



MEMORANDUM

TO: Aviation Technical Subcommittee
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SUBJECT: Air Passenger Ground Access Trips Forecast Update, 2022
DATE: September 21, 2022

Introduction

In 2022, as part of the Air Passenger Origin/Destination and Air Passenger Ground Access Forecast Update projects, Metropolitan Washington Council of Governments (COG) staff updated the air passenger trips input to the regional travel demand modeling process. This exercise consisted of applying the process described in this memo to the latest Federal Aviation Administration's (FAA) Terminal Area Forecasts (TAF), Washington-Baltimore Regional Air Passenger Survey results, and land use forecasts developed by COG and Baltimore Metropolitan Council (BMC) that cover the Washington-Baltimore Air Systems Planning Region. These inputs were used to update the base year and forecast year annual and weekday air passenger ground access trips by arrival mode and time-of-day for the TPB travel demand modeled region.

Air Passenger Enplanement Forecasts

FAA's enplanement forecasts were obtained for forecast years 2015 through 2045. Tables 1, 2, and 3 present observed and forecast air passenger enplanements for the three airports in the Washington/Baltimore region, respectively: Baltimore/Washington International Thurgood Marshall Airport (BWI), Ronald Reagan Washington National Airport (DCA), and Washington Dulles International Airport (IAD). Air passenger enplanements for BWI are presented in Table 1. Enplanements at BWI are forecast to reach 21 million by 2045, an increase of 55 percent from 2019. At DCA (shown in Table 2), enplanements are projected to reach 16.7 million, an increase of 41 percent from 2019. Enplanements at IAD (shown in Table 3) are projected to reach more than 19 million by 2045, an increase of 60 percent from 2019.

Table 1
Annual Air Passenger Enplanement Forecasts
Baltimore/Washington International Thurgood Marshall Airport

Year	Enplanements		Growth (from previous forecast year)	
2019	13,541,751	¹		
2020	5,606,801	¹	-7,934,950	-58.60%
2025	14,366,148	²	8,759,347	156.23%
2030	16,033,343	²	1,667,195	11.61%
2035	17,664,050	²	1,630,707	10.17%
2040	19,278,629	²	1,614,579	9.14%
2045	21,002,555	²	1,723,926	8.94%

¹ Observed

² Forecast based on FAA TAF Fiscal Year annual percent increase

Table 2
Annual Air Passenger Enplanement Forecasts
Ronald Reagan Washington National Airport

Year	Enplanements		Growth (from previous forecast year)	Percent Change
2019	11,949,042	¹		
2020	3,768,361	¹	-8,180,681	-68.46%
2025	13,725,183	²	9,956,822	264.22%
2030	14,799,152	²	1,073,969	7.82%
2035	15,464,737	²	665,585	4.50%
2040	16,128,510	²	663,773	4.29%
2045	16,788,450	²	659,940	4.09%

¹ Observed

² Forecast based on FAA TAF Fiscal Year annual percent increase

Table 3
Annual Air Passenger Enplanement Forecasts
Washington Dulles International Airport

Year	Enplanements		Growth (from previous forecast year)	Percent Change
2019	12,328,926	¹		
2020	4,087,368	¹	-8,241,558	-66.85%
2025	12,990,820	²	8,903,452	217.83%
2030	14,702,859	²	1,712,039	13.18%
2035	16,368,635	²	1,665,776	11.33%
2040	18,033,722	²	1,665,087	10.17%
2045	19,759,028	²	1,725,306	9.57%

¹ Observed

² Forecast based on FAA TAF Fiscal Year annual percent increase



Market Segmentation

Based on the 2019 Washington-Baltimore Regional Air Passenger Survey data, enplanements were further grouped into local originations, internal originations (within the Washington-Baltimore Air System Planning Region) and the TPB modeled region (within the 132 AAZs in the TPB modeled region). Table 4 shows the breakdown of these three types of originations by airport for base year 2019 and forecast years through 2045.

A locally originating air passenger is defined as an air traveler beginning one's air travel on a flight departing from one of the region's three airports. This definition excludes air travelers who are connecting to another flight at one of the region's airports, but it includes air travelers who are not residents of the Washington/Baltimore region who are making a return air trip home from a business or vacation trip to the Washington/Baltimore region. Thus, local originating air passengers can be either residents or non-residents of the Washington/Baltimore region. The results of the 2019 Washington/Baltimore Regional Air Passenger Survey showed that 59 percent of all locally originating air passengers were non-residents who began their ground access trip to the airport from a hotel/motel, place of business, a private residence, or other location in the Washington-Baltimore Air System Planning Region.

Air Passenger Ground Access Trip Forecasting Methodology

The Air Passenger Ground Access Trips Forecast Update was accomplished in a series of steps, illustrated in Figure 1 and below:

- Convert base year 2019 annual air passenger trips from the Regional Air Passenger Survey to average weekday air passenger ground access trips.
- Summarize base year 2019 average weekday air passenger ground access trips by residential (home-based) / non-residential (non-home based) trip origin type and area resident/non-resident status for each AAZ.¹
- Summarize household and employment land use activity data by AAZ for base year 2019 and all forecast years (2020, 2025, 2030, 2035, 2040 and 2045).
- Calculate base year 2019 air passenger ground access trip generation factors by home/non-home trip origin type and area resident/non-resident status for each airport AAZ pair.
- Calculate average weekday air passenger ground access trips to each airport for 2019 base year and all forecast years.
- Summarize base year 2019 weekday ground access trips by mode of arrival for each airport, by geographic trip origination (AAZ) and resident status.

¹ In the context of air passenger ground access trips, a home-based trip refers to any airport ground access trip that begins at a private residence. Short term rentals are not counted as private residences.

For example, an airport ground access trip by a non-resident that begins at the home of a friend or family member who lives in this region is considered a home-based trip, even though this starting location is not technically the "home" of the non-resident air passenger.



- Calculate average weekday airport ground access trips by mode of arrival for 2019 base year and all forecast years.
- Calculate time-of-day split.

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Table 4
Washington / Baltimore Regional Airports
Annual Local and Internal AAZ Originating Trips
(in thousands)

Year	Local Originating Trips				Internal AAZ Originating Trips				TPB AAZ Originating Trips			
	BWI	DCA	IAD	Total	BWI	DCA	IAD	Total	BWI	DCA	IAD	Total
2019	10,426	10,918	8,726	30,070	8,999	10,761	8,071	27,831	6,422	10,716	7,972	25,109
2020	4,317	3,443	2,893	10,653	3,726	3,394	2,676	9,795	2,659	3,379	2,643	8,681
2025	11,060	12,541	9,195	32,796	9,547	12,361	8,504	30,412	6,813	12,309	8,400	27,521
2030	12,344	13,522	10,407	36,273	10,655	13,328	9,625	33,608	7,603	13,272	9,507	30,382
2035	13,600	14,130	11,586	39,316	11,739	13,928	10,715	36,382	8,376	13,869	10,584	32,829
2040	14,843	14,737	12,764	42,344	12,812	14,526	11,805	39,142	9,142	14,464	11,660	35,267
2045	16,170	15,340	13,985	45,495	13,957	15,120	12,935	42,012	9,960	15,056	12,776	37,792

Note:

- Local originating trips are departing passengers whose trip starts from one of the region's three airports.
- Internal AAZ originating trips are local originating trips within the Washington/Baltimore Air System Planning Area.
- Local originating trips are calculated based on the 2019 Air Passenger Survey data to be 77% for BWI, 91% for DCA and 71% for IAD, of the total enplanements, shown on Tables 1, 2 and 3, respectively.
- Internal originating trips are calculated based on the 2019 Air Passenger Survey data to be 86% for BWI, 99% for DCA, and 92% for IAD, of the total local originating trips, that are within the 161 internal AAZ's.
- TPB AAZ originating trips are calculated based on the 2019 Air Passenger Survey data to be 71% for BWI, 100% for DCA and 99% IAD, of the total Internal AAZ originating trips, that are within the 132 AAZ's.
- Internal AAZs include 161 AAZs within the Washington-Baltimore Air System Planning Region.
- TPB AAZs include 132 AAZs within the TPB Modeled Region.
- Internal and external TPB originations do not include external zones for PA, DE, and NJ or external VA, MD, and WV.

