/from their destination could all increase the attractiveness of the express bus to current non-riders. But, these programs may not be “additive” in terms of their effects. All three of these programs, for example, appeal to the same group of SOVers rather than each attracting a new group.

Implication: The “overlap” in the appeal of these programs does not necessarily mean that all or several of them should not be offered. Working together, the programs can provide a kind of synergy that works to ensure the likelihood that commuters who express interest in the programs will actually ride or try riding the express bus. But, it is important to manage expectations in terms of the power of these programs to attract new riders.

Conclusion and Implication

Conclusion: Time is an especially important benefit for VRE riders. They have the longest average commute. Additionally, commuters for whom VRE is their primary mode of transportation as well as those who sometimes ride VRE say that more frequent service and information about whether the train is on time (by cell or email) could convince them to continue riding VRE or convince them to ride more frequently.

Implication: To ensure current VRE ridership continues, consider offering more frequent train service. Continue to provide on-time information and explore the use of technology to communicate with riders. Explore ways that VRE can enhance its image by “reminding” or educating riders and potential riders about how easy it is to get on-time information.

Conclusion and Implication

Conclusion: Of 5 programs/services tested to increase VRE ridership, all offer some potential to attract new riders. But, just as with programs/services tested for express bus service, these programs/services tend to appeal to the same group of commuters. Thus, putting in place several of the programs/services would not increase ridership exponentially. “Shuttle service” to/from their destination was the single-most-powerful potential program/service enhancement.

Implication: Explore the opportunity to put in place shuttle service between the train station and work destinations in order to attract new riders to VRE. However, additional research in which specific service attributes are specified could help make implementation of this service more successful. In addition, don’t overlook other opportunities: adding more trains, adding more parking at VRE stations, putting in place a neighborhood feeder bus system, and making more seats available. One or more of these additional programs could provide greater impetus to commuters to make the switch to VRE. Programs/services to offer more frequent service could be a “double” benefit in that they could help to attract new riders and enhance the appeal of VRE to ensure that current riders continue to ride and perhaps increase their ridership of VRE.

Conclusion and Implication

Conclusion: Of 5 programs/services tested for Metrorail, neighborhood shuttle service tends to enhance the appeal of Metrorail to those who have Metrorail available but do not ride it currently. Eleven percent of current sluggers and SOVers say that they would be likely to ride Metrorail 1-2 days a week with a neighborhood shuttle. But, less crowded trains could also help. Nearly a quarter (24%) of current SOVers said they would ride Metrorail if trains were less crowded.

Implication: Explore the potential of offering neighborhood shuttle to increase the appeal of Metrorail. Additional research in which specific service attributes are specified could provide more precise understanding of the potential success of a neighborhood shuttle program. To the extent that trains become more crowded, consider the need to increase capacity so that trains are less crowded.

Conclusion and Implication

Conclusion: SOVer interest in a paid and reserved parking space is low.

Implication: Do not pursue development of paid and reserved parking without further research.

Conclusion and Implication

Conclusion: There is interest in an online ride-matching service. Stated likelihood of usage ranges from 14% among Metrorail riders to 44% among vanpoolers and 37% among commuters in carpools of 3 or more persons.

Implication: Consider further development of online ride-matching. Since those who may have had experience with ridematching or ridematching services have the greatest interest in using this online service, learn from this group of commuters. Carpoolers and vanpoolers seem to recognize the benefits of ridematching - especially an online service. Understand better how ridematching has helped these commuters. Identify and understand the benefits so that “ridematching” can be marketed to other commuters.

Appendix: Hybrid Drivers

Hybrid SOVers Tend to Have Slightly Longer Commutes than Do Gasoline Vehicle SOVers; The Two Commuter Groups Are About Equally Likely to Have Flexible Schedules

	<u>SOV: Hybrid</u>	<u>SOV: Gasoline</u>
<u>Length of commute</u> (average in minutes)	55 minutes	48 minutes
<u>Length of commute</u> (average in miles)	33.9 miles	24.3 miles
<u>Flexibility in schedule</u>		
Yes	57%	56%
No	42%	44%

Hybrid, n=100
Gasoline, n=816

Hybrid Drivers Are More Likely than Gasoline SOVers to Be Aware of the HOV Lanes, to Have a Convenient Entrance, and to Use the HOV Lanes

71% of hybrid drivers use the HOV lanes 5 days a week

	<u>SOV: Hybrid</u>	<u>SOV: Gasoline</u>
Aware of HOV lanes	100%	98%
Convenient entrance to HOV lanes	93%	65%
Use HOV lanes at least occasionally	91%	59%

The HOV lanes are more important to hybrid drivers than to drivers of gasoline vehicles. Similarly, dependability is more important to hybrid drivers. But, flexibility, time have to leave, parking, comfort and toll cost are more important to drivers of gasoline vehicles.

Hybrid, n=100
Gasoline, n=816

Q23. Next, think about what factors are important to you when deciding how you will commute. How important to you are the following factors in choosing how you commute on your morning commute trip?

	<u>SOV:</u> <u>Hybrid</u>	<u>SOV:</u> <u>Gasoline</u>
Dependability	93%	80%
Time it takes	93%	92%
Arriving on time	89%	87%
Availability of HOV lanes	89%	34%
Being in control	87%	84%
Flexibility	72%	84%
Availability of transport if stay late/leave early	78%	80%
Time have to leave	75%	93%
Safety	74%	74%
Reducing stress	69%	69%
Parking at work/school	65%	52%
Comfort	63%	72%
Availability of transport during day	60%	61%
Cost of tolls	55%	40%
Fare cost	53%	49%
Price of gas	49%	52%
Time alone	38%	36%
Making productive use of commute time	36%	38%
Parking cost at work/school	36%	39%
Ability to find carpool partner	15%	13%

95% of hybrid drivers are aware of the HOT lanes on I-95/I-395.

Proportions reported are those giving a "4" or "5" on a 1-5 scale where "5" means that they "agree strongly" with the statement.

Interpret with caution. Base size for hybrids is small.

Hybrid Drivers Have Slightly Less Favorable Views of the HOT Lanes than Do Drivers of Gasoline Vehicles

Hybrid, n=100
Gasoline, n=816

	<u>SOV:</u> <u>Hybrid</u>	<u>SOV:</u> <u>Gasoline</u>
Disruption caused by construction will be worse than any benefit	57%	44%
HOT lanes will discourage drivers from picking up sluggers	49%	34%
HOT lanes will encourage drivers to pick up sluggers	30%	35%
HOT lanes will help commuters save time	20%	35%
HOT lanes will help traffic flow faster in general purpose lanes	18%	32%
HOT lanes will create new transit, vanpooling and carpooling opportunities	20%	33%
HOT lanes will be key in emergency and evacuation	18%	35%
HOT lanes will help traffic in existing HOV lanes	17%	27%
HOT lanes will benefit all commuters	12%	30%
HOT lanes will benefit the environment	4%	15%
HOT lanes will support region's economic vitality	13%	26%
HOT lanes will add too much growth and development	46%	25%
HOT lanes will help commuters spend less time commuting and more time enjoying life	23%	34%

Hybrid, n=100
Gasoline, n=816

Hybrid Drivers Who Would Use the HOT Lanes Would Be More Likely than Gasoline Drivers to Use the HOT Lanes 5 Days a Week

Response to
questions
does not
provide
information
about mode
change or
intent to
pay toll.

	<u>SOV: Hybrid</u>	<u>SOV: Gasoline</u>
Likelihood of using HOT lanes	20%	23%
Number of days would use HOT lanes*:		
Occasionally - less than one day a week	0%	6%
1-2 days a week	0%	11%
3 days a week	0%	16%
4 days a week	4%	10%
5 days a week	88%	40%
It would vary	4%	13%
Don't know	4%	4%

* Based to those who said they would use the HOT lanes.

Q39. Assume the HOT lanes are completed and open for use. How likely would you be to use them at least occasionally for your regular commute? Q40. How often would you use the HOT lanes during the week, Monday through Friday?

Hybrid, n=100
Gasoline, n=816

Hybrid SOV Drivers Are About as Likely to Ride an Express Bus as SOV Drivers Who Drive Vehicles with Gasoline Engines

Values in **red font** indicate total scores after discount demand factor has been applied.

Proportions reported are those giving a "4" or "5" on a 1-5 scale where "5" means "very likely."

	<u>SOV: Hybrid</u>	<u>SOV: Gasoline</u>
Likelihood of riding express bus if buses came more often	30% (12%)	30% (12%)
Likelihood of riding express bus if neighborhood feeder	25% (9%)	24% (10%)
Likelihood of riding express bus if shuttle to/from destination	23% (9%)	24% (10%)

Q49. If the schedule were revised so that express buses came more often, how likely would you be to ride an express bus at least 1-2 days a week? Q50. Suppose that a shuttle bus could operate frequently in your neighborhood that would circulate and connect to an express bus stop. How likely would you be to ride an express bus at least 1-2 days a week if such a feeder bus service operated? Q51. Suppose that a shuttle bus service could operate frequently in the morning and afternoon peak hours between the express bus drop-off point and your commute destination. How likely would you be to ride an express bus at least 1-2 days a week if such a shuttle bus service operated?

Hybrid, n=100
Gasoline, n=816

Hybrid Drivers Express Less Interest in Riding VRE than Do Drivers of Gasoline Vehicles

Values in **red font** indicate total scores after discount demand factor has been applied.

Proportions reported are those giving a "4" or "5" on a 1-5 scale where "5" means "very likely."

	<u>SOV: Hybrid</u>	<u>SOV: Gasoline</u>
Likelihood of riding VRE if trains came more often	6% (2%)	20% (8%)
Likelihood of riding VRE if more seats	5% (2%)	19% (7%)
Likelihood of riding VRE if shuttle to/from destination	13% (5%)	27% (11%)
Likelihood of riding VRE if neighborhood shuttle	14% (6%)	26% (10%)
Likelihood of riding VRE if more parking	9% (3%)	18% (9%)

Q57. If additional VRE trains were added so that they came more often, how likely would you be to use the Virginia Railway Express for your commute at least 1-2 days a week? Q58. If VRE trains had more seats available, how likely would you be to use the Virginia Railway Express for your commute at least 1-2 days a week? Q59. Suppose a shuttle bus service could operate frequently in the morning and afternoon peak hours between the VRE train station and your commute destination (e.g., work). How likely would you be to take this shuttle bus? Q60. Suppose a shuttle bus service could operate frequently in the morning and afternoon peak hours between the VRE train station and your commute destination (e.g., work). How likely would you be to ride VRE if this shuttle bus service were offered? Q62. Suppose a shuttle feeder bus could operate frequently in your neighborhood that would circulate and connect to the VRE train station. How likely would you be to use this feeder bus and take VRE at least 1-2 days a week? Q63. If more parking were available at VRE train stations, how likely would you be to take VRE at least 1-2 days a week?

Hybrid, n=100
Gasoline, n=816

Values in **red font** indicate total scores after discount demand factor has been applied.

Proportions reported are those giving a "4" or "5" on a 1-5 scale where "5" means "very likely."

