GROUND ACCESS TRAVEL TIME STUDY STATUS

Detail Findings from Key Metrics

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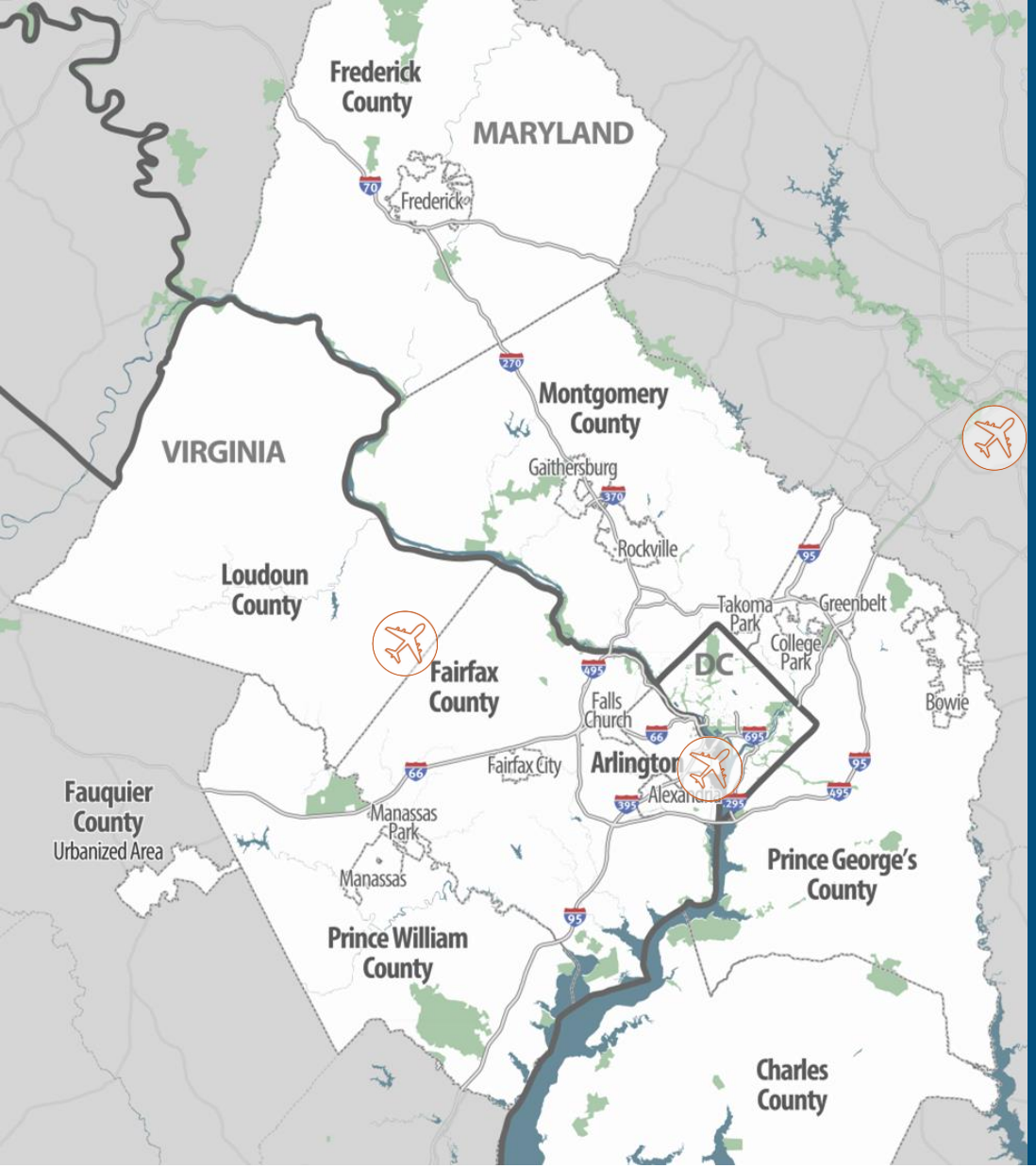
Aviation Technical Subcommittee
January 25, 2024



