

AIR CARGO ELEMENT – 2022 UPDATE

Summary of Findings

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WASHINGTON-BALTIMORE REGIONAL AIR CARGO STUDY - DRAFT

2022 Update

January 2025



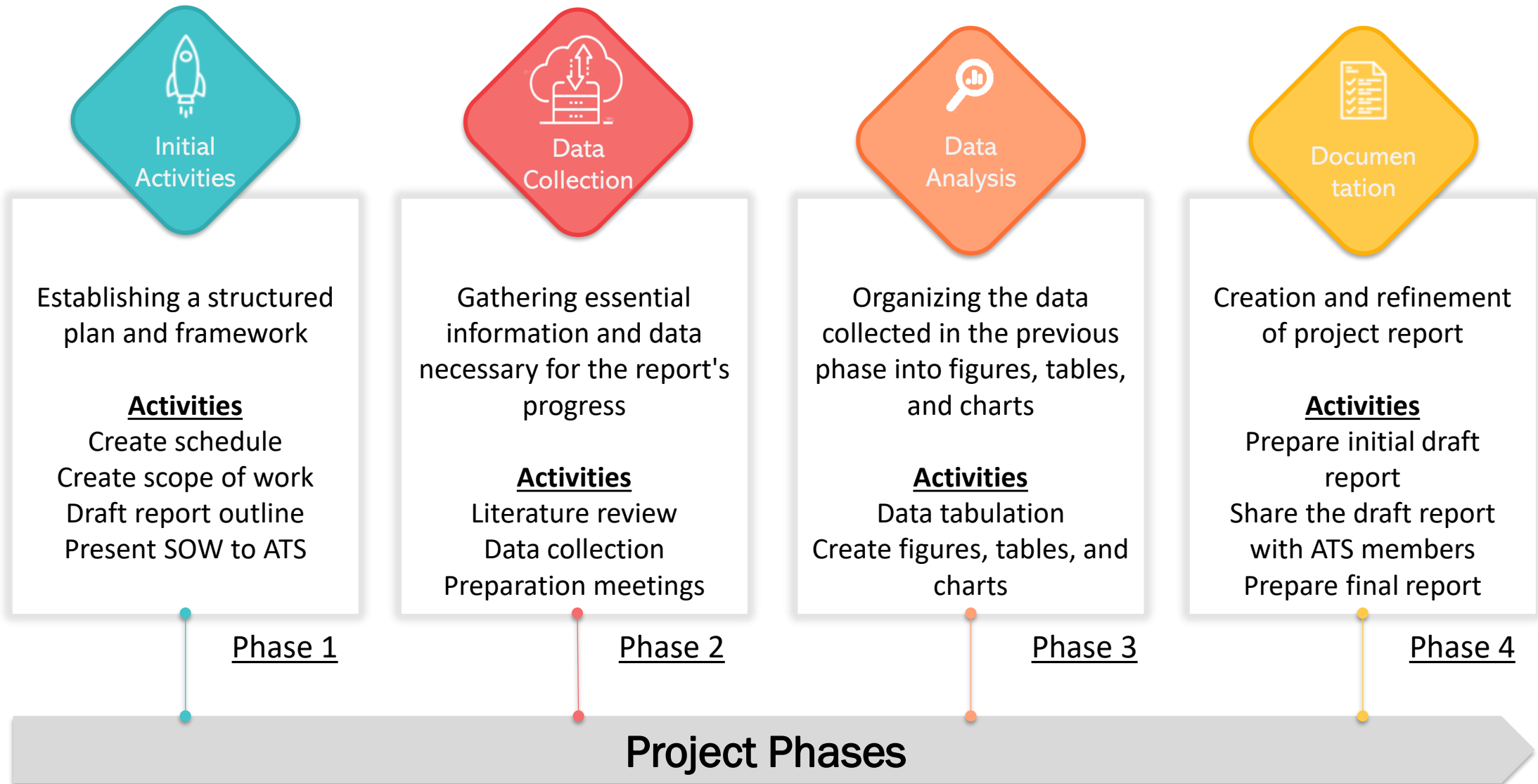
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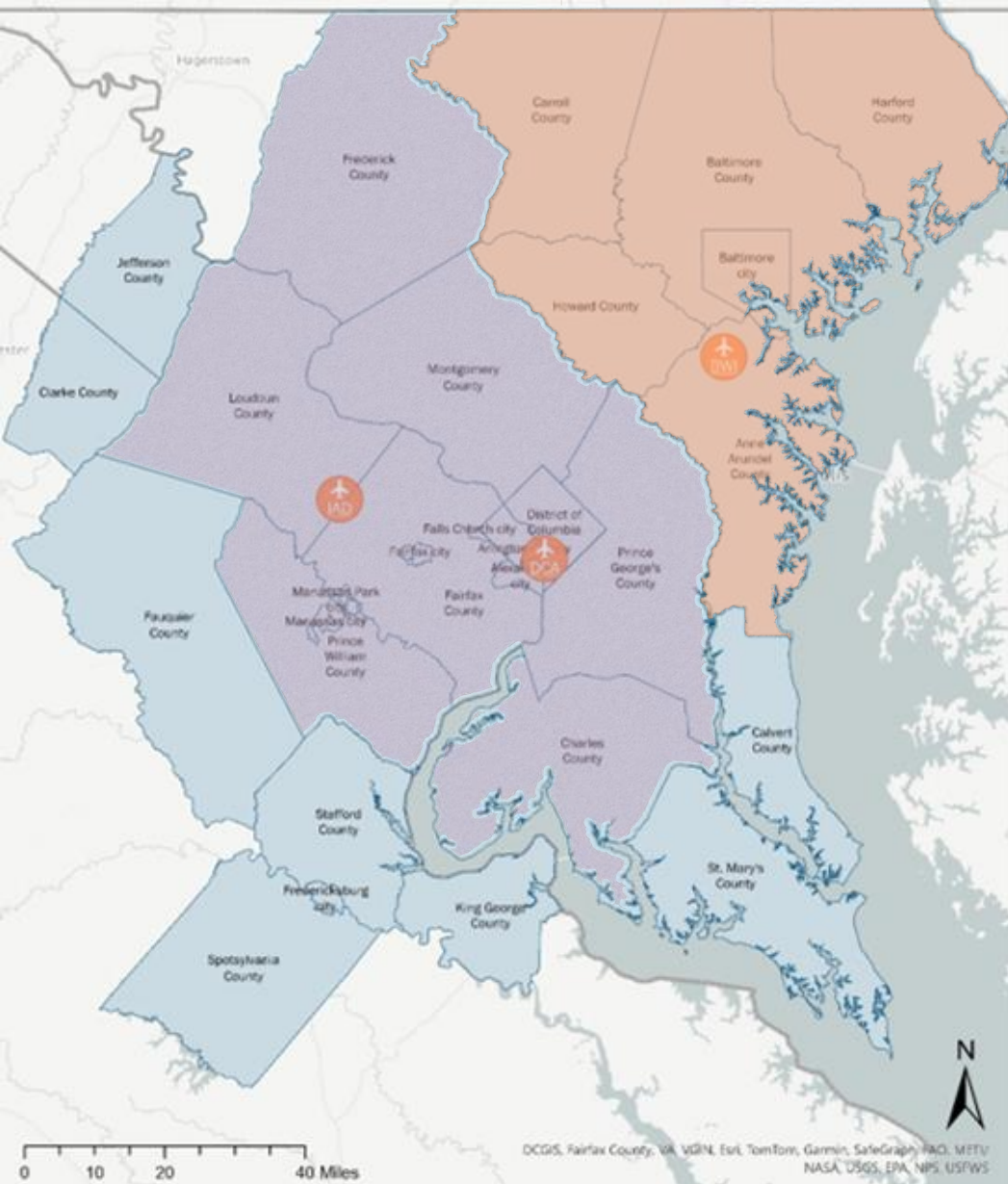
Air Cargo Study