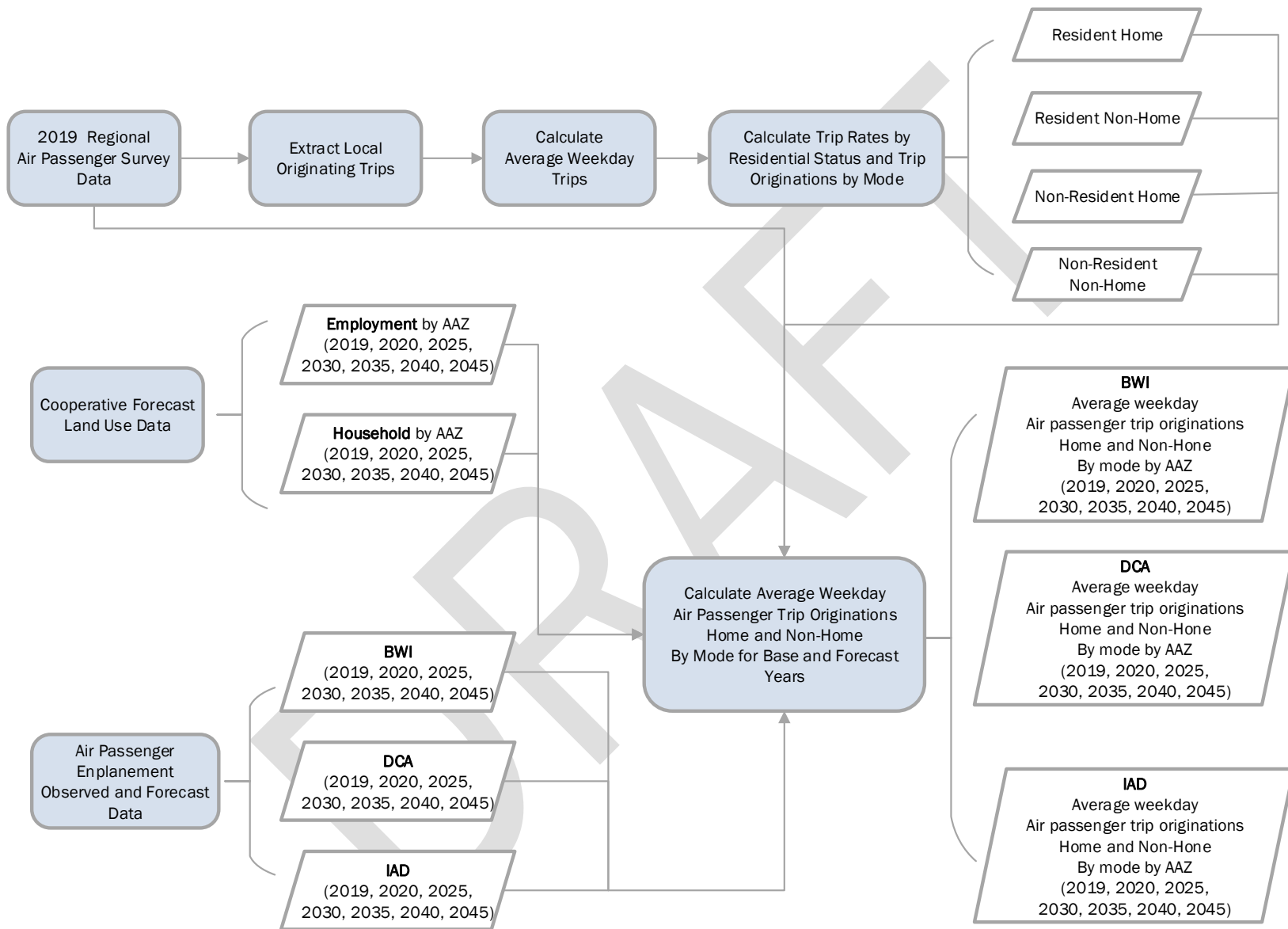


Figure 1 Air Passenger Ground Access Forecast Procedure



2019 Washington-Baltimore Regional Air Passenger Survey

The 2019 Washington-Baltimore Regional Air Passenger Survey was conducted over a two-week period in the fall of 2019. The survey includes departing passengers from the three major commercial airports in the region: Baltimore/Washington International Thurgood Marshall (BWI), Ronald Reagan Washington National (DCA), and Washington Dulles International (IAD). Table 5 shows local originating and connecting annual enplanements at the three regional airports, and Table 6 shows enplanements for local originations within and outside of the Washington-Baltimore Air System Planning Region by airport. Table 7 shows enplanements for local originations within the Air System Planning Region classified by within and outside the TPB modeled region.

Table 5
2019 Washington / Baltimore Regional Air Passenger Survey
Annual Trip Originations by Airport (in Thousands)

Enplanement Type		Airport			
		BWI	DCA	IAD	Total
Local origination	Number	10,426	10,918	8,726	30,070
- (Came by ground transportation)	Percent	77%	91%	71%	80%
Connected from another Flight	Number	3,116	1,031	3,603	7,750
- (Local and/or International)	Percent	23%	9%	29%	20%
Total Annual Enplanements	Number	13,542	11,949	12,329	37,820
	Percent	100%	100%	100%	100%
Percent of Air System Planning Region		36%	36%	32%	33%

Source: 2019 Washington-Baltimore Regional Air Passenger Survey

Note: Totals may not add due to rounding

Table 6
2019 Washington / Baltimore Regional Air Passenger Survey
Annual Trip Local Originations by Airport (in Thousands)
Air System Planning Region - Internal/External Trip Originations by Airport

Enplanement Type		Airport			
		BWI	DCA	IAD	Total
Within Air System Planning Region (Aviation Analysis Zone (AAZ) 1-161)	Number	8,999	10,761	8,071	27,831
- (Internals)	Percent	86%	99%	92%	93%
Outside Air System Planning Region (AAZ >161)	Number	1,427	157	656	2,239
- (Externals)	Percent	14%	1%	8%	7%
Total Annual Enplanements	Number	10,426	10,918	8,726	30,070
	Percent	100%	100%	100%	100%

- **Internal** originating trips are local originating trips from the Washington/Baltimore Air System Planning Region.

- **External** originating trips are trips originating from PA, DE, NJ or external VA, MD, or WV

Source: 2019 Washington-Baltimore Regional Air Passenger Survey

Note: Totals may not add due to rounding

Table 7
2019 Washington / Baltimore Regional Air Passenger Survey
Air System Planning Region Annual Trip Originations by Airport (in Thousands)
TPB Modeled Region - Internal/External Trip Originations by Airport

Enplanement Type		Airport			Total
		BWI	DCA	IAD	
Within TPB Modeled Region (AAZ 1-132)	<i>Number</i>	6,422	10,716	7,972	25,109
- (<i>Internals</i>)	<i>Percent</i>	71%	100%	99%	90%
Outside TPB Modeled Region (AAZ 133-161)	<i>Number</i>	2,578	46	99	2,722
- (<i>Externals</i>)	<i>Percent</i>	29%	0%	1%	10%
Total Annual Enplanements	<i>Number</i>	8,999	10,761	8,071	27,831
	<i>Percent</i>	100%	100%	100%	100%

- **Internal** originating trips are local originating trips from the TPB Modeled Region.

- **External** originating trips are trips originating from PA, DE, NJ or external VA, MD, or WV

Source: 2019 Washington-Baltimore Regional Air Passenger Survey

Note: Totals may not add due to rounding

Since the survey was conducted over a two-week period, the survey responses were expanded to represent observed annual passenger enplanements for the survey year 2019. The TPB regional travel demand model simulates average weekday travel, therefore, only weekday trips (Monday – Friday) were considered.

Annual weekday total enplanements for the region’s three major airports are shown in Table 8. Approximately 21 million passengers flew out of the region’s three major airports during the weekdays of 2019. Of these, 93 percent were air passengers originating within the TPB modeled region, while seven percent were external originations.

Table 8
2019 Washington / Baltimore Regional Air Passenger Survey
Annual Weekday Trip Originations by Airport (in Thousands)
Air System Planning Region and External Trip Originations by Airport

Enplanement Type		Airport			Total
		BWI	DCA	IAD	
Within Air System Planning Region (AAZ 1-161)	<i>Number</i>	6,468	7,805	5,944	20,216
- (<i>Internals</i>)	<i>Percent</i>	86%	99%	94%	93%
Outside Air System Planning Region (AAZ >161)	<i>Number</i>	1,055	104	409	1,568
- (<i>Externals</i>)	<i>Percent</i>	14%	1%	6%	7%
Total Annual Enplanements	<i>Number</i>	7,523	7,909	6,353	21,785
	<i>Percent</i>	100%	100%	100%	100%

- **Internal** originating trips are local originating trips from the Washington/Baltimore Air Systems Planning Region.

- **External** originating trips are trips originating from PA, DE, NJ or external VA, MD, or WV.

Source: 2019 Washington-Baltimore Regional Air Passenger Survey

Note: Totals may not add due to rounding

The first step in the update of airport ground access trips was converting annual air passenger trips from the 2019 Washington/Baltimore Regional Air Passenger Survey to average weekday figures for base year 2019. This was accomplished by (1) slightly adjusting the annual air passenger survey weights to match the year 2019 observed enplanements at the three commercial airports; (2) selecting only the survey records for local originating air passengers making airport ground access trips on a weekday; and (3) dividing the adjusted annual survey weights for each air passenger trip record using the following formula.

$$\text{Average Weekday Air Passenger Ground Access Trips} = \frac{\text{Annual Weekday Ground Access Trips}}{260}$$

The resulting data are shown in Table 9.

Table 9
2019 Washington / Baltimore Regional Air Passenger Survey
Average Weekday Trip Originations by Airport
TPB Modeled Region – Internal/External Trip Originations by Airport

Enplanement Type		Airport			Total
		BWI	DCA	IAD	
Within TPB Modeled Region (AAZ 1-132)	<i>Number</i>	17,638	29,882	22,616	70,136
- (<i>Internals</i>)	<i>Percent</i>	71%	100%	99%	90%
Outside TPB Modeled Region (AAZ 133-161)	<i>Number</i>	7,237	139	244	7,620
- (<i>Externals</i>)	<i>Percent</i>	29%	0%	1%	10%
Total Annual Enplanements	<i>Number</i>	24,875	30,021	22,860	77,755
	<i>Percent</i>	100%	100%	100%	100%

- **Internal** originating trips are local originating trips within the Washington-Baltimore Air System Planning Region.

