Transportation

Southern California Association of Governments

Regional Aviation Forecasts

Year 2012 Air Passenger Trip Table Development Methodology and Results Technical Memorandum

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Statement of Qualifications and Limitations

This report is based upon information that was available to AECOM as of the date of its preparation. In certain circumstances, AECOM was provided with information by SCAG and other public entities and is entitled to rely upon the accuracy of such information. There are factors that may affect the recommendations contained in this report that are beyond AECOM's reasonable control or which may occur after the date of the preparation of this report. This report was prepared in accordance with a generally acceptable industry standard of care. This report and the data, information, drawings, computations, notes, renderings, or other documents or materials prepared by AECOM in connection with this report shall not be used on any other project without Consultant's written consent. Any changes made to the report, or any use of the report not specifically prescribed under agreement between the parties or otherwise expressly approved by AECOM, shall be at the sole risk of the party making such changes or adopting such use, and AECOM shall not be responsible for any damages whatsoever resulting from such use. No party other than SCAG shall have the right to rely upon the information contained in this report without the express written consent of AECOM Technical Services, Inc.

In addition, this report includes analysis and conclusions based on procedures and data contained in the Southern California Association of Government's Regional Transportation Plan travel demand model. AECOM was provided the model and its associated data by SCAG and is entitled to rely upon the validity of the model and the accuracy of the procedures and data contained in it. Except to the extent described in this report, AECOM has not independently validated the model or verified the accuracy of the data contained in it.

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Table of Contents

List of Figures

List of Tables

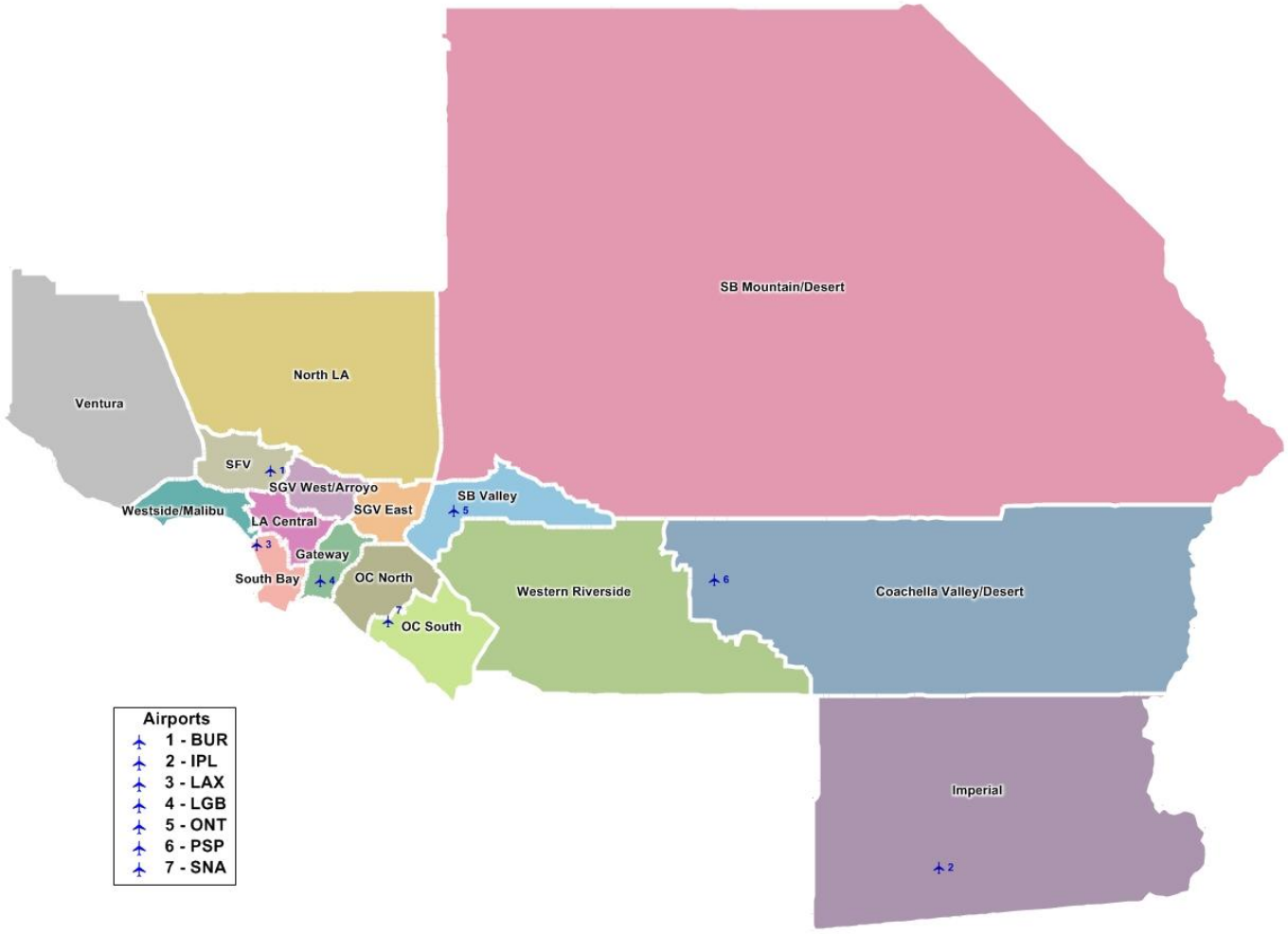
1. Introduction

This memorandum documents the work done to generate the base year (2012) air passenger person trip tables in support of the Southern California Association of Governments (SCAG) Regional Transportation Plan (RTP). This work includes the development of a methodology to estimate commercial air passenger trips using regression analysis from air passenger survey data, as well as the application of that methodology to develop base year air passenger trip tables. This methodology is intended to be used to generate air passenger trips for any forecast year in the RTP. Air passenger trips were generated for the seven airports in the SCAG region that had schedule air passenger service in 2012:

- Burbank Airport (BUR)
- Imperial County Airport (IPL)
- Los Angeles International Airport (LAX)
- Long Beach Airport (LGB)
- Ontario International Airport (ONT)
- Palm Springs International Airport (PSP)
- John Wayne Airport (SNA)

For the purpose of analyzing the generated airport trips, the SCAG region was divided into 16 subregions as shown in Figure 1. These subregions were based on SCAG RSAs, which were grouped qualitatively based on their interactions with the commercial airports. The subregions in Los Angeles County were based on the subregional planning areas as defined in the Metro travel demand model. LAX, while located in the Westside Cities Council of Governments region, is located on the northern edge of the South Bay subregion in the travel demand model.

Figure 1: Sub Regions for Analyzing Air Passenger Trips



Elements of the traditional four-step travel demand modeling approach were used to develop the base year air passenger person trip tables. The air passenger person trip tables are an output of the first three steps of the modeling process (trip generation, trip distribution and mode choice), and are an input to the final step (assignment). As discussed in the final section of this memorandum, person trip tables in Production-Attraction (PA) format must be converted to Origin-Destination (OD) format prior to assignment. Methodological issues regarding this conversion remain to be discussed with SCAG modeling staff.

Trip tables were developed for four trip purposes typically used in analyzing ground access air passenger trips: resident business, resident non-business, visitor business, and visitor non-business. Trip generation rates were developed for each trip purpose using socio-economic variables included in the draft 2016 RTP data. The generated air passenger trips were then distributed from the 16 subregions to the seven airports using a gravity model, matching the total trips by subregion and airport. Finally, the mode of arrival was forecast for each airport estimated using an Air Passenger Mode of Arrival Model.