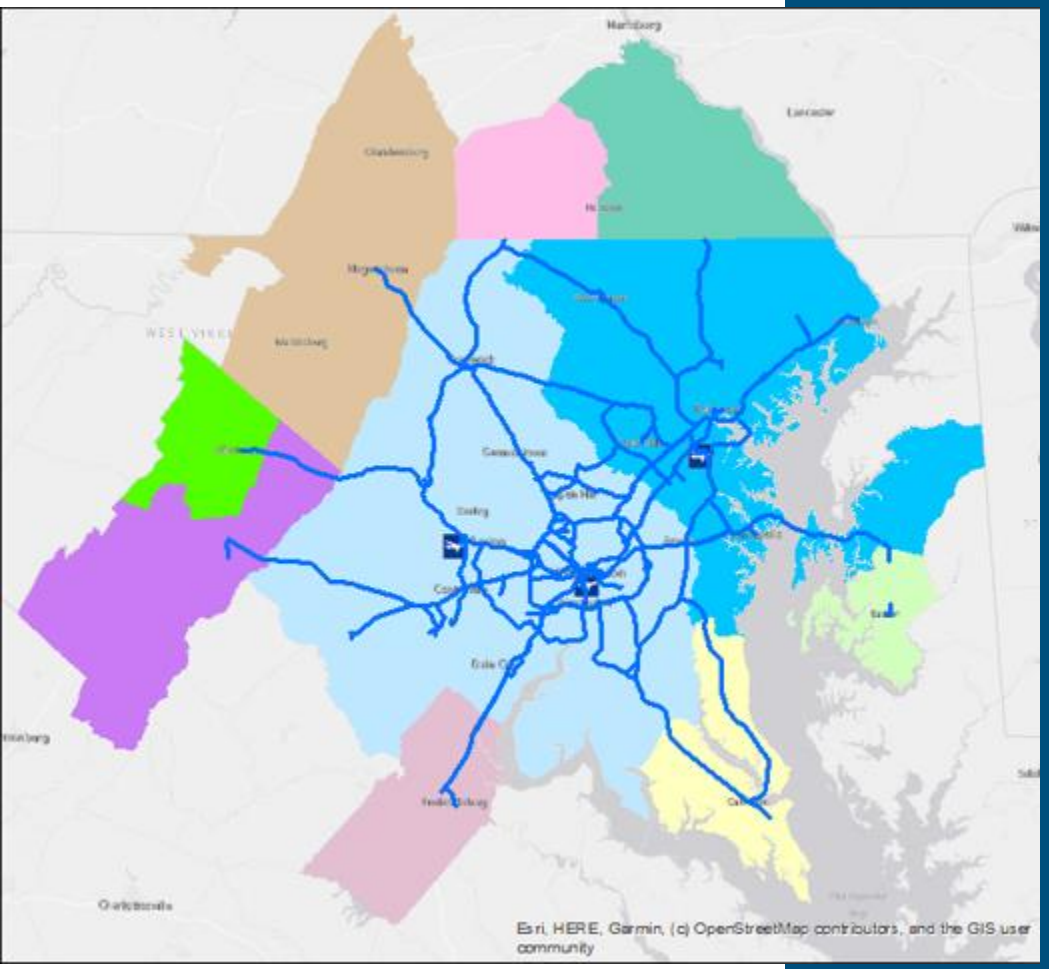
Presentation Outline

- About the Project
- Methodology
- Demographics
- Travel Time Index and Planning Time Index Findings
- Route Travel Time Changes
- Savings by Managed Lanes

About the Project

- The 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 CATT Lab to analyze the key metrics of selected travel routes.

Methodology (Study Area)



- Primary region included is shaded in blue (Washington / Baltimore Air System Planning Region – includes MWCOG and Baltimore Metropolitan Council (BMC) member cities and counties and some outlying jurisdictions)
- Some travel time “runs” have extended beyond the shaded counties

Methodology (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.*

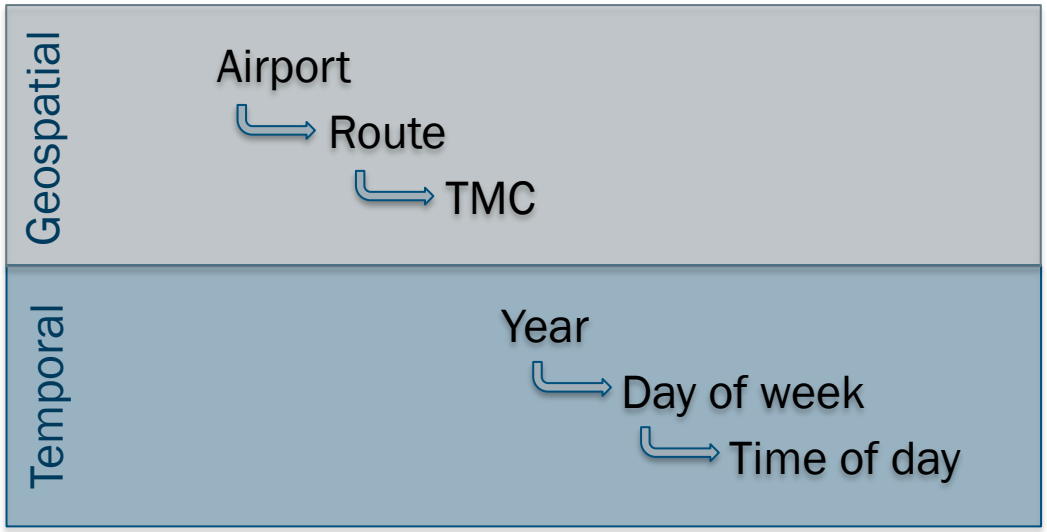
- Planning Time Index: It represents the total travel time that should be planned when an adequate buffer time is included.
  - *Example: a planning time index of 1.60 means, for a 15-minute trip in light traffic, the total time that should be planned for the trip is 24 minutes (15 min * 1.60 = 24 min).*

Methodology (cont'd)

- Analyzing data from three **timeframes**:
  - Spring 2019 Base Period
  - Spring 2020 Pandemic (peak of stay-at-home orders)
  - Spring 2023 Latest Conditions (after opening of Silver Line Phase 2)
- Summarizing data by type of **day-of-week** (dow):
  - Weekday (Tuesday, Wednesday, and Thursday),
  - Weekend (Friday, Saturday, Sunday, and Monday)
  - Holiday (Easter)
- For each dow-type, aggregating data into one of six **time periods**:
  - 12 Midnight to 5 A.M. (AM before 5)
  - 5 A.M. to 6 A.M. (AM 5 to 6)
  - 6 A.M. to 9 A.M. (AM Peak)
  - 9 A.M. to 3 P.M. (Midday)
  - 3 P.M. to 7 P.M. (PM Peak)
  - 7 P.M. to 11:59 P.M. (PM after 7)

Methodology

Dimensions:



Metrics:

