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Tech Memo

DATE: April 20, 1999.

TO: Carl Snow, Project Director / TNRCC
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SUBJ: Progress under Task 1:
Trip Generation Model Application.

PROJECT: **Estudio Integral de Transporte (III)/ Multimodal Transportation Study:** Development of Travel Demand and Mobile Source Emissions Models for base year 1996, Juarez. (Contract No. 9880055000)

SERIAL: EITIII-01

Overview

The Estudio Integral de Transporte (Multimodal Transportation Study) for Ciudad Juarez is a multi-year, multi-phase research effort intended to analyze, understand, and forecast the transportation characteristics of the region and its impacts. Phases I and II of the study dealt primarily with the gathering of field data (1996 travel surveys and counts), database development and management, and coding and preliminary analysis of the transportation networks.

Continuing with this research effort, the focus has now turned to the modeling aspects for base year 1996. Thus five specific tasks have been outlined for development under the current project (phase III):

1. Trip generation model application
2. Trip distribution model application
3. Mode split model application
4. Traffic assignment application
5. On-road mobile source emissions modeling

The present Tech Memo summarizes the work performed to accomplish task 1.

Background

Trip generation is the initial step in the classical travel demand modeling process. It provides the total number of ***trip productions*** and ***trip attractions*** for each zone of the study area or TAZs (Traffic Analysis Zones). These trip productions and trip attractions usually are expressed as daily person or vehicle trips, and are further categorized by the purpose of the trip. For this project, trip rates are expressed as person trips.

Basic Definitions

Before any discussion detailing the trip generation modeling process, it is important at this point to emphasize a few clue definitions.

Trip:
One-way journey or movement from a point of origin to a point of destination.

Home-based trip:
When home of the trip maker is either the origin or destination of the trip.

Non-home-based trip:
Neither end of the trip is the home of the trip maker.

Trip Production:
Home end (origin or destination) of a home-based trip, or origin of a non-home-based trip.

Trip Attraction:
Non-home end (origin or destination) of a home-based trip, or destination of a non-home-based trip.

Tripcal5 software

The software used for internal trip generation modeling was Tripcal5. This computer program developed by TxDOT/TTI joint efforts allows the estimation of trip productions and attractions for multiple trip purposes using different user-specified models. Although there are other software packages available to do this type of analysis, IMIP has decided to use the procedures recommended by TxDOT and TTI in order to ensure consistency and compatibility with the work being done in El Paso and Dona Ana counties, both immediately bordering Juarez.

The present document focuses on the Tripcal5 input requirements, and the interpretation of the program's output for the base year 1996 Juarez model. As a final task in pase II of the study, preliminary exercises with Tripcal5 were carried out by IMIP and reviewed by TTI; the present document shows the final version edited with modifications suggested by TTI.

Traffic Analysis Zones

A total of 425 internal zones and 7 external stations have been designated for the base year 1996 Juarez travel model. The specific delimitation of the zones has been accomplished following recommended guidelines of demographic comparability within the zones, and in overall coherence with the transportation network. This information has been analyzed and described in detail as part of the previous phase of the study.

Input data

The information required to develop a trip generation model is in general some sort of estimation of trip generation rates (productions and attractions) dependent on socioeconomic variables, usually obtained from travel surveys for different trip purposes. Also the model requires an array of demographic characteristics aggregated at the TAZ level to expand the rates, usually projected from the most recent census results. The following is a description of this information obtained for Juarez for year 1996, along with relevant Tripcal5 coding tips. The complete input setup for Tripcal5 is shown in appendix A.

Trip Purposes

Four trip purposes were used to model internal trip generation in Juarez:

1) Non-home-based trips (NHB), which have non-home locations at both trip ends.
2) Home-based-work trips (HBW), which have home at one end of the trip and work at the other.
3) Home-based-non-work trips (HBNW), which have home at one end and a non-work location at the other.
4) Truck-Taxi trips (TT), which conventionally is simplified as a special case of NHB trips but for commercial vehicles.

The specification of trip purposes is provided to Tripcal5 under the "TP" records (refer to appendix A).

Production model: Regional distribution of Households

The production model selected for Juarez 1996 is a two-way cross-classification model, which simply provides trip rates by household, stratified by two independent variables: household size and household income. This option of production model is specified on Tripcal5 under the "TP" record for each trip purpose, by entering letter A on column 28 (refer to appendix A).

For the production model it is necessary to provide a regional distribution of households, so Tripcal5 can use it as a control total to the overall TAZ household disaggregation. Obviously, it must also follow the cross-classification structure of household income and household size. In this regard, a preliminary regional distribution of households was obtained from a special report requested to INEGI and based on the 1990 population census. After converting the 1990 income ranges to equivalent 1996 pesos (mexican currency), it was assumed that the distribution remained overall the same by 1996. Yet, the task of incorporating new growth to account for 1996 population required in some isolated cases the projection of new household distributions at the TAZ level, which eventually caused a minor re-adjustment of the original regional distribution figures. Table 1 shows the final regional household distribution for Juarez.

Table 1. Regional distribution of households (base year 1996).

		HH size					
		1	2	3	4	5	6+
HH income	(1) $0 to $1,374	4.16%	4.89%	8.24%	5.05%	3.36%	2.81%
	(2) $1,375 to $4,122	1.66%	5.18%	7.51%	11.55%	8.62%	8.49%
	(3) $4,123 to $6,870	0.31%	1.18%	1.99%	3.85%	3.24%	5.33%
	(4) $6,871 to $8,244	0.07%	0.27%	0.46%	0.89%	0.72%	1.45%
	(5) $8,245 to $12,367	0.10%	0.37%	0.57%	1.10%	0.85%	1.63%
	(6) $12,368 plus	0.12%	0.41%	0.56%	1.01%	0.83%	1.17%

The regional distribution of households is provided to Tripcal5 under the "PCR" records (appendix A).

Production rates

Trip production rates were computed with the assistance of TTI, using data from the 1996 household travel survey. The ranges of income and household size were selected such that a statistical comparison of two adjacent cell rates (vertically and horizontally) yielded a significant difference. Table 2 shows the resulting trip rate table used for the production model. Six income ranges and six household sizes were specified for this model. On Tripcal5 income ranges are specified under the "IR" records, and household size ranges under the "HS" records.

Table 2. Trip production rates (person trips per household).

Trip purpose	HH income	HH size					
		1	2	3	4	5	6+
NHB	(1)	0.142	0.183	0.485	0.409	0.851	0.783
	(2)	0.115	0.268	0.495	0.618	0.810	0.763
	(3)	0.333	0.319	0.752	0.844	0.842	0.756
	(4)	0.402	0.542	0.577	1.160	1.078	0.010
	(5)	0.402	0.708	1.271	1.045	1.172	0.010
	(6)	0.199	0.615	0.564	0.957	1.844	0.652
HBW	(1)	0.508	1.156	1.268	1.417	1.474	2.067
	(2)	0.902	1.479	1.705	1.726	2.096	2.400
	(3)	0.875	1.522	1.581	1.698	2.247	2.987
	(4)	1.000	1.708	1.847	1.800	2.438	2.762
	(5)	0.598	1.541	1.559	2.169	2.494	3.259
	(6)	0.801	2.307	2.180	2.119	2.622	3.196
HBNW	(1)	1.350	1.946	3.178	4.882	6.863	6.784
	(2)	0.852	1.962	3.107	4.809	6.242	7.104
	(3)	1.000	2.029	2.984	4.771	6.703	6.949
	(4)	1.335	1.626	2.347	5.694	6.547	8.810
	(5)	1.000	2.250	3.746	5.540	5.608	6.593
	(6)	0.398	1.384	2.565	5.420	7.223	6.196

The production rate table is provided to Tripcal5 under the "PT" records.

Attraction model: Attraction rates

The attraction model selected for Juarez 1996 is a regression type cross-classification model, which provides trip rates by employment enrollment, stratified under area type and employment type. In addition trip attraction rates for households are included. This option of attraction model is specified on Tripcal5 under the "TP" record for each trip purpose, by including letter D on column 30 (refer to appendix A).

Trip attraction rates were computed using data from the 1996 workplace travel survey. In the case of trip attraction rates for households, these were computed from the household survey. Table 3 shows the

resulting trip rate table used for the attraction model. Four area types and three employment types were specified for the model.

Table 3. Trip attraction rates (person trips per household, and per employee).

Trip purpose	Area Type	Household	Employment type		
			Basic	Retail	Service
NHB	CBD	0.127	0.062	14.438	0.409
	Urban	0.127	0.505	7.179	3.568
	Suburban	0.127	0.109	2.681	4.875
	Rural	0.127	0.627	10.485	2.694
HBW	CBD	0.125	2.000	1.557	1.899
	Urban	0.125	1.859	3.351	2.953
	Suburban	0.125	1.932	1.777	2.027
	Rural	0.125	1.497	1.615	2.099
HBNW	CBD	0.569	0.031	22.417	36.758
	Urban	0.569	0.084	16.275	28.701
	Suburban	0.569	0.036	20.086	29.457
	Rural	0.569	0.195	3.423	2.881
TT	CBD	0.160	0.002	0.000	0.000
	Urban	0.170	0.000	0.129	0.000
	Suburban	0.180	0.012	0.549	0.102
	Rural	0.180	0.087	0.477	0.028

The attraction rate table is provided to Tripcal5 under the "AMC" records

Balancing trip generation

One of the premises of trip generation modeling is that total productions must equal total attractions. Yet, a wide range of factors (including the fact that the two values are obtained from different sample sources) will cause these values to end up being different to some extent. Thus an adjustment of one of the values is required to comply with the model premises. Usually, a higher sample size of the household survey provides better estimates for production values, than the attraction values provided by the workplace survey, so it is common practice to adjust or "balance" the attractions to the production estimates; nevertheless, special conditions might warrant balancing to attractions. In any case Tripcal5 is flexible enough to allow balancing in any direction the user desires. The end result will be the computation of a scaling factor that could be applied to the total trips being balanced.

For the Juarez case, evidence of better data gathered from the workplace survey for NHB and HBNW trips, prompted the decision to balance these trip purposes to trip attraction control totals, as will be explained just ahead in this document.

HBW trips were balanced to productions, since similar indicators showed consistency of the household survey data for this trip purpose.

TT trips were balanced to productions. Yet, under Tripcal5 setup, TT trips can be specified to either productions or attractions with no difference in the results. Tripcal5 will balance to the control total, be this from the default model or one provided by the user.

The balance code is specified under the "TP" records on column 32, entering either a letter P if balancing to productions, or a letter A if balancing to attractions (see appendix A).

Control totals for NHB and HBNW trips

Initial trip generation exercises with the Juarez data were specified to balance to productions all trip purposes, however the results showed considerable differences between productions and attractions for NHB and HBNW trip purposes.