- **Purpose and Scope:** Updates 2015 Air Cargo Study, focusing on demand, facilities, and ground access at BWI and IAD in the Air System Planning region under the CASP program.
- **Outline Report:**
 - Regional Air System Planning,
 - Air Cargo Characteristics and Regional Air Cargo Market,
 - Washington-Baltimore Region Industrial and Demographic Profile,
 - Air Cargo Demand Analysis,
 - At-home Delivery and E-commerce
 - Regional Airports Cargo Facilities,
 - Accessibility Analysis,
 - Recommendations.



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Transportation Planning Board





About Air System Planning Region

- **National Capital Region Transportation Planning Board (TPB), which is staffed by COG's Department of Transportation Planning**

Composed of representatives of the transportation agencies of the states of Maryland, Virginia, and the District of Columbia, local governments, the Washington Metropolitan Area Transit Authority (WMATA), the Maryland and Virginia General Assemblies, and members from the MWAA and federal agencies.

- **Baltimore Metropolitan Council (BMC)**

The Board of Directors includes the executives of Anne Arundel, Baltimore, Harford and Howard Counties, the mayor of the City of Baltimore, a member of the Carroll County and Queen Anne's County boards of commissioners, a member of the Maryland State Senate, a member of the Maryland House of Delegates, and a gubernatorial appointee from the private sector.

Picture source: COG
Source: MWCOG and BMC website

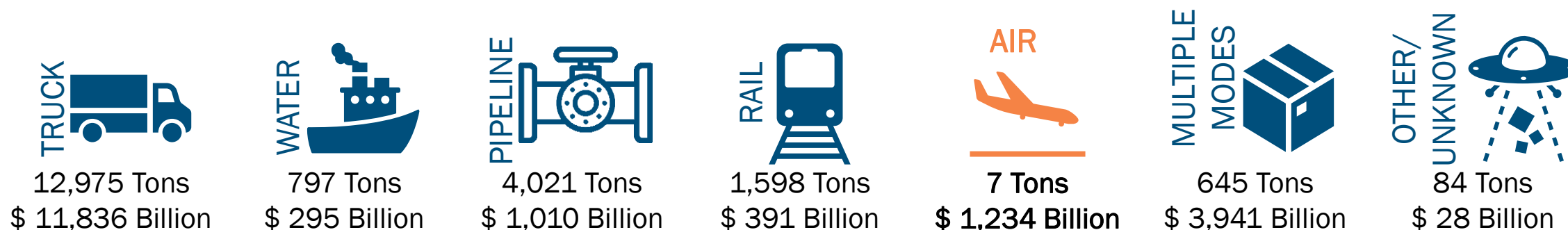


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National Cargo



Distribution of National Cargo by Mode



Air cargo has a significantly higher price compared to the other modes, with a cost of 179 USD per ton in 2023.

Air cargo is expected to grow steadily at 2% by 2050

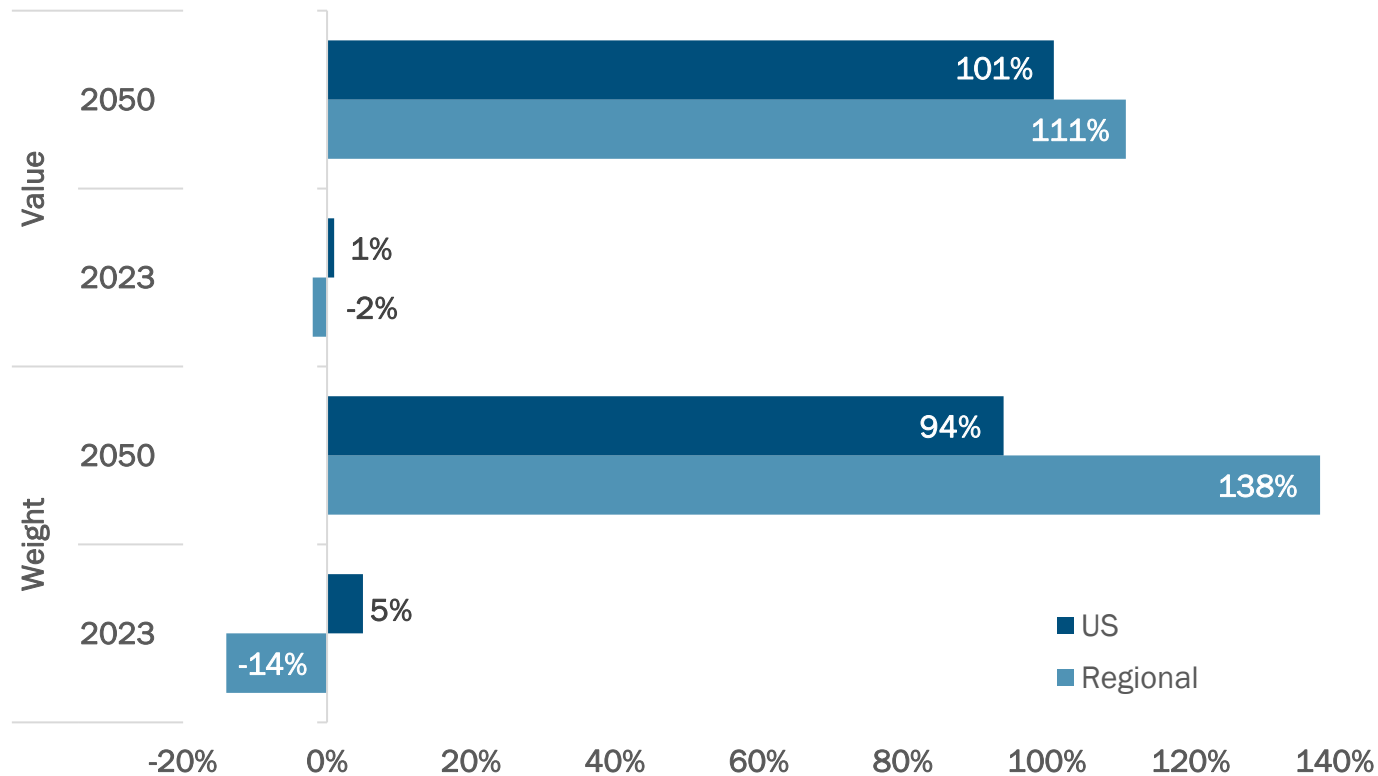
Source: U.S. Department of Transportation, Bureau of Transportation Statistics and Federal Highway Administration. Freight Analysis Framework
No domestic was excluded from the presentation. It will be included in the data presented in the report