The base year data for the trip generation targets, are described and summarized in Section 2. Section 3 provides more details about the methodologies used in the air passenger trip generation, trip distribution, and mode of arrival steps. Section 4 briefly describes next steps.

2. Data Sources

The 2012 base year annual air passenger trip estimates for each airport were developed by InterVISTAS based on reported total enplanements and deplanements at each airport, the air service levels at each airport (in terms of the number of seats, departures, and destinations served) and the population in each subregion within 30, 60, and 90 minute drive times of each airport . For analysis purposes, the annual trip volumes were compiled by airport, subregion and county, as shown in Table 1.

Table 1: 2012 Annual Air Passenger Traffic

Sub Region	BUR	IPL	LAX	LGB	ONT	PSP	SNA	Total	County	Total
Ventura	228,803	0	1,355,198	69,409	8,366	0	51,882	1,713,658	Ventura	1,713,658
North LA	159,806	0	2,312,265	90,184	69,895	20,048	88,292	2,740,491	Los Angeles	41,660,100
SFV	318,841	0	5,856,904	186,905	109,072	0	204,068	6,675,791		
Westside/Malibu	121,622	0	2,155,453	118,553	64,086	0	92,728	2,552,442		
SGV West/Arroyo	333,415	0	4,817,462	223,896	127,512	0	254,709	5,756,993		
LA Central	423,645	0	7,307,686	327,181	164,938	0	334,027	8,557,478		
South Bay	234,810	0	5,090,843	237,117	102,982	0	232,698	5,898,450		
Gateway	234,412	0	4,976,462	240,545	114,195	0	267,444	5,833,059		
SGV East	177,499	0	2,874,436	140,652	118,648	155,743	178,419	3,645,396		
OC North	657,613	0	3,745,794	471,065	319,067	129,329	3,608,428	8,931,296	Orange	14,509,522
OC South	400,902	0	2,158,686	274,739	243,481	29,011	2,471,407	5,578,226		
SB Mountain	54,360	0	224,567	20,269	344,110	120,002	65,558	828,866	San Bernardino	4,792,701
SB Valley	310,602	0	1,626,247	165,135	1,256,497	384,242	221,112	3,963,834		
West Riverside	257,804	0	1,855,095	196,167	977,238	575,782	249,938	4,112,025	Riverside	4,367,539
Coachella Valley	0	2,175	0	0	19,986	233,353	0	255,514		
Imperial	0	10,095	0	0	0	0	0	10,095	Imperial	10,095
Total	3,914,134	12,270	46,357,098	2,761,818	4,040,075	1,647,509	8,320,711	67,053,615		

Since the SCAG model forecasts average weekday travel, these annual volumes were converted to daily trips using a factor that represents the share of annual air passenger trips that occur on the “Peak Month Average Day” (PMAD). According to the LAX Specific Plan Amendment Study (SPAS) Report, Appendix F-1, the PMAD for LAX in 2009 was August 18. On that day, LAX handled 174,247 passengers, our of a total of 56,520,843 passengers in 2009. Thus, the PMAD represented 0.3083% of annual passengers. According to the “John Wayne Airport Settlement Agreement Amendment Environmental Impact Report Aviation Forecasts Technical Report,” in 2013, SNA handled 27,451 on its PMAD, out of 9.17 million passengers that year, so the PMAD represented 0.2994% of annual passengers. Therefore, based on the data from LAX and SNA, daily air passenger volumes for each airport were calculated by multiplying annual air passenger volumes by 0.3%. Finally, since each airport trip attraction in the model represents a ground access trip for both the enplanement and the deplanement segments of the trip, daily volumes were divided by two to calculate daily air passenger trip attractions for each airport, as shown in Table 2.

Table 2: 2012 Daily Trip Productions and Attractions by Airport

Airport Attractions / Sub Region Productions	BUR	IPL	LAX	LGB	ONT	PSP	SNA	Total	County	Total
Ventura	343	0	2,033	104	13	0	78	2,570	Ventura	2,570
North LA	240	0	3,468	135	105	30	132	4,111	Los Angeles	62,490
SFV	478	0	8,785	280	164	0	306	10,014		
Westside/Malibu	182	0	3,233	178	96	0	139	3,829		
SGV West/Arroyo	500	0	7,226	336	191	0	382	8,635		
LA Central	635	0	10,962	491	247	0	501	12,836		
South Bay	352	0	7,636	356	154	0	349	8,848		
Gateway	352	0	7,465	361	171	0	401	8,750		
SGV East	266	0	4,312	211	178	234	268	5,468		
OC North	986	0	5,619	707	479	194	5,413	13,397	Orange	21,764
OC South	601	0	3,238	412	365	44	3,707	8,367		
SB Mountain	82	0	337	30	516	180	98	1,243	San Bernardino	7,189
SB Valley	466	0	2,439	248	1,885	576	332	5,946		
West Riverside	387	0	2,783	294	1,466	864	375	6,168	Riverside	6,551
Coachella Valley	0	3	0	0	30	350	0	383		
Imperial	0	15	0	0	0	0	0	15	Imperial	15
Total	5,871	18	69,536	4,143	6,060	2,471	12,481	100,580		

Existing air passenger surveys were used to further disaggregate the air passenger forecasts into the four trip purposes. Of the seven airports in the region, four (BUR, LAX, ONT, and SNA) have conducted air passenger surveys that asked departing passengers about their trip origin, their mode of arrival at the airport, and the purpose of their air travel. However, the ONT survey was pre-recession and "pre-9/11" (conducted in early 2001) and the SNA survey did not use the same format for its question as the other surveys. For these reasons, the 2011 LAX and 2010 BUR air passenger surveys data were used to determine the percentage of air passengers by purpose as well as for developing the trip generation equations. The percentages of air passengers traveling for each of the four trip purposes in the survey data are shown in Table 3.

Table 3: LAX and BUR Passenger Survey

	Percentages	
LAX + BUR	**Business**	**Non Business**
Residents	19%	34%
Visitors	17%	30%

3. Development of Air Passenger Trip Tables

Using the data described in Section 2, Year 2012 average weekday air passenger trips were developed in three steps: trip generation, trip distribution, and mode of arrival. Trip rates were developed using a regression analysis conducted between observed base year trips and SCAG socio-economic data. The generated airport trips were then distributed using the gravity model incorporated in the current SCAG travel demand model. Modes of arrival were estimated using Metro's Air Passenger Model. These steps are described in detail below.

3.1 Trip Generation

The 2011 LAX and 2010 BUR air passenger survey data was compiled and grouped into the four air passenger trip purposes, resident business, resident non-business, visitor business and visitor non-business. Trip generation equations were developed for each of the trip purposes that represent the number of air passenger trips from each subregion as a function of the subregion's socioeconomic characteristics. In all of the regression analyses, the y-intercept was fixed at zero. Single variable and multivariate regression analyses were conducted for all four trip purposes. However, in no case did a second independent variable add substantial predictive power. Therefore, to keep the analyses simple and understandable, only single variable regressions were selected for use in trip generation. Correlations between the observed air passenger trips and SCAG 2012 socioeconomic data were developed for each purpose to determine airport trip generation rates. The regression analysis for each purpose is described below.

