

Airport System Planning in the Washington-Baltimore Region

Timothy Canan, AICP
Metropolitan Washington Council of Governments
National Capital Region Transportation Planning Board

January 5, 2010

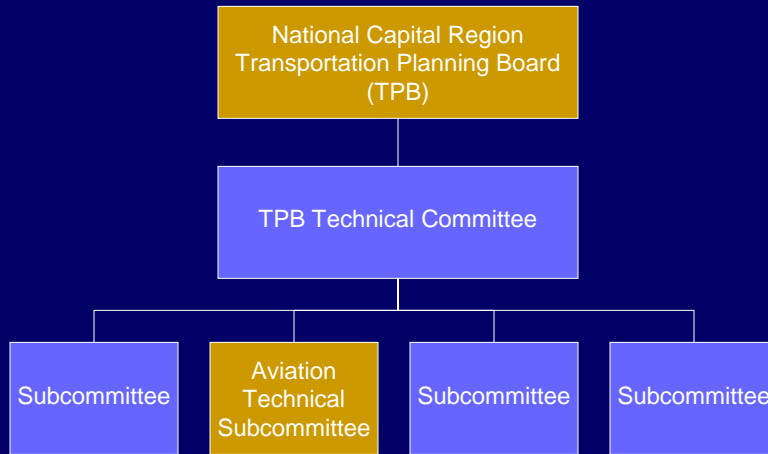
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The Metropolitan Washington Council of Governments (MWCOG) has conducted metropolitan airport systems planning for 30 years.

- The Continuous Airport System Planning Program (CASP) provides a regional process that supports planning, development and operation of airport and airport-serving facilities in a systematic framework for the Washington region.
- Transportation planning at the regional (MPO) level is coordinated in the Washington area by the National Capital Region Transportation Planning Board (TPB), which is staffed by MWCOG's Department of Transportation Planning.

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TPB's Aviation Technical Subcommittee develops, implements and monitors CASP Program activities.



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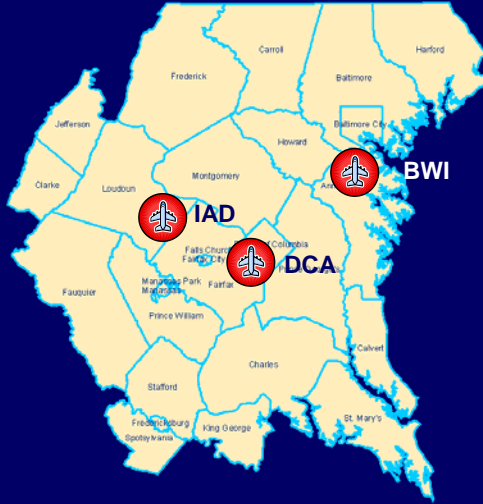
CASP planning activities are carried out in cooperation with key agencies represented on the Aviation Technical Subcommittee.

- Federal Aviation Administration (FAA)
- Maryland Aviation Administration (MAA)
- Virginia Department of Aviation (VDOA)
- District of Columbia Office of Planning (DCOP)
- District Department of Transportation (DDOT)
- Metropolitan Washington Airports Authority (MWAA)
- Staff from the Baltimore Metropolitan Council (BMC)

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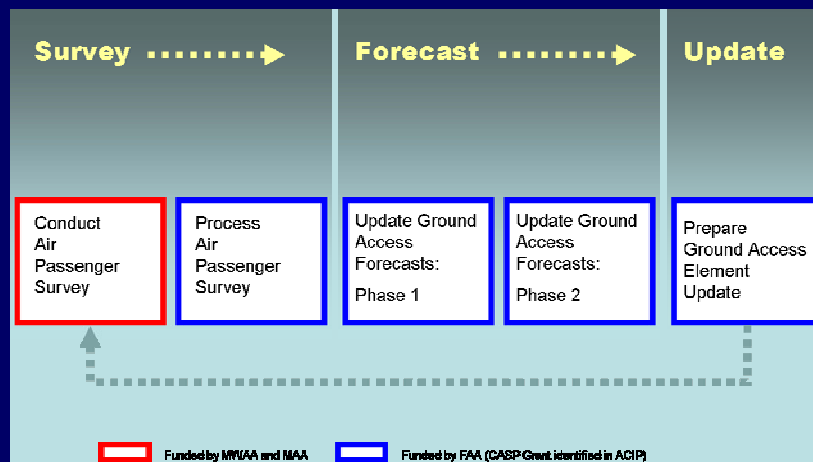
Airport System Planning Region includes jurisdictions in Washington region travel demand model, PLUS remainder of the Baltimore Region.

