

*National Capital Region Transportation Planning Board
Metropolitan Washington Council of Governments*

Calibration Report
for the TPB Travel Forecasting Model,
Version 2.3,
on the 3,722-Zone Area System

Final Report

January 20, 2012

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Agency National Capital Region Transportation Planning Board (TPB). Transportation planning at the regional level in the Washington area is coordinated by the National Capital Region Transportation Planning Board (TPB), the federally designated Metropolitan Planning Organization (MPO) for the region. The TPB is staffed by the Department of Transportation Planning (DTP) at the Metropolitan Washington Council of Governments (COG). COG is an independent, nonprofit association composed of elected officials from 21 local governments, members of the Maryland and Virginia state legislatures, and members of the U.S. Congress.		
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Abstract: This report describes the calibration and validation of a regional travel demand forecasting model, known as the TPB Version 2.3 Travel Model, which has been constructed for use in the Metropolitan Washington Region. The Version 2.3 model became the adopted regional travel model on Nov. 16, 2011. Revisions to the travel model are known as “builds.” When the model was adopted, it was at build #36, i.e., Version 2.3.36. The Version 2.3 Travel Model is distinguished from prior TPB travel models in that it has been developed over a new 3,722 transportation analysis zone (TAZ) system, and it has been calibrated and validated with several sources of recently collected travel data, including the COG/TPB 2007/08 Household Travel Survey and several on-board transit surveys. The TPB Travel Forecasting Subcommittee provided oversight for the Version 2.3 Model development effort.		
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Chapter 1 Introduction

This report documents the calibration of the National Capital Region Transportation Planning Board (TPB) Version 2.3 Travel Model. This report is to be used in conjunction with the TPB Version 2.3 Travel Model user's guide, which is referenced at various points in this report. The Version 2.3 Travel Model became the adopted regional travel model for the Metropolitan Washington Region on November 16, 2011, when the TPB approved the Air Quality Conformity Determination of the 2011 Financially Constrained Long-Range Transportation Plan (CLRP), since that analysis was done using the new travel model.

Transportation planning at the regional level in the Washington area is coordinated by the National Capital Region Transportation Planning Board (TPB), the federally designated Metropolitan Planning Organization (MPO) for the region. The TPB is staffed by the Department of Transportation Planning (DTP) at the Metropolitan Washington Council of Governments (COG). COG is an independent, nonprofit association composed of elected officials from 21 local governments, members of the Maryland and Virginia state legislatures, and members of the U.S. Congress. The TPB coordinates transportation planning among federal, state, and local transportation agencies in the region. TPB staff maintains a travel forecasting capability that is used to support regional, corridor, and local transportation planning needs. The Models Development work activity in the TPB's Unified Planning Work Program (element 4.C in the FY 2012 UPWP) is established to maintain and refine the TPB's travel forecasting methods and practice on a continuing basis.

The Version 2.3 Travel Model is similar to the TPB's previous model, Version 2.2, in that it is a standard, trip-based model, often known as a "four-step model," typical of those applied by most MPOs in the U.S.. However, the Version 2.3 model is different from Version 2.2 in two key respects. First, Version 2.3 operates on a more detailed zone system consisting of 3,722 Transportation Analysis Zones (TAZs). This represents an almost doubling of internal TAZs that are currently used by the Version 2.2 model. The increase in TAZs will allow for greater sensitivity to land development patterns, particularly for areas of intense land development. Second, the Version 2.3 model has also been calibrated with an array of newly collected travel survey data. The primary data source supporting the Version 2.3 calibration is the COG/TPB 2007/08 Household Travel Survey (The previous regional travel survey supporting the existing Version 2.2 model was conducted in 1994). Version 2.3 also includes several additional technical refinements which are described in greater detail below.

The oversight body of the TPB's Models Development program is the Travel Forecasting Subcommittee (TFS), a subcommittee of the Transportation Planning Board's Technical Committee. The TFS is composed of representatives from state and local transportation agencies, local transportation consultants, and interested citizens. As many TFS members are active users of the regional model, the subcommittee has been engaged in all facets of the Version 2.3 development process on a bi-monthly basis during the past few years.

The remainder of this chapter briefly describes background on the data that was prepared for the Version 2.3 calibration process. It also describes technical features of the model that were not considered in the TPB's previous Version 2.2 model. Chapter 2 describes some of the basic inputs to the travel model. The remainder of this report addresses the specific calibration work undertaken for each step of the model chain (Chapters 3 to 8). Validation summaries are presented in Chapter 9. The report also contains an appendix section which includes detailed calibration summaries.

1.1 Development history of the Version 2.3 travel model

The TPB's previously adopted travel model, Version 2.2, was released on March 1, 2008.¹ The Version 2.2 travel model was developed on the 2,191-TAZ area system and most of its sub-models were estimated/calibrated with data from the COG/TPB 1994 Household Travel Survey. At the time Version 2.2 was released, a parallel effort was also underway to combine a nested logit mode choice model and revised truck models into the Version 2.2 framework. This development effort proved to be viable and resulted in a release of what was then called the "draft Version 2.3 travel model" in June of 2008. The draft Version 2.3 model, like Version 2.2, was developed on the 2,191-TAZ area system.

The draft Version 2.3 model was not brought into production given that two related events were in motion during 2008. First, a new round of travel data collection was underway, including a major regional household travel survey (2007/08 HTS) and a series of transit on-board surveys. Second, a new TAZ system was in development. The new zone system was envisioned to be developed over the same geographic area as the 2,191-TAZ system, but with smaller average zone sizes. TPB staff ultimately decided that the Version 2.3 travel model should not become the approved regional travel model until it incorporated the new zone system and the new data from the 2007/2008 Household Travel Survey.

The last two to three years have been spent compiling and cleaning new survey data, preparing calibration files based on the new 3,722 TAZ system, and estimating/calibrating the models that make up the regional travel model. This report documents the culmination of the Version 2.3 model calibration effort. Changes to the model, such as a change in a script or a batch file, are known as "revisions" or "builds" of the travel model. When the model was adopted in November 2011, the model was at build #36, also known as Version 2.3.36. The most recent Air Quality Conformity (AQC) Determination done by TPB staff² was done with Version 2.3.33. The differences between Version 2.3.33 and Version 2.3.36 can be viewed as "cosmetic," since they do not affect the estimates of VMT or transit person trips coming out of the model. The model is now on build 38, which adds some enhancements, but does not affect modeled results. These recent updates to the model are described in Chapter 1 of the user's guide.

¹ Ronald Milone et al., *TPB Travel Forecasting Model, Version 2.2: Specification, Validation, and User's Guide* (Washington, D.C.: Metropolitan Washington Council of Governments, National Capital Region Transportation Planning Board, March 1, 2008).

² *Air Quality Conformity Determination of the 2011 Constrained Long-Range Plan for the Washington Metropolitan Region* (Washington, D.C.: National Capital Region Transportation Planning Board, Metropolitan Washington Council of Governments, November 16, 2011), <http://www.mwcog.org/uploads/committee-documents/Y15WWItX20110602144900.pdf>.

1.2 Calibration Data

1.2.1 2007/2008 COG/TPB Household Travel Survey

The COG/TPB 2007/08 Household Travel Survey (HTS) served as the primary data source for estimation and calibration of the Version 2.3 model. The survey included a sample of 11,400 households drawn from all 22 jurisdictions comprising the Version 2.3 modeled area (See Figure 1). The 2007/08 HTS survey yielded approximately 88,000 un-weighted trip records occurring on weekdays.³ The previous regional household travel survey, conducted in the spring and fall of 1994, included a 4,800-household sample drawn from a subset of jurisdictions in the modeled region (13 of the 22).

The 2007/08 HTS was not conducted during a specific season of the year, but rather was collected on a continuing basis over a 15-month period, from February 2007 through May 2008. As some of the sampled travel data were collected on federal holidays, staff decided to remove all holiday-related data from the final calibration file to ensure that the data reflected truly normal weekday conditions.⁴ The removing of holiday-related data reduced the household sample by about 300 households and necessitated the reweighting of the household and trip files.

TPB staff spent several months during the fall of 2010 checking the geo-coding, logic, and internal consistency of the household travel data, and summarizing the data by purposes, modes, political geography, and by time of day. Some of the key trip information is presented in Table 1.

1.2.2 Land activity

The provision of zonal land activity posed a significant challenge as no such data was readily available for the new TAZ system during the early stages of the calibration effort (spring of 2010). At that point in time, the adopted land activity projections (Round 7.2a Cooperative Forecasts) were developed for the 2,191 TAZ-system only. Consequently, TPB staff assembled American Community Survey (ACS) and proprietary employment inventory data to develop what was referred to as the 2007 "Pseudo Round 8.0" land use for the 3,722-TAZ system. The 2007 land activity totals are shown on Table 2.

³ National Capital Region Transportation Planning Board, Metropolitan Washington Council of Governments, *2007/2008 TPB Household Travel Survey: Technical Documentation*, Draft report (Washington, D.C.: National Capital Region Transportation Planning Board, Metropolitan Washington Council of Governments, August 27, 2010).

⁴ Ronald Milone et al., *FY-2010 Development Program for TPB Travel Forecasting Models: DRAFT* (Washington, D.C.: National Capital Region Transportation Planning Board, June 30, 2010), sec. 2.4.4.

Table 1 2007/2008 HTS Trip Summary by Purpose and Mode

	HBW	HBS	HBO	NHW	NHO	Total
Auto Driver	2,786,976	1,934,278	3,808,912	1,326,060	1,904,312	11,760,538
Auto Passenger	162,607	877,567	2,396,515	145,469	947,355	4,529,513
Subtotal Auto Person	2,949,583	2,811,845	6,205,427	1,471,529	2,851,667	16,290,051
Average Auto Occupancy	1.06	1.45	1.63	1.11	1.50	1.39
Transit	571,886	70,250	215,477	139,584	65,365	1,062,562
Motorized Person Subtotal	3,521,469	2,882,095	6,420,904	1,611,113	2,917,032	17,352,613
Transit Percentage	16.24%	2.44%	3.36%	8.66%	2.24%	6.12%
Walk	84,275	180,660	576,456	396,435	293,130	1,530,956
Bike	32,514	8,798	36,399	7,379	6,608	91,698
Non-Motorized Person Subtotal	116,789	189,458	612,855	403,814	299,738	1,622,654
Other Subtotal	28,277	9,249	732,000	33,517	84,240	887,283
Total Person Subtotal	3,666,535	3,080,802	7,765,759	2,048,444	3,301,010	19,862,550

Note: The above trips are internal (I-I) with respect to the study area

Table 2 2007 "Pseudo Round 8.0" Land Activity Totals

Households	2,339,832
HH Population	5,860,693
Group Quarters	119,669
Total Population	5,980,362
Total Employment	3,801,935
Industrial Employment	547,612
Retail Employment	665,172
Office Employment	179,6018
Other Employment	793,133
Land Area (sq. mi)	6,795.684

1.2.3 Other data

Staff compiled several sources of recent data beyond the 2007/08 HTS to support the Version 2.3 calibration and validation. These included 2007 Highway Performance Monitoring System (HPMS) traffic counts, the 2007 Air Passenger Survey, 2007 ACS data, and numerous transit on-board surveys for 2007 and 2008. The transit on-board surveys are discussed in more detail in Chapter 6.

1.3 Features of the Version 2.3 travel model

The following sections provide greater detail on the new TAZ system and on technical refinements to Version 2.3.

1.3.1 Modeled area and the 3,722-TAZ system

The Version 2.3 modeled area is the same as that of the existing Version 2.2 model (see Figure 1). The modeled area is composed of 22 jurisdictions and extends over the District of Columbia and portions of three states: Maryland, Virginia, and West Virginia. The modeled area was expanded to its current size in the 1990s, in order to extend well beyond the TPB member area (as can be seen in Figure 1),⁵ as well as, beyond the non-attainment area that is used in air quality planning work.⁶ In the 1990s, there was one non-attainment area, but now there are three non-attainment areas, depending on the pollutant (See for example Posey, 2011).⁷

The modeled area is divided into a new 3,722-TAZ system, composed of 3,675 internal zones and 47 external stations. The new TAZ system contains about 85% more internal zones than the existing 2,191-TAZ system (The 2,191-TAZ system has 1,972 internal zones; the 3,722-TAZ system has 3,675 internal zones). The new TAZ system was developed to improve the connection between transportation planning and local development plans. The delineation of the new zone system was conducted primarily by land use planners and was heavily influenced by the regional activity centers/activity clusters concept adopted by the TPB and COG Board.⁸ The modeling benefits of the more detailed zone system are substantial. It allows for a more detailed depiction of zonal access to the highway and transit systems and it also enables improved opportunities for modeling non-motorized travel.

One unfortunate aspect of the 3,722 TAZ system is that it does not neatly nest into the existing 2,191-TAZ system, and so, translating zonal attributes between systems is not easily done. However, spatial relationships between the two TAZ systems, complicated as they are, are well defined and can be made available.

The 3,722 TAZ system numbering has been developed on a jurisdictional basis as indicated in Table 3. The table indicates that the internal TAZs are numbered from 1 to 3675. It also indicates that thirteen TAZs in this range are unused and so 3662 internal TAZs are active. External stations are sequenced from 3676 to 3722. There are 1278 reserve TAZs (3723-5000) available for future use. .

⁵ In many cases, there is a one-jurisdiction buffer between the modeled area cordon and the TPB member jurisdiction cordon. The urbanized portion of Charles County, Maryland is part of the TPB membership, but not the entire county.

⁶ Ronald Milone, *FY-94 Development Program for MWCOG Travel Forecasting Models, Volume A: Current Applications*, Draft report (Washington, D.C.: Metropolitan Washington Council of Governments, National Capital Region Transportation Planning Board, June 30, 1994), 9-10.

⁷ Jane A. Posey to National Capital Region Planning Board, "Air Quality Conformity Assessment for the 2011 Update of the Constrained Long Range Plan (CLRP)," Memorandum, November 16, 2011, 6.

⁸ Metropolitan Washington Council of Governments, *Metropolitan Washington Regional Activity Centers and Clusters* (Washington, D.C.: Metropolitan Washington Council of Governments (COG), April 2007).

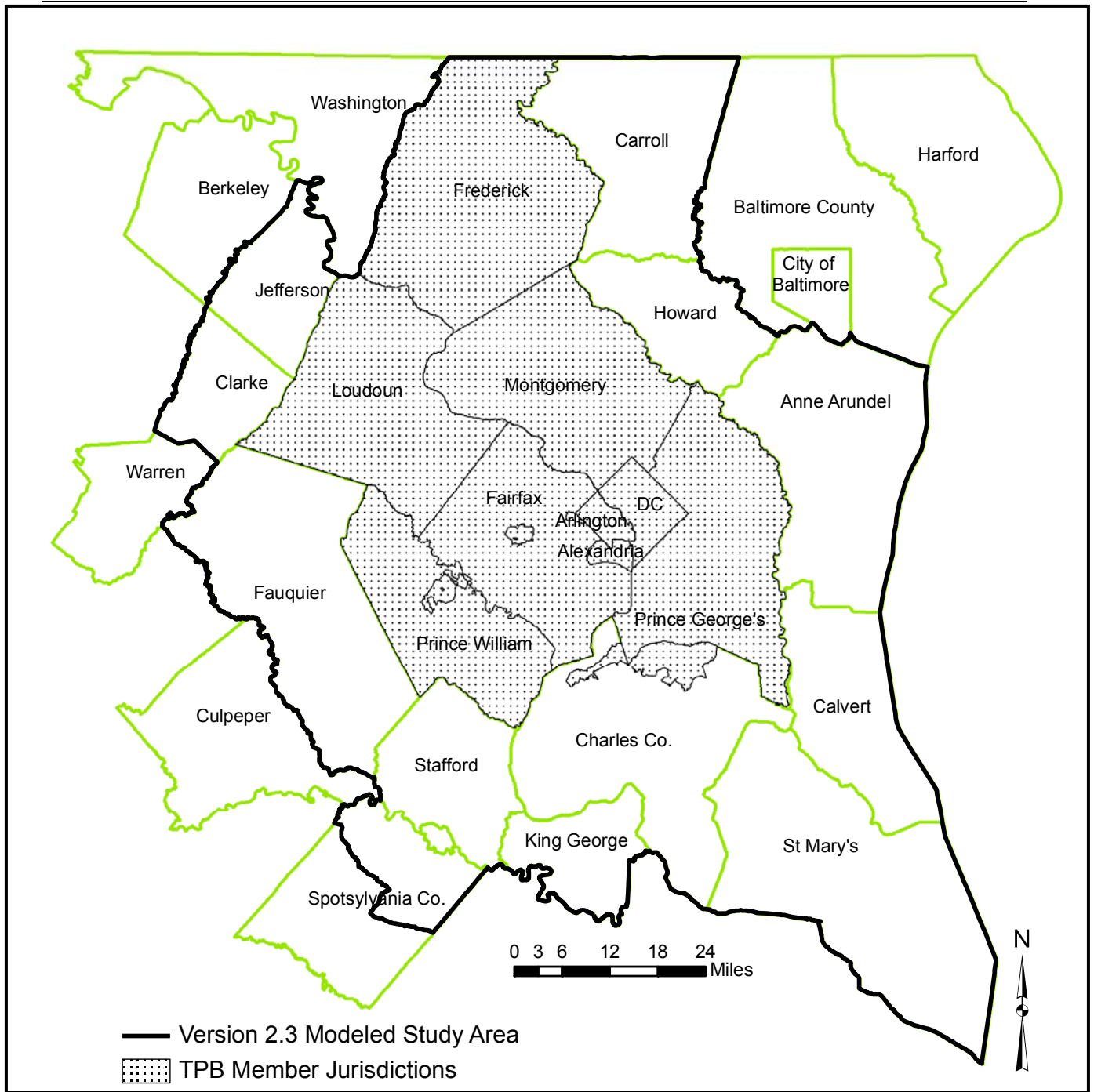


Figure 1 Modeled area of the Version 2.3 travel model and the TPB member jurisdiction area

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Table 3 3,722-TAZ Numbering Allocation by Jurisdiction

Jurisdiction	Active TAZ Count	Beginning TAZ	Ending TAZ	Inactive TAZs
District of Columbia	391	1	393	61, 382
Montgomery Co., Md.	376	394	769	
Prince George's Co., Md.	633	770	1404	770, 777
Arlington Co., Va.	141	1405	1545	
City of Alexandria, Va.	65	1546	1610	
Fairfax Co., Va.	549	1611	2159	
Loudoun Co., Va.	282	2160	2441	
Prince William Co., Va.	376	2442	2819	2555, 2629
Frederick Co., Md.	130	2820	2949	
Howard Co., Md.	68	2950	3017	
Anne Arundel Co., Md.	98	3018	3116	3103
Charles Co., Md.	113	3117	3229	
Carroll Co., Md.	56	3230	3287	3266, 3267
Calvert Co., Md.	47	3288	3334	
St. Mary's Co., Md.	75	3335	3409	
King George Co., Va.	25	3410	3434	
City of Fredericksburg, Va.	14	3435	3448	
Stafford Co., Va.	90	3449	3541	3478, 3482, 3495
Spotsylvania Co., Va.	61	3542	3603	3544
Fauquier Co., Va.	50	3604	3653	
Clarke Co., Va.	9	3654	3662	
Jefferson Co., WV.	13	3663	3675	
External Stations:	47	3676	3722	
Reserved TAZ numbers	1,278	3723	5000	
Total Active Internal TAZs:	3662			
Total Active Internal and External TAZs:	3709			

Ref: 3722TAZ_Master_Node_Table.xls

1.3.2 Nested-logit mode choice model

Version 2.3 model includes a nested-logit (NL) mode choice model, which replaces the sequential multinomial logit (SMNL) mode choice model used in Version 2.2. The NL model provides for a more exhaustive choice set (15 choices) compared to that offered by the existing SMNL model (5 choices).

1.3.3 Updated models for medium trucks and heavy trucks

The Version 2.2 model contains revised truck models that were initially developed, with consultant assistance, for the Version 2.3 model on the 2,191-TAZ system.⁹ Separate model specifications exist for “medium” (2-axle, 6 tire), and “heavy” (all combination vehicle) trucks. TPB staff has adapted the 2,191-TAZ-based models to operate on the 3,722-TAZ system.

⁹ William G. Allen, *Development of a Model for Truck Trips* (Windsor, South Carolina: Prepared for the Metropolitan Washington Council of Governments/National Capital Region Transportation Planning Board, January 14, 2008).

1.3.4 Subdivided non-home-based purpose

Whereas the Version 2.2 model uses a single Non-Home-Based trip purpose, the Version 2.3 model disaggregates NHB travel among two sub-purposes: Non-Home-Base Work (NHW) and Non-Home Base Other (NHO). This change was also in line with consultant recommendations.¹⁰ TPB staff felt that the observed differences between these travel markets in terms of trip rates, trip lengths, modal preferences, etc. were substantial enough to justify establishing an additional purpose. TPB staff considered making other splits of trip purposes (e.g., separating out home-based school trips from home-based other trips), but ultimately decided to defer making any further splits of trip purposes at the present time.

1.3.5 Refined non-motorized travel

The Version 2.3 model includes the development of non-motorized trips¹¹ for all (work and non-work) purposes. The Version 2.2 model develops non-motorized travel for the HBW purpose only. Staff felt that the more detailed TAZ system would facilitate efforts to better reflect this particular travel market. However, the non-motorized travel will be developed at the trip generation stage only.

1.4 Overview of the Version 2.3 travel model

A graphic showing the essential parts of the Version 2.3 modeling process is shown on Figure 2. Despite the general name for travel models (“four step”), the TPB travel model could more accurately be called a “six step” model. These six steps are described below.

The demographic models are used to disaggregate the total number of zonal households across 64 cross-classes: 4 household income groups¹² by 4 household size groups (1, 2, 3, 4+ persons) by 4 vehicle availability groups (0, 1, 2, and 3+ vehicles available). The allocation of households to each cross-class is made at the traffic analysis zone (TAZ) level. The figure indicates that peak-hour transit accessibility measures are used as part of the demographic (vehicle availability) submodel step.

The trip generation models are next applied to compute daily person trip productions and attractions by purpose. Five modeled purposes are modeled: Home-Based Work (HBW), Home-Based Shop (HBS), Home-Based Other (HBO), Non-Home-Based Work (NHW), and Non-Home-Based Other (NHO). A commercial vehicle purpose (consisting of both autos and light duty trucks), and two truck types, Medium and Heavy, are also modeled. Medium trucks are those with two axles and 6 tires. Heavy trucks represent all combination vehicles.

¹⁰ Cambridge Systematics, Inc., *Fiscal Year 2010 Task Reports*, Final Report (Washington, D.C.: National Capital Region Transportation Planning Board, November 16, 2010), 2–3, 2–12.

¹¹ Actually, “trip ends,” since they are an output from trip generation.

¹² The income levels used approximate household income quartiles, based on the 2007 ACS.

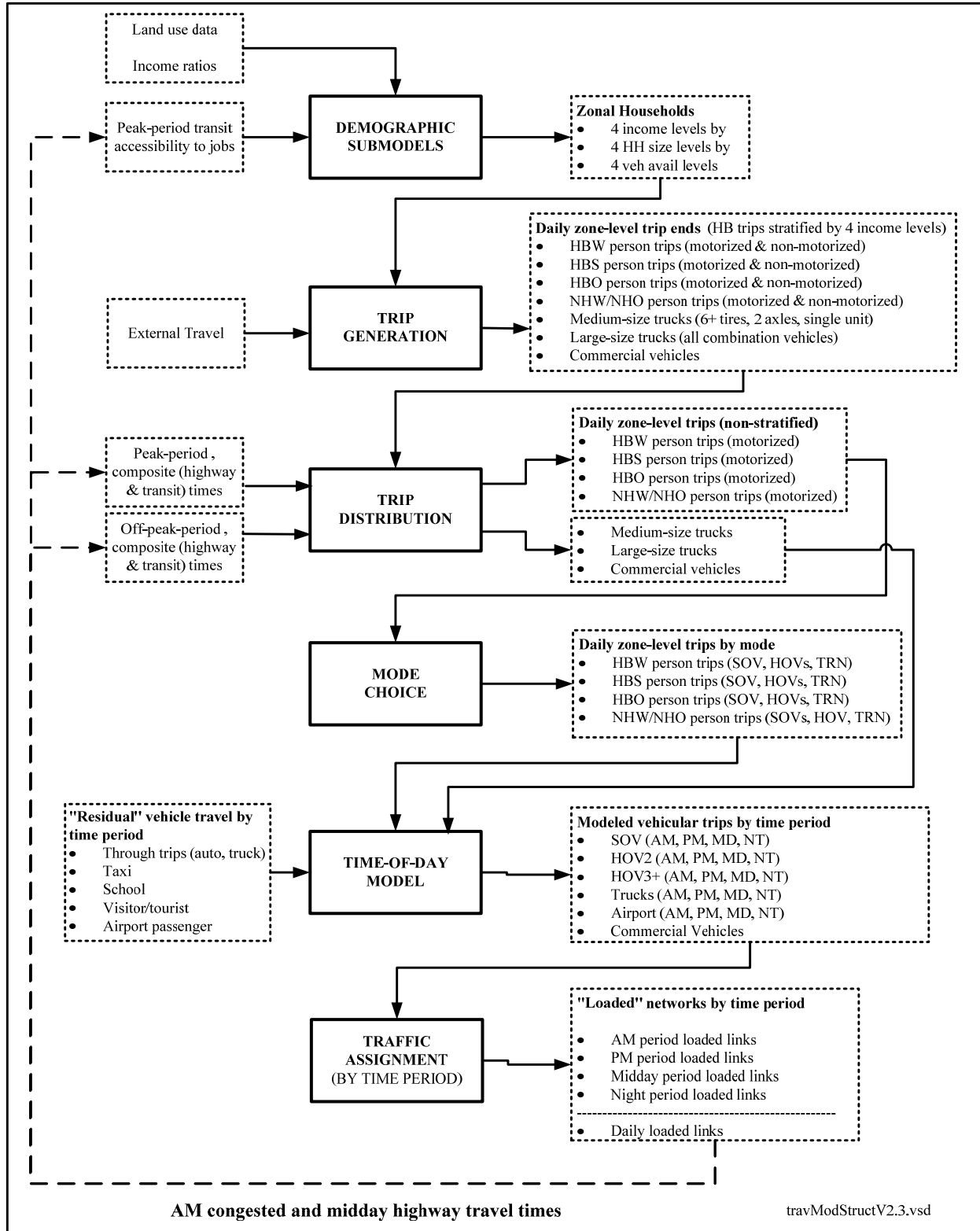


Figure 2 Structure of the Version 2.3 Travel Model

Trip generation involves the application of daily trip rates to the number of households, in each of the 64 classes, and to the number of jobs. The trip rates reflect both motorized (i.e., transit and automobile) and non-motorized (i.e., bicycle and walk) person travel. The non-motorized trip-ends produced in the trip generation step are not carried forward into trip distribution. Trip attractions are computed by purpose as a function of zonal land use attributes. External (i.e., external-to-internal, X/I, and internal-to-external, I/X) productions and attractions are entered as an exogenous input, by purpose, into the trip generation process. External travel relates to auto person, commercial vehicle and truck travel only (transit externals are currently not considered in the model). The home-based productions and attractions are developed by the four income levels.

The trip distribution model uses the standard gravity model formulation and makes use of a composite time function that represents a blending of transit and highway travel times. The gravity model is doubly constrained for all five trip purposes. The distribution step involves separate gravity model runs for 30 travel markets, given that home-based purposes are income stratified, and external travel is modeled separately by purpose and facility type (interstate travel vs. non-interstate). However, the trip distribution process ultimately results in seven daily trip tables corresponding to the basic motorized person, commercial, and truck purposes.

The mode choice process consists of five models corresponding to the HBW, HBS, HBO, NHW, and NHO purposes. The models are used to apportion total motorized person trips among SOVs, 2-occupant HOVs, 3+occupant HOVs, and 12 combinations of transit mode and access to transit.

The time-of-day model apportions daily resident travel among four time periods: AM peak period (6:00 AM to 9:00 AM), midday (9:00 AM to 3:00 PM), PM peak period (3:00 PM to 7:00 PM), and the nighttime/early morning hours (7:00 PM to 6:00 AM). The time-of-day model consists of survey-based factors that are applied on the basis of purpose, mode, and directionality (i.e., the home-to-non-home and non-home-to-home directions). This step also includes provisions for apportioning daily residual travel¹³ and truck travel among the three time periods. The time-of-day process ultimately produces three “total vehicle” trip tables, one for each of the four time periods.

The traffic assignment process addresses six user classes: SOVs, HOV-2, HOV 3+, commercial vehicles, trucks, and airport passenger vehicles. Highway link volumes are developed for each of the user classes by time period. Although one might expect the four time-of-day periods to result in four time-of-day traffic assignments, there are actually six traffic assignments conducted, since the AM and PM peak periods are split into two assignments (HOV3+ and non-HOV3+, the so-called “two-step assignment”). This is described in more detail in Chapter 8 and Figure 19. Daily transit assignments can also be produced in the Version 2.3 model, though this capability has yet to be fully calibrated and validated.

¹³ Residual travel is also referred to as “miscellaneous” travel which represents special travel markets that are typically not (or not well) represented in home-interview surveys; it is composed of taxi, school, visitor/tourist, and air passenger auto driver travel.

Figure 2 also indicates that highway speeds resulting from the traffic assignment process are recycled back into the trip distribution and mode choice steps. A method of successive averages (MSA) is applied to daily link volumes to ensure that regional speeds and VMT close in on an equilibrium condition. Figure 3 shows the 2007 VMT that is produced by the Version 2.3 model by speed feedback (SFB) iteration, and the dampened behavior that results using the MSA procedure. As indicated, the Version 2.3 model execution consists of five SFB iterations: an initial (or “pump prime”) iteration using default input highway speeds and default mode choice model percentages, and four “standard” SFB iterations using traffic assignment-based input highway speeds and a mode choice model execution. Volume averaging is implemented for SFB iterations 2, 3, and 4.

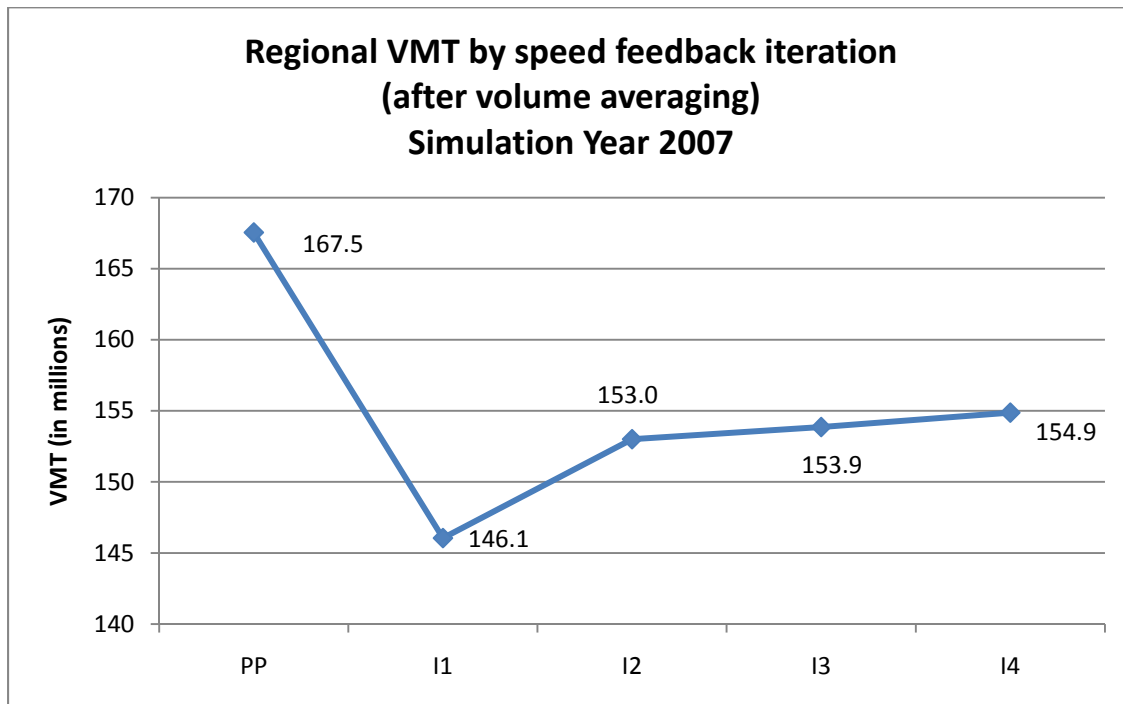


Figure 3 VMT by Iteration

1.5 Special modeling applications

A single standard execution of the regional travel is sometimes insufficient for representing a special policy condition that is relevant to a particular forecasted scenario. In recent years, TPB staff has established two model execution “variations,” which address the treatment of special transportation policies or operations.

The first such variation is known as the “transit constraint” option. Since the year 2000, TPB forecasts have been subject to a Metrorail-related capacity limitation in the core area. It is currently assumed that, beyond the year 2020, all Metrorail trips moving to and through the regional core area will not exceed 2020 levels. Consequently, procedures have been added to all *post-2020* model executions to compare the modeled Metrorail trip table with a pre-existing 2020 Metrorail trip table. Under current procedures, post-2020 Metrorail trips exceeding 2020 ridership levels to and through the regional core are converted into auto trips.

The second variation, known as the “HOV-3+ skims substitution” option, is undertaken to the model of planned HOT (High-Occupancy/Toll) lanes in Northern Virginia. Modeling this type of facility has proven to be especially challenging given:

1. The HOT facility will operate using dynamic tolling, i.e., the tolls will change in real time to maintain a service speed at or near free-flow levels;
2. The legislative stipulation that SOV’s and 2-occupant HOVs will pay for the HOT lane access while 3+ occupant HOVs will be allowed access to the HOT facility at no charge; and
3. the legislative stipulation that the HOV travel market will suffer no service degradation from the HOT lane operation.

Obviously, a central modeling objective in representing HOT lanes is to specify detailed toll rates that will result in demand levels that do not degrade the prevailing speed on the HOT facility. Another modeling objective is to ensure that HOV 3+ service levels will remain unaffected by the HOT operation. To achieve these two objectives, the following four steps are currently undertaken by TPB staff on a year-by-year basis to simulate HOT lanes in Virginia.

1. The travel model is fully executed whereby all Virginia HOT lanes in the highway network are coded as HOV 3+-priority lanes. The resulting HOV 3+ LOS skim files corresponding to each iteration (pump-prime, iteration 1,..., iteration 6) are preserved for later use. This step is known as the “base” execution.
2. The travel model is fully executed again. This time, the Virginia HOT lanes are coded as mixed use lanes (i.e., allowing access by both SOVs and HOVs). The HOT lanes are assigned a “straw” toll level of 20 cents per mile during the peak periods and 15 cents per mile during the off-peak. The toll is included into the overall highway impedance during path building in the traffic assignment step. Therefore, the toll level impacts the loading in the HOT lane facility.
3. The final (iteration 6) highway assignment process (including three traffic assignments for each time period) resulting from Step 2 is run iteratively, on a trial-and-error basis, to identify HOT lane toll rates (cents/mile) which yield optimum speeds on the facility. The toll rates are developed on a freeway segment by segment basis. The queuing delay function is disabled on the HOT lane facility during this particular step as such delay will presumably be minimal given

the special operating conditions of the facility. At the end of each assignment execution, the segment level volume and speed is evaluated and the toll rate is adjusted incrementally. The toll level is increased when the desired segment speed is too low. The result of this process is a file containing “final” toll rates for each HOT lane freeway segment, by time period.

4. The model is again executed as in Step 2, such that: 1) the final HOT lane toll rates developed in Step 3 are invoked and 2) the HOV 3+ skims developed in Step 1 are used as “overrides” to the HOV 3+ skims that would be normally developed as part of the modeling process. The result of this execution produces the final loaded links (this step is referred to as the “final” run).

After the above steps are completed, TPB travel forecasts involving HOT-lane scenarios are developed using two separate model executions: 1) the “base” run from which HOV 3+ skims are developed by simulating the proposed HOT lanes as HOV lanes, and 2) the “final” run which accurately simulates the HOT operation using specially developed toll rates and using (substituting) the HOV 3+ skims from the “base” run in the mode choice model. While the use of “dual” modeling scenarios requires additional network coding requirements and imposes more running time, it is currently the best approach staff has formulated for reflecting a very complicated operating policy.

Chapter 2 Inputs to the Travel Model

This chapter describes the land use and exogenous travel files that have been prepared for the Version 2.3 model application. Zonal land use forecasts are periodically updated from COG's Cooperative Forecasting Program. The most recent land use release is known as Round 8.0 and it was released in July 2010. Exogenous trip files used in the Version 2.3 model represent special travel markets that need to be accounted for in the regional forecast. Such markets include external trip-ends, through trips, airport passengers trips, and "miscellaneous" (or taxi, school, and visitor/ tourist) trips. This chapter does not address network-related inputs to the travel model, which are typically discussed in network documentation.

2.1 Round 8.0 Land Use

The Version 2.3 model requires the preparation of a zonal land use file in a standard format, for each simulation year. The most recently adopted land use projections are the Round 8.0 Cooperative Forecasts (adopted in November 2010). The Cooperative Forecasts are zonal (both 2,191- and 3,722-TAZ systems) projections of households, household population, group quarters population, and employment by category (i.e., retail, office, industrial, and other). The Round 8.0 forecasts include land use projections from 2005 to 2040 in five-year increments. The Version 2.3 model requires a few additional data items that are included in the standard land use file.

- Zonal area (square miles)
- Jurisdiction code (0-23)
- Zonal median income index (ratio of 2007 zonal median income to the regional median income, in tenths (e.g. a value of "10" indicates the ratio is 1.0 meaning the zonal income equals the regional median income))
- Airline distance to the nearest external station (miles)
- X-coordinate of TAZ centroid (Datum NAD83; Projection: Maryland state plane; Units: feet)
- Y-coordinate of TAZ centroid (Datum NAD83; Projection: Maryland state plane; Units: feet)

The zonal median income index was developed using 2007 ACS information and is normally assumed to remain constant over time. Procedures to prepare standardized land use files supporting the TPB travel model have, in recent years, included a provision to factor employment on a jurisdictional basis to account for definitional differences between local planning agencies. The Round 8.0 regional land use totals over time are listed on Table 4. The totals shown in between the five-year increments have been linearly interpolated. (Intermediate years are typically required for air quality planning work, and so files are generally prepared for all years between the base and horizon year in a given land use round).

Table 4 Round 8.0 Land Use Forecasts for Version 2.3 Modeling (w/ CTPP Employment Adjustments)

Year	HH	HHPOP	GQPop	TotPop	TotEMP	OffEMP	RetEMP	IndEMP	OthEMP
2000	2,143,451	5,632,014	116,105	5,748,119	3,441,381	1,630,149	628,912	459,906	722,414
2001	2,183,671	5,730,582	120,415	5,851,012	3,493,123	1,651,538	640,799	471,392	729,431
2002	2,223,890	5,829,130	124,740	5,953,891	3,544,852	1,672,917	652,676	482,869	736,474
2003	2,264,122	5,927,655	129,102	6,056,736	3,596,604	1,694,239	664,507	494,309	743,465
2004	2,304,341	6,026,203	133,427	6,159,615	3,648,333	1,715,618	676,384	505,786	750,508
2005	2,344,561	6,124,771	137,737	6,262,508	3,700,075	1,737,007	688,271	517,272	757,525
2006	2,373,295	6,196,646	138,757	6,335,407	3,745,215	1,756,046	700,656	523,177	765,338
2007	2,402,012	6,268,475	139,783	6,408,278	3,790,330	1,775,055	713,043	529,082	773,150
2007	2,339,832	5,860,693	119,669	5,980,362	3,801,935	1,796,018	665,172	547,612	793,133
2008	2,430,726	6,340,350	140,837	6,481,167	3,835,434	1,794,100	725,370	534,987	780,977
2009	2,459,443	6,412,179	141,863	6,554,038	3,880,549	1,813,109	737,757	540,892	788,789
2010	2,488,177	6,484,054	142,883	6,626,937	3,925,689	1,832,148	750,142	546,797	796,602
2011	2,524,150	6,562,726	143,920	6,706,665	3,982,448	1,860,822	762,224	552,967	806,367
2012	2,560,126	6,641,442	144,994	6,786,434	4,039,250	1,889,515	774,342	559,164	816,163
2013	2,596,143	6,720,132	146,038	6,866,172	4,096,084	1,918,247	786,467	565,363	826,073
2014	2,632,119	6,798,848	147,112	6,945,941	4,152,886	1,946,940	798,585	571,560	835,869
2015	2,668,092	6,877,520	148,149	7,025,669	4,209,645	1,975,614	810,667	577,730	845,634
2016	2,702,192	6,954,419	148,452	7,102,874	4,276,603	2,014,539	822,186	585,908	853,940
2017	2,736,270	7,031,287	148,762	7,180,051	4,343,579	2,053,440	833,723	594,056	862,270
2018	2,770,344	7,108,250	149,081	7,257,329	4,410,604	2,092,399	845,309	602,272	870,714
2019	2,804,422	7,185,118	149,391	7,334,506	4,477,580	2,131,300	856,846	610,420	879,044
2020	2,838,522	7,262,017	149,694	7,411,711	4,544,538	2,170,225	868,365	618,598	887,350
2021	2,870,184	7,333,196	150,516	7,483,723	4,599,869	2,202,750	877,523	624,893	894,682
2022	2,901,857	7,404,337	151,347	7,555,697	4,655,240	2,235,254	886,683	631,204	902,006
2023	2,933,527	7,475,526	152,190	7,627,703	4,710,506	2,267,809	895,868	637,520	909,402
2024	2,965,200	7,546,667	153,021	7,699,677	4,765,877	2,300,313	905,028	643,831	916,726
2025	2,996,862	7,617,846	153,843	7,771,689	4,821,208	2,332,838	914,186	650,126	924,058
2026	3,024,306	7,680,053	154,389	7,834,459	4,868,342	2,357,519	922,961	657,237	930,578
2027	3,051,804	7,742,282	154,953	7,897,243	4,915,485	2,382,209	931,694	664,379	937,125
2028	3,079,378	7,804,473	155,544	7,960,009	4,962,592	2,406,933	940,512	671,523	943,702
2029	3,106,876	7,866,702	156,108	8,022,793	5,009,735	2,431,623	949,245	678,665	950,249
2030	3,134,320	7,928,909	156,654	8,085,563	5,056,869	2,456,304	958,020	685,776	956,769
2031	3,158,341	7,984,123	157,111	8,141,244	5,099,494	2,478,581	966,151	692,053	962,650
2032	3,182,385	8,039,333	157,584	8,196,924	5,142,175	2,500,839	974,322	698,358	968,567
2033	3,206,445	8,094,523	158,064	8,252,580	5,184,826	2,523,179	982,549	704,656	974,531
2034	3,230,489	8,149,733	158,537	8,308,260	5,227,507	2,545,437	990,720	710,961	980,448
2035	3,254,510	8,204,947	158,994	8,363,941	5,270,132	2,567,714	998,851	717,238	986,329
2036	3,275,533	8,254,463	159,481	8,413,952	5,307,502	2,587,634	1,006,677	720,919	992,210
2037	3,296,569	8,303,964	159,979	8,463,962	5,344,893	2,607,540	1,014,501	724,623	998,114
2038	3,317,681	8,353,473	160,507	8,513,961	5,382,243	2,627,515	1,022,420	728,372	1,004,051
2039	3,338,717	8,402,974	161,005	8,563,971	5,419,634	2,647,421	1,030,244	732,076	1,009,955
2040	3,359,740	8,452,490	161,492	8,613,982	5,457,004	2,667,341	1,038,070	735,757	1,015,836
Notes: (1) - Rnd 8.0 Employment has been adjusted with CTPP-based factors.									
(2) -The sum of emp. subcategories may not exactly equal the total emp. figures for interpolated years due to									
rounding									
2007	2007 "Pseudo" Round 8.0 Land Activity								

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2.2 External and Through Forecasts

External stations represent the entry and exit points of the highway network along the periphery of the modeled study area. External and through travel files are geographically referenced to 47 external stations, numbered from 3676 to 3722. The Version 2.3 model requires three files relating to external (I-X and X-I) and through (X-X) travel, for a given simulation year. These include:

- A through auto driver trip table file;
- A through commercial vehicle and truck (medium/heavy) trip table file;
- A file containing external productions and attractions by mode (auto, commercial vehicle, medium trucks, and heavy trucks).

The Version 2.3 external and through trip forecasts were recently updated to accommodate the revised truck models. Previously, the external and through trip forecasts were developed from base-year (year-2000) counts at each external station. The updated forecasts, however, were built from year-2005 counts, the year for which the revised truck models were calibrated. Care was taken to respect the same traffic growth levels for 2030 that were established previously. A summary of the revised external and through trips are shown in Table 5. The projected total level of external travel between 2005 and 2040 is shown to grow from 1,320,900 to 2,082,700, which reflects an average annual growth rate of about 1.3%. External productions and attractions are shown by travel mode and purpose, in Table 6 and Table 7, respectively.

Table 5 External and Through Auto/Truck Trips by Year

Year	AAWDT	Auto Drv Control	Truck Control	Auto XX Trip-Ends	ComVehXX Trip-Ends	Auto XI Adr Trips	Auto IX Adr Trips	TruckXX Trip-Ends	Truck XI Trips	Truck IX Trips
2000	1,215,783	1,003,776	114,016	70,027	5,318	486,084	442,347	59,702	27,157	27,157
2001	1,236,031	1,020,677	116,024	71,258	5,413	494,348	449,658	60,766	27,629	27,629
2002	1,256,657	1,037,896	118,072	72,513	5,510	502,769	457,104	61,851	28,110	28,110
2003	1,277,670	1,055,440	120,161	73,793	5,609	511,350	464,688	62,958	28,601	28,601
2004	1,299,076	1,073,316	122,292	75,099	5,710	520,094	472,413	64,089	29,102	29,102
2005	1,320,886	1,091,530	124,466	76,430	5,813	529,005	480,281	65,242	29,612	29,612
2006	1,343,106	1,110,090	126,684	77,789	5,918	538,087	488,296	66,420	30,132	30,132
2007	1,365,745	1,129,002	128,947	79,174	6,025	547,343	496,460	67,622	30,663	30,663
2008	1,388,813	1,148,275	131,256	80,587	6,135	556,776	504,777	68,848	31,204	31,204
2009	1,412,317	1,167,915	133,612	82,028	6,246	566,391	513,250	70,101	31,756	31,756
2010	1,436,269	1,187,931	136,016	83,499	6,360	576,191	521,882	71,379	32,319	32,319
2011	1,460,676	1,208,331	138,469	84,999	6,476	586,180	530,676	72,684	32,893	32,893
2012	1,485,548	1,229,122	140,973	86,529	6,595	596,362	539,636	74,017	33,478	33,478
2013	1,510,895	1,250,312	143,527	88,090	6,716	606,741	548,765	75,377	34,075	34,075
2014	1,536,728	1,271,912	146,135	89,683	6,839	617,322	558,067	76,766	34,684	34,684
2015	1,563,056	1,293,928	148,796	91,309	6,966	628,109	567,545	78,184	35,306	35,306
2016	1,589,891	1,316,370	151,511	92,967	7,094	639,105	577,203	79,632	35,940	35,940
2017	1,617,242	1,339,246	154,283	94,660	7,226	650,316	587,045	81,111	36,586	36,586
2018	1,645,121	1,362,567	157,113	96,386	7,360	661,747	597,075	82,621	37,246	37,246
2019	1,673,539	1,386,342	160,001	98,149	7,497	673,401	607,296	84,164	37,919	37,919
2020	1,702,507	1,410,580	162,950	99,947	7,637	685,283	617,713	85,739	38,605	38,605
2021	1,719,603	1,424,873	164,676	101,002	7,718	692,284	623,868	86,659	39,009	39,009
2022	1,736,886	1,439,323	166,423	102,069	7,801	699,363	630,089	87,590	39,416	39,416
2023	1,754,359	1,453,933	168,189	103,149	7,885	706,521	636,378	88,532	39,829	39,829
2024	1,772,023	1,468,704	169,977	104,240	7,970	713,758	642,736	89,485	40,246	40,246
2025	1,789,883	1,483,639	171,785	105,345	8,055	721,076	649,163	90,449	40,668	40,668
2026	1,807,938	1,498,739	173,615	106,462	8,142	728,475	655,659	91,425	41,095	41,095
2027	1,826,193	1,514,006	175,466	107,592	8,230	735,957	662,227	92,413	41,527	41,527
2028	1,844,649	1,529,443	177,339	108,735	8,319	743,523	668,866	93,412	41,963	41,963
2029	1,863,309	1,545,051	179,233	109,892	8,408	751,173	675,578	94,424	42,405	42,405
2030	1,882,174	1,560,833	181,151	111,062	8,499	758,908	682,363	95,447	42,852	42,852
2031	1,901,249	1,576,790	183,090	112,246	8,591	766,730	689,223	96,483	43,304	43,304
2032	1,920,534	1,592,924	185,053	113,443	8,684	774,640	696,157	97,531	43,761	43,761
2033	1,940,033	1,609,239	187,038	114,654	8,779	782,638	703,168	98,592	44,223	44,223
2034	1,959,749	1,625,735	189,047	115,880	8,874	790,726	710,255	99,666	44,691	44,691
2035	1,979,683	1,642,415	191,080	117,120	8,970	798,904	717,421	100,752	45,164	45,164
2036	1,999,838	1,659,281	193,136	118,374	9,068	807,175	724,665	101,852	45,642	45,642
2037	2,020,217	1,676,336	195,217	119,643	9,167	815,538	731,989	102,965	46,126	46,126
2038	2,040,823	1,693,582	197,323	120,927	9,266	823,996	739,393	104,091	46,616	46,616
2039	2,061,659	1,711,021	199,454	122,225	9,368	832,549	746,879	105,231	47,111	47,111
2040	2,082,727	1,728,655	201,610	123,540	9,470	841,198	754,448	106,385	47,612	47,612

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Table 6 External Auto/Truck Productions by Year

Year	HBWXI AutoDrvs	HBSXI Auto Drvs	HBOXI AutoDrvs	NHBXI AutoDrvs	ComvXI AutoDrv	HBWXI AutoPsns	HBSXI Auto Psns	HBOXI AutoPsns	NHBXI AutoPsns	ComvXI AutoPsns	MedTkXI	HeavyTkXI	AutoXI Drv Totl	TruckXI Total
2000	236,559	42,352	117,778	56,408	32,987	272,043	69,457	189,623	72,203	42,223	3,637	23,520	486,084	27,157
2001	240,636	43,005	119,847	57,297	33,562	276,732	70,529	192,953	73,340	42,960	3,700	23,929	494,348	27,629
2002	244,792	43,670	121,956	58,202	34,149	281,510	71,619	196,348	74,499	43,711	3,765	24,346	502,769	28,110
2003	249,027	44,346	124,106	59,123	34,748	286,381	72,727	199,810	75,678	44,477	3,831	24,771	511,350	28,601
2004	253,344	45,034	126,298	60,061	35,358	291,346	73,855	203,340	76,878	45,258	3,898	25,204	520,094	29,102
2005	257,744	45,733	128,533	61,016	35,979	296,406	75,002	206,939	78,100	46,054	3,966	25,646	529,005	29,612
2006	262,229	46,444	130,813	61,987	36,613	301,564	76,168	210,609	79,344	46,865	4,036	26,096	538,087	30,132
2007	266,801	47,168	133,137	62,977	37,260	306,822	77,355	214,351	80,610	47,692	4,108	26,555	547,343	30,663
2008	271,462	47,903	135,508	63,984	37,919	312,181	78,562	218,167	81,900	48,536	4,180	27,024	556,776	31,204
2009	276,213	48,652	137,925	65,010	38,591	317,645	79,789	222,059	83,213	49,396	4,254	27,501	566,391	31,756
2010	281,057	49,413	140,390	66,055	39,276	323,216	81,038	226,028	84,550	50,273	4,330	27,989	576,191	32,319
2011	285,995	50,188	142,904	67,118	39,974	328,894	82,308	230,076	85,911	51,167	4,407	28,486	586,180	32,893
2012	291,030	50,976	145,468	68,201	40,687	334,684	83,600	234,204	87,298	52,079	4,486	28,992	596,362	33,478
2013	296,163	51,777	148,084	69,304	41,413	340,587	84,915	238,415	88,709	53,009	4,566	29,509	606,741	34,075
2014	301,396	52,593	150,751	70,427	42,154	346,606	86,252	242,710	90,147	53,957	4,648	30,037	617,322	34,684
2015	306,732	53,423	153,472	71,571	42,910	352,742	87,613	247,091	91,611	54,925	4,731	30,574	628,109	35,306
2016	312,174	54,267	156,248	72,737	43,680	359,000	88,997	251,559	93,103	55,911	4,816	31,123	639,105	35,940
2017	317,722	55,126	159,079	73,923	44,466	365,380	90,406	256,118	94,622	56,917	4,903	31,683	650,316	36,586
2018	323,380	55,999	161,968	75,132	45,268	371,887	91,839	260,768	96,169	57,943	4,992	32,254	661,747	37,246
2019	329,149	56,889	164,914	76,363	46,086	378,521	93,297	265,512	97,745	58,990	5,082	32,837	673,401	37,919
2020	335,033	57,793	167,920	77,618	46,920	385,288	94,781	270,351	99,350	60,057	5,174	33,431	685,283	38,605
2021	338,495	58,333	169,685	78,361	47,410	389,270	95,666	273,193	100,302	60,684	5,228	33,780	692,284	39,009
2022	341,997	58,878	171,471	79,113	47,905	393,296	96,560	276,068	101,264	61,319	5,283	34,133	699,363	39,416
2023	345,538	59,428	173,276	79,872	48,407	397,368	97,463	278,975	102,236	61,961	5,339	34,490	706,521	39,829
2024	349,118	59,984	175,102	80,639	48,914	401,486	98,375	281,915	103,218	62,610	5,395	34,851	713,758	40,246
2025	352,739	60,546	176,950	81,415	49,427	405,650	99,296	284,889	104,211	63,266	5,451	35,217	721,076	40,668
2026	356,400	61,114	178,818	82,199	49,945	409,860	100,226	287,897	105,214	63,930	5,509	35,586	728,475	41,095
2027	360,103	61,687	180,707	82,991	50,470	414,118	101,166	290,939	106,228	64,601	5,567	35,960	735,957	41,527
2028	363,847	62,266	182,619	83,792	51,000	418,424	102,115	294,016	107,253	65,280	5,625	36,338	743,523	41,963
2029	367,633	62,850	184,552	84,601	51,536	422,778	103,075	297,128	108,289	65,967	5,685	36,720	751,173	42,405
2030	371,463	63,441	186,507	85,419	52,079	427,182	104,043	300,276	109,336	66,661	5,745	37,107	758,908	42,852
2031	375,335	64,038	188,485	86,245	52,628	431,635	105,022	303,461	110,394	67,363	5,805	37,498	766,730	43,304
2032	379,251	64,640	190,485	87,080	53,183	436,138	106,010	306,681	111,463	68,074	5,867	37,894	774,640	43,761
2033	383,211	65,249	192,509	87,925	53,744	440,693	107,009	309,939	112,544	68,792	5,929	38,294	782,638	44,223
2034	387,216	65,864	194,555	88,778	54,312	445,299	108,018	313,234	113,636	69,519	5,992	38,699	790,726	44,691
2035	391,266	66,486	196,626	89,641	54,886	449,956	109,037	316,567	114,740	70,254	6,055	39,109	798,904	45,164
2036	395,363	67,113	198,720	90,512	55,466	454,667	110,066	319,939	115,856	70,997	6,119	39,523	807,175	45,642
2037	399,505	67,747	200,838	91,394	56,054	459,431	111,106	323,349	116,984	71,749	6,184	39,942	815,538	46,126
2038	403,695	68,388	202,981	92,284	56,648	464,249	112,156	326,799	118,124	72,509	6,250	40,366	823,996	46,616
2039	407,932	69,035	205,148	93,184	57,249	469,122	113,217	330,289	119,276	73,279	6,317	40,795	832,549	47,111
2040	412,217	69,689	207,341	94,094	57,857	474,050	114,289	333,819	120,441	74,056	6,384	41,229	841,198	47,612

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Table 7 External Auto/Truck Attractions by Year

Year	HBWIX AutoDrvs	HBSIX Auto Drvs	HBOIX AutoDrvs	NHBIX AutoDrvs	ComvIX AutoDrvs	HBWIX AutoPsns	HBSIX Auto Psns	HBOIX AutoPsns	NHBIX AutoPsns	ComvIX AutoPsns	MedTkIX	HeavyTkIX	AutoIX Drv Totl	TruckIX Total
2000	146,581	41,644	164,738	56,400	32,983	168,568	68,297	265,229	72,193	42,219	3,637	23,520	442,347	27,157
2001	148,926	42,318	167,565	57,289	33,559	171,265	69,402	269,780	73,330	42,956	3,700	23,929	449,658	27,629
2002	151,314	43,004	170,447	58,194	34,146	174,011	70,526	274,419	74,488	43,707	3,765	24,346	457,104	28,110
2003	153,744	43,702	173,384	59,115	34,744	176,806	71,670	279,148	75,667	44,472	3,831	24,771	464,688	28,601
2004	156,218	44,411	176,378	60,053	35,354	179,650	72,834	283,968	76,867	45,253	3,898	25,204	472,413	29,102
2005	158,736	45,133	179,430	61,007	35,976	182,546	74,019	288,882	78,089	46,049	3,966	25,646	480,281	29,612
2006	161,299	45,868	182,541	61,979	36,609	185,494	75,224	293,890	79,333	46,860	4,036	26,096	488,296	30,132
2007	163,909	46,616	185,712	62,968	37,256	188,495	76,450	298,997	80,600	47,687	4,108	26,555	496,460	30,663
2008	166,565	47,376	188,946	63,976	37,915	191,550	77,697	304,203	81,889	48,531	4,180	27,024	504,777	31,204
2009	169,270	48,150	192,242	65,001	38,586	194,661	78,966	309,510	83,202	49,391	4,254	27,501	513,250	31,756
2010	172,024	48,938	195,603	66,046	39,271	197,827	80,258	314,921	84,539	50,267	4,330	27,989	521,882	32,319
2011	174,828	49,739	199,030	67,109	39,970	201,052	81,572	320,439	85,900	51,161	4,407	28,486	530,676	32,893
2012	177,682	50,554	202,525	68,192	40,682	204,335	82,909	326,064	87,286	52,073	4,486	28,992	539,636	33,478
2013	180,589	51,384	206,088	69,295	41,409	207,678	84,270	331,801	88,698	53,003	4,566	29,509	548,765	34,075
2014	183,549	52,228	209,721	70,418	42,149	211,082	85,655	337,651	90,135	53,951	4,648	30,037	558,067	34,684
2015	186,564	53,088	213,426	71,562	42,905	214,548	87,064	343,616	91,600	54,918	4,731	30,574	567,545	35,306
2016	189,633	53,962	217,205	72,727	43,675	218,078	88,498	349,699	93,091	55,904	4,816	31,123	577,203	35,940
2017	192,760	54,852	221,058	73,914	44,461	221,673	89,958	355,904	94,610	56,910	4,903	31,683	587,045	36,586
2018	195,943	55,758	224,988	75,123	45,263	225,335	91,443	362,231	96,157	57,936	4,992	32,254	597,075	37,246
2019	199,186	56,680	228,997	76,354	46,080	229,064	92,955	368,685	97,733	58,982	5,082	32,837	607,296	37,919
2020	202,488	57,618	233,085	77,608	46,914	232,861	94,493	375,267	99,338	60,050	5,174	33,431	617,713	38,605
2021	204,447	58,176	235,490	78,351	47,404	235,114	95,408	379,138	100,290	60,677	5,228	33,780	623,868	39,009
2022	206,426	58,740	237,921	79,103	47,900	237,390	96,333	383,053	101,251	61,311	5,283	34,133	630,089	39,416
2023	208,426	59,309	240,380	79,862	48,401	239,690	97,267	387,012	102,223	61,953	5,339	34,490	636,378	39,829
2024	210,448	59,885	242,867	80,629	48,908	242,015	98,211	391,015	103,206	62,602	5,395	34,851	642,736	40,246
2025	212,490	60,466	245,381	81,405	49,420	244,364	99,164	395,064	104,198	63,258	5,451	35,217	649,163	40,668
2026	214,554	61,053	247,924	82,189	49,939	246,738	100,127	399,158	105,202	63,922	5,509	35,586	655,659	41,095
2027	216,641	61,646	250,496	82,981	50,463	249,137	101,100	403,299	106,216	64,593	5,567	35,960	662,227	41,527
2028	218,749	62,246	253,097	83,781	50,993	251,561	102,083	407,486	107,240	65,272	5,625	36,338	668,866	41,963
2029	220,879	62,851	255,727	84,591	51,530	254,011	103,076	411,721	108,276	65,958	5,685	36,720	675,578	42,405
2030	223,032	63,463	258,388	85,408	52,072	256,487	104,079	416,004	109,323	66,652	5,745	37,107	682,363	42,852
2031	225,208	64,081	261,078	86,235	52,621	258,989	105,093	420,336	110,380	67,355	5,805	37,498	689,223	43,304
2032	227,407	64,705	263,799	87,070	53,176	261,518	106,117	424,716	111,450	68,065	5,867	37,894	696,157	43,761
2033	229,630	65,336	266,551	87,914	53,737	264,074	107,151	429,147	112,530	68,783	5,929	38,294	703,168	44,223
2034	231,876	65,973	269,334	88,768	54,304	266,657	108,196	433,628	113,622	69,510	5,992	38,699	710,255	44,691
2035	234,146	66,617	272,149	89,630	54,879	269,268	109,252	438,160	114,726	70,245	6,055	39,109	717,421	45,164
2036	236,440	67,268	274,996	90,502	55,459	271,906	110,319	442,744	115,842	70,988	6,119	39,523	724,665	45,642
2037	238,759	67,925	277,875	91,383	56,046	274,573	111,397	447,380	116,970	71,739	6,184	39,942	731,989	46,126
2038	241,103	68,589	280,788	92,273	56,640	277,268	112,486	452,068	118,110	72,500	6,250	40,366	739,393	46,616
2039	243,471	69,260	283,733	93,174	57,241	279,992	113,586	456,811	119,262	73,269	6,317	40,795	746,879	47,111
2040	245,865	69,937	286,713	94,083	57,849	282,745	114,697	461,607	120,427	74,047	6,384	41,229	754,448	47,612

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2.3 Miscellaneous and Airport-Passenger Trip Forecasts

The remaining exogenous travel markets consist of taxis, school, and visitor/tourist auto driver trips (collectively referred to as “miscellaneous trips”) and airport-passenger auto driver trips. The miscellaneous trip totals, shown by year on Table 8, are based on surveyed travel patterns that have been growth factored through time. The airport-passenger forecasts are shown on Table 9. The airport trips have been recently updated using the 2007 COG Air Passenger Survey. The trip tables represent auto travel to each of the three major airports serving the Washington/Baltimore area.

Table 8 Miscellaneous Auto Driver Forecasts

Year	School	Taxi	Visitor/ Tourist
2000	250,448	111,246	222,227
2001	255,158	112,989	226,423
2002	259,861	114,586	230,605
2003	264,556	116,329	234,769
2004	269,271	117,928	238,970
2005	273,930	119,671	243,045
2006	277,301	121,103	246,065
2007	280,645	122,504	249,010
2008	283,994	123,938	251,972
2009	287,368	125,477	254,993
2010	290,712	126,881	257,941
2011	294,940	128,748	261,728
2012	299,119	130,536	265,388
2013	303,334	132,394	269,139
2014	307,557	134,263	272,918
2015	311,736	136,057	276,574
2016	315,734	138,233	280,147
2017	319,733	140,385	283,723
2018	323,707	142,564	287,229
2019	327,698	144,721	290,788
2020	331,653	146,891	294,257
2021	335,374	148,724	297,598
2022	339,052	150,476	300,828
2023	342,766	152,304	304,155
2024	346,445	154,101	307,391
2025	350,158	155,830	310,714
2026	353,359	157,324	313,529
2027	356,574	158,933	316,376
2028	359,810	160,395	319,284
2029	363,022	161,984	322,126
2030	366,220	163,486	324,934
2031	369,030	164,826	327,428
2032	371,830	166,186	329,898
2033	374,676	167,632	332,479
2034	377,476	169,010	334,951
2035	380,292	170,339	337,456
2036	382,740	171,540	339,623
2037	385,196	172,762	341,808
2038	387,653	173,952	343,989
2039	390,110	175,134	346,174
2040	392,556	176,445	348,328

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Table 9 Air Passenger Auto Driver Trips by Year and Airport

Year	Airport			Total
	National	Dulles	BWI	
2000	18,746	16,585	14,486	49,723
2001	18,343	16,595	14,810	49,656
2002	17,941	16,604	15,134	49,588
2003	17,538	16,614	15,459	49,521
2004	17,136	16,623	15,783	49,453
2005	16,733	16,633	16,107	49,386
2006	16,714	17,000	16,918	50,544
2007	16,694	17,368	17,729	51,703
2008	16,673	17,737	18,540	52,863
2009	16,653	18,105	19,351	54,022
2010	16,634	18,471	20,162	55,180
2011	16,870	19,407	20,626	56,814
2012	17,106	20,343	21,091	58,449
2013	17,347	21,279	21,556	60,089
2014	17,583	22,214	22,020	61,724
2015	17,820	23,150	22,485	63,358
2016	18,058	24,133	22,969	65,061
2017	18,298	25,116	23,452	66,765
2018	18,541	26,101	23,938	68,476
2019	18,781	27,084	24,421	70,180
2020	19,019	28,068	24,906	71,883
2021	19,233	29,032	25,393	73,547
2022	19,448	29,997	25,883	75,214
2023	19,667	30,962	26,372	76,885
2024	19,882	31,927	26,861	78,552
2025	20,096	32,891	27,349	80,216
2026	20,284	33,850	27,856	81,868
2027	20,474	34,810	28,362	83,522
2028	20,667	35,771	28,869	85,180
2029	20,857	36,731	29,376	86,835
2030	21,046	37,690	29,883	88,487
2031	21,171	38,518	30,360	89,917
2032	21,298	39,347	30,839	91,350
2033	21,425	40,175	31,316	92,781
2034	21,551	41,004	31,795	94,213
2035	21,677	41,832	32,272	95,643
2036	21,765	42,416	32,724	96,766
2037	21,852	43,001	33,175	97,890
2038	21,938	43,586	33,627	99,012
2039	22,025	44,171	34,078	100,135
2040	22,113	44,755	34,530	101,258

Ref: I:\ateam\mod_inputs\airport\2009_07_25_Rnd80Based\ Airport_Summary.xls
 I:\ateam\docum\FY11\Ver2.3\modelDoc\ Airport_Summary_V23.xls

Chapter 3 Demographic models

This chapter describes the specification of the demographic modeling process used within the Version 2.3 travel model. The demographic models, or sub-models, refer to the household size, household income, and vehicle availability models that are run prior to trip generation. The models are applied at the zone level and are used to apportion the total number households among 64 size, income, and vehicle availability categories or cross classifications:

- Household size (1, 2, 3, or 4+ persons per household);
- Household income (Income “quartile” 1, 2, 3, or 4); and
- Vehicle ownership/availability (0, 1, 2, or 3+ vehicles per household).

Prior to this latest update, the last two updates of the demographic models, or sub-models, were completed in 2004, using the 1990 Census Transportation Planning Package (CTPP) data, and in 2006, using the 2000 CTPP data. The demographic models used in the Version 2.3 travel model are similar to those used in the Version 2.2 travel model, with the following exceptions. First, the validation of the three demographic sub-models was updated to year 2007 conditions, using the American Community Survey (ACS).¹⁴ Second, the vehicle availability model has been recalibrated based on the 2007/2008 Household Travel Survey.

The 2000 Census was the last decennial census to include the long form, a roughly one-in-six sample of the population that included many questions about commuting travel. The long form was the basis for the CTPP data in 1990 and 2000. The American Community Survey (ACS) is a project of the U.S. Census Bureau that replaces the long form in the decennial census. Ideally, when updating the demographic models, one would like to have small area, e.g., zone-level, data. Unfortunately, the ACS data does not generally support development of models at the TAZ level of geography, due to privacy concerns regarding the release of data. Consequently, the ACS updates were done using county-level data.¹⁵

According to the 2007 ACS data, the regional median household income is \$84,280 and the regional mean household income is \$106,780 (in year 2007 dollars). The household income quartiles, based on the 2007 ACS data, are shown in Table 10.

¹⁴ Hamid Humeida to Files, “Analysis of data from the American Community Survey (ACS): Households by household income, household size, and vehicle availability,” Memorandum, March 19, 2010.

¹⁵ It is thought that some CTPP data may be produced in the future from multiple years of the ACS, but that data is not likely to be available for another few years.

Table 10 Household income quartiles computed from the ACS

Quartile	Income range (2007 dollars)
First	Less than \$50,000
Second	\$50,000 to \$99,999
Third	\$100,000 to \$149,999
Fourth	\$150,000 or more

The median household income reported from the 2007/2008 HTS (\$90,086) is slightly higher than that of the ACS (\$84,280). However, both medians fall in the same income interval, \$50,000-\$99,999. One possible explanation for the difference is that the larger ACS sample covered a larger percentage of lower income households than the 2007/2008 HTS.

A sub-model was developed for each of the three socio-economic dimensions. The household size sub-model uses Census-based relationships to estimate the percent of households in each integer class of household size, given the zone’s average household size. The household income sub-model uses similar Census-based relationships to estimate the percent of households in each income class, given the zone’s median household income. Lastly, the vehicle ownership model uses a disaggregate logit formulation to estimate the percentage of households in each of the four vehicle-availability classes. The logit model makes use of the household size and income information developed in prior steps as well as some additional parameters. The model specifications are detailed below.

3.1 Household size sub-model

The household size sub-model is an “aggregate share” model. The model is essentially a family of four curves used to allocate the total number of households among integer size levels, based on the average household size of a given zone. Each curve uses the same independent variable.

Curve	Dependent variable	Independent variable
1	Percent of HHs with 1 person	Average zonal household size
2	Percent of HHs with 2 persons	Average zonal household size
3	Percent of HHs with 3 persons	Average zonal household size
4	Percent of HHs with 4+ persons	Average zonal household size

The final model is shown in graphical form in Figure 4 and in tabular form in Table 11.

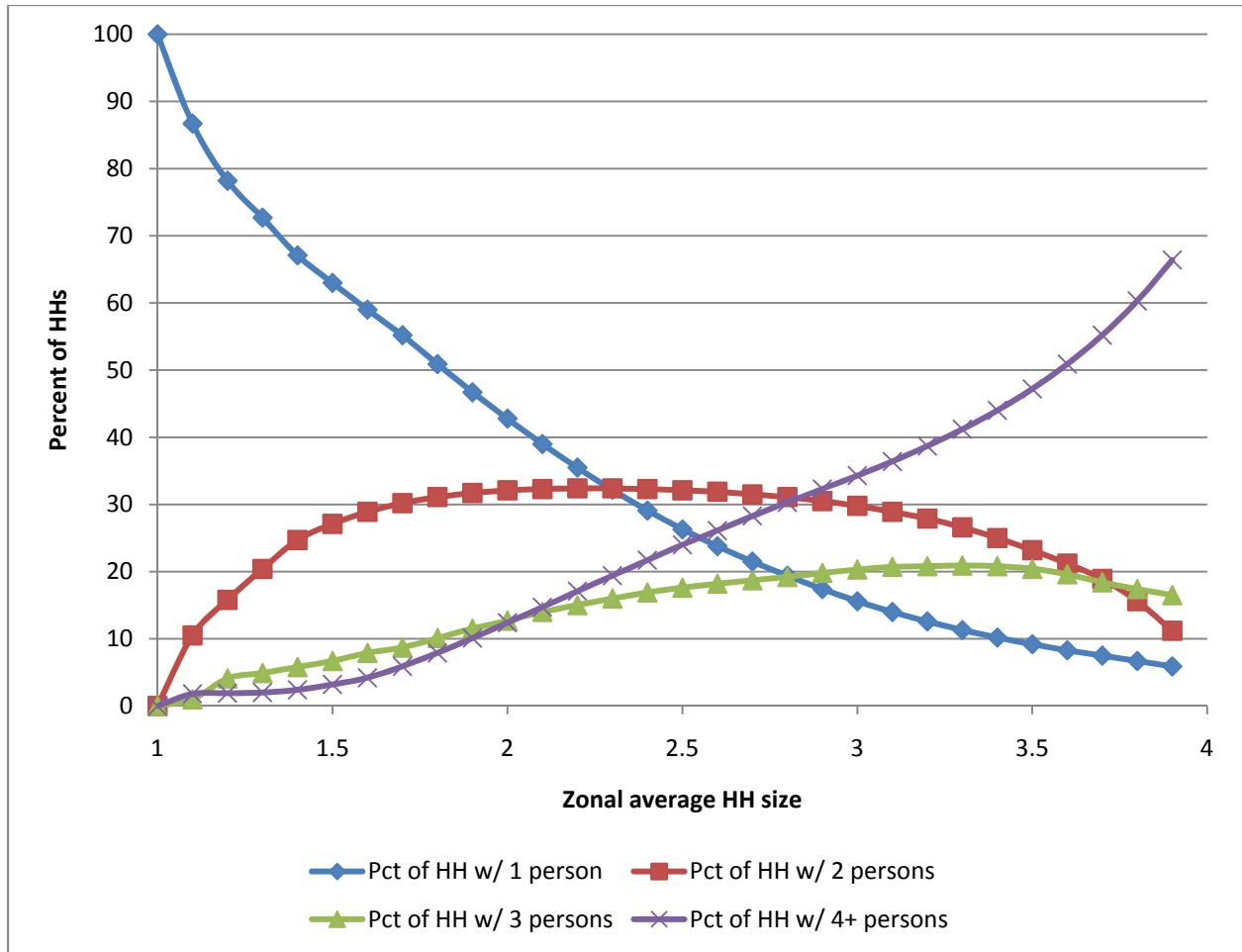


Figure 4 Household size sub-model: Graphical form

Table 11 Household size sub-model: Tabular form

Avg. Zonal HH Size	Pct of HH with 1 person	Pct of HH with 2 persons	Pct of HH with 3 persons	Pct of HH with 4+ persons
1.0	100.0	0.0	0.0	0.0
1.1	86.7	10.5	1.0	1.8
1.2	78.2	15.8	4.1	1.9
1.3	72.7	20.4	4.9	2.0
1.4	67.1	24.7	5.8	2.4
1.5	63.0	27.1	6.7	3.2
1.6	59.0	28.9	7.9	4.2
1.7	55.2	30.2	8.7	5.9
1.8	50.9	31.1	10.1	7.9
1.9	46.7	31.7	11.5	10.1
2.0	42.8	32.1	12.7	12.4
2.1	39.0	32.3	14.0	14.7
2.2	35.5	32.4	15.0	17.1
2.3	32.2	32.4	16.0	19.4
2.4	29.1	32.3	16.9	21.7
2.5	26.3	32.1	17.6	24.0
2.6	23.8	31.9	18.2	26.1
2.7	21.5	31.5	18.7	28.3
2.8	19.4	31.1	19.2	30.3
2.9	17.4	30.5	19.8	32.3
3.0	15.6	29.8	20.3	34.3
3.1	14.0	28.9	20.7	36.4
3.2	12.6	27.9	20.8	38.7
3.3	11.3	26.6	20.9	41.2
3.4	10.2	25.0	20.8	44.0
3.5	9.2	23.2	20.4	47.2
3.6	8.3	21.2	19.6	50.9
3.7	7.5	18.9	18.4	55.2
3.8	6.7	15.6	17.4	60.3
3.9	5.9	11.2	16.5	66.4

3.2 Household income sub-model

The household income sub-model is also an “aggregate share” model and is, therefore, similar in form to the household size sub-model. The household income sub-model is used to estimate the share of households in each of the four income quartiles in each zone, given the median household income for the zone.

Unlike the 2000 CTPP, the most recent census data, the 2007 American Community Survey (ACS), is not available at the census tract level. This fact presented a limitation to any possible updates of the income sub-model using the ACS aggregated data. The county geography is the lowest level that the 2000 CTPP and the 2007 ACS data could be compared. As such, it was decided to use the existing models based on the 2000 CTPP data and to develop an area-based zone equivalency to migrate the 2191 TAZ model to the new 3722 TAZ system.¹⁶ Based on the 2000 CTPP data, the income ratio variable was developed as shown in Equation 1.

Equation 1 Income ratio equation

$$\text{Income ratio} = (\text{zonal median HH income}) / (\text{regional median HH income})$$

The final model is shown in graphical form in Figure 5 and in tabular form in Table 12.

¹⁶ Hamid Humeida to Files, “Development of an equivalency file to convert the household income sub-model from the 2191 TAZ system to the new 3722 TAZ system,” Memorandum, June 2, 2010.

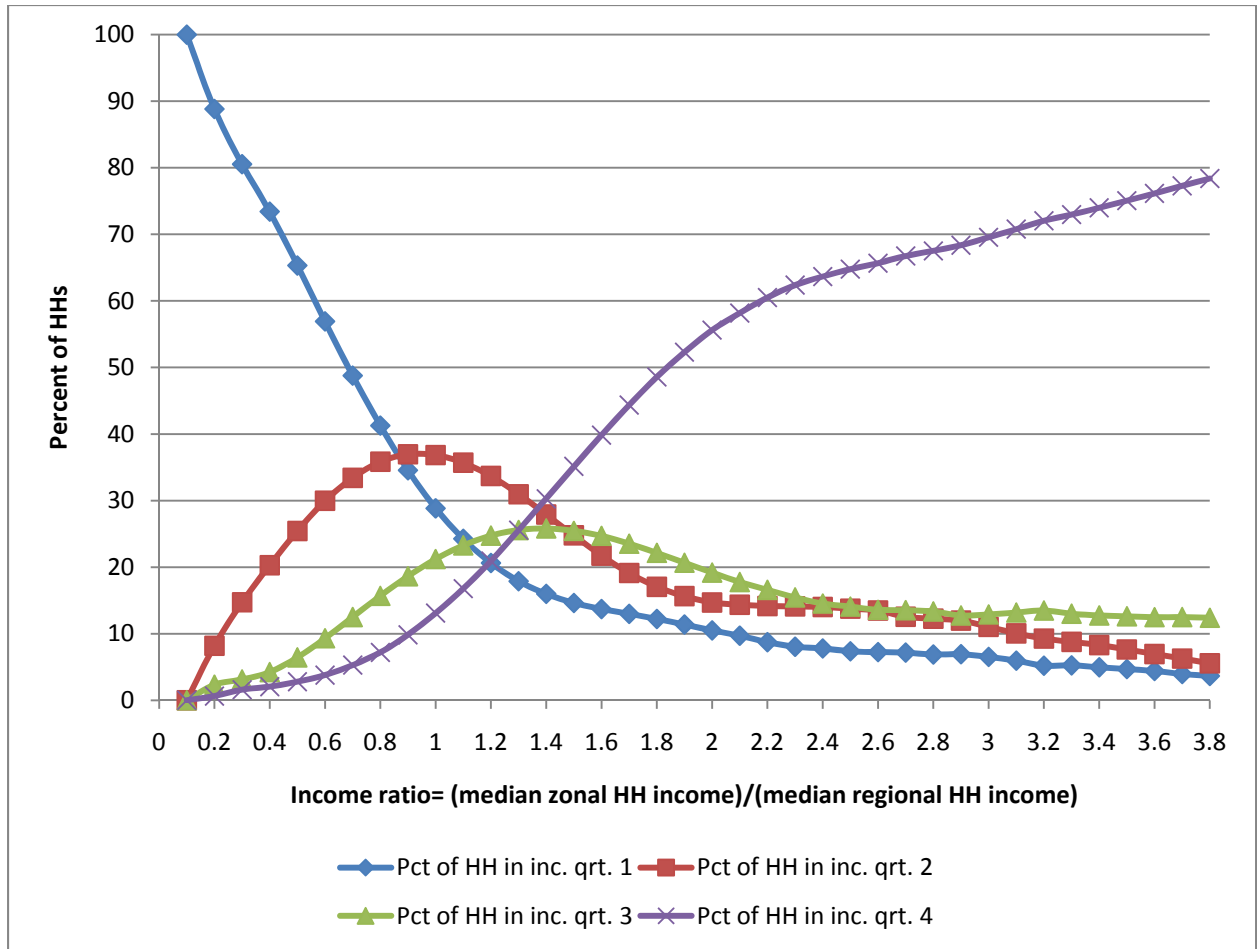


Figure 5 Household income sub-model: Graphical form

Table 12 Household income sub-model: Tabular form

Income Ratio	Pct of HH in inc. qrt. 1	Pct of HH in inc. qrt. 2	Pct of HH in inc. qrt. 3	Pct of HH in inc. qrt. 4
0.1	100.0	0.0	0.0	0.0
0.2	88.8	8.2	2.3	0.6
0.3	80.5	14.7	3.1	1.6
0.4	73.4	20.3	4.2	2.1
0.5	65.3	25.4	6.4	2.8
0.6	56.9	30.0	9.3	3.8
0.7	48.8	33.4	12.5	5.3
0.8	41.3	35.9	15.7	7.2
0.9	34.6	37.0	18.6	9.8
1.0	28.8	36.8	21.2	13.1
1.1	24.3	35.7	23.3	16.8
1.2	20.6	33.7	24.8	20.9
1.3	17.9	31.0	25.6	25.6
1.4	16.0	27.9	25.8	30.3
1.5	14.6	24.8	25.5	35.2
1.6	13.7	21.7	24.7	39.8
1.7	13.0	19.1	23.5	44.4
1.8	12.2	17.0	22.2	48.6
1.9	11.4	15.7	20.7	52.3
2.0	10.5	14.7	19.2	55.6
2.1	9.7	14.4	17.8	58.2
2.2	8.7	14.2	16.6	60.5
2.3	8.1	14.1	15.5	62.4
2.4	7.8	14.0	14.5	63.7
2.5	7.4	13.8	14.1	64.8
2.6	7.3	13.5	13.6	65.7
2.7	7.2	12.6	13.5	66.8
2.8	6.9	12.3	13.3	67.5
2.9	6.9	12.0	12.7	68.4
3.0	6.5	11.0	12.9	69.6
3.1	6.0	10.1	13.2	70.8
3.2	5.2	9.3	13.5	72.0
3.3	5.3	8.8	13.0	73.0
3.4	5.0	8.3	12.8	74.0
3.5	4.7	7.6	12.6	75.1
3.6	4.4	7.0	12.5	76.1
3.7	4.0	6.3	12.5	77.3
3.8	3.7	5.6	12.4	78.4

3.3 Vehicle availability sub-model

The vehicle availability sub-model is the last demographic sub-model. It is a disaggregate choice model that apportions households among vehicle availability levels. The variables considered are household size, household income (furnished by the previous sub-models), area type, and transit accessibility defined as the number of jobs accessible in 45 minutes using the “best” AM transit service. The best transit service is defined as the minimum AM walk-/drive-access transit time among the Metrorail-related transit (i.e., Metrorail only or bus/Metrorail). The vehicle availability model specification is detailed in Table 13.

Table 13 Vehicle availability model

Number of Vehicles				Variable	New Coefficient
0	1	2	3+		
	X			Constant	0.5382
		X		Constant	-3.0820
			X	Constant	-6.8508
X				Household Size	0.1693
		X		Household Size	1.3439
			X	Household Size	1.6910
X				Income level 2	1.4535
		X		Income level 2	1.8432
			X	Income level 2	2.4619
X				Income level 3	2.2589
		X		Income level 3	3.4209
			X	Income level 3	4.6234
X				Income level 4	2.6558
		X		Income level 4	3.9163
			X	Income level 4	5.5402
X				Employment w/in 45 min transit	-1.20E-06
		X		Employment w/in 45 min transit	-2.04E-06
			X	Employment w/in 45 min transit	-2.37E-06
X				Area type	0.2092
		X		Area type	0.4772
			X	Area type	0.7792
X				DC dummy	-0.9448
		X		DC dummy	-1.3977
			X	DC dummy	-1.5294

3.4 Demographic Model Validation Results

In order to evaluate how well the models fit the data, a comparison was made between the estimated results and data from the 2007 ACS. Table 14, Table 15, and Table 16 show the regional estimates, observed ACS data, the ratio of estimated to observed, and the difference between the estimated and observed results. It is evident that the difference between the estimated and observed data is less than 1% for all three demographic models, which indicates an acceptable fit. The difference in the total number of households of 15,885 is due to Clarke County being omitted from the ACS dataset because the county is small and no data was available at this level of geography. In addition to regional summaries, jurisdictional summaries for household size, household income, and vehicle availability are presented in a memorandum¹⁷.

Table 14 2007 Regional Estimated and Observed Households by Size

Estimated					
	1 Psn	2 Psns	3 Psns	4+ Psns	Total
HHs	664,559	723,464	392,846	558,997	2,339,865
Pct.	28.40%	30.92%	16.79%	23.89%	100.00%
Observed					
	1 Psn	2 Psns	3 Psns	4+ Psns	Total
HHs	649,305	713,509	385,435	575,731	2,323,980
Pct.	27.94%	30.70%	16.59%	24.77%	100.00%
Estimated/Observed Ratio					
	1 Psn	2 Psns	3 Psns	4+ Psns	Total
HHs	1.0235	1.0140	1.0192	0.9709	1.0068
Pct.	1.0165	1.0071	1.0123	0.9643	1.0000
Estimated- Observed					
	1 Psn	2 Psns	3 Psns	4+ Psns	Total
HHs	15,254	9,955	7,411	-16,734	15,885
Pct.	0.46%	0.22%	0.20%	-0.88%	0.00%

¹⁷ Hamid Humeida to Files, "Analysis of data from the American Community Survey (ACS): Households by household income, household size, and vehicle availability," Memorandum, March 19, 2010.

Table 15 2007 Regional Estimated and Observed Households by Income Level

Estimated					
	< 50.00k	50.00k-99.99k	100.k-149.99k	> 150.00k	Total
HHs	635,803	726,626	483,261	494,175	2,339,865
Pct.	27.17%	31.05%	20.65%	21.12%	100.00%
Observed					
	< 50.00k	50.00k-99.99k	100.k-149.99k	> 150.00k	Total
HHs	640,594	731,729	470,110	481,547	2,323,980
Pct.	27.56%	31.49%	20.23%	20.72%	100.00%
Estimated/Observed Ratio					
	< 50.00k	50.00k-99.99k	100.k-149.99k	> 150.00k	Total
HHs	0.9925	0.9930	1.0280	1.0262	1.0068
Pct.	0.9858	0.9863	1.0210	1.0193	1.0000
Estimated- Observed					
	< 50.00k	50.00k-99.99k	100.k-149.99k	> 150.00k	Total
HHs	-4,791	-5,103	13,151	12,628	15,885
Pct.	-0.39%	-0.43%	0.42%	0.40%	0.00%

Table 16 2007 Regional Estimated and Observed Households by Vehicles Available

Estimated					
	0 Vehs.	1 Veh.	2 Vehs.	3+ Vehs.	Total
HHs	202,358	736,973	871,294	529,240	2,339,865
Pct.	8.65%	31.50%	37.24%	22.62%	100.00%
Observed					
	0 Vehs.	1 Veh.	2 Vehs.	3+ Vehs.	Total
HHs	200,561	733,753	865,514	524,152	2,323,980
Pct.	8.63%	31.57%	37.24%	22.55%	100.00%
Estimated/Observed Ratio					
	0 Vehs.	1 Veh.	2 Vehs.	3+ Vehs.	Total
HHs	1.0090	1.0044	1.0067	1.0097	1.0068
Pct.	1.0021	0.9938	1.0065	1.0056	1.0000
Estimated- Observed					
	0 Vehs.	1 Veh.	2 Vehs.	3+ Vehs.	Total
HHs	1,797	3,220	5,780	5,088	15,885
Pct.	0.02%	-0.07%	0.00%	0.07%	0.00%

Chapter 4 Trip Generation

The Version 2.3 trip generation process computes zonal trip productions and trip attractions, for each modeled purpose, on the basis of zonal land activity. This chapter details the trip generation model pertaining to resident, commercial vehicle, and truck purposes. “Resident trips” are those made by people who reside in the modeled area. Information on resident trips is obtained from the COG/TPB 2007/2008 Household Travel Survey.