- ✓Travel time
- ✓TTI
- ✓PTI

Travel time

Total seconds spent on every TMCs of routes

Travel time index

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

Planning time index

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

Demographic changes

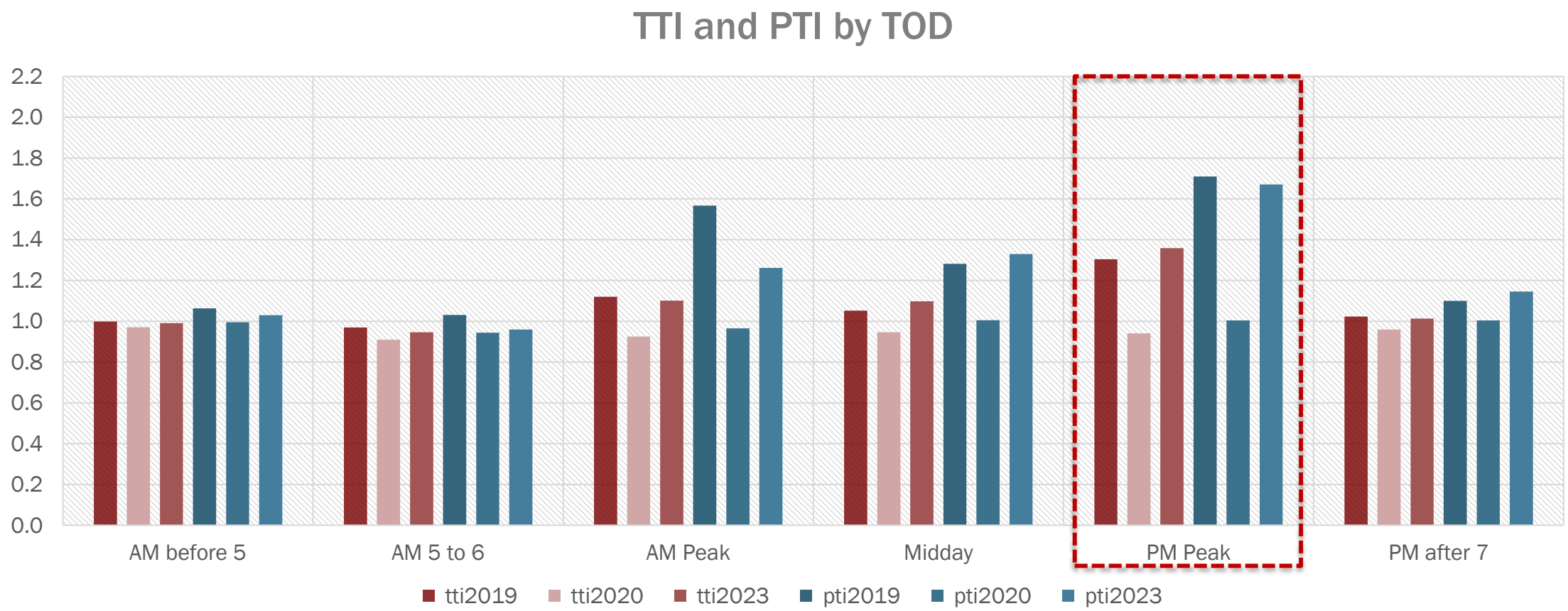
All Cities and Counties	2019 Estimated Population	2022 Estimated Population	Changes in Estimate Population (2020–2019)	Changes in Estimate Population (2022–2019)	2019 Estimated Nonfarm Employment (NFE)	2022 Estimated Nonfarm Employment (NFE)	Changes in Estimate NFE (2020-2019)	Changes in Estimate NFE (2022–2019)
MWCOG/NCRTPB cities and counties (DC, MD and VA, includes all of Fauquier County, VA)	5,685,000	5,749,000	75,000	64,000	3,777,000	3,704,000	-332,000	-73,000
BMC/BRTB Cities and Counties (MD)	2,800,000	2,836,000	42,000	36,000	1,346,000	1,311,000	-114,000	-36,000
All other counties (MD, VA, PA, WV)	1,836,000	1,903,000	30,000	67,000	677,000	674,000	-46,000	-3,000
TOTALS	10,320,000	10,487,000	148,000	167,000	5,800,000	5,688,000	-492,000	-112,000

Data sources:

- Population Estimates: Annual Estimates of the Resident Population – 2010-2019, 2020-2022 (U.S. Census Bureau, Population Division)
- Employment Data: Local Area Unemployment Statistics (Bureau of Labor Statistics)

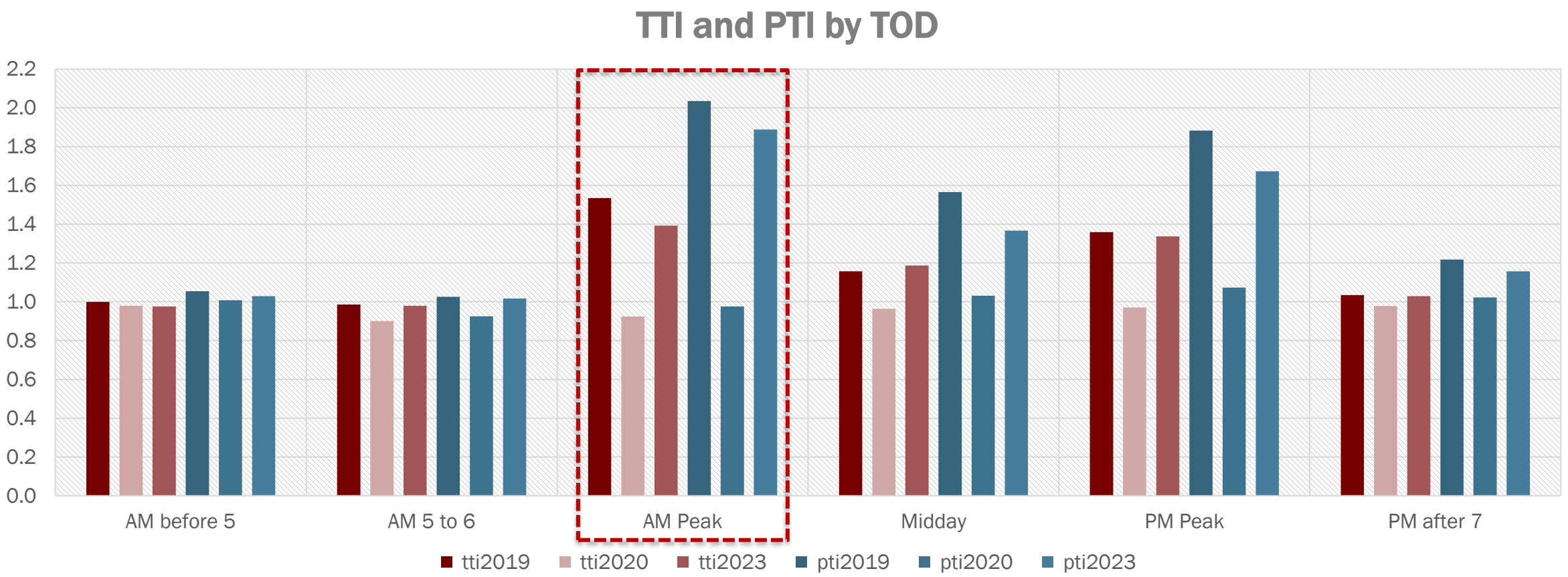
Notes: Numbers are rounded to the nearest thousands.

