2023 AIRPORT GROUND ACCESS TRAVEL TIME STUDY

Findings from Key Metrics

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TPB Technical Committee
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National Capital Region
Transportation Planning Board

Presentation Outline

- About the Project

- Methodology

- Travel Time Index and Planning Time Index Findings

- Route Travel Time Changes

- Savings by Managed Lanes

About the Project

- The Continuous Airport System Planning (CASP) Program provides a process and systematic framework to support the planning, development and operation of airport and airport-serving facilities in the Washington-Baltimore region.

- The CASP Program conducted five studies between 1988 and 2015 on highway travel times from selected activity centers to the region's three commercial airports (BWI, DCA, and IAD).

- These studies employed a probe vehicle to measure speeds and congestion along a subset of routes. In 2017, vehicle probe data obtained from the Center for Advanced Transportation Technology Laboratory at the University of Maryland (CATT Lab) was used as the input to analyze travel routes.

- This study continuously uses the probe data from the University of Maryland's CATT Lab to analyze the key metrics of selected travel routes.

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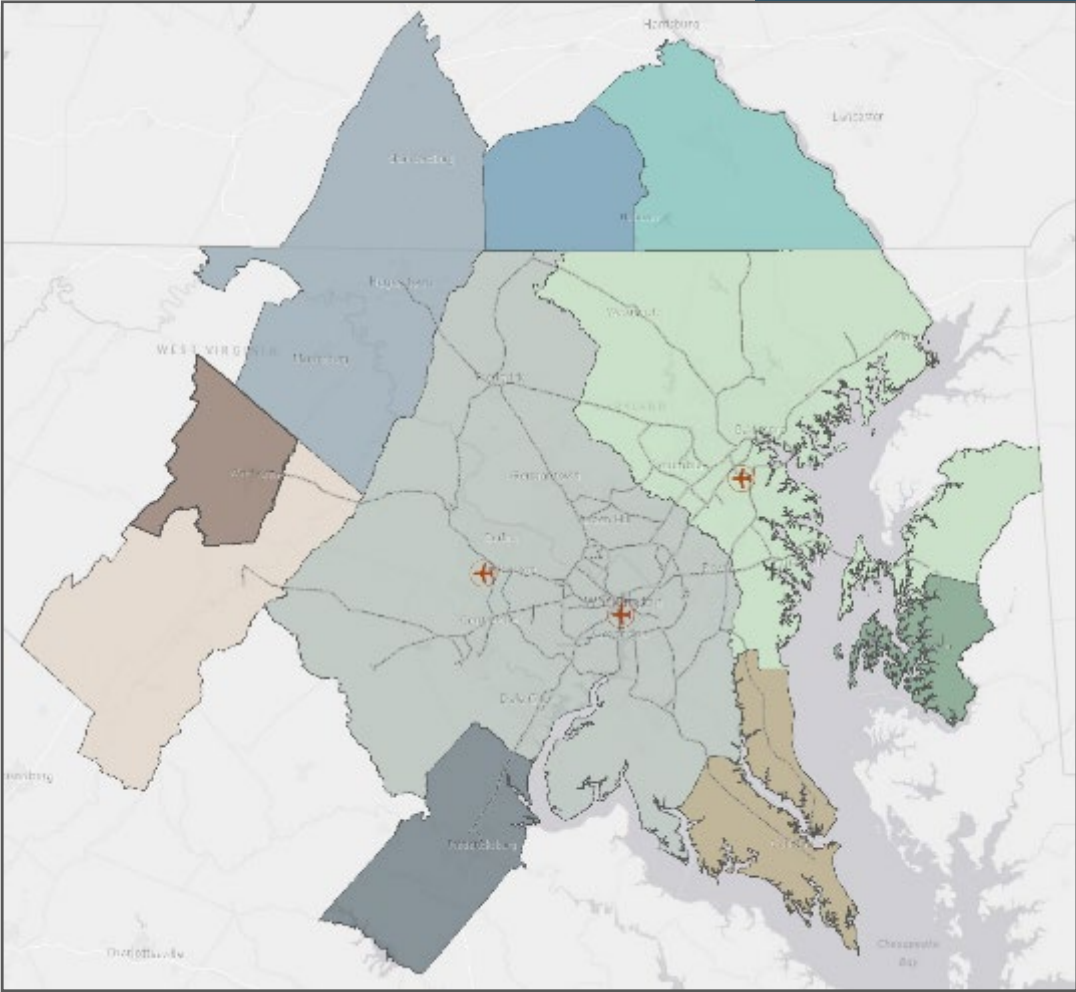
Study Area

- The Washington / Baltimore Air System Planning Region is the primary study area. It includes COG and Baltimore Metropolitan Council (BMC) member cities and counties and some outlying jurisdictions.

- Some travel time "runs" have extended beyond the shaded counties because there are several routes originating from outside the region.

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Metrics

- **Travel Time:** Total time spent on all road segments along a route from the origin to the destination.