Mode of Transportation	Weight (Tons - Millions)			Value (Billions Of 2017 \$)			Price per Ton		
	2017	2023	2050	2017	2023	2050	2017	2023	2050
Air (Includes Truck-Air)	6	7	13	1,226	1,234	2,500	204.33	176.29	192.31



International Cargo

National Vs Regional Air Cargo Projection



Source: U.S. Department of Transportation, Bureau of Transportation Statistics and Federal Highway Administration. Freight Analysis Framework

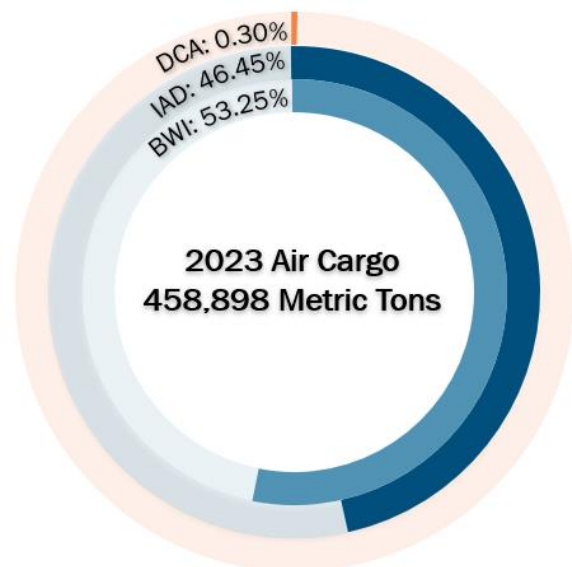
- National air cargo weight grew by 5%, while regional air cargo decreased by 14%.
- National air cargo value increased by 1%, while regional value declined by 2%.
- Regional weight growth projected at 138% compared to 94% nationally.
- Regional air freight value is expected to increase by 111%.



Regional Air Cargo Market



Regional Air Cargo Market



- **BWI** shows a steady increase in freight activity, peaking at 280,690 metric tons in 2021, before declining to 244,365 metric tons in 2023
- **IAD** experienced a notable decrease, starting at 298,683 metric tons in 2017, dropping significantly to 197,916 metric tons in 2020, and stabilizing around 213,162 metric tons by 2023.
- **DCA** consistently handled under 3,000 metric tons annually.

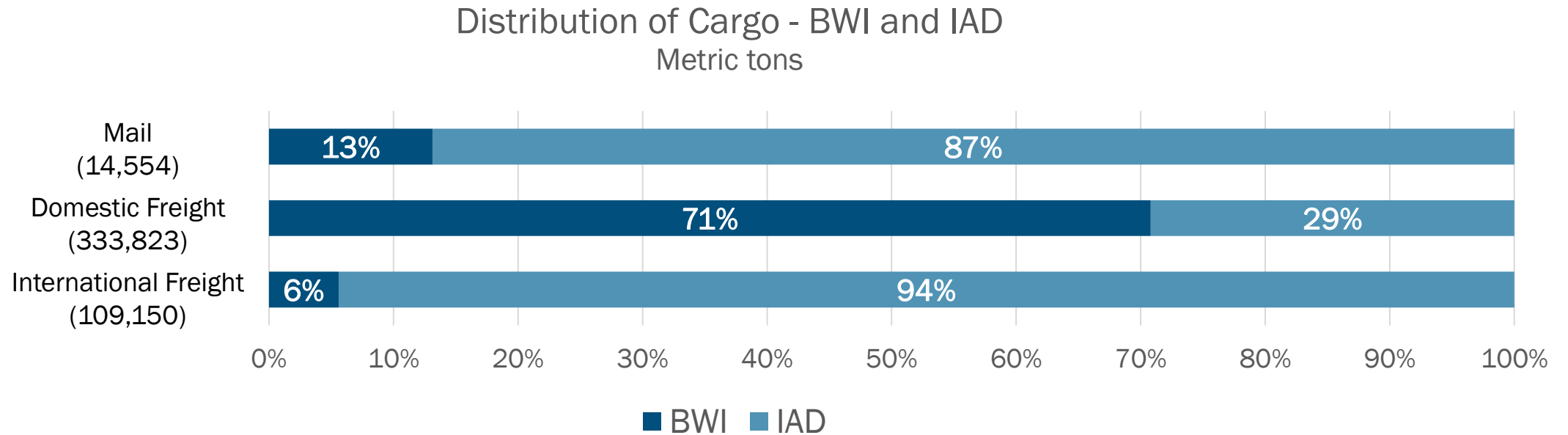
DCA is excluded from the air cargo data analysis, with the analysis focusing solely on data gathered from IAD and BWI.



