

ITEM 10 – Information

November 20, 2019

2017/2018 Regional Travel Survey: Alternative Travel Options

Background:

The board will be briefed on the purpose of the 2017/2018 Regional Travel Survey (RTS) and how information from the RTS will be used to inform regional travel demand modeling and travel trend analyses. This briefing will focus on new questions on the use of alternative travel options that contribute to reducing reliance on solo driving throughout the region. This will be the first in a series of briefings on the RTS.



MEMORANDUM

TO: Transportation Planning Board
FROM: Timothy Canan, TPB Planning Data and Research Program Director
SUBJECT: 2017-2018 Regional Travel Survey Update
DATE: November 14, 2019

BACKGROUND

TPB has conducted a regional household travel survey approximately every ten years since 1968. The survey, which collects demographic and travel information from a randomly selected representative sample of households in the TPB region and adjacent areas, is the primary source of observed data used to estimate, calibrate, and validate the regional travel demand model. The model in turn is used for the travel forecasting and air quality conformity analysis of the region's long-range transportation plan as well as to support other key program activities. The survey data are also used by staff to analyze regional travel trends, and by TPB member jurisdictions and agencies to inform regional and sub-regional transportation studies and to conduct their own analysis for their areas of interest. The purpose of the survey is to better understand the characteristics of the households and persons in the region and to better understand daily travel and activities: how we travel, why we travel, where we go, how long it takes us, and what we do when we arrive. The survey seeks to obtain a complete picture of travel patterns in the region. As a result, the regional household travel survey is a critical and essential element of the TPB work program.

PROGRESS TO DATE

The 2017-2018 Regional Travel Survey (RTS) consisted of two key parts: Part 1 featured a recruitment questionnaire, which was completed by households who were invited and agreed to participate in the survey. These households completed the Part 1 questionnaire, which captured information on household, person, and vehicle characteristics as well as new questions on the use of alternative travel options. Approximately 23,000 households completed the recruitment questionnaire for Part 1. Part 2 consisted of a one-day travel diary, which survey participants completed to record details of every trip that household members took on their assigned travel day. Data collected in Part 2 constitutes actual observed trip information that will provide critical input for developing the regional travel demand model. Approximately 16,000 households completed both parts of the survey, well exceeding the survey goal of a representative sample of 15,000 households.

DESCRIPTION OF FILES

Data collection for the RTS concluded in late 2018. TPB staff is editing and processing the raw datasets that ultimately will yield four key data files that will be used in future analyses:

1. Household File: characteristics of households, including, among others, household size, income, number of licensed drivers, housing type, and number of vehicles and bicycles.
2. Person File: characteristics of individual persons, including, among others, demographic information, employment status, work location, and usual commute mode.
3. Vehicle File: characteristics of household vehicles, including make, model, year, fuel type, and automatic toll payment transponder information.
4. Trip File: recorded trip details, including origin/destination, start/end times, mode of travel, trip purpose, and transit access and egress.

RELEASE PLAN

Information included in the Household, Person, and Vehicle files was obtained from Part 1 (recruitment questionnaire), while information contained in the Trip file was obtained from Part 2 (travel diary). Data processing and editing on the Household, Person, and Vehicle files has reached the stage where staff can now analyze the results and report preliminary findings from those sources. Staff is continuing to process and edit the trip file, which is significantly larger and more complex; this effort is scheduled to be completed in the spring of 2020.

Because of the volume and depth of information obtained from the RTS, staff intends to present survey results through a series of briefings, rather than attempting to present all of the results at once. This gradual rollout of briefings began recently when staff presented initial results from Part 1 to the TPB Technical Committee and various subcommittees. Staff will brief the TPB on the preliminary results for the first time at the November 20, 2019 meeting. After the initial briefing, the TPB will receive subsequent briefings on a bi-monthly basis through approximately September 2020.