- **External** originating trips are trips originating from PA, DE, NJ or external VA, MD, or WV

Source: 2019 Washington-Baltimore Regional Air Passenger Survey

Note: Totals may not add due to rounding

The next step in the process was to summarize the average weekday ground access trip data for each airport (BWI, DCA, and IAD) by trip origin type and resident status for each AAZ for the TPB modeled region within the Washington-Baltimore Regional Air System Planning Region. The weekday ground access data were summarized into two trip origin types (home-based, non-home based) and two resident status types (resident, non-resident). Thus, this processing summarized the ground access trip data into four categories for each Airport-AAZ pair. These categories were:

- (1) Resident Status=**Resident**, Origin Type=**Home-based**
- (2) Resident Status=**Resident**, Origin Type=**Non-home based**
- (3) Resident Status=**Non-Resident**, Origin Type=**Home-based**
- (4) Resident Status=**Non-Resident**, Origin Type=**Non-home based**

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Summarize Land Use Activity Data for 2019 Base Year and Forecast Years

COG's Round 9.2 and BMC's Round 8B Cooperative Forecasts served as the source of the latest available household and employment land use activity estimates and forecasts from 2019 through 2045 by TAZ. These TAZ-level data were aggregated to the internal AAZs shown in Figure 1 of the appendix following this memorandum. Table 10 shows the household and employment forecasts for the Air System Planning region.

Table 10
Washington-Baltimore Air System Planning Region
Household Forecast

Year	Household	Growth (from previous forecast year)	Percent Growth
2019	3,317,128	-	
2020	3,348,910	31,782	1.0%
2025	3,521,453	172,543	5.2%
2030	3,692,301	170,848	4.9%
2035	3,840,616	148,315	4.0%
2040	3,972,676	132,060	3.4%
2045	4,096,163	123,487	3.1%

Source: COG Round 9.2 and BMC Round 8B Cooperative Land Use Forecast

Employment Forecast

Year	Employment	Growth (from previous forecast year)	Percent Growth
2019	5,045,500	-	
2020	5,101,016	55,516	1.1%
2025	5,386,036	285,020	5.6%
2030	5,656,451	270,415	5.0%
2035	5,904,765	248,314	4.4%
2040	6,143,758	238,993	4.0%
2045	6,365,730	221,972	3.6%

Source: COG Round 9.2 and BMC Round 8B Cooperative Land Use Forecast

Note: For regional transportation planning purposes, adjustments were applied to employment forecasts in selected jurisdictions to account for definitional differences in employment.



Calculate Air Passenger Ground Access Trip Generation Factors

Once the air passenger ground access trip and land use activity data were summarized, trip generation factors were calculated for each Airport/AAZ/trip origin type/resident-status classification using the following formulae:

A. Resident Home-based Trip Origin factor for Airport_(A) AAZ_(X) =

$$\text{Resident Home-based Factor} = \frac{\text{Total Resident Home-based Trip Origin Trips (AAZ}_X\text{) (Year 2019)}}{\text{Total Households (AAZ}_X\text{) (Year 2019)}}$$

B. Resident Non-home-based Trip Origin factor for Airport_(A) AAZ_(X) =

$$\text{Resident Non-home-based Factor} = \frac{\text{Total Resident Non-home-based Trip Origin Trips (AAZ}_X\text{) (Year 2019)}}{\text{Total Employment (AAZ}_X\text{) (Year 2019)}}$$

C. Non-Resident Home-based Trip Origin factor for Airport_(A) AAZ_(X) =

$$\text{Non-Resident Home-based Factor} = \frac{\text{Total Non-Resident Home-based Trip Origin Trips (AAZ}_X\text{) (Year 2019)}}{\text{Total Households (AAZ}_X\text{) (Year 2019)}}$$

D. Non-Resident Non-Home-based Trip Origin factor for Airport_(A) AAZ_(X) =

$$\text{Non-Resident Non-Home-based Factor} = \frac{\text{Total Non-Resident Non-home-based Trip Origin Trips (AAZ}_X\text{) (Year 2019)}}{\text{Total Employment (AAZ}_X\text{) (Year 2019)}}$$

Calculate Air Passenger Ground Access Trips for 2019 and Forecast Years

Ground access trips for 2019, 2020, 2025, 2030, 2035, 2040 and 2045 were calculated by multiplying base year and forecast year household and employment data by the appropriate trip generation factors and adjusting the resultant product to be consistent with local air passenger originations estimates and forecasts for each airport (See the “Control Total” worksheet in “gafu2022.xlsx”, including, see column ‘T’ for the TPB Modeled Region.) For each airport-AAZ combination, (1) air passenger ground access trips by residents with home-based trip origin types were calculated by multiplying AAZ households by the resident home-based trip origin trip generation factor; (2) air passenger ground access trips by residents with non-home-based trip origin types were calculated by multiplying AAZ employment by the resident non-home-based trip origin trip generation factor; (3) air passenger ground access trips by



non-residents with home-based trip origin types were calculated by multiplying AAZ households by the non-resident home-based trip origin trip generation factor; and (4) air passenger ground access trips by non-residents with non-home-based origin types were calculated by multiplying AAZ employment by the non-resident non-home-based trip origin trip generation factor.

The resultant products for each AAZ-origin type-resident-status classification were then summed by airport-AAZ pair and totaled for each airport. This total then divided the forecasts of local passenger originations within the Air System Planning Region and generated adjustment factors for each airport and forecast year. These adjustment factors were then applied to all airport-AAZ pairs to ensure that the sum of the calculated ground access trips by AAZ for that airport would match the FAA terminal forecasts of the Air System Planning Region.

As shown in Table 11, average weekday resident and non-resident trips were categorized into Home-Based (HB) and Non-Home-Based (NHB) trips depending on the air passengers' trip origination, i.e., the starting point of the passenger's ground trip to the airport.

Table 11
Average Weekday Air Passenger Ground Access Trips
by Resident Status and Trip Origin
(TPB Modeled Region Only)

Year	BWI					
	Resident			Non-Resident		
	Home Based	Non-Home Based	Total	Home Based	Non-Home Based	Total
2019	7,996	1,182	9,178	3,795	4,671	8,466
2020	3,317	492	3,809	1,578	1,948	3,526
2025	8,542	1,264	9,806	4,075	5,015	9,090
2030	9,588	1,422	11,010	4,597	5,644	10,241
2035	10,590	1,583	12,173	5,098	6,272	11,370
2040	11,538	1,753	13,291	5,574	6,930	12,504
2045	12,526	1,933	14,459	6,061	7,644	13,705
Year	DCA					
	Resident			Non-Resident		
	Home Based	Non-Home Based	Total	Home Based	Non-Home Based	Total
2019	9,599	1,452	11,051	4,133	14,731	18,864
2020	3,026	466	3,492	1,305	4,653	5,958
2025	10,918	1,642	12,560	4,708	17,087	21,795
2030	11,658	1,761	13,419	5,038	18,620	23,658
2035	12,063	1,827	13,890	5,210	19,662	24,872
2040	12,665	1,908	14,573	5,443	20,392	25,835
2045	13,302	1,977	15,279	5,719	21,064	26,783



Year	IAD					
	Resident			Non-Resident		
	Home Based	Non-Home Based	Total	Home Based	Non-Home Based	Total
2019	10,232	1,123	11,355	3,873	7,447	11,320
2020	3,405	377	3,782	1,298	2,479	3,777
2025	10,753	1,179	11,932	4,090	7,872	11,962
2030	12,166	1,316	13,482	4,654	8,912	13,566
2035	13,487	1,462	14,949	5,202	9,965	15,167
2040	14,791	1,593	16,384	5,767	11,032	16,799
2045	16,190	1,736	17,926	6,354	12,086	18,440

Year	ALL					
	Resident			Non-Resident		
	Home Based	Non-Home Based	Total	Home Based	Non-Home Based	Total
2019	27,827	3,757	31,584	11,801	26,849	38,650
2020	9,748	1,335	11,083	4,181	9,080	13,261
2025	30,213	4,085	34,298	12,873	29,974	42,847
2030	33,412	4,499	37,911	14,289	33,176	47,465
2035	36,140	4,872	41,012	15,510	35,899	51,409
2040	38,994	5,254	44,248	16,784	38,354	55,138
2045	42,018	5,646	47,664	18,134	40,794	58,928

Source: 2019 Washington-Baltimore Regional Air Passenger Survey

Note: Totals may not add due to rounding

Air Passenger Ground Access Trips by Mode of Arrival

Air passenger trips to the airports consist of a larger mode choice set compared with what is ordinarily used in COG's standard mode choice modeling procedures. The ground access trips to the airports were summarized into four major arrival modes as follows:

- Auto = Private Car, Rental Car, Transportation Network Companies (TNCs) and Taxi
- Transit = Metrorail, Amtrak/MARC/VRE and Light Rail
- Airport Transit = Airport Bus/Limo and Hotel/Motel Courtesy Shuttle
- Other = Charter Bus, Employer Shuttle, and All Other

The auto mode of arrival was further split into two sub-categories:

- Auto Driver
- Auto Passenger

The split of auto ground access trips into auto driver and auto passenger trips was determined from the air passenger survey question that asked for the total number of household members, friends, or business associates that traveled with the surveyed air passenger to the airport (Question B-5). From this question the total vehicle occupancy of air passengers arriving at the airport by private or rental cars could be determined. The reciprocal of this number yields



the proportion of air passengers who were likely auto drivers. The complement of this reciprocal yields the proportion of air passengers who were likely auto passengers. Multiplying the survey record weights by these proportions produces estimates of the number of air passenger who were auto drivers and the number of air passengers who were auto passengers for these auto ground access trips. Air passengers arriving at the airport by taxi are, by definition, auto passengers.