Hybrid Drivers Also Express Less Interest in Riding Metrorail than Do Drivers of Gasoline Vehicles

	<u>SOV: Hybrid</u>	<u>SOV: Gasoline</u>
Likelihood of riding Metrorail if trains came more often	9% (3%)	20% (8%)
Likelihood of riding Metrorail if less crowded	9% (4%)	24% (9%)
Likelihood of riding Metrorail if shuttle to/from destination	10% (4%)	25% (10%)
Likelihood of riding Metrorail if neighborhood feeder	14% (5%)	29% (11%)
Likelihood of riding Metrorail if more parking	12% (5%)	26% (10%)

Q66. If the schedule were revised so that trains came more often, how likely would you be to use Metrorail for your commute at least 1-2 days a week? Q67. If trains were less crowded, how likely would you be to use Metrorail for your commute at least 1-2 days a week? Q69. Suppose that a shuttle bus service between the Metrorail train station and your commute destination (e.g., work) could operate frequently in morning and afternoon peak hours. How likely would you be to ride Metrorail if this shuttle bus service were offered? Q71. Suppose that a shuttle bus could operate frequently in your neighborhood that would circulate and connect to the Metrorail station. How likely would you be to ride Metrorail at least 1-2 days a week if a feeder bus operated in your neighborhood? Q72. If more parking were available at Metrorail stations, how likely would you be to take Metrorail at least 1-2 days a week?

Appendix: Questionnaire

I-95/I-395 Transit/TDM Study: Questionnaire

August 9, 2007 (Final)

INTRODUCTION

Thank you for participating in this important research about transportation issues along the I-95/I-395 corridor from Fredericksburg to Washington, DC. This research is being conducted on behalf of the Virginia Department of Rail and Public Transportation (DRPT). All of your responses will be kept strictly confidential. If you have any questions or would like additional information about this research, please contact the Southeastern Institute of Research at 1-804-358-8981.

Instructions for completing this survey:

For most questions, simply click your response. In addition, there are places where you may add your specific comments. If you mistakenly skip a question, you will be prompted for an answer. You will not be able to move ahead to other questions until that question is answered.

This survey can be completed in about 15 minutes, but may take longer should you wish to add comments. If you are unable to complete this survey in one sitting, close the window with the survey. Then, when you are ready to continue, re-start the survey by clicking on the link you used to access the survey the first time. It will take you to the first unanswered question.

Once you have completed the survey, click the final "continue" box to submit your answers. At that point, the link will no longer be active, so you will not be able to review your answers or the survey again. Prior to clicking the final "continue" to submit your answers, you may review and change your answers.

There is a link on every page that you can click to get help if you have any problems or questions.

Again, thank you for participating in this research.

In order to begin the survey, please enter the password listed on the postcard sent to you. The password must be entered in all CAPITAL letters.

Password:

I. SCREENING AND CURRENT TRIP ATTRIBUTES

1. In what year were you born?

(MUST BE BETWEEN THE AGES OF 18 AND 65 TO QUALIFY.)

2. Typically, how many days a week (Monday through Friday) do you travel in the I-95/I-395 corridor in the morning, between 5:00 a.m. and 10:00 a.m.?

1. 1-2 days a week → **THANK & TERMINATE**
2. 3 days a week
3. 4 days a week
4. 5 days a week
5. None → **THANK & TERMINATE**
6. Occasionally - less than once a week → **THANK & TERMINATE**
7. Don't know/not certain → **THANK & TERMINATE**

3. What is the main purpose of your morning travel in the I-95/I-395 corridor?

1. Going to work
2. Going to school
3. Going to work and school
4. Something else → **THANK & TERMINATE**

4. What direction are you headed when you travel in the I-95/I-395 corridor on your morning commute between 5:00 a.m. and 10:00 a.m.?

1. North
2. South → **THANK & TERMINATE**
3. Don't know/not certain → **THANK & TERMINATE**

5. About what time do you typically begin your commute (i.e., leave your house) in the I-95/I-395 corridor in the morning?

1. Prior to 5:00 a.m. → THANK & TERMINATE
2. 5:00-5:30 a.m.
3. 5:31-6:00 a.m.
4. 6:01-6:30 a.m.
5. 6:31-7:00 a.m.
6. 7:01-7:30 a.m.
7. 7:31-8:00 a.m.
8. 8:01-8:30 a.m.
9. 8:31-9:00 a.m.
10. 9:01-9:30 a.m.
11. 9:31-10:00 a.m.
12. After 10:00 → THANK & TERMINATE

5a. Do you have flexibility in your daily departure time (that is, can you vary your arrival time at work/school)?

1. Yes
2. No
9. Don't know

6. Please think of your travel in the I-95/I-395 corridor during a typical week, Monday through Friday. In the table below, please enter the number of weekdays you typically use each of the listed types of transportation as your **primary** mode for your **morning** commute. If you use more than one type on a single day (e.g., walk to the bus stop, then ride the bus), please count only the type you use for the **longest distance part** of your commute trip. (If you do not use a particular form of transportation for your morning commute, please enter a 0 for that form of transportation.)

	<i>Number of Days Used (Enter 0 to 5)</i>
1. Drive alone	
2. Travel in a pre-arranged carpool with 1 other person either as the driver or as a passenger	
3. Travel in a pre-arranged carpool with 2 or more other people either as the driver or as a passenger	
4. Travel in an informal carpool ("slugging" - picking up or picked up passengers to use the HOV lanes)	
5. Travel in a vanpool as either the driver or as a passenger	
6. Ride a bus	
7. Take Metrorail	
8. Take Virginia Railway Express (VRE)	
9. Other _____	
TOTAL WEEKDAYS	(SUM OF 1-9)

(VALIDATION CHECK: TOTAL ALIGNS WITH ANSWER TO Q2 (i.e., 3, 4, or 5)

(IF CHOICE "2", CHOICE "3", CHOICE "4", OR CHOICE "5" IS GREATER THAN 0 AT Q6 ASK Q6a)

6a. What is your typical role when carpooling or vanpooling?

1. I am typically the driver
2. I am typically a passenger
3. I alternate roles as driver and passenger
9. Don't know/prefer not to answer

(IF CHOICE "1" IS GREATER THAN 0 AT Q6 OR ANSWER "1" at Q6a, ASK Q6b)

6b. When you drive, what type of vehicle do you typically use on I-95/I-395?

1. Gasoline-only or diesel powered vehicle
2. Gasoline-electric hybrid vehicle registered before July 1, 2006 (allows me to travel on the HOV lanes)
3. Gasoline-electric hybrid vehicle registered after July 1, 2006
9. Don't know/prefer not to answer

(IF CHOICE "6" IS GREATER THAN 0 AT Q6, ASK Q7. OTHERS SKIP TO Q8A.)

7. Please identify the specific bus line that you use for your morning commute?

1. ART (Arlington Transit)
2. CUE (City of Fairfax)
3. DASH (Alexandria Transit Co.)
4. Fairfax Connector
5. FRED (Fredericksburg Regional Transit)
6. GEORGE (City of Falls Church)
7. Loudoun County Transit Service
8. Martz
9. Metrobus/WMATA
10. PRTC/OmniLink/OmniRide/OmniBus
11. Quick's
12. TAGS Bus
13. Other

(IF ANSWERED "13" AT Q7, ASK Q7A. OTHERS SKIP TO INSTRUCTIONS BEFORE Q7A-1.)

7A. What bus line is that?

(IF CHOICE "7" IS GREATER THAN 0 AT Q6, ASK Q7A-1. OTHERS SKIP TO Q7B.)

7A-1. At what Metrorail station do you typically begin the rail portion of your commute?

1. Pentagon
2. Pentagon City
3. Crystal City
4. Ronald Reagan Washington National Airport
5. Braddock Road
6. King Street
7. Eisenhower Avenue
8. Huntington
9. Van Dorn Street
10. Franconia-Springfield
11. Other station

(IF ANSWERED "11" AT Q7A-1, ASK Q7A-2. OTHERS SKIP TO Q7B.)

7A-2. What station is that?

(IF CHOICE "8" IS GREATER THAN 0 AT Q6, ASK Q7B-1. OTHERS SKIP TO Q8.)

7B-1. At what train station do you typically begin the rail portion of your commute?

1. Union Station
2. L'Enfant Plaza
3. Crystal City
4. Alexandria (King Street)
5. Manassas Line - Backlick Road
6. Manassas Line - Rolling Road
7. Fredericksburg Line - Franconia/Springfield
8. Fredericksburg Line - Lorton
9. Fredericksburg Line - Woodbridge
10. Fredericksburg Line - Rippon
11. Fredericksburg Line - Quantico
12. Fredericksburg Line - Brooke
13. Fredericksburg Line - Leeland
14. Fredericksburg Line - Fredericksburg
15. Other station

(IF ANSWERED "15" AT Q7B-1, ASK Q7B-2. OTHERS SKIP TO Q8.)

7B-2. What station is that?

(IF CHOICE 6 IS GREATER THAN 0 AT Q6 ASK Q8.)

8. How do you get to the bus service that you use for your morning commute?

1. Drive alone
2. Drive with one or more people
3. Get dropped off
4. Take another bus
5. Walk
6. Bicycle
7. Other

(IF CHOICE "7" IS GREATER THAN 0 AT Q6 [METRORAIL], ASK Q8A-1.)

8A-1. How do you get to the Metrorail for your morning commute?

1. Drive alone
2. Drive with one or more people
3. Get dropped off
4. Take a bus
5. Walk
6. Bicycle
7. Other

(IF CHOICE "8" IS GREATER THAN 0 AT Q6 [VRE COMMUTER], ASK Q8A-2.)

8A-2. How do you get to the VRE train for your morning commute?

1. Drive alone
2. Drive with one or more people
3. Get dropped off
4. Take a bus
5. Walk
6. Bicycle
7. Other

(IF CHOICE "6" IS GREATER THAN 0 AT Q6 [BUS], ASK Q8B-1.)

8B-1. How do you typically get from the bus drop-off to the final destination of your morning commute (if more than one method used, please indicate the one you use for the longest distance).

1. Take another public bus (e.g., Metrobus)
2. Take rail transit (e.g., Metrorail)
3. Take a private shuttle bus
4. Walk
5. Bicycle
6. Other

(IF CHOICE "7" IS GREATER THAN 0 AT Q6 [METRORAIL], ASK Q8B-2.)

8B-2. How do you typically get from the Metrorail train to the final destination of your morning commute (if more than one method used, please indicate the one you use for the longest distance).

1. Take public bus (e.g., Metrobus)
2. Take a private shuttle bus
3. Walk
4. Bicycle
5. Other

(IF CHOICE "8" IS GREATER THAN 0 AT Q6 [VRE COMMUTER], ASK Q8B-3.)

8B-3. How do you typically get from the VRE train to the final destination of your morning commute (if more than one method is used, please indicate the one you use for the longest distance.)