- Extends north to south from MD/PA border to mid-way between District of Columbia to Richmond, VA
- Extends east to west from Chesapeake Bay in MD to front range of Appalachians
- Three major airports: BWI, DCA, and IAD
- Region includes areas from DC, MD, VA, and WV



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The CASP Process is a 2-year planning cycle occurring in three (3) distinct phases, each containing specific projects and milestones.



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Periodically, additional studies are carried out as part of the CASP program.

- These additional studies are not completed every two years as part of the core program.
- Examples include:
 - Washington-Baltimore Region Air Cargo Study
 - Ground Access Travel Time Study

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2007 Washington-Baltimore Regional Air Passenger Survey

C. ABOUT YOUR AIRFARE CHOICE

8. Please circle your age bracket:

a. 18 to 24 years	b. 25 to 34
c. 35 to 44	d. 45 to 54
e. 55 to 64	f. 65 and older

9. Please check the answer that approximates the 100 U.S. domestic round-trip ticket price for all persons in your household in 2007:

a. Less than \$1,000	e. \$25,000 to \$50,000
b. \$1,000 to \$2,000	f. \$25,000 to \$50,000
c. \$2,000 to \$3,000	g. \$50,000 to \$100,000
d. \$3,000 to \$4,000	h. \$100,000 or more

If you were visiting the Washington-Baltimore area, please answer Questions 10 and 11, disregarding aircraft in section 2.

10. How many nights will you stay in the area?
 _____ Nights (Enter "0" if you are staying the same day as arrival.)

11. Approximately how much did you spend PER DAY while you were in the area? (Include approximate cost of meals, travel, rental car, etc.) Do not include gasoline. Please circle (1) domestic and (2) international flights only.

a. Less than \$100	e. \$400 to \$500
b. \$100 to \$150	f. \$500 to \$600
c. \$150 to \$200	g. \$600 to \$700
d. \$200 to \$250	h. \$700 to \$800
i. \$250 to \$300	j. \$800 or more

12. How many nights will you spend away on this trip?
 _____ Nights (Enter "0" if you are returning today.)

13. How many vehicles are usually available for use at your household?
 _____ Vehicles (Enter "0" if no vehicles are available.)

14. How far would you have to travel to the nearest BARTER or car rental agency?
 _____ Miles (Enter "0" if the vehicle is parked either directly in front of or adjoining your office.)

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 _____ Miles (Enter "0" if the vehicle is parked either directly in front of or adjoining your office.)

18. How far would you have to travel to the nearest BARTER or car rental agency?
 _____ Miles (Enter "0" if the vehicle is parked either directly in front of or adjoining your office.)

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Survey Background

- Major O/D survey conducted at BWI, DCA and IAD
- 685 flights composed randomly-selected sample

606 domestic	227 at BWI
79 international	212 at DCA
	246 at IAD

- Survey conducted early October through early November 2007

33 Airlines	114 Destinations
17 domestic	82 Domestic
16 international	32 International

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The 2007 air passenger survey yielded a favorable 49 percent response rate.

	BWI	DCA	IAD	Total
Actual No. of Completed Surveys	6,987	4,718	7,312	19,017
Mail-back				157
Total				19,174
No. Survey Completed (With Passenger Factor)	10,042	6,745	10,526	27,313
Revenue Passenger Count	21,277	14,825	19,422	55,524
Response Rate	47%	45%	54%	49%

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The 2007 regional air passenger survey examined 10 major factors.