Once the ground access mode of arrival trip data had been summarized, modal shares for Auto Driver, Auto Passenger, Transit, Airport Transit and Other arrival modes were calculated for each Airport/AAZ/trip origin type/resident status classification. Table 12 shows estimated 2019 to 2045 air passenger ground access trip totals by mode of arrival and Table 13 shows Home and Non-Home originations by mode for the TPB modeled region by airport.

Table 12
Average Weekday Air Passenger Ground Access Trips
(TPB Modeled Region Only)

Arrival Mode - BWI						
Forecast Year	Auto Driver	Auto Passenger	Transit	Airport Transit	Other	Total
2019	5,607	9,113	979	1,390	555	17,644
2020	2,334	3,782	407	579	233	7,335
2025	5,998	9,737	1,071	1,485	605	18,896
2030	6,754	10,924	1,221	1,661	691	21,251
2035	7,467	12,095	1,372	1,849	760	23,543
2040	8,166	13,239	1,508	2,046	836	25,795
2045	8,910	14,436	1,647	2,261	910	28,164
Arrival Mode - DCA						
Forecast Year	Auto Driver	Auto Passenger	Transit	Airport Transit	Other	Total
2019	8,782	14,150	4,312	1,829	842	29,915
2020	2,779	4,472	1,357	577	265	9,450
2025	10,054	16,220	4,966	2,151	964	34,355
2030	10,775	17,400	5,358	2,516	1,028	37,077
2035	11,184	18,075	5,612	2,824	1,067	38,762
2040	11,682	18,889	5,833	2,900	1,104	40,408
2045	12,189	19,710	6,059	2,965	1,139	42,062
Arrival Mode - IAD						
Forecast Year	Auto Driver	Auto Passenger	Transit	Airport Transit	Other	Total
2019	7,528	11,910	707	1,758	772	22,675
2020	2,517	3,973	233	579	257	7,559
2025	7,934	12,544	765	1,868	783	23,894
2030	8,960	14,211	876	2,144	857	27,048
2035	9,972	15,819	975	2,412	938	30,116
2040	10,978	17,425	1,076	2,687	1,017	33,183
2045	12,023	19,092	1,189	2,960	1,102	36,366



Arrival Mode - ALL

Forecast Year	Auto Driver	Auto Passenger	Transit	Airport Transit	Other	Total
2019	21,917	35,173	5,998	4,977	2,169	70,234
2020	7,630	12,227	1,997	1,735	755	24,344
2025	23,986	38,501	6,802	5,504	2,352	77,145
2030	26,489	42,535	7,455	6,321	2,576	85,376
2035	28,623	45,989	7,959	7,085	2,765	92,421
2040	30,826	49,553	8,417	7,633	2,957	99,386
2045	33,122	53,238	8,895	8,186	3,151	106,592

Source: 2019 Washington-Baltimore Regional Air Passenger Survey

Note: Totals may not add due to rounding



Table 13

Average Weekday Air Passenger Ground Access Trips
by Mode and Trip Originations (TPB Modeled Region Only)

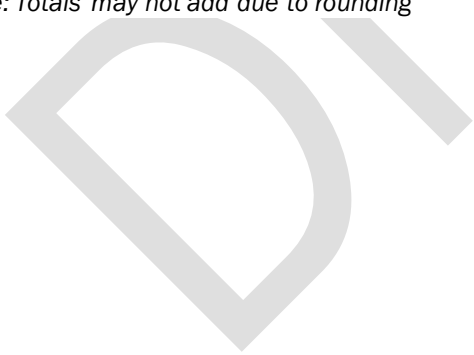
Arrival Mode	Trip Origin	Forecast Year							
		2019	2020	2025	2030	2035	2040	2045	
Auto Driver Trips	BWI	HB	4,144	1,720	4,426	4,986	5,510	5,997	6,524
		NHB	1,463	614	1,572	1,768	1,957	2,169	2,386
		Total	5,607	2,334	5,998	6,754	7,467	8,166	8,910
	DCA	HB	4,576	1,446	5,206	5,559	5,742	6,024	6,329
		NHB	4,206	1,333	4,848	5,216	5,442	5,658	5,860
		Total	8,782	2,779	10,054	10,775	11,184	11,682	12,189
	IAD	HB	4,965	1,657	5,231	5,914	6,565	7,221	7,913
		NHB	2,563	860	2,703	3,046	3,407	3,757	4,110
		Total	7,528	2,517	7,934	8,960	9,972	10,978	12,023
Auto Passenger Trips	BWI	HB	6,624	2,750	7,086	7,953	8,799	9,600	10,420
		NHB	2,489	1,032	2,651	2,971	3,296	3,639	4,016
		Total	9,113	3,782	9,737	10,924	12,095	13,239	14,436
	DCA	HB	7,041	2,221	8,010	8,563	8,875	9,317	9,792
		NHB	7,109	2,251	8,210	8,837	9,200	9,572	9,918
		Total	14,150	4,472	16,220	17,400	18,075	18,889	19,710
	IAD	HB	8,137	2,714	8,555	9,700	10,785	11,866	13,012
		NHB	3,773	1,259	3,989	4,511	5,034	5,559	6,080
		Total	11,910	3,973	12,544	14,211	15,819	17,425	19,092
Transit Trips	BWI	HB	344	142	382	433	480	531	581
		NHB	635	265	689	788	892	977	1,066
		Total	979	407	1,071	1,221	1,372	1,508	1,647
	DCA	HB	1,521	479	1,748	1,871	1,937	2,018	2,112
		NHB	2,791	878	3,218	3,487	3,675	3,815	3,947
		Total	4,312	1,357	4,966	5,358	5,612	5,833	6,059
	IAD	HB	428	142	473	550	613	679	752
		NHB	279	91	292	326	362	397	437
		Total	707	233	765	876	975	1,076	1,189



Arrival Mode	Trip Origin	Forecast Year							
		2019	2020	2025	2030	2035	2040	2045	
Airport Transit Trips	BWI	HB	325	135	347	389	434	474	516
		NHB	1,065	444	1,138	1,272	1,415	1,572	1,745
		Total	1,390	579	1,485	1,661	1,849	2,046	2,261
	DCA	HB	210	65	240	259	267	281	301
		NHB	1,619	512	1,911	2,257	2,557	2,619	2,664
		Total	1,829	577	2,151	2,516	2,824	2,900	2,965
	IAD	HB	310	101	320	362	403	440	482
		NHB	1,448	478	1,548	1,782	2,009	2,247	2,478
		Total	1,758	579	1,868	2,144	2,412	2,687	2,960
Other Mode Trips	BWI	HB	354	148	376	424	465	510	546
		NHB	201	85	229	267	295	326	364
		Total	555	233	605	691	760	836	910
	DCA	HB	384	120	422	444	452	468	487
		NHB	458	145	542	584	615	636	652
		Total	842	265	964	1,028	1,067	1,104	1,139
	IAD	HB	265	89	264	294	323	352	385
		NHB	507	168	519	563	615	665	717
		Total	772	257	783	857	938	1,017	1,102
Total Trips	BWI	HB	11,791	4,895	12,617	14,185	15,688	17,112	18,587
		NHB	5,853	2,440	6,279	7,066	7,855	8,683	9,577
		Total	17,644	7,335	18,896	21,251	23,543	25,795	28,164
	DCA	HB	13,732	4,331	15,626	16,696	17,273	18,108	19,021
		NHB	16,183	5,119	18,729	20,381	21,489	22,300	23,041
		Total	29,915	9,450	34,355	37,077	38,762	40,408	42,062
	IAD	HB	14,105	4,703	14,843	16,820	18,689	20,558	22,544
		NHB	8,570	2,856	9,051	10,228	11,427	12,625	13,822
		Total	22,675	7,559	23,894	27,048	30,116	33,183	36,366

Source: 2019 Washington-Baltimore Regional Air Passenger Survey

Note: Totals may not add due to rounding



Time-Of-Day Split

The 2019 air passenger survey data has scheduled flight times for the survey records. Two separate time-of-day split factors were developed using the survey data. Time-of-day is calculated as a percent of total trips departing one hour and two hours before the scheduled flight departure time and shown in Table 14.