Weekday TTI and PTI - BWI



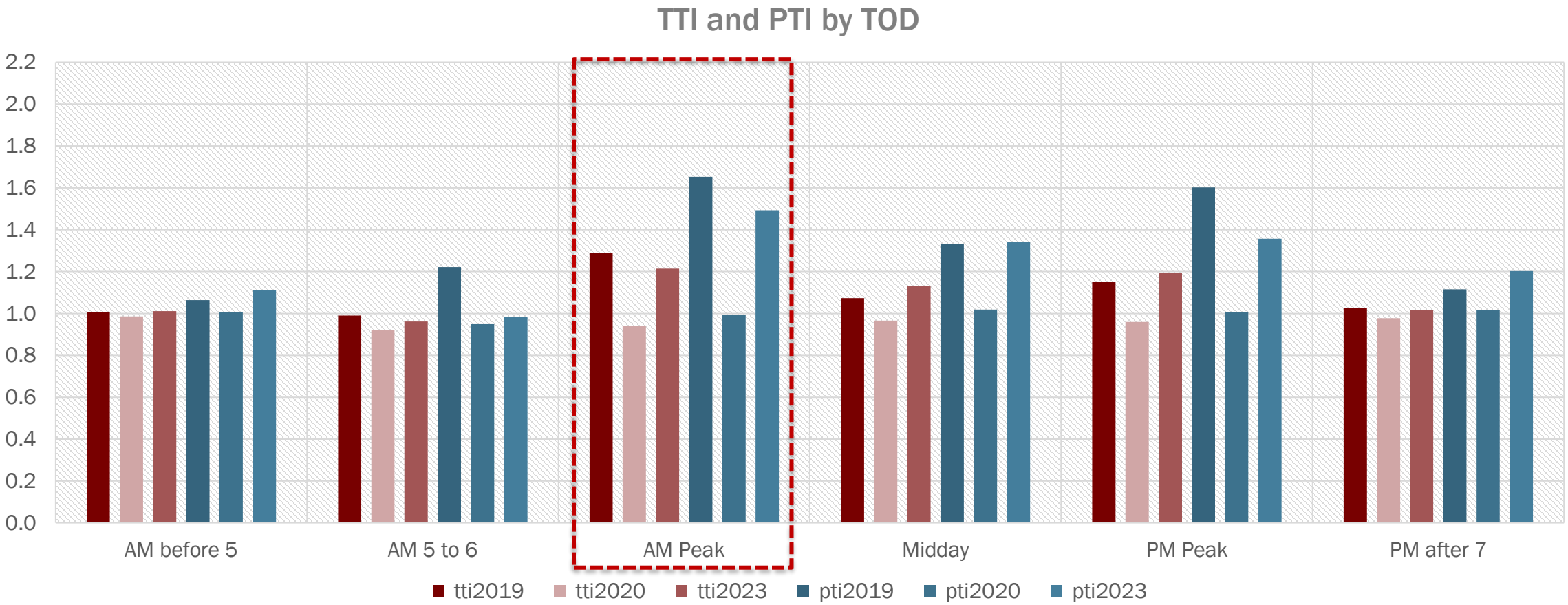
TTI and PTI: highest on weekday afternoons

Weekday TTI and PTI - DCA



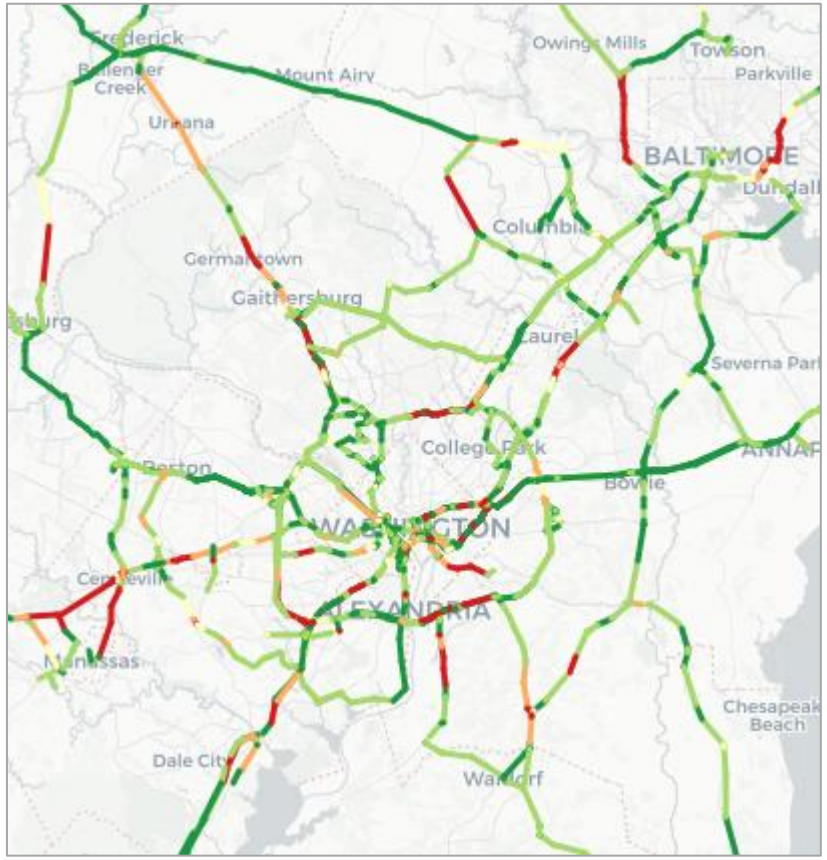
TTI and PTI: highest in AM on weekdays.

Weekday TTI and PTI - IAD

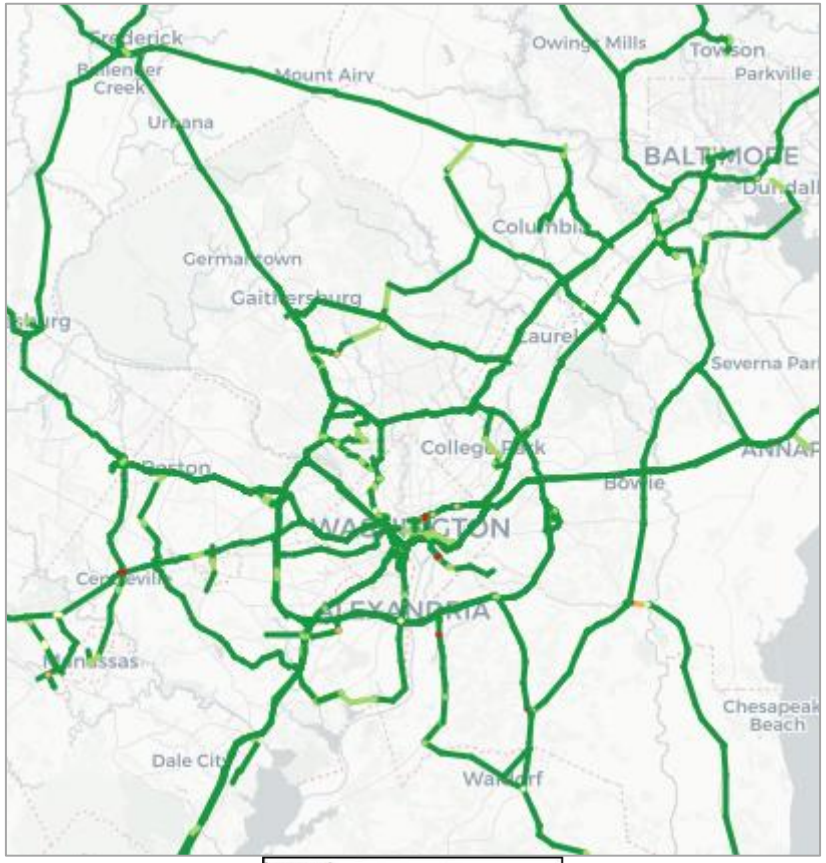


TTI and PTI: highest in AM on weekdays.