Resident Business Trips

Several variables from the socioeconomic data were tested to determine their relationship to resident business air passenger trips. These variables included average household income, total number of workers, number of high income workers, and income weighted population. Different combinations of these variables were also tested with multivariate equations. Of the variable tested, the number of high income workers had the highest correlation with air passenger trips. The relationship for resident business trips to air passenger trips is given below:

Air Passenger Trips = 0.0096 X High Income Workers

Resident Non-Business Trips

Similarly, the variables tested for resident non business air passenger trips included number of households, household size, income, and income weighted population. The income weighted population variable had the highest correlation with air passenger trips. The relationship for resident non business trips is given below:

Air Passenger Trips = 0.0012 X Income Weighted Population

Visitor Business Trips

The variables tested for visitor business air passenger trips included non-retail employment, professional employment, and financial employment. The professional employment variable had the highest correlation with air passenger trips. The relationship for visitor business trips was determined as below:

Air Passenger Trips = 0.0105 X Professional Employment

Visitor Non Business Trips

The variables tested for visitor non business air passenger trips included population, income weighted population, and hospitality employment. The hospitality employment variable had the highest correlation with air passenger trips.

However, further analysis indicated that the regression equation substantially overpredicted air passenger trips in the Ventura, San Bernardino Desert, Coachella Valley/Desert and Imperial subregions. These four subregions are popular weekend destinations for residents of other parts of the SCAG region. Therefore, the hospitality employment in these regions is likely associated with more automobile travel and less air travel than in the other subregions. To reflect the different nature of hospitality trips in different parts of the SCAG region, separate regressions were performed for these four subregions and the rest of the region. The relationships for visitor non-business trips were determined as below:

Air Passenger Trips (select four sub regions) = 0.0048 X Hospitality Employment

Air Passenger Trips (rest of the region) = 0.0344 X Hospitality Employment

Table 4 summarizes the regression coefficients for each of the four air passenger trip purposes, along with the R^2 statistics that indicate the amount of the variability that each explains. These coefficients, which were developed at the subregional level, were then applied to the socioeconomic data in the SCAG model at the Tier 1 traffic analysis zone (TAZ) level. Total trip generation by purposes was then summed at the county level for analysis purposes. Because the regression coefficients explain only part of the variability in air travel trip making, total air passenger trips predicted by the regression equations differed from the observed data. It was noted that the deviation was larger for Los Angeles County than for the other five counties in the region, indicating that zones in Los Angeles County are actually generating more air passenger trips, on average, than comparable zones in the other counties. In addition, the regression equations for some trip purposes were more accurate, overall, than those for other purposes at matching the total number of air passenger trips by purpose. Therefore, adjustment factors were developed for each trip purpose to match the trip generation targets. The adjustment factors are summarized in Table 5. The resulting air passenger trips from the trip generation model are shown in Table 6.

Table 4: Regression Coefficients

Purpose	Regression Coefficient	R^2 Coefficient of Determination
Resident Business	0.0096	0.6032
Resident Non-Business	0.0012	0.6329
Visitor Business	0.0105	0.4761
Visitor Non-Business (Selected 4 sub regions)	0.0048	0.3745
Visitor Non-Business (Rest of the Sub Regions)	0.0344	0.5432

Table 5: Adjustment Factors for Regression Air Passenger Trips

County	Resident Business	Resident Non-Business	Visitor Business	Visitor Non-Business
Los Angeles County	1.74	1.92	1.54	1.30
Other Counties	1.12	1.15	1.21	1.21

Table 6: Year 2012 Average Weekday Air Passenger Person Trips by Purpose

County	Resident Business	Resident Non-Business	Visitor Business	Visitor Non-Business	Total	Target Total	Ratio
Ventura	906	1,471	579	195	3,151	2,570	1.23
Los Angeles	11,591	21,426	10,527	18,946	62,490	62,490	1.00
Orange	3,598	5,577	3,748	7,427	20,350	21,764	0.94
San Bernardino	1,163	2,743	1,119	1,820	6,845	7,189	0.95
Riverside	1,315	3,084	928	2,083	7,410	6,551	1.13
Imperial	84	184	42	24	333	15	22.20
Total	18,656	34,486	16,943	30,494	100,580	100,580	1.00

3.2 Trip Distribution

The next step after trip generation was to distribute air passenger trips from each TAZ to each of the seven commercial airports. For this step, gravity models were developed for each of the airports. The number of trips between zones in transportation gravity models is a function of the attractiveness of a zone and the travel impedance between zones. The gravity models were doubly constrained, which means that TransCAD will iterate until the trips produced from each TAZ and attracted to each airport are consistent with the trip productions and attractions forecast in trip generation. The friction factors were derived by fitting the trip length frequency distributions to the observed trip lengths from the LAX and BUR air passenger surveys.

Final trip length frequency distributions from the models were compared against the survey dataset. Figures 2 through 5 illustrate the trip length distributions from the gravity model for each trip purpose. As shown in the figures, the trip length distributions for the resident trips are similar to that of the observed trips in the survey dataset, whereas for the visitor trips the model generated fewer short trips compared to the observed trips. The gravity model results were also compared to targets generated from data described in Section 2 at the subregional level for each airport, and adjusted using K-factors.