One hour before flight time:

1. AM trips = flight time 0700 to 1000 (7:00 AM to 10:00 AM).
2. PM trips = flight time 1600 to 1900 (4:00 PM to 7:00 PM).
3. Off-Peak trips = flight time 600 to 700, 1000 to 1600, and 1900 to 2400.
(6:00-7:00 AM, 10:00 AM-4:00 PM, and 7:00 PM-12:00 AM).

Two hours before flight time:

1. AM trips = flight time 0800 to 1100 (8:00 AM to 11:00 AM).
2. PM trips = flight time 1700 to 2000 (5:00 PM to 8:00 PM).
3. Off-Peak trips = flight time 1100 to 1700, and 2000 to 2400.
(11:00 AM-5:00 PM, and 8:00 PM-12:00 AM).

Note that there are no regularly scheduled departures at any of the three regional airports between 0000 and 0600 (12:00 midnight and 6:00 AM).

Table 14
2019 Washington / Baltimore Regional Air Passenger Survey
Average Weekday Air Passenger Ground Access Trips
by Time-of-Day by Airport

Time Period	One-Hour Before Flight Departure				Two-Hours Before Flight Departure			
	BWI	DCA	IAD	Total	BWI	DCA	IAD	Total
AM-Peak	7,585	5,522	4,979	18,086	6,500	6,020	5,531	18,051
	30%	18%	22%	23%	26%	20%	24%	23%
PM-Peak	3,976	8,025	8,284	20,285	4,644	7,570	8,144	20,358
	16%	27%	36%	26%	19%	25%	36%	26%
Off-Peak	13,314	16,474	9,596	39,385	13,731	16,431	9,184	39,346
	54%	55%	42%	51%	55%	55%	40%	51%
Total	24,875	30,021	22,860	77,755	24,875	30,021	22,860	77,755
	100%	100%	100%	100%	100%	100%	100%	100%

Source: 2019 Washington-Baltimore Regional Air Passenger Survey

Note: Totals may not add due to rounding



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APPENDIX



Table A-1
Washington / Baltimore Air System Planning Region
Aviation Analysis Zone System

No.	Jurisdiction	No. of AAZs	AAZs Range	No. of TAZs
1	District of Columbia	20	1 - 20	393
2	Arlington County	9	21 - 29	141
3	City of Alexandria	4	30 - 33	65
4	Fairfax County	15	34 - 47	549
5	Montgomery County	20	48 - 68	375
6	Prince George's County	14	69 - 82	636
7	Prince William County	6	83 - 88	378
8	Loudoun County	6	89 - 94	282
9	Frederick County	3	95 - 97	130
10	Carroll County	1	98	58
11	Howard County	9	99 - 107	68
12	Anne Arundel County	14	108 - 121	99
13	Calvert County	1	122	47
14	St. Mary's County	1	123	75
15	Charles County	2	124 - 125	113
16	King George County	1	126	25
17	Spotsylvania County	1	127	62
18	City of Fredericksburg	1	128	14
19	Stafford County	1	129	93
20	Fauquier County	1	130	50
21	Clarke County	1	131	9
22	Jefferson County	1	132	13
23	Baltimore City	13	133 - 145	217
24	Baltimore County	13	146 - 158	342
25	Harford County	3	159 - 161	140
Total Washington/Baltimore Air System Planning Area		161		4,374
26	External Maryland	1	162	NA
27	External Virginia	1	163	NA
28	External West Virginia	1	164	NA
29	Pennsylvania	1	165	NA
30	Delaware	1	166	NA
31	New Jersey	1	167	NA
32	Other	1	999	NA
Total Externals		7		
Grand Total		168		



*Figure 1
Washington - Baltimore
Air System Planning Region*

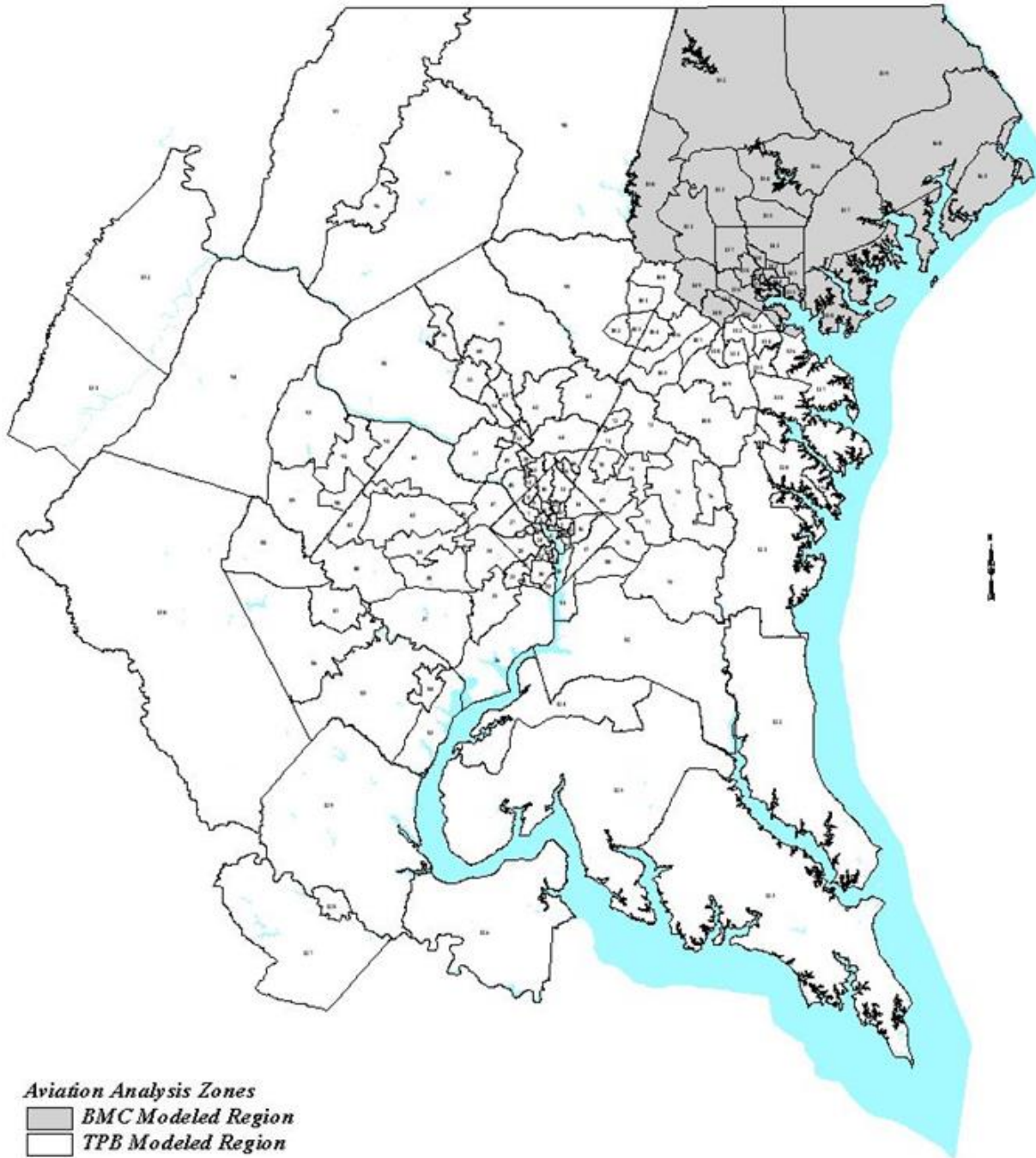




Table A-2
Washington / Baltimore Air System Planning Region
Household by Jurisdiction

Jurisdiction	Households						
	2019	2020	2025	2030	2035	2040	2045
District of Columbia	314,851	319,290	341,019	362,524	380,594	396,233	411,872
Montgomery County	108,036	109,245	117,855	123,837	129,675	135,788	141,401
Prince George's County	74,762	75,658	82,725	88,238	92,635	97,085	103,662
Arlington County	412,188	415,298	433,682	457,180	483,223	507,140	526,812
City of Alexandria	387,492	390,743	405,238	421,904	437,703	450,453	461,379
Fairfax County	332,060	334,684	344,281	355,910	363,703	370,486	377,324
Loudoun County	186,656	188,546	205,595	216,126	225,107	232,369	238,228
Prince William County	134,326	137,617	151,668	165,451	172,147	177,020	180,495
Frederick County	96,704	98,398	106,256	115,404	122,358	128,064	132,076
Howard County	62,349	62,675	64,394	66,521	67,974	69,119	70,330
Anne Arundel County	117,502	118,936	126,992	133,388	138,062	139,802	139,932
Charles County	214,116	215,369	224,654	232,362	238,834	244,965	247,112
Carroll County	33,500	33,903	35,703	36,946	37,556	37,650	37,912
Calvert County	43,329	44,094	47,656	52,164	55,278	58,292	61,367
St. Mary's County	58,985	60,302	65,529	72,911	78,606	83,426	92,163
King George County	8,723	8,754	8,961	9,226	9,557	9,976	10,497
City of Fredericksburg	34,419	34,641	37,905	41,045	45,468	50,947	57,589
Stafford County	10,931	11,120	11,645	12,294	13,048	13,941	15,012
Spotsylvania County	48,570	49,557	54,686	60,892	68,550	78,234	90,824
Fauquier County	26,081	26,444	28,270	30,096	31,922	33,748	35,574
Clarke County	5,694	5,714	5,939	6,166	6,336	6,507	6,680
Jefferson County	23,088	23,459	25,139	26,726	28,298	29,742	31,188
Baltimore City	176,164	176,353	178,677	180,563	182,122	182,500	183,602
Baltimore County	291,670	292,883	300,227	306,701	312,124	316,920	319,057
Harford County	114,932	115,227	116,757	117,726	119,736	122,269	124,075
Total	3,317,128	3,348,910	3,521,453	3,692,301	3,840,616	3,972,676	4,096,163