4.1 Model Structure

The trip generation model is used to compute the number of daily person trips (i.e., on an average weekday) and daily truck/commercial vehicle trips produced by and attracted to each transportation analysis zone (TAZ). Resident trips are stratified into five trip purposes:

- Home-Based Work (HBW)
- Home-Based Shop (HBS)
- Home-Based Other (HBO)
- Non-Home-Based Work (NHW)
- Non-Home-Based Other (NHO)

HBO trips include home-based school and home-based university trips, since these trips are not modeled separately. Following consultant guidance, what used to be one trip purpose – non-home-based (NHB) – has now been divided into two trip purposes: NHW and NHO.¹⁸ In the Version 2.1 travel model and previous TPB travel models, commercial vehicle travel, described below, was assumed to be part of the non-home-based trip purpose, although this is no longer the case. In general, a commercial vehicle is a motor vehicle used to transport goods (freight), services, or, potentially, revenue-paying passengers. However, the usage of this term within the TPB travel model is more limited. Since the TPB travel model has always had a truck model (for medium trucks and heavy trucks), the term “commercial vehicle” is used to refer to light-duty vehicles (auto, light trucks, SUV, etc.) used to transport goods and services.¹⁹ Consequently, there are three commercial/truck vehicle types:

- Medium truck (single unit, two axles, 6 or more tires)
- Heavy truck (all combination vehicles)²⁰
- Commercial vehicles (autos and light duty trucks used to transport commercial goods and services)

Examples of commercial vehicles include “delivery and courier vehicles (including postal vehicles), light trucks used in construction, tradesmen, craftsmen, equipment service personnel, telephone company trucks, shuttle vans, taxicabs, ambulances, police cars, government vehicles, and 4-tire vans used for

¹⁸ Cambridge Systematics, Inc., *Fiscal Year 2010 Task Reports*, 2–3, 2–12.

¹⁹ William G. Allen Jr., *Development of a Model for Commercial Vehicle Trips* (Washington, D.C.: Metropolitan Washington Council of Governments, National Capital Region Transportation Planning Board, May 4, 2007).

²⁰ Note that “heavy” and “medium” do not refer strictly to the weight of the vehicle.

paratransit and school transportation.”²¹ As stated earlier, in the Version 2.1 travel model and previous TPB travel models, commercial vehicle travel was assumed to be part of the non-home-based trip purpose. Similar to the Version 2.2 model, the Version 2.3 model now accounts for commercial trips as a separate and distinct trip purpose. The trip generation process also estimates productions and attractions associated with non-motorized (walk and bicycle) trips. The non-motorized trips are removed from the “final” trip-ends prior to the trip distribution step.

The resident trip generation process can be envisioned as a series of six sequential steps. These are:

- 1) Trip production model;
- 2) Internal-to-external trip extraction model;
- 3) Non-motorized trip production model;
- 4) Trip attraction model;
- 5) Non-motorized trip attraction model; and
- 6) Home-based attraction income disaggregation model.

4.2 Trip Production Model

The trip production model is a cross-classification model involving the application of trip rates to households in specific socioeconomic categories. The trip rates are specific to each purpose. The cross-classes established for the Version 2.3 model are structured by the four household income, four household size, and four vehicle availability levels used in the demographic models. The total number of cross-classes equals 64 (i.e., 4 x 4 x 4). The trip rates are displayed, by purpose in Table 17, Table 18, Table 19, Table 20, and Table 21. Trip rates are weighted rates, based on the 2007/2008 Household Travel Survey.²²

²¹ Allen, *Development of a Model for Commercial Vehicle Trips*, 4.

²² Hamid Humeida to Files, Mark Moran, and Ronald Milone, “Estimation of Trip Production Model based on the 2007 Household Travel Survey,” Memorandum, January 13, 2011.

Table 17 Final HBW Trip Production Rates²³

Income Level	HH Size	Vehicles				Subtotal
		0	1	2	3+	
00k - 50k	1-PSN	0.41	0.65	0.54	0.66	0.58
	2-PSN	0.67	0.86	1.27	1.34	1.05
	3-PSN	0.91	1.34	1.89	1.92	1.55
	4+PSN	1.34	1.34	1.70	2.50	1.69
	Subtotal	0.55	0.80	1.35	1.75	0.94
50k-100k	1-PSN	1.00	1.06	1.04	1.04	1.05
	2-PSN	1.20	1.29	1.41	1.51	1.39
	3-PSN	1.25	1.70	1.95	2.05	1.93
	4+PSN	1.34	1.82	1.99	2.69	2.24
	Subtotal	1.06	1.20	1.63	2.14	1.55
100k-150k	1-PSN	1.08	0.99	1.09	1.29	1.03
	2-PSN	1.72	1.78	1.78	1.87	1.79
	3-PSN	1.72	1.82	2.05	2.51	2.23
	4+PSN	1.75	1.97	1.98	2.71	2.26
	Subtotal	1.33	1.36	1.86	2.42	1.92
> 150k	1-PSN	1.16	1.04	1.20	0.87	1.07
	2-PSN	1.72	1.82	1.87	1.90	1.88
	3-PSN	1.72	2.16	2.28	2.93	2.62
	4+PSN	1.75	2.24	2.60	2.97	2.75
	Subtotal	1.33	1.57	2.15	2.58	2.25
	TOTAL	0.72	1.10	1.78	2.33	1.63

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²³ Source: Hamid Humeida to Files, Mark Moran, and Ronald Milone, "Estimation of Trip Production Model based on the 2007 Household Travel Survey," Memorandum, January 13, 2011.

Table 18 Final HBS Trip Production Rates²⁴

Income Level	HH Size	Vehicles				Subtotal
		0	1	2	3+	
00k - 50k	1-PSN	0.59	0.65	0.77	0.77	0.64
	2-PSN	0.88	1.16	1.18	1.29	1.15
	3-PSN	0.90	1.31	1.52	1.57	1.36
	4+PSN	1.00	1.31	1.52	1.53	1.40
	Subtotal	0.69	0.85	1.25	1.35	0.94
50k-100k	1-PSN	0.59	0.67	0.64	0.77	0.66
	2-PSN	0.88	1.26	1.31	1.31	1.28
	3-PSN	0.92	0.94	1.64	1.74	1.52
	4+PSN	1.25	1.59	2.12	2.15	2.07
	Subtotal	0.69	0.85	1.52	1.76	1.28
100k-150k	1-PSN	0.67	0.71	0.73	0.77	0.71
	2-PSN	0.88	1.30	1.31	1.31	1.30
	3-PSN	0.88	1.65	1.69	1.63	1.66
	4+PSN	1.75	1.81	2.22	2.36	2.25
	Subtotal	0.83	1.04	1.68	1.86	1.60
> 150k	1-PSN	0.86	0.89	0.89	0.89	0.89
	2-PSN	1.31	1.31	1.31	1.31	1.31
	3-PSN	0.88	1.66	1.66	1.66	1.66
	4+PSN	1.24	2.12	2.40	2.45	2.41
	Subtotal	0.99	1.27	1.71	1.83	1.70
	TOTAL	0.70	0.90	1.58	1.79	1.36

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²⁴ Source: Hamid Humeida to Files, Mark Moran, and Ronald Milone, "Estimation of Trip Production Model based on the 2007 Household Travel Survey," Memorandum, January 13, 2011.

Table 19 Final HBO Trip Production Rates²⁵

Income Level	HH Size	Vehicles				Subtotal
		0	1	2	3+	
00k - 50k	1-PSN	0.80	0.89	0.89	1.17	0.87
	2-PSN	0.78	1.57	1.98	2.22	1.70
	3-PSN	1.55	1.57	3.00	3.00	2.25
	4+PSN	1.66	3.76	3.76	5.91	3.93
	Subtotal	0.91	1.30	2.38	3.48	1.62
50k-100k	1-PSN	0.80	0.89	0.89	1.18	0.89
	2-PSN	1.26	2.08	2.08	2.10	2.06
	3-PSN	1.55	3.00	3.47	3.79	3.47
	4+PSN	1.66	6.15	6.44	6.81	6.52
	Subtotal	0.96	1.59	3.45	4.52	2.86
100k-150k	1-PSN	1.09	0.90	0.93	0.90	0.92
	2-PSN	1.55	2.08	2.08	2.10	2.08
	3-PSN	2.50	3.40	3.66	3.79	3.70
	4+PSN	2.50	6.48	7.36	7.36	7.31
	Subtotal	1.35	1.87	4.24	4.93	3.96
> 150k	1-PSN	1.09	0.90	0.98	1.15	0.95
	2-PSN	1.55	2.08	2.08	2.08	2.08
	3-PSN	2.50	4.15	5.00	5.00	4.94
	4+PSN	2.50	6.48	7.36	7.87	7.55
	Subtotal	1.23	2.35	4.25	5.09	4.34
	TOTAL	0.95	1.58	3.76	4.75	3.13

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²⁵ Source: Hamid Humeida to Files, Mark Moran, and Ronald Milone, "Estimation of Trip Production Model based on the 2007 Household Travel Survey," Memorandum, January 13, 2011.

Table 20 Final NHW Trip Production Rates²⁶

Income Level	HH Size	Vehicles				Subtotal
		0	1	2	3+	
00k - 50k	1-PSN	0.30	0.37	0.37	0.37	0.35
	2-PSN	0.30	0.32	0.44	0.44	0.38
	3-PSN	0.35	0.56	0.56	0.85	0.57
	4+PSN	0.35	0.56	0.56	1.18	0.65
	Subtotal	0.31	0.39	0.48	0.76	0.42
50k-100k	1-PSN	0.30	0.75	0.75	0.75	0.72
	2-PSN	0.30	0.77	0.81	0.81	0.79
	3-PSN	0.83	0.77	0.77	0.93	0.83
	4+PSN	0.83	0.94	0.94	1.04	0.97
	Subtotal	0.33	0.77	0.83	0.94	0.81
100k-150k	1-PSN	0.30	0.75	0.75	0.75	0.73
	2-PSN	0.75	1.03	1.03	1.18	1.06
	3-PSN	0.95	1.03	1.15	1.18	1.15
	4+PSN	0.98	1.03	1.15	1.33	1.21
	Subtotal	0.49	1.03	1.08	1.24	1.08
> 150k	1-PSN	0.75	1.00	1.00	1.05	0.99
	2-PSN	0.80	1.08	1.08	1.08	1.08
	3-PSN	1.26	1.26	1.30	1.42	1.36
	4+PSN	1.26	1.35	1.35	1.42	1.38
	Subtotal	0.77	1.10	1.20	1.31	1.23
	TOTAL	0.33	0.70	0.95	1.13	0.87

Ref: I:\ateam\docum\FY11\Ver2.3\memos\Trip_production_memo_final.docx

²⁶ Source: Hamid Humeida to Files, Mark Moran, and Ronald Milone, "Estimation of Trip Production Model based on the 2007 Household Travel Survey," Memorandum, January 13, 2011.

Table 21 Final NHO Trip Production Rates²⁷

Income Level	HH Size	Vehicles				Subtotal
		0	1	2	3+	
00k - 50k	1-PSN	0.58	0.68	0.96	1.12	0.68
	2-PSN	0.63	1.22	1.22	1.44	1.17
	3-PSN	0.71	1.25	1.25	1.25	1.18
	4+PSN	1.10	1.10	1.72	1.69	1.45
	Subtotal	0.63	0.86	1.30	1.44	0.95
50k-100k	1-PSN	0.61	0.68	0.96	1.21	0.72
	2-PSN	0.63	1.22	1.25	1.45	1.26
	3-PSN	0.74	1.46	1.47	1.62	1.52
	4+PSN	1.10	1.54	2.33	2.56	2.33
	Subtotal	0.64	0.89	1.56	1.95	1.35
100k-150k	1-PSN	0.61	0.72	0.94	0.88	0.76
	2-PSN	0.87	1.22	1.25	1.53	1.30
	3-PSN	1.00	1.46	1.47	1.62	1.53
	4+PSN	1.38	1.54	2.33	2.56	2.38
	Subtotal	0.75	0.99	1.67	2.00	1.63
> 150k	1-PSN	0.67	0.72	0.99	1.36	0.84
	2-PSN	0.95	1.22	1.49	1.62	1.50
	3-PSN	1.00	1.46	1.56	1.66	1.61
	4+PSN	1.49	2.39	2.41	2.56	2.48
	Subtotal	0.76	1.17	1.79	1.98	1.79
	TOTAL	0.64	0.91	1.61	1.94	1.41

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Table 22 shows a summary of the trip production rates across the five trip purposes, indicating an average of about 8.40 trip productions per household on an average weekday. According to NCHRP 365, one would expect about 8.5 daily person trips per household for an urban area with over one million people.²⁸

²⁷ Source: Hamid Humeida to Files, Mark Moran, and Ronald Milone, "Estimation of Trip Production Model based on the 2007 Household Travel Survey," Memorandum, January 13, 2011.

²⁸ William A. Martin and Nancy A. McGuckin, *NCHRP Report 365, Travel Estimation Techniques for Urban Planning*, National Cooperative Highway Research Program (NCHRP) (Washington, D.C.: Transportation Research Board, National Research Council, 1998), 25.

Table 22 Daily trip productions per household (average weekday), summary across the trip purposes

Daily Trip Productions per HH (ave wkday)	
HBW	1.63
HBS	1.36
HBO	3.13
NHW	0.87
NHO	1.41
Total	8.40

Ref: I:\ateam\docum\FY11\Ver2.3\modelDoc\01_calib\tripProdSummary.xlsx

4.3 The Internal-to-External Trip Estimation Model

Travel can be categorized into four markets, based on whether the starting and ending points of the trip are within or beyond the modeled area, as can be seen in Table 23.

Table 23 Categorization of trips into four markets, based on whether the starting and ending points of the trip are within or beyond the modeled area

Travel market	Acronym	Short-hand name
Internal-to-internal	I-I	Internal
Internal-to-external	I-X	External
External-to-internal	X-I	External
External-to-external	X-X	Through

Since I-X trips and X-I trips are typically referred to as “external travel,” one can also think in terms of three markets: internal, external, and through. External and through travel (I-X, X-I and X-X) are entered exogenously into the trip generation process. However, since the trip production rates include both internal (I-I) and internal-to-external (I-X) trips generated by households that reside in the modeled area, it is necessary to remove the I-X portion of total trip productions to avoid double counting.

The first I-X trip extraction sub-model was estimated by William Allen in the early 1990s based on the 1987 Home Interview Survey and the 1478 zone system. The model was then updated by TPB staff in 1997 using the 1994 HTS and the 2,191 zone system.^{29 30 31} Consequently, this is the third update of the I-X trip extraction model. This latest update is based on the 2007 HTS and the 3,722-zone system, which has 3,675 internal zones. All of these models are based on the premise that the share of I-X trips is inversely related to the distance between the centroid of the production zone and the nearest external station.

In Version 2.2 of the travel model, a single curve was developed to extract internal-to-external trips following trip generation. However, during Version 2.3 model calibration, it was noted that Home-Based-Work internal-to-external trip rates are dramatically different for counties in the vicinity of Baltimore.³² Thus, for the purposes of HBW I-X trip estimation, the region was split into counties near Baltimore (i.e., Anne Arundel, Howard, and Carroll counties) and the rest of the region. The equations

²⁹ Parsons, Brinckerhoff, Quade & Douglas, Inc., KPMG Peat Marwick LLP, and William G. Allen Jr. to Metropolitan Washington Council of Governments, “Technical Assistance for 1995 Model Validation: Technical Memorandum #2: Review of 1994 Survey Files,” Memorandum, January 19, 1997, 16.

³⁰ Parsons, Brinckerhoff, Quade & Douglas, Inc., KPMG Peat Marwick LLP, and William G. Allen Jr. to Metropolitan Washington Council of Governments, “Technical Assistance for 1995 Model Validation: Technical Memorandum #4: Trip Generation and Time-of-Day Models,” Memorandum, June 30, 1997, 7.

³¹ Ronald Milone, Hamid Humeida, and Meseret Seifu, *FY-97 Models Development Program for COG/TPB Travel Models*, Draft (Washington, D.C.: Metropolitan Washington Council of Governments, National Capital Region Transportation Planning Board, June 30, 1997), 3–31.

³² Hamid Humeida to Mark Moran, “I-X Trip Extraction Sub-Model,” Memorandum, January 13, 2011.

developed for I-X trip extraction are described below and shown graphically in Figure 6. This function captures the fact that, as the distance to the nearest external station increases, the share of total trip productions that is attracted to external locations (I-X) drops.

Equation 2 Percent of total trips productions that are I-X

$$IX_Baltimore_HBW = 0.3348 \text{ Exp } (-0.0938 * DNE)$$

$$IX_Baltimore_Non-HBW = 0.1766 \text{ Exp } (-0.1957 * DNE)$$

$$IX_Non-Baltimore_HBW = 0.2133 \text{ Exp } (-0.1950 * DNE)$$

where

DNE = the “straight-line” distance to the nearest external station (in miles)

Exp = the exponential function

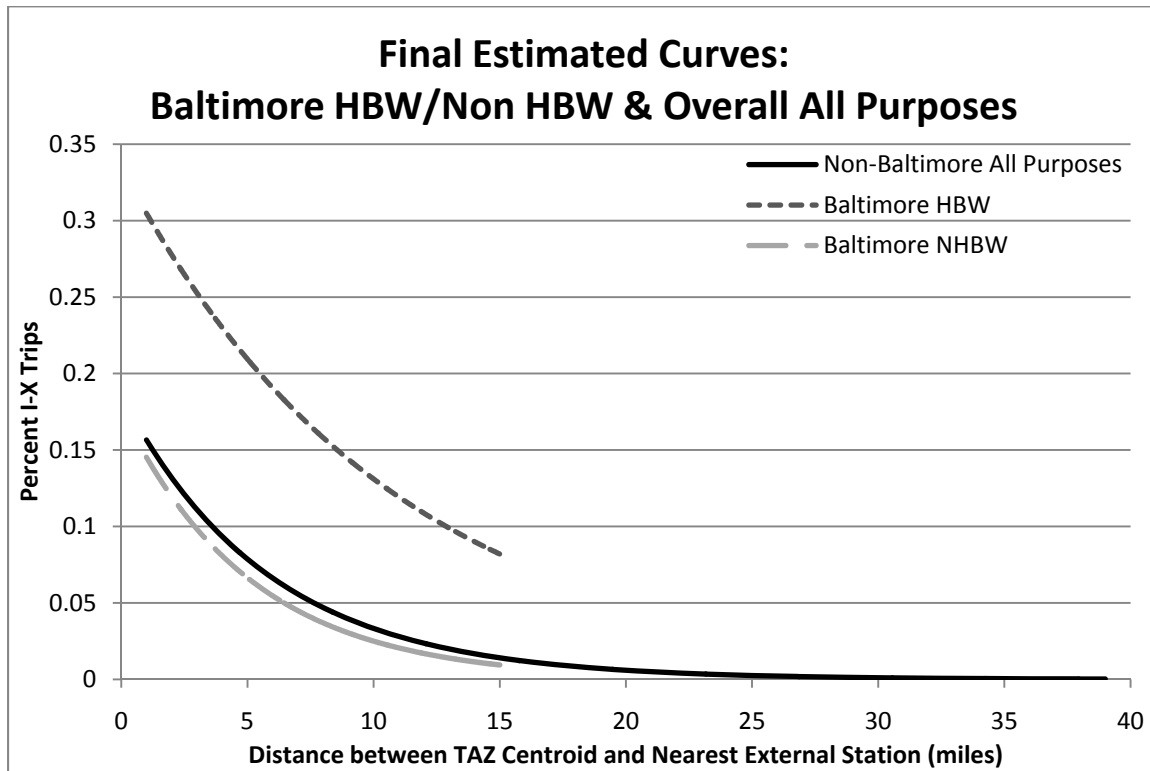


Figure 6 Internal-to-External Trip Extraction Model

4.4 Area type

Area type is an important parameter that is used as a basis for determining link free-flow speed and link capacity, and is also used in a number of models, including the vehicle ownership model, the trip generation model, and the non-motorized HBW trip-end model. In the Version 2.2 model, area type is defined based on a one-mile “floating” employment and population density. The one-mile floating

density for a specified TAZ is calculated by adding the density in the TAZ to the density in other TAZs whose centroid lies within a one-mile radius of the specified TAZ’s centroid (this aggregation technique is sometimes referred to as “geographic centroid aggregation”). In the Version 2.2 travel model, there were seven area types, which were a function of the population density and the employment density.³³ By contrast, in the Version 2.3 travel model on the 3,722-TAZ area system, there are now six area types, as can be seen in Table 24.³⁴ Changes to the previous definitions included combining area types 6 and 7, changing the employment and population category thresholds, as well as reclassifying some area types. Also, the new scheme has generally a smoother transition from one area type to the next.

Table 24 Area Type Definitions (1-7) as a function of population and employment density

One-Mile “Floating” Population Density (Pop/Sq mi)	One- mile “Floating” Employment Density (Emp/Sq mi)						
	0-100	101-350	351-1,500	1,501-3,550	3,551- 13,750	13,751- 15,000	15,001+
0-750	6	6	5	3	3	3	2
751-1,500	6	5	5	3	3	3	2
1,501-3,500	6	5	5	3	3	2	2
3,501-6,000	6	4	4	3	2	2	1
6,001-10,000	4	4	4	2	2	2	1
10,001-15,000	4	4	4	2	2	2	1
15,001+	2	2	2	2	2	1	1

Two maps showing the revised area types can be seen in Figure 7 and Figure 8.

³³ Ronald Milone et al., *TPB Travel Forecasting Model, Version 2.2: Specification, Validation, and User’s Guide*, 4–8.

³⁴ Mary Martchouk to Mark S. Moran, “Area Type Definitions for Version 2.3 Travel Demand Model,” Memorandum, June 16, 2010.

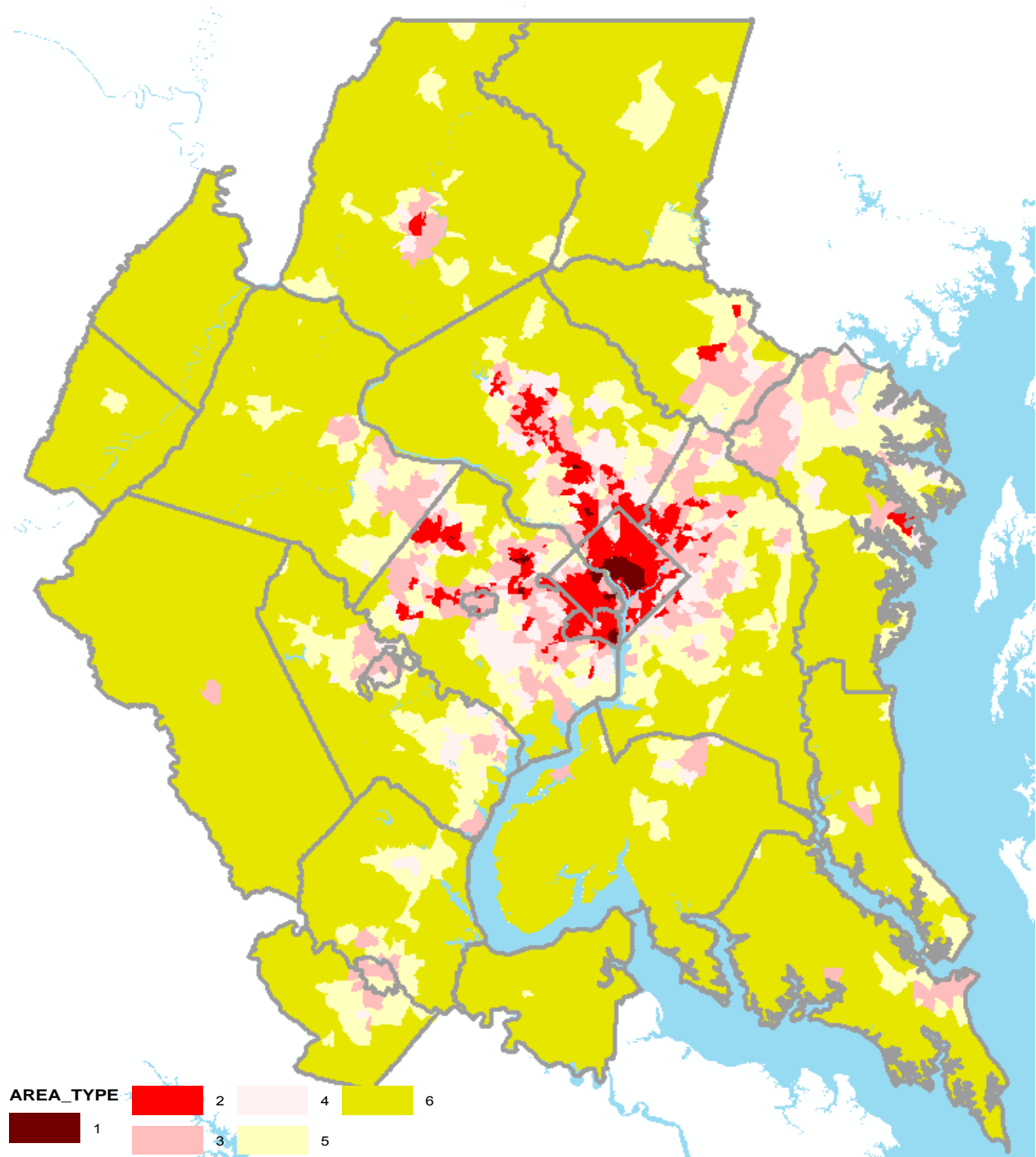


Figure 7 Revised area types used in the Version 2.3 travel model: Modeled area

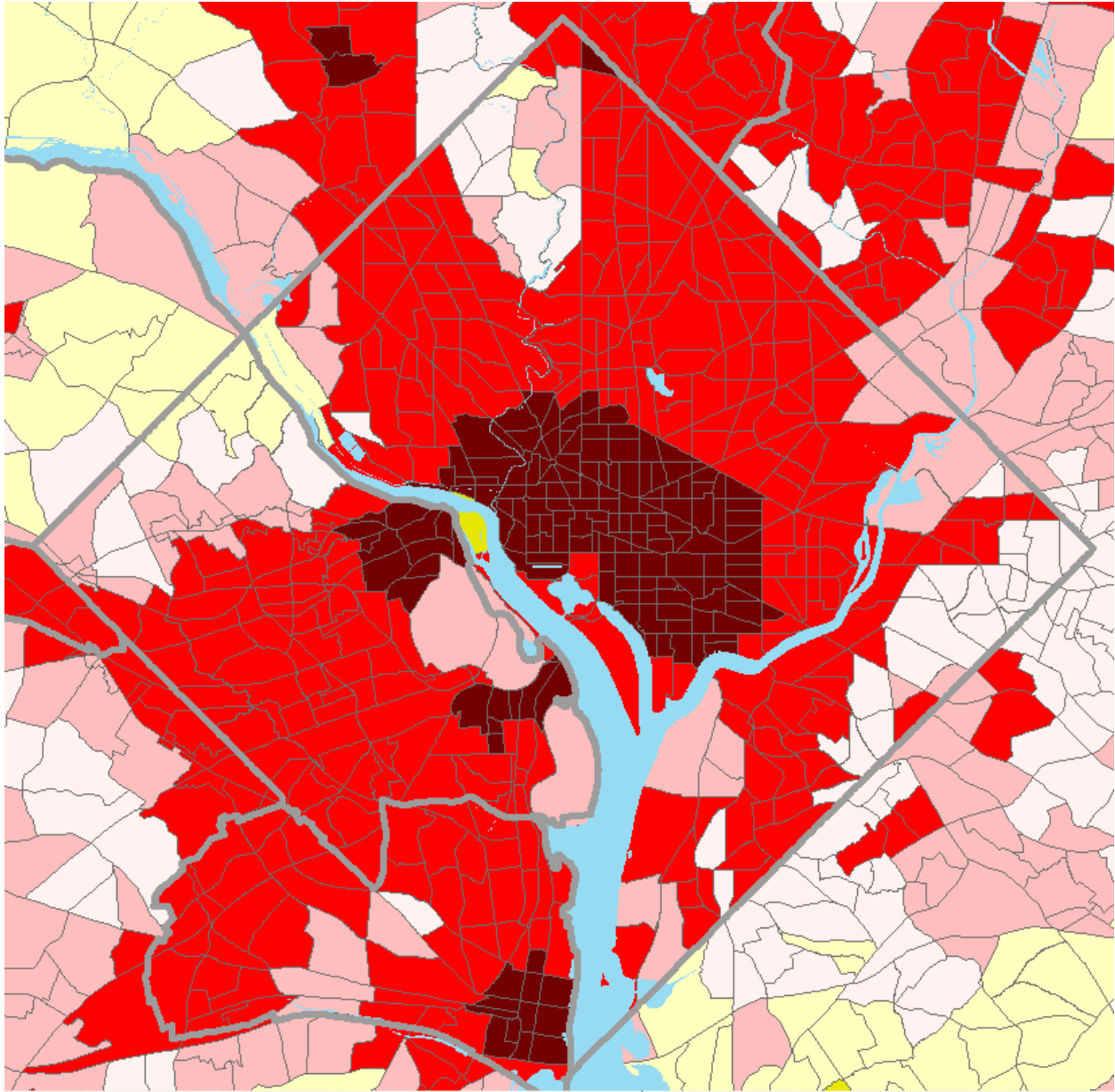


Figure 8 Revised area types used in the Version 2.3 travel model: the 10-mile square

Notice that the TAZs containing both the Pentagon (TAZ 1496) and Arlington Cemetery (TAZ 1487) are shown as area type 3 (“medium employment density”). In reality, the Pentagon should probably be area type 1 (“high mixed employment and population density”) or 2 (“medium/high mixed density”). Similarly, Arlington Cemetery should probably be area type 6 (“rural”). This apparent mischaracterization of area types for these two zones is likely due to the fact that floating density is used in the calculations. In the Version 2.3.30 model, we added the *capability* to have area type overrides. In the year-2007 model runs done for the 2.3.31 and 2.3.32 models, we changed the area type of the Pentagon from 3 to 1 and changed the area type of Arlington Cemetery from 3 to 6. Unfortunately, this change was mistakenly left out of the year-2007 model runs done for the 2.3.33-

2.3.36 models. In the future, as we update the travel model, we plan to re-introduce these two area-type override values (and possibly some others, as appropriate).

While calibrating the trip generation model, a series of area-type adjustments were added to the model, as seen in Table 26.³⁵

³⁵ Ronald Milone to Files, "Performance of trip generation models," Memorandum, November 18, 2010.

The following names are associated with the six area types:

Table 25 Description of each area type and examples of each area type

Area Type	Name	Examples
1	High mixed employment and population density	<ol style="list-style-type: none"> 1. Downtown DC, between Georgetown, Florida Ave., and 11th St. NE & SE 2. Old Town Alexandria 3. The Rosslyn/Court House area of Arlington Co. 4. Pentagon City area of Arlington Co. 5. Downtown Bethesda, Maryland 6. Center of Tysons Corner, Virginia
2	Medium/high mixed density	<ol style="list-style-type: none"> 1. A majority of DC outside the downtown core 2. A majority of Arlington Co., south of Lee Highway 3. A majority of Alexandria 4. Areas of Tysons Corner just beyond the center 5. Annapolis, Maryland 6. Downtown Frederick, Maryland 7. Parts of Reston and Herndon, Virginia, along the Dulles Access/Toll Road
3	Medium employment density	<ol style="list-style-type: none"> 1. Parts of upper NW DC near Rock Creek Park 2. Parts of Arlington along Lee Highway 3. National Airport 4. The Pentagon 5. Arlington Cemetery 6. BWI Airport 7. Potomac Mills mall in Woodbridge, Virginia
4	Medium population density	<ol style="list-style-type: none"> 1. Parts of upper NW DC near Rock Creek Park 2. Parts of north Arlington 3. SE DC near the Capitol Heights Metrorail station 4. Chevy Chase, Maryland, near the DC border
5	Low density	<ol style="list-style-type: none"> 1. Area along McArthur Boulevard in DC 2. Upper north Arlington Co. 3. Fort Hunt section of Fairfax Co. 4. Dulles Airport 5. Andrews Air Force Base
6	Rural	<ol style="list-style-type: none"> 1. Great Falls, Virginia 2. Much of Loudoun Co., Virginia 3. Most of Fauquier Co., Virginia 4. Much of Charles, St. Mary's, and Calvert Counties, Maryland 5. Most of Frederick and Carroll Co., Maryland

Table 26 Area-type adjustments developed in trip generation calibration

Motorized Production Adjustments

AreaType->	1	2	3	4	5	6
HBW	1.1358	1.1180	1.0554	0.9175	0.9577	0.9307
HBS	0.8092	0.9504	1.0793	0.9059	1.0751	0.8620
HBO	1.1067	1.1181	1.0303	0.9647	1.0109	0.8324
NHB	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
NHO	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Motorized Attraction Adjustments

AreaType->	1	2	3	4	5	6
HBW	1.0765	0.8478	0.9612	1.1045	0.9871	1.0383
HBS	0.7952	1.0967	1.1577	0.8770	0.9437	0.5187
HBO	1.1542	1.1304	0.9307	1.0635	1.0480	0.8032
NHB	1.1457	0.8686	0.9843	1.5731	1.1860	1.0919
NHO	0.7953	1.0652	1.0724	0.9180	1.0899	0.7224

Nonmotorized Production Adjustments

AreaType->	1	2	3	4	5	6
HBW	1.4424	1.1007	1.0554	0.9175	0.9577	0.9307
HBS	1.2222	1.2677	1.0793	0.9059	1.0751	0.8619
HBO	0.9363	1.3047	1.0303	0.9647	1.0109	0.8325
NHB	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
NHO	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Nonmotorized Attraction Adjustments

AreaType->	1	2	3	4	5	6
HBW	1.2809	1.0087	1.1436	1.3141	1.1746	1.2354
HBS	1.0758	1.2904	1.3709	1.0385	1.1175	0.6141
HBO	0.6886	1.2374	1.0476	1.1970	1.1796	0.9041
NHB	1.0477	1.0620	0.8302	1.3269	1.0004	0.9211
NHO	1.2008	1.0651	0.8146	0.6974	0.8280	0.5488

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In model application, these are supplemented with a series of jurisdiction-level production and attraction modification factors (p-mods and a-mods).

4.5 Non-Motorized Production Trip Model

The trip rates developed in trip generation reflect both motorized and non-motorized travel. The inclusion of non-motorized trips was intended to allow the modeler the ability to relate land use policy (e.g. land use mix, density, etc.) to the level of walking and bicycling, and its explicit effect on the reduction of motorized travel. However, the decision was also made early on that non-motorized trips should not be carried forth into trip distribution and mode choice steps given that the non-motorized

trips are extremely dissimilar in spatial scale compared to that of motorized travel (non-motorized trips predominantly occur within zones, or between adjacent zones). In Version 2.2 travel model, non-motorized trips were estimated using a fixed percentage developed based on area type and were only modeled for home-based work trips.³⁶

In Version 2.3 of the model, non-motorized trip are estimated for all purposes. In addition, walking environment factors, sometimes referred to as pedestrian environment factors or PEFs, are considered in modeling these trips. Walking environment can be captured using parameters that can be estimated based on a GIS street layer and include block density, ratio of 4-way intersections to cul-de-sacs, and major/minor street density. All these parameters were considered in the non-motorized model, however, only block density proved to be a significant predictor of non-motorized trip percentage.

The percentage of non-motorized trips was modeled using linear regression for high density areas (area types 1 and 2). For other area types, too few non-motorized trips were observed to produce any meaningful model results and thus fixed percentages of non-motorized trips were assumed for each area type as shown in Table 27.³⁷ For area types 1 and 2, HBW and HBS/HBO models were estimated as shown in Table 28 and Table 29. Note that the no non-motorized trip models are developed at the production end for non-home-based trips.

Table 27 Production End Non-Motorized Trip Percentages for Area Types 3-6

Area Type	HBW	HBS	HBO	NHW	NHO	Total
3	2.45%	2.79%	8.19%	4.69%	4.20%	5.00%
4	1.15%	2.32%	7.36%	2.04%	3.99%	4.52%
5	0.42%	1.06%	5.10%	2.41%	3.10%	3.00%
6	0.81%	0.17%	3.58%	3.07%	1.77%	2.08%

³⁶ Ronald Milone et al., *TPB Travel Forecasting Model, Version 2.2: Specification, Validation, and User's Guide*, 4–8.

³⁷ Mary Martchouk to Mark Moran, "Validation of Non-Motorized Trip Model," Memorandum, October 27, 2010; Mary Martchouk to Mark Moran, "Development of the Non-motorized Trip End Model," Memorandum, October 7, 2010.

Table 28 HBW Non-Motorized Production-End Trip Model

Variable	Definition	Coefficient	Std. Error	T- stat.	P-value	Avg. Value
Constant		-0.00388	0.009633	-0.402	0.6875	
POPDEN10	One-mile floating population density (persons/sq. mile)	2.20E-06	1.12E-06	1.963	0.0496	8943
EMPDEN10	One-mile floating employment density (employees/sq. mile)	3.54E-06	1.85E-07	19.148	0	16520
BLKDEN05	Street block density (blocks/sq. mile)	0.000474	0.000124	3.82	0.0001	71.99
Adjusted R ²		0.44				
Number of Observations		758				

Table 29 Home-Based Shop (HBS) and Home-Based Other (HBO) Non-Motorized Production Trip Model

Variable	Definition	Coefficient	Std. Error	T- stat.	P-value	Avg. Value
Constant		-0.00870	0.01148	-0.758	0.4485	
POPDEN10	One-mile floating population density (persons/sq. mile)	1.110E-05	1.37E-05	8.141	0	8812
EMPDEN10	One-mile floating employment density (employees/sq. mile)	2.582E-06	2.30E-06	11.243	0	16150
BLKDEN05	Street block density (blocks/sq. mile)	0.00083426	0.00013	5.527	0	70.53
Adjusted R ²		0.40				
Number of Observations		786				

4.6 Trip Attraction Model

The trip attraction models are linear regression equations that use land use data, including employment and population, to predict the number of attractions in a TAZ. The equations were developed using district-level data from the 2007/2008 Household Travel Survey. Trip attractions are estimated by trip

purpose and two area type groupings (area types 1-2 and area types 3+).³⁸ The resulting trip attractions models are shown below.

$$\text{HBW_Attr}_{1-2} = 1.118 * \text{TOTEMP}$$

$$\text{HBW_Attr}_{3+} = 0.8546 * \text{TOTEMP}$$

$$\text{HBS_Attr}_{1-2} = 1.995 * \text{RETEMP} + 0.301 * \text{TOTPOP}$$

$$\text{HBS_Attr}_{3+} = 3.102 * \text{RETEMP} + 0.221 * \text{TOTPOP}$$

$$\text{HBO_Attr}_{1-2} = 0.425 * \text{NONRETEMP} + 1.012 * \text{TOTPOP}$$

$$\text{HBO_Attr}_{3+} = 1.084 * \text{NONRETEMP} + 0.588 * \text{RETEMP} + 0.777 * \text{TOTPOP}$$

$$\text{NHW_Attr}_{1-2} = 0.944 * \text{RETEMP} + 0.557 * \text{OFFEMP} + 0.656 * \text{OTHEREMP}$$

$$\text{NHW_Attr}_{3+} = 0.807 * \text{RETEMP} + 0.522 * \text{OFFEMP} + 0.507 * \text{OTHEREMP}$$

$$\text{NHO_Attr}_{1-2} = 0.097 * \text{NONRETEMP} + 1.498 * \text{RETEMP} + 0.300 * \text{TOTPOP}$$

$$\text{NHO_Attr}_{3+} = 0.178 * \text{NONRETEMP} + 2.784 * \text{RETEMP} + 0.184 * \text{TOTPOP}$$

4.7 Non-motorized Attraction Trip Model

The non-motorized trip model on the attraction trip end is estimated similarly to the non-motorized trip model on the production trip end. For area types 3-6, a fixed percentage of non-motorized trips is assumed for each area type as shown in Table 30. For area types 1 and 2, the non-motorized trips are predicted as a function of the land use and walkability factors. The models are split by trip purpose into HBW, HBS/HBO/NHO, and NHW. However, since there are too few HBW non-motorized trip attractions, a fixed percentage of 4.87% is assumed. The HBS/HBO/NHO and NHW models are shown in Table 31 and Table 32.

³⁸ Mary Martchouk to Mark Moran, "Development of Trip Attraction Models," Memorandum, September 14, 2010.

Table 30 Attraction End Non-Motorized Trip Percentages for Area Types 3-6

Area Type	HBW	HBS	HBO	NHW	NHO	Total
3	1.71%	1.48%	6.19%	4.59%	4.26%	3.87%
4	2.33%	4.14%	9.28%	1.95%	3.87%	6.42%
5	0.77%	1.45%	5.67%	2.16%	3.19%	3.67%
6	1.41%	0.74%	5.28%	3.46%	1.23%	3.42%

Table 31 HBS/HBO/NHO Non-Motorized Attraction Trip Model

Variable	Definition	Coefficient	Std. Error	T- stat.	P-value	Avg. Value
Constant		-0.0157	0.00953	-1.647	0.0995	
POPDEN10	One-mile floating population density (persons/sq. mile)	1.08E-05	1.18E-04	9.203	0	8612
BLKDEN05	Street block density (blocks/sq. mile)	0.001294	0.000125	10.35	0	68.87
Adjusted R ²		0.37				
Number of Observations		822				

Table 32 NHW Non-Motorized Attraction Trip Model

Variable	Definition	Coefficient	Std. Error	T- stat.	P-value	Avg. Value
Constant		-0.00383	0.012245	-0.312	0.7547	
POPDEN10	One-mile floating population density (persons/sq. mile)	5.41E-06	1.48E-04	3.665	0.0002	8769
EMPDEN10	One-mile floating employment density (employees/sq. mile)	5.34E-06	2.30E-05	23.196	0	18003
BLKDEN05	Street block density (blocks/sq. mile)	0.001217	0.000165	7.382	0	70.43
Adjusted R ²		0.57				
Number of Observations		756				

4.8 Home-based Trip Attraction Income Disaggregation Model

The Version 2.3 trip distribution and mode choice models are applied by income level for the home-based trip purposes. Trip production stratification by income is straightforward since trip productions

are developed by income, along with size and vehicle availability levels. However, the trip attraction model calculates total trip attractions for each TAZ, and so, a technique is necessary for apportioning the total attractions among the four income levels, for each home-based purpose.

The approach for apportioning trip attractions by income level is one that assumes that the zonal income distribution is not substantially different from the regional income distribution. The approach does, however, allow for the income variation by area type which is an important consideration. Ideally, it would be desirable to know the type of employment in each TAZ as a basis for the distributing HBW attractions by income, or the type of retail employment as a basis for distributing HBS attractions by income. Unfortunately, this type of information is not currently available as an input to the travel model and cannot be considered.

The income distribution of HBW, HBS, and HBO trip attractions by area type is shown on Table 33, Table 34, and Table 35, respectively. These tables were summarized from the 2007/08 HTS. Table 33 indicates that 12.95% of regional attractions are composed of income level 1 attractions. Table 33 also indicates that the regional proportion varies somewhat by area type. For example, the proportion of income level 1 attractions in area type 1 (high density urban) is about 9.6% of all attractions in area type 1, and this differential is reflected in the ratios shown at the bottom of Table 33 (the ratio of 9.4% to 12.95% is 0.74). This information will be used to perform the apportioning of total motorized attractions by income level. In application, the technique is will be performed for each purpose as follows:

1. Total motorized attractions will be computed for a TAZ.
2. The TAZ level trip attractions will be calculated by income level, by purpose, using the following equation:

Equation 3 Trip Attraction by Income Level

$$\text{Attractions(L)} = \text{Total Attractions} * \text{Regional Pct(L)} * \text{Ratio (L,AT)}$$

where:

Attractions(L)	= income level L trip attractions
Total Attractions	= Total trip attractions
Regional Pct(L)	= Regional percent of trip attractions of income L
Ratio (L,T)	= Ratio of area type T pct. of income L attractions to the regional pct.

3. The income-based attractions computed in step 2 will be normalized to the step 1 total.

The regional income percentage and the area type-based ratios for each HB purpose are read into the trip generation program as a parameter table (or a “lookup table”). After all TAZs have been processed, the zonal trip attractions in each income group are scaled to match the computed trip production totals. This method assures that the income distribution of attractions within area types will agree with that of the 2007/08 HTS. It is assumed that this distribution will remain stable over time.

Table 33 HBW Motorized Trip Attractions by Area Type and Income

Area Type	Income1	Income2	Income3	Income4	Total
1	80,191	241,965	287,102	222,871	832,129
2	101,088	288,627	309,459	204,419	903,593
3	147,866	350,939	345,579	195,381	1,039,764
4	30,640	67,420	44,367	28,069	170,496
5	61,816	139,199	133,200	49,754	383,969
6	34,570	73,482	63,813	19,652	191,517
Total	456,170	1,161,633	1,183,521	720,146	3,521,469
Income Distribution of HBW Trip Attractions by Area Type					
Area Type	Income1	Income2	Income3	Income4	Total
1	9.64%	29.08%	34.50%	26.78%	100.00%
2	11.19%	31.94%	34.25%	22.62%	100.00%
3	14.22%	33.75%	33.24%	18.79%	100.00%
4	17.97%	39.54%	26.02%	16.46%	100.00%
5	16.10%	36.25%	34.69%	12.96%	100.00%
6	18.05%	38.37%	33.32%	10.26%	100.00%
Total	12.95%	32.99%	33.61%	20.45%	100.00%
Ratio of Area Type Income Distribution to the Regional Distribution					
Area Type	Income1	Income2	Income3	Income4	
1	0.7439	0.8815	1.0266	1.3097	
2	0.8636	0.9683	1.0190	1.1062	
3	1.0978	1.0232	0.9889	0.9189	
4	1.3873	1.1988	0.7743	0.8050	
5	1.2428	1.0990	1.0322	0.6336	
6	1.3935	1.1631	0.9914	0.5018	

Source: 2007/2008 HTS

Table 34 HBS Motorized Trip Attractions by Area Type and Income

Area Type	Income1	Income2	Income3	Income4	Total
1	20,757	42,349	37,159	27,709	127,974
2	95,882	191,413	204,988	128,509	620,791
3	165,345	381,588	368,510	159,232	1,074,675
4	56,739	117,664	112,012	58,191	344,607
5	72,449	211,873	201,293	60,035	545,650
6	30,362	54,583	60,979	22,475	168,398
Total	441,533	999,471	984,940	456,151	2,882,095
Income Distribution of HBS Trip Attractions by Area Type					
Area Type	Income1	Income2	Income3	Income4	Total
1	16.22%	33.09%	29.04%	21.65%	100.00%
2	15.45%	30.83%	33.02%	20.70%	100.00%
3	15.39%	35.51%	34.29%	14.82%	100.00%
4	16.46%	34.14%	32.50%	16.89%	100.00%
5	13.28%	38.83%	36.89%	11.00%	100.00%
6	18.03%	32.41%	36.21%	13.35%	100.00%
Total	15.32%	34.68%	34.17%	15.83%	100.00%
Ratio of Area Type Income Distribution to the Regional Distribution					
Area Type	Income1	Income2	Income3	Income4	
1	1.0587	0.9542	0.8499	1.3677	
2	1.0085	0.8890	0.9663	1.3076	
3	1.0046	1.0239	1.0035	0.9362	
4	1.0744	0.9844	0.9511	1.0670	
5	0.8668	1.1197	1.0796	0.6949	
6	1.1769	0.9345	1.0597	0.8433	

Source: 2007/2008 HTS

Table 35 HBO Motorized Trip Attractions by Area Type and Income

Area Type	Income1	Income2	Income3	Income4	Total
1	62,588	104,036	102,072	91,767	360,463
2	232,338	416,417	418,281	285,700	1,352,736
3	207,625	572,863	552,918	310,960	1,644,367
4	136,070	326,709	315,535	187,180	965,495
5	151,018	504,410	521,081	241,014	1,417,524
6	60,220	235,598	277,858	106,643	680,319
Total	849,860	2,160,033	2,187,745	1,223,265	6,420,904
Income Distribution of HBO Trip Attractions by Area Type					
Area Type	Income1	Income2	Income3	Income4	Total
1	17.36%	28.86%	28.32%	25.46%	100.00%
2	17.18%	30.78%	30.92%	21.12%	100.00%
3	12.63%	34.84%	33.62%	18.91%	100.00%
4	14.09%	33.84%	32.68%	19.39%	100.00%
5	10.65%	35.58%	36.76%	17.00%	100.00%
6	8.85%	34.63%	40.84%	15.68%	100.00%
Total	13.24%	33.64%	34.07%	19.05%	100.00%
Ratio of Area Type Income Distribution to the Regional Distribution					
Area Type	Income1	Income2	Income3	Income4	
1	1.3112	0.8579	0.8312	1.3365	
2	1.2976	0.9150	0.9075	1.1087	
3	0.9539	1.0357	0.9868	0.9927	
4	1.0642	1.0059	0.9592	1.0178	
5	0.8044	1.0577	1.0790	0.8924	
6	0.6684	1.0294	1.1987	0.8231	

Source: 2007/08 HTS

4.9 Truck Model

The origin/destination truck trip generation rates are based on area type and land activity variables as shown in Table 36. The truck trip generation model also includes provisions to remove external trucks generated because external truck travel is accounted for exogenously. The truck trip generation process also includes network checks provisions to ascertain whether or not truck access from each TAZ to the highway network is valid. There are some zonal centroids in the regional network that have a single connection to a parkway where trucks are prohibited. In these types of cases, truck trip generation is suppressed. Finally, the truck model also considers a limited number of special generator TAZs, or locations where truck traffic generation is known to be more intensive. Global trip generation adjustments are applied to the special generator TAZs. The medium truck generation is factored by 2.70 while heavy trucks are factored by 5.3.

Table 36 Truck trip generation rates as a function of truck type, area type, and land use category³⁹

Vehicle Type	Area Type	Land Use Category				
		Office	Retail	Industrial	Other	HH
Medium Truck (Single Unit 6+ Tires)	1 (CBD)	0.004	0.088	0.088	0.014	0.070
	2 - 4	0.005	0.125	0.125	0.020	0.100
	5	0.006	0.150	0.150	0.024	0.120
	6	0.006	0.150	0.150	0.024	0.120
Heavy Truck (All Combination Vehicles)	1 (CBD)	0.001	0.027	0.055	0.002	0.011
	2 - 4	0.002	0.039	0.078	0.003	0.015
	5	0.002	0.043	0.086	0.003	0.017
	6	0.002	0.043	0.086	0.003	0.017

Ref: I:\ateam\docum\FY09\Version2.3_modelDoc_2008-07\tgcheck.xls

4.10 Commercial Vehicle Model

The trip generation of zonal commercial vehicle trips is developed with the equation shown below:⁴⁰

Equation 4 Trip generation of commercial vehicle trips

COM productions =

$$(0.056 \cdot \text{indemp} + 0.168 \cdot \text{offemp} + 0.494 \cdot \text{retemp} + 0.082 \cdot \text{othemp} + 0.130 \cdot \text{HH}) \cdot \text{ATFAC}$$

(attractions = productions, by zone)

where:

indemp = industrial employment

offemp = office employment

retemp = retail employment

othemp = other employment

HH = households

ATFAC = area type adjustment factor:

Area type	Factor
1	1.05
2	0.90
6	1.20

Note: no factor is applied to area types 3-5.

³⁹ Allen, *Development of a Model for Truck Trips*.

⁴⁰ Allen, *Development of a Model for Commercial Vehicle Trips*, 46.

Chapter 5 Trip Distribution

The Version 2.3 trip distribution model involves a standard gravity model approach and the use of a composite (highway and transit) travel time impedance measure. The model also employs income stratification as well as special external (i.e., external-to-internal, X/I, and internal-to-external, I/X) auto and truck distribution models. The Version 2.3 trip distribution process is identical to that of Version 2.2, except that, first, the truck F-Factors have been revised,⁴¹ and, second, the output formats of trip table have been changed from an integer format to a real number format (two-decimals).

5.1 Model Structure

The Version 2.3 trip distribution model is used to develop zonal trip tables corresponding to the eight basic trip purposes:

- HBW, HBS, HBO, NHW, and NHO motorized person trips,
- Commercial vehicle trips, and
- Medium and heavy truck trips.

The Version 2.3 trip distribution process consists of several different distribution models that are developed for special travel markets within the eight basic purposes. As can be seen in Table 37, there are 17 markets for internal (I-I) trips and 13 markets for external (I-X, X-I) trips, which leads to 30 trip distribution markets.

Table 37 Trip distribution markets

Purpose/Mode	Internal (I-I) trips	External (I-X, X-I) trips
HBW person	4 income strata	2 facility types: interstate and arterial
HBS person	4 income strata	2 facility types: interstate and arterial
HBO person	4 income strata	2 facility types: interstate and arterial
NHW person	1 (non-stratified)	2 facility types: interstate and arterial
NHO person	1 (non-stratified)	2 facility types: interstate and arterial
Commercial vehicles	1 (non-stratified)	1 (non-stratified)
Medium truck	1 (non-stratified)	1 (non-stratified)
Heavy truck	1 (non-stratified)	1 (non-stratified)
Total internal/ext. markets	17	13
Total markets modeled	30	

For the current calibration effort, 14 of the 30 trip distribution markets have been re-calibrated using the observed motorized trips from the 2007/2008 Household Travel Survey data and year 2007 highway

⁴¹ Allen, *Development of a Model for Truck Trips*.

and transit networks (See Table 38).⁴² These 14 markets account for the vast majority of motorized travel in the region. The external distribution models were not re-estimated as no external survey data has been recently collected for these markets. Similarly, the internal trip distribution markets for commercial vehicles and trucks were not re-estimated. Consequently, the “legacy” friction factor (F-factor) curves used in the Version 2.2 model will be maintained for the other 16 markets. The commercial vehicle and truck models calibrated in 2008 on the 2,191-TAZ area system were preserved and adapted to operate on the 3,722-TAZ area system.⁴³

Table 38 Trip distribution markets that were re-calibrated

Purpose/Mode	Internal Person Models
HBW person	4 Income Strata
HBS person	4 Income Strata
HBO person	4 Income Strata
NHW person	1 (non-stratified)
NHO person	1 (non-stratified)
Total Markets	14

5.2 Internal Motorized Person Models

The Version 2.3 trip distribution model includes income stratification for the home-based trip purposes. The model also makes use of a composite time formulation involving both highway and transit travel times. The composite time formulation is desirable since many corridors in the Washington region are well served by transit and the consideration of highway time only (as has been used in some previous model versions) has the potential to understate accessibility. The definition of the composite time is:

⁴² Ron Milone to Files, “Version 2.3 Trip Distribution Calibration,” Memorandum, January 2, 2011.

⁴³ Ronald Milone to Hamid Humeida and Mark Moran, “Conversion Truck Modeling Inputs for the 3722 System,” Memorandum, March 26, 2010; Hamid Humeida to Files, “Development of an equivalency file to convert truck modeling inputs from the 2191 TAZ system to the new 3722 TAZ system,” Memorandum, April 16, 2010.

Equation 5 Composite time

$$CT_i = \frac{1}{\frac{1}{HT + TollT_i} + \frac{P_i}{TT}}$$

where

CT_i = Composite time for income level i

HT = Congested highway time (minutes), including terminal time

$TollT_i$ = Time equivalent (minutes) of tolls associated with the minimum-time path for income i

P_i = Regional transit share of income i for the trip purpose

TT = Metrorail-related transit time (min.), including in-vehicle and out-of-veh. time components

The highway and transit times used in the formulation vary by purpose. AM peak highway/transit times are used for the HBW purpose and midday highway/transit times are used for the remaining HBS, HBO, NHW and NHO purposes. The highway time (HT) includes both over-the-network times as well as terminal times, e.g., parking and retrieving a vehicle, which vary from 1 to 5 minutes depending on the area type of the origin/destination. Since the trip distribution model not only distributes trips between zones, but also determines the number of trips that stay within each zone, the average travel time for intra-zonal trips must be estimated. The intra-zonal highway times have been set to 85% of the minimum inter-zonal time. The previous assumption (50% of the minimum intra-zonal time) was found to yield an overestimation in intra-zonal travel and so the percentage was increased to better approximate the observed intra-zonal proportions. The regional share of transit trips made by each income group (P_i) is shown in Table 39 as percents. The table indicates that work transit shares vary by income, from 0.1483 to 0.1851. The transit percentages for the remaining purposes vary by income group from 0.0104 to 0.1239. Since these values are relatively small, the effect of highway times will be generally more pronounced on the overall composite time function compared to the effect of transit times for most interchanges.

Table 39 Internal Motorized Trips and Transit Percentages by Purpose and Mode

Purpose	Mode	Income Level				Total
		<50k	50k - 100k	100k - 150k	>150k	
HBW	Transit	84,443	181,611	199,065	106,767	571,886
	Auto Person & Transit	456,170	1,161,633	1,183,520	720,145	3,521,468
	<i>Transit Percentage</i>	<i>18.51%</i>	<i>15.63%</i>	<i>16.82%</i>	<i>14.83%</i>	<i>16.24%</i>
HBS	Transit	35,553	18,377	11,572	4,748	70,250
	Auto Person & Transit	441,532	999,471	984,941	456,151	2,882,095
	<i>Transit Percentage</i>	<i>8.05%</i>	<i>1.84%</i>	<i>1.17%</i>	<i>1.04%</i>	<i>2.44%</i>
HBO	Transit	105,308	49,816	41,030	19,324	215,478
	Auto Person & Transit	849,860	2,160,034	2,187,745	1,223,266	6,420,905
	<i>Transit Percentage</i>	<i>12.39%</i>	<i>2.31%</i>	<i>1.88%</i>	<i>1.58%</i>	<i>3.36%</i>
NHW	Transit	20,858	38,214	51,402	29,110	139,584
	Auto Person & Transit	183,863	549,589	557,211	320,450	1,611,113
	<i>Transit Percentage</i>	<i>11.34%</i>	<i>6.95%</i>	<i>9.22%</i>	<i>9.08%</i>	<i>8.66%</i>
NHO	Transit	35,845	10,999	12,305	6,216	65,365
	Auto Person & Transit	478,859	1,050,166	950,672	437,335	2,917,032
	<i>Transit Percentage</i>	<i>7.49%</i>	<i>1.05%</i>	<i>1.29%</i>	<i>1.42%</i>	<i>2.24%</i>
All	Transit	282,007	299,017	315,374	166,165	1,062,563
	Auto Person & Transit	2,410,284	5,920,893	5,864,089	3,157,347	17,352,613
	<i>Transit Percentage</i>	<i>11.70%</i>	<i>5.05%</i>	<i>5.38%</i>	<i>5.26%</i>	<i>6.12%</i>

Source: 2007/08 HTS, Ref: 2007_HTS_Trips_by_Mode&Income.xlsx

Some points can be made regarding the composite time function. First, for interchanges that are not served by transit, the composite time function reflects highway time. Second, the presence of transit service will generally contribute a small benefit to the travel time, since the regional transit shares are relatively small. Nonetheless, the composite time function will still reflect some travel time benefit with the presence of competitive transit service. This benefit would not be captured with an impedance measure based on highway time alone.

The highway time in the composite time function consists of both over-the-network time combined with terminal times (both production and attraction-end times). The highway time also includes toll values accumulated along the path that have been transformed into equivalent minutes.

The time-cost equivalents are provided by income level and purpose, and are shown on Table 40. These equivalents were developed using 2007 ACS income data and are described in greater detail in Chapter 2 (“Set-Up Programs and Highway Network Building”) of the Version 2.3 model user’s guide.

The basis of the TollT_i term calculation is specified in Table 40. The table indicates the average time valuation (minutes per 2007 dollar) assigned to a toll value by income level and trip type (in 2007

dollars). The table indicates, for example, that a \$1.00 toll equates to 8.7 minutes of travel time for a traveler in income level 1. More generally, the table indicates that travelers commuting to work are less sensitive to tolls than non-work-bound travelers because the time valuation of commuters is relatively high. The table also reflects the intuitive generalization that lower income travelers are more sensitive to tolls than the higher income travelers. Table 41 indicates assumed average time valuations by time period and mode. The values shown on Table 41 are not used in the distribution step, but will be used in the traffic assignment process, where income is not considered but highway mode is considered.

Table 40 Time Valuation (Minutes/2007\$) by Purpose and Income Level

HH Income Quartile Range (1)	Mid-Point of HH Income Range	Hourly Rate per Worker (2)	2007 Time Valuation (Minutes per Dollar)	
			Work Trips (75% V.O.T.)	Non-work (50% V.O.T.)
\$ 0 - \$ 50,000	\$25,000	\$9.23	8.7	13.0
\$ 50,000 - \$ 100,000	\$75,000	\$27.70	2.9	4.3
\$100,000 - \$150,000	\$125,000	\$46.17	1.7	2.6
\$150,000 +	\$175,000	\$64.64	1.2	1.9

Notes:

- (1) Income groups based on 2007 ACS-based quartiles
- (2) Hourly rate based on 1,920 annual hours/worker * 1.41 workers/HH = 2,707 hrs/HH
- (3) Median 2007 Annual Income for modeled area is \$84,280

Table 41 Time valuation (minutes per year 2007 dollar) by vehicle type and time period, used in traffic assignment

Mode	Equivalent minutes per dollar			
	AM Peak	Midday	PM Peak	Night
SOV	2.5	3.0	3.0	3.0
HOV 2-occupant auto	1.5	4.0	2.0	4.0
HOV 3+occupant auto	1.0	4.0	1.0	4.0
Light duty commercial vehicle	2.0	2.0	2.0	2.0
Truck	2.0	2.0	2.0	2.0
Auto serving airport passenger	2.0	2.0	2.0	2.0

Time_Valuation_V2.3.xls

5.3 External Auto Person , commercial vehicle, and truck models

The external trip distribution models segment markets by purpose and facility. Facilities are distinguished as interstates (or interstate-like facilities) and arterial facilities. The rationale behind this distinction is that arterial facilities tend to serve more localized traffic associated with shorter trip lengths while interstate travel is associated with longer trip lengths. In contrast, the external commercial vehicle and truck models (medium and heavy) are not segmented by facility types.

The highway time is used as the impedance measure in the distribution of external trips. AM peak time is used for the HBW purpose and midday times are used for all remaining purposes. The external calibration does not make use of time penalties added into the impedance files. However, the impedances are altered in that extremely large time values were inserted into internal and through (I-I, X-X) interchanges to preclude those types of interchanges from occurring in the trip distribution process.

5.4 Friction Factor Summary

The process of calibrating F-factors for each purpose and income strata was established after the observed trip files and network files were prepared. Developing F-factors is a trial-and-error process. Test F-factors are used in a gravity model (GM) execution and then subsequently adjusted based on a comparison of observed and estimated trip lengths made for each one-minute increment of travel time. The calculation used to adjust the F-factor is as follows:

Equation 6 Friction factor calibration

$$F_{\text{adjusted}} = F_{\text{used}} * \text{Observed Pct./Estimated Pct.}$$

where

- F_{adjusted} = Adjusted F-factor to be used in a future GM execution
- F_{used} = Tested F-factor used in a previous GM execution
- Observed Pct. = Percentage of observed trips observed
- Estimated Pct. = Percentage of estimated trips resulting from the use of the test F-factors

The resulting adjusted F-curve typically appears as a “saw-tooth” looking function because the observed trip percent is subject to varying degrees of sampling error from one impedance unit to the next. An

irregular function is not desirable for modeling. Consequently, a nonlinear curve fitting is used for “smoothing” the adjusted F-factor curve.

The Gamma function was selected for smoothing the adjusted F-factor function. The form of the function is:

$$F_i = A \times I^B \times e^{-GI}$$

where

F_i = “Smoothed”, adjusted F-factor at impedance unit I

I = travel impedance (usually time in minutes)

A, B, G = Gamma function coefficients to be statistically estimated

e = Euler’s number; base of natural logarithms

The resulting Gamma coefficients are listed on Table 42. Friction factors are also shown graphically in Figure 9, Figure 10, Figure 11, and Figure 12.

Table 42 Estimated Gamma Distribution Values by Purpose and Income Strata

Purpose	Strata	Beta	Gamma
HBW	Income 1	-0.95818	-0.04622
	Income 2	-1.41425	-0.02571
	Income 3	-1.49461	-0.01920
	Income 4	-1.88024	-0.00835
HBS	Income 1	-2.46334	-0.07853
	Income 2	-1.33371	-0.12170
	Income 3	-1.99113	-0.09033
	Income 4	-2.91461	-0.06704
HBO	Income 1	-1.83692	-0.09635
	Income 2	-1.92946	-0.07128
	Income 3	-1.72297	-0.08637
	Income 4	-2.44221	-0.05837
NHW		-2.34915	-0.01478
NHO		-1.77486	-0.07430

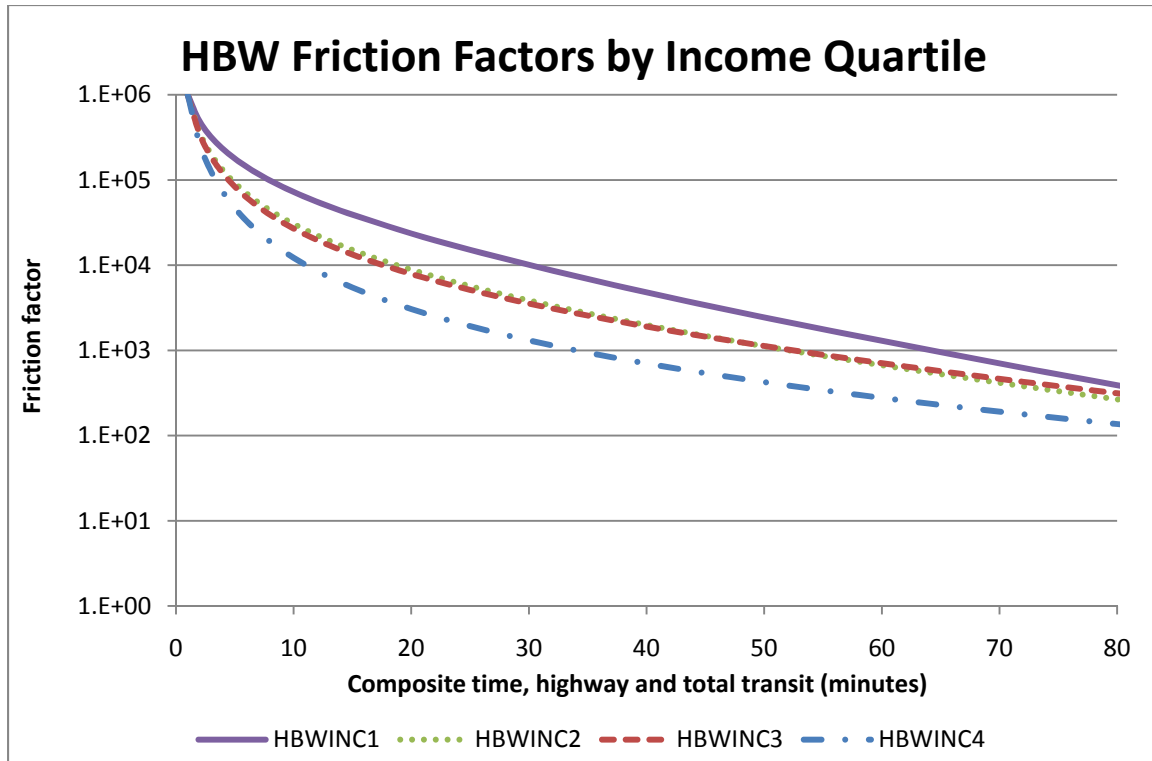


Figure 9 HBW Friction Factors

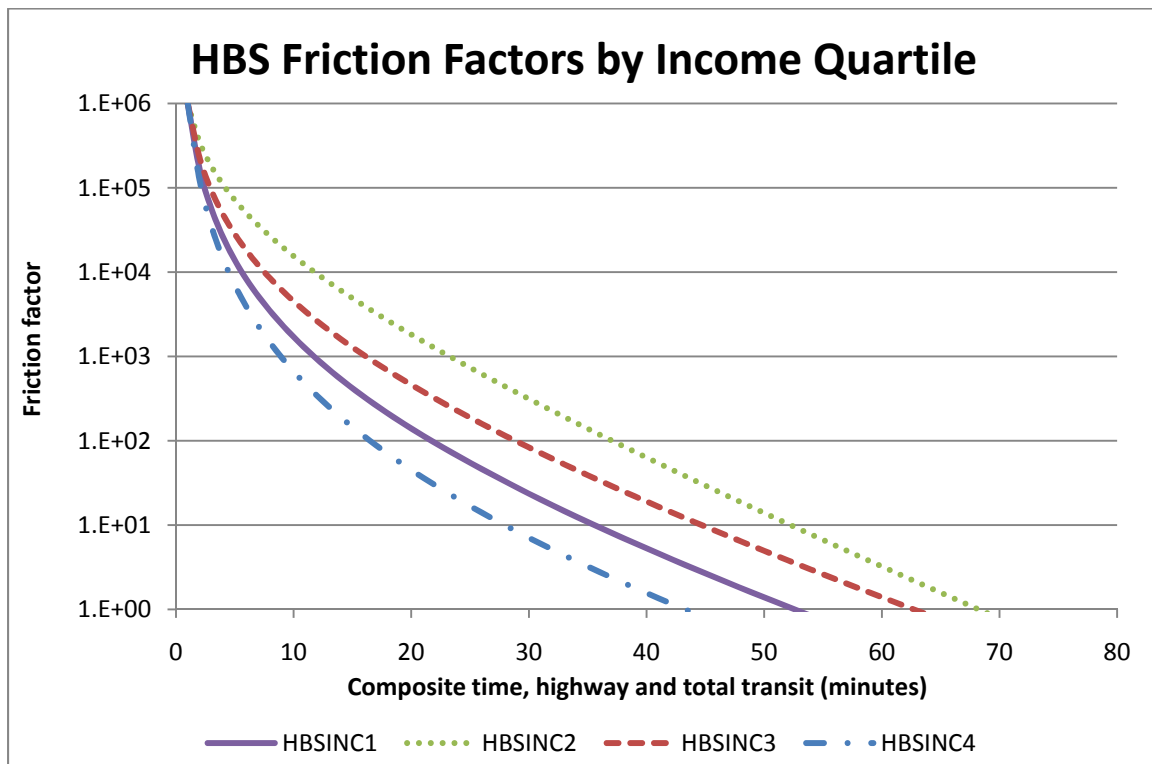


Figure 10 HBS Friction Factors

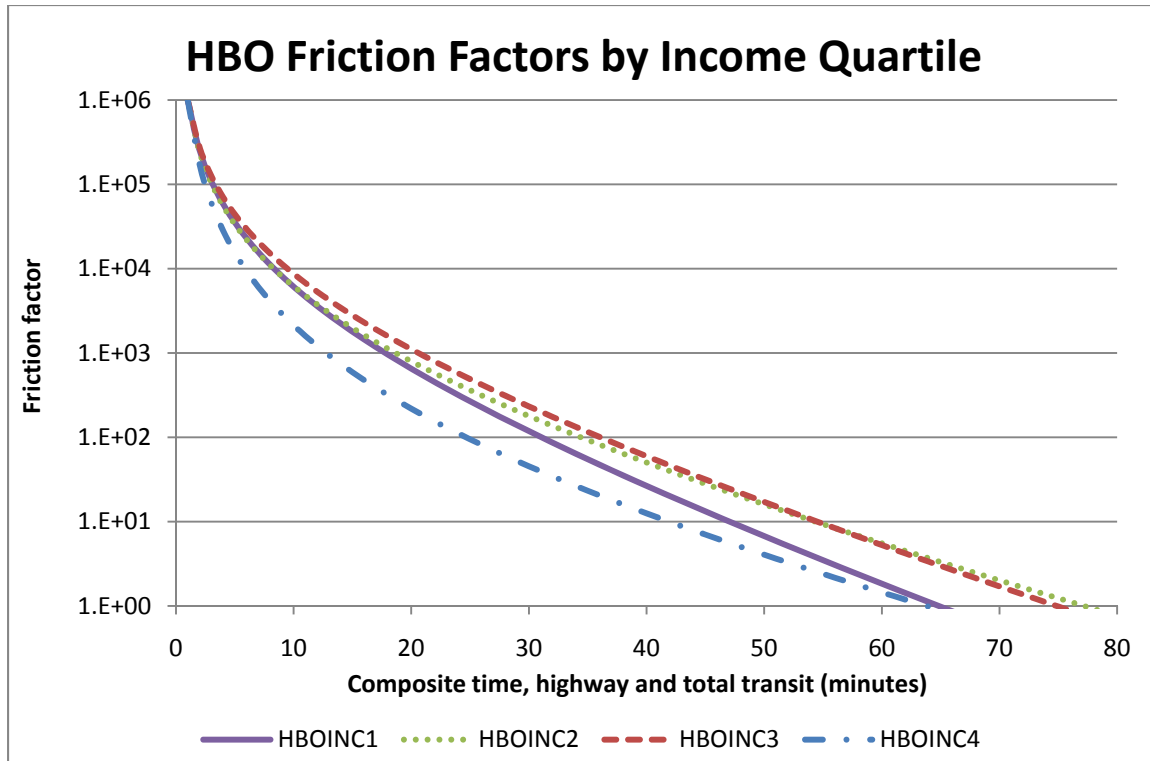


Figure 11 HBO Friction Factors

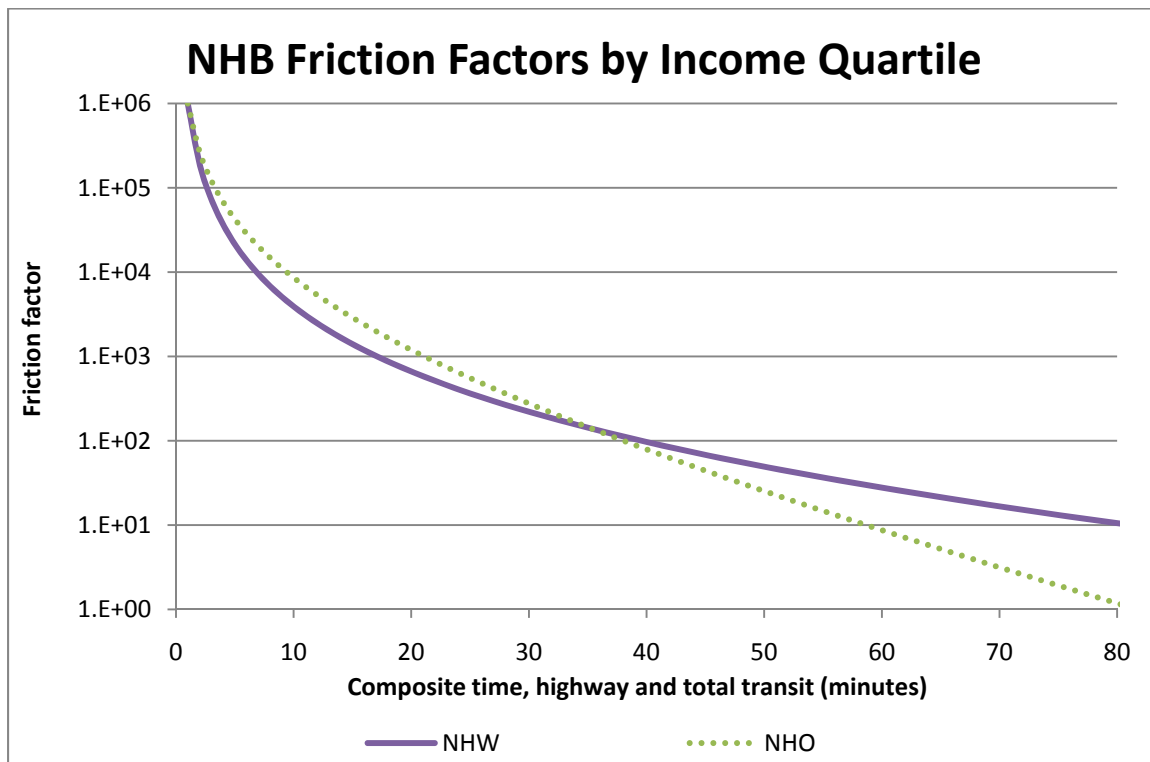


Figure 12 NHB Friction Factors

Table 43 presents a summary of estimated and observed trip lengths and intra-zonal percentages resulting from the calibrated F-factors, which are reasonable.

Table 43 Regional Estimated and Observed Trip lengths and Intra-zonal Percentages

Purpose	Income Level	HTS Trips	Trip Length in Composite mins.			Intrazonal Percentage		
			Est.	Obs.	Est.-Obs.	Est.	Obs.	Est.-Obs.
HBW	1	456,200	33.69	35.58	-1.89	3.12	3.22	-0.10
	2	1,161,600	46.54	47.21	-0.67	3.00	2.92	0.08
	3	1,183,500	52.47	51.33	1.14	2.02	1.97	0.05
	4	720,100	53.57	52.21	1.36	1.41	1.62	-0.21
HBS	1	441,500	16.56	16.81	-0.25	9.13	9.33	-0.20
	2	999,500	16.82	17.17	-0.35	8.98	9.84	-0.86
	3	984,900	17.30	17.70	-0.40	7.88	7.68	0.20
	4	456,200	16.83	17.13	-0.30	6.37	5.19	1.18
HBO	1	849,900	16.73	18.31	-1.58	9.36	7.90	1.46
	2	2,160,000	17.61	17.86	-0.25	11.60	11.06	0.54
	3	2,187,700	17.15	17.77	-0.62	9.92	12.15	-2.23
	4	1,223,300	17.00	17.92	-0.92	9.56	9.12	0.44
NHW	(n/a)	1,611,100	24.63	23.58	1.05	10.63	7.44	3.19
NHO	(n/a)	2,917,000	17.13	17.50	-0.37	17.33	14.61	2.72

The calibration procedure is described in more detail in a recent memorandum,⁴⁴ which includes trip-length frequency distributions comparing estimated and observed trips.

⁴⁴ Ron Milone to Files, "Version 2.3 Trip Distribution Calibration."

Chapter 6 Mode choice

6.1 Overview

A mode choice model is used to apportion motorized person trips by travel mode. The mode choice model in the TPB Version 2.3 Travel Model on the 3,722-TAZ area system is a 15-choice, nested-logit mode choice (NLMC) model. The model includes three auto modes (drive alone, shared ride 2-person, and shared ride 3+person) and four transit modes (commuter rail, all bus, all Metrorail, and combined bus/Metrorail) by three modes of access to transit (park and ride, kiss and ride, and walk), as shown in Figure 13.

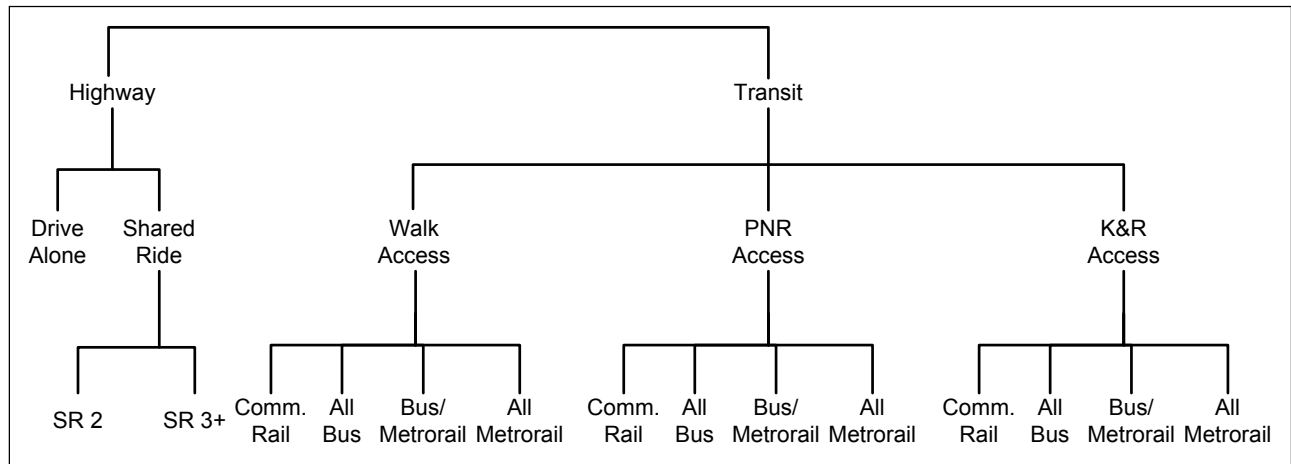


Figure 13 Nesting structure of the nested-logit mode choice model in the Version 2.3 travel model

Ref: "I:\ateam\nest_log\NestedChoice_Struct4.vsd"

The definition of high-occupancy vehicle (HOV) trips has changed, compared to the definition that was used in Version 2.2 and before. Previously, HOV trips coming out of the mode choice model referred to *only those that use HOV facilities for a substantial portion of their trip*. Similarly, in previous models, the definition of low-occupancy vehicle (LOV) included both drive-alone and carpools (provided the carpools did not use a preferential HOV facility). By contrast, in the Version 2.3 NLMC model, the term LOV refers to only the drive-alone trips. Similarly, HOV refers to all shared-ride 2 (2-person carpools) and shared-ride 3 (3+ person carpools), irrespective of whether they use an HOV facility or not. Table 44 shows some of the main differences between the Version 2.2 and Version 2.3 mode choice models, including the aforementioned HOV/LOV difference.

Table 44 Differences between the Version 2.2 and Version 2.3 mode choice models

Item	Ver. 2.2 mode choice model	Ver. 2.3 mode choice model
Structure	Sequential multinomial logit (SMNL)	Nested logit (NL)
Number of choices	5	15
Definition of high-occupancy vehicle (HOV) trips	Only those trips that use HOV facilities for a substantial portion of their trip	All shared-ride 2-person carpools and shared-ride 3+ person carpools, irrespective of whether they use an HOV facility or not
Definition of low-occupancy vehicle (LOV) trips	Both drive-alone and carpool trips (provided the carpools do not use a preferential HOV facility)	Only drive-alone trips (SOVs)
Access modes to transit	Walk & drive	Walk, PNR, KNR
Short/long walk to transit	0.3333 mile; 1.0 mile	0.5 mile; 1.0 mile

In terms of access to transit, park-and-ride (PNR) access means driving to transit and parking a motor vehicle at the PNR lot, for the purpose of boarding a transit vehicle at the transit stop. Similarly, kiss-and-ride (KNR) access, also known as “ride to transit,” means accessing transit by driving in cases where one either 1) is dropped-off/picked-up or 2) rides with a PNR driver. Motorized person trips are those that occur in motorized vehicles, such as cars, trains, buses, and subways. Motorized trips exclude walk and bike trips. However, as noted above, walking is represented in the model as one of the three access modes to transit. The NLMC model is applied at the zone-to-zone interchange level after trip distribution and before highway and transit assignment (i.e., within what is known as the “speed feedback loop” of the four-step model). The model is applied using a Fortran program named AEMS (AECOM mode split modeling package).⁴⁵ AEMS is completely parametric, i.e., all characteristics for any given mode choice model are specified in a control file. Characteristics represented in the control file include nesting structure, market segmentation, utility/disutility functions, and the values of coefficients

⁴⁵ AECOM Consult, Inc., *AECOM Consult Mode Choice Computation Programs, AEMS, Users Guide*, Draft report (Fairfax, Virginia: AECOM Consult, Inc., April 5, 2005).

and constants. AEMS can handle models with any nesting structure and up to 15 choices.⁴⁶ AEMS and its control files are described in more detail in the Version 2.3 travel model user's guide.

There are five NLMC models – one for each trip purpose: home-based work (HBW), home-based shop (HBS), home-based other (HBO), non-home-based work (NHW), and non-home-based other (NHO). Each of the five models shares the same nesting structure (shown in Figure 13), but each has its own set of coefficients and constants, discussed later in this chapter. In model application, the inputs to the TPB Version 2.3 nested logit mode choice model are

- Motorized person trips, segmented by four income levels and 20 geographic market segments, in production/attraction format (these are output from the trip distribution step);
- Highway “skims” (i.e., zone-to-zone travel times and costs), which come from the highway path building and skimming process;
- Transit “skims,” which come from the transit path building and skimming process; and
- Zonal attributes, such as parking cost, terminal time (i.e., the time to park and “unpark” a car), and the percent of each zone that is within walking distance to transit (where two walking distances are defined: short and long).

The HBW mode choice model was calibrated with and is applied with transit and highway skims corresponding to the AM peak period. The non work (i.e., HBS, HBO, NHW, and NHO) mode choice models were calibrated with and are applied with transit and highway skims corresponding to the midday period.

Two of the most significant changes between the NLMC model and its predecessor (the sequential multinomial logit, or SMNL, mode choice model found in the Version 2.2 travel model) are that the NLMC model handles 15 choices (up from five, previously) and the NLMC model provides sufficiently detailed output, such that a transit assignment can be performed.

6.2 Treatment of LRT, BRT, and streetcar

Note that the nesting structure of the TPB Version 2.3 NLMC model does not include branches for specialized transit modes, such as light-rail transit (LRT), bus rapid transit (BRT), and streetcar. From this, one might conclude that the mode choice model is not designed to deal with these special transit modes. In fact, **the model is designed to deal with these special transit modes.**⁴⁷ This section of the report discusses how these modes are treated in both the mode choice model and the transit path skimming process that feeds the mode choice model. This is the scheme that was developed by AECOM in 2004-2005 and has been retained by TPB staff. One of the underlying assumptions is that “premium” transit modes (e.g., Metrorail, commuter rail, LRT, BRT, and streetcar) will typically travel faster than buses, since they have one or more of these characteristics:

⁴⁶ A newer version of AEMS is now available that can handle up to 18 choices.

⁴⁷ This is issue, which is discussed in the user's guide, is not very relevant for the calibration of the model, since the year-2007 networks used for calibration did not have any LRT, BRT, or streetcar. However, this topic is included in the calibration report so that it is clear that the model is designed to deal with these specialized transit modes.

- A dedicated right-of-way, at least for part, if not all, of the route
- Traffic signal priority
- Superior acceleration/deceleration (compared to buses)

6.2.1 Network representation

In terms of network representation, LRT is typically coded as “mode 5.” BRT and streetcar are coded as “mode 10,” referred to in some parts of the model as the “new” mode. The thought is that LRT will travel mainly on its own grade-separated right-of-way (ROW), where it does not have to interact with road traffic. By contrast, it is assumed that streetcar will travel mostly in mixed traffic, i.e., it will share its at-grade right-of-way with road traffic. It is believed that AECOM chose to include BRT with streetcar, since although BRT will often include some grade-separated rights-of-way for the trunk-line portion of the route, the beginning and ending of the BRT route are likely to be in mixed traffic, making it more similar to the streetcar.

In cases where a travel demand modeler is coding a new transit line representing a “premium” transit mode,⁴⁸ the modeler must add “transit-only” links to the transit network to represent the new service, since the line requires a dedicated ROW which is not part of the highway network. In the past, one would have added these transit-only links to the rail link file (rail_link.bse). However, with the advent of TPB staff using an ESRI geodatabase to manage the highway and transit networks, the rail_link.bse file no longer exists. For a modeler working at COG, one should add transit-only links directly into the highway/transit network geodatabase. For a modeler working external to COG (who will not have access to the COGTools ArcGIS add-in for managing the geodatabase), one should modify the text *.tb files that are output from the create_support_files.s Cube Voyager script.⁴⁹

The “station file” (station.dbf) contains information about transit stations in the modeled area. More formally, the station file contains information about Metrorail stations, commuter rail stations, light rail stations, bus rapid transit stations/stops, streetcar stations/stops, express-bus bus stops, and park-and-ride (PNR) lots that serve these stations/stops. One must add Mode 5 and Mode 10 station nodes to the station file using a mode code of “L” for LRT/Mode 5 and “N” for New/BRT/streetcar/Mode 10. Mode 5 and 10 stations do not require a station centroid number.⁵⁰ In cases where Mode 10 routes share a street segment with local bus and where one would like the Mode 10 routes to be “combined” in terms of TP+/Voyager computing effective headways, the station node numbers of the Mode 10 routes should be the same as those used for the bus stops on the link(s) of interest.