Freight Activity at Cargo Airports Serving the Region				
Total (metric tons)				
Year		BWI	IAD	DCA
2017	Ton	167,875	298,683	2,830
	%	36%	64%	0.60%
2018	Ton	199,548	300,936	2,336
	%	40%	60%	0.46%
2019	Ton	226,954	273,385	2,178
	%	45%	54%	0.43%
2020	Ton	269,979	197,916	1,326
	%	58%	42%	0.28%
2021	Ton	280,690	225,450	1,307
	%	55%	44%	0.26%
2022	Ton	256,597	226,096	1,689
	%	53%	47%	0.35%
2023	Ton	244,365	213,162	1,371
	%	53%	46%	0.30%

Source: BWI statistics, DCA and IAD Air traffic statistics; National Capital Region Freight Plan, 2023 Update

BALTIMORE/WASHINGTON INTERNATIONAL THURGOOD MARSHALL AIRPORT



Source: Source: Air Cargo International-North America

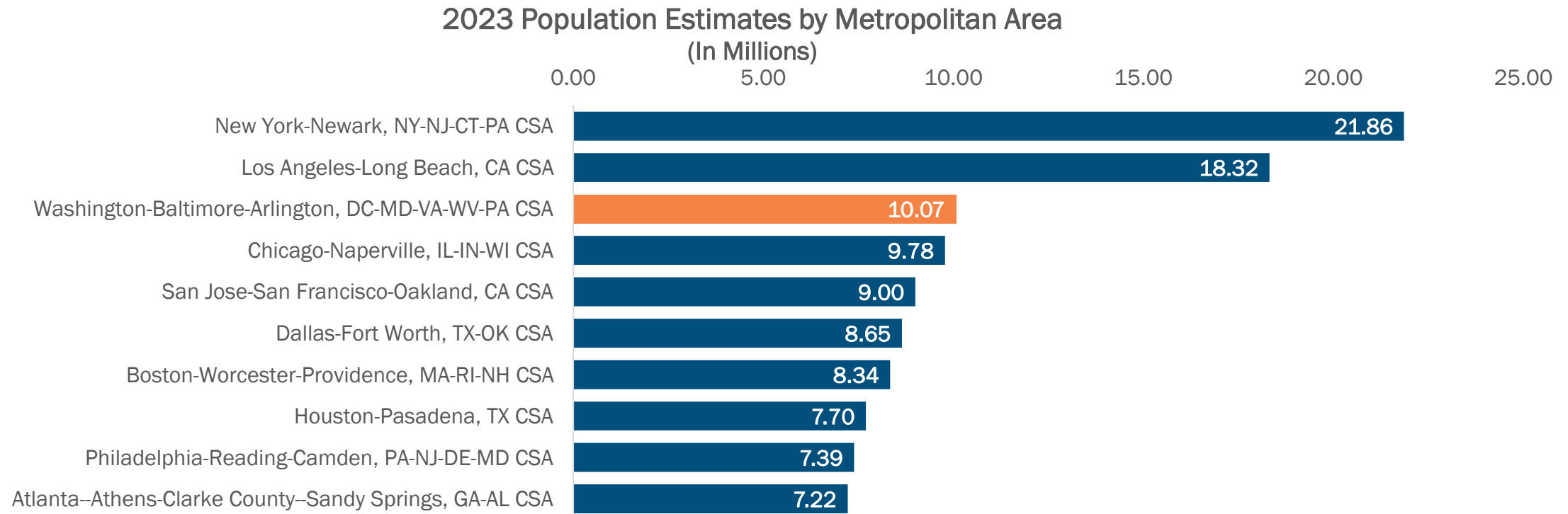
Dulles leads in Mail and International Freight, BWI dominates Domestic Freight, highlighting their vital roles in supporting regional market diversity.



Industrial and Demographic Profile



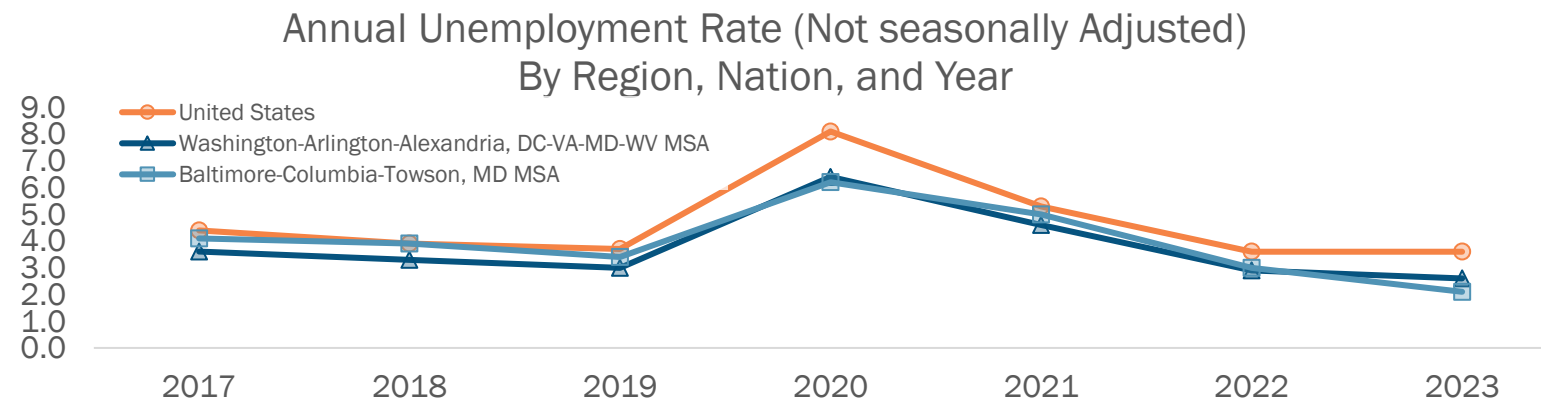
POPULATION ESTIMATES BY METROPOLITAN AREA



Source: U.S. Census Bureau, Population Division

The Washington-Baltimore region was ranked as the **third most populated region** in the United States in 2023, underscoring its critical role in economic growth.

Labor Force and Unemployment



Source: U.S. Bureau of Labor Statistics. (2024)

2022 At-place Employment by Industry	Combined Region
Government (Federal, State, and Local)	915,724
Professional and Business Services	780,349
Educational & Health Care & Social Assistance	711,763
Trade, Transportation, Warehousing, Utilities	445,982
Other	1,131,782
TOTAL	3,985,600