Figure 2: Survey Vs Model Trip Length Distribution – Resident Business

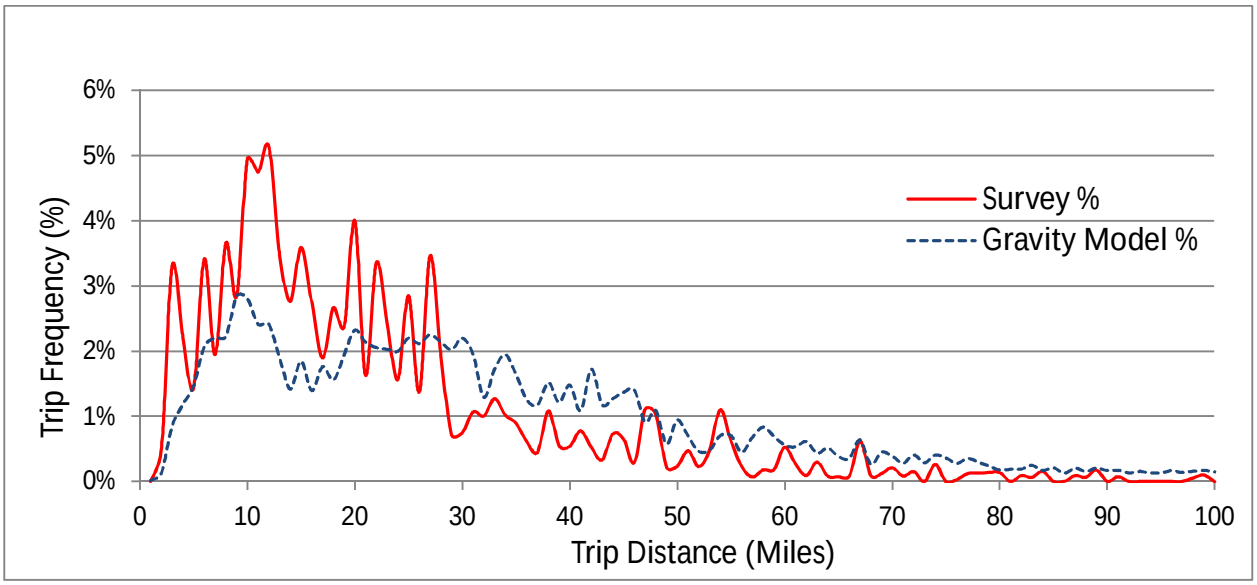


Figure 3: Survey Vs Model Trip Length Distribution – Resident Non-Business

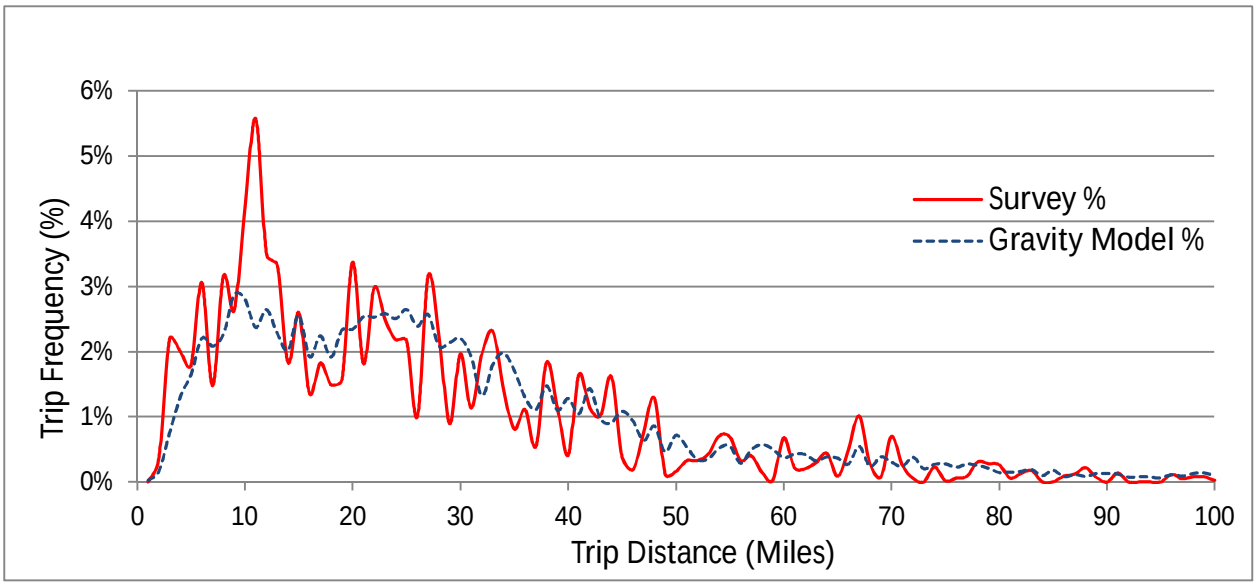


Figure 4: Survey Vs Model Trip Length Distribution – Visitor Business

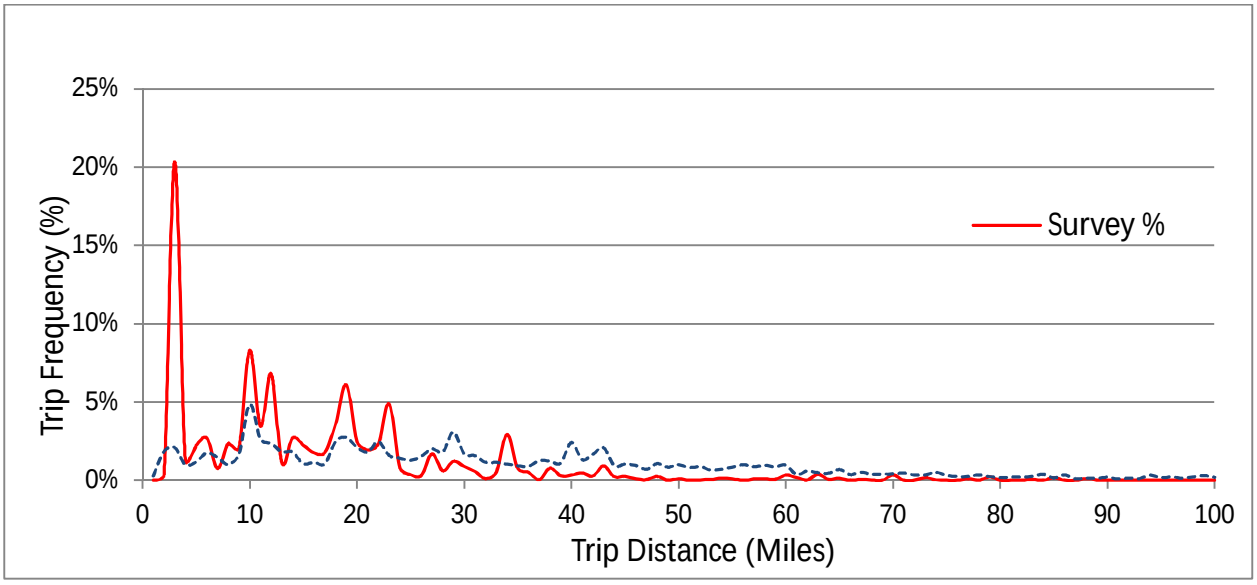


Figure 5: Survey Vs Model Trip Length Distribution – Visitor Non-Business

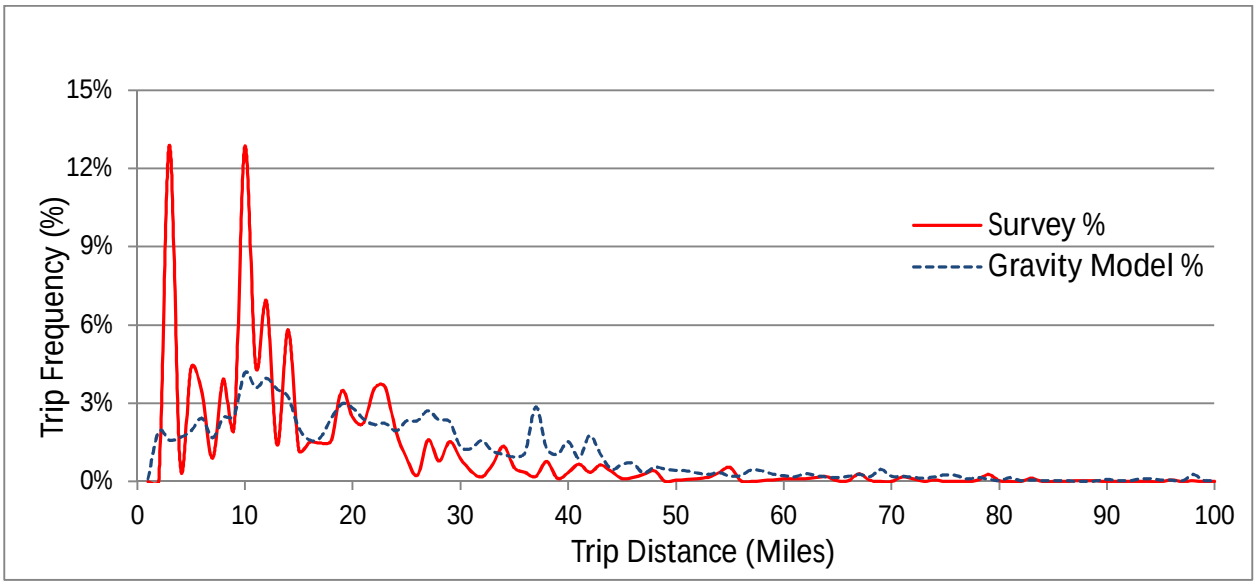


Table 7 summarizes the trip distribution results at the subregional and airport level, as well as the ratio of model vs. observed trips. The modeled airport trips between each subregion and airport compare reasonably well to the "targets developed from the InterVISTAS dataset.