Table 4 shows a printout of Tripcal5 results from these preliminary runs. In it there is a comparison of total raw productions and attractions (look under the column "UNSCALED MODELED") computed for NHB, HBW, and HBNW trip purposes. For HBW trips there is a difference of about 15% between productions and attractions, which is not uncommon; furthermore, this trip purpose shows a scaling factor for attractions of around 0.87 (highlighted in blue), which again seems consistent with similar studies. In contrast, for NHB and

HBNW trip purposes the difference between raw productions and attractions goes over 100% (300% for NHB), with scaling factors much lower than 0.50 (marked with "*"), which evidently raised concerns.

A closer look at the household survey data revealed some evidence that in fact a good level of under reporting for these trip purposes took place.

Table 4. Comparison of productions and attractions from original Tripcal5 run.

	TRIP PURPOSE	TYPE	CONTROL TOTAL	UNSCALED MODELED	SPECIAL GENERATOR	ADD ON	SCALE FACTOR
1	NON-HOME BASED	PROD	161428.	161428.	0.	0.	1.0000
		ATTR		581214.	0.	0.	0.2777 *
2	HOME BASED WORK	PROD	463748.	463748.	0.	0.	1.0000
		ATTR		530313.	0.	0.	0.8745
3	HOME BASED NONWORK	PROD	1197320.	1197320.	0.	0.	1.0000
		ATTR		2722470.	0.	0.	0.4398 *

In general NHB and HBNW trips tend to be under reported, one explanation being the instinctive predisposition of many trip makers to regard these as less important trips (compared to HBW trips for example). A trained interviewer should be able to overcome this problem, but it is important to underline that the household survey interviews for the Juarez study were conducted mostly by 6th and 8th graders, which although closely supervised, it is now clear that they still allowed deficient feedback. This was an important precedent to try to adjust to a more robust reference. Since trained adult personnel conducted the workplace survey, it was decided to first attempt to use attraction values as the reference before attempting to correct production rates. Moreover, the proportion breakdown of raw attractions by purpose seemed to be quite consistent with those observed in other cases (i.e. El Paso).

Now, since there is also a well known tendency of attraction rates from workplace surveys to provide overestimates of actual attractions, it was decided to provide a control total of about 0.85 the reported trip attraction value, instead of balancing directly to the raw attraction estimate. This scaling factor is consistent with that yielded by HBW trips.

In summary, a control total of 494,032 trip attractions for the NHB trip purpose, and 2,314,100 trip attractions for the HBNW trip purpose were specified on the Tripcal5 setup. Eventually these values would be revised at the traffic assignment and validation stages.

On Tripcal5, control totals must be provided on columns 41-50 of the appropriate "TP" record (see appendix A).

Control total for TT trips

On Tripcal5 there is an option to run a commercial truck default model; this model essentially calculates TT trips on the basis of population. It is not recommended that this default model be used for Juarez, and thus the option needs to be turned-off on the Tripcal5 setup. This is accomplished by entering a "1" on column 66 of the "PS" record (refer to appendix A). Also, whenever the default model is not being used a control total for TT trips must be provided on columns 41-50 of the appropriate "TP" record. Now, in the case of Juarez the travel surveys did not include a commercial truck survey, so the total TT trips needed to be estimated through an expansion of the observed commercial flow from a sample of traffic counts. An overview of this procedure follows.

A) A two-way cross-classification table was developed with roadway facility type and area type.

B) Mileage of network links with traffic counts and without traffic counts were added-up under this stratification.

Table 5. Mileage of network links under facility type and area type stratification.

a)Links with counts

Facility Type	Area Type: CBD	Urban	Suburban	Rural
Major Arterial	15.29	26.95	44.74	30.24
Minor Arterial	1.47	6.11	19.52	1.22
Collector/local	N/A	N/A	N/A	N/A

b)Links without counts

Facility Type	Area Type: CBD	Urban	Suburban	Rural
Major Arterial	5.38	31.31	43.59	19.61
Minor Arterial	5.57	20.34	75.60	22.95
Collector/local	N/A	N/A	N/A	N/A

C) A counted VMT was obtained by adding for each cell the product of each link mileage times the corresponding daily traffic count of the link (only links with counts). The result is shown in table 6.

Table 6. VMT of links with traffic counts.

		Area Type			
		CBD	Urban	Suburban	Rural
Facility Type	Major Arterial	235,129	567,773	779,105	469,761
	Minor Arterial	6,685	46,016	125,310	16,275
	Collector/local	N/A	N/A	N/A	N/A

D) Values of table 6 for each cell were divided by corresponding values of table 5a to obtain a weighted average count for all links with counts. These weighted cell averages were then multiplied by the total link mileage of the corresponding cell (Table 5a + Table 5b) to obtain an estimate of total VMT by cell. The result of this step is shown in Table 7.

Table 7. Total arterial VMT.

		Area Type			
		CBD	Urban	Suburban	Rural
Facility Type	Major Arterial	317,902	1,227,185	1,538,080	774,503
	Minor Arterial	31,986	199,232	610,593	322,932
	Collector/local	N/A	N/A	N/A	N/A

E) Vehicle classification procedures at some traffic count stations allowed a rough estimation of the proportion of commercial vehicles in some cells. On major arterials at CBD and Urban areas this was on average 2.4%, and on Suburban and Rural areas increased to 3.6%. No such proportions were available for lower hierarchy roadways. Table 8 shows the resulting commercial VMT, which added up to 120,335 for all area types.

Table 8. Commercial VMT.

		Area Type			
		CBD	Urban	Suburban	Rural
Facility Type	Major Arterial	7,630	29,452	55,371	27,882
	Minor Arterial	N/A	N/A	N/A	N/A
	Collector/local	N/A	N/A	N/A	N/A

F) Finally to convert commercial VMT to total commercial truck trips, commercial VMT needed to be divided by the average trip length (in miles) of TT trips. For the Juarez case without a commercial truck survey, the number of TT trips registered was not big enough (for the observed variability in the trip length) to provide a reliable estimate of the trip length, so the NHB average trip length of 3.4 miles was used. Thus the control total for TT trips came up to 35,392 vehicle trips, equivalent to 50,964 person trips if a TT vehicle occupancy of 1.44 pax/veh is considered.

Aggregation of zones by sectors

In addition to the TAZ zoning structure, Tripcal5 allows further aggregation into sectors for coarser trip generation analysis. For the Juarez case 18 sectors were specified. This is done on Tripcal5, under the “ES” records (see appendix A).

Area type specification

As previously mentioned, all TAZs were categorized within four area types: 1) CBD, 2) Urban, 3) Suburban, and 4) Rural, according to the socioeconomic characteristics of the zone. An indicator known as the activity density factor condenses these socioeconomic characteristics as follows:

Activity Density = [TAZ population + (TAZ employment*Norm Factor)]/TAZ acres

Where Norm Factor = Total study area Population / Total study area Employment

The range of activity density for each area type was selected such that minimized the resulting standard deviation of the factor within area types. The resulting ones are shown in table 9.

Table 9. Activity density ranges for area types.

Area Type	Activity Density Range
1) CBD	$X \geq 136$
2) Urban	$136 > X \geq 63$
3) Suburban	$63 > X \geq 27$
4) Rural	$27 > X \geq 0$

These ranges as well as the number of area types were selected as part of the process for estimating attraction rates[1], as a measure to pool enough data to yield significant results. The area type of each TAZ is specified on Tripcal5, under the "EA" records.

Demographics (DA records)

Demographic characteristics at the TAZ level are provided to Tripcal5 through the "DA" series of records. These serve as the basis to expand the trip generation rates.

The "DA1" records display each zone's acreage, population, household number, average household size, median household income, as well as basic, retail, service, and total employment. For the Juarez case both average household size and median household income for each TAZ were not specified on Tripcal5, since under the model selected this data was not required (direct specification of marginal HH size and income distributions in each zone, instead of computing these distributions through the use of disaggregation curves).

The "DA3" records display for each TAZ the marginal HH size distribution (% of total households under each size category). An option to this setup is to specify instead disaggregation curves ("HH" records) to have Tripcal5 compute the distributions for each TAZ, on the basis of each TAZ average household size.

The "DA4" records display for each TAZ the marginal HH income distribution (% of total households under each income category). An option to this setup is to specify instead disaggregation curves ("IC" records) to have Tripcal5 compute the distributions for each TAZ, on the basis of each TAZ median household income.

Overall, by base year 1996 (late October) Juarez had a population of 1,065,170, and a total employment of 235,700 (130,925 in basic, 48,070 in retail, and 56,705 in services). The urban area covered 92 square miles and had 255,780 households.

Tripcal5 output

At this time two types of results were expected as output from Tripcal5. The first one was the set of scaling factors required to balance productions and attractions, and the second one was the final (scaled) daily trip productions and attractions by trip purpose for each TAZ. These two products of Tripcal5 have to be specified on the input setup as tables #10 and #20 respectively, under the "TBL" record.

Scaling factors

The significance of scaling factors is mainly the capability to compare the differences between the end number of raw productions (computed from the production model) with the end number of raw attractions (computed from the attraction model). As previously mentioned, the ideal would be to have these two numbers be the same. Since these numbers come from different sources the chances of having an exact match are quite slim, yet a close match would most likely provide strong evidence of the robustness of both models.

As previously discussed, initial Tripcal5 runs yielded poor matches for NHB and HBNW trip purposes, so after evaluating the options to solve this problem, attraction control totals were provided as a preliminary

[1] Tech Memo EITII-03, "Editing/analysis of the workplace/special generator survey database", IMIP (December 1998).

measure under further review. These control totals are shown highlighted in red in Table 10 as part of the output. On the same table the resulting scaling factors for this two trip purposes (marked with "*") show the adjustment artificially introduced to the attractions. As a result, productions were increased by a factor of 3 for NHB trips, and by a factor around 2 for HBNW trips. The resulting scaling factors for HBW and TT trip purposes appear to be reasonably good.

Table 10. Scaling factor output (table 10 from Tripcal5).

TABLE 10: SCALING FACTOR COMPUTATIONS

	TRIP PURPOSE	TYPE	CONTROL TOTAL	UNSCALED MODELED	SPECIAL GENERATOR	ADD ON	SCALE FACTOR
1	NON-HOME BASED	PROD		161428.	0.	0.	3.0604
		ATTR	494032.	581214.	0.	0.	0.8500 *
2	HOME BASED WORK	PROD	463748.	463748.	0.	0.	1.0000
		ATTR		530313.	0.	0.	0.8745
3	HOME BASED NONWORK	PROD		1197320.	0.	0.	1.9327
		ATTR	2314100.	2722470.	0.	0.	0.8500 *
4	TRUCK-TAXI	PROD	50964.	60535.	0.	0.	0.8419
		ATTR		60535.	0.	0.	0.8419

CONTROL TOTAL = VALUE INPUT FROM TP RECORD
OR = MODELED PRODUCTIONS + SPECIAL GENERATORS PRODUCTIONS + ADD ON PRODUCTIONS
OR = MODELED ATTRACTIONS + SPECIAL GENERATORS ATTRACTIONS + ADD ON ATTRACTIONS

SCALE FACTOR = (CONTROL TOTAL - SPECIAL GENERATOR)/(UNSCALED MODELLED + ADD ON)

Trip generation table

Finally, scaled trip productions and attractions were obtained as the key output of Tripcal5 and the whole trip generation step. These are shown in appendix B, categorized by trip purpose and for each TAZ in the study area.

