2023 REGIONAL AIR PASSENGER SURVEY GEOGRAPHIC FINDINGS

Summary of Key Findings

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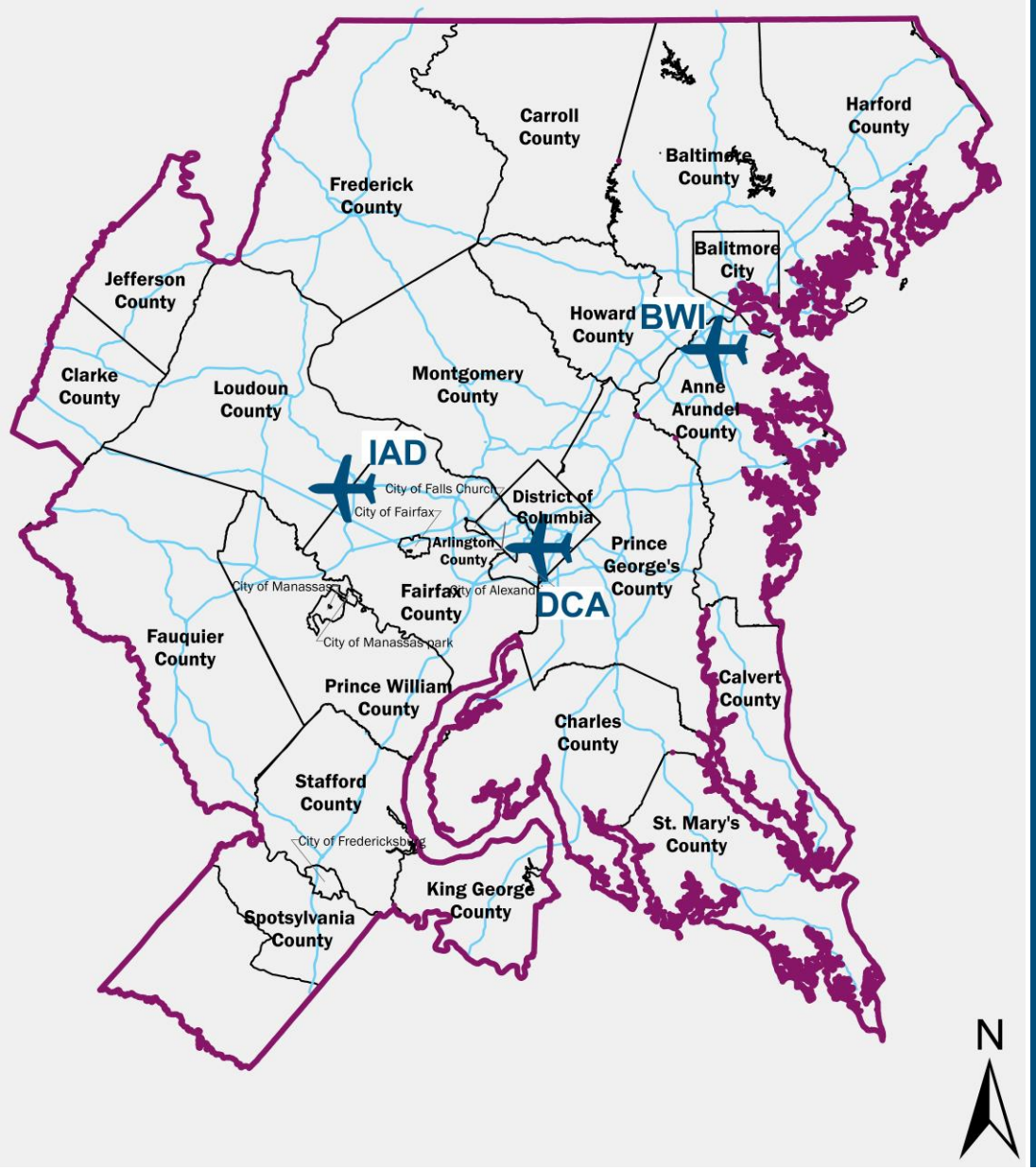
Aviation Technical Subcommittee
January 23, 2025



Presentation Outline

- Introduction/Overview
- Data Collection Summary
- Passenger Characteristics
- Ground Access
- Analysis by Subregional Cores
- Key Takeaways
- Next Steps

Introduction/Overview

- The 2023 Washington-Baltimore Regional Air Passenger Survey (APS) was conducted at Dulles International Airport (IAD), Reagan National Airport (DCA), and Baltimore/Washington International Thurgood Marshall Airport (BWI), under the oversight of the TPB Aviation Technical Subcommittee.
- The APS General Findings Report published in October 2024 summarizes findings from the weighted data collected from the survey, focusing on air passenger characteristics, ground access, and preferences and behavior.
- The forthcoming APS Geographic Findings Report summarizes weighted survey data based on geographic distribution, including airport use, trip purpose, origin activity, and mode of access.
- This presentation highlights key findings drawn from the Geographic Findings Report.

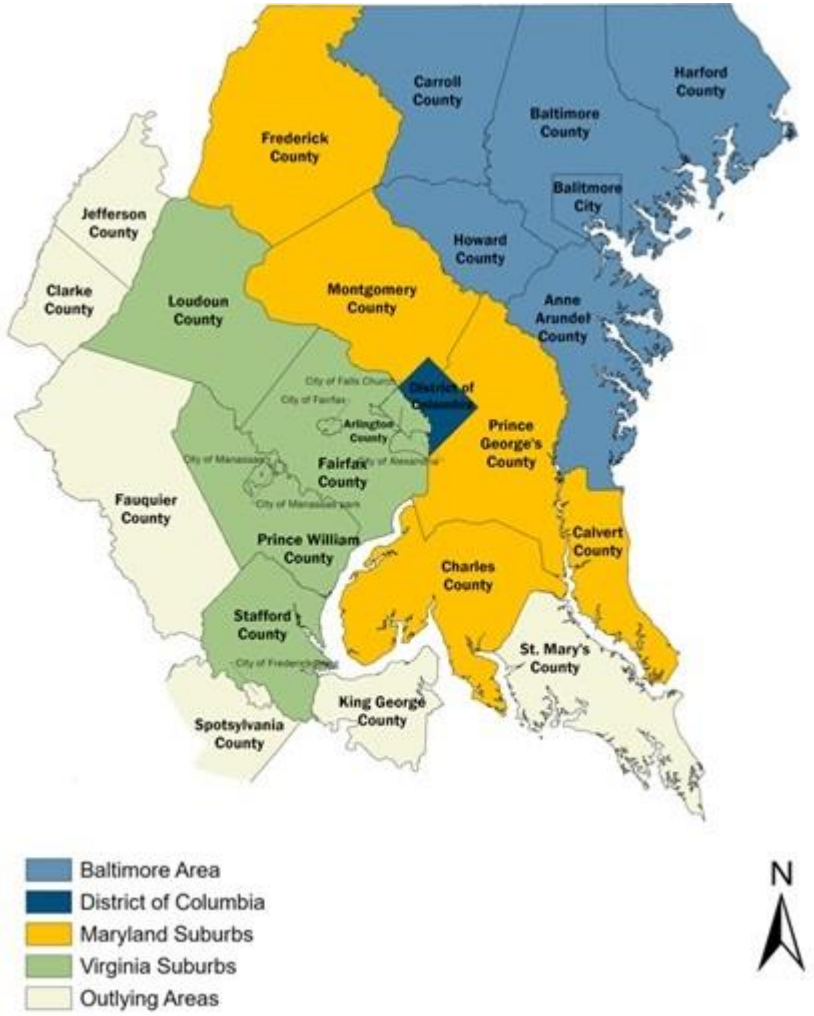
Data Collection Summary

- A total of 9,599 valid survey responses were collected, with participants providing information about the approximate location of their trip origin.
- Among these responses, 3,668 responses included geolocation data that were required for analysis.
- The 3,668 responses were weighted and factored to estimate the annual enplanement figures for the three airports (BWI, DCA, IAD).