Table 7: 2012 Trip Distribution Model Results

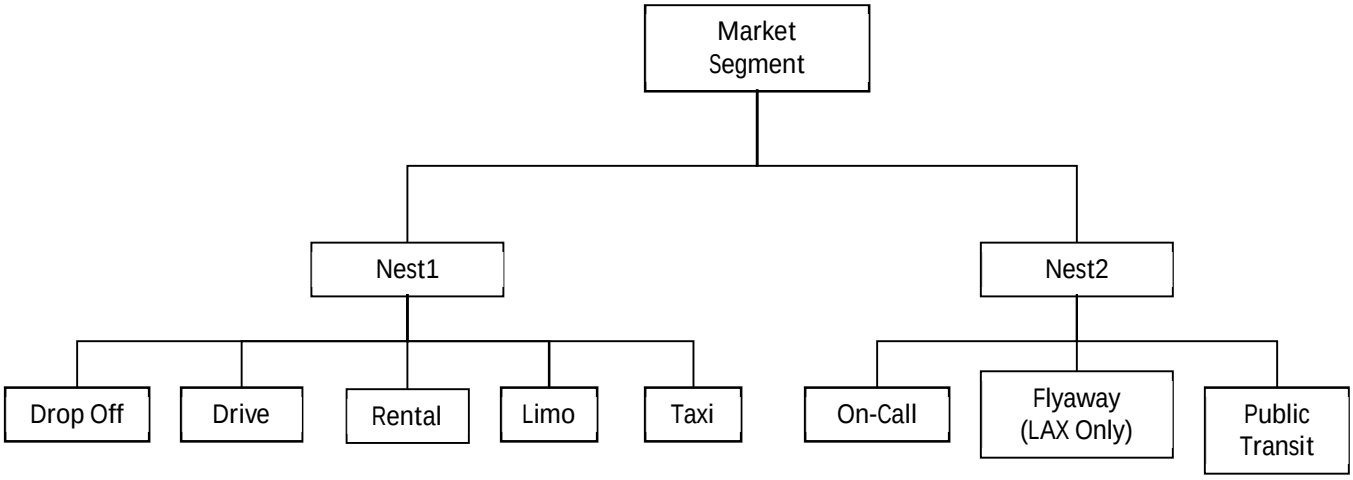
Subregion	BUR	IPL	LAX	LGB	ONT	PSP	SNA	Model Total	Target Total	Ratio
Ventura	408	0	2,512	124	11	0	96	3,151	2,570	1.23
North LA	266	0	3,961	145	86	11	142	4,611	4,111	1.12
SFV	511	0	8,846	275	120	0	301	10,052	10,014	1.00
Westside/Malibu	257	0	4,523	229	142	0	178	5,329	3,829	1.39
SGV West/Arroyo	604	0	7,001	330	143	0	379	8,457	8,635	0.98
LA Central	651	0	11,475	495	226	0	500	13,346	12,836	1.04
South Bay	281	0	7,203	323	96	0	318	8,221	8,848	0.93
Gateway	354	0	5,990	320	102	0	340	7,106	8,750	0.81
SGV East	312	0	4,207	218	158	181	294	5,370	5,468	0.98
OC North	752	0	5,054	685	465	61	4,771	11,788	13,397	0.88
OC South	492	0	3,262	435	321	15	4,036	8,561	8,367	1.02
SB Mountain	108	0	490	51	352	84	75	1,160	1,243	0.93
SB Valley	460	0	1,812	164	2,312	378	559	5,685	5,946	0.96
West Riverside	398	0	2,984	336	1,352	667	452	6,189	6,168	1.00
Coachella Valley	0	0	0	0	156	1,066	0	1,221	383	3.19
Imperial	0	333	0	0	0	0	0	333	15	22.02
Total	5,854	333	69,320	4,130	6,042	2,463	12,441	100,580	100,580	1.00

3.3 Mode of Arrival

Trips by mode of arrival for each airport were developed using an Air Passenger Mode of Arrival Model (APM). The APM selected was originally developed for use in modeling Metro rail projects serving LAX and runs in parallel with the "regular" Metro model. AECOM also adopted this model for BUR as part of the Bob Hope Airport Multi-Modal Ground Access Planning Study (MGAPS). Figure 6 shows the nesting structure assumed in the mode choice model for each of the market segments. To develop the air passenger person trip tables by mode, the calibrated LAX APM was used for LAX, and the calibrated BUR APM was used for BUR and asserted for LGB, SNA, ONT and PSP. These airports have similar ground access travel market characteristics as BUR. Imperial Airport (IPL) modes of arrival were estimated manually, as this airport serves fewer market segments and very few air passenger trips.

As shown in Figure 6, the APM generates trips for seven modes of access: drop-off, drive, rental, limo, taxi, on-call and public transit. (The on-call category includes shuttle services like "Super Shuttle" and "Prime Time". Flyaway is only available to LAX.) The available modes of access for each of the airports were reviewed and classified into the categories used by the APM.

Figure 6: Air Passenger Model



Figures 7 through 12 graphically summarize air passenger trips by subregion and mode of arrival for each airport (except IPL).