Appendix A

Tripcal5 input setup.

```
PS   CIUDAD JUAREZ    425  18   4 1996 0 0 0        2267    4.70 1
TBL     10   20
TP  1 NON-HOME BASED       A D A N          494032
TP  2 HOME BASED WORK      A D P
TP  3 HOME BASED NONWORK   A D A           2314100
TP  4 TRUCK-TAXI             D P T           50964
PCI     HHSIZE N 6   1 PERSON 2 PERSONS 3 PERSONS 4 PERSONS 5 PERSONS 6+PERSONS
PRI   HHINCOME N 6    0-1374 1375-4122 4123-6870 6871-8244 8245-12367 12368+
PCR   1 4.16 4.89 8.24 5.05 3.36 2.81
PCR   2 1.66 5.18 7.5111.55 8.62 8.49
PCR   3 0.31 1.18 1.99 3.85 3.24 5.33
PCR   4 0.07 0.27 0.46 0.89 0.72 1.45
PCR   5 0.10 0.37 0.57 1.10 0.85 1.63
PCR   6 0.12 0.41 0.56 1.01 0.83 1.17
PT  1     1      0.142     0.183     0.485     0.409     0.851     0.783
PT  1     2      0.115     0.268     0.495     0.618     0.810     0.763
PT  1     3      0.333     0.319     0.752     0.844     0.842     0.756
PT  1     4      0.402     0.542     0.577     1.160     1.078     1.000
PT  1     5      0.402     0.708     1.271     1.045     1.172     1.000
PT  1     6      0.199     0.615     0.564     0.957     1.844     0.652
PT  2     1      0.508     1.156     1.268     1.417     1.474     2.067
PT  2     2      0.902     1.479     1.705     1.726     2.096     2.400
PT  2     3      0.875     1.522     1.581     1.698     2.247     2.987
PT  2     4      1.000     1.708     1.847     1.800     2.438     2.762
PT  2     5      0.598     1.541     1.559     2.169     2.494     3.259
PT  2     6      0.801     2.307     2.180     2.119     2.622     3.196
PT  3     1      1.350     1.946     3.178     4.882     6.863     6.784
PT  3     2      0.852     1.962     3.107     4.809     6.242     7.104
PT  3     3      1.000     2.029     2.984     4.771     6.703     6.949
PT  3     4      1.335     1.626     2.347     5.694     6.547     8.810
PT  3     5      1.000     2.250     3.746     5.540     5.608     6.593
PT  3     6      0.398     1.384     2.565     5.420     7.223     6.196
AMC 1  1  4       03  0.127 07  0.062 08 14.438 09  0.409
AMC 1  2  4       03  0.127 07  0.505 08  7.179 09  3.568
AMC 1  3  4       03  0.127 07  0.109 08  2.681 09  4.875
AMC 1  4  4       03  0.127 07  0.627 08 10.485 09  2.694
AMC 2  1  4       03  0.125 07  2.000 08  1.557 09  1.899
AMC 2  2  4       03  0.125 07  1.859 08  3.351 09  2.953
AMC 2  3  4       03  0.125 07  1.932 08  1.777 09  2.027
AMC 2  4  4       03  0.125 07  1.497 08  1.615 09  2.099
AMC 3  1  4       03  0.569 07  0.031 08 22.417 09 36.758
AMC 3  2  4       03  0.569 07  0.084 08 16.275 09 28.701
AMC 3  3  4       03  0.569 07  0.036 08 20.086 09 29.457
AMC 3  4  4       03  0.569 07  0.195 08  3.423 09  2.881
AMC 4  1  4       03  0.16  07  0.002 08  0.000 09  0.000
AMC 4  2  4       03  0.17  07  0.000 08  0.129 09  0.000
AMC 4  3  4       03  0.18  07  0.012 08  0.549 09  0.102
AMC 4  4  4       03  0.18  07  0.087 08  0.477 09  0.028
ES  1    4    5    6    7    8    9   10   11   33   34   35   36   37   41   45
ES  1   60   61   62   63   64   65   66   67   68   69   76   77   78   79   80
ES  2   81   82  216  217  218  249  258  261  262  263
ES  3   12   13   14   15   16   17   18   19   20   21   22   23   25   26   38
ES  3   39   40   42   43   44   46   47   48   52   57   58   59   70
ES  4   75  198  200  201  202  203  204  205  206  207  208  209  210  211  212
ES  4  213  214  215  219  220  223  224  225  226  239  392  393  395  422  423
ES  5  221  222  238  240  241  243  250  251  252  253  254  255  259  260  264
ES  5  265  266  267  275  276  277  278  281  291  292
ES  6  268  269  270  271  272  273  274  303  307  308  396  424  425
ES  7   24   27   28   29   30   31   32   49   50   51   53   54   55   56   71
ES  7   72   73   74   83   84   85   88   89   90   91   92   93  184  185  186
ES  7  187  190  191  192  193  194  195  196  197  199  390  391  394  411  412
ES  8   94   95   96   97   98   99  100  101  102  103  104  105  106  107  108
ES  8  109  110  111  112  113  114  115  116  117  118  119  120  122  123  124
ES  8  135  136  137  138  139  140  141  142  143  144  145  146  147  148  149
ES  8  150  151  152  153  154  155  157  158  159  180  181  182  183  188  189
ES  8  231
ES  9  121  125  126  127  128  129  133  134  156  160  161  162  163  164  165
ES  9  166  168  169  170  171  172  174  175  176  177  178  179  399  400  401
ES  9  402  409  410
ES 10  130  131  132  167  173  246  247  248  320  321  322  332  333  334
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ES 11  227  228  229  230  232  233  234  235  236  237  242  244  245  256  279
ES 11  280  282  289  290  293  294  298  300  301  310  405  406  413  414
ES 12  257  283  284  285  286  287  288  295  296  297  299  335  336  337  338
ES 12  339  340  341  342  343  344  345  346  347  348  349  350  351  353  354
ES 12  355  356  357  358  359  360  361  362  363  364  365  366  367  368  369
ES 12  370  371  372  373  374  375  376  377  378  379  380  381  382  383  384
ES 12  397  403  404  417  418  419  420  421
ES 13  323  324  325  326  327  329  330  331  415  416
ES 14  328  386  398
ES 15  302  304  305  311  352  385  387  388  389  407  408
ES 16  306  309  312  313  314  315  316  317  318  319
ES 17    1    2    3
ES 18   86   87
EA  1   29   30   31   32   50   51   53   84   88  117  122  161  162  163  165
EA  1  166  184  186  222  225  235  238  239  327  385  402
EA  2   18   19   21   22   23   25   27   28   46   48   49   54   72   73   83
EA  2   85   89   90   91   92   93   94   95   96   97   98   99  100  101  102
EA  2  103  107  108  109  110  111  112  114  115  116  118  119  120  123  124
EA  2  138  139  140  146  149  153  154  159  171  179  185  187  188  189  190
EA  2  191  192  193  195  197  198  199  200  201  205  220  223  228  230  231
EA  2  232  233  236  237  242  257  275  288  290  297  323  338  340  341  343
EA  2  344  348  349  363  364  365  371  372  373  374  375  379  390  393  394
EA  2  404  411  412  413  418  421
EA  3    8    9   11   12   13   14   15   16   17   20   24   26   33   35   36
EA  3   37   38   39   40   41   42   43   44   45   47   52   55   56   57   58
EA  3   59   60   61   62   63   64   65   66   67   68   69   70   71   74   75
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EA  3  227  229  234  240  241  243  245  250  251  252  253  254  255  256  258
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EA  3  278  279  280  281  282  283  284  285  286  287  289  291  292  293  294
EA  3  295  296  298  299  300  301  310  330  331  336  337  339  342  345  346
EA  3  347  350  351  353  354  355  356  357  358  359  360  366  367  368  369
EA  3  370  376  377  378  380  381  383  384  387  388  389  391  392  395  397
EA  3  401  403  405  409  410  414  417  419  420  422  423
EA  4    1    2    3    4    5    6    7   10   34   86   87  105  126  128  130
EA  4  132  134  135  164  167  170  172  173  175  176  177  178  183  196  244
EA  4  246  247  248  249  270  271  273  302  303  304  305  306  307  308  309
EA  4  311  312  313  314  315  316  317  318  319  320  321  322  324  325  326
EA  4  328  329  332  333  334  335  352  361  362  382  386  396  398  399  400
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IR        1374      4122      6870      8244     12367     99999
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DA1    3  185.3    904    211                    0      0      0      0
DA1    4  123.6   2174    453                   33      4     27      2
DA1    5  113.7   2184    472                   41      1     35      5
DA1    6  153.2   2131    474                   65      5     51      9
DA1    7  296.5   1465    334                   14      1     13      0
DA1    8  195.2   4885   1042                   92      4     71     17
DA1    9   54.4   1428    307                   53      2     29     22