⁴⁸ Such as Metrorail (Mode 3), commuter rail (Mode 4), LRT (Mode 5), and BRT/streetcar (Mode 10).

⁴⁹ Meseret Seifu to Files, “Creating a station file,” Memorandum, July 11, 2011.

⁵⁰ Manish Jain to Ronald Milone and Mark Moran, “MWCOG network coding guide for Nested Logit Model (revised Oct. 2010),” Memorandum, February 2008, 10.

6.2.2 Transit path building and skimming, mode choice, and transit assignment

Treatment of LRT, BRT, and streetcar: In transit path building and skimming, mode choice, and transit assignment, the following two rules apply:⁵¹

- Mode 5 is treated like Metrorail (Mode 3)
- Mode 10 is treated like local bus (Mode 1)

6.2.3 Fares

Treatment of LRT, BRT, and streetcar: Fares for Mode 5 and Mode 10 are computed like those for local bus (Mode 1).

6.3 Background

The nested-logit mode choice model in the TPB Version 2.3 travel model nested-logit mode choice model is a descendant of an earlier nested-logit model developed by AECOM Consult, Inc. for the Washington Metropolitan Area Transit Authority (WMATA). The TPB nested-logit mode choice model and its predecessor, the AECOM/WMATA nested logit mode choice model, share many traits, but also have some key differences. Table 45 summarizes the key differences between these two models. More information can be found on pages 6-2 to 6-8 of the earlier Version 2.3 model documentation.⁵²

⁵¹ Ibid.

⁵² Ronald Milone et al., *TPB Travel Forecasting Model, Version 2.3: Specification, Validation, and User's Guide*, Draft report (Washington, D.C.: Metropolitan Washington Council of Governments, National Capital Region Transportation Planning Board, June 30, 2008), 6–2 to 6–8.

Table 45 Comparison of characteristics found in both the AECOM/WMATA NLMC model and the TPB NLMC model

Item	AECOM/WMATA NLMC	TPB NLMC
Travel modes	15 (3 auto, 12 transit)	Same
Nesting structure	3 levels, including auto by occupancy and transit by access mode	Same
Model application code	AEMS Fortran program	Same
How the mode choice model is applied	As a post process to the regional travel model	Within the speed feedback loop of the regional travel model (i.e., after trip distribution and before traffic assignment)
Trip purposes	3 (HBW, HBS/O, and NHB)	5 (HBW, HBS, HBO, NHW, and NHO)
Types of travel skims	2 (AM peak period and off peak period)	2 (AM peak period and midday period)
Number of mode choice models	6 (HBW AM, HBW OP, HBS/O AM, HBS/O OP, NHB AM, and NHB OP)	5 (HBW AM, HBS MD, HBO MD, NHW MD, and NHO MD)
Geographic market segmentation	7 superdistricts; 20 production/attraction interchanges	Same
Economic market segmentation	Households stratified by income (four levels)	Same
Revised transit access coding	<ul style="list-style-type: none"> • Additional information to describe transit stations; • A new way to code sidewalks and walk-access-to-transit links; • A new way to code drive-access-to-transit links; • Additional coding detail around Metrorail stations with “park and ride” access; and • Revised procedures for calculating the percent of each zone that is within walking distance to transit 	Same, except the item in the fourth bullet has not been adopted: <ul style="list-style-type: none"> • Additional coding detail around Metrorail stations with “park and ride” access;
Calibration year	2002	2007/2008
Data used for calibration	2002 WMATA Metrorail survey; 2000 Regional bus survey; Boarding counts for express bus and commuter rail	2008 Metrorail Survey; 2008 Regional Bus Survey, supplemented by the Fairfax Connector Bus Survey; 2007-2008 On-Board Survey of Maryland Transit Administration (MTA) Riders; 2005 Virginia Railway Express (VRE) Passenger Survey
Calibration approach	Calibrated by AECOM for 6 models applied as a post process	Re-calibrated by TPB staff for 5 models. Applied as an integral part of the speed feedback loop
Calibration programs	Used the Fortran program CALIBMS to automate the process of calculating nesting constants	Same

6.4 Detailed description of the TPB nested-logit mode choice model

The NLMC model in TPB’s Version 2.3 Travel Model can be thought of as consisting of three parts:

1. Choice set and nesting structure
2. Market segmentation
3. Utility equations

6.4.1 Choice set and nesting structure

The choice set and nesting structure of the NLMC model in the Version 2.3 travel model was already described in section 6.1 on page 6-1. The treatment of LRT, BRT, and streetcar was covered in 6.2 on page 6-3.

6.4.2 Market segmentation

The TPB NLMC model is market segmented by household income level and geography. This two-way market segmentation scheme was developed by AECOM Consult, Inc. for the AECOM/WMATA NLMC model and was retained by TPB staff.

Income-level market segmentation

The income segmentation is the same that is used for the first two steps of the travel model (i.e., trip generation and trip distribution), namely households are segmented by the four household income quartiles, which are shown in Table 10.⁵³

Table 46 Household income quartiles computed from the ACS

Quartile	Income range (2007 dollars)
First	Less than \$50,000
Second	\$50,000 to \$99,999
Third	\$100,000 to \$149,999
Fourth	\$150,000 or more

Geographic market segmentation

AECOM Consult, Inc. divided the modeled area into seven superdistricts, which have been retained by the TPB staff for the mode choice model in the Version 2.3 Travel Model:⁵⁴

1. DC core
2. VA core
3. DC urban
4. MD urban
5. VA urban
6. MD suburban
7. VA suburban

These seven superdistricts are shown in Figure 14 and in Table 47. Table 47 shows the equivalency between the seven NLMC superdistricts and the new 3,722-TAZ area system.

⁵³ Hamid Humeida to Files, "Analysis of data from the American Community Survey (ACS): Households by household income, household size, and vehicle availability," Memorandum, March 19, 2010.

⁵⁴ Bill Woodford, "Development of Revised Transit Components of Washington Regional Demand Forecasting Model" (presented at the Transit Modeling Meeting, held at the Metropolitan Washington Council of Governments, Washington, D.C., December 1, 2004), 30.

Superdistricts used in the COG/TPB nested-logit mode choice model

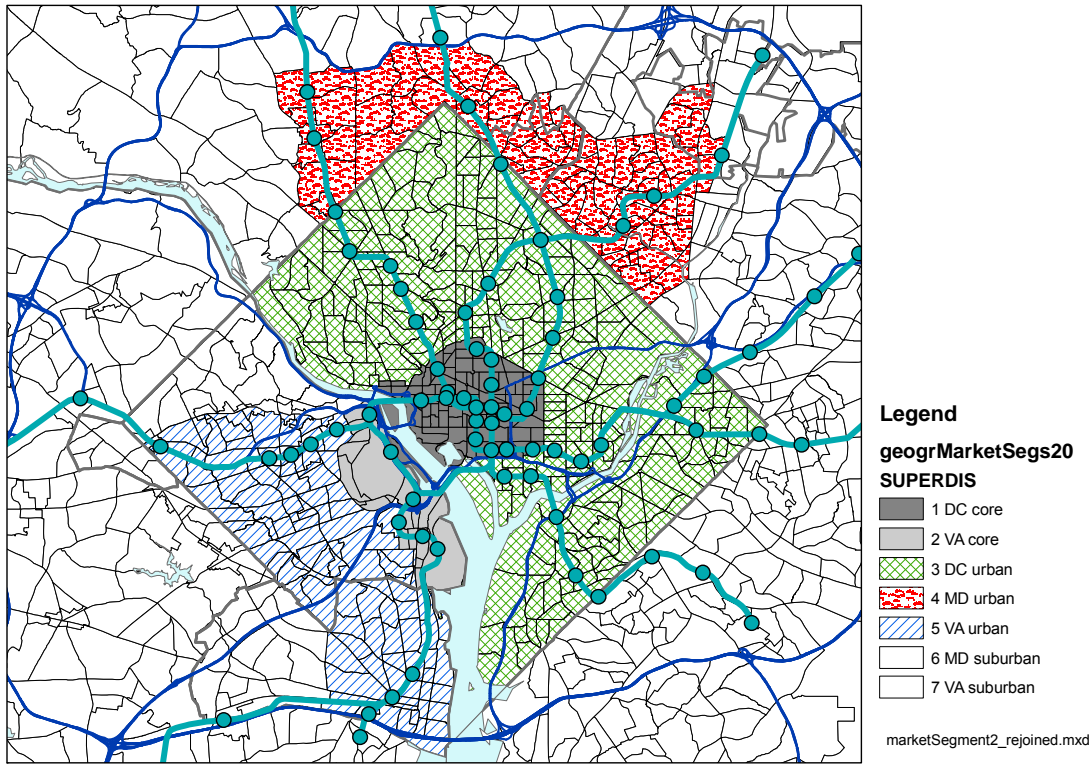


Figure 14 Seven superdistricts used in the Version 2.3 nested-logit mode choice model

Ref: "i:\ateam\neat_log\marketSegment2_rejoined.mxd",
 "i:\ateam\neat_log\marketSegment2_rejoined_forBlackAndWhite.emf"

Table 47 Equivalency between nested-logit mode choice superdistricts and TPB TAZ 3,722

No.	Name	TAZs (TPB TAZ 3,722)
1	DC core	1-4,6-47,49-63,65,181-287,374-381
2	VA core	1471-1476,1486-1489,1493,1495-1504,1507,1508,1510,1511
3	DC urban	5,48,51,64,66-180,210-281,288-373,382-393
4	MD urban	603,606,612-628,630-640,662-664,669,670,913,916,917,939-957,959,961-982,985,
4	MD urban	986
5	VA urban	1405-1422,1427-1435,1448,1452,1454-1464,1477-1485,1490-1492,1494,1505,1506,
5	VA urban	1509,1512-1545,1569-1609
6	MD suburban	394-602,604,605,607-611,629,641-661,665-668,671-912,914,915,918-938,958,960,
6	MD suburban	983,984,987-1404,2820-3102,3104-3409
7	VA suburban	1423-1426,1436-1447,1449-1451,1453,1465-1470,1546-1568,1610-2554,2556-2628,
7	VA suburban	2630-2819,3410-3477,3479-3481,3483-3494,3496-3675

Ref: "i:\ateam\neat_log\equiv_tpbTaz3722_nlmc_superdistr.txt" and "i:\ateam\neat_log\Market_segment_NewTAZs_sorted.xlsx"

Although seven market areas could lead to 49 (= 7 x 7) geographic interchanges, AECOM Consult, Inc. grouped them into the 20 paired production/attraction areas shown in Table 48 and Table 49. Another way to view the 20 geographic market segments is shown in Table 50.

Table 48 Production and attraction market segments used in the TPB Version 2.3 NLMC model

Production Areas Attraction Areas

- | | |
|--------------------|-------------|
| 1. DC Core / Urban | 1. DC Core |
| 2. MD Urban | 2. VA Core |
| 3. VA Core / Urban | 3. Urban |
| 4. MD Suburban | 4. Suburban |
| 5. VA Suburban | |

Ref: "I:\ateam\nest_log\marketSeg.xls"

Table 49 20 geographic market segments used in the TPB nested-logit mode choice model

Market Seg No.	Prod Superdis	Attr Superdis	Production Area	Attraction Area
1	1,3	1	DC	DC core
2	1,3	2	DC	VA core
3	1,3	3,4,5	DC	Urban DC, MD, VA
4	1,3	6,7	DC	Suburban MD, VA
5	4	1	MD urban	DC core
6	4	2	MD urban	VA core
7	4	3,4,5	MD urban	Urban DC, MD, VA
8	4	6,7	MD urban	Suburban MD, VA
9	2,5	1	VA core/urban	DC core
10	2,5	2	VA core/urban	VA core
11	2,5	3,4,5	VA core/urban	Urban DC, MD, VA
12	2,5	6,7	VA core/urban	Suburban MD, VA
13	6	1	MD suburban	DC core
14	6	2	MD suburban	VA core
15	6	3,4,5	MD suburban	Urban DC, MD, VA
16	6	6,7	MD suburban	Suburban MD, VA
17	7	1	VA suburban	DC core
18	7	2	VA suburban	VA core
19	7	3,4,5	VA suburban	Urban DC, MD, VA
20	7	6,7	VA suburban	Suburban MD, VA

Ref: "I:\ateam\nest_log\marketSeg.xls"

Table 50 Equivalency between seven super-districts and the 20 geographic market segments

	1 DC core	2 VA core	3 DC urban	4 MD urban	5 VA urban	6 MD suburban	7 VA suburban
1 DC core	1	2	3	3	3	4	4
3 DC urban	1	2	3	3	3	4	4
4 MD urban	5	6	7	7	7	8	8
2 VA core	9	10	11	11	11	12	12
5 VA urban	9	10	11	11	11	12	12
6 MD suburban	13	14	15	15	15	16	16
7 VA suburban	17	18	19	19	19	20	20

Ref: "I:\ateam\nest_log\superDistr_marketSeg.xlsx"

6.4.3 Utility equations

The TPB mode choice model is a discrete-choice, logit mode choice model. These types of models are based on what is known as utility theory (see, for example, Ben-Akiva and Lerman; or Koppelman and Bhat).^{55 56} Utility is a measure of value or benefit to an individual decision maker. According to the utility maximization rule, an individual will select the alternative from his or her set of available alternatives that maximizes his or her utility. This implies that individual t will always choose alternative i over all alternatives j if the utility of alternative i is greater than that for all alternatives j . In reality, the decision rule is rarely so deterministic. Consequently, most choice theory used in transportation planning is probabilistic. So, as shown in the equation below, the true utility of alternative i to decision maker t is the sum of two elements: a deterministic portion of the utility (V) and an error term (ϵ) that captures the unobserved characteristics of both the alternative and the individual decision maker.

Equation 7 True utility of an alternative expressed as the sum of deterministic utility and an error term

$$U_{it} = V_{it} + \epsilon_{it}$$

where

U_{it} = the true utility of alternative i to decision maker t

V_{it} = the deterministic or observable portion of the utility estimated by the analyst

ϵ_{it} = the error or portion of the utility that is unknown to the analyst

Assumptions about this error term turn out to be quite important, since this determines the type of mathematical model that is used. For example, if one assumes that this error term is distributed as a normal distribution, then the model is a multinomial probit model (MNP). If one assumes that the error terms are Gumbel distributed, then the model is multinomial logit (MNL).

⁵⁵ Moshe Ben-Akiva and Steven Lerman, *Discrete Choice Analysis: Theory and Application to Travel Demand*, 1st ed. (The MIT Press, 1985).

⁵⁶ Frank S. Koppelman and Chandra Bhat, *A Self Instructing Course in Mode Choice Modeling: Multinomial and Nested Logit Models* (U.S. Department of Transportation, Federal Transit Administration, January 31, 2006).

Generally, it is assumed that the utility equation for each mode/alternative can be expressed as a linear combination of attributes of the mode/alternative (e.g., travel time and travel cost) and attributes of the individual/decision maker (e.g. income, number of autos owned):

Equation 8 Systematic utility of using alternative/mode i for individual t

$$V_{it} = \beta_0 + \beta_1 Z_{it1} + \beta_2 Z_{it2} + \dots + \beta_n Z_{itn}$$

where

V_{it} = systematic utility of using alternative/mode i for individual t

$Z_{it} = f(X_i, S_t)$, with X_i = attributes of alternative/mode i; S_t = characteristics of individual t

β_0 = alternative-specific constant for alternative/mode i

β_i = coefficient for a given attribute of the alternative or characteristic of the individual

A binomial logit mode would have two choices. A multinomial model would have three or more choices. For example, a simple binary-logit mode choice model for auto and bus might look like the following:

Equation 9 Systematic utility of auto and bus in a simple binary logit mode choice model

$$\begin{aligned} V_{auto} &= Const_{auto} - 0.03 * IVTT_{auto} - 0.0043 * Cost_{auto} \\ V_{bus} &= \phantom{Const_{auto}} - 0.03 * IVTT_{bus} - 0.0043 * Cost_{bus} \end{aligned}$$

The alternative-specific constant accounts for the average effects of all variables affecting mode choice that are not explicit explanatory variables in the model (e.g., comfort, dependability, convenience). The number of alternative-specific constants must not exceed the number of alternatives minus one ($N - 1$). The predictions of the model are the same, regardless of which utility equation is the one chosen to be without the alternative-specific constant. The coefficients of the attributes of the alternatives may be either generic or alternative-specific. In the example above, both IVTT (in-vehicle travel time) and cost are generic since they occur in both utility equations and have the same coefficient value in both utility equations.

For a multinomial logit (MNL) model, to convert the estimated utilities into probabilities, we use the standard logit formula:

Equation 10 Probability of choosing alternative i over alternatives j for a multinomial logit mode choice model

$$Pr(i) = \frac{\exp(V_i)}{\sum_{j=1}^J \exp(V_j)}$$

where

$Pr(i)$ = probability of the decision maker choosing alternative i

V_j = systematic component of the utility of alternative j

J = set of available alternatives

$\exp(x) = e^x$, where e is Euler's number, ≈ 2.71828

The MNL model has been criticized, however, for its Independence of Irrelevant Alternatives (IIA) property, which implies equal competition between all pairs of alternatives, which is inappropriate in

many situations (See, for example, Koppelman and Bhat, p. 157). This limitation of the MNL model is due to the assumption of the independence of the error terms in the utility equations. The most widely used solution to this problem is to use the nested logit (NL) model, also known as the “hierarchical logit,” which groups or nests subsets of alternatives that are more similar to each other with respect to excluded characteristics. Consequently, alternatives in a common nest are more competitive with each other than alternatives outside of the nest. The derivation of the NL model is based on the assumption that some of the alternatives share common components in their random error terms.

The NL model gives rise to a parameter which is not part of the MNL model: nesting coefficients. Nesting coefficients are often denoted by the Greek letter theta (θ , which we will use) or sometimes the Greek letter phi (Φ) or mu (μ). Nesting coefficients are known by a number of different terms, including logsum parameters, logsum coefficients, dissimilarity parameters, or inclusive value parameters. These are discussed in more detail in section 0.0.0 on page 6-15.

Both MNL and NL models have constant terms or alternative-specific constants. In the Version 2.3 mode choice model, these are referred to as “nesting constants.” These are discussed in more detail in a later section (section 0.0.0 on page 6-16). There is generally one utility equation for each alternative or mode. The number of alternative-specific constants can be up to one less than the number of alternatives (N-1). However, when the model is market segmented, the number of nesting constants is increased because each alternative in each market segment has its own equation. For example, in the case of the Version 2.3 mode choice model, since the model is market segmented by 20 geographic market areas, the maximum number of nesting constants per trip purpose is $20 * (15 - 1) = 280$.

Different types of nested-logit mode choice models and their use by AEMS.EXE

Nested-logit, or hierarchical logit, models come in two different flavors:⁵⁷

- McFadden Utility Maximizing Nested Logit (UMNL) model
- Daly Non-Normalized Nested Logit (NNNL) model

The default for the AEMS mode choice model application program is to use the McFadden UMNL model. The AEMS command COEF is used to specify coefficient values in the utility equations. Below is an example from the HBW AEMS control file (For brevity, only columns 1-87 are shown. Also, the comment line beginning with the word “*CHOICE” is also shown, since it helps one read the COEF line/command):

```
*CHOICE          1>DR ALONE  SR2          SR3+          WK-CR          WK-BUS          WK-BU/MR      WK-MR
COEF01: IVTT     1>-0.02128  -0.02128  -0.02128  -0.02128  -0.02128  -0.02128  -0.02128
```

By contrast, the AEMS command NSTC is used to define nesting coefficients and nesting constants. Below is an example from the HBW AEMS control file:

```
NSTC 12 1TRANSIT  >      0.5      3.72445
```

⁵⁷ Frank S. Koppelman and Chieh-Hua Wen, “Different Nested Logit Models: Which Are You Using?” (presented at the 77th Annual Transportation Research Board Meeting, January 11-15, 1998, Washington, D.C., 1997).

The nesting coefficient value is 0.5 and the nesting constant value is 3.72445. According to the AEMS documentation:

By default, AEMS is based on the McFadden structure of a nested logit model. As such, all coefficients and constants used in the disutility function (except Nest-specific constants specified with the NSTC) command are specified in terms of their equivalent top-level, main mode choice values. Prior to computing lower level disutilities, all coefficients and constants are divided by the product of all pertinent nest coefficients to create an equivalent lower-level coefficient. If the Daly formulation (coefficients are specified in terms of their bottom-level value), then the “DALY Coef” command can be used to override the default.⁵⁸

Since the nest-specific constants and coefficients that are specified using the NSTC command are structured in the Daly way (not McFadden), they sometimes need to be converted to the McFadden-equivalent form. This will be noted later in this documentation.

Time and cost coefficients

The time and cost coefficients used in the utility equations are shown in Table 51.

Table 51 Time and cost coefficients in the Version 2.3 nested-logit mode choice model

Variable		Trip Purpose (5)				
		HBW	HBS	HBO	NHBW	NHBO
In-vehicle time	ivt	-0.02128	-0.02168	-0.02322	-0.02860	-0.02860
Auto access time	aat	-0.03192	-0.03252	-0.03483	-0.04290	-0.04290
Walk access time	ovtwa	-0.04256	-0.04336	-0.04644	-0.05720	-0.05720
Other out-of-vehicle time*	ovtot	-0.05320	-0.05420	-0.05805	-0.07150	-0.07150
Cost - Income group 1	costinc1	-0.00185	-0.00202	-0.00202	-0.00994	-0.00994
Cost - Income group 2	costinc2	-0.00093	-0.00101	-0.00101	-0.00994	-0.00994
Cost - Income group 3	costinc3	-0.00062	-0.00067	-0.00067	-0.00994	-0.00994
Cost - Income group 4	costinc4	-0.00046	-0.00051	-0.00051	-0.00994	-0.00994
* Includes boarding penalty						

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Some of the coefficients in Table 51 are statistically estimated, others are set using professional judgment and rules of thumb. Before discussing which are statistically estimated and which are set using professional judgment, it is useful to understand how calibration approaches have changed in the past few years.

In previous mode choice models developed by TPB staff (e.g., the sequential, multinomial-logit mode choice model in the Version 2.1 and Version 2.2 travel models), coefficients in the utility equations of the mode choice model were statistically estimated using a maximum likelihood estimation (MLE) technique (in this case, using Alogit software). Following the estimation of coefficients, TPB staff would check the reasonableness of coefficients by using various rules of thumb. For example, one rule of

⁵⁸ AECOM Consult, Inc., *AECOM Consult Mode Choice Computation Programs, AEMS, Users Guide*, Draft report (Fairfax, Virginia: AECOM Consult, Inc., April 5, 2005), 14.

thumb is that the ratio of the out-of-vehicle travel time coefficient to the in-vehicle travel time coefficient (C_{ovtt}/C_{ivtt}) should be between 2.0 and 3.0. This rule of thumb has always been used by TPB staff in mode choice model estimation and has also been proposed by the Federal Transit Administration.⁵⁹ In cases where the estimated coefficients did not agree with the rule of thumb, one was left to ponder the cause of the discrepancy. For example: Was there a problem with the estimation data? Was a utility equation misspecified? Was the estimation software not used correctly? Did the discrepancy in the ratio value represent a true difference in travel behavior of Washington, D.C. area travelers compared to other travelers in the U.S.? Or, since the values of the coefficients are, in part, a function of the other coefficients in the utility equation, would a different set of utility variables have resulted in coefficient values that met the rule of thumb? Due to issues such as these, and the increased interest in getting proposed transit projects to pass muster with the FTA, many consulting firms and agencies have started taking a new approach in calibrating mode choice models: namely, using a combination of statistically estimated coefficients and coefficients that are set by fiat, typically based on rules of thumb (See, for example, FTA discussion piece/paper #16).⁶⁰ This latter approach is what was used by AECOM when they calibrated their nested-logit mode choice model in 2004-2005, and it is also the approach used by TPB staff in calibrating the NLMC model.

The in-vehicle time (IVT) coefficients are all about -0.02 and were statistically estimated using Alogit software. These come from earlier estimation work done by TPB staff, for the 2.1C and 2.1D travel models. These values are in the range of values expected by FTA, which expects IVT coefficients in the range of -0.03 to -0.02.^{61 62} The next three time coefficients have been set as multiples of the IVT coefficient. For example, the auto access time coefficient is set equal to 1.5 times the IVT coefficient, indicating that time spent in a car for accessing transit is perceived as 1.5 times as burdensome as time spent in the transit vehicle itself. Similarly, the walk-access time coefficient is set equal to 2.0 times the IVT coefficient, indicating that time spent walking to access transit is perceived as 2.0 times as burdensome as time spent in the transit vehicle. Lastly, the other-out-of-vehicle time coefficient is set to a value of 2.5 times the IVT coefficient. These last two out-of-vehicle time coefficients conform to FTA expectations that the ratio of C_{ovt}/C_{ivt} should be between 2.0 and 3.0, unless an agency can provide compelling evidence to the contrary. Next come four cost coefficients, one per household income group (income group 1, 2, 3, and 4). The first cost coefficient, like the IVT coefficient, was statistically estimated from a previous version of the regional travel model. The remaining three cost coefficients, in the case of the three home-based purposes, are set as factors of the cost coefficient for income group 1. Specifically, the cost coefficient for income group 2 is equal to ½ the cost coefficient for income group 1.

⁵⁹ Jim Ryan, "Travel Forecasting for New Starts: The FTA Perspective", April 7, 2004, 55; Federal Transit Administration, "12 - Early Quality-of-Service Analysis of the Alternatives" (presented at the Travel Forecasting for New Starts Proposals Workshop, Minneapolis, Minnesota, June 16, 2006), 38, http://www.fta.dot.gov/planning/newstarts/planning_environment_5402.html.

⁶⁰ Federal Transit Administration, "Discussion-piece #16, Calibration and Validation of Travel Models for New Starts Forecasting" (presented at the Workshop on Travel Forecasting for New Starts Proposals, Minneapolis, Minnesota, 2006), http://www.fta.dot.gov/planning/newstarts/planning_environment_5402.html.

⁶¹ Ryan, "Travel Forecasting for New Starts: The FTA Perspective," 53.

⁶² Federal Transit Administration, "12 - Early Quality-of-Service Analysis of the Alternatives," 37.

Similarly, the cost coefficient for income group 3 is equal to 1/3 the cost coefficient for income group 1, and the cost coefficient for income group 4 is equal to 1/4 the cost coefficient for income group 1.

Income constants

The TPB NLMC model also uses a set of income constants, which were developed for the AECOM/WMATA NLMC model and retained for use in the TPB model (See Table 52). AECOM introduced the income constants to help reduce the high number of modeled boardings in Northwest DC.⁶³

Table 52 Income constants used in the TPB Ver. 2.3 NLMC model

Mode	Income stratification		
	Low	Middle	High
All auto modes	0.0	0.0	0.0
Walk to commuter rail	2.0	0.0	-2.0
Walk to all bus	2.0	0.0	-2.0
Walk to bus/Metrorail	2.0	0.0	-2.0
Walk to all Metrorail	2.0	0.0	-2.0
PNR and KNR to transit	0.0	0.0	0.0

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The income constants apply to all trip purposes. “Low income” means income group 1. “Middle income” means income groups 2 and 3. “High income” means income group 4. These income constants have the effect of increasing the probability (due to the +2.0) that low income travelers will choose walk to transit and decreasing the probability (due to the -2.0) that high income travelers will choose walk to transit.

Nesting coefficients

As stated earlier, the NL model gives rise to a parameter which is not part of the MNL model: nesting coefficients. Nesting coefficients are often denoted by the Greek letter theta (θ , which we will use) or sometimes the Greek letter phi (Φ) or mu (μ). Nesting coefficients are known by a number of different terms, including logsum parameters, logsum coefficients, dissimilarity parameters, or inclusive value parameters. The nesting coefficients (θ) in a nested-logit mode choice model are a function of the underlying correlation between the unobserved components for pairs of alternatives in a nest, and they characterize the degree of substitutability between those alternatives. The values of the nesting constants should lie between 0 and 1, as indicated in Table 53.

⁶³ Bruce Williams, “Revised Calibration Results with Additional Revisions to Transit Components of Washington Regional Demand Forecasting Model” (presented at the Transit Modeling Meeting, held at the Metropolitan Washington Council of Governments, Washington, D.C., March 2, 2005), 5.

Table 53 Interpretation of nesting coefficient values in nested-logit mode choice models

Nesting coefficient value	Implication
0 < θ < 1	The range of acceptable values for θ . Decreasing values of θ indicate increased substitution among alternatives in a nest.
$\theta = 0$	Implies perfect correlation between pairs of alternatives in the nest
$\theta = 1$	Zero correlation among mode pairs in the nest. This means the nested-logit (NL) model becomes a multinomial logit (MNL) model.
$\theta > 1$	Reject the nested-logit model

The TPB Ver. 2.3 NL mode choice model has seven nests, which are numbered as shown in Figure 15. The number of nesting coefficients in a nest is equal to the number of choices in each nest. The model has seven nests, but the number of choices in each nest varies from two to four. The total number of nesting coefficients in the model is 21. All the nesting coefficients in the TPB NL MC model have been set, by fiat, to a value of either 0.5 or 1.0, as can be seen in Figure 15. The nodes shown with a nesting coefficient value of 1.0 are those at the bottom of a tree (i.e., without any sub-nodes), which is effectively the same as having no nesting coefficient. By contrast, those nodes with nesting constants values of 0.5 are those which have sub-nodes. The top-level equivalent of the nesting coefficients can be calculated by multiplying the nesting coefficient values of the two layers, i.e., $0.5 * 0.5 = 0.25$, which is in the range of what would be considered reasonable by the FTA.

Nesting constants

In general, the maximum number of alternative-specific constants is equal to the number of alternatives minus one ($N - 1$). In the case of the Version 2.3 mode choice model, since the model is market segmented by 20 geographic market areas, the maximum number of nesting constants per trip purpose is $20 * (15 - 1) = 280$. Calibrating the nested-logit mode choice model essentially consists of estimating these nesting constant values.

6.4.4 Other details

Information about revised transit access coding conventions, transit path-building procedures, and the treatment of parking costs and terminal times can be found in the user’s guide.

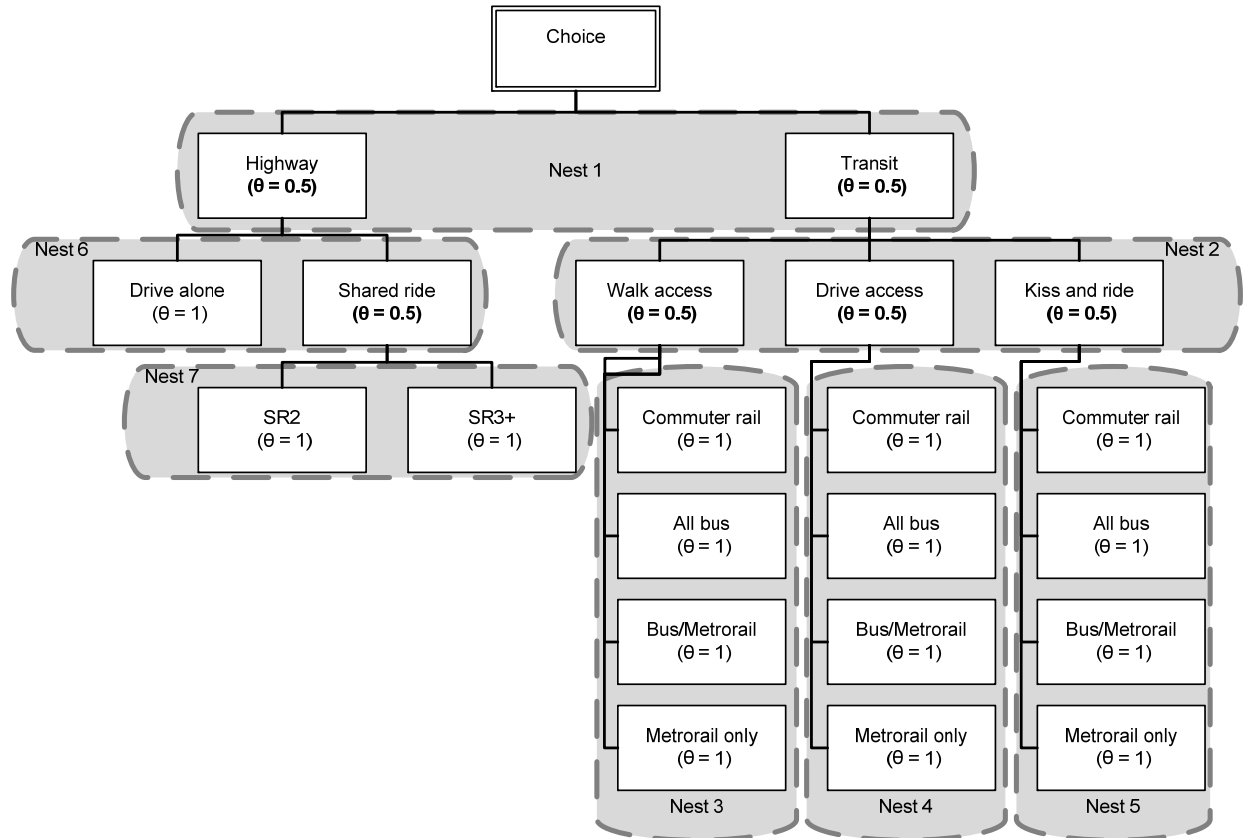


Figure 15 Nesting coefficient values used in the TPB Ver. 2.3 NL mode choice model

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6.5 Calibration process

In late June 2011, the TPB’s models application staff began using the new Version 2.3 Travel Model in its first production use at COG, namely the air quality conformity (AQC) determination of the 2011 CLRP. This production work was first undertaken with “build” 27 of the model, i.e., Version 2.3.27. While performing this work, staff on the models application team noticed that the new model seemed to be underestimating high-occupancy vehicle (HOV) trips in the I-395/I-95 corridor in Virginia. Since the auto person trip targets used for the NLMC model calibration had come from the 2007/2008 HTS, it appeared that the HTS did not have a sufficient number of samples to adequately portray HOV behavior in that corridor. Consequently, TPB staff developed a way to adjust the HOV trips based on the 2000 CTPP data. After this adjustment was made, the mode choice model was re-calibrated and a new build of the travel model, #33, was created (i.e., Ver. 2.3.33). This section of the report documents the mode choice model calibration that was done following the HOV adjustment. The details of the latest mode choice model calibration can be found in a draft technical report.⁶⁴

⁶⁴ Mark S. Moran, *TPB Version 2.3 Travel Model: Calibrating the nested-logit mode choice model after making adjustments to HOV auto person trip targets*, Draft Internal Technical Report (Washington, D.C.: National Capital Region Transportation Planning Board, Metropolitan Washington Council of Governments, October 27, 2011).

To calibrate the TPB NLMC model, one assumes that the time and cost coefficients are known. One also assumes that the income constants and nesting coefficients are known. Thus, the calibration consists of finding a set of nesting constants that allow the NLMC model to most closely replicate the observed market shares (known as “targets”). An automated routine, implemented as a Fortran program named CALIBMS, is used to perform the calibration.⁶⁵ The output of the CALIBMS calibration process is a set of nesting constants (280 constants for each of the five trip purposes). Once one has run CALIBMS, one should ideally check the values of the output nesting constants to make sure that none of the constants is overly large. In cases where overly large nesting constants are found, their values should be overridden with more moderate values. Checking and possibly overriding the value of the output nesting constants is very time consuming, since it involves lots of professional judgment and there are no hard and fast rules dictating which values are too large. Consequently, for this current calibration effort, due to time limitations, the nesting constants estimated by CALIBMS have been taken as is and no override values have been used.

6.5.1 Observed data and calibration targets

A “calibration target” is a control total representing the number of person trips, for an average weekday, for each trip purpose (5), travel mode (15), and geographic market segment (20). Calibration targets can be divided into two groups: transit person trips and auto person trips. Our transit person trip calibration targets come from on-board transit surveys. Our auto person trip calibration targets come from the 2007/2008 HTS. Although it would be more consistent to get both transit person trip targets and auto person trip targets from one source, such as the HTS, the reality is that by using on-board transit surveys for the transit person trip targets, we were able to take advantage of more data (compare ca. 5,000 unweighted transit person trips in the HTS versus ca. 50,000 unweighted transit person trips in the on-board transit surveys; see Table 58). The HTS was used for the auto person trip targets, since it was the best known source of information. However, as stated earlier, it appears that the HTS did not have a sufficient number of samples to adequately portray HOV behavior in the I-95/I-395 corridor in Virginia. Consequently, TPB staff developed a way to adjust the HOV trips based on the 2000 CTPP data.

Transit person trip targets

The following on-board transit surveys were used to develop transit person trip targets:

- 2008 Metrorail Survey⁶⁶
- 2008 Regional Bus Survey (supplemented by the Fairfax Connector Bus Survey)^{67 68 69}

⁶⁵ AECOM Consult, Inc., *CALIBMS: Nested Mode Split Model Constant Calibrator for AEMS (AECOM Consult Mode Choice Computation Programs), Users Guide*, Draft report (AECOM Consult, Inc., June 2006).

⁶⁶ WB&A Market Research, “2008 Metrorail Passenger Survey”, 2008.

⁶⁷ Robert E. Griffiths, “2008 Regional Bus Survey: Preliminary Results” (presented at the Travel Forecasting Subcommittee of the Technical Committee of the National Capital Region Transportation Planning Board, held at the Metropolitan Washington Council of Governments, Washington, D.C., May 22, 2009).

⁶⁸ NuStats, *2008 Regional Bus Survey: Draft Report* (Austin, Texas: Metropolitan Washington Council of Governments, June 2009).

- 2007-2008 On-Board Survey of Maryland Transit Administration (MTA) Riders, which would include survey information from riders of the Maryland Area Regional Commuter (MARC) train service⁷⁰
- 2005 Virginia Railway Express (VRE) Passenger Survey⁷¹

Since the calibration year is 2007, it is preferable to have a survey from that year. In some cases this was not possible (e.g., no survey was conducted in 2007) or not desirable (e.g., a survey in another year was of better quality), or both. In the case of Metrorail, there was, in fact, a 2007 Metrorail Passenger Survey,⁷² but it was believed that the 2008 survey had more complete information. For example, the 2008 survey, in contrast with the 2007 survey, included production-end mode of access to the first transit vehicle for every observation.⁷³ The 2008 Metrorail survey⁷⁴ was collected by WB&A, geocoded by Rummel, Klepper & Kahl, LLP (RK&K), and cleaned by Parsons Brinckerhoff (PB). The final survey included 35,966 records, which were expanded to 786,813 daily Metrorail trips (the average number of trips in September 2008).⁷⁵ Survey results were not factored to 2007 conditions, given the closeness of the two years.

Information about bus-only trips was obtained from the 2008 Regional Bus Survey (supplemented by the Fairfax Connector Bus Survey). Again, data was not explicitly factored to year-2007 conditions. Details can be found in a recent memo.⁷⁶ Commuter rail information was obtained from the 2007-2008 MTA survey (which included MARC commuter rail riders) and the 2005 VRE survey (which included VRE commuter rail riders). The MTA survey was collected by NuStats and provided to MWCOG by PB. The total number of MARC survey records after it was cleaned and geocoded by PB was 1,915, which were then expanded to 26,451 trips. Although VRE conducts a survey on an annual basis, the 2007 survey was “Deemed Statistically Invalid,” according to the VRE website (http://www.vre.org/feedback/cs_survey/survey_results_index.htm). We have used the 2005 survey and factored the results to year-2007 conditions.⁷⁷ The transit person trip control totals (“targets”) can be seen in Table 54.

⁶⁹ Clara Reschovsky, *Analysis of 2008 Bus Survey Data, WMATA On-Board Survey*, Internal Report (Washington, D.C.: Metropolitan Washington Council of Governments, National Capital Region Transportation Planning Board, June 30, 2010).

⁷⁰ NuStats, *Baltimore 2007-2008 On-Board Study: Final Report* (Austin, Texas: Maryland Transit Administration, December 2008).

⁷¹ Virginia Railway Express, *2005 Passenger Survey* (Virginia Railway Express, n.d.), http://www.vre.org/feedback/cs_survey/survey_results_index.htm.

⁷² WB&A Market Research, *2007 Metrorail Passenger Survey Final Report* (Washington Metropolitan Area Transit Authority, October 16, 2007).

⁷³ Mary Martchouk to Mark S. Moran, “Developing Transit Calibration Targets for 2007,” Memorandum, June 2, 2010, 5.

⁷⁴ WB&A Market Research, “2008 Metrorail Passenger Survey.”

⁷⁵ Martchouk to Mark S. Moran, “Developing Transit Calibration Targets for 2007.”

⁷⁶ Mary Martchouk to Mark Moran, “Developing Bus-only Calibration Targets for 2007,” Memorandum, August 17, 2010.

⁷⁷ Martchouk to Mark S. Moran, “Developing Transit Calibration Targets for 2007,” 8–9.

Table 54 Transit person trip control totals (“targets”) for 2007, average weekday

	HBW (Peak)	HBS (Midday)	HBO (Midday)	NHBW (Midday)	NHBO (Midday)	TOTAL
WK-CR	1,851	21	210	0	400	2,483
PNR-CR	16,645	0	259	0	208	17,112
KNR-CR	1,473	0	197	0	217	1,887
ALL CR	19,970	21	666	0	825	21,482
WK-BUS	171,836	18,432	87,043	23,685	16,226	317,222
PNR-BUS	15,966	81	3,029	354	1,522	20,953
KNR-BUS	4,554	199	2,004	1,425	880	9,063
ALL BUS	192,356	18,712	92,077	25,465	18,628	347,238
WK-BUS/MR	132,144	2,486	23,694	12,417	3,960	174,701
PNR-BUS/MR	27,525	112	2,700	1,482	560	32,379
KNR-BUS/MR	9,248	136	1,731	1,211	1,003	13,329
ALL BUS/MR	168,916	2,733	28,125	15,110	5,524	220,408
WK-MR	194,164	4,854	46,905	56,578	16,428	318,928
PNR-MR	137,984	469	15,658	7,270	1,562	162,943
KNR-MR	42,791	145	4,437	4,378	1,832	53,582
ALL MR	374,939	5,468	66,999	68,226	19,822	535,454
GRAND TOTAL	756,181	26,934	187,867	108,801	44,798	1,124,582

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Auto person trip targets

As stated earlier, the auto person trip targets have generally been developed from COG’s 2007/2008 Household Travel Survey (HTS). In the beginning of 2011, the mode choice model was calibrated twice – first, to an observed auto person trip table and then, second, to a simulated auto person trip table that was based on the observed trip table from the HTS. In the first of these two calibrations, conducted in January 2011, the auto person trip targets were developed by loading the weighted HTS on a year-2007 highway network. In the second of these two calibrations, instead of using an observed trip table, TPB staff used a simulated trip table. A third re-calibration was done in April 2011 as part of an update to the Version 2.3 travel model (Ver2.3.17_3722TAZ). Finally, this is the fourth re-calibration in 2011 of the mode choice model.

Table 55 shows the regional control totals for the auto person targets before the HOV adjustment was made. Table 56 shows the regional control totals for the auto person targets after the HOV adjustment was made. And Table 57 shows the difference in regional control totals for the auto person targets (after HOV adjustment minus before HOV adjustment).

Table 55 Year-2007 auto targets from a simulated trip table: Before updating HOV trips

	HBW (Peak)	HBS (Midday)	HBO (Midday)	NHBW (Midday)	NHBO (Midday)	TOTAL
DRIVE ALONE	2,488,139	1,310,755	2,142,698	1,172,254	1,261,823	8,375,669
SR2	274,299	936,969	2,353,079	261,343	977,302	4,802,992
SR3+	9,228	593,357	1,770,683	6,393	615,484	2,995,145
TOTAL AUTO	2,771,666	2,841,081	6,266,460	1,439,990	2,854,609	16,173,806

Sources:

O:\model_dev\Ver2.3.16_3722TAZ\Prepare_MC_Targets\Create_Targets_3722to7Mrkts.s

Create_Targets_3722to7Mrkts.s/txt

Ref: "I:\ateam\nest_log\calibms_2011-09hov\Mode_choice_targets2.xlsx"

Table 56 Year-2007 auto targets from a simulated trip table: After updating HOV trips

	HBW (Peak)	HBS (Midday)	HBO (Midday)	NHW (Midday)	NHO (Midday)	TOTAL
DRIVE ALONE	2,341,573	1,247,599	2,489,989	1,061,425	1,300,863	8,441,449
SR2	311,741	866,266	1,998,391	210,143	895,477	4,282,018
SR3+	119,813	727,923	1,778,874	169,857	658,899	3,455,366
TOTAL AUTO	2,773,127	2,841,788	6,267,254	1,441,425	2,855,239	16,178,833

Sources:

X:\modelRuns\fy12\Ver2.3.28\Prepare_MC_Targets\Create_Targets_3722to7Mrkts.s

X:\modelRuns\fy12\Ver2.3.28\Prepare_MC_Targets\Create_Targets_3722to7Mrkts.txt

Ref: "I:\ateam\nest_log\calibms_2011-09hov\Mode_choice_targets2.xlsx"

Table 57 Year-2007 auto targets from a simulated trip table: Difference

	HBW (Peak)	HBS (Midday)	HBO (Midday)	NHW (Midday)	NHO (Midday)	TOTAL
DRIVE ALONE	-146,566	-63,156	347,291	-110,829	39,040	65,780
SR2	37,442	-70,703	-354,688	-51,200	-81,825	-520,974
SR3+	110,585	134,566	8,191	163,464	43,415	460,221
TOTAL AUTO	1,461	707	794	1,435	630	5,027

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It is clear that HOV2 auto person trips (shared ride, 2-person: SR2) have increased for HBW, but decreased for the other four trip purposes. By contrast, HOV3+ auto person trips have increased for all five trip purposes.

Comparison with the mode choice model calibration for the Version 2.2 Travel Model

One key point to remember is that the NL MC model in the Version 2.3 travel model was calibrated using different data sources from those used to calibrate the multinomial-logit (MNL) mode choice

model in the Version 2.2 travel model. Thus the travel patterns in the calibration data are different. The Version 2.2 mode choice model was calibrated using the 1994 COG/TPB Household Travel Survey and validated using the 2000 Census Transportation Planning Package (CTPP). By contrast, the Version 2.3 mode choice model was calibrated to year-2007 conditions, with the primary data set being the 2008 Metrorail Survey. As for the Version 2.3 mode choice model, there was some debate over whether to use the 2007/2008 HTS or the most recent on-board transit surveys. It was decided to use the on-board transit surveys since they contained more observations. For example, the 2007/2008 HTS contained about 5,500 transit trip records⁷⁸ (and this survey was twice the size of the 1994 HTS – 11,000 households vs. 4,800 households). By contrast, the transit on-board surveys provided about 51,000 transit trip records, of which about 35,000 were from the Metrorail Survey (see Table 58).

Table 58 Transit surveys used to calculate transit trip targets

Transit Survey	Submode Targets	Number of Records
2008 Metrorail Survey	Metrorail, Metrorail/Bus	34,852
2007 Bus Survey	Bus-only	10,959
2007 MARC Survey (MTA Baltimore Transit Survey)	Commuter Rail	1,594
2005 VRE Survey	Commuter Rail	3,646
Total	All	51,051

6.5.2 Calibration results

Calibration results come in the form of both the nesting constants, which are the output of the CALIBMS process, and the resultant trips by mode coming from the calibrated model. Nesting constants are discussed first.

Nesting constants

The calibration result shown in this section of the report comes from the calibration to a simulated trip table, which was derived from the earlier calibration to an observed trip table, and which was adjusted so that HOV trips in the I-95/I-395 corridor would be closer to observed travel. The automated calibration process, which involves running AEMS and CALIBMS 105 times (21 times for each trip purpose), takes about 16 hours on a relatively new travel model server (TMS5).

The output of the calibration process is the set of nesting constants, which are shown on Table 59, Table 60, Table 61, Table 62 and Table 63 on pages 6-23 through 6-24. A positive nesting constant has the effect of increasing trips in the given category and a negative nesting constant has the effect of decreasing trips in the given category. The values shown on these five tables are “top-level equivalent” or “McFadden-style” nesting constants, as described later in this report.

⁷⁸ Mary Martchouk to Mark Moran, “Comparison of Transit Trips from 2007/2008 HTS to Transit Surveys,” Memorandum, August 17, 2010.

Table 59 Top-level equivalent nesting constants for HBW

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
		DC CORE / URBAN-DC CORE	DC CORE / URBAN-VA CORE	DC CORE / URBAN-URBAN	DC CORE / URBAN-OTHER	MD URBAN-DC CORE	MD URBAN-VA CORE	MD URBAN-URBAN	MD URBAN-OTHER	VA CORE / URBAN-DC CORE	VA CORE / URBAN-VA CORE	VA CORE / URBAN-URBAN	VA CORE / URBAN-OTHER	MD OTHER-DC CORE	MD OTHER-VA CORE	MD OTHER-URBAN	MD OTHER-OTHER	VA OTHER-DC CORE	VA OTHER-VA CORE	VA OTHER-URBAN	VA OTHER-OTHER
1	LOV	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	HOV2	-0.6475	-0.8885	-0.7258	-0.9290	-0.7687	-0.7366	-0.8516	-1.0610	-0.7346	-0.8955	-0.9395	-1.0988	-0.8009	-0.9175	-1.0008	-1.1245	-1.0091	-1.0527	-1.2452	-1.1986
3	HOV3+	-1.0368	-1.1322	-1.0351	-1.2435	-1.2138	-1.3765	-1.2834	-1.3288	-1.2215	-1.2382	-1.3203	-1.3532	-1.1325	-1.2476	-1.4153	-1.4882	-1.4039	-1.4882	-1.8867	-1.7174
4	WLK CR	3.5226	3.7520	5.2652	0.5927	2.4165	1.5886	1.2664	-0.2560	0.6870	0.9474	2.1387	0.1999	0.6617	-0.9022	-0.3731	-1.3222	-0.8786	-0.4825	-1.0120	-2.4355
5	WLK BUS	3.3621	0.7368	4.4084	0.7443	0.8042	-0.5625	0.9143	0.0040	1.7415	0.2990	0.9942	-0.9730	0.4786	0.1050	0.5097	-0.3769	0.0324	0.6315	-0.0965	-0.8282
6	WLK BU/MR	3.3594	2.9895	4.5288	0.6581	1.0518	0.4517	0.8046	-0.2439	2.7286	-0.1491	1.1228	-0.7191	0.3402	-0.1582	0.1727	-0.7370	0.3058	0.4007	0.0755	-1.2334
7	WLK METRO	3.7245	4.4161	6.6777	6.3964	3.3885	2.2606	2.1782	1.7391	7.0301	1.7313	5.3527	4.2353	2.5352	1.1731	2.0659	0.0001	3.5149	2.3678	2.7608	1.6577
8	PNR CR	1.7439	1.1563	2.0443	1.1578	-0.1275	-0.0741	-1.3708	-1.7033	0.8930	-1.7066	-0.9942	-2.7197	-0.2006	-0.9141	-1.2882	-2.2732	-1.2458	-0.3778	-1.0881	-2.9333
9	KNR CR	0.9501	-0.3696	1.0130	0.6870	-0.8766	-0.6199	-2.7533	-2.3325	-0.1173	-2.5799	-1.7356	-2.1574	-1.7840	-2.8841	-2.5516	-3.0663	-2.5593	-1.7863	-2.3885	-4.0106
10	PNR BUS	1.2296	1.1563	0.2375	-0.7797	-1.3329	-0.0741	-2.1327	-1.4883	0.9620	-1.3830	-1.2903	-2.1637	-1.4998	0.2222	-0.7523	-2.0418	-0.5947	0.1492	-0.7623	-3.7583
11	KNR BUS	0.3721	-0.3696	0.0649	-0.0819	-0.7092	-0.6199	-1.6631	-1.3812	-0.1173	-2.5799	-1.7356	-1.6621	-2.3454	-0.8670	-1.4715	-2.3484	-1.6635	-1.1464	-1.7715	-3.2251
12	PNR BU/MR	2.0549	1.3523	0.6590	-0.3941	0.2423	0.0821	-1.4609	-1.9400	0.9445	-1.7066	-0.8751	-2.7197	0.0624	0.2087	-0.6898	-1.9721	-0.3605	-0.1731	-0.7226	-3.1537
13	KNR BU/MR	1.4927	1.8540	1.2523	-0.5941	0.8316	-0.6199	-0.9510	-2.0382	2.0120	-2.5799	-1.7170	-2.8128	-1.0181	-0.8589	-1.4571	-2.4166	-1.4020	-1.2014	-1.6813	-3.6261
14	PNR METRO	1.8423	1.3398	2.6326	1.1883	0.0417	0.1450	-1.0457	-1.2029	0.7958	-1.2090	-0.9391	-0.4426	0.1423	0.5162	-0.3259	-1.8244	-0.4196	-0.1242	-0.5981	-2.2028
15	KNR METRO	0.0568	-0.4652	1.0409	0.3674	-0.9545	-0.4838	-1.6602	-2.4586	-0.1838	-2.5074	-1.5965	-1.6178	-0.6760	-0.5804	-0.8838	-1.9996	-0.9161	-0.5918	-0.9130	-1.7239

Ref: "I:\ateam\rest_log\calibms_2011-09\hov\newSegSumm5purps2007_2011-09.xlsx", sheet= N5TC2

Table 60 Top-level equivalent nesting constants for HBS

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
		DC CORE / URBAN-DC CORE	DC CORE / URBAN-VA CORE	DC CORE / URBAN-URBAN	DC CORE / URBAN-OTHER	MD URBAN-DC CORE	MD URBAN-VA CORE	MD URBAN-URBAN	MD URBAN-OTHER	VA CORE / URBAN-DC CORE	VA CORE / URBAN-VA CORE	VA CORE / URBAN-URBAN	VA CORE / URBAN-OTHER	MD OTHER-DC CORE	MD OTHER-VA CORE	MD OTHER-URBAN	MD OTHER-OTHER	VA OTHER-DC CORE	VA OTHER-VA CORE	VA OTHER-URBAN	VA OTHER-OTHER
1	LOV	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	HOV2	-0.2181	0.1246	-0.3638	-0.0280	-1.8025	0.0000	-0.2774	-0.2092	0.0407	0.0875	-0.2103	-0.2743	-0.5100	0.7810	0.0318	-0.1004	-0.1576	-0.0820	-0.1571	0.0266
3	HOV3+	-0.4391	-0.6890	-0.5409	-0.1268	-1.8024	0.0000	-0.3380	-0.4800	-0.7497	-0.0770	-0.3778	-0.6392	-1.3217	0.5363	-0.0827	-0.1491	-0.1809	-0.0275	-0.5797	-0.0055
4	WLK CR	-1.4928	-3.3614	-1.3004	-1.5545	-1.2625	3.4099	-1.6224	-3.5022	-1.2153	-2.8401	-1.7222	-3.3057	-3.0106	-2.3672	-1.1163	-1.7360	-0.5315	-13.6922	-1.8627	-2.4004
5	WLK BUS	-1.3389	-3.3614	-1.4014	-1.5289	-1.7177	3.4099	-1.5759	-2.9079	-1.2153	-1.5160	-2.0717	-2.6120	-1.7998	-2.3672	-1.0677	-1.6711	0.1539	-6.9792	-2.1257	-1.9842
6	WLK BU/MR	-1.3277	-3.3614	-1.2434	-2.3707	-1.0285	3.4099	-1.3290	-3.5022	-1.2153	-2.8401	-2.1495	-3.3057	-1.8744	-0.7047	-1.6500	-2.8297	-0.5315	-13.6922	-1.7785	-15.5283
7	WLK METRO	-1.8033	-2.4159	-1.1502	-1.9728	-1.3060	6.3627	-2.1533	-3.5499	0.0857	-2.8401	-0.9580	-3.3057	-3.0106	-2.3672	-0.8805	-3.0810	2.0025	-13.6922	-0.7788	-2.2279
8	PNR CR	-3.3402	-3.5711	-3.9673	-3.0870	-4.0713	1.7768	-4.3941	-4.3462	-2.5372	-4.9591	-5.9279	-4.5681	-2.6457	-4.3471	-4.5335	-9.6759	-2.4953	-21.2351	-6.9078	-48.7669
9	KNR CR	-4.5282	-3.5711	-3.7396	-3.0870	-4.0713	1.7768	-4.3941	-4.5472	-4.1181	-4.9591	-3.8815	-4.5681	-2.8085	-4.3471	-4.8979	-6.7078	-3.8446	-21.2740	-5.9793	-50.9109
10	PNR BUS	-3.3402	-3.5711	-3.9673	-3.0870	-4.0713	1.7768	-4.3941	-4.3462	-2.5372	-4.9591	-5.9279	-4.5681	-0.7967	-4.3471	-4.5335	-6.4989	-2.4953	-16.9609	-6.9078	-43.5299
11	KNR BUS	-4.5282	-3.5711	-3.4459	-3.0870	-4.0713	1.7768	-4.3941	-2.2755	-4.1181	-4.9591	-3.8815	-4.5681	-2.8085	-4.3471	-4.8979	-4.8555	-3.8446	-21.2740	-5.9793	-45.1316
12	PNR BU/MR	-3.3402	-3.5711	-2.6245	-3.0870	-4.0713	1.7768	-4.3941	-4.3462	-2.5372	-4.9591	-5.9279	-4.5681	-1.4084	-4.3471	-4.5335	-9.6759	-0.1697	-21.2351	-6.9078	-48.7669
13	KNR BU/MR	-4.5282	-3.5711	-3.0237	-3.0870	-4.0713	1.7768	-4.3941	-4.5472	0.5982	-4.9591	-3.8815	-4.5681	-1.6098	-4.3471	-3.5251	-6.7078	-3.8446	-21.2740	-5.9793	-50.9109
14	PNR METRO	-2.6756	-3.5711	-3.0172	-3.0870	-4.0714	1.7768	-4.3941	-4.3462	-2.5372	-4.9591	-3.9481	-4.5681	-2.9740	-4.3471	-3.7347	-9.6759	-3.1030	-21.2351	-5.5357	-48.7669
15	KNR METRO	-4.3494	-3.5711	-4.4245	-3.0870	-4.0714	1.7768	-4.3941	-4.5472	-4.1181	-4.9591	-3.8815	-4.5681	-3.0673	-4.3471	-4.7914	-6.7078	-3.8446	-21.2740	-5.9793	-50.9109

Ref: "I:\ateam\rest_log\calibms_2011-09\hov\newSegSumm5purps2007_2011-09.xlsx", sheet= N5TC2

Table 61 Top-level equivalent nesting constants for HBO

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
		DC CORE / URBAN-DC CORE	DC CORE / URBAN-VA CORE	DC CORE / URBAN-URBAN	DC CORE / URBAN-OTHER	MD URBAN-DC CORE	MD URBAN-VA CORE	MD URBAN-URBAN	MD URBAN-OTHER	VA CORE / URBAN-DC CORE	VA CORE / URBAN-VA CORE	VA CORE / URBAN-URBAN	VA CORE / URBAN-OTHER	MD OTHER-DC CORE	MD OTHER-VA CORE	MD OTHER-URBAN	MD OTHER-OTHER	VA OTHER-DC CORE	VA OTHER-VA CORE	VA OTHER-URBAN	VA OTHER-OTHER
1	LOV	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	HOV2	0.0034	-0.2118	-0.0935	-0.3155	-0.2409	0.0000	0.0102	0.0339	0.0300	0.0250	-0.0211	-0.1062	-0.1469	-0.2942	-0.1269	0.0255	-0.3325	0.0512	-0.1185	0.0285
3	HOV3+	-0.1795	-0.4702	-0.1578	-0.3385	-0.5435	0.0000	-0.0795	-0.1473	-0.0615	-0.0158	-0.1036	-0.1653	-0.1659	-0.0649	-0.2046	-0.0262	-0.8013	0.0122	-0.2453	0.0012
4	WLK CR	0.4667	0.1148	-0.2602	-0.0131	0.9060	5.8749	-0.1976	-1.2549	3.3086	-1.1812	-0.6963	-0.6633	3.3733	-0.1920	-0.2506	-1.1209	2.1275	-0.1814	-0.0266	-1.1798
5	WLK BUS	0.4563	-1.6518	-0.1991	-0.9584	0.0398	4.9872	-0.4361	-1.2518	1.2751	-3.3999	-1.3550	-1.8236	0.4450	-0.1920	-0.1254	-0.6810	1.7382	-1.1023	-0.7758	-1.0207
6	WLK BU/MR	0.5675	-0.2731	-0.3744	-1.0003	0.4680	6.2542	-0.5338	-1.5312	1.6494	-2.9351	-0.2677	-1.4974	-0.1028	-0.6484	-0.5055	-0.9605	1.4764	-1.2245	0.3266	-2.6095
7	WLK METRO	0.4532	0.2791	-0.3183	-0.1886	1.3047	6.0828	0.3838	-0.8687	3.9252	-0.6841	0.2250	0.6455	0.6328	0.4117	-0.6152	-1.3785	3.1486	0.9706	1.4791	-0.6079
8	PNR CR	-0.8570	-0.8819	-2.1790	-2.6533	-1.5736	2.0556	-2.9215	-2.6526	-0.2220	-4.1839	-4.3915	-5.0254	0.1019	-0.0277	-1.5197	-4.2895	-0.6041	-2.0205	-2.1351	-26.6494
9	KNR CR	-2.2446	-1.8904	-3.0535	0.9144	-2.4825	2.0556	-4.2611	-4.2814	-1.1019	-4.1839	-4.5417	-3.6492	-1.4714	-0.3236	-1.7240	-4.1518	-1.3749	-3.3118	-2.6030	-27.0285
10	PNR BUS	-1.4624	-0.8819	-2.9743	-1.5313	-1.5736	2.0556	-2.6022	-0.4789	-0.2220	-4.1839	-4.3915	-5.0254	0.6523	-0.0277	-1.9082	-3.3783	0.2861	-3.2869	-2.4818	-24.6711
11	KNR BUS	-1.4289	-0.8449	-2.7167	-2.3011	-2.4825	2.0556	-3.2540	-2.3793	-1.1019	-4.1839	-3.3668	-3.9663	-1.7535	-0.3236	-1.6897	-3.2278	-1.3749	-3.3118	-2.2320	-24.7543
12	PNR BU/MR	-1.0877	-0.8819	-1.8439	-2.6533	0.8838	2.0556	-3.1864	-2.6526	0.1410	-4.1839	-2.2474	-5.0254	1.4849	2.4809	-1.6573	-11.0084	0.7202	-1.0667	-2.0080	-29.6818
13	KNR BU/MR	-0.3786	-1.8904	-2.8338	-2.4146	0.2222	2.0556	-4.2611	-3.6220	2.6965	-4.1839	-4.5417	-3.6492	-0.5682	0.2620	-1.9287	-3.8595	-0.5318	-1.2663	-2.1152	-29.0856
14	PNR METRO	-0.8001	-0.8819	-2.0472	-1.4026	-1.5222	2.0556	-3.1023	-2.6526	-0.2270	-4.1839	-3.0119	-2.3781	-0.7699	-0.1946	-2.0897	-4.1104	-0.7710	-1.9707	-1.8295	-13.6230
15	KNR METRO	-2.5774	-1.9117	-3.2210	-1.9281	-2.5435	2.0556	-4.2766	-4.2814	-1.6634	-4.1839	-4.0078	-2.4149	-1.9475	-0.2336	-2.6675	-4.1282	-1.4864	-3.2991	-2.5710	-13.7843

Ref: "I:\ateam\nest_log\calibms_2011-09hov\newSegSumm5purps2007_2011-09.xlsx", sheet= NSTC2

Table 62 Top-level equivalent nesting constants for NHW

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
		DC CORE / URBAN-DC CORE	DC CORE / URBAN-VA CORE	DC CORE / URBAN-URBAN	DC CORE / URBAN-OTHER	MD URBAN-DC CORE	MD URBAN-VA CORE	MD URBAN-URBAN	MD URBAN-OTHER	VA CORE / URBAN-DC CORE	VA CORE / URBAN-VA CORE	VA CORE / URBAN-URBAN	VA CORE / URBAN-OTHER	MD OTHER-DC CORE	MD OTHER-VA CORE	MD OTHER-URBAN	MD OTHER-OTHER	VA OTHER-DC CORE	VA OTHER-VA CORE	VA OTHER-URBAN	VA OTHER-OTHER
1	LOV	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	HOV2	-2.4376	-1.5657	-2.0310	-2.0077	-3.8841	0.0000	-2.2594	-1.8822	-2.4765	-1.9004	-2.1911	-2.1279	-3.6029	-2.2104	-2.7180	-1.3908	-3.9866	-3.9037	-2.7655	-1.3649
3	HOV3+	-3.5455	-1.9487	-2.3634	-3.2005	-3.7904	0.0000	-2.7406	-2.3435	-3.1951	-2.4839	-3.1260	-3.0600	-5.0775	-4.2154	-3.9865	-1.9164	-5.3697	-6.0925	-4.1766	-1.9571
4	WLK CR	-1.6903	-0.4053	-0.3370	1.7025	-2.0220	6.2062	-1.5944	-0.1703	-2.0894	-1.0396	-1.6799	-0.8202	-1.7455	-0.9505	-1.4634	-0.3105	-1.2490	-3.3652	-1.6986	-1.2128
5	WLK BUS	-1.9595	-0.4053	-0.4801	-0.5447	-1.8584	6.2062	-1.5470	0.1920	-2.0894	-1.4982	-1.9253	-2.0126	-2.0160	-0.9505	-1.2400	-0.0919	-2.3222	-3.9255	-2.6994	-1.3645
6	WLK BU/MR	-0.6114	1.7337	0.1905	0.3267	-1.0794	8.8945	-0.1273	-0.0709	-0.5114	-0.6410	-0.6534	-1.2615	-1.4502	-0.0940	-0.8682	-0.8592	-1.4804	-3.1791	-1.5834	-0.2274
7	WLK METRO	-1.7094	-0.3752	-0.2642	3.0591	-2.1822	6.1449	-1.9032	-1.1478	-1.9452	-0.9863	-1.7099	0.6712	-1.7701	-1.5237	-2.2838	-1.6032	-0.4143	-2.9653	-0.1749	0.9161
8	PNR CR	-2.6406	-0.7167	-1.6196	1.6398	-3.3384	2.8065	-3.6695	-3.1487	-2.2962	-2.4258	-3.7777	-0.7243	-2.9853	-2.1610	-2.9937	-4.1550	-2.4409	-3.7939	-4.2744	-5.8461
9	KNR CR	-3.4200	-1.1675	-2.2434	-0.2994	-4.4639	2.8065	-3.7179	-3.3772	-3.7569	-5.3010	-5.6579	-2.5389	-3.9190	-2.6049	-3.0810	-2.2037	-3.5800	-4.9894	-4.5255	-5.6336
10	PNR BUS	-2.7937	-0.7167	-3.0221	0.4159	-3.3384	2.8065	-4.5837	-3.1487	-2.2962	-2.4258	-3.7777	-1.6842	-2.9853	-2.1610	-2.7769	-4.3793	-3.8261	-5.4111	-4.2744	-5.1085
11	KNR BUS	-2.8981	-1.1675	-1.5993	-0.1074	-4.4639	2.8065	-2.6372	-3.3772	-3.7569	-2.6255	-3.2875	-1.2885	-2.8625	-2.6049	-2.0398	-1.3391	-3.5800	-4.9894	-4.5255	-4.3488
12	PNR BU/MR	-2.1902	-0.7244	-2.0208	0.0927	-1.4416	2.8065	-1.9062	-3.1487	-0.3921	0.1998	-1.3897	-1.3045	0.2511	-2.1610	-0.5615	-3.8897	-0.8536	-1.7350	-1.8885	-6.0620
13	KNR BU/MR	-1.1556	-1.1675	-0.8441	-1.1516	-4.4639	2.8065	-1.2887	-3.3772	-2.3751	-5.3010	-5.6579	-2.9415	-2.1199	-0.6721	-1.6133	-1.7721	-2.3873	-2.8043	-2.9213	-5.4754
14	PNR METRO	-2.6848	-0.6501	-1.4107	2.2379	-3.4506	2.8065	-4.3716	-2.6083	-2.7644	-1.9506	-3.6536	0.0965	-3.2444	-2.1325	-3.3581	-4.0099	-2.5813	-3.7801	-3.8424	-5.8461
15	KNR METRO	-3.7972	-1.1531	-2.7023	-0.0656	-4.4231	2.8065	-5.4254	-2.8775	-3.8119	-5.6346	-5.9060	-3.6840	-4.0520	-2.8441	-4.0099	-4.6996	-3.2268	-4.4158	-4.2103	-5.6336

Ref: "I:\ateam\nest_log\calibms_2011-09hov\newSegSumm5purps2007_2011-09.xlsx", sheet= NSTC2

Table 63 Top-level equivalent nesting constants for NHO

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
		DC CORE / URBAN-DC CORE	DC CORE / URBAN-VA CORE	DC CORE / URBAN-URBAN	DC CORE / URBAN-OTHER	MD URBAN-DC CORE	MD URBAN-VA CORE	MD URBAN-URBAN	MD URBAN-OTHER	VA CORE / URBAN-DC CORE	VA CORE / URBAN-VA CORE	VA CORE / URBAN-URBAN	VA CORE / URBAN-OTHER	MD OTHER-DC CORE	MD OTHER-VA CORE	MD OTHER-URBAN	MD OTHER-OTHER	VA OTHER-DC CORE	VA OTHER-VA CORE	VA OTHER-URBAN	VA OTHER-OTHER
1	LOV	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	HOV2	-2.2404	-1.2452	-1.3467	-1.1410	-3.1344	0.0000	-1.1515	-0.9380	-2.5265	-1.8987	-1.5496	-1.0076	-2.2877	0.0000	-1.3530	-0.4546	-3.3001	-1.1960	-1.7771	-0.4119
3	HOV3+	-3.3165	-2.7461	-1.9886	-2.0087	-4.8406	0.0000	-2.0389	-1.7496	-4.2143	-3.0188	-2.3954	-1.5215	-3.3084	0.0000	-2.0412	-0.7840	-5.2859	-1.8159	-2.7387	-0.7341
4	WLK CR	-2.7103	14.4532	-1.3012	3.8052	-3.8066	5.6246	-2.0853	0.8939	4.5942	-2.7925	-1.8710	-0.5412	5.8333	5.8435	2.2363	0.4785	-2.0189	-2.8030	-2.5317	-2.2029
5	WLK BUS	-2.7298	2.1756	-1.3548	-0.3841	-3.6153	5.6246	-1.9184	-0.6535	-0.6371	-3.9149	-2.5782	-2.9590	-2.9345	5.8435	-1.5897	-0.8081	-2.0189	-2.3898	-3.1561	-1.9266
6	WLK BU/MR	-1.5929	14.6844	-1.0196	0.2155	-3.8372	5.6246	-1.5135	-0.7223	0.8046	-2.7925	-1.7510	-2.9326	-2.8937	5.8435	-1.3104	-2.1187	-1.4854	-1.4768	-1.2410	-8.5635
7	WLK METRO	-2.8907	14.8040	-1.2693	0.9272	-3.8252	7.1431	-2.6014	-2.6241	5.3324	-2.4153	-1.3204	-1.2713	-3.7450	7.4533	-2.8427	-3.1104	-0.6206	-2.8030	-2.3442	-0.4109
8	PNR CR	-3.2036	11.3868	-2.7009	5.5366	-5.1009	2.7278	-4.4368	-3.3171	0.1334	-3.9554	-3.2669	-3.0443	-1.4415	9.9027	-2.0066	-3.6171	-2.7488	-5.0527	-5.0799	-25.0794
9	KNR CR	-4.0443	12.4264	-2.9376	6.5793	-5.8969	2.7278	-4.5538	-4.1205	-1.7831	-4.1493	-3.8767	-5.2161	-3.0747	10.3516	-2.9328	-5.1200	-3.2226	-5.8118	-5.3164	-20.7873
10	PNR BUS	-3.1549	11.3868	-2.8778	-1.7849	-5.1009	2.7278	-2.3237	-3.3171	0.1334	-3.9554	-3.2669	-3.0443	-3.7766	9.0661	-3.7922	-1.9278	-2.7488	-5.0527	-5.0799	-19.6462
11	KNR BUS	-2.9282	12.4264	-2.4805	-0.5501	-5.8969	2.7278	-3.2365	-1.3829	-1.7831	-4.1493	-3.8767	-2.7129	-3.7336	6.6043	-2.9570	-2.9143	-3.2226	-5.8118	-5.3164	-17.1340
12	PNR BU/MR	-2.1972	11.3868	-1.5707	-1.7849	-2.9949	2.7278	-4.4368	-3.3171	0.7842	-3.9554	-3.2669	-3.0443	-1.9992	19.2582	-1.1466	-3.6171	-1.4001	-5.0527	-3.9203	-25.0794
13	KNR BU/MR	-2.8527	12.4264	-1.7376	-0.8011	-5.8969	2.7278	-4.5538	-4.1205	2.6833	0.9938	-1.7953	-5.2161	-2.4275	6.6043	-1.1044	-5.1200	-1.4696	-5.8118	-5.3164	-20.7873
14	PNR METRO	-3.3138	12.0154	-3.8882	-1.6944	-5.3412	2.7278	-4.4368	-3.3171	0.3752	-3.9554	-3.2669	-3.0443	-4.4164	5.3409	-4.3497	-3.6171	-2.6974	-4.3444	-3.8118	-25.0794
15	KNR METRO	-4.4196	12.6442	-3.3930	-1.6450	-5.8166	2.7278	-5.0141	-4.1205	-2.6233	-4.8077	-5.3551	-5.2161	-5.2742	4.9954	-4.4617	-5.1200	-3.7608	-5.8118	-4.2009	-17.6239

Ref: "I:\ateam\nest_log\calibms_2011-09hov\newSegSumm5purps2007_2011-09.xlsx", sheet= NSTC2

Computing top-level nesting constants and calculating implied minutes of impedance

As stated earlier, the default for the AEMS mode choice model application program is to use the McFadden UMNL model for coefficient values (specified in the AEMS control file using the COEF command) and the Daly NNL model format for nesting coefficients and nesting constants (specified in the AEMS control file using the NSTC command). Consequently, one will often want to convert from the Daly-style nesting constant values to the McFadden-style nesting constant values (also known as “top-level” nesting constant values). This section of the report describes how to do this transformation, which is also done in formulas found on the spreadsheet page entitled “NSTCconst” found in the newSegSumm5purps*.xlsx Excel file.

To compute the top-level value of the nesting constants, we use the formula shown in Equation 11.

Equation 11 Equation for calculating the top-level equivalent value of a nesting constant

$$\text{Higher level constant} = \{ (\text{lower level nest constant}) * (\text{higher level nest coefficient}) + (\text{higher level nest constant}) \}$$

and so on, up to top nest level

To help illustrate this, we will perform a sample calculation. Figure 16 contains a nested-logit mode choice model with the same structure as the TPB NLMC model, but with hypothetical values for the nesting constants and nesting coefficients. Nest 4 is the PNR or drive-access to transit nest. The nesting constant values shown on the branches of the tree are in Daly format (e.g., the raw values that are produced by the CALIBMS program) and need to be converted to McFadden (top-level) format. Figure 16, the lower-level nesting constant for the PNR bus/Metrorail choice is -2.50368. To convert this value to its upper-level equivalent, we multiply it by the nesting *coefficient* of the next higher level (the PNR nest, which has a nesting coefficient value of 0.5). Then we add the nesting constant value of the PNR nest (-3.25564). Next, we multiply the result by the nesting coefficient of the next level up (the transit nest, whose nesting coefficient value is also 0.5). And finally, we add the nesting coefficient for the transit nest (3.01841), giving a result of 0.7647. This calculation can be seen below and on Figure 16.

Sample calculation:

$$\text{PNR BU/MR (top level)} = \{ (-2.50368) * (0.5) + (-3.25564) \} * (0.5) + (3.01841) = 0.7647$$

In addition, to calculate the implied minutes of impedance, we divide the top-level constant value by the IVT coefficient, as shown in Equation 12.

Equation 12 Equation for calculating the implied minutes of impedance of a top-level nesting constant

$$\text{Implied minutes of impedance} = (\text{top level const}) / \text{IVT coefficient}$$

Thus, continuing with the example,

$$\text{Implied minutes of impedance} = 0.7647 / -0.02128 = 35.9 \text{ minutes.}$$

Top-level constants are computed as follows:

Higher level constant = { (lower level nest constant) * (higher level nest coefficient) + (higher level nest constant) } and so on, up to top nest level

Sample calculations with hypothetical values:

$$\text{PNR BU/MR (top level)} = \{ (-2.50368) * (0.5) + (-3.25564) \} * (0.5) + (3.01841) = 0.7647$$

$$\text{Implied minutes of impedance} = (\text{top level const}) / \text{IVTT coeff} = 0.7647 / 0.02128 = 35.9 \text{ min.}$$

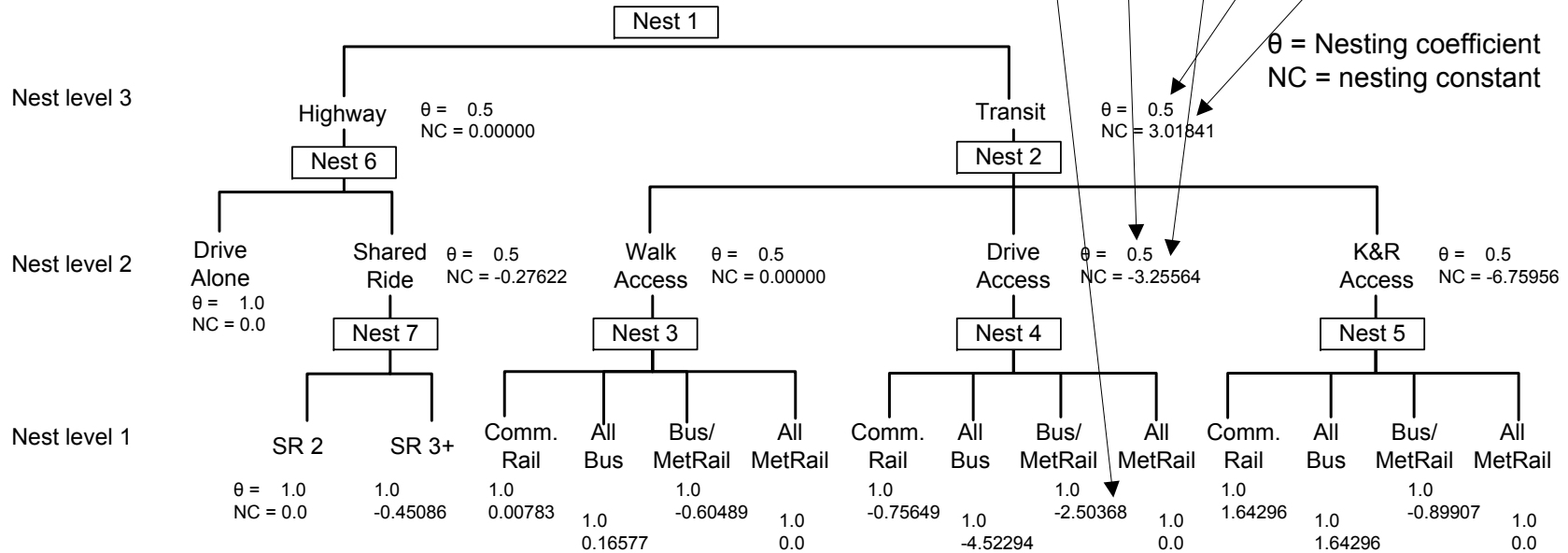


Figure 16 Example of calculating top-level nesting constant values and implied minutes of impedance

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Trips by mode

Table 64 shows person trips summarized by travel mode and trip purpose, summarized for all 20 geographic market segments. The total number of year-2007 estimated person trips is 17,330,543. The total number of year-2007 estimated transit person trips in Table 64 is 1,107,185, which is about 1.6% below the observed target value.

Table 64 Person trips summarized by travel mode and trip purpose, summed for all 20 geographic market segments

	Mode	HBW		HBS		HBO		NHW		NHO		ALL	
		Target	Model	Target	Model	Target	Model	Target	Model	Target	Model	Target	Model
All 20 Segments	DR ALONE	2,341,574	2,360,603	1,247,598	1,250,215	2,489,986	2,492,548	1,061,426	1,063,213	1,300,863	1,303,491	8,441,447	8,470,070
	SR2	311,741	315,351	866,268	868,063	1,998,390	2,000,328	210,142	210,410	895,478	897,067	4,282,019	4,291,219
	SR3+	119,813	121,668	727,922	729,607	1,778,874	1,780,536	169,857	170,225	658,899	660,034	3,455,365	3,462,070
	WK-CR	1,849	1,809	21	77	210	399	0	407	400	368	2,480	3,059
	WK-BUS	171,834	176,138	18,433	16,784	87,044	86,047	23,685	24,067	16,224	15,907	317,220	318,944
	WK-BU/MR	132,142	138,821	2,487	2,709	23,696	23,882	12,417	12,330	3,960	4,248	174,702	181,989
	WK-MR	194,165	159,582	4,853	4,720	46,904	46,109	56,579	55,968	16,428	15,826	318,929	282,206
	PNR-CR	16,647	16,948	0	57	260	529	0	67	208	248	17,115	17,849
	KNR-CR	1,472	1,515	0	27	197	265	0	60	216	345	1,885	2,212
	PNR-BUS	15,967	16,325	82	684	3,030	3,127	355	409	1,523	1,625	20,957	22,169
	KNR-BUS	4,553	4,768	199	323	2,004	2,440	1,426	1,475	880	1,020	9,062	10,027
	PNR-BU/MR	27,525	27,972	112	467	2,700	3,086	1,482	1,462	559	687	32,378	33,673
	KNR-BU/MR	9,248	9,652	136	350	1,733	1,997	1,210	1,200	1,003	1,136	13,330	14,335
	PNR-MR	137,984	139,762	469	496	15,657	15,721	7,271	7,248	1,563	1,942	162,944	165,168
	KNR-MR	42,794	44,292	146	417	4,436	4,456	4,378	4,379	1,831	2,011	53,585	55,554
Total Person	3,529,308	3,535,205	2,868,726	2,874,995	6,455,121	6,461,470	1,550,228	1,552,920	2,900,035	2,905,954	17,303,418	17,330,543	
Total Transit	756,180	737,582	26,938	27,111	187,871	188,058	108,803	109,072	44,795	45,362	1,124,587	1,107,185	
Transit Pct	21.4%	20.9%	0.9%	0.9%	2.9%	2.9%	7.0%	7.0%	1.5%	1.6%	6.5%	6.4%	

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Table 65 shows the total person trips summarized by market segment. The model seems to replicate the observed data well at the geographic market segment level, which is not surprising, since the model was calibrated to the geographic market segments.

Table 65 Total person trips summarized by market segment

Market Segment	HBW		HBS		HBO		NHW		NHO		ALL	
	Target	Model	Target	Model	Target	Model	Target	Model	Target	Model	Target	Model
1	134,401	134,443	19,489	19,516	87,614	87,638	73,639	73,702	40,293	40,326	355,436	355,625
2	12,048	12,052	2,259	2,263	9,262	9,263	8,584	8,592	1,963	1,959	34,116	34,129
3	79,327	79,375	85,883	85,882	290,451	290,407	87,235	87,404	109,738	109,835	652,634	652,902
4	50,639	51,001	43,584	44,229	83,410	83,779	57,228	57,477	46,839	48,080	281,700	284,565
5	27,134	27,140	1,951	1,949	11,089	11,090	4,712	4,720	3,567	3,574	48,453	48,473
6	2,690	2,690	32	149	183	874	192	637	35	174	3,132	4,525
7	34,407	34,463	31,704	31,724	87,461	87,468	32,336	32,367	36,942	36,985	222,850	223,007
8	28,197	28,310	29,115	29,247	63,122	63,256	26,792	26,831	39,057	39,204	186,283	186,849
9	52,353	52,362	2,285	2,291	16,151	16,141	11,905	11,913	2,986	2,983	85,680	85,690
10	16,258	16,259	8,202	8,203	21,647	21,647	16,987	16,986	7,613	7,613	70,707	70,708
11	40,690	40,744	53,655	53,749	119,875	119,902	44,977	45,013	45,523	45,611	304,720	305,018
12	37,238	37,308	33,573	33,746	68,500	68,685	33,800	33,876	39,006	39,318	212,117	212,933
13	253,810	253,898	9,499	9,632	62,394	62,457	18,619	18,741	12,216	12,428	356,538	357,156
14	31,972	31,992	1,250	1,272	8,456	8,469	2,700	2,713	295	803	44,673	45,250
15	255,819	256,817	65,623	66,141	257,639	258,249	51,200	51,505	71,695	72,349	701,976	705,059
16	1,153,303	1,155,451	1,377,580	1,378,889	2,935,938	2,938,054	575,180	575,774	1,411,540	1,412,393	7,453,541	7,460,562
17	177,725	177,806	6,142	6,342	39,527	39,584	9,448	9,530	2,441	2,588	235,283	235,850
18	48,637	48,645	6,448	6,468	22,379	22,394	6,951	6,968	4,190	4,205	88,605	88,681
19	162,085	162,713	45,211	46,140	127,689	128,316	28,602	28,712	32,517	33,007	396,104	398,888
20	930,575	931,736	1,045,241	1,047,163	2,142,334	2,143,798	459,141	459,459	991,579	992,516	5,568,870	5,574,673
Total Person	3,529,308	3,535,205	2,868,726	2,874,995	6,455,121	6,461,470	1,550,228	1,552,920	2,900,035	2,905,954	17,303,418	17,330,543
Total Transit	756,180	737,582	26,938	27,111	187,871	188,058	108,803	109,072	44,795	45,362	1,124,587	1,107,185
Transit Pct	21.4%	20.9%	0.9%	0.9%	2.9%	2.9%	7.0%	7.0%	1.5%	1.6%	6.5%	6.4%

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Table 66 shows *transit* person trips summarized by market segment. As stated before, at the regional level, the model appears to be underestimating total transit by about 1.6%. In terms of the five trip purposes, the estimated transit person trips for all five trip purposes match reasonably well at the regional level, with the largest discrepancy being a 2.5% underestimation of HBW transit person trips compared to the observed target.

Table 66 Transit person trips summarized by market segment

Market Segment	HBW		HBS		HBO		NHW		NHO		ALL	
	Target	Model	Target	Model	Target	Model	Target	Model	Target	Model	Target	Model
1	121,156	121,179	2,516	2,519	32,693	32,702	29,816	29,856	9,430	9,440	195,611	195,696
2	10,475	10,399	145	144	3,142	3,130	4,281	4,292	1,880	1,818	19,923	19,784
3	71,016	70,358	6,941	6,940	41,914	41,908	24,992	25,043	11,535	11,545	156,398	155,795
4	20,938	18,330	1,238	1,254	5,028	5,032	6,633	6,433	2,681	2,751	36,518	33,801
5	20,376	20,133	202	201	3,493	3,477	2,089	2,094	467	468	26,627	26,372
6	1,753	1,739	32	126	183	773	192	581	35	153	2,195	3,372
7	15,410	15,271	900	898	6,656	6,633	2,084	2,087	1,014	1,015	26,064	25,905
8	6,056	5,953	390	391	2,659	2,663	1,901	1,904	1,056	1,061	12,062	11,972
9	46,277	45,188	197	196	7,689	7,575	5,427	5,431	2,540	2,442	62,130	60,832
10	7,160	7,086	247	253	938	930	2,977	2,976	586	585	11,908	11,830
11	20,454	18,903	1,397	1,386	5,681	5,648	4,626	4,633	2,260	2,251	34,418	32,821
12	5,473	4,851	466	476	1,991	1,966	1,703	1,685	374	375	10,007	9,353
13	122,128	118,903	377	392	11,153	11,117	4,701	4,731	966	987	139,325	136,130
14	14,072	13,967	27	28	1,436	1,433	493	496	295	715	16,323	16,639
15	68,062	66,519	1,779	1,792	16,478	16,521	3,984	4,013	2,077	2,096	92,380	90,942
16	42,095	42,095	5,444	5,450	21,809	21,825	4,505	4,510	3,970	3,981	77,823	77,862
17	76,030	72,423	218	218	7,192	7,078	3,220	3,202	753	786	87,413	83,707
18	21,412	20,955	21	32	1,061	1,052	676	677	123	126	23,293	22,843
19	41,081	39,395	597	601	6,262	6,193	1,838	1,803	871	884	50,649	48,876
20	24,756	23,933	3,804	3,811	10,413	10,403	2,665	2,625	1,882	1,883	43,520	42,655
Total Transit	756,180	737,582	26,938	27,111	187,871	188,058	108,803	109,072	44,795	45,362	1,124,587	1,107,185

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Table 67 shows transit person trips summarized by transit submode. It appears that Metrorail is slightly underestimated at the regional level, summed across all five trip purposes (502,928 versus 535,458 observed, or about 6%), whereas bus and bus/Metrorail are slightly overestimated at the regional level, by about 1% for bus and 4% for bus/Metrorail.