INITIAL BRIEFING

At the first TPB briefing in November, staff will provide an overview of the RTS, including more details on the nature of the four primary data files and the types of detailed analysis that can be performed over the coming months. As part of this process, TPB members will be asked to share their ideas and provide input on more detailed analysis and survey results they would like to see in subsequent briefings. The initial briefing in November will provide several very high-level results to provide a general understanding of the types of information that will be forthcoming and to facilitate discussion among TPB members on areas of interest for future briefings. The briefing also will include information on the frequency and use of alternative travel options that help reduce solo driving.

2017-2018 REGIONAL TRAVEL SURVEY: ALTERNATIVE TRAVEL OPTIONS

Kenneth Joh, Ph.D., AICP
TPB Transportation Planner

Transportation Planning Board
November 20, 2019

Agenda Item 10



Presentation Outline

- Purpose of Regional Household Travel Survey
- Regional Travel Survey (RTS) vs. State of the Commute Survey
- Overview of RTS information
- New Alternative Travel Option Questions
- Next steps

Purpose of Regional Household Travel Survey

- Collect empirical data on travel behavior from individual persons and households
- Provide more details, specificity to national level travel behavior data (Census, ACS, etc.)
- Serve as primary source of region specific data to develop travel demand forecasting model
- Inform development of projects, programs and policies supporting transportation planning and programming decisions
- Typically performed every ten years
- Largest single discrete project (on cost basis) in UPWP

Regional Travel Survey vs. State of the Commute Survey

COG's Department of Transportation Planning conducts two random sample surveys focused on trips. Both use an address based sampling methodology.

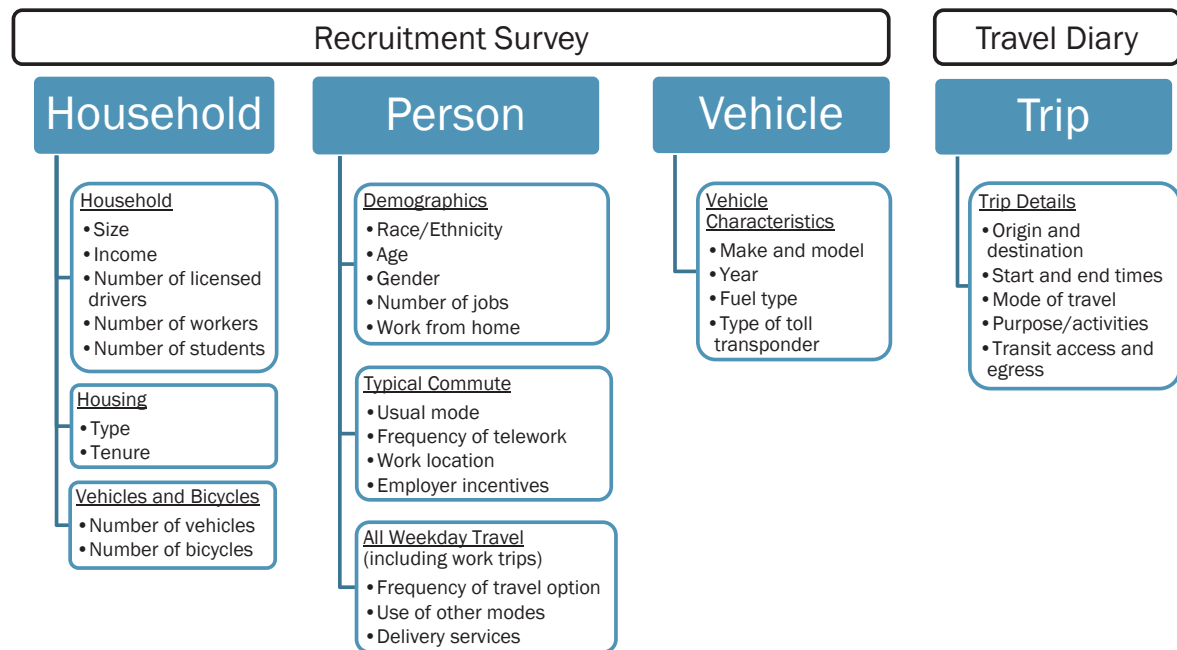


Once a decade comprehensive survey of all types of trips (both work and non-work trips). Analyzes detailed household and person trips to assist in travel demand forecasting, transportation planning and programming.