DA1   10  126.0   2483    512                   72     35     32      5
DA1   11   79.1   2472    555                   52     10     40      2
DA1   12   66.7   2033    477                   49      7     29     13
DA1   13  101.3   3838    893                   57      6     35     16
DA1   14   86.5   3601    832                   52      8     34     10
DA1   15  113.7   3700    870                   85     10     68      7
DA1   16  113.7   4455   1058                  160     20    133      7
DA1   17   47.0   1149    282                  323    152     30    141
DA1   18   61.8   3432    826                   92     16     48     28
DA1   19   56.8   4037    949                  125     22     65     38
DA1   20   34.6   1666    429                   95     12     70     13
DA1   21   44.5   2380    605                  109     18     59     32
DA1   22   42.0   2433    621                   80     11     51     18
DA1   23  103.8   2284    562                  986    462    112    412
DA1   24   37.1   1819    478                   32      5     23      4
DA1   25   29.7   1622    447                   64     16     22     26
DA1   26   34.6   1724    470                   84     11     40     33
DA1   27   39.5   2005    578                  122     24     58     40
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DA1	31	22.2	941	304	650	40	292	318
DA1	32	27.2	131	46	1419	69	779	571
DA1	33	66.7	1941	425	42	18	24	0
DA1	34	257.0	3827	891	36	1	35	0
DA1	35	84.0	2852	648	48	7	35	6
DA1	36	106.3	3557	797	61	1	52	8
DA1	37	61.8	1821	404	39	4	32	3
DA1	38	42.0	1340	298	71	32	30	9
DA1	39	84.0	3539	869	158	35	94	29
DA1	40	64.2	2563	578	61	1	50	10
DA1	41	84.0	3118	709	69	7	57	5
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DA1	43	93.9	4170	994	148	14	117	17
DA1	44	89.0	3811	853	122	5	96	21
DA1	45	103.8	3374	745	70	3	62	5
DA1	46	71.7	3854	950	159	13	102	44
DA1	47	37.1	1810	415	51	17	30	4
DA1	48	37.1	2768	729	151	33	57	61
DA1	49	37.1	2032	555	139	13	71	55
DA1	50	14.8	574	161	638	24	381	233
DA1	51	32.1	210	74	1676	82	920	674
DA1	52	39.5	2177	578	53	9	27	17
DA1	53	27.2	1521	423	568	21	398	149
DA1	54	37.1	2384	646	182	12	118	52
DA1	55	56.8	3010	814	107	19	61	27
DA1	56	71.7	3697	909	87	10	70	7
DA1	57	123.6	4049	879	43	8	32	3
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DA1	59	153.2	5261	1141	75	16	49	10
DA1	60	106.3	3645	805	68	10	55	3
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DA1	62	252.1	8797	1928	149	15	121	13
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DA1	64	163.1	5837	1300	97	23	61	13
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DA1	67	118.6	3836	848	51	7	43	1
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DA1	69	103.8	4027	974	74	4	56	14
DA1	70	103.8	3996	942	204	32	110	62
DA1	71	89.0	4502	1118	76	7	51	18
DA1	72	32.1	2183	555	39	15	17	7
DA1	73	34.6	1958	530	195	88	61	46
DA1	74	81.5	4414	1123	109	13	72	24
DA1	75	96.4	5021	1258	189	35	108	46
DA1	76	123.6	5149	1249	114	11	66	37
DA1	77	101.3	2629	630	65	7	48	10
DA1	78	205.1	6900	1605	120	10	93	17
DA1	79	170.5	6414	1532	146	25	102	19
DA1	80	98.8	3694	864	128	24	80	24
DA1	81	108.7	3762	901	95	7	72	16
DA1	82	118.6	3582	846	24	1	22	1
DA1	83	42.0	611	186	833	102	79	652
DA1	84	56.8	1267	387	1833	289	412	1332
DA1	85	61.8	2894	872	488	71	65	352
DA1	86	259.5	2	2	22	0	6	16
DA1	87	588.1	0	0	59	0	15	44
DA1	88	34.6	1242	403	1033	208	285	540
DA1	89	59.3	1707	515	808	123	193	492
DA1	90	59.3	2772	823	291	62	107	122
DA1	91	126.0	5994	1758	469	115	149	205
DA1	92	49.4	1958	590	659	127	164	368
DA1	93	24.7	848	253	179	54	39	86
DA1	94	44.5	406	118	785	267	217	301
DA1	95	34.6	852	260	542	107	72	363
DA1	96	64.2	1541	473	876	135	95	646
DA1	97	128.5	4284	1247	1397	89	229	1079
DA1	98	69.2	619	186	1129	410	352	367
DA1	99	59.3	425	130	839	141	146	552

DA1	100	42.0	255	78	620	104	107	409
DA1	101	39.5	170	52	584	98	101	385
DA1	102	39.5	0	0	621	105	107	409
DA1	103	74.1	866	260	1318	478	411	429
DA1	104	84.0	1282	368	638	32	47	559
DA1	105	37.1	0	0	206	10	15	181
DA1	106	98.8	854	246	743	172	140	431
DA1	107	27.2	1238	342	337	10	52	275
DA1	108	93.9	2334	661	1026	161	261	604
DA1	109	98.8	4167	1107	1082	492	145	445
DA1	110	106.3	0	0	2647	2022	24	601
DA1	111	116.1	371	102	2250	1170	831	249
DA1	112	71.7	867	239	1388	721	513	154
DA1	113	96.4	1477	429	906	431	171	304
DA1	114	116.1	2245	607	1768	306	824	638
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DA1	116	96.4	0	0	2541	2073	126	342
DA1	117	113.7	0	0	4764	3640	43	1081
DA1	118	106.3	1061	277	1589	1213	15	361
DA1	119	91.4	37	10	2410	1966	119	325
DA1	120	64.2	1061	277	1060	809	10	241
DA1	121	145.8	3865	917	431	325	63	43
DA1	122	108.7	467	117	3614	2650	483	481
DA1	123	113.7	4992	1244	541	389	81	71
DA1	124	49.4	2455	565	559	389	102	68
DA1	125	116.1	2742	676	566	434	82	50
DA1	126	59.3	198	51	123	30	18	75
DA1	127	126.0	3516	930	172	46	58	68
DA1	128	131.0	1554	450	46	18	10	18
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DA1	130	449.7	16	4	77	46	0	31
DA1	131	150.7	16	4	1315	786	0	529
DA1	132	316.3	33	9	155	93	0	62
DA1	133	133.4	163	40	793	561	11	221
DA1	134	195.2	814	200	528	374	7	147
DA1	135	121.1	0	0	569	323	52	194
DA1	136	131.0	2089	536	1328	755	120	453
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DA1	138	49.4	1723	501	465	221	88	156
DA1	139	49.4	990	297	753	273	235	245
DA1	140	74.1	1723	501	697	332	132	233
DA1	141	29.7	447	130	189	6	38	145
DA1	142	34.6	736	218	165	15	65	85
DA1	143	54.4	1303	385	291	27	115	149
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DA1	146	98.8	5871	1593	455	85	163	207
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DA1	149	59.3	2431	659	455	115	210	130
DA1	150	91.4	2391	668	284	13	119	152
DA1	151	34.6	739	194	194	50	71	73
DA1	152	79.1	690	444	293	75	107	111
DA1	153	51.9	1109	292	486	124	179	183
DA1	154	71.7	3152	810	440	11	166	263
DA1	155	123.6	3095	855	604	144	245	215
DA1	156	84.0	492	130	715	46	325	344
DA1	157	69.2	440	117	666	138	292	236
DA1	158	64.2	1467	391	303	63	133	107
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DA1	160	140.9	3773	987	178	3	82	93
DA1	161	138.4	2735	716	4679	4215	28	736
DA1	162	37.1	0	0	3772	3195	0	577
DA1	163	56.8	0	0	4149	3514	0	635
DA1	164	210.0	445	121	251	213	0	38
DA1	165	51.9	0	0	5801	4882	280	639
DA1	166	106.3	430	112	5221	4394	253	574
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DA1	168	113.7	2670	640	303	47	157	99
DA1	169	143.3	4936	1227	211	33	102	76
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DA1	172	116.1	39	10	67	10	35	22
DA1	173	625.2	1195	238	10	3	7	0
DA1	174	59.3	1940	541	46	2	20	24
DA1	175	81.5	1045	291	63	3	27	33
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DA1	177	81.5	1138	299	170	31	27	112
DA1	178	153.2	2135	524	317	58	49	210
DA1	179	202.6	2046	535	3055	1860	618	577
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DA1	184	54.4	166	54	1721	347	474	900
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DA1	187	24.7	726	223	301	49	52	200
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DA1	189	56.8	1315	376	524	104	144	276
DA1	190	37.1	1605	473	319	62	102	155
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DA1	195	56.8	3545	960	212	80	96	36
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DA1	200	271.8	955	244	4417	1249	591	2577
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DA1	202	71.7	2773	704	207	74	85	48
DA1	203	66.7	2871	743	224	21	152	51
DA1	204	79.1	2948	732	133	14	92	27
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DA1	208	42.0	1021	243	94	27	40	27
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DA1	211	71.7	2113	516	249	25	176	48
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DA1	226	133.4	4450	1018	762	227	461	74
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DA1	229	91.4	4118	915	231	79	110	42
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DA1	231	74.1	1189	314	851	515	48	288
DA1	232	56.8	4135	967	95	5	57	33
DA1	233	118.6	3668	965	2386	1034	259	1093