Geocoding		BWI	DCA	IAD	REGION
Within Air System Planning Region (Internal)	Number (In 1000's)	10,808	12,271	10,759	33,837
	Percent	83%	96%	87%	89%
Outside Air System Planning Region (External)	Number (In 1000's)	2,291	465	1,636	4,392
	Percent	17%	4%	13%	11%
TOTAL	Number (In 1000's)	13,099	12,735	12,395	38,229
	Percent	100%	100%	100%	100%

Regional Districts

- Airport trip originations are aggregated by Aviation Analysis Zones (AAZ's). There are a total of 161 zones in the Washington/Baltimore Air Systems Planning Region.
- The AAZ's are further grouped into regional districts:
  - Baltimore Metropolitan Area
  - District of Columbia
  - Maryland Suburbs of DC
  - Virginia Suburbs of DC
  - Outlying Areas



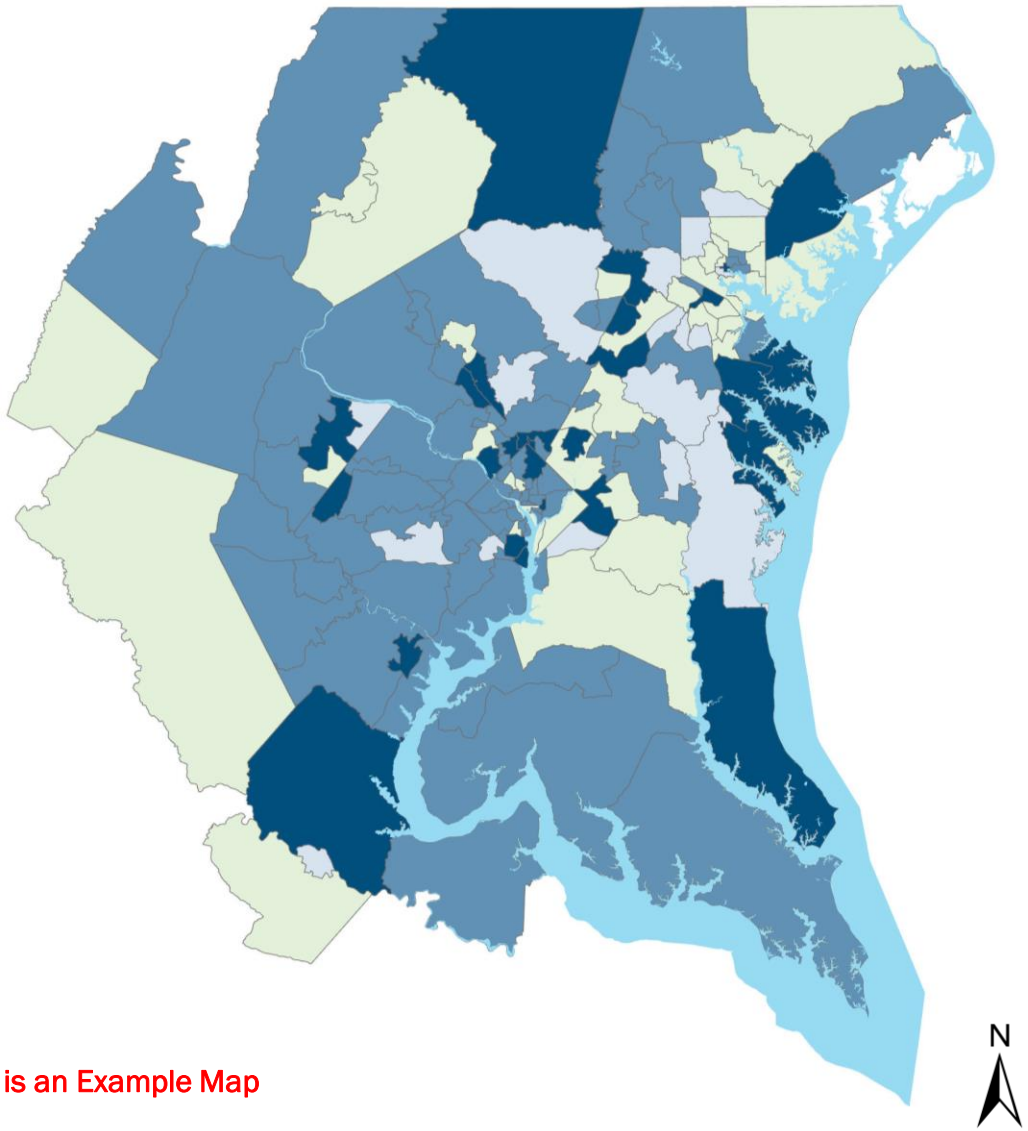
Subregional Cores

- To examine passenger patterns in the high-density areas of the region, the air systems planning region is categorized into two primary subregional cores:
  - **Washington Core**
    - District of Columbia
    - Arlington County
    - City of Alexandria
  - **Baltimore Core**
    - Baltimore City
  - **All Other Areas**
    - Include all additional locations within the air systems planning region