Triennial survey focused on commute trips. Analyzes commute patterns and attitudes towards alternative modes to evaluate and improve the region's travel demand management efforts.

Overview of Regional Travel Survey Information



Example Cross Tabulations

Number of Vehicles by Household Size (Household Information)

Household Size	No Vehicle	1 Vehicle	2 Vehicles	3 or more Vehicles
1 Person	X	X	X	X
2 Persons	X	X	X	X
3 Persons	X	X	X	X
4 Persons	X	X	X	X
5+ Persons	X	X	X	X

Number of Jobs by Gender (Person Information)

Gender	Unemployed	1 Job	2 Jobs	3 or more Jobs
Female	X	X	X	X
Male	X	X	X	X
Unspecified	X	X	X	X

Preliminary Plan for Release

Phase I – Household, Person, and Vehicle Information

- Alternative travel option questions (New)
- Demographic changes since 2007/08
- Additional analysis of demographics including cross tabulations

Phase II – Trip Information

- Preliminary findings of select indicators from the travel diary
- Changes in reported travel between 2007/08 and 2017/18
- Additional findings from the travel diary



REGIONAL TRAVEL SURVEY



Planning Our Future Together

New Alternative Travel Options Questions

- Inquired how often a person uses these travel options in a typical week
- Focus on travel options that reduce SOV travel and capture recent travel trends since the 2007/08 Household Travel Survey
- Asked of those 16 years and older



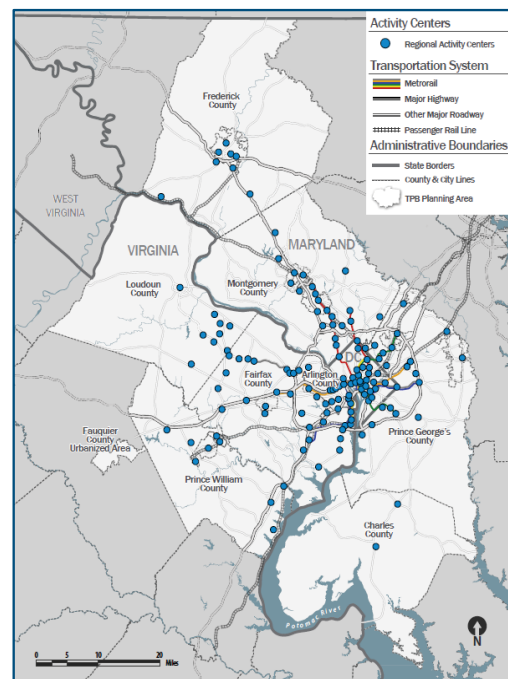
Alternative Travel Options

These questions cover:

- A. Modes that reduce the need for a household vehicle (e.g., ride-hailing, public transit)
- B. Optimizing the region's highway system including high-occupancy vehicle (HOV) and recently built high-occupancy toll (HOT) lane facilities
- C. Non-motorized travel (bicycle/bikeshare)

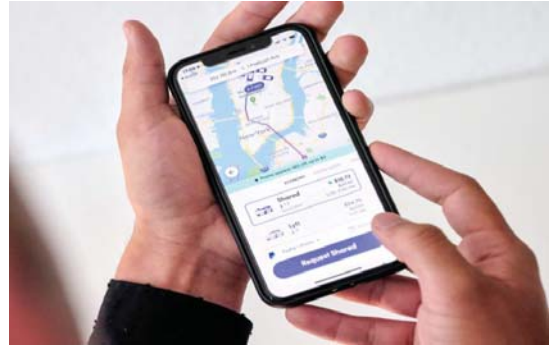
A. Modes that Reduce the Need for a Household Vehicle

- 1. Ride-Hailing Services
- 2. Regional and Local Transit Services
- 3. Delivery Services to Home