1. Take public bus (e.g., Metrobus)
2. Take rail transit (e.g., Metrorail)
3. Take a private shuttle bus
4. Walk
5. Bicycle
6. Other

9. What entrance to I-95/I-395 do you use on your morning commute?
 1. I-95 Exit 118 - Route 606 - Thornburg
 2. I-95 Exit 126 - US Route 1, US Route 17 SB - Fredericksburg / Massaponax
 3. I-95 Exit 130 - VA Route 3 - Fredericksburg / Culpeper
 4. I-95 Exit 133 - US Route 17 BN - Warrenton
 5. I-95 Exit 136 - Route 627 / US Route 1
 6. I-95 Exit 140 - Route 630 - Stafford
 7. I-95 Exit 143 - US Route 1 - Aquia; Route 610 - Garrisonville
 8. I-95 Exit 148 - Russell Road - Marine Corps Base Quantico
 9. I-95 Exit 150 - Route 619 - Triangle, Quantico
 10. I-95 Exit 152 - VA Route 234 - Dumfries, Manassas
 11. I-95 Exit 156 - Route 784 - Dale City, Rippon Landing, Potomac Mills
 12. I-95 Exit 158 - Route 3000 - Prince William Parkway / Woodbridge, Manassas
 13. I-95 Exit 160 - VA Route 123 - Woodbridge, Occoquan
 14. I-95 Exit 163 - Route 642 - Lorton
 15. I-95 Exit 166 - Route 7100 - Fairfax County Parkway / Newington, Ft. Belvoir
 16. I-95 Exit 167 - Backlick Road, Fullerton Road
 17. I-95 Exit 169 - Route 644 - Springfield, Franconia
 18. I-95 Exit - Route 7900 - Franconia-Springfield Parkway HOV Ramp
 19. I-95 Exit 170 - Capital Beltway I-495
 20. I-395 Exit 2 - Route 648 - Edsall Road
 21. I-395 Exit 3 - VA Route 236 - Duke St, Little River Turnpike
 22. I-395 Exit 4 - Seminary Road
 23. I-395 Exit 5 - VA Route 7 - King Street
 24. I-395 Exit 6 - Quaker Lane - Shirlington
 25. I-395 Exit 7 - VA 120 - Glebe Road
 26. I-395 Exit 8 - VA 27 - Washington Blvd (fr Columbia Pike)
 27. I-395 Exit 10 - Boundary Channel Dr.
 28. Other
 29. Don't know
 30. I do not use I-95/I-395

10. In addition to I-95/I-395, what other major highways, if any, do you typically travel on your regular morning commute?

1. I-495/Capital Beltway traveling towards Tysons
2. I-495/Capital Beltway traveling towards Alexandria
3. I-66
4. Dulles Toll Road (DTR)
5. Fairfax County Parkway/Franconia-Springfield Parkway
6. George Washington Parkway
7. Prince William Parkway
8. US Route 1
9. VA Route 3
10. VA Route 7
11. US Route 17
12. VA Route 28
13. US Route 29
14. US Route 50
15. VA Route 123
16. VA Route 234
17. None of these

11. How long have you been commuting using the transportation mode(s) you now use?

1. Less than one year
2. 1-2 years
3. 3-5 years
4. 6-9 years
5. 10-15 years
6. Over 15 years

12. In the past, which of the following transportation mode(s) other than driving alone have you ever used on a regular basis, regardless of where you may have been living? Please select all that apply.
1. Travel in a pre-arranged carpool with 1 other person either as the driver or as a passenger
 2. Travel in a pre-arranged carpool with 2 or more other people either as the driver or as a passenger
 3. Travel in an informal carpool (slugging) where you are the person who **gets picked up** as a passenger
 4. Travel in an informal carpool (slugging) where you are the person who **picks up** passengers
 5. Travel in a vanpool either as the driver or as a passenger
 6. Ride a bus
 7. Ride a train (VRE, Metrorail, or Amtrak)
 8. Telework/telecommute
 9. Walk
 10. Ride a bike
 11. Other
 12. None of these
13. What is the zip code of the usual location where your morning commute begins (for example, your home zip code)? *Your information is confidential, and we are not going to contact you there.* We just want to know the general location of your usual trip start so we can analyze transportation corridor improvements.
- Zip code: ____ ____ ____ ____ ____
- Don't know/can't recall zip code

14. What is the general location of the start of your morning commute (for example, your home)?

1. Alexandria
2. Arlington
3. Caroline County, South of Massaponax
4. Dale City
5. Dumfries/Triangle
6. Fredericksburg
7. Falmouth
8. Ft. Belvoir
9. Garrisonville
10. Kingstowne
11. Lake Ridge
12. Lorton
13. Manassas
14. Montclair
15. Occoquan
16. Quantico
17. Spotsylvania
18. Springfield
19. Stafford
20. Woodbridge
21. Other location in Fairfax County
22. Other location in Prince William County
23. Other location in Spotsylvania County
24. Other location Stafford County
25. Some other location

(IF ANSWERED "21-25" AT Q14, ASK 14a.)

14a. What location is that? _____

15. What is the zip code of your usual destination (for example, your workplace) on your morning commute? *Your information is confidential, and we are not going to contact you there.* We just want to know the general location of your usual destination so we can analyze transportation corridor improvements.

Zip code: ____ ____ ____ ____ ____

Don't know/can't recall zip code

16. What is the general location of your usual destination (for example, your workplace) on your morning commute?

1. Alexandria
2. Annandale
3. Arlington
4. Baileys Crossroads
5. Ballston
6. Chantilly area
7. Crystal City
8. Dale City area
9. Dumfries area
10. Fairfax City
11. Falls Church
12. Herndon/Reston
13. Leesburg
14. Loudoun County
15. Manassas
16. Manassas Park
17. Maryland
18. McLean
19. Merrifield
20. Pentagon
21. Springfield
22. Tysons
23. Vienna

24. Washington, DC
25. Western Dulles Corridor
26. Woodbridge
27. Some other location

(IF ANSWERED "27" AT Q16, ASK Q16a.)

16a. What location would that be? _____

17. On average, about how many **minutes** long is your total morning commute, door to door?

1. 10 minutes or less
2. 11-20 minutes
3. 21-30 minutes
4. 31-40 minutes
5. 41-50 minutes
6. 51-60 minutes
7. 61-70 minutes
8. 71-80 minutes
9. 81-90 minutes
10. 91-100 minutes
11. 101-110 minutes
12. 111-120 minutes
13. More than 120 minutes
14. Don't know

18. About how many **miles** long is your total morning commute, door to door?

_____ miles

19. Again, please think of your travel in the I-95/I-395 corridor during a typical week, Monday through Friday. Do you typically use the same mode of transportation for your afternoon commute as you do for your morning commute?
1. Yes, typically my mode of transportation in the afternoon is the same as in the morning → SKIP TO Q23
 2. No, typically my mode of transportation in the afternoon is not the same as in the morning
20. In the table below, please enter the number of weekdays you typically use each of the listed types of transportation as your primary mode of transportation for your afternoon return trip. If you use more than one type on a single day (e.g., walk to the bus stop, then ride the bus), please count only the type you use for the longest distance part of your trip. (If you do not use a particular form of transportation for your afternoon commute, please enter a 0 for that form of transportation.)

Type of Transportation	Number of Days Used (Enter 0 to 5)
1. Drive alone	
2. Travel in a pre-arranged carpool with 1 other person either as the driver or as a passenger	
3. Travel in a pre-arranged carpool with 2 or more other people either as the driver or as a passenger	
4. Travel in an informal carpool ("slugging" - picking up or picked up passengers to use the HOV lanes)	
5. Travel in a vanpool as either the driver or as a passenger	
6. Ride a bus	
7. Take Metrorail	
8. Take Virginia Railway Express (VRE)	
9. Other _____	
TOTAL WEEKDAYS	(SUM OF 1-9)

(IF CHOICE "6" IS GREAT THAN 0 AT Q20, ASK Q21. OTHERS SKIP TO Q23.)

21. What bus line would that be?

1. ART (Arlington Transit)
2. CUE (City of Fairfax)
3. DASH (Alexandria Transit Co.)
4. Fairfax Connector
5. FRED
6. GEORGE (City of Falls Church)
7. Loudoun County Transit Service
8. Martz
9. Metrobus/WMATA
10. PRTC/OmniLink/OmniRide/OmniBus
11. Quick's
12. TAGS Bus
13. Other

(IF ANSWERED "13" AT Q21, ASK Q22. OTHERS SKIP TO Q23.)

22. What bus line is that?

II. REASONS FOR USING CURRENT TRANSPORTATION MODE

23. Next, think about what factors are important to you when deciding how you will commute. How important to you are the following factors in choosing how you commute on your morning commute trip? For your answer, please use a scale of "1" to "5" where "1" means it is "not at all important" and "5" means it is "very important" in choosing your mode of transportation. How important to you is each of the following?

	<u>Not at all</u> <u>Important</u>				<u>Very</u> <u>Important</u>	<u>(Don't</u> <u>Know)</u>
Scale:	1	2	3	4	5	9

ASK EACH RESPONDENT HALF OF THE FOLLOWING LIST (ROTATE):

- a. The time you have to leave home in the morning
- b. The length of time it takes to commute
- c. Cost of fares
- d. Cost of tolls
- e. Price of gas
- f. Comfort
- g. Flexibility
- h. Dependability
- i. Safety
- j. Making productive use of your time during the commute
- k. Time alone to yourself
- l. Being in control of your commute
- m. Reducing your level of stress
- n. Availability of transportation if you have to be at work/school late or have to leave work/school unexpectedly
- o. Availability of transportation during the day while you are at work/school
- p. Arriving at work/school on time

- q. Availability of parking at work/school site
- r. Cost of parking at work/school site
- s. Availability of HOV lanes
- t. Ability to find a carpool or slugging partner

Ask carpoolers (choice "2," "3," or "4" at Q6):

How important were each of the following in your decision to carpool?

- u. Availability of slug lines / informal carpool pick-up points
- v. Availability of "free" or preferential parking for carpools at work/school
- w. Availability of parking at carpool "connecting" or "pick-up" point

Ask vanpoolers (choice "5" at Q6):

How important were each of the following in your decision to vanpool?

- x. Availability of "free" or preferential parking for vanpools at work/school
- y. Availability of parking at vanpool "connecting" or "pick-up" point
- z. Employer provided transportation subsidy (e.g., Metrochek)

Ask bus riders (answer "6" at Q6):

How important were each of the following in your decision to ride the bus?

- aa. Availability of bus at time you want to travel
- bb. Cost of parking at "connecting" or "pick-up" point
- cc. Availability of parking at "connecting" or "pick-up" point
- dd. Employer provided transportation subsidy (e.g., Metrochek)

Ask train riders (answer "7" or "8" at Q6):

How important were each of the following in your decision to ride the train?

- ee. Availability of train at time you want to travel
- ff. Cost of parking at "connecting" or "pick-up" point
- gg. Availability of parking at "connecting" or "pick-up" point
- hh. Employer provided transportation subsidy (e.g., Metrochek)

24. Is there any other factor that is important to you when selecting your morning commute mode?

- 1. Yes → GO ON TO Q25
- 2. No → SKIP TO Q27

25. What other factor is important in your commute choice?

IF ONE LISTED, ASK:

26. How important is that in your choice of how you will commute?

	<u>Not at all</u> <u>Important</u>					<u>Very</u> <u>Important</u>	<u>(Don't</u> <u>Know)</u>
Scale:	1	2	3	4		5	9

(IF ANSWERED "2" AT Q19, ASK Q27. OTHERS SKIP TO Q28.)

27. Earlier, you indicated that you use different commute mode(s) in the afternoons than you do in the mornings. Why do you use different commute mode(s) in the afternoon?

III. CURRENT USE OF HOV LANES

28. Prior to this survey, were you aware of the High-Occupancy Vehicle (HOV) lanes on I-95/I-395?

- 1. Yes
- 2. No → SKIP TO Q36
- 9. Don't know → SKIP TO Q36

29. How familiar are you with the HOV lanes on I-95/I-395? By familiar we mean, do you know where the exits and entrances for the HOV lanes are? Do you know the basic hours of operation? How familiar would you say you are with the HOV lanes? Please use a scale of 1-5 for your answer where "1" is "not very familiar" and "5" is "very familiar."