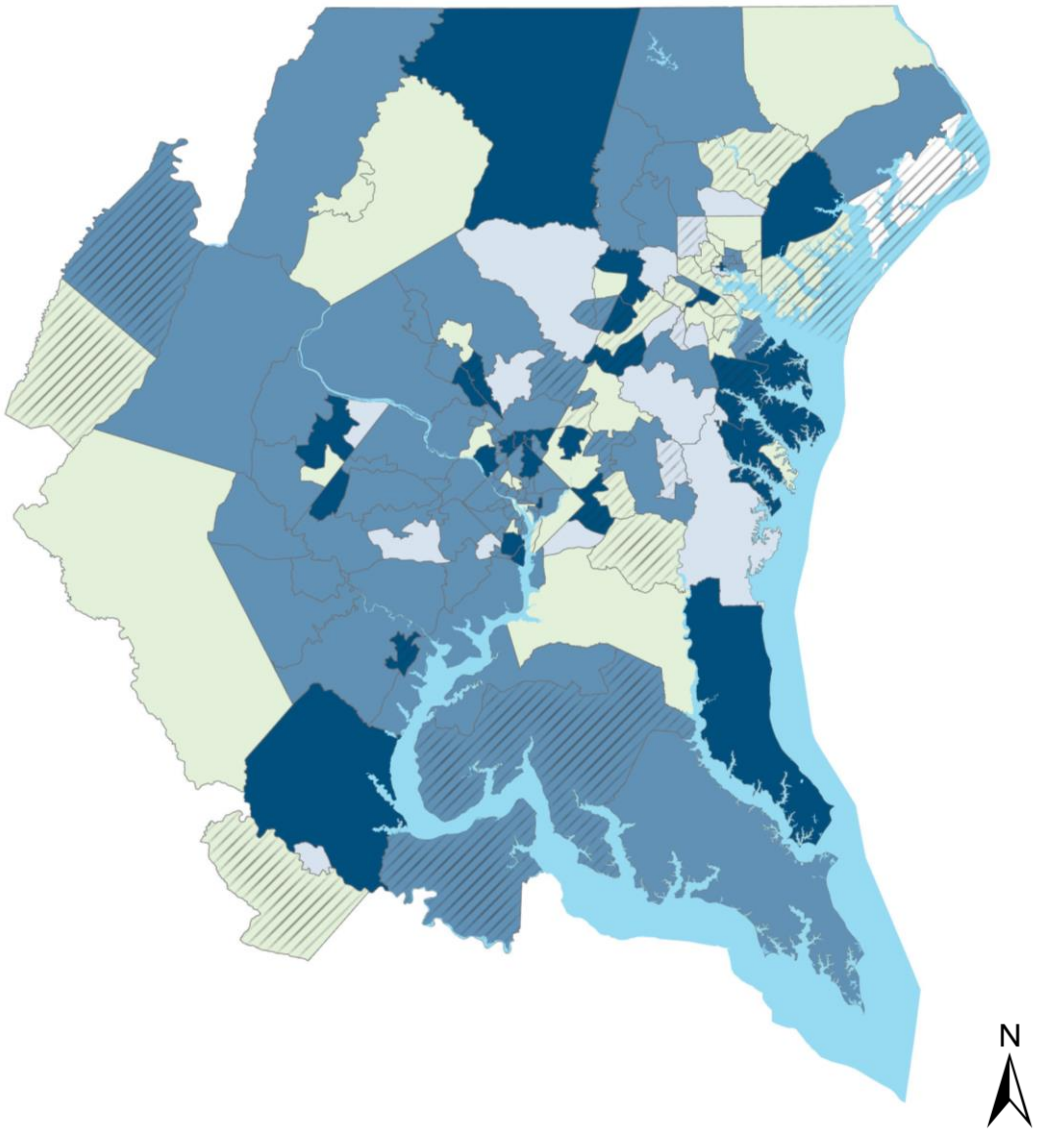
Methodology for Data Analysis

- Survey respondents were asked to enter their point of origin to the airport (trip origin).
- Many responses did not contain the geographic location that was required for the geographic findings analysis, as only 38% of the 9,599 valid responses had geolocation data.
- The survey responses containing geographic locations were reweighted to match the annual enplanements for all three airports (38.2 million total passengers).
- Due to low responses for some AAZs, 48 AAZ's (out of 161) were suppressed (denoted by hash pattern fill on the map)

WITHOUT AAZ's SUPPRESSED



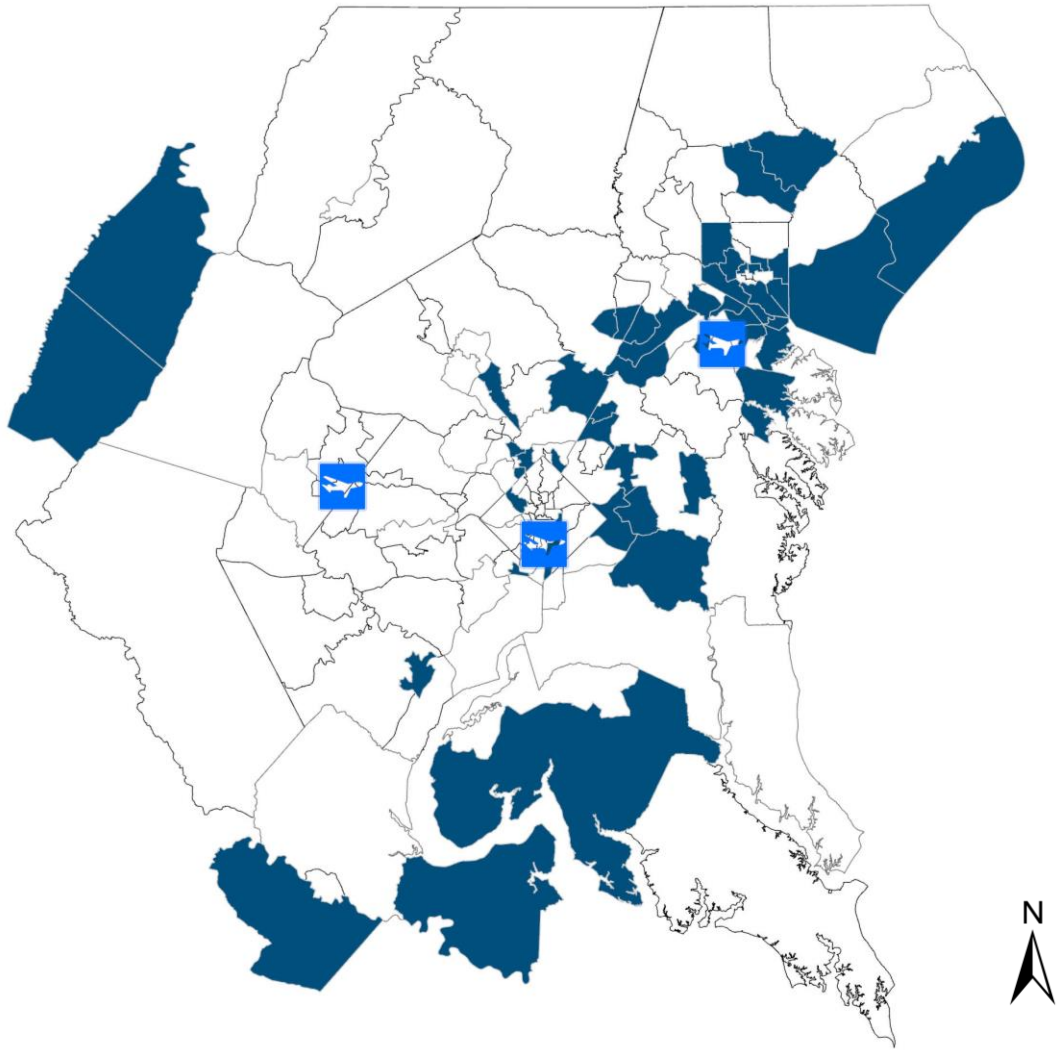
WITH AAZ's SUPPRESSED



Note: This is an Example Map

Suppressed AAZ's

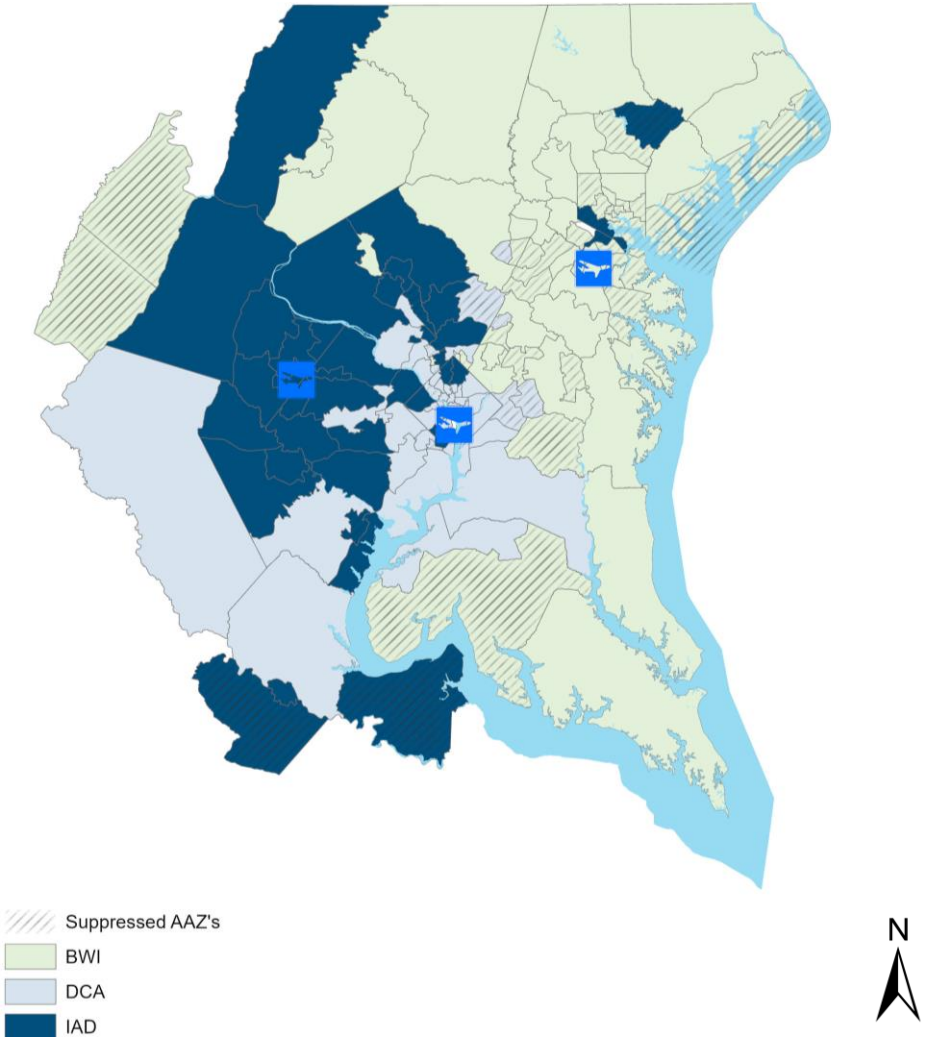
COUNTY	Suppressed AAZ's
Baltimore City (MD)	8
Prince George's County (MD)	7
Montgomery County (MD)	6
Anne Arundel County (MD)	5
Baltimore County (MD)	5
Howard County (MD)	5
District of Columbia (DC)	3
City of Alexandria (VA)	1
Arlington County (VA)	1
Charles County (MD)	1
Clarke County (VA)	1
Harford County (MD)	1
Jefferson County (WV)	1
King George County (VA)	1
Prince William County (VA)	1
Spotsylvania County (VA)	1