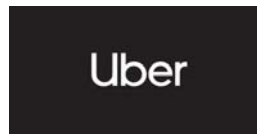


1. Ride-Hailing Services

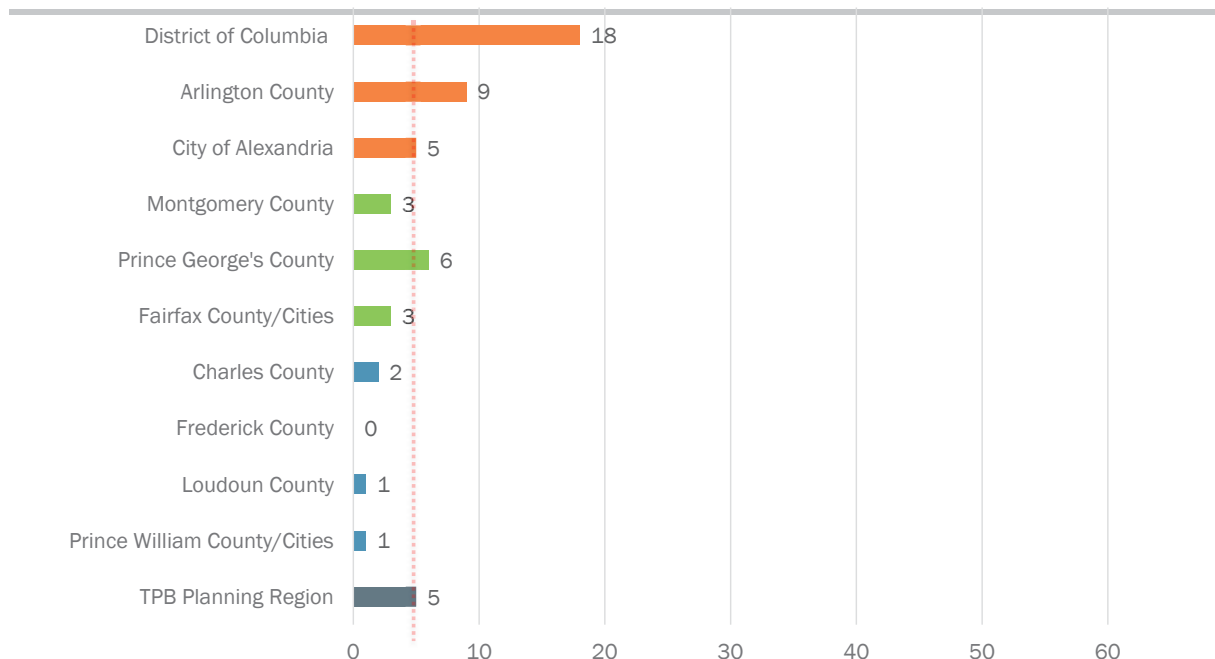
- Also called Transportation Network Companies (TNCs)
- Use smartphone apps to connect passengers with drivers of personal vehicles
- Dynamic pricing based on demand
- Examples include: Uber, Lyft, Via



"Lyft" by danielfoster437



Household Weekday Use of Ride-Hailing Services At Least Once a Week (%)