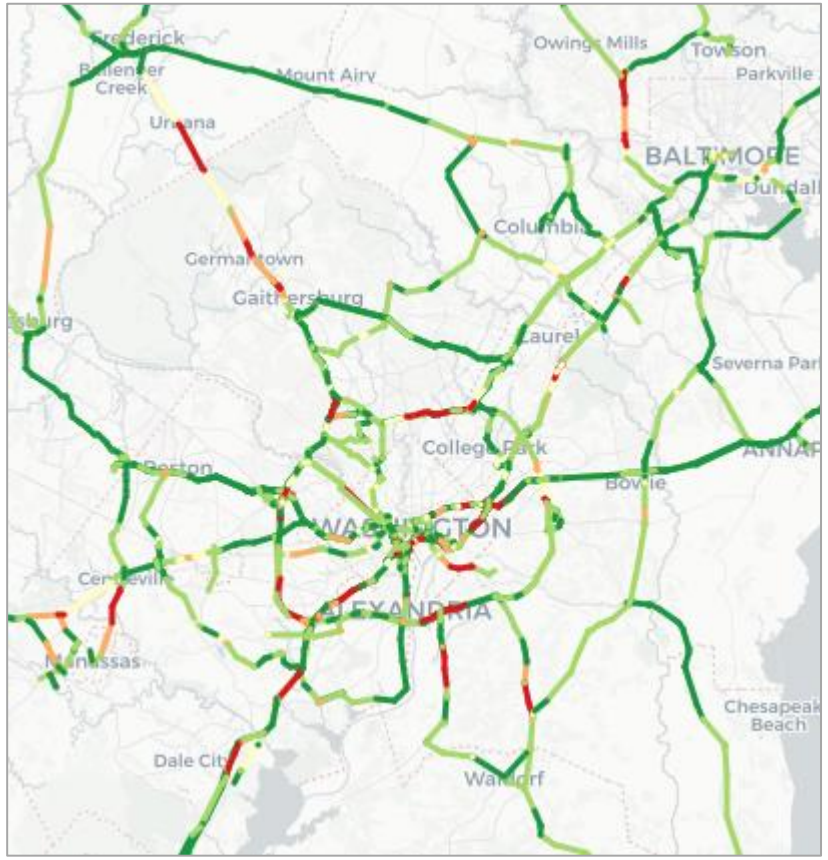
Plot of TTI– weekday mornings



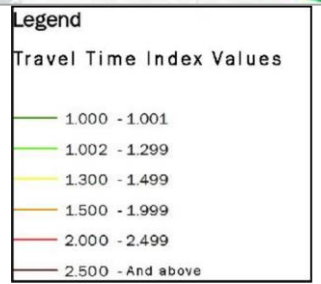
2019



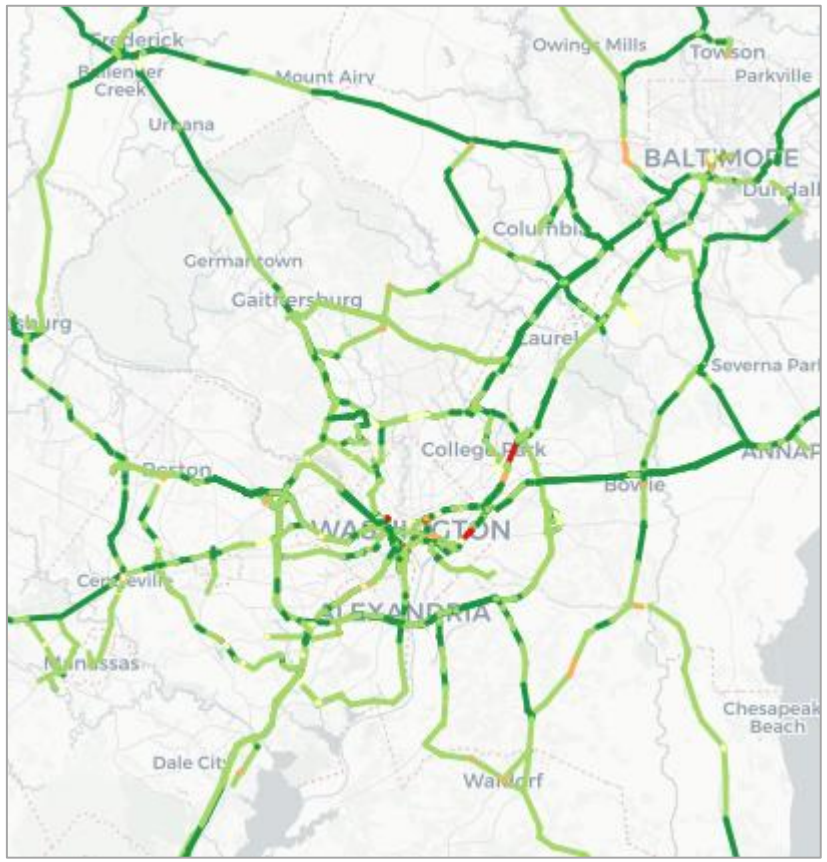
2020



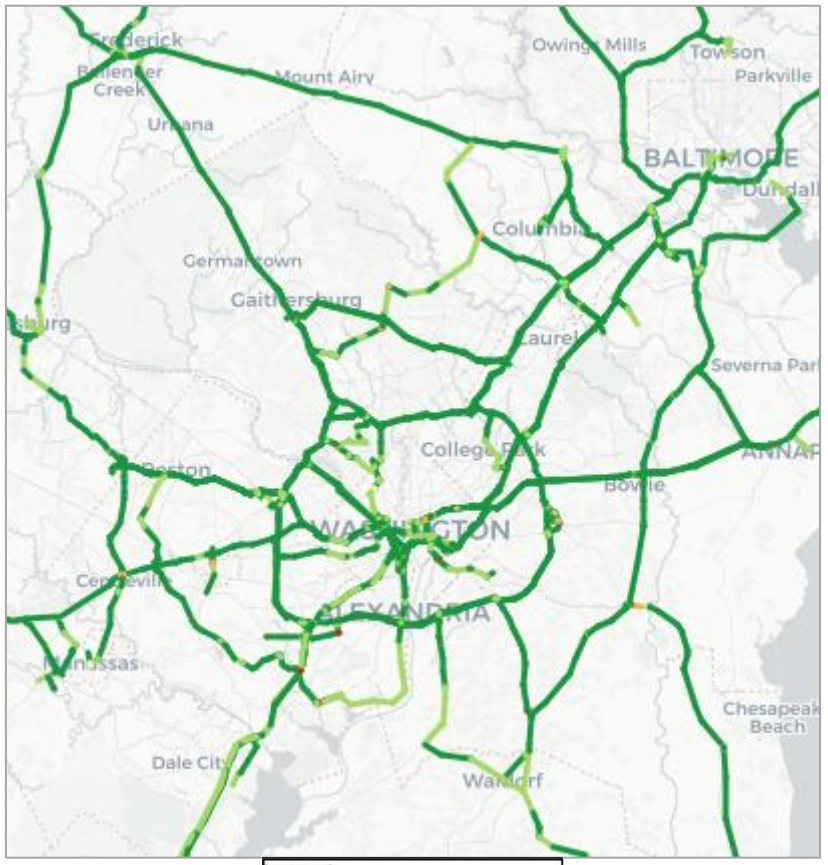
2023



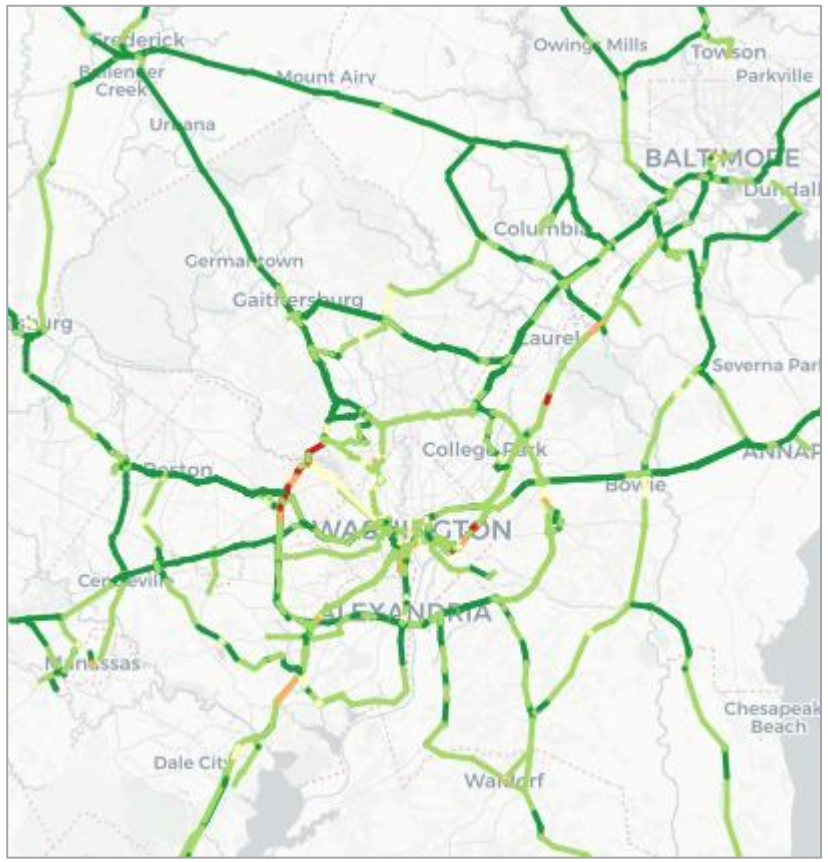
Plot of TTI values– weekday middays