- Airport use
- Airport preference
- Trip purpose
- Trip origin
- Mode of access
- Air travel characteristics
- Resident status
- Age
- Income
- Ticket purchase method

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Annual air passenger enplanements increased 5 percent to 32 million between 2005 and 2007.

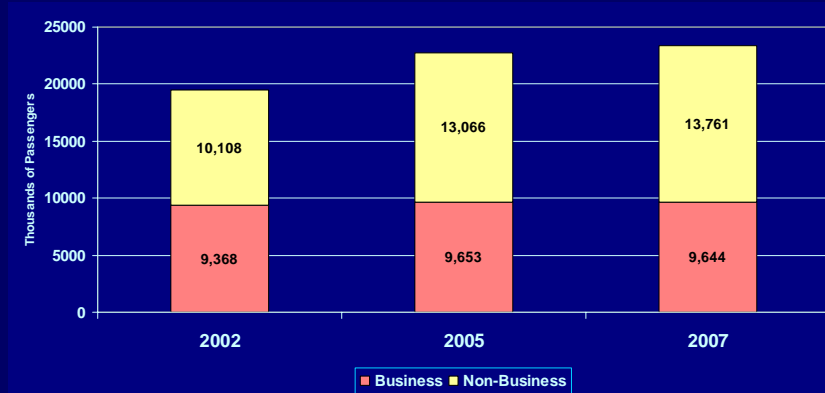
75 percent are local originating passengers.

- 8.4 million connecting passengers
- 23.6 million local originating passengers

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Trip Purpose: Originating Passengers by Survey Year

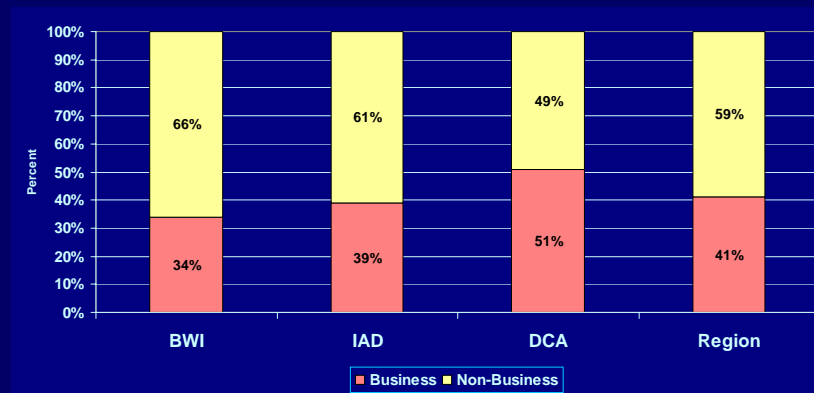
- Percent Non-Business trips steadily increased since 2002
- Largest increase between 2002 (post-911) and 2005



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Trip Purpose: Percent Originating Passengers by Airport

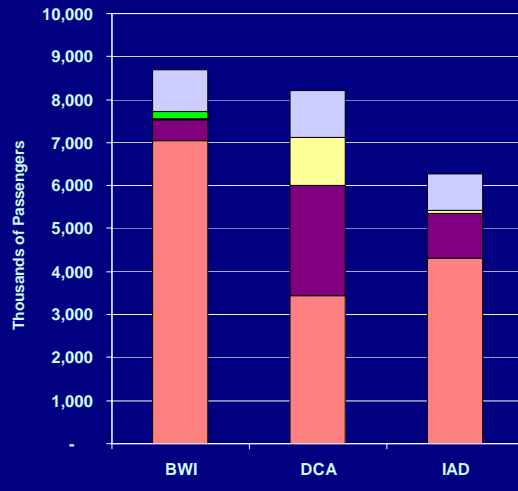
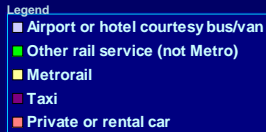
- Larger non-business share at BWI
- Larger business share at DCA