PASSENGER CHARACTERISTICS

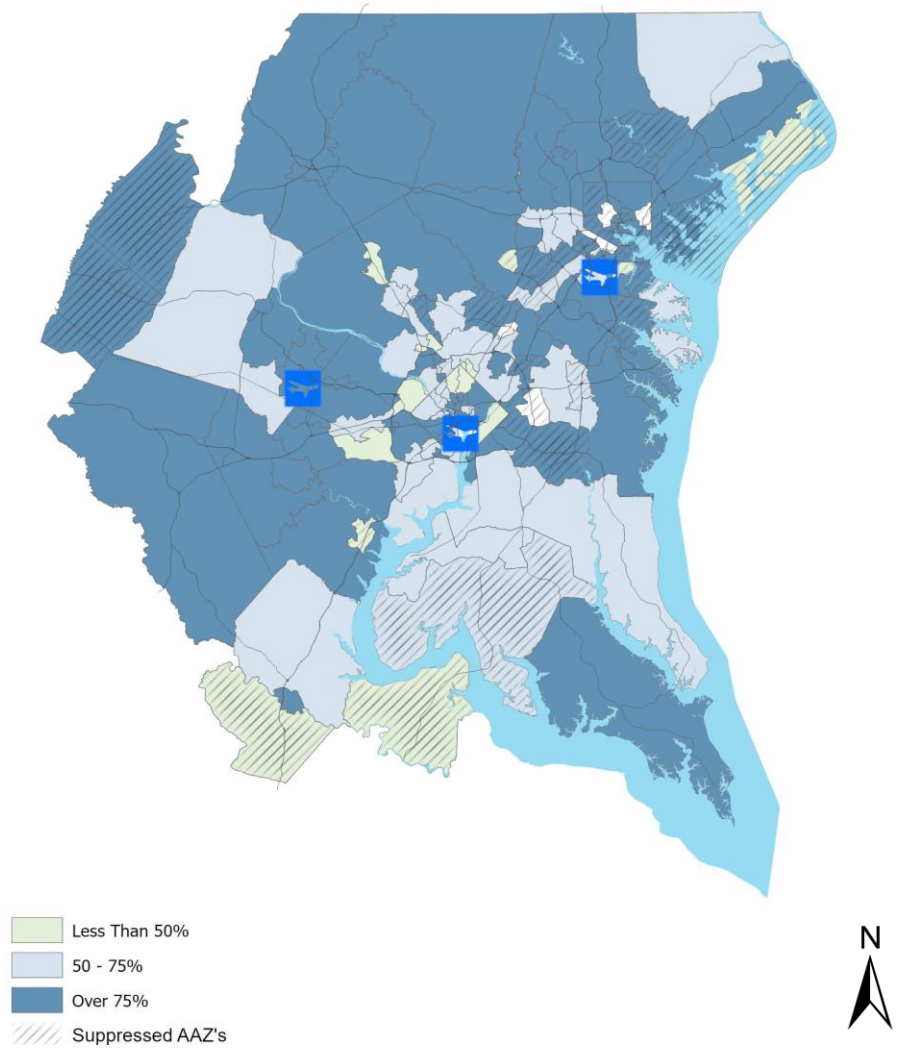
Airport Service Area by AAZ's

- The three airports in the region – BWI, DCA and IAD have distinct service areas, influenced strongly by the proximity to different regional districts.
- This map shows the primary service areas for the airports in the region.
- **BWI** dominated the northern and the northeastern parts of the region. It remains the most popular airport for the Baltimore metro area and Maryland suburbs.
- **DCA** is concentrated around the District of Columbia and closer Maryland suburbs, serving as the go-to airport for densely populated urban areas and nearby suburban commuters.
- **IAD** is concentrated in the Virginia suburbs and the outlying areas west of Washington, DC.