DA1	234	210.0	7367	1856	159	4	70	85
DA1	235	111.2	559	143	8719	7181	970	568
DA1	236	91.4	5027	1291	968	798	107	63
DA1	237	76.6	4024	891	184	91	54	39
DA1	238	177.9	4957	1045	5590	4604	338	648
DA1	239	59.3	2227	516	2275	1888	215	172
DA1	240	98.8	1591	410	417	110	206	101
DA1	241	61.8	2929	567	105	62	43	0
DA1	242	96.4	210	47	1874	1332	284	258
DA1	243	118.6	2471	569	500	132	247	121

DA1	244	84.0	0	0	134	95	21	18
DA1	245	133.4	3998	901	670	476	102	92
DA1	246	390.4	1757	482	16	0	10	6
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DA1	259	254.5	11076	2411	377	27	267	83
DA1	260	64.2	2485	537	66	8	46	12
DA1	261	98.8	4332	992	145	18	88	39
DA1	262	111.2	3298	743	46	1	44	1
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DA1	264	93.9	3299	758	113	9	80	24
DA1	265	56.8	1912	439	63	5	45	13
DA1	266	96.4	5018	1100	111	5	74	32
DA1	267	49.4	2544	555	56	3	38	15
DA1	268	66.7	2296	523	43	7	29	7
DA1	269	69.2	3870	934	27	11	13	3
DA1	270	128.5	2317	478	7	3	4	0
DA1	271	168.0	3682	868	18	3	14	1
DA1	272	54.4	3130	418	4	1	2	1
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DA1	275	234.8	4962	1056	3118	2583	327	208
DA1	276	74.1	2900	628	51	4	42	5
DA1	277	81.5	3960	908	105	19	69	17
DA1	278	51.9	2689	604	74	13	40	21
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DA1	283	148.3	5615	1346	576	392	154	30
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DA1	285	93.9	2727	608	331	68	113	150
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DA1	287	59.3	1520	330	242	63	82	97
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DA1	290	74.1	3926	920	342	60	229	53
DA1	291	49.4	2119	457	95	19	49	27
DA1	292	91.4	3044	671	205	43	111	51
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DA4   9635.1126.8514.74 5.49 7.99 9.82
DA4   9731.2032.2116.60 5.22 8.07 6.70
DA4   9825.1227.8920.09 6.54 8.1012.26
DA4   9927.3621.8216.83 4.7413.6015.65
DA4  10027.3621.8216.83 4.7413.6015.65
DA4  10127.3621.8216.83 4.7413.6015.65
DA4  10227.3621.8216.83 4.7413.6015.65
DA4  10325.1227.8920.09 6.54 8.1012.26
DA4  10432.6026.7015.47 5.81 8.4211.00
DA4  10532.6026.7015.47 5.81 8.4211.00
DA4  10632.6026.7015.47 5.81 8.4211.00
DA4  10730.9626.8315.93 6.01 8.6811.59
DA4  10828.3522.2518.25 7.9910.6212.54
DA4  10921.0131.2123.16 6.76 9.28 8.58
DA4  11018.7034.7124.69 6.21 8.74 6.95
DA4  11130.9626.8315.93 6.01 8.6811.59
DA4  11230.9626.8315.93 6.01 8.6811.59
DA4  11326.4427.2018.95 5.28 8.9513.18
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DA4  11718.7034.7124.69 6.21 8.74 6.95
DA4  11818.7034.7124.69 6.21 8.74 6.95
DA4  11914.9716.0324.39 6.7916.4021.42
DA4  12018.7034.7124.69 6.21 8.74 6.95
DA4  12119.4043.7620.39 4.57 6.62 5.26
DA4  12222.8337.1320.59 6.62 7.57 5.26
DA4  12322.7537.0520.68 6.69 7.57 5.26
DA4  12420.0736.0922.46 7.52 8.21 5.65
DA4  12512.1123.7020.99 8.9214.9319.35
DA4  12615.3728.8124.86 6.5912.7111.66
DA4  12715.7128.8824.59 6.5712.8111.44
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DA4  12910.5726.0830.0710.8413.20 9.24
DA4  130 9.5026.9230.6610.1412.6210.16
DA4  131 9.5026.9230.6610.1412.6210.16
DA4  132 9.5026.9230.6610.1412.6210.16
DA4  13311.5522.1621.04 9.2615.5620.43
DA4  13411.5522.1621.04 9.2615.5620.43
DA4  13512.9612.5416.09 7.8518.5632.00
DA4  13612.9612.5416.09 7.8518.5632.00
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DA4  13925.1227.8920.09 6.54 8.1012.26
DA4  14026.4427.2018.95 5.28 8.9513.18
DA4  14134.0716.1814.38 3.8612.8618.65
DA4  14228.6625.7517.29 6.05 8.6313.62
DA4  14328.6625.7517.29 6.05 8.6313.62
DA4  14434.0716.1814.38 3.8612.8618.65
DA4  14531.8335.7815.89 4.51 5.66 6.33
DA4  14632.1341.0415.35 3.65 4.25 3.58
DA4  14728.2025.5317.50 6.02 8.7414.01
DA4  14831.2337.2517.41 4.29 5.92 3.90
DA4  14931.7440.0416.58 4.42 3.55 3.67
DA4  15023.8017.1617.10 7.3813.2421.32
DA4  15123.9526.2718.35 6.1710.8114.45
DA4  15223.9526.2718.35 6.1710.8114.45
DA4  15323.9526.2718.35 6.1710.8114.45
DA4  15420.2824.9120.07 7.4613.1114.17
DA4  15521.1825.2819.29 8.7613.0412.45
DA4  15618.5122.1919.47 8.5614.0817.19
DA4  15721.2722.5018.85 8.2113.1116.06
DA4  15821.2722.5018.85 8.2113.1116.06
DA4  15915.6423.4921.10 9.3815.1115.28
DA4  16014.3621.7120.39 9.1015.5418.90
DA4  16117.5622.1914.83 7.0211.9826.42
DA4  16221.1312.8514.5814.9312.5024.01
DA4  16321.1312.8514.5814.9312.5024.01
DA4  16421.1312.8514.5814.9312.5024.01
DA4  16517.1123.3714.87 6.0211.9126.72
DA4  16617.1123.3714.87 6.0211.9126.72
DA4  16732.8945.7011.48 3.46 4.60 1.87
DA4  16832.5145.9513.18 3.37 2.90 2.09
DA4  16929.6338.3018.03 3.92 5.99 4.13
DA4  17044.3244.95 5.11 1.59 0.58 3.45
DA4  17126.2450.0615.45 4.50 2.32 1.43
DA4  17244.3244.95 5.11 1.59 0.58 3.45
DA4  17331.2647.8913.28 3.46 0.10 4.01
DA4  17418.7423.4919.07 7.3113.3418.05
DA4  17518.7423.4919.07 7.3113.3418.05
DA4  17615.6723.9819.39 7.6914.5918.68
DA4  17715.6723.9819.39 7.6914.5918.68
DA4  17815.7123.6019.10 7.9014.5419.15
DA4  17916.2523.6918.97 7.7114.3019.08
DA4  18015.0224.1221.92 9.5814.2015.16
DA4  18120.6824.5318.78 9.3113.2813.42
DA4  18220.6824.5318.78 9.3113.2813.42
DA4  18320.6824.5318.78 9.3113.2813.42
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DA4  18532.4242.6615.07 2.93 3.84 3.08
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DA4  18928.0827.5115.96 6.1211.6510.68
DA4  19033.8134.5815.83 5.15 5.61 5.02
DA4  19134.2131.8116.13 6.23 6.46 5.16
DA4  19233.8134.5815.83 5.15 5.61 5.02
DA4  19332.7033.1616.63 5.34 6.06 6.11
DA4  19428.1735.9319.48 6.32 5.91 4.19
DA4  19533.5141.7714.15 3.19 4.04 3.34
DA4  19633.5141.7714.15 3.19 4.04 3.34
DA4  19738.6534.6114.81 4.45 3.88 3.60
DA4  19831.2944.2815.22 4.23 2.83 2.15
DA4  19937.2734.8315.35 4.68 3.98 3.89
DA4  20035.6235.0916.01 4.95 4.09 4.24
DA4  20131.2346.0013.41 2.96 3.38 3.02
DA4  20230.9644.2114.82 3.77 3.71 2.53
DA4  20332.1545.0014.23 4.06 2.94 1.62
DA4  20431.1945.2714.91 3.79 3.15 1.69
DA4  20532.4144.6813.32 2.95 3.85 2.79
DA4  20631.3242.7415.47 3.60 4.25 2.62
DA4  20731.4343.1615.40 3.51 4.14 2.36
DA4  20832.5040.0316.90 3.71 3.53 3.33
DA4  20930.3245.3715.53 3.54 3.50 1.74
DA4  21032.9947.7812.86 2.58 2.39 1.40
DA4  21132.9947.7812.86 2.58 2.39 1.40
DA4  21231.5943.6815.82 3.40 3.56 1.95
DA4  21331.5146.5014.32 3.27 2.57 1.83
DA4  21433.1042.6515.61 3.25 3.45 1.94
DA4  21532.7441.1116.37 3.52 3.50 2.76
DA4  21636.2246.5211.06 2.09 2.34 1.77
DA4  21735.7346.7611.22 2.13 2.37 1.79
DA4  21833.5246.7611.90 2.47 3.37 1.98
DA4  21928.9046.7215.59 3.65 2.58 2.56
DA4  22033.0846.3813.13 2.79 2.82 1.80
DA4  22133.8646.8412.61 2.06 2.27 2.36
DA4  22231.9849.3712.54 2.11 2.07 1.93
DA4  22327.1446.9417.13 3.60 3.40 1.79
DA4  22430.9446.3515.19 3.17 2.90 1.45
DA4  22527.6444.3216.24 4.21 4.43 3.16
DA4  22626.4245.1616.46 4.32 4.42 3.22
DA4  22719.7737.8524.21 5.53 8.36 4.28
DA4  22820.5432.6223.94 7.60 9.65 5.65
DA4  22919.7737.8524.21 5.53 8.36 4.28
DA4  23019.0244.0321.83 5.11 6.20 3.81
DA4  23113.3623.7321.86 9.8416.2314.98
DA4  23214.7535.9524.14 7.99 9.70 7.47
DA4  23317.0936.2422.94 7.23 9.16 7.34
DA4  23411.4820.2524.2110.4417.0116.61
DA4  23516.6635.8323.04 7.51 9.42 7.54
DA4  23616.6635.8323.04 7.51 9.42 7.54
DA4  23719.1842.9622.10 5.34 6.43 3.99
DA4  23824.5851.4815.69 3.08 3.33 1.84
DA4  23927.6444.3216.24 4.21 4.43 3.16
DA4  24024.3647.9517.01 4.45 4.84 1.39
DA4  24123.4550.3617.13 3.31 3.71 2.04
DA4  24214.9651.3221.58 5.24 4.25 2.65
DA4  24323.4550.3617.13 3.31 3.71 2.04
DA4  24414.9651.3221.58 5.24 4.25 2.65
DA4  24514.9651.3221.58 5.24 4.25 2.65
DA4  24637.9451.5410.52 0.00 0.00 0.00
DA4  24742.8339.3416.70 0.70 0.00 0.43
DA4  24842.6139.2017.07 0.71 0.00 0.41
DA4  24935.2548.7210.55 2.16 1.98 1.34
DA4  25031.7547.4013.36 2.43 2.71 2.35
DA4  25130.2550.9312.50 2.21 2.55 1.56
DA4  25225.0151.4015.43 2.92 3.56 1.68
DA4  25327.7249.2115.45 3.61 2.30 1.71
DA4  25429.6640.5217.41 3.40 4.79 4.22
DA4  25529.6640.5217.41 3.40 4.79 4.22
DA4  25629.2441.2717.29 3.32 4.69 4.19
DA4  25741.1139.5817.09 1.21 0.00 1.01
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DA4  25931.0150.2612.34 2.55 2.32 1.52