2. Regional and Local Public Transit

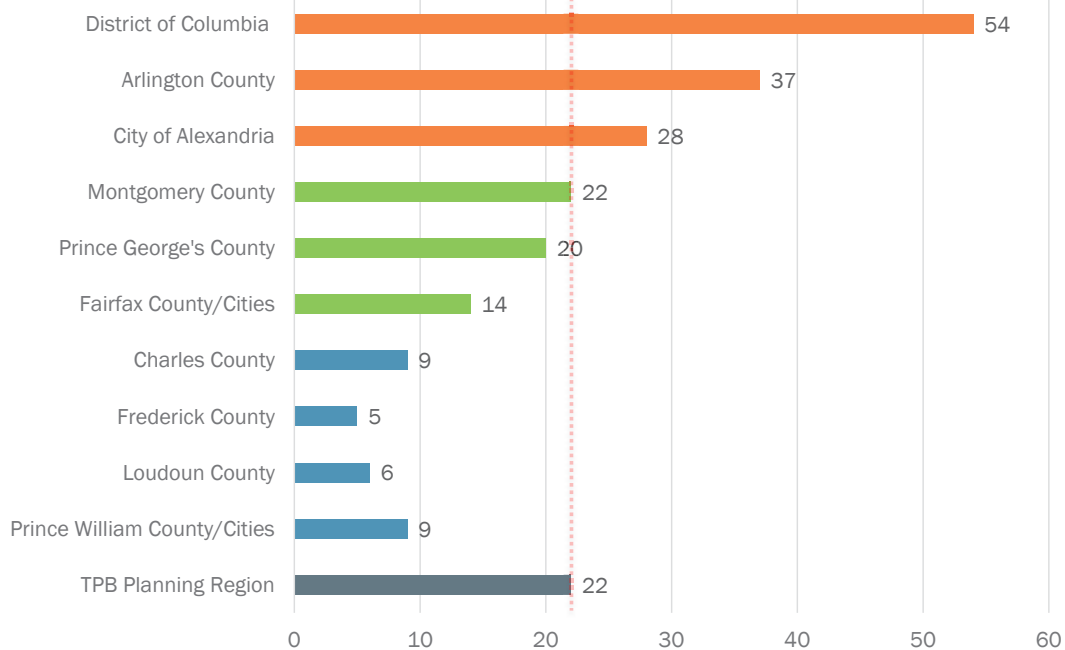
- Regional/local rail options:
 - Metrorail
 - Commuter rail (MARC, VRE)
 - Light rail/streetcar (DC Streetcar)
- Regional/local bus options:
 - Metrobus
 - Commuter bus (e.g., Loudoun County Transit, OmniRide)
 - Local bus (e.g., ART, Ride On)



"Metrobus at Metrorail" (top) and "Farragut West" (bottom) by afaen



Household Weekday Use of Public Transit At Least Once a Week (%)



3. Delivery Services to Home on Weekdays

- Package deliveries:
 - Amazon
 - UPS/FedEx
 - USPS
- Food deliveries:
 - Pizza delivery
 - UberEats/GrubHub
- Home services:
 - Landscaping
 - Cable service



Household Delivery Services to Home on Weekdays (%)

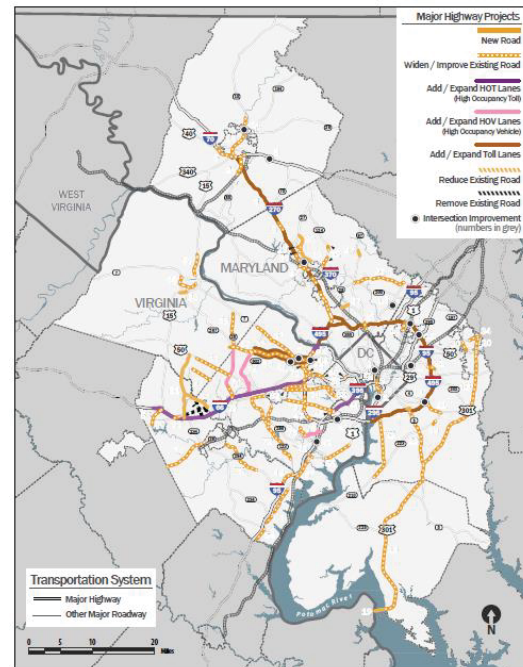
Person File

	Package	Food	Service	Any Type
Core	28.6	4.1	6.4	34.3
Inner Suburb	28.1	3.7	6.6	34.0
Outer Suburb	24.6	2.2	5.6	29.5
TPB Region	27.5	3.5	6.3	33.1