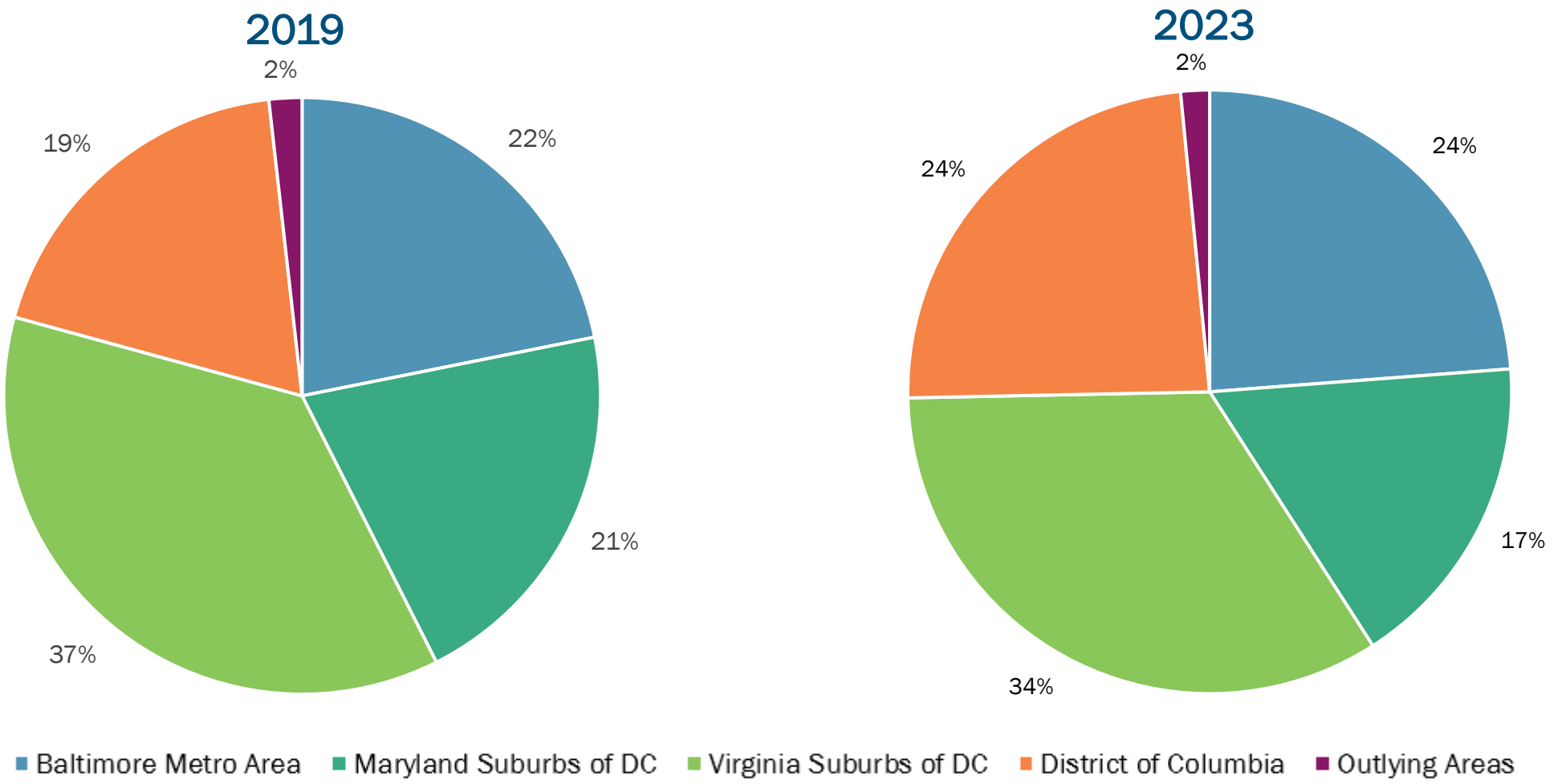


Use of Preferred Airport

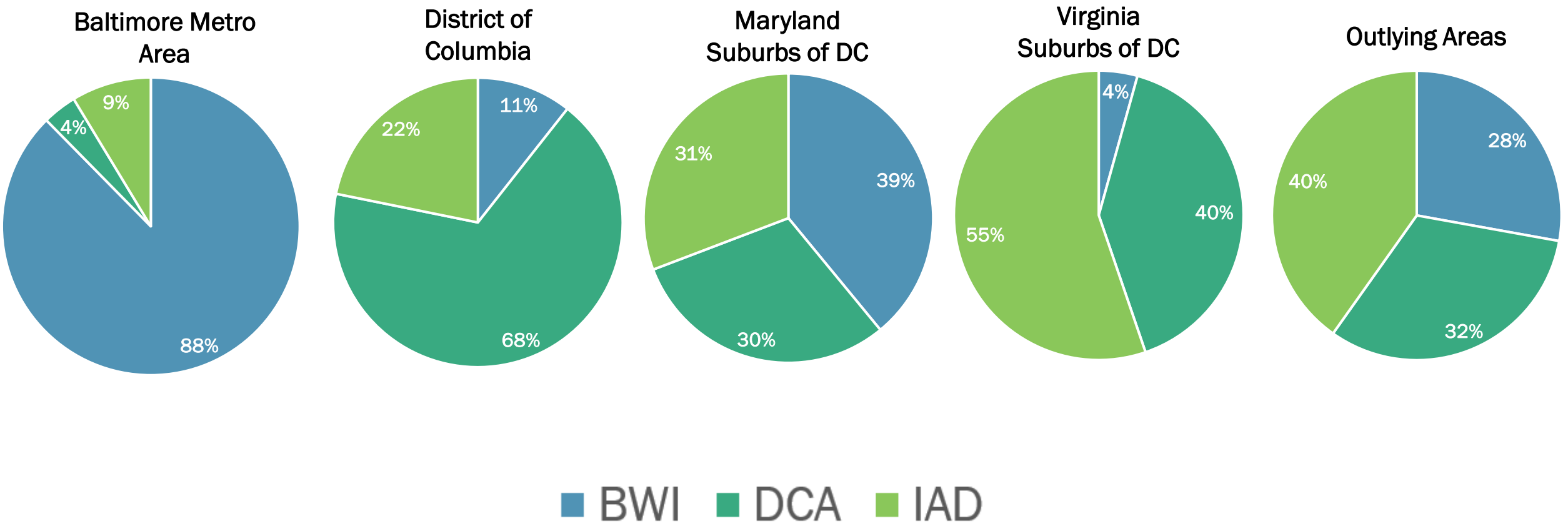
- On average, 77 % of the passengers in the region departed from their preferred airport of choice.
- The highest proportion of passengers departing from their preferred airport are mainly in the Baltimore region.



Originations by Regional District

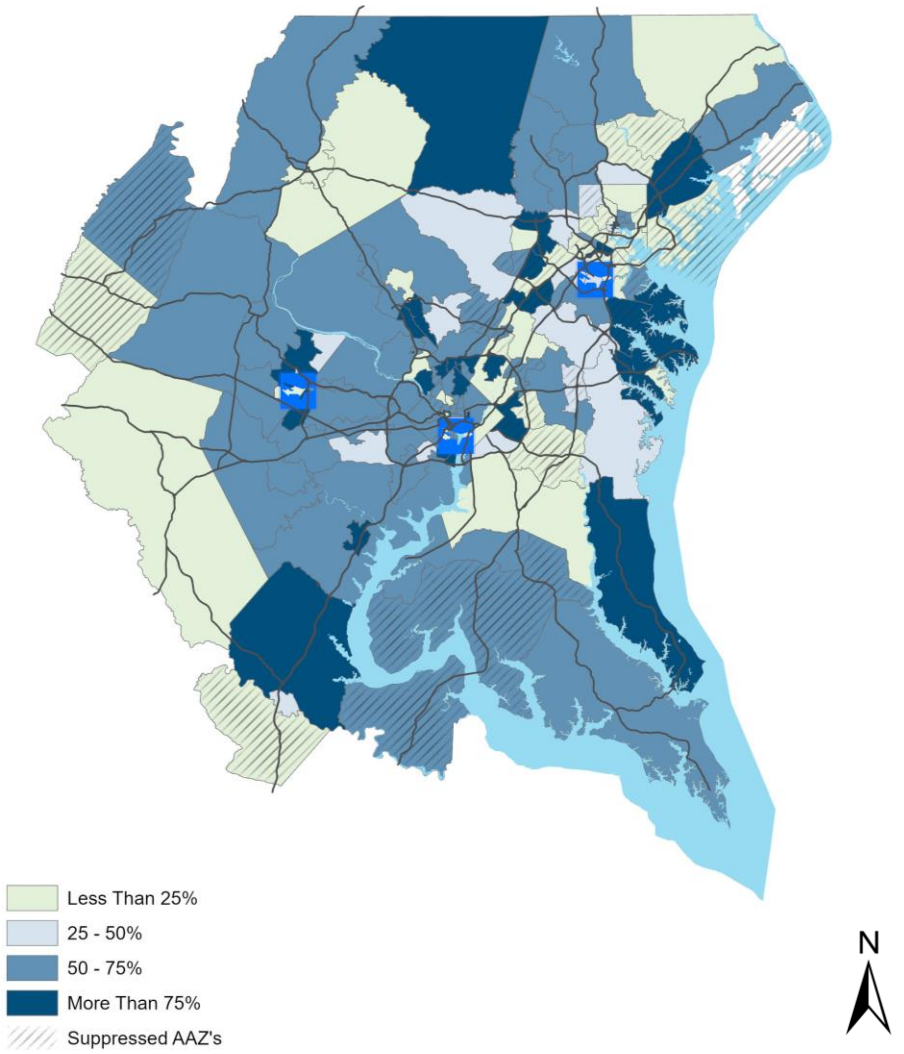


Originations by Super District – 2023



Household Income (Over $150,000)