DA4  26032.6550.1211.37 2.49 2.09 1.28
DA4  26132.9048.7212.48 2.40 2.44 1.06
DA4  26233.7349.8511.17 1.56 2.08 1.61
DA4  26334.1649.4011.24 1.48 2.03 1.69
DA4  26432.1448.2112.97 2.50 2.49 1.69
DA4  26532.8247.8312.75 2.51 2.41 1.68
DA4  26631.1749.8513.16 2.77 1.79 1.26
DA4  26732.0649.0112.98 2.78 1.83 1.34
DA4  26829.3654.0112.42 1.90 1.49 0.82
DA4  26929.2153.5512.91 1.89 1.61 0.83
DA4  27026.9754.7813.59 1.97 1.76 0.93
DA4  27136.2345.1012.10 2.84 2.02 1.71
DA4  27228.9753.6212.95 1.88 1.69 0.89
DA4  27310.4334.3630.35 9.42 8.84 6.60
DA4  27410.4334.3630.35 9.42 8.84 6.60
DA4  27533.8449.0611.42 2.80 1.94 0.94
DA4  27634.2549.0611.23 2.68 1.85 0.93
DA4  27729.2851.1413.67 2.37 2.20 1.34
DA4  27830.1152.0112.73 2.34 1.79 1.02
DA4  27924.2443.8218.16 5.01 3.84 4.93
DA4  28033.7440.6714.97 2.94 3.08 4.60
DA4  28127.7249.2115.45 3.61 2.30 1.71
DA4  28231.0440.5615.80 3.15 4.92 4.53
DA4  28325.9341.5120.96 3.99 4.98 2.63
DA4  28418.9243.0621.62 5.55 7.04 3.81
DA4  28524.7444.2318.31 4.58 4.76 3.38
DA4  28618.7942.8022.04 5.09 7.11 4.17
DA4  28727.4544.4717.11 3.65 4.08 3.24
DA4  28821.3544.7320.83 4.83 4.62 3.64
DA4  28928.6944.8116.12 3.67 4.56 2.15
DA4  29029.1945.2715.82 3.49 4.09 2.14
DA4  29128.1649.6715.65 3.19 2.51 0.82
DA4  29230.5145.5716.53 3.63 2.70 1.06
DA4  29327.1443.6618.50 3.94 3.36 3.40
DA4  29425.9842.7319.57 4.36 5.07 2.29
DA4  29528.7641.9518.39 3.67 4.80 2.43
DA4  29622.6744.6220.26 4.65 4.29 3.51
DA4  29721.4646.4719.56 4.55 4.58 3.38
DA4  29829.5845.6415.59 3.35 3.71 2.13
DA4  29927.0848.0716.22 3.57 3.08 1.98
DA4  30027.8849.0616.29 3.13 2.07 1.57
DA4  30118.7948.5524.00 4.17 2.07 2.42
DA4  302100.0 0.00 0.00 0.00 0.00 0.00
DA4  30328.9753.6212.95 1.88 1.69 0.89
DA4  30431.5156.12 9.41 0.55 1.21 1.20
DA4  30533.0440.5326.43 0.00 0.00 0.00
DA4  30636.0245.4311.67 2.22 2.86 1.80
DA4  307 8.8667.2022.92 1.02 0.00 0.00
DA4  30834.8248.2614.95 1.92 0.05 0.00
DA4  30936.0245.4311.67 2.22 2.86 1.80
DA4  31034.6149.8811.81 1.93 0.82 0.95
DA4  31120.4845.8020.45 4.80 4.81 3.66
DA4  31229.1641.8722.23 1.32 2.35 3.07
DA4  31368.2331.77 0.00 0.00 0.00 0.00
DA4  31453.0535.21 5.66 0.24 2.13 3.71
DA4  31541.4143.3710.41 0.66 1.22 2.93
DA4  31641.4143.3710.41 0.66 1.22 2.93
DA4  31748.9637.98 6.03 0.31 2.93 3.79
DA4  31828.5146.8314.80 4.35 3.87 1.64
DA4  31968.1120.34 6.86 1.10 1.54 2.05
DA4  32033.8448.5812.72 3.63 0.84 0.39
DA4  32124.2165.3710.42 0.00 0.00 0.00
DA4  32229.5239.6416.71 3.26 6.60 4.27
DA4  32327.1340.4418.37 3.54 5.41 5.11
DA4  32425.7440.6914.62 6.01 6.28 6.66
DA4  32525.7440.6914.62 6.01 6.28 6.66
DA4  32626.9440.4717.86 3.88 5.53 5.32
DA4  32726.6251.1913.15 2.05 2.44 4.55
DA4  32827.7947.9614.80 4.02 2.59 2.84
DA4  32925.7444.7615.82 4.56 5.23 3.89
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DA4  33126.6251.1913.15 2.05 2.44 4.55
DA4  33228.1949.3612.80 2.30 4.78 2.57
DA4  33332.8967.11 0.00 0.00 0.00 0.00
DA4  33444.9246.75 8.33 0.00 0.00 0.00
DA4  33517.6747.3921.89 5.28 4.77 3.00
DA4  33636.6040.5018.48 1.83 1.46 1.13
DA4  33720.9743.0821.20 4.64 6.28 3.83
DA4  33817.5547.6721.87 5.24 4.74 2.93
DA4  33924.0049.2918.03 3.43 3.08 2.17
DA4  34020.2851.1019.72 3.72 3.35 1.83
DA4  34120.7550.6519.69 3.73 3.38 1.80
DA4  34222.9749.5718.54 3.94 3.30 1.68
DA4  34321.7450.0319.61 3.67 3.23 1.72
DA4  34421.8550.3319.08 3.64 3.34 1.76
DA4  34523.4749.3018.20 4.03 3.34 1.66
DA4  34626.0947.8215.94 3.83 3.13 3.19
DA4  34726.0947.8215.94 3.83 3.13 3.19
DA4  34820.4151.2019.65 3.70 3.23 1.81
DA4  34920.4151.2019.65 3.70 3.23 1.81
DA4  35022.2249.2019.61 3.74 3.49 1.74
DA4  35134.1952.71 8.42 1.38 1.62 1.68
DA4  35216.7227.8238.22 0.00 7.41 9.83
DA4  35328.3654.9812.19 1.70 1.96 0.81
DA4  35427.0354.6813.64 2.02 2.12 0.51
DA4  35524.9249.3916.57 4.37 3.18 1.57
DA4  35626.0947.8215.94 3.83 3.13 3.19
DA4  35726.0947.8215.94 3.83 3.13 3.19
DA4  35832.0447.1914.73 1.84 2.59 1.61
DA4  35927.8350.0215.51 2.73 2.55 1.36
DA4  36027.8350.0215.51 2.73 2.55 1.36
DA4  36126.0049.9818.93 2.16 1.44 1.49
DA4  36227.7951.5315.58 1.68 2.86 0.56
DA4  36327.8350.0215.51 2.73 2.55 1.36
DA4  36427.8350.0215.51 2.73 2.55 1.36
DA4  36520.4151.2019.65 3.70 3.23 1.81
DA4  36626.2444.8817.40 3.39 4.97 3.12
DA4  36730.0345.9814.99 3.39 2.96 2.65
DA4  36828.8350.3413.85 2.34 3.64 1.00
DA4  36927.7544.5916.30 3.94 4.69 2.73
DA4  37031.5146.0814.70 3.14 2.25 2.32
DA4  37120.4433.0918.30 5.95 9.8012.42
DA4  37228.8955.9710.82 2.36 1.62 0.34
DA4  37328.6955.7910.94 2.47 1.75 0.36
DA4  37427.8350.0215.51 2.73 2.55 1.36
DA4  37527.8350.0215.51 2.73 2.55 1.36
DA4  37627.1150.9613.77 2.12 4.32 1.72
DA4  37727.2051.9513.68 2.09 3.70 1.38
DA4  37827.4653.8113.35 2.51 2.06 0.81
DA4  37928.6955.7910.94 2.47 1.75 0.36
DA4  38026.3449.9514.83 3.20 4.17 1.51
DA4  38128.3548.3215.04 3.73 3.45 1.11
DA4  38227.2149.8813.24 2.77 3.67 3.23
DA4  38325.2451.6814.56 2.85 3.52 2.15
DA4  38423.9852.5215.92 3.23 3.32 1.03
DA4  38527.8350.0215.51 2.73 2.55 1.36
DA4  38628.0449.6912.91 2.78 3.62 2.96
DA4  38720.4253.0014.74 1.95 0.82 9.07
DA4  38824.5951.5315.66 3.07 3.31 1.83
DA4  38924.5951.5415.66 3.07 3.31 1.83
DA4  39032.6441.1715.18 3.95 4.41 2.65
DA4  39131.7940.6315.87 4.10 4.72 2.89
DA4  39229.3145.0416.51 3.54 3.84 1.76
DA4  39329.9544.7015.84 3.83 3.72 1.96
DA4  39431.5645.2815.10 2.18 3.31 2.57
DA4  39530.1544.5815.98 4.02 3.27 2.00
DA4  396 0.0074.0026.00 0.00 0.00 0.00
DA4  39725.4448.7016.29 4.13 3.15 2.29
DA4  39831.9845.7814.69 4.07 1.50 1.98
DA4  39913.80 7.45 8.00 2.7215.9352.10
DA4  40013.80 7.45 8.00 2.7215.9352.10
DA4  40111.5522.1621.04 9.2615.5620.43
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DA4  40211.5522.1621.04 9.2615.5620.43
DA4  40322.8156.2016.14 2.58 0.65 1.62
DA4  40427.0848.0716.22 3.57 3.08 1.98
DA4  40534.6149.8811.81 1.93 0.82 0.95
DA4  40634.6149.8811.81 1.93 0.82 0.95
DA4  40733.0440.5326.43 0.00 0.00 0.00
DA4  40833.0440.5326.43 0.00 0.00 0.00
DA4  40915.3728.8124.86 6.5912.7111.66
DA4  41015.3728.8124.86 6.5912.7111.66
DA4  41134.5833.6215.16 5.33 5.38 5.93
DA4  41234.4333.1614.80 5.29 5.46 6.86
DA4  41317.6936.4123.45 6.71 9.11 6.63
DA4  41417.6936.4123.45 6.71 9.11 6.63
DA4  41527.1340.4418.37 3.54 5.41 5.11
DA4  41627.1340.4418.37 3.54 5.41 5.11
DA4  41728.2147.3915.55 4.79 3.08 0.98
DA4  41830.3240.1520.17 3.95 2.06 3.35
DA4  41928.0147.9815.23 2.99 2.82 2.97
DA4  42028.0147.9815.23 2.99 2.82 2.97
DA4  42119.5444.4222.03 5.29 5.01 3.71
DA4  42232.7646.2313.35 2.87 2.96 1.83
DA4  42331.7946.2214.28 3.05 2.99 1.67
DA4  42425.9053.6214.80 2.77 2.32 0.59
DA4  42525.9053.6214.80 2.77 2.32 0.59
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Appendix B

Tripcal5 output: Table 20-Final productions and attractions

TABLE 20: FINAL PRODUCTIONS AND ATTRACTIONS

	NON-HOME BASED		HOME BASED WORK		HOME BASED NONWORK		TRUCK-TAXI	
ZONE	P	A	P	A	P	A	P	A
1	153	153	2604	155	13467	686	215	215
2	86	86	1444	87	7333	387	121	121
3	23	23	392	23	1915	102	32	32
4	296	296	842	97	4511	304	80	80
5	375	375	879	112	4571	342	86	86
6	529	529	857	146	4470	401	93	93
7	153	153	639	57	3388	199	55	55
8	345	345	1918	261	9808	2142	193	193
9	190	190	572	121	3003	1195	62	62
10	371	371	986	156	5219	358	93	93
11	160	160	991	143	5214	1002	103	103
12	172	172	855	132	4391	1052	86	86
13	243	243	1622	191	8173	1430	153	153
14	210	210	1499	175	7712	1233	143	143
15	279	279	1556	230	7894	1758	164	164
16	448	448	1836	368	9590	2958	223	223
17	697	697	498	584	2458	4184	70	70
18	474	474	1451	330	7306	1748	123	123
19	624	624	1693	428	8565	2286	143	143
20	260	260	723	199	3536	1729	99	99
21	530	530	1044	351	5163	1891	93	93
22	438	438	1073	281	5240	1445	94	94
23	2192	2192	981	2205	4828	11906	93	93
24	121	121	802	104	3909	724	83	83
25	268	268	738	206	3526	1156	67	67
26	280	280	783	191	3769	1737	92	92
27	548	548	927	375	4320	2059	89	89
28	590	590	682	442	3250	3237	67	67
29	960	960	483	674	2110	10286	46	46
30	10659	10659	92	2330	386	35695	9	9
31	3729	3729	453	1029	1999	15648	41	41