- **Travel Time Index:** It is a dimensionless quantity that compares travel conditions in the peak period to travel conditions during free-flow or posted speed limit conditions.
  - *Example: A TTI of 1.20 indicates that a trip that takes 20 minutes in the off-peak period will take 24 minutes in the peak period or 20 percent longer.*

- **Planning Time Index:** It represents the total travel time that should be planned when an adequate buffer time is included.
  - *Example: A planning time index of 1.60 means, for a 15-minute trip in light traffic, the total time that should be planned for the trip is 24 minutes (15 min * 1.60 = 24 min).*

Travel time index
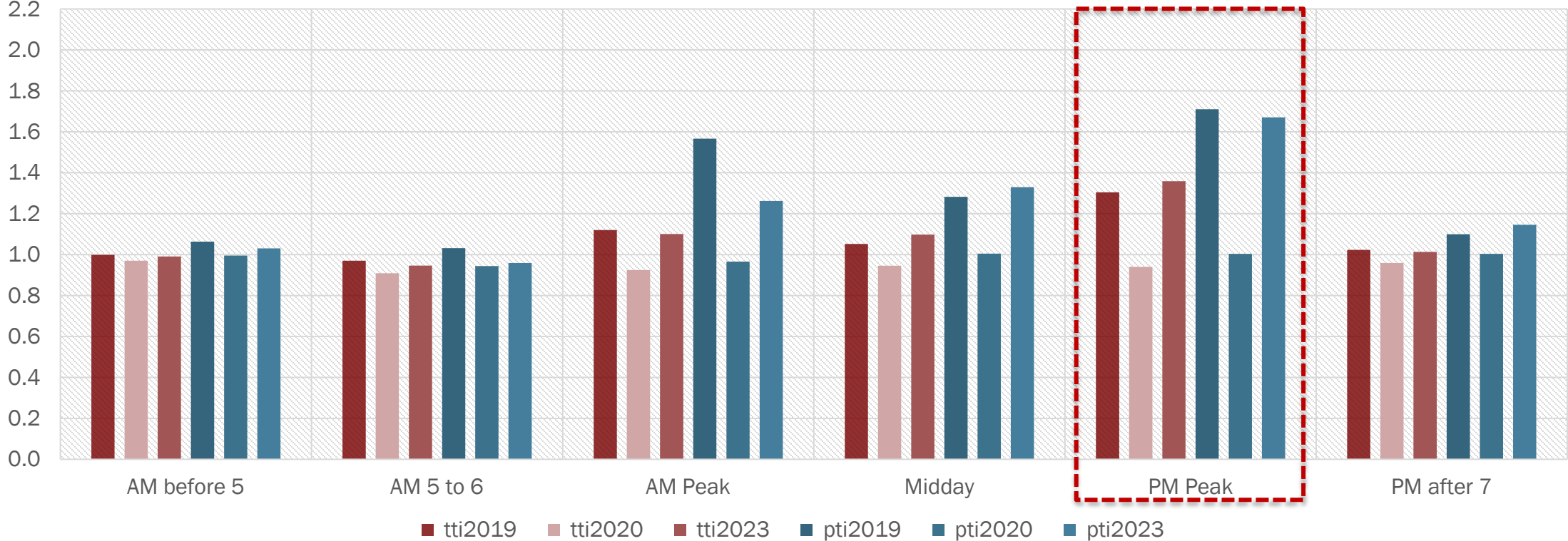
$$\frac{travel\ time}{free\ flow\ travel\ time}$$