B. Alternative Travel Options to Optimize the Region's Highway System

1. Carpooling and Vanpooling
2. HOV Lanes
3. HOT Lanes and Toll Roads



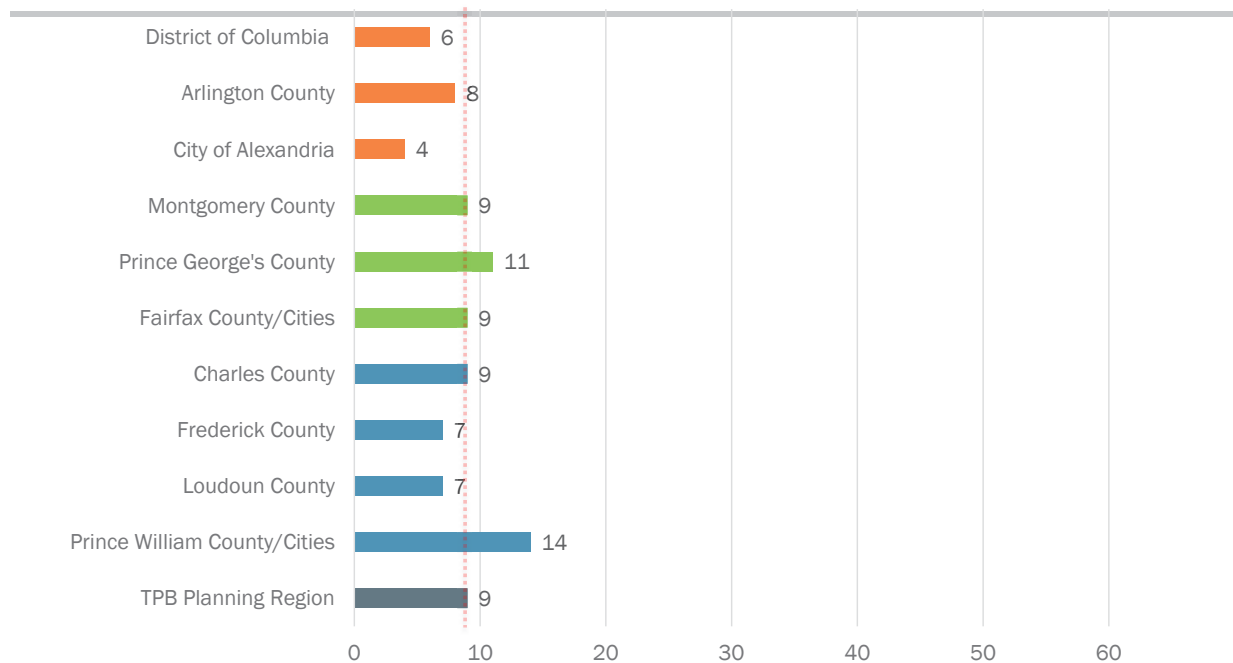
1. Carpooling and Vanpooling

- Commuter Connections offers ridesharing programs to promote carpooling and vanpooling to and from work
- Casual carpooling (“slugging”) allows drivers and non-paying passengers to use HOV lanes
- Carpools/vanpools can be formally arranged via ride-matching services or ad hoc via slug lines



Source: Federal Highway Administration

Household Weekday Commuter Car & Vanpooling At Least Once a Week (%)



2. The Region's HOV Network

- First HOV lane in the U.S. opened in the Washington region (I-395/Shirley Hwy)
- The region's extensive network of HOV lanes help move more persons per lane than general purpose lanes in the AM and PM peak periods
- HOV facilities include: I-66, I-95/395, I-270, I-495 (in VA), VA-267(Dulles Toll Road)