32	9768	9768	65	2134	273	32708	7	7
33	102	102	756	115	4067	616	75	75
34	408	408	1595	148	8448	532	149	149
35	176	176	1178	147	6067	1062	115	115
36	237	237	1429	184	7592	1474	146	146
37	130	130	740	106	3871	816	76	76
38	141	141	542	149	2817	883	60	60
39	431	431	1514	352	7609	2752	178	178
40	218	218	1061	160	5454	1384	112	112
41	228	228	1268	187	6631	1442	134	134
42	290	290	1431	249	7236	1794	149	149
43	446	446	1760	344	8853	2904	206	206
44	398	398	1553	288	7978	2577	176	176
45	243	243	1347	192	7001	1545	142	142
46	864	864	1653	537	8261	2944	147	147
47	131	131	771	128	3816	814	77	77
48	626	626	1232	458	6009	2632	110	110
49	666	666	924	432	4391	2593	88	88
50	4775	4775	265	965	1189	14618	21	21

TABLE 20: FINAL PRODUCTIONS AND ATTRACTIONS

	NON-HOME BASED		HOME BASED WORK		HOME BASED NONWORK		TRUCK-TAXI	
ZONE	P	A	P	A	P	A	P	A
51	11537	11537	104	2523	439	38627	10	10
52	195	195	963	151	4716	1166	102	102
53	4983	4983	691	872	3254	12445	57	57
54	953	953	1080	570	5235	3214	105	105
55	341	341	1364	264	6553	2112	154	154
56	287	287	1588	238	7881	1810	171	171
57	181	181	1620	164	8343	1047	149	149
58	114	114	934	101	4863	663	89	89
59	277	277	2105	245	10867	1640	197	197
60	226	226	1454	196	7701	1403	148	148
61	254	254	2014	230	10723	1522	189	189
62	539	539	3521	447	18616	3324	350	350
63	433	433	3333	361	17881	2588	326	326
64	335	335	2345	299	12332	1996	226	226
65	236	236	2043	201	10870	1385	191	191
66	408	408	2047	309	11195	2452	206	206
67	194	194	1532	173	8010	1169	148	148
68	314	314	1625	246	8494	1952	173	173
69	291	291	1703	225	8527	1778	175	175
70	612	612	1704	438	8632	3887	199	199
71	312	312	1937	245	9674	1863	194	194
72	192	192	961	153	4692	675	82	82
73	606	606	894	499	4264	2229	82	82
74	386	386	1944	299	9474	2373	206	206
75	576	576	2220	446	10988	3606	245	245
76	440	440	2204	323	10840	2657	223	223
77	219	219	1119	173	5647	1375	118	118
78	457	457	2915	367	14641	2790	288	288
79	479	479	2730	402	13717	2959	281	281
80	377	377	1545	302	7902	2385	170	170
81	328	328	1562	251	8026	2066	172	172
82	146	146	1501	130	7694	810	138	138
83	2523	2523	290	2101	1283	17096	35	35
84	5576	5576	606	3321	2681	49663	53	53
85	1589	1589	1373	1310	6114	9913	132	132
86	91	91	1	38	4	58	3	3
87	234	234	0	102	0	151	7	7
88	3740	3740	600	1693	2620	22503	55	55
89	2778	2778	846	2092	3710	14931	94	94
90	1138	1138	1321	819	6031	4859	130	130
91	1771	1771	2833	1345	13087	7920	268	268
92	2235	2235	948	1702	4276	11541	102	102
93	549	549	405	452	1847	2764	40	40
94	2364	2364	199	1860	885	10421	41	41
95	1614	1614	423	1351	1887	9985	45	45
96	2648	2648	765	2218	3414	17313	78	78
97	4843	4843	2079	3738	9495	30100	203	203
98	3457	3457	315	2666	1376	13942	65	65
99	2640	2640	224	2097	951	15559	34	34
100	1946	1946	134	1547	571	11504	23	23

TABLE 20: FINAL PRODUCTIONS AND ATTRACTIONS

	NON-HOME BASED		HOME BASED WORK		HOME BASED NONWORK		TRUCK-TAXI	
ZONE	P	A	P	A	P	A	P	A
101	1832	1832	89	1455	380	10821	19	19
102	1938	1938	0	1541	0	11466	11	11
103	4042	4042	442	3117	1924	16311	82	82
104	2467	2467	625	1159	2820	14978	126	126
105	553	553	0	366	0	489	11	11
106	2148	2148	417	1299	1885	13306	141	141
107	1192	1192	597	916	2751	7594	54	54
108	3565	3565	1161	2659	5223	18677	123	123
109	2565	2565	2015	2495	9369	13433	174	174
110	2837	2837	0	4909	0	15138	3	3
111	6340	6340	178	4991	821	17703	105	105
112	3932	3932	417	3100	1922	11021	90	90
113	1736	1736	744	1579	3315	10752	174	174
114	7160	7160	1108	4626	5030	27279	177	177
115	4275	4275	455	4388	2045	16260	76	76
116	2695	2695	0	4623	0	10235	14	14
117	1096	1096	0	8220	0	34690	6	6
118	1737	1737	509	2978	2389	9235	41	41
119	2557	2557	19	4385	87	9720	14	14
120	1169	1169	509	1997	2389	6210	41	41
121	451	451	1749	824	8839	2605	175	175
122	6247	6247	217	6103	1039	24359	20	20
123	1010	1010	2299	1190	11024	3482	187	187
124	1057	1057	1096	1168	5299	3371	92	92
125	507	507	1343	1023	6199	2992	149	149
126	354	354	96	208	447	265	19	19
127	519	519	1730	390	7997	3145	174	174
128	188	188	800	120	3512	293	74	74
129	600	600	2382	559	10266	3446	231	231
130	96	96	8	117	33	86	5	5
131	2265	2265	8	2267	33	13271	53	53
132	193	193	17	236	74	171	10	10
133	997	997	80	1361	365	5758	36	36
134	620	620	398	791	1827	539	64	64
135	1080	1080	0	853	0	680	49	49
136	2278	2278	1091	2323	4915	13674	183	183
137	1356	1356	1864	918	8406	8636	271	271
138	1159	1159	869	1075	3872	5282	81	81
139	2326	2326	504	1797	2197	9391	68	68
140	1709	1709	869	1583	3872	7776	86	86
141	702	702	225	341	1017	4342	50	50
142	525	525	372	300	1644	3344	71	71
143	924	924	655	531	2903	5881	124	124
144	1980	1980	638	962	2879	12247	141	141
145	726	726	1379	567	6447	4356	158	158
146	1831	1831	2695	1325	12652	8082	246	246
147	964	964	874	787	3930	5987	139	139
148	1751	1751	1968	1311	9281	11817	400	400
149	1796	1796	1117	1210	5233	6404	118	118
150	974	974	1231	549	5294	6161	169	169

TABLE 20: FINAL PRODUCTIONS AND ATTRACTIONS

	NON-HOME BASED		HOME BASED WORK		HOME BASED NONWORK		TRUCK-TAXI	
ZONE	P	A	P	A	P	A	P	A
151	490	490	361	346	1670	3135	69	69
152	759	759	824	538	3824	4823	127	127
153	1732	1732	542	1231	2515	7091	61	61
154	1903	1903	1560	1272	7056	9105	134	134
155	1555	1555	1554	1098	7116	9984	263	263
156	2184	2184	245	1207	1125	14226	200	200
157	1669	1669	218	1118	998	10956	174	174
158	794	794	728	546	3337	5140	131	131
159	2434	2434	1444	2791	6624	12886	121	121
160	679	679	1900	405	8707	4207	196	196
161	899	899	1380	8711	6210	23986	103	103
162	369	369	0	6546	0	18112	6	6
163	406	406	0	7200	0	19933	6	6
164	214	214	230	362	1047	187	34	34
165	3915	3915	0	9981	0	25429	9	9
166	3549	3549	216	8995	972	22925	22	22
167	286	286	149	88	756	153	25	25
168	841	841	1140	569	5722	5470	178	178
169	683	683	2203	483	10819	4239	240	240
170	897	897	118	254	601	413	48	48
171	2429	2429	2682	3383	13754	7832	227	227
172	369	369	17	104	85	162	16	16
173	89	89	455	40	2393	136	40	40
174	204	204	986	136	4369	1204	93	93
175	349	349	530	135	2350	300	56	56
176	783	783	31	412	148	535	27	27
177	546	546	586	317	2768	503	61	61
178	1005	1005	1009	588	4775	919	108	108
179	6377	6377	1021	6383	4774	23018	144	144
180	981	981	2012	629	9278	6130	230	230
181	970	970	1041	566	4817	6202	161	161
182	783	783	481	447	2226	5052	103	103
183	680	680	79	216	366	349	33	33
184	6154	6154	80	2753	351	37187	7	7
185	719	719	1167	522	5590	3768	104	104
186	12392	12392	592	1967	2733	28170	52	52
187	969	969	354	773	1592	5710	38	38
188	1721	1721	618	1291	2778	8576	66	66
189	1801	1801	648	1345	2912	8915	69	69
190	1170	1170	763	852	3486	5425	79	79
191	1164	1164	424	929	1907	6871	45	45
192	1173	1173	762	852	3486	5450	79	79
193	1824	1824	1019	1397	4627	8973	105	105
194	1118	1118	1649	745	7636	6789	201	201
195	833	833	1603	609	7607	2676	147	147
196	848	848	0	265	0	329	40	40
197	3418	3418	318	2978	1499	9141	75	75
198	913	913	2040	755	9991	3002	181	181
199	1105	1105	1104	973	5281	5233	103	103
200	11985	11985	420	10443	2043	71251	100	100

TABLE 20: FINAL PRODUCTIONS AND ATTRACTIONS

	NON-HOME BASED		HOME BASED WORK		HOME BASED NONWORK		TRUCK-TAXI	
ZONE	P	A	P	A	P	A	P	A
201	941	941	1212	784	5916	3045	111	111
202	476	476	1223	419	5983	2996	150	150
203	639	639	1272	444	6206	4232	188	188
204	402	402	1280	294	6355	2601	156	156
205	472	472	1077	327	5385	1553	92	92
206	303	303	678	211	3400	1967	88	88
207	392	392	1247	299	6287	2490	142	142
208	232	232	437	183	2195	1478	58	58
209	230	230	1203	184	6058	1401	123	123
210	430	430	592	299	3002	2921	107	107
211	658	658	903	457	4583	4457	164	164
212	247	247	1204	223	6147	1505	122	122
213	898	898	2436	703	12489	5798	302	302
214	354	354	474	267	2422	2252	69	69
215	336	336	595	257	3010	2125	79	79
216	316	316	1113	223	5741	2007	126	126
217	405	405	1494	289	7719	2583	169	169
218	677	677	3003	516	15554	4279	319	319
219	2147	2147	1959	1865	9965	14518	446	446
220	1217	1217	1197	650	6240	3174	114	114
221	864	864	3699	662	19404	5452	391	391
222	6594	6594	1905	12301	10083	33167	146	146
223	536	536	1983	364	10208	1766	157	157
224	228	228	1121	203	5587	1403	119	119
225	15873	15873	0	21983	0	53867	18	18
226	1488	1488	1901	1342	9577	10222	376	376