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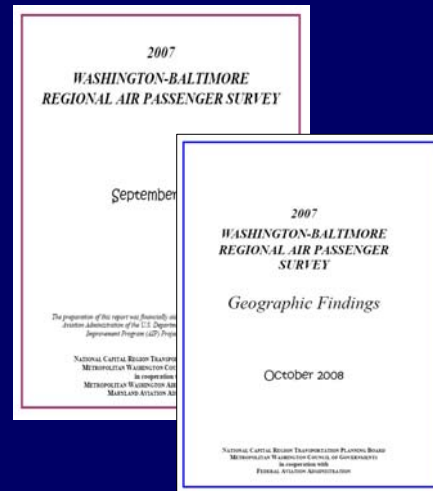
Mode of Access: Originating Passengers by Airport

- Notably higher percentage of passengers at DCA used Metrorail or taxi.
 - Lower share of private or rental cars, by contrast
- BWI travelers primarily used automobile, followed somewhat by airport or hotel shuttles.
 - Less than 2 percent used “other rail” service at BWI
- IAD travelers mostly dependent on automobile, followed by airport/hotel shuttles and taxi service



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Washington-Baltimore
Regional Air
Passenger Survey reports
are accessible from:



http://www.mwcog.org/transportation/committee/committee/documents.asp?COMMITTEE_ID=102

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Integrating the Regional Air Passenger Survey into Transportation Planning

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Washington-Baltimore Regional Air Passenger Origin/Destination Forecast Update

*Washington-Baltimore
Regional Air Passenger
Origin/Destination Forecast Update*

May 2008



Metropolitan Washington Council of Governments

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Purpose – develop base and forecast years of local originating internal annual air passenger trips from each Aviation Analysis Zone (AAZ) to the three regional commercial airports

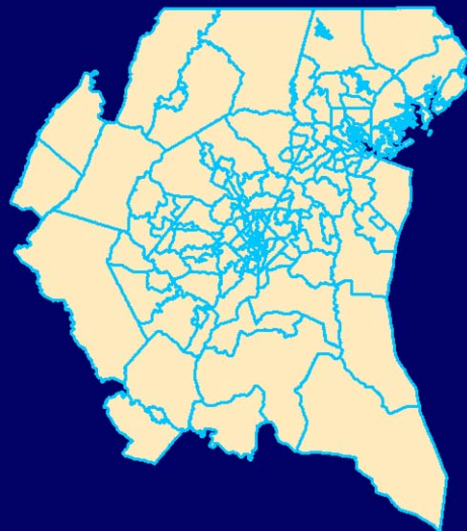
- Predict ground access demand on regional transportation system to each airport
- Provide justification for regional transportation improvement decision-making
- Forecasts incorporated into the regional travel model
- Consistent set of regional forecasts are then used by each of the airports in project planning

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The Air System Planning Region uses Aviation Analysis Zones (AAZs).

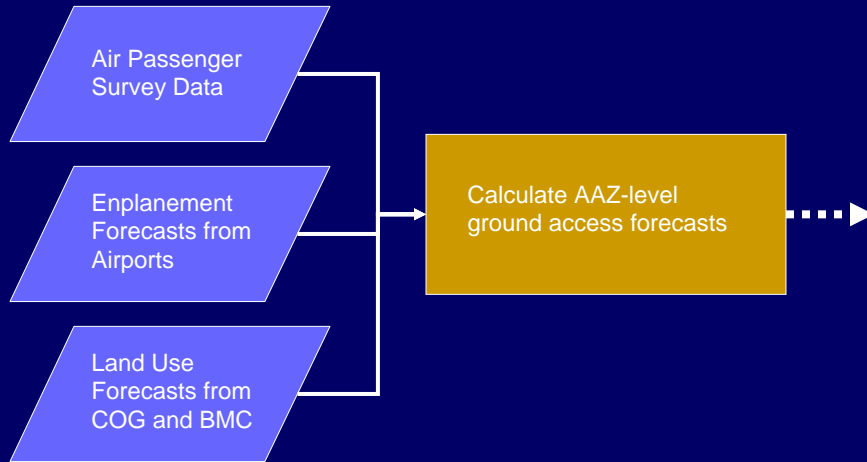
- Aviation Analysis Zones (AAZs) are used in survey geographic analysis and ground access forecasts.
- AAZs are composed of aggregated TAZs from TPB and Baltimore regional models.