Table 67 Transit person trips summarized by transit submode

Mode	HBW		HBS		HBO		NHW		NHO		ALL	
	Target	Model	Target	Model	Target	Model	Target	Model	Target	Model	Target	Model
CR	19,968	20,272	21	160	667	1,193	0	534	824	961	21,480	23,120
MR	374,943	343,635	5,468	5,633	66,997	66,286	68,228	67,595	19,822	19,779	535,458	502,928
BUS	192,354	197,231	18,714	17,791	92,078	91,615	25,466	25,951	18,627	18,552	347,239	351,140
BUS/MR	168,915	176,444	2,735	3,526	28,129	28,965	15,109	14,992	5,522	6,070	220,410	229,997
Total Person	3,529,308	3,535,205	2,868,726	2,874,995	6,455,121	6,461,470	1,550,228	1,552,920	2,900,035	2,905,954	17,303,418	17,330,543
Total Transit	756,180	737,582	26,938	27,111	187,871	188,058	108,803	109,072	44,795	45,362	1,124,587	1,107,185
Transit Pct	21.4%	20.9%	0.9%	0.9%	2.9%	2.9%	7.0%	7.0%	1.5%	1.6%	6.5%	6.4%

Table 68 shows transit person trips summarized by access mode to transit. At the regional level, when summed across all five trip purposes, transit person trips by the walk-access mode are underestimated by about 3%, but transit person trips by the PNR and KNR access modes are overestimated, by about 2% and 6% respectively.

Table 68 Transit person trips summarized by access mode to transit

Mode	HBW		HBS		HBO		NHW		NHO		ALL	
	Target	Model	Target	Model	Target	Model	Target	Model	Target	Model	Target	Model
WALK	499,990	476,349	25,794	24,290	157,854	156,437	92,681	92,772	37,012	36,349	813,331	786,198
PNR	198,123	201,006	663	1,704	21,647	22,462	9,108	9,185	3,853	4,502	233,394	238,859
KNR	58,067	60,226	481	1,116	8,370	9,159	7,014	7,115	3,930	4,511	77,862	82,128
Total Person	3,529,308	3,535,205	2,868,726	2,874,995	6,455,121	6,461,470	1,550,228	1,552,920	2,900,035	2,905,954	17,303,418	17,330,543
Total Transit	756,180	737,582	26,938	27,111	187,871	188,058	108,803	109,072	44,795	45,362	1,124,587	1,107,185
Transit Pct	21.4%	20.9%	0.9%	0.9%	2.9%	2.9%	7.0%	7.0%	1.5%	1.6%	6.5%	6.4%

Chapter 7 Time-of-Day Model

The time-of-day model for the Version 2.3 travel model apportions daily vehicle trips among four modeled time-of-day periods, prior to the traffic assignment step. This chapter presents the details of the model and the development of the peaking factors. The actual peak-hour factors for the four time-of-day periods can be found on Table 77 on page 8-18.

7.1 Model Structure

The time-of-day model, which follows the mode choice model, addresses the temporal dimension of travel. The model distributes daily trips by purpose and mode to specific periods of the day, in preparation for the traffic assignment step. The four modeled time periods considered in the Version 2.3 model are defined as the AM peak period (6 – 9 AM), the midday period (9 AM – 3 PM), the PM peak period (3 PM – 7 PM) and the nighttime/early morning period (7 PM – 6 AM). Note that the AM peak period is defined as being three hour long (as it was in Version 2.2), but the PM peak period is now defined as being four hours long (compared to three hours in Version 2.2).⁷⁹

The distribution of daily trips to specific time periods are made with time-in-motion factors developed from the 2007/2008 HTS. The factors, shown as Table 70, have been developed on the basis of purpose, mode, and directionality of the trip (with respect to the home-end and non-home ends of the trip). After applying the travel model, including the time-of-day-specific traffic assignment, it was found that the model was overestimating travel in the AM and PM peaks, and underestimating travel in the midday and night periods. Consequently, the time-of-day factors were adjusted so that the traffic assignment more closely matched the observed VMT. The resulting, adjusted time-of-day factors are shown in Table 71.

The truck and various non-modeled auto driver travel markets are also converted from daily trip tables to the four time periods using a system of temporal factors. The factors are summarized in Table 69.

⁷⁹ Mark S. Moran to Ronald Milone, "Choosing the breakpoints for and duration of time-of-day periods used in the Version 2.3 travel model," Memorandum, October 21, 2010.

Table 69 Version 2.3 Temporal Factors (Percentages) For Truck and Non-Modeled Travel Markets

Time Period	Travel Market							
	Comm. Vehicle	Medium Truck	Heavy Truck	X-X Auto Dr	Taxi Auto Dr	Tourist Auto Dr	School Auto Dr	Airport Auto Dr
AM	18.70	25.00	20.00	18.70	18.70	18.70	18.70	23.10
MD	32.63	45.00	50.00	32.63	32.63	32.63	32.63	36.57
PM	32.89	20.00	10.00	32.89	32.89	32.89	32.89	25.38
NT	15.78	10.00	20.00	15.78	15.78	15.78	15.78	14.95

Note: Medium & Heavy truck factors were updated as part of the truck modeling update

The temporal factors shown for medium and heavy trucks were recently updated as part of the revised truck modeling effort.⁸⁰ The remaining temporal factors were based on professional judgment. The directional splits for the above auto trips are 50/50 (all time periods). The directional X/I and IX split for external commercial and truck trips 70/30, 30/70, and 50/50, for the AM, PM, and off-peak periods, respectively.

In application, these factors are assumed to remain *constant* over time. Although it is reasonable to expect, that congestion will encourage traffic spreading from the AM and PM periods to the off-peak, the peak spreading phenomenon is complex and not well understood in the profession. Instead of addressing this issue in the regional model, TPB accounts for peak spreading issues in its travel model post-processor (also known as the mobile emissions post processor), where hourly volume and speed estimates are formulated.⁸¹

⁸⁰ Allen, *Development of a Model for Truck Trips*.

⁸¹ Hamid Humeida, "Emissions post processor used for the Air Quality Conformity Determination of the 2008 CLRP and the FY2009-2014 TIP," Memorandum, April 27, 2009; Ronald Milone and Hamid Humeida to Files, "Mobile Emissions Post-Processor Description and Results," Memorandum, May 26, 2009.

Table 70 Initial, Household Travel Survey-based temporal travel distributions by purpose, mode, and direction

Purpose	Mode	Direction	AM	MD	PM	NT
HBW	Auto Driver	Home-NonHome	66.53	19.99	4.17	9.31
		NonHome-Home	1.41	8.16	70.77	19.66
	Drive Alone	Home-NonHome	67.06	19.69	3.89	9.36
		NonHome-Home	1.59	8.20	69.67	20.54
	Carpool Person	Home-NonHome	58.06	25.85	7.90	8.19
		NonHome-Home	0.25	8.69	75.95	15.11
Transit	Home-NonHome	74.63	16.70	0.81	7.86	
	NonHome-Home	0.19	2.78	79.88	17.15	
HBS	Auto Driver	Home-NonHome	15.43	41.71	28.17	14.69
		NonHome-Home	1.49	32.12	38.24	28.15
	Drive Alone	Home-NonHome	20.84	43.46	22.08	13.62
		NonHome-Home	2.10	33.17	39.24	25.49
	Carpool Person	Home-NonHome	6.38	37.49	40.09	16.04
		NonHome-Home	0.30	29.26	35.89	34.55
Transit	Home-NonHome	35.42	43.24	14.49	6.85	
	NonHome-Home	0.36	25.76	38.85	35.03	
HBO	Auto Driver	Home-NonHome	24.26	38.71	25.24	11.79
		NonHome-Home	6.96	27.53	35.58	29.93
	Drive Alone	Home-NonHome	22.43	42.19	23.05	12.33
		NonHome-Home	9.34	29.41	31.68	29.57
	Carpool Person	Home-NonHome	33.57	30.60	26.06	9.77
		NonHome-Home	2.37	22.94	45.92	28.77
Transit	Home-NonHome	41.28	41.23	13.20	4.29	
	NonHome-Home	0.52	23.33	43.54	32.61	
NHW	Auto Driver	Home-NonHome	12.33	43.14	38.80	5.73
		NonHome-Home	12.33	43.14	38.80	5.73
	Drive Alone	Home-NonHome	12.93	42.82	38.36	5.89
		NonHome-Home	12.93	42.82	38.36	5.89
	Carpool Person	Home-NonHome	12.46	41.92	39.87	5.75
		NonHome-Home	12.46	41.92	39.87	5.75
Transit	Home-NonHome	17.35	24.71	51.08	6.86	
	NonHome-Home	17.35	24.71	51.08	6.86	
NHO	Auto Driver	Home-NonHome	4.07	55.33	29.87	10.73
		NonHome-Home	4.07	55.33	29.87	10.73
	Drive Alone	Home-NonHome	4.92	57.58	28.17	9.33
		NonHome-Home	4.92	57.58	28.17	9.33
	Carpool Person	Home-NonHome	3.69	47.29	35.48	13.54
		NonHome-Home	3.69	47.29	35.48	13.54
Transit	Home-NonHome	5.92	39.82	45.49	8.77	
	NonHome-Home	5.92	39.82	45.49	8.77	

Table 71 Final temporal travel distributions by purpose, mode, and direction

Purpose	Mode	Direction	AM	MD	PM	NT
HBW	Auto Driver	Home-NonHome	57.88	22.89	3.76	15.47
		NonHome-Home	1.14	8.73	59.62	30.51
	Drive Alone	Home-NonHome	58.38	22.56	3.50	15.56
		NonHome-Home	1.28	8.72	58.32	31.68
	Carpool Person	Home-NonHome	50.09	29.35	7.07	13.49
		NonHome-Home	0.21	9.59	66.01	24.19
	Transit	Home-NonHome	66.36	19.55	0.74	13.35
		NonHome-Home	0.16	3.06	69.35	27.43
HBS	Auto Driver	Home-NonHome	12.09	43.04	22.89	21.98
		NonHome-Home	1.10	30.82	28.90	39.18
	Drive Alone	Home-NonHome	16.42	45.06	18.03	20.49
		NonHome-Home	1.57	32.31	30.10	36.02
	Carpool Person	Home-NonHome	4.99	38.58	32.49	23.94
		NonHome-Home	0.21	27.13	26.20	46.46
	Transit	Home-NonHome	29.42	47.26	12.46	10.86
		NonHome-Home	0.25	23.98	28.47	47.30
HBO	Auto Driver	Home-NonHome	19.58	41.12	21.11	18.19
		NonHome-Home	5.07	26.41	26.87	41.65
	Drive Alone	Home-NonHome	17.89	44.28	19.05	18.78
		NonHome-Home	6.81	28.18	23.91	41.10
	Carpool Person	Home-NonHome	28.09	33.70	22.60	15.61
		NonHome-Home	1.76	22.35	35.23	40.66
	Transit	Home-NonHome	35.16	46.21	11.65	6.98
		NonHome-Home	0.37	22.15	32.56	44.92
NHW	Auto Driver	Home-NonHome	10.26	47.22	33.44	9.08
		NonHome-Home	10.26	47.22	33.44	9.08
	Drive Alone	Home-NonHome	10.75	46.85	33.05	9.35
		NonHome-Home	10.75	46.85	33.05	9.35
	Carpool Person	Home-NonHome	10.39	46.01	34.45	9.15
		NonHome-Home	10.39	46.01	34.45	9.15
	Transit	Home-NonHome	14.97	28.06	45.68	11.29
		NonHome-Home	14.97	28.06	45.68	11.29
NHO	Auto Driver	Home-NonHome	3.17	56.75	24.12	15.96
		NonHome-Home	3.17	56.75	24.12	15.96
	Drive Alone	Home-NonHome	3.85	59.34	22.86	13.95
		NonHome-Home	3.85	59.34	22.86	13.95
	Carpool Person	Home-NonHome	2.89	48.41	28.60	20.10
		NonHome-Home	2.89	48.41	28.60	20.10
	Transit	Home-NonHome	4.85	42.88	38.57	13.70
		NonHome-Home	4.85	42.88	38.57	13.70

Chapter 8 Traffic Assignment/Feedback

The traffic assignment step is used to load a trip table onto the highway network in order to produce network link flows and speeds. The traffic assignment process of the Version 2.3 model is detailed in this chapter.

8.1 Updated features

Table 72 compares how traffic assignment features have changed from Version 2.2 to Version 2.3. Following the table is 1) a brief discussion of some of these items, and 2) more detailed descriptions of some features.

Table 72 A comparison of traffic assignment features in the Version 2.2 and 2.3 travel models

Feature	Version 2.2	Version 2.3
Methodology	Static, user equilibrium traffic assignment	Same
Algorithm	Frank-Wolfe	Bi-conjugate Frank-Wolfe
Volume delay function	Conical	Same
Queuing delay function	Yes, sigmoid curve	None
User classes	5	6 (added commercial vehicles)
Time of day periods	AM, PM, off peak	AM, PM, midday, and night time
Number of time-of-day/user-class traffic assignments	5 (See Figure 18)	6 (See Figure 19)
Convergence criterion	60 user equilibrium iterations per time-of-day period	A relative gap of 10^{-3} (0.001) or 300 user equilibrium iterations, whichever is attained first
Speed feedback iterations	7 (pump prime, i1, i2, i3, i4, i5, i6)	5 (pump prime, i1, i2, i3, i4)
Two-step traffic assignment (see section 8.3 on page 8-3)	Yes	Yes
Double run of the travel model to address Northern Virginia HOV/HOT lane policy (see section 8.4 on page 8-7)	Yes	Yes
Number of zone-to-zone interchanges	$2,191^2 = 4,800,481$	$3,722^2 = 13,853,284$ (increased by a factor of 2.86 or 186%)
Free-flow capacity and speed lookup tables		Updated

The Version 2.3 travel model traffic assignment process uses a static, user-equilibrium traffic assignment, implemented with a Frank-Wolfe algorithm. The bi-conjugate Frank-Wolfe algorithm, which yields faster convergence and run times, was used in the initial model tests. However, after implementation of distributed processing (Cube Cluster), it was found to yield different results with and without distributed processing. If the issue can be resolved by the software vendor, TPB staff plans to revert back to using the bi-conjugate Frank-Wolfe algorithm in the Version 2.3 travel model. The Version 2.3 traffic assignment uses a conical volume delay function, but foregoes the queuing delay function that had been added to the Version 2.2 travel model (see discussion later in the chapter). Whereas the

Version 2.2 traffic assignment process used five user classes, the Version 2.3 model uses six user classes (commercial vehicles is now its own user class). For the Version 2.2 traffic assignment, the convergence/stopping criterion was simply to stop after 60 user equilibrium (UE) iterations. In Version 2.3, there is a dual convergence/stopping criterion: attain a relative gap of 10^{-3} (0.001) or 300 user equilibrium iterations, whichever comes first. This means that the Version 2.3 traffic assignment reaches a more converged solution than was the case with Version 2.2 and it also means that the six user classes should be similarly converged if the assignment stops after reaching the relative gap stopping criterion. By contrast, in Version 2.2, since each user class went to 60 UE iterations, some of the five were more converged than others, as is shown later in this chapter.

The Version 2.3 traffic assignment continues to use both the two-step traffic assignment and the double run of the travel model to address Northern Virginia HOV/HOT lane policy, both of which are discussed in greater detail later in this chapter. The maximum TAZ number has increased from 2,191 to 3,722, a 70% increase. However, traffic assignment run times scale with the matrix size, so there has been an increase of 186% or a factor of 2.86. In the past, half of the model run time was spent on traffic assignment. Although we have not computed what this percentage is for the new model, we do know that a typical run time for the entire Version 2.2 travel model (traffic assignment and other steps) on our travel model server was about 18 hours and the new model takes about 80 hours (a factor of 4.4). If the model is distributed over 4 cores (using Cube Cluster as discussed in the User’s Guide), model run time decreases to 47 hours. The increased run times are primarily due to the increased size of the matrices, the increased convergence in traffic assignment, the addition of a sixth user class in traffic assignment, and the fact that we now use four time-of-day periods (up from the previous three). For reference when model run times are discussed, the specifications or “specs” of the travel model server used by the models development staff (TMS3) are shown in Table 73.

Table 73 Specs of travel model server tms3

Item	Spec
Processor name and speed	Intel Xeon W5580 CPU @ 3.20GHz
Number of processors in system	2
Active cores per processor	4
Total number of cores	8
L2 Cache	4 x 256 KB
System Bus Frequency	133 MHz
Memory	4.0 GB
Hard drive	Network attached storage (NAS, O drive), 1.99 TB
Operating system	Windows Server Standard, SP2, 32-bit

Ref: O:\model_dev\computer_specs_2011-01.xlsx

8.2 Model structure

The traffic assignment step is executed five times during a given model run. The first assignment is called the “pump prime” traffic assignment. The last four traffic assignments, which occur as part of the speed feedback loop, are called iteration 1, 2, 3, and 4. For each of the five traffic assignments, there are actually four individual traffic assignments, one for each time-of-day period:

- AM peak period (3 hours: 6:00 AM to 9:00 AM)
- Midday period (6 hours: 9:00 AM to 3:00 PM)
- PM peak period (4 hours: 3:00 PM to 7:00 PM)
- Night/early morning period (11 hours: 7:00 PM to 6:00 AM)

The trips loaded in each time period are composed of all purposes, as allocated by the time-of-day model. The trip tables that are loaded to the network are segmented into six user classes:

1. Single-occupant vehicles (SOVs)
2. Two-occupant HOVs
3. Three or more-occupant HOVs
4. Commercial vehicles
5. Medium/heavy truck
6. Airport auto driver

In Version 2.2, there were only five user classes, since the commercial vehicles category was grouped with medium/heavy truck. The primary reason for distinguishing truck markets is to allow for the option of using passenger car equivalents (PCEs) in the traffic assignment process. The use of PCE's has not yet been implemented, but they will be considered in future developmental work.

8.3 Two-step traffic assignment

To better understand the two-step assignment, it is necessary to discuss its development as part of the Version 2.2 travel model. The Version 2.2 traffic assignment process prior to the fall of 2008 consisted of three separate assignment executions: AM peak period, PM peak period, and the off-peak period (See Figure 17). The stopping criterion used was a fixed number UE iterations per time period (i.e., 60). To respect the various highway path options and prohibitions in the Washington region, five separate markets or "user classes" (trip tables) were loaded during each assignment execution:

1. Single-occupant vehicles, including commercial vehicles (SOV),
2. 2-occupant vehicles (HOV2),
3. 3+occupant vehicles (HOV3+),
4. Trucks (medium and heavy), and
5. Airport passenger vehicles.

	# UE Iterations	Period	Trip Markets Assigned
Assignment 1	60	AM	1 SOV 2 HOV 2-Occ. 3 HOV 3+-Occ. 4 Trucks 5 Airport Pax
Assignment 2	60	PM	1 SOV 2 HOV 2-Occ. 3 HOV 3+-Occ. 4 Trucks 5 Airport Pax
Assignment 3	60	Off-Peak	1 SOV 2 HOV 2-Occ. 3 HOV 3+-Occ. 4 Trucks 5 Airport Pax

Figure 17 Traffic assignment in the Version 2.2 Travel Model prior to fall 2008: three assignments, each with five market segments (user classes), resulting in 180 user equilibrium iterations

Source: Ronald Milone and Mark Moran, "TPB Models Development Status Report" (Presentation at the Travel Forecasting Subcommittee presented at the Travel Forecasting Subcommittee, Washington, D.C., November 21, 2008).

This type of assignment is known as a multi-class assignment. Although separate link volumes are developed for each of the five markets, the final loaded links file ultimately contains total volumes, speeds, and volume-to-capacity (V/C) ratios for each time period. The Version 2.2 travel model includes a speed feedback loop. The AM and off-peak SOV restrained times resulting from the traffic assignment step are fed back into trip generation (via transit accessibility), trip distribution, and mode choice. In standard application of the travel model, the four-step process is executed a total of seven times, hence seven traffic assignments.⁸² The first of these traffic assignments is known as the "pump prime" assignment, since it primes the pump, or gets the process started. The pump prime assignment uses free-flow link speeds (based on a lookup table) and exogenous mode choice percentages (i.e., the mode choice model is not run). In the six subsequent applications of the four-step model, congested link speeds are used and the mode choice model is executed. A link-level "method of successive averaging" (MSA) process is applied after each successive highway assignment process to ensure that highway volumes (and hence speeds) will stabilize. The MSA averaging is performed on the basis of total (non-segmented) link volumes, and is performed individually for each time period.

In the fall of 2008, as part of air quality conformity work, the traffic assignment process was modified to improve the assignment of HOV/HOT traffic on the Capital Beltway in Virginia and the I-395 Shirley

⁸² The total number of all-or-nothing traffic assignments is 1,260 (= 7 speed feedback loops x 3 time-of-day periods x 60 UE iterations). Traffic assignment accounts for over half of the model run time.

Highway.⁸³ The previous process, describe above included three traffic assignments by time period with five user classes, resulting in 180 UE iterations per speed feedback iteration, or 1,260 UE iterations per model run. The revised process, shown in Figure 18, splits the AM traffic assignment into two parts: non-HOV 3+ (i.e., SOV, HOV2, trucks, and airport passengers) and HOV 3+. Similarly, the PM traffic assignment is also split into the same two parts: non-HOV 3+ and HOV3+. This new traffic assignment process is sometimes referred to as the “two-step assignment,” since it splits the AM and PM assignment each into two parts.⁸⁴ The result is five (not three) traffic assignments, with either four, one, or five user classes, depending on which assignment is being conducted. The fifth traffic assignment, representing the off-peak period, includes all five trip markets – it is only the AM and PM peak assignments where the non-HOV 3+ and HOV 3+ are split out. This results in 300 UE iterations per speed feedback iteration, or 2,100 UE iterations per model run (a 67% increase).

In the first step of the two-step assignment (assignments #1 and #3), non-HOV 3+ traffic (i.e., SOV, HOV 2, truck, and airport passenger trips) is assigned to all facilities (HOV and general purpose). In the second step, HOV 3+ traffic is assigned to HOT lanes and other facilities on the partially loaded network. The pre-assignment of non-HOV 3+ traffic results in congested link speeds for the general purpose lanes. This means that HOV 3+ traffic has a greater incentive to use HOV facilities, which results in improved HOV 3+ loadings on priority-use and general-use facilities.

⁸³ Ronald Milone and Mark Moran, “TPB Models Development Status Report” (presented at the Travel Forecasting Subcommittee of the Technical Committee of the National Capital Region Transportation Planning Board, held at the Metropolitan Washington Council of Governments, Washington, D.C., November 21, 2008).

⁸⁴ Jinchul Park to Files, “Two Step Traffic Assignment for HOT Lane Modeling in 2008 CLRP,” Memorandum, December 2, 2008.

	# UE Iterations	Period	Trip Markets Assigned
Assignment 1	60	AM	1 SOV 2 HOV 2-Occ. 3 Trucks 4 Airport Pax
Assignment 2	60	AM	1 HOV 3+-Occ.
Assignment 3	60	PM	1 SOV 2 HOV 2-Occ. 3 Trucks 4 Airport Pax
Assignment 4	60	PM	1 HOV 3+-Occ.
Assignment 5	60	Off-Peak	1 SOV 2 HOV 2-Occ. 3 HOV 3+-Occ. 4 Trucks 5 Airport Pax

Figure 18 Traffic assignment in the Version 2.2 Travel Model after fall 2008: five assignments, with one, four, or five user classes, resulting in 300 user equilibrium iterations

Source: Ronald Milone and Mark Moran, "TPB Models Development Status Report" (Presentation at the Travel Forecasting Subcommittee presented at the Travel Forecasting Subcommittee, Washington, D.C., November 21, 2008).

The Version 2.3 travel model continues to use the same two-step assignment shown in Figure 18, except that there are six assignments, not five, as discussed in section 8.2 . The new traffic assignment process is described in Figure 19.

Similar to the Version 2.2, Version 2.3 travel model includes a speed feedback loop. The restrained travel times calculated in traffic assignment are fed back into trip generation, trip distribution, and mode choice steps. The model is executed five times, starting with a "pump-prime" speed feedback iteration followed by iterations 1, 2, 3, and 4. A link-level "method of successive averaging" (MSA) process is applied after each successive highway assignment process, yielding a network file <iter>hwy.net, where <iter> can have values of pp, i1, i2, i3, or i4. In addition, in the final speed feedback iteration, the trip table is directly assigned to the network resulting in a network with no volume averaging, called assign_output_i4.net. TPB staff use assign_output_i4.net to compute the emissions as a part of air quality conformity and SIP work.

	# UE Iterations	Period	User classes
Assignment 1	Rel. gap= 10^{-3} OR 300 UE	AM	1. SOV 2. HOV 2 3. Trucks 4. Commercial Vehicles 5. Airport PAX
Assignment 2	Rel. gap= 10^{-3} OR 300 UE	AM	1. HOV 3+
Assignment 3	Rel. gap= 10^{-3} OR 300 UE	PM	1. SOV 2. HOV 2 3. Trucks 4. Commercial Vehicles 5. Airport PAX
Assignment 4	Rel. gap= 10^{-3} OR 300 UE	PM	1. HOV 3+
Assignment 5	Rel. gap= 10^{-3} OR 300 UE	Midday	1. SOV 2. HOV 2 3. HOV 3+ 4. Trucks 5. Commercial Vehicles 6. Airport PAX
Assignment 6	Rel. gap= 10^{-3} OR 300 UE	Night Time	1. SOV 2. HOV 2 3. HOV 3+ 4. Trucks 5. Commercial Vehicles 6. Airport PAX

Figure 19 Traffic assignment in the Version 2.3 Travel Model: six traffic assignments, with one, five, or six user classes

8.4 Double run of the travel model to address Northern Virginia HOV/HOT lane policy

The Version 2.2 travel model requires two model runs be performed for each scenario being modeled to address the stated policy of Virginia Department of Transportation (VDOT) that HOT facilities will not degrade the operations of HOV users. The “base run” captures the travel time for unimpeded flow of HOV traffic on HOT lanes, consistent with the stated operational policy. The “conformity run” or “final run” of the travel model substitutes the HOV skims obtained for the HOV skims that would otherwise be obtained by simply skimming the networks with HOT lanes in operation. Only the HOV skims are taken from the “base run.” Skims for all other modes are taken from the “conformity run.” Under this

framework, the “base run” serves solely as a means for measuring times for HOV traffic on HOT facilities. This procedure, which is also called the “HOV 3+ skim substitution option,” is described on page 1-10 of the Version 2.2 documentation.⁸⁵

Cambridge Systematics, Inc. (CS) has proposed eliminating the double run of the travel model to address Northern Virginia HOV/HOT lane policy by combining the two steps into one step. The consultant cites the following benefits: less time needed for model runs and greater consistency in mode choice modeling.⁸⁶ TPB staff is currently considering the pros and cons of eliminating the double run procedures, but has not chosen to eliminate it yet. Consequently, the double run of the travel model to address Northern Virginia HOV/HOT lane policy is still a part of the Version 2.3 travel model.

8.5 Convergence in traffic assignment

The convergence of the traffic assignment step for the Version 2.2 travel model is shown in Figure 20. This comes from a recent air quality conformity analysis.⁸⁷ The y-axis shows the relative gap, using a logarithmic scale, and the x-axis shows the number of UE iterations.

⁸⁵ Ronald Milone et al., *TPB Travel Forecasting Model, Version 2.2: Specification, Validation, and User’s Guide*, 1–10.

⁸⁶ Cambridge Systematics, Inc., *Fiscal Year 2010 Task Reports*, 3–20.

⁸⁷ Ronald Milone and Meseret Seifu to Files, “Transmittal of Version 2.2 Travel Model files as per the October 21, 2009 Amendment to the 2009 CLRP/FY 2010-2015 TIP Air Quality Conformity Determination,” Memorandum, October 29, 2009.

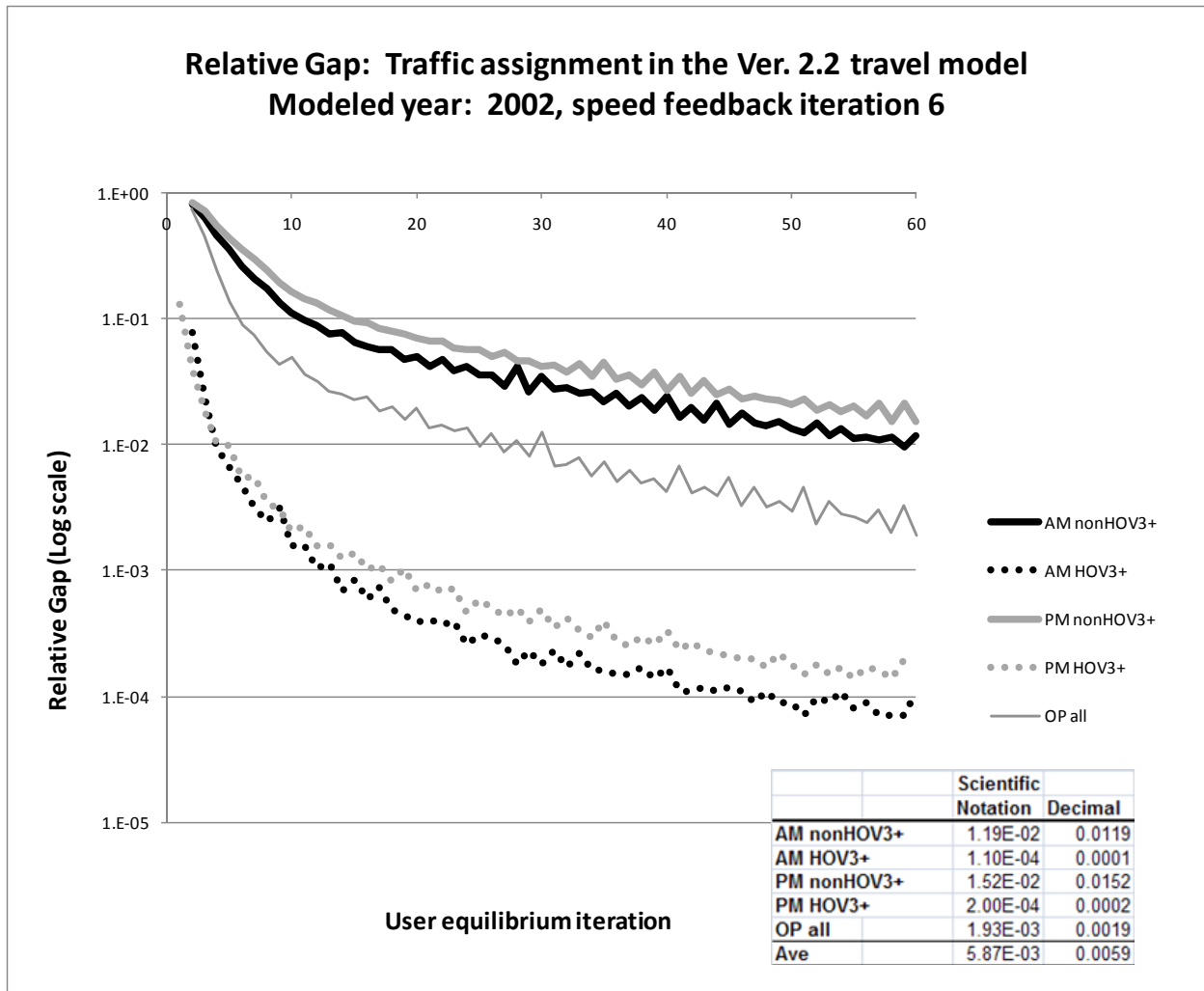


Figure 20 Relative gap by user equilibrium traffic assignment iteration: Version 2.2 Travel Model (final speed feedback iteration, i6)

Source: Transmittal of Version 2.2 Travel Model files as per the October 21, 2009 Amendment to the 2009 CLR/P/FY 2010-2015 TIP Air Quality Conformity Determination (O:\model_dev\Version2.2_Jan08_Conformity2010Amended_Xmittal\2002_Conf). Ref: I:\ateam\from_consults\modelScanTaskOrder\2008_cs\2010\trafficAssignRelGapByIterVer2.2_2010_LogScale.pdf.

The current Version 2.2 travel model is reaching the following traffic assignment relative gaps

- about 10^{-2} (ca. 0.01 to 0.02) for the AM and PM non-HOV 3+ assignments
- about 10^{-3} (ca. 0.002) for the off-peak assignment
- about 10^{-4} (ca. 0.0001 to 0.0002) for the AM and PM HOV 3+ assignments

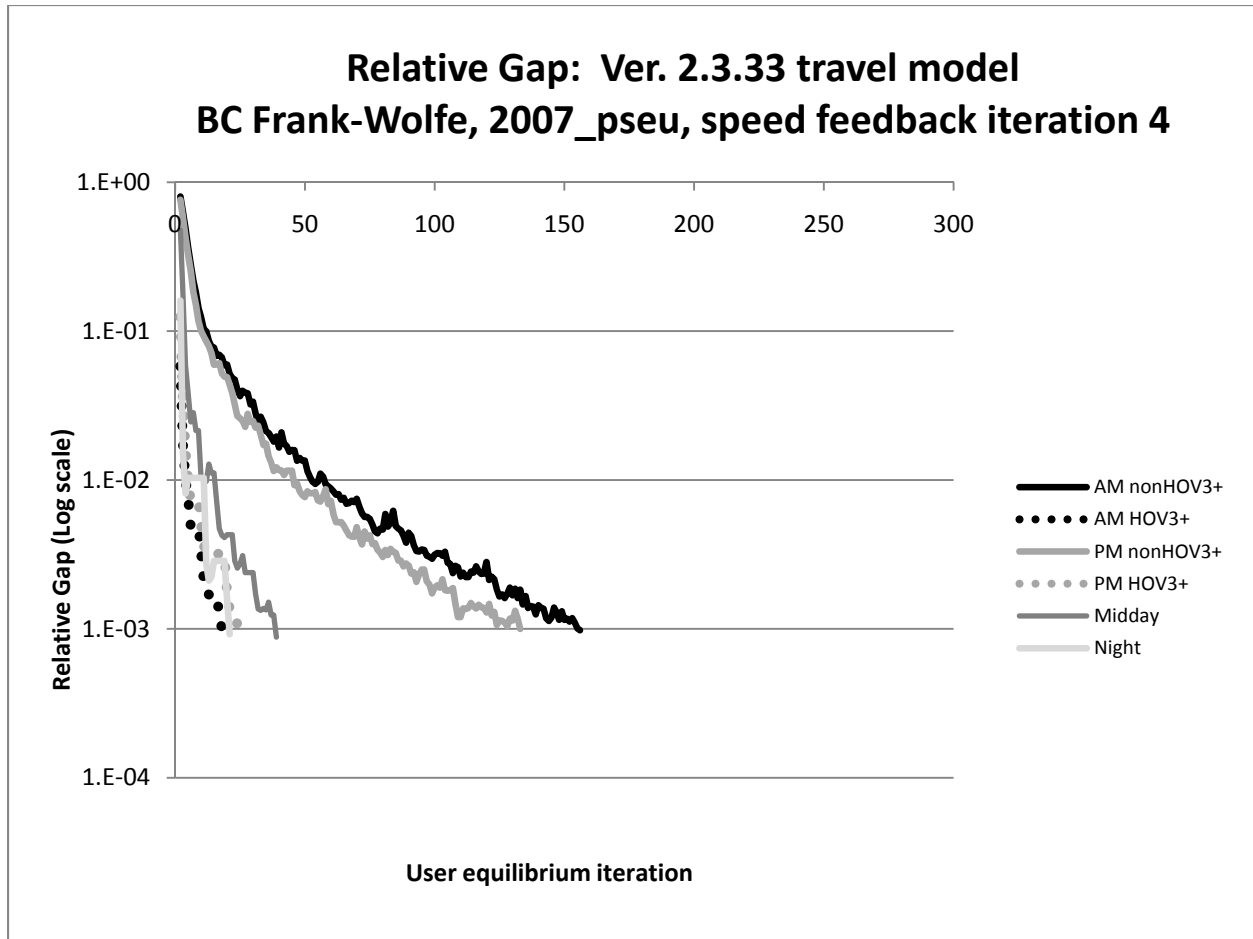


Figure 21 Relative gap by user equilibrium traffic assignment iteration: Version 2.3 Travel Model (final speed feedback iteration, i4)

The Version 2.3 travel model is reaching a similar level of convergence (as seen in Figure 21) for the AM nonHOV3+, PMnonHOV3+ and Night periods. Midday, AM HOV3+, and PM HOV3+ reach a relative gap of 10^{-3} .

8.6 Removal of queuing delay function

The TPB, like most MPOs in the U.S., uses a static traffic assignment (STA), which means that demand is assumed to be constant during the specific assignment period (in TPB’s example: AM peak period, PM peak period, midday, and night). In a static traffic assignment model, link speeds are represented by volume-delay functions (VDFs), which capture the fact that as the link becomes more congested, the time to traverse the link goes up. STAs typically do not explicitly account for intersection (node) delay, however the link’s VDF can be viewed as implicitly including the sum of the link delay and intersection delay. Another well known limitation of STA models is that some of the loaded links may have assigned volumes that are greater than the physical capacity of the given links, i.e., the volume-to-capacity ratio is

greater than one.⁸⁸ One of the model enhancements done by TPB staff to minimize the number of overloaded links, particularly freeways and freeway ramps, was the introduction of a queuing delay function (QDF), such as that shown in Equation 13, which would act in conjunction with the VDF, but would be focused on intersection delay.

Equation 13 Queuing delay function (QDF): Sigmoid

$$t_D = a \frac{1}{1 + e^{-b(x-c)}}$$

where

t_D = delay time (minutes)

x = link demand to capacity ratio $\left(\frac{V}{C}\right)$

a = amplitude

b = slope

c = offset

The idea was to represent a phenomena that is not natively part of traditional STA models, namely that of queuing and traffic blockages, which result in reduced link speeds. TPB staff found that the addition of a QDF did, in fact, reduce the number of overloaded links. It also, however, may have resulted in some unintended consequences, such as unrealistically slow modeled speeds on freeways and an unrealistic shifting of volume from freeways to arterials, due to the way that QDFs were applied only to freeways and freeway ramps, but not to arterials and other types of roads. As noted by Cambridge Systematics, Inc. in a recent report, the queuing delay is not related to the length of the link, so it is possible for a very short link to have a very high level of queuing delay.⁸⁹

Here is a summary of some of the findings/conclusions from CS's recent report:

- The TPB model is the only one that CS encountered which applies queuing delay only to freeway links.
- The No-QDF scenario achieves approximately the same results without the need for a QDF while using a VDF that has been validated for the Washington region.
- The Akçelik function also shows some promise in achieving TPB's goals.
- The QDF may not be the most accurate way to capture the desired network constraints.
- CS recommended TPB staff consider using a newly calibrated set of link-based VDFs that reflect the breakdown in traffic at higher volumes. Using this approach, TPB could
 - Continue use of an expanded and/or re-calibrated conical function
 - Switch to an Akçelik curve
 - Possibly employ different functional forms of VDFs on different facility types (e.g., conical functions for freeway versus Akçelik functions for surface streets).

⁸⁸ Yi-Chang Chiu et al., *A Primer for Dynamic Traffic Assignment* (Transportation Research Board, 2010), http://www.nextrans.org/ADB30/UPLOAD/ssharma/dta_primer.pdf.

⁸⁹ Cambridge Systematics, Inc., *Fiscal Year 2010 Task Reports*, 3–7.

From November 2010 to January 2011, TPB staff ran a series of test traffic assignments, some of which used Akçelik functions, such as that shown in Equation 14 and Equation 15. Staff tried implementing these curves as both function and lookup tables in the Cube Voyager scripts. However, it did not seem that the assigned volumes using the Akçelik function were any better at matching the observed volumes and the run times for the Akçelik function were considerably longer. Consequently, TPB staff decided to continue using the conical volume delay function, implemented as a lookup table, and to drop the use of the QDF. Tests conducted by TPB staff indicated that the elimination of the QDF was beneficial for improving the traffic assignment results. Hence, based on these findings and the consultant recommendations, the QDFs were removed.

Equation 14 Akçelik curve

$$t = t_0 + 0.25T \left[(x - 1) + \sqrt{(x - 1)^2 + \frac{8J_A x}{CT}} \right]$$

where

t = average travel time per unit distance (hours/mile)

t_0 = free-flow travel time per unit distance (hours/mile)

T = flow period, i. e. , the time interval in hours, during which an average arrival flow rate V persists

C = capacity

x = the degree of saturation, i. e. , V/C , or volume to capacity ratio

J = the delay parameter, a calibration parameter

Equation 15 Akçelik Delay Function (HCM 2000)

$$R = R_0 + D_0 + D_M + 0.25NT \left[(x - 1) + \sqrt{(x - 1)^2 + \frac{16J * x * L^2}{N^2 T^2}} \right]$$

where

R = link traversal time (hours)

R_0 = link traversal time under free flow conditions (hours)

D_0 = zero-flow control delay at signalized intersection (hours)

D_M = segment delay between signals- equals zero if no signals (hours)

N = number of signals (=1 if no signals)

T = expected duration of demand-Typically 1 hour (hours)

x = link demand to capacity ratio $\left(\frac{V}{C}\right)$

J = calibration parameter

L = link length (miles)

8.7 Volume Delay Functions

Volume delay functions (VDFs) are used to develop link speeds at the end of each loading pass. These functions represent the ratio of congested travel time to the free-flow time as a function of the volume-to-capacity (V/C) ratio. The function typically varies by facility type. Like the Version 2.2 travel model, the Version 2.3 travel model uses conical volume delay functions (see Equation 16).⁹⁰

Equation 16 Conical VDF function (Spiess 1990)

$$\frac{t}{t_0} = f(x) = 2 + \sqrt{\alpha^2(1 - x)^2 + \beta^2} - \alpha(1 - x) - \beta$$

where

t = Congested link travel time

t_0 = Link free-flow travel time

$x = \frac{V}{C}$ = link volume to capacity ratio

α = slope of the function at $\frac{V}{C}=1$ (slope must be >1.0)

$$\beta = \frac{2\alpha - 1}{2\alpha - 2}$$

Table 74 shows, in tabular form, the conical VDFs used in the Version 2.3 travel model. There is a separate curve for each facility type, although ramps and freeways are assumed to have the same VDF.

⁹⁰ Heinz Spiess, "Conical Volume-Delay Functions," *Transportation Science* 24, no. 2 (May 1, 1990): 153-158, <http://transci.journal.informs.org/cgi/content/abstract/24/2/153>.

The conical VDFs are shown in graphical form in Figure 22 (for $V/C > 1$) and Figure 23 (for $V/C \leq 1$). In reality, no link would ever have a V/C ratio above one. However, in a typical regional travel model, V/C ratios above 1 do occur, so the VDF needs to account for this domain. Figure 22 shows the behavior of the Version 2.3 conical VDFs for large V/C ratios ($V/C > 1$). The curve for freeways is the steepest, followed by expressways, then major arterials, minor arterials, and collectors. A steeper curve means more sensitivity to high V/C ratios, forcing excess traffic off of these facilities. Figure 23 shows the behavior of the Version 2.3 conical VDFs for V/C s less than or equal to one. In this area of V/C ratio, the freeways show the least sensitivity to V/C ratio, but, as the V/C ratio approaches 1, the freeway VDFs have the steepest slope (a slope of 15).

In Figure 24, the vertical axis now shows congested speed (not ratio of congested to free-flow travel time). One can see that, for freeways, the congested speed drops to about 2 mph at a V/C ratio of 2.00.

Table 74 Conical volume-delay functions used in the Version 2.3 travel model: Tabular format

	Centroid (FT=0)	Freeway (FT=1)	Maj Art (FT=2)	Min Art (FT=3)	Collector (FT=4)	Exprw (FT=5)	Ramps (FT=6)
a		15	7	5.5	3	8	15
b		1.035714	1.083333	1.111111	1.25	1.071429	1.035714
v/c	t/t0	t/t0	t/t0	t/t0	t/t0	t/t0	t/t0
0	1.000	1.000	1.000	1.000	1.000	1.000	1.000
0.1	1.000	1.004	1.009	1.012	1.025	1.008	1.004
0.2	1.000	1.009	1.020	1.027	1.056	1.018	1.009
0.3	1.000	1.015	1.035	1.046	1.094	1.030	1.015
0.4	1.000	1.024	1.054	1.071	1.141	1.047	1.024
0.5	1.000	1.035	1.080	1.105	1.203	1.070	1.035
0.6	1.000	1.053	1.119	1.154	1.283	1.103	1.053
0.7	1.000	1.082	1.180	1.228	1.390	1.157	1.082
0.8	1.000	1.138	1.287	1.352	1.537	1.254	1.138
0.9	1.000	1.287	1.506	1.579	1.735	1.466	1.287
1	1.000	2.000	2.000	2.000	2.000	2.000	2.000
1.1	1.000	4.287	2.906	2.679	2.335	3.066	4.287
1.2	1.000	7.138	4.087	3.552	2.737	4.454	7.138
1.3	1.000	10.082	5.380	4.528	3.190	5.957	10.082
1.4	1.000	13.053	6.719	5.554	3.683	7.503	13.053
1.5	1.000	16.035	8.080	6.605	4.203	9.070	16.035
1.6	1.000	19.024	9.454	7.671	4.741	10.647	19.024
1.7	1.000	22.015	10.835	8.746	5.294	12.230	22.015
1.8	1.000	25.009	12.220	9.827	5.856	13.818	25.009
1.9	1.000	28.004	13.609	10.912	6.425	15.408	28.004
2	1.000	31.000	15.000	12.000	7.000	17.000	31.000
2.1	1.000	33.997	16.393	13.090	7.579	18.594	33.997
2.2	1.000	36.994	17.786	14.182	8.161	20.188	36.994
2.3	1.000	39.992	19.181	15.275	8.745	21.784	39.992
2.4	1.000	42.990	20.576	16.369	9.332	23.380	42.990
2.5	1.000	45.988	21.972	17.463	9.920	24.976	45.988
2.6	1.000	48.987	23.369	18.559	10.510	26.573	48.987
2.7	1.000	51.985	24.766	19.655	11.101	28.171	51.985
2.8	1.000	54.984	26.163	20.751	11.693	29.768	54.984
2.9	1.000	57.983	27.561	21.848	12.285	31.366	57.983
3	1.000	60.982	28.959	22.945	12.879	32.964	60.982
999.9	1.000	60.982	28.959	22.945	12.879	32.964	60.982

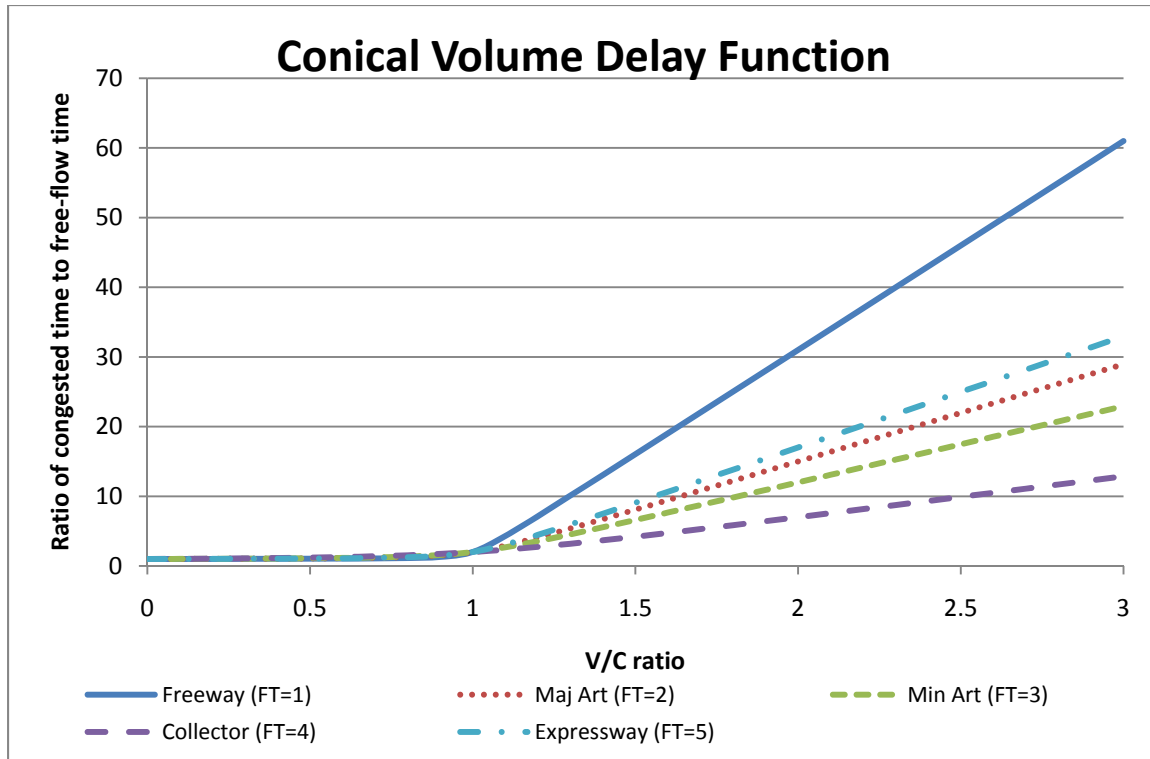


Figure 22 Conical volume-delay functions used in the Version 2.3 travel model: $V/C > 1$

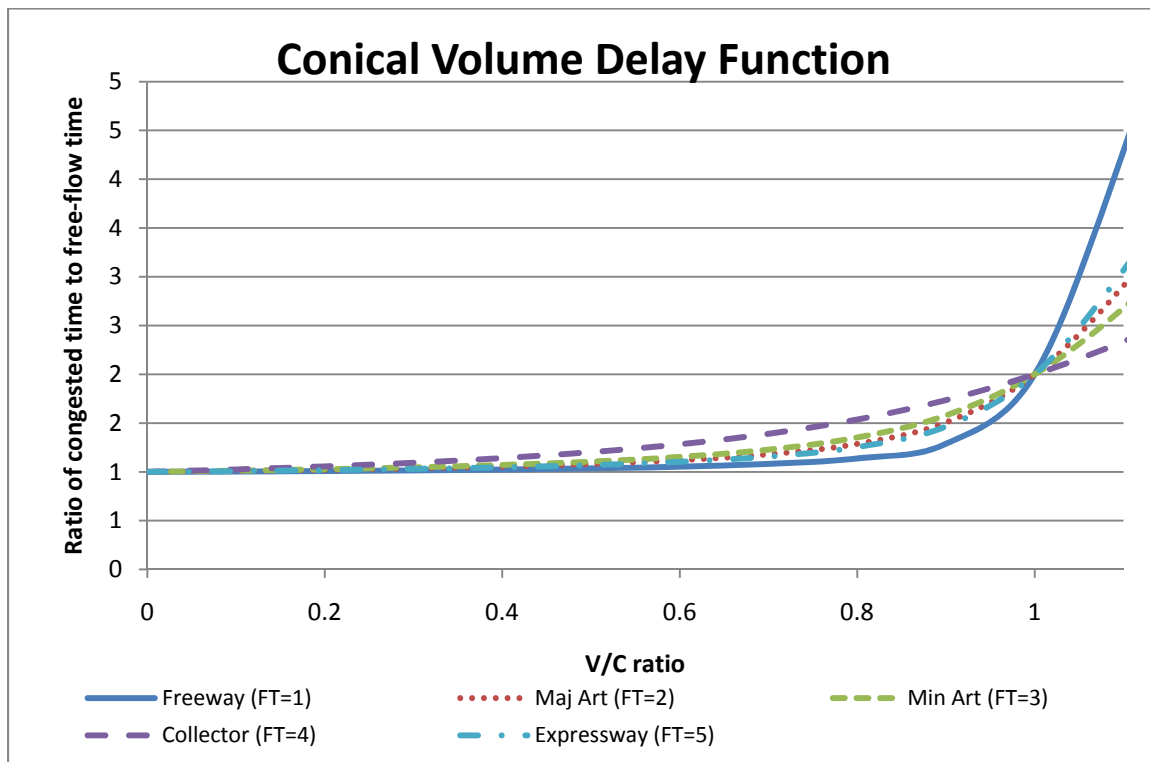


Figure 23 Conical volume-delay functions used in the Version 2.3 travel model: $V/C < 1$

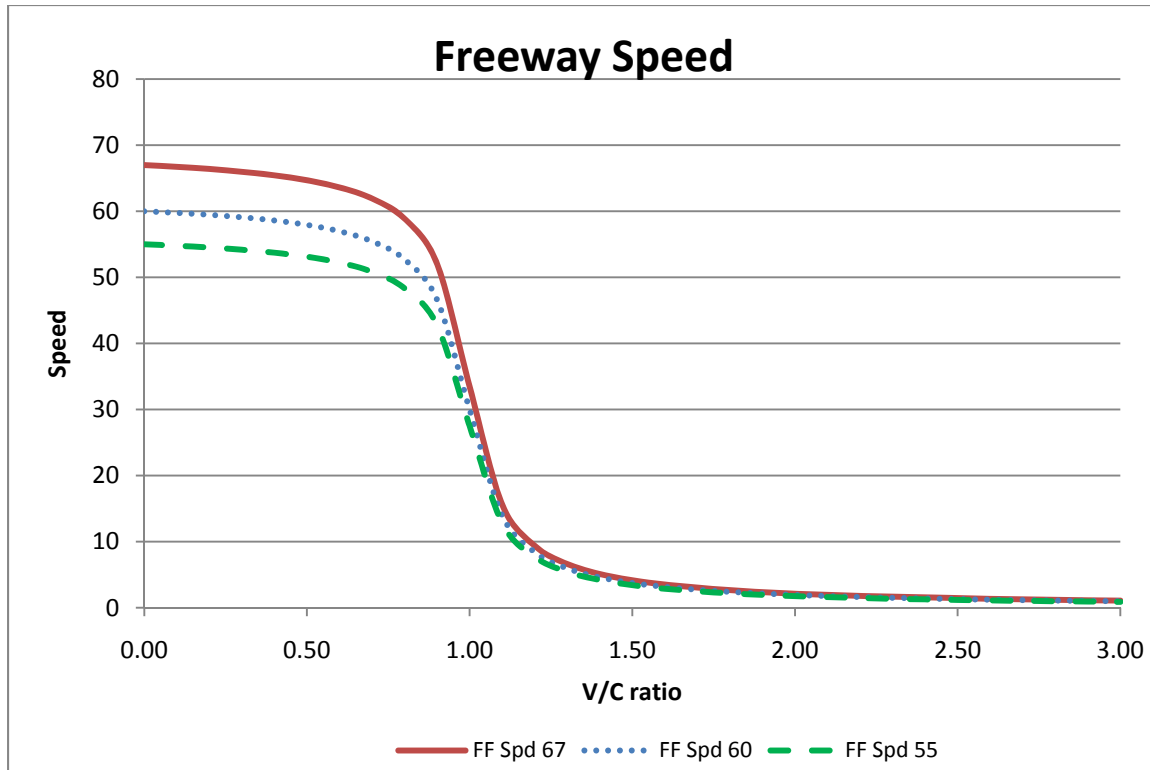


Figure 24 Freeway Speed

8.8 Speed and Capacity Tables

Two of the parameters that are necessary as inputs to the VDF are free-flow capacities and speeds. Free-flow capacity is defined as level-of-service (LOS) E capacity. The assumed free-flow speeds and capacities vary by facility type and area type. The Version 2.3 capacities and free flow speeds are defined in Table 75 and Table 76.

Table 75 Free Flow Capacities

	Area type					
	1	2	3	4	5	6
Freeways	1900	1900	2000	2000	2000	2000
Major Arterials	600	800	960	960	1100	1100
Minor Arterials	500	600	700	840	900	900
Collectors	500	500	600	800	800	800
Expressways	1100	1200	1200	1400	1600	1600

Table 76 Free Flow Speeds

	Area type					
	1	2	3	4	5	6
Freeways	55	55	60	60	65	65
Major Arterials	35	35	45	45	50	50
Minor Arterials	35	35	40	40	40	45
Collectors	30	30	30	35	35	35
Expressways	45	45	50	50	50	55

8.9 Peaking Factor Assumptions

Another important temporal parameter in the traffic assignment process is the peaking factor, which is the proportion of traffic in a given time period which occurs in the peak hour of the period. Link speeds are a function of the volume-to-capacity (V/C) ratio. The peaking factor is necessary for converting hourly lane capacities into “period lane capacities,” from which V/C ratios are computed. The Version 2.3 model requires peaking factors for the AM, midday, PM, and night time periods. To arrive at regionally appropriate peaking factors, an analysis of total auto driver trips from the 2007/2008 HTS was summarized to the modeled time periods. The maximum hourly volume occurring within each time period was then determined. The resulting peaking factors are show in Table 77.

Table 77 Peak- Hour Percentage by Time Period based on Total Auto Driver Trips in Motion Distribution

Period	Percent of Travel	Hours in Period	Peak Hour in Period	Saturation Percent	Peak Hour Percent
AM Peak (6:00 - 9:00)	18.70%	3	8:00 - 9:00	33.3%	41.7%
Midday (9:00 - 15:00)	32.63%	6	12:00 - 13:00	16.7%	17.7%
PM Peak (15:00 - 19:00)	32.89%	4	17:00 - 18:00	25.0%	29.4%
All other hours	15.78%	11	19:00 – 20:00	9.1%	15.0%
Daily	100.00%	24	17:00 - 18:00	4.2%	9.7%

Note: For the AM, midday, and PM periods, the peak-hour percent represents the worst hour of the period. For the “all other hours” period, however, the peak-hour percent represents the average hour during the period.

Chapter 9 Validation

This chapter presents highway and transit performance results of the Version 2.3 model for 2007. The model includes five speed-feedback iterations of the four-step model (pump prime, plus iterations 1 through 4). As mentioned in Chapter 8, there is a dual convergence/stopping criterion for traffic assignment: attain a relative gap of 10^{-3} (0.001) or 200 user equilibrium iterations, whichever comes first. A comparison of global demographic and travel-related statistics between the Version 2.3 model and the existing Version 2.2 model is also presented. The Version 2.3 model also produces transit assignment results. Although transit assignment results for the Metrorail system have been presented at a recent TFS meeting,⁹¹ there was insufficient time to include the updated transit assignment results in this report.

While the model is composed of the numerous calibrated parameters described earlier in this report, it also includes adjustments that were subsequently deemed necessary during initial validation tests of the model. These include trip generation adjustments and K-factors used in trip distribution. Prior experience has shown that these types of adjustments are sometimes necessary to address some observed travel patterns that are not explained well by the travel model. A detailed accounting of the adjustments is documented in Appendix A.

9.1 Validation summaries

Vehicle miles of travel (VMT) is a standard metric used to assess travel model performance. Simulated VMT is also essential for the estimation of mobile emissions. TPB consulted Highway Performance Monitoring System (HPMS) summaries reported by the local state DOTs to obtain “observed” VMT figures at the jurisdiction level. Care was taken to obtain VMT figures that excluded local facilities, which are not included in the regional highway network.

A summary of estimated and observed VMT for the Washington, D.C. Metropolitan Statistical Area (MSA) is shown in Table 78. The MSA area is composed of 12 of the central jurisdictions within the larger 22-jurisdiction modeled study area. The table indicates that the model presently matches the VMT in MSA. Virginia and District of Columbia portions of MSA are overestimated by 1% and 8%, respectively, while Maryland MSA VMT is underestimated by 1%.

Estimated and observed VMT for all jurisdictions within the modeled study area is shown in Table 79. The observed VMT figure of 156 million is well aligned with the VMT currently simulated by the Version 2.3 model. The simulated VMT for the region is about 1% lower than the observed figure, an excellent match overall. The table indicates that 10 of the 12 jurisdictions in the MSA match observed VMT figures

⁹¹ Ronald Milone, “TPB Version 2.3 travel model on the 3,722-TAZ area system: Status report” (presented at the Travel Forecasting Subcommittee of the Technical Committee of the National Capital Region Transportation Planning Board, held at the Metropolitan Washington Council of Governments, Washington, D.C., April 29, 2011), 42.

within 10 percent of observed figures. Loudoun County VMT is overestimated by 12%. While Charles county VMT is underestimated by 12%.

Table 78 2007 Estimated/Observed (HPMS) VMT for the Washington, DC MSA (in thousands)

State	Observed VMT	Estimated VMT	Difference	Pct. Difference
DC	8,271,900	8,929,239	657,339	1.08
MD	56,366,301	55,859,589	-506,712	0.99
VA	50,237,805	50,495,080	257,275	1.01
Total	114,876,006	115,283,908	407,902	1.00

Ref: "E:\modelRuns\fy12\Ver2.3.33\Summary\Jurisdictional_VMT.xlsx"

Note: VMT shown excludes local traffic

Jurisdictions in the MSA are: District of Columbia, Montgomery County, Prince George's County, Arlington County, City of Alexandria, Fairfax County, Loudoun County, Prince William County, Frederick County, Charles County, Calvert County, Stafford County.

Table 79 Year 2007 Estimated and Observed VMT Summary by Jurisdiction (in thousands)

Jurisdiction	Observed VMT	Estimated VMT	Difference (E-O)	Ratio (E/O)
District of Columbia	8,271,900	8,929,239	657,339	1.08
Montgomery County	19,889,589	20,755,761	866,172	1.04
Prince George's County	23,315,753	21,733,273	-1,582,480	0.93
Arlington County	4,391,518	4,314,948	-76,570	0.98
City of Alexandria	1,957,552	2,013,028	55,476	1.03
Fairfax County	26,799,196	25,712,591	-1,086,605	0.96
Loudoun County	5,259,907	5,910,328	650,421	1.12
Prince William County	8,000,267	8,558,940	558,673	1.07
Frederick County	7,841,918	8,630,544	788,626	1.10
Howard County	10,094,384	10,090,905	-3,479	1.00
Anne Arundel County	15,330,000	14,570,489	-759,511	0.95
Charles County	3,348,493	2,951,689	-396,804	0.88
Carrol County	3,394,521	4,227,247	832,726	1.25
Calvert County	1,970,548	1,788,322	-182,226	0.91
St. Mary's County	2,194,932	2,052,550	-142,382	0.94
King George County	789,089	656,299	-132,790	0.83
City of Fredericksburg	948,495	777,383	-171,112	0.82
Stafford County	3,829,366	3,985,245	155,879	1.04
Spotsylvania County	3,299,537	2,013,315	-1,286,222	0.61
Fauquier County	3,149,136	2,932,644	-216,492	0.93
Clarke County	769,608	914,487	144,879	1.19
Jefferson County	1,081,763	1,354,704	272,942	1.25
Total	155,927,469	154,873,932	-1,053,537	0.99

Ref: "E:\modelRuns\fy12\Ver2.3.33\Summary\Jurisdictional_VMT.xlsx"

Estimated and observed daily link volumes on pre-defined “screenlines” in the regional network are also important performance indicators of the regional model. Screenline locations currently analyzed by TPB staff are shown on Figure 25 and Figure 26.

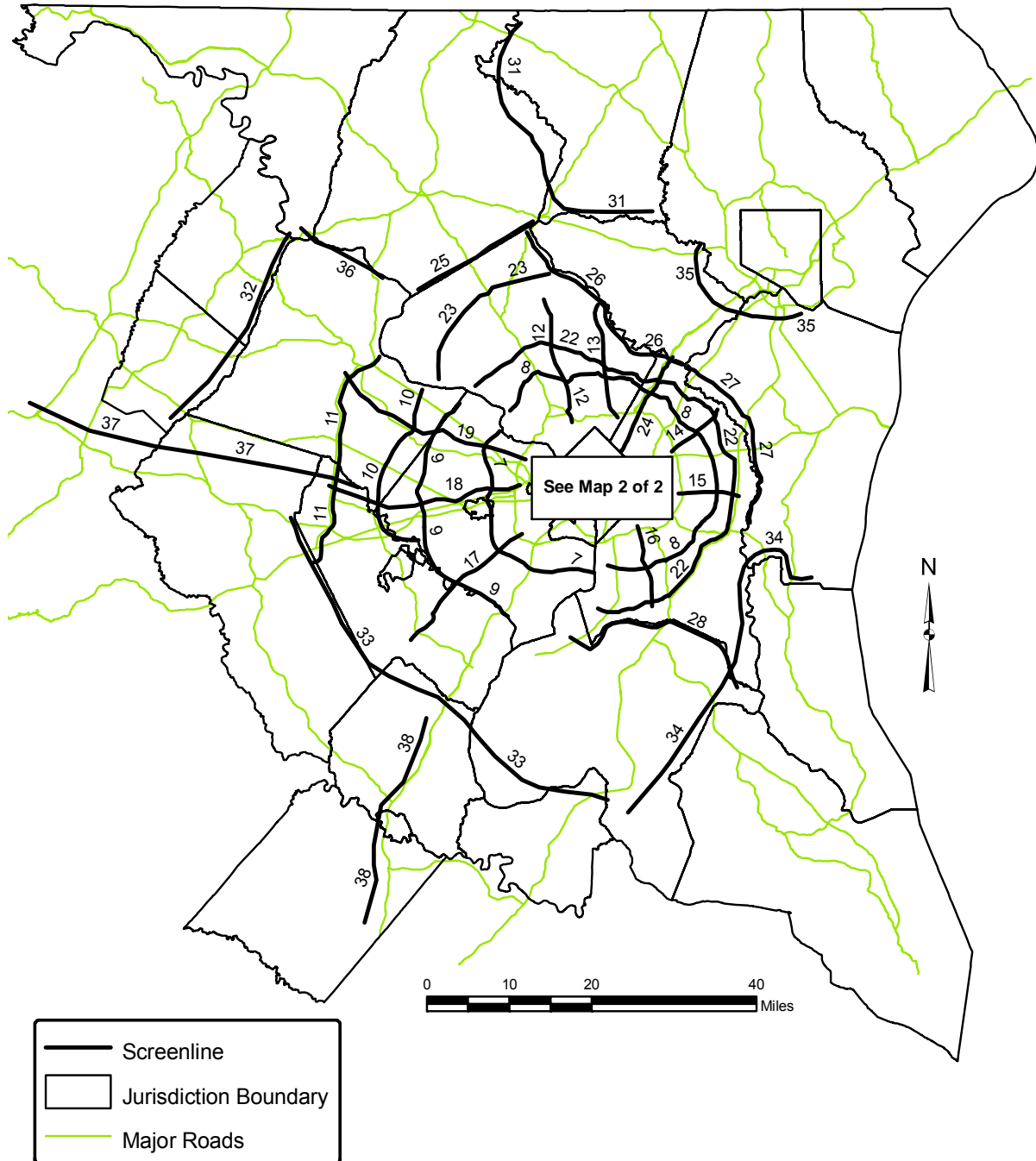


Figure 25 Highway Network Screen lines Map 1 of 2

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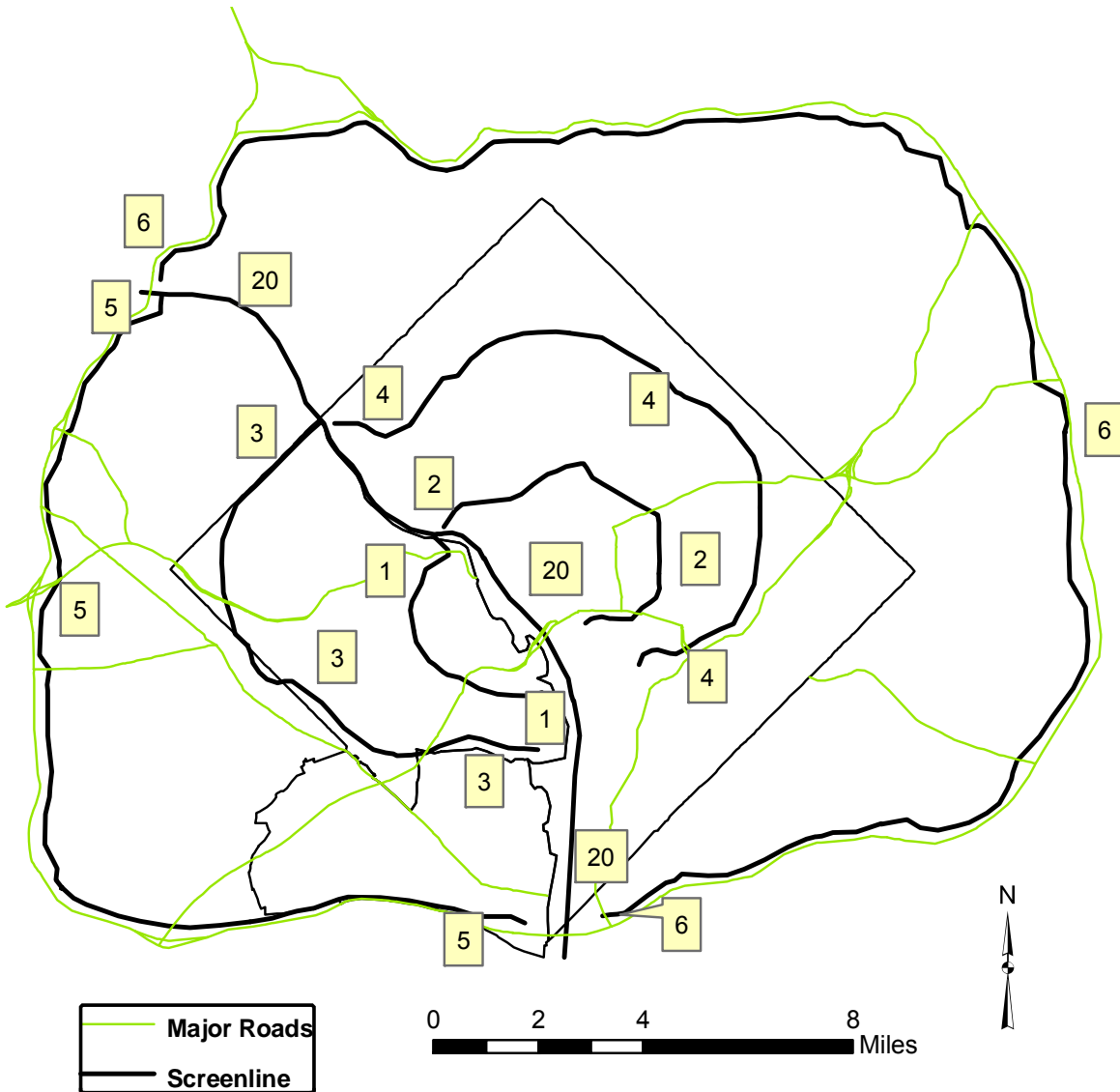


Figure 26 Highway Network Screen lines (Inside the Capital Beltway) Map 2 of 2

Ref: I:\ateam\docum\FY11\Ver2.3\modelDoc\Screenline_V23_BltWay.emf

The screenline performance of the Version 2.3 model is shown in Table 80. The table also indicates the total number of highway links crossing each screenline and the percentage of links with a coded daily ground count. The table indicates that 57% of all links crossing regional screenlines are coded with a ground count, which is an improvement over Version 2.2 Travel Model where 37% of screenline links had a coded ground count.⁹²

⁹² Ronald Milone et al., *TPB Travel Forecasting Model, Version 2.2: Specification, Validation, and User's Guide*, 9–5.

Table 80 Year 2007 Estimated and Observed Daily Screenline Crossings

Screenline	Estimated	Observed	Difference	Ratio	Screenline		
					Screenline links	links with counts	Pct. links with counts
1	432,188	541,123	-108,935	0.80	44	24	0.55
2	913,400	770,152	143,248	1.19	74	60	0.81
3	744,547	769,828	-25,281	0.97	58	44	0.76
4	1,048,019	844,084	203,935	1.24	74	68	0.92
5	597,585	535,254	62,331	1.12	60	22	0.37
6	1,526,646	1,517,908	8,738	1.01	118	68	0.58
7	572,945	630,970	-58,025	0.91	74	36	0.49
8	1,401,027	1,278,214	122,813	1.10	108	44	0.41
9	531,776	548,542	-16,766	0.97	55	26	0.47
10	470,090	437,926	32,164	1.07	24	18	0.75
11	255,449	218,070	37,379	1.17	34	20	0.59
12	439,385	470,410	-31,025	0.93	34	16	0.47
13	435,242	367,212	68,030	1.19	20	10	0.50
14	263,130	323,644	-60,514	0.81	12	8	0.67
15	268,910	326,882	-57,972	0.82	16	8	0.50
16	116,667	142,540	-25,873	0.82	16	2	0.13
17	157,650	175,348	-17,698	0.90	42	22	0.52
18	395,804	457,548	-61,744	0.87	50	22	0.44
19	310,789	398,144	-87,355	0.78	50	27	0.54
20	1,130,839	897,896	232,943	1.26	14	14	1.00
22	1,033,219	1,004,460	28,759	1.03	140	47	0.34
23	234,069	237,578	-3,509	0.99	31	18	0.58
24	331,210	364,500	-33,290	0.91	30	12	0.40
25	138,663	109,804	28,859	1.26	12	8	0.67
26	88,827	40,888	47,939	2.17	18	8	0.44
27	200,329	144,130	56,199	1.39	16	6	0.38
28	172,704	231,106	-58,402	0.75	26	24	0.92
31	180,641	78,014	102,627	2.32	30	20	0.67
32	33,943	26,900	7,043	1.26	8	2	0.25
33	337,117	290,636	46,481	1.16	22	16	0.73
34	111,655	96,922	14,733	1.15	18	14	0.78
35	688,805	855,788	-166,983	0.80	36	30	0.83
36	50,040	11,702	38,338	4.28	8	6	0.75
37	40,774	30,784	9,990	1.32	16	16	1.00
38	185,109	266,540	-81,431	0.69	32	26	0.81
Total	15,839,193	15,441,447	397,746	1.03	1,420	812	0.57

Ref: E:\modelRuns\fy12\Ver2.3.36\Assignment_Summary\Screenline_summary.xlsx

In addition to screenline counts, percent Root Mean Square Error (RMSE) for all links with ground counts is calculated to assess model performance. RMSE values by facility type are shown in Table 81.

Table 81 Percent RMSE by Facility Type

Facility Type	% RMSE
FTYPE1 Freeway	24%
FTYPE2 Major Arterial	38%
FTYPE3 Minor Arterial	57%
FTYPE4 Collector	82%
FTYPE5 Expressway	35%
All FTYPEs	43%

Ref: "E:\modelRuns\fy12\Ver2.3.36\Assignment_Summary\Daily_scatterplot_RMSE.xlsx" ("E:\modelRuns\fy12\Ver2.3.36\Assignment_Summary\Summarize_Est_Obs_Volume_Daily.s")

Another part of the validation effort includes comparing the assigned Metrorail trips by line segment to the observed trips as shown in Table 82 and Table 83 for the HBW and total Metrorail trips. It is evident from the tables that most of the estimated productions and attractions are within 20% of the observed values.

Table 82 Estimated and Observed 2007/2008 HBW Metrorail Productions & Attractions by Station Group

Metrorail Segment	Observed 2008		Estimated 2007		Est/Obs	Est/Obs
	Prods	Attrrs	Prods	Attrrs	Prods	Attrrs
1 Red Line - "A" route MD outside Beltway	46,251	10,059	43,167	10,696	0.93	1.06
2 Red Line - "A" route MD inside Beltway	18,431	20,477	21,974	25,211	1.19	1.23
3 Red Line - "A" route DC non-core	24,498	8,537	22,724	9,202	0.93	1.08
4 Red Line - DC core	40,392	179,029	26,303	129,460	0.65	0.72
5 Red Line - "B" route DC non-core	27,069	10,339	31,142	10,255	1.15	0.99
6 Red Line - "B" route MD	36,344	8,095	43,425	11,056	1.19	1.37
7 Green Line - "E" route MD	28,573	5,525	20,763	5,909	0.73	1.07
8 Green Line - "E" route DC non-core	19,728	8,949	18,094	9,185	0.92	1.03
9 Green Line - DC core	10,216	44,883	8,504	40,783	0.83	0.91
10 Green Line - "F" route DC non-core	17,294	20,695	16,825	14,482	0.97	0.70
11 Green Line - "F" route MD	41,114	4,583	25,634	1,891	0.62	0.41
12 Blue/Yellow Line - VA Fairfax	36,743	2,044	34,460	2,254	0.94	1.10
13 Blue/Yellow Line - VA Alexandria	14,922	12,374	10,512	11,603	0.70	0.94
14 Blue/Yellow Line - VA Core	37,297	39,966	39,831	28,848	1.07	0.72
15 Orange Line - VA Fairfax	43,366	7,392	43,464	6,655	1.00	0.90
16 Orange Line - VA Arlington non-core	33,914	18,001	33,945	26,457	1.00	1.47
17 Orange/Blue Line - VA/DC core	21,282	152,374	23,409	167,727	1.10	1.10
18 Orange/Blue Line - DC non-core	12,001	4,451	16,851	4,824	1.40	1.08
19 Orange Line - DC/MD	30,806	4,459	19,913	3,615	0.65	0.81
20 Blue Line - DC/MD	24,456	2,460	20,829	1,831	0.85	0.74
Total	564,694	564,694	521,769	521,944	0.92	0.92
DC/VA Core Total	109,186	416,252	98,047	366,818	0.90	0.88

Ref: "X:\modelRuns\fy12\Ver2.3.36\2007_pseu\transum\mrBoardingSum2007.xlsx"

Table 83 Estimated and Observed 2007/2008 Total Metrorail Productions & Attractions by Station Group

Metrorail Segment	Observed 2008		Estimated 2007		Est/Obs	Est/Obs
	Prods	Attrrs	Prods	Attrrs	Prods	Attrrs
1 Red Line - "A" route MD outside Beltway	56,808	14,571	49,565	16,070	0.87	1.10
2 Red Line - "A" route MD inside Beltway	26,662	27,751	30,394	36,148	1.14	1.30
3 Red Line - "A" route DC non-core	39,433	20,366	32,473	15,246	0.82	0.75
4 Red Line - DC core	77,420	244,253	50,469	172,417	0.65	0.71
5 Red Line - "B" route DC non-core	37,861	18,574	46,870	16,287	1.24	0.88
6 Red Line - "B" route MD	45,877	12,223	48,987	15,639	1.07	1.28
7 Green Line - "E" route MD	35,182	10,346	26,124	8,173	0.74	0.79
8 Green Line - "E" route DC non-core	28,928	15,757	28,080	16,058	0.97	1.02
9 Green Line - DC core	21,386	58,090	19,794	60,153	0.93	1.04
10 Green Line - "F" route DC non-core	27,328	25,498	28,800	21,276	1.05	0.83
11 Green Line - "F" route MD	46,024	6,575	32,128	3,470	0.70	0.53
12 Blue/Yellow Line - VA Fairfax	43,511	3,382	41,580	4,387	0.96	1.30
13 Blue/Yellow Line - VA Alexandria	19,638	15,575	15,953	17,833	0.81	1.14
14 Blue/Yellow Line - VA Core	53,475	62,198	52,937	43,877	0.99	0.71
15 Orange Line - VA Fairfax	51,403	10,798	50,208	9,449	0.98	0.88
16 Orange Line - VA Arlington non-core	45,199	25,858	47,620	37,708	1.05	1.46
17 Orange/Blue Line - VA/DC core	47,110	195,738	50,202	219,259	1.07	1.12
18 Orange/Blue Line - DC non-core	17,677	7,161	26,146	8,776	1.48	1.23
19 Orange Line - DC/MD	35,728	6,552	25,714	5,740	0.72	0.88
20 Blue Line - DC/MD	28,970	4,354	26,516	3,017	0.92	0.69
Total	785,621	785,621	730,560	730,983	0.93	0.93
DC/VA Core Total	199,391	560,279	173,402	495,706	0.87	0.88

Ref: "X:\modelRuns\fy12\Ver2.3.36\2007_pseu\transum\mrBoardingSum2007.xlsx"

A comparison of year-2007 estimated and observed trips by purpose and mode is shown in Table 84. The table includes estimated and observed on-board transit surveys collected in or around 2007. The Version 2.3 mode choice model was calibrated to targets established by the on-board surveys. Overall estimated regional transit percentage is less than the observed target percentage (6.23% versus 6.50%).

A global comparison of control totals (land use, demographic, and travel) from the Version 2.2 model and Version 2.3 model results is displayed in Table 85. A direct comparison of 2007 results was not possible as the Version 2.2 model has not been executed for that particular year. Instead, the nearest available Version 2.2 simulation years were used for the comparison (2005 and 2011). Staff offers the following observations from the comparison table:

- The 2007 land use used in the Version 2.3 simulation reflects a lower average household size than that reflected in the Version 2.2 land use (about 2.5 versus 2.6). This is because the 2007 "Pseudo Round 8.0" land use was informed by recent ACS data. The Round 8.0 Cooperative land use used in the Version 2.2 model is based on 2000 Census data.
- The 2007 external travel data used in the Version 2.3 model reflects actual 2007 traffic counts. The Version 2.2 external travel is based on earlier traffic count data.
- The proportion of transit trips between the travel models, by purpose, is different as noted above.

- The HBW car occupancies are notably lower in the Version 2.3 model, in comparison with those of Version 2.2. However, the *reverse* is true for the non-work purposes -- The 2007/08 HTS reports notably larger auto occupancies, for non-work purposes, particularly for the HBO purpose. Overall, the Version 2.3 average auto occupancy is higher than that of the Version 2.2 model simulation (1.40 versus 1.26).
- The Version 2.3 motorized trip rate is about 7.39/HH, in contrast to the Version 2.2 model rate of about 10.2. This is a substantial difference and may be due, in part, to the lower average household size assumed in the Version 2.3 land activity inputs.
- Version 2.3 vehicle trip lengths are longer than those in the Version 2.2 model (66.2 miles/HH versus 64.9 shown for the 2005 Version 2.2 model).
- The VMT appears to track well in the comparison.

Table 84 Comparison of 2007 Estimated and Observed Trips by Purpose and Mode

		Simulated V2.3.36	Observed (2007/08 HTS & Trn On-Board Surveys)		
		Trips	Trips	Diff (E-O)	Ratio (E/O)
HBW	Transit	716,400	755,700	-39,300	0.95
	Auto Person	2,806,600	2,856,600	-50,000	0.98
	Auto Driver	2,576,400	2,609,000	-32,600	0.99
	Motorized Person	3,522,900	3,612,300	-89,400	0.98
	Avg. Auto Occupancy	1.09	1.09	0.00	1.00
	Transit Percentage	20.33	20.90	-0.57	0.97
HBS	Transit	25,600	26,900	-1,300	0.95
	Auto Person	2,845,200	2,957,600	-112,400	0.96
	Auto Driver	1,891,100	1,966,900	-75,800	0.96
	Motorized Person	2,870,800	2,984,500	-113,700	0.96
	Avg. Auto Occupancy	1.51	1.50	0.01	1.00
	Transit Percentage	0.89	0.90	-0.01	0.99
HBO	Transit	184,900	187,900	-3,000	0.98
	Auto Person	6,268,500	6,007,300	261,200	1.04
	Auto Driver	3,998,200	3,827,900	170,300	1.04
	Motorized Person	6,453,500	6,195,200	258,300	1.04
	Avg. Auto Occupancy	1.57	1.57	0.00	1.00
	Transit Percentage	2.87	3.03	-0.53	0.94
NHW	Transit	107,100	108,800	-1,700	0.98
	Auto Person	1,438,800	1,602,800	-164,000	0.90
	Auto Driver	1,214,400	1,353,400	-139,000	0.90
	Motorized Person	1,545,800	1,711,600	-165,800	0.90
	Avg. Auto Occupancy	1.19	1.18	0.01	1.01
	Transit Percentage	6.93	6.40	0.53	1.08
NHO	Transit	43,500	44,800	-1,300	0.97
	Auto Person	2,856,700	2,825,900	30,800	1.01
	Auto Driver	1,936,900	1,919,100	17,800	1.01
	Motorized Person	2,900,200	2,870,700	29,500	1.01
	Avg. Auto Occupancy	1.47	1.47	0.00	1.00
	Transit Percentage	1.50	1.60	-0.10	0.94
Total	Transit	1,077,500	1,124,100	-46,600	0.96
	Auto Person	16,215,700	16,250,100	-34,400	1.00
	Auto Driver	11,617,000	11,676,300	-59,300	0.99
	Motorized Person	17,293,200	17,374,300	-81,100	1.00
	Avg. Auto Occupancy	1.40	1.38	0.02	1.01
	Transit Percentage	6.23	6.50	-0.27	0.96

Source: "X:\modelRuns\fy12\Ver2.3.36\Summary\Compare_Mode_Choice_Adj.tab"; Ref: "I:\ateam\docum\FY12\Ver2.3\modelDoc_v3\01_calib\Compare_Mode_Choice_V2.3.36.xlsx"

Table 85 Summary of Version 2.2 and Version 2.3 travel model output: Years 2005, 2007 and 2011

	Version 2.2 - 2010 CLRP 2005	Version 2.3 (2.3.36) 2007	Version 2.2 - 2010 CLRP 2011	V2.3- V2.2- 2005
1 Households	2,344,561	2,339,832	2,524,150	-4,729
2 Employment	3,700,075	3,801,935	3,982,448	101,860
3 HH Population	6,124,771	5,860,693	6,562,726	-264,078
4 HH & GQ Population	6,262,508	5,980,362	6,706,665	-282,146
5 Extl. Productions/ HBW Auto Person	296,405	294,506	328,893	-1,899
6 Extl. Productions/ HBS Auto Person	75,000	70,670	82,309	-4,330
7 Extl. Productions/ HBO Auto Person	206,939	226,003	230,075	19,064
8 Extl. Productions/ NHB Auto Person	78,096	87,025	85,912	8,929
9 Extl. Productions/ Auto Person Subtotal	656,440	678,204	727,189	21,764
10 Extl. Productions/ Medium Truck	3,965	11,810	4,405	2,021
11 Extl. Productions/ Heavy Truck	25,647	14,325	28,489	-18,408
12 Extl. Productions/ Truck Subtotal	29,612	26,135	32,894	-16,387
13 Extl. Attractions/ HBW Auto Person	182,548	183,126	201,047	578
14 Extl. Attractions/ HBS Auto Person	74,016	68,260	81,571	-5,756
15 Extl. Attractions/ HBO Auto Person	288,889	320,036	320,442	31,147
16 Extl. Attractions/ NHB Auto Person	78,087	87,006	85,902	8,919
17 Extl. Attractions/ Auto Person Subtotal	623,540	658,428	688,962	34,888
18 Extl. Attractions/ Medium Truck	3,965	11,810	4,405	2,021
19 Extl. Attractions/ Heavy Truck	25,647	14,325	28,489	-18,408
20 Extl. Attractions/ Truck Subtotal	29,612	26,135	32,894	-16,387
21 Inc. Grp 1 HHs	546,725	635,804	590,646	89,079
22 Inc. Grp 2 HHs	534,824	726,625	576,826	191,801
23 Inc. Grp 3 HHs	651,606	483,258	702,106	-168,349
24 Inc. Grp 4 HHs	611,405	494,172	654,570	-117,233
25 HHs Subtotal	2,344,560	2,339,858	2,524,149	-4,702
26 1- person HHs	594,601	664,558	645,373	69,956
27 2- person HHs	721,723	723,463	780,010	1,739
28 3- person HHs	411,997	392,844	442,560	-19,153
29 4+ person HHs	616,239	558,994	656,205	-57,245
30 HHs Subtotal	2,344,560	2,339,858	2,524,149	-4,703
31 0 Vehicle HHs	220,862	203,376	242,413	-18,201
32 1 Vehicle HHs	772,416	737,660	837,490	-35,718
33 2 Vehicle HHs	911,858	870,427	977,824	-40,654
34 3+ Vehicle HHs	439,423	528,395	466,423	89,871
35 HHs Subtotal	2,344,560	2,339,858	2,524,149	-4,695

	Version 2.2 - 2010 CLRP 2005	Version 2.3 (2.3.36) 2007	Version 2.2 - 2010 CLRP 2011	V2.3- V2.2- 2005
36 HBW Motorized Person Trips	4,425,947	3,522,945	4,756,097	-899,735
37 HBS Motorized Person Trips	3,404,738	2,870,779	3,650,705	-537,070
38 HBO Motorized Person Trips	10,480,364	6,453,461	11,215,274	-4,026,571
39 NHB Motorized Person Trips	5,795,249	4,446,044	6,216,076	-1,346,881
40 Total Motorized Person Trips	24,106,298	17,293,230	25,838,152	-6,810,257
41 Motorized Person Trips per HH	10.28	7.39	10.24	-2.89
42 Motorized Person Trips per capita	3.85	2.89	3.85	-0.96
43 Non-Motorized HBW Trips	186,955	117,309	207,633	-69,632
44 HBW Auto Driver Trips	3,417,806	2,571,616	3,684,230	-763,461
45 HBS Auto Driver Trips	2,695,175	1,888,395	2,904,137	-747,754
46 HBO Auto Driver Trips	7,684,037	3,997,403	8,239,272	-3,855,984
47 NHB Auto Driver Trips	4,419,748	3,141,645	4,763,290	-1,193,359
48 Total Auto Driver Trips	18,216,766	11,599,060	19,590,929	-6,560,558
49 HBW Auto Passenger Trips	419,737	234,976	461,494	-274,516
50 HBS Auto Passenger Trips	653,783	956,790	685,536	241,215
51 HBO Auto Passenger Trips	2,557,797	2,271,132	2,713,741	-116,004
52 NHB Auto Passenger Trips	1,218,207	1,153,787	1,289,772	-145,459
53 Total Auto Passenger Trips	4,849,524	4,616,683	5,150,543	-294,764
54 HBW Auto Occupancies	1.12	1.09	1.13	-0.07
55 HBS Auto Occupancies	1.24	1.51	1.24	0.22
56 HBO Auto Occupancies	1.33	1.57	1.33	0.31
57 NHB Auto Occupancies	1.28	1.37	1.27	0.05
58 Total Auto Occupancies	1.27	1.40	1.26	0.12
59 HBW Transit Trips	588,404	716,353	610,373	138,242
60 HBS Transit Trips	55,780	25,595	61,032	-30,531
61 HBO Transit Trips	238,530	184,926	262,261	-54,583
62 NHB Transit Trips	157,294	214,130	163,014	-8,063
63 Total Transit Trips	1,040,008	1,077,487	1,096,680	45,065
64 HBW Transit Percentage	13.29	20.33	12.83	7.32
65 HBS Transit Percentage	1.64	0.89	1.67	-0.76
66 HBO Transit Percentage	2.28	2.87	2.34	0.57
67 NHB Transit Percentage	2.71	4.82	2.62	0.64
68 Total Transit Percentage	4.31	6.23	4.24	1.96

	Version 2.2 - 2011 CLRP 2005	Version 2.3 (2.3.36) 2007	Version 2.2 - 2011 CLRP 2011	V2.3- V2.2- 2005
69 Medium Truck	328,595	508,308	356,288	134,284
70 Heavy Truck	168,507	156,879	182,503	-23,533
71 Misc. Auto Driver	636,646	652,238	685,415	15,592
72 Through (X-X) Auto&Comm.Veh	40,761	42,456	45,365	1,695
73 Through (X-X) Trucks	32,621	33,637	36,346	1,016
74 Airport Passenger Auto Drivers	49,386	60,681	56,814	11,295
75 Commercial Vehicles (Int/&Extl)	1,197,239	1,268,086	1,282,625	71,007
76 Total Vehicle Trips	20,670,521	15,261,363	22,236,285	-5,317,784
77 Freeway VMT	58,798,950	63,875,252	61,635,302	4,680,352
78 Major Art VMT	57,217,037	54,872,253	59,734,047	-1,387,312
79 Minor Art VMT	19,990,859	18,319,353	21,750,767	-456,623
80 Collector VMT	8,417,414	9,999,308	8,966,940	2,764,443
81 Express. VMT	6,411,319	6,238,093	6,963,125	-83,230
82 Ramp VMT	1,228,003	1,569,673	1,276,848	363,237
83 Total VMT	152,063,583	154,873,932	160,327,029	5,880,866
84 VMT per Capita	24.28	25.90	23.91	2.13
85 VMT per HH	64.86	66.19	63.52	2.64
86 VMT per Vehicle Trip	7.36	10.15	7.21	2.93

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Appendix A Model adjustment factors

Appendix A Model adjustment factors

The Version 2.3 travel model incorporates three sets of adjustment factors: one is applied following trip generation and two are applied to the trip distribution process.