227	159	159	317	138	1555	1063	45	45
228	927	927	1994	599	9711	2692	162	162
229	530	530	1803	479	8841	3374	194	194
230	531	531	1451	355	7249	2040	114	114
231	1421	1421	596	1756	2727	7879	50	50
232	555	555	1913	366	9337	2061	145	145
233	5443	5443	1768	5368	8413	30788	166	166
234	712	712	3664	469	17264	4221	321	321
235	12496	12496	266	14839	1265	36488	31	31
236	1326	1326	2407	1914	11420	3699	197	197
237	583	583	1744	504	8681	2136	133	133
238	4729	4729	2010	9703	10267	27313	149	149
239	2853	2853	954	3937	4776	9770	72	72
240	943	943	724	730	3473	6248	167	167
241	165	165	1138	233	5893	1010	107	107
242	3092	3092	91	3669	467	10341	37	37
243	1138	1138	1142	884	5913	7526	213	213
244	279	279	0	187	0	121	15	15
245	755	755	1748	1224	8954	4495	197	197
246	155	155	781	78	3992	277	77	77
247	44	44	0	7	0	15	2	2
248	174	174	1971	138	10154	594	183	183
249	1932	1932	3528	614	18662	1555	368	368
250	500	500	2045	365	10676	3183	219	219

TABLE 20: FINAL PRODUCTIONS AND ATTRACTIONS

	NON-HOME BASED		HOME BASED WORK		HOME BASED NONWORK		TRUCK-TAXI	
ZONE	P	A	P	A	P	A	P	A
251	304	304	1604	239	8301	1900	164	164
252	576	576	2989	532	15412	3562	293	293
253	188	188	560	505	2949	1170	73	73
254	457	457	491	296	2455	2983	85	85
255	500	500	531	322	2657	3264	92	92
256	950	950	904	968	4588	5853	139	139
257	3582	3582	1038	3694	5327	7214	137	137
258	260	260	1639	217	8543	1601	164	164
259	1215	1215	4468	871	23431	7804	496	496
260	213	213	988	165	5227	1345	103	103
261	471	471	1798	345	9250	2960	195	195
262	185	185	1353	153	7112	1135	133	133
263	278	278	1202	498	6277	1681	131	131
264	365	365	1375	265	7132	2334	154	154
265	204	204	796	150	4134	1306	88	88
266	420	420	2031	300	10644	2597	204	204
267	209	209	1024	152	5369	1293	103	103
268	153	153	949	126	4911	923	93	93
269	143	143	1665	146	8814	750	148	148
270	89	89	917	62	4867	243	74	74
271	223	223	1586	120	8384	463	138	138
272	54	54	774	53	4037	262	64	64
273	312	312	1401	124	6713	440	122	122
274	375	375	2025	251	9700	2208	182	182
275	3849	3849	1950	5810	10408	10293	187	187
276	185	185	1152	149	6140	1146	115	115
277	327	327	1625	269	8253	2043	171	171
278	245	245	1064	188	5432	1502	112	112
279	777	777	1009	471	4945	5048	155	155
280	379	379	867	258	4398	2364	101	101
281	160	160	560	418	2949	981	68	68
282	883	883	775	608	3758	5627	134	134
283	657	657	2458	1102	12449	4043	282	282
284	1242	1242	3401	866	16989	7655	354	354
285	951	951	1153	623	5842	5981	158	158
286	403	403	1407	293	7070	2539	146	146
287	630	630	626	442	3212	3990	97	97
288	1965	1965	1191	1839	6076	5935	113	113
289	553	553	1272	433	6398	3669	173	173
290	1684	1684	1682	1006	8463	4910	157	157
291	274	274	859	206	4461	1734	94	94
292	541	541	1250	409	6467	3498	158	158
293	686	686	1332	457	6776	4298	159	159
294	478	478	1035	376	5215	3000	122	122
295	503	503	1910	364	9627	3121	199	199
296	485	485	1800	400	8994	3050	191	191
297	2987	2987	4033	2597	20864	8843	333	333
298	864	864	1197	656	6025	5909	221	221
299	607	607	3078	506	16161	3806	304	304
300	1723	1723	1779	1898	9176	11201	337	337

TABLE 20: FINAL PRODUCTIONS AND ATTRACTIONS

	NON-HOME BASED		HOME BASED WORK		HOME BASED NONWORK		TRUCK-TAXI	
ZONE	P	A	P	A	P	A	P	A
301	3766	3766	319	2008	1666	22851	132	132
302	594	594	12	425	49	580	10	10
303	400	400	87	143	454	194	25	25
304	206	206	525	70	2770	207	51	51
305	3172	3172	139	647	686	1083	160	160
306	574	574	1040	245	5414	468	112	112
307	145	145	285	80	1393	165	27	27
308	358	358	92	73	471	141	24	24
309	783	783	260	290	1351	353	60	60
310	1817	1817	244	4100	1189	10060	97	97
311	165	165	1287	90	6640	345	101	101
312	378	378	178	278	886	257	32	32
313	1	1	14	1	78	5	1	1
314	175	175	422	58	2206	177	47	47
315	33	33	17	10	84	19	3	3
316	31	31	156	16	781	53	15	15
317	235	235	386	63	1984	184	44	44
318	23	23	390	23	1996	103	32	32
319	24	24	340	24	1922	106	34	34
320	246	246	118	68	595	138	20	20
321	14	14	56	12	284	26	5	5
322	531	531	968	213	4629	448	105	105
323	4742	4742	13	7069	61	19798	28	28
324	667	667	221	461	1078	424	49	49
325	163	163	7	111	35	92	9	9
326	877	877	35	808	165	480	53	53
327	3096	3096	410	13179	2049	38273	42	42
328	588	588	787	227	4078	476	85	85
329	622	622	853	442	4157	545	98	98
330	826	826	25	1880	126	4612	40	40
331	1120	1120	77	2593	386	6217	55	55
332	2317	2317	338	551	1697	862	137	137
333	75	75	18	20	108	37	4	4
334	0	0	8	0	38	2	1	1
335	512	512	397	362	2031	305	60	60
336	271	271	2092	213	10936	1527	196	196
337	322	322	653	239	3297	2093	85	85
338	6399	6399	5393	5498	27628	18124	482	482
339	280	280	1014	210	5230	1776	109	109
340	2208	2208	1749	1176	9290	5913	166	166
341	483	483	907	277	4785	1361	74	74
342	304	304	1823	235	9326	1847	172	172
343	562	562	1201	348	6268	1923	97	97
344	626	626	4262	455	22106	2135	325	325
345	261	261	800	203	4060	1717	96	96
346	133	133	284	119	1462	869	39	39
347	128	128	215	115	1102	852	33	33
348	196	196	1167	141	6221	690	89	89
349	195	195	1167	141	6221	689	88	88
350	115	115	548	91	2813	723	55	55

TABLE 20: FINAL PRODUCTIONS AND ATTRACTIONS

	NON-HOME BASED		HOME BASED WORK		HOME BASED NONWORK		TRUCK-TAXI	
ZONE	P	A	P	A	P	A	P	A
351	520	520	2883	434	15235	3230	297	297
352	2	2	43	2	202	10	3	3
353	461	461	2453	368	12805	2848	246	246
354	796	796	5416	667	28115	4854	524	524
355	170	170	394	130	1966	1130	53	53
356	131	131	262	118	1345	865	37	37
357	134	134	309	121	1590	876	41	41
358	244	244	1298	199	6630	1532	136	136
359	46	46	323	238	1565	190	33	33
360	51	51	403	244	1955	213	39	39
361	346	346	597	137	3016	306	61	61
362	808	808	433	243	2230	399	72	72
363	276	276	482	680	2339	429	42	42
364	270	270	404	675	1956	406	36	36
365	196	196	1167	141	6221	689	89	89
366	139	139	531	95	2590	829	50	50
367	109	109	656	91	3382	662	63	63
368	100	100	632	87	3285	605	61	61
369	617	617	919	396	4544	4067	142	142
370	307	307	1402	229	7105	1926	149	149
371	1010	1010	8275	772	38725	3720	646	646
372	579	579	1393	545	7406	1660	114	114
373	528	528	1084	725	5790	1368	89	89
374	486	486	0	1295	0	591	3	3
375	486	486	0	1295	0	591	2	2
376	90	90	598	79	3118	560	58	58
377	152	152	1225	136	6358	911	113	113
378	429	429	4559	394	23827	2328	397	397
379	139	139	609	91	3257	464	49	49
380	585	585	1982	438	10241	3858	231	231
381	403	403	1675	304	8373	2581	183	183
382	316	316	1054	106	5400	360	97	97
383	612	612	2624	461	13561	3993	283	283
384	334	334	2432	268	12674	2030	221	221
385	553	553	8619	560	41797	2480	691	691
386	20	20	185	13	947	52	16	16
387	80	80	1445	81	7239	358	112	112
388	61	61	1085	61	5536	273	85	85
389	181	181	3227	184	16469	811	255	255
390	635	635	620	386	3001	2381	60	60
391	590	590	481	378	2350	3929	105	105
392	402	402	309	405	1499	2719	83	83
393	1097	1097	543	792	2639	3353	60	60
394	1279	1279	1604	734	7786	3864	151	151
395	452	452	627	453	3066	3020	115	115
396	136	136	493	74	2352	193	42	42
397	286	286	2352	267	11903	1645	212	212
398	415	415	856	137	4264	373	88	88
399	964	964	806	522	3428	860	81	81
400	102	102	43	54	185	84	5	5

TABLE 20: FINAL PRODUCTIONS AND ATTRACTIONS

	NON-HOME BASED		HOME BASED WORK		HOME BASED NONWORK		TRUCK-TAXI	
ZONE	P	A	P	A	P	A	P	A
401	993	993	0	1357	0	5738	30	30
402	1049	1049	1114	5512	5105	28701	79	79
403	135	135	1224	140	6087	747	115	115
404	164	164	1563	142	8208	592	117	117
405	1263	1263	0	2860	0	7008	52	52
406	700	700	0	1002	0	407	52	52
407	533	533	68	110	339	194	31	31
408	1592	1592	69	326	339	544	80	80
409	176	176	1160	134	5373	975	97	97
410	95	95	675	72	3129	524	57	57
411	1594	1594	311	1082	1382	7132	44	44
412	2193	2193	413	1490	1823	10217	59	59
413	2715	2715	1204	2220	5734	9213	125	125
414	1162	1162	161	1215	767	7585	136	136
415	284	284	525	288	2532	275	60	60
416	1014	1014	18	732	87	515	55	55
417	408	408	530	280	2670	2778	98	98
418	270	270	475	167	2363	938	42	42
419	293	293	698	250	3519	1899	91	91
420	176	176	524	151	2639	1124	62	62
421	573	573	1461	493	7413	1901	117	117
422	506	506	1144	378	5984	3458	168	168
423	465	465	1696	396	8691	2982	194	194
424	148	148	133	49	692	97	17	17
425	290	290	309	101	1610	200	36	36
0 TOTAL	494032		463747		2314100		50964	
	494032		463747		2314100		50964	