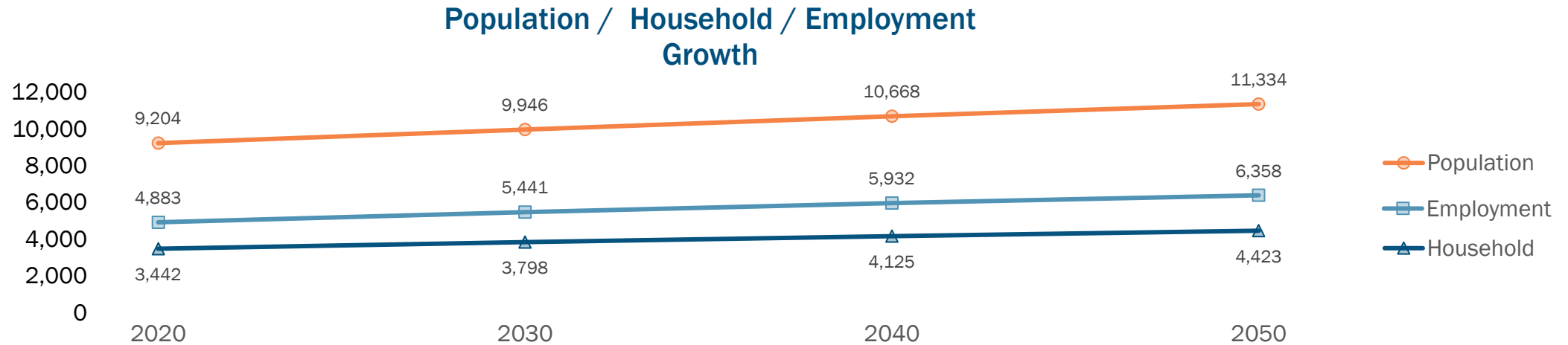
Source: U.S. Census Bureau

Other includes: Natural Resources, Mining & Construction, Manufacturing, Information, Financial Activities, Leisure & Hospitality, Other Services

- National **unemployment** peaked at 8.1% in 2020, while Washington (2.6%) and Baltimore (2.1%) regions saw lower peaks of 6.4% and 6.2%, respectively, with strong recoveries by 2023.
- Government jobs (23% of total) lead employment, followed by professional and business services (19.6%) and education/healthcare/social assistance (17.9%). **The region supports nearly 4 million jobs.**



Population / Household / Employment Growth



Source: MWCOG Round 10.0 Cooperative Forecast and BMC Round 10 Cooperative Forecast

	Growth in relation to 2020		
	2030	2040	2050
Population	8.1%	15.9%	23.1%
Household	10.3%	19.9%	28.5%
Employment	11.4%	21.5%	30.2%

- The region is expected to see significant population growth by 2050, approx. 23.1%.
- By 2050, several areas in the region will experience significant household growth, contributing to a 28.5% overall increase.
- Employment in the Washington-Baltimore region is expected to grow significantly by 2050, with the highest increases in suburban areas driving demand for infrastructure and services.



Commodities

- Air cargo, despite carrying the smallest amount by weight, holds a high value share, particularly for long-distance, time-sensitive, and high-value goods like pharmaceuticals and electronics.
- BWI Marshall focuses on domestic cargo, while IAD handles more international cargo and relies more on belly cargo.

***Belly cargo** is the transportation of goods in the lower deck of a passenger aircraft.

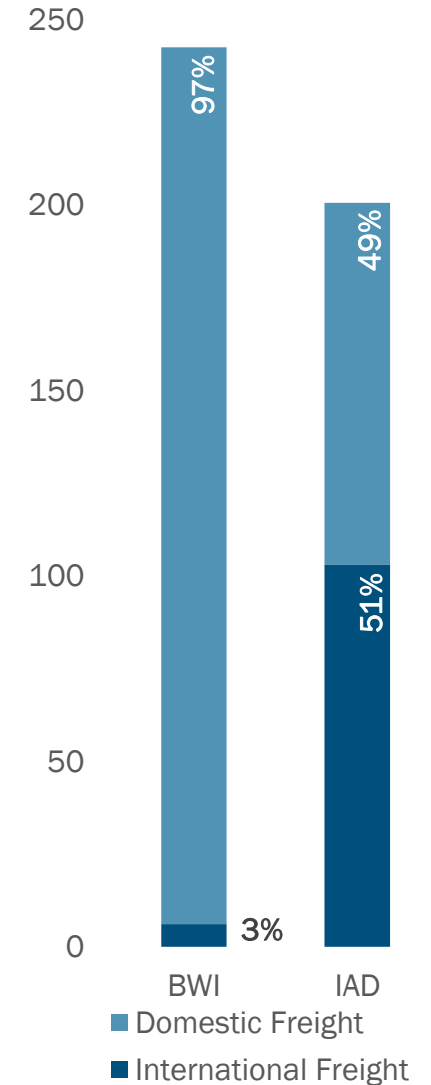
Washington-Baltimore Air System Planning Region			
Commodity Types Handled by Air			
Weight	Thousands of Tons	Value	Millions of Dollars
Plastic and rubber	44	Electronic and Electrical equipment	2,404
Basic Chemicals	39	Pharmaceutical products	1,170
Pharmaceutical products	24	Transportation equipment	977

Source: National Capital Region Freight Plan (2023). COG/TPB



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Air Cargo by Airport
Metric Tons



