2017-2018 REGIONAL TRAVEL SURVEY BRIEFING: CHANGE IN OBSERVED TRIPS SINCE 2007/08

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Travel Forecasting Subcommittee
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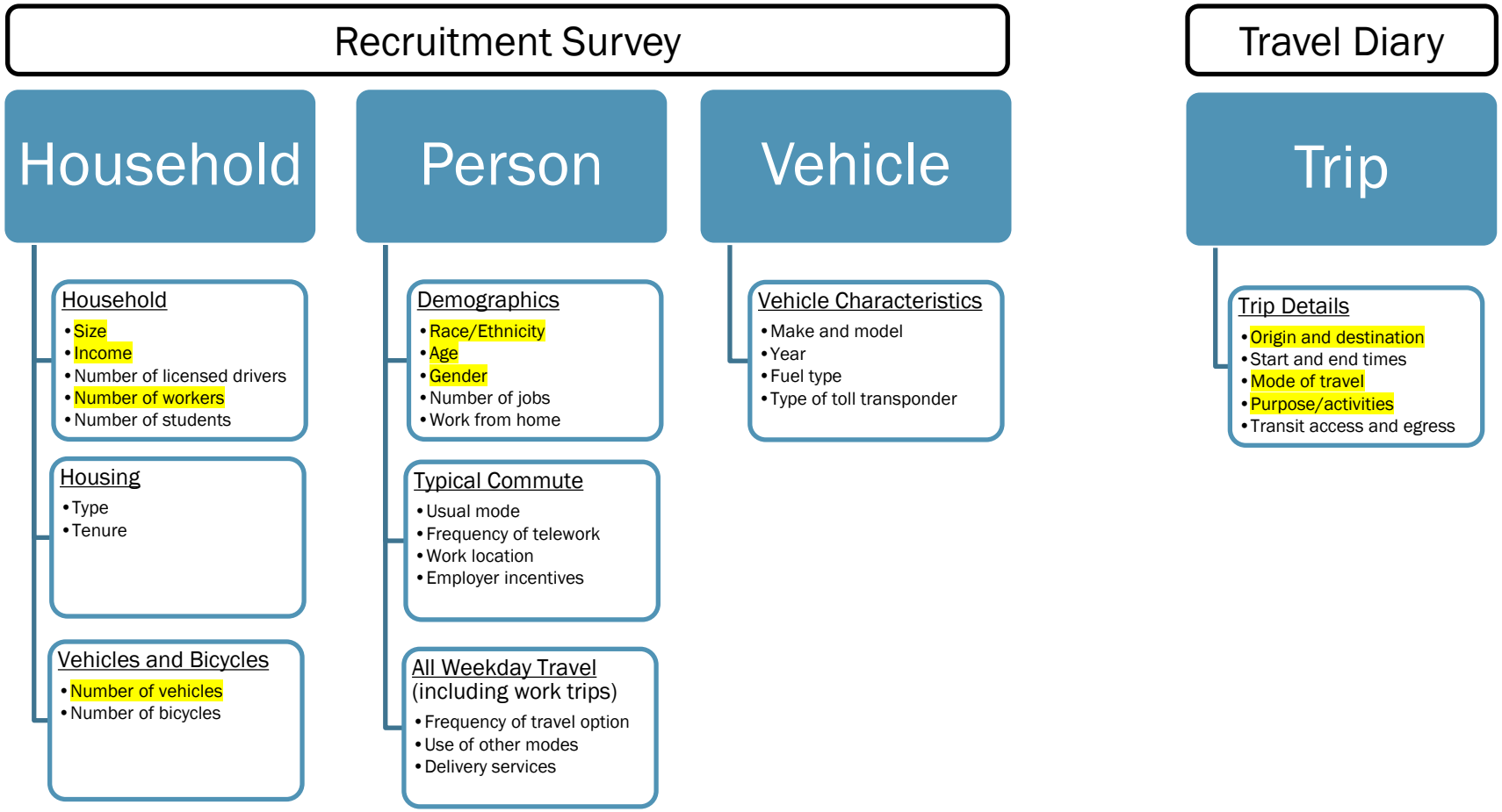
Agenda Item 2

National Capital Region
Transportation Planning Board

Overview of Regional Travel Survey Information



Taking a Deeper Dive into the Travel Diary

- The last briefing provided a **cross-sectional snapshot** of observed travel in the TPB region by sub-area, activity centers, and equity emphasis areas
  - Differences in household/person trip rates by demographic characteristics
  - Differences in commute/non-commute trip share
- Today's briefing will provide a **longitudinal comparison** of observed travel from 2007/08 – 2017/18

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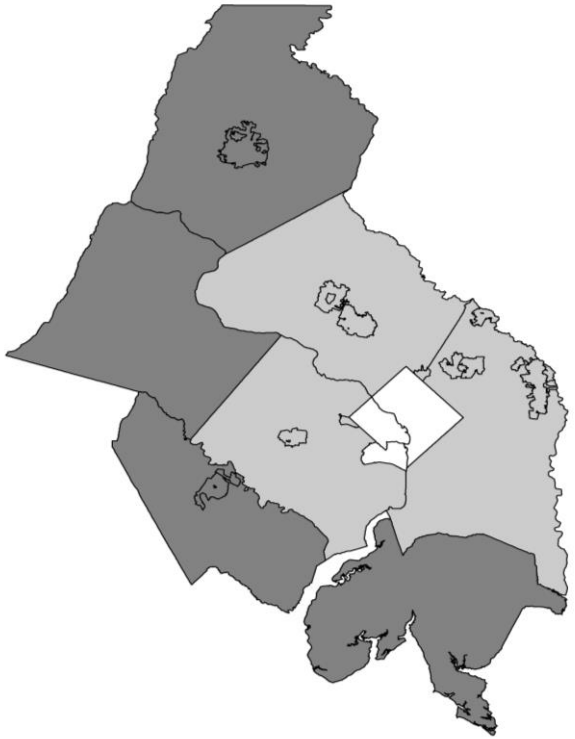
- Change in reported travel between 2007/08 and 2017/18
  - Daily weekday trips
  - Mode share of all trips
  - Commute trips
- Additional 2017/2018 RTS tabulations
  - Trip length by mode
  - Trip length by purpose
- Revised person and trip weights applied to adjust for ACS commuter distribution and 2018 Metrorail ridership estimates

Sub-Regional Areas

Sub-Area	Jurisdiction
Core	District of Columbia
	Arlington County
	City of Alexandria
Inner Suburb	Montgomery County
	Prince George's County
	Fairfax County, including City of Fairfax and City of Falls Church
Outer Suburb	Charles County
	Frederick County
	Loudoun County
	Prince William County, City of Manassas, and City of Manassas Park