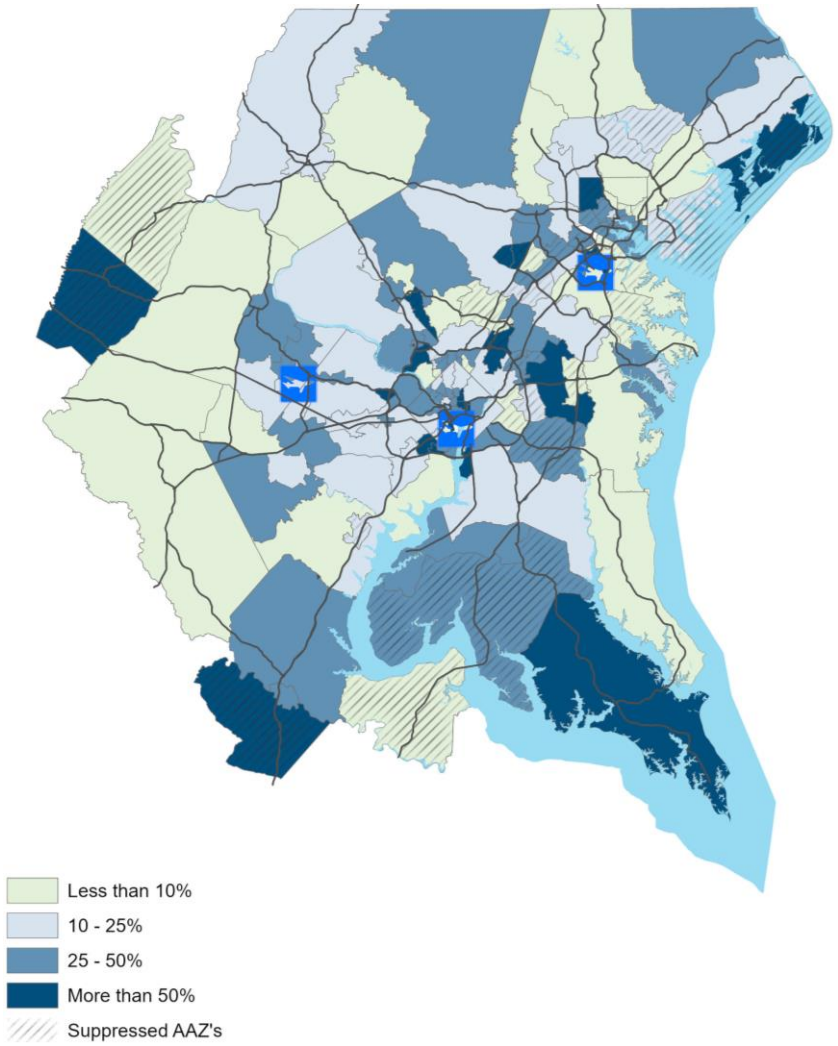
- The median household income for the Washington-Arlington-Alexandria, DC-VA-MD-WV Metro Area was $121,469 (US Census Bureau) in 2023.
- Higher income passengers with household incomes $150,000 or more, are broadly scattered across the region.
- Zones with a lower share of higher income passengers (i.e., less than 25%) include the east and southeast Maryland suburbs and some exurban areas.



GROUND ACCESS

Trip Purpose – Business

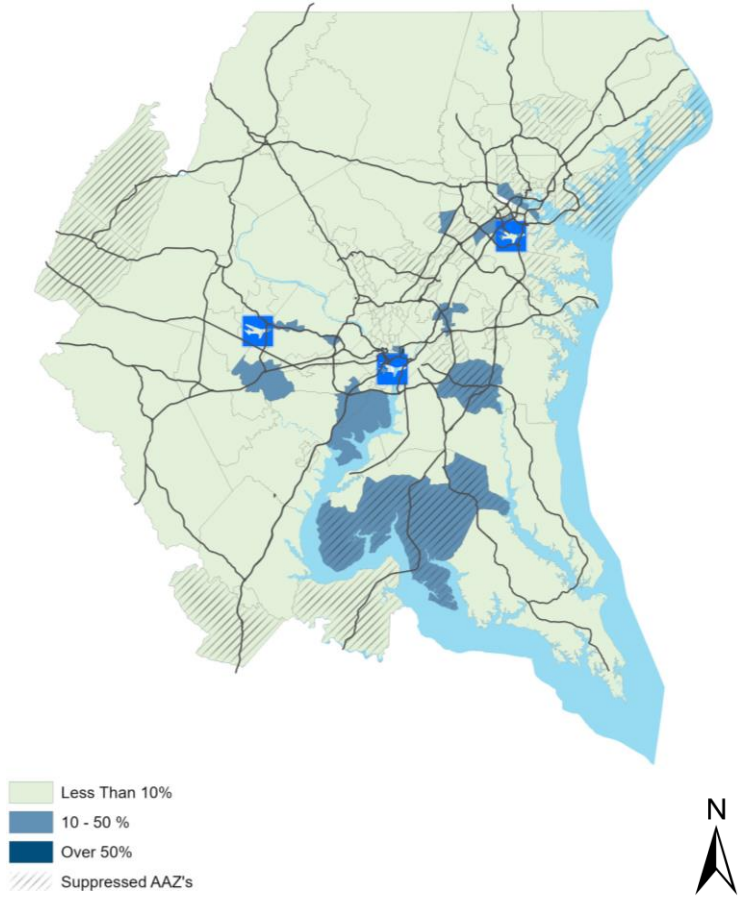
- Trip originations for business travel varies across the region.
- The Baltimore and Washington subregional cores combined accounts for 47% of the region's total business travel.



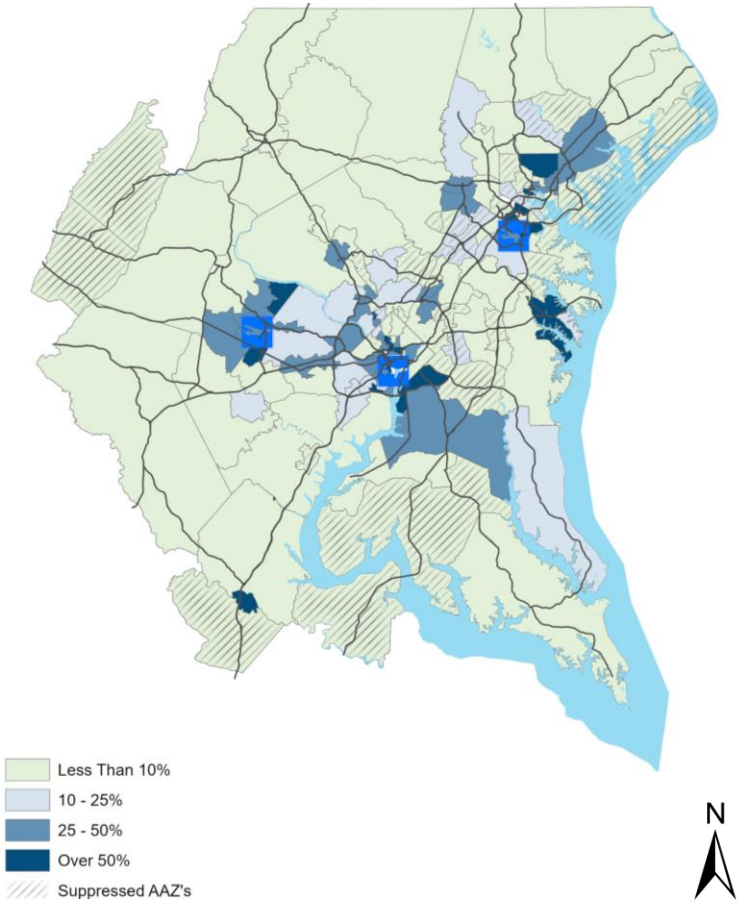
Trip Origin – Work and Hotel/Motel

Passengers traveling to the airport from their workplace or from hotels and motels are more concentrated in areas near airports, particularly those with good public transportation connections.

Percentage of Passengers leaving from **Work**



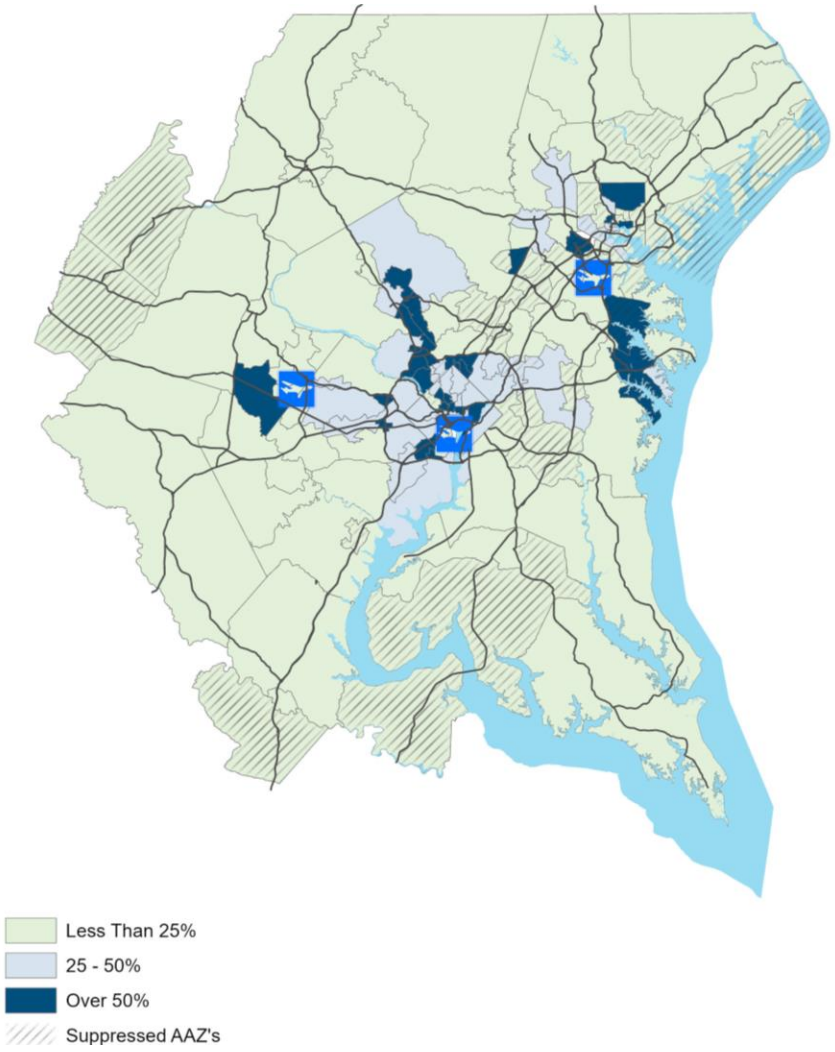
Percentage of Passengers leaving from **Hotel/Motel**