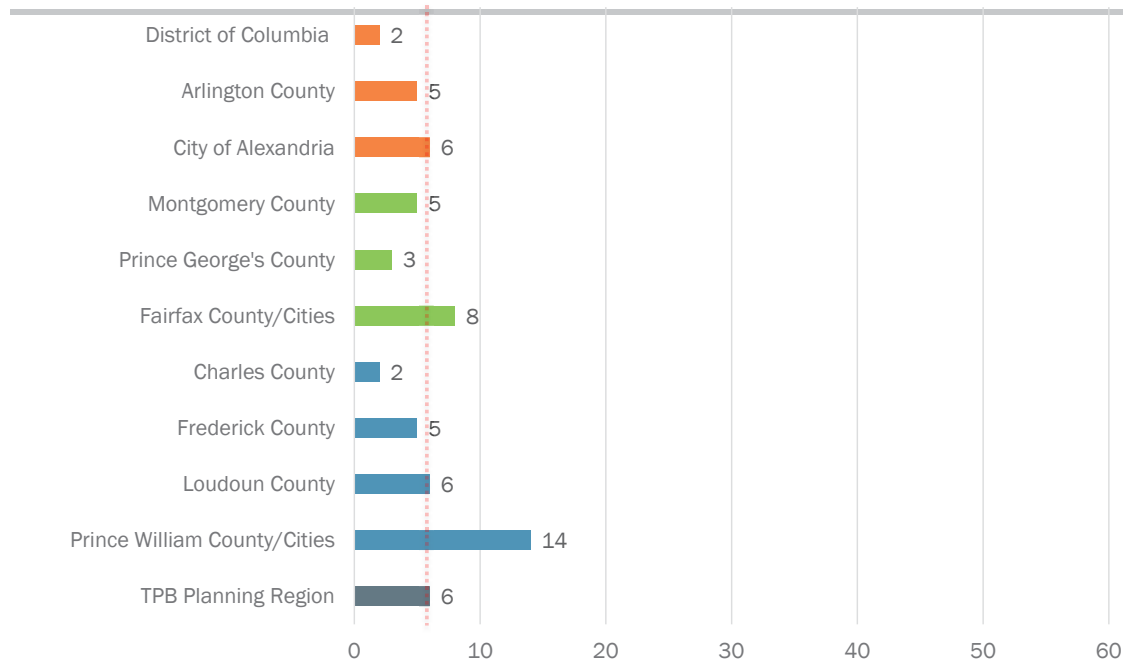


"File:HOV2+ I270 MD 08 2009 7033.JPG" by Mariordo



Source: <https://williamsonsource.com/the-past-and-future-of-hov-lanes/>

Household HOV Use for Weekday Peak Period Travel At Least Once a Week (%)



3. HOT Lanes and Toll Road Use

- HOT lanes and toll road pricing encourage efficient use of the region's limited highway capacity in peak periods
- Examples of HOT Lanes:
 - I-95/495 Express Lanes (VA)
 - I-66 Express Lanes
- Examples of Toll Roads:
 - Dulles Toll Road/Dulles Greenway (VA-267)
 - Intercounty Connector (MD-200)



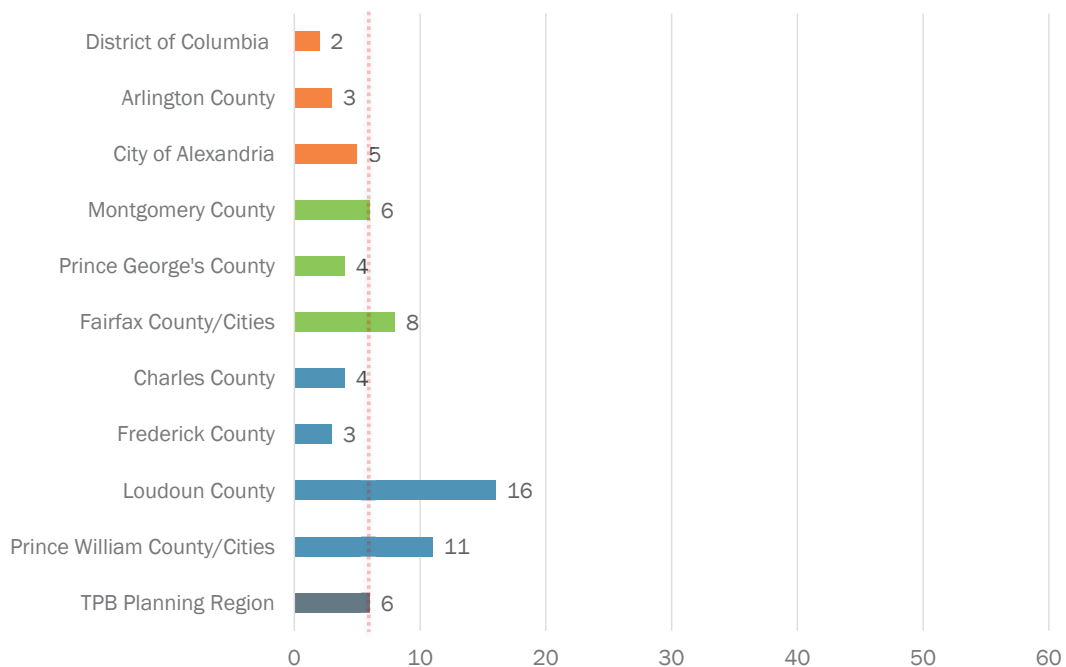
Household Vehicles with Toll Transponders (%)