Households in the Region

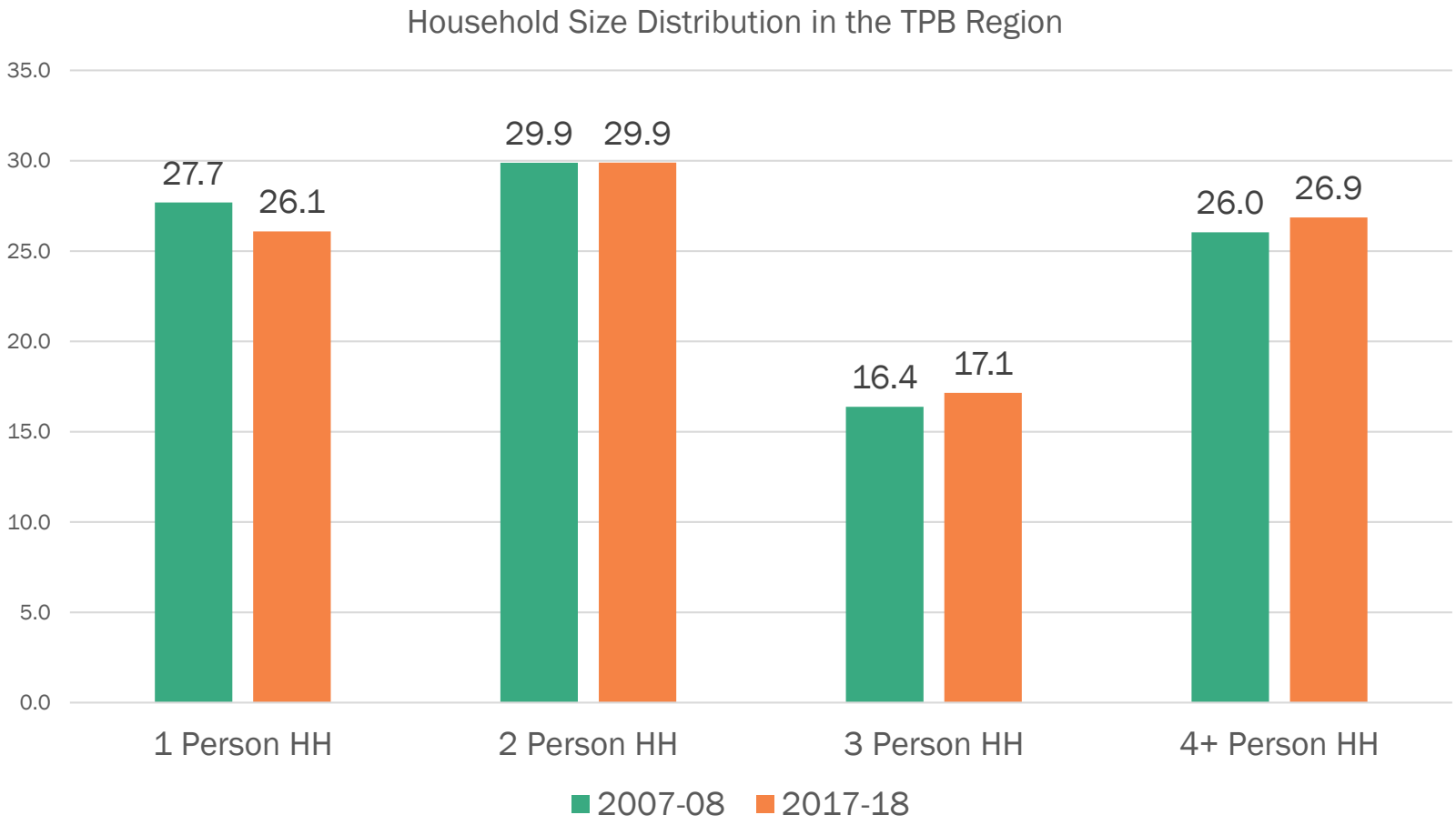
Image Credit: Kenneth Joh

The TPB region increased by 300,000 households since 2007/08

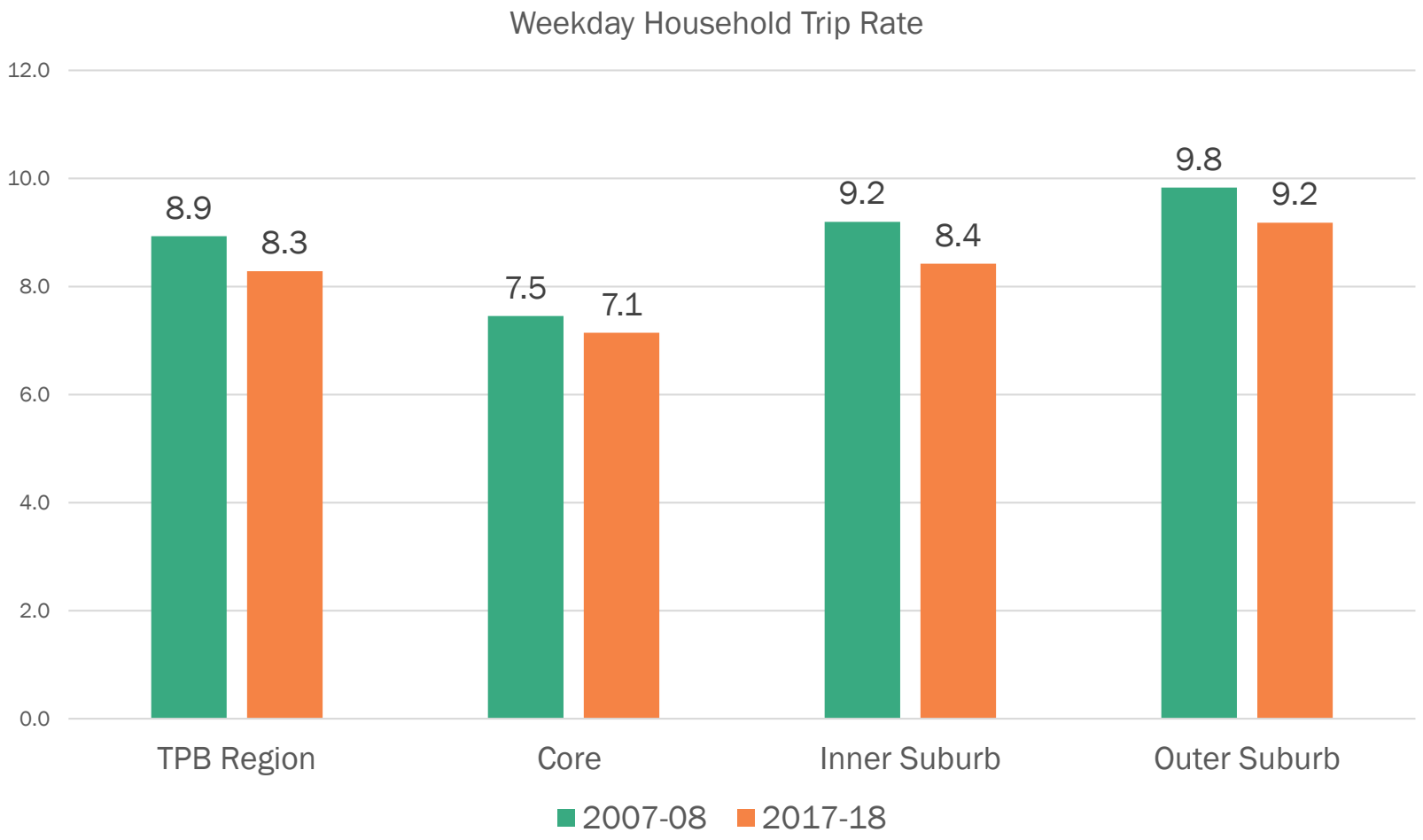
The region has added new transportation infrastructure

Image Credit: Washington Post

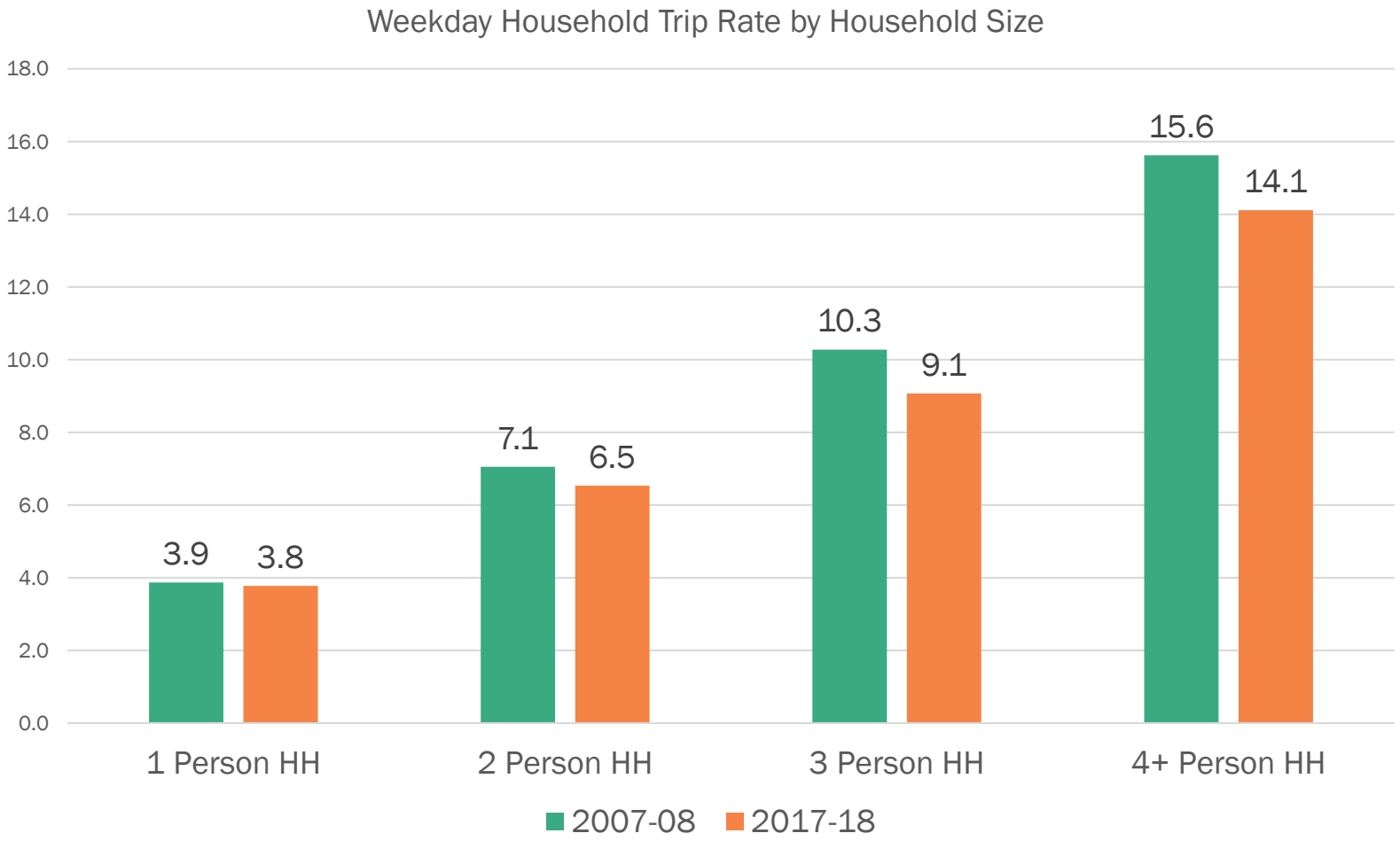
Household Sizes Have Slightly Increased



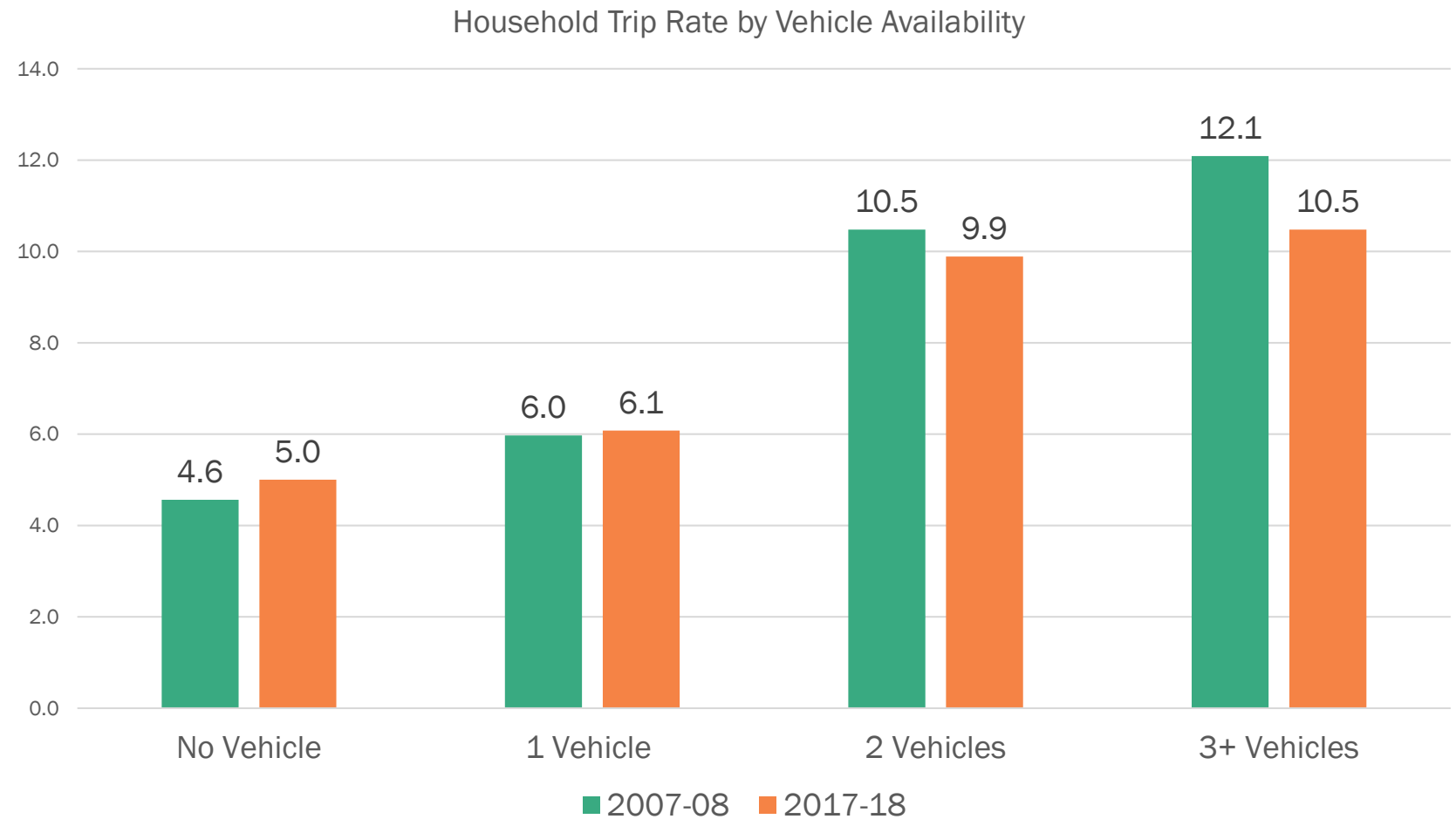
Households are Taking Fewer Trips in 2017/18