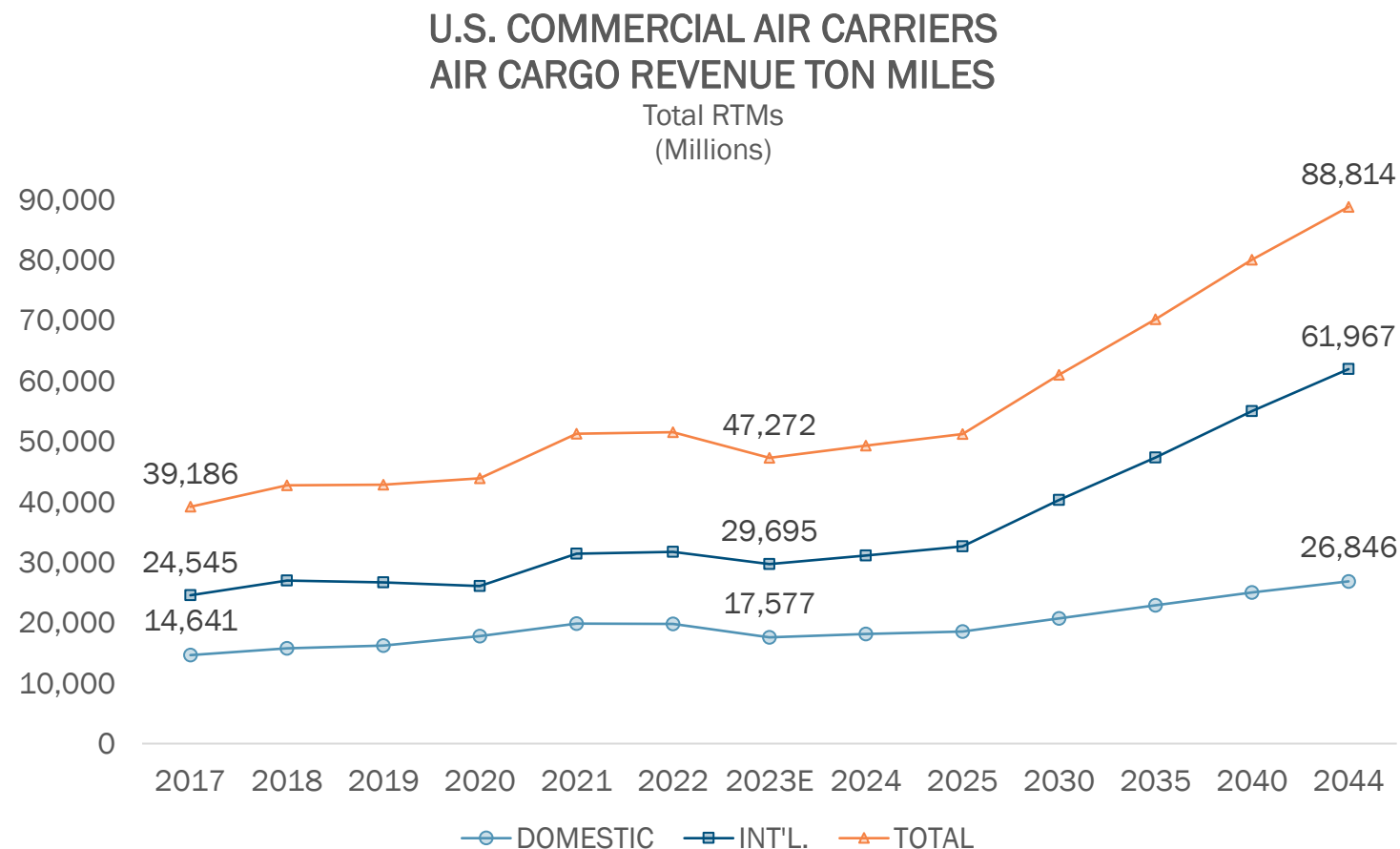
Source: 2023 North American Airport Traffic Summary

Air Cargo Demand Analysis



Forecast Air Cargo - National

- Air cargo traffic, closely tied to economic trends, saw significant growth during the pandemic due to a shift towards goods consumption, with a 20% increase in RTMs by 2022.
- Despite a slight decline in 2023, projections show continued growth, particularly in international RTMs, with a 72% increase in total RTMs expected by 2044, driven by air cargo's resilience and technological advancements.



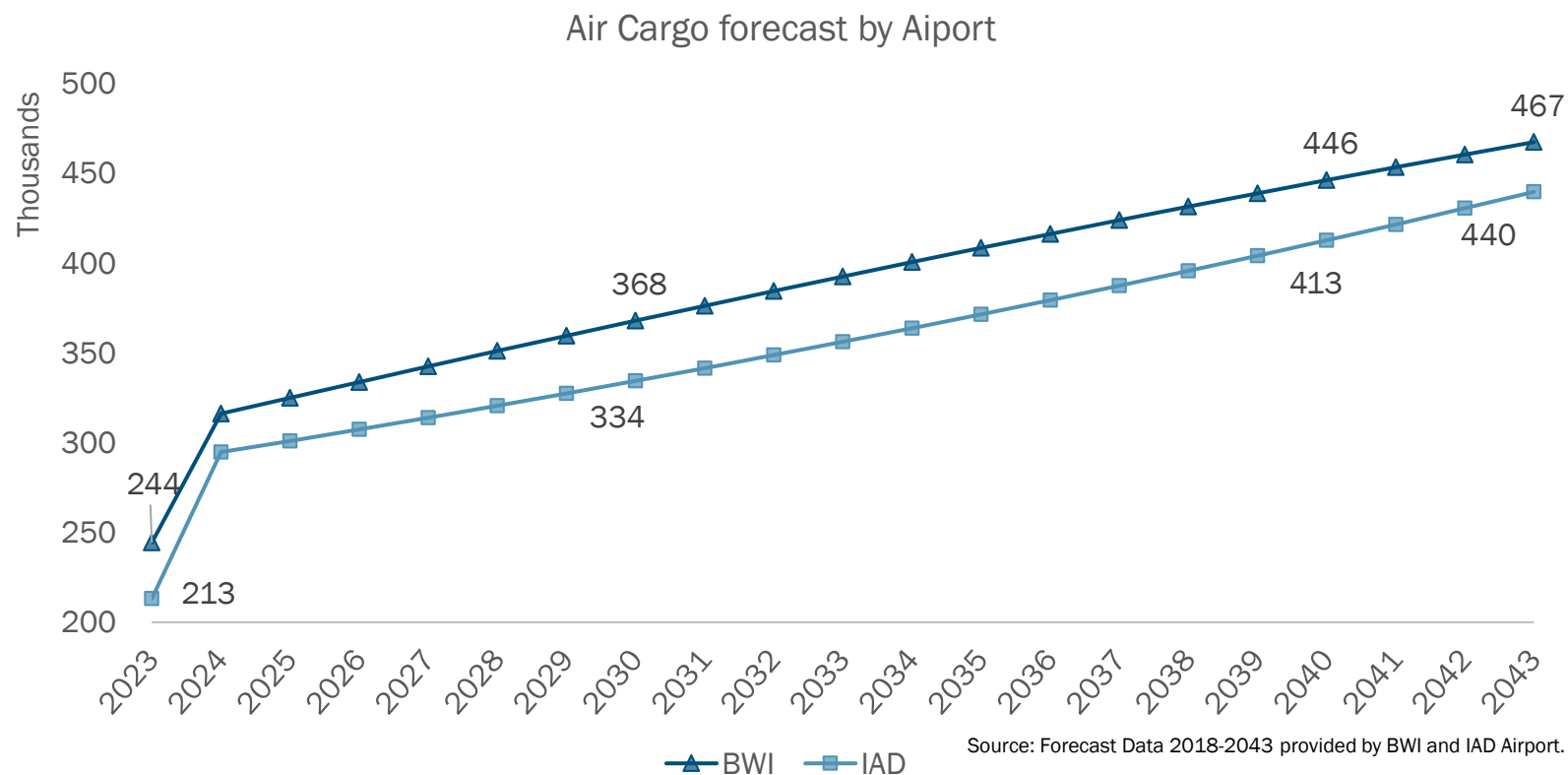
Source: FAA Aerospace Forecast Years 2024-2044

Note: RTMs (Revenue Ton Miles): Measures the volume of freight transported and the distance it is carried. Specifically, one RTM is equal to one ton of cargo transported one mile.