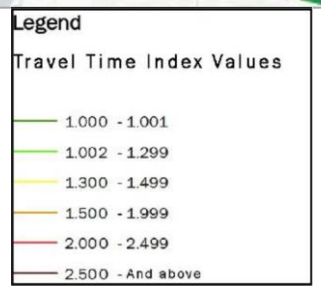
2019



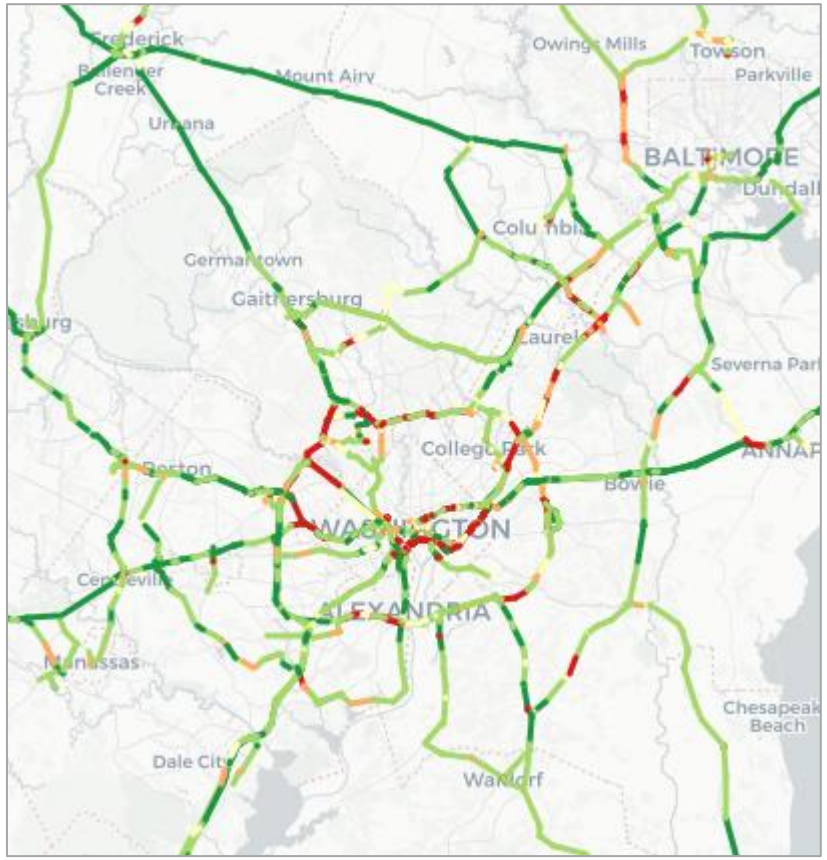
2020



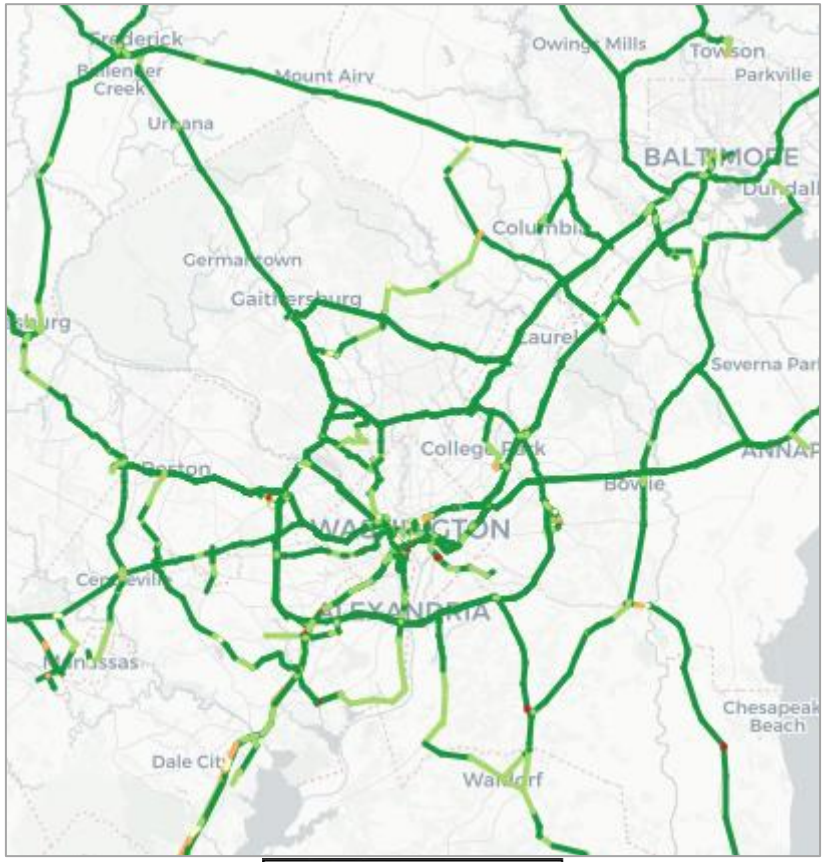
2023



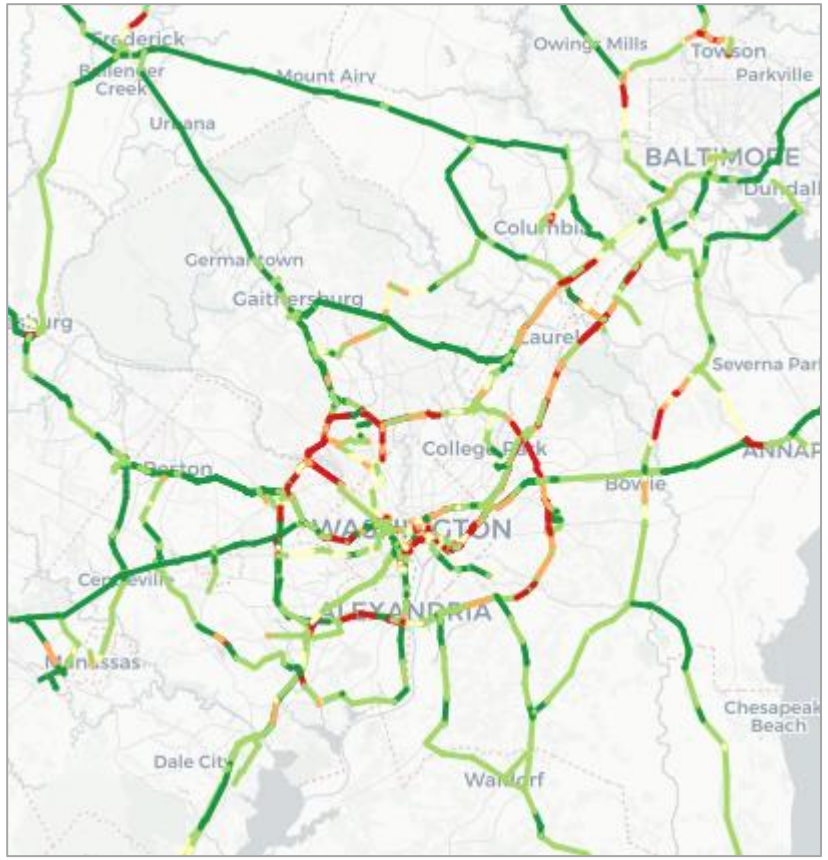
Plot of TTI values– weekday afternoons



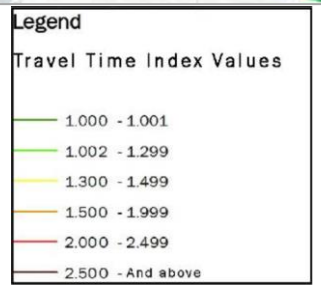
2019



2020



2023



Observations of TTI Changes from 2019