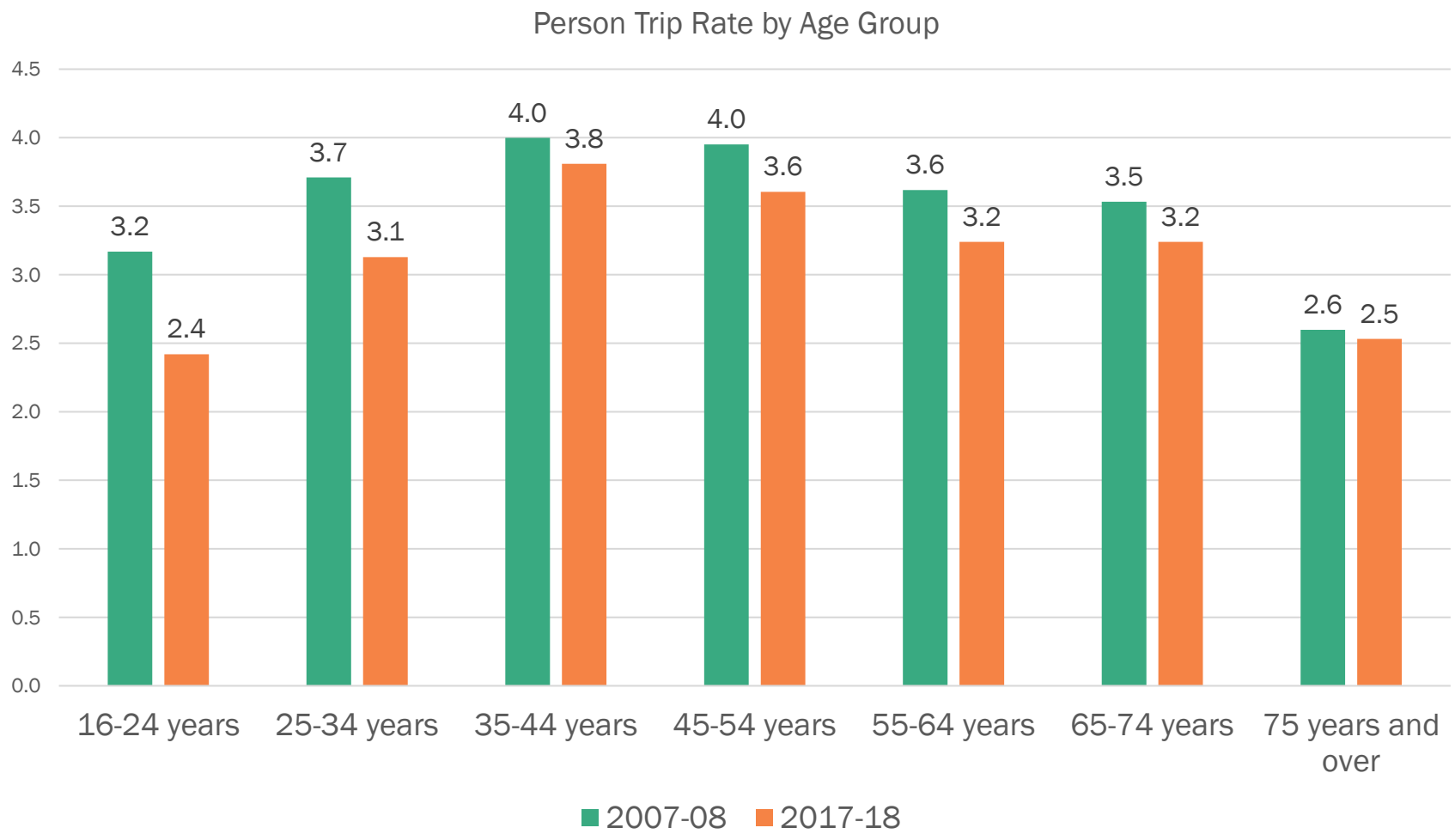
Larger Decrease in Household Trips for Larger Households



Change in Household Trip Rate Varies by Vehicle Availability



Largest Decrease in Trips for Persons Under 35



Summary of Changes in Weekday Household/ Person Trip Rates

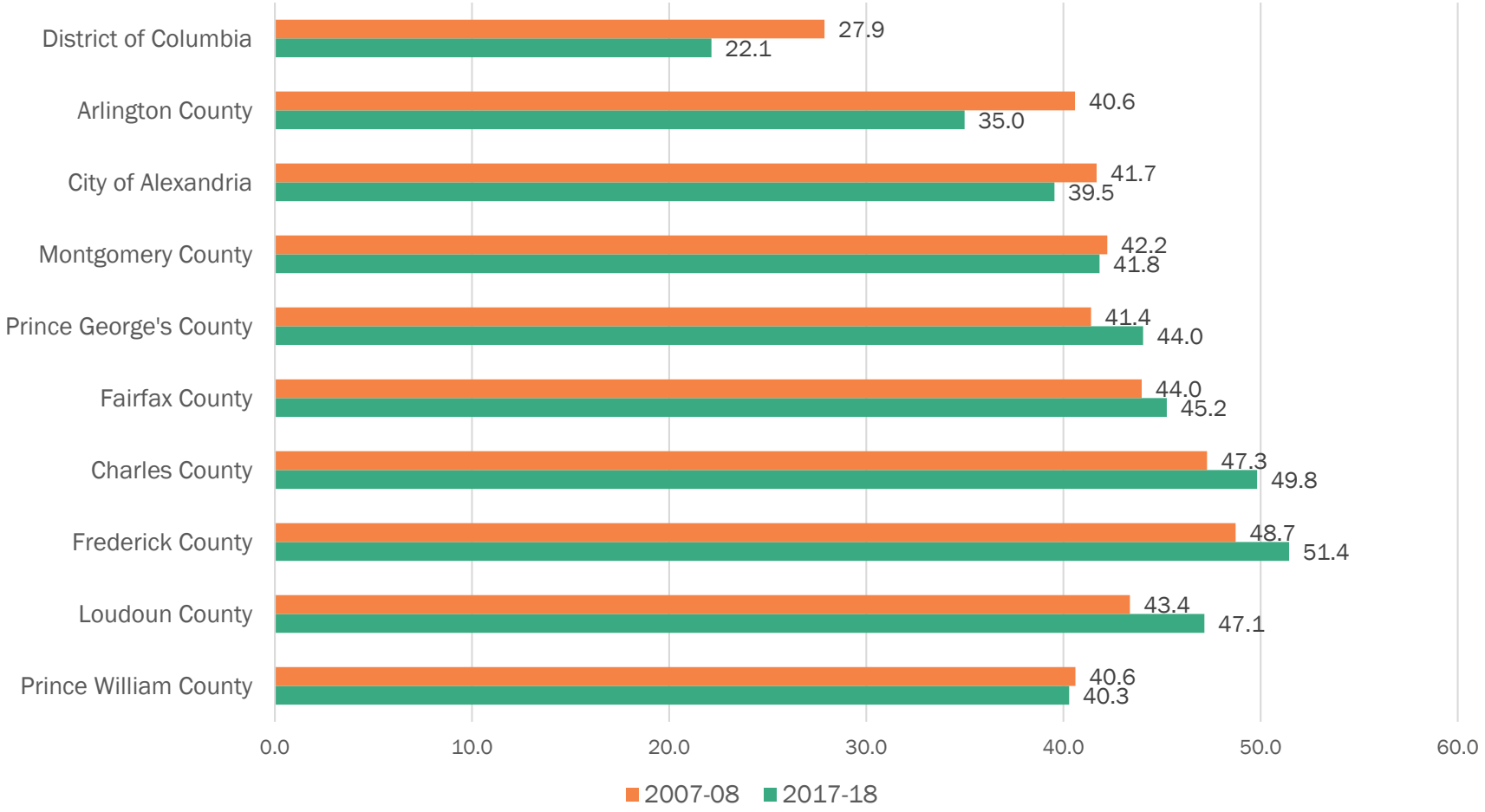
- Households in the TPB region are taking fewer trips in 2017/18 compared with 2007/08
- Larger decrease in daily weekday trips for households with 3 or more persons
- Decrease in daily weekday trips for households with 2 or more vehicles
- Larger decrease in daily weekday trips for persons under 35

Change in Mode Share of All Weekday Trips by Region and Sub-Area

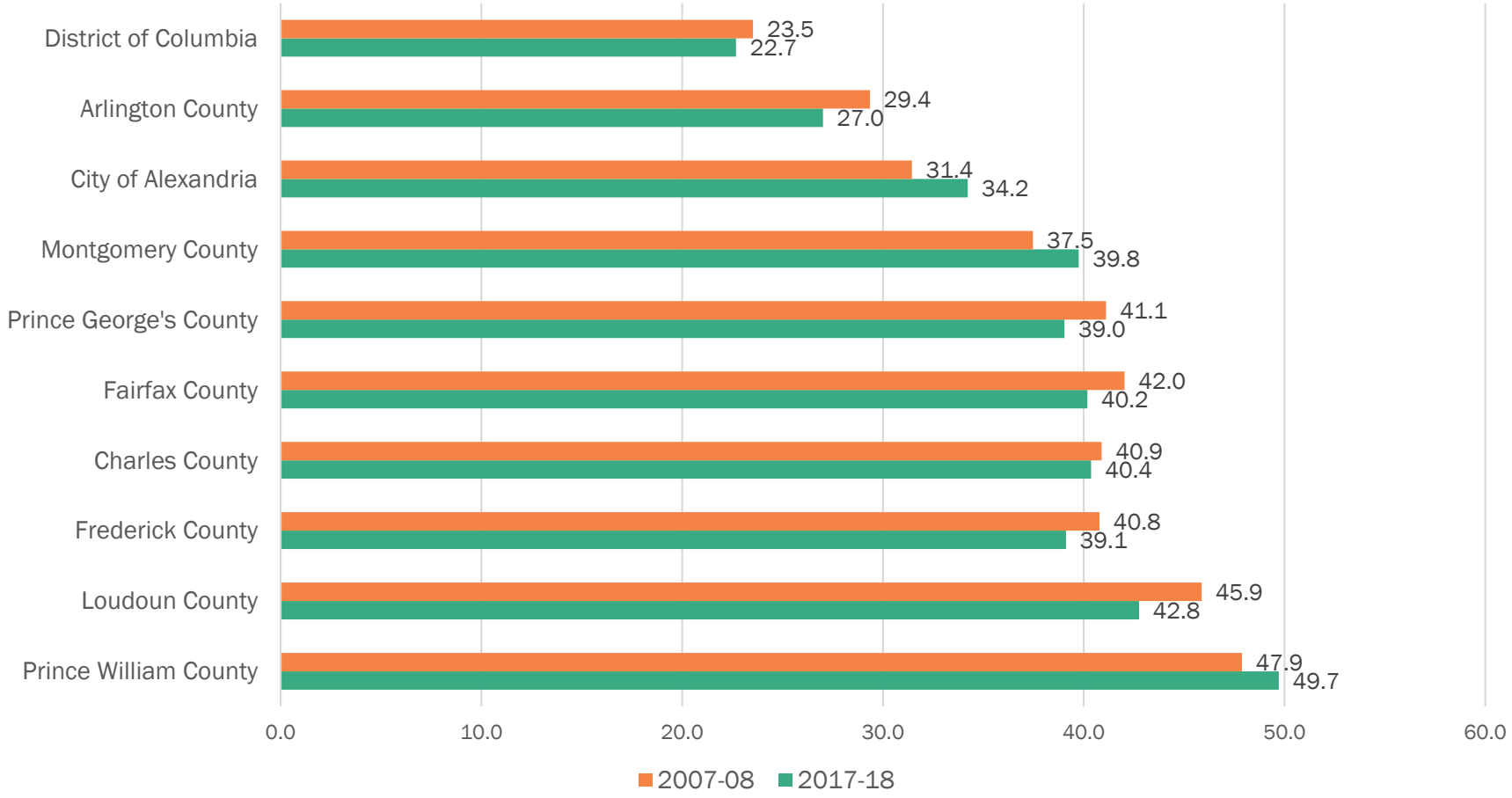
Travel Mode	TPB Region 2007/08	TPB Region 2017/18	Core 2007/08	Core 2017/18	Inner Suburb 2007/08	Inner Suburb 2017/18	Outer Suburb 2007/08	Outer Suburb 2017/18
Drive Alone	41.2	41.0	33.1	27.9	42.7	43.7	44.0	45.6
Drive Others and Auto Passenger	38.6	38.0	26.2	25.5	40.2	39.7	44.9	44.5
Rail Transit	4.5	3.6	9.9	8.3	4.0	3.2	1.2	0.8
Bus Transit	1.8	2.0	5.2	5.1	1.2	1.4	0.4	0.5
Walk	9.1	9.3	21.9	24.6	6.9	6.3	4.0	3.4
Bicycle	0.6	1.3	1.3	3.8	0.5	0.9	0.2	0.3
Taxi/Ride-Hail	0.3	1.0	0.8	2.8	0.2	0.6	0.1	0.1
School Bus	3.8	3.5	1.2	1.2	4.1	3.8	4.9	4.6
Other	0.3	0.4	0.4	0.7	0.2	0.4	0.4	0.2