Planning time index

$$\frac{95th\ percentile\ travel\ time}{free\ flow\ travel\ time}$$

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Weekday TTI and PTI - BWI

TTI and PTI by TOD

TTI and PTI: highest on weekday afternoons

Weekday TTI and PTI - DCA

TTI and PTI by TOD

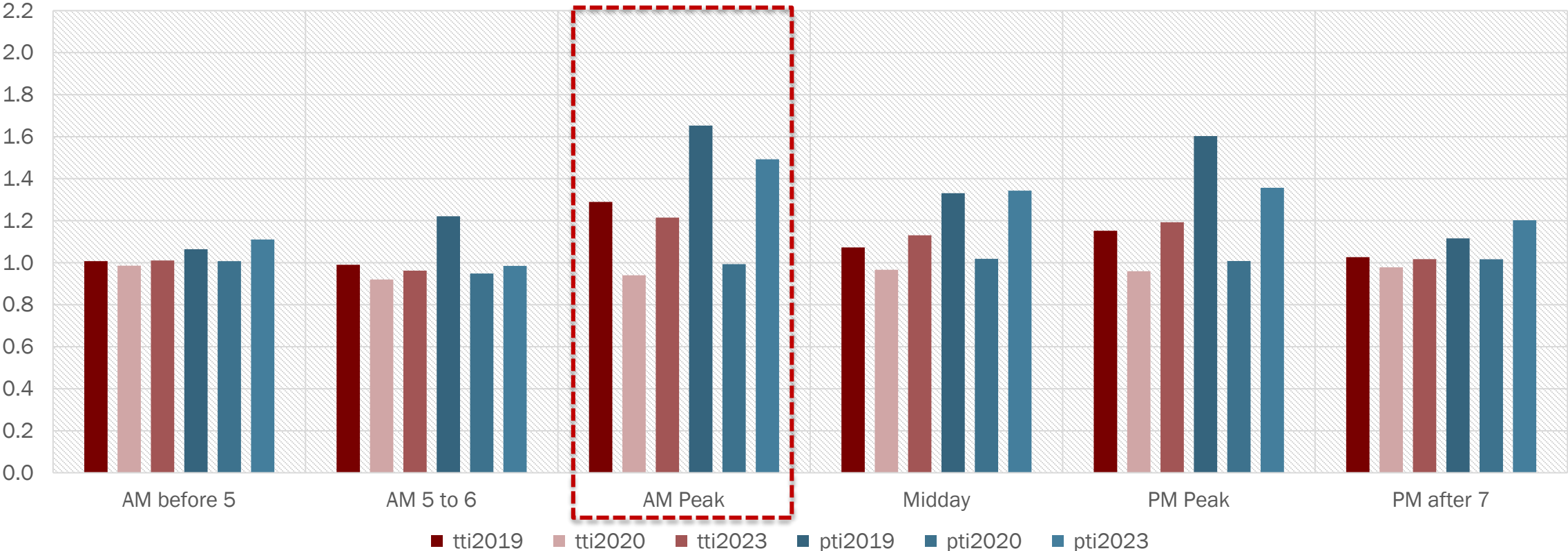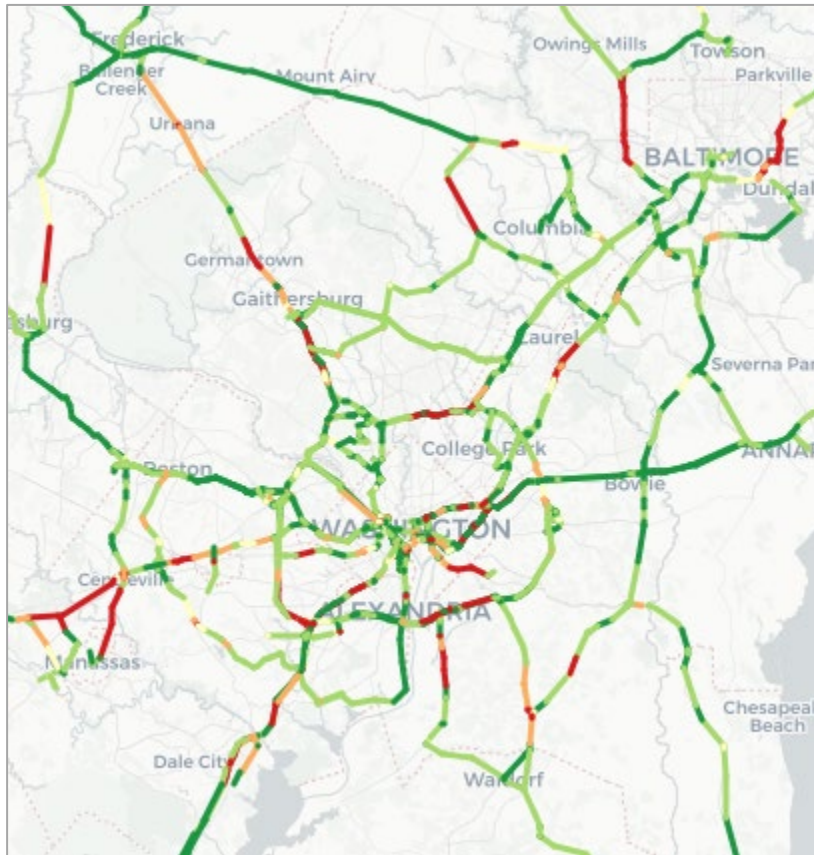Legend: tti2019, tti2020, tti2023, pti2019, pti2020, pti2023

Categories: AM before 5, AM 5 to 6, AM Peak, Midday, PM Peak, PM after 7
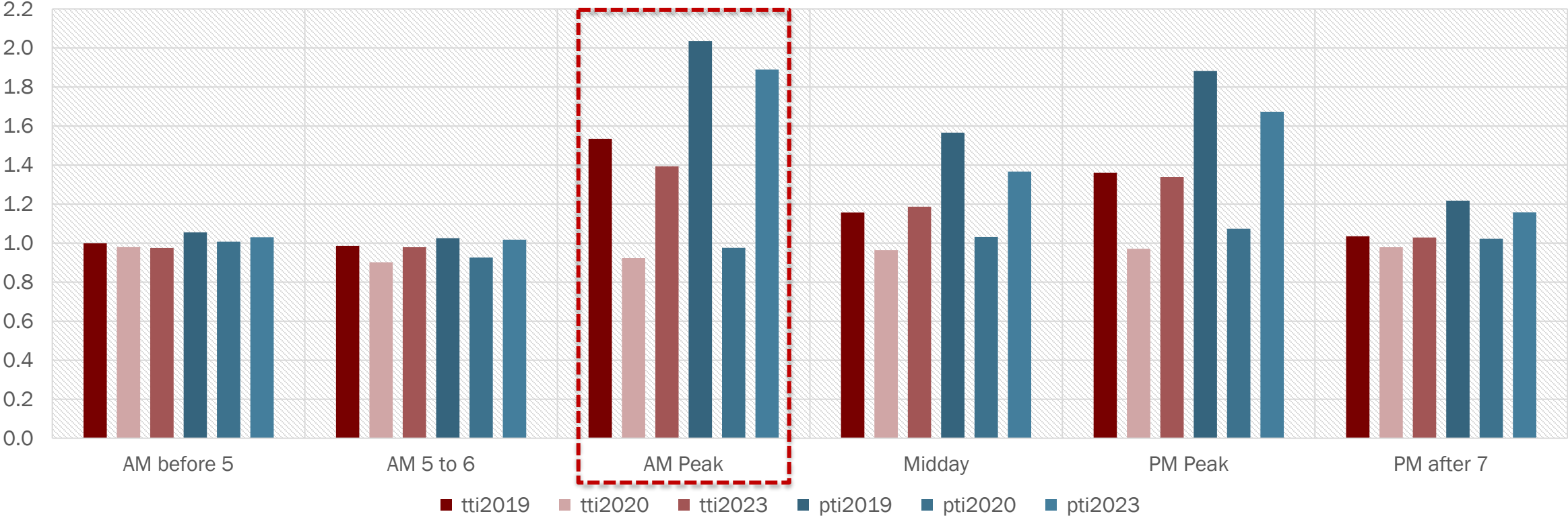
TTI and PTI: highest in AM on weekdays.