Figure 7: Air Passenger Mode of Arrival for BUR

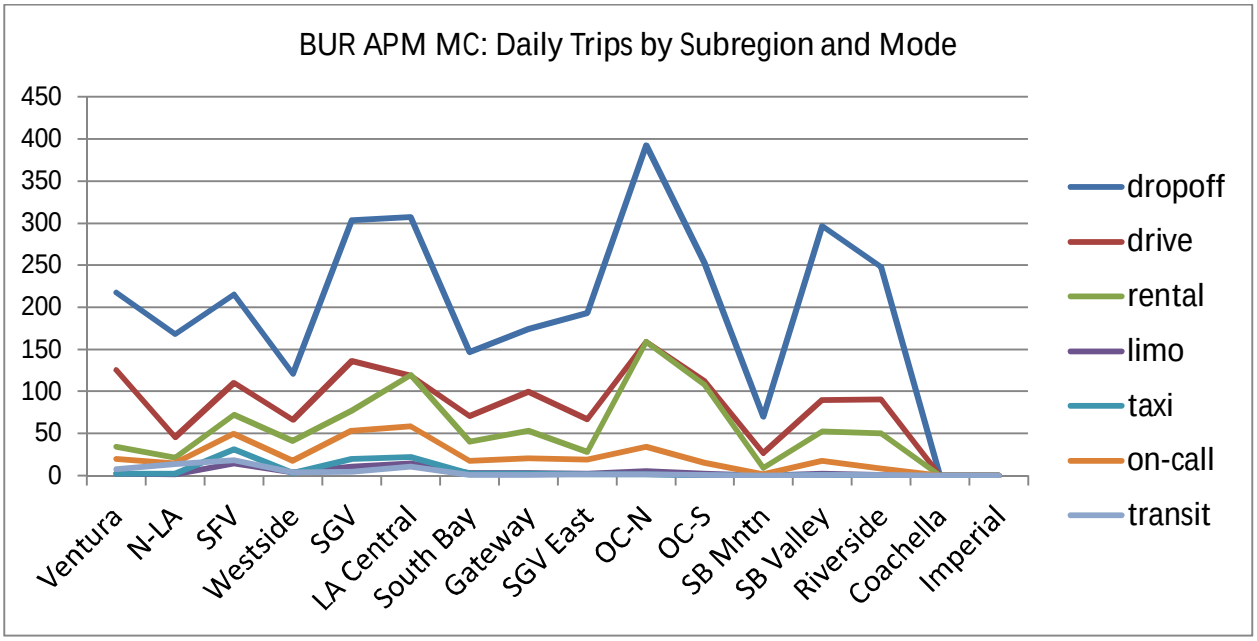


Figure 8: Air Passenger Mode of Arrival for LAX

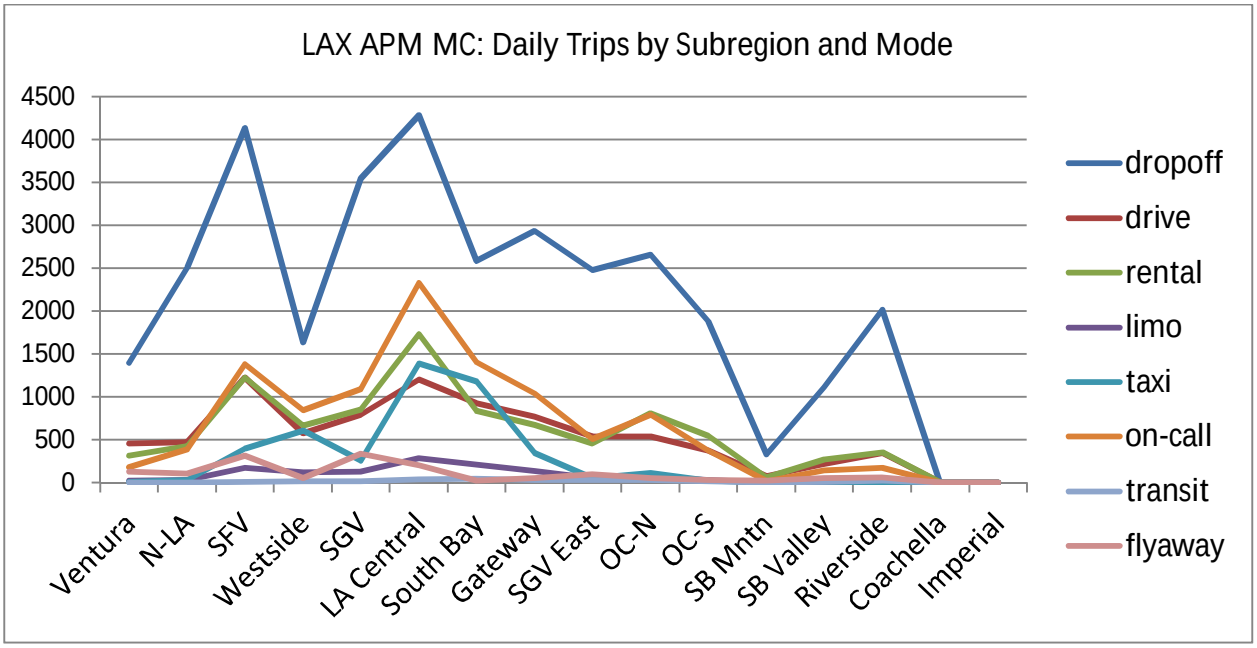


Figure 9: Air Passenger Mode of Arrival for LGB

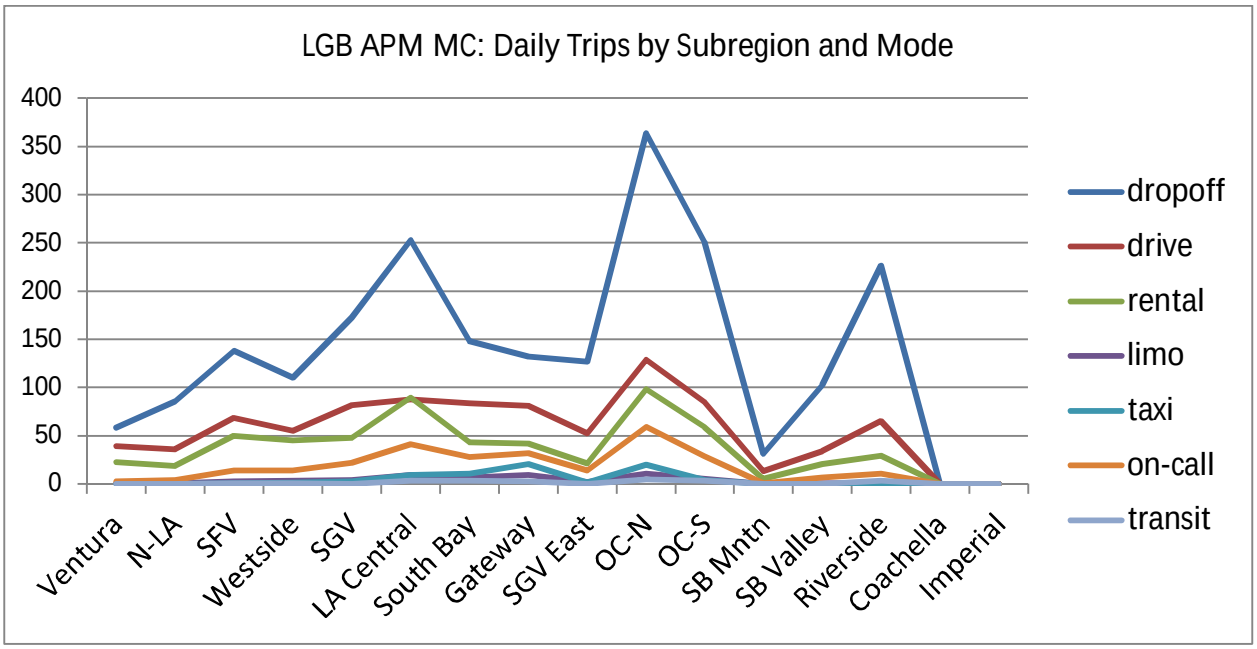


Figure 10: Air Passenger Mode of Arrival for ONT

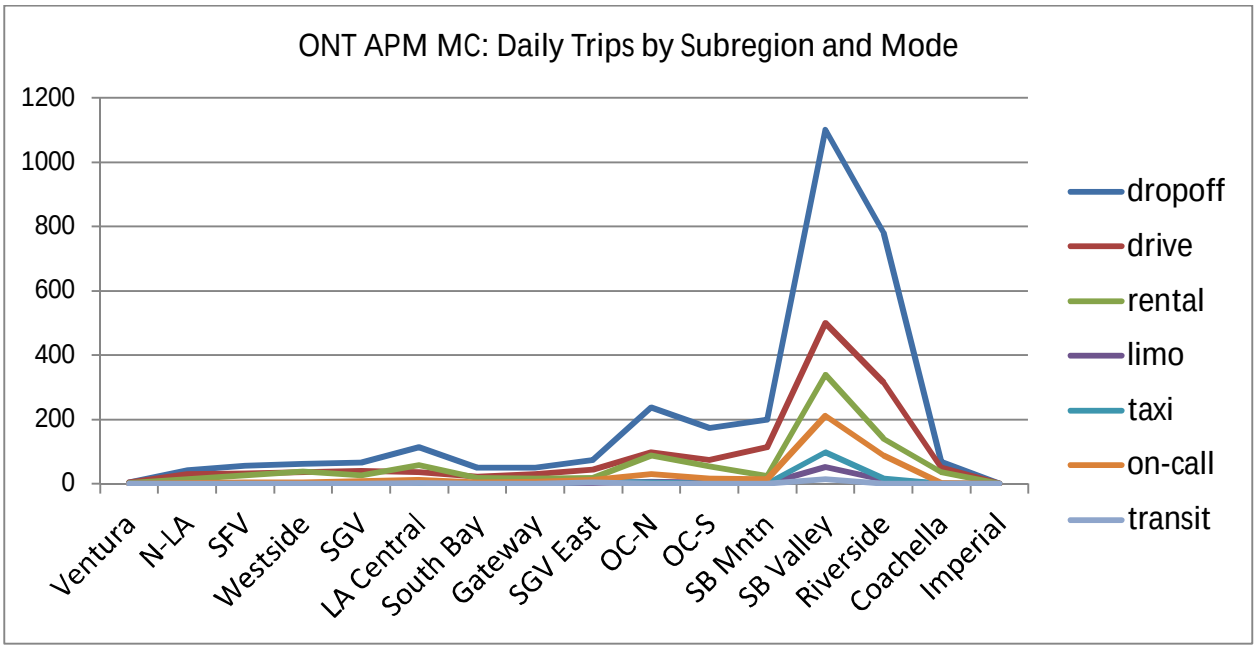


Figure 11: Air Passenger Mode of Arrival for PSP