Note: Highlighted data points indicate differences (negative = yellow; positive = green) at the 95% confidence level

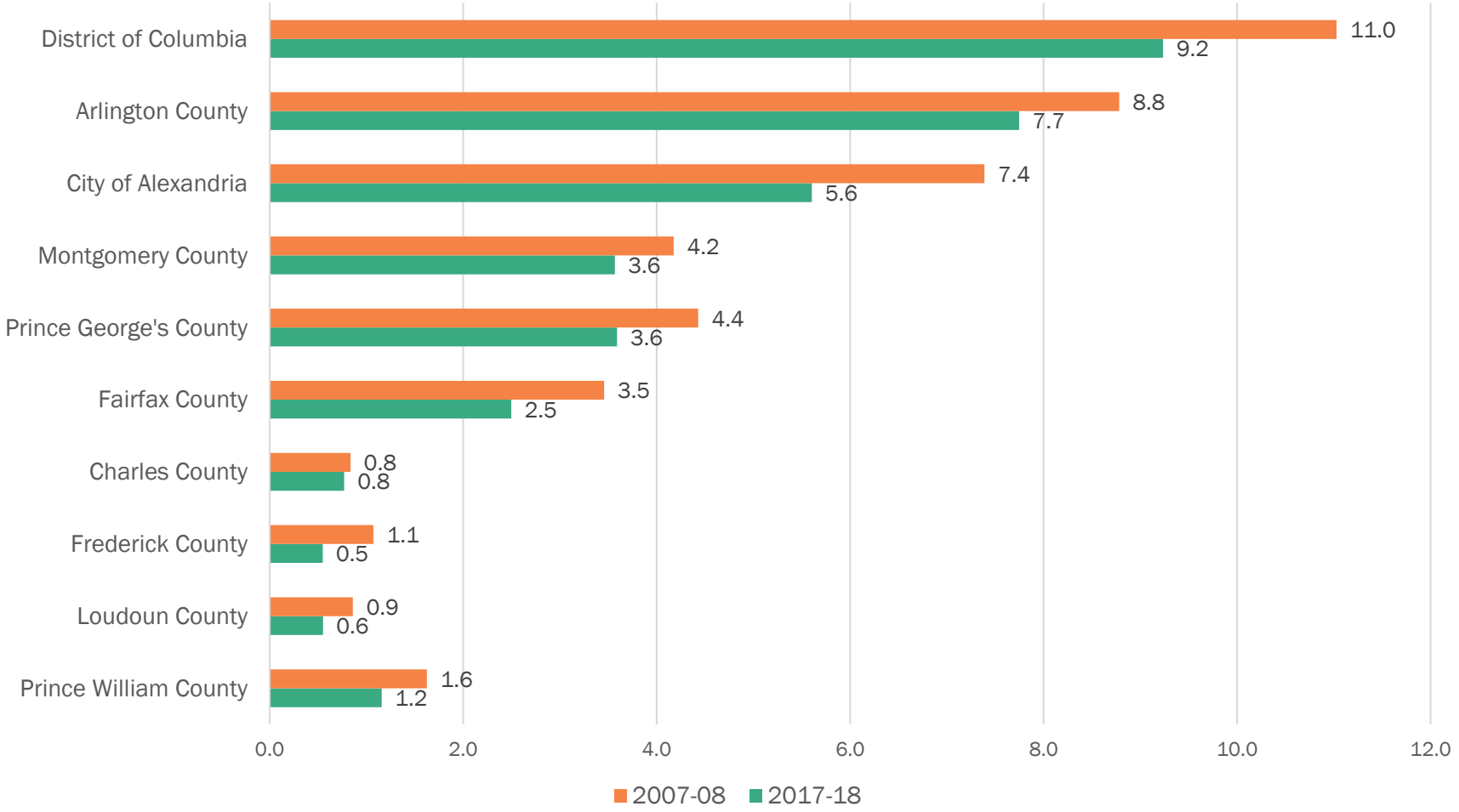
Mode Share for All Trips – Drive Alone (2007/08 – 2017/18)



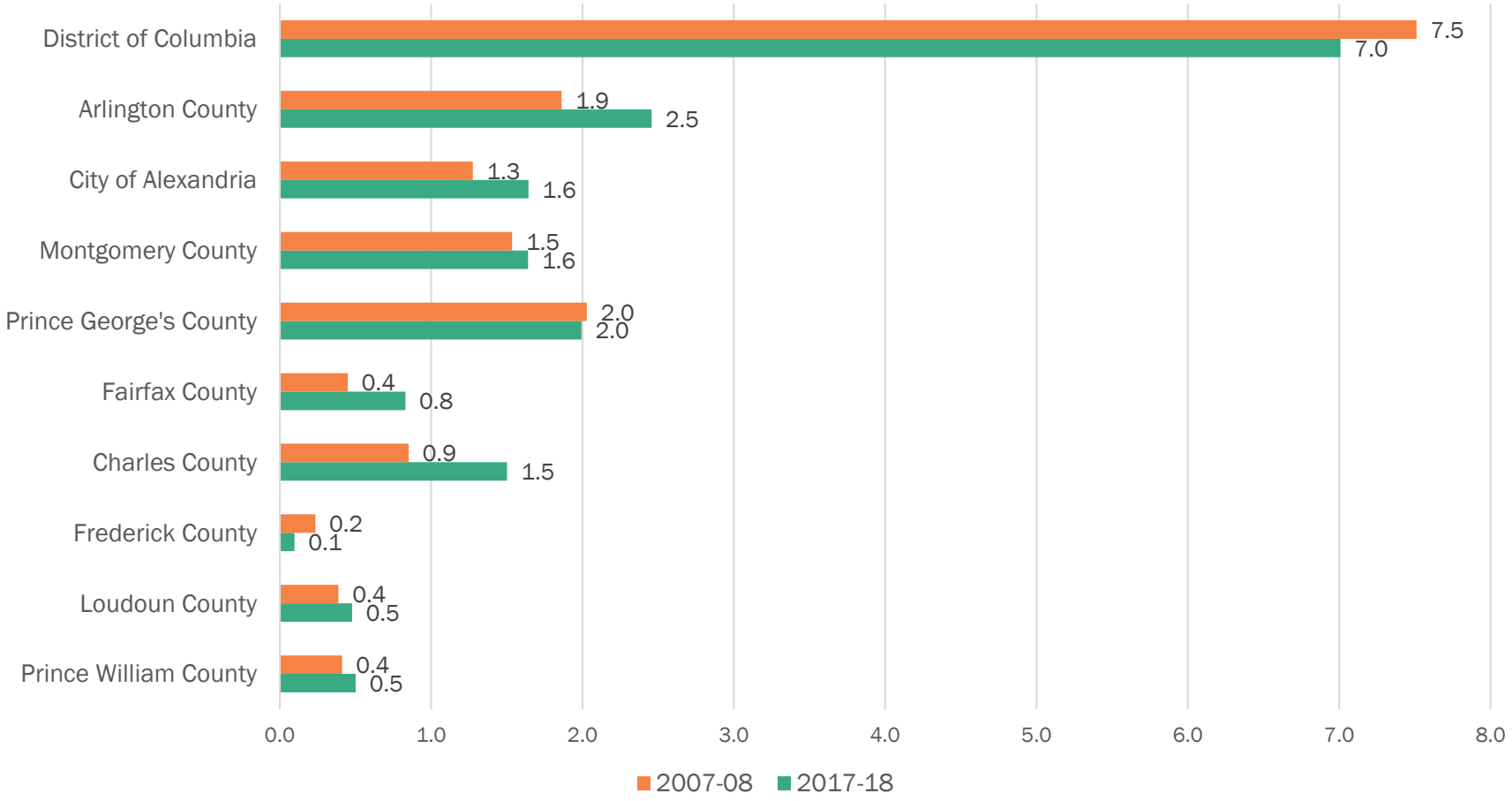
Mode Share for All Trips – Drive Others and Auto Passenger (2007/08 – 2017/18)



