National Capital Region
Transportation Planning Board

2017/2018 Regional Travel Survey In-Depth Analysis

Dimensions and Characteristics of Peak and Off-Peak Travel

In the Fall of 2019, TPB staff began releasing the preliminary results of the Regional Travel Survey. TPB staff asked regional stakeholders to offer questions that the RTS might help inform. The RTS is a once-a-decade household travel survey which collected detailed information about households and their daily travel obtained from a travel diary. The piece is part of a series of responses to thought-provoking questions offered by our stakeholders.

QUESTIONS

How do travel modes differ for peak and off-peak travel?
How do trip purpose, trip length, and trip duration differ for peak and off-peak travel? How do they differ for all travel modes vs. transit modes?
What is the income and race/ethnicity breakdown for persons traveling during off-peak hours? How do they differ for all travel modes vs. transit modes?

INTRODUCTION

The 2017/2018 Regional Travel Survey (RTS) data can provide detailed information about travel patterns in the metropolitan Washington region, particularly for non-work travel which comprise the majority of daily weekday trips. Previous studies have shown that travel during peak commute periods differ from off-peak periods. This question examines how travel behavior differs for peak and off-peak travel, in addition to how they differ for transit modes specifically. This question also provides insights on the demographics of persons traveling during off-peak hours and whether they differ for transit modes compared with all travel modes. The primary source of data is from the one-day travel diary that was completed by all household members who participated in the survey.

APPROACH

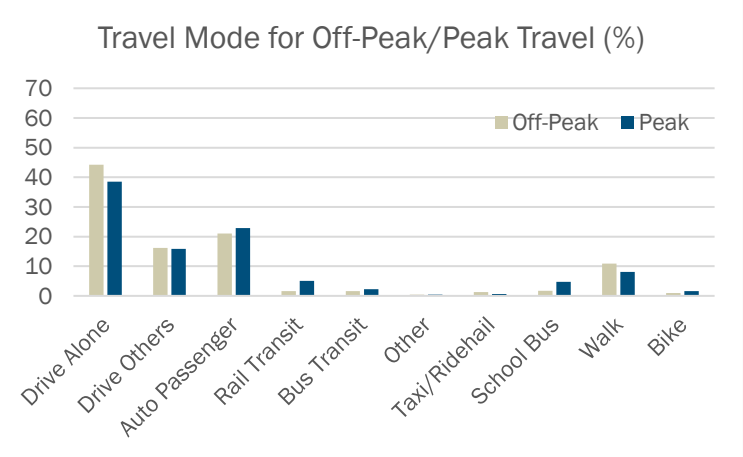
We examined several dimensions of travel, including travel mode, trip purpose, trip length, and trip duration for both work and non-work trips in the TPB Planning Region; we compared travel patterns for peak commute hours (5:30 – 9:30 am and 3:00 – 7:00 pm on weekdays) and off-peak hours (all other times). Travel mode includes automobile modes (drive alone, drive others, auto passenger), rail and bus transit, taxi/ridehail, walk, and bicycle. Trip purposes were based on primary destination activity and were categorized into work, work-related, drop off/pick up, school, personal business, shop/meal, and social/recreation trips. Median trip lengths and trip duration were tabulated for trips taken during peak and off-peak periods. Trip purpose, trip length, and trip duration were compared for all travel modes and transit modes. Finally, income and race/ethnicity for persons traveling during off-peak hours were compared for all travel modes and transit modes.

Detailed breakdowns of each comparison are shown in the tables and charts below, with key takeaways for each. Highlighting is used in certain tables for emphasis. In advance of preparing these responses, the tabulations were reviewed for accuracy and robustness. To create these tables for the TPB Planning Region, the survey results were expanded using weights that considered the probability of selection of individual households as well as adjustments for household size, workplace location, and Metrorail ridership.

ANALYSIS AND KEY FINDINGS

A. Travel Mode for Off-Peak/Peak Travel

Travel Mode (%)	Off-Peak	Peak
Drive Alone	44.3	38.5
Drive Others	16.1	15.9
Auto Passenger	21.0	22.8
Rail Transit	1.6	5.1
Bus Transit	1.6	2.2
Other	0.4	0.4
Taxi/Ridehail	1.3	0.7
School Bus	1.7	4.7
Walk	10.9	8.1
Bike	1.0	1.6