1.1 Trip Generation

The first set of factors is applied to productions and attractions as shown in Table 1 and Table 2. Factors that are applied to productions and attractions are often called “p-mods” and “a-mods” since they modify the productions and attractions. In this case, we are using jurisdiction-level p-mods and a-mods.

Table 1 Jurisdictional Production Adjustment Factors (“P-mods”)

Jurisdiction	HBW	HBS	HBO	NNW	NHO
District of Columbia	1.00	0.85	1.20	1.00	1.00
Montgomery	0.95	1.00	1.05	1.00	1.00
Prince George's	1.00	0.88	0.97	1.00	1.00
Arlington	1.00	1.11	1.08	1.00	1.00
Alexandria	1.00	1.00	1.00	1.00	1.00
Fairfax	1.02	1.02	1.02	1.00	1.00
Loudoun	1.00	0.95	0.92	1.00	1.00
Prince William	1.04	1.15	0.94	1.00	1.00
Frederick	1.13	1.00	1.04	1.00	1.00
Howard	1.00	1.00	0.94	1.00	1.00
Anne Arundel	1.00	1.12	1.03	1.00	1.00
Charles	1.00	1.00	0.93	1.00	1.00
Carroll	1.00	1.00	0.92	1.00	1.00
Calvert	1.00	1.00	1.12	1.00	1.00
St. Mary's	1.36	1.00	1.00	1.00	1.00
King George's	1.00	1.00	1.00	1.00	1.00
Fredericksburg	1.00	1.00	1.00	1.00	1.00
Stafford	1.00	1.14	0.86	1.00	1.00
Spotsylvania	1.00	1.00	1.00	1.00	1.00
Fauquier	1.00	1.00	0.88	1.00	1.00
Clarke	1.00	1.00	1.00	1.00	1.00
Jefferson	1.00	1.00	1.00	1.00	1.00

Note: Cells < 1.0 are shown in green (dark gray). Cells > 1.0 are shown in red (light gray).

Table 2 Jurisdictional Attraction Adjustment Factors (“A-mods”)

Jurisdiction	HBW	HBS	HBO	NNW	NHO
District of Columbia	1.10	0.60	0.90	1.10	0.80
Montgomery	1.02	1.07	1.10	0.90	1.13
Prince George's	1.08	0.78	0.77	1.00	0.77
Arlington	1.22	0.87	0.95	1.00	0.60
Alexandria	0.77	0.85	1.00	1.00	1.14
Fairfax	1.07	1.05	1.00	0.95	0.95
Loudoun	0.89	1.07	0.87	0.85	1.00
Prince William	1.11	1.05	0.96	1.00	1.00
Frederick	1.00	1.00	0.83	0.88	1.14
Howard	0.82	1.18	0.87	0.78	1.00
Anne Arundel	0.86	1.00	0.85	0.89	0.94
Charles	1.00	1.00	1.00	1.00	1.00
Carroll	1.00	1.51	0.94	1.00	1.24
Calvert	1.00	0.78	1.29	1.00	1.00
St. Mary's	1.40	1.00	0.80	1.49	1.00
King George's	1.00	1.00	1.00	1.00	1.00
Fredericksburg	1.00	1.00	1.00	1.00	1.00
Stafford	1.00	1.72	1.00	1.00	1.00
Spotsylvania	1.00	1.00	1.00	1.00	1.00
Fauquier	1.00	1.00	1.00	1.00	1.00
Clarke	1.00	1.00	1.00	1.00	1.00
Jefferson	1.00	1.00	1.00	1.00	1.00

1.2 Trip Distribution

Trip distribution has two sets of adjustment factors. The first set is used to address physical barrier effects on trip patterns, such as the Potomac River as shown in Table 3. The second set of adjustment factors addresses jurisdictional effects (e.g., school trips and shopping trips tend to remain in a given traveler’s residence jurisdiction). HBW k-factors are shown in Table 4, while all other purpose k-factors are presented in Table 5. These adjustment factors were developed by comparing estimated trip distribution results with the observed results from 2007/2008 HTS.

Appendix A Model adjustment factors

Table 3 K-Factors used in Trip Distribution to Calibrate Potomac River Crossings

HBW	DC/SubMD	SubVA	OuterMD	OuterVA
DC/SubMD	1.00	0.80	1.00	1.00
SubVA	0.90	1.00	0.50	1.00
OuterMD	1.00	0.70	1.00	0.50
OuterVA	0.70	1.00	0.30	1.00

HBS	DC/SubMD	SubVA	OuterMD	OuterVA
DC/SubMD	1.00	0.25	1.00	1.00
SubVA	0.25	1.00	0.50	1.00
OuterMD	1.00	1.00	1.00	1.00
OuterVA	1.00	1.00	1.00	1.00

HBO	DC/SubMD	SubVA	OuterMD	OuterVA
DC/SubMD	1.00	0.30	1.00	1.00
SubVA	0.70	1.00	0.30	1.00
OuterMD	1.00	1.00	1.00	1.00
OuterVA	1.00	1.00	1.00	1.00

NHW	DC/SubMD	SubVA	OuterMD	OuterVA
DC/SubMD	1.00	0.60	1.00	1.00
SubVA	0.60	1.00	0.50	1.00
OuterMD	1.00	1.00	1.00	1.00

NHO	DC/SubMD	SubVA	OuterMD	OuterVA
DC/SubMD	1.00	0.30	1.00	1.00
SubVA	0.30	1.00	0.50	1.00
OuterMD	1.00	0.40	1.00	0.50
OuterVA	1.00	1.00	1.00	1.00

Appendix A Model adjustment factors

Table 4 HBW K-Factors (Overrides to Potomac River Crossing K-Factors)

Interchange	HBW Factor
DC non-core to DC core	2
Mtg to DC core	2
Mtg to Mtg	2.5
PG to PG	1.5
Arl core to DC core	2.5
Arl non-core to DC core	1.7
Alx to DC core	2
Ffx to DC core	1.5
Ffx to Ffx	1.2
PW to Ffx	2

Table 5 Non-HBW Intra-Jurisdictional K-Factors

Interchange	HBS Factor	HBO Factor	NHW Factor	NHO Factor
DC non-core to DC non-core	2.5	2.2	1.5	2.5
Mtg to Mtg	2	2.2	2.2	1.5
PG to PG	2.5	2.5	1.5	1.7
Arl non-core to Arl non-core	2	2.2	1.7	1.7
Alx to Alx	2	2.2	1.7	1.7
Ffx to Ffx	2.5	2.5	2	2.1
Ldn to Ldn	1.5	2.2	1.7	1.5
PW to PW	1.75	2.2	1.5	1.5
Frd to Frd	1.5	2.2	1.5	1.5
Car to Car	1.5	2.2	1.5	1.5
How to How	1.5	2.2	1.7	1.7
Ann to Ann	1.5	2.2	1.5	1.7
Calv to Calv	1.5	1.5	1.5	1.7
StM to StM	1.5	1.5	1.5	1.7
Chs to Chs	1.5	1.5	1.5	1.7
Fau to Fau	1.5	1.5	1.5	1.7
Staf to Staf	1.5	1	1.5	1.7
Clrk to Clrk	1.5	1.5	1.5	1.3
Jef to Jef	1.5	1.5	1.5	1.3
Frbrg to Frbrg	1.5	1	1.5	1.7
Spots to Spots	1.5	1	1.5	1.7
KingG to KingG	1.5	1.5	1.5	1.5

Appendix B Year 2007 mode choice summary (final, i4, iteration)

HBW	Transit (Estimated, Observed, Est.-Obs., Est./Obs.)	B-1
HBW	Auto Person (Estimated, Observed, Est.-Obs., Est./Obs.)	B-3
HBW	Auto Driver (Estimated, Observed, Est.-Obs., Est./Obs.)	B-5
HBW	Motorized Person (Estimated, Observed, Est.-Obs., Est./Obs.)	B-7
HBW	Auto Occupancy (Estimated, Observed)	B-9
HBW	Percent Transit (Estimated, Observed)	B-10
<hr/>		
HBS	Transit	B-11
HBS	Auto Person	B-13
HBS	Auto Driver	B-15
HBS	Motorized Person	B-17
HBS	Auto Occupancy	B-19
HBS	Percent Transit	B-20
<hr/>		
HBO	Transit	B-21
HBO	Auto Person	B-23
HBO	Auto Driver	B-25
HBO	Motorized Person	B-27
HBO	Auto Occupancy	B-29
HBO	Percent Transit	B-30
<hr/>		
NHW	Transit	B-31
NHW	Auto Person	B-33
NHW	Auto Driver	B-35
NHW	Motorized Person	B-37
NHW	Auto Occupancy	B-39
NHW	Percent Transit	B-40
<hr/>		
NHO	Transit	B-41
NHO	Auto Person	B-43
NHO	Auto Driver	B-45
NHO	Motorized Person	B-47
NHO	Auto Occupancy	B-49
NHO	Percent Transit	B-50
<hr/>		
Total	Transit	B-51
Total	Auto Person	B-53
Total	Auto Driver	B-55
Total	Motorized Person	B-57
Total	Auto Occupancy	B-59
Total	Percent Transit	B-60

Note: Global estimated and observed totals can be found in Table 84 on page 9-9.

Appendix B Year 2007 mode choice summary

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal HBW Trips MODE: Est Transit

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	10811	5319	1900	683	1428	2251	630	983	1	3	0	0	2	2	0	0	0	0	0	0	0	0	0	24012
2 DC NC	109010	36591	17789	7970	5551	9732	2988	4308	3	11	0	0	22	17	0	0	0	0	0	0	0	0	0	193991
3 MTG	71960	13757	40953	2917	3925	4660	902	1277	0	3	0	0	22	4	0	0	0	0	0	0	0	0	0	140379
4 PG	46648	19177	9438	15265	4834	6093	1470	1324	0	2	0	0	81	55	0	0	1	0	0	0	0	0	0	104388
5 ARLCR	2896	285	128	23	158	572	118	140	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4321
6 ARNCR	35374	3845	1591	287	4114	8970	2448	2583	1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	59220
7 ALX	18077	1949	718	153	2144	4665	2683	1766	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	32162
8 FFX	50134	6848	3413	454	8968	14740	5766	13368	70	63	0	0	6	7	0	0	0	0	0	0	0	1	0	103838
9 LDN	2268	448	248	20	617	724	112	246	459	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5141
10 PW	5560	1596	863	208	1470	2091	853	1993	33	1221	0	0	11	13	0	0	0	0	0	0	0	1	0	15912
11 FRD	1210	187	480	15	81	81	13	17	0	0	1086	0	0	0	0	0	0	0	0	0	0	0	0	3172
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	4306	1181	920	333	400	424	84	51	0	0	0	0	460	21	0	0	0	0	0	0	0	0	0	8179
14 AAR	6292	1394	673	357	533	572	113	61	0	0	0	0	31	68	0	0	0	0	0	0	0	0	0	10094
15 CAL	647	282	89	39	107	114	26	10	0	0	0	0	0	1	21	0	0	0	0	0	0	0	0	1338
16 STM	331	118	43	13	50	52	12	7	0	0	0	0	0	0	1	89	13	0	0	0	0	0	0	728
17 CHS	2777	893	276	122	318	360	90	51	0	0	0	0	0	0	3	381	0	0	0	0	0	0	0	5270
18 FAU	67	23	9	1	31	38	16	4	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	193
19 STA	799	213	76	9	278	383	125	38	0	35	0	0	0	0	0	0	0	0	2	0	1	0	0	1960
20 CL/JF	94	42	56	4	35	35	7	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	284
21 SP/FB	615	191	75	11	225	319	146	61	0	65	0	0	0	0	0	0	0	0	2	0	10	0	0	1721
22 KGEO	15	6	2	0	7	9	5	2	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	48
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	369891	94347	79740	28884	35273	56885	28301	567	1421	1087	0	635	187	22	93	396	0	4	0	13	0	0	0	716353

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal HBW Trips MODE: Obs Transit

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	17296	6707	3631	1280	774	3422	1059	1467	32	64	22	0	34	43	0	0	0	72	0	0	0	0	0	35903
2 DC NC	103373	42192	14393	5918	3034	10116	3969	3048	248	104	0	0	79	70	0	0	17	17	0	0	0	0	0	186578
3 MTG	67810	23319	38961	3600	1471	4582	1403	604	0	0	69	0	76	94	32	15	5	0	53	0	0	0	0	142094
4 PG	66663	24251	9938	14686	2898	10715	2316	2670	133	0	0	0	156	186	0	0	7	0	0	0	0	0	0	134619
5 ARLCR	2844	894	161	222	13	627	283	189	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5233
6 ARNCR	38525	8185	1703	930	1811	7631	1874	1953	39	29	0	0	0	3	0	0	0	0	0	0	0	0	0	62683
7 ALX	17922	4329	774	539	1309	4808	4306	1720	36	18	0	0	0	0	0	0	0	0	0	0	0	0	0	35761
8 FFX	47265	11473	1424	1063	5032	17147	4359	15275	120	76	0	0	10	9	0	0	0	0	0	0	0	0	0	103252
9 LDN	1159	492	13	27	142	638	133	97	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2701
10 PW	6246	1899	226	136	695	3022	772	656	70	1466	0	0	4	5	0	0	0	3	4	0	0	0	0	15206
11 FRD	2847	537	1787	120	22	252	31	0	0	0	846	0	0	0	0	0	0	0	0	0	0	0	0	6442
12 CAR	213	18	0	0	0	64	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	295
13 HOW	3854	554	111	80	162	693	34	67	0	0	0	0	0	0	0	0	0	0	0	0	0	57	0	5612
14 AAR	5265	1482	210	99	407	1122	59	33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8677
15 CAL	607	304	109	2	82	67	35	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1232
16 STM	31	0	41	0	4	112	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	205
17 CHS	2539	874	120	255	221	990	42	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5081
18 FAU	174	111	3	0	78	121	19	46	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	554
19 STA	825	269	44	6	83	381	182	208	0	43	0	0	0	0	0	0	0	0	0	0	0	3	0	2044
20 CL/JF	2	45	0	0	5	3	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	61
21 SP/FB	222	265	11	46	59	264	184	163	0	59	0	0	0	0	0	0	0	0	9	0	3	0	0	1285
22 KGEO	89	16	3	0	7	25	8	13	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	166
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	385771	128216	73663	29009	18310	66802	21090	28275	678	1867	937	0	359	410	32	15	29	92	66	0	63	0	0	755684

Appendix B Year 2007 mode choice summary

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal HBW Trips MODE: Difference (Est-Obs) Transit

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	-6485	-1388	-1731	-597	654	-1171	-429	-484	-31	-61	-22	0	-32	-41	0	0	0	-72	0	0	0	0	0	-11891
2 DC NC	5637	-5601	3396	2052	2517	-384	-981	1260	-245	-93	0	0	-57	-53	0	0	-17	-17	0	0	0	0	0	7413
3 MTG	4150	-9562	1992	-683	2454	78	-501	673	0	3	-69	0	-54	-90	-32	-15	-5	0	-53	0	0	0	0	-1715
4 PG	-20015	-5074	-500	579	1936	-4622	-846	-1347	-133	2	0	0	-75	-131	0	0	-6	0	0	0	0	0	0	-30231
5 ARLCR	52	-609	-33	-199	145	-55	-165	-49	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-912
6 ARNCR	-3151	-4340	-112	-643	2303	1339	574	630	-38	-24	0	0	0	-3	0	0	0	0	0	0	0	0	0	-3463
7 ALX	155	-2380	-56	-386	835	-143	-1623	46	-36	-11	0	0	0	0	0	0	0	0	0	0	0	0	0	-3599
8 FFX	2869	-4625	1989	-610	3936	-2407	1408	-1906	-50	-13	0	0	-4	-2	0	0	0	0	0	0	0	1	0	586
9 LDN	1108	-44	235	-7	476	86	-21	149	459	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2441
10 PW	-686	-303	636	71	775	-932	81	1336	-37	-246	0	0	7	8	0	0	0	-3	-4	0	1	0	0	706
11 FRD	-1637	-350	-1307	-105	59	-171	-18	17	0	0	240	0	0	0	0	0	0	0	0	0	0	0	0	-3270
12 CAR	-213	-18	0	0	0	-64	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-295
13 HOW	452	627	809	253	238	-269	50	-16	0	0	0	0	460	21	0	0	0	0	0	0	0	-57	0	2567
14 AAR	1027	-88	463	258	126	-550	54	28	0	0	0	0	31	68	0	0	0	0	0	0	0	0	0	1417
15 CAL	40	-22	-20	37	25	47	-9	-16	0	0	0	0	1	21	0	0	0	0	0	0	0	0	0	106
16 STM	300	117	2	13	46	-60	-5	7	0	0	0	0	0	0	1	89	13	0	0	0	0	0	0	523
17 CHS	238	19	156	-133	97	-630	48	11	0	0	0	0	0	0	3	381	0	0	0	0	0	0	0	189
18 FAU	-107	-89	7	1	-47	-83	-3	-42	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	-361
19 STA	-26	-56	32	4	195	1	-57	-170	-0	-8	0	0	0	0	0	0	0	-0	2	0	-2	0	0	-84
20 CL/JF	92	-3	56	4	29	32	2	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	224
21 SP/FB	393	-73	64	-35	166	55	-38	-101	0	5	0	0	0	0	0	0	0	-0	-7	0	7	0	0	436
22 KGEO	-74	-10	-1	0	-1	-16	-4	-11	0	-2	0	0	0	0	0	0	0	0	0	0	0	0	0	-118
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	-15880		6077		16963		-2482		-111		150		276		-10		367		-62		-50		0	-39331
		-33869		-125		-9918		27		-446		0		-223		78		-92		0		0		

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal HBW Trips MODE: Ratio (Est/Obs) Transit

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	0.63	0.79	0.52	0.53	1.84	0.66	0.60	0.67	0.03	0.04	0	0	0.06	0.04	0	0	0	0	0	0	0	0	0	0.67
2 DC NC	1.05	0.87	1.24	1.35	1.83	0.96	0.75	1.41	0.01	0.11	0	0	0.28	0.24	0	0	0	0	0	0	0	0	0	1.04
3 MTG	1.06	0.59	1.05	0.81	2.67	1.02	0.64	2.11	0.13	2.75	0.00	0	0.29	0.04	0	0	0	0	0	0	0	0	0	0.99
4 PG	0.70	0.79	0.95	1.04	1.67	0.57	0.63	0.50	0	1.97	0	0	0.52	0.29	0	0	0.21	0	0	0	0	0	0	0.78
5 ARLCR	1.02	0.32	0.80	0.10	12.14	0.91	0.42	0.74	0.06	0.31	0	0	0	0.01	0	0	0	0	0	0	0	0	0	0.83
6 ARNCR	0.92	0.47	0.93	0.31	2.27	1.18	1.31	1.32	0.02	0.17	0	0	0.03	0.04	0	0	0	0	0	0	0	0	0	0.94
7 ALX	1.01	0.45	0.93	0.28	1.64	0.97	0.62	1.03	0.00	0.36	0	0	0	0	0	0	0	0	0	0	0	0	0	0.90
8 FFX	1.06	0.60	2.40	0.43	1.78	0.86	1.32	0.88	0.59	0.83	0.03	0	0.57	0.74	0	0	0	0	0	0	0.63	0	0	1.01
9 LDN	1.96	0.91	19.06	0.74	4.36	1.13	0.84	2.54	459.26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.90
10 PW	0.89	0.84	3.81	1.52	2.12	0.69	1.10	3.04	0.47	0.83	0.04	0	3.11	2.41	0	0	0	0	0	0	0	1.28	0	1.05
11 FRD	0.43	0.35	0.27	0.13	3.67	0.32	0.43	17.35	0	0	1.28	0	0	0	0	0	0	0	0	0	0	0	0	0.49
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	1.12	2.13	8.28	4.16	2.47	0.61	2.47	0.76	0	0.04	0	0	460.03	20.70	0	0	0	0	0	0	0	0	0	1.46
14 AAR	1.20	0.94	3.21	3.61	1.31	0.51	1.91	1.84	0	0.07	0	0	30.94	68.17	0	0	0	0	0	0	0	0	0	1.16
15 CAL	1.07	0.93	0.81	19.70	1.30	1.70	0.76	0.37	0	0	0	0	0	1.33	21.49	0.34	0	0	0	0	0	0	0	1.09
16 STM	10.832938	2.25	1.04	12.95	12.54	0.46	0.70	6.68	0	0	0	0	0	0	0.95	89.24	12.97	0	0	0	0	0	0	3.56
17 CHS	1.09	1.02	2.30	0.48	1.44	0.36	2.15	1.27	0	0	0	0	0.04	0.02	0	2.98	381.43	0	0	0	0	0	0	1.04
18 FAU	0.39	0.20	3.45	1.11	0.39	0.31	0.84	0.09	0	1.86	0	0	0	0	0	0	0	0	0	0	0	0	0	0.35
19 STA	0.97	0.79	1.71	1.68	3.35	1.00	0.69	0.18	0	0.82	0	0	0	0	0	0	0	0	0	0	0	0	0	0.96
20 CL/JF	48.91	0.93	55.89	3.60	6.51	11.31	1.36	240.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.69
21 SP/FB	2.76	0.72	6.86	0.24	3.80	1.21	0.79	0.38	0	1.09	0	0	0.05	0.05	0	0	0	0	0	0.23	0	3.43	0	1.34
22 KGEO	0.17	0.40	0.75	0.25	0.91	0.35	0.57	0.14	0	0.56	0	0	0	0	0	0	0	0	0	0	0.01	0	0	0.29
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0.96		1.08		1.93		0.88		0.84		1.16		1.77		0.70		13.65		0.07		0.21		0	0.95
		0.74		1.00		0.85		1.00		0.76		0		0.46		6.17		0		0		0		

Appendix B Year 2007 mode choice summary

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
Purpose: Internal HBW Trips MODE: Est Auto Person

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	3942	546	647	816	121	128	127	1277	75	36	7	0	60	127	3	3	29	2	1	0	0	0	0	7948
2 DC NC	9333	6399	8202	11154	1011	1053	780	7584	460	230	113	3	806	1679	74	45	376	15	5	2	4	1	0	49330
3 MTG	57644	31275	200880	32379	3697	8709	3631	26731	1708	760	5255	485	7714	6893	192	275	559	87	39	218	51	6	0	389188
4 PG	39186	41648	36217	152696	4223	9492	5519	18402	743	579	379	57	7124	15727	1032	890	5329	39	29	15	33	29	0	339388
5 ARLCR	197	130	132	82	540	336	103	555	24	15	1	0	2	5	0	0	1	1	0	0	0	0	0	2123
6 ARNCR	8450	3950	3580	1859	4435	13614	4050	19076	676	497	26	0	57	133	5	12	41	24	16	3	13	1	0	60517
7 ALX	9211	3183	2450	1743	2341	6086	8499	16498	450	623	17	0	44	116	8	16	63	21	28	3	20	1	0	51419
8 FFX	72033	25257	29367	13572	11007	32704	26267	291719	22839	17816	403	21	513	1181	92	265	554	1044	563	210	511	23	0	547960
9 LDN	9582	5171	8616	2508	2041	5116	2526	51594	53826	4631	1708	97	353	461	19	86	101	854	119	1603	142	7	0	151163
10 PW	12124	6304	6879	3623	2595	6783	5219	89902	6292	76721	188	10	153	397	30	115	171	3022	2358	219	1351	58	0	224514
11 FRD	4953	3502	19304	3097	666	1354	512	4774	2263	33	80091	5765	7686	4376	41	83	109	67	5	1160	8	1	0	140152
12 CAR	3099	1935	7786	2019	326	622	237	1645	396	83	8624	44377	4787	2900	32	47	77	14	2	178	3	0	0	79187
13 HOW	7665	6444	16222	11457	681	1491	679	3113	247	125	4079	1319	56037	20348	127	189	277	10	4	105	7	2	0	130625
14 AAR	14112	11474	14119	21017	1356	2867	1404	4862	291	235	1169	357	17730	140153	1458	721	1124	11	8	41	11	7	0	234528
15 CAL	4648	2895	2187	4419	412	834	460	1510	79	84	56	10	380	2680	18354	5904	2206	4	8	1	17	19	0	47166
16 STM	3564	2192	1499	3332	346	668	406	1307	62	94	32	4	219	978	4061	51426	5596	10	30	0	56	93	0	75974
17 CHS	8925	5953	3539	10336	852	1749	1123	3398	144	176	67	9	444	1788	1796	3305	31121	8	22	1	49	97	0	74903
18 FAU	1505	725	1012	364	434	1024	601	7848	2095	5798	53	2	20	40	4	24	22	10465	923	199	704	34	0	33895
19 STA	2524	1301	1309	836	677	1736	1361	8963	949	9253	26	1	31	91	21	121	124	1720	20758	72	10573	374	0	62821
20 CL/JF	706	409	1957	310	188	445	212	4158	3781	940	1502	94	297	179	1	2	4	442	27	16886	28	1	0	32570
21 SP/FB	1404	723	806	514	372	1012	785	5940	678	5313	18	1	17	52	26	127	159	1414	8230	58	31199	458	0	59307
22 KGEO	723	405	277	494	154	308	193	1130	116	917	2	0	13	52	43	155	317	212	1022	9	1404	3968	0	11913
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	275531		366987		38477		64692		98192		103813		104482		27419		48359		34197		46183		0	
		161822		278625		98132		571985		125265		52612		200357		63811		19489		20983		5179		2806592

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
Purpose: Internal HBW Trips MODE: Obs Auto Person

ORIGIN	DESTINATION																							TOTAL	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1 DC CR	1740	284	386	130	0	417	0	623	254	0	0	0	0	447	0	0	0	0	0	0	0	0	0	4281	
2 DC NC	12791	2168	7347	11193	1111	1595	1341	7886	936	334	0	0	116	3006	116	0	0	0	0	0	0	0	0	49938	
3 MTG	48287	34541	243503	26384	2437	9989	1758	27514	2146	725	3187	0	8957	8185	0	0	0	0	457	821	0	0	0	418889	
4 PG	51967	39513	45941	156780	1296	8989	3789	23187	1657	442	111	1070	6491	12343	0	0	6620	0	0	0	0	0	0	360195	
5 ARLCR	0	341	401	0	186	126	0	1411	0	347	0	0	178	0	0	0	0	0	0	0	0	0	0	2991	
6 ARNCR	12858	5173	4633	653	4266	13822	3012	22185	1490	503	0	0	0	279	91	0	0	0	0	287	0	0	0	69252	
7 ALX	14251	3229	1847	2528	1711	6062	10762	14035	263	1301	0	0	0	311	0	0	0	0	0	0	0	0	0	56300	
8 FFX	67526	20930	17450	5794	20447	35172	27099	324648	21332	19794	0	0	2563	238	424	0	336	816	1052	471	0	132	0	566223	
9 LDN	5843	2218	4248	0	607	4034	925	64363	59149	2229	0	0	0	382	0	0	0	663	0	480	0	0	0	145140	
10 PW	12985	9392	4274	3686	5520	6920	7527	86697	5418	80339	0	0	0	0	0	761	295	2909	2916	0	636	0	0	230273	
11 FRD	951	2246	27495	2619	107	227	201	1986	2572	296	87417	3891	3895	1204	0	0	0	0	0	465	0	0	0	135572	
12 CAR	553	87	9459	2962	0	0	164	164	0	0	2251	41478	10836	6026	0	0	0	0	0	0	0	0	0	73981	
13 HOW	5535	2561	15538	22679	165	285	526	3048	274	0	420	961	56055	22019	0	0	137	0	0	0	323	0	0	130528	
14 AAR	13029	6734	7861	26984	950	1569	1792	5109	0	202	0	797	20126	140038	607	80	0	0	0	143	0	0	0	226021	
15 CAL	2995	1771	722	5190	152	888	0	3022	0	360	0	0	1072	7577	15580	7407	485	0	0	0	0	0	0	47220	
16 STM	1678	2910	457	3385	0	0	0	388	0	0	0	0	0	569	5367	55394	6675	0	0	0	0	0	0	76821	
17 CHS	5534	4066	1872	14769	674	1931	1549	5934	0	0	0	0	0	2226	1809	1701	29661	0	0	0	0	288	0	72013	
18 FAU	524	0	567	0	0	766	374	8831	1816	6562	0	0	0	0	0	0	0	10640	0	0	214	0	0	30295	
19 STA	1561	1843	858	279	0	2573	1186	9510	0	13392	0	0	0	0	0	0	0	0	18220	536	10419	893	0	61271	
20 CL/JF	509	0	533	0	0	0	0	3934	6540	0	3619	0	157	0	0	0	0	314	0	13645	0	297	0	29549	
21 SP/FB	1865	2718	788	1011	520	544	0	617	0	2460	0	0	0	0	0	0	258	5811	2235	32937	4830	0	0	56592	
22 KGEO	273	0	0	0	0	0	0	329	0	804	0	0	0	367	0	244	1001	244	839	0	1018	8183	0	13302	
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
TOTAL	263256		396179		40148		62005		103848		130089		97005		23994		45209		29580		45225		0		
		142721		287025		95909		615422		130089		48196		110445		205217		65587		15845		19120		14624	2856648

Appendix B Year 2007 mode choice summary

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal HBW Trips MODE: Difference (Est-Obs) Auto Person

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	2202	262	261	685	121	-289	127	654	-179	36	7	0	60	-319	3	3	29	2	1	0	0	0	0	3667
2 DC NC	-3458	4232	855	-39	-99	-542	-561	-302	-476	-104	113	3	690	-1327	-41	45	376	15	5	2	4	1	0	-608
3 MTG	9357	-3266	-42623	5994	1260	-1279	1873	-782	-437	35	2068	485	-1243	-1293	192	275	559	87	-418	-603	51	6	0	-29702
4 PG	-12781	2136	-9724	-4085	2927	504	1730	-4786	-914	137	268	-1013	633	3384	1032	890	-1291	39	29	15	33	29	0	-20807
5 ARLCR	197	-211	-269	82	354	210	103	-856	24	-332	1	0	-176	5	0	0	1	1	0	0	0	0	0	-867
6 ARNCR	-4408	-1222	-1054	1206	169	-208	1038	-3109	-814	-6	26	0	57	-146	-86	12	41	24	-270	3	13	1	0	-8735
7 ALX	-5040	-47	603	-785	629	24	-2263	2463	187	-677	17	0	44	-196	8	16	63	21	28	3	20	1	0	-4881
8 FFX	4507	4327	11917	7779	-9440	-2468	-832	-32929	1507	-1977	403	21	-2051	943	-332	265	218	229	-489	-261	511	-109	0	-18263
9 LDN	3739	2954	4369	2508	1435	1082	1601	-12769	-5323	2403	1708	97	353	79	19	86	101	192	119	1123	142	7	0	6022
10 PW	-861	-3088	2605	-63	-2924	-137	-2307	3205	873	-3618	188	10	153	397	30	-645	-124	113	-558	219	715	58	0	-5759
11 FRD	4002	1256	-8191	479	558	1127	311	2788	-310	41	-7325	1875	3791	3172	41	83	109	67	5	695	8	1	0	4580
12 CAR	2546	1848	-1673	-943	326	622	72	1481	396	83	6373	2899	-6050	-3127	32	47	77	14	2	178	3	0	0	5206
13 HOW	2130	3883	684	-11222	515	1207	152	65	-27	125	3658	358	-18	-1671	127	189	140	10	4	-219	7	2	0	98
14 AAR	1083	4740	6259	-5967	405	1299	-388	-247	291	33	1169	-440	-2396	115	851	641	1124	11	8	-102	11	7	0	8508
15 CAL	1653	1124	1465	-771	260	-54	460	-1513	79	-275	56	10	-692	-4897	2774	-1503	1721	4	8	1	17	19	0	-54
16 STM	1886	-718	1043	-53	346	668	406	918	62	94	32	4	219	409	-1306	-3968	-1079	10	30	0	56	93	0	-847
17 CHS	3391	1888	1667	-4433	179	-182	-426	-2536	144	176	67	9	444	-437	-13	1604	1460	8	22	1	49	-190	0	2890
18 FAU	982	725	445	364	434	258	227	-984	278	-764	53	2	20	40	4	24	22	-175	923	199	490	34	0	3600
19 STA	963	-542	452	556	677	-838	175	-547	949	-4139	26	1	31	91	21	121	124	1720	2538	-464	154	-519	0	1550
20 CL/JF	197	409	1423	310	188	445	212	224	-2759	940	-2117	94	139	179	1	2	4	128	27	3241	28	-296	0	3021
21 SP/FB	-460	-1994	18	-497	-147	468	785	5323	678	2854	18	1	17	52	26	127	159	1156	2419	-2176	-1739	-4372	0	2715
22 KGEO	450	405	277	494	154	308	193	802	116	113	2	0	13	-315	43	-90	-684	-33	184	9	386	-4216	0	-1389
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	12276		-29192		-1672		2687		-5656		6808		-5963		3426		3150		4617		958		0	
		19100		-8400		2223		-43437		-4824		4416		-4860		-1776		3644		1863		-9444		-50057

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal HBW Trips MODE: Ratio (Est/Obs) Auto Person

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	2.27	1.92	1.68	6.26	120.54	0.31	126.58	2.05	0.30	36.46	7.15	0.01	59.92	0.29	3.43	3.06	29.20	2.10	0.63	0.01	0.21	0.02	0	1.86
2 DC NC	0.73	2.95	1.12	1.00	0.91	0.66	0.58	0.96	0.49	0.69	113.35	3.03	6.97	0.56	0.64	44.97	375.65	15.06	5.36	2.35	4.06	0.77	0	0.99
3 MTG	1.19	0.91	0.82	1.23	1.52	0.87	2.07	0.97	0.80	1.05	1.65	484.97	0.86	0.84	192.41	274.83	559.27	87.03	0.09	0.27	50.93	5.89	0	0.93
4 PG	0.75	1.05	0.79	0.97	3.26	1.06	1.46	0.79	0.45	1.31	3.42	0.05	1.10	1.27	1032.30	889.60	0.80	39.31	28.93	14.70	33.19	29.12	0	0.94
5 ARLCR	196.69	0.38	0.33	81.78	2.90	2.67	102.81	0.39	23.73	0.04	0.59	0	0.01	5.33	0.15	0.23	1.49	0.63	0.36	0.02	0.14	0	0	0.71
6 ARNCR	0.66	0.76	0.77	2.85	1.04	0.98	1.34	0.86	0.45	0.99	25.53	0.25	56.72	0.48	0.06	12.13	40.89	24.26	0.06	3.04	12.55	0.60	0	0.87
7 ALX	0.65	0.99	1.33	0.69	1.37	1.00	0.79	1.18	1.71	0.48	16.83	0.23	43.75	0.37	7.89	15.79	63.30	21.18	27.89	2.59	19.59	0.99	0	0.91
8 FFX	1.07	1.21	1.68	2.34	0.54	0.93	0.97	0.90	1.07	0.90	402.81	20.86	0.20	4.96	0.22	264.51	1.65	1.28	0.54	0.45	510.59	0.17	0	0.97
9 LDN	1.64	2.33	2.03	2507.88	3.37	1.27	2.73	0.80	0.91	2.08	1707.92	96.52	352.55	1.21	18.89	86.49	100.56	1.29	118.66	3.34	142.33	6.94	0	1.04
10 PW	0.93	0.67	1.61	0.98	0.47	0.98	0.69	1.04	1.16	0.95	187.76	9.86	152.53	397.09	29.57	0.15	0.58	1.04	0.81	218.80	2.12	57.83	0	0.97
11 FRD	5.21	1.56	0.70	1.18	6.20	5.96	2.55	2.40	0.88	1.14	0.92	1.48	1.97	3.63	40.62	82.52	108.86	66.80	5.31	2.49	7.52	0.54	0	1.03
12 CAR	5.60	22.22	0.82	0.68	326.35	622.29	1.44	10.00	396.40	82.56	3.83	1.07	0.44	0.48	31.64	47.14	76.78	14.36	1.66	177.77	2.84	0.41	0	1.07
13 HOW	1.38	2.52	1.04	0.51	4.12	5.24	1.29	1.02	0.90	124.89	9.70	1.37	1.00	0.92	126.59	189.43	2.02	9.97	4.05	0.32	6.81	1.82	0	1.00
14 AAR	1.08	1.70	1.80	0.78	1.43	1.83	0.78	0.95	290.54	1.16	168.62	0.45	0.88	1.00	2.40	9.01	1123.97	11.24	8.35	0.29	11.49	6.71	0	1.04
15 CAL	1.55	1.63	3.03	0.85	2.71	0.94	459.52	0.50	79.09	0.23	55.67	9.98	0.35	0.35	1.18	0.80	4.55	4.17	7.78	1.35	16.86	18.93	0	1.00
16 STM	2.12	0.75	3.28	0.98	346.22	667.73	406.08	3.37	61.76	93.75	31.80	3.70	218.55	1.72	0.76	0.93	0.84	9.99	29.65	0.48	56.23	93.37	0	0.99
17 CHS	1.61	1.46	1.89	0.70	1.27	0.91	0.72	0.57	143.55	175.87	66.81	8.89	444.04	0.80	0.99	1.94	1.05	8.44	21.87	1.18	49.10	0.34	0	1.04
18 FAU	2.87	725.11	1.79	363.94	433.62	1.34	1.61	0.89	1.15	0.88	52.55	2.47	19.56	40.34	3.59	23.56	21.57	0.98	923.23	199.24	3.29	34.26	0	1.12
19 STA	1.62	0.71	1.53	2.99	677.38	0.67	1.15	0.94	948.79	0.69	26.24	1.40	30.80	90.62	21.48	120.64	123.55	1720.12	1.14	0.13	1.01	0.42	0	1.03
20 CL/JF	1.39	409.14	3.67	310.09	187.82	444.63	211.81	1.06	0.58	940.28	0.42	93.80	1.89	179.35	0.86	2.08	4.34	1.41	27.16	1.24	28.41	0.00	0	1.10
21 SP/FB	0.75	0.27	1.02	0.51	0.72	1.86	785.44	9.62	677.76	2.16	17.56	0.61	17.33	52.24	26.19	126.72	158.97	5.48	1.42	0.03	0.95	0.09	0	1.05
22 KGEO	2.65	404.98	276.72	494.04	154.36	307.50	193.04	3.44	115.97	1.14	2.27	0.08	12.98	0.14	42.91	0.63	0.32	0.87	1.22	8.80	1.38	0.48	0	0.90
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	1.05		0.93		0.96		1.04		0.95		1.07		0.95		1.14		1.07		1.23		1.16		0	
		1.13		0.97		1.02		0.93		0.96		1.09		0.98		0.97		1.23		1.10		0.35		0.98

Appendix B Year 2007 mode choice summary

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
Purpose: Internal HBW Trips MODE: Est Auto Driver

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	3229	471	588	749	107	117	114	1148	67	34	7	0	54	115	3	3	27	2	1	0	0	0	0	6836
2 DC NC	7820	5578	7360	10137	887	944	697	6767	410	213	103	3	720	1491	70	41	343	14	5	2	4	1	0	43610
3 MTG	49256	28522	186588	30114	3251	7873	3303	24532	1578	715	4894	460	7173	6387	183	257	525	81	38	205	50	6	0	355990
4 PG	33194	37982	33207	142698	3691	8558	5022	16887	689	548	355	56	6615	14597	971	833	4988	37	28	15	33	28	0	311031
5 ARLCR	169	119	120	77	476	304	94	508	22	14	1	0	2	5	0	0	1	1	0	0	0	0	0	1912
6 ARNCR	7448	3627	3293	1739	3961	12432	3720	17595	620	464	24	0	54	124	5	12	39	22	16	3	12	1	0	55211
7 ALX	8058	2950	2256	1639	2093	5626	7909	15394	417	588	16	0	41	109	8	15	61	20	27	3	19	1	0	47249
8 FFX	61462	23578	27506	12792	9727	30354	24826	275371	21609	16907	385	21	487	1111	90	252	532	990	540	201	489	22	0	509252
9 LDN	7764	4714	8002	2326	1710	4561	2318	48110	51072	4386	1618	94	332	428	18	80	96	808	114	1518	136	7	0	140212
10 PW	8065	5308	5874	3145	1862	5666	4713	82260	5912	72843	174	10	131	339	28	106	161	2857	2239	208	1279	56	0	203235
11 FRD	4042	3118	17520	2829	563	1189	454	4260	2063	309	74756	5349	6968	3948	38	75	101	61	5	1073	7	1	0	128730
12 CAR	2544	1728	7038	1853	277	545	210	1467	355	76	7931	41696	4393	2643	30	43	71	13	2	162	3	0	0	73080
13 HOW	6478	5847	14928	10650	595	1341	615	2846	228	118	3766	1232	52510	18965	118	175	257	9	4	97	7	2	0	120784
14 AAR	11748	10322	12820	19460	1171	2551	1261	4409	266	219	1065	331	16419	131075	1353	663	1038	10	8	38	11	6	0	216247
15 CAL	3823	2588	1964	4069	352	736	411	1360	72	78	51	10	344	2454	17228	5493	2026	4	7	1	16	17	0	43103
16 STM	2837	1923	1317	3027	287	577	357	1158	56	85	29	4	195	873	3753	48180	5144	9	28	0	52	86	0	69974
17 CHS	7389	5356	3183	9581	732	1553	1014	3088	131	164	62	9	404	1630	1667	3071	29175	8	21	1	46	91	0	68376
18 FAU	1036	608	886	316	318	839	530	7062	1949	5451	50	2	18	35	3	22	20	9920	872	187	662	32	0	30819
19 STA	1367	977	963	660	401	1296	1156	7691	858	8698	22	1	23	69	20	113	115	1606	19744	67	10013	354	0	56214
20 CL/JF	540	366	1761	281	145	372	184	3678	3468	854	1392	86	264	160	1	2	4	406	25	16052	27	1	0	30070
21 SP/FB	720	522	569	396	208	729	646	4940	598	4932	15	1	12	38	25	118	148	1303	7786	54	29620	431	0	53812
22 KGEO	498	352	223	451	100	230	161	920	100	842	2	0	12	48	40	144	294	192	960	8	1317	3776	0	10669
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	229487		337967		32913		59713		92539		96717		97170		25653		45168		32469		43803		0	
		146554		258989		88395		531451		118538		49363		186642		59700		18370		19896		4918		2576417

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
Purpose: Internal HBW Trips MODE: Obs Auto Driver

ORIGIN	DESTINATION																							TOTAL	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1 DC CR	1292	226	386	130	0	417	0	623	254	0	0	0	0	447	0	0	0	0	0	0	0	0	0	3776	
2 DC NC	10790	1951	6887	9414	1111	1595	929	7178	936	334	0	0	116	2505	116	0	0	0	0	0	0	0	0	43862	
3 MTG	40219	30719	224648	25685	2065	9137	1758	25990	2146	725	3187	0	8957	7306	0	0	0	0	457	821	0	0	0	383818	
4 PG	44339	35248	41549	142691	1296	7982	3491	20967	1657	221	111	1070	6491	11763	0	0	5112	0	0	0	0	0	0	323986	
5 ARLCR	0	341	401	0	186	126	0	1411	0	347	0	0	178	0	0	0	0	0	0	0	0	0	0	2991	
6 ARNCR	11171	4821	4236	653	3930	12314	2844	20212	1490	503	0	0	0	279	91	0	0	0	287	0	0	0	0	62832	
7 ALX	10303	3229	1665	1913	1711	5450	9330	12987	263	1301	0	0	0	311	0	0	0	0	0	0	0	0	0	48463	
8 FFX	55303	18116	16790	5794	16414	32518	25817	303262	18639	19204	0	0	2563	238	424	0	336	816	1052	471	0	132	0	517887	
9 LDN	4587	2218	4248	0	607	2609	925	61288	54268	2229	0	0	0	382	0	0	0	663	0	480	0	0	0	134503	
10 PW	6825	7319	2701	2113	3842	5940	6405	80112	5418	77918	0	0	0	0	0	393	295	2909	2916	0	636	0	0	205743	
11 FRD	951	2246	25532	2619	107	227	201	1986	2572	296	80588	3891	3895	1204	0	0	0	0	0	465	0	0	0	126781	
12 CAR	553	87	8280	2678	0	0	164	164	0	0	2137	38595	10381	5623	0	0	0	0	0	0	0	0	0	68663	
13 HOW	4595	2426	15199	20938	165	285	526	2273	274	0	420	961	51185	21307	0	0	137	0	0	323	0	0	0	121016	
14 AAR	9872	6734	6360	26285	950	1569	1792	4567	0	202	0	797	19351	133857	607	80	0	0	0	143	0	0	0	213166	
15 CAL	2995	1537	722	5190	152	444	0	3022	0	360	0	0	1072	6156	13696	7407	485	0	0	0	0	0	0	43237	
16 STM	1678	2459	457	3385	0	0	0	388	0	0	0	0	0	569	4252	51198	5483	0	0	0	0	0	0	69868	
17 CHS	4959	3924	1238	13642	674	1931	1549	5149	0	0	0	0	0	2055	1608	1303	27526	0	0	0	0	288	0	65846	
18 FAU	524	0	567	0	0	766	374	8831	1816	6062	0	0	0	0	0	0	0	9273	0	0	214	0	0	28428	
19 STA	1561	1843	858	140	0	901	1186	7725	0	11574	0	0	0	0	0	0	0	0	15822	536	9107	893	0	52145	
20 CL/JF	509	0	533	0	0	0	0	3239	5658	0	3619	0	157	0	0	0	0	314	0	12335	0	297	0	26663	
21 SP/FB	1865	1100	788	1011	520	544	0	617	0	2460	0	0	0	0	0	0	258	5811	1658	31341	4830	0	0	52803	
22 KGEO	273	0	0	0	0	0	0	329	0	804	0	0	0	367	0	244	1001	244	839	0	842	7623	0	0	12565
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
TOTAL	215164		364044		33730		57292		95393		90062		104345		20794		40374		27182		42141		0		
		126545		264279		84754		572320		124540		45314		194369		60626		14478		17233		14063		2609040	

Appendix B Year 2007 mode choice summary

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal HBW Trips MODE: Difference (Est-Obs) Auto Driver

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	1937	245	201	619	107	-300	114	525	-187	34	7	0	54	-332	3	3	27	2	1	0	0	0	0	3060
2 DC NC	-2970	3626	474	723	-223	-652	-233	-411	-526	-122	103	3	604	-1014	-46	41	343	14	5	2	4	1	0	-252
3 MTG	9037	-2197	-38060	4430	1186	-1264	1545	-1458	-568	-10	1707	460	-1784	-918	183	257	525	81	-419	-616	50	6	0	-27828
4 PG	-11145	2734	-8342	8	2395	577	1531	-4080	-968	327	244	-1014	125	2833	971	833	-124	37	28	15	33	28	0	-12955
5 ARLCR	169	-222	-281	77	290	178	94	-903	22	-333	1	0	-176	5	0	0	1	1	0	0	0	0	0	-1078
6 ARNCR	-3723	-1193	-943	1086	30	118	875	-2617	-870	-39	24	0	54	-155	-86	12	39	22	-271	3	12	1	0	-7621
7 ALX	-2245	-280	591	-274	382	177	-1421	2408	154	-713	16	0	41	-203	8	15	61	20	27	3	19	1	0	-1214
8 FFX	6160	5462	10716	6999	-6687	-2164	-990	-27890	2970	-2297	385	21	-2077	873	-334	252	197	174	-512	-270	489	-110	0	-8635
9 LDN	3177	2497	3754	2326	1104	1953	1393	-13178	-3197	2157	1618	94	332	45	18	80	96	145	114	1038	136	7	0	5709
10 PW	1241	-2012	3173	1032	-1980	-274	-1693	2149	494	-5075	174	10	131	339	28	-287	-134	-52	-677	208	642	56	0	-2507
11 FRD	3091	873	-8012	211	455	961	253	2274	-509	13	-5832	1458	3073	2744	38	75	101	61	5	608	7	1	0	1950
12 CAR	1990	1640	-1242	-825	277	545	46	1303	355	76	5794	3101	-5988	-2979	30	43	71	13	2	162	3	0	0	4417
13 HOW	1883	3421	-271	-10289	430	1056	89	573	-46	118	3345	270	1325	-2343	118	175	120	9	4	-227	7	2	0	-232
14 AAR	1875	3588	6461	-6825	220	983	-531	-158	266	17	1065	-465	-2932	-2782	747	583	1038	10	8	-105	11	6	0	3081
15 CAL	828	1051	1242	-1121	200	292	411	-1662	72	-281	51	10	-728	-3702	3532	-1914	1541	4	7	1	16	17	0	-134
16 STM	1159	-537	860	-358	287	577	357	769	56	85	29	4	195	304	-499	-3018	-340	9	28	0	52	86	0	106
17 CHS	2430	1432	1945	-4061	59	-378	-536	-2061	131	164	62	9	404	-426	59	1768	1649	8	21	1	46	-197	0	2531
18 FAU	512	608	320	316	318	73	157	-1769	133	-612	50	2	18	35	3	22	20	646	872	187	448	32	0	2391
19 STA	-194	-866	106	520	401	396	-30	-33	858	-2875	22	1	23	69	20	113	115	1606	3922	-469	906	-539	0	4069
20 CL/JF	31	366	1228	281	145	372	184	439	-2190	854	-2227	86	107	160	1	2	4	91	25	3717	27	-296	0	3407
21 SP/FB	-1144	-578	-218	-615	-312	185	646	4323	598	2472	15	1	12	38	25	118	148	1045	1975	-1604	-1721	-4399	0	1009
22 KGEO	225	352	223	451	100	230	161	591	100	38	2	0	12	-319	40	-100	-707	-52	121	8	475	-3847	0	-1896
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	14323		-26076		-817		2421		-2854		6655		-7175		4860		4794		5286		1662		0	
		20009		-5290		3641		-40869		-6002		4049		-7727		-926		3893		2662		-9145		-32623

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal HBW Trips MODE: Ratio (Est/Obs) Auto Driver

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	2.50	2.08	1.52	5.75	106.51	0.28	114.15	1.84	0.26	34.02	6.70	0.01	54.35	0.26	3.36	2.83	27.28	1.91	0.63	0.01	0.21	0.02	0	1.81
2 DC NC	0.72	2.86	1.07	1.08	0.80	0.59	0.75	0.94	0.44	0.64	103.42	3.03	6.23	0.60	0.61	41.42	342.56	13.52	5.26	2.35	4.02	0.77	0	0.99
3 MTG	1.22	0.93	0.83	1.17	1.57	0.86	1.88	0.94	0.74	0.99	1.54	459.56	0.80	0.87	183.33	256.60	524.90	80.86	0.08	0.25	49.80	5.77	0	0.93
4 PG	0.75	1.08	0.80	1.00	2.85	1.07	1.44	0.81	0.42	2.48	3.20	0.05	1.02	1.24	970.67	833.36	0.98	36.91	28.37	14.59	32.57	27.65	0	0.96
5 ARLCR	169.01	0.35	0.30	76.67	2.56	2.41	93.72	0.36	21.51	0.04	0.58	0	0.01	4.95	0.15	0.22	1.44	0.57	0.36	0.02	0.14	0	0	0.64
6 ARNCR	0.67	0.75	0.78	2.66	1.01	1.01	1.31	0.87	0.42	0.92	24.45	0.25	53.60	0.45	0.06	11.50	39.16	22.49	0.05	3.01	12.23	0.60	0	0.88
7 ALX	0.78	0.91	1.35	0.86	1.22	1.03	0.85	1.19	1.58	0.45	16.13	0.23	41.42	0.35	7.78	15.04	60.70	19.81	26.74	2.56	18.96	0.97	0	0.97
8 FFX	1.11	1.30	1.64	2.21	0.59	0.93	0.96	0.91	1.16	0.88	384.50	20.73	0.19	4.67	0.21	251.84	1.59	1.21	0.51	0.43	488.68	0.17	0	0.98
9 LDN	1.69	2.13	1.88	2326.35	2.82	1.75	2.51	0.78	0.94	1.97	1617.72	93.56	331.82	1.12	18.18	80.48	95.64	1.22	114.01	3.16	136.31	6.80	0	1.04
10 PW	1.18	0.73	2.17	1.49	0.48	0.95	0.74	1.03	1.09	0.93	174.22	9.67	130.60	339.35	28.08	0.27	0.54	0.98	0.77	207.98	2.01	55.59	0	0.99
11 FRD	4.25	1.39	0.69	1.08	5.24	5.23	2.26	2.15	0.80	1.04	0.93	1.37	1.79	3.28	38.43	75.49	101.08	61.01	5.12	2.31	7.32	0.53	0	1.02
12 CAR	4.60	19.85	0.85	0.69	276.52	545.45	1.28	8.92	355.15	76.04	3.71	1.08	0.42	0.47	29.76	43.23	71.18	13.02	1.63	161.84	2.81	0.40	0	1.06
13 HOW	1.41	2.41	0.98	0.51	3.60	4.71	1.17	1.25	0.83	117.52	8.96	1.28	1.03	0.89	118.41	174.91	1.88	9.17	3.98	0.30	6.70	1.77	0	1.00
14 AAR	1.19	1.53	2.02	0.74	1.23	1.63	0.70	0.97	265.85	1.08	1064.85	0.42	0.85	0.98	2.23	8.27	1038.38	10.34	8.10	0.27	11.18	6.31	0	1.01
15 CAL	1.28	1.68	2.72	0.78	2.31	1.66	410.60	0.45	72.07	0.22	51.24	9.63	0.32	0.40	1.26	0.74	4.18	3.81	7.32	1.34	15.84	17.48	0	1.00
16 STM	1.69	0.78	2.88	0.89	287.05	577.31	356.54	2.98	55.60	85.00	29.17	3.60	195.34	1.53	0.88	0.94	0.94	8.97	27.77	0.48	51.97	86.16	0	1.00
17 CHS	1.49	1.37	2.57	0.70	1.09	0.80	0.65	0.60	131.21	164.02	61.80	8.70	404.31	0.79	1.04	2.36	1.06	7.78	20.91	1.18	46.41	0.32	0	1.04
18 FAU	1.98	608.25	1.56	315.77	317.78	1.10	1.42	0.80	1.07	0.90	49.74	2.45	17.54	34.70	3.46	21.99	20.38	1.07	871.60	187.21	3.09	32.38	0	1.08
19 STA	0.88	0.53	1.12	4.72	400.93	1.44	0.97	1.00	857.66	0.75	21.86	1.29	22.60	68.83	20.16	113.25	115.46	1605.79	1.25	0.13	1.10	0.40	0	1.08
20 CL/JF	1.06	365.62	3.30	281.01	145.42	372.17	183.82	1.14	0.61	853.65	0.38	86.47	1.68	160.33	0.85	1.95	4.05	1.29	25.35	1.30	26.59	0.00	0	1.13
21 SP/FB	0.39	0.47	0.72	0.39	0.40	1.34	646.00	8.00	597.76	2.01	14.94	0.52	12.17	38.06	24.74	118.30	148.30	5.05	1.34	0.03	0.95	0.09	0	1.02
22 KGEO	1.83	351.55	222.74	451.30	100.10	229.92	160.63	2.80	99.99	1.05	1.96	0.08	11.77	0.13	39.83	0.59	0.29	0.79	1.14	8.23	1.56	0.50	0	0.85
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	1.07		0.93		0.98		1.04		0.97		1.07		0.93		1.23		1.12		1.19		1.04		0	
		1.16		0.98		1.04		0.93		0.95		1.09		0.96		0.98		1.27		1.15		0.35		0.99

Appendix B Year 2007 mode choice summary

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
Purpose: Internal HBW Trips MODE: Est Motr Psn

ORIGIN	DESTINATION																							TOTAL	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1 DC CR	14753	5865	2547	1499	1548	2379	757	2260	76	39	7	0	62	129	3	3	29	2	1	0	0	0	0	31960	
2 DC NC	118343	42990	25991	19124	6562	10785	3768	11892	462	241	113	3	827	1696	74	45	376	15	5	2	4	1	0	243322	
3 MTG	129604	45032	241833	35295	7622	13369	4533	28008	1709	763	5255	485	7736	6897	192	275	559	87	39	218	51	6	0	529567	
4 PG	85835	60825	45655	167961	9057	15586	6989	19725	743	581	379	57	7205	15781	1032	890	5331	39	29	15	33	29	0	443776	
5 ARLCR	3092	415	260	105	697	908	221	695	24	15	1	0	2	5	0	0	1	1	0	0	0	0	0	6445	
6 ARNCR	43824	7796	5171	2146	8550	22584	6498	21660	677	502	26	0	57	133	5	12	41	24	16	3	13	1	0	119737	
7 ALX	27287	5132	3168	1895	4485	10751	11182	18264	450	630	17	0	44	116	8	16	63	21	28	3	20	1	0	83581	
8 FFX	122166	32106	32780	14026	19976	47444	32033	305087	22909	17880	403	21	518	1188	92	265	554	1044	563	210	511	23	0	651798	
9 LDN	11850	5619	8864	2528	2659	5840	2637	51840	54286	4631	1708	97	353	461	19	86	101	854	119	1603	142	7	0	156304	
10 PW	17685	7900	7742	3831	4065	8873	6072	91895	6325	77942	188	10	163	410	30	115	171	3022	2358	219	1352	58	0	240426	
11 FRD	6164	3689	19784	3113	747	1436	525	4791	2263	337	81178	5765	7686	4376	41	83	109	67	5	1160	8	1	0	143325	
12 CAR	3099	1935	7786	2019	326	622	237	1645	396	83	8624	44377	4787	2900	32	47	77	14	2	178	3	0	0	79187	
13 HOW	11971	7625	17142	11790	1080	1915	763	3163	247	125	4079	1319	56497	20369	127	189	277	10	4	105	7	2	0	138804	
14 AAR	20403	12868	14793	21375	1888	3440	1517	4923	291	235	1169	357	17761	140221	1458	721	1124	11	8	41	11	7	0	244623	
15 CAL	5296	3177	2275	4458	519	948	486	1519	79	84	56	10	380	2681	18375	5905	2206	4	8	1	17	19	0	48504	
16 STM	3895	2310	1542	3345	396	719	418	1313	62	94	32	4	219	978	4062	51515	5609	10	30	0	56	93	0	76702	
17 CHS	11702	6846	3815	10457	1170	2109	1214	3449	144	176	67	9	444	1788	1796	3308	31502	8	22	1	49	97	0	80173	
18 FAU	1573	748	1021	365	464	1062	617	7852	2095	5802	53	2	20	40	4	24	22	10465	923	199	704	34	0	34088	
19 STA	3323	1514	1385	845	956	2118	1486	9001	949	9288	26	1	31	91	21	121	124	1720	20761	72	10574	374	0	64780	
20 CL/JF	800	451	2013	314	222	480	219	4170	3781	940	1502	94	297	179	1	2	4	442	27	16886	28	1	0	32854	
21 SP/FB	2019	914	881	525	598	1332	931	6002	678	5378	18	1	17	52	26	127	159	1414	8232	58	31209	458	0	61029	
22 KGEO	738	411	279	494	161	316	198	1132	116	920	2	0	13	52	43	155	317	212	1022	9	1404	3968	0	11961	
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
TOTAL	645422		446727		73750		83300		98759		104899		52612		200544		27441		48755		34201		46197	0	3522945
		256169		307508		155016		600286		126686		52612		200544		63904		19489		20983		5179			

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
Purpose: Internal HBW Trips MODE: Obs Motr Psn

ORIGIN	DESTINATION																							TOTAL	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1 DC CR	19036	6991	4017	1410	774	3839	1059	2090	286	64	22	0	34	490	0	0	0	72	0	0	0	0	0	0	40184
2 DC NC	116164	44360	21740	17111	4145	11711	5310	10934	1184	438	0	0	195	3076	116	0	17	17	0	0	0	0	0	0	236517
3 MTG	116097	57860	282464	29984	3908	14571	3161	28118	2146	725	3256	0	9033	8279	32	15	5	0	510	821	0	0	0	0	560983
4 PG	118630	63764	55879	171466	4194	19704	6105	25857	1790	442	111	1070	6647	12529	0	0	6627	0	0	0	0	0	0	0	494814
5 ARLCR	2844	1235	562	222	199	753	283	1600	0	347	0	0	178	0	0	0	0	0	0	0	0	0	0	0	8224
6 ARNCR	51383	13358	6336	1583	6077	21453	4886	24138	1529	532	0	0	0	282	91	0	0	0	287	0	0	0	0	0	131935
7 ALX	32173	7559	2621	3067	3020	10870	15068	15755	299	1319	0	0	0	311	0	0	0	0	0	0	0	0	0	0	92061
8 FFX	114791	32403	18873	6857	25479	52319	31458	339922	21452	19870	0	0	2573	247	424	0	336	816	1052	471	0	132	0	0	669476
9 LDN	7002	2710	4261	27	748	4672	1058	64460	59149	2229	0	0	0	382	0	0	0	663	0	480	0	0	0	0	147841
10 PW	19232	11290	4501	3822	6215	9942	8299	87353	5488	81805	0	0	4	5	0	761	295	2912	2919	0	636	0	0	0	245479
11 FRD	3798	2783	29282	2739	129	479	232	1986	2572	296	88263	3891	3895	1204	0	0	0	0	0	0	465	0	0	0	142014
12 CAR	766	105	9459	2962	0	64	164	164	0	0	2251	41478	10836	6026	0	0	0	0	0	0	0	0	0	0	74276
13 HOW	9389	3115	15649	22759	327	978	560	3115	274	0	420	961	56055	22019	0	0	137	0	0	0	323	57	0	0	136140
14 AAR	18294	8216	8071	27083	1357	2691	1851	5142	0	202	0	797	20126	140038	607	80	0	0	0	143	0	0	0	0	234698
15 CAL	3602	2075	831	5192	234	955	35	3048	0	360	0	0	1072	7577	15580	7407	485	0	0	0	0	0	0	0	48452
16 STM	1708	2910	498	3385	4	112	17	388	0	0	0	0	0	569	5367	55394	6675	0	0	0	0	0	0	0	77026
17 CHS	8073	4940	1992	15024	895	2921	1591	5974	0	0	0	0	0	2226	1809	1701	29661	0	0	0	0	288	0	0	77094
18 FAU	698	111	569	0	78	887	393	8878	1816	6565	0	0	0	0	0	0	0	10640	0	0	214	0	0	0	30849
19 STA	2386	2112	902	285	83	2955	1368	9718	0	13435	0	0	0	0	0	0	0	0	18220	536	10422	893	0	0	63315
20 CL/JF	511	45	533	0	5	3	5	3934	6540	0	3619	0	157	0	0	0	0	0	314	0	13645	0	297	0	29609
21 SP/FB	2087	2982	799	1057	579	808	184	780	0	2519	0	0	0	0	0	0	0	258	5820	2235	32940	4830	0	0	57878
22 KGEO	362	16	3	0	7	25	8	342	0	809	0	0	0	367	0	244	1001	244	839	0	1018	8183	0	0	13468
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	649027		469842		58458		83095		104526		97942		48196		205627		24026		45238		29646		45288	0	3612333
		270938		316034		162711		643697		131956		48196		205627		65602		15937		19120		14624			

Appendix B Year 2007 mode choice summary

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal HBW Trips MODE: Difference (Est-Obs) Motorized Person

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	-4283	-1126	-1470	88	774	-1460	-302	170	-210	-25	-15	0	28	-361	3	3	29	-70	1	0	0	0	0	-8224
2 DC NC	2179	-1370	4251	2013	2417	-926	-1541	958	-721	-197	113	3	633	-1380	-41	45	359	-2	5	2	4	1	0	6805
3 MTG	13507	-12828	-40631	5311	3714	-1201	1372	-109	-437	38	1999	485	-1297	-1383	160	260	554	87	-471	-603	51	6	0	-31416
4 PG	-32796	-2939	-10224	-3506	4863	-4118	884	-6132	-1047	139	268	-1013	558	3253	1032	890	-1296	39	29	15	33	29	0	-51038
5 ARLCR	248	-820	-302	-117	498	155	-62	-905	24	-332	1	0	-176	5	0	0	1	1	0	0	0	0	0	-1779
6 ARNCR	-7559	-5562	-1165	563	2473	1131	1612	-2479	-852	-30	26	0	57	-149	-86	12	41	24	-270	3	13	1	0	-12198
7 ALX	-4885	-2427	547	-1171	1465	-119	-3886	2509	151	-689	17	0	44	-196	8	16	63	21	28	3	20	1	0	-8480
8 FFX	7375	-297	13906	7169	-5504	-4875	576	-34835	1457	-1990	403	21	-2055	941	-332	265	218	229	-489	-261	511	-109	0	-17678
9 LDN	4848	2910	4603	2501	1911	1168	1579	-12620	-4864	2403	1708	97	353	79	19	86	101	192	119	1123	142	7	0	8463
10 PW	-1547	-3390	3242	8	-2149	-1069	-2227	4541	836	-3863	188	10	160	405	30	-645	-124	110	-562	219	716	58	0	-5053
11 FRD	2365	907	-9498	374	617	956	293	2805	-310	41	-7085	1875	3791	3172	41	83	109	67	5	695	8	1	0	1311
12 CAR	2333	1830	-1673	-943	326	558	72	1481	396	83	6373	2899	-6050	-3127	32	47	77	14	2	178	3	0	0	4911
13 HOW	2582	4510	1492	-10969	753	937	202	49	-27	125	3658	358	442	-1650	127	189	140	10	4	-219	-50	2	0	2665
14 AAR	2110	4652	6722	-5708	531	749	-334	-219	291	33	1169	-440	-2365	184	851	641	1124	11	8	-102	11	7	0	9925
15 CAL	1693	1102	1444	-734	285	-7	451	-1529	79	-275	56	10	-692	-4895	2795	-1502	1721	4	8	1	17	19	0	52
16 STM	2187	-600	1044	-40	392	607	401	925	62	94	32	4	219	409	-1305	-3878	-1066	10	30	0	56	93	0	-324
17 CHS	3629	1907	1823	-4567	275	-812	-378	-2525	144	176	67	9	444	-437	-13	1607	1841	8	22	1	49	-190	0	3079
18 FAU	875	636	452	365	386	175	224	-1025	278	-762	53	2	20	40	4	24	22	-175	923	199	490	34	0	3239
19 STA	937	-598	483	560	873	-836	118	-717	949	-4147	26	1	31	91	21	121	124	1720	2540	-464	152	-519	0	1465
20 CL/JF	289	406	1479	314	217	477	214	236	-2759	940	-2117	94	139	179	1	2	4	128	27	3241	28	-296	0	3245
21 SP/FB	-68	-2068	82	-532	19	523	747	5222	678	2859	18	1	17	52	26	127	159	1156	2412	-2176	-1731	-4372	0	3151
22 KGEO	376	395	276	494	154	292	189	790	116	111	2	0	13	-315	43	-90	-684	-33	184	9	386	-4216	0	-1507
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	-3604	-14769	-23115	-8526	15292	-7695	-43410	-5767	-5270	6958	4416	-5687	-5083	3416	-1698	3517	3552	4555	1863	909	-9444	0	0	-89387

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal HBW Trips MODE: Ratio (Est/Obs) Motorized Person

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	0.78	0.84	0.63	1.06	2.00	0.62	0.71	1.08	0.26	0.61	0.33	0.01	1.82	0.26	3.43	3.06	29.20	0.03	0.63	0.01	0.21	0.02	0	0.80
2 DC NC	1.02	0.97	1.20	1.12	1.58	0.92	0.71	1.09	0.39	0.55	113.35	3.03	4.25	0.55	0.64	44.97	22.10	0.89	5.36	2.35	4.06	0.77	0	1.03
3 MTG	1.12	0.78	0.86	1.18	1.95	0.92	1.43	1.00	0.80	1.05	1.61	484.97	0.86	0.83	6.01	18.32	111.85	87.03	0.08	0.27	50.93	5.89	0	0.94
4 PG	0.72	0.95	0.82	0.98	2.16	0.79	1.14	0.76	0.42	1.32	3.42	0.05	1.08	1.26	1032.30	889.60	0.80	39.31	28.93	14.70	33.19	29.12	0	0.90
5 ARLCR	1.09	0.34	0.46	0.47	3.50	1.21	0.78	0.43	23.79	0.04	0.59	0	0.01	5.34	0.15	0.23	1.49	0.63	0.36	0.02	0.14	0	0	0.78
6 ARNCR	0.85	0.58	0.82	1.36	1.41	1.05	1.33	0.90	0.44	0.94	25.53	0.25	56.75	0.47	0.06	12.13	40.89	24.26	0.06	3.04	12.55	0.60	0	0.91
7 ALX	0.85	0.68	1.21	0.62	1.49	0.99	0.74	1.16	1.51	0.48	16.83	0.23	43.75	0.37	7.89	15.79	63.30	21.18	27.89	2.59	19.59	0.99	0	0.91
8 FFX	1.06	0.99	1.74	2.05	0.78	0.91	1.02	0.90	1.07	0.90	402.84	20.86	0.20	4.81	0.22	264.51	1.65	1.28	0.54	0.45	511.22	0.17	0	0.97
9 LDN	1.69	2.07	2.08	93.63	3.55	1.25	2.49	0.80	0.92	2.08	1707.92	96.52	352.55	1.21	18.89	86.49	100.56	1.29	118.66	3.34	142.33	6.94	0	1.06
10 PW	0.92	0.70	1.72	1.00	0.65	0.89	0.73	1.05	1.15	0.95	187.80	9.86	46.69	75.94	29.57	0.15	0.58	1.04	0.81	218.80	2.13	57.83	0	0.98
11 FRD	1.62	1.33	0.68	1.14	5.77	3.00	2.26	2.41	0.88	1.14	0.92	1.48	1.97	3.63	40.62	82.52	108.86	66.80	5.31	2.49	7.52	0.54	0	1.01
12 CAR	4.04	18.42	0.82	0.68	326.35	9.72	1.44	10.00	396.40	82.56	3.83	1.07	0.44	0.48	31.64	47.14	76.78	14.36	1.66	177.77	2.84	0.41	0	1.07
13 HOW	1.28	2.45	1.10	0.52	3.30	1.96	1.36	1.02	0.90	124.93	9.70	1.37	1.01	0.93	126.59	189.43	2.02	9.97	4.05	0.32	0.12	1.82	0	1.02
14 AAR	1.12	1.57	1.83	0.79	1.39	1.28	0.82	0.96	290.54	1.16	168.62	0.45	0.88	1.00	2.40	9.01	1123.97	11.24	8.35	0.29	11.49	6.71	0	1.04
15 CAL	1.47	1.53	2.74	0.86	2.22	0.99	13.89	0.50	79.09	0.23	55.67	9.98	0.35	0.35	1.18	0.80	4.55	4.17	7.78	1.35	16.86	18.93	0	1.00
16 STM	2.28	0.79	3.10	0.99	99.10	6.42	24.59	3.38	61.76	93.75	31.80	3.70	218.55	1.72	0.76	0.93	0.84	9.99	29.65	0.48	56.23	93.37	0	1.00
17 CHS	1.45	1.39	1.91	0.70	1.31	0.72	0.76	0.58	143.55	175.87	66.81	8.89	444.08	0.80	0.99	1.94	1.06	8.44	21.87	1.18	49.10	0.34	0	1.04
18 FAU	2.25	6.71	1.79	365.05	5.95	1.20	1.57	0.88	1.15	0.88	52.55	2.47	19.56	40.34	3.59	23.56	21.57	0.98	923.23	199.24	3.29	34.26	0	1.10
19 STA	1.39	0.72	1.54	2.97	11.52	0.72	1.09	0.939	4879.0	0.69	26.24	1.40	30.80	90.62	21.48	120.64	123.55	172012	1.14	0.13	1.01	0.42	0	1.02
20 CL/JF	1.57	10.00	3.77	313.69	41.81	154.27	42.98	1.06	0.58	940.28	0.42	93.80	1.89	179.35	0.86	2.08	4.34	1.41	27.16	1.24	28.41	0.00	0	1.11
21 SP/FB	0.97	0.31	1.10	0.50	1.03	1.65	5.06	7.69	677.76	2.13	17.56	0.61	17.38	52.29	26.19	126.72	158.97	5.48	1.41	0.03	0.95	0.09	0	1.05
22 KGEO	2.04	25.84	101.74	494.29	22.44	12.89	24.00	3.31	115.97	1.14	2.27	0.08	12.98	0.14	42.91	0.63	0.32	0.87	1.22	8.80	1.38	0.48	0	0.89
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0.99	0.95	0.95	0.97	1.26	0.95	1.00	0.93	0.94	0.96	1.07	1.09	0.95	0.98	1.14	0.97	1.08	1.22	1.15	1.10	0.35	0	0	0.98

Appendix B Year 2007 mode choice summary

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
Purpose: Internal HBW Trips MODE: Est Auto Occ.

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	1.22	1.16	1.10	1.09	1.13	1.09	1.11	1.11	1.11	1.07	1.07	1.00	1.10	1.11	1.02	1.08	1.07	1.10	1.00	1.00	1.00	1.00	0	1.16
2 DC NC	1.19	1.15	1.11	1.10	1.14	1.12	1.12	1.12	1.12	1.08	1.10	1.00	1.12	1.13	1.06	1.09	1.10	1.11	1.02	1.00	1.01	1.00	0	1.13
3 MTG	1.17	1.10	1.08	1.08	1.14	1.11	1.10	1.09	1.08	1.06	1.07	1.06	1.08	1.08	1.05	1.07	1.07	1.08	1.03	1.06	1.02	1.02	0	1.09
4 PG	1.18	1.10	1.09	1.07	1.14	1.11	1.10	1.09	1.08	1.06	1.07	1.03	1.08	1.08	1.06	1.07	1.07	1.07	1.02	1.01	1.02	1.05	0	1.09
5 ARLCR	1.16	1.09	1.09	1.07	1.13	1.11	1.10	1.09	1.10	1.07	1.02	0	1.06	1.08	1.00	1.05	1.03	1.11	1.00	1.00	1.00	0	1.11	
6 ARNCR	1.13	1.09	1.09	1.07	1.12	1.10	1.09	1.08	1.09	1.07	1.04	1.00	1.06	1.07	1.01	1.05	1.04	1.08	1.04	1.01	1.03	1.00	0	1.10
7 ALX	1.14	1.08	1.09	1.06	1.12	1.08	1.07	1.07	1.08	1.06	1.04	1.00	1.06	1.07	1.01	1.05	1.04	1.07	1.04	1.01	1.03	1.02	0	1.09
8 FFX	1.17	1.07	1.07	1.06	1.13	1.08	1.06	1.06	1.06	1.05	1.05	1.01	1.05	1.06	1.02	1.05	1.04	1.06	1.04	1.05	1.04	1.03	0	1.08
9 LDN	1.23	1.10	1.08	1.08	1.19	1.12	1.09	1.07	1.05	1.06	1.06	1.03	1.06	1.08	1.04	1.07	1.05	1.06	1.04	1.06	1.04	1.02	0	1.08
10 PW	1.50	1.19	1.17	1.15	1.39	1.20	1.11	1.09	1.06	1.05	1.08	1.02	1.17	1.17	1.05	1.09	1.07	1.06	1.05	1.05	1.06	1.04	0	1.10
11 FRD	1.23	1.12	1.10	1.09	1.18	1.14	1.13	1.12	1.10	1.09	1.07	1.08	1.10	1.11	1.06	1.09	1.08	1.09	1.04	1.08	1.03	1.02	0	1.09
12 CAR	1.22	1.12	1.11	1.09	1.18	1.14	1.12	1.12	1.12	1.09	1.09	1.06	1.09	1.10	1.06	1.09	1.08	1.10	1.02	1.10	1.01	1.02	0	1.08
13 HOW	1.18	1.10	1.09	1.08	1.14	1.11	1.10	1.09	1.08	1.06	1.08	1.07	1.07	1.07	1.07	1.08	1.08	1.09	1.02	1.08	1.02	1.03	0	1.08
14 AAR	1.20	1.11	1.10	1.08	1.16	1.12	1.11	1.10	1.09	1.07	1.10	1.08	1.08	1.07	1.08	1.09	1.08	1.09	1.03	1.08	1.03	1.06	0	1.08
15 CAL	1.22	1.12	1.11	1.09	1.17	1.13	1.12	1.11	1.10	1.08	1.09	1.04	1.10	1.09	1.07	1.07	1.09	1.09	1.06	1.01	1.06	1.08	0	1.09
16 STM	1.26	1.14	1.14	1.10	1.21	1.16	1.14	1.13	1.11	1.10	1.09	1.03	1.12	1.12	1.08	1.07	1.09	1.11	1.07	1.00	1.08	1.08	0	1.09
17 CHS	1.21	1.11	1.11	1.08	1.16	1.13	1.11	1.10	1.09	1.07	1.08	1.02	1.10	1.10	1.08	1.08	1.07	1.08	1.05	1.00	1.06	1.07	0	1.10
18 FAU	1.45	1.19	1.14	1.15	1.36	1.22	1.13	1.11	1.07	1.06	1.06	1.01	1.12	1.16	1.04	1.07	1.06	1.06	1.06	1.06	1.06	1.06	0	1.10
19 STA	1.85	1.33	1.36	1.27	1.69	1.34	1.18	1.17	1.11	1.06	1.20	1.09	1.36	1.32	1.07	1.07	1.07	1.07	1.05	1.07	1.06	1.06	0	1.12
20 CL/JF	1.31	1.12	1.11	1.10	1.29	1.19	1.15	1.13	1.09	1.10	1.08	1.08	1.12	1.12	1.01	1.07	1.07	1.09	1.07	1.05	1.07	1.05	0	1.08
21 SP/FB	1.95	1.39	1.42	1.30	1.79	1.39	1.22	1.20	1.13	1.08	1.18	1.17	1.42	1.37	1.06	1.07	1.07	1.09	1.06	1.08	1.05	1.06	0	1.10
22 KGEO	1.45	1.15	1.24	1.09	1.54	1.34	1.20	1.23	1.16	1.09	1.16	1.00	1.10	1.09	1.08	1.07	1.08	1.10	1.07	1.07	1.05	0	1.12	
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	1.20	1.10	1.09	1.08	1.17	1.11	1.08	1.08	1.06	1.07	1.07	1.08	1.07	1.07	1.07	1.07	1.07	1.06	1.05	1.05	1.05	1.05	0	1.09

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
Purpose: Internal HBW Trips MODE: Obs Auto Occ.