Note: The percentage categories differ between the two maps

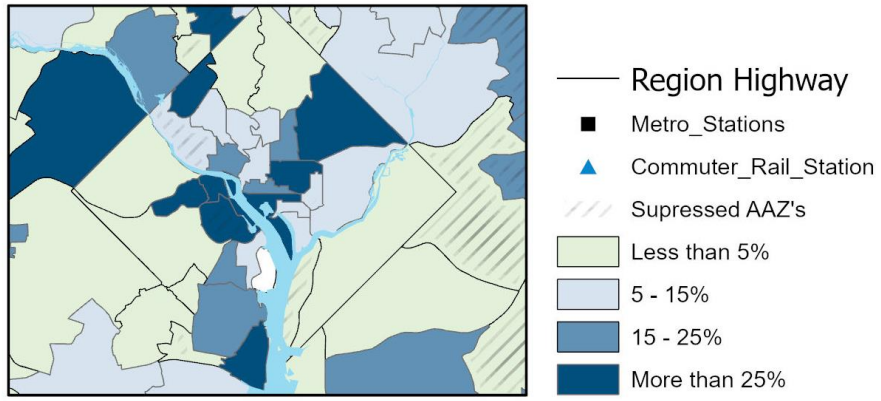
Mode of Access to the Airports – TNC's

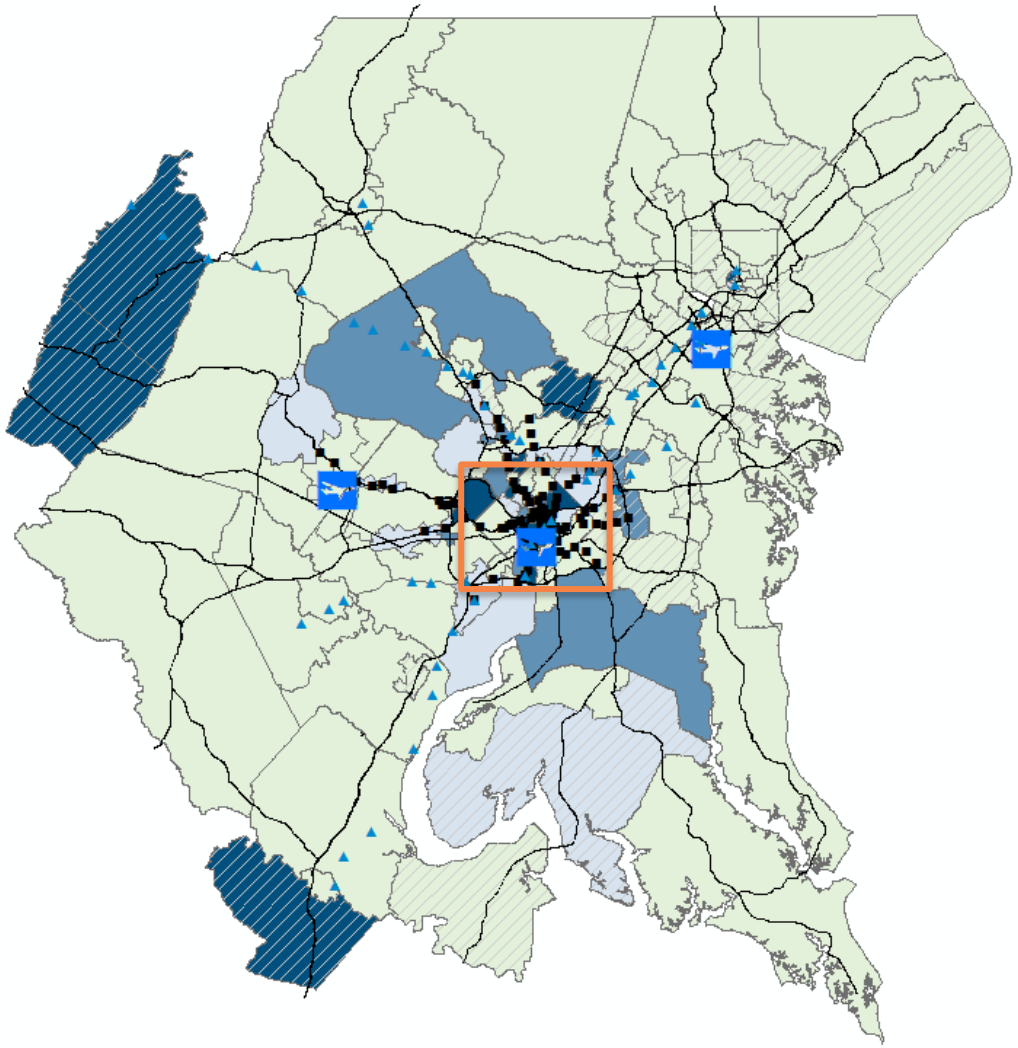
Highest concentration of passengers who use TNC's are in the region immediately surrounding the airports.



Mode of Access to the Airports - Transit

- Washington core, parts of Maryland suburbs and areas immediately surrounding BWI and IAD have higher proportions of passengers using transit.
- Areas near Metrorail stations and commuter rail stations exhibit higher transit usage.





ANALYSIS BY SUBREGIONAL CORES

Trip Originations - Subregional Cores

- BWI handles 92% of the passengers originating from the Baltimore Core, with minimal use of DCA and IAD
- DCA accounts for 66% of the passengers originating from the Washington Core, while IAD accounts for 24% and BWI only 10%

Airport Used	Baltimore Core	Washington Core	All Other	Region
BWI	92%	10%	40%	34%
DCA	0%	66%	21%	33%
IAD	8%	24%	39%	32%
TOTAL	100%	100%	100%	100%

Trip Purpose - Subregional Cores

- Business travel in Baltimore Core (Gov't and Non-Govt') accounts for 29% of the total trips, which is similar to the regional average of 29%, followed by Vacation travel with 31%
- Business travel is the dominant trip purpose in Washington Core, accounting for 40% of all the trips, significantly higher than the regional average and vacation travel at 34%
- All Other Areas show a smaller share of business travel at 24%, with vacation (38%) and personal travel (34%) being the dominant trip purposes.

Trip Purpose	Baltimore Core	Washington Core	All Other	Region
Business (Gov't)	2%	16%	8%	10%
Business (Non-Gov't)	27%	24%	16%	19%
Vacation	31%	34%	38%	37%
Personal	24%	17%	34%	28%
Student	14%	6%	3%	5%
Other	1%	2%	1%	1%
TOTAL	100%	100%	100%	100%

Passenger Trip Origin - Subregional Cores

- In the Baltimore Core, private residences contribute 46% and hotels/motels 42% of passenger trip origins, making them the primary sources.
- In the Washington Core, hotels/motels dominate with 44%, slightly higher than private residences at 42%.
- Both the regions show a significantly higher proportion of trips originating from hotels/motels compared to the regional average (27%) and All Other Areas (18%).