	Not very <u>Familiar</u>					Very <u>Familiar</u>	(Don't <u>Know</u>)
Scale:	1	2	3	4	5	9	

30. Is there an entrance to the HOV lanes that you currently use or could use on your morning commute?

- 1. Yes
- 2. No → SKIP TO Q33
- 9. Don't know → SKIP TO Q33

31. Please select the entrance to the HOV lanes that you currently use or could use on your morning commute.

1. South of VA Route 234 (Dumfries)
2. South of Dale Blvd / Rest Area
3. South of Prince William Parkway
4. Horner Road Park and Ride Lot
5. VA Route 123 (Gordon Blvd)
6. US Route 1
7. South of Fairfax County Parkway
8. Franconia - Springfield Parkway
9. Old Keene Mill Road / Franconia Road
10. North of Edsall Road
11. Seminary Road
12. Shirlington Road / Quaker Lane
13. Eads Street / Pentagon
14. Ramp at 14th St. Bridge
15. None of these / Don't know

32. How frequently during your weekday morning commute do you use the HOV lanes on I-95/I-395, either driving alone in your vehicle or traveling in a carpool, vanpool, or bus?

1. occasionally - less than once a week
2. 1-2 days a week
3. 3 days a week
4. 4 days a week
5. 5 days a week
6. None
9. Don't know

(IF "2," "3," "4," OR "5" AT Q32, SKIP TO Q34. IF ANSWERS "1" OR "6" AT Q32, ASK Q33. IF "9" AT Q32, SKIP TO Q37.)

33. If there were an HOV entrance conveniently accessible on your morning commute and you were to use the HOV lanes, what form of transportation would you be most likely to use? Assume that parking would be available at your "pick-up" or "connection" location.

1. Travel in a pre-arranged carpool with 2 or more other people either as the driver or as a passenger
2. Travel in an informal carpool (slugging) where you are the person who **gets picked up** as a passenger
3. Travel in an informal carpool (slugging) where you are the person who **picks up** passengers
4. Travel in a vanpool either as the driver or as a passenger
5. Ride a bus
6. Ride a train (VRE, Metrorail, or Amtrak)
7. Telework/telecommute
8. Walk
9. Ride a bike
10. Other

(IF "1," "2," "3," "4," OR "5" AT Q32, ASK Q34. OTHERS SKIP TO Q36.)

34. Please select the time that most closely corresponds to the time you currently enter (or would enter) the HOV lanes on a typical morning.

1. Prior to 5:00 a.m.
2. 5:00-5:30 a.m.
3. 5:31-6:00 a.m.
4. 6:01-6:30 a.m.
5. 6:31-7:00 a.m.
6. 7:01-7:30 a.m.
7. 7:31-8:00 a.m.
8. 8:01-8:30 a.m.
9. 8:31-9:00 a.m.
10. After 9:00 a.m.

NO Q35

IV. AWARENESS OF AND FAMILIARITY WITH HOT LANES

NO Q36

37. Have you ever heard or read anything about the proposed construction of the High Occupancy Toll (HOT) lanes in the I-95/I-395 corridor?
1. Yes
 2. No
 9. Don't know/not certain

37A. Here's some information about proposed HOT lanes in the I-95/I-395 corridor: HOT lanes may be constructed on I-95/I-395. Construction could begin in 2008. The project would expand the existing High Occupancy Vehicle (HOV) facility on I-95/I-395 from two to three lanes and extend two new lanes south of Fredericksburg to Massaponax. All of these lanes would become High Occupancy Toll (HOT) lanes - meaning that buses, vanpools, motorcycles, and carpools with three or more people could continue to use the lanes for free, and non-HOV motorists could choose to pay a toll to use the lanes. Drivers of hybrid vehicles would not be able to use the lanes for free unless they met the same carpool occupancy requirements as non-hybrid vehicles.

The HOT lanes would be in effect 24 hours a day, but their direction would change to match peak period travel just as the existing HOV lanes do today. So, the HOT lanes would be northbound during some periods of time (e.g., morning) and southbound during other periods of time (e.g., evening) to correspond with peak travel. HOT lanes are also proposed for I-495, the Capital Beltway. The HOT lanes on I-95/I-395 would connect to the HOT lanes on I-495 from Springfield to Tysons Corner. The following questions relate to the HOT lanes being proposed for the I-95/I-395 corridor.

38. Next is a list of statements about the HOT lanes. Please indicate the extent to which you agree or disagree with each statement. Use a scale of 1-5 for your answer where “1” means that you “disagree strongly” with the statement and “5” means that you “agree strongly” with the statement.

	<u>Disagree</u> <u>Strongly</u>					<u>Agree</u> <u>Strongly</u>	(Don't <u>Know</u>)
Scale:	1	2	3	4	5		9

(ROTATE)

(ASK EACH RESPONDENT HALF OF LIST.)

- a. HOT lanes will help traffic to flow faster in the general purpose lanes on I-95/I-395
- b. HOT lanes will help traffic to flow faster in the existing HOV lanes
- c. HOT lanes will create new transit, vanpooling, and carpooling opportunities
- d. HOT lanes will help commuters save time on their commutes
- e. HOT lanes will benefit all commuters, even those that do not use them
- f. The disruption caused by the construction of HOT lanes will be worse than any eventual benefit
- g. HOT lanes will encourage drivers to pick up sluggers in order to avoid paying the toll to use the HOT lanes
- h. HOT lanes will discourage drivers from picking up sluggers - drivers will simply pay the toll to use the HOT lanes
- i. HOT lanes will play a key role in the region's emergency and evacuation plans
- j. HOT lanes will benefit the environment because there will be fewer vehicles on the road and, thus, reduced vehicle emissions
- k. HOT lanes will help I-95/I-395 to support the region's economic vitality
- l. HOT lanes will add too much growth and development to the area
- m. HOT lanes will help commuters be able to spend less time commuting and more time doing things they enjoy

V. FUTURE COMMUTE BEHAVIOR AND USE OF HOT LANES

39. Assume the HOT lanes are completed and open for use. How likely would you be to use them at least occasionally for your regular commute? Use a scale of "1" to "5" for your answer, where "1" means that you are "not at all likely" to use this alternative and "5" means you are "very likely."

	Not at all <u>Likely</u>					Very <u>Likely</u>	(Don't <u>Know</u>)
Scale:	1	2	3	4	5	9	

(IF ANSWERED "4" OR "5" AT Q39, ASK Q40. OTHERS SKIP TO Q41.)

40. How often would you use the HOT lanes during the week, Monday through Friday?

1. occasionally - less than once per week
2. 1-2 days a week
3. 3 days a week
4. 4 days a week
5. 5 days a week
6. It would vary
9. Don't know

(IF Q6 DRIVE ALONE > 6, ASK Q41-A.)

41-A. Which of the following statements best describes how you would typically commute when the HOT lanes are completed and open for use? Please select only one answer.

1. I would **continue to drive alone** in my own vehicle and pay to use the HOT lanes.
2. I would **stop driving alone** in my own vehicle and switch to a form of transportation that allows me to use the HOT lanes without paying (e.g., carpool, vanpool, slugging, or transit).
3. I would **stop driving alone** in my own vehicle and switch to a carpool with one other person to allow me to split the HOT lane toll with that person.
4. I would **not change** the way I commute in any way.
5. I would do something not listed here.

(IF ANSWERED "4" AT Q41, ASK Q42. OTHERS SKIP TO Q43.)

(IF Q6, DRIVE ALONE = 0, ASK Q41-B.)

41-B. Which of the following statements best describes how you would typically commute when the HOT lanes are completed and open for use? Please select only one answer.

1. I would **start driving alone** in my own vehicle and pay to use the HOT lanes.
2. I would **start driving alone** in my own vehicle, but I would not use the HOT lanes. I would drive in the regular lanes.
3. I would **not change** the way I commute in any way.
4. I would do something not listed here.

(IF ANSWERED "5" AT Q41-A OR "4" AT Q41-B, ASK Q41-C.)

41-C. What, specifically, would you do?

42. If you were to change to another form of transportation to use the HOT lanes for free, what would you most likely use?

1. Travel in a pre-arranged carpool with 2 or more other people as either the driver or as a passenger
2. Travel in an informal carpool (slugging) where you are the person who gets picked up as a passenger
3. Travel in an informal carpool (slugging) where you are the person who picks up passengers
4. Travel in a vanpool either as the driver or as a passenger
5. Ride a bus
6. Take Virginia Railway Express (VRE)
7. Take Metrorail
8. Telework/telecommute
9. Other

(IF ANSWERED "1," or "2" AT Q17 [COMMUTE IS 20 MINUTES OR LESS], SKIP TO Q46. OTHERS, PROVIDE INFORMATION AT Q43 AND ASK Q44.)

43. Now, we'd like to share some additional information with you about the proposed HOT lanes. The HOT lanes would be tolled 24-hours a day, seven days a week. The cost of the tolls to use the HOT lanes would vary throughout the day according to traffic conditions to maintain free-flowing conditions on the HOT lanes. That is, tolls would be higher when the demand for the lanes is greater, such as during rush hour. When demand for the lanes is lighter, tolls would be less. In addition, new access and exit points would be constructed to allow drivers to be able to enter and exit the HOT lanes at various points on their commutes. Drivers of hybrid vehicles would pay the same toll as other vehicles. Drivers of hybrid vehicles would not be able to use the HOT lanes without paying the toll. **PLEASE DO NOT GO BACK AND CHANGE YOUR PREVIOUS ANSWERS ABOUT USING THE HOT LANES.**

WE WILL GIVE YOU THE OPPORTUNITY TO RESPOND AGAIN ABOUT USING THE HOT LANES.

44. Suppose that by using the HOT lanes on your typical commute, you could reliably shorten the duration of your commute. Again, you could choose to use only a segment of the HOT lanes between an entry point and new exit point. How do you think you would respond at various levels of time savings and toll cost?

We will now describe several different combinations of time savings and toll prices. We'd like to know how you would respond to each

(PRESENT 3 OR 4 SCENARIOS BASED ON RESPONSE TO Q17 AND Q6 AS SHOWN BELOW.)

Assume that by using the HOT lanes, you could typically shorten the length of your commute versus what you do today by (INSERT TIME SAVINGS FROM LIST BELOW) minutes and the one-way cost of the toll is typically (INSERT COST FROM LIST BELOW). Which of the following best describes what you would do?

(PROGRAMMER INSTRUCTIONS: DO NOT BOLD OR CAPITALIZE INSERTIONS.)

44-1. (IF Q6 DRIVE ALONE IS > 0:)

1. I would continue to drive alone in my own vehicle and pay to use the HOT lanes.
2. I would stop driving alone in my own vehicle and switch to a form of transportation that allowed me to use the HOT lanes without paying (e.g., carpool, vanpool, slugging, or transit).
3. I would stop driving alone in my own vehicle and switch to a carpool with one other person to allow me to split the HOT lane toll with that person.
4. I would not change the way I commute in any way.
5. I would do something not listed here.

44-2. (IF Q6 DRIVE ALONE = 0:)

1. I would start driving alone in my own vehicle and pay to use the HOT lanes.
2. I would start driving alone in my own vehicle, but I would not use the HOT lanes. I would drive in the regular lanes.
3. I would not change the way I commute in any way.
4. I would do something not listed here.