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	1.35	1.25	1.00	1.00	0	1.00	0	1.00	1.00	0	0	0	0	1.00	0	0	0	0	0	0	0	0	0	1.13
2 DC NC	1.19	1.11	1.07	1.19	1.00	1.00	1.44	1.10	1.00	1.00	0	0	1.00	1.20	1.00	0	0	0	0	0	0	0	0	1.14
3 MTG	1.20	1.12	1.08	1.03	1.18	1.09	1.00	1.06	1.00	1.00	1.00	1.00	1.12	0	0	0	0	1.00	1.00	0	0	0	0	1.09
4 PG	1.17	1.12	1.11	1.10	1.00	1.13	1.09	1.11	1.00	2.00	1.00	1.00	1.00	1.05	0	0	1.30	0	0	0	0	0	0	1.11
5 ARLCR	0	1.00	1.00	0	1.00	1.00	0	1.00	0	1.00	0	0	1.00	0	0	0	0	0	0	0	0	0	0	1.00
6 ARNCR	1.15	1.07	1.09	1.00	1.09	1.12	1.06	1.10	1.00	1.00	0	0	0	1.00	1.00	0	0	0	1.00	0	0	0	0	1.10
7 ALX	1.38	1.00	1.11	1.32	1.00	1.11	1.15	1.08	1.00	1.00	0	0	0	1.00	0	0	0	0	0	0	0	0	0	1.16
8 FFX	1.22	1.16	1.04	1.00	1.25	1.08	1.05	1.07	1.14	1.03	0	0	1.00	1.00	1.00	0	1.00	1.00	1.00	1.00	0	1.00	0	1.09
9 LDN	1.27	1.00	1.00	0	1.00	1.55	1.00	1.05	1.09	1.00	0	0	0	1.00	0	0	0	1.00	0	1.00	0	0	0	1.08
10 PW	1.90	1.28	1.58	1.74	1.44	1.16	1.18	1.08	1.00	1.03	0	0	0	0	0	1.93	1.00	1.00	1.00	0	1.00	0	0	1.12
11 FRD	1.00	1.00	1.08	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.08	1.00	1.00	1.00	0	0	0	0	1.00	0	0	0	1.07
12 CAR	1.00	1.00	1.14	1.11	0	0	1.00	1.00	0	0	1.05	1.07	1.04	1.07	0	0	0	0	0	0	0	0	0	1.08
13 HOW	1.20	1.06	1.02	1.08	1.00	1.00	1.00	1.34	1.00	0	1.00	1.00	1.10	1.03	0	0	1.00	0	0	1.00	0	0	0	1.08
14 AAR	1.32	1.00	1.24	1.03	1.00	1.00	1.00	1.12	0	1.00	0	1.00	1.04	1.05	1.00	1.00	0	0	0	1.00	0	0	0	1.06
15 CAL	1.00	1.15	1.00	1.00	1.00	2.00	0	1.00	0	1.00	0	0	1.00	1.23	1.14	1.00	1.00	0	0	0	0	0	0	1.09
16 STM	1.00	1.18	1.00	1.00	0	0	0	1.00	0	0	0	0	0	1.00	1.26	1.08	1.22	0	0	0	0	0	0	1.10
17 CHS	1.12	1.04	1.51	1.08	1.00	1.00	1.00	1.15	0	0	0	0	0	1.08	1.12	1.31	1.08	0	0	0	0	1.00	0	1.09
18 FAU	1.00	0	1.00	0	0	1.00	1.00	1.00	1.00	1.08	0	0	0	0	0	0	0	1.15	0	0	1.00	0	0	1.07
19 STA	1.00	1.00	1.00	2.00	0	2.86	1.00	1.23	0	1.16	0	0	0	0	0	0	0	0	1.15	1.00	1.14	1.00	0	1.18
20 CL/JF	1.00	0	1.00	0	0	0	0	1.21	1.16	0	1.00	0	1.00	0	0	0	0	1.00	0	1.11	0	1.00	0	1.11
21 SP/FB	1.00	2.47	1.00	1.00	1.00	1.00	0	1.00	0	1.00	0	0	0	0	0	0	0	1.00	1.00	1.35	1.05	1.00	0	1.07
22 KGEO	1.00	0	0	0	0	0	0	1.00	0	1.00	0	0	0	1.00	0	1.00	1.00	1.00	0	1.21	1.07	0	1.06	
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	1.22	1.13	1.09	1.09	1.19	1.13	1.08	1.08	1.09	1.04	1.08	1.06	1.06	1.06	1.15	1.08	1.12	1.09	1.09	1.11	1.07	1.04	0	1.09

Appendix B Year 2007 mode choice summary

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal HBW Trips MODE: Est Pct. Tran

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	73.3	90.7	74.6	45.6	92.2	94.6	83.3	43.5	1.1	7.0	0	0	3.3	1.3	0	0	0	0	0	0	0	0	0	75.1
2 DC NC	92.1	85.1	68.4	41.7	84.6	90.2	79.3	36.2	0.6	4.5	0	0	2.7	1.0	0	0	0	0	0	0	0	0	0	79.7
3 MTG	55.5	30.5	16.9	8.3	51.5	34.9	19.9	4.6	0.0	0.4	0.0	0	0.3	0.1	0	0	0	0	0	0	0	0	0	26.5
4 PG	54.3	31.5	20.7	9.1	53.4	39.1	21.0	6.7	0	0.3	0	0	1.1	0.3	0	0	0.0	0	0	0	0	0	0	23.5
5 ARLCR	93.6	68.7	49.4	22.1	22.6	63.0	53.5	20.2	0.3	2.0	0	0	0	0.2	0	0	0	0	0	0	0	0	0	67.1
6 ARNCR	80.7	49.3	30.8	13.4	48.1	39.7	37.7	11.9	0.1	1.0	0	0	0.1	0.1	0	0	0	0	0	0	0	0	0	49.5
7 ALX	66.2	38.0	22.7	8.1	47.8	43.4	24.0	9.7	0.0	1.0	0	0	0	0	0	0	0	0	0	0	0	0	0	38.5
8 FFX	41.0	21.3	10.4	3.2	44.9	31.1	18.0	4.4	0.3	0.4	0.0	0	1.1	0.6	0	0	0	0	0	0	0.1	0	0	15.9
9 LDN	19.1	8.0	2.8	0.8	23.2	12.4	4.2	0.5	0.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.3
10 PW	31.4	20.2	11.1	5.4	36.2	23.6	14.0	2.2	0.5	1.6	0.0	0	6.7	3.2	0	0	0	0	0	0	0.1	0	0	6.6
11 FRD	19.6	5.1	2.4	0.5	10.8	5.7	2.6	0.4	0	0	1.3	0	0	0	0	0	0	0	0	0	0	0	0	2.2
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	36.0	15.5	5.4	2.8	37.0	22.1	11.0	1.6	0	0.0	0	0	0.8	0.1	0	0	0	0	0	0	0	0	0	5.9
14 AAR	30.8	10.8	4.6	1.7	28.2	16.6	7.4	1.2	0	0.0	0	0	0.2	0.0	0	0	0	0	0	0	0	0	0	4.1
15 CAL	12.2	8.9	3.9	0.9	20.6	12.0	5.4	0.6	0	0	0	0	0	0.0	0.1	0.0	0	0	0	0	0	0	0	2.8
16 STM	8.5	5.1	2.8	0.4	12.7	7.2	2.9	0.5	0	0	0	0	0	0	0.0	0.2	0.2	0	0	0	0	0	0	0.9
17 CHS	23.7	13.0	7.2	1.2	27.1	17.1	7.4	1.5	0	0	0	0	0.0	0.0	0	0.1	1.2	0	0	0	0	0	0	6.6
18 FAU	4.3	3.0	0.9	0.3	6.6	3.6	2.6	0.1	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0.6
19 STA	24.0	14.1	5.5	1.1	29.1	18.1	8.4	0.4	0	0.4	0	0	0	0	0	0	0	0.0	0	0.0	0	0	0	3.0
20 CL/JF	11.7	9.3	2.8	1.1	15.6	7.3	3.2	0.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.9
21 SP/FB	30.5	20.9	8.5	2.1	37.7	24.0	15.7	1.0	0	1.2	0	0	0.3	0.1	0	0	0	0	0.0	0	0.0	0	0	2.8
22 KGEO	2.0	1.5	0.7	0.1	4.1	2.7	2.4	0.2	0	0.3	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0.4
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	57.3	36.8	17.8	9.4	47.8	36.7	22.3	4.7	0.6	1.1	1.0	0	0.6	0.1	0.1	0.1	0.8	0	0.0	0	0.0	0	0	20.3

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal HBW Trips MODE: Obs Pct. Tran

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	90.9	95.9	90.4	90.8	100.0	89.1	100.0	70.2	11.2	100.0	100.0	0	100.0	8.8	0	0	0	100.0	0	0	0	0	0	89.3
2 DC NC	89.0	95.1	66.2	34.6	73.2	86.4	74.8	27.9	20.9	23.7	0	0	40.6	2.3	0	0	100.0	100.0	0	0	0	0	0	78.9
3 MTG	58.4	40.3	13.8	12.0	37.6	31.4	44.4	2.1	0	0	2.1	0	0.8	1.1	100.0	100.0	100.0	0	10.4	0	0	0	0	25.3
4 PG	56.2	38.0	17.8	8.6	69.1	54.4	37.9	10.3	7.4	0	0	0	2.3	1.5	0	0	0.1	0	0	0	0	0	0	27.2
5 ARLCR	100.0	72.4	28.7	100.0	6.5	83.3	100.0	11.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	63.6
6 ARNCR	75.0	61.3	26.9	58.8	29.8	35.6	38.4	8.1	2.6	5.5	0	0	0	1.1	0	0	0	0	0	0	0	0	0	47.5
7 ALX	55.7	57.3	29.5	17.6	43.3	44.2	28.6	10.9	12.0	1.4	0	0	0	0	0	0	0	0	0	0	0	0	0	38.8
8 FFX	41.2	35.4	7.5	15.5	19.7	32.8	13.9	4.5	0.6	0.4	0	0	0.4	3.6	0	0	0	0	0	0	0	0	0	15.4
9 LDN	16.6	18.2	0.3	100.0	18.9	13.7	12.6	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.8
10 PW	32.5	16.8	5.0	3.6	11.2	30.4	9.3	0.8	1.3	1.8	0	0	100.0	100.0	0	0	0	0.1	0.1	0	0	0	0	6.2
11 FRD	75.0	19.3	6.1	4.4	17.0	52.6	13.4	0	0	0	1.0	0	0	0	0	0	0	0	0	0	0	0	0	4.5
12 CAR	27.8	17.1	0	0	0	100.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4
13 HOW	41.0	17.8	0.7	0.4	49.5	70.9	6.1	2.2	0	0	0	0	0	0	0	0	0	0	0	0	100.0	0	0	4.1
14 AAR	28.8	18.0	2.6	0.4	30.0	41.7	3.2	0.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.7
15 CAL	16.9	14.7	13.1	0.0	35.0	7.0	100.0	0.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.5
16 STM	1.8	0.0	8.2	0	100.0	100.0	100.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3
17 CHS	31.5	17.7	6.0	1.7	24.7	33.9	2.6	0.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6.6
18 FAU	24.9	100.0	0.5	0	100.0	13.6	4.8	0.5	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.8
19 STA	34.6	12.7	4.9	2.0	100.0	12.9	13.3	2.1	100.0	0.3	0	0	0	0	0	0	0	100.0	0.0	0	0.0	0	0	3.2
20 CL/JF	0.4	100.0	0	0	100.0	100.0	100.0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2
21 SP/FB	10.7	8.9	1.4	4.3	10.2	32.7	100.0	20.9	0	2.4	0	0	0	0	0	0	0	0.1	0.2	0	0.0	0	0	2.2
22 KGEO	24.5	100.0	100.0	0	100.0	100.0	100.0	3.8	0	0.6	0	0	0	0	0	0	0	0	0.0	0	0	0	0	1.2
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	59.4	47.3	15.7	9.2	31.3	41.1	25.4	4.4	0.6	1.4	1.0	0	0.3	0.2	0.1	0.0	0.1	0.6	0.2	0	0.1	0	0	20.9

Appendix B Year 2007 mode choice summary

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal HBS Trips MODE: Est Transit

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	433	326	164	17	23	196	42	35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1237
2 DC NC	2050	4458	1278	443	43	528	161	104	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	9066
3 MTG	193	149	4804	87	31	28	1	1	0	2	0	0	3	0	0	0	0	0	0	0	0	0	0	5298
4 PG	255	307	445	1820	43	90	20	5	0	2	0	0	8	6	0	0	1	0	0	0	0	0	0	3002
5 ARLCR	34	3	1	0	4	109	12	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	179
6 ARNCR	164	8	2	0	66	1144	139	261	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1786
7 ALX	43	1	0	0	9	161	378	181	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	774
8 FFX	78	12	25	21	4	118	102	1679	11	72	5	0	10	9	1	33	23	0	0	0	2	0	0	2205
9 LDN	1	0	0	0	0	0	0	11	97	23	0	0	0	0	0	0	0	0	0	0	0	0	0	132
10 PW	18	29	66	49	12	85	63	573	50	442	11	0	26	25	2	64	51	0	0	0	3	0	0	1568
11 FRD	0	0	0	0	0	0	0	0	0	1	125	0	0	0	0	0	0	0	0	0	0	0	0	126
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	0	0	0	4	0	0	0	1	0	4	0	0	34	2	0	0	0	0	0	0	0	0	0	46
14 AAR	2	0	0	4	0	0	0	6	0	6	0	0	1	6	0	0	0	0	0	0	0	0	0	26
15 CAL	0	0	0	0	0	0	0	0	0	1	0	0	0	0	5	0	0	0	0	0	0	0	0	6
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	1	0	0	0	0	0	0	0	9
17 CHS	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	108	0	0	0	0	0	0	109
18 FAU	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
19 STA	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0	0	2	1	0	1	14	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20
22 KGEO	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	3273		6787		235	2461	919	2893	159	559	141	0	82	48	7	105	184	0	0	0	5	0	0	25595

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal HBS Trips MODE: Obs Transit

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	269	716	84	0	0	517	0	0	0	0	0	0	0	21	0	0	0	0	0	0	0	0	0	1607
2 DC NC	2244	4135	894	811	0	1015	0	107	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9206
3 MTG	186	217	4946	77	0	59	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5503
4 PG	405	588	608	1915	0	91	0	57	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3664
5 ARLCR	44	72	0	0	0	186	0	51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	353
6 ARNCR	167	0	0	0	22	893	0	328	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1410
7 ALX	0	31	32	0	0	408	390	199	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1060
8 FFX	132	38	0	0	21	242	171	3272	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3876
9 LDN	0	0	0	0	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10
10 PW	59	0	0	0	0	20	0	0	0	81	0	0	0	0	0	0	0	0	0	0	0	0	0	160
11 FRD	0	0	0	0	0	0	0	0	0	0	91	0	0	0	0	0	0	0	0	0	0	0	0	91
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
14 AAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 CAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 CHS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18 FAU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19 STA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	3506		6568		43	3431	579	4024	0	81	91	0	0	21	0	0	0	0	0	0	0	0	0	26944

Appendix B Year 2007 mode choice summary

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal HBS Trips MODE: Difference (Est-Obs) Transit

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	164	-390	80	17	23	-321	42	35	0	0	0	0	0	-21	0	0	0	0	0	0	0	0	0	-370
2 DC NC	-194	323	384	-368	43	-487	161	-3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	-140
3 MTG	7	-68	-142	10	31	-31	-17	1	0	2	0	0	3	0	0	0	0	0	0	0	0	0	0	-205
4 PG	-150	-281	-163	-95	43	-1	20	-52	0	2	0	0	8	6	0	0	1	0	0	0	0	0	0	-662
5 ARLCR	-10	-69	1	0	4	-77	12	-36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-174
6 ARNCR	-3	8	2	0	44	251	139	-67	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	376
7 ALX	43	-30	-32	0	9	-247	-12	-18	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	-286
8 FFX	-54	-26	25	21	-17	-124	-69	-1593	11	72	5	0	10	9	1	33	23	0	0	0	2	0	0	-1671
9 LDN	1	0	0	0	0	0	0	1	97	23	0	0	0	0	0	0	0	0	0	0	0	0	0	122
10 PW	-41	29	66	49	12	65	63	573	50	361	11	0	26	25	2	64	51	0	0	0	3	0	0	1408
11 FRD	0	0	0	0	0	0	0	0	0	1	34	0	0	0	0	0	0	0	0	0	0	0	0	35
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	0	0	-4	4	0	0	0	1	0	4	0	0	34	2	0	0	0	0	0	0	0	0	0	42
14 AAR	2	0	0	4	0	0	0	6	0	6	0	1	6	0	0	0	0	0	0	0	0	0	0	26
15 CAL	0	0	0	0	0	0	0	0	0	1	0	0	0	0	5	0	0	0	0	0	0	0	0	6
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	1	0	0	0	0	0	0	0	9
17 CHS	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	108	0	0	0	0	0	0	109
18 FAU	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
19 STA	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0	0	2	1	0	1	1	14	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	20
22 KGEO	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	-233	-505	219	-358	192	-970	340	-1131	0	478	50	0	27	0	0	0	0	0	0	0	0	0	0	-1349

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal HBS Trips MODE: Ratio (Est/Obs) Transit

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	1.61	0.46	1.95	16.85	23.14	0.38	42.22	35.09	0	0.06	0	0	0	0	0	0	0	0	0	0	0	0	0	0.77
2 DC NC	0.91	1.08	1.43	0.55	43.09	0.52	161.15	0.97	0	0.76	0	0	0.42	0.04	0	0	0.23	0	0	0	0	0	0	0.98
3 MTG	1.04	0.69	0.97	1.13	31.12	0.48	0.04	0.60	0	2.21	0	0	2.57	0.10	0	0	0	0	0	0	0	0	0	0.96
4 PG	0.63	0.52	0.73	0.95	43.46	0.99	20.23	0.08	0	1.68	0	0	7.65	5.68	0	0	1.13	0	0	0	0	0	0	0.82
5 ARLCR	0.78	0.04	0.96	0	3.73	0.59	12.10	0.30	0	0.13	0	0	0	0	0	0	0	0	0	0	0	0	0	0.51
6 ARNCR	0.98	7.96	2.02	0	2.99	1.28	138.62	0.80	0	2.44	0	0	0	0	0	0	0	0	0	0	0	0	0	1.27
7 ALX	42.64	0.02	0.00	0	8.78	0.39	0.97	0.91	0	1.67	0	0	0	0	0	0	0	0	0	0	0	0	0	0.73
8 FFX	0.59	0.32	24.56	20.66	0.20	0.49	0.60	0.51	11.42	71.99	4.80	0	10.11	8.52	0.72	32.51	23.22	0	0.01	0	1.52	0	0	0.57
9 LDN	0.89	0	0	0	0	0	0	1.10	96.88	23.09	0	0	0	0	0	0	0	0	0	0	0	0	0	13.18
10 PW	0.30	28.89	66.20	49.14	11.53	4.24	63.17	573.18	50.27	5.45	10.89	0	25.93	24.90	1.51	64.32	50.63	0	0.02	0	3.21	0	0	9.80
11 FRD	0.02	0	0	0	0	0	0	0.16	0	0.50	1.38	0	0	0	0	0	0	0	0	0	0	0	0	1.39
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	0.18	0	0.12	3.61	0	0	0	1.39	0	3.79	0	0	34.06	2.25	0	0	0	0	0	0	0	0	0	11.44
14 AAR	2.06	0.04	0.07	3.63	0	0.04	0.01	6.24	0	6.16	0	0	1.40	6.43	0	0	0	0	0	0	0	0	0	26.08
15 CAL	0.19	0.02	0	0	0	0.01	0	0.31	0	0.95	0	0	0	0	4.76	0.14	0	0	0	0	0	0	0	6.38
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.04	7.82	0.98	0	0	0	0	0	0	8.84
17 CHS	0	0	0	0.03	0	0	0	0.33	0	0.98	0	0	0	0	0	0	107.51	0	0	0	0	0	0	108.85
18 FAU	0	0	0	0	0	0	0	2.38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.38
19 STA	0	0	0	0	0	0	0	2.31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.31
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0.39	0.14	2.34	0.67	0.12	0.72	0.66	13.83	0	0.83	0	0	0	0	0	0	0	0	0	0	0.02	0	0	19.72
22 KGEO	0	0	0	0	0	0	0	1.76	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.76
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0.93	0.91	1.03	0.87	5.46	0.72	1.59	0.72	0	6.90	1.55	0	2.28	0	0	0	0	0	0	0	0	0	0	0.95

Appendix B Year 2007 mode choice summary

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal HBS Trips MODE: Est Auto Person

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	4160	2248	1454	818	202	952	380	1739	63	22	0	0	29	39	0	0	12	1	0	0	0	0	0	12120
2 DC NC	12850	61893	17395	15486	871	4666	2405	10848	373	179	3	0	564	741	0	0	273	11	0	0	0	0	0	128557
3 MTG	4638	12056	387938	19556	97	646	161	2540	105	11	1735	257	3691	2223	0	0	96	1	0	0	1	0	0	435753
4 PG	5420	13666	19147	258671	318	2155	2415	7920	159	130	1	1	4709	7173	17	56	7046	7	0	0	0	0	0	329011
5 ARLCR	151	127	42	41	588	1207	327	1129	21	17	0	0	0	3	0	0	3	0	0	0	0	0	0	3656
6 ARNCR	2147	1991	584	764	2287	50703	5914	19475	235	230	6	0	6	50	0	0	65	1	0	0	3	0	0	84463
7 ALX	715	768	118	552	659	5946	28689	14893	107	289	0	0	2	23	0	2	107	1	1	0	4	0	0	52875
8 FFX	4190	5467	2848	4358	1925	17425	16535	448037	6794	7367	126	1	92	415	0	8	1037	81	94	2	325	0	0	517127
9 LDN	505	672	694	586	171	1232	579	16149	97123	1353	4404	127	56	145	0	0	166	181	10	1436	47	0	0	125634
10 PW	317	352	110	311	165	1292	1491	21999	1379	198636	45	0	6	42	0	0	169	1544	765	6	1150	0	0	229779
11 FRD	13	20	6865	38	8	47	5	795	2239	10	90113	4243	1086	117	0	0	0	1	0	30	0	0	0	105630
12 CAR	0	0	797	14	0	2	0	44	80	0	1349	74824	1400	113	0	0	0	0	0	0	0	0	0	78624
13 HOW	95	293	3823	5453	7	34	14	148	10	1	719	1537	111109	12371	0	0	14	0	0	0	0	0	0	135629
14 AAR	485	1118	1850	10467	80	455	422	1422	39	39	4	22	12111	241040	217	59	529	0	0	0	0	0	0	270360
15 CAL	191	444	272	3031	43	259	345	1083	21	35	0	0	66	1405	26197	4732	1793	0	0	0	0	0	0	39915
16 STM	8	4	5	196	5	32	75	266	0	4	0	0	1	12	302	40954	4469	0	0	0	0	0	0	46333
17 CHS	85	124	37	1366	29	182	379	1218	26	35	0	0	4	18	171	737	63058	0	0	0	0	0	0	67470
18 FAU	49	39	41	40	7	45	25	1988	460	3067	6	0	0	1	0	0	7	20013	444	15	402	0	0	26649
19 STA	43	26	26	32	15	116	180	2400	55	7725	0	0	0	1	0	0	8	231	46795	0	7131	10	0	64793
20 CL/JF	3	1	716	0	1	11	2	1199	5918	241	1942	55	82	3	0	0	0	183	0	16014	0	0	0	26371
21 SP/FB	3	0	13	1	7	65	93	1862	76	3134	0	0	0	0	0	0	0	149	4499	0	45097	3	0	55004
22 KGEO	2	1	1	41	2	19	38	523	3	896	0	0	0	0	3	113	1555	54	1297	0	1404	3480	0	9432
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	36070		444776		7488		60473		115284		100454		135016		26906		80408		53905		55565		0	
		101310		321824		87491		557679		223423		81067		265934		46659		22458		17502		3493		2845185

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal HBS Trips MODE: Obs Auto Person

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	6088	1617	350	0	0	1768	210	640	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10674
2 DC NC	16016	66001	28122	15345	115	6873	946	5368	373	0	0	0	110	907	0	0	979	0	0	0	0	0	0	141153
3 MTG	4485	10227	397179	7751	1390	844	206	4624	124	2175	1503	0	2168	2378	0	0	875	0	141	0	0	0	0	436071
4 PG	4612	6497	16408	272971	0	1103	110	2486	182	182	272	0	3629	15982	390	286	16365	0	0	0	0	198	0	341673
5 ARLCR	0	106	0	0	723	1622	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2451
6 ARNCR	3520	12889	652	102	2154	59521	8235	17407	225	0	93	0	0	712	0	0	0	0	0	0	0	0	0	93909
7 ALX	1295	730	352	951	147	3701	36500	12319	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	55994
8 FFX	1007	126	1922	773	978	11191	10543	473052	14737	14484	0	0	0	0	0	0	132	0	552	0	0	0	0	529497
9 LDN	452	0	394	0	0	1029	0	22404	102019	1994	0	0	0	0	0	0	0	0	0	288	382	0	0	128962
10 PW	0	0	0	0	0	439	2081	27325	211	209393	0	0	0	0	0	0	0	0	3066	309	0	2655	197	245675
11 FRD	0	0	5106	261	0	0	231	0	1136	0	103235	4892	181	260	0	0	0	0	0	0	0	0	0	115301
12 CAR	0	669	418	767	0	0	0	0	0	0	858	75762	2248	381	0	0	0	0	0	0	0	0	0	81103
13 HOW	437	339	3462	3993	0	0	163	0	0	0	0	0	1644	123286	8510	0	0	0	0	0	0	0	0	141835
14 AAR	0	282	0	19966	0	72	0	228	0	204	0	2169	13014	250504	803	0	402	0	0	0	0	0	0	287644
15 CAL	0	0	1316	5478	0	0	255	2796	0	0	0	0	0	3856	25964	1603	2784	0	0	0	0	0	0	44051
16 STM	0	0	0	0	0	391	0	391	0	0	0	0	0	0	791	38086	5040	0	0	0	0	0	0	44700
17 CHS	1216	0	842	6383	0	0	1271	0	0	0	0	0	0	833	222	3210	59964	0	0	0	0	0	0	73940
18 FAU	0	0	0	0	0	0	0	1038	2948	4497	0	0	0	0	0	0	0	17421	939	0	0	0	0	26843
19 STA	0	0	0	0	0	564	0	689	0	1741	0	0	0	0	0	0	0	0	49660	0	13824	0	0	66478
20 CL/JF	0	0	0	0	0	0	0	148	1204	0	830	0	0	0	0	0	0	78	0	17736	0	0	0	19996
21 SP/FB	0	0	0	0	0	0	0	0	0	2118	0	0	0	0	0	0	0	0	4096	0	58236	0	0	64450
22 KGEO	0	0	0	0	0	0	0	0	0	179	0	0	0	122	0	0	0	0	980	0	1533	2347	0	5160
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	39129		456524		5506		60751		123157		106791		144635		28171		86540		56965		76247		0	
		87883		334740		89118		570917		236967		84466		284444		43185		20565		18118		2741		2957561

Appendix B Year 2007 mode choice summary

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal HBS Trips MODE: Difference (Est-Obs) Auto Person

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	-1928	631	1104	818	202	-816	169	1099	63	22	0	0	29	39	0	0	12	1	0	0	0	0	0	1445
2 DC NC	-3166	-4107	-10727	141	756	-2207	1459	5480	-0	179	3	0	455	-166	0	0	-706	11	0	0	0	0	0	-12596
3 MTG	153	1829	-9241	11805	-1293	-197	-45	-2085	-20	-2164	232	257	1523	-155	0	0	-778	1	-141	0	1	0	0	-318
4 PG	808	7169	2739	-14300	318	1051	2305	5434	-23	-52	-271	1	1080	-8809	-374	-230	-9319	7	0	0	0	-198	0	-12662
5 ARLCR	151	21	42	41	-135	-415	327	1129	21	17	0	0	0	3	0	0	3	0	0	0	0	0	0	1205
6 ARNCR	-1373	702	-68	663	133	-8818	-2321	2068	11	230	-87	0	6	-662	0	0	65	1	0	0	3	0	0	-9446
7 ALX	-580	38	-233	-398	512	2245	-7811	2573	107	289	0	0	2	23	0	2	107	1	1	0	4	0	0	-3119
8 FFX	3183	5341	926	3585	948	6234	5992	-25015	-7943	-7117	126	1	92	415	0	8	906	81	-459	2	325	0	0	-12370
9 LDN	53	672	300	586	171	203	579	-6255	-4896	-642	4404	127	56	145	0	0	166	181	-277	1054	47	0	0	-3328
10 PW	317	352	110	311	165	853	-591	-5326	1168	-10757	45	0	6	42	0	0	169	-1522	457	6	-1505	-197	0	-15896
11 FRD	13	20	1758	-223	8	47	-225	795	1103	10	-13122	-649	906	-144	0	0	0	1	0	30	0	0	0	-9671
12 CAR	0	-668	379	-753	0	2	0	44	80	0	491	-938	-847	-268	0	0	0	0	0	0	0	0	0	-2478
13 HOW	-342	-47	361	1460	7	34	-149	148	10	1	719	-106	-12177	3861	0	0	14	0	0	0	0	0	0	-6206
14 AAR	485	836	1850	-9498	80	383	422	1193	39	-164	4	-2147	-903	-9463	-586	59	127	0	0	0	0	0	0	-17284
15 CAL	191	444	-1044	-2447	43	259	89	-1713	21	35	0	0	66	-2451	233	3129	-991	0	0	0	0	0	0	-4136
16 STM	8	4	5	196	5	-359	75	-125	0	4	0	0	1	12	-490	2868	-571	0	0	0	0	0	0	1633
17 CHS	-1131	124	-805	-5017	29	182	-892	1218	26	35	0	0	4	-814	-51	-2473	3094	0	0	0	0	0	0	-6470
18 FAU	49	39	41	40	7	45	25	950	-2488	-1430	6	0	0	1	0	0	7	2592	-495	15	402	0	0	-194
19 STA	43	26	26	32	15	-449	180	1710	55	5984	0	0	0	1	0	0	8	231	-2865	0	-6692	10	0	-1685
20 CL/JF	3	1	716	0	1	11	2	1051	4714	241	1112	55	82	3	0	0	0	104	0	-1722	0	0	0	6375
21 SP/FB	3	0	13	1	7	65	93	1862	76	1016	0	0	0	0	0	0	0	149	403	0	-13138	3	0	-9446
22 KGEO	2	1	1	41	2	19	38	523	3	718	0	0	0	-122	3	113	1555	54	317	0	-129	1133	0	4272
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	-3059		-11748		1982		-278		-7874		-6337		-9620		-1265		-6132		-3060		-20682		753	-112377
		13427		-12916		-1627		-13239		-13544		-3399		-18511		3475		1893		-616				

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal HBS Trips MODE: Ratio (Est/Obs) Auto Person

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	0.68	1.39	4.15	818.23	202.10	0.54	1.81	2.72	62.80	22.18	0.03	0	28.50	38.66	0	0	12.43	1.39	0	0	0	0	0	1.14
2 DC NC	0.80	0.94	0.62	1.01	7.58	0.68	2.54	2.02	1.00	178.57	2.95	0	5.15	0.82	0	0	0.28	10.60	0.16	0	0	0	0	0.91
3 MTG	1.03	1.18	0.98	2.52	0.07	0.77	0.78	0.55	0.84	0.01	1.15	257.27	1.70	0.93	0	0	0.11	1.38	0.00	0.36	0.97	0	0	1.00
4 PG	1.18	2.10	1.17	0.95	317.61	1.95	21.95	3.19	0.87	0.72	0.00	0.98	1.30	0.45	0.04	0.20	0.43	6.86	0.13	0	0	0	0	0.96
5 ARLCR	150.51	1.20	42.41	41.01	0.81	0.74	327.42	1128.67	20.53	17.31	0.09	0	0.31	2.50	0	0	2.62	0.13	0.01	0	0.07	0	0	1.49
6 ARNCR	0.61	1.54	0.90	7.52	1.06	0.85	0.72	1.12	1.05	230.16	0.06	0	6.44	0.07	0	0.15	64.96	0.98	0.36	0	3.36	0	0	0.90
7 ALX	0.55	1.05	0.34	0.58	4.48	1.61	0.79	1.21	106.95	289.37	0.31	0	1.92	22.67	0	1.81	106.55	0.71	0.71	0	3.70	0	0	0.94
8 FFX	4.16	43.24	1.48	5.64	1.97	1.56	1.57	0.95	0.46	0.51	125.67	1.02	91.91	414.82	0.09	7.71	7.88	80.95	0.17	1.53	325.03	0	0	0.98
9 LDN	1.12	671.88	1.76	585.50	170.73	1.20	578.57	0.72	0.95	0.68	4404.11	126.72	55.59	145.07	0	0.03	166.38	180.67	0.04	3.76	46.63	0	0	0.97
10 PW	316.95	351.56	109.91	311.14	165.23	2.94	0.72	0.81	6.55	0.95	44.77	0	6.32	42.15	0	0	169.31	0.50	2.48	6.11	0.43	0	0	0.94
11 FRD	13.42	19.79	1.34	0.15	8.43	46.88	0.02	794.78	1.97	10.01	0.87	0.87	6.01	0.45	0	0	0.15	0.81	0	29.68	0	0	0	0.92
12 CAR	0.11	0.00	1.91	0.02	0.42	1.81	0.03	44.29	79.99	0.05	1.57	0.99	0.62	0.30	0	0	0	0	0	0	0	0	0	0.97
13 HOW	0.22	0.86	1.10	1.37	7.48	33.53	0.08	148.30	10.38	0.93	719.37	0.94	0.90	1.45	0	0	14.18	0.01	0	0.12	0	0	0	0.96
14 AAR	485.12	3.96	1849.98	0.52	80.21	6.30	421.96	6.23	38.50	0.19	4.23	0.01	0.93	0.96	0.27	58.81	1.32	0.11	0.01	0	0	0	0	0.94
15 CAL	190.51	443.83	0.21	0.55	42.97	259.06	1.35	0.39	20.90	34.63	0	0	66.47	0.36	1.01	2.95	0.64	0.02	0	0	0	0	0	0.91
16 STM	7.55	4.21	4.84	195.88	4.96	0.08	75.41	0.68	0.07	4.44	0	0	0.93	11.78	0.38	1.08	0.89	0	0	0	0.06	0.18	0	1.04
17 CHS	0.07	123.70	0.04	0.21	28.92	182.15	0.30	218.28	25.76	35.17	0	0	4.37	0.02	0.77	0.23	1.05	0.14	0.01	0	0.03	0.43	0	0.91
18 FAU	49.43	39.12	40.69	40.36	6.76	45.05	24.99	1.92	0.16	0.68	6.20	0	0.37	0.78	0	0	6.78	1.15	0.47	14.50	401.95	0.09	0	0.99
19 STA	43.13	25.84	26.22	31.97	14.84	0.20	179.79	3.48	55.03	4.44	0	0	0	0.71	0	0	7.88	231.12	0.94	0	0.52	9.96	0	0.97
20 CL/JF	2.72	1.24	715.94	0.28	1.27	10.59	1.72	8.09	4.92	240.87	2.34	55.07	82.02	3.35	0	0	0	2.33	0.21	0.90	0.25	0	0	1.32
21 SP/FB	2.96	0.04	13.40	0.60	6.78	65.46	92.82	1862.43	76.35	1.48	0	0	0	0	0	0	0.24	148.77	1.10	0	0.77	3.06	0	0.85
22 KGEO	1.86	1.38	0.59	41.36	2.26	19.32	38.07	523.39	2.51	5.02	0	0	0	0.00	2.93	112.51	1555.09	53.70	1.32	0	0.92	1.48	0	1.83
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0.92		0.97		1.36		1.00		0.94		0.94		0.93		0.96		0.93		0.95		0.73		1.27	0.96
		1.15		0.96		0.98		0.98		0.94		0.96		0.93		1.08		1.09		0.97				

Appendix B Year 2007 mode choice summary

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
Purpose: Internal HBS Trips MODE: Est Auto Driver

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	3056	1743	967	559	139	697	267	1074	36	13	0	0	17	23	0	0	8	1	0	0	0	0	0	8599
2 DC NC	9374	47958	11812	10499	595	3379	1678	6628	209	101	2	0	334	440	0	0	166	5	0	0	0	0	0	93179
3 MTG	4080	8076	263388	13223	49	414	106	1639	64	7	1143	168	2430	1465	0	0	62	1	0	0	1	0	0	296316
4 PG	4656	8910	12571	175371	157	1284	1503	4883	87	75	0	1	3042	4658	11	36	4672	3	0	0	0	0	0	221921
5 ARLCR	109	95	32	33	377	870	242	857	15	13	0	0	2	0	0	2	0	0	0	0	0	0	0	2647
6 ARNCR	1521	1490	425	581	1465	36695	4405	14489	165	168	4	0	5	37	0	0	49	1	0	0	0	3	0	61503
7 ALX	503	576	85	412	416	4257	20016	9988	65	186	0	0	1	17	0	2	77	0	0	0	0	3	0	36605
8 FFX	2800	4187	1862	2780	1208	12605	11268	284008	4255	4615	75	1	55	247	0	5	630	49	57	1	195	0	0	330900
9 LDN	328	516	445	370	104	883	389	10039	61866	837	2708	75	33	85	0	0	98	111	6	896	27	0	0	79816
10 PW	203	287	71	193	99	918	978	13356	823	126486	27	0	4	25	0	0	100	965	472	4	700	0	0	145711
11 FRD	11	12	4280	24	4	25	3	427	1334	5	60856	2810	663	72	0	0	0	0	0	19	0	0	0	70544
12 CAR	0	0	485	9	0	1	0	20	38	0	866	50892	886	70	0	0	0	0	0	0	0	0	0	53269
13 HOW	81	183	2500	3640	4	19	8	86	6	0	470	1026	75487	8281	0	0	9	0	0	0	0	0	0	91799
14 AAR	403	692	1136	6857	39	256	248	801	18	20	2	13	7832	163072	144	37	338	0	0	0	0	0	0	181907
15 CAL	158	273	157	1945	20	141	198	596	9	18	0	0	38	891	17757	3119	1114	0	0	0	0	0	0	26435
16 STM	7	3	2	119	2	15	38	131	0	2	0	0	0	5	192	27724	2785	0	0	0	0	0	0	31025
17 CHS	72	76	21	895	14	102	227	709	12	19	0	0	2	10	114	490	42727	0	0	0	0	0	0	45488
18 FAU	31	29	25	25	4	31	16	1130	264	1842	4	0	0	0	0	4	12695	275	9	246	0	0	0	16629
19 STA	27	19	15	19	8	77	110	1312	25	4676	0	0	0	0	0	5	133	29971	0	4502	6	0	0	40906
20 CL/JF	2	1	367	0	1	6	1	602	3278	126	1128	30	39	2	0	0	0	102	0	10244	0	0	0	15929
21 SP/FB	2	0	5	0	3	40	52	906	31	1725	0	0	0	0	0	0	75	2775	0	28786	2	0	0	34402
22 KGEO	1	1	0	23	1	11	20	239	1	455	0	0	0	0	2	65	881	24	778	0	849	2232	0	5584
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	27424	75125	300650	217576	4708	62726	41772	72601	141389	67286	55015	90869	179403	18219	31478	53727	14166	34334	11173	35313	2241	0	0	1891114

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
Purpose: Internal HBS Trips MODE: Obs Auto Driver

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	4752	1295	350	0	0	1768	105	543	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8813
2 DC NC	11400	52974	15371	12799	115	4795	753	3441	275	0	0	0	110	551	0	0	356	0	0	0	0	0	0	102939
3 MTG	4179	7492	281699	5332	695	597	206	2990	124	622	984	0	1200	951	0	0	437	0	141	0	0	0	0	307649
4 PG	4231	4725	11316	187410	0	445	110	2071	182	182	272	0	1871	10350	390	286	9460	0	0	0	0	198	0	233499
5 ARLCR	0	106	0	0	0	474	1401	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1982
6 ARNCR	2629	1077	652	102	1083	41801	5724	12321	112	0	93	0	203	0	0	0	0	0	0	0	0	0	0	65796
7 ALX	859	459	352	532	147	2754	29146	8795	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	43044
8 FFX	448	126	1669	773	978	7714	7493	309078	9119	7301	0	0	0	0	0	0	132	0	552	0	0	0	0	345382
9 LDN	452	0	394	0	0	826	0	14504	64817	997	0	0	0	0	0	0	0	0	144	382	0	0	0	82515
10 PW	0	0	0	0	0	439	1348	13326	211	125132	0	0	0	0	0	0	0	1170	309	0	759	98	0	142791
11 FRD	0	0	3080	130	0	0	231	0	813	0	69328	3615	181	130	0	0	0	0	0	0	0	0	0	77507
12 CAR	0	191	209	290	0	0	0	0	0	0	659	49486	1583	381	0	0	0	0	0	0	0	0	0	52799
13 HOW	437	339	2238	3195	0	0	163	0	0	0	0	0	1204	82146	4079	0	0	0	0	0	0	0	0	93803
14 AAR	0	282	0	12729	0	72	0	228	0	204	0	1085	5087	165660	803	0	402	0	0	0	0	0	0	186551
15 CAL	0	0	376	3462	0	0	255	982	0	0	0	0	0	2421	17068	1005	1708	0	0	0	0	0	0	27276
16 STM	0	0	0	0	0	391	0	391	0	0	0	0	0	0	528	26250	2060	0	0	0	0	0	0	29620
17 CHS	608	0	494	4918	0	0	793	0	0	0	0	0	0	610	222	1934	39923	0	0	0	0	0	0	49502
18 FAU	0	0	0	0	0	0	0	1038	1157	3627	0	0	0	0	0	0	0	11833	577	0	0	0	0	18231
19 STA	0	0	0	0	0	282	0	362	0	1741	0	0	0	0	0	0	0	0	27234	0	8360	0	0	37979
20 CL/JF	0	0	0	0	0	0	0	148	543	0	616	0	0	0	0	0	0	78	0	13419	0	0	0	14804
21 SP/FB	0	0	0	0	0	0	0	0	0	1332	0	0	0	0	0	0	0	0	3484	0	35779	0	0	40594
22 KGEO	0	0	0	0	0	0	0	0	0	179	0	0	0	122	0	0	0	0	572	0	1001	1945	0	3819
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	29994	69067	318198	231673	3492	63286	46325	370219	77353	141315	71952	55390	92177	185457	19011	29475	54476	13081	33012	13801	45898	2241	0	1966896

Appendix B Year 2007 mode choice summary

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal HBS Trips MODE: Difference (Est-Obs) Auto Driver

ORIGIN	DESTINATION																							TOTAL									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23										
1 DC CR	-1695	448	617	559	139	-1071	162	531	36	13	0	0	17	23	0	0	8	1	0	0	0	0	0	-214									
2 DC NC	-2026	-5016	-3559	-2300	480	-1416	925	3187	-66	101	2	0	225	-111	0	0	-190	5	0	0	0	0	0	-9760									
3 MTG	-98	584	-18310	7891	-646	-182	-100	-1352	-61	-615	159	168	1230	514	0	0	-375	1	-141	0	1	0	0	-11333									
4 PG	425	4186	1256	-12039	157	839	1393	2812	-95	-107	-271	1	1171	-5691	-380	-250	-4788	3	0	0	0	-198	0	-11577									
5 ARLCR	109	-12	32	33	-97	-531	242	857	15	13	0	0	0	2	0	0	2	0	0	0	0	0	0	665									
6 ARNCR	-1108	413	-227	479	382	-5106	-1319	2168	53	168	-89	0	5	-166	0	0	49	1	0	0	3	0	0	-4294									
7 ALX	-356	117	-267	-120	269	1503	-9129	1193	65	186	0	0	1	17	0	2	77	0	0	0	3	0	0	-6439									
8 FFX	2352	4060	193	2007	230	4890	3775	-25070	-4864	-2686	75	1	55	247	0	5	498	49	-496	1	195	0	0	-14482									
9 LDN	-124	516	50	370	104	57	389	-4464	-2951	-160	2708	75	33	85	0	0	98	111	-138	514	27	0	0	-2700									
10 PW	203	287	71	193	99	479	-370	30	612	1354	27	0	4	25	0	0	100	-205	164	4	-58	-98	0	2920									
11 FRD	11	12	1200	-107	4	25	-228	427	521	5	-8472	-805	482	-58	0	0	0	0	0	19	0	0	0	-6963									
12 CAR	0	-191	276	-282	0	1	0	20	38	0	207	1407	-696	-311	0	0	0	0	0	0	0	0	0	470									
13 HOW	-356	-157	262	445	4	19	-155	86	6	0	470	-179	-6659	4203	0	0	9	0	0	0	0	0	0	-2003									
14 AAR	403	410	1136	-5872	39	184	248	573	18	-184	2	-1071	2745	-2588	-659	37	-64	0	0	0	0	0	0	-4644									
15 CAL	158	273	-219	-1517	20	141	-58	-386	9	18	0	0	38	-1529	690	2114	-594	0	0	0	0	0	0	-842									
16 STM	7	3	2	119	2	-377	38	-261	0	2	0	0	0	5	-336	1475	725	0	0	0	0	0	0	1405									
17 CHS	-536	76	-473	-4024	14	102	-566	709	12	19	0	0	2	-600	-108	-1444	2804	0	0	0	0	0	0	-4014									
18 FAU	31	29	25	25	4	31	16	92	-893	-1785	4	0	0	0	0	0	4	862	-302	9	246	0	0	-1602									
19 STA	27	19	15	19	8	-205	110	950	25	2936	0	0	0	0	0	5	133	2737	0	-3858	6	0	0	2928									
20 CL/JF	2	1	367	0	1	6	1	454	2735	126	512	30	39	2	0	0	0	24	0	-3175	0	0	0	1124									
21 SP/FB	2	0	5	0	3	40	52	906	31	393	0	0	0	0	0	0	0	75	-708	0	-6993	2	0	-6192									
22 KGEO	1	1	0	23	1	11	20	239	1	277	0	0	0	-122	2	65	881	24	206	0	-152	287	0	1766									
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0									
TOTAL	-2571		-17548		1216		-4553		-4752		-4666		-1308		-792		2004		-750		1084		1322		-2628		-10585		-1		0		-75781

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal HBS Trips MODE: Ratio (Est/Obs) Auto Driver

ORIGIN	DESTINATION																							TOTAL									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23										
1 DC CR	0.64	1.35	2.76	558.65	139.33	0.39	2.54	1.98	36.05	12.82	0.02	0	16.84	22.92	0	0	7.59	0.68	0	0	0	0	0	0	0.98								
2 DC NC	0.82	0.91	0.77	0.82	5.18	0.70	2.23	1.93	0.76	101.34	1.68	0	3.05	0.80	0	0	0.47	5.18	0.08	0	0	0	0	0	0.91								
3 MTG	0.98	1.08	0.93	2.48	0.07	0.69	0.52	0.55	0.51	0.01	1.16	168.15	2.02	1.54	0	0	0.14	0.63	0.00	0.23	0.58	0	0	0	0.96								
4 PG	1.10	1.89	1.11	0.94	156.92	2.88	13.66	2.36	0.48	0.41	0.00	0.58	1.63	0.45	0.03	0.13	0.49	2.80	0.07	0	0	0	0	0	0.95								
5 ARLCR	108.68	0.89	32.26	32.86	0.79	0.62	242.24	856.69	14.60	12.67	0.08	0	0.26	1.99	0	0	2.11	0.09	0.01	0	0.07	0	0	0	1.34								
6 ARNCR	0.58	1.38	0.65	5.71	1.35	0.88	0.77	1.18	1.47	168.40	0.05	0	4.93	0.18	0	0.15	48.85	0.65	0.33	0	2.94	0	0	0	0.93								
7 ALX	0.59	1.25	0.24	0.77	2.83	1.55	0.69	1.14	64.78	185.60	0.28	0	1.49	16.70	0	1.53	77.29	0.33	0.49	0	2.81	0	0	0	0.85								
8 FFX	6.25	33.11	1.12	3.60	1.24	1.63	1.50	0.92	0.47	0.63	74.99	0.61	54.94	247.02	0.05	4.57	4.78	49.31	0.10	0.91	195.07	0	0	0	0.96								
9 LDN	0.72	515.87	1.13	369.88	104.37	1.07	388.62	0.69	0.95	0.842708.23	75.03	32.90	85.20	0	0.02	98.35	110.66	0.04	2.35	27.48	0	0	0	0.97									
10 PW	202.83	287.37	70.73	193.37	98.95	2.09	0.73	1.00	3.91	1.01	26.67	0	3.74	24.82	0	0	100.39	0.83	1.53	3.65	0.92	0	0	0	1.02								
11 FRD	11.29	11.93	1.39	0.18	3.84	25.32	0.01	426.72	1.64	4.70	0.88	0.78	3.67	0.55	0	0	0.09	0.36	0	19.30	0	0	0	0	0.91								
12 CAR	0.10	0.00	2.32	0.03	0.18	0.75	0.01	20.44	38.47	0.01	1.31	1.03	0.56	0.18	0	0	0	0	0	0	0	0	0	0	1.01								
13 HOW	0.18	0.54	1.12	1.14	3.51	19.06	0.05	86.03	5.56	0.40	469.97	0.85	0.92	2.03	0	0	8.84	0	0	0.07	0	0	0	0	0.98								
14 AAR	403.18	2.451135.50	0.54	38.50	3.54	247.50	3.51	18.32	0.10	2.45	0.01	1.54	0.98	0.18	37.31	0.84	0.04	0	0	0	0	0	0	0	0.98								
15 CAL	157.69	273.09	0.42	0.56	20.33	141.42	0.77	0.61	9.48	17.72	0	0	37.94	0.37	1.04	3.10	0.65	0.01	0	0	0	0	0	0	0.97								
16 STM	6.74	2.52	2.11	118.95	2.11	0.04	38.19	0.33	0.02	1.94	0	0	0.35	5.39	0.36	1.06	1.35	0	0	0	0.04	0.11	0	0	1.05								
17 CHS	0.12	75.61	0.04	0.18	13.74	102.03	0.29	709.11	11.84	18.75	0	0	2.14	0.02	0.51	0.25	1.07	0.05	0	0	0.02	0.27	0	0	0.92								
18 FAU	31.12	28.62	25.01	24.58	3.99	31.14	15.66	1.09	0.23	0.51	3.67	0	0.22	0.46	0	0	3.95	1.07	0.48	8.86	246.35	0.05	0	0	0.91								
19 STA	26.91	19.11	15.10	19.21	8.26	0.27	110.11	3.62	24.69	2.69	0	0	0	0.42	0	0	4.64	132.90	1.10	0	0.54	6.27	0	0	1.08								
20 CL/JF	1.67	0.92	367.19	0.16	0.58	6.11	0.93	4.06	6.04	125.66	1.83	29.55	39.47	1.54	0	0	0	1.30	0.13	0.76	0.15	0	0	0	1.08								
21 SP/FB	1.69	0.03	5.20	0.35	3.12	39.67	51.64	906.29	31.27	1.29	0	0	0	0	0	0	0.08	75.18	0.80	0	0.80	1.86	0	0	0.85								
22 KGEO	1.03	1.00	0.21	22.57	1.02	10.96	20.44	238.72	1.02	2.55	0	0	0	0.00	1.62	65.38	881.49	24.49	1.36	0	0.85	1.15	0	0	1.46								
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
TOTAL	0.91		0.94		1.35		0.90		0.94		0.94		0.99		0.96		1.07		0.99		1.08		1.04		0.81		0.77		1.00		0		0.96

Appendix B Year 2007 mode choice summary

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal HBS Trips MODE: Est Motr Psn

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	4593	2574	1618	835	225	1148	422	1775	63	22	0	0	29	39	0	0	12	1	0	0	0	0	0	13356
2 DC NC	14900	66351	18673	15928	914	5194	2566	10952	373	179	3	0	565	741	0	0	273	11	0	0	0	0	0	137623
3 MTG	4831	12205	392742	19643	128	674	162	2540	105	14	1735	257	3694	2223	0	0	96	1	0	0	1	0	0	441051
4 PG	5675	13972	19592	260492	361	2245	2435	7925	159	132	1	1	4717	7179	17	56	7047	7	0	0	0	0	0	332014
5 ARLCR	185	130	43	41	592	1317	340	1144	21	17	0	0	0	3	0	0	3	0	0	0	0	0	0	3835
6 ARNCR	2312	1999	586	764	2353	51847	6053	19736	235	233	6	0	6	50	0	0	65	1	0	0	3	0	0	86248
7 ALX	758	768	118	552	668	6107	29067	15074	107	291	0	0	2	23	0	2	107	1	1	0	4	0	0	53649
8 FFX	4269	5479	2872	4379	1930	17544	16637	449717	6806	7439	130	1	102	423	1	40	1060	81	94	2	327	0	0	519332
9 LDN	506	672	694	586	171	1232	579	16160	97220	1376	4404	127	56	145	0	0	166	181	10	1436	47	0	0	125766
10 PW	335	380	176	360	177	1377	1554	22572	1429	199077	56	0	32	67	2	64	220	1544	765	6	1153	0	0	231347
11 FRD	13	20	6865	38	8	47	5	795	2239	11	90239	4243	1086	117	0	0	0	1	0	30	0	0	0	105757
12 CAR	0	0	797	14	0	2	0	44	80	0	1349	74824	1400	113	0	0	0	0	0	0	0	0	0	78624
13 HOW	95	293	3824	5457	7	34	14	150	10	5	719	1537	111143	12373	0	0	14	0	0	0	0	0	0	135674
14 AAR	487	1118	1850	10471	80	456	422	1428	39	46	4	22	12112	241047	217	59	529	0	0	0	0	0	0	270386
15 CAL	191	444	272	3031	43	259	345	1084	21	36	0	0	66	1405	26202	4732	1793	0	0	0	0	0	0	39922
16 STM	8	4	5	196	5	32	75	266	0	4	0	0	1	12	302	40961	4470	0	0	0	0	0	0	46342
17 CHS	85	124	37	1366	29	182	379	1219	26	36	0	0	4	18	171	737	63165	0	0	0	0	0	0	67579
18 FAU	49	39	41	40	7	45	25	1991	460	3067	6	0	0	1	0	0	7	20013	444	15	402	0	0	26652
19 STA	43	26	26	32	15	116	180	2402	55	7725	0	0	0	1	0	0	8	231	46795	0	7131	10	0	64795
20 CL/JF	3	1	716	0	1	11	2	1199	5918	241	1942	55	82	3	0	0	0	183	0	16014	0	0	0	26371
21 SP/FB	3	0	16	1	7	66	93	1876	76	3135	0	0	0	0	0	0	0	149	4499	0	45097	3	0	55023
22 KGEO	2	1	1	41	2	19	38	525	3	896	0	0	0	0	3	113	1555	54	1297	0	1404	3480	0	9434
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	39343		451563		7723		61392		115442		100595		135098		26913		80592		53905		55570		0	2870779
		106603		324269		89952		560572		223982		81067		265982		46764		22458		17502		3493		

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal HBS Trips MODE: Obs Motr Psn

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	6357	2333	434	0	0	2285	210	640	0	0	0	0	0	21	0	0	0	0	0	0	0	0	0	12281
2 DC NC	18260	70136	29016	16156	115	7888	946	5475	373	0	0	0	110	907	0	0	979	0	0	0	0	0	0	150359
3 MTG	4671	10444	402125	7828	1390	903	224	4624	124	2175	1503	0	2168	2378	0	0	875	0	141	0	0	0	0	441574
4 PG	5017	7085	17016	274886	0	1194	110	2543	182	182	272	0	3629	15982	390	286	16365	0	0	0	0	198	0	345337
5 ARLCR	44	178	0	0	723	1808	0	51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2804
6 ARNCR	3687	12889	652	102	2176	60414	8235	17735	225	0	93	0	0	712	0	0	0	0	0	0	0	0	0	95319
7 ALX	1295	761	384	951	147	4109	36890	12518	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	57054
8 FFX	1139	164	1922	773	999	11433	10714	476324	14737	14484	0	0	0	0	0	0	132	0	552	0	0	0	0	533373
9 LDN	452	0	394	0	0	1029	0	22414	102019	1994	0	0	0	0	0	0	0	0	288	382	0	0	0	128972
10 PW	59	0	0	0	0	459	2081	27325	211	209474	0	0	0	0	0	0	0	0	3066	309	0	2655	197	245835
11 FRD	0	0	5106	261	0	0	231	0	1136	0	103326	4892	181	260	0	0	0	0	0	0	0	0	0	115392
12 CAR	0	669	418	767	0	0	0	0	0	0	858	75762	2248	381	0	0	0	0	0	0	0	0	0	81103
13 HOW	437	339	3466	3993	0	0	163	0	0	0	0	0	1644	123286	8510	0	0	0	0	0	0	0	0	141839
14 AAR	0	282	0	19966	0	72	0	228	0	204	0	2169	13014	250504	803	0	402	0	0	0	0	0	0	287644
15 CAL	0	0	1316	5478	0	0	255	2796	0	0	0	0	0	3856	25964	1603	2784	0	0	0	0	0	0	44051
16 STM	0	0	0	0	0	391	0	391	0	0	0	0	0	0	791	38086	5040	0	0	0	0	0	0	44700
17 CHS	1216	0	842	6383	0	0	1271	0	0	0	0	0	0	833	222	3210	59964	0	0	0	0	0	0	73940
18 FAU	0	0	0	0	0	0	0	1038	2948	4497	0	0	0	0	0	0	0	0	17421	939	0	0	0	26843
19 STA	0	0	0	0	0	564	0	689	0	1741	0	0	0	0	0	0	0	0	49660	0	13824	0	0	66478
20 CL/JF	0	0	0	0	0	0	0	148	1204	0	830	0	0	0	0	0	0	0	78	0	17736	0	0	19996
21 SP/FB	0	0	0	0	0	0	0	0	0	2118	0	0	0	0	0	0	0	0	4096	0	58236	0	0	64450
22 KGEO	0	0	0	0	0	0	0	0	0	179	0	0	0	122	0	0	0	0	980	0	1533	2347	0	5160
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	42635		463092		5549		61330		123157		106882		144635		28171		86540		56965		76247		0	2984505
		93680		337543		92549		574941		237048		84466		284465		43185		20565		18118		2741		

Appendix B Year 2007 mode choice summary

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal HBS Trips MODE: Difference (Est-Obs) Motorized Person

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	-1764	241	1184	835	225	-1137	212	1134	63	22	0	0	29	18	0	0	12	1	0	0	0	0	0	1075
2 DC NC	-3360	-3784	-10343	-228	799	-2694	1621	5477	-0	179	3	0	455	-166	0	0	-706	11	0	0	0	0	0	-12736
3 MTG	160	1761	-9383	11815	-1262	-228	-62	-2084	-20	-2162	232	257	1526	-155	0	0	-778	1	-141	0	1	0	0	-523
4 PG	659	6888	2576	-14394	361	1051	2325	5382	-23	-50	-271	1	1087	-8803	-374	-230	-9318	7	0	0	0	-198	0	-13324
5 ARLCR	141	-48	43	41	-131	-491	340	1093	21	17	0	0	0	3	0	0	3	0	0	0	0	0	0	1031
6 ARNCR	-1376	710	-66	663	177	-8567	-2182	2001	11	233	-87	0	6	-662	0	0	65	1	0	0	3	0	0	-9071
7 ALX	-537	8	-265	-398	521	1998	-7823	2556	107	291	0	0	2	23	0	2	107	1	1	0	4	0	0	-3406
8 FFX	3129	5315	950	3606	931	6111	5923	-26607	-7931	-7045	130	1	102	423	1	40	929	81	-459	2	327	0	0	-14041
9 LDN	54	672	300	586	171	203	579	-6254	-4799	-618	4404	127	56	145	0	0	166	181	-277	1054	47	0	0	-3206
10 PW	276	380	176	360	177	918	-528	-4753	1219	-10397	56	0	32	67	2	64	220	-1522	457	6	-1502	-197	0	-14488
11 FRD	13	20	1758	-223	8	47	-225	795	1103	11	-13087	-649	906	-144	0	0	0	1	0	30	0	0	0	-9635
12 CAR	0	-668	379	-753	0	2	0	44	80	0	491	-938	-847	-268	0	0	0	0	0	0	0	0	0	-2478
13 HOW	-342	-47	357	1464	7	34	-149	150	10	5	719	-106	-12143	3863	0	0	14	0	0	0	0	0	0	-6165
14 AAR	487	836	1850	-9495	80	383	422	1200	39	-158	4	-2147	-902	-9457	-586	59	127	0	0	0	0	0	0	-17258
15 CAL	191	444	-1044	-2447	43	259	89	-1713	21	36	0	0	66	-2451	238	3129	-991	0	0	0	0	0	0	-4130
16 STM	8	4	5	196	5	-359	75	-125	0	4	0	0	1	12	-490	2876	-570	0	0	0	0	0	0	1642
17 CHS	-1131	124	-805	-5017	29	182	-892	1219	26	36	0	0	4	-814	-51	-2473	3202	0	0	0	0	0	0	-6361
18 FAU	49	39	41	40	7	45	25	953	-2488	-1430	6	0	0	1	0	0	7	2592	-495	15	402	0	0	-191
19 STA	43	26	26	32	15	-449	180	1713	55	5984	0	0	0	1	0	0	8	231	-2865	0	-6692	10	0	-1683
20 CL/JF	3	1	716	0	1	11	2	1051	4714	241	1112	55	82	3	0	0	0	104	0	-1722	0	0	0	6375
21 SP/FB	3	0	16	1	7	66	93	1876	76	1017	0	0	0	0	0	0	0	149	403	0	-13138	3	0	-9427
22 KGEO	2	1	1	41	2	19	38	525	3	718	0	0	0	-122	3	113	1555	54	317	0	-129	1133	0	4274
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	-3292		-11529		2174		62	-7715		-6287		-9537		-1258		-5948		1893		-3060		-20677		0
		12922		-13274		-2597		-14369		-13067		-3399		-18484		3580		1893		-616		753		-113726

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal HBS Trips MODE: Ratio (Est/Obs) Motorized Person

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	0.72	1.10	3.73	835.08	225.24	0.50	2.01	2.77	62.80	22.24	0.03	0	28.50	1.84	0	0	12.43	1.39	0	0	0	0	0	1.09
2 DC NC	0.82	0.95	0.64	0.99	7.96	0.66	2.71	2.00	1.00	179.33	2.95	0	5.15	0.82	0	0	0.28	10.60	0.16	0	0	0	0	0.92
3 MTG	1.03	1.17	0.98	2.51	0.09	0.75	0.72	0.55	0.84	0.01	1.15	257.27	1.70	0.93	0	0	0.11	1.38	0.00	0.36	0.97	0	0	1.00
4 PG	1.13	1.97	1.15	0.95	361.07	1.88	22.14	3.12	0.87	0.73	0.00	0.98	1.30	0.45	0.04	0.20	0.43	6.86	0.13	0	0	0	0	0.96
5 ARLCR	4.20	0.73	43.37	41.01	0.82	0.73	339.52	22.43	20.53	17.44	0.09	0	0.31	2.50	0	0	2.62	0.13	0.01	0	0.07	0	0	1.37
6 ARNCR	0.63	1.55	0.90	7.52	1.08	0.86	0.74	1.11	1.05	232.60	0.06	0	6.44	0.07	0	0.15	64.96	0.98	0.36	0	3.36	0	0	0.90
7 ALX	0.59	1.01	0.31	0.58	4.54	1.49	0.79	1.20	106.95	291.04	0.31	0	1.92	22.67	0	1.81	106.55	0.71	0.71	0	3.70	0	0	0.94
8 FFX	3.75	33.32	1.49	5.67	1.93	1.53	1.55	0.94	0.46	0.51	130.47	1.02	102.02	423.34	0.81	40.22	8.06	80.95	0.17	1.53	326.55	0	0	0.97
9 LDN	1.12	671.88	1.76	585.50	170.73	1.20	578.57	0.72	0.95	0.694404.11	126.72	55.59	145.07	0	0.03	166.38	180.67	0.04	3.76	46.63	0	0	0.98	
10 PW	5.67	380.45	176.11	360.28	176.76	3.00	0.75	0.83	6.79	0.95	55.66	0	32.25	67.05	1.51	64.32	219.94	0.50	2.48	6.11	0.43	0	0	0.94
11 FRD	13.44	19.79	1.34	0.15	8.43	46.88	0.02	794.94	1.97	10.51	0.87	0.87	6.01	0.45	0	0	0.15	0.81	0	29.68	0	0	0	0.92
12 CAR	0.11	0.00	1.91	0.02	0.42	1.81	0.03	44.29	79.99	0.05	1.57	0.99	0.62	0.30	0	0	0	0	0	0	0	0	0	0.97
13 HOW	0.22	0.86	1.10	1.37	7.48	33.53	0.08	149.69	10.38	4.72	719.37	0.94	0.90	1.45	0	0	14.18	0.01	0	0.12	0	0	0	0.96
14 AAR	487.18	3.961850.05	0.52	80.21	6.30	421.97	6.26	38.50	0.22	4.23	0.01	0.93	0.96	0.27	58.81	1.32	0.11	0.01	0	0	0	0	0	0.94
15 CAL	190.70	443.85	0.21	0.55	42.97	259.07	1.35	0.39	20.90	35.58	0	0	66.47	0.36	1.01	2.95	0.64	0.02	0	0	0	0	0	0.91
16 STM	7.55	4.21	4.84	195.88	4.96	0.08	75.41	0.68	0.07	4.44	0	0	0.93	11.78	0.38	1.08	0.89	0	0	0	0.06	0.18	0	1.04
17 CHS	0.07	123.70	0.04	0.21	28.92	182.15	0.301218.61	25.76	36.15	0	0	4.37	0.02	0.77	0.23	1.05	0.14	0.01	0	0	0.03	0.43	0	0.91
18 FAU	49.43	39.12	40.69	40.36	6.76	45.05	24.99	1.92	0.16	0.68	6.20	0	0.37	0.78	0	0	6.78	1.15	0.47	14.50	401.95	0.09	0	0.99
19 STA	43.13	25.84	26.22	31.97	14.84	0.20	179.79	3.48	55.03	4.44	0	0	0.71	0	0	7.88	231.12	0.94	0	0.52	9.96	0	0	0.97
20 CL/JF	2.72	1.24	715.94	0.28	1.27	10.59	1.72	8.09	4.92	240.87	2.34	55.07	82.02	3.35	0	0	2.33	0.21	0.90	0.25	0	0	0	1.32
21 SP/FB	3.35	0.18	15.74	1.27	6.90	66.18	93.481876.26	76.35	1.48	0	0	0	0	0	0	0.24	148.77	1.10	0	0.77	3.06	0	0	0.85
22 KGEO	1.86	1.38	0.59	41.36	2.26	19.32	38.07	525.15	2.51	5.02	0	0	0.00	2.93	112.511555.09	53.70	1.32	0	0.92	1.48	0	0	0	1.83
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0.92		0.98		1.39		1.00	0.98		0.94		0.94		0.96		1.08		1.09		0.95		0.73		0
		1.14		0.96		0.97		0.98		0.94		0.96		0.94		1.08		1.09		0.97		1.27		0.96

Appendix B Year 2007 mode choice summary

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
Purpose: Internal HBS Trips MODE: Est Auto Occ.

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	1.36	1.29	1.50	1.46	1.45	1.37	1.42	1.62	1.74	1.73	1.50	0	1.69	1.69	0	0	1.64	2.04	0	0	0	0	0	1.41
2 DC NC	1.37	1.29	1.47	1.47	1.46	1.38	1.43	1.64	1.78	1.76	1.76	0	1.69	1.69	0	0	1.65	2.05	2.00	0	0	0	0	1.38
3 MTG	1.14	1.49	1.47	1.48	1.98	1.56	1.52	1.55	1.64	1.64	1.52	1.53	1.52	1.52	0	0	1.54	2.19	1.50	1.57	1.67	0	0	1.47
4 PG	1.16	1.53	1.52	1.47	2.02	1.68	1.61	1.62	1.82	1.74	2.18	1.69	1.55	1.54	1.57	1.57	1.51	2.45	1.86	0	0	0	0	1.48
5 ARLCR	1.38	1.34	1.31	1.25	1.56	1.39	1.35	1.32	1.41	1.37	1.13	0	1.19	1.26	0	0	1.24	1.44	1.00	0	1.00	0	0	1.38
6 ARNCR	1.41	1.34	1.37	1.32	1.56	1.38	1.34	1.34	1.42	1.37	1.37	0	1.31	1.34	0	1.00	1.33	1.51	1.09	0	1.14	0	0	1.37
7 ALX	1.42	1.33	1.39	1.34	1.59	1.40	1.43	1.49	1.65	1.56	1.11	0	1.29	1.36	0	1.18	1.38	2.15	1.45	0	1.32	0	0	1.44
8 FFX	1.50	1.31	1.53	1.57	1.59	1.38	1.47	1.58	1.60	1.60	1.68	1.67	1.67	1.68	1.80	1.69	1.65	1.64	1.66	1.68	1.67	0	0	1.56
9 LDN	1.54	1.30	1.56	1.58	1.64	1.40	1.49	1.61	1.57	1.62	1.63	1.69	1.69	1.70	0	1.50	1.69	1.63	1.69	1.60	1.70	0	0	1.57
10 PW	1.56	1.22	1.55	1.61	1.67	1.41	1.52	1.65	1.68	1.57	1.68	0	1.69	1.70	0	0	1.69	1.60	1.62	1.67	1.64	0	0	1.58
11 FRD	1.19	1.66	1.60	1.61	2.20	1.85	1.87	1.86	1.68	2.13	1.48	1.51	1.64	1.63	0	0	1.67	2.25	0	1.54	0	0	0	1.50
12 CAR	1.10	1.67	1.64	1.60	2.33	2.41	3.00	2.17	2.08	5.00	1.56	1.47	1.58	1.61	0	0	0	0	0	0	0	0	0	1.48
13 HOW	1.17	1.60	1.53	1.50	2.13	1.76	1.68	1.72	1.87	2.33	1.53	1.50	1.47	1.49	0	0	1.60	0.01	0	1.71	0	0	0	1.48
14 AAR	1.20	1.62	1.63	1.53	2.08	1.78	1.70	1.77	2.10	1.93	1.73	1.67	1.55	1.48	1.51	1.58	1.57	2.75	0.01	0	0	0	0	1.49
15 CAL	1.21	1.63	1.73	1.56	2.11	1.83	1.74	1.82	2.20	1.95	0	0	1.75	1.58	1.48	1.52	1.61	2.00	0	0	0	0	0	1.51
16 STM	1.12	1.67	2.29	1.65	2.35	2.20	1.97	2.04	3.50	2.29	0	0	2.66	2.19	1.57	1.48	1.60	0	0	0	1.50	1.64	0	1.49
17 CHS	1.19	1.64	1.78	1.53	2.10	1.79	1.67	1.72	2.18	1.88	0	0	2.04	1.74	1.50	1.50	1.48	2.80	0.01	0	1.50	1.59	0	1.48
18 FAU	1.59	1.37	1.63	1.64	1.69	1.45	1.60	1.76	1.74	1.67	1.69	0	1.68	1.70	0	0	1.72	1.58	1.62	1.64	1.63	1.80	0	1.60
19 STA	1.60	1.35	1.74	1.66	1.80	1.50	1.63	1.83	2.23	1.65	0	0	0	1.69	0	0	1.70	1.74	1.56	0	1.58	1.59	0	1.58
20 CL/JF	1.63	1.35	1.95	1.75	2.19	1.73	1.85	1.99	1.81	1.92	1.72	1.86	2.08	2.18	0	0	0	1.79	1.62	1.56	1.67	0	0	1.66
21 SP/FB	1.75	1.33	2.58	1.71	2.17	1.65	1.80	2.06	2.44	1.82	0	0	0	0	0	0	3.00	1.98	1.62	0	1.57	1.65	0	1.60
22 KGEO	1.81	1.38	2.81	1.83	2.22	1.76	1.86	2.19	2.46	1.97	0	0	0	2.71	1.81	1.72	1.76	2.19	1.67	0	1.65	1.56	0	1.69
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	1.32		1.48	1.48	1.59	1.39	1.45	1.58	1.58	1.49	1.47	1.49	1.48	1.48	1.48	1.50	1.59	1.57	1.57	1.57	1.56	0	0	1.50
		1.35																						

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
Purpose: Internal HBS Trips MODE: Obs Auto Occ.

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	1.28	1.25	1.00	0	0	1.00	2.00	1.18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.21
2 DC NC	1.40	1.25	1.83	1.20	1.00	1.43	1.26	1.56	1.35	0	0	0	1.00	1.65	0	0	2.75	0	0	0	0	0	0	1.37
3 MTG	1.07	1.37	1.41	1.45	2.00	1.41	1.00	1.55	1.00	3.50	1.53	0	1.81	2.50	0	0	2.00	0	1.00	0	0	0	0	1.42
4 PG	1.09	1.37	1.45	1.46	0	2.48	1.00	1.20	1.00	1.00	1.00	0	1.94	1.54	1.00	1.00	1.73	0	0	0	0	1.00	0	1.46
5 ARLCR	0	1.00	0	0	1.52	1.16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.24
6 ARNCR	1.34	1.20	1.00	1.00	1.99	1.42	1.44	1.41	2.00	0	1.00	0	0	3.50	0	0	0	0	0	0	0	0	0	1.43
7 ALX	1.51	1.59	1.00	1.79	1.00	1.34	1.25	1.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.30
8 FFX	2.25	1.00	1.15	1.00	1.00	1.45	1.41	1.53	1.62	1.98	0	0	0	0	0	0	1.00	0	1.00	0	0	0	0	1.53
9 LDN	1.00	0	1.00	0	0	1.25	0	1.54	1.57	2.00	0	0	0	0	0	0	0	0	2.00	1.00	0	0	0	1.56
10 PW	0	0	0	0	0	1.00	1.54	2.05	1.00	1.67	0	0	0	0	0	0	0	2.62	1.00	0	3.50	2.00	0	1.72
11 FRD	0	0	1.66	2.00	0	0	1.00	0	1.40	0	1.49	1.35	1.00	2.00	0	0	0	0	0	0	0	0	0	1.49
12 CAR	0	3.50	2.00	2.64	0	0	0	0	0	0	1.30	1.53	1.42	1.00	0	0	0	0	0	0	0	0	0	1.54
13 HOW	1.00	1.00	1.55	1.25	0	0	1.00	0	0	0	0	0	1.36	1.50	2.09	0	0	0	0	0	0	0	0	1.51
14 AAR	0	1.00	0	1.57	0	1.00	0	1.00	0	1.00	0	2.00	2.56	1.51	1.00	0	1.00	0	0	0	0	0	0	1.54
15 CAL	0	0	3.50	1.58	0	0	1.00	2.85	0	0	0	0	0	1.59	1.52	1.60	1.63	0	0	0	0	0	0	1.62
16 STM	0	0	0	0	0	1.00	0	1.00	0	0	0	0	0	0	1.50	1.45	2.45	0	0	0	0	0	0	1.51
17 CHS	2.00	0	1.71	1.30	0	0	1.60	0	0	0	0	0	0	1.36	1.00	1.66	1.50	0	0	0	0	0	0	1.49
18 FAU	0	0	0	0	0	0	0	1.00	2.55	1.24	0	0	0	0	0	0	0	1.47	1.63	0	0	0	0	1.47
19 STA	0	0	0	0	0	2.00	0	1.90	0	1.00	0	0	0	0	0	0	0	0	1.82	0	1.65	0	0	1.75
20 CL/JF	0	0	0	0	0	0	0	1.00	2.22	0	1.35	0	0	0	0	0	0	1.00	0	1.32	0	0	0	1.35
21 SP/FB	0	0	0	0	0	0	0	0	0	1.59	0	0	0	0	0	0	0	0	1.18	0	1.63	0	0	1.59
22 KGEO	0	0	0	0	0	0	0	0	0	1.00	0	0	0	1.00	0	0	0	0	1.71	0	1.53	1.21	0	1.35
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	1.30		1.43	1.44	1.58	1.41	1.31	1.54	1.59	1.68	1.48	1.52	1.57	1.53	1.48	1.47	1.59	1.57	1.73	1.31	1.66	0	0	1.50
		1.27																						

Appendix B Year 2007 mode choice summary

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal HBS Trips MODE: Est Pct. Tran

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	9.4	12.7	10.1	2.0	10.3	17.1	10.0	2.0	0	0.3	0	0	0	0	0	0	0	0	0	0	0	0	0	9.3
2 DC NC	13.8	6.7	6.8	2.8	4.7	10.2	6.3	0.9	0	0.4	0	0	0.1	0.0	0	0	0.1	0	0	0	0	0	0	6.6
3 MTG	4.0	1.2	1.2	0.4	24.3	4.2	0.4	0.0	0	16.3	0	0	0.1	0.0	0	0	0	0	0	0	0	0	0	1.2
4 PG	4.5	2.2	2.3	0.7	12.0	4.0	0.8	0.1	0	1.3	0	0	0.2	0.1	0	0	0.0	0	0	0	0	0	0	0.9
5 ARLCR	18.6	2.3	2.2	0	0.6	8.3	3.6	1.3	0	0.7	0	0	0	0	0	0	0	0	0	0	0	0	0	4.7
6 ARNCR	7.1	0.4	0.3	0	2.8	2.2	2.3	1.3	0	1.0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.1
7 ALX	5.6	0.1	0.1	0	1.3	2.6	1.3	1.2	0	0.6	0	0	0	0	0	0	0	0	0	0	0	0	0	1.4
8 FFX	1.8	0.2	0.9	0.5	0.2	0.7	0.6	0.4	0.2	1.0	3.7	0	9.9	2.0	88.9	80.8	2.2	0	0.0	0	0.5	0	0	0.4
9 LDN	0.2	0	0	0	0	0	0	0.1	0.1	1.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1
10 PW	5.3	7.6	37.6	13.6	6.5	6.2	4.1	2.5	3.5	0.2	19.6	0	80.4	37.1	100.0	100.0	23.0	0	0.0	0	0.3	0	0	0.7
11 FRD	0.1	0	0	0	0	0	0	0.0	0	4.8	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0.1
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	0.2	0	0.0	0.1	0	0	0	0.9	0	80.3	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0	0.0
14 AAR	0.4	0.0	0.0	0.0	0	0.0	0.0	0.4	0	13.5	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0	0.0
15 CAL	0.1	0.0	0	0	0	0.0	0	0.0	0	2.7	0	0	0	0	0.0	0.0	0	0	0	0	0	0	0	0.0
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0.0
17 CHS	0	0	0	0.0	0	0	0	0.0	0	2.7	0	0	0	0	0	0	0.2	0	0	0	0	0	0	0.2
18 FAU	0	0	0	0	0	0	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
19 STA	0	0	0	0	0	0	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	11.6	77.8	14.9	52.8	1.7	1.1	0.7	0.7	0	0.0	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0.0
22 KGEO	0	0	0	0	0	0	0	0.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	8.3	5.0	1.5	0.8	3.0	2.7	1.5	0.5	0.1	0.2	0.1	0	0.1	0.0	0.2	0.2	0	0.0	0	0.0	0	0	0	0.9

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal HBS Trips MODE: Obs Pct. Tran

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	4.2	30.7	19.3	0	0	22.6	0	0	0	0	0	0	0	100.0	0	0	0	0	0	0	0	0	0	13.1
2 DC NC	12.3	5.9	3.1	5.0	0	12.9	0	2.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6.1
3 MTG	4.0	2.1	1.2	1.0	0	6.5	8.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.2
4 PG	8.1	8.3	3.6	0.7	0	7.6	0	2.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.1
5 ARLCR	100.0	40.4	0	0	0	10.3	0	100.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12.6
6 ARNCR	4.5	0	0	0	1.0	1.5	0	1.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.5
7 ALX	0	4.1	8.3	0	0	9.9	1.1	1.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.9
8 FFX	11.6	23.1	0	0	2.1	2.1	1.6	0.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.7
9 LDN	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
10 PW	100.0	0	0	0	0	4.4	0	0	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1
11 FRD	0	0	0	0	0	0	0	0	0	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0.1
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	0	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 AAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 CAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 CHS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18 FAU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19 STA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	8.2	6.2	1.4	0.8	0.8	3.7	0.9	0.7	0	0.0	0.1	0	0	0.0	0	0	0	0	0	0	0	0	0	0.9

Appendix B Year 2007 mode choice summary

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
Purpose: Internal HBO Trips MODE: Est Transit

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	5246	2551	744	106	590	863	213	244	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	10558
2 DC NC	27440	31238	5490	1648	1663	2487	805	776	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0	71559
3 MTG	4737	2353	23963	576	484	222	19	48	0	54	0	0	4	0	0	0	0	0	0	0	0	0	0	32460
4 PG	9305	5500	3020	8487	1011	776	244	143	0	45	0	0	25	8	0	0	1	0	0	0	0	0	0	28567
5 ARLCR	820	70	22	2	60	309	70	90	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1443
6 ARNCR	6374	432	82	9	507	4477	733	861	0	20	0	0	0	0	0	0	0	0	0	0	0	0	0	13495
7 ALX	1955	151	21	2	178	876	2165	542	0	13	0	0	0	0	0	0	0	0	0	0	0	0	0	5904
8 FFX	5045	519	133	43	479	1764	1282	5911	21	299	2	4	2	8	22	7	0	0	0	0	12	0	0	15552
9 LDN	138	7	2	0	8	16	1	44	270	70	0	0	0	0	0	0	0	0	0	0	0	0	0	556
10 PW	238	126	164	86	47	148	137	875	64	1015	5	0	9	4	15	41	13	0	0	0	24	0	0	3011
11 FRD	3	0	1	0	1	0	0	2	0	4	354	0	0	0	0	0	0	0	0	0	0	0	0	365
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	71	11	14	15	12	5	0	25	0	45	0	0	163	2	0	0	0	0	0	0	0	0	0	363
14 AAR	288	35	10	15	80	36	3	99	0	62	0	0	6	19	0	0	0	0	0	0	0	0	0	654
15 CAL	3	0	0	0	1	1	0	1	0	2	0	0	0	0	17	0	0	0	0	0	0	0	0	25
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	26	2	0	0	0	0	0	0	29
17 CHS	42	5	0	1	18	10	3	8	0	18	0	0	0	0	0	248	0	0	0	0	0	0	0	353
18 FAU	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
19 STA	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	2	1	3	0	1	2	2	15	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	27
22 KGEO	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	61707	43000	33668	10988	5140	11992	5677	9690	355	1663	361	0	213	35	41	90	270	0	0	0	36	0	0	184926

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
Purpose: Internal HBO Trips MODE: Obs Transit

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	4845	4851	607	295	48	1504	104	231	0	0	0	0	0	194	28	0	0	0	0	0	0	0	0	12707
2 DC NC	27630	31395	4258	2315	316	2980	387	469	22	31	0	0	33	143	0	0	0	0	0	0	22	0	0	70001
3 MTG	9572	5574	20047	1266	224	1185	46	56	45	19	0	0	42	178	0	0	0	0	0	0	0	0	0	38254
4 PG	5032	5555	2838	10179	125	621	76	177	37	0	3	0	10	56	0	0	0	0	0	0	0	0	0	24709
5 ARLCR	682	126	10	0	0	263	54	122	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1297
6 ARNCR	6254	1983	262	135	503	2621	367	921	35	4	0	0	0	46	0	0	15	0	29	0	0	0	0	13175
7 ALX	1882	657	154	44	72	631	2035	537	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6012
8 FFX	4709	1791	323	183	232	1637	1123	7100	120	27	0	0	0	23	0	0	0	29	0	0	0	0	0	17297
9 LDN	116	13	0	0	0	0	0	48	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	189
10 PW	396	226	21	0	0	162	0	165	0	630	0	0	0	0	0	0	0	0	0	0	0	0	0	1600
11 FRD	99	65	57	15	0	0	0	0	0	0	611	0	0	0	0	0	0	0	0	0	0	0	0	847
12 CAR	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23
13 HOW	149	33	32	0	0	31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	245
14 AAR	419	204	17	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	643
15 CAL	64	0	0	0	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	89
16 STM	0	77	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	77
17 CHS	132	192	0	3	37	85	0	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	462
18 FAU	47	0	0	35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	82
19 STA	33	0	0	0	0	92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	125
20 CL/JF	0	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14
21 SP/FB	0	41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	41
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	62084	52797	28626	14473	1582	11812	4192	9839	311	711	614	0	85	640	28	0	0	44	0	29	22	0	0	187889

Appendix B Year 2007 mode choice summary

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal HBO Trips MODE: Difference (Est-Obs) Transit

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	401	-2300	137	-189	542	-641	109	13	0	1	0	0	0	-194	-28	0	0	0	0	0	0	0	0	-2149
2 DC NC	-190	-157	1232	-667	1347	-493	418	307	-22	-19	0	0	-33	-143	0	0	0	0	0	0	-22	0	0	1558
3 MTG	-4835	-3221	3916	-690	260	-963	-27	-8	-45	35	0	0	-38	-178	0	0	0	0	0	0	0	0	0	-5794
4 PG	4273	-55	182	-1692	886	155	168	-34	-37	45	-3	0	15	-48	0	0	1	0	0	0	0	0	0	3858
5 ARLCR	138	-56	12	2	60	46	16	-32	-40	1	0	0	0	0	0	0	0	0	0	0	0	0	0	146
6 ARNCR	120	-1551	-180	-127	4	1856	366	-60	-35	16	0	0	0	-46	0	0	0	-15	0	-29	0	0	0	320
7 ALX	73	-506	-133	-42	106	245	130	5	0	13	0	0	0	0	0	0	0	0	0	0	0	0	0	-108
8 FFX	336	-1272	-190	-140	247	127	159	-1189	-99	272	2	0	4	-21	8	22	7	-29	0	0	12	0	0	-1745
9 LDN	22	-6	2	0	8	16	1	-4	258	70	0	0	0	0	0	0	0	0	0	0	0	0	0	367
10 PW	-158	-100	143	86	47	-14	137	710	64	385	5	0	9	4	15	41	13	0	0	0	24	0	0	1411
11 FRD	-96	-65	-56	-15	1	0	0	2	0	4	-257	0	0	0	0	0	0	0	0	0	0	0	0	-483
12 CAR	-23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-23
13 HOW	-78	-22	-18	15	12	-26	0	25	0	45	0	0	163	2	0	0	0	0	0	0	0	0	0	118
14 AAR	-131	-169	-7	12	80	36	3	99	0	62	0	0	6	19	0	0	0	0	0	0	0	0	0	11
15 CAL	-61	0	0	0	-24	1	0	1	0	2	0	0	0	0	17	0	0	0	0	0	0	0	0	-64
16 STM	0	-77	0	0	0	0	0	0	0	0	0	0	0	0	1	26	2	0	0	0	0	0	0	-48
17 CHS	-90	-187	0	-2	-19	-75	3	-5	0	18	0	0	0	0	0	248	0	0	0	0	0	0	0	-109
18 FAU	-47	0	0	-35	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-78
19 STA	-33	0	0	0	0	-92	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-123
20 CL/JF	0	-14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-14
21 SP/FB	2	-40	3	0	1	2	2	15	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	-14
22 KGEO	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	-377	-9797	5042	-3485	3558	180	1485	-149	44	952	-253	0	128	-605	13	0	0	-44	0	-29	14	0	0	-2963

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal HBO Trips MODE: Ratio (Est/Obs) Transit

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	1.08	0.53	1.23	0.36	12.29	0.57	2.05	1.06	0	1.22	0	0	0.01	0	0	0	0	0	0	0	0	0	0	0.83
2 DC NC	0.99	0.99	1.29	0.71	5.26	0.83	2.08	1.66	0	0.39	0	0	0.01	0	0	0	0	0	0	0	0	0	0	1.02
3 MTG	0.49	0.42	1.20	0.45	2.16	0.19	0.42	0.85	0	2.83	0.03	0	0.11	0.00	0	0	0	0	0	0	0	0	0	0.85
4 PG	1.85	0.99	1.06	0.83	8.09	1.25	3.21	0.81	0	45.40	0	0	2.55	0.15	0	0	1.29	0	0	0	0	0	0	1.16
5 ARLCR	1.20	0.55	2.17	2.03	59.53	1.17	1.30	0.74	0	0.97	0	0	0	0	0	0	0	0	0	0	0	0	0	1.11
6 ARNCR	1.02	0.22	0.31	0.06	1.01	1.71	2.00	0.94	0	4.90	0	0	0	0	0	0	0	0	0	0	0	0	0	1.02
7 ALX	1.04	0.23	0.14	0.04	2.47	1.39	1.06	1.01	0	13.19	0	0	0	0	0	0	0	0	0	0	0	0	0	0.98
8 FFX	1.07	0.29	0.41	0.23	2.06	1.08	1.14	0.83	0.17	11.07	2.29	0	4.03	0.08	7.88	22.06	6.50	0	0.13	0	11.97	0	0	0.90
9 LDN	1.19	0.53	1.83	0.02	7.76	15.60	1.19	0.92	22.48	70.33	0	0	0	0	0	0	0	0	0	0	0	0	0	2.94
10 PW	0.60	0.56	7.79	85.93	46.86	0.92	136.55	5.30	64.49	1.61	4.57	0	9.19	4.07	15.03	40.89	12.88	0	0.27	0	24.05	0	0	1.88
11 FRD	0.03	0.00	0.01	0	0.87	0.32	0	1.55	0	3.90	0.58	0	0	0	0	0	0	0	0	0	0	0	0	0.43
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	0.48	0.33	0.42	15.33	12.24	0.16	0.09	24.92	0	44.63	0	0	163.29	1.74	0	0	0	0	0	0	0	0	0	1.48
14 AAR	0.69	0.17	0.57	5.04	80.17	35.50	3.45	98.63	0	62.25	0	0	6.11	19.08	0.20	0	0	0	0	0	0	0	0	1.02
15 CAL	0.05	0.42	0.03	0	0.04	0.51	0.07	0.68	0	1.70	0	0	0	0	0	17.17	0.06	0	0	0	0	0	0	0.28
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.61	26.35	1.89	0	0	0	0	0	0	0.37
17 CHS	0.32	0.03	0.40	0.20	0.49	0.12	2.59	0.61	0	18.37	0	0	0	0	0	0.32	247.56	0	0	0	0	0	0	0.76
18 FAU	0.00	0	0	0	0	0	0	3.83	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.05
19 STA	0	0	0	0	0	0	0	1.94	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.02
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	1.72	0.02	3.26	0.20	0.58	1.65	1.62	15.00	0	1.30	0	0	0	0	0	0	0	0	0	0	0.29	0	0	0.65
22 KGEO	0	0	0	0	0	0	0	0.87	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.87
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0.99	0.81	1.18	0.76	3.25	1.02	1.35	0.98	1.14	2.34	0.59	0	2.50	0.05	1.46	0	0	0	0	0	1.65	0	0	0.98

Appendix B Year 2007 mode choice summary

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
Purpose: Internal HBO Trips MODE: Est Auto Person

ORIGIN	DESTINATION																							TOTAL	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1 DC CR	12820	8039	3100	1514	691	1850	1004	3223	88	22	0	0	40	48	1	1	26	5	13	0	5	0	0	32490	
2 DC NC	42118	205968	37806	26233	3964	10123	6506	19817	550	199	28	6	734	782	44	23	349	31	100	0	47	3	0	355432	
3 MTG	21895	47932	901621	37394	1024	3431	1419	10581	530	74	5661	1759	7889	5049	121	92	377	53	195	307	266	22	0	1047692	
4 PG	31201	76731	56695	528413	2412	7413	9207	22488	489	305	10	20	9404	12431	1497	921	11167	39	246	0	115	148	0	771352	
5 ARLCR	273	624	230	98	1625	1855	640	1826	49	31	0	0	0	1	0	0	1	1	6	0	4	0	0	7264	
6 ARNCR	8466	10251	3214	1976	10237	98511	13518	34310	704	587	2	0	5	29	1	7	37	29	157	0	144	6	0	182189	
7 ALX	4049	4632	949	1549	3803	11447	62593	24424	301	636	0	0	2	14	2	10	72	13	176	0	143	10	0	114824	
8 FFX	24196	28323	12043	11066	10730	40231	42860	961546	17782	17396	105	17	80	295	56	153	689	1237	4278	179	4693	270	0	1178225	
9 LDN	2254	2406	1784	938	648	2062	1165	27281	213041	2182	2327	229	23	69	4	1	55	1007	354	8825	534	28	0	267218	
10 PW	1648	1561	483	483	731	2358	3055	41366	3059	338802	11	2	1	10	1	5	40	5563	9826	117	6726	244	0	416092	
11 FRD	230	311	20570	119	152	542	174	5392	7678	82	189652	7470	2560	235	0	0	1	21	1	2779	1	0	0	237970	
12 CAR	32	66	6146	94	25	88	20	695	540	3	2992	140003	5025	241	0	0	0	0	0	54	0	0	0	156024	
13 HOW	812	1930	11009	8441	126	308	188	1158	94	9	1388	4191	237359	16576	24	7	47	1	2	81	5	2	0	283757	
14 AAR	3037	5690	7581	18358	743	1935	1706	5400	260	134	35	118	21771	463315	3008	274	519	5	28	2	16	14	0	533949	
15 CAL	384	559	367	1507	150	422	610	1630	28	28	0	0	47	1029	89242	2044	769	0	2	0	1	13	0	98833	
16 STM	333	440	151	1398	159	476	1103	2423	28	40	0	0	12	115	4523	78487	7235	1	25	0	34	239	0	97223	
17 CHS	1005	1407	492	4269	396	1240	2281	6361	147	161	0	0	33	109	1781	2444	113999	3	30	0	31	694	0	136881	
18 FAU	60	34	15	9	17	46	32	2421	688	2630	2	0	0	2	0	0	3	42520	1213	123	712	23	0	50552	
19 STA	55	27	29	3	44	165	245	3109	90	4638	0	0	0	0	0	1	728	84964	0	15127	332	0	0	109558	
20 CL/JF	6	11	1153	2	9	31	6	3004	8004	293	718	15	72	2	0	0	0	0	420	1	41774	2	0	0	55523
21 SP/FB	22	8	33	0	33	145	204	2933	81	2156	0	0	0	0	0	0	0	267	11920	0	96550	145	0	114496	
22 KGEO	3	3	2	16	8	32	53	680	5	596	0	0	0	0	2	6	203	63	2225	0	1806	15289	0	20992	
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
TOTAL	154898		1065472		37727		148587		254236		202930		285056		100306		135590		115763		126960		0	6268535	
		396954		643880		184712		1182069		371004		153829		500352		84475		52009		54242		17482		0	