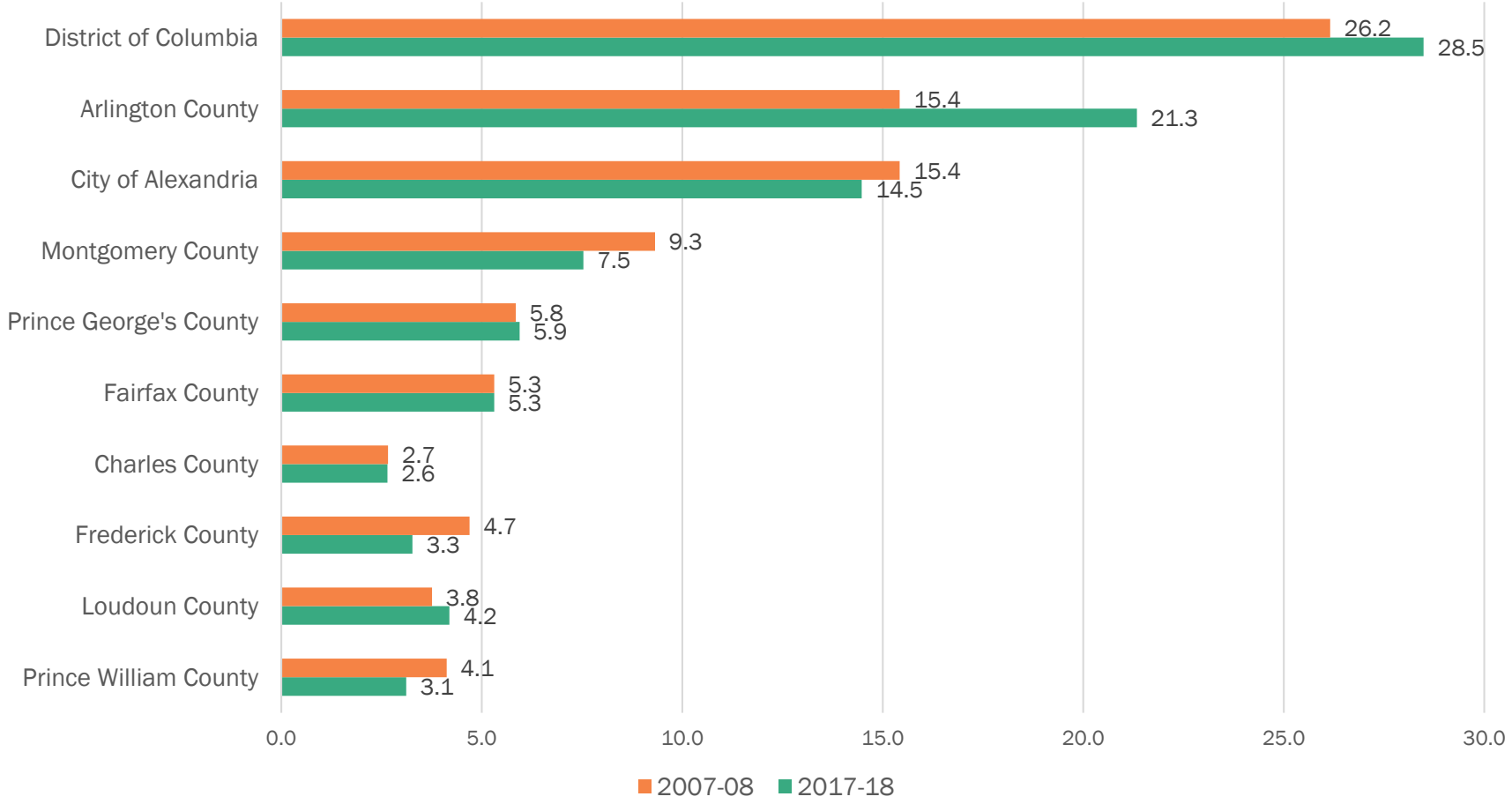
Mode Share for All Trips – Rail Transit (2007/08 – 2017/18)



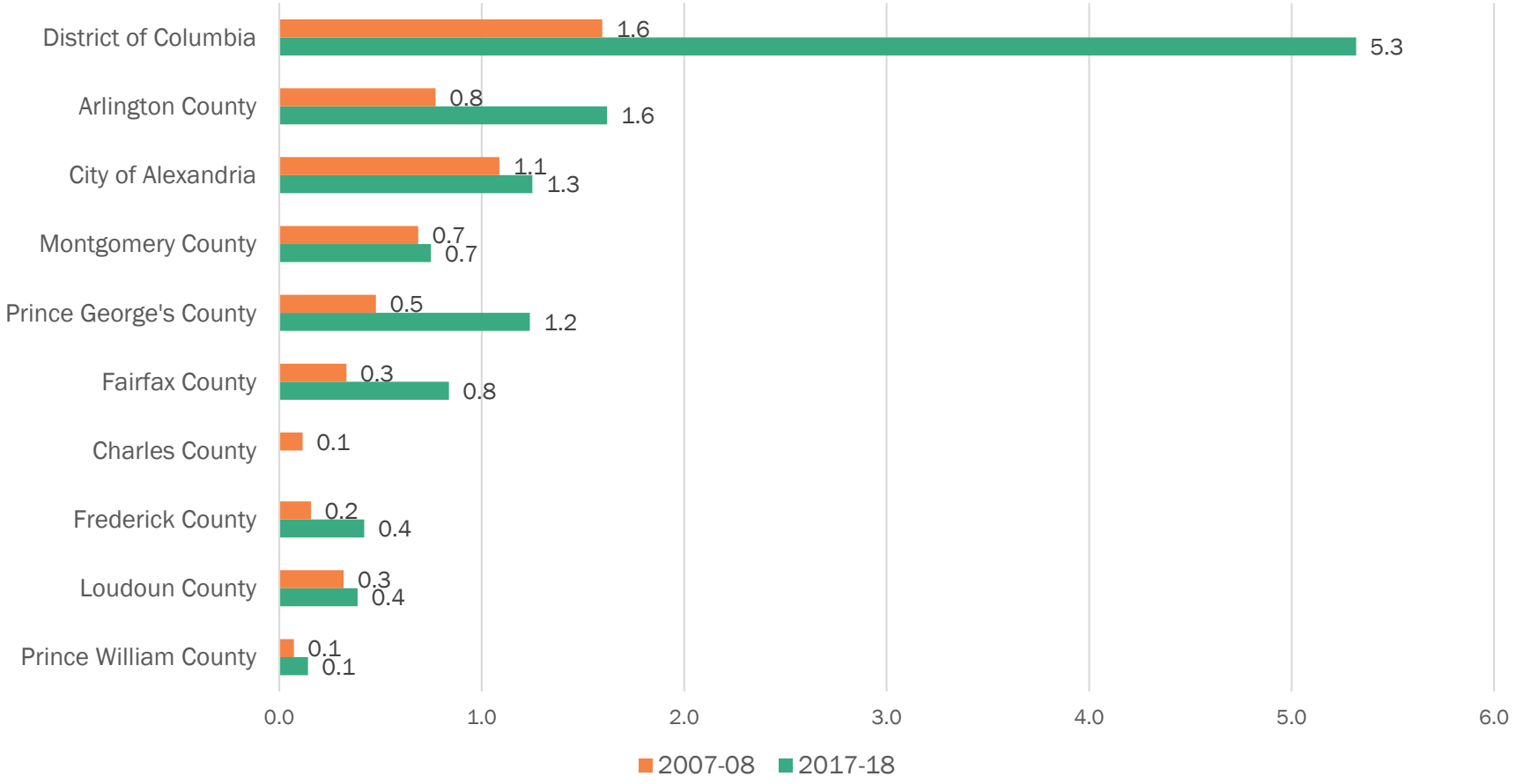
Mode Share for All Trips – Bus Transit (2007/08 – 2017/18)



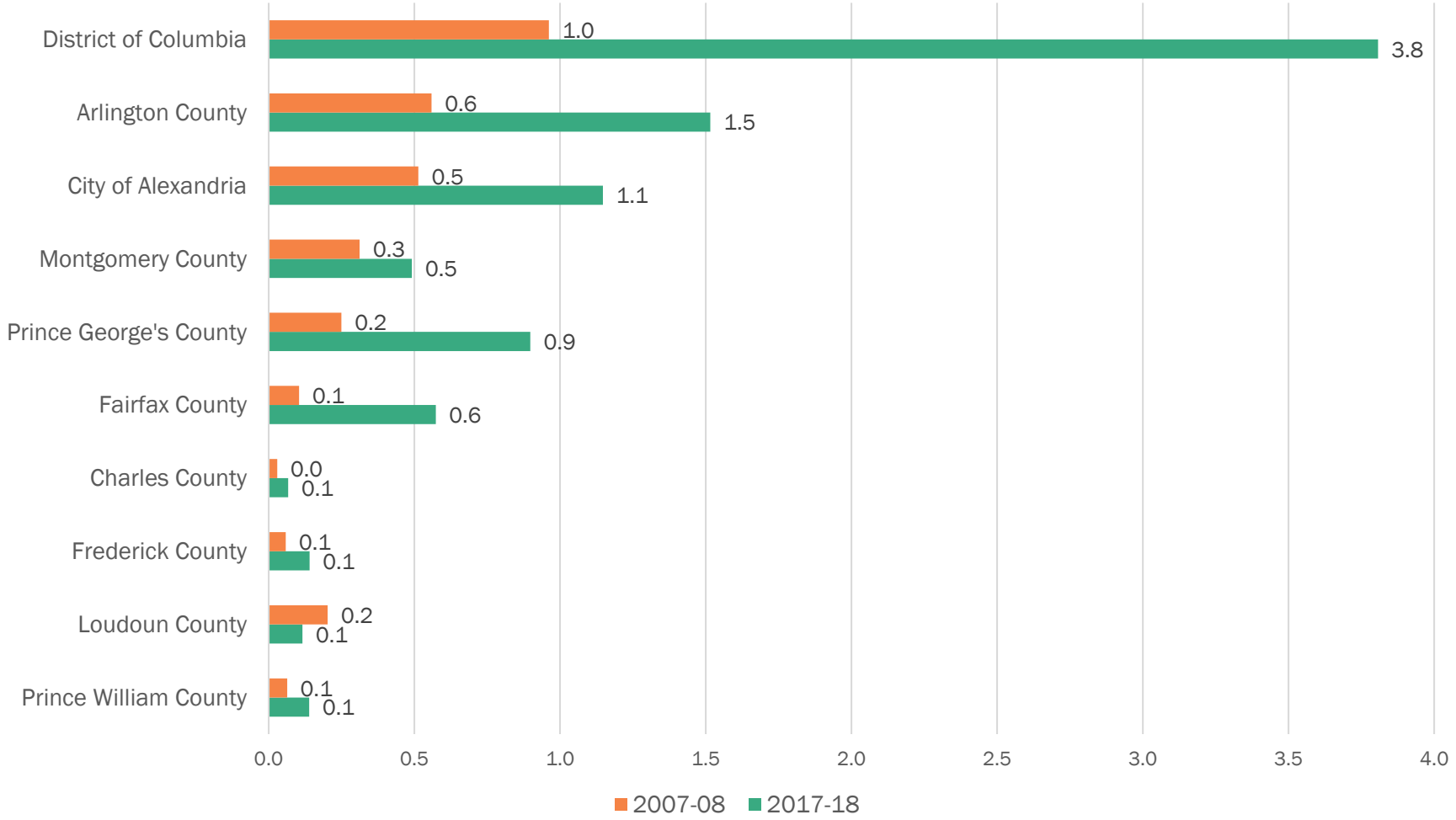
Mode Share for All Trips – Walk (2007/08 – 2017/18)