(IF ANSWERED "2" AT Q44-1, ASK Q44A.)

44A. What, specifically, would you do?

1. Travel in a pre-arranged carpool with 2 or more other people either as the driver or as a passenger.
2. Travel in an informal carpool (slugging) where you are the person who gets picked up as a passenger
3. Travel in an informal carpool (slugging) where you are the person who picks up passengers
3. Travel in a vanpool either as the driver or as a passenger.
4. Ride a bus
5. Ride a train (VRE, Metrorail, Amtrak)
6. Other

(IF ANSWERED "5" AT Q44-1 OR "4" AT Q44-2, ASK Q44B.)

44B. What, specifically, would you do?

45. (FOR SCENARIO QUESTIONS BELOW, IF ANSWER TO Q6, CHOICE "1" >2 [SOV], THEN ASK ALL FOUR SCENARIOS. OTHERWISE, ONLY PRESENT FIRST THREE.)

(The pre-determined element in each scenario is the number of minutes of savings; toll amount presented will be computed as a random number between \$0.10 and \$0.50 per minute of savings rounded to nearest \$0.25 (i.e., if RAND = 0.12/min and Savings = 8 min., toll = \$1.00.) The order that the three/four scenarios are presented should be random.)

IF ANSWER TO Q17 IS:

"3" - 21-30 MINUTES

<u>Time savings</u>	<u>Cost of toll</u>
5 minutes	\$0.50 - \$2.50
8 minutes	\$0.75 - \$4.00
10 minutes	\$1.00 - \$5.00
IF ANSWER TO Q6, CHOICE "1" >2, ASK 4TH SCENARIO. OTHERS SKIP LAST SCENARIO	
12 minutes	\$1.25 - \$6.00

IF ANSWER TO Q17 IS:

"4" - 31-40 MINUTES

<u>Time savings</u>	<u>Cost of toll</u>
5 minutes	\$0.50 - \$2.50
10 minutes	\$1.00 - \$5.00
12 minutes	\$1.25 - \$6.00
IF ANSWER TO Q6, CHOICE "1" >2, ASK 4TH SCENARIO. OTHERS SKIP LAST SCENARIO	
15 minutes	\$1.50 - \$7.50

IF ANSWER TO Q17 IS:

"5" - 41 - 50 MINUTES

<u>Time savings</u>	<u>Cost of toll</u>
5 minutes	\$0.50 - \$2.50
10 minutes	\$1.00 - \$5.00
15 minutes	\$1.50 - \$7.50
IF ANSWER TO Q6, CHOICE "1" >2, ASK 4TH SCENARIO. OTHERS SKIP LAST SCENARIO	
20 minutes	\$2.00 - \$10.00

IF ANSWER TO Q17 IS:

"6" - 51 - 60 MINUTES

<u>Time savings</u>	<u>Cost of toll</u>
5 minutes	\$0.50 - \$2.50
10 minutes	\$1.00 - \$5.00
15 minutes	\$1.50 - \$7.50
IF ANSWER TO Q6, CHOICE "1" >2, ASK 4TH SCENARIO. OTHERS SKIP LAST SCENARIO	
20 minutes	\$2.50 - \$10.00

IF ANSWER TO Q17 IS:

"7" - 61 - 70 MINUTES

<u>Time savings</u>	<u>Cost of toll</u>
10 minutes	\$1.00 - \$5.00
15 minutes	\$1.50 - \$7.50
20 minutes	\$2.00 - \$10.00
IF ANSWER TO Q6, CHOICE "1" >2, ASK 4TH SCENARIO. OTHERS SKIP LAST SCENARIO	
25 minutes	\$2.50 - \$12.50

IF ANSWER TO Q17 IS:

"8" - 71 - 80 MINUTES

<u>Time savings</u>	<u>Cost of toll</u>
10 minutes	\$1.00 - \$5.00
15 minutes	\$1.50 - \$7.50
20 minutes	\$2.00 - \$10.00
IF ANSWER TO Q6, CHOICE "1" >2, ASK 4TH SCENARIO. OTHERS SKIP LAST SCENARIO	
30 minutes	\$3.00 - \$15.00

IF ANSWER TO Q17 IS:

"9" - 81 - 90 MINUTES

<u>Time savings</u>	<u>Cost of toll</u>
10 minutes	\$1.00 - \$5.00
15 minutes	\$2.00 - \$7.50
25 minutes	\$2.50 - \$12.50
IF ANSWER TO Q6, CHOICE "1" >2, ASK 4TH SCENARIO. OTHERS SKIP LAST SCENARIO	
35 minutes	\$3.50 - \$17.50

IF ANSWER TO Q17 IS:

"10" - 91 - 100 MINUTES

<u>Time savings</u>	<u>Cost of toll</u>
15 minutes	\$1.50 - \$7.50
20 minutes	\$2.00 - \$10.00
30 minutes	\$3.00 - \$15.00
IF ANSWER TO Q6, CHOICE "1" >2, ASK 4TH SCENARIO. OTHERS SKIP LAST SCENARIO	
40 minutes	\$4.00 - \$20.00

IF ANSWER TO Q17 IS:

"11" - 101-110 MINUTES

<u>Time savings</u>	<u>Cost of toll</u>
15 minutes	\$1.50 - \$7.50
20 minutes	\$2.00 - \$10.00
30 minutes	\$3.00 - \$15.00
IF ANSWER TO Q6, CHOICE "1" >2, ASK 4TH SCENARIO. OTHERS SKIP LAST SCENARIO	
40 minutes	\$4.00 - \$20.00

IF ANSWER TO Q17 IS:

"12" - 111-120 MINUTES

<u>Time savings</u>	<u>Cost of toll</u>
15 minutes	\$1.50 - \$7.50
20 minutes	\$2.00 - \$10.00
30 minutes	\$3.00 - \$15.00
IF ANSWER TO Q6, CHOICE "1" >2, ASK 4TH SCENARIO. OTHERS SKIP LAST SCENARIO	
45 minutes	\$4.50 - \$22.50

IF ANSWER TO Q17 IS:

"13" - MORE THAN 120 MINUTES

<u>Time savings</u>	<u>Cost of toll</u>
15 minutes	\$1.50 - \$7.50
20 minutes	\$2.00 - \$10.00
30 minutes	\$3.00 - \$15.00
IF ANSWER TO Q6, CHOICE "1" >2, ASK 4TH SCENARIO. OTHERS SKIP LAST SCENARIO	
50 minutes	\$5.00 - \$25.00

VI. TRANSIT-RELATED SERVICE IMPROVEMENTS

As a result of HOT lanes, some transit-related service improvements will be put in place. Next, we have some questions about transit services.

[EXPRESS BUS QUESTIONS]

46. Is there express bus service reasonably available for the area where you commute? An express bus service is a motorcoach or bus, generally traveling longer distance with limited stops, taking commuters to their work areas.

1. Yes → GO TO Q47
2. No → SKIP TO Q48
9. Don't know → SKIP TO Q48

47. How often do you use that express bus service?

1. occasionally - less than once a week
2. 1-2 days a week
3. 3 days a week
4. 4 days a week
5. 5 or more days a week
6. Never, I do not ride the express bus → SKIP TO Q48
9. Don't know → SKIP TO Q48

47A. Next is a list of potential improvements to that express bus service. Please indicate how important each improvement would be to you in helping you choose to continue riding express bus service or to increase your usage. Use a scale of 1-5 for your answer where "1" means "not at all important" and "5" means "very important".

	<u>Not at all</u> <u>Important</u>					<u>Very</u> <u>Important</u>	(Don't <u>Know</u>)
Scale:	1	2	3	4	5		9

(ROTATE - ASK EACH ELIGIBLE RESPONDENT HALF OF LIST.)

- a. Earlier morning inbound service
- b. More midday inbound service
- c. Earlier afternoon outbound service
- d. Later evening outbound service
- e. More frequent service
- f. More parking spaces at the existing park-and-ride lot
- g. New park-and-ride lot more convenient to my home
- h. Shuttle bus service from your neighborhood to the bus pick-up point
- i. Shuttle bus service from your bus drop-off point to your final destination
- j. Bicycle racks at the park-and-ride lot
- k. Bicycle racks on buses
- j. Provision of information about whether your bus is on time, available on cell phone or by email

47B. What other very important improvement or improvements, if any, could be made to help keep you riding or increase your riding of the express bus?

(SKIP TO Q55)

48. If new express bus service were available for the area where you commute (e.g., where you live to where you work), how likely would you be to use it at least 1-2 days a week?

	Not at all <u>Likely</u>				Very <u>Likely</u>	(Don't <u>Know</u>)
Scale:	1	2	3	4	5	9

49. If the schedule were revised so that express buses came more often, how likely would you be to ride an express bus at least 1-2 days a week?

	Not at all <u>Likely</u>				Very <u>Likely</u>	(Don't <u>Know</u>)
Scale:	1	2	3	4	5	9

50. Suppose that a shuttle bus could operate frequently in your neighborhood that would circulate and connect to an express bus stop. How likely would you be to ride an express bus at least 1-2 days a week if such a feeder bus service operated?

	Not at all <u>Likely</u>				Very <u>Likely</u>	(Don't <u>Know</u>)
Scale:	1	2	3	4	5	9

51. Suppose that a shuttle bus service could operate frequently in the morning and afternoon peak hours between the express bus drop-off point and your commute destination. How likely would you be to ride an express bus at least 1-2 days a week if such a shuttle bus service operated?

	Not at all <u>Likely</u>				Very <u>Likely</u>	(Don't <u>Know</u>)
Scale:	1	2	3	4	5	9

52. Is there a park-and-ride lot located along your commute where you could catch an express bus?

1. Yes → SKIP TO Q55
2. Yes, but the lot is usually full → SKIP TO Q55
2. No → GO ON TO Q53
9. Don't know → GO ON TO Q53

53. If there were a new park-and-ride lot located along your commute, how likely would you be to use it at least 1-2 days a week in order to take an express bus?

	Not at all <u>Likely</u>				Very <u>Likely</u>	(Don't <u>Know</u>)
Scale:	1	2	3	4	5	9

(IF ANSWERD "4" OR "5" AT Q53, ASK Q54. OTHERS SKIP TO Q55.)

54. Where, specifically, would be the best place for that park-and-ride lot?

(IF ANSWER "8" AT Q6 > 0 [USES VRE], ASK Q55A. ALL OTHERS ASK Q55B.)

55-A. Earlier you indicated that you use the VRE service. Following is a list of potential improvements to that service. Please indicate how important each improvement would be to you in helping you choose to continue riding VRE or to increase your usage. Use a scale of 1-5 for your answer where "1" means "not at all important" and "5" means "very important."

	Not at all <u>Likely</u>					Very <u>Likely</u>	(Don't <u>Know</u>)
Scale:	1	2	3	4	5	9	

(ROTATE - ASK EACH ELIGIBLE RESPONDENT HALF OF LIST.)

- a. Earlier morning inbound service
- b. More midday inbound service
- c. Earlier afternoon outbound service
- d. Later evening outbound service
- e. More frequent service
- f. More parking spaces at the existing station parking lot
- g. New station more convenient to my home
- h. Shuttle bus service from my neighborhood to the closest station
- i. Shuttle bus service from my current exit station to my final destination
- j. Bicycle racks at the station
- k. Improved bicycle accommodations on trains
- l. Provision of information about whether my train is on time available on cell phone or by email

55-A-2. What other very important improvement could be made to help keep you riding or increase your riding of VRE?