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
Purpose: Internal HBO Trips MODE: Obs Auto Person

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	5514	8325	623	696	0	769	769	770	0	0	0	0	412	377	0	0	0	0	0	0	0	0	0	18255
2 DC NC	56616	193732	43263	13631	57	4669	2177	11817	3290	365	0	0	212	569	199	0	199	0	0	0	199	0	0	330996
3 MTG	18969	45662	887958	19749	350	1499	2387	15983	4567	0	4059	477	5975	4173	0	0	233	0	0	0	2174	0	0	1014214
4 PG	21472	60268	61022	513883	0	5911	4315	6063	2241	682	0	533	8049	22096	5395	0	10517	0	0	0	0	0	0	722447
5 ARLCR	0	207	103	0	404	1610	202	788	0	0	0	0	0	221	0	0	0	0	0	0	0	0	0	3534
6 ARNCR	13108	6055	3201	406	5911	108180	8237	27880	307	207	0	0	547	0	0	0	519	102	0	0	0	0	0	174660
7 ALX	4326	3536	932	340	1189	9794	70887	25179	719	0	0	0	0	1262	0	0	0	262	0	0	0	0	0	118426
8 FFX	15905	10397	13531	4324	1305	36019	34207	992161	24823	16917	977	0	235	381	0	0	0	0	1930	939	237	0	0	1154288
9 LDN	2389	594	2441	0	0	2428	909	33569	207612	255	1314	0	0	292	0	0	0	2119	0	255	0	0	0	254177
10 PW	755	455	1445	185	301	7174	4039	35589	4448	343810	0	0	0	0	0	196	0	2018	651	0	0	0	0	401068
11 FRD	1120	1646	13060	506	372	0	361	629	702	0	191451	10441	4927	3035	0	0	0	0	0	0	396	0	0	228645
12 CAR	0	0	1703	917	0	0	0	100	0	0	1772	138328	6934	491	0	0	0	0	0	0	0	0	0	150244
13 HOW	494	1398	8104	9156	0	911	163	674	0	0	163	2191	231964	13605	0	0	138	571	0	0	0	0	0	269533
14 AAR	859	6616	14482	23154	83	445	71	2753	0	0	445	0	22879	452969	2545	0	680	0	0	0	0	0	0	527982
15 CAL	1238	509	0	1971	0	0	0	0	0	0	0	0	239	1866	78756	3119	899	0	0	0	0	0	0	88596
16 STM	286	444	0	2170	0	0	0	0	0	0	0	0	0	527	5373	76506	4966	0	460	0	0	0	0	90733
17 CHS	2136	3374	289	11144	1807	1259	185	437	251	0	0	0	145	501	1734	2669	103588	0	0	0	290	290	0	130101
18 FAU	0	565	333	0	408	0	0	2002	1321	3854	0	0	0	0	0	0	0	36494	0	2418	0	0	0	47395
19 STA	0	0	131	0	124	442	0	911	0	4943	0	0	0	0	0	0	0	0	63614	0	32457	0	0	102623
20 CL/JF	0	0	157	0	0	0	0	808	5567	78	653	0	78	0	0	0	0	0	0	46420	0	0	0	53762
21 SP/FB	0	0	296	0	1075	0	0	732	0	4730	0	0	0	0	0	0	615	0	12095	615	83652	257	0	104067
22 KGEO	0	161	0	0	0	0	0	118	0	0	0	0	0	0	0	0	0	0	3016	0	3052	15186	0	21533
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	145187		1053075		13388		128909		255850		200832		282596		94002		121739		81766		122062		0	6007278
		343943		602232		181111		1158963		375841		151970		502365		83106		41564		51044		15733		0

Appendix B Year 2007 mode choice summary

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal HBO Trips MODE: Est Auto Driver

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	8294	5318	2117	1077	505	1224	663	2197	57	15	0	0	27	34	1	1	20	3	8	0	3	0	0	21564
2 DC NC	27218	136638	25899	18653	2866	6616	4226	13395	354	130	21	5	502	545	31	15	254	20	66	0	30	2	0	237485
3 MTG	14664	31954	578065	24054	635	2202	893	6346	309	44	3523	1080	4929	3132	72	54	228	31	116	183	157	13	0	672684
4 PG	19906	50949	35091	338606	1446	4578	5677	13023	272	177	6	12	5814	7736	917	555	7038	21	144	0	67	88	0	492125
5 ARLCR	172	404	149	65	996	1190	411	1182	30	20	0	0	0	1	0	0	1	1	4	0	2	0	0	4627
6 ARNCR	5753	6751	2069	1297	6380	64194	8845	22362	435	370	1	0	3	18	1	4	23	17	98	0	89	4	0	118715
7 ALX	2785	3057	593	1011	2349	7477	40313	15374	176	390	0	0	1	9	1	6	45	8	107	0	87	6	0	73793
8 FFX	18989	19283	7558	6891	6549	26922	27775	604496	11088	10829	62	10	48	175	33	88	415	749	2579	107	2787	157	0	747591
9 LDN	1759	1607	1105	575	387	1350	738	16795	135297	1342	1435	136	14	40	2	1	33	615	209	5458	309	16	0	169223
10 PW	1285	1041	290	293	426	1500	1878	24761	1820	215307	7	1	0	6	1	3	24	3453	6046	70	4058	145	0	262412
11 FRD	129	185	11732	70	77	293	92	2737	4322	43	121325	4689	1480	137	0	0	0	11	1	1707	1	0	0	149032
12 CAR	17	35	3266	50	12	44	10	331	262	1	1791	90236	2888	133	0	0	0	0	0	31	0	0	0	99107
13 HOW	510	1260	6818	5334	73	186	112	636	51	5	854	2636	152333	10458	14	4	28	1	1	48	3	1	0	181367
14 AAR	1821	3623	4420	11342	417	1129	981	2888	134	72	21	70	13304	296585	1884	163	313	3	15	1	9	8	0	339202
15 CAL	205	331	183	870	74	218	313	796	13	14	0	0	24	616	57469	1262	450	0	1	0	1	8	0	62848
16 STM	160	229	71	715	73	234	528	1140	13	19	0	0	6	55	2710	50268	4192	0	12	0	17	142	0	60585
17 CHS	576	877	259	2632	214	704	1310	3386	73	86	0	0	17	62	1112	1523	73327	2	17	0	18	421	0	86617
18 FAU	49	22	9	5	9	28	18	1299	392	1569	1	0	0	1	0	0	2	27012	744	75	430	14	0	31680
19 STA	40	17	13	2	22	90	130	1601	42	2760	0	0	0	0	0	1	439	54221	0	9474	206	0	0	69060
20 CL/JF	4	5	542	1	4	14	3	1429	4302	148	403	8	34	1	0	0	0	237	1	26634	1	0	0	33772
21 SP/FB	14	3	12	0	15	69	96	1365	35	1145	0	0	0	0	0	0	0	145	7317	0	61464	89	0	71769
22 KGEO	2	2	1	7	4	15	24	299	2	288	0	0	0	0	1	3	110	31	1298	0	1059	9773	0	12918
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	104352		680262		23534		95037		159479		129451		181424		64250		86504		73006		80066		0	
		263590		413549		120276		737838		234774		98883		319744		53950		32800		34314		11093		3998175

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal HBO Trips MODE: Obs Auto Driver

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	4038	5436	623	464	0	493	769	770	0	0	0	0	412	377	0	0	0	0	0	0	0	0	0	13383
2 DC NC	36123	126833	28341	11086	57	3575	1872	7439	1918	182	0	0	212	457	199	0	100	0	0	0	199	0	0	218593
3 MTG	14203	28283	563878	15433	350	1117	1303	12139	3347	0	2734	477	4457	2431	0	0	233	0	0	0	621	0	0	651006
4 PG	11660	37989	36514	326503	0	2945	2350	4731	930	682	0	352	5114	15403	3760	0	5934	0	0	0	0	0	0	454867
5 ARLCR	0	207	103	0	404	1164	202	420	0	0	0	0	0	221	0	0	0	0	0	0	0	0	0	2721
6 ARNCR	8274	4802	2175	203	3069	71703	6333	18904	204	207	0	0	547	0	0	0	519	102	0	0	0	0	0	117042
7 ALX	3543	1805	751	340	501	7384	43005	16480	392	0	0	0	0	361	0	0	0	262	0	0	0	0	0	74824
8 FFX	12053	7732	7870	4324	765	23939	21451	623930	14757	12650	977	0	235	381	0	0	0	0	551	470	119	0	0	732203
9 LDN	2389	454	2441	0	0	1614	909	21438	120287	255	584	0	0	292	0	0	0	1671	0	255	0	0	0	152588
10 PW	574	455	1445	185	301	4063	1802	23835	3135	212012	0	0	0	0	0	98	0	1387	553	0	0	0	0	249846
11 FRD	560	1199	7946	506	372	0	361	629	702	0	121625	6343	2529	1349	0	0	0	0	0	0	396	0	0	144517
12 CAR	0	0	1410	708	0	0	0	100	0	0	986	84965	3703	491	0	0	0	0	0	0	0	0	0	92362
13 HOW	494	832	5595	6338	0	433	163	674	0	0	163	1149	144027	9951	0	0	138	571	0	0	0	0	0	170528
14 AAR	509	3452	7676	14620	83	445	71	858	0	0	372	0	13928	292077	1526	0	680	0	0	0	0	0	0	336299
15 CAL	619	254	0	1369	0	0	0	0	0	0	0	0	239	1609	49390	2522	257	0	0	0	0	0	0	56258
16 STM	286	444	0	1643	0	0	0	0	0	0	0	0	0	264	2965	50179	4445	0	460	0	0	0	0	60686
17 CHS	1905	2191	289	7769	803	619	185	437	251	0	0	0	145	501	1734	2379	67488	0	0	0	145	145	0	86986
18 FAU	0	565	333	0	204	0	0	2002	1154	2624	0	0	0	0	0	0	0	24952	0	1319	0	0	0	33153
19 STA	0	0	131	0	124	442	0	781	0	4409	0	0	0	0	0	0	0	0	41675	0	18823	0	0	66384
20 CL/JF	0	0	157	0	0	0	0	730	3192	78	520	0	78	0	0	0	0	0	0	29963	0	0	0	34719
21 SP/FB	0	0	296	0	1075	0	0	732	0	2111	0	0	0	0	0	308	0	0	7682	308	52493	129	0	65131
22 KGEO	0	161	0	0	0	0	0	118	0	0	0	0	0	0	0	0	0	0	1729	0	2359	9415	0	13782
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	97228		667974		8110		80776		150270		127961		175625		59574		79793		52651		74759		0	
		223095		391491		119938		737146		235210		93285		326166		55485		28944		32710		9689		3827878

Appendix B Year 2007 mode choice summary

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal HBO Trips MODE: Difference (Est-Obs) Auto Driver

ORIGIN	DESTINATION																							TOTAL	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1 DC CR	4256	-118	1495	613	505	730	-106	1427	57	15	0	0	-385	-343	1	1	20	3	8	0	3	0	0	8181	
2 DC NC	-8905	9805	-2442	7567	2809	3041	2353	5956	-1564	-53	21	5	290	88	-169	15	155	20	66	0	-169	2	0	18891	
3 MTG	462	3670	14187	8621	285	1085	-410	-5793	-3037	44	788	604	472	702	72	54	-4	31	116	183	-465	13	0	21677	
4 PG	8246	12960	-1422	12102	1446	1633	3327	8292	-658	-504	6	-340	701	-7667	-2843	555	1104	21	144	0	67	88	0	37257	
5 ARLCR	172	198	45	65	592	26	210	762	30	20	0	0	0	-221	0	0	1	1	4	0	2	0	0	1906	
6 ARNCR	-2521	1949	-106	1094	3311	-7509	2513	3457	230	164	1	0	-544	18	1	4	-496	-84	98	0	89	4	0	1673	
7 ALX	-758	1252	-159	671	1847	93	-2692	-1107	-216	390	0	0	1	-352	1	6	45	-254	107	0	87	6	0	-1031	
8 FFX	6936	11551	-312	2567	5784	2982	6324	-19433	-3668	-1821	-915	10	-187	-206	33	88	415	749	2028	-363	2669	157	0	15388	
9 LDN	-630	1154	-1336	575	387	-264	-171	-4643	15010	1087	851	136	14	-252	2	1	33	-1056	209	5203	309	16	0	16634	
10 PW	711	586	-1156	108	125	-2564	76	926	-1315	3294	7	1	0	6	1	-95	24	2066	5493	70	4058	145	0	12566	
11 FRD	-431	-1014	3786	-435	-295	293	-269	2108	3620	43	-300	-1654	-1049	-1213	0	0	0	11	1	1311	1	0	0	4515	
12 CAR	17	35	1855	-658	12	44	10	232	262	1	806	5271	-815	-358	0	0	0	0	0	31	0	0	0	6746	
13 HOW	16	427	1223	-1004	73	-246	-51	-38	51	5	692	1487	8306	507	14	4	-110	-570	1	48	3	1	0	10839	
14 AAR	1312	170	-3256	-3278	334	684	910	2030	134	72	-352	70	-624	4508	358	163	-367	3	15	1	9	8	0	2904	
15 CAL	-414	77	183	-499	74	218	313	796	13	14	0	0	-215	-993	8080	-1259	193	0	1	0	1	8	0	6590	
16 STM	-125	-215	71	-928	73	234	528	1140	13	19	0	0	6	-209	-255	90	-254	0	-448	0	17	142	0	-101	
17 CHS	-1329	-1315	-29	-5136	-589	84	1125	2949	-178	86	0	0	0	-128	-439	-621	-857	5839	2	17	0	-127	277	0	-369
18 FAU	49	-543	-324	5	-195	28	18	-703	-763	-1055	1	0	0	1	0	0	2	2060	744	-1244	430	14	0	-1473	
19 STA	40	17	-117	2	-102	-351	130	821	42	-1649	0	0	0	0	0	0	1	439	12545	0	-9349	206	0	2676	
20 CL/JF	4	5	385	1	4	14	3	699	1110	69	-117	8	-45	1	0	0	0	237	1	-3328	1	0	0	-947	
21 SP/FB	14	3	-284	0	-1060	69	96	634	35	-966	0	0	0	0	0	-308	0	145	-364	-308	8971	-40	0	6637	
22 KGEO	2	-159	1	7	4	15	24	182	2	288	0	0	0	0	1	3	110	31	-431	0	-1300	358	0	-864	
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
TOTAL	7124		12287		15424		14261		9209		1490		5799		4676		6711		20355		5307		0		
		40496		22059		338		692		-437		5598		-6422		-1535		3855		1605		1404		170297	

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal HBO Trips MODE: Ratio (Est/Obs) Auto Driver

ORIGIN	DESTINATION																							TOTAL	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1 DC CR	2.05	0.98	3.40	2.32	504.87	2.48	0.86	2.85	56.87	14.66	0.24	0.01	0.07	0.09	1.16	0.91	20.01	2.91	8.36	0	3.05	0.10	0	1.61	
2 DC NC	0.75	1.08	0.91	1.68	49.90	1.85	2.26	1.80	0.18	0.71	21.14	4.90	2.37	1.19	0.15	15.13	2.55	19.86	66.16	0.21	0.15	2.08	0	1.09	
3 MTG	1.03	1.13	1.03	1.56	1.81	1.97	0.69	0.52	0.09	43.88	1.29	2.27	1.11	1.29	71.98	53.88	0.98	30.61	116.06	183.00	0.25	12.83	0	1.03	
4 PG	1.71	1.34	0.96	1.04	1446.39	1.55	2.42	2.75	0.29	0.26	5.78	0.03	1.14	0.50	0.24	554.66	1.19	21.06	143.77	0	67.38	87.78	0	1.08	
5 ARLCR	172.11	1.96	1.44	64.89	2.47	1.02	2.04	2.81	29.81	19.69	0	0	0.18	0.00	0	0.08	0.55	0.84	3.56	0	2.49	0.08	0	1.70	
6 ARNCR	0.70	1.41	0.95	6.39	2.08	0.90	1.40	1.18	2.13	1.79	1.45	0.02	0.01	17.73	0.66	4.08	0.04	0.17	98.03	0.09	88.91	3.78	0	1.01	
7 ALX	0.79	1.69	0.79	2.97	4.69	1.01	0.94	0.93	0.45	390.49	0.02	0	1.01	0.02	1.44	5.83	45.38	0.03	107.21	0	86.52	5.74	0	0.99	
8 FFX	1.58	2.49	0.96	1.59	8.56	1.12	1.29	0.97	0.75	0.86	0.06	9.92	0.20	0.46	32.68	88.22	415.19	749.33	4.68	0.23	23.51	156.94	0	1.02	
9 LDN	0.74	3.54	0.45	575.28	386.64	0.84	0.81	0.78	1.12	5.26	2.46	135.57	13.78	0.14	2.05	0.77	32.83	0.37	208.98	21.40	309.03	15.89	0	1.11	
10 PW	2.24	2.29	0.20	1.58	1.41	0.37	1.04	1.04	0.58	1.02	6.55	0.88	0.41	6.14	0.72	0.03	23.58	2.49	10.93	69.63	4058.06	144.54	0	1.05	
11 FRD	0.23	0.15	1.48	0.14	0.21	293.35	0.25	4.35	6.15	43.19	1.00	0.74	0.59	0.10	0.09	0	0.34	11.30	0.71	4.31	0.64	0	0	1.03	
12 CAR	16.55	35.31	2.32	0.07	12.02	44.35	10.15	3.33	262.32	1.22	1.82	1.06	0.78	0.27	0	0	0	0.19	0	31.34	0	0	0	1.07	
13 HOW	1.03	1.51	1.22	0.84	73.49	0.43	0.69	0.94	50.90	5.27	5.25	2.29	1.06	1.05	14.19	4.12	0.20	0.00	1.24	47.54	2.75	1.27	0	1.06	
14 AAR	3.58	1.05	0.58	0.78	5.01	2.54	13.73	3.36	133.70	71.77	0.06	70.42	0.96	1.02	1.23	162.67	0.46	2.62	15.11	1.43	9.19	8.07	0	1.01	
15 CAL	0.33	1.30	183.23	0.64	74.27	217.97	313.31	795.60	12.90	13.56	0	0.02	0.10	0.38	1.16	0.50	1.75	0.18	1.22	0	0.68	7.74	0	1.12	
16 STM	0.56	0.52	71.03	0.44	73.39	233.94	528.40	1140.19	13.09	18.51	0	0	5.55	0.21	0.91	1.00	0.94	0.37	0.03	0	17.39	142.47	0	1.00	
17 CHS	0.30	0.40	0.90	0.34	0.27	1.14	7.09	7.74	0.29	85.98	0	0	0.12	0.12	0.64	0.64	1.09	1.64	17.06	0	0.12	2.91	0	1.00	
18 FAU	49.27	0.04	0.03	5.29	0.05	27.63	18.44	0.65	0.34	0.60	1.25	0.11	0.25	1.21	0.11	0.02	1.91	1.08	744.25	0.06	429.84	13.70	0	0.96	
19 STA	39.81	16.72	0.10	1.88	0.18	0.20	130.45	2.05	41.93	0.63	0	0	0	0.13	0	0.14	0.72	439.48	1.30	0	0.50	206.45	0	1.04	
20 CL/JF	4.26	4.98	3.46	0.60	3.85	14.45	2.83	1.96	1.35	1.89	0.77	7.94	0.43	1.06	0	0	0	237.37	0.72	0.89	1.05	0	0	0.97	
21 SP/FB	14.45	2.92	0.04	0.06	0.01	68.64	95.90	1.87	34.78	0.54	0	0	0	0	0	0.00	0	144.91	0.95	0	1.17	0.69	0	1.10	
22 KGEO	1.67	0.01	0.56	7.07	3.57	14.57	23.66	2.54	1.92	287.98	0	0	0.01	0.06	1.07	3.38	110.19	31.26	0.75	0	0.45	1.04	0	0.94	
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
TOTAL	1.07		1.02		2.90		1.18		1.06		1.01		1.06		1.03		0.98		1.08		1.13		0		
		1.18		1.06		1.00		1.00		1.00		1.06		0.98		0.97		1.13		1.39		1.05		1.14	1.04

Appendix B Year 2007 mode choice summary

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal HBO Trips MODE: Est Motr Psn

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	18066	10590	3844	1620	1281	2713	1217	3467	88	24	0	0	40	48	1	1	26	5	13	0	5	0	0	43049
2 DC NC	69558	237206	43296	27881	5627	12610	7311	20593	550	211	28	6	734	782	44	23	349	31	100	0	47	3	0	426991
3 MTG	26632	50285	925583	37970	1508	3653	1438	10629	530	128	5661	1759	7894	5049	121	92	377	53	195	307	266	22	0	1080152
4 PG	40506	82231	59715	536901	3424	8189	9451	22631	489	351	10	20	9430	12440	1497	921	11168	39	246	0	115	148	0	799920
5 ARLCR	1093	694	252	100	1685	2164	710	1916	49	32	0	0	0	1	0	0	1	1	6	0	4	0	0	8707
6 ARNCR	14840	10683	3296	1984	10744	102988	14251	35171	704	607	2	0	5	29	1	7	37	29	157	0	144	6	0	195684
7 ALX	6004	4783	970	1551	3981	12323	64758	24966	301	649	0	0	2	14	2	10	72	13	176	0	143	10	0	120727
8 FFX	29241	28842	12176	11108	11209	41996	44141	967457	17803	17695	107	17	84	297	63	175	696	1237	4278	179	4705	270	0	1193777
9 LDN	2392	2413	1785	938	655	2078	1167	27325	213311	2253	2327	229	23	69	4	1	55	1007	354	8825	534	28	0	267773
10 PW	1886	1687	647	569	778	2506	3192	42241	3123	339817	16	2	10	15	16	46	53	5563	9826	117	6750	244	0	419103
11 FRD	232	311	20570	119	153	543	174	5394	7678	86	190006	7470	2560	235	0	0	1	21	1	2779	1	0	0	238334
12 CAR	32	66	6146	94	25	88	20	695	540	3	2992	140003	5025	241	0	0	0	0	0	54	0	0	0	156024
13 HOW	884	1941	11023	8456	138	312	188	1183	94	54	1388	4191	237522	16577	24	7	47	1	2	81	5	2	0	284119
14 AAR	3325	5726	7590	18373	823	1971	1709	5499	260	196	35	118	21777	463334	3008	274	519	5	28	2	16	14	0	534603
15 CAL	387	559	367	1507	151	422	610	1631	28	30	0	0	47	1029	89259	2044	769	0	2	0	1	13	0	98858
16 STM	333	440	151	1398	159	476	1103	2423	28	40	0	0	12	115	4524	78514	7237	1	25	0	34	239	0	97252
17 CHS	1047	1412	492	4269	414	1250	2284	6369	147	179	0	0	33	109	1781	2444	114247	3	30	0	31	694	0	137234
18 FAU	60	34	15	9	17	46	32	2425	688	2630	2	0	0	2	0	0	3	42520	1213	123	712	23	0	50556
19 STA	55	27	29	3	44	165	245	3111	90	4638	0	0	0	0	0	1	728	84964	0	15127	332	0	0	109560
20 CL/JF	6	11	1153	2	9	31	6	3004	8004	293	718	15	72	2	0	0	0	420	1	41774	2	0	0	55523
21 SP/FB	23	9	36	0	33	147	206	2948	81	2158	0	0	0	0	0	0	0	267	11920	0	96550	145	0	114523
22 KGEO	3	3	2	16	8	32	53	681	5	596	0	0	0	0	2	6	203	63	2225	0	1806	15289	0	20993
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	216605	1099140	654868	42867	196704	154264	1191759	254592	372667	203292	285269	153829	500387	84564	52009	135860	115764	54242	126996	17482	0	0	0	6453461

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal HBO Trips MODE: Obs Motr Psn

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	10359	13176	1230	991	48	2273	873	1001	0	0	0	0	412	571	28	0	0	0	0	0	0	0	0	30962
2 DC NC	84246	225127	47521	15946	373	7649	2564	12286	3312	396	0	0	245	712	199	0	199	0	0	0	221	0	0	400997
3 MTG	28541	51236	908005	21015	574	2684	2433	16039	4612	19	4059	477	6017	4351	0	0	233	0	0	0	2174	0	0	1052468
4 PG	26504	65823	63860	524062	125	6532	4391	6240	2278	682	3	533	8059	22152	5395	0	10517	0	0	0	0	0	0	747156
5 ARLCR	682	333	113	0	404	1873	256	910	40	0	0	0	0	221	0	0	0	0	0	0	0	0	0	4831
6 ARNCR	19362	8038	3463	541	6414	110801	8604	28801	342	211	0	0	547	46	0	0	519	117	0	29	0	0	0	187835
7 ALX	6208	4193	1086	384	1261	10425	72922	25716	719	0	0	0	0	1262	0	0	0	262	0	0	0	0	0	124438
8 FFX	20614	12188	13854	4507	1537	37656	35330	999261	24943	16944	977	0	235	404	0	0	0	29	1930	939	237	0	0	1171585
9 LDN	2505	607	2441	0	0	2428	909	33617	207624	255	1314	0	0	292	0	0	0	2119	0	255	0	0	0	254366
10 PW	1151	681	1466	185	301	7336	4039	35754	4448	344440	0	0	0	0	0	196	0	2018	651	0	0	0	0	402668
11 FRD	1219	1711	13117	521	372	0	361	629	702	0	192062	10441	4927	3035	0	0	0	0	0	0	396	0	0	229492
12 CAR	23	0	1703	917	0	0	0	100	0	0	1772	138328	6934	491	0	0	0	0	0	0	0	0	0	150267
13 HOW	643	1431	8136	9156	0	942	163	674	0	0	163	2191	231964	13605	0	0	138	571	0	0	0	0	0	269778
14 AAR	1278	6820	14499	23157	83	445	71	2753	0	0	445	0	22879	452969	2545	0	680	0	0	0	0	0	0	528625
15 CAL	1302	509	0	1971	25	0	0	0	0	0	0	0	239	1866	78756	3119	899	0	0	0	0	0	0	88685
16 STM	286	521	0	2170	0	0	0	0	0	0	0	0	0	527	5373	76506	4966	0	460	0	0	0	0	90810
17 CHS	2268	3566	289	11147	1844	1344	185	450	251	0	0	0	145	501	1734	2669	103588	0	0	0	290	290	0	130563
18 FAU	47	565	333	35	408	0	0	2002	1321	3854	0	0	0	0	0	0	0	36494	0	2418	0	0	0	47477
19 STA	33	0	131	0	124	534	0	911	0	4943	0	0	0	0	0	0	0	0	63614	0	32457	0	0	102748
20 CL/JF	0	14	157	0	0	0	0	808	5567	78	653	0	78	0	0	0	0	0	0	46420	0	0	0	53776
21 SP/FB	0	41	296	0	1075	0	0	732	0	4730	0	0	0	0	0	615	0	0	12095	615	83652	257	0	104108
22 KGEO	0	161	0	0	0	0	0	118	0	0	0	0	0	0	0	0	0	0	3016	0	3052	15186	0	21533
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	207271	1081701	616705	14970	192923	133101	1168802	256161	376552	201446	151970	282681	503005	94030	83106	121739	41608	81766	51073	122084	15733	0	0	6195167

Appendix B Year 2007 mode choice summary

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal HBO Trips MODE: Difference (Est-Obs) Motorized Person

ORIGIN	DESTINATION																						TOTAL	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22		23
1 DC CR	7707	-2586	2614	628	1233	440	344	2466	88	24	0	0	-372	-524	-27	1	26	5	13	0	5	0	0	12086
2 DC NC	-14688	12079	-4225	11935	5254	4961	4746	8308	-2761	-185	28	6	489	70	-156	23	150	31	100	0	-175	3	0	25994
3 MTG	-1909	-951	17578	16955	934	969	-995	-5410	-4082	109	1602	1282	1877	698	121	92	145	53	195	307	-1909	22	0	27683
4 PG	14002	16408	-4145	12839	3299	1657	5060	16391	-1789	-331	7	-513	1370	-9712	-3898	921	651	39	246	0	115	148	0	52763
5 ARLCR	411	361	138	100	1281	291	454	1006	9	32	0	0	0	-220	0	0	1	1	6	0	4	0	0	3876
6 ARNCR	-4523	2645	-168	1443	4330	-7813	5647	6370	362	396	2	0	-542	-17	1	7	-482	-88	157	-29	144	6	0	7849
7 ALX	-203	590	-116	1167	2720	1898	-8164	-751	-418	649	0	2	-1248	2	10	72	-248	176	0	143	10	0	0	-3711
8 FFX	8627	16655	-1678	6601	9672	4340	8811	-31804	-7140	750	-870	17	-151	-108	63	175	696	1208	2349	-760	4468	270	0	22192
9 LDN	-113	1805	-656	938	655	-350	258	-6292	5687	1998	1013	229	23	-223	4	1	55	-1112	354	8570	534	28	0	13407
10 PW	735	1006	-819	384	477	-4830	-847	6487	-1325	-4623	16	2	10	15	16	-150	53	3545	9175	117	6750	244	0	16435
11 FRD	-987	-1400	7453	-401	-220	543	-187	4765	6976	86	-2056	-2971	-2367	-2800	0	0	1	21	1	2383	1	0	0	8842
12 CAR	9	66	4443	-823	25	88	20	595	540	3	1220	1675	-1909	-250	0	0	0	0	0	54	0	0	0	5757
13 HOW	240	510	2887	-700	138	-630	25	509	94	54	1225	1999	5559	2972	24	7	-91	-570	2	81	5	2	0	14342
14 AAR	2047	-1094	-6908	-4784	740	1526	1638	2746	260	196	-409	118	-1102	10365	463	274	-161	5	28	2	16	14	0	5978
15 CAL	-915	51	367	-464	126	422	610	1631	28	30	0	0	-193	-837	10503	-1075	-129	0	2	0	1	13	0	10173
16 STM	48	-82	151	-772	159	476	1103	2423	28	40	0	0	12	-412	-849	2008	2270	1	-435	0	34	239	0	6442
17 CHS	-1221	-2154	204	-6878	-1430	-94	2099	5918	-104	179	0	0	-112	-393	47	-225	10658	3	30	0	-259	404	0	6671
18 FAU	13	-531	-318	-26	-391	46	32	423	-633	-1225	2	0	0	2	0	0	3	6026	1213	-2295	712	23	0	3079
19 STA	22	27	-101	3	-80	-368	245	2199	90	-306	0	0	0	0	0	1	728	21350	0	-17330	332	0	0	6812
20 CL/JF	6	-3	997	2	9	31	6	2196	2437	214	65	15	-6	2	0	0	0	420	1	-4646	2	0	0	1747
21 SP/FB	23	-32	-260	0	-1041	147	206	2216	81	-2572	0	0	0	0	0	-615	0	267	-175	-615	12898	-113	0	10415
22 KGEO	3	-157	2	16	8	32	53	563	5	596	0	0	0	0	2	6	203	63	-791	0	-1246	103	0	-540
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	9334		17439		27897		21163		-1569		1846		2588		6317		14122		33997		4913		0	
		43213		38163		3781		22957		-3885		1859		-2619		1458		10401		3169		1749		258295

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal HBO Trips MODE: Ratio (Est/Obs) Motorized Person

ORIGIN	DESTINATION																						TOTAL	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22		23
1 DC CR	1.74	0.80	3.13	1.63	26.69	1.19	1.39	3.46	87.97	23.68	0.25	0.01	0.10	0.08	0.05	1.36	26.34	4.55	12.70	0	4.76	0.15	0	1.39
2 DC NC	0.83	1.05	0.91	1.75	15.07	1.65	2.85	1.68	0.17	0.53	27.74	6.11	3.00	1.10	0.22	22.65	1.75	31.29	100.23	0.32	0.21	3.21	0	1.06
3 MTG	0.93	0.98	1.02	1.81	2.63	1.36	0.59	0.66	0.11	6.72	1.39	3.69	1.31	1.16	120.89	92.27	1.62	53.07	194.91	306.81	0.12	22.13	0	1.03
4 PG	1.53	1.25	0.94	1.02	27.39	1.25	2.15	3.63	0.21	0.51	3.23	0.04	1.17	0.56	0.28	920.78	1.06	38.65	246.25	0	114.75	147.82	0	1.07
5 ARLCR	1.60	2.09	2.22	100.22	4.17	1.16	2.77	2.11	1.21	32.40	0	0	0.30	0.00	0	0.13	0.89	1.39	5.66	0	4.06	0.13	0	1.80
6 ARNCR	0.77	1.33	0.95	3.67	1.68	0.93	1.66	1.22	2.06	2.88	2.43	0.03	0.01	0.62	1.11	6.76	0.07	0.25	156.78	0.01	143.92	6.25	0	1.04
7 ALX	0.97	1.14	0.89	4.04	3.16	1.18	0.89	0.97	0.42	649.30	0.03	0	1.68	0.01	2.40	9.68	71.85	0.05	175.84	0	142.56	9.50	0	0.97
8 FFX	1.42	2.37	0.88	2.46	7.29	1.12	1.25	0.97	0.71	1.04	0.11	16.79	0.36	0.73	63.47	175.06	695.78	42.66	2.22	0.19	19.84	269.51	0	1.02
9 LDN	0.95	3.97	0.73	937.53	655.26	0.86	1.28	0.81	1.03	8.83	1.77	229.32	23.27	0.24	3.53	1.31	55.36	0.48	354.30	34.61	533.70	27.92	0	1.05
10 PW	1.64	2.48	0.44	3.07	2.58	0.34	0.79	1.18	0.70	0.99	15.58	1.50	9.88	14.52	16.24	0.23	52.52	2.76	15.09	116.71	6750.21	244.01	0	1.04
11 FRD	0.19	0.18	1.57	0.23	0.41	542.75	0.48	8.58	10.93	85.84	0.99	0.72	0.52	0.08	0.15	0	0.57	20.75	1.49	7.02	1.11	0	0	1.04
12 CAR	1.40	66.07	3.61	0.10	25.16	88.01	20.04	6.98	540.25	2.76	1.69	1.01	0.72	0.49	0	0	0	0.44	0.01	53.53	0	0	0	1.04
13 HOW	1.37	1.36	1.35	0.92	137.81	0.33	1.15	1.76	93.81	54.03	8.52	1.91	1.02	1.22	23.98	7.14	0.34	0.00	2.13	81.14	4.73	2.25	0	1.05
14 AAR	2.60	0.84	0.52	0.79	9.89	4.43	23.91	2.00	260.06	195.99	0.08	118.41	0.95	1.02	1.18	273.54	0.76	5.19	28.11	2.48	16.14	14.08	0	1.01
15 CAL	0.30	1.10	366.90	0.76	6.06	422.25	609.92	1630.95	27.50	30.16	0	0.03	0.19	0.55	1.13	0.66	0.86	0.43	2.33	0	1.31	13.22	0	1.11
16 STM	1.17	0.84	151.01	0.64	159.29	476.47	1102.73	2423.37	28.19	39.95	0	0	11.93	0.22	0.84	1.03	1.46	0.94	0.05	0	33.69	239.44	0	1.07
17 CHS	0.46	0.40	1.71	0.38	0.22	0.93	12.36	14.15	0.59	179.43	0	0	0.23	0.22	1.03	0.92	1.10	3.36	29.92	0	0.11	2.39	0	1.05
18 FAU	1.28	0.06	0.05	0.25	0.04	45.57	32.06	1.21	0.52	0.68	2.10	0.18	0.42	2.09	0.19	0.03	3.28	1.17	1213.22	0.05	712.30	23.07	0	1.06
19 STA	1.65	27.36	0.22	3.15	0.36	0.31	244.87	3.41	89.59	0.94	0	0	0	0.23	0	0.24	1.21	728.32	1.34	0	0.47	332.08	0	1.07
20 CL/JF	5.90	0.80	7.36	1.56	8.85	31.11	6.27	3.72	1.44	3.74	1.10	14.53	0.92	2.43	0	0	0	420.40	1.37	0.90	1.81	0	0	1.03
21 SP/FB	23.23	0.21	0.12	0.38	0.03	146.94	205.97	4.03	81.04	0.46	0	0	0	0	0	0.00	0	266.86	0.99	0	1.15	0.56	0	1.10
22 KGEO	2.61	0.02	1.63	16.02	8.36	32.41	52.83	5.78	4.77	595.61	0	0	0.05	0.19	2.14	5.91	203.14	63.02	0.74	0	0.59	1.01	0	0.97
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	1.05		1.02		2.86		1.16		1.02		0.99		1.01		1.01		1.07		1.12		1.42		0	
		1.11		1.06		1.02		1.02		0.99		1.01		0.99		1.02		1.25		1.06		1.11		1.04

Appendix B Year 2007 mode choice summary

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
Purpose: Internal HBO Trips MODE: Est Auto Occ.

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	1.55	1.51	1.46	1.41	1.37	1.51	1.52	1.47	1.55	1.53	1.04	1.00	1.45	1.40	1.27	1.49	1.32	1.56	1.52	0	1.56	1.50	0	1.51
2 DC NC	1.55	1.51	1.46	1.41	1.38	1.53	1.54	1.48	1.56	1.53	1.31	1.25	1.46	1.44	1.42	1.50	1.37	1.58	1.51	1.52	1.54	1.54	0	1.50
3 MTG	1.49	1.50	1.56	1.55	1.61	1.56	1.59	1.67	1.72	1.68	1.61	1.63	1.60	1.61	1.68	1.71	1.65	1.73	1.68	1.68	1.70	1.72	0	1.56
4 PG	1.57	1.51	1.62	1.56	1.67	1.62	1.62	1.73	1.80	1.72	1.68	1.67	1.62	1.61	1.63	1.66	1.59	1.84	1.71	0	1.70	1.68	0	1.57
5 ARLCR	1.59	1.54	1.55	1.51	1.63	1.56	1.55	1.54	1.63	1.60	0	0	1.67	1.59	0	1.63	1.62	1.65	1.59	0	1.63	1.63	0	1.57
6 ARNCR	1.47	1.52	1.55	1.52	1.60	1.53	1.53	1.53	1.62	1.58	1.68	1.50	1.64	1.61	1.68	1.66	1.60	1.65	1.60	1.67	1.62	1.65	0	1.53
7 ALX	1.45	1.52	1.60	1.53	1.62	1.53	1.55	1.59	1.71	1.63	1.50	0	1.66	1.62	1.67	1.66	1.58	1.72	1.64	0	1.65	1.66	0	1.56
8 FFX	1.27	1.47	1.59	1.61	1.64	1.49	1.54	1.59	1.60	1.61	1.68	1.69	1.68	1.68	1.70	1.73	1.66	1.65	1.66	1.68	1.68	1.72	0	1.58
9 LDN	1.28	1.50	1.61	1.63	1.67	1.53	1.58	1.62	1.57	1.63	1.62	1.69	1.69	1.70	1.72	1.70	1.69	1.64	1.70	1.62	1.73	1.76	0	1.58
10 PW	1.28	1.50	1.67	1.65	1.72	1.57	1.63	1.67	1.68	1.57	1.68	1.70	1.68	1.70	1.68	1.74	1.68	1.61	1.63	1.68	1.66	1.69	0	1.59
11 FRD	1.78	1.68	1.75	1.70	1.97	1.85	1.89	1.97	1.78	1.90	1.56	1.59	1.73	1.72	1.67	0	1.68	1.84	2.10	1.63	1.73	0	0	1.60
12 CAR	1.95	1.87	1.88	1.89	2.09	1.98	1.97	2.10	2.06	2.26	1.67	1.55	1.74	1.82	0	0	0	2.32	0.01	1.71	0	0	0	1.57
13 HOW	1.59	1.53	1.61	1.58	1.71	1.65	1.68	1.82	1.84	1.78	1.62	1.59	1.56	1.58	1.69	1.73	1.68	1.81	1.72	1.71	1.72	1.77	0	1.56
14 AAR	1.67	1.57	1.71	1.62	1.78	1.71	1.74	1.87	1.95	1.86	1.72	1.68	1.64	1.56	1.60	1.68	1.66	1.98	1.86	1.73	1.76	1.74	0	1.57
15 CAL	1.88	1.69	2.00	1.73	2.03	1.93	1.95	2.05	2.13	2.10	0	1.50	1.96	1.67	1.55	1.62	1.71	2.39	1.91	0	1.93	1.71	0	1.57
16 STM	2.08	1.92	2.13	1.96	2.17	2.04	2.09	2.13	2.15	2.16	0	0	2.15	2.11	1.67	1.56	1.73	2.54	1.99	0	1.94	1.68	0	1.60
17 CHS	1.74	1.60	1.90	1.62	1.85	1.76	1.74	1.88	2.00	1.87	0	0	1.89	1.76	1.60	1.60	1.55	2.05	1.75	0	1.75	1.65	0	1.58
18 FAU	1.21	1.55	1.71	1.66	1.79	1.65	1.74	1.86	1.76	1.68	1.68	1.64	1.68	1.73	1.73	1.50	1.72	1.57	1.63	1.64	1.66	1.68	0	1.60
19 STA	1.37	1.64	2.18	1.68	1.98	1.83	1.88	1.94	2.14	1.68	0	0	0	1.77	0	1.71	1.68	1.66	1.57	0	1.60	1.61	0	1.59
20 CL/JF	1.38	2.24	2.13	2.60	2.30	2.15	2.22	2.10	1.86	1.98	1.78	1.83	2.15	2.29	0	0	0	1.77	1.90	1.57	1.72	0	0	1.64
21 SP/FB	1.49	2.63	2.79	3.00	2.25	2.12	2.13	2.15	2.33	1.88	0	0	0	0	0	1.50	0	1.84	1.63	0	1.57	1.63	0	1.60
22 KGEO	1.56	2.17	2.91	2.27	2.34	2.22	2.23	2.27	2.48	2.07	0	0	5.00	3.17	2.00	1.75	1.84	2.02	1.71	0	1.71	1.56	0	1.63
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	1.48	1.51	1.57	1.56	1.60	1.54	1.56	1.60	1.59	1.58	1.57	1.56	1.57	1.56	1.57	1.56	1.57	1.59	1.59	1.58	1.59	1.58	0	1.57

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
Purpose: Internal HBO Trips MODE: Obs Auto Occ.

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	1.37	1.53	1.00	1.50	0	1.56	1.00	1.00	0	0	0	0	1.00	1.00	0	0	0	0	0	0	0	0	0	1.36
2 DC NC	1.57	1.53	1.53	1.23	1.00	1.31	1.16	1.59	1.72	2.00	0	0	1.00	1.25	1.00	0	2.00	0	0	0	1.00	0	0	1.51
3 MTG	1.34	1.61	1.57	1.28	1.00	1.34	1.83	1.32	1.36	0	1.48	1.00	1.34	1.72	0	0	1.00	0	0	0	3.50	0	0	1.56
4 PG	1.84	1.59	1.67	1.57	0	2.01	1.84	1.28	2.41	1.00	0	1.52	1.57	1.43	1.43	0	1.77	0	0	0	0	0	0	1.59
5 ARLCR	0	1.00	1.00	0	1.00	1.38	1.00	1.88	0	0	0	0	0	1.00	0	0	0	0	0	0	0	0	0	1.30
6 ARNCR	1.58	1.26	1.47	2.00	1.93	1.51	1.30	1.47	1.50	1.00	0	0	1.00	0	0	1.00	1.00	0	0	0	0	0	0	1.49
7 ALX	1.22	1.96	1.24	1.00	2.37	1.33	1.65	1.53	1.83	0	0	0	0	3.50	0	0	0	1.00	0	0	0	0	0	1.58
8 FFX	1.32	1.34	1.72	1.00	1.71	1.50	1.59	1.59	1.68	1.34	1.00	0	1.00	1.00	0	0	0	0	3.50	2.00	2.00	0	0	1.58
9 LDN	1.00	1.31	1.00	0	0	1.50	1.00	1.57	1.73	1.00	2.25	0	0	1.00	0	0	0	1.27	0	1.00	0	0	0	1.67
10 PW	1.32	1.00	1.00	1.00	1.00	1.77	2.24	1.49	1.42	1.62	0	0	0	0	0	2.00	0	1.45	1.18	0	0	0	0	1.61
11 FRD	2.00	1.37	1.64	1.00	1.00	0	1.00	1.00	1.00	0	1.57	1.65	1.95	2.25	0	0	0	0	0	1.00	0	0	0	1.58
12 CAR	0	0	1.21	1.30	0	0	0	1.00	0	0	1.80	1.63	1.87	1.00	0	0	0	0	0	0	0	0	0	1.63
13 HOW	1.00	1.68	1.45	1.44	0	2.11	1.00	1.00	0	0	1.00	1.91	1.61	1.37	0	0	1.00	1.00	0	0	0	0	0	1.58
14 AAR	1.69	1.92	1.89	1.58	1.00	1.00	1.00	3.21	0	0	1.19	0	1.64	1.55	1.67	0	1.00	0	0	0	0	0	0	1.57
15 CAL	2.00	2.00	0	1.44	0	0	0	0	0	0	0	1.00	1.16	1.59	1.24	3.50	0	0	0	0	0	0	0	1.57
16 STM	1.00	1.00	0	1.32	0	0	0	0	0	0	0	0	2.00	1.81	1.52	1.12	0	1.00	0	0	0	0	0	1.50
17 CHS	1.12	1.54	1.00	1.43	2.25	2.03	1.00	1.00	1.00	0	0	1.00	1.00	1.00	1.12	1.53	0	0	0	2.00	2.00	0	0	1.50
18 FAU	0	1.00	1.00	0	2.00	0	0	1.00	1.14	1.47	0	0	0	0	0	0	0	1.46	0	1.83	0	0	0	1.43
19 STA	0	0	1.00	0	1.00	1.00	0	1.17	0	1.12	0	0	0	0	0	0	0	0	1.53	0	1.72	0	0	1.55
20 CL/JF	0	0	1.00	0	0	0	0	1.11	1.74	1.00	1.25	0	1.00	0	0	0	0	0	0	1.55	0	0	0	1.55
21 SP/FB	0	0	1.00	0	1.00	0	0	1.00	0	2.24	0	0	0	0	0	2.00	0	0	1.57	2.00	1.59	2.00	0	1.60
22 KGEO	0	1.00	0	0	0	0	0	1.00	0	0	0	0	0	0	0	0	0	0	1.74	0	1.29	1.61	0	1.56
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	1.49	1.54	1.58	1.54	1.65	1.51	1.60	1.57	1.70	1.60	1.57	1.63	1.61	1.54	1.58	1.50	1.53	1.44	1.55	1.56	1.63	1.62	0	1.57

Appendix B Year 2007 mode choice summary

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal HBO Trips MODE: Est Pct. Tran

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	29.0	24.1	19.4	6.5	46.0	31.8	17.5	7.0	0	5.2	0	0	0.0	0	0	0	0	0	0	0	0	0	0	24.5
2 DC NC	39.4	13.2	12.7	5.9	29.6	19.7	11.0	3.8	0	5.7	0	0	0.0	0	0	0	0	0	0	0	0	0	0	16.8
3 MTG	17.8	4.7	2.6	1.5	32.1	6.1	1.3	0.4	0	42.2	0.0	0	0.1	0.0	0	0	0	0	0	0	0	0	0	3.0
4 PG	23.0	6.7	5.1	1.6	29.5	9.5	2.6	0.6	0	12.9	0	0	0.3	0.1	0	0	0.0	0	0	0	0	0	0	3.6
5 ARLCR	75.0	10.0	8.6	2.0	3.5	14.3	9.9	4.7	0	3.0	0	0	0	0	0	0	0	0	0	0	0	0	0	16.6
6 ARNCR	43.0	4.0	2.5	0.4	4.7	4.3	5.1	2.4	0	3.2	0	0	0	0	0	0	0	0	0	0	0	0	0	6.9
7 ALX	32.6	3.2	2.2	0.1	4.5	7.1	3.3	2.2	0	2.0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.9
8 FFX	17.3	1.8	1.1	0.4	4.3	4.2	2.9	0.6	0.1	1.7	2.1	0	4.8	0.6	12.4	12.6	0.9	0	0.0	0	0.3	0	0	1.3
9 LDN	5.8	0.3	0.1	0.0	1.2	0.8	0.1	0.2	0.1	3.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2
10 PW	12.6	7.5	25.3	15.1	6.0	5.9	4.3	2.1	2.1	0.3	29.3	0	93.0	28.0	92.5	88.9	24.5	0	0.0	0	0.4	0	0	0.7
11 FRD	1.2	0.1	0.0	0	0.6	0.1	0	0.0	0	4.5	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0.2
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	8.1	0.6	0.1	0.2	8.9	1.5	0.0	2.1	0	82.6	0	0	0.1	0.0	0	0	0	0	0	0	0	0	0	0.1
14 AAR	8.7	0.6	0.1	0.1	9.7	1.8	0.2	1.8	0	31.8	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0.1
15 CAL	0.8	0.1	0.0	0	0.6	0.1	0.0	0.0	0	5.6	0	0	0	0	0.0	0.0	0	0	0	0	0	0	0	0.0
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0.0
17 CHS	4.0	0.4	0.1	0.0	4.4	0.8	0.1	0.1	0	10.2	0	0	0	0	0.0	0.0	0.2	0	0	0	0	0	0	0.3
18 FAU	0.3	0	0	0	0	0	0	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
19 STA	0	0	0	0	0	0	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	7.4	10.4	9.0	52.6	1.7	1.1	0.8	0.5	0	0.1	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0.0
22 KGEO	0	0	0	0	0	0	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	28.5	9.8	3.1	1.7	12.0	6.1	3.7	0.8	0.1	0.4	0.2	0	0.1	0.0	0.1	0.2	0	0.0	0	0.0	0	0	0	2.9

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal HBO Trips MODE: Obs Pct. Tran

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	46.8	36.8	49.4	29.8	100.0	66.2	11.9	23.1	0	0	0	0	34.0	100.0	0	0	0	0	0	0	0	0	0	41.0
2 DC NC	32.8	13.9	9.0	14.5	84.6	39.0	15.1	3.8	0.7	7.8	0	0	13.5	20.1	0	0	0	0	0	0	9.9	0	0	17.5
3 MTG	33.5	10.9	2.2	6.0	39.0	44.2	1.9	0.3	1.0	100.0	0	0	0.7	4.1	0	0	0	0	0	0	0	0	0	3.6
4 PG	19.0	8.4	4.4	1.9	100.0	9.5	1.7	2.8	1.6	0	100.0	0	0.1	0.3	0	0	0	0	0	0	0	0	0	3.3
5 ARLCR	100.0	37.9	8.8	0	0	14.0	21.1	13.4	100.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26.8
6 ARNCR	32.3	24.7	7.6	24.9	7.8	2.4	4.3	3.2	10.2	1.9	0	0	0	100.0	0	0	12.9	0	100.0	0	0	0	0	7.0
7 ALX	30.3	15.7	14.2	11.5	5.7	6.1	2.8	2.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.8
8 FFX	22.8	14.7	2.3	4.1	15.1	4.3	3.2	0.7	0.5	0.2	0	0	0	5.7	0	0	100.0	0	0	0	0	0	0	1.5
9 LDN	4.6	2.1	0	0	0	0	0	0.1	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1
10 PW	34.4	33.2	1.4	0	0	2.2	0	0.5	0	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4
11 FRD	8.1	3.8	0.4	2.9	0	0	0	0	0	0	0.3	0	0	0	0	0	0	0	0	0	0	0	0	0.4
12 CAR	100.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
13 HOW	23.2	2.3	0.4	0	0	3.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1
14 AAR	32.8	3.0	0.1	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1
15 CAL	4.9	0	0	0	100.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1
16 STM	0	14.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1
17 CHS	5.8	5.4	0	0.0	2.0	6.3	0	2.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4
18 FAU	100.0	0	0	100.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2
19 STA	100.0	0	0	0	0	17.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1
20 CL/JF	0	100.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
21 SP/FB	0	100.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	30.0	13.3	2.6	2.3	10.6	6.1	3.1	0.8	0.1	0.2	0.3	0	0.0	0.1	0.0	0	0	0.1	0	0.1	0	0	0	3.0

Appendix B Year 2007 mode choice summary

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal NHW Trips MODE: Est Transit

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	18298	9221	2441	1504	1954	2915	1179	867	0	18	0	0	2	2	1	0	0	0	0	0	1	0	0	38402
2 DC NC	11526	8425	2440	1213	957	1255	456	317	0	10	0	0	1	0	0	0	0	0	0	0	0	0	0	26601
3 MTG	3253	1037	7948	175	462	296	67	47	0	15	0	0	1	0	0	0	0	0	0	0	0	0	0	13301
4 PG	3134	773	253	1007	275	201	50	9	0	15	0	0	0	0	0	0	0	0	0	0	0	0	0	5717
5 ARLCR	1939	363	122	33	325	825	316	169	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	4094
6 ARNCR	2918	519	176	42	1238	2198	635	492	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	8225
7 ALX	1167	164	62	18	313	594	1165	189	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	3680
8 FFX	2290	156	84	11	402	634	409	1954	1	38	1	0	1	0	0	0	1	0	0	0	0	0	0	5983
9 LDN	62	0	0	0	8	5	0	2	46	5	0	0	0	0	0	0	0	0	0	0	0	0	0	130
10 PW	144	11	17	14	19	20	20	44	2	66	2	0	2	1	1	1	2	0	0	0	1	0	0	366
11 FRD	2	0	0	0	0	0	0	0	0	0	153	0	0	0	0	0	0	0	0	0	0	0	0	155
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	51	4	4	1	3	2	0	1	0	3	0	0	5	0	0	0	0	0	0	0	0	0	0	74
14 AAR	171	12	5	3	5	3	2	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	208
15 CAL	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	1	0	0	0	0	0	0	12
17 CHS	38	4	1	0	2	1	0	1	0	2	0	0	0	0	0	1	62	0	0	0	0	0	0	110
18 FAU	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
19 STA	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	1	0	1	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	44994	20691	13555	4021	5962	8949	4299	4099	49	194	156	0	12	4	2	13	65	0	0	0	1	0	0	107065

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal NHW Trips MODE: Obs Transit

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	19512	10054	2658	1761	920	4465	394	1054	48	60	0	0	79	89	0	0	0	12	0	0	0	0	0	41106
2 DC NC	10435	8323	1306	1147	338	1992	523	530	0	23	0	0	0	0	0	0	0	0	0	18	0	0	0	24635
3 MTG	4630	2130	5072	662	118	377	67	66	0	0	0	0	25	0	0	0	0	0	0	0	0	0	0	13147
4 PG	2249	1436	1085	1467	52	373	125	35	0	0	0	0	0	31	0	0	0	0	0	0	0	0	0	6853
5 ARLCR	811	360	43	58	0	585	75	111	0	15	0	0	0	28	0	0	0	0	0	0	0	0	0	2086
6 ARNCR	4098	1184	164	418	313	3356	423	632	36	0	0	0	35	0	0	0	0	17	0	0	0	0	0	10676
7 ALX	1020	329	50	98	137	664	673	215	0	26	0	0	0	0	0	0	0	0	0	0	0	0	0	3212
8 FFX	2021	532	90	21	128	822	416	1667	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5706
9 LDN	82	0	0	0	0	47	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	140
10 PW	115	14	10	0	0	98	0	65	0	146	0	0	0	0	0	0	0	0	0	0	0	0	0	448
11 FRD	48	0	0	0	0	0	0	0	0	0	179	0	0	0	0	0	0	0	0	0	0	0	0	227
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	109	0	0	0	0	48	24	0	0	0	0	0	27	0	0	0	0	0	0	0	0	0	0	208
14 AAR	137	30	0	0	0	74	31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	272
15 CAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 CHS	42	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	42
18 FAU	0	0	33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	33
19 STA	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	45319	24392	10511	5632	2006	12901	2751	4386	93	270	179	0	131	183	0	0	0	12	17	18	0	0	0	108801

Appendix B Year 2007 mode choice summary

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal NHW Trips MODE: Difference (Est-Obs) Transit

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	-1214	-833	-217	-257	1034	-1550	785	-187	-48	-42	0	0	-77	-87	1	0	0	-12	0	0	1	0	0	-2704
2 DC NC	1091	102	1134	66	619	-737	-67	-213	0	-13	0	0	1	0	0	0	0	0	0	-18	0	0	0	1966
3 MTG	-1377	-1093	2876	-487	344	-81	0	-19	0	15	0	0	-24	0	0	0	0	0	0	0	0	0	0	154
4 PG	885	-663	-832	-460	223	-172	-75	-26	0	15	0	0	0	-31	0	0	0	0	0	0	0	0	0	-1136
5 ARLCR	1128	3	79	-25	325	240	241	58	0	-12	0	0	0	-28	0	0	0	0	0	0	0	0	0	2008
6 ARNCR	-1180	-665	12	-376	925	-1158	212	-140	-36	7	0	0	0	-35	0	0	0	0	-17	0	0	0	0	-2451
7 ALX	147	-165	12	-80	176	-70	492	-26	0	-18	0	0	0	0	0	0	0	0	0	0	0	0	0	468
8 FFX	269	-376	-6	-10	274	-188	-7	287	-8	38	1	0	1	0	0	0	1	0	0	0	0	0	0	277
9 LDN	-20	0	0	0	8	-42	0	-9	46	5	0	0	0	0	0	0	0	0	0	0	0	0	0	-10
10 PW	29	-3	7	14	19	-78	20	-21	2	-80	2	0	2	1	1	1	2	0	0	0	0	1	0	-82
11 FRD	-46	0	0	0	0	0	0	0	0	0	0	0	-26	0	0	0	0	0	0	0	0	0	0	-72
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	-58	4	4	1	3	-47	-24	1	0	3	0	0	-22	0	0	0	0	0	0	0	0	0	0	-134
14 AAR	34	-18	5	3	5	-71	-29	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	-64
15 CAL	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	1	0	0	0	0	0	0	12
17 CHS	-4	4	1	0	2	1	0	1	0	2	0	0	0	0	0	1	62	0	0	0	0	0	0	68
18 FAU	0	0	-33	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-32
19 STA	-10	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-9
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	1	0	1	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	-325	-3701	3044	-1611	3956	-3952	1548	-287	-44	-76	-23	0	-119	-179	0	0	0	-12	-17	-18	0	0	0	-1736

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal NHW Trips MODE: Ratio (Est/Obs) Transit

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	0.94	0.92	0.92	0.85	2.12	0.65	2.99	0.82	0	0.30	0	0	0.02	0.02	0.63	0.01	0.32	0	0	0	0.65	0	0	0.93
2 DC NC	1.10	1.01	1.87	1.06	2.83	0.63	0.87	0.60	0	0.44	0	0	0.51	0.15	0.08	0	0.04	0	0	0	0.03	0	0	1.08
3 MTG	0.70	0.49	1.57	0.26	3.91	0.79	1.00	0.71	0	14.98	0.01	0	0.05	0	0.01	0	0	0	0	0	0	0	0	1.01
4 PG	1.39	0.54	0.23	0.69	5.29	0.54	0.40	0.25	0	14.86	0	0	0.18	0.01	0	0	0.03	0	0	0	0	0	0	0.83
5 ARLCR	2.39	1.01	2.85	0.56	324.64	1.41	4.21	1.52	0	0.21	0	0	0	0	0	0	0	0	0	0	0	0	0	1.96
6 ARNCR	0.71	0.44	1.08	0.10	3.95	0.65	1.50	0.78	0	7.30	0	0	0	0	0	0	0	0	0	0	0	0	0	0.77
7 ALX	1.14	0.50	1.24	0.19	2.28	0.89	1.73	0.88	0	0.30	0	0	0	0	0	0	0	0	0	0	0	0	0	1.15
8 FFX	1.13	0.29	0.93	0.53	3.14	0.77	0.98	1.17	0.08	37.99	0.79	0	1.02	0.46	0.28	0.35	0.81	0	0	0	0.21	0	0	1.05
9 LDN	0.75	0.40	0.42	0	8.39	0.11	0.35	0.20	45.83	5.35	0	0	0	0	0	0	0	0	0	0	0	0	0	0.93
10 PW	1.25	0.79	1.67	13.95	19.26	0.20	20.36	0.68	2.10	0.45	1.93	0	2.48	1.29	0.69	0.91	2.00	0	0	0	0.53	0	0	0.82
11 FRD	0.04	0.04	0.15	0	0.11	0.04	0	0.04	0	0.12	0.85	0	0	0	0	0	0	0	0	0	0	0	0	0.68
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	0.46	4.30	3.99	1.13	2.70	0.03	0.02	1.30	0	3.03	0	0	0.18	0	0	0	0	0	0	0	0	0	0	0.36
14 AAR	1.25	0.42	4.66	2.62	5.00	0.04	0.06	3.47	0	3.35	0	0	0	0.20	0	0	0	0	0	0	0	0	0	0.76
15 CAL	1.16	0.09	0.02	0	0.05	0.02	0	0.03	0	0.08	0	0	0	0	0.39	0	0	0	0	0	0	0	0	1.84
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11.29	0.73	0	0	0	0	0	0	12.02
17 CHS	0.90	3.89	0.94	0	1.85	1.05	0.17	0.58	0	1.69	0	0	0	0	0	0.50	61.56	0	0	0	0	0	0	2.62
18 FAU	0.05	0	0	0	0	0	0	0.73	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.02
19 STA	0.02	0	0	0	0	0	0	1.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.12
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0.78	0.25	0.56	0.27	0.09	0.17	0.18	2.47	0	0.14	0	0	0	0	0	0	0	0	0	0	0	0	0	4.91
22 KGEO	0	0	0	0	0	0	0	0.05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.05
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0.99	0.85	1.29	0.71	2.97	0.69	1.56	0.93	0.52	0.72	0.87	0	0.09	0.02	0	0	0	0	0	0	0	0	0	0.98

Appendix B Year 2007 mode choice summary

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal NHW Trips MODE: Est Auto Person

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	31630	14507	5105	10022	1874	3326	2434	5813	404	768	324	76	614	1604	166	111	633	121	207	42	138	12	0	79933
2 DC NC	12225	32953	7765	12755	1123	2443	1962	4708	318	565	314	75	769	1732	157	91	611	88	145	39	97	9	0	80943
3 MTG	4311	9292	155735	10541	453	1685	1038	6467	628	625	2282	444	2397	2350	133	75	325	155	153	164	115	8	0	199377
4 PG	8689	13323	10515	109488	701	1723	2168	4045	268	548	403	161	3073	6988	582	293	2143	95	179	48	130	22	0	165586
5 ARLCR	1744	1694	777	909	5207	3138	1460	3086	168	341	37	8	47	121	14	10	54	30	52	10	34	3	0	18942
6 ARNCR	3205	3120	1763	1835	2697	21222	3543	9410	447	850	77	14	97	253	26	17	113	73	115	22	79	5	0	48982
7 ALX	2412	2213	1027	2114	1401	3588	19881	9025	297	1010	56	12	81	237	38	30	193	61	155	17	101	8	0	43956
8 FFX	4012	4636	5962	3900	2776	9079	8681	227141	8297	8216	324	59	320	625	80	64	368	706	675	160	432	23	0	286534
9 LDN	277	255	548	229	146	403	272	8281	39427	992	217	21	43	63	4	4	24	192	48	248	36	1	0	51733
10 PW	583	511	579	515	311	818	967	8027	931	55488	43	7	43	107	14	12	68	707	1053	48	463	19	0	71314
11 FRD	323	313	2360	419	39	81	60	383	261	56	45128	1008	586	365	13	8	33	31	20	444	16	1	0	51947
12 CAR	89	84	508	184	9	17	14	80	29	11	1041	26207	507	267	6	3	13	6	5	51	4	0	0	29136
13 HOW	641	832	2545	3295	51	107	92	384	54	52	530	456	33009	4815	45	26	92	20	19	44	16	2	0	47128
14 AAR	1521	1781	2527	7226	123	263	252	731	84	128	347	246	5009	88151	363	113	355	38	57	41	47	9	0	109414
15 CAL	180	167	148	628	16	29	42	97	7	19	14	6	51	391	13610	830	350	5	10	2	11	9	0	16623
16 STM	132	110	94	352	12	22	35	81	7	17	10	4	33	139	887	36711	734	6	19	2	33	39	0	39478
17 CHS	624	620	357	2244	55	116	193	385	28	74	32	11	98	372	333	659	25713	18	42	5	44	70	0	32093
18 FAU	102	72	130	81	26	63	55	690	191	723	25	4	16	31	4	4	16	8037	145	39	112	5	0	10573
19 STA	176	119	133	153	43	94	132	624	47	1073	16	3	17	50	8	12	37	142	12374	5	2148	55	0	17461
20 CL/JF	36	32	147	42	8	19	15	154	243	50	371	40	42	37	2	1	5	39	5	10065	5	0	0	11360
21 SP/FB	120	89	99	110	29	64	85	398	36	464	12	3	14	40	8	21	36	107	2075	5	20034	82	0	23931
22 KGEO	11	7	7	19	2	4	7	22	1	20	1	0	2	8	7	28	60	5	57	0	86	1961	0	2316
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	73044		198831		17101		43388		52173		51604		28865		16501		31976		17614		24181		0	1438760
		86731		167062		48304		290030		72090		28865		108745		39124		10681		11502		2343		

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal NHW Trips MODE: Obs Auto Person

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	24492	17645	9284	12601	382	7308	5548	12447	1623	635	0	0	0	1974	0	0	1289	0	610	0	0	218	0	96057
2 DC NC	13372	35152	14187	21173	500	2117	1074	8691	691	271	0	0	172	1917	951	0	1302	0	568	0	610	0	0	102748
3 MTG	7988	6881	182299	15389	0	2390	922	6513	1316	186	5969	455	2368	2535	0	0	0	0	330	0	0	0	0	235541
4 PG	7299	9492	14249	117882	410	941	503	4562	661	281	0	0	4576	11109	376	0	2326	0	0	0	0	0	0	174665
5 ARLCR	1501	1095	674	578	1093	2132	1275	3740	0	666	0	0	0	0	0	0	0	0	0	0	0	0	0	12755
6 ARNCR	5572	1670	2579	958	3172	22054	4424	17269	243	976	0	0	0	383	0	0	156	0	929	0	0	0	0	60384
7 ALX	2706	1733	589	1054	799	3330	22215	7306	618	857	0	0	1832	757	0	0	394	0	320	0	0	0	0	44510
8 FFX	12244	8314	12004	5143	2308	13260	6809	244825	10629	16271	610	0	54	280	238	235	1866	909	2885	521	1344	0	0	340747
9 LDN	1491	356	460	984	0	719	300	9678	36901	1147	0	0	0	0	0	0	0	0	260	78	0	0	0	52374
10 PW	0	367	770	203	0	1102	1002	16194	804	53581	0	0	0	0	0	0	0	759	797	0	129	164	0	75870
11 FRD	0	0	3837	1533	0	0	0	0	0	298	51834	1142	883	0	0	0	0	0	0	0	539	0	0	60066
12 CAR	0	0	679	0	0	0	0	0	0	0	0	0	1302	23345	1072	1026	0	0	0	0	0	0	0	27424
13 HOW	740	707	1876	2185	0	0	1368	210	0	0	0	387	1630	35663	10060	0	0	392	0	0	0	0	0	55217
14 AAR	1217	602	3742	6812	188	1292	0	191	0	363	0	0	969	6472	86800	765	527	0	0	0	0	0	0	109941
15 CAL	801	0	0	510	0	0	0	674	0	0	0	0	0	239	889	14131	760	249	0	0	0	0	0	18254
16 STM	0	0	0	460	0	0	0	523	0	0	0	0	0	0	0	1343	38555	1136	0	0	0	0	0	42017
17 CHS	142	491	0	2971	0	295	680	0	0	0	0	0	0	401	0	1403	26668	0	0	0	0	0	0	33053
18 FAU	0	0	0	0	0	0	0	685	351	286	0	0	0	0	0	0	0	0	3937	0	0	0	0	5259
19 STA	0	1014	0	0	0	0	0	856	0	1228	0	0	0	0	0	0	0	0	10130	0	2452	118	0	15799
20 CL/JF	0	0	0	0	0	0	0	0	0	488	0	545	0	0	0	0	0	0	0	0	2923	539	0	4495
21 SP/FB	0	266	0	0	558	568	0	337	0	131	0	0	0	0	0	0	0	0	2784	0	22091	593	0	27328
22 KGEO	335	173	0	0	0	0	0	0	0	164	0	0	0	0	0	0	596	0	0	0	1643	5357	0	8267
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	79900		247229		9410		46120		54325		60646		27541		53333		17805		19614		28807		0	1602771
		85957		190434		57510		334698		77341		27541		118130		41480		5605		4060		6450		

Appendix B Year 2007 mode choice summary

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal NHW Trips MODE: Difference (Est-Obs) Auto Person

ORIGIN	DESTINATION																							TOTAL	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1 DC CR	7138	-3138	-4179	-2579	1491	-3982	-3113	-6634	-1219	133	324	76	614	-370	166	111	-655	121	-403	42	138	-206	0	-16123	
2 DC NC	-1148	-2199	-6422	-8418	623	326	889	-3983	-373	294	314	75	596	-185	-795	91	-691	88	-423	39	-513	9	0	-21805	
3 MTG	-3677	2411	-26564	-4848	453	-706	116	-46	-688	439	-3687	-11	29	-185	133	75	325	155	-177	164	115	8	0	-36165	
4 PG	1390	3830	-3734	-8394	292	782	1664	-517	-393	267	403	161	-1503	-4121	206	293	-183	95	179	48	130	22	0	-9080	
5 ARLCR	242	599	103	331	4113	1006	184	-655	168	-326	37	8	47	121	14	10	54	30	52	10	34	3	0	6186	
6 ARNCR	-2367	1450	-816	878	-475	-832	-882	-7859	204	-126	77	14	97	-130	26	17	-43	73	-814	22	79	5	0	-11402	
7 ALX	-294	480	438	1060	603	258	-2335	1720	-321	153	56	12	-1751	-520	38	30	-201	61	-165	17	101	8	0	-554	
8 FFX	-8233	-3678	-6042	-1242	469	-4181	1872	-17685	-2331	-8055	-286	59	266	345	-158	-171	-1499	-204	-2209	-361	-912	23	0	-54214	
9 LDN	-1214	-101	88	-755	146	-317	-28	-1396	2526	-154	217	21	43	63	4	4	24	192	-212	170	36	1	0	-641	
10 PW	583	144	-191	313	311	-284	-35	-8167	127	1907	43	7	43	107	14	12	68	-52	257	48	334	-145	0	-4556	
11 FRD	323	313	-1477	-1114	39	81	60	383	261	-243	-6705	-134	-297	365	13	8	33	31	20	-95	16	1	0	-8119	
12 CAR	89	84	-171	184	9	17	14	80	29	11	-260	2862	-565	-759	6	3	13	6	5	51	4	0	0	1713	
13 HOW	-99	125	669	1110	51	107	-1276	174	54	52	143	-1174	-2654	-5244	45	26	-299	20	19	44	16	2	0	-8089	
14 AAR	304	1179	-1215	415	-65	-1029	252	540	84	-234	347	-723	-1464	1351	-402	-414	355	38	57	41	47	9	0	-527	
15 CAL	-621	167	148	118	16	29	42	-577	7	19	14	6	-188	-499	-521	71	100	5	10	2	11	9	0	-1631	
16 STM	132	110	94	-108	12	22	35	-442	7	17	10	4	33	139	-456	-1844	-403	6	19	2	33	39	0	-2539	
17 CHS	482	130	357	-727	55	-179	-488	385	28	74	32	11	98	-29	333	-745	-955	18	42	5	44	70	0	-959	
18 FAU	102	72	130	81	26	63	55	6	-161	437	25	4	16	31	4	4	16	4100	145	39	112	5	0	5314	
19 STA	176	-895	133	153	43	94	132	-233	47	-155	16	3	17	50	8	12	37	142	2244	5	-304	-63	0	1662	
20 CL/JF	36	32	147	42	8	19	15	154	-245	50	-174	40	42	37	2	1	5	39	5	7142	-534	0	0	6865	
21 SP/FB	120	-177	99	110	-530	-505	85	61	36	334	12	3	14	40	8	21	36	107	-709	5	-2058	-511	0	-3397	
22 KGEO	-323	-165	7	19	2	4	7	22	1	-143	1	0	2	8	7	28	-536	5	57	0	-1557	-3396	0	-5951	
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
TOTAL	-6856		-48398		7691		-2732		-2152		-9043		-6463		-1304		-4398		-2000		7442		-4107		-164011
		774		-23372		-9206		-44668		-5251		1324		-9385		-2356		5077		7442		-4107			

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal NHW Trips MODE: Ratio (Est/Obs) Auto Person

ORIGIN	DESTINATION																							TOTAL	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1 DC CR	1.29	0.82	0.55	0.80	4.90	0.46	0.44	0.47	0.25	1.21	324.47	76.06	613.73	0.81	166.03	111.03	0.49	121.15	0.34	42.43	138.36	0.06	0	0.83	
2 DC NC	0.91	0.94	0.55	0.60	2.25	1.15	1.83	0.54	0.46	2.08	313.58	74.58	4.46	0.90	0.16	91.22	0.47	88.39	0.26	38.70	0.16	9.24	0	0.79	
3 MTG	0.54	1.35	0.85	0.68	452.65	0.70	1.13	0.99	0.48	3.36	0.38	0.98	1.01	0.93	133.48	74.78	325.13	154.92	0.46	164.48	114.70	7.59	0	0.85	
4 PG	1.19	1.40	0.74	0.93	1.71	1.83	4.31	0.89	0.41	1.95	403.20	160.91	0.67	0.63	1.55	292.95	0.92	95.32	178.90	48.16	130.31	21.91	0	0.95	
5 ARLCR	1.16	1.55	1.15	1.57	4.76	1.47	1.14	0.82	168.06	0.51	37.47	7.84	47.37	121.06	14.46	9.88	53.75	29.62	51.66	9.50	34.23	2.74	0	1.49	
6 ARNCR	0.58	1.87	0.68	1.92	0.85	0.96	0.80	0.54	1.84	0.87	76.62	13.84	97.33	0.66	25.89	17.39	0.73	73.17	0.12	22.33	78.91	5.02	0	0.81	
7 ALX	0.89	1.28	1.74	2.01	1.75	1.08	0.89	1.24	0.48	1.18	55.76	11.64	0.04	0.31	37.68	29.82	0.49	61.01	0.49	17.47	101.07	7.86	0	0.99	
8 FFX	0.33	0.56	0.50	0.76	1.20	0.68	1.27	0.93	0.78	0.50	0.53	59.42	5.96	2.23	0.34	0.27	0.20	0.78	0.23	0.31	0.32	23.00	0	0.84	
9 LDN	0.19	0.72	1.19	0.23	146.35	0.56	0.91	0.86	1.07	0.87	216.94	21.04	43.31	62.84	4.44	3.97	23.68	191.98	0.18	3.17	36.36	1.39	0	0.99	
10 PW	583.15	1.39	0.75	2.54	311.25	0.74	0.96	0.50	1.16	1.04	42.89	7.03	43.29	107.02	14.16	12.00	68.11	0.93	1.32	47.68	3.60	0.11	0	0.94	
11 FRD	323.43	313.44	0.62	0.27	38.50	80.60	59.80	382.96	261.22	0.19	0.87	0.88	0.66	365.00	13.23	8.32	32.85	30.60	19.66	0.82	16.21	0.84	0	0.86	
12 CAR	89.21	84.24	0.75	183.59	9.17	17.23	14.37	80.28	29.36	10.83	0.80	1.12	0.47	0.26	5.70	3.27	12.74	5.67	4.77	50.76	4.05	0.17	0	1.06	
13 HOW	0.87	1.18	1.36	1.51	51.31	107.31	0.07	1.83	53.87	52.26	1.37	0.28	0.93	0.48	45.29	25.89	0.24	19.56	19.37	44.21	15.96	2.12	0	0.85	
14 AAR	1.25	2.96	0.68	1.06	0.65	0.20	252.38	3.82	83.99	0.35	346.82	0.25	0.77	1.02	0.47	0.22	355.31	37.52	57.21	41.41	47.06	8.52	0	1.00	
15 CAL	0.22	167.37	148.28	1.23	15.71	28.85	42.40	0.14	6.67	18.87	14.17	5.61	0.21	0.44	0.96	1.09	1.40	4.76	10.41	2.22	10.63	9.13	0	0.91	
16 STM	131.75	109.86	93.74	0.77	11.96	21.95	34.94	0.16	6.60	17.18	10.21	3.73	33.25	139.19	0.66	0.95	0.65	5.97	19.47	1.92	32.91	38.52	0	0.94	
17 CHS	4.39	1.26	356.99	0.76	54.60	0.39	0.28	384.55	27.74	73.85	32.06	11.33	98.24	0.93	333.09	0.47	0.96	17.93	42.29	5.42	44.24	70.37	0	0.97	
18 FAU	102.35	72.18	130.07	81.31	26.05	62.91	55.41	1.01	0.54	2.52	24.79	3.94	16.40	31.16	3.79	4.16	16.42	2.04	145.02	38.70	111.77	5.19	0	2.01	
19 STA	175.75	0.12	132.94	153.01	42.55	94.15	132.06	0.73	47.33	0.87	15.79	3.42	16.85	49.50	7.88	12.39	37.41	142.40	1.22	5.20	0.88	0.46	0	1.11	
20 CL/JF	36.15	32.33	147.44	41.51	8.27	19.22	15.45	153.80	0.50	49.77	0.68	40.42	41.87	36.97	1.63	1.13	4.61	39.47	5.37	3.44	0.01	0.17	0	2.53	
21 SP/FB	120.15	0.33	98.62	109.56	0.05	0.11	85.09	1.18	35.80	3.55	12.49	2.66	14.04	40.17	7.73	21.26	36.48	107.03	0.75	4.94	0.91	0.14	0	0.88	
22 KGEO	0.03	0.04	6.67	19.18	2.31	4.38	6.89	21.72	1.46	0.12	0.65	0.10	1.94	7.64	6.86	27.59	0.10	5.37	57.18	0.17	0.05	0.37	0	0.28	
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
TOTAL	0.91		0.80		1.82		0.94		0.96		0.93		0.85		0.88		0.93		0.88		1.91		0.90		0.90
		1.01		0.88		0.84		0.87		0.93		1.05		0.92		0.94		1.91		2.83		0.36			

Appendix B Year 2007 mode choice summary

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
Purpose: Internal NHW Trips MODE: Est Auto Driver

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	25737	11711	4311	9415	1345	2508	1793	5048	305	653	175	44	519	1286	122	54	536	66	133	15	62	4	0	65841
2 DC NC	9469	27416	6655	12048	748	1741	1345	4022	235	479	181	47	660	1406	118	46	529	46	90	13	39	3	0	67335
3 MTG	3707	8326	132254	8331	323	1347	619	3576	261	260	1343	247	1725	1274	45	22	122	48	47	51	33	2	0	163965
4 PG	7988	12303	7901	100030	537	1412	1557	2155	87	222	128	59	2276	4990	346	121	1588	28	56	14	38	6	0	143840
5 ARLCR	1225	1498	666	858	3885	2657	1237	2722	118	294	19	4	39	90	10	4	44	16	34	3	14	1	0	15437
6 ARNCR	2218	2744	1476	1723	2079	18556	3046	8252	322	740	37	6	75	181	18	7	95	40	76	7	32	2	0	41732
7 ALX	1716	1919	755	1901	1136	3151	17013	7705	181	826	20	4	50	142	23	14	159	26	96	5	41	2	0	36885
8 FFX	3805	4143	3803	2555	2701	8371	6736	182743	6886	6435	105	18	115	211	25	19	167	352	319	54	139	7	0	229709
9 LDN	195	167	222	79	124	275	126	5672	36881	681	116	6	13	18	1	1	7	100	15	155	11	0	0	44867
10 PW	473	391	240	223	284	658	585	5385	637	51984	12	2	13	31	4	3	22	523	818	15	234	6	0	62544
11 FRD	129	157	1261	139	19	35	19	114	141	16	40956	740	268	112	4	2	9	9	6	262	5	0	0	44404
12 CAR	34	39	239	65	4	6	4	23	9	3	704	24978	327	100	2	1	4	2	1	16	1	0	0	26563
13 HOW	487	664	1732	2449	32	67	40	122	16	15	239	324	30289	3880	14	7	28	6	6	13	5	1	0	40436
14 AAR	1073	1329	1345	5173	75	154	114	228	24	37	108	101	3971	79986	214	34	134	11	16	12	14	2	0	94156
15 CAL	97	103	51	355	9	14	18	29	2	5	4	2	16	218	12898	631	217	1	3	1	3	3	0	14679
16 STM	49	47	28	140	6	8	12	23	2	5	3	1	10	41	682	34388	484	2	6	1	9	13	0	35959
17 CHS	444	471	138	1653	34	74	114	145	8	23	9	3	30	141	210	448	24171	5	12	2	13	31	0	28179
18 FAU	41	32	42	25	19	34	20	287	99	527	7	1	5	9	1	1	5	7539	94	17	56	2	0	8863
19 STA	86	61	43	49	33	58	59	255	14	812	5	1	5	14	2	4	11	93	11733	2	1899	41	0	15279
20 CL/JF	10	10	45	12	4	6	5	47	143	15	201	13	12	11	0	0	1	17	2	9583	2	0	0	10140
21 SP/FB	40	33	29	32	19	30	30	126	10	242	4	1	4	12	2	6	11	56	1863	1	18911	62	0	21524
22 KGEO	3	2	2	6	1	2	2	6	0	7	0	0	1	2	2	9	27	2	42	0	61	1883	0	2060
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	59028		163238		13419		34493		46383		44378		40419		14745		28369		15466		21619		0	1214396
		73568		147259		41165		228685		64283		26602		94155		35822		8987		10240		2072		

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
Purpose: Internal NHW Trips MODE: Obs Auto Driver

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	19851	14593	8320	10799	233	5905	4449	11035	1623	635	0	0	0	1974	0	0	1289	0	174	0	0	218	0	81097
2 DC NC	10542	28622	12019	16741	282	2117	1074	8167	691	271	0	0	172	1917	634	0	1302	0	162	0	174	0	0	84889
3 MTG	7015	5983	150732	13752	0	2390	810	5993	1134	186	5065	455	2368	2535	0	0	0	0	330	0	0	0	0	198749
4 PG	6267	7687	12943	95292	263	941	503	4380	661	281	0	0	3916	10171	376	0	2018	0	0	0	0	0	0	145700
5 ARLCR	881	1095	674	578	1093	1635	1275	3740	0	666	0	0	0	0	0	0	0	0	0	0	0	0	0	11638
6 ARNCR	4111	1559	1646	958	1794	18589	3968	15419	243	687	0	0	0	191	0	0	156	0	929	0	0	0	0	50249
7 ALX	2170	1544	589	1054	799	3100	17996	6967	618	857	0	0	730	399	0	0	394	0	320	0	0	0	0	37537
8 FFX	10339	7554	10939	3611	2100	11508	6809	196505	9379	14473	610	0	54	280	238	235	1387	699	1036	327	1344	0	0	279426
9 LDN	1491	356	460	984	0	719	300	8107	32101	1147	0	0	0	0	0	0	0	0	260	78	0	0	0	46003
10 PW	0	367	770	203	0	1102	1002	14113	804	45994	0	0	0	0	0	0	0	592	797	0	129	164	0	66035
11 FRD	0	0	2664	952	0	0	0	0	0	298	44564	976	883	0	0	0	0	0	0	0	539	0	0	50876
12 CAR	0	0	679	0	0	0	0	0	0	0	0	1136	19012	1072	1026	0	0	0	0	0	0	0	0	22925
13 HOW	211	707	1568	1765	0	0	540	210	0	0	387	1630	31827	8293	0	0	392	0	0	0	0	0	0	47530
14 AAR	859	602	2042	6812	188	646	0	191	0	363	0	969	5944	80970	765	264	0	0	0	0	0	0	0	100614
15 CAL	801	0	0	510	0	0	0	674	0	0	0	0	239	626	12393	760	249	0	0	0	0	0	0	16252
16 STM	0	0	0	460	0	0	0	523	0	0	0	0	0	0	1343	34619	1136	0	0	0	0	0	0	38080
17 CHS	142	491	0	2971	0	295	680	0	0	0	0	0	0	401	0	1403	19913	0	0	0	0	0	0	26298
18 FAU	0	0	0	0	0	0	0	685	351	286	0	0	0	0	0	0	0	3389	0	0	0	0	0	4711
19 STA	0	404	0	0	0	0	0	856	0	1228	0	0	0	0	0	0	0	0	6941	0	2156	118	0	11703
20 CL/JF	0	0	0	0	0	0	0	0	488	0	545	0	0	0	0	0	0	0	0	2266	539	0	0	3839
21 SP/FB	0	266	0	0	558	568	0	337	0	131	0	0	0	0	0	0	0	0	2488	0	18863	593	0	23803
22 KGEO	335	173	0	0	0	0	0	0	0	164	0	0	0	0	0	0	596	0	0	0	900	3257	0	5425
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	65015		206044		7312		39405		48094		52306		23043		47206		15749		37280		28832		0	1353382
		72002		157441		49515		277902		67668		23043		108783		37280		4680		13438		3210		

Appendix B Year 2007 mode choice summary

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal NHW Trips MODE: Difference (Est-Obs) Auto Driver

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	5887	-2882	-4009	-1385	1112	-3396	-2656	-5986	-1317	17	175	44	519	-688	122	54	-753	66	-41	15	62	-214	0	-15257
2 DC NC	-1073	-1206	-5364	-4694	465	-376	271	-4146	-456	207	181	47	488	-511	-516	46	-773	46	-73	13	-135	3	0	-17554
3 MTG	-3308	2343	-18478	-5421	323	-1043	-191	-2417	-873	74	-3721	-208	-643	-1261	45	22	122	48	-283	51	33	2	0	-34784
4 PG	1721	4616	-5042	4737	274	471	1053	-2225	-574	-59	128	59	-1640	-5182	-30	121	-430	28	56	14	38	6	0	-1860
5 ARLCR	343	403	-8	280	2792	1022	-39	-1019	118	-372	19	4	39	90	10	4	44	16	34	3	14	1	0	3799
6 ARNCR	-1893	1185	-170	765	286	-33	-922	-7167	80	53	37	6	75	-10	18	7	-61	40	-853	7	32	2	0	-8518
7 ALX	-454	375	166	847	337	51	-982	738	-437	-31	20	4	-681	-257	23	14	-235	26	-224	5	41	2	0	-652
8 FFX	-6534	-3411	-7136	-1056	600	-3137	-72	-13761	-2493	-8038	-505	18	61	-69	-213	-216	-1220	-347	-717	-273	-1205	7	0	-49717
9 LDN	-1296	-189	-238	-904	124	-444	-173	-2435	4780	-465	116	6	13	18	1	1	7	100	-245	77	11	0	0	-1136
10 PW	473	24	-529	20	284	-444	-418	-8728	-167	5991	12	2	13	31	4	3	22	-69	21	15	105	-157	0	-3491
11 FRD	129	157	-1403	-813	19	35	19	114	141	-282	-3607	-236	-616	112	4	2	9	9	6	-277	5	0	0	-6473
12 CAR	34	39	-440	65	4	6	4	23	9	3	-432	5966	-746	-926	2	1	4	2	1	16	1	0	0	3638
13 HOW	276	-43	164	684	32	67	-499	-89	16	15	-148	-1306	-1538	-4413	14	7	-363	6	6	13	5	1	0	-7094
14 AAR	214	726	-697	-1638	-113	-492	114	37	24	-325	108	-868	-1972	-984	-551	-230	134	11	16	12	14	2	0	-6458
15 CAL	-704	103	51	-155	9	14	18	-645	2	5	4	2	-224	-407	506	-129	-32	1	3	1	3	3	0	-1573
16 STM	49	47	28	-320	6	8	12	-499	2	5	3	1	10	41	-661	-230	-653	2	6	1	9	13	0	-2121
17 CHS	302	-20	138	-1318	34	-221	-566	145	8	23	9	3	30	-260	210	-956	4257	5	12	2	13	31	0	1881
18 FAU	41	32	42	25	19	34	20	-398	-252	241	7	1	5	9	1	1	5	4150	94	17	56	2	0	4151
19 STA	86	-342	43	49	33	58	59	-601	14	-416	5	1	5	14	2	4	11	93	4792	2	-256	-76	0	3576
20 CL/JF	10	10	45	12	4	6	5	47	-345	15	-344	13	12	11	0	0	1	17	2	7317	-538	0	0	6301
21 SP/FB	40	-233	29	32	-539	-539	30	-210	10	112	4	1	4	12	2	6	11	56	-625	1	48	-531	0	-2279
22 KGEO	-331	-170	2	6	1	2	2	6	0	-157	0	0	1	2	2	9	-569	2	42	0	-840	-1374	0	-3365
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	-5987	1565	-42806	-10182	6108	-8350	-4912	-49217	-1711	-7928	3560	-6787	-14628	-1004	-1458	-463	4307	2028	7030	-2486	-2278	0	0	-138985