(TAZs from TPB model are used to define AAZs for Anne Arundel, Carroll, and Howard counties.)



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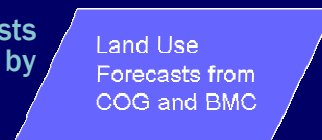
Three (3) datasets, including air passenger survey data, are used to develop ground access forecasts for the TPB model.



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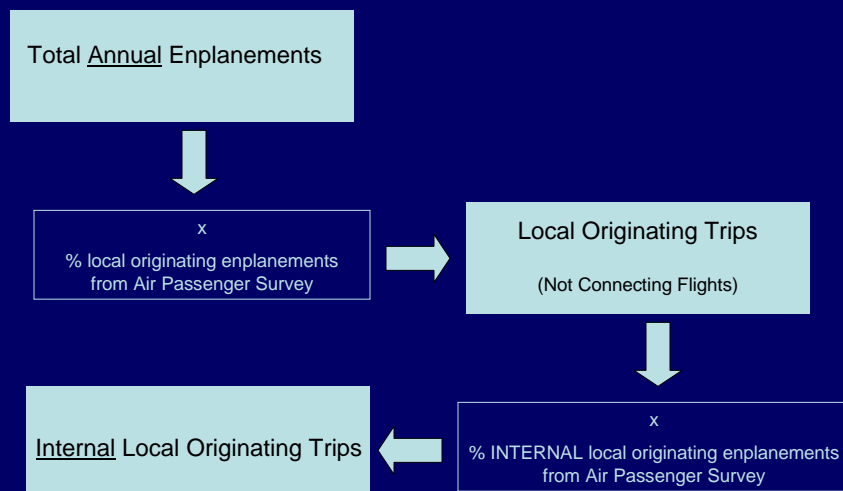
Three (3) principal datasets involved

- **Air Passenger Survey**
 - % local originating trips
 - % local originating internal trips
 - % home and non-home local originating trips
- **Enplanement forecasts through 2030 for BWI, DCA and IAD provided by airports**
- **Latest MWCOG and BMC forecasts of households and employment by TAZ through 2030**



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Step 1: Estimate internal local originating trips for each airport.



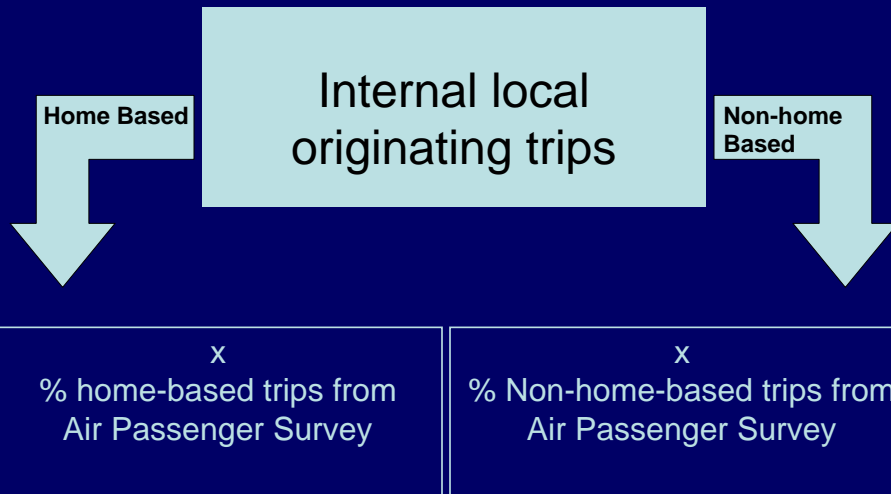
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Completing Step 1 results in annual control totals of internal local originating trips by airport by forecast year.