(SKIP TO INSTRUCTIONS BEFORE Q56.)

55-B. Is Virginia Railway Express (VRE) conveniently available for at least a portion of your commute?

- 1. Yes → SKIP TO Q57
- 2. No
- 9. Don't know

(IF LIVE IN ZIP CODES SOUTH OF FREDERICKSBURG, ASK Q56. OTHERS SKIP TO INSTRUCTIONS BEFORE Q57.)

56. If a VRE station were constructed south of Fredericksburg, how likely would you be to use the Virginia Railway Express for your commute at least 1-2 days a week?

	Not at all <u>Likely</u>					Very <u>Likely</u>	(Don't <u>Know</u>)
Scale:	1	2	3	4	5	9	

(IF ANSWERED 0 for VRE on Q6 ASK Q57 and Q58. ALL OTHERS ASK Q59.)

57. If additional VRE trains were added so that they came more often, how likely would you be to use the Virginia Railway Express for your commute at least 1-2 days a week?

	Not at all <u>Likely</u>					Very <u>Likely</u>	(Don't <u>Know</u>)
Scale:	1	2	3	4	5	9	

58. If VRE trains had more seats available, how likely would you be to use the Virginia Railway Express for your commute at least 1-2 days a week?

	Not at all <u>Likely</u>					Very <u>Likely</u>	(Don't <u>Know</u>)
Scale:	1	2	3	4	5	9	

(IF ANSWERED =0 for VRE on Q6 ASK Q60. ALL OTHERS ASK Q59.)

59. Suppose a shuttle bus service could operate frequently in the morning and afternoon peak hours between the VRE train station and your commute destination (e.g., work). How likely would you be to take this shuttle bus?

	Not at all <u>Likely</u>					Very <u>Likely</u>	(Don't <u>Know</u>)
Scale:	1	2	3	4	5	9	

(IF ASKED Q59, SKIP TO Q61.)

60. Suppose a shuttle bus service could operate frequently in the morning and afternoon peak hours between the VRE train station and your commute destination (e.g., work). How likely would you be to ride VRE if this shuttle bus service were offered?

	Not at all <u>Likely</u>					Very <u>Likely</u>	(Don't <u>Know</u>)
Scale:	1	2	3	4	5	9	

(IF ANSWERED >0 for VRE on Q6 ASK Q62. ALL OTHERS ASK Q61.)

61. Suppose a shuttle bus could operate frequently in your neighborhood that would circulate and connect to the VRE train station. How likely would you be to use this feeder bus?

	Not at all <u>Likely</u>					Very <u>Likely</u>	(Don't <u>Know</u>)
Scale:	1	2	3	4	5	9	

(ALL WHO WERE ASKED Q61, SKIP TO Q64.)

62. Suppose a shuttle feeder bus could operate frequently in your neighborhood that would circulate and connect to the VRE train station. How likely would you be to use this feeder bus and take VRE at least 1-2 days a week?

	Not at all <u>Likely</u>					Very <u>Likely</u>	(Don't <u>Know</u>)
Scale:	1	2	3	4	5	9	

63. If more parking were available at VRE train stations, how likely would you be to take VRE at least 1-2 days a week?

	Not at all <u>Likely</u>					Very <u>Likely</u>	(Don't <u>Know</u>)
Scale:	1	2	3	4	5	9	

(IF ANSWERED >0 FOR METRORAIL AT Q6 AND/OR Q20, DO NOT ASK Q64.)

64. Is Metrorail available for at least a portion of your commute?

- 1. Yes → SKIP TO INSTRUCTIONS BEFORE Q66
- 2. No
- 9. Don't know

(IF ANSWERED "2" OR "9" AT Q64 AND LIVE IN ZIP CODES 22194, 22191, 22195, 22192, OR 22193, ASK Q65. OTHERS WHO ANSWERED "2" OR "9" AT Q64 SKIP TO INSTRUCTIONS BEFORE Q66.)

65. If a Metrorail station were constructed near Potomac Mills, how likely would you be to take Metrorail at least 1-2 days a week?

	Not at all <u>Likely</u>					Very <u>Likely</u>	(Don't <u>Know</u>)
Scale:	1	2	3	4	5	9	

(IF ANSWERED =0 for Metrorail on Q6 ASK Q66 and Q67. ALL OTHERS ASK Q68.)

66. If the schedule were revised so that trains came more often, how likely would you be to use Metrorail for your commute at least 1-2 days a week?

	Not at all <u>Likely</u>					Very <u>Likely</u>	(Don't <u>Know</u>)
Scale:	1	2	3	4	5	9	

67. If trains were less crowded, how likely would you be to use Metrorail for your commute at least 1-2 days a week?

	Not at all <u>Likely</u>					Very <u>Likely</u>	(Don't <u>Know</u>)
Scale:	1	2	3	4	5	9	

(IF ANSWERED =0 FOR Metrorail AT Q6, ASK Q69. ALL OTHERS ASK Q68.)

68. Suppose that a shuttle bus service between the Metrorail train station and your place of work could operate frequently in morning and afternoon peak hours. How likely would you be to use this shuttle bus service?

	Not at all <u>Likely</u>				Very <u>Likely</u>	(Don't <u>Know</u>)
Scale:	1	2	3	4	5	9

69. Suppose that a shuttle bus service between the Metrorail train station and your commute destination (e.g., work) could operate frequently in morning and afternoon peak hours. How likely would you be to ride Metrorail if this shuttle bus service were offered?

	Not at all <u>Likely</u>				Very <u>Likely</u>	(Don't <u>Know</u>)
Scale:	1	2	3	4	5	9

(IF ANSWERED =0 for Metrorail at Q6, ASK Q71. ALL OTHERS ASK Q70.)

70. Suppose that a shuttle bus could operate frequently in your neighborhood that would circulate and connect to the Metrorail station. How likely would you be to ride this feeder bus if it operated in your neighborhood?

	Not at all <u>Likely</u>				Very <u>Likely</u>	(Don't <u>Know</u>)
Scale:	1	2	3	4	5	9

71. Suppose that a shuttle bus could operate frequently in your neighborhood that would circulate and connect to the Metrorail station. How likely would you be to ride Metrorail at least 1-2 days a week if a feeder bus operated in your neighborhood?

	Not at all <u>Likely</u>					Very <u>Likely</u>	(Don't <u>Know</u>)
Scale:	1	2	3	4	5	9	

(IF Metrorail = 0 at Q6, ASK Q72. OTHERS SKIP TO Q73.)

72. If more parking were available at Metrorail stations, how likely would you be to take Metrorail at least 1-2 days a week?

	Not at all <u>Likely</u>					Very <u>Likely</u>	(Don't <u>Know</u>)
Scale:	1	2	3	4	5	9	

(IF Q6 is 1 only - 100% SOV drive alone only - ASK Q73. OTHERS SKIP TO Q78.)

73. Is there a place such as a park-and-ride lot conveniently located on your commute where you could ever catch a carpool or vanpool or commuter bus?

1. Yes → SKIP TO Q77
2. No
9. Don't know

74. If a park-and-ride lot were conveniently located, how likely would you be to use it at least 1-2 days a week in order to use a form of transportation other than driving alone?

	Not at all <u>Likely</u>				Very <u>Likely</u>	(Don't <u>Know</u>)
Scale:	1	2	3	4	5	9

75. Suppose that HOT lanes are built and a park-and-ride lot was located convenient for your commute. How likely would you be to use the park-and-ride lot to take advantage of free travel on the HOT lanes in a bus, vanpool, or three-person carpool?

	Not at all <u>Likely</u>				Very <u>Likely</u>	(Don't <u>Know</u>)
Scale:	1	2	3	4	5	9

(IF ANSWERED "4" OR "5" AT Q75, ASK Q76. OTHERS SKIP TO Q77.)

76. Where, specifically, would be the best place for that park-and-ride lot?

77. Suppose you could pay to have a reserved parking space at a convenient park-and-ride lot. The cost of parking would be up to \$5.00 per day and would be paid on a monthly basis. How likely would you be to pay for a reserved parking space at a park-and-ride lot in order to travel in a bus, vanpool, or three-person carpool and use the HOT lanes for no additional charge at least 1-2 days a week?

	Not at all <u>Likely</u>				Very <u>Likely</u>	(Don't <u>Know</u>)
Scale:	1	2	3	4	5	9

78. Suppose that Bus Rapid Transit (BRT) service became available in the general area of your commute. BRT offers frequent express service in comfortable vehicles serving station-like stops. How likely would you be to use this bus service for your commute at least 1-2 days a week?

	Not at all <u>Likely</u>				Very <u>Likely</u>	(Don't <u>Know</u>)
Scale:	1	2	3	4	5	9

79. Suppose you could use a self-assisted, online ride-matching service to find a rideshare partner in order to use the HOT lanes. This service provides you with a list of commuters who live in your area, commute to the same area as you do and are also looking for a vanpool or carpool partner. You register for this service online and receive the information online. How likely would you be to use this type of ride-matching service if you wanted to carpool or vanpool and use the HOT lanes?

	Not at all <u>Likely</u>				Very <u>Likely</u>	(Don't <u>Know</u>)
Scale:	1	2	3	4	5	9

[SKIP Q80-81 IF RESPONDENT ANSWERED "2" FOR Q3 (i.e., "school")]

80. Which of the following does your employer offer?

	<u>Yes</u>	<u>No</u>	<u>Don't know</u>
a. Free or subsidized parking	1	2	3
b. Preferred parking spaces for carpools/vanpools	1	2	3
c. Transit fare subsidies/benefits, Metrochek or SmartBenefits	1	2	3
d. Vanpool/carpool ridematching program/assistance	1	2	3
e. Flexible work hours	1	2	3
f. Compressed work week	1	2	3
g. Telework or telecommute	1	2	3
h. Shuttle to Metrorail station	1	2	3
i. Guaranteed Ride Home program	1	2	3
j. Another program or programs	1	2	3
If yes: What is that program or programs? _____			

81. Is there ample parking at your worksite?

1. Yes
2. No
9. Don't know

NO Q82-83

84A. How many licensed drivers are there in your household?

84B How many total vehicles are there in your household that are available to use for the commute - including your commute and the commutes of all other adults in your household?

VII. DEMOGRAPHICS

Our final questions are for classification purposes only.

85. Which of the following best describes your employer?

1. The military
2. Federal government
3. State or local government
4. Private company
5. Self-employed
6. I am a full-time student
7. Other

86. Do you have school-aged children in your household?

1. Yes
2. No
9. Don't know/prefer not to say

87. Which of the following represents your total combined annual household income?

1. Less than \$15,000
2. \$15,000-\$24,999
3. \$25,000-\$34,999
4. \$35,000-\$49,999
5. \$50,000-\$74,999
6. \$75,000-\$99,999
7. \$100,000-\$124,999
8. \$125,000 - \$149,999
9. \$150,000 or higher
10. Don't know/prefer not to say

88. Please indicate your gender.

1. Male
2. Female

89. Would you be interested in participating in future focus groups, telephone interviews, or Internet surveys regarding traffic and transportation issues in your area?