E: Estimated value

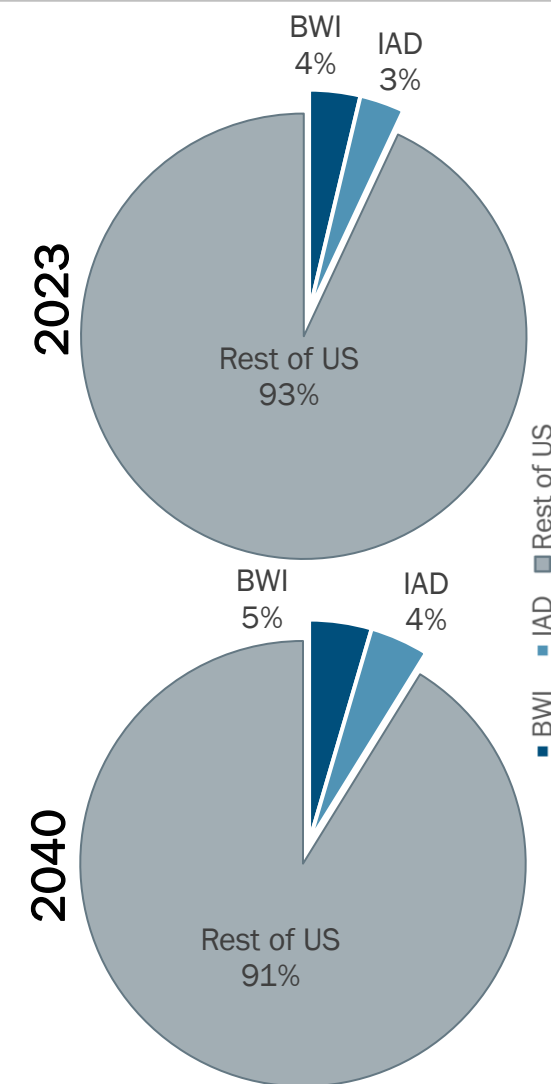


Forecast Air Cargo – BWI and IAD



BWI Projected growth of 91.3% by 2043

IAD Projected growth of 106.3% by 2043





At-Home Delivery and E-commerce

- At-home delivery, driven by E-commerce, is transforming how goods are transported and received, with air cargo playing a vital role in meeting consumer expectations.
- E-commerce accounts for approximately 20% of global air cargo, with IAD likely seeing 42,500 metric tons driven by online retail demand, reflecting the growing trend in fast shipping.
- At BWI, Amazon's dedicated operations (ABX Air, ATI, Atlas Air) handle 62% of the airport's 242,000 metric tons of air cargo, highlighting E-commerce's significant impact on regional cargo activities.

Picture source: Stock Images



Airport Infrastructure and Road Network





- BWI handles 23 daily cargo flights and features 665,341 sq. ft. of warehouse space, including cold storage for time-sensitive shipments, with capacity for up to 17 aircraft.
- BWI's infrastructure supports both domestic and international cargo operations, with planned expansions, including a 200,000 sq. ft. integrator building, a facility for Amazon operations of 415,000 sq. ft., and additional facilities, to accommodate projected cargo growth by 2043.

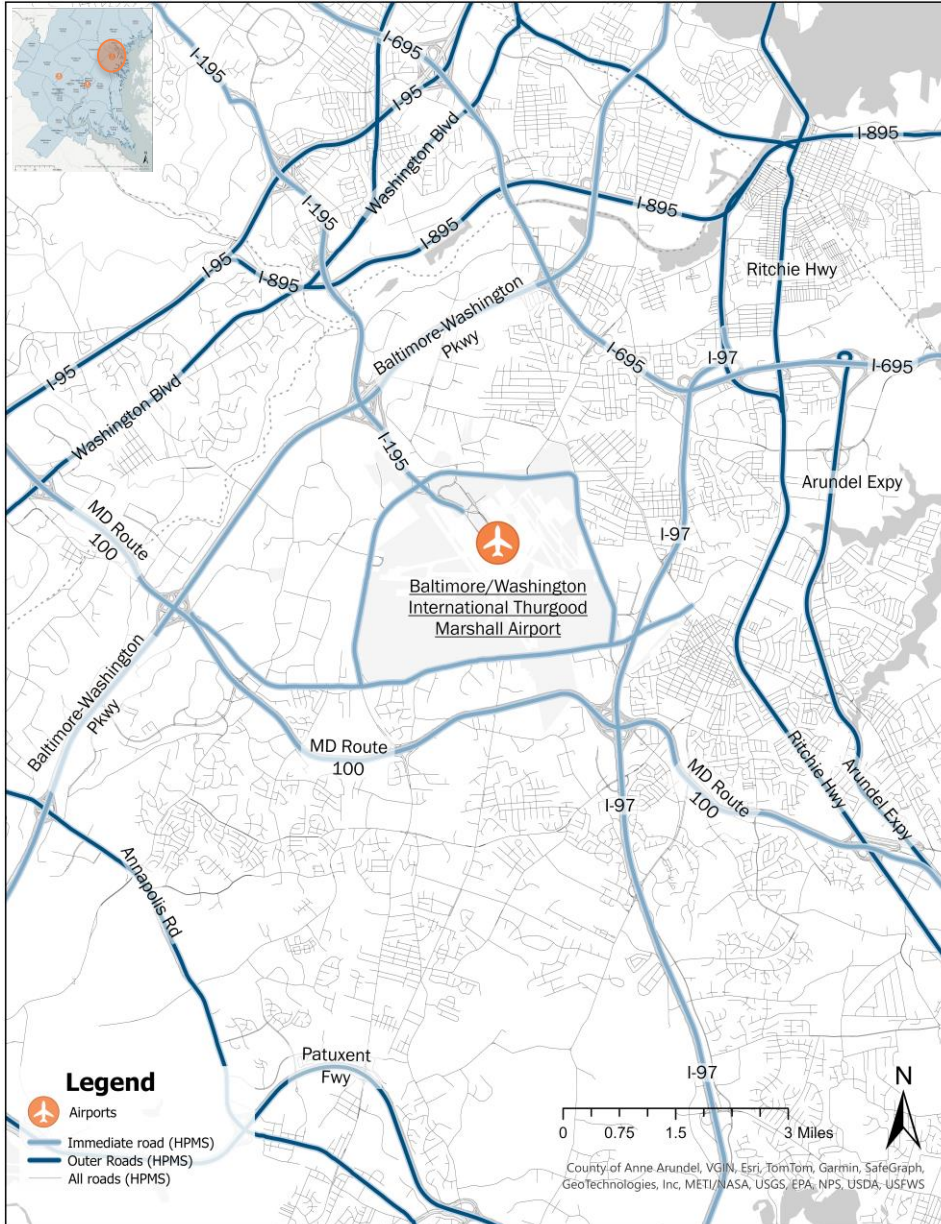
Source Picture: Flickr: brewbooks "BWI - early morning"
Source: BWI Facts and Figures; BWI Cargo Study Report



Accessibility analysis - BWI

- BWI is strategically connected to the National Highway Freight Network (NHFN), with key routes like MD-100 linking I-95 and I-97, to support efficient air cargo movement to and from the airport.
- The Baltimore-Washington Parkway offers an alternative to I-95, reducing congestion and improving logistics efficiency, ensuring reliable freight movement between Baltimore and Washington, D.C.