Trip Origin	Baltimore Core	Washington Core	All Other	Region
Private Residence	46%	42%	74%	63%
Hotel/Motel	42%	44%	18%	27%
Short-Term Rental	8%	3%	2%	3%
Regular Employment	2%	2%	1%	1%
Other Business	1%	4%	2%	3%
Other	1%	5%	2%	3%
TOTAL	100%	100%	100%	100%

Mode of Access - Subregional Cores

- TNCs comprised the largest share of trips from the Baltimore and Washington cores, each accounting for 43% of trips. In the Baltimore core, TNC usage has surpassed private auto usage (32% share) for the first time.
- Outside of these cores, private cars are the dominant travel mode, used by 55% of passengers, followed by TNCs (19%) and rental cars (14%).
- Although only 8% of passengers in the region use public transportation, 18% of Washington Core passengers rely on it and account for 68% of all public transit users in the region.

Mode of Access	Baltimore Core	Washington Core	All Other	Region
Private Auto	32%	17%	55%	42%
Rental Auto	7%	6%	14%	11%
Taxicab	10%	8%	3%	5%
TNC's	43%	43%	19%	28%
Public Transportation	3%	18%	4%	8%
Airport Bus/Limousine	1%	0%	2%	1%
Other	3%	7%	4%	5%
TOTAL	100%	100%	100%	100%

Flights Destination by Region

- Flight destinations are categorized into nine domestic regions and international destinations.
- Destination regions in 2023 were re-defined to ensure a more even distribution of destinations for each region.
- Despite encompassing only three states and 16 airports out of a total of 121 destinations, the South region accounted for 17% of all departing passengers.
- Florida, designated as its own region, contributed 12% of the departing passenger volume.

Destination Region	%	States (United States)
South	17%	GA, NC, SC
Midwest	14%	IL, IN, IA, KS, MI, MN, MO, NE, ND, OH, SD, WI
Florida	12%	FL
South Central	10%	AR, LA, OK, TX
New England	10%	CT, MA, ME, NH, RI, VT
Mountain	7%	AZ, CO, ID, MT, NV, NM, UT, WY
West	7%	AK, CA, HI, OR, WA
Mid-Atlantic	7%	DE, MD, NJ, NY, PA, VA, WV
Southeast	3%	AL, KY, MS, TN
SUBTOTAL	86%	---
International	14%	---
TOTAL	100%	---

Flights Destination by Region and Origin Airports

- BWI and DCA together handled 92% of all flights to Florida, whereas IAD had the largest share of international flights.
- DCA handled 54% of departing passengers to the Mid-Atlantic region, followed by BWI at 23% and IAD at 22%.
- IAD handled the largest share of passengers traveling internationally at 37%, followed by BWI at 5% and DCA at 2%.
- Although IAD accounted for just 24% of all domestic flights, it dominated with 62% of flights to the West.

Destination Region	BWI	DCA	IAD	Region	Airport Share to Destination Region		
	%	%	%	%	BWI	DCA	IAD
South	19%	18%	13%	28%	39%	36%	26%
Midwest	16%	18%	7%	12%	39%	43%	17%
Florida	18%	15%	3%	9%	51%	41%	7%
South Central	10%	13%	8%	7%	32%	42%	26%
New England	13%	11%	4%	7%	46%	39%	15%
Mountain	9%	5%	7%	2%	43%	24%	33%
West	4%	4%	13%	10%	19%	19%	62%
Mid-Atlantic	5%	11%	5%	3%	23%	54%	22%
Southeast	3%	4%	2%	7%	32%	47%	21%
SUBTOTAL	95%	98%	63%	86%	38%	38%	24%
International	5%	2%	37%	14%	12%	4%	84%
TOTAL	100%	100%	100%	100%	34%	33%	32%

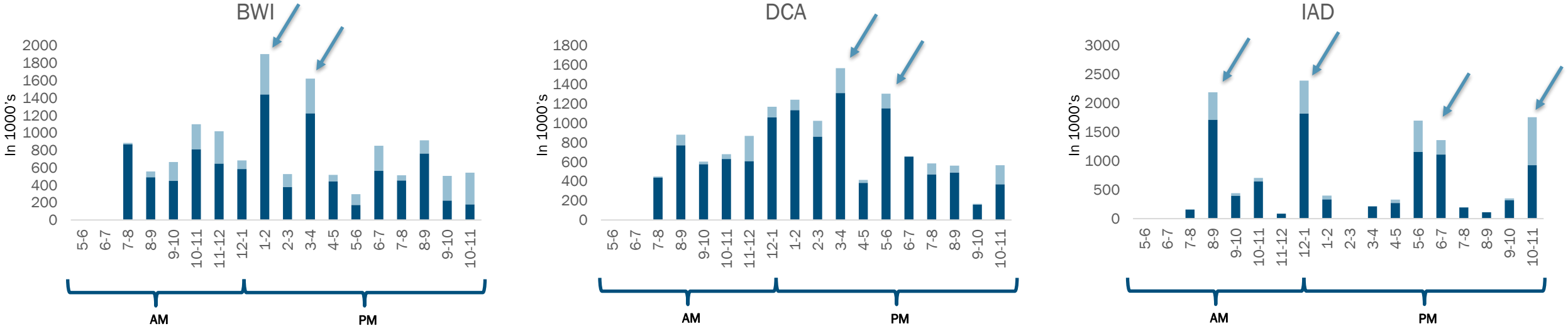
Flights Destination by Region and Origin Airports – Intl'

- IAD leads in international travel, handling 84% of all international flights in the region.
- Europe is the top international destination, accounting for 44% of all international flights, with IAD handling an overwhelming 94% of these flights.
- All flights to Asia from the region exclusively depart from IAD, highlighting its dominance in long-haul routes.
- At BWI, 44% of international flights are to North America, followed by 23% to Europe.
- DCA exclusively serves North American destinations for international flights.

Destination Region	BWI	DCA	IAD	Region	Airport Share to Destination Region		
	%	%	%	%	BWI (%)	DCA (%)	IAD (%)
Europe	23%	0%	49%	44%	6%	0%	94%
North America	44%	100%	18%	24%	22%	16%	62%
Asia	0%	0%	21%	17%	0%	0%	100%
Other	32%	0%	12%	14%	28%	0%	72%
TOTAL	100%	100%	100%	100%	12%	4%	84%

Departures by Time of Day

- Peak departure times at BWI were generally in the afternoon hours, with the highest peak from 1-2 PM and a secondary peak from 3-4 PM, followed by a sharp decline and a rebound in the evening hours.
- Departures at DCA steadily increase from the morning to afternoon hours, reaching a peak at 3-4 PM, followed by a sharp decline from 4-5 PM, a secondary peak at 5-6 PM, and tapering off into the evening hours.
- Departures at IAD have multiple peaks throughout the day with peaks at 8-9 AM, 12-1 PM, 5-7 PM, and 10-11 PM.



Note: The units on Y-axis are different across airports

National Capital Region
Transportation Planning Board

Key Takeaways

- 3 out of 4 passengers in the region departed from their preferred airport of choice.
- The Washington and Baltimore subregional cores account for nearly half of all business travel in the air systems planning region.
- Passengers traveling to the airport from their workplace or from hotels and motels are more concentrated in areas near airports.
- While private car remains the primary mode of access across the region, TNC's have become the dominant travel mode in the Baltimore and Washington cores.
- BWI and DCA primarily serve short to medium-haul domestic flights while IAD focuses on long-haul domestic flights and international destinations.
- Departures by time of day varies by airport, with BWI and DCA departures peaking in the afternoon, while IAD has multiple peaks throughout the day and evening.

Next Steps

- Draft report of the Geographic Findings will be shared with the Subcommittee by early March.
- Start the Ground Access Forecast Update analysis.

Questions/Comments?

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