Enplanements								
Year	BWI	DCA	IAD	Total				
2005	9,865,928	8,227,000	13,795,311	31,888,239				
2010	12	Local Originations						
2015	13							
2020	15	Year	BWI	DCA	IAD	Total		
2025	16	2005	8,561,530	7,412,114	7,644,048	23,617,692		
2030	18	2010	Internal Local Originations					
		2015	11					
		2020	13	Year	BWI	DCA	IAD	Total
		2025	14	2005	7,350,101	7,262,445	7,047,500	21,660,046
		2030	15	2010	9,200,805	7,816,199	7,603,678	24,620,681
				2015	10,260,267	8,373,219	9,532,431	28,165,916
				2020	11,365,249	8,936,859	11,559,274	31,861,383
				2025	12,480,511	9,441,796	13,545,505	35,467,812
				2030	13,636,823	9,888,030	15,523,303	39,048,156

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Step 2: Estimate annual home and non-home internal local originating trips for every AAZ.



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Step 3: Estimate annual home and non-home trip rates for trips from each AAZ to each airport.

$$\text{Home Based Trip Origin Rate for Airport}_A \text{ from AAZ}_X = \frac{\text{AAZ}_X \text{ Origin Home Trip}_{2005}}{\text{AAZ}_X \text{ Households}_{2005}}$$

$$\text{Non-Home Based Trip Origin Rate for Airport}_A \text{ from AAZ}_X = \frac{\text{AAZ}_X \text{ Origin Non-Home Trip}_{2005}}{\text{AAZ}_X \text{ Employment}_{2005}}$$

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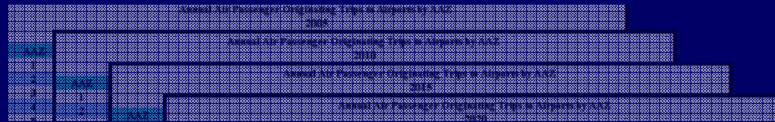
Step 4: Estimate annual home and non-home trips from each AAZ to each airport.

Home Based Trips for Airport_A from AAZ_X =
 Home-based Trip Origin Rate for Airport_A AAZ_X *
 Household AAZ_X Year_Y

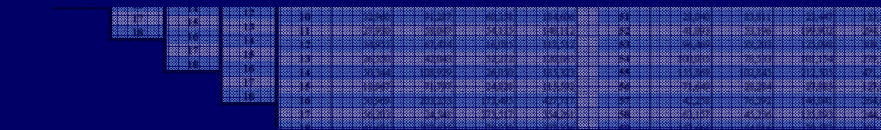
Non-Home Based Trips for Airport_A from AAZ_X =
 Non-home-based Trip Origin Rate for Airport_A AAZ_X *
 Employment AAZ_X Year_Y

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Completing Step 4 results in trip tables of internal local originating annual trips from each AAZ to each airport.



O/D forecasts are then further broken down to detailed ground access forecasts for individual TAZs by mode of travel and time of day using factors from the air passenger survey.



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Ground Access Element Update

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Developing the Regional Ground Access Element Update entails a sequence of analyses and makes recommendations.

1. **Supply Analysis:** identify current transportation facilities and services and future improvements contained in the region's long-range plan and airport master plans that support regional ground access
2. **Demand Analysis:** identify current and future ground access demand (ground access forecasts)
3. **Needs Analysis:** determine if future planned ground access system will adequately accommodate future demand
4. **Recommendations:** policy changes and transportation facilities and service improvements that may be necessary to meet future ground access challenges

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Conducting Air System Planning at the regional level provides several key benefits.