Mode Share for All Trips – Bicycle (2007/08 – 2017/18)



Mode Share for All Trips – Taxi/Ride-Hail (2007/08 – 2017/18)



Change in Mode Share of Commute Trips by Region and Sub-Area

Commute Mode	TPB Region 2007/08	TPB Region 2017/18	Core 2007/08	Core 2017/18	Inner Suburb 2007/08	Inner Suburb 2017/18	Outer Suburb 2007/08	Outer Suburb 2017/18
Drive Alone	66.7	64.9	46.9	34.6	69.1	70.1	78.3	82.3
Drive Others and Auto Passenger	11.4	7.4	7.8	4.1	11.9	7.4	13.2	11.0
Rail Transit	14.2	15.5	25.0	29.8	13.9	14.6	4.9	3.2
Bus Transit	3.3	4.3	7.7	9.1	2.4	3.2	1.7	2.2
Walk	2.7	3.8	8.5	10.8	1.3	2.3	1.0	0.5
Bicycle	1.1	2.5	2.9	7.6	0.8	1.3	0.3	0.4
Taxi/Ride-Hail	0.3	1.3	0.7	3.4	0.3	1.0	0.0	0.1
Other	0.4	0.3	0.5	0.7	0.2	0.2	0.7	0.2

Note: Highlighted data points indicate differences (negative = yellow; positive = green) at the 95% confidence level

Summary of Changes in Mode Share

- Dramatic increase in bicycle trips throughout the region
- Decline in rail transit trips across the region, especially for non-commute trips
- Significant increases in bus transit, walk, bicycle, and taxi/ride-hail commute trips in the region
- In the regional core, a significant decrease in automobile commutes and an increase in rail transit commutes

Trip Length Distribution by Mode in Miles – All Trips (2017/2018)

Travel Mode	25th Percentile	Median	75th Percentile	90th Percentile
Drive Alone	1.7	4.3	10.2	19.4
Drive Others and Auto Passenger	1.3	3.1	6.4	13.4
Rail Transit	4.9	8.6	14.9	23.2
Bus Transit	1.8	3.3	6.0	12.8
Walk	0.1	0.3	0.5	1.0
Bike	0.8	1.6	2.9	5.6
Taxi/Ride-Hail	1.9	3.6	6.8	10.6

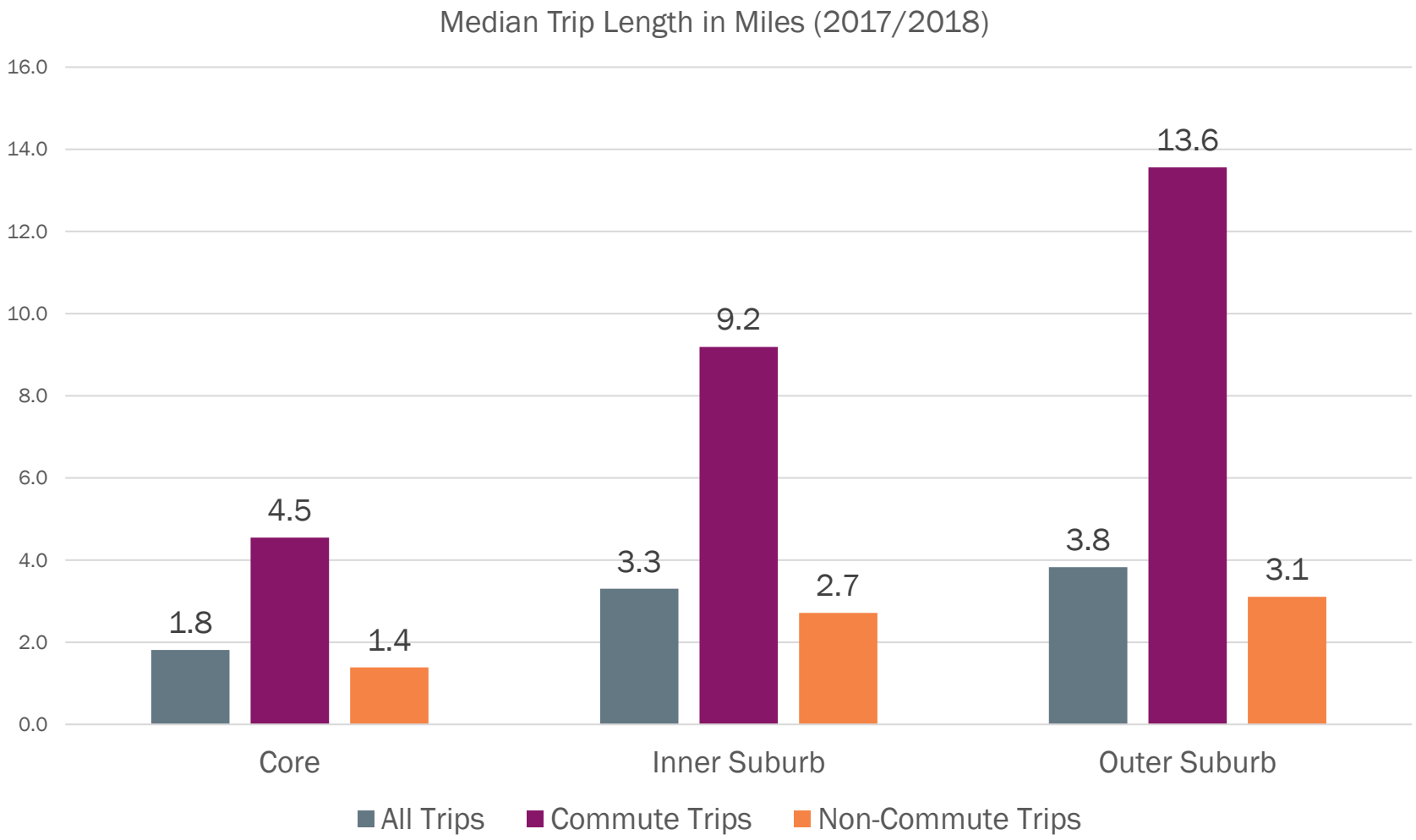
Trip Length Distribution by Mode in Miles – Commute Trips (2017/2018)

Commute Mode	25th Percentile	Median	75th Percentile	90th Percentile
Drive Alone	4.8	9.3	17.0	26.3
Drive Others and Auto Passenger	3.5	7.8	15.2	27.7
Rail Transit	5.6	9.3	15.9	23.2
Bus Transit	2.4	4.5	10.0	26.5
Walk	0.4	0.7	1.3	1.9
Bike	1.9	3.0	5.5	8.5
Taxi/Ride-Hail	2.5	4.6	6.6	10.4

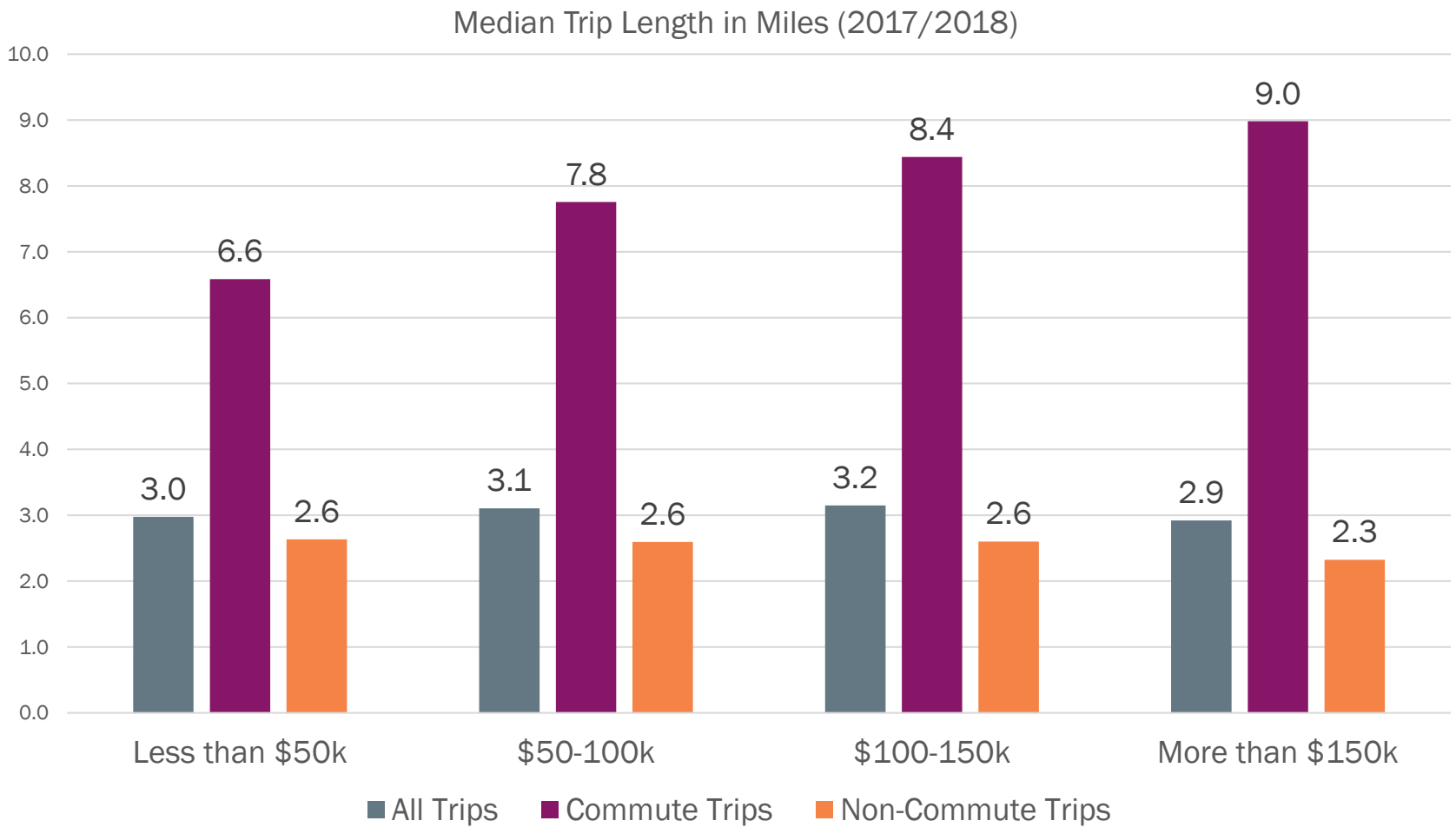
Trip Length Distribution by Mode in Miles – Non-Commute Trips (2017/2018)

Travel Mode	25th Percentile	Median	75th Percentile	90th Percentile
Drive Alone	1.3	3.1	7.5	15.0
Drive Others and Auto Passenger	1.3	3.0	6.3	12.6
Rail Transit	3.6	6.9	12.4	23.2
Bus Transit	1.6	2.9	4.9	8.5
Walk	0.1	0.3	0.5	0.9
Bike	0.6	1.0	2.3	3.3
Taxi/Ride-Hail	1.8	3.3	6.8	10.6