Weekday TTI and PTI - IAD

TTI and PTI by TOD

Legend: tti2019, tti2020, tti2023, pti2019, pti2020, pti2023

Categories: AM before 5, AM 5 to 6, AM Peak, Midday, PM Peak, PM after 7
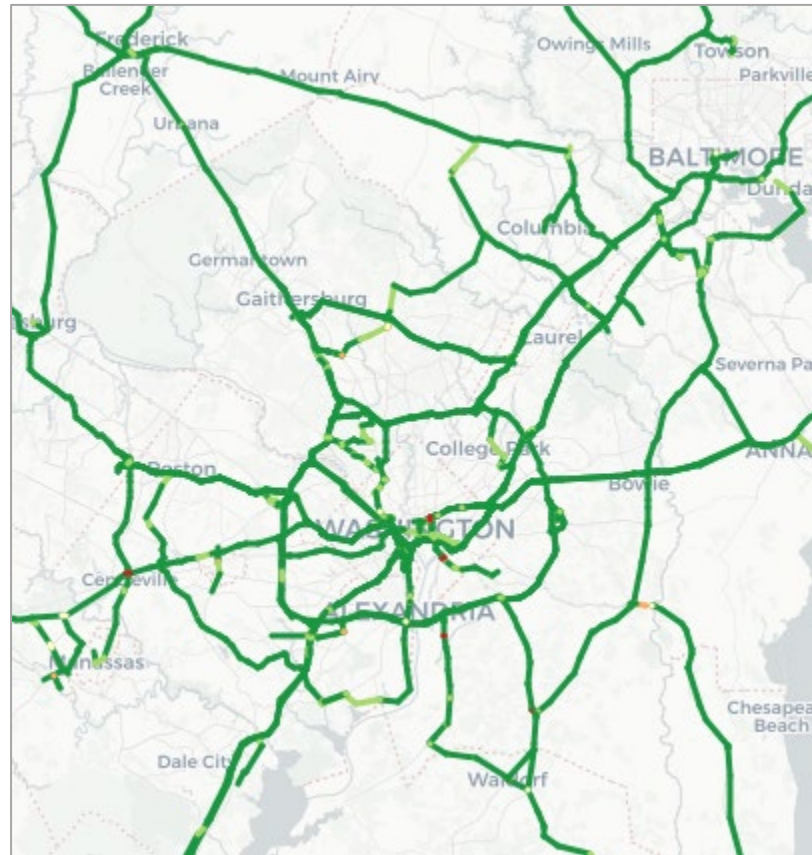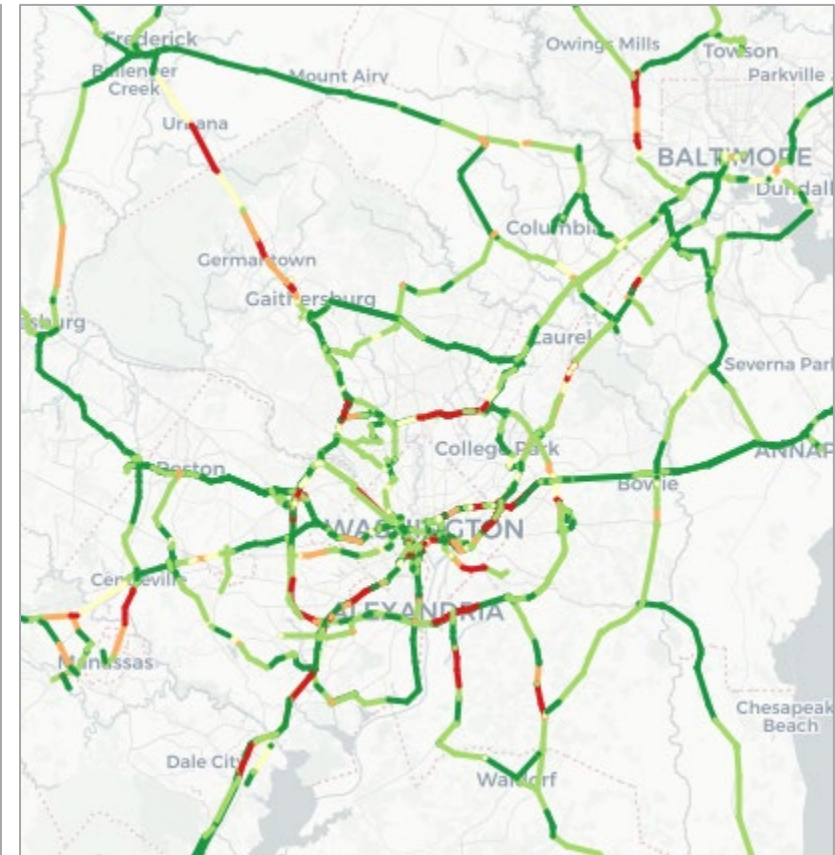
TTI and PTI: highest in AM on weekdays.