Source: COG Round 9.2 Cooperative Forecast and BMC 8B Land Use Data

Table A-3
Washington / Baltimore Air System Planning Region
Employment by Jurisdiction

Jurisdiction	Employment						
	2019	2020	2025	2030	2035	2040	2045
District of Columbia	836,693	846,280	895,120	937,854	978,223	1,011,806	1,045,390
Montgomery County	218,576	222,492	232,928	250,398	271,758	278,863	282,090
Prince George's County	107,042	107,310	116,229	117,403	122,064	128,408	132,408
Arlington County	702,975	712,403	761,001	807,810	843,404	881,447	907,766
City of Alexandria	538,510	543,162	572,188	604,204	627,038	653,552	678,303
Fairfax County	350,614	352,723	370,175	379,689	389,588	397,465	406,490
Loudoun County	216,522	221,095	242,364	263,258	282,737	301,976	319,247
Prince William County	186,007	190,724	204,959	224,434	239,978	252,469	260,933
Frederick County	115,099	116,166	121,981	127,370	134,023	139,696	144,103
Howard County	69,882	70,446	72,587	74,864	76,817	79,004	81,250
Anne Arundel County	198,770	201,533	215,335	229,126	238,326	247,531	256,724
Charles County	319,324	321,535	333,679	346,959	362,291	379,167	398,579
Carroll County	28,633	29,077	31,206	32,318	33,106	34,050	34,996
Calvert County	57,623	58,995	61,791	63,419	65,259	67,232	69,183
St. Mary's County	47,818	47,896	50,177	53,207	56,452	59,906	62,708
King George County	12,133	12,234	13,029	13,808	14,769	15,984	17,542
City of Fredericksburg	38,634	39,129	41,217	43,040	45,195	47,773	50,871
Stafford County	28,126	28,478	30,511	32,885	35,737	39,206	43,519
Spotsylvania County	46,058	46,524	50,837	54,571	59,348	65,755	74,883
Fauquier County	25,484	25,799	27,358	28,917	30,476	32,035	33,593
Clarke County	4,295	4,317	4,684	5,051	5,450	5,850	6,250
Jefferson County	18,390	18,675	19,989	21,212	22,434	23,555	24,676
Baltimore City	251,105	252,824	261,065	268,814	275,038	285,695	296,667
Baltimore County	501,350	503,759	518,385	533,056	547,260	562,909	582,034
Harford County	125,837	127,440	137,241	142,784	147,994	152,424	155,525
Total	5,045,500	5,101,016	5,386,036	5,656,451	5,904,765	6,143,758	6,365,730

Source: COG Round 9.2 Cooperative Forecast and BMC 8B Land Use Data

Table A-4
Washington / Baltimore Air System Planning Region
Average Weekday Trips 2019 - 2045 - BWI Airport
Average Weekday Trips

AAZ	2019	2020	2025	2030	2035	2040	2045	AAZ	2019	2020	2025	2030	2035	2040	2045
1	0	0	0	0	0	0	0	35	165	69	192	224	245	267	290
2	70	30	71	76	83	87	92	36	71	29	76	87	97	110	122
3	602	250	673	763	833	911	995	37	34	14	34	40	40	42	46
4	238	96	245	266	286	311	334	38	80	33	81	87	95	100	108
5	56	23	56	63	67	76	85	39	13	7	16	18	18	19	20
6	98	40	99	106	115	122	130	40	0	0	0	0	0	0	0
7	42	16	42	42	47	50	53	41	62	26	64	70	76	82	92
8	44	20	46	52	54	58	62	42	0	0	0	0	0	0	0
9	4	2	4	4	4	6	6	43	66	28	67	73	81	84	93
10	15	6	15	16	17	18	19	44	44	20	59	76	95	115	135
11	49	20	50	58	64	72	79	45	82	34	84	91	100	105	114
12	38	15	39	44	45	51	55	46	72	31	84	103	126	152	178
13	122	50	133	149	161	176	193	47	0	0	0	0	0	0	0
14	128	53	142	168	200	226	256	48	37	17	38	42	46	48	53
15	27	13	32	37	44	45	48	49	36	15	37	41	44	47	50
16	167	73	206	244	267	295	323	50	59	21	61	72	74	83	88
17	111	46	122	140	161	183	206	51	63	25	65	76	81	85	92
18	0	0	0	0	0	0	0	52	98	41	117	125	134	142	153
19	21	9	25	31	40	48	56	53	51	22	56	70	75	83	93
20	0	0	0	0	0	0	0	54	299	125	321	360	405	461	514
21	0	0	0	0	0	0	0	55	228	95	240	267	307	357	396
22	69	29	80	113	147	158	166	56	148	63	157	186	205	220	241
23	88	36	91	98	102	110	123	57	135	55	137	150	162	172	184
24	0	0	0	0	0	0	0	58	218	91	224	247	272	293	310
25	43	19	43	46	51	59	65	59	222	92	229	249	271	296	321
26	38	15	41	45	49	54	57	60	31	12	31	34	35	37	40
27	26	11	26	30	33	36	38	61	79	34	88	103	110	122	139
28	101	43	111	120	139	151	170	62	213	88	216	230	253	271	293
29	16	7	21	21	23	24	27	63	167	70	167	183	201	214	228
30	62	25	75	90	105	127	143	64	389	161	410	462	537	605	662
31	51	21	54	58	64	68	71	65	80	32	90	98	105	118	126
32	21	8	21	22	23	25	26	66	79	34	81	91	98	104	114
33	45	19	46	52	55	59	65	67	94	39	111	123	137	153	167
34	66	27	69	78	88	95	105	68	81	34	81	90	95	103	110

AAZ	2019	2020	2025	2030	2035	2040	2045	AAZ	2019	2020	2025	2030	2035	2040	2045
69	326	135	339	376	407	436	471	108	372	154	399	443	486	526	558
70	121	49	131	148	161	173	188	109	485	200	523	585	649	711	788
71	72	30	73	79	85	91	97	110	72	31	85	99	109	122	133
72	23	9	31	62	80	92	109	111	0	0	0	0	0	0	0
73	233	95	237	251	274	293	312	112	1,265	524	1,337	1,492	1,668	1,853	2,079
74	79	32	82	92	99	108	115	113	47	21	51	56	64	71	79
75	212	87	216	238	254	269	288	114	25	12	27	31	34	38	42
76	170	71	181	194	217	233	246	115	511	211	536	595	653	718	737
77	65	28	70	77	84	91	101	116	144	61	158	175	193	214	241
78	78	34	80	86	94	102	112	117	791	327	827	920	1,017	1,116	1,201
79	95	39	104	121	143	158	182	118	447	184	466	517	571	622	674
80	47	20	47	55	59	66	72	119	247	101	251	272	293	312	331
81	18	9	25	28	30	31	36	120	508	208	531	592	651	712	777
82	152	65	161	182	195	211	230	121	131	54	135	148	163	176	194
83	32	15	39	44	50	54	59	122	187	77	201	223	242	257	276
84	11	4	13	15	17	19	21	123	192	81	212	244	273	307	342
85	29	12	30	33	40	42	46	124	374	157	409	482	550	617	713
86	30	12	38	44	49	56	61	125	77	30	86	100	115	129	149
87	43	17	47	53	57	62	67	126	0	0	0	0	0	0	0
88	0	0	0	0	0	0	0	127	39	16	44	51	60	71	87
89	8	4	10	12	14	14	16	128	36	15	40	44	51	59	67
90	0	0	0	0	0	0	0	129	46	19	52	63	76	92	112
91	26	12	26	30	32	34	38	130	79	34	86	98	113	124	138
92	14	6	16	20	22	26	30	131	0	0	0	0	0	0	0
93	32	13	35	41	46	49	52	132	34	15	37	43	49	53	59
94	8	4	8	10	12	12	14	133	997	415	1,042	1,155	1,261	1,392	1,539
95	279	117	318	367	413	457	497	134	221	91	237	263	284	311	341
96	122	54	134	154	172	191	210	135	127	53	133	145	157	169	189
97	294	123	314	365	412	457	505	136	152	61	157	171	184	197	210
98	770	317	800	885	967	1,044	1,133	137	443	182	451	487	524	558	601
99	406	170	440	499	547	591	632	138	422	172	426	460	495	522	561
100	318	131	340	375	414	442	469	139	121	50	126	137	149	161	175
101	50	21	54	59	64	68	72	140	179	75	182	198	212	226	246
102	92	38	99	108	116	125	135	141	539	220	548	592	637	679	727
103	140	58	166	194	224	251	269	142	74	29	75	81	87	92	98
104	240	97	242	263	285	304	321	143	267	112	271	298	319	346	374
105	179	73	194	230	255	273	294	144	413	171	420	457	491	529	569
106	328	136	348	382	414	444	476	145	55	22	55	60	64	68	74
107	439	187	523	606	672	735	791	146	0	0	0	0	0	0	0