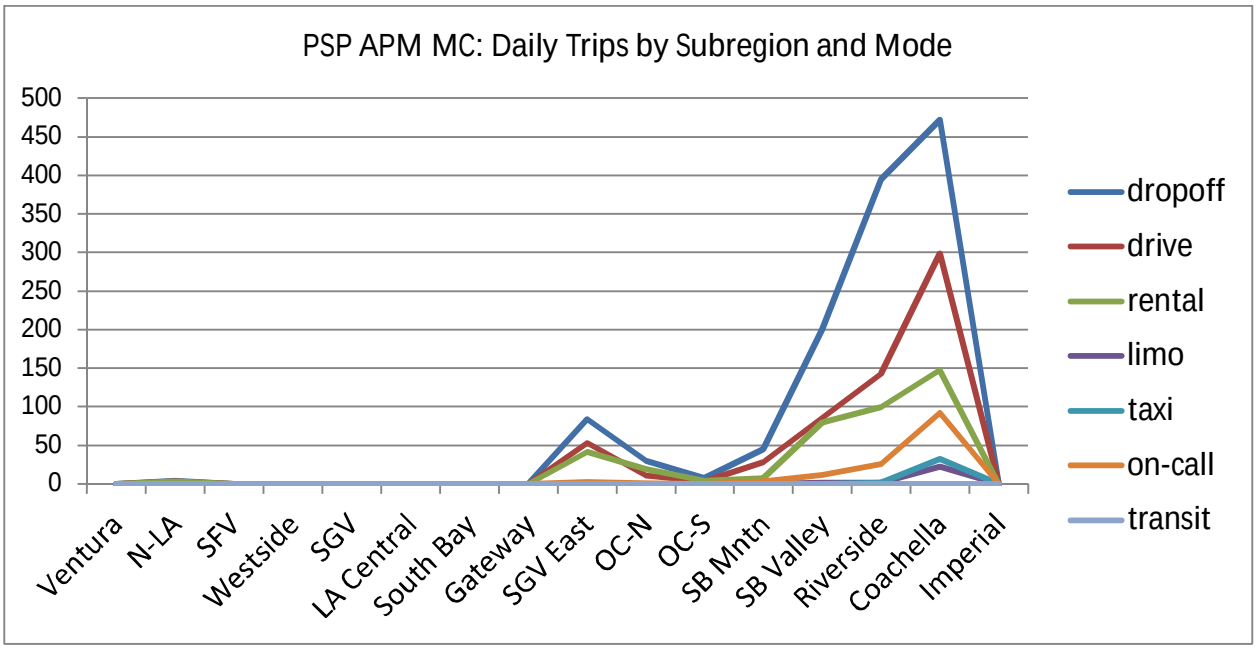
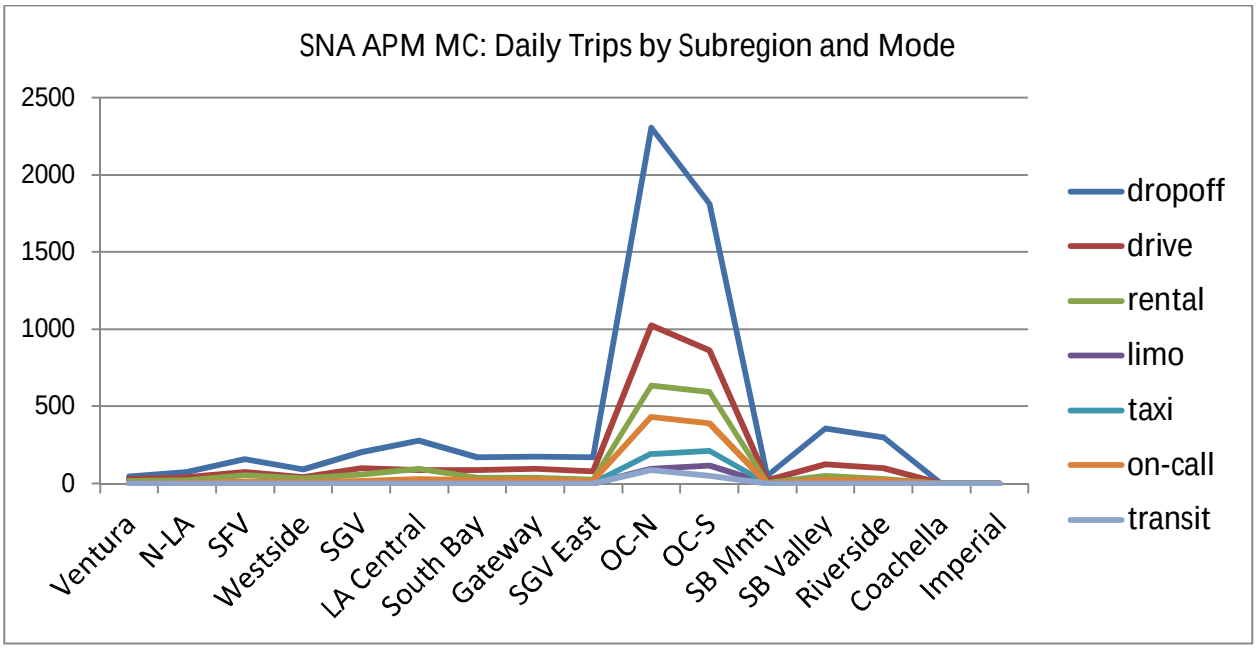


Figure 12: Air Passenger Mode of Arrival for SNA



3.4 Trip Table Summaries

The outputs from the APM for each airport were compiled, and air passenger person trip tables were assembled by trip purpose by mode of arrival at the TAZ level. These trip tables are summarized by airport (except IPL) by mode of arrival by subregion in Tables 9 through 14.