- Consistent set of ground access planning forecasts bolsters credibility of plans and project studies
 - MAA and MWAA provide these data to consultants in project studies
 - Data are consistently used in regional travel demand forecasting
- Aviation Technical Subcommittee provides regional forum for all three airports, their owner/operators, regulating agencies, planning agencies, and other stakeholders to interact and address key issues.
- Regional collaboration leverages each of the three airports' planning resources and provides an economy of scale.

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Contacts . . .



Metropolitan Washington
Council of Governments

Timothy Canan, AICP

Principal Planner / CASP Program Manager
Department of Transportation Planning

(202) 962-3488

tcanan@mwkog.org



Metropolitan Washington
Council of Governments

Abdul Mohammed

Senior Transportation Engineer
Department of Transportation Planning

(202) 962-3370

abdul@mwkog.org

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2009 Washington-Baltimore Regional Air Passenger Survey

A. ABOUT YOUR TRIP TODAY

1. How did you get to Washington Dulles International Airport for this trip?

(Please circle ONE answer)

- a. I came to this airport by GROUND TRANSPORTATION (e.g. auto, taxi, Metro, etc.)
(Please proceed directly to QUESTION #2)
- b. I was on this flight when it arrived at this airport.
(STOP. That is all the information we need)
- c. I made a connection at this airport from a DOMESTIC FLIGHT with _____ Airlines. *(Please fill in the name of the airline and STOP. That is all we need to know)*
- d. I made a connection at this airport from an INTERNATIONAL FLIGHT with _____ Airlines *(Please fill in the name of the airline and STOP. That is all we need to know)*

If you arrived at this airport by GROUND TRANSPORTATION, please complete the rest of this survey.

2. What is the destination of your trip today?

Airport	City
State/Province	Country

3. What type of trip is this?

(Please circle the answer for the main purpose of your travel)

- a. Business related to the federal government (Including military)
- b. Business related to state or local government
- c. Business that is not related to government
- d. Vacation
- e. Personal or family affairs
- f. Student or school related
- g. Other purpose
(Specify) _____



4. Since your arrival at the airport, did you stop at any of the following? (Please circle ALL that apply)

- a. Curbside agent for boarding pass
- b. Curbside agent for bag check
- c. E-ticket kiosk for boarding pass
- d. E-ticket kiosk for bag check
- e. Ticket agent in terminal for boarding pass
- f. Ticket agent in terminal for bag check
- g. None of the above

B. ABOUT YOUR GROUND TRIP TO WASHINGTON DULLES INTERNATIONAL AIRPORT:

1. Where did you start your ground trip to this airport (IAD)?

(Please circle ONE answer)

- a. Private residence
- d. Another place of business
- b. Hotel/Motel
- e. Other
- c. My regular place of employment

(Specify)

2. What is the address of the place above?

(If you prefer to provide a less specific geographic location, please indicate the nearest intersection, or building name)

Street Number	Street Name	City Quadrant (e.g. SW, NE)
---------------	-------------	-----------------------------

City	State	Zip Code
------	-------	----------

3. What time did you begin your trip to the airport today? (Enter time and circle AM or PM)

_____ : _____ AM PM

4. What time did you arrive at the airport today ?

(Enter time and circle AM or PM)

_____ : _____ AM PM

5. Did any member of your household, friends, or business associates travel to the airport with you?

a. NO

b. YES

- 1. How many? _____
- 2. Of this group, how many came to board this flight? _____

6. How many checked-in bags on this flight are yours? (Enter '0' if no bags were checked) _____

7. What was your primary means of transportation to this airport?

(Please circle ONE answer)

- a. Private Car
- f. Metrorail (National)
- b. Rented Car
- g. Amtrak/MARC (BWI)
- c. Taxi
- h. Light Rail (BWI)
- d. Airport bus/van/limo
- i. Hotel/Motel courtesy bus
- e. Other
(Specify) _____

8. If you arrived in a private vehicle (excluding rental cars):

a. Were you dropped off at the terminal curbside?

YES _____ NO _____

b. Where was that vehicle parked (either directly or after dropping you off)?

- 1. It was not parked
- 2. Short term/hourly Parking Lot
- 3. Long term/daily parking garage
- 4. Long term/economy parking lot.
- 5. Valet Parking

- For How Long?