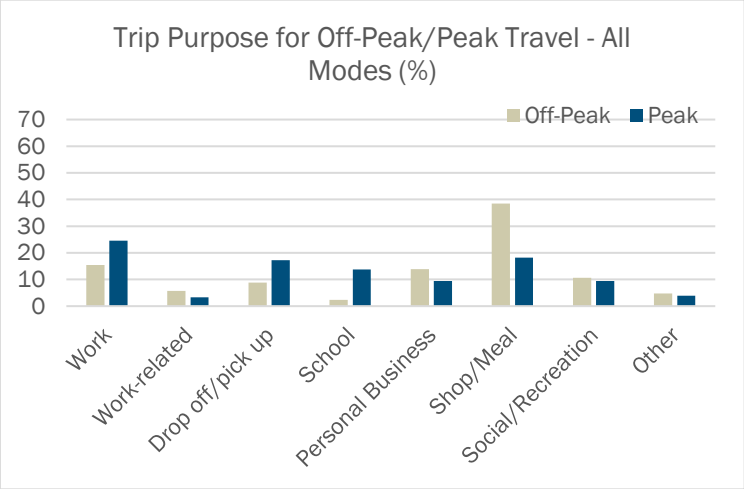


Key Findings for Travel Mode for Off-Peak/Peak Travel:

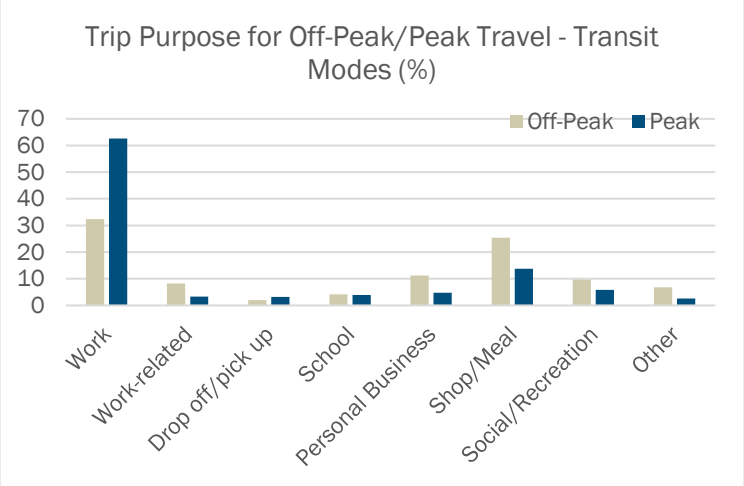
- Higher shares of rail and bus transit, school bus, and bike trips during peak hours (5:30 – 9:30 am and 3:00 – 7:00 pm)
- Higher shares of drive alone, taxi/ridehail and walk trips during off-peak hours

B. Trip Purpose for Off-Peak/Peak Travel

Trip Purpose - All Modes (%)	Off-Peak	Peak
Work	15.4	24.6
Work-related	5.7	3.4
Drop off/pick up	8.8	17.3
School	2.4	13.7
Personal Business	13.9	9.5
Shop/Meal	38.5	18.3
Social/Recreation	10.6	9.5
Other	4.7	3.9



Trip Purpose – Transit Modes (%)	Off-Peak	Peak
Work	32.4	62.6
Work-related	8.3	3.3
Drop off/pick up	2.0	3.2
School	4.1	4.0
Personal Business	11.3	4.7
Shop/Meal	25.4	13.8
Social/Recreation	9.6	5.8
Other	6.8	2.5

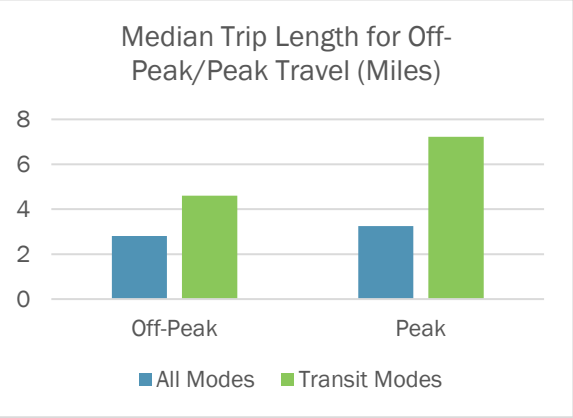


Key Findings for Trip Purpose for Off-Peak/Peak Travel:

- Higher shares of work, drop off/pick up, and school trips during peak hours (5:30 – 9:30 am and 3:00 – 7:00 pm)
- Higher shares of work-related, personal business, shop/meal, and social/recreation trips during off-peak hours
- For Transit Modes:
    - Higher shares of work and drop off/pick up transit trips during peak hours (5:30 – 9:30 am and 3:00 – 7:00 pm)
    - Higher shares of work-related, personal business, shop/meal, and social/recreation transit trips during off-peak hours