Table 8: Year 2012 Average Weekday BUR Air Passenger Trips by Mode of Arrival

Subregion	Dropoff	Drive	Rental	Limo	Taxi	On-Call	Transit	Total
Ventura	217	125	34	2	2	19	8	408
North LA	168	45	21	1	2	15	13	266
SFV	215	111	72	14	31	50	18	511
Westside/Malibu	121	66	41	4	3	17	4	257
SGV West/Arroyo	303	136	76	10	20	54	4	604
LA Central	307	118	120	14	22	58	10	650
South Bay	147	70	40	3	2	18	1	281
Gateway	174	100	53	3	2	20	1	354
SGV East	193	67	28	2	2	19	1	312
OC North	392	159	159	5	1	34	2	752
OC South	252	112	108	2	0	15	1	492
SB Mountain	70	26	9	0	0	2	0	108
SB Valley	297	90	52	2	0	17	1	460
West Riverside	248	90	50	1	0	9	1	398
Coachella Valley	0	0	0	0	0	0	0	0
Imperial	0	0	0	0	0	0	0	0
Total	3,105	1,316	864	66	89	346	66	5,853

Table 9: Year 2012 Average Weekday LAX Air Passenger Trips by Mode of Arrival

Subregion	Dropoff	Drive	Rental	Limo	Taxi	On-Call	Transit	Flyaway	Total
Ventura	1,396	457	316	19	11	180	4	129	2,512
North LA	2,511	468	425	32	28	388	1	108	3,961
SFV	4,134	1,227	1,221	171	393	1,380	4	315	8,846
Westside/Malibu	1,638	578	667	119	607	846	16	51	4,523
SGV West/Arroyo	3,545	795	854	125	251	1,093	15	334	7,012
LA Central	4,282	1,202	1,733	286	1,391	2,328	37	205	11,464
South Bay	2,584	924	839	212	1,180	1,402	42	23	7,207
Gateway	2,932	772	675	132	343	1,039	34	54	5,982
SGV East	2,478	538	456	50	52	511	27	96	4,207
OC North	2,657	535	807	68	111	793	33	49	5,054
OC South	1,881	372	543	27	22	375	14	28	3,262
SB Mountain	327	73	57	1	0	12	0	21	490
SB Valley	1,111	219	268	9	4	142	10	49	1,812
West Riverside	2,015	347	352	10	3	172	24	60	2,984
Coachella Valley	0	0	0	0	0	0	0	0	0
Imperial	0	0	0	0	0	0	0	0	0
Total	33,492	8,507	9,214	1,262	4,396	10,660	262	1,521	69,315

Table 10: Year 2012 Average Weekday LGB Air Passenger Trips by Mode of Arrival

Subregion	Dropoff	Drive	Rental	Limo	Taxi	On-Call	Transit	Total
Ventura	59	39	23	0	0	3	0	124
North LA	86	36	18	1	0	4	0	145
SFV	138	69	50	3	1	14	1	275
Westside/Malibu	110	55	45	3	1	14	0	229
SGV West/Arroyo	173	82	48	4	3	22	0	332
LA Central	253	88	90	9	9	41	4	493
South Bay	148	84	43	7	10	28	3	323
Gateway	132	81	42	9	21	32	3	320
SGV East	127	52	21	2	2	14	0	218
OC North	364	129	99	11	20	59	5	685
OC South	251	85	59	5	4	28	3	435
SB Mountain	31	14	5	0	0	1	0	51
SB Valley	102	34	21	1	0	6	0	164
West Riverside	226	65	29	1	0	11	3	336
Coachella Valley	0	0	0	0	0	0	0	0
Imperial	0	0	0	0	0	0	0	0
Total	2,198	912	593	56	71	277	23	4,129

Table 11: Year 2012 Average Weekday ONT Air Passenger Trips by Mode of Arrival

Subregion	Dropoff	Drive	Rental	Limo	Taxi	On-Call	Transit	Total
Ventura	4	4	3	0	0	0	0	11
North LA	42	29	13	0	0	2	0	86
SFV	56	33	26	1	0	4	0	120
Westside/Malibu	63	35	38	1	0	5	0	142
SGV West/Arroyo	66	40	26	2	1	8	1	144
LA Central	114	37	58	3	1	12	1	225
South Bay	50	23	18	1	0	4	0	96
Gateway	50	29	16	1	0	5	0	102
SGV East	73	43	18	3	5	13	3	158
OC North	237	98	88	7	4	30	1	465
OC South	174	74	55	3	1	15	0	321
SB Mountain	200	114	23	1	1	13	0	352
SB Valley	1,101	499	339	52	97	210	13	2,312
West Riverside	781	315	140	12	17	87	0	1,352
Coachella Valley	68	50	35	0	0	2	0	156
Imperial	0	0	0	0	0	0	0	0
Total	3,078	1,424	896	86	126	411	20	6,041

Table 12: Year 2012 Average Weekday PSP Air Passenger Trips by Mode of Arrival

Subregion	Dropoff	Drive	Rental	Limo	Taxi	On-Call	Transit	Total
Ventura	0	0	0	0	0	0	0	0
North LA	4	4	3	0	0	0	0	11
SFV	0	0	0	0	0	0	0	0
Westside/Malibu	0	0	0	0	0	0	0	0
SGV West/Arroyo	0	0	0	0	0	0	0	0
LA Central	0	0	0	0	0	0	0	0
South Bay	0	0	0	0	0	0	0	0
Gateway	0	0	0	0	0	0	0	0
SGV East	84	53	41	0	0	2	0	181
OC North	30	11	19	0	0	1	0	61
OC South	8	3	4	0	0	0	0	15
SB Mountain	45	28	7	0	0	3	0	84
SB Valley	200	85	80	1	0	12	0	378
West Riverside	395	143	100	2	2	26	0	667
Coachella Valley	472	299	148	22	33	92	0	1,066
Imperial	0	0	0	0	0	0	0	0
Total	1,238	626	403	26	35	137	0	2,464

Table 13: Year 2012 Average Weekday SNA Air Passenger Trips by Mode of Arrival

Subregion	Dropoff	Drive	Rental	Limo	Taxi	On-Call	Transit	Total
Ventura	46	30	17	0	0	2	0	96
North LA	76	43	20	0	0	2	0	142
SFV	157	76	55	2	0	11	0	301
Westside/Malibu	92	42	34	2	0	8	0	178
SGV West/Arroyo	203	101	56	3	1	17	0	381
LA Central	279	89	95	5	2	28	0	498
South Bay	169	87	39	3	2	19	0	318
Gateway	174	97	35	4	5	24	0	340
SGV East	170	79	24	2	2	18	0	294
OC North	2,306	1,024	635	97	189	433	88	4,771
OC South	1,814	863	593	116	210	389	51	4,036
SB Mountain	48	21	5	0	0	1	0	75
SB Valley	357	123	49	3	1	26	0	559
West Riverside	301	98	30	2	1	21	0	452
Coachella Valley	0	0	0	0	0	0	0	0
Imperial	0	0	0	0	0	0	0	0
Total	6,193	2,773	1,687	238	412	999	139	12,442

4. Next Steps

The methodology developed for the generation of regional air passenger trips is based on the use of a trip generation model for resident, visitor, business and non-business trips that expresses the number of daily air passenger trips from a given zone as a function of zonal socioeconomic attributes such as population, income and employment. Trips were assumed to account for the same proportion of total regional resident, visitor, business and non-business trips, with the same geographical distribution in the region, as observed in the most recent air passenger surveys. The regional air passenger trips were allocated to each of the regional airports on the basis of the existing (2012) pattern of airport use and the proximity of the zone to each of the airports. Given such simplistic assumptions about air passenger trips generation, the trip generation equations do a reasonable job of generating airport travel in the SCAG region. The advantage of this methodology is that it can be used to generate air passenger trips for any forecast year in the SCAG RTP.

The next step is the development of vehicular origin-destination trips for input into highway assignment by vehicle sub mode (drive alone, carpool 2 and carpool 3+). The vehicular trips will also be developed for each of the 5 time periods used in the SCAG model.