AAZ	2019	2020	2025	2030	2035	2040	2045
147	35	15	35	40	44	46	49
148	53	22	53	58	65	67	72
149	185	76	190	203	218	235	252
150	179	73	193	219	238	260	278
151	305	125	314	344	373	406	432
152	166	68	172	190	213	231	252
153	222	90	230	254	279	299	314
154	222	91	233	258	283	311	337
155	392	160	406	447	486	526	571
156	103	43	111	122	132	147	154
157	470	194	488	537	586	630	677
158	159	65	164	177	188	201	214
159	205	84	210	225	243	262	283
160	536	222	578	634	699	766	830
161	30	11	30	32	35	38	41
Sub-Total							
Internal	17,644	2,105	13,506	5,384	5,512	5,288	5,493
External							
Trips	7,272	8,222	12,920	24,111	26,977	30,182	33,131
Total							
Trips	24,916	10,327	26,426	29,495	32,489	35,470	38,624

Note: Numbers may not add to total due to rounding

- **Internal** originating trips are local originating trips within the COG Planning Area.
- **External** originating trips are trips originating from PA, DE, WV, NJ or external VA and MD





Table A-5
Washington / Baltimore Air System Planning Region
Average Weekday Trips 2019 - 2045 - DCA Airport
Average Weekday Trips

AAZ	2019	2020	2025	2030	2035	2040	2045	AAZ	2019	2020	2025	2030	2035	2040	2045
1	54	18	60	60	60	60	60	31	726	229	801	818	813	824	837
2	428	137	456	467	467	474	486	32	124	41	151	174	178	175	194
3	2,763	871	3,270	3,506	3,566	3,692	3,836	33	480	148	524	544	547	562	605
4	1,891	594	2,067	2,134	2,137	2,179	2,230	34	289	90	326	352	363	384	403
5	305	94	328	343	353	367	383	35	514	164	598	646	659	682	705
6	413	129	443	454	453	462	472	36	863	268	945	1,017	1,065	1,135	1,188
7	153	49	162	168	167	168	170	37	478	147	514	528	528	537	545
8	157	47	178	189	189	193	197	38	224	70	240	246	246	250	255
9	121	40	136	145	149	156	164	39	28	8	32	34	34	34	40
10	223	70	242	244	243	247	249	40	38	12	41	43	44	45	46
11	416	131	460	488	513	538	563	41	192	62	215	229	232	243	252
12	227	70	248	258	259	268	279	42	51	16	66	70	74	78	83
13	498	158	574	609	622	647	675	43	475	149	514	528	532	540	549
14	576	180	690	779	850	916	989	44	300	95	371	414	437	457	478
15	92	29	103	113	121	123	128	45	79	26	89	90	90	92	95
16	879	283	1,115	1,252	1,314	1,397	1,485	46	341	109	411	485	554	645	704
17	144	46	165	178	189	202	214	47	0	0	0	0	0	0	0
18	435	136	492	519	528	552	576	48	171	54	186	191	200	202	205
19	135	44	169	199	231	268	308	49	183	57	203	208	213	214	217
20	72	24	80	83	85	85	86	50	170	52	196	208	208	213	215
21	0	0	0	0	0	0	0	51	108	36	116	126	126	127	130
22	2,007	638	2,497	3,275	3,993	4,063	4,098	52	503	159	631	634	632	639	644
23	383	120	415	423	420	426	451	53	200	65	223	252	248	254	267
24	100	32	109	111	111	145	149	54	245	77	275	293	308	331	353
25	572	184	648	653	692	731	778	55	230	74	256	270	287	318	338
26	1,018	317	1,136	1,195	1,201	1,289	1,353	56	38	12	42	51	53	56	60
27	633	197	693	727	743	761	775	57	207	67	225	232	235	236	239
28	901	283	1,024	1,070	1,124	1,195	1,243	58	187	56	203	212	217	219	223
29	219	69	245	255	255	256	266	59	52	17	56	60	61	62	64
30	339	104	434	494	542	614	669	60	62	18	67	70	70	70	70

AAZ	2019	2020	2025	2030	2035	2040	2045	AAZ	2019	2020	2025	2030	2035	2040	2045
61	104	33	118	125	123	128	137	100	60	18	69	72	74	75	77
62	98	32	105	107	109	111	113	101	4	2	4	4	4	4	4
63	20	6	21	21	23	22	22	102	8	2	9	10	10	11	12
64	315	102	355	385	417	447	464	103	24	8	30	34	38	40	42
65	205	64	236	247	247	268	273	104	8	2	8	9	9	9	9
66	95	29	103	107	109	111	115	105	28	9	33	36	38	40	42
67	357	114	401	425	451	476	487	106	49	16	54	56	57	60	67
68	87	28	93	94	95	95	102	107	14	4	16	18	18	20	21
69	540	168	595	621	636	652	667	108	2	2	2	2	2	2	2
70	257	82	293	318	329	340	356	109	5	2	6	6	6	7	7
71	20	8	22	22	22	22	22	110	0	0	0	0	0	0	0
72	0	0	0	0	0	0	0	111	0	0	0	0	0	0	0
73	40	12	46	46	46	46	48	112	8	2	9	9	9	10	11
74	25	8	29	29	31	32	32	113	0	0	0	0	0	0	0
75	101	32	109	113	112	113	115	114	11	3	12	13	15	15	15
76	50	14	54	56	58	58	58	115	8	2	8	8	8	8	8
77	328	105	377	399	403	419	437	116	0	0	0	0	0	0	0
78	173	56	188	192	197	198	205	117	16	6	18	20	20	20	20
79	35	11	41	47	49	54	60	118	6	2	6	6	6	8	8
80	86	27	96	100	100	104	110	119	31	10	33	33	33	33	34
81	625	213	851	874	890	920	949	120	58	19	63	69	69	70	72
82	293	94	330	345	345	357	368	121	0	0	0	0	0	0	0
83	170	53	207	228	239	252	263	122	60	18	70	72	72	72	76
84	37	11	44	50	54	56	61	123	167	52	195	215	222	234	247
85	219	67	247	261	265	270	278	124	192	59	219	244	260	276	306
86	75	24	94	100	103	108	112	125	34	11	42	48	53	57	64
87	81	25	93	96	104	106	110	126	3	1	4	4	4	4	4
88	54	17	66	71	71	74	76	127	69	22	81	90	101	113	128
89	28	9	36	41	42	43	44	128	77	24	87	93	98	105	115
90	0	0	0	0	0	0	0	129	335	107	398	449	497	569	664
91	14	4	15	16	16	16	16	130	76	24	89	96	100	107	115
92	12	5	15	18	21	21	24	131	0	0	0	0	0	0	0
93	87	28	101	114	116	121	125	132	17	5	19	20	21	23	24
94	36	12	43	46	46	49	51	133	38	12	42	44	44	44	46
95	21	7	26	29	32	33	33	134	0	0	0	0	0	0	0
96	22	8	24	28	30	32	32	135	10	4	10	12	12	12	14
97	54	17	62	66	68	74	76	136	5	2	5	6	6	6	6
98	8	2	10	10	10	10	10	137	0	0	0	0	0	0	0
99	61	19	69	78	78	80	81	138	10	4	10	12	10	12	12



AAZ	2019	2020	2025	2030	2035	2040	2045
139	8	4	10	10	10	10	10
140	0	0	0	0	0	0	0
141	12	4	14	14	14	14	16
142	5	2	5	5	5	6	6
143	0	0	0	0	0	0	0
144	0	0	0	0	0	0	0
145	0	0	0	0	0	0	0
146	0	0	0	0	0	0	0
147	0	0	0	0	0	0	0
148	0	0	0	0	0	0	0
149	27	8	30	30	30	31	32
150	0	0	0	0	0	0	0
151	0	0	0	0	0	0	0
152	0	0	0	0	0	0	0
153	0	0	0	0	0	0	0
154	0	0	0	0	0	0	0
155	6	2	6	6	6	8	8
156	0	0	0	0	0	0	0
157	0	0	0	0	0	0	0
158	0	0	0	0	0	0	0
159	0	0	0	0	0	0	0
160	6	2	6	6	6	7	7
161	0	0	0	0	0	0	0
Sub-Total							
Internal	29,915	1,015	13,858	3,514	3,605	3,759	3,781
External							
Trips	127	8,479	20,635	33,708	35,300	36,799	38,438
Total Trips	30,042	9,494	34,493	37,222	38,905	40,558	42,219

Note: Numbers may not add to total due to rounding

- Internal originating trips are local originating trips within the COG Planning Area.