C. Trip Length for Off-Peak Travel

Trip Length (Miles)	Off-Peak	Peak
All Modes	2.8	3.3
Transit Modes	4.6	7.2

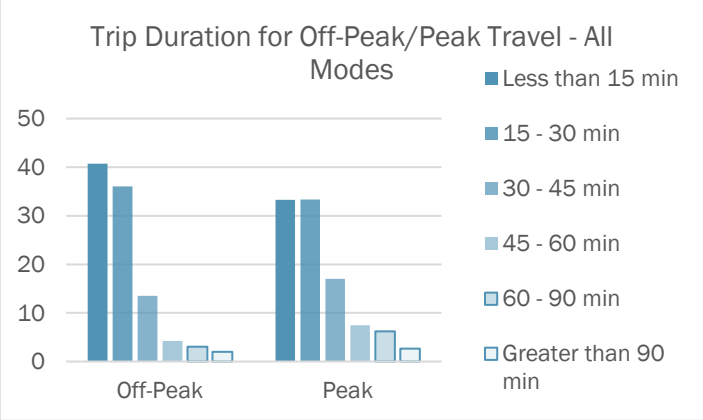


Key Findings for Trip Length for Off-Peak/Peak Travel

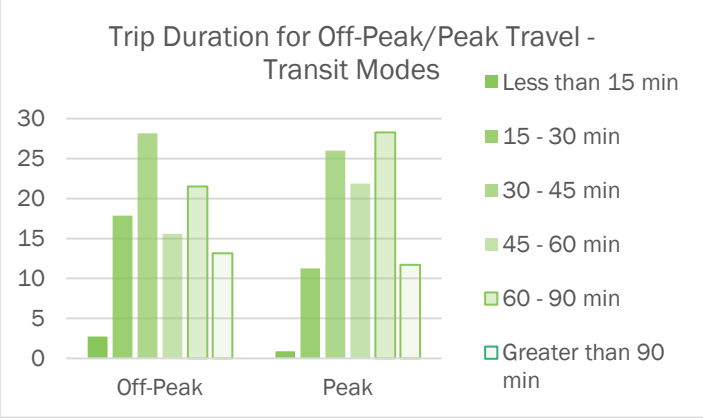
- Longer trip lengths during peak hours (5:30 – 9:30 am and 3:00 – 7:00 pm)
- Longer trip lengths for transit modes

D. Trip Duration for Off-Peak/Peak Travel

Trip Duration – All Modes (%)	Off-Peak	Peak
Less than 15 min	40.7	33.3
15 - 30 min	36.0	33.3
30 - 45 min	13.5	17.0
45 - 60 min	4.2	7.4
60 - 90 min	3.1	6.2
Greater than 90 min	2.0	2.7



Trip Duration – Transit Modes (%)	Off-Peak	Peak
Less than 15 min	2.7	0.9
15 - 30 min	17.9	11.3
30 - 45 min	28.1	26.0
45 - 60 min	15.6	21.9
60 - 90 min	21.5	28.3
Greater than 90 min	13.2	11.7



Key Findings for Trip Duration for Off-Peak/Peak Travel:

- More trips with longer trip durations (greater than 30 min) during peak hours (5:30 – 9:30 am and 3:00 – 7:00 pm)
- More trips with shorter trip durations (less than 30 min) during off-peak hours
- For transit modes:
    - More trips with longer trip durations (greater than 45 min) during peak hours (5:30 – 9:30 am and 3:00 – 7:00 pm)
    - More trips with shorter trip durations (less than 45 min) during off-peak hours

E. Travel Mode for Off-Peak/Peak Travel by Income

Travel Mode – Off-Peak (%)	<$25K	$25-50K	$50-75K	$75-100K	$100-150K	>$150K
Drive Alone	35.4	45.6	48.0	45.3	43.9	43.9
Drive Others	11.3	15.1	15.7	16.5	17.1	16.3
Auto Passenger	24.7	17.3	19.6	20.7	22.3	20.9
Rail Transit	2.1	1.6	1.8	1.8	1.3	1.6
Bus Transit	10.1	4.0	1.4	0.7	1.2	0.6
Other	0.6	0.4	0.3	0.3	0.4	0.6
Taxi/Ridehail	2.4	2.6	1.2	1.4	0.9	1.2
School Bus	0.9	2.0	1.6	1.5	1.9	1.7
Walk	11.8	10.5	9.3	11.0	9.8	12.2
Bike	0.8	0.8	1.1	0.9	1.0	1.1

Key Findings for Travel Mode for Off-Peak Travel by Income:

- Much higher share of bus transit trips for very low (<$25K) and low ($25-50K) income households
- Higher share of taxi/ridehail trips for very low (<$25K) and low ($25-50K) income households
- Lower share of drive alone trips for very low (<$25K) income households

Travel Mode – Peak (%)	<$25K	$25-50K	$50-75K	$75-100K	$100-150K	>$150K
Drive Alone	30.7	37.1	42.4	39.6	39.2	37.8
Drive Others	10.5	15.0	14.3	16.0	16.4	16.5
Auto Passenger	18.6	19.7	19.8	24.2	22.7	24.0
Rail Transit	4.4	3.6	5.2	6.2	5.4	4.8
Bus Transit	11.4	6.4	2.7	1.9	1.5	1.2
Other	0.9	0.6	0.3	0.3	0.4	0.4
Taxi/Ridehail	1.5	1.0	0.8	0.7	0.6	0.6
School Bus	5.4	7.6	4.2	3.0	5.0	4.6
Walk	15.0	7.8	8.7	7.1	7.5	8.1
Bike	1.6	1.1	1.5	1.0	1.3	2.0