Plot of TTI– weekday mornings

2019

2020

2023

Legend
Travel Time Index Values

- 1.000 - 1.001
- 1.002 - 1.299
- 1.300 - 1.499
- 1.500 - 1.999
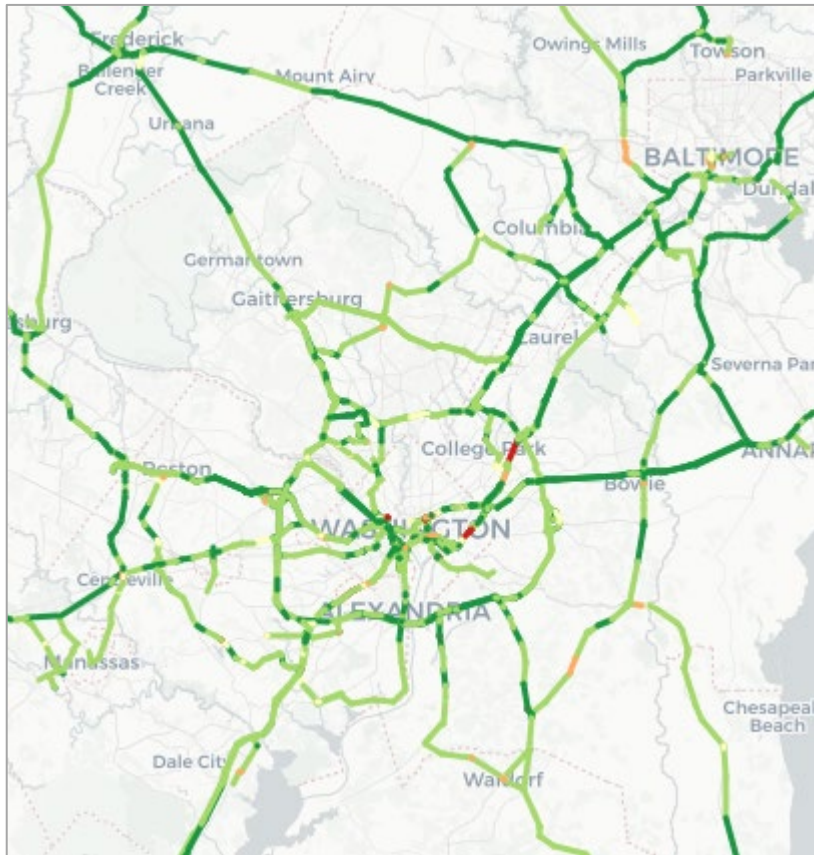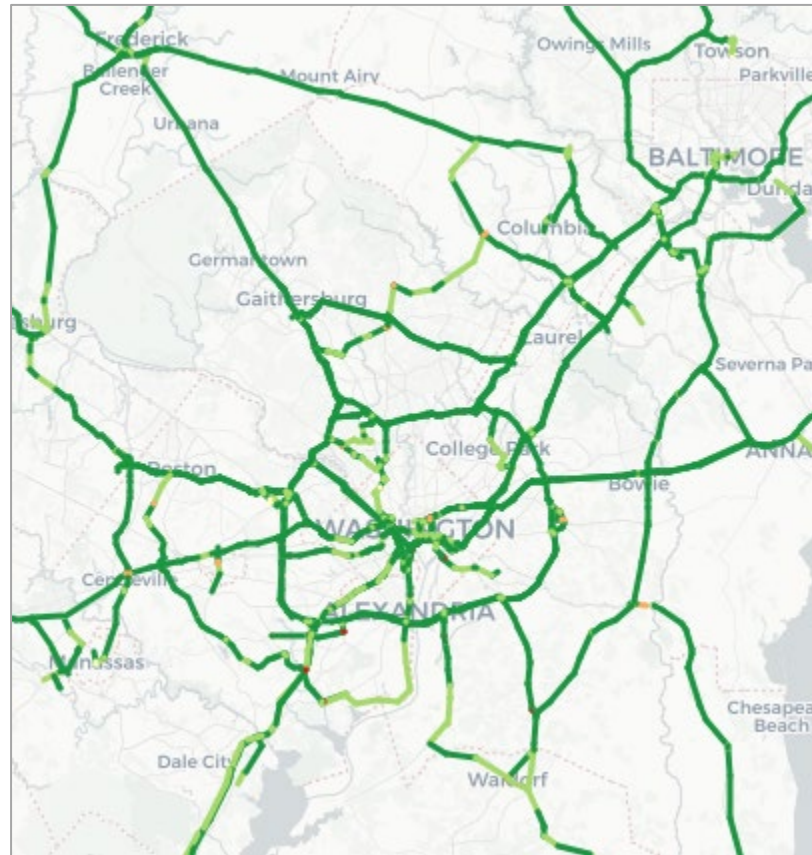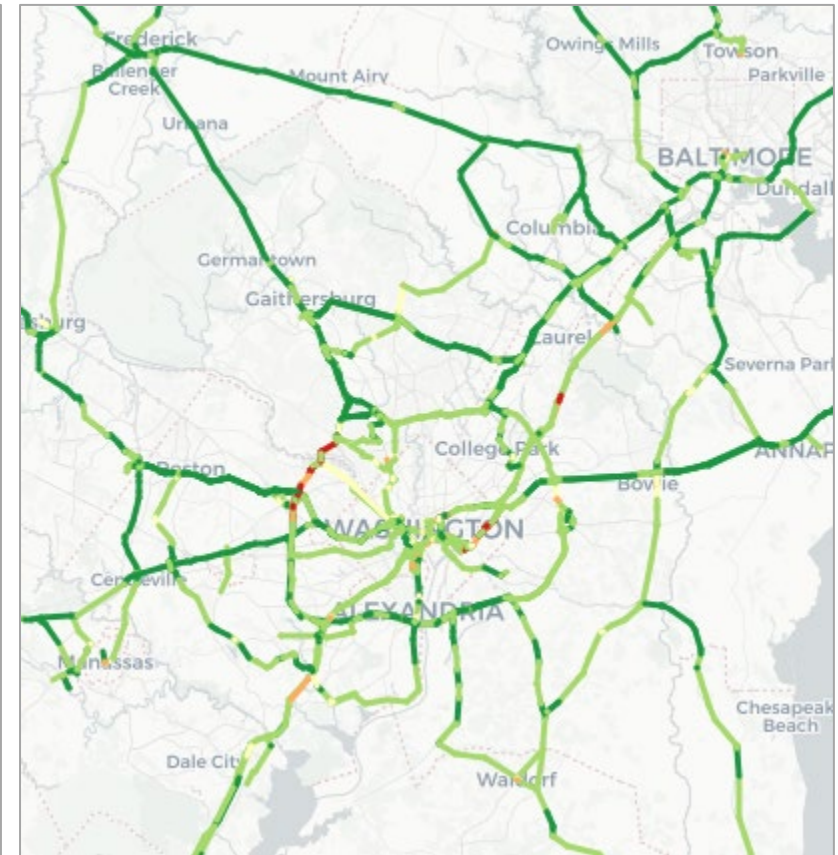- 2.000 - 2.499
- 2.500 - And above