Picture source: COG





- IAD operates 24/7 with four CAT III ILS runways and 481,084 sq. ft. of warehouse space, including specialized facilities for perishable goods, live animals, and high-value cargo, along with an FTZ for international trade.
- The airport's expansion plans include 93 acres of new infrastructure by 2045, with 59% allocated to belly cargo and 41% to all-cargo and integrator operations, ensuring capacity for future growth and efficient cargo handling.

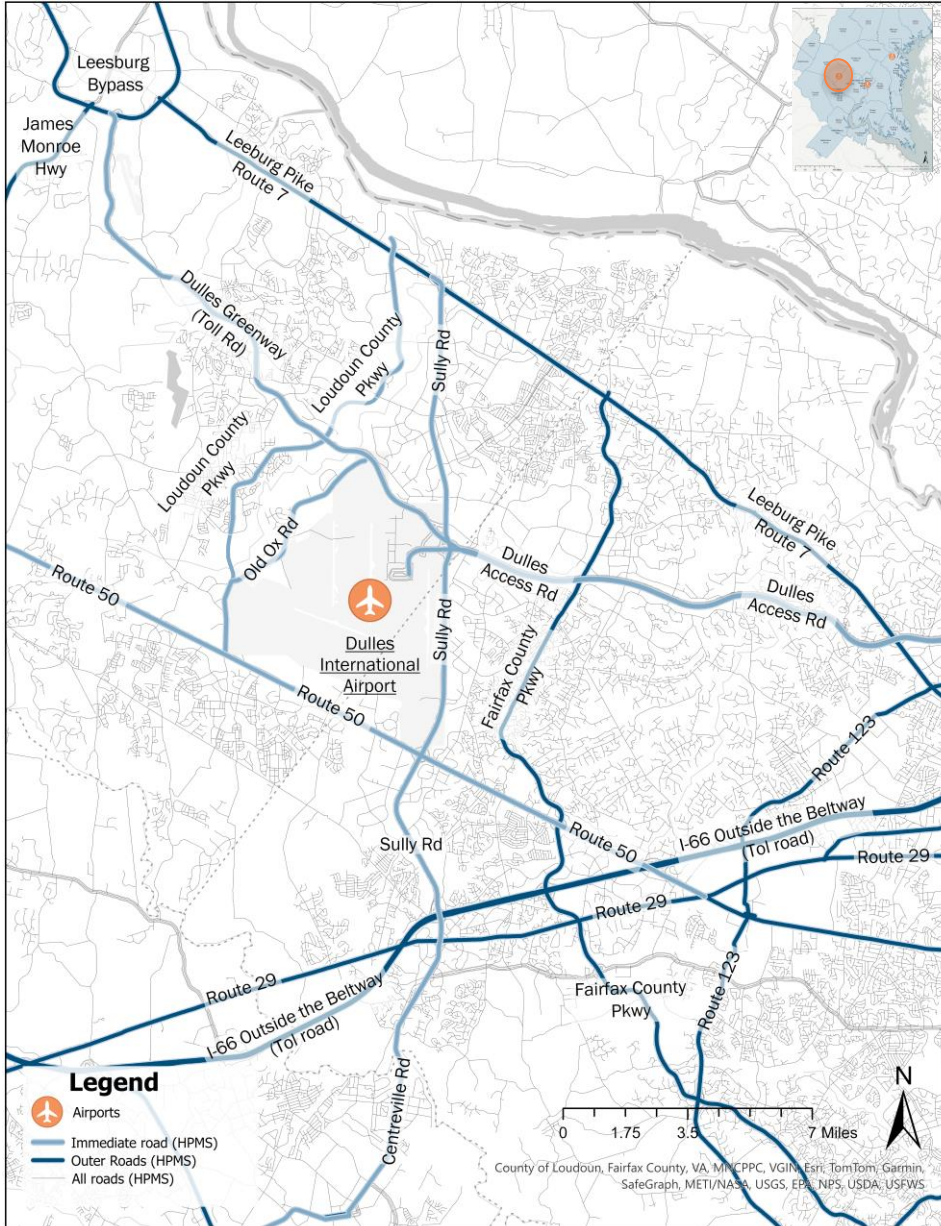
Source Picture: Airport Master Plan Public Workshop #3
Source: www.mwaa.com



Accessibility analysis - IAD

- IAD's road network, including US-50, Old Ox Rd, Dulles Greenway, and SR-28 (Sully Rd), provides critical connections to major highways like I-495 and I-66, supporting efficient cargo movement to regional and interstate destinations.
- The integration of parallel routes and alternative corridors, such as US-15 (James Monroe Hwy), enhances IAD's ability to manage high cargo volumes and maintain flexibility, ensuring smooth transport to distribution centers and key markets.

Picture source: COG



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Recommendations

- Manage Regional Infrastructure
- Strategic Planning for Regional Housing and Services
- Enhance Connectivity between Airports and Regional Markets
- Support E-Commerce Growth Through Targeted Cargo Facilities Expansion
- Adapt to Changing Regional Demographics
- Leverage Regional Growth for Economic Development



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Summary

- BWI and IAD play complementary roles in regional cargo operations—BWI leading in domestic freight and IAD excelling in international cargo—ensuring efficient access to both local and global markets.
- Understanding regional growth and global air cargo trends, driven by e-commerce, highlights the need to plan for future cargo demand and anticipate evolving market needs through strategic investments and advanced infrastructure.



Additional Notes

- The Final Air Cargo Element update was presented and approved by the Aviation Technical Subcommittee in March 2025.
- The 2022 Update of the Final Air Cargo Element was published on COG's website in April 2025.
 - Download here: [Air Cargo Element Study, 2022 Update](#)
- Future updates will be developed in consultation with the TPB Freight Subcommittee and TPB Freight Planning staff.



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