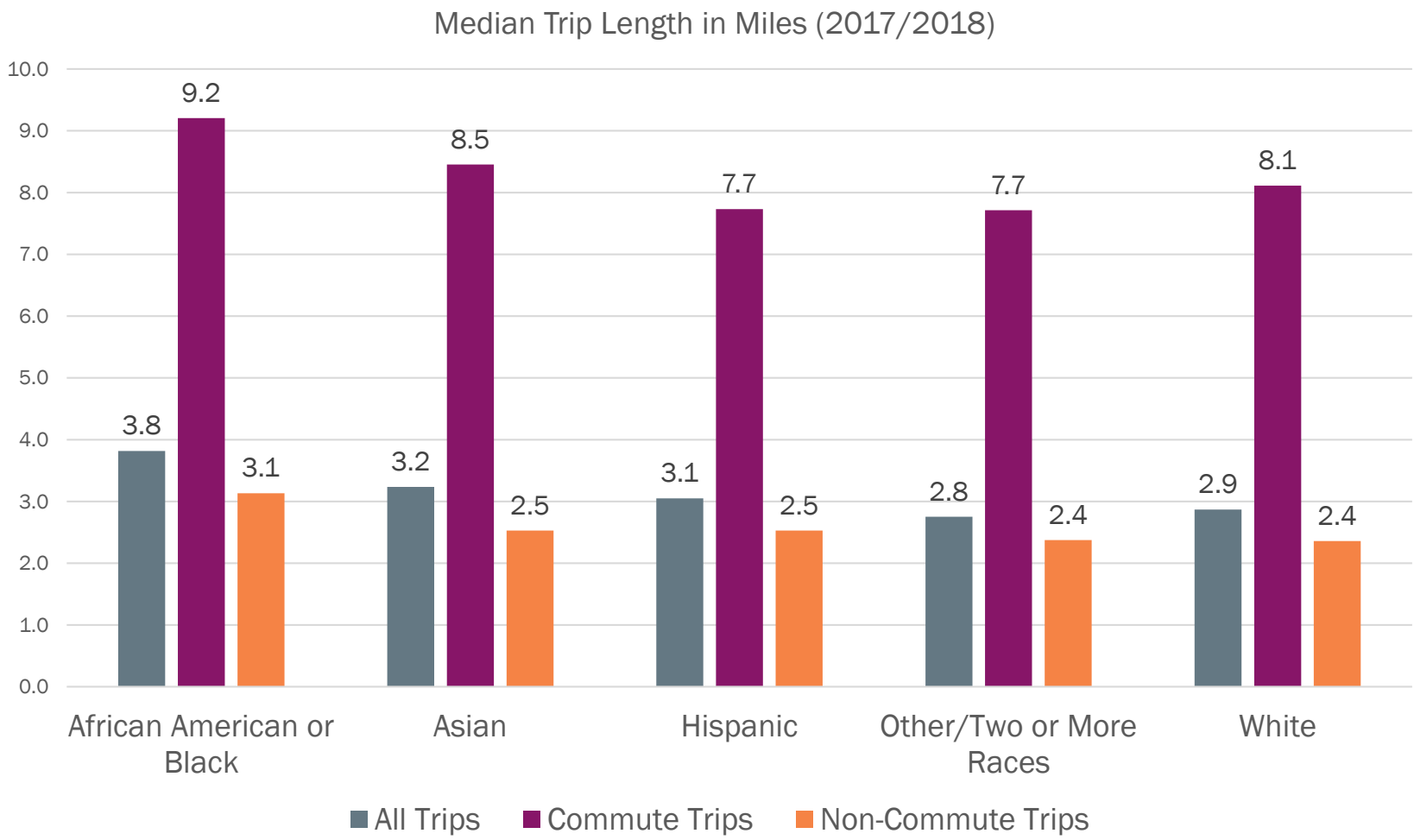
Trip Length Increases from Core to Suburbs



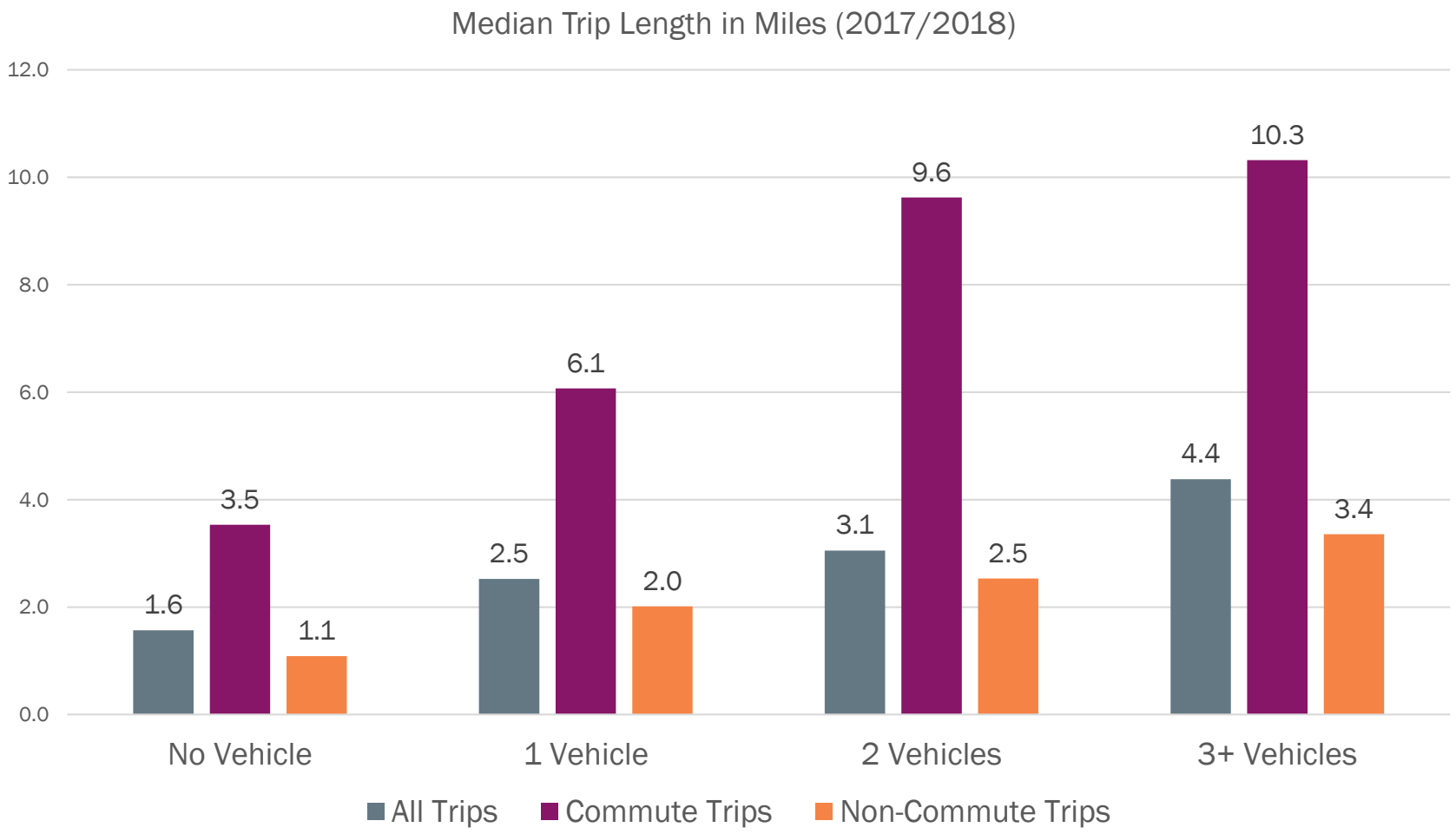
Commute Trip Lengths Increase with Income