Vehicle File

	E-ZPass	E-ZPass Flex	Other Transponder	No Transponder
Core	47.7	11.2	0.6	40.5
Inner Suburb	45.5	10.5	0.5	43.5
Outer Suburb	37.6	15.0	0.4	46.9
TPB Region	43.6	11.9	0.5	44.0



Household HOT Lane and Toll Road Use for Weekday Travel At Least Once a Week (%)



C. Bicycle and Bikeshare Travel

- The region's bicycling network and infrastructure has grown rapidly since 2005
- Capital Bikeshare launched in 2010 and has grown to serve five jurisdictions with 500 stations and over 4,300 bikes
- 48% of the region's households have 1 or more adult bicycles for their personal use



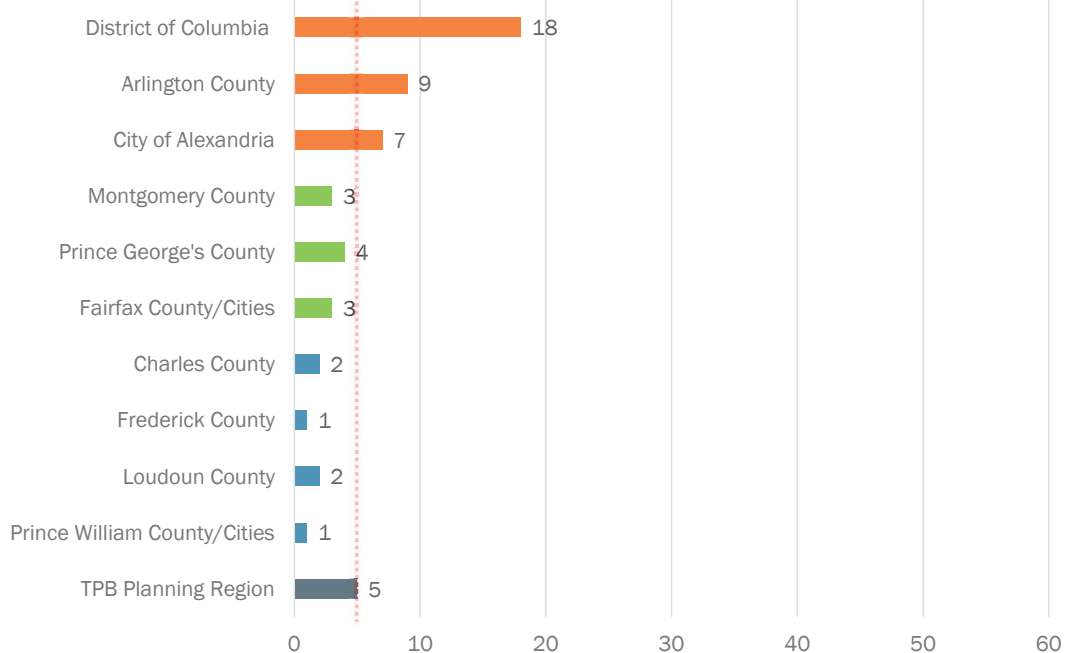
"DC Capital Bikeshare" by James D. Schwartz



Agenda Item 10: 2017-2018 Regional Travel Survey Update
November 20, 2019

25

Household Weekday Bicycle Use (including Bikeshare) At Least Once a Week (%)



26

Summary of Findings

- Ride-hailing is most heavily used in the core
- Public transit is used widely across the region, especially in the core and inner suburban areas
- Car and vanpooling rates do not vary as much regionally as other alternative travel modes
- HOV lanes, HOT lanes, and toll roads/bridges are utilized most by suburban commuters
- Bicycle and bikeshare use most prevalent in the core

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