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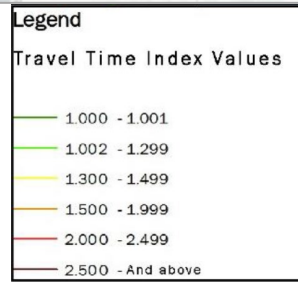
Plot of TTI values– weekday middays

2019

2020

2023

Legend

Travel Time Index Values

— 1.000 - 1.001
— 1.002 - 1.299
— 1.300 - 1.499
— 1.500 - 1.999
— 2.000 - 2.499
— 2.500 - And above
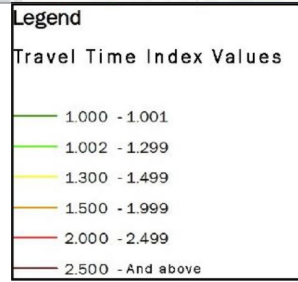
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Plot of TTI values– weekday afternoons

2019

2020

2023

Legend

Travel Time Index Values

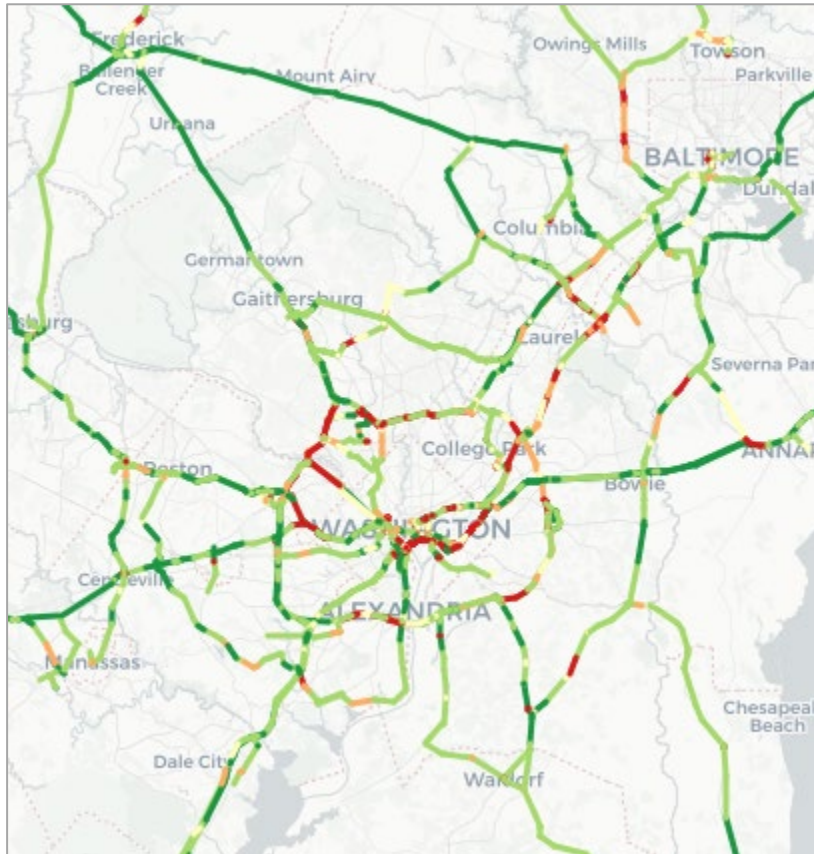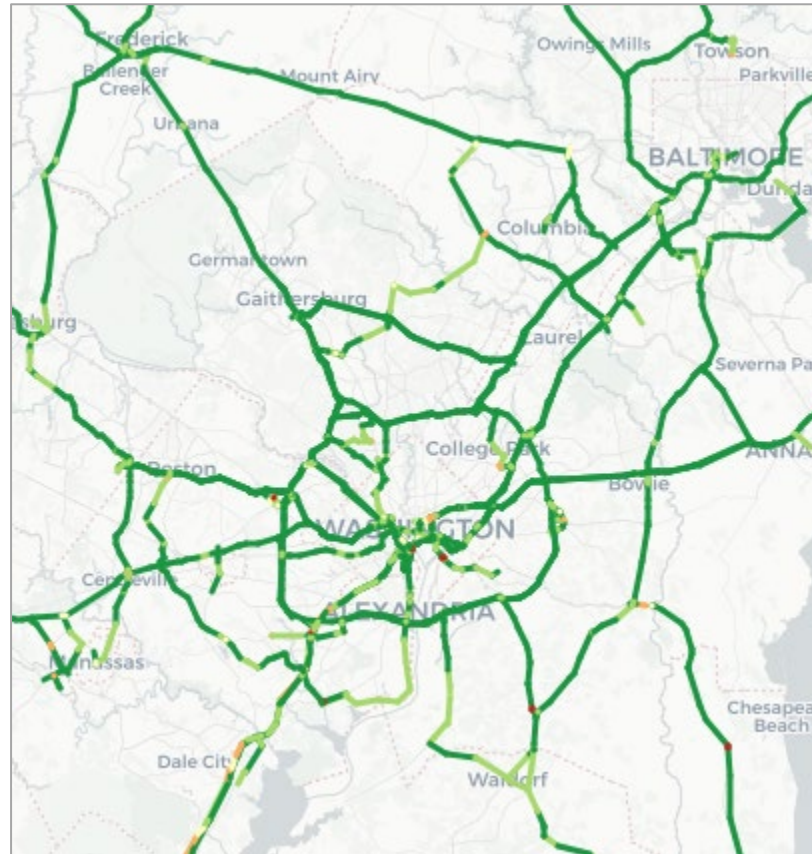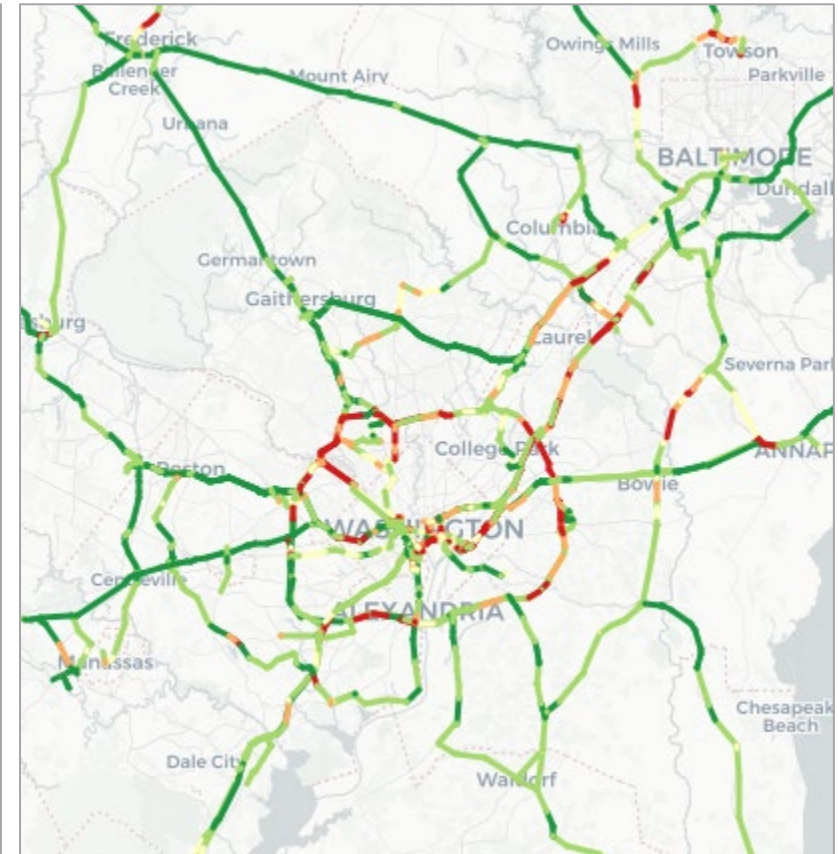|	
――	1.000 - 1.001
――	1.002 - 1.299
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――	2.000 - 2.499
――	2.500 - And above

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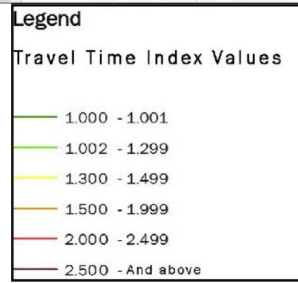
Route Travel Time Change between 2019 and 2023