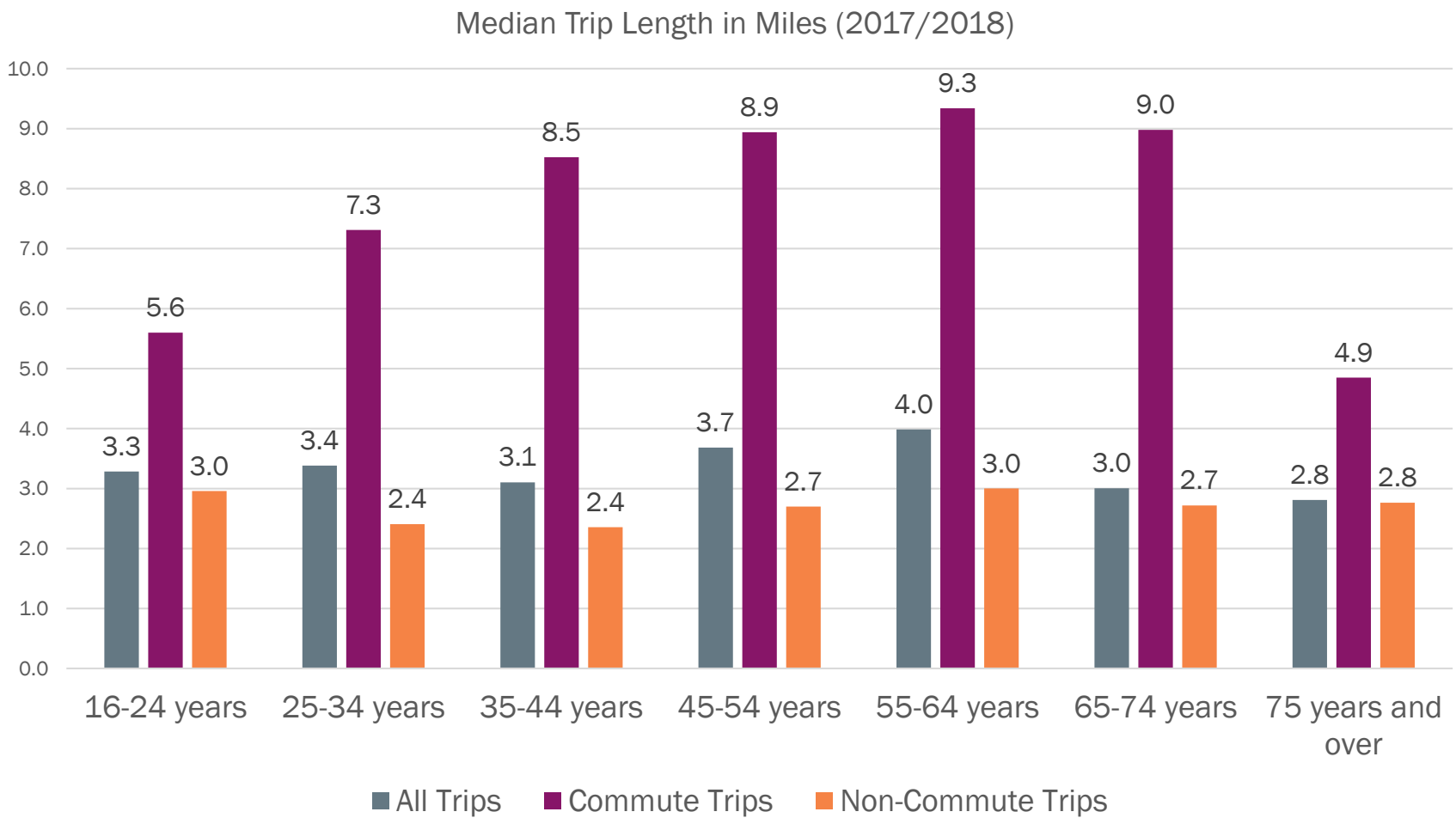
Trip Length Varies by Race/Ethnicity



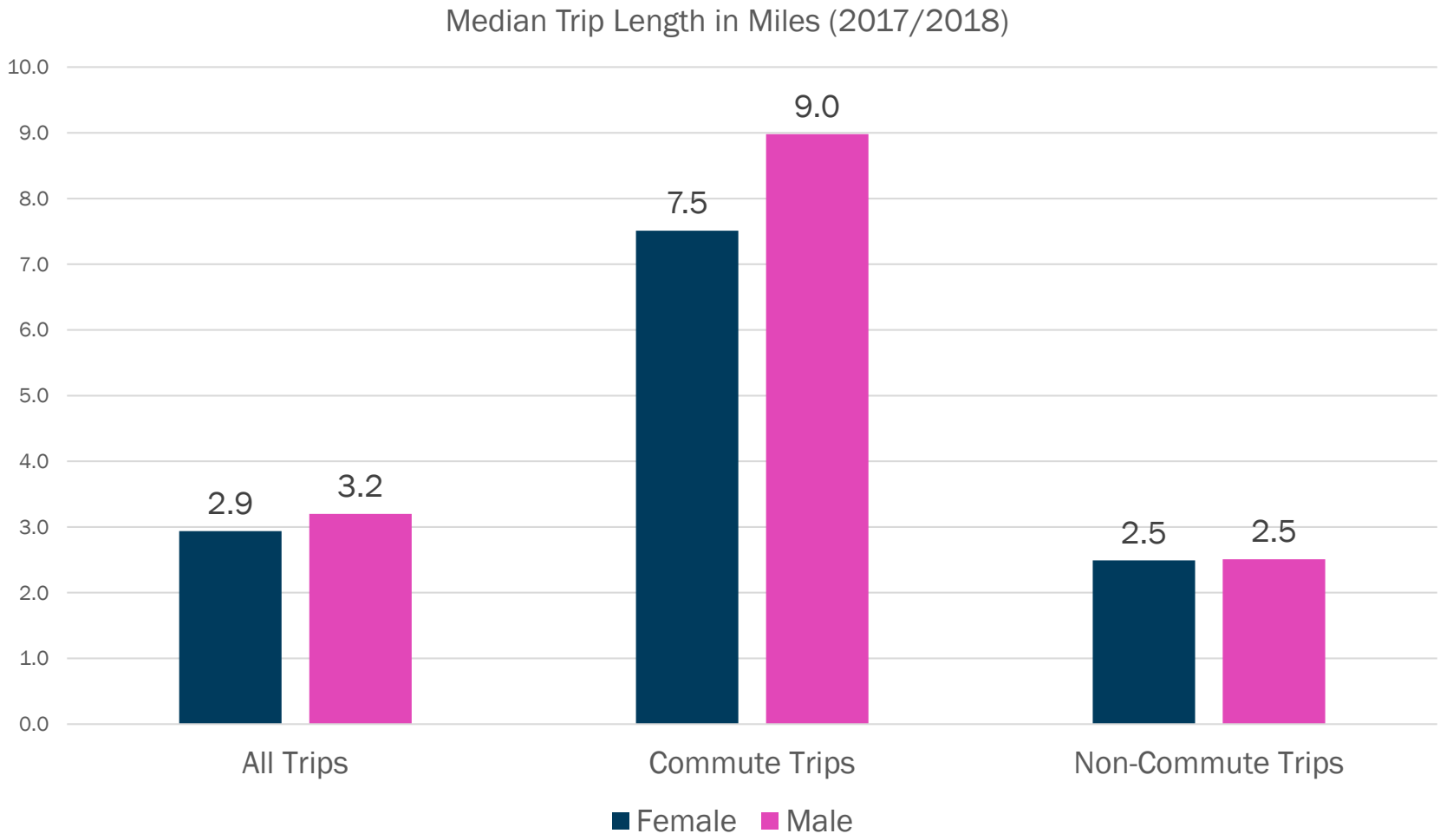
Trip Lengths Increase with Vehicle Availability



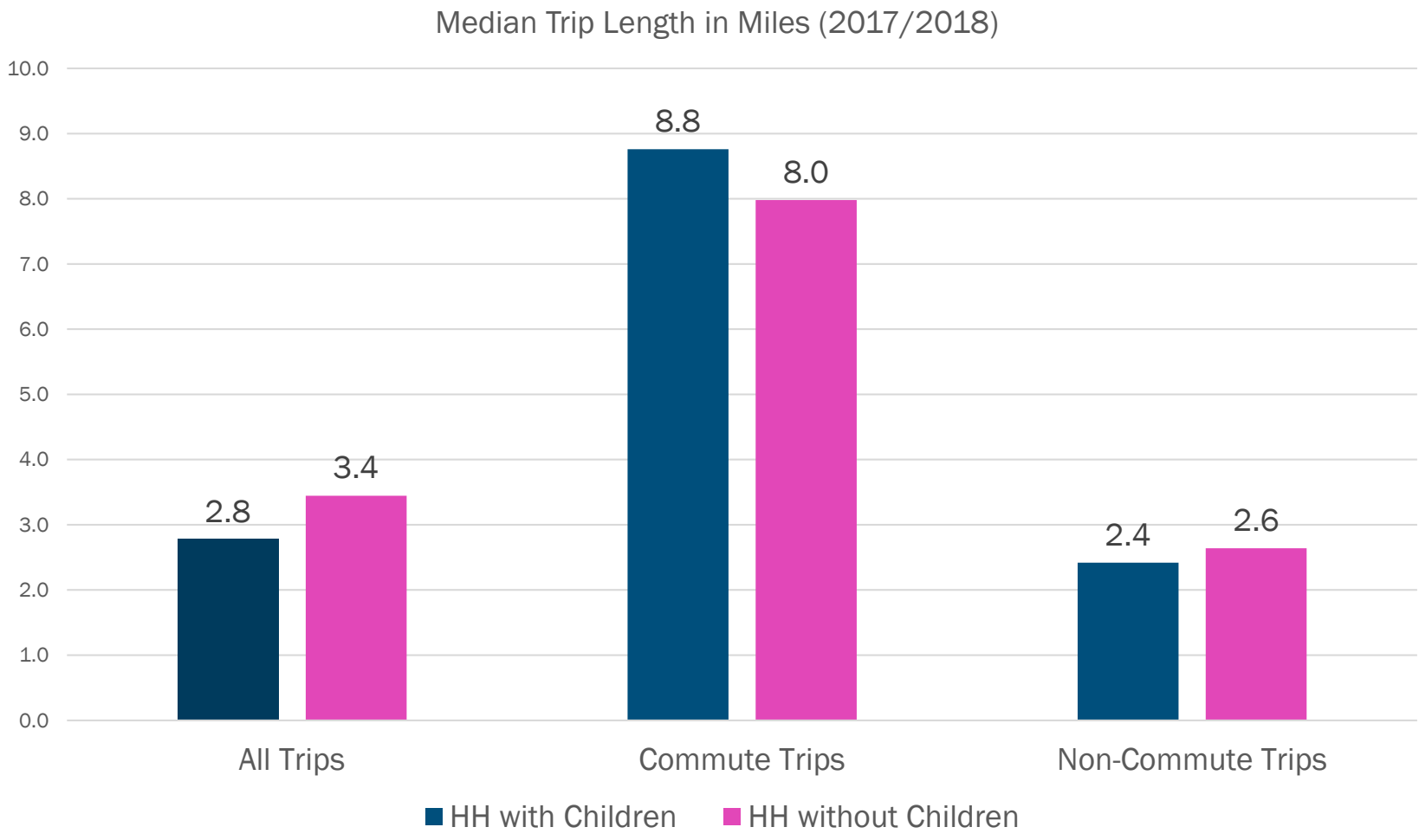
Life Stage Influences Trip Length



Trip Length Varies by Gender



Households with Children Travel Further to Work



Trip Length by Purpose – All Trips (2017/2018)

Trip Purpose	25th Percentile	Median	75th Percentile	90th Percentile
Commute	2.3	6.7	13.7	23.2
Work-Related	1.4	4.1	10.5	21.9
Drop Off/Pick Up	0.9	2.4	5.7	10.6
School	0.9	2.0	4.7	9.6
Personal Business	1.1	2.8	6.8	13.9
Shop/Meal	0.7	2.1	4.9	10.5
Social/Recreation	1.1	2.9	7.0	14.4

Summary of Trip Length Distributions

- Longest commutes for drive alone and rail transit trips
- Trip length increases from the core to the outer suburbs
- Higher income households have further commutes
- African Americans have further commutes than other racial/ethnic groups
- Households with more vehicles take longer trips
- Persons between 35 and 74 have the furthest commutes
- Males have longer commute distances than females
- Households with children travel further to work

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- RTS Post-Survey Edits & Consistency Checks completed
- Lessons learned
- RTS Public File Release

Summary of RTS Post-Survey Edits

- COG/TPB has performed rigorous post-survey edits and data validation to ensure that the RTS data will produce accurate forecasts of regional travel patterns
- Open response items in the Household, Person, Vehicle, and Trip Files were edited and recoded
- The Trip File focused on modal edits for non-automobile modes and applied trip linking procedures based on a modal hierarchy
- Trip purpose categories were created based on origin and destination activity
- Imputation of missing household and person data

Summary of RTS Consistency Checks

- COG/TPB staff have also performed consistency checks:
  - *Speed and distance checks* to ensure that reported travel times, travel modes, and geocoded locations are reasonable and accurately reported
  - *Loop trip checks* for walk and bicycle trips that begin and end at the same location with no intermediate stops; these trips were treated separately from destination-oriented trips
  - *Missing and incomplete trip checks* to determine missing trip segments such as a return trip to home (i.e., "incomplete" trips); these were imputed based on reported travel from other household members

Lessons Learned & Recommendations

- Lessons learned
  - Limitations of respondent self-reporting without assistance from trained survey interviewers
  - Limitations of traditional surveys (i.e., cross-sectional, one-day travel diary)
  - Address-based sampling and response rates
- Recommendations
  - Smartphone-based GPS data collection
  - Multiple travel days to capture weekday trends
  - Alternative sampling approaches such as continuous and panel surveys

RTS Public File Release

- The RTS data files are now available for public use by practitioners, researchers, and other stakeholders
- The data files include household, person, vehicle, and trip information for the TPB model region
- The public file release will include technical documentation that provides an overview of the data files
- The public file release will protect the confidentiality of survey participants
- For more information about the RTS and to request data, go to: https://www.mwcog.org/transportation/data-and-tools/household-travel-survey/

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