Key Findings for Travel Mode for Peak Travel by Income:

- Much higher share of bus transit trips for very low (<$25K) and low ($25-50K) income households
- Higher share of taxi/ridehail trips for very low (<$25K) and low ($25-50K) income households
- Higher share of walking trips for very low (<$25K) income households
- Lower share of drive alone trips for very low (<$25K) income households

F. Travel Mode for Off-Peak/Peak Travel by Race/Ethnicity

Travel Mode – Off-Peak (%)	Black	Asian	Hispanic	Other	White
Drive Alone	46.3	37.3	35.6	37	45.9
Drive Others	14.9	18.8	17.8	10.3	16.2
Auto Passenger	18.4	26	26.4	30.1	20
Rail Transit	2.2	1.5	1.1	2.5	1.5
Bus Transit	4.6	1.1	1.8	1.8	0.9
Other	0.4	0.7	0.3	0.4	0.4
Taxi/Ridehail	2.4	0.9	1.5	0.7	1.2
School Bus	1.9	2.4	3	3.6	1.4
Walk	8.6	10	11.1	12.9	11.5
Bike	0.5	1.2	1.4	0.7	1.1
Total	100.0	100.0	100.0	100.0	100.0

Key Findings for Travel Mode for Off-Peak Travel by Race/Ethnicity:

- Higher share of drive alone, bus transit, and taxi/ridehail trips for African Americans; lower share of auto passenger, walk, and bike trips.
- Higher share of drive others for Asians, lower share of taxi/ridehail.
- Higher share of bike trips for Hispanics and lower share of drive-alone and rail transit trips.
- Higher shares of auto passenger, rail transit, school bus, and walk trips for Other, lower shares of drive others and taxi/ridehail. Other includes Non-Hispanic American Indian or Alaska Native, Non-Hispanic Hawaiian or Pacific Islander, Two or more races, or Other.
- Higher share of drive alone trips for Whites and lower share of bus transit and school bus trips.

Travel Mode – Peak (%)	Black	Asian	Hispanic	Other	White
Drive Alone	38.6	36.5	32.2	23.9	40.4
Drive Others	15.1	16.7	18	9.9	16.1
Auto Passenger	23	23.4	25.8	35.5	21.6
Rail Transit	5.7	5.1	3.8	5.1	5.1
Bus Transit	4.4	2.7	3.8	2.1	1.5
Other	0.3	0.4	0.3	0.1	0.5
Taxi/Ridehail	1.3	0.8	0.7	0.3	0.5
School Bus	4.6	8	5.4	10.9	3.8
Walk	6.4	5.5	8.7	11.1	8.6
Bike	0.7	1.1	1.1	1.1	1.9
Total	100.0	100.0	100.0	100.0	100.0

Key Findings for Travel Mode for Peak Travel by Race/Ethnicity:

- Higher share of rail transit, bus transit, and taxi/ridehail trips for African Americans; lower share of bike trips.
- Lower share of walk trips for Asians.
- Higher share of drive others trips for Hispanics and lower share of rail transit trips.
- Higher share of auto passengers, school bus, and walk trips for other; lower share of drive alone, drive others, and taxi/ridehail trips for other.
- Higher share of drive alone and bike trips by Whites; lower share of auto passenger, bus transit, and school bus trips.

SUMMARY OF FINDINGS

The RTS data reveal that on all of these key dimensions of travel, travel patterns during peak commute periods differ from off-peak periods.

- For travel mode, persons are more likely to take rail and bus transit, school bus, and bike trips during peak hours. This suggests that public transit, walking, and bicycles play an important role in accommodating peak period travel and reducing congestion on the regional highway network.
- For trip purpose, more people travel to and from work and school during peak hours; for transit, there is a higher share of work and drop off/pick up trips. This finding suggests that most people in the region travel to work and school during typical commute hours and that public transit carries a significant share of peak-hour work trips.
- Trip lengths are generally longer during peak hours, and transit trips are further in distance than other travel modes.
- Trips tend to be longer in duration during peak hours compared with off-peak hours; the trend is similar for transit trips.
- Lower income households are much more likely to take bus transit and taxi/ridehail trips for both peak and off-peak travel. This suggests that lower income households are more likely to be transit dependent and lack access to a personal vehicle.
- For race/ethnicity, Whites and African Americans are more likely to drive alone; African Americans are also more likely to take the bus for both peak and off-peak trips.