AM Peak, Travel Time Change by Route
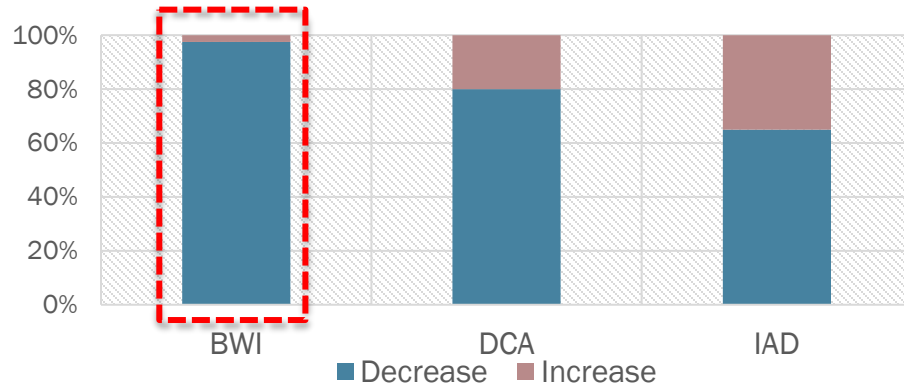
PM Peak, Travel Time Change by Route
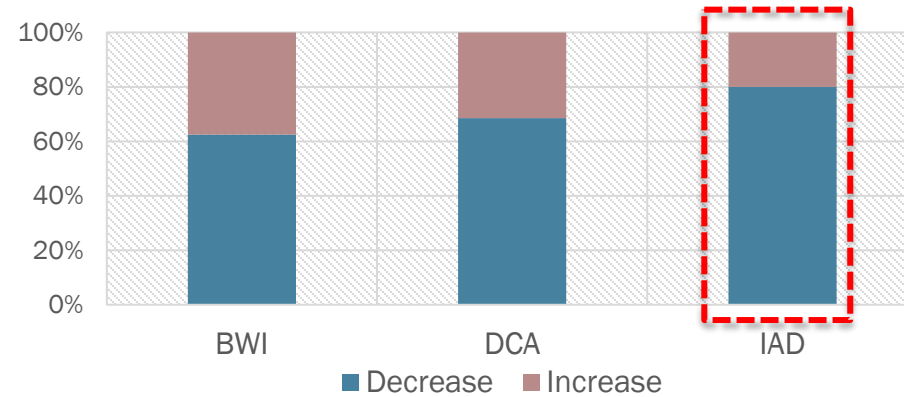
Midday, Travel Time Change by Route
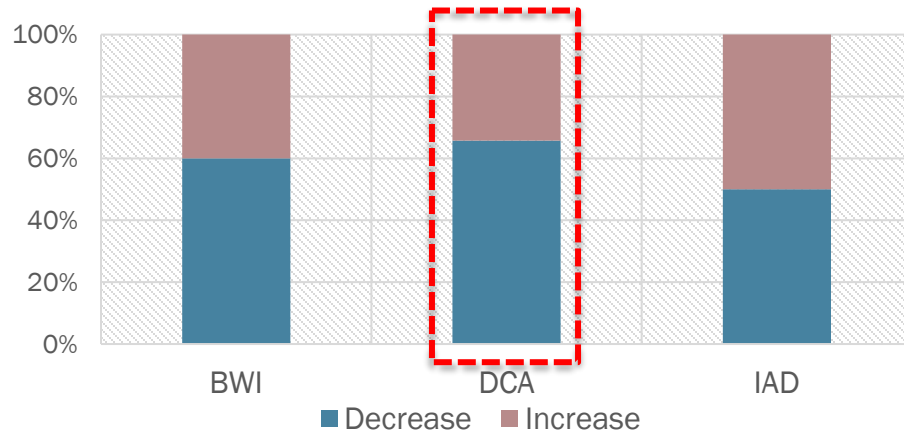
On weekdays:

- During AM peak (6 AM to 9 AM), 98% of the routes to BWI showed decreases in travel time.

- During Midday (9 AM to 3 PM), 66% of the routes to DCA showed decreases in travel time.

- During PM peak (3 PM to 7 PM), 80% of the routes to IAD showed decreases in travel time.

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Managed Lanes

- MD-200 – I-370 to I-95

- 495 Express Lanes (I-495 from Springfield to McLean)

- 95 and 395 Express Lanes conversion of 95/395 HOV lanes between Stafford and Pentagon City

- I-95 Express Toll Lanes (Baltimore County and Baltimore City)

Managed Lanes Savings, 2023

Gaithersburg to BWI saves time with MD-200
- AM: 10 minutes
- Midday: 7 minutes
- PM: 10 minutes

Comparing:
- I-370 to MD-200
- I-270 to I-495

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Managed Lanes Savings, 2023

Fredericksburg to DCA saves time
- AM: 23 minutes
- Midday: 7 minutes

Comparing:
- 95 and 395 Express (HOV/Toll lanes)
- I-95 and I-395 conventional lanes

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Managed Lanes Savings, 2023

Springfield to IAD saves time
- AM: 7 minutes
- Midday: 4 minutes
- PM: 5 minutes

Comparing:
- 495 Express (HOV/Toll lanes)
- I-495 conventional lanes

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Key Findings

- TTI and PTI values sharply decreased in 2020 and rebounded in 2023, especially during midweek.

- **AM** TTI values in 2023 increased from 2020 but still lower than 2019. However, **PM** TTI values were larger in 2023 compared with 2019, indicating worsened traffic conditions.

- The highest TTI/PTI values for travel observed on weekdays were:

  o **PM** peak for BWI

  o **AM** peak for DCA and IAD

- For weekdays, BWI showed highest decreases in travel time during **AM** peak, DCA showed highest decreases during **Midday**, and IAD showed highest decreases during **PM** peak.

- Manage lanes saved noticeable travel time, ranging from 4 to 23 minutes.

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Acknowledgements

- **DTP Contributors**

  - Patrick Zilliacus

  - Kenneth Joh

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