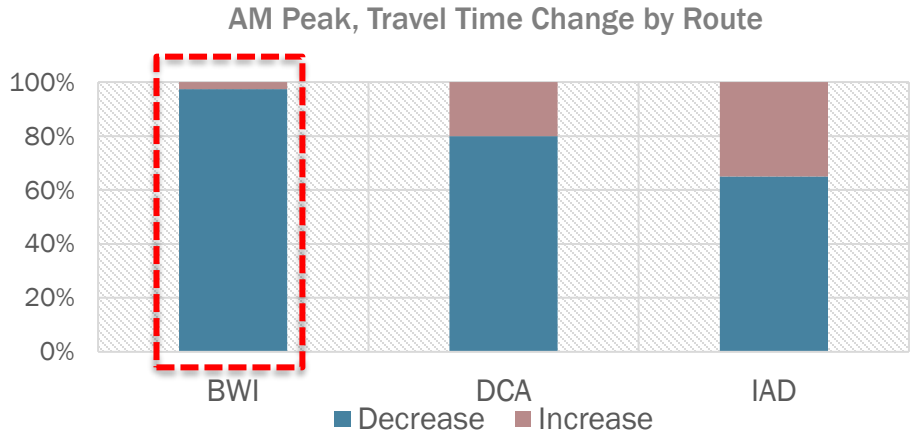
- Among all the route and time period pairs, 98.3% showed decreases in TTI from 2019.
- Only two routes to DCA and IAD showed increases of over 5% in TTI. Both cases happened on the 2020 Easter holiday.
- No routes to BWI showed any increase in TTI in 2020.