- 1. Yes
- 2. No
- 9. Don't Know

90. (IF "YES" AT Q89, ASK:) Great! May we have an email address along with your first name and/or telephone number to easily contact you for participation in future focus groups or surveys? We will not give or sell the email or telephone number to any one. It will be strictly used for this panel of motorists who want to be involved with transportation and planning issues in the I-95/I-395 corridor.

First Name: _____

Email address: _____

Telephone number: _____

91. Thank you for completing this survey. In order for us to mail your \$5.00 Starbucks' gift card to you, we need to know:

Your name: _____

Your street address: _____

City: _____

Zip code: _____

(Note: Include option: I don't wish to receive a Starbucks' gift card.)

For more information about this study, please feel free to visit our project Web site:

<http://www.drpt.virginia.gov/projects/TransitTDMStudy.aspx>

Thank you for participating in this important research! Your Opinion Counts.

Thank You!

For additional information on
this report,
please contact
Dr. Karen Smith
Southeastern Institute of Research
804-358-8981

Appendix D

Appendix D – Travel Demand Forecasts – Supplemental Information

D.1 Regional Forecasting Tool Details

The MWCOG travel demand forecast model uses a series of submodels or steps to forecast potential travel demand given the future land use and transportation networks. The regional transportation options are represented in terms of a network. The network represents all of the transportation services and infrastructure. This network includes transit and highway facilities. The Washington metropolitan area is divided into 2,191 traffic analysis zones (TAZ). In the denser populated areas, there are a greater number of TAZs and in less dense areas the TAZs are larger. At the boundaries of the modeled areas the TAZs are larger and the highway network is less detailed. In the primary modeled jurisdictions, the highway network is more detailed and the corresponding number of TAZs is greater.

D.1.1 Trip Generation

The MWCOG model is a four-step model. The trip generation step answers the question of how much travel and for what purpose. That is, the trip generation model produces trips by purpose by TAZ. The output from the trip generation model is the number of productions and attractions by purpose at the origin TAZ or destination TAZ, as appropriate. In the MWCOG model process, there are four primary trip purposes modeled:

- **Home-Based Work (HBW)** – Home-based work trips originate at home and travel to a place of work and back again;
- **Home-Based Shop (HBS)** – Home-based shopping trips originate at home and travel to a place of shopping and return home again;
- **Home-Based Other (HBO)** – Home-based other trips include all trips from a home not associated with work or shopping; and
- **Nonhome-Based (NHB)** – Nonhome-based trips are trips that do not originate or end at a home. These can include trips from the place of work which return to the place of work or other similar types of trips.

D.1.2 Trip Distribution

The second step in the process is trip distribution. The trip distribution step answers the question where do trips travel. The trip distribution model determines the origin and destination of the productions and attractions from the trip generation step. The trip distribution model looks at the distribution of trips based on travel time and applies that to match productions and attractions. As future congestion increases, the trip length tends to decrease, while the travel-time distribution tends to remain constant. The end product of the distribution model is a single motorized person trip table for each trip purpose giving the total trips made between each origin and destination TAZ pair.

D.1.3 Mode Choice

The third step in the process is the mode choice model. This step answers the question of how travel will be done. The mode choice model produces the probability of a specific mode choice for a specific origin-destination pair. The model determines this probability based on elements such as in-vehicle travel time, out of vehicle wait time, the number of transfers, and other relevant choice criteria. The end product of the mode choice model is a set of trip tables giving trips made between each origin and destination TAZ pair by mode.

D.1.4 Trip Assignment

The fourth step in the process is the assignment. The assignment step answers the question of what route a trip will travel given an origin and destination TAZ. There are two assignments – a highway assignment and a transit assignment. The highway assignment captures vehicle trips on the network, while the transit assignment captures person trips on transit modes through the network. The networks cover large geographic areas and, therefore, are less detailed representations of real world highway and transit facilities and services. Paths are determined based on weighted travel-time cost. For highway assignment, an equilibrium concept is used to route vehicles between their origins and destinations. Typically for transit assignment the shortest path through the network (based on the perceived travel-time cost which is a weighted combination of in-vehicle, out-of-vehicle time, and cost elements) is taken.

D.1.5 Calibration

The model set is calibrated for a base year data set. The base year data set is linked to survey data which captures the travel characteristics of the modeled region. The MWCOG model set is calibrated to the 1994 home travel survey. A new household survey is being conducted through 2008 and will serve to update MWCOG's models in the future.

D.2 Validation of the Tool for the Study

Version 2.1D#50 of the MWCOG model has been validated to year 2000 travel data. The calibration and validation are on a regional basis. For this study, we focused on the jurisdictions in our study area and reviewed the validation.

Commuters, and associated carpool and transit users, are important users of the proposed directional HOT facilities. Thus, validation has focused on work trips. The HBW trips represent the longer-distance trips and also the trips most likely to use shared ride or to be impacted by TDM measures. For validation, we compared the model results for year 2000 to the Census Transportation Planning Package (CTPP) data. The CTPP data was at the jurisdictional level and refined/factored by MWCOG based on other survey data for the year 2000.

For total motorized person trips in our study jurisdictions, the model estimated trips were 2.5 percent greater than the CTPP data. The total work trips in the study jurisdictions were 471,639 trips per day. For work trips originating in the study area jurisdictions and going to Washington, D.C., Arlington, Alexandria, or Fairfax, the model estimated mode share was 32 percent on transit modes and the observed transit mode share was 27 percent transit. The transit mode share was 23 percent higher than the observed mode share for year 2000.

The year 2000 vehicle-miles traveled (VMT) for the study corridor jurisdictions was six percent higher than the observed VMT. The model estimated average weekday VMT was 15,707,000 miles. The observed average weekday VMT was 14,779,000 miles. The VMT is representative

of all travel and not just HBW. It represents all trip purposes, as well as external travel into and out of the region.

The results of the 2000 model validation for the study area jurisdictions show that the model set reasonably represents the travel in the corridor within expected levels of accuracy.

D.3 Origin-Destination Maps

A series of summary origin-destination mode choice results maps are on the pages which follow. These maps depict the origin and destination flows of work trips for the morning peak period from major travel markets to major travel markets in the study area and the associated mode choice for the following scenarios and horizon years: 2015 Refined Alternative; 2015 BRAC; 2030 Baseline; and 2030 Refined Alternative.

Appendix E

Appendix E – Detailed TDM Model Input Assumptions

This Appendix describes the assumptions used in estimating the impacts of the TDM strategies included in the low, medium, and high alternatives. The FHWA TDM Model was a primary tool to estimate strategy impacts. This Appendix presents the modeling assumptions and settings used for strategies analyzed using the model.

The Appendix also presents the assumptions applied for strategies that could not easily be analyzed by the TDM Model. Trip reduction impacts for these strategies were estimated through "off-model" calculations, using available data from the Washington metropolitan area or other regions if local data were not available. These data sources and calculations are summarized below.

Tables E-1 through E-3, which follow these individual assumption descriptions, list the strategies included in the low-, medium-, and high-service packages.

E.1 Strategies Analyzed with TDM Model

Six strategies were modeled using the TDM Model. All of these strategies offered a financial incentive that could be translated into a daily cost saving per vehicle. These per vehicle savings were used as primary model inputs. The calculation of the assumed per vehicle cost savings for these strategies are described below:

- Capital Assistance for Vanpools;
- Capital Cost of Contracting for Vanpools;
- Carpool Incentives;
- Vanpool Driver Incentives;
- Vanpool Insurance; and
- VanStart/VanSave.

Capital Assistance for Vanpools

This strategy is similar to the Capital Cost of Contracting in that it also would provide a cost saving for lease/purchase of vans. The difference in this strategy is that it would apply to both new and existing vans. DRPT assumes this strategy would provide a subsidy of about \$1,000 per van per year. That level of subsidy would equate to about \$4 per day per van ($\$1,000/250$ work days = \$4).

Capital Cost of Contracting for Vanpools

Vanpools pay a capital cost to buy or lease van vehicles. This strategy would provide an incentive to defray part of the capital cost. The budget for this strategy is \$5 million over 20 years, or about \$250,000 per year.

DRPT estimates a typical monthly capital cost of about \$700 per van and assumed that the subsidy would cover no more than 35 percent of the capital cost, or about \$3,000 annual subsidy per van ($\$700/\text{month} \times 12 \text{ months} \times 35 \text{ percent} = \$3,000$). On a daily basis, this subsidy would equal about \$12 ($\$3,000/250$ work days = \$12).

Carpool Incentives

The Carpool Incentive program would offer carpoolers a financial benefit for each rideshare use.

The budget for this program is \$3 million over 20 years or \$150,000 per year. The analysis assumed the budget for this program would provide an additional \$10 per month (\$120 per year) subsidy for up to 1,250 participants ($\$150,000/1,250$ carpoolers = \$120 per year). This would equal about \$0.50 per day subsidy for each carpooler ($\$120/250$ work days). Because the TDM Model requires that subsidies be entered as “per vehicle” amounts, the model inputs would be \$1 per day for two-person carpools, \$1.50 per day for three-person carpools, and \$2 per day for four-person carpools.

Vanpool Driver Incentives

The Vanpool Driver Incentive also represented a vanpool cost-saving. In this case, the incentive was provided only to the driver, thus riders would not necessarily receive a financial benefit from this strategy. But because driver recruitment is a large part of van start-up, it was assumed that the incentive was distributed to all vanpool members and the model input was defined as a daily travel cost reduction for vanpooling.

The 20-year budget for this strategy was \$250,000 or about \$12,500 per year ($\$250,000/20$ years = \$12,500). Assuming about 45 to 50 new vans are formed/saved per year, as estimated by DRPT for the VanStart/VanSave program, this subsidy would equal about \$250 per driver/van ($\$12,500/50$ vans = \$250). If averaged over a year, this strategy would provide a cost saving of about \$1 per day ($\$250/250$ work days = \$1 per day) to the van.

The budget allocated to this strategy would increase in the medium and high Program Alternatives, but the daily subsidy is assumed to be the same in these alternatives. The additional budget would allow more vans/drivers to receive the incentive.

Vanpool Insurance

The Vanpool Insurance strategy would provide a pool to “buy-down” for vanpools for the annual cost of vehicle insurance. The 20-year budget for this strategy is \$1,500,000 for the low program. This budget would be in addition to initial insurance pool funding of \$500,000 that is included in the TDM baseline.

DRPT estimates the annual insurance cost per van to be about \$2,000 and estimates the baseline \$500,000 will enable vans to receive 10 to percent saving in insurance cost. The additional funding of \$1,500,000 in the low program, for a total of \$2,000,000, would thus be expected to generate a 35 percent saving, equal to about \$700 per year per van ($\$2,000 \times 35$ percent = \$700). This subsidy would equal a per day subsidy of about \$2.80 per van ($\$700/250$ work days = \$2.80).

The budget allocated to this strategy would increase in the medium and high program alternatives, but the daily subsidy is assumed to be the same in these alternatives. The additional budget would allow more vans to receive the incentive.

VanStart/VanSave

The VanStart/VanSave program offers temporary financial benefits for new vanpools (start-up period) and empty seat incentive for existing vanpools that lose a rider. This strategy was defined as an estimated daily travel cost reduction for vanpooling.

A \$1.3 million budget was allocated for this strategy, for 20 years for the low program. Thus, the annual budget for this strategy was assumed to be about \$65,000 ($\$1,300,000/20 \text{ years} = \$65,000$).