- External originating trips are trips originating from PA, DE, WV, NJ or external VA and MD





Table A-6
Washington / Baltimore Air System Planning Region
Average Weekday Trips 2019 - 2045 - IAD Airport
Average Weekday Trips

AAZ	2019	2020	2025	2030	2035	2040	2045	AAZ	2019	2020	2025	2030	2035	2040	2045
1	0	0	0	0	0	0	0	31	265	89	274	297	322	345	371
2	174	58	170	182	196	207	222	32	72	22	78	96	106	108	124
3	834	278	905	1,022	1,111	1,203	1,309	33	270	90	269	291	308	331	366
4	582	190	582	632	676	719	771	34	342	114	349	395	441	484	531
5	152	52	150	165	182	198	217	35	241	79	239	263	289	315	341
6	82	27	78	87	92	97	105	36	398	132	403	460	514	578	632
7	72	24	70	74	79	84	88	37	306	100	302	324	346	367	392
8	24	8	24	28	30	32	35	38	254	84	249	267	286	305	325
9	55	17	56	63	70	77	83	39	45	15	47	52	54	59	64
10	118	37	115	124	131	138	148	40	308	102	310	337	362	393	422
11	92	29	93	106	120	133	145	41	834	274	861	957	1,048	1,137	1,235
12	72	26	72	78	86	93	99	42	458	156	493	537	587	635	704
13	186	62	200	223	242	264	288	43	1,067	351	1,048	1,134	1,221	1,307	1,396
14	105	36	116	136	159	180	205	44	2,066	685	2,403	2,912	3,387	3,841	4,286
15	56	18	59	70	80	85	91	45	727	239	726	780	834	888	955
16	190	65	225	261	291	318	351	46	660	222	724	901	1,102	1,338	1,528
17	80	29	82	92	106	118	131	47	0	0	0	0	0	0	0
18	78	26	87	96	106	117	127	48	117	39	113	124	137	146	156
19	86	27	101	125	151	189	227	49	177	60	179	194	209	221	236
20	8	3	8	9	10	11	12	50	52	20	54	62	64	72	74
21	0	0	0	0	0	0	0	51	100	33	98	113	120	127	135
22	148	51	170	225	280	305	333	52	161	53	185	198	212	226	240
23	18	8	18	18	20	20	24	53	155	49	162	194	205	225	250
24	6	2	6	7	7	8	8	54	260	86	271	304	341	384	427
25	610	205	633	671	758	841	937	55	227	76	233	257	291	333	367
26	448	145	464	517	555	616	670	56	118	39	120	149	163	175	194
27	220	72	220	243	266	282	304	57	203	68	199	213	231	244	258
28	524	174	545	600	675	756	833	58	203	69	206	225	244	260	277
29	34	11	34	37	40	42	45	59	137	44	133	145	158	169	185
30	218	71	280	333	414	506	582	60	90	29	88	96	102	109	115

AAZ	2019	2020	2025	2030	2035	2040	2045	AAZ	2019	2020	2025	2030	2035	2040	2045
61	63	20	66	79	84	94	104	100	24	8	26	28	32	34	36
62	45	14	45	48	52	55	59	101	0	0	0	0	0	0	0
63	44	14	43	46	51	54	57	102	0	0	0	0	0	0	0
64	360	119	359	403	465	516	569	103	12	4	14	17	20	22	24
65	37	14	39	44	44	51	53	104	39	12	38	40	44	46	49
66	77	25	76	84	90	97	103	105	12	6	14	16	16	18	22
67	193	65	200	222	252	280	299	106	14	6	14	15	18	18	18
68	0	0	0	0	0	0	0	107	11	4	14	16	18	19	20
69	64	22	64	68	76	82	88	108	19	7	20	22	24	25	27
70	65	24	67	74	82	89	94	109	30	12	32	36	40	42	46
71	8	2	8	8	8	8	10	110	0	0	0	0	0	0	0
72	0	0	0	0	0	0	0	111	8	3	8	9	10	12	13
73	148	49	145	156	165	175	185	112	0	0	0	0	0	0	0
74	135	44	131	143	159	170	184	113	0	0	0	0	0	0	0
75	59	20	59	65	68	72	76	114	0	0	0	0	0	0	0
76	4	1	4	5	5	5	6	115	8	3	8	9	10	11	12
77	24	8	24	28	30	32	36	116	9	3	10	11	12	14	15
78	10	4	10	12	12	14	14	117	39	14	40	43	47	51	56
79	15	7	15	18	18	21	23	118	2	2	2	2	4	4	4
80	41	15	41	45	49	53	59	119	81	27	80	85	92	95	103
81	95	34	119	128	139	151	163	120	27	9	27	30	33	36	38
82	129	44	136	149	160	174	188	121	3	1	3	3	4	4	4
83	186	61	205	237	267	294	323	122	20	7	20	21	24	24	27
84	95	30	104	123	138	154	172	123	76	26	81	95	107	118	132
85	331	107	342	383	414	446	481	124	48	16	53	62	70	77	91
86	215	73	245	280	314	345	378	125	22	8	24	29	34	39	44
87	173	58	177	197	217	239	261	126	43	13	43	46	50	56	62
88	242	82	266	296	323	350	380	127	34	12	38	42	50	58	70
89	304	105	363	423	462	494	527	128	59	20	62	72	83	96	113
90	0	0	0	0	0	0	0	129	168	58	185	217	260	311	382
91	236	79	236	257	278	296	315	130	234	78	245	278	313	348	387
92	601	205	675	828	972	1,109	1,232	131	75	25	76	84	92	100	108
93	814	272	873	1,024	1,110	1,190	1,273	132	115	39	121	138	154	170	188
94	686	228	710	793	878	965	1,050	133	14	5	14	15	16	17	18
95	37	14	39	46	54	60	61	134	0	0	0	0	0	0	0
96	58	21	61	67	73	82	89	135	20	7	20	23	24	27	30
97	124	39	127	142	156	171	187	136	23	8	23	24	25	27	28
98	83	28	83	92	99	106	115	137	2	2	2	2	2	2	4
99	57	19	60	68	74	80	85	138	10	3	9	10	11	12	12



AAZ	2019	2020	2025	2030	2035	2040	2045
139	4	2	4	4	4	4	4
140	0	0	0	0	0	0	0
141	45	17	45	49	54	55	59
142	0	0	0	0	0	0	0
143	0	0	0	0	0	0	0
144	0	0	0	0	0	0	0
145	0	0	0	0	0	0	0
146	0	0	0	0	0	0	0
147	0	0	0	0	0	0	0
148	16	4	16	16	16	16	18
149	0	0	0	0	0	0	0
150	5	2	5	6	7	7	8
151	24	8	24	26	28	30	32
152	6	2	6	7	8	8	8
153	0	0	0	0	0	0	0
154	0	0	0	0	0	0	0
155	0	0	0	0	0	0	0
156	0	0	0	0	0	0	0
157	5	2	5	5	6	6	6
158	32	10	32	34	37	38	42
159	0	0	0	0	0	0	0
160	36	12	36	39	42	45	49
161	0	0	0	0	0	0	0
Sub-Total Internal	22,675	1,315	12,493	4,506	4,171	3,898	3,944
External Trips	242	6,328	11,642	22,802	26,225	29,579	32,740
Total Trips	22,917	7,643	24,135	27,308	30,396	33,477	36,684

Note: Numbers may not add to total due to rounding

- Internal originating trips are local originating trips within the COG Planning Area.

- External originating trips are trips originating from PA, DE, WV, NJ or external VA and MD





2019 Washington - Baltimore Regional Air Passenger Survey
Average Weekday Observed 2019 Trips
 File: I:\GAFU_22\gafu2022.xlsx(sheet "19")

Columns

dest_aaz	Airport AAZ
aaz	AAZ
trip_RHome_tt_out_19	Resident HB Trips
trip_RNonHome_tt_out_19	Resident Non-HB Trips
trip_NHome_tt_out_19	Non-Resident HB Trips
trip_NNonHome_tt_out_19	Non-Resident Non-HB Trips
	Total
trip_Home_tt_out_19	Total HB Trips
trip_NonHome_tt_out_19	Total Non-HB Trips
	Total
trip_autodr_Home_tt_out_19	Auto Driver HB Trips
trip_autopass_Home_tt_out_19	Auto Passenger HB Trips
trip_transit_Home_tt_out_19	Transit HB Trips
trip_aptrans_Home_tt_out_19	Airport Transit HB Trips
trip_other_Home_tt_out_19	Other HB Trips
trip_autodr_NonHome_tt_out_19	Auto Driver Non-HB Trips
trip_autopass_NonHome_tt_out_19	Auto Passenger Non-HB Trips
trip_transit_NonHome_tt_out_19	Transit Non-HB Trips
trip_aptrans_NonHome_tt_out_19	Airport Transit Non-HB Trips
trip_other_NonHome_tt_out_19	Other Non-HB Trips
	Total

Total		
TPB	BMC	Total
AAZ: 1-132	AAZ: 133-161	AAZ: 1-161
27,827	3,818	31,645
3,757	503	4,260
11,801	1,261	13,062
26,849	2,059	28,908
70,234	7,641	77,875
39,628	5,079	44,707
30,606	2,562	33,168
70,234	7,641	77,875
13,685	1,773	15,458
21,802	2,837	24,639
2,293	59	2,352
845	133	978
1,003	277	1,280
8,232	860	9,092
13,371	1,310	14,681
3,705	64	3,769
4,132	273	4,405
1,166	55	1,221
70,234	7,641	77,875

Source: 2019 Washington-Baltimore Regional Air Passenger Survey
 Note: Totals may not add due to rounding