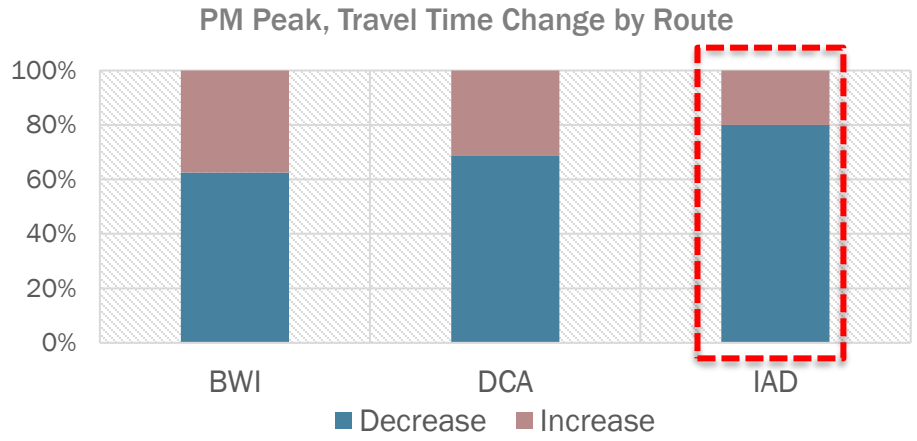
2020

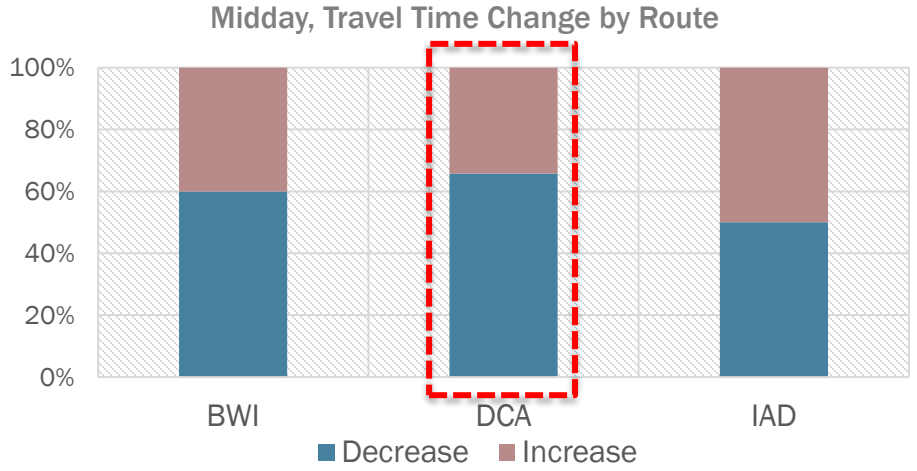
- Compared to the spring of 2019, about 46% of all routes and time periods showed increases in 2023 and 54% of them showed decreases in TTI.
- For each airport:
  BWI showed 43% increase and 57% decrease
  DCA showed 52% increase and 48% decrease
  IAD showed 45% increase and 55% decrease

2023

Route Travel Time Change between 2019 and 2023







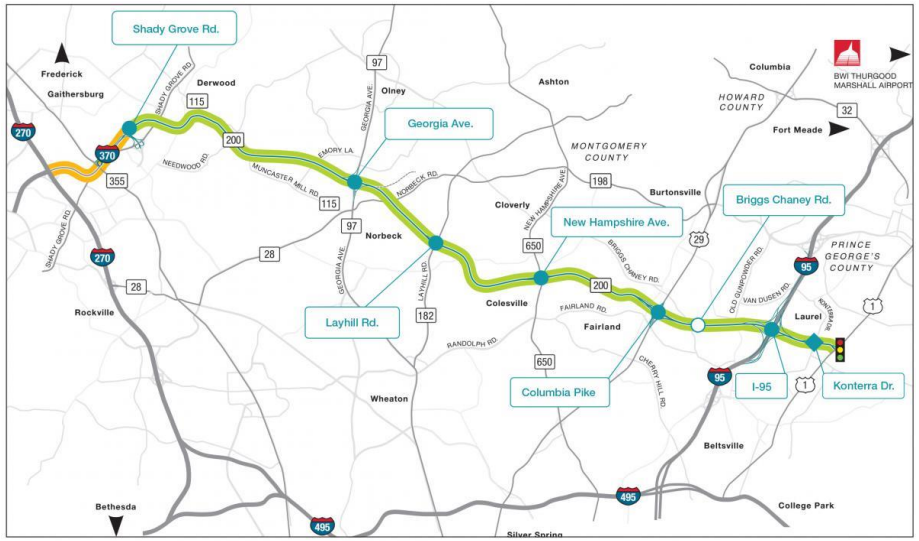
<u>On weekdays:</u>

- 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.

Managed Lanes

- MD-200 – I-370 to I-95 opened November 2011
- 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



Comparing:

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

Managed Lanes Savings, 2023

Comparing:

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

Managed Lanes Savings, 2023

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

Recap of 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:
  - **PM** peak for BWI
  - **AM** peak for DCA and IAD
- During the pandemic, among route-time of day pairs:
  - 98% showed TTI decrease in BWI
  - Almost 100% showed TTI decrease in 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.

Conclusions and Insights

- The impact of regional transportation improvement projects should be carefully evaluated as population and employment changes may also impact congestion levels and travel times.
- Post-pandemic commute patterns reflect a **shift in the PM peak to earlier** in the workday.
- Transportation demand management measures such as **contraflow lanes** should be considered for routes with high congestion levels instead of capacity expansion.
- Since different airports experience the highest travel times at different periods, encouraging the use of **alternative travel modes** during these periods may be beneficial to air passengers.
- Managed lanes may be effective in improving traffic conditions; however, **improving public transit** and non-auto options may offer a longer-term solution to addressing regional roadway congestion.

Next Steps

- Incorporate transit ridership comparison among the three years
- Finish compiling draft report
- Internal review of draft report
- Share draft report with the Aviation Technical Subcommittee for comments
- Make revisions according to comments received from the Subcommittee

Acknowledgement

- **DTP Contributors**
  - Patrick Zilliacus
  - Kenneth Joh
  - Olga Perez Pelaez
  - Timothy Canan

Questions/Comments?

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