DRPT estimated the budget would cover funding for 43 vans per year, with about one-half of the funding for new vans and the remaining half used to maintain existing vans that lost a rider. The share apportioned to new vans would provide a start-up subsidy of about \$1,500 per van for about 22 new vans per year ($\$65,000 \times 50 \text{ percent start-up}/22 \text{ vans} = \$1,500 \text{ per van}$).

The subsidy would be offered for a start-up period of only three months, but the TDM model assumes only ongoing subsidies. Thus, for analysis purposes this subsidy was averaged over six months to approximate the value of an ongoing incentive. At 125 work days over six months, the vanpool would realize a daily subsidy of \$12 ($\$1,500/125 \text{ work days} = \12).

The budget for this strategy was the same in all three program levels: low; medium; and high, so the model input calculated above was used in model runs for all three levels.

E.2 Strategies Analyzed Off-Model

Four TDM strategies could not be modeled using the TDM Model, thus were analyzed “off-model,” using data on impacts of similar programs implemented in the greater Washington metropolitan region. In all cases, these local results were obtained from the regional analysis of Transportation Emission Reduction Measures (TERM) conducted by the Metropolitan Washington Council of Governments’ Commuter Connections program. These strategies included:

- Enhanced Guaranteed Ride Home Program;
- Rideshare Operations Support;
- TDM Program Marketing; and
- Telework Program Assistance.

Enhanced Guaranteed Ride Home Program

A Guaranteed Ride Home (GRH) Program offers free transportation home to commuters who do not drive alone to work and have a personal emergency during the work day. A region GRH program currently is operated by Commuter Connections for commuters who work in the Washington metropolitan region. The Enhanced GRH program would expand the coverage of the GRH, program to additional commuters who now use I-95/I-395 but who currently are not involved in the Commuter Connections’ program.

Commuter Connections’ 2005 TERM analysis estimated a reduction of about 0.3 percent of total vehicle trips and VMT regionwide from regional GRH on a base of 3.4 million daily vehicle trips. For the I-95/I-395 analysis, a trip reduction of 0.1 percent was assumed, to avoid overlap with MWCOG’s program, which serves nearly all of the study area. Additionally, the reduction was applied only to commuters who live in the southern portion of the study area.

Rideshare Program Operational Support

The Rideshare Program Operational Support strategy would primarily fund resources for additional rideshare staff to assist commuters with trip planning and information requests.

The estimated impacts of this strategy were assumed to be similar to impacts realized for ride-share support services implemented by the Commuter Connections program in the Washington metropolitan region.

The MWCOG 2005 TERM analysis estimated about 0.2 percent of total vehicle trips and VMT regionwide from rideshare support (separate from other strategies such as GRH and marketing). For the I-95/I-395 analysis, a reduction of 0.1 percent of trips is assumed, with the reduction applied to a limited area; DRPT assumed the additional staff would be assigned to programs in the southern portion of the study area.

TDM Program Marketing

The TDM Program Marketing strategy would encompass outreach and marketing campaigns to acquaint commuters with nonSOV options available in the I-95/I-395 corridor. To estimate trip reduction for TDM marketing, the analysis examined trip reduction results calculated for a regionwide TDM marketing campaign implemented by Commuter Connections program in the Washington metropolitan region.

In 2005, using data from the 2004 regional State of Commute survey, Commuter Connections estimated the percentage of regional commuters who shifted from driving alone to a nonSOV mode after hearing or seeing commute marketing. The 2005 TERM analysis estimated a reduction of about 0.2 percent of total vehicle trips and vehicle miles of travel (VMT) regionwide from mass marketing ad campaigns on a base of 3.4 million daily vehicle trips.

This percentage was used as a starting point for estimating trip reduction from a campaign targeted to the I-95/I-395 corridor. For the I-95/I-395 analysis, a reduction of 0.1 percent of trips was assumed with the adjustment made to account for dissimilarities between the MWCOG survey area and the I-95/I-395 study area and for overlap with existing ads/marketing conducted by Commuter Connections in the northern section of the corridor.

The assumed reduction also was applied primarily to the southern areas of the study area. Because some marketing of this type currently is implemented in the northern sections of the study corridor, the primary emphasis of the outreach was assumed to be targeted to commuters who lived in the southern areas.

Telework Program Assistance

The estimated impacts of this strategy were calculated using data from the 2007 regional State of the Commute (SOC) survey conducted by Commuter Connections. This survey included questions on current use of telework and potential use of telework among nontelework commuters.

The SOC survey showed that about 21 percent of Northern Virginia workers teleworked an average of 1.6 days/week. To identify commuters who could be potential teleworkers, the survey asked respondents if their job responsibilities would permit work away from their main work location and if they would want to telework if given the opportunity.

The survey showed that about 27 percent of office-based commuters and 10 percent of nonoffice commuters in Northern Virginia were potential teleworkers. This assumed, however, that their employers would allow them to telework. This was thought to be too aggressive an assumption for the I-95/I-395 analysis, thus a lower percentage of likely new teleworkers was assumed.

For the 2015 time horizon, an additional eight percent of office-based commuters and two percent of nonoffice commuters were assumed to telework. Over the Northern Virginia survey area, this office/nonoffice mix equated to about seven percent of all nonteleworking commuters. The SOC

survey indicated that potential teleworkers were likely to telework less frequently than current teleworkers; the “anticipated frequency” reported by these commuters was estimated to be about 0.9 days/week.

When factored together to estimate a percentage of trips reduced, this equaled approximately 1.2 percent of daily person trips removed (7 percent x 0.9 TW days/5 days/week). Because teleworkers are distributed across all travel modes on nontelework days, this reduction was applied to both SOV and nonSOV trips.

Table E-1. TDM Analysis Low-Program Elements

Program Elements	Analysis Assumption	Modeling Strategy
Carpool Incentives	Assume the program offers additional \$10 per month subsidy per person (funding for 1,250 users).	\$0.50/day/person subsidy.
Rideshare Program Operational Support	The MWCOCG 2005 TERM analysis estimated about 0.2 percent of total vehicle trips and VMT regionwide from rideshare support (separate from other strategies). For this analysis, a reduction of 0.1 percent of trips is assumed, applied the reduction to a limited area, to reduce overlap with ad/marketing in the MWCOCG area.	Reduce vehicle trips originating in southern districts by 0.1 percent.
TDM Programs Marketing	MWCOCG's 2005 TERM analysis estimated a reduction of about 0.2 percent of total vehicle trips and vehicle miles of travel (VMT) regionwide from mass marketing ad campaigns on a base of 3.4 million daily vehicle trips. For this analysis, a reduction of 0.1 percent of trips is assumed. The reduction is applied to a limited subsection of the study area, to account for potential overlap with ad/marketing in the MWCOCG area in the northern section of the corridor.	Reduce vehicle trips originating in southern districts by 0.1 percent.
Vanpool Driver Incentives	Assuming about 45 to 50 new vans are formed/saved per year, as estimated by DRPT for the VanStart/VanSave program, this subsidy would be about \$250 per driver. If it is averaged over a year, it would be about \$1 per day.	\$1/vehicle subsidy.
Vanpool Insurance	DRPT estimates the insurance cost per year at about \$2,000 per van and estimates the \$500,000 they are including in the baseline would enable a 10 to 15 percent saving. With this additional funding, a 35 percent saving (\$700 per year) is assumed, which would be would equal about \$2.80 per day per van.	\$2.80/day/vehicle subsidy.
VanStart/VanSave	DRPT estimated the \$1.3 million budget would cover funding for 43 vans per year, but about one-half would be for existing vans, so the subsidy would be about \$1,500 per van for about 22 new vans. The subsidy would be start-up only (three months), but for analysis this subsidy is averaged over six months to approximate an ongoing incentive. At 125 work days over six months, the daily subsidy would be \$12 for the van.	\$12/vehicle subsidy.

Table E-2. TDM Analysis Medium Program Elements

Program Elements	Analysis Assumption	Modeling Strategy
Capital Cost of Contracting for Vanpools	DRPT estimates a typical monthly capital cost of about \$700 per van or about \$32.00 per day. DRPT does not expect the subsidy to be 35 to 40 percent of that figure, so a \$12 per day per van is assumed.	\$12/vehicle subsidy.
Carpool Incentives	Same assumptions as the low alternative.	\$0.50/day/person subsidy.
Rideshare Program Operational Support	Same assumptions as the low alternative, but with more money applied. A trip reduction factor of 0.15 percent is assumed for the medium alternative.	Reduce vehicle trips originating in southern districts by 0.15 percent.
TDM Programs Marketing	Same assumptions as the low alternative.	Reduce vehicle trips originating in southern districts by 0.1 percent.
Telework Program Assistance	According to the 2007 State of the Commute (SOC) survey for the MWCOG region, about 21 percent of Northern Virginia workers telework (TW) today, an average of 1.6 days/week. The potential for additional TW (TW-appropriate jobs and want to TW) appears to be about 27 percent of office-based commuters and 10 percent of nonoffice commuters. But this assumes employers allow them to TW, which is too aggressive. Because 2015 is the time horizon, an additional eight percent of office-based commuters TW and two percent of nonoffice commuters is assumed. The “anticipated frequency” reported by these commuters is estimated to be about 0.9 days/week. This is equal to approximately 1.2 percent of person trips removed (7 percent x 0.9/5 days/week).	Reduce person trips by 0.12 percent.
Vanpool Driver Incentives	Same assumptions as the low alternative.	\$1/vehicle subsidy.
Vanpool Insurance	Same assumptions as the low alternative.	\$2.80/day/vehicle subsidy.
VanStart/VanSave	Same assumptions as the low alternative.	\$12/vehicle subsidy.

Table E-3. TDM Analysis High Program Elements

Program Elements	Analysis Assumption	Modeling Strategy
Capital Assistance For Vanpools	DRPT assumes about \$1,000 per van per year. That level of subsidy would be about \$4 per day per van.	\$4/vehicle subsidy.
Capital Cost of Contracting for Vanpools	Same assumptions as the medium alternative.	\$12/vehicle subsidy.
Carpool Incentives	Same assumptions as the low alternative.	\$0.50/day/person subsidy.
Enhanced Guaranteed Ride Home Program	MWCOG's 2005 TERM analysis estimated a reduction of about 0.3 percent of total vehicle trips and VMT regionwide from regional guaranteed ride home on a base of 3.4 million daily vehicle trips. For this analysis, a trip reduction of 0.1 percent is assumed, to avoid overlap with MWCOG's program, which serves nearly all of the study area.	Reduce vehicle trips originating in southern districts by 0.1 percent.
Rideshare Program Operational Support	Same assumptions as the low alternative, but with more money applied. A trip reduction factor of 0.15 percent is assumed for the medium alternative.	Reduce vehicle trips originating in southern districts by 0.15 percent.
TDM Programs Marketing	Same assumptions as the low alternative.	Reduce vehicle trips originating in southern districts by 0.1 percent.
Telework Program Assistance	Same assumptions as the medium alternative.	Reduce person trips by 0.12 percent.
Vanpool Driver Incentives	Same assumptions as the low alternative.	\$1/vehicle subsidy.
Vanpool Insurance	Same assumptions as the low alternative.	\$2.80/day/vehicle subsidy.
VanStart/VanSave	Same assumptions as the low alternative.	\$12/vehicle subsidy.