- a. For a few hours or less
- b. Until you return from this trip.



2009 Washington-Baltimore Regional Air Passenger Survey

C. ABOUT YOUR AIRPORT CHOICE

1. Please rank the three most important reasons for choosing Washington Dulles International Airport for your flight today.

(Please write #1, #2 or #3 in the appropriate spaces)

- _____ Closest airport
- _____ Easy road access
- _____ Convenient limo, bus, or rail service
- _____ Good parking facilities
- _____ More convenient flight times
- _____ Less expensive airfare
- _____ Only airport with non-stop flights
- _____ Only airport that serves market
- _____ Frequent flyer specific airline
- _____ Other _____

2. If you could have arranged the airline schedule for your trip today, which airport would you have PREFERRED to use? (Please circle ONE answer)

- a. Baltimore/Washington International Thurgood Marshall
- b. Washington Dulles International
- c. Ronald Reagan Washington National
- d. No preference

3. Please indicate which other airport(s) you considered using today. (Please circle ALL answers that apply)

- a. Baltimore/Washington International Thurgood Marshall
- b. Ronald Reagan Washington National
- c. Other airport _____
(Specify)
- d. Did not consider another airport

4. During the last twelve months, how many flights did you make from each of the following airports?

(Please write a number in the appropriate spaces.

Count today's trip as one flight)

- _____ Baltimore/Washington International Thurgood Marshall
- _____ Washington Dulles International
- _____ Ronald Reagan Washington National

D. ABOUT YOURSELF

1. Please indicate the location of your current residence:

_____ City/County _____ State _____ Zip Code _____ Country

2. How many people live in your household?

_____ People *(Enter '1' if you live alone)*

3. Please circle your age bracket:

- | | |
|------------------|----------------|
| a. 18 or younger | d. 35-49 |
| b. 19-24 | e. 50-64 |
| c. 25-34 | f. 65 or older |

4. Please circle the answer that approximates the total household annual income of all persons in your household:

- | | |
|-----------------------|----------------------|
| a. Less than \$15,000 | e. \$80,000-119,999 |
| b. \$15,000-24,999 | f. \$120,000-159,999 |
| c. \$25,000-44,999 | g. \$160,000-199,999 |
| d. \$45,000-79,999 | h. \$200,000 or more |

If you were visiting the Washington-Baltimore area, please answer questions #5 and #6, then proceed directly to section E.

5. How many nights did you stay in the area?

_____ Nights *(Enter '0' if you are leaving the same day you arrived)*

6. Approximately how much did you spend PER DAY while you were in the area? (Include expenses which are meals, hotels, rental cars, etc. Do not include airfare. Please circle ONE answer)

- | | |
|--------------------|--------------------|
| a. Less than \$100 | e. \$400-499 |
| b. \$100-199 | f. \$500-749 |
| c. \$200-299 | g. \$750-999 |
| d. \$300-399 | h. \$1,000 or more |

If your air travel begins from this airport please answer Questions #7 and #8 below, then proceed to section E.

7. How many nights will you spend away on this trip?

_____ Nights *(Enter '0' if you are returning today)*

8. How many vehicles are usually available for use at your residence?

_____ Vehicles *(Enter '0' if no vehicles are available)*

E. PLEASE WRITE ANY COMMENTS YOU MAY WISH TO BRING TO OUR ATTENTION BELOW

Again, Thanks For Your Help!

I -

2009 WASHINGTON- BALTIMORE REGIONAL AIR PASSENGER SURVEY

TO DETERMINE LOCAL AIRPORT NEEDS



IAD

This survey is being conducted by:
Metropolitan Washington Council of Governments
Metropolitan Washington Airports Authority
Maryland Aviation Administration
in cooperation with the airlines
serving the region's airports.

This survey concerns your trip today.
Please complete this form, even if you have
received a form on other days.

All answers are confidential.
Personal identification is not required.
Thank you for your cooperation.