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal NHW Trips MODE: Ratio (Est/Obs) Auto Driver

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	1.30	0.80	0.52	0.87	5.77	0.42	0.40	0.46	0.19	1.03	175.41	44.22	518.77	0.65	121.87	53.59	0.42	66.07	0.76	14.68	61.67	0.02	0	0.81
2 DC NC	0.90	0.96	0.55	0.72	2.65	0.82	1.25	0.49	0.34	1.76	181.10	46.53	3.83	0.73	0.19	46.06	0.41	45.79	0.55	13.22	0.23	3.04	0	0.79
3 MTG	0.53	1.39	0.88	0.61	323.47	0.56	0.76	0.60	0.23	1.40	0.27	0.54	0.73	0.50	45.07	21.76	122.09	48.21	0.14	51.31	33.00	2.19	0	0.82
4 PG	1.27	1.60	0.61	1.05	2.04	1.50	3.09	0.49	0.13	0.79	127.58	58.60	0.58	0.49	0.92	120.59	0.79	27.69	55.77	13.84	37.54	6.40	0	0.99
5 ARLCR	1.39	1.37	0.99	1.48	3.55	1.63	0.97	0.73	118.14	0.44	18.98	4.01	38.57	89.94	9.91	4.16	44.10	16.29	33.54	3.02	14.44	0.87	0	1.33
6 ARNCR	0.54	1.76	0.90	1.80	1.16	1.00	0.77	0.54	1.33	1.08	37.10	6.36	74.72	0.95	17.53	7.00	0.61	40.33	0.08	6.94	32.15	1.52	0	0.83
7 ALX	0.79	1.24	1.28	1.80	1.42	1.02	0.95	1.11	0.29	0.96	20.01	4.16	0.07	0.36	23.05	13.56	0.40	25.79	0.30	5.16	40.91	2.45	0	0.98
8 FFX	0.37	0.55	0.35	0.71	1.29	0.73	0.99	0.93	0.73	0.44	0.17	18.18	2.14	0.75	0.11	0.08	0.12	0.50	0.31	0.16	0.10	6.65	0	0.82
9 LDN	0.13	0.47	0.48	0.08	124.13	0.38	0.42	0.70	1.15	0.59	116.39	6.28	12.72	18.27	1.28	1.15	6.89	100.12	0.06	1.98	10.52	0.40	0	0.98
10 PW	473.25	1.06	0.31	1.10	284.32	0.60	0.58	0.38	0.79	1.13	12.37	2.03	12.55	31.21	4.11	3.46	21.80	0.88	1.03	14.83	1.82	0.04	0	0.95
11 FRD	128.77	157.21	0.47	0.15	19.15	34.98	19.15	113.81	140.78	0.05	0.92	0.76	0.30	112.15	3.81	2.40	9.44	8.95	5.65	0.49	4.66	0.24	0	0.87
12 CAR	34.16	39.06	0.35	65.24	4.31	6.45	4.35	23.23	8.58	3.12	0.62	1.31	0.30	0.10	1.64	0.94	3.67	1.63	1.37	15.94	1.17	0.05	0	1.16
13 HOW	2.31	0.94	1.10	1.39	32.18	67.11	0.08	0.58	15.85	15.12	0.62	0.20	0.95	0.47	14.45	7.45	0.07	5.62	5.57	12.87	4.59	0.61	0	0.85
14 AAR	1.25	2.21	0.66	0.76	0.40	0.24	114.05	1.19	24.44	0.10	107.81	0.10	0.67	0.99	0.28	0.13	133.53	10.77	16.45	11.87	13.51	2.45	0	0.94
15 CAL	0.12	103.00	50.57	0.70	8.70	13.81	17.84	0.04	1.93	5.45	4.08	1.62	0.07	0.35	1.04	0.83	0.87	1.37	3.00	0.64	3.06	2.68	0	0.90
16 STM	49.00	47.09	27.97	0.31	5.66	8.17	11.87	0.04	1.90	4.95	2.94	1.08	9.55	41.40	0.51	0.99	0.43	1.72	5.60	0.56	9.44	12.90	0	0.94
17 CHS	3.12	0.96	137.63	0.56	34.06	0.25	0.17	145.25	8.02	23.01	9.21	3.26	29.79	0.35	210.21	0.32	1.21	5.15	12.31	1.56	12.74	31.01	0	1.07
18 FAU	41.18	32.40	41.97	24.56	18.92	34.27	19.71	0.42	0.28	1.84	7.27	1.13	4.71	8.95	1.09	1.20	4.72	2.22	93.91	16.89	55.59	1.74	0	1.88
19 STA	86.07	0.15	42.99	49.28	33.09	57.57	58.54	0.30	14.39	0.66	4.54	0.99	4.84	14.24	2.27	3.57	10.92	92.78	1.69	1.50	0.88	0.35	0	1.31
20 CL/JF	10.38	10.14	45.39	12.06	4.07	6.48	4.52	46.50	0.29	15.17	0.37	12.95	12.20	10.60	0.47	0.33	1.33	16.65	1.54	4.23	0.00	0.05	0	2.64
21 SP/FB	40.33	0.12	29.46	32.23	0.03	0.05	30.16	0.38	10.35	1.85	3.59	0.77	4.04	11.53	2.23	6.11	10.56	55.65	0.75	1.42	1.00	0.10	0	0.90
22 KGEO	0.01	0.01	1.93	5.64	1.20	1.56	2.07	6.27	0.42	0.04	0.19	0.03	0.56	2.20	2.02	9.32	0.04	1.78	42.03	0.05	0.07	0.58	0	0.38
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0.91	1.02	0.79	0.94	1.84	0.83	0.88	0.82	0.95	0.85	1.15	0.86	0.87	0.94	0.96	0.98	1.92	1.15	3.19	0.48	0	0	0	0.90

Appendix B Year 2007 mode choice summary

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal NHW Trips MODE: Est Motr Psn

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	49927	23728	7546	11526	3827	6242	3613	6680	404	786	324	76	615	1606	167	111	634	121	207	42	139	12	0	118335
2 DC NC	23751	41378	10205	13968	2080	3698	2418	5025	318	575	314	75	769	1732	157	91	611	88	145	39	97	9	0	107544
3 MTG	7565	10329	163683	10716	914	1981	1106	6513	628	640	2282	444	2399	2350	133	75	325	155	153	164	115	8	0	212678
4 PG	11824	14096	10768	110495	977	1924	2217	4054	268	563	403	161	3073	6988	582	293	2143	95	179	48	130	22	0	171303
5 ARLCR	3682	2056	900	942	5531	3963	1776	3254	168	344	37	8	47	121	14	10	54	30	52	10	34	3	0	23036
6 ARNCR	6123	3639	1940	1877	3934	23420	4177	9901	447	857	77	14	97	253	26	17	113	73	115	22	79	5	0	57207
7 ALX	3579	2377	1090	2132	1714	4182	21045	9214	297	1018	56	12	81	237	38	30	193	61	155	17	101	8	0	47636
8 FFX	6302	4792	6046	3912	3178	9713	9090	229094	8298	8254	324	59	321	625	80	64	369	706	675	160	432	23	0	292516
9 LDN	338	255	548	229	155	408	272	8284	39473	998	217	21	43	63	4	4	24	192	48	248	36	1	0	51862
10 PW	727	522	596	529	331	838	987	8071	933	55554	45	7	46	108	15	13	70	707	1053	48	463	19	0	71680
11 FRD	325	313	2360	419	39	81	60	383	261	56	45281	1008	586	365	13	8	33	31	20	444	16	1	0	52102
12 CAR	89	84	508	184	9	17	14	80	29	11	1041	26207	507	267	6	3	13	6	5	51	4	0	0	29136
13 HOW	691	836	2549	3296	54	109	92	386	54	55	530	456	33014	4815	45	26	92	20	19	44	16	2	0	47202
14 AAR	1692	1793	2532	7229	128	266	254	735	84	132	347	246	5009	88151	363	113	355	38	57	41	47	9	0	109622
15 CAL	181	167	148	628	16	29	42	97	7	19	14	6	51	391	13611	830	350	5	10	2	11	9	0	16624
16 STM	132	110	94	352	12	22	35	81	7	17	10	4	33	139	887	36722	735	6	19	2	33	39	0	39490
17 CHS	662	624	358	2244	56	117	193	385	28	76	32	11	98	372	333	659	25775	18	42	5	44	70	0	32203
18 FAU	102	72	130	81	26	63	55	691	191	723	25	4	16	31	4	4	16	8037	145	39	112	5	0	10574
19 STA	176	119	133	153	43	94	132	625	47	1073	16	3	17	50	8	12	37	142	12374	5	2148	55	0	17462
20 CL/JF	36	32	147	42	8	19	15	154	243	50	371	40	42	37	2	1	5	39	5	10065	5	0	0	11360
21 SP/FB	121	89	99	110	29	64	85	400	36	465	12	3	14	40	8	21	36	107	2075	5	20034	82	0	23936
22 KGEO	11	7	7	19	2	4	7	22	1	20	1	0	2	8	7	28	60	5	57	0	86	1961	0	2316
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	118037		212386		23064		47687		52222		51759		46881		16503		32042		17614		24182		0	1545825
		107422		171083		57253		294129		72284		28865		108749		39138		10681		11502		2343		

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal NHW Trips MODE: Obs Motr Psn

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	44004	27699	11942	14362	1302	11773	5942	13501	1671	695	0	0	79	2063	0	0	1289	12	610	0	0	218	0	137163
2 DC NC	23807	43475	15493	22320	838	4109	1597	9221	691	294	0	0	172	1917	951	0	1302	0	568	18	610	0	0	127383
3 MTG	12618	9011	187371	16051	118	2767	989	6579	1316	186	5969	455	2393	2535	0	0	0	0	330	0	0	0	0	248688
4 PG	9548	10928	15334	119349	462	1314	628	4597	661	281	0	0	4576	11140	376	0	2326	0	0	0	0	0	0	181518
5 ARLCR	2312	1455	717	636	1093	2717	1350	3851	0	681	0	0	0	28	0	0	0	0	0	0	0	0	0	14841
6 ARNCR	9670	2854	2743	1376	3485	25410	4847	17901	279	976	0	0	0	418	0	0	156	0	946	0	0	0	0	71060
7 ALX	3726	2062	639	1152	936	3994	22888	7521	618	883	0	0	1832	757	0	0	394	0	320	0	0	0	0	47722
8 FFX	14265	8846	12094	5164	2436	14082	7225	246492	10638	16271	610	0	54	280	238	235	1866	909	2885	521	1344	0	0	346453
9 LDN	1573	356	460	984	0	766	300	9689	36901	1147	0	0	0	0	0	0	0	0	260	78	0	0	0	52514
10 PW	115	381	780	203	0	1200	1002	16259	804	53727	0	0	0	0	0	0	0	759	797	0	129	164	0	76318
11 FRD	48	0	3837	1533	0	0	0	0	0	298	52013	1142	883	0	0	0	0	0	0	0	539	0	0	60293
12 CAR	0	0	679	0	0	0	0	0	0	0	0	1302	23345	1072	1026	0	0	0	0	0	0	0	0	27424
13 HOW	849	707	1876	2185	0	48	1392	210	0	0	387	1630	35690	10060	0	0	392	0	0	0	0	0	0	55425
14 AAR	1354	632	3742	6812	188	1366	31	191	0	363	0	969	6472	86800	765	527	0	0	0	0	0	0	0	110213
15 CAL	801	0	0	510	0	0	0	674	0	0	0	0	239	889	14131	760	249	0	0	0	0	0	0	18254
16 STM	0	0	0	460	0	0	0	523	0	0	0	0	0	0	1343	38555	1136	0	0	0	0	0	0	42017
17 CHS	184	491	0	2971	0	295	680	0	0	0	0	0	401	0	1403	26668	0	0	0	0	0	0	0	33095
18 FAU	0	0	33	0	0	0	0	685	351	286	0	0	0	0	0	0	0	3937	0	0	0	0	0	5292
19 STA	10	1014	0	0	0	0	0	856	0	1228	0	0	0	0	0	0	0	0	10130	0	2452	118	0	15809
20 CL/JF	0	0	0	0	0	0	0	0	0	488	0	545	0	0	0	0	0	0	0	2923	539	0	0	4495
21 SP/FB	0	266	0	0	558	568	0	337	0	131	0	0	0	0	0	0	0	0	2784	0	22091	593	0	27328
22 KGEO	335	173	0	0	0	0	0	0	0	164	0	0	0	0	0	0	596	0	0	0	1643	5357	0	8267
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	125219		257740		11416		48871		54418		60825		53464		17805		36374		19631		28807		0	1711572
		110349		196066		70411		339084		77611		27541		118313		41480		5617		4078		6450		

Appendix B Year 2007 mode choice summary

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal NHW Trips MODE: Difference (Est-Obs) Motorized Person

ORIGIN	DESTINATION																							TOTAL	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1 DC CR	5924	-3971	-4396	-2836	2525	-5532	-2329	-6821	-1267	90	324	76	536	-457	167	111	-655	109	-403	42	139	-206	0	-18827	
2 DC NC	-57	-2097	-5288	-8351	1243	-411	822	-4196	-373	281	314	75	597	-185	-795	91	-691	88	-423	21	-513	9	0	-19839	
3 MTG	-5053	1318	-23688	-5335	796	-787	117	-66	-688	454	-3687	-11	5	-185	133	75	325	155	-177	164	115	8	0	-36011	
4 PG	2275	3167	-4566	-8854	515	610	1589	-543	-393	282	403	161	-1503	-4152	206	293	-183	95	179	48	130	22	0	-10216	
5 ARLCR	1370	601	183	306	4438	1246	425	-597	168	-337	37	8	47	93	14	10	54	30	52	10	34	3	0	8194	
6 ARNCR	-3546	786	-803	501	450	-1990	-670	-7999	168	-119	77	14	97	-165	26	17	-43	73	-831	22	79	5	0	-13853	
7 ALX	-146	316	450	980	778	187	-1843	1693	-321	135	56	12	-1751	-520	38	30	-201	61	-165	17	101	8	0	-86	
8 FFX	-7964	-4054	-6048	-1252	742	-4370	1865	-17398	-2339	-8017	-286	59	267	345	-158	-171	-1498	-204	-2209	-361	-912	23	0	-53937	
9 LDN	-1234	-101	88	-755	155	-358	-27	-1405	2572	-149	217	21	43	63	4	4	24	192	-212	170	36	1	0	-651	
10 PW	612	141	-184	327	331	-362	-15	-8187	129	1827	45	7	46	108	15	13	70	-52	257	48	335	-145	0	-4638	
11 FRD	277	313	-1477	-1114	39	81	60	383	261	-243	-6731	-134	-297	365	13	8	33	31	20	-95	16	1	0	-8191	
12 CAR	89	84	-171	184	9	17	14	80	29	11	-260	2862	-565	-759	6	3	13	6	5	51	4	0	0	1713	
13 HOW	-157	129	673	1111	54	61	-1300	175	54	55	143	-1174	-2676	-5244	45	26	-299	20	19	44	16	2	0	-8223	
14 AAR	338	1161	-1210	418	-60	-1100	223	544	84	-231	347	-723	-1464	1351	-402	-414	355	38	57	41	47	9	0	-591	
15 CAL	-620	167	148	118	16	29	42	-577	7	19	14	6	-188	-499	-520	71	100	5	10	2	11	9	0	-1629	
16 STM	132	110	94	-108	12	22	35	-442	7	17	10	4	33	139	-456	-1833	-402	6	19	2	33	39	0	-2527	
17 CHS	478	133	358	-727	56	-178	-487	385	28	76	32	11	98	-29	333	-744	-894	18	42	5	44	70	0	-891	
18 FAU	102	72	97	81	26	63	55	7	-161	437	25	4	16	31	4	4	16	4100	145	39	112	5	0	5282	
19 STA	166	-895	133	153	43	94	132	-232	47	-155	16	3	17	50	8	12	37	142	2244	5	-304	-63	0	1654	
20 CL/JF	36	32	147	42	8	19	15	154	-245	50	-174	40	42	37	2	1	5	39	5	7142	-534	0	0	6865	
21 SP/FB	121	-177	99	110	-530	-504	85	64	36	334	12	3	14	40	8	21	36	107	-709	5	-2058	-511	0	-3392	
22 KGEO	-323	-165	7	19	2	4	7	22	1	-143	1	0	2	8	7	28	-536	5	57	0	-1557	-3396	0	-5951	
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
TOTAL	-7181		-45355		11648		-1184	-44955		-2196		-9066		-6583		-1302		-4333		-2017		-4625			
		-2928		-24983		-13158					-5327		1324		-9564		-2343		5065		7424		-4107		-165746

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal NHW Trips MODE: Ratio (Est/Obs) Motorized Person

ORIGIN	DESTINATION																							TOTAL	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1 DC CR	1.13	0.86	0.63	0.80	2.94	0.53	0.61	0.49	0.24	1.13	324.47	76.06	7.79	0.78	166.66	111.04	0.49	10.10	0.34	42.43	139.01	0.06	0	0.86	
2 DC NC	1.00	0.95	0.66	0.63	2.48	0.90	1.51	0.54	0.46	1.96	313.58	74.58	4.46	0.90	0.16	91.22	0.47	88.39	0.26	2.15	0.16	9.24	0	0.84	
3 MTG	0.60	1.15	0.87	0.67	7.75	0.72	1.12	0.99	0.48	3.44	0.38	0.98	1.00	0.93	133.49	74.78	325.13	154.92	0.46	164.48	114.70	7.59	0	0.86	
4 PG	1.24	1.29	0.70	0.93	2.12	1.46	3.53	0.88	0.41	2.00	403.20	160.91	0.67	0.63	1.55	292.95	0.92	95.32	178.90	48.16	130.31	21.91	0	0.94	
5 ARLCR	1.59	1.41	1.25	1.48	5.06	1.46	1.31	0.85	168.06	0.50	37.47	7.84	47.37	4.32	14.46	9.88	53.75	29.62	51.66	9.50	34.23	2.74	0	1.55	
6 ARNCR	0.63	1.28	0.71	1.36	1.13	0.92	0.86	0.55	1.60	0.88	76.62	13.84	97.33	0.61	25.89	17.39	0.73	73.17	0.12	22.33	78.91	5.02	0	0.81	
7 ALX	0.96	1.15	1.70	1.85	1.83	1.05	0.92	1.23	0.48	1.15	55.76	11.64	0.04	0.31	37.68	29.82	0.49	61.01	0.49	17.47	101.07	7.86	0	1.00	
8 FFX	0.44	0.54	0.50	0.76	1.30	0.69	1.26	0.93	0.78	0.51	0.53	59.42	5.98	2.23	0.34	0.27	0.20	0.78	0.23	0.31	0.32	23.00	0	0.84	
9 LDN	0.22	0.72	1.19	0.23	154.74	0.53	0.91	0.85	1.07	0.87	216.94	21.04	43.31	62.84	4.44	3.97	23.68	191.98	0.18	3.17	36.36	1.39	0	0.99	
10 PW	6.32	1.37	0.76	2.61	330.51	0.70	0.98	0.50	1.16	1.03	44.82	7.03	45.77	108.31	14.85	12.91	70.11	0.93	1.32	47.68	3.60	0.11	0	0.94	
11 FRD	6.77	313.48	0.62	0.27	38.61	80.64	59.80	383.00	261.22	0.19	0.87	0.88	0.66	365.00	13.23	8.32	32.85	30.60	19.66	0.82	16.21	0.84	0	0.86	
12 CAR	89.21	84.24	0.75	183.59	9.17	17.23	14.37	80.28	29.36	10.83	0.80	1.12	0.47	0.26	5.70	3.27	12.74	5.67	4.77	50.76	4.05	0.17	0	1.06	
13 HOW	0.81	1.18	1.36	1.51	54.01	2.27	0.07	1.83	53.87	55.29	1.37	0.28	0.93	0.48	45.29	25.89	0.24	19.56	19.37	44.21	15.96	2.12	0	0.85	
14 AAR	1.25	2.84	0.68	1.06	0.68	0.19	8.20	3.84	83.99	0.36	346.82	0.25	0.77	1.02	0.47	0.22	355.31	37.52	57.21	41.41	47.06	8.52	0	0.99	
15 CAL	0.23	167.46	148.30	1.23	15.76	28.87	42.40	0.14	6.67	18.95	14.17	5.61	0.21	0.44	0.96	1.09	1.40	4.76	10.41	2.22	10.63	9.13	0	0.91	
16 STM	131.75	109.86	93.74	0.77	11.96	21.95	34.94	0.16	6.60	17.18	10.21	3.73	33.25	139.19	0.66	0.95	0.65	5.97	19.47	1.92	32.91	38.52	0	0.94	
17 CHS	3.59	1.27	357.93	0.76	56.45	0.40	0.28	385.13	27.74	75.54	32.06	11.33	98.24	0.93	333.09	0.47	0.97	17.93	42.29	5.42	44.24	70.37	0	0.97	
18 FAU	102.40	72.18	3.94	81.31	26.05	62.91	55.41	1.01	0.54	2.52	24.79	3.94	16.40	31.16	3.79	4.16	16.42	2.04	145.02	38.70	111.77	5.19	0	2.00	
19 STA	17.59	0.12	132.94	153.01	42.55	94.15	132.06	0.73	47.33	0.87	15.79	3.42	16.85	49.50	7.88	12.39	37.41	142.40	1.22	5.20	0.88	0.46	0	1.10	
20 CL/JF	36.15	32.33	147.44	41.51	8.27	19.22	15.45	153.80	0.50	49.77	0.68	40.42	41.87	36.97	1.63	1.13	4.61	39.47	5.37	3.44	0.01	0.17	0	2.53	
21 SP/FB	120.93	0.34	99.18	109.83	0.05	0.11	85.27	1.19	35.80	3.55	12.49	2.66	14.04	40.17	7.73	21.26	36.48	107.03	0.75	4.94	0.91	0.14	0	0.88	
22 KGEO	0.03	0.04	6.67	19.18	2.31	4.38	6.89	21.77	1.46	0.12	0.65	0.10	1.94	7.64	6.86	27.59	0.10	5.37	57.18	0.17	0.05	0.37	0	0.28	
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
TOTAL	0.94		0.82		2.02		0.81	0.98		0.96		0.93		0.85		0.88		0.93		0.88		0.90			
		0.97		0.87		0.81		0.87			0.93		1.05		0.92		0.94		1.90		2.82		0.36		0.90

Appendix B Year 2007 mode choice summary

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
Purpose: Internal NHW Trips MODE: Est Auto Occ.

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	1.23	1.24	1.18	1.06	1.39	1.33	1.36	1.15	1.32	1.18	1.85	1.72	1.18	1.25	1.36	2.07	1.18	1.83	1.56	2.89	2.24	3.00	0	1.21
2 DC NC	1.29	1.20	1.17	1.06	1.50	1.40	1.46	1.17	1.35	1.18	1.73	1.60	1.16	1.23	1.32	1.98	1.16	1.93	1.62	2.93	2.47	3.04	0	1.20
3 MTG	1.16	1.12	1.18	1.27	1.40	1.25	1.68	1.81	2.40	2.40	1.70	1.80	1.39	1.85	2.96	3.44	2.66	3.21	3.24	3.21	3.48	3.47	0	1.22
4 PG	1.09	1.08	1.33	1.09	1.31	1.22	1.39	1.88	3.09	2.47	3.16	2.75	1.35	1.40	1.68	2.43	1.35	3.44	3.21	3.48	3.47	3.42	0	1.15
5 ARLCR	1.42	1.13	1.17	1.06	1.34	1.18	1.18	1.13	1.42	1.16	1.97	1.96	1.23	1.35	1.46	2.38	1.22	1.82	1.54	3.15	2.37	3.15	0	1.23
6 ARNCR	1.45	1.14	1.19	1.07	1.30	1.14	1.16	1.14	1.38	1.15	2.07	2.18	1.30	1.39	1.48	2.48	1.19	1.81	1.51	3.22	2.45	3.30	0	1.17
7 ALX	1.41	1.15	1.36	1.11	1.23	1.14	1.17	1.17	1.64	1.22	2.79	2.80	1.62	1.67	1.63	2.20	1.22	2.37	1.62	3.39	2.47	3.21	0	1.19
8 FFX	1.05	1.12	1.57	1.53	1.03	1.08	1.29	1.24	1.20	1.28	3.07	3.27	2.79	2.96	3.17	3.41	2.20	2.01	2.12	2.97	3.11	3.46	0	1.25
9 LDN	1.42	1.53	2.47	2.89	1.18	1.46	2.15	1.46	1.07	1.46	1.86	3.35	3.40	3.44	3.47	3.45	3.44	1.92	3.20	1.60	3.46	3.47	0	1.15
10 PW	1.23	1.31	2.41	2.31	1.09	1.24	1.65	1.49	1.46	1.07	3.47	3.46	3.45	3.43	3.45	3.47	3.12	1.35	1.29	3.22	1.98	2.94	0	1.14
11 FRD	2.51	1.99	1.87	3.01	2.01	2.30	3.12	3.36	1.86	3.48	1.10	1.36	2.19	3.25	3.47	3.47	3.48	3.42	3.48	1.69	3.48	3.50	0	1.17
12 CAR	2.61	2.16	2.12	2.81	2.13	2.67	3.30	3.46	3.42	3.47	1.48	1.05	1.55	2.67	3.48	3.48	3.47	3.48	3.48	3.18	3.46	3.40	0	1.10
13 HOW	1.31	1.25	1.47	1.35	1.59	1.60	2.26	3.16	3.40	3.46	2.22	1.41	1.09	1.24	3.13	3.48	3.25	3.48	3.48	3.44	3.48	3.48	0	1.17
14 AAR	1.42	1.34	1.88	1.40	1.63	1.71	2.21	3.21	3.44	3.44	3.22	2.43	1.26	1.10	1.70	3.36	2.66	3.48	3.48	3.49	3.48	3.48	0	1.16
15 CAL	1.86	1.62	2.93	1.77	1.81	2.09	2.38	3.37	3.46	3.46	3.47	3.46	3.28	1.79	1.06	1.32	1.61	3.47	3.47	3.47	3.47	3.41	0	1.13
16 STM	2.69	2.33	3.35	2.51	2.11	2.69	2.94	3.46	3.47	3.47	3.47	3.45	3.48	3.36	1.30	1.07	1.52	3.47	3.48	3.43	3.49	2.99	0	1.10
17 CHS	1.41	1.32	2.59	1.36	1.60	1.57	1.69	2.65	3.46	3.21	3.48	3.48	3.30	2.64	1.58	1.47	1.06	3.48	3.44	3.47	3.47	2.27	0	1.14
18 FAU	2.49	2.23	3.10	3.31	1.38	1.84	2.81	2.41	1.92	1.37	3.41	3.49	3.48	3.48	3.48	3.47	3.48	1.07	1.54	2.29	2.01	2.98	0	1.19
19 STA	2.04	1.94	3.09	3.10	1.29	1.64	2.26	2.45	3.29	1.32	3.48	3.45	3.48	3.48	3.47	3.47	3.43	1.53	1.05	3.47	1.13	1.32	0	1.14
20 CL/JF	3.48	3.19	3.25	3.44	2.03	2.97	3.42	3.31	1.70	3.28	1.84	3.12	3.43	3.49	3.47	3.42	3.47	2.37	3.49	1.05	3.47	3.40	0	1.12
21 SP/FB	2.98	2.70	3.35	3.40	1.51	2.15	2.82	3.15	3.46	1.92	3.48	3.45	3.48	3.48	3.47	3.48	3.45	1.92	1.11	3.48	1.06	1.33	0	1.11
22 KGEO	3.47	3.20	3.46	3.40	1.93	2.81	3.33	3.46	3.48	3.06	3.42	3.33	3.46	3.47	3.40	2.96	2.26	3.02	1.36	3.40	1.42	1.04	0	1.12
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	1.24	1.18	1.22	1.13	1.27	1.17	1.26	1.27	1.12	1.16	1.09	1.16	1.15	1.12	1.09	1.13	1.19	1.14	1.12	1.12	1.13	0	1.18	

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
Purpose: Internal NHW Trips MODE: Obs Auto Occ.

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	1.23	1.21	1.12	1.17	1.64	1.24	1.25	1.13	1.00	1.00	0	0	0	1.00	0	0	1.00	0	3.50	0	0	1.00	0	1.18
2 DC NC	1.27	1.23	1.18	1.26	1.77	1.00	1.00	1.06	1.00	1.00	0	0	1.00	1.00	1.50	0	1.00	0	3.50	0	3.50	0	1.21	
3 MTG	1.14	1.15	1.21	1.12	0	1.00	1.14	1.09	1.16	1.00	1.18	1.00	1.00	1.00	0	0	0	1.00	0	0	0	0	1.19	
4 PG	1.16	1.23	1.10	1.24	1.56	1.00	1.00	1.04	1.00	1.00	0	0	1.17	1.09	1.00	0	1.15	0	0	0	0	0	1.20	
5 ARLCR	1.70	1.00	1.00	1.00	1.00	1.30	1.00	1.00	0	1.00	0	0	0	0	0	0	0	0	0	0	0	0	1.10	
6 ARNCR	1.36	1.07	1.57	1.00	1.77	1.19	1.11	1.12	1.00	1.42	0	0	0	2.00	0	0	1.00	0	1.00	0	0	0	1.20	
7 ALX	1.25	1.12	1.00	1.00	1.00	1.07	1.23	1.05	1.00	1.00	0	0	2.51	1.90	0	0	1.00	0	1.00	0	0	0	1.19	
8 FFX	1.18	1.10	1.10	1.42	1.10	1.15	1.00	1.25	1.13	1.12	1.00	0	1.00	1.00	1.00	1.35	1.30	2.78	1.59	1.00	0	0	1.22	
9 LDN	1.00	1.00	1.00	1.00	0	1.00	1.00	1.19	1.15	1.00	0	0	0	0	0	0	0	0	1.00	1.00	0	0	1.14	
10 PW	0	1.00	1.00	1.00	0	1.00	1.00	1.15	1.00	1.16	0	0	0	0	0	0	0	1.28	1.00	0	1.00	1.00	1.15	
11 FRD	0	0	1.44	1.61	0	0	0	0	0	1.00	1.16	1.17	1.00	0	0	0	0	0	0	1.00	0	0	1.18	
12 CAR	0	0	1.00	0	0	0	0	0	0	0	1.15	1.23	1.00	1.00	0	0	0	0	0	0	0	0	1.20	
13 HOW	3.50	1.00	1.20	1.24	0	0	2.53	1.00	0	0	1.00	1.00	1.12	1.21	0	0	1.00	0	0	0	0	0	1.16	
14 AAR	1.42	1.00	1.83	1.00	1.00	2.00	0	1.00	0	1.00	0	1.00	1.09	1.07	1.00	2.00	0	0	0	0	0	0	1.09	
15 CAL	1.00	0	0	1.00	0	0	0	1.00	0	0	0	0	1.00	1.42	1.14	1.00	1.00	0	0	0	0	0	1.12	
16 STM	0	0	0	1.00	0	0	0	1.00	0	0	0	0	0	0	1.00	1.11	1.00	0	0	0	0	0	1.10	
17 CHS	1.00	1.00	0	1.00	0	1.00	1.00	0	0	0	0	0	1.00	0	1.00	1.34	0	0	0	0	0	0	1.26	
18 FAU	0	0	0	0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	1.16	0	0	0	0	1.12	
19 STA	0	2.51	0	0	0	0	0	1.00	0	1.00	0	0	0	0	0	0	0	0	1.46	0	1.14	1.00	1.35	
20 CL/JF	0	0	0	0	0	0	0	0	1.00	0	1.00	0	0	0	0	0	0	0	0	1.29	1.00	0	1.17	
21 SP/FB	0	1.00	0	0	1.00	1.00	0	1.00	0	1.00	0	0	0	0	0	0	0	0	1.12	0	1.17	1.00	1.15	
22 KGEO	1.00	1.00	0	0	0	0	0	0	0	1.00	0	0	0	0	0	0	1.00	0	0	1.82	1.64	0	1.52	
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
TOTAL	1.23	1.19	1.20	1.21	1.29	1.16	1.17	1.20	1.13	1.14	1.16	1.20	1.13	1.09	1.11	1.26	1.20	1.46	1.26	1.20	1.48	0	1.18	

Appendix B Year 2007 mode choice summary

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal NHW Trips MODE: Est Pct. Tran

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	36.6	38.9	32.3	13.0	51.0	46.7	32.6	13.0	0	2.3	0	0	0.3	0.1	0.4	0.0	0.1	0	0	0	0.5	0	0	32.5
2 DC NC	48.5	20.4	23.9	8.7	46.0	33.9	18.9	6.3	0	1.8	0	0	0.1	0.0	0.1	0	0.0	0	0	0	0.0	0	0	24.7
3 MTG	43.0	10.0	4.9	1.6	50.5	14.9	6.1	0.7	0	2.3	0.0	0	0.0	0	0.0	0	0	0	0	0	0	0	0	6.3
4 PG	26.5	5.5	2.4	0.9	28.2	10.4	2.2	0.2	0	2.6	0	0	0.0	0.0	0	0	0.0	0	0	0	0	0	0	3.3
5 ARLCR	52.6	17.6	13.6	3.5	5.9	20.8	17.8	5.2	0	0.9	0	0	0	0	0	0	0	0	0	0	0	0	0	17.8
6 ARNCR	47.7	14.3	9.1	2.2	31.5	9.4	15.2	5.0	0	0.9	0	0	0	0	0	0	0	0	0	0	0	0	0	14.4
7 ALX	32.6	6.9	5.7	0.9	18.2	14.2	5.5	2.0	0	0.8	0	0	0	0	0	0	0	0	0	0	0	0	0	7.7
8 FFX	36.3	3.3	1.4	0.3	12.6	6.5	4.5	0.9	0.0	0.5	0.2	0	0.3	0.1	0.3	0.5	0.2	0	0	0	0.0	0	0	2.0
9 LDN	18.2	0.2	0.1	0	5.4	1.3	0.1	0.0	0.1	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3
10 PW	19.8	2.1	2.8	2.6	5.8	2.3	2.1	0.5	0.2	0.1	4.3	0	5.4	1.2	4.6	7.0	2.9	0	0	0	0.1	0	0	0.5
11 FRD	0.5	0.0	0.0	0	0.3	0.0	0	0.0	0	0.2	0.3	0	0	0	0	0	0	0	0	0	0	0	0	0.3
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	7.3	0.5	0.2	0.0	5.0	1.4	0.4	0.3	0	5.5	0	0	0.0	0	0	0	0	0	0	0	0	0	0	0.2
14 AAR	10.1	0.7	0.2	0.0	3.9	1.2	0.8	0.5	0	2.5	0	0	0	0.0	0	0	0	0	0	0	0	0	0	0.2
15 CAL	0.6	0.1	0.0	0	0.3	0.1	0	0.0	0	0.4	0	0	0	0	0.0	0	0	0	0	0	0	0	0	0.0
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.1	0	0	0	0	0	0	0.0
17 CHS	5.7	0.6	0.3	0	3.3	0.9	0.1	0.2	0	2.2	0	0	0	0	0	0.1	0.2	0	0	0	0	0	0	0.3
18 FAU	0.0	0	0	0	0	0	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
19 STA	0.1	0	0	0	0	0	0	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0.6	0.3	0.6	0.2	0.3	0.3	0.2	0.6	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
22 KGEO	0	0	0	0	0	0	0	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	38.1	19.3	6.4	2.4	25.9	15.6	9.0	1.4	0.1	0.3	0.3	0	0.0	0.0	0.0	0.0	0.2	0	0	0	0.0	0	0	6.9

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal NHW Trips MODE: Obs Pct. Tran

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	44.3	36.3	22.3	12.3	70.6	37.9	6.6	7.8	2.9	8.6	0	0	100.0	4.3	0	0	0	100.0	0	0	0	0	0	30.0
2 DC NC	43.8	19.1	8.4	5.1	40.3	48.5	32.8	5.7	0	7.8	0	0	0	0	0	0	0	0	0	100.0	0	0	0	19.3
3 MTG	36.7	23.6	2.7	4.1	100.0	13.6	6.8	1.0	0	0	0	0	1.0	0	0	0	0	0	0	0	0	0	0	5.3
4 PG	23.6	13.1	7.1	1.2	11.3	28.4	19.9	0.8	0	0	0	0	0	0.3	0	0	0	0	0	0	0	0	0	3.8
5 ARLCR	35.1	24.7	6.0	9.1	0	21.5	5.6	2.9	0	2.2	0	0	0	0	0	0	0	0	0	0	0	0	0	14.1
6 ARNCR	42.4	41.5	6.0	30.4	9.0	13.2	8.7	3.5	12.9	0	0	0	0	8.4	0	0	0	0	1.8	0	0	0	0	15.0
7 ALX	27.4	16.0	7.8	8.5	14.6	16.6	2.9	2.9	0	2.9	0	0	0	0	0	0	0	0	0	0	0	0	0	6.7
8 FFX	14.2	6.0	0.7	0.4	5.3	5.8	5.8	0.7	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.6
9 LDN	5.2	0	0	0	0	6.1	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3
10 PW	100.0	3.7	1.3	0	0	8.2	0	0.4	0	0.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0.6
11 FRD	100.0	0	0	0	0	0	0	0	0	0	0.3	0	0	0	0	0	0	0	0	0	0	0	0	0.4
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	12.8	0	0	0	0	100.0	1.7	0	0	0	0	0	0.1	0	0	0	0	0	0	0	0	0	0	0.4
14 AAR	10.1	4.7	0	0	0	5.4	100.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2
15 CAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 CHS	22.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1
18 FAU	0	0	100.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.6
19 STA	100.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	36.2	22.1	4.1	2.9	17.6	18.3	5.6	1.3	0.2	0.3	0.3	0	0.2	0.2	0	0	0	0.2	0.1	0.4	0	0	0	6.4

Appendix B Year 2007 mode choice summary

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal NHO Trips MODE: Est Transit

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	4799	2972	757	425	620	734	212	151	0	15	0	0	1	2	0	0	0	0	0	0	0	0	0	10687
2 DC NC	4608	6608	1290	647	463	437	102	46	0	17	0	0	0	1	0	0	0	0	0	0	0	0	0	14218
3 MTG	637	512	4810	190	247	146	11	18	0	57	0	0	0	0	0	0	0	0	0	0	0	0	0	6628
4 PG	586	358	181	955	227	190	7	12	0	41	0	0	0	0	0	0	0	0	0	0	0	0	0	2559
5 ARLCR	482	51	7	1	43	218	90	12	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	908
6 ARNCR	1463	98	12	1	243	1080	320	86	0	24	0	0	0	0	0	0	0	0	0	0	0	0	0	3327
7 ALX	721	24	3	0	71	278	792	74	0	32	0	0	0	0	0	0	0	0	0	0	0	0	0	1996
8 FFX	433	12	17	9	43	241	249	773	3	165	3	0	4	2	1	1	3	0	0	0	1	0	0	1960
9 LDN	2	0	0	0	0	0	0	10	50	26	0	0	0	0	0	0	0	0	0	0	0	0	0	87
10 PW	17	14	38	26	5	30	42	179	11	238	7	0	11	6	3	9	0	0	0	0	2	0	0	641
11 FRD	0	0	0	0	0	0	0	0	0	1	152	0	0	0	0	0	0	0	0	0	0	0	0	153
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	17	0	0	0	7	4	0	7	0	16	0	0	5	0	0	0	0	0	0	0	0	0	0	56
14 AAR	31	0	0	1	18	14	0	15	0	18	0	0	0	1	0	0	0	0	0	0	0	0	0	98
15 CAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	2
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19	0	0	0	0	0	0	0	19
17 CHS	0	0	0	0	4	4	0	3	0	10	0	0	0	0	0	0	167	0	0	0	0	0	0	189
18 FAU	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
19 STA	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0	0	1	1	0	0	1	10	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	14
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	13796		7118		1991		1825		64		161		21		5		180		0		0		3	43547
		10650		2255		3378		1402		665		0		11		23		0		0		0		

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal NHO Trips MODE: Obs Transit

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	4161	3557	734	502	151	1894	226	114	25	46	29	0	0	430	0	0	0	0	0	0	0	0	0	11869
2 DC NC	5257	5669	644	619	60	1040	180	114	31	0	0	0	0	67	0	0	0	0	0	0	0	0	0	13681
3 MTG	762	696	3264	416	23	250	0	0	0	0	3	0	0	61	0	0	0	0	0	0	0	0	0	5475
4 PG	465	681	252	2242	35	213	0	0	0	0	0	0	0	68	0	0	0	0	0	0	0	0	0	3956
5 ARLCR	497	71	0	0	39	211	34	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	859
6 ARNCR	1724	916	119	14	96	968	116	106	9	0	0	0	0	21	0	0	0	0	0	0	0	0	0	4089
7 ALX	387	154	18	0	42	279	269	83	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1232
8 FFX	501	129	13	0	11	363	186	1524	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0	2738
9 LDN	19	0	0	0	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	43
10 PW	67	27	0	0	21	0	0	0	0	91	0	0	0	0	0	0	0	0	0	0	0	0	0	206
11 FRD	20	0	0	0	0	0	0	0	0	0	150	0	0	0	0	0	0	0	0	0	0	0	0	170
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	79	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	79
14 AAR	194	13	16	0	35	74	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	332
15 CAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 CHS	24	28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	52
18 FAU	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30
19 STA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	14187		5060		537		1011		65		182		0		0		0		0		0		0	44811
		11941		3793		5292		1941		155		0		647		0		0		0		0		

Appendix B Year 2007 mode choice summary

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal NHO Trips MODE: Difference (Est-Obs) Transit

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	638	-585	23	-77	469	-1160	-14	37	-25	-31	-29	0	1	-428	0	0	0	0	0	0	0	0	0	-1182
2 DC NC	-649	939	646	28	403	-603	-78	-68	-31	17	0	0	0	-66	0	0	0	0	0	0	0	0	0	537
3 MTG	-125	-184	1546	-226	224	-104	11	18	0	57	-3	0	0	-61	0	0	0	0	0	0	0	0	0	1153
4 PG	121	-323	-71	-1287	192	-23	7	12	0	41	0	0	0	-68	0	0	0	0	0	0	0	0	0	-1397
5 ARLCR	-15	-20	7	1	4	7	56	12	0	-3	0	0	0	0	0	0	0	0	0	0	0	0	0	49
6 ARNCR	-261	-818	-107	-13	147	112	204	-20	-9	24	0	0	0	-21	0	0	0	0	0	0	0	0	0	-763
7 ALX	334	-130	-15	0	29	-1	523	-9	0	32	0	0	0	0	0	0	0	0	0	0	0	0	0	764
8 FFX	-68	-117	4	9	32	-122	63	-751	3	154	3	0	4	2	1	1	3	0	0	0	1	0	0	-778
9 LDN	-17	0	0	0	-24	0	0	10	50	26	0	0	0	0	0	0	0	0	0	0	0	0	0	44
10 PW	-50	-13	38	26	-16	30	42	179	11	147	7	0	11	6	3	3	9	0	0	0	2	0	0	435
11 FRD	-20	0	0	0	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	-17
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	-62	0	0	0	7	4	0	7	0	16	0	0	5	0	0	0	0	0	0	0	0	0	0	-23
14 AAR	-163	-13	-16	1	-17	-60	0	15	0	18	0	0	0	1	0	0	0	0	0	0	0	0	0	-234
15 CAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	2
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19	0	0	0	0	0	0	0	19
17 CHS	-24	-28	0	0	4	4	0	3	0	10	0	0	0	0	0	0	167	0	0	0	0	0	0	137
18 FAU	-30	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-27
19 STA	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0	0	1	1	0	0	1	10	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	14
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	-391	-1291	2058	-1538	1454	-1914	814	-539	-1	510	-21	0	0	-636	0	0	0	0	0	0	0	0	0	-1264

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal NHO Trips MODE: Ratio (Est/Obs) Transit

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	1.15	0.84	1.03	0.85	4.11	0.39	0.94	1.32	0	0.33	0	0	0.55	0.00	0	0	0	0	0	0	0.02	0	0	0.90
2 DC NC	0.88	1.17	2.00	1.05	7.71	0.42	0.57	0.40	0	16.87	0	0	0.03	0.01	0	0	0	0	0	0	0	0	0	1.04
3 MTG	0.84	0.74	1.47	0.46	10.73	0.58	10.92	18.39	0	56.90	0	0	0.18	0	0	0	0	0	0	0	0	0	0	1.21
4 PG	1.26	0.53	0.72	0.43	6.50	0.89	6.94	12.06	0	41.21	0	0	0.12	0.01	0	0	0.03	0	0	0	0	0	0	0.65
5 ARLCR	0.97	0.72	7.42	0.68	1.10	1.03	2.65	11.66	0	0.59	0	0	0	0	0	0	0	0	0	0	0	0	0	1.06
6 ARNCR	0.85	0.11	0.10	0.05	2.53	1.12	2.76	0.81	0	24.15	0	0	0	0	0	0	0	0	0	0	0	0	0	0.81
7 ALX	1.86	0.16	0.16	0.05	1.69	1.00	2.94	0.89	0	32.16	0	0	0	0	0	0	0	0	0	0	0	0	0	1.62
8 FFX	0.86	0.10	1.32	9.40	3.88	0.66	1.34	0.51	3.34	14.98	2.52	0	4.07	1.79	1.06	1.04	3.38	0	0	0.91	0	0	0	0.72
9 LDN	0.11	0	0	0	0	0.13	0	9.66	49.63	25.57	0	0	0	0	0	0	0	0	0	0	0	0	0	2.02
10 PW	0.25	0.52	38.28	26.25	0.23	30.23	41.75	179.32	11.16	2.61	6.78	0	10.77	5.82	2.76	2.83	9.06	0	0.03	0	2.47	0	0	3.11
11 FRD	0	0	0	0	0.20	0.08	0	0.18	0	0.60	1.01	0	0	0	0	0	0	0	0	0	0	0	0	0.90
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	0.21	0	0.27	0.22	6.52	4.34	0	6.67	0	16.26	0	0	4.91	0	0	0	0	0	0	0	0	0	0	0.71
14 AAR	0.16	0.01	0.01	0.92	0.51	0.19	0.01	15.32	0	18.11	0	0	0	0.75	0	0	0	0	0	0	0	0	0	0.30
15 CAL	0	0	0	0	0.13	0.12	0	0.13	0	0.43	0	0	0	0	0.76	0	0	0	0	0	0	0	0	1.57
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19.18	0.19	0	0	0	0	0	0	19.37
17 CHS	0.01	0	0	0	4.26	4.06	0	2.92	0	9.90	0	0	0	0	0	0.33	166.94	0	0	0	0	0	0	3.63
18 FAU	0	0	0	0	0	0	0	2.81	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.09
19 STA	0	0	0	0	0	0	0	2.90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.90
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0.28	0.15	1.45	0.61	0.07	0.22	0.50	9.84	0	0.54	0	0	0.01	0	0	0	0	0	0	0	0.03	0	0	13.70
22 KGEO	0	0	0	0	0	0	0	0.24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.24
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0.97	0.89	1.41	0.59	3.71	0.64	1.80	0.72	0.99	4.29	0.89	0	0	0.02	0	0	0	0	0	0	0	0	0	0.97

Appendix B Year 2007 mode choice summary

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal NHO Trips MODE: Est Auto Person

ORIGIN	DESTINATION																							TOTAL	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1 DC CR	19306	12764	5148	7322	64	1584	1550	2316	54	175	32	2	163	450	25	1	179	14	32	0	13	0	0	51194	
2 DC NC	11610	69630	13880	20061	54	1425	1522	2424	48	144	53	5	438	992	49	3	336	10	22	0	7	0	0	122714	
3 MTG	5691	15364	404714	22114	27	1233	788	4908	325	273	3721	586	5086	2535	35	1	117	49	36	81	10	0	0	467692	
4 PG	7815	21237	22205	241673	22	756	1829	2491	31	210	78	36	5117	10133	527	90	3603	9	45	1	13	4	0	317927	
5 ARLCR	41	340	189	177	1084	1827	1211	1824	41	139	3	0	6	18	1	0	9	3	8	0	3	0	0	6925	
6 ARNCR	292	1272	913	641	1753	24781	6819	14374	302	828	11	1	22	67	3	0	34	20	38	0	13	0	0	52183	
7 ALX	658	1179	551	1214	1170	6820	40234	19765	201	1596	8	0	23	91	11	2	124	19	94	0	35	0	0	73797	
8 FFX	1149	1507	2846	1608	1540	12939	18667	428188	14430	16940	45	2	64	134	10	1	179	532	436	27	150	1	0	501393	
9 LDN	15	17	135	10	29	211	147	13722	103714	1682	262	3	3	2	0	0	1	225	5	506	1	0	0	120691	
10 PW	73	58	119	104	105	643	1278	15257	1510	187718	1	0	2	8	0	0	16	1597	1906	19	492	10	0	210915	
11 FRD	34	57	3570	73	3	12	8	61	373	3	116820	2337	686	86	0	0	0	2	0	721	0	0	0	124847	
12 CAR	4	7	613	38	0	1	0	3	6	0	2400	79582	1027	108	0	0	0	0	0	23	0	0	0	83812	
13 HOW	189	525	5554	5603	2	27	33	107	7	5	672	1010	105446	10039	8	0	19	1	0	14	0	0	0	129259	
14 AAR	500	1122	2760	10794	4	71	115	188	5	16	87	109	10292	239007	519	8	160	1	2	2	0	0	0	265762	
15 CAL	32	59	40	571	2	5	15	15	0	1	0	0	9	550	37221	1100	464	0	0	0	0	3	0	40085	
16 STM	3	3	1	94	0	0	2	1	0	0	0	0	0	9	1104	51222	931	0	0	0	0	25	0	53395	
17 CHS	196	367	126	3846	6	39	141	190	1	23	0	0	19	172	452	927	76589	1	5	0	5	110	0	83216	
18 FAU	5	3	14	2	2	11	11	406	193	1422	1	0	0	0	0	0	0	22820	220	46	97	2	0	25256	
19 STA	15	10	12	16	4	23	59	311	4	1827	0	0	0	1	0	0	2	234	30556	0	4573	139	0	37788	
20 CL/JF	0	0	30	0	0	0	0	17	413	14	321	9	5	0	0	0	0	42	0	22773	0	0	0	23623	
21 SP/FB	4	1	2	3	2	7	21	100	1	451	0	0	0	0	0	0	1	100	4474	0	54013	166	0	59346	
22 KGEO	0	0	0	1	0	0	0	0	0	7	0	0	0	0	0	7	37	2	120	0	138	4540	0	4853	
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
TOTAL	47632		463424		5870		74450		121661		124513		128408		39968		82801		38000		59563		4999	0	2856672
		125521		315963		52414		506669		213475		83682		264402		53362		25680		24213		4999		0	2856672

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal NHO Trips MODE: Obs Auto Person

ORIGIN	DESTINATION																							TOTAL	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1 DC CR	17996	16087	2847	4627	119	1583	3054	2928	1103	322	0	0	0	85	0	474	469	0	0	0	0	0	0	51692	
2 DC NC	17552	70403	19792	14483	956	2058	1674	3237	0	416	0	339	282	0	0	0	152	0	0	0	0	0	0	131343	
3 MTG	2805	17491	371369	16760	0	759	317	4786	1391	304	4223	2354	2640	2161	310	0	146	0	0	0	0	0	0	427814	
4 PG	3771	12224	17716	228100	0	206	182	2691	0	182	0	100	10260	7494	2565	0	7478	0	0	0	0	0	0	292968	
5 ARLCR	181	732	0	113	341	1186	540	496	0	886	0	0	0	0	0	0	0	0	0	0	0	0	0	4476	
6 ARNCR	700	2396	575	1031	3492	27541	4477	12659	664	0	0	0	0	0	0	0	0	0	0	0	0	0	0	53535	
7 ALX	340	777	563	527	240	4023	43645	18058	0	589	382	0	0	0	0	0	289	0	0	0	0	0	0	69433	
8 FFX	1994	3485	3872	1616	816	14369	18038	428681	17407	22216	0	0	0	470	219	0	0	849	521	132	768	0	0	515454	
9 LDN	214	0	341	256	0	295	0	13500	89488	1403	297	0	0	178	0	0	0	627	0	2540	0	0	0	109138	
10 PW	0	949	0	0	0	519	421	14751	1432	177322	0	0	0	0	0	0	337	772	3352	0	976	0	0	200831	
11 FRD	0	0	3722	0	0	0	0	215	0	114591	2463	1233	228	0	0	0	0	0	0	0	899	0	0	123351	
12 CAR	0	0	264	0	0	0	0	0	0	0	2732	72213	741	934	0	0	0	0	0	0	0	0	0	76885	
13 HOW	0	0	3767	5810	0	54	0	94	0	0	1137	1436	107477	6725	0	0	0	0	0	0	0	0	0	126500	
14 AAR	116	93	4850	22819	0	178	163	440	0	0	395	414	3795	237390	2495	81	402	0	453	0	0	0	0	274084	
15 CAL	0	185	0	1990	0	0	0	621	0	0	0	0	0	634	35938	1185	2561	0	0	0	0	0	0	43114	
16 STM	0	0	0	695	0	394	0	0	0	0	0	0	0	0	803	54412	2828	0	0	0	0	0	0	59132	
17 CHS	0	849	548	3603	0	0	290	264	0	0	0	0	363	0	315	1127	2794	77177	0	0	0	349	0	87681	
18 FAU	290	0	0	0	0	0	0	0	211	608	0	0	0	0	0	0	0	25303	0	0	0	179	0	26591	
19 STA	0	0	297	0	0	0	0	1945	0	2539	130	0	0	393	0	0	0	0	32479	0	3136	118	0	41035	
20 CL/JF	0	0	0	0	0	0	0	0	0	0	589	0	0	0	0	0	0	0	0	19536	0	0	0	20125	
21 SP/FB	0	0	0	0	0	0	0	349	0	1062	0	0	0	0	0	0	0	10298	616	73448	665	0	0	86439	
22 KGEO	0	0	0	0	0	0	0	118	0	179	0	0	0	0	197	0	179	0	0	690	2909	0	0	4271	
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
TOTAL	45959		430523		5964		72801		111695		124476		126426		43457		91839		47102		79017		4219	0	2825891
		125673		302428		53164		505833		208027		79682		257007		59143		27730		23722		4219		0	2825891

Appendix B Year 2007 mode choice summary

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal NHO Trips MODE: Difference (Est-Obs) Auto Person

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	1311	-3323	2302	2695	-55	1	-1504	-612	-1049	-148	32	2	163	365	25	-473	-290	14	32	0	13	0	0	-499
2 DC NC	-5942	-774	-5912	5578	-902	-633	-152	-813	48	-272	53	-333	156	992	49	3	184	10	22	0	7	0	0	-8629
3 MTG	2886	-2128	33345	5354	27	474	471	122	-1066	-31	-502	-1768	2446	374	-275	1	-29	49	36	81	10	0	0	39878
4 PG	4045	9013	4490	13573	22	549	1648	-199	31	29	78	-64	-5143	2639	-2038	90	-3875	9	45	1	13	4	0	24959
5 ARLCR	-140	-392	189	64	743	640	671	1328	41	-747	3	0	6	18	1	0	9	3	8	0	3	0	0	2449
6 ARNCR	-408	-1124	337	-391	-1739	-2760	2342	1715	-362	828	11	1	22	67	3	0	34	20	38	0	13	0	0	-1352
7 ALX	318	402	-12	688	930	2797	-3412	1707	201	1007	-374	0	23	91	11	2	-165	19	94	0	35	0	0	4364
8 FFX	-846	-1978	-1025	-9	723	-1431	629	-493	-2977	-5277	45	2	64	-336	-208	1	179	-317	-85	-104	-619	1	0	-14060
9 LDN	-199	17	-205	-246	29	-83	147	222	14226	279	-36	3	3	-176	0	0	1	-402	5	-2034	1	0	0	11553
10 PW	73	-891	119	104	105	124	856	506	78	10396	1	0	2	8	0	0	-321	825	-1447	19	-484	10	0	10083
11 FRD	34	57	-152	73	3	12	8	-154	373	3	2229	-126	-547	-143	0	0	0	2	0	-178	0	0	0	1495
12 CAR	4	7	348	38	0	1	0	3	6	0	-333	7369	286	-826	0	0	0	0	0	23	0	0	0	6928
13 HOW	189	525	1787	-207	2	-28	33	13	7	5	-465	-427	-2031	3314	8	0	19	1	0	14	0	0	0	2759
14 AAR	384	1028	-2091	-12025	4	-107	-49	-252	5	16	-308	-305	6498	1617	-1976	-73	-242	1	-450	2	0	0	0	-8322
15 CAL	32	-126	40	-1419	2	5	15	-607	0	1	0	0	9	-84	1283	-85	-2097	0	0	0	0	3	0	-3029
16 STM	3	3	1	-601	0	-394	2	1	0	0	0	0	0	9	301	-3191	-1897	0	0	0	0	25	0	-5737
17 CHS	196	-483	-422	243	6	39	-149	-74	1	23	0	-363	19	-143	-675	-1868	-588	1	5	0	5	-239	0	-4464
18 FAU	-285	3	14	2	2	11	11	406	-17	814	1	0	0	0	0	0	0	-2483	220	46	97	-177	0	-1335
19 STA	15	10	-285	16	4	23	59	-1633	4	-711	-130	0	0	-393	0	0	2	234	-1923	0	1438	21	0	-3247
20 CL/JF	0	0	30	0	0	0	0	17	413	14	-268	9	5	0	0	0	0	42	0	3237	0	0	0	3498
21 SP/FB	4	1	2	3	2	7	21	-249	1	-611	0	0	0	0	0	0	1	100	-5824	-616	-19434	-499	0	-27092
22 KGEO	0	0	0	1	0	0	0	-118	0	-171	0	0	0	0	0	-189	37	-177	120	0	-552	1630	0	582
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	1674	-152	32901	13534	-94	-751	1649	9966	5448	37	4000	1982	7394	-3489	-5781	-9039	-2049	-9102	491	-19454	780	0	0	30781

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal NHO Trips MODE: Ratio (Est/Obs) Auto Person

ORIGIN	DESTINATION																							TOTAL	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1 DC CR	1.07	0.79	1.81	1.58	0.53	1.00	0.51	0.79	0.05	0.54	32.44	1.68	163.00	5.32	25.14	0.00	0.38	13.66	31.96	0.42	12.95	0.01	0	0.99	
2 DC NC	0.66	0.99	0.70	1.39	0.06	0.69	0.91	0.75	48.18	0.35	52.52	0.02	1.55	992.35	48.96	3.09	2.21	9.93	21.90	0.35	7.16	0.06	0	0.93	
3 MTG	2.03	0.88	1.09	1.32	27.29	1.62	2.49	1.03	0.23	0.90	0.88	0.25	1.93	1.17	0.11	1.10	0.80	49.27	35.75	81.00	9.74	0.03	0	1.09	
4 PG	2.07	1.74	1.25	1.06	22.31	3.66	10.07	0.93	31.37	1.16	78.23	0.36	0.50	1.35	0.21	90.44	0.48	9.22	45.47	0.50	12.76	3.77	0	1.09	
5 ARLCR	0.23	0.46	189.35	1.57	3.18	1.54	2.24	3.68	41.08	0.16	2.72	0.20	5.89	17.92	1.28	0.06	8.61	3.32	7.74	0.15	2.85	0.02	0	1.55	
6 ARNCR	0.42	0.53	1.59	0.62	0.50	0.90	1.52	1.14	0.46	827.97	11.05	0.54	21.73	66.64	3.27	0.20	34.35	20.19	38.19	0.34	12.97	0.02	0	0.97	
7 ALX	1.93	1.52	0.98	2.31	4.88	1.70	0.92	1.09	201.34	2.71	0.02	0.37	23.13	91.16	11.19	1.65	0.43	19.43	93.92	0.20	35.03	0.44	0	1.06	
8 FFX	0.58	0.43	0.74	0.99	1.89	0.90	1.03	1.00	0.83	0.76	44.74	2.00	63.78	0.28	0.05	1.16	178.92	0.63	0.84	0.21	0.19	1.01	0	0.97	
9 LDN	0.07	17.34	0.40	0.04	28.85	0.72	147.11	1.02	1.16	1.20	0.88	3.16	2.78	0.01	0.02	0	0.74	0.36	5.47	0.20	1.19	0	0	1.11	
10 PW	72.85	0.06	118.84	103.54	104.76	1.24	3.03	1.03	1.05	1.06	1.22	0.02	1.79	8.08	0.47	0.04	0.05	2.07	0.57	19.01	0.50	9.89	0	1.05	
11 FRD	34.37	57.12	0.96	72.68	2.66	12.23	7.97	0.29	372.90	2.84	1.02	0.95	0.56	0.38	0	0	0.16	2.33	0.12	0.80	0.01	0	0	1.01	
12 CAR	3.77	6.79	2.32	38.45	0.25	0.68	0.44	3.38	5.93	0.08	0.88	1.10	1.39	0.12	0	0	0.01	0.03	0	23.12	0	0	0	1.09	
13 HOW	189.47	524.50	1.47	0.96	1.51	0.49	32.95	1.14	7.39	4.71	0.59	0.70	0.98	1.49	8.48	0.19	18.63	0.70	0.29	13.52	0.02	0	0	1.02	
14 AAR	4.30	12.05	0.57	0.47	3.61	0.40	0.70	0.43	5.33	16.19	0.22	0.26	2.71	1.01	0.21	0.10	0.40	0.76	0.01	1.78	0.37	0.17	0	0.97	
15 CAL	31.57	0.32	39.78	0.29	1.50	4.74	15.03	0.02	0.02	1.25	0	0	9.19	0.87	1.04	0.93	0.18	0	0.07	0	0	0	0	0.93	
16 STM	2.55	3.37	1.05	0.13	0.08	0.00	1.79	0.94	0	0.07	0	0	0.18	8.56	1.37	0.94	0.33	0	0.08	0	0.45	25.11	0	0.90	
17 CHS	196.30	0.43	0.23	1.07	5.93	39.01	0.49	0.72	1.32	22.99	0.23	0.00	19.24	0.55	0.40	0.33	0.99	0.53	5.33	0	4.51	0.31	0	0.95	
18 FAU	0.02	3.31	14.14	2.36	1.98	11.41	11.42	405.51	0.92	2.34	0.67	0	0.12	0.20	0	0	0.17	0.90	219.53	46.28	96.70	0.01	0	0.95	
19 STA	14.94	10.33	0.04	16.19	4.43	23.04	59.13	0.16	4.17	0.72	0	0	0.01	0.00	0	0	1.78	234.12	0.94	0	1.46	1.18	0	0.92	
20 CL/JF	0	0	29.94	0	0.03	0.04	0.01	16.57	412.71	14.29	0.54	8.94	5.27	0.42	0	0	0	41.71	0	1.17	0	0	0	1.17	
21 SP/FB	4.16	1.08	2.13	3.15	1.59	6.74	21.17	0.29	0.78	0.42	0	0	0	0.01	0	0.02	1.25	99.62	0.43	0	0.74	0.25	0	0.69	
22 KGEO	0	0	0	0.71	0	0	0.07	0.00	0	0.04	0	0	0	0	0	0.47	0.04	37.12	0.01	119.82	0	0.20	1.56	0	1.14
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
TOTAL	1.04	1.00	1.08	1.04	0.98	0.99	1.02	1.00	1.09	1.00	1.03	1.05	1.02	1.03	0.92	0.90	0.90	0.93	0.81	1.02	0.75	1.18	0	1.01	

Appendix B Year 2007 mode choice summary

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal NHO Trips MODE: Est Auto Driver

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	14590	9121	3734	5954	46	1096	964	1699	28	105	12	1	101	261	13	0	109	5	13	0	4	0	0	37856
2 DC NC	8267	51962	10439	16770	38	931	883	1752	25	81	20	3	281	597	29	2	220	3	8	0	2	0	0	92311
3 MTG	3775	10029	263164	13176	9	648	320	2077	111	89	1645	277	2654	1093	11	0	39	15	11	24	3	0	0	299170
4 PG	4957	14688	13119	168363	7	377	822	1041	9	68	23	11	2923	5342	228	35	1980	3	13	0	4	1	0	214017
5 ARLCR	34	260	123	129	897	1430	798	1223	17	73	1	0	3	7	0	0	4	1	3	0	1	0	0	5003
6 ARNCR	255	959	550	452	1350	19968	4586	9639	125	433	3	0	8	25	1	0	15	6	13	0	4	0	0	38393
7 ALX	571	851	284	806	829	5258	26106	12871	73	809	2	0	8	32	4	0	61	6	33	0	10	0	0	48613
8 FFX	1036	1103	1271	745	793	9572	10288	262994	8645	8980	13	1	19	40	3	0	61	191	151	8	44	0	0	305956
9 LDN	10	7	44	3	9	88	48	6992	75321	767	128	1	1	1	0	0	0	96	2	246	0	0	0	83763
10 PW	53	27	37	33	41	317	516	7554	715	136478	0	0	1	2	0	0	5	829	1021	6	171	3	0	147810
11 FRD	10	17	1514	21	1	4	2	18	182	1	82876	1356	274	25	0	0	0	1	0	310	0	0	0	86612
12 CAR	1	2	269	12	0	0	0	1	2	0	1349	62728	556	34	0	0	0	0	0	0	7	0	0	64962
13 HOW	70	223	2821	3057	0	8	10	31	2	1	265	565	74850	5740	2	0	5	0	0	4	0	0	0	87656
14 AAR	176	469	1139	5538	1	22	35	55	2	5	26	36	5867	170329	291	2	52	0	1	1	0	0	0	184047
15 CAL	10	22	12	236	0	1	4	4	0	0	0	3	307	28740	619	227	0	0	0	0	0	1	0	30187
16 STM	1	1	0	36	0	0	1	0	0	0	0	0	0	3	642	38170	504	0	0	0	0	0	0	39366
17 CHS	69	164	38	2188	2	12	49	61	0	7	0	0	6	58	218	512	57210	0	2	0	1	38	0	60635
18 FAU	2	1	4	1	1	4	3	136	85	739	0	0	0	0	0	0	0	16842	117	21	37	1	0	17995
19 STA	8	3	3	5	1	8	19	103	1	949	0	0	0	0	0	0	1	126	23393	0	2863	80	0	27563
20 CL/JF	0	0	9	0	0	0	0	5	201	4	133	3	2	0	0	0	0	19	0	17612	0	0	0	17987
21 SP/FB	2	0	1	1	0	2	6	29	0	162	0	0	0	0	0	0	0	40	2936	0	40064	83	0	43328
22 KGEO	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2	13	1	68	0	65	3559	0	3711
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	33896	89909	298574	217525	4026	39747	45459	308288	85544	149755	86498	64982	87553	183897	30183	39345	60504	18185	27784	18239	43274	3774	0	1936941

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal NHO Trips MODE: Obs Auto Driver

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	14940	11964	2503	3438	119	1361	1784	2282	834	322	0	0	0	85	0	474	134	0	0	0	0	0	0	40241
2 DC NC	11339	51778	15011	9627	604	1848	1528	3059	0	416	0	339	282	0	0	152	0	0	0	0	0	0	0	95981
3 MTG	1306	13156	263445	10695	0	534	317	3916	919	304	3285	1653	2074	1669	310	0	146	0	0	0	0	0	0	303729
4 PG	3038	7748	11660	158091	0	206	182	2691	0	182	0	100	4818	5772	1865	0	5667	0	0	0	0	0	0	202019
5 ARLCR	181	209	0	113	341	832	331	496	0	253	0	0	0	0	0	0	0	0	0	0	0	0	0	2757
6 ARNCR	464	2095	390	803	1910	20969	3736	8929	332	0	0	0	0	0	0	0	0	0	0	0	0	0	0	39628
7 ALX	340	613	451	527	240	3091	32566	13129	0	378	382	0	0	0	0	0	145	0	0	0	0	0	0	51861
8 FFX	1703	2185	3569	1616	816	9751	12897	289617	11926	12194	0	0	0	470	109	0	0	849	521	132	768	0	0	349125
9 LDN	214	0	341	256	0	295	0	7920	62368	1403	297	0	0	178	0	0	0	353	0	1001	0	0	0	74625
10 PW	0	633	0	0	0	519	211	8209	1114	107170	0	0	0	0	0	0	169	772	1727	0	363	0	0	120884
11 FRD	0	0	2584	0	0	0	0	215	0	0	77043	1672	1024	228	0	0	0	0	0	0	570	0	0	83337
12 CAR	0	0	264	0	0	0	0	0	0	0	1757	45496	575	652	0	0	0	0	0	0	0	0	0	48745
13 HOW	0	0	1994	3110	0	54	0	94	0	0	999	860	68529	4500	0	0	0	0	0	0	0	0	0	80140
14 AAR	116	93	2503	13054	0	178	163	440	0	0	395	414	2177	155087	2110	81	402	0	453	0	0	0	0	177664
15 CAL	0	185	0	1392	0	0	0	511	0	0	0	0	0	634	26550	981	1426	0	0	0	0	0	0	31679
16 STM	0	0	0	491	0	394	0	0	0	0	0	0	0	0	0	803	38533	1379	0	0	0	0	0	41600
17 CHS	0	528	548	3179	0	0	145	264	0	0	182	0	315	812	1663	55718	0	0	0	0	0	349	0	63703
18 FAU	290	0	0	0	0	0	0	0	211	441	0	0	0	0	0	0	0	17801	0	0	0	179	0	18922
19 STA	0	0	297	0	0	0	0	904	0	1979	130	0	0	393	0	0	0	0	20400	0	1928	118	0	26149
20 CL/JF	0	0	0	0	0	0	0	0	0	0	395	0	0	0	0	0	0	0	0	13025	0	0	0	13420
21 SP/FB	0	0	0	0	0	0	0	349	0	1062	0	0	0	0	0	0	0	0	6073	308	41473	391	0	49657
22 KGEO	0	0	0	0	0	0	0	118	0	179	0	0	0	0	0	98	0	179	0	0	404	2304	0	3282
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	33931	91189	305558	206389	4030	40033	53859	343143	77705	126283	84683	50715	79479	169982	32559	41830	65337	19953	29173	15037	44936	3341	0	1919147

Appendix B Year 2007 mode choice summary

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal NHO Trips MODE: Difference (Est-Obs) Auto Driver

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	-350	-2844	1231	2516	-73	-265	-820	-583	-806	-217	12	1	101	176	13	-474	-25	5	13	0	4	0	0	-2384
2 DC NC	-3072	184	-4572	7143	-566	-917	-645	-1307	25	-334	20	-336	-1	597	29	2	68	3	8	0	2	0	0	-3670
3 MTG	2468	-3127	-280	2480	9	114	4	-1838	-808	-215	-1640	-1376	580	-576	-299	0	-107	15	11	24	3	0	0	-4559
4 PG	1920	6940	1459	10272	7	171	640	-1649	9	-114	23	-88	-1895	-430	-1636	35	-3687	3	13	0	4	1	0	11998
5 ARLCR	-146	51	123	16	556	598	467	727	17	-180	1	0	3	7	0	0	4	1	3	0	1	0	0	2246
6 ARNCR	-209	-1136	160	-351	-560	-1001	849	710	-207	433	3	0	8	25	1	0	15	6	13	0	4	0	0	-1235
7 ALX	231	237	-167	280	589	2167	-6460	-258	73	431	-380	0	8	32	4	0	-83	6	33	0	10	0	0	-3248
8 FFX	-667	-1083	-2298	-872	-23	-179	-2610	-26623	-3282	-3215	13	1	19	-430	-106	0	61	-657	-370	-124	-725	0	0	-43169
9 LDN	-204	7	-297	-253	9	-207	48	-928	12952	-636	-169	1	1	-177	0	0	0	-257	2	-755	0	0	0	9138
10 PW	53	-606	37	33	41	-202	306	-654	-399	29309	0	0	1	2	0	0	-164	58	-706	6	-192	3	0	26926
11 FRD	10	17	-1070	21	1	4	2	-198	182	1	5834	-317	-750	-203	0	0	0	1	0	-260	0	0	0	3275
12 CAR	1	2	5	12	0	0	0	1	2	0	-408	17232	-19	-618	0	0	0	0	0	7	0	0	0	16217
13 HOW	70	223	827	-53	0	-46	10	-63	2	1	-734	-294	6320	1240	2	0	5	0	0	4	0	0	0	7517
14 AAR	60	376	-1364	-7516	1	-156	-128	-385	2	5	-369	-377	3690	15243	-1819	-79	-350	0	-452	1	0	0	0	6382
15 CAL	10	-163	12	-1155	0	1	4	-507	0	0	0	3	-328	2189	-362	-1199	0	0	0	0	0	1	0	-1493
16 STM	1	1	0	-454	0	-394	1	0	0	0	0	0	0	3	-161	-363	-875	0	0	0	0	0	8	-2235
17 CHS	69	-365	-510	-990	2	12	-97	-203	0	7	0	-182	6	-257	-594	-1151	1492	0	2	0	1	-311	0	-3068
18 FAU	-288	1	4	1	1	4	3	136	-126	298	0	0	0	0	0	0	0	-959	117	21	37	-178	0	-927
19 STA	8	3	-293	5	1	8	19	-801	1	-1029	-130	0	0	-393	0	0	1	126	2993	0	935	-38	0	1415
20 CL/JF	0	0	9	0	0	0	0	5	201	4	-261	3	2	0	0	0	0	19	0	4586	0	0	0	4567
21 SP/FB	2	0	1	1	0	2	6	-320	0	-900	0	0	0	0	0	0	0	40	-3137	-308	-1408	-308	0	-6329
22 KGEO	0	0	0	0	0	0	0	-118	0	-176	0	0	0	0	0	-96	13	-178	68	0	-339	1254	0	428
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	-35	-1280	-6984	11135	-4	-286	-8400	-34855	7839	23472	1816	14266	8074	13914	-2376	-2486	-4833	-1768	-1389	3202	-1663	433	0	17794

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal NHO Trips MODE: Ratio (Est/Obs) Auto Driver

ORIGIN	DESTINATION																							TOTAL	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1 DC CR	0.98	0.76	1.49	1.73	0.39	0.81	0.54	0.74	0.03	0.33	11.60	0.67	100.89	3.08	13.37	0.00	0.81	4.75	13.35	0.12	3.84	0	0	0.94	
2 DC NC	0.73	1.00	0.70	1.74	0.06	0.50	0.58	0.57	24.57	0.20	20.43	0.01	0.99	597.21	28.58	1.50	1.44	3.36	8.12	0.10	2.09	0.02	0	0.96	
3 MTG	2.89	0.76	1.00	1.23	8.70	1.21	1.01	0.53	0.12	0.29	0.50	0.17	1.28	0.65	0.04	0.32	0.27	14.69	10.66	23.91	2.82	0.01	0	0.98	
4 PG	1.63	1.90	1.13	1.06	7.34	1.83	4.52	0.39	9.46	0.37	23.45	0.12	0.61	0.93	0.12	35.47	0.35	2.66	13.31	0.15	3.68	1.09	0	1.06	
5 ARLCR	0.19	1.24	122.50	1.14	2.63	1.72	2.41	2.46	16.85	0.29	0.81	0.06	2.62	7.34	0.46	0.02	3.88	1.04	2.72	0.04	0.83	0.01	0	1.81	
6 ARNCR	0.55	0.46	1.41	0.56	0.71	0.95	1.23	1.08	0.38	433.41	3.25	0.16	7.82	24.72	1.09	0.06	15.04	6.30	13.21	0.10	3.76	0.01	0	0.97	
7 ALX	1.68	1.39	0.63	1.53	3.46	1.70	0.80	0.98	72.53	2.14	0.01	0.11	7.54	31.92	3.70	0.49	0.42	5.76	32.76	0.06	10.16	0.13	0	0.94	
8 FFX	0.61	0.50	0.36	0.46	0.97	0.98	0.80	0.91	0.72	0.74	13.00	0.58	18.68	0.08	0.03	0.34	60.64	0.23	0.29	0.06	0.06	0.29	0	0.88	
9 LDN	0.05	7.24	0.13	0.01	9.26	0.30	48.20	0.88	1.21	0.55	0.43	0.93	0.80	0.00	0.01	0	0.21	0.27	1.59	0.25	0.34	0	0	1.12	
10 PW	52.70	0.04	36.53	33.07	40.78	0.61	2.45	0.92	0.64	1.27	0.35	0.01	0.52	2.33	0.14	0.01	0.03	1.07	0.59	5.69	0.47	2.99	0	1.22	
11 FRD	9.96	17.10	0.59	21.13	0.77	3.55	2.30	0.08	182.07	0.82	1.08	0.81	0.27	0.11	0	0	0.05	0.68	0.03	0.54	0	0	0	1.04	
12 CAR	1.09	1.97	1.02	11.64	0.07	0.20	0.13	0.98	1.75	0.02	0.77	1.38	0.97	0.05	0	0	0.01	0	6.89	0	0	0	0	1.33	
13 HOW	69.57	223.15	1.41	0.98	0.43	0.15	9.77	0.33	2.13	1.36	0.27	0.66	1.09	1.28	2.49	0.06	5.40	0.20	0.08	3.90	0.01	0	0	1.09	
14 AAR	1.52	5.04	0.46	0.42	1.04	0.12	0.21	0.13	1.54	4.67	0.07	0.09	2.70	1.10	0.14	0.03	0.13	0.22	0.00	0.51	0.11	0.05	0	1.04	
15 CAL	9.59	0.12	11.75	0.17	0.43	1.38	4.43	0.01	0.01	0.36	0	0	2.67	0.48	1.08	0.63	0.16	0	0.02	0	0	0	0	0.95	
16 STM	0.74	1.02	0.30	0.07	0.02	0.00	0.52	0.27	0	0.02	0	0	0.05	2.53	0.80	0.99	0.37	0	0.02	0	0.13	7.70	0	0.95	
17 CHS	68.91	0.31	0.07	0.69	1.72	12.36	0.33	0.23	0.38	6.71	0.07	0	5.60	0.18	0.27	0.31	1.03	0.15	1.54	0	1.30	0.11	0	0.95	
18 FAU	0.01	0.99	4.11	0.68	0.58	3.68	3.34	136.33	0.40	1.68	0.19	0	0.03	0.06	0	0	0.05	0.95	117.31	21.29	36.93	0.00	0	0.95	
19 STA	7.95	3.11	0.01	4.69	1.39	7.56	18.66	0.11	1.21	0.48	0	0	0	0.00	0	0	0.51	126.27	1.15	0	1.48	0.68	0	1.05	
20 CL/JF	0	0	8.74	0	0.01	0.01	0	4.80	200.85	4.21	0.34	2.65	1.53	0.12	0	0	0	18.89	0	1.35	0	0	0	1.34	
21 SP/FB	2.01	0.31	0.62	0.91	0.46	1.96	6.13	0.08	0.23	0.15	0	0	0	0	0	0.01	0.36	40.25	0.48	0	0.97	0.21	0	0.87	
22 KGEO	0	0	0	0.21	0	0	0.02	0.00	0	0.01	0	0	0	0	0	0.14	0.02	12.77	0.00	68.46	0	0.16	1.54	0	1.13
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
TOTAL	1.00	0.99	0.98	1.05	1.00	0.99	0.84	0.90	1.10	1.19	1.02	1.28	1.10	1.08	0.93	0.94	0.93	0.91	0.95	1.21	0.96	1.13	0	1.01	

Appendix B Year 2007 mode choice summary

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
Purpose: Internal NHO Trips MODE: Est Motr Psn

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	24105	15736	5905	7747	684	2318	1762	2467	54	190	32	2	164	452	25	1	179	14	32	0	13	0	0	61880
2 DC NC	16218	76238	15171	20708	516	1862	1624	2469	48	161	53	5	438	993	49	3	336	10	22	0	7	0	0	136931
3 MTG	6328	15875	409524	22304	274	1379	799	4926	325	330	3721	586	5086	2535	35	1	117	49	36	81	10	0	0	474320
4 PG	8402	21595	22387	242627	250	946	1836	2503	31	252	78	36	5117	10133	527	90	3603	9	45	1	13	4	0	320486
5 ARLCR	523	391	197	178	1127	2044	1301	1836	41	143	3	0	6	18	1	0	9	3	8	0	3	0	0	7833
6 ARNCR	1756	1369	925	641	1995	25860	7139	14460	302	852	11	1	22	67	3	0	34	20	38	0	13	0	0	55509
7 ALX	1380	1203	554	1214	1241	7098	41025	19839	201	1628	8	0	23	91	11	2	124	19	94	0	35	0	0	75793
8 FFX	1581	1520	2864	1617	1582	13180	18916	428962	14434	17104	47	2	68	136	12	2	182	532	436	27	151	1	0	503354
9 LDN	17	17	135	10	29	212	147	13732	103764	1707	262	3	3	2	0	0	1	225	5	506	1	0	0	120778
10 PW	90	72	157	130	110	673	1319	15436	1521	187956	8	0	13	14	3	3	25	1597	1906	19	494	10	0	211556
11 FRD	34	57	3570	73	3	12	8	62	373	3	116972	2337	686	86	0	0	0	2	0	721	0	0	0	125000
12 CAR	4	7	613	38	0	1	0	3	6	0	2400	79582	1027	108	0	0	0	0	0	23	0	0	0	83812
13 HOW	206	525	5555	5603	8	31	33	113	7	21	672	1010	105451	10039	8	0	19	1	0	14	0	0	0	129315
14 AAR	531	1122	2760	10795	22	85	115	204	5	34	87	109	10292	239008	519	8	160	1	2	2	0	0	0	265860
15 CAL	32	59	40	571	2	5	15	15	0	2	0	0	9	550	37221	1100	464	0	0	0	0	3	0	40087
16 STM	3	3	1	94	0	0	2	1	0	0	0	0	0	9	1104	51241	931	0	0	0	0	25	0	53414
17 CHS	197	367	126	3846	10	43	141	193	1	33	0	0	19	172	452	927	76756	1	5	0	5	110	0	83405
18 FAU	5	3	14	2	2	11	11	408	193	1422	1	0	0	0	0	0	22820	220	46	97	2	0	0	25259
19 STA	15	10	12	16	4	23	59	314	4	1827	0	0	0	1	0	0	2	234	30556	0	4573	139	0	37791
20 CL/JF	0	0	30	0	0	0	0	17	413	14	321	9	5	0	0	0	0	42	0	22773	0	0	0	23623
21 SP/FB	4	1	4	4	2	7	22	110	1	452	0	0	0	0	0	0	1	100	4474	0	54013	166	0	59360
22 KGEO	0	0	0	1	0	0	0	0	0	7	0	0	0	0	0	7	37	2	120	0	138	4540	0	4853
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	61429	136172	470542	318218	7861	55791	76275	508070	214140	124675	83682	128429	264413	39972	53385	82980	25680	38000	24213	59567	4999	0	0	2900219

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
Purpose: Internal NHO Trips MODE: Obs Motr Psn

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	22157	19644	3581	5129	270	3477	3280	3042	1128	368	29	0	0	515	0	474	469	0	0	0	0	0	0	63561
2 DC NC	22809	76072	20436	15102	1016	3098	1854	3351	31	416	0	339	282	67	0	0	152	0	0	0	0	0	0	145024
3 MTG	3567	18187	374633	17176	23	1009	317	4786	1391	304	4226	2354	2640	2222	310	0	146	0	0	0	0	0	0	433289
4 PG	4236	12905	17968	230342	35	419	182	2691	0	182	0	100	10260	7562	2565	0	7478	0	0	0	0	0	0	296924
5 ARLCR	678	803	0	113	380	1397	574	496	0	893	0	0	0	0	0	0	0	0	0	0	0	0	0	5335
6 ARNCR	2424	3312	694	1045	3588	28509	4593	12765	673	0	0	0	0	21	0	0	0	0	0	0	0	0	0	57624
7 ALX	727	931	581	527	282	4302	43914	18141	0	589	382	0	0	0	0	0	289	0	0	0	0	0	0	70665
8 FFX	2495	3614	3885	1616	827	14732	18224	430205	17407	22227	0	0	0	470	219	0	0	849	521	132	768	0	0	518192
9 LDN	233	0	341	256	24	295	0	13500	89488	1403	297	0	0	178	0	0	0	627	0	2540	0	0	0	109181
10 PW	67	976	0	0	21	519	421	14751	1432	177413	0	0	0	0	0	0	337	772	3352	0	976	0	0	201037
11 FRD	20	0	3722	0	0	0	0	215	0	114741	2463	1233	228	0	0	0	0	0	0	0	899	0	0	123521
12 CAR	0	0	264	0	0	0	0	0	0	0	2732	72213	741	934	0	0	0	0	0	0	0	0	0	76885
13 HOW	79	0	3767	5810	0	54	0	94	0	0	1137	1436	107477	6725	0	0	0	0	0	0	0	0	0	126579
14 AAR	310	106	4866	22819	35	252	163	440	0	0	395	414	3795	237390	2495	81	402	0	453	0	0	0	0	274416
15 CAL	0	185	0	1990	0	0	0	621	0	0	0	0	0	634	35938	1185	2561	0	0	0	0	0	0	43114
16 STM	0	0	0	695	0	394	0	0	0	0	0	0	0	0	803	54412	2828	0	0	0	0	0	0	59132
17 CHS	24	877	548	3603	0	0	290	264	0	0	0	363	0	315	1127	2794	77177	0	0	0	0	349	0	87733
18 FAU	320	0	0	0	0	0	0	0	211	608	0	0	0	0	0	0	0	25303	0	0	0	179	0	26621
19 STA	0	0	297	0	0	0	0	1945	0	2539	130	0	0	393	0	0	0	0	32479	0	3136	118	0	41035
20 CL/JF	0	0	0	0	0	0	0	0	0	0	589	0	0	0	0	0	0	0	0	19536	0	0	0	20125
21 SP/FB	0	0	0	0	0	0	0	349	0	1062	0	0	0	0	0	0	0	10298	616	73448	665	0	0	86439
22 KGEO	0	0	0	0	0	0	0	118	0	179	0	0	0	0	197	0	179	0	0	690	2909	0	0	4271
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	60146	137614	435583	306221	6501	58456	73812	507774	111760	208182	124658	79682	126426	257654	43457	59143	91839	27730	47102	23722	79017	4219	0	2870702

Appendix B Year 2007 mode choice summary

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal NHO Trips MODE: Difference (Est-Obs) Motorized Person

ORIGIN	DESTINATION																							TOTAL	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1 DC CR	1948	-3908	2324	2618	414	-1159	-1518	-575	-1074	-179	3	2	164	-63	25	-473	-290	14	32	0	13	0	0	-1681	
2 DC NC	-6591	166	-5266	5606	-500	-1236	-230	-881	17	-255	53	-333	156	926	49	3	184	10	22	0	7	0	0	-8092	
3 MTG	2761	-2312	34891	5128	251	370	482	140	-1066	26	-505	-1768	2446	313	-275	1	-29	49	36	81	10	0	0	41031	
4 PG	4166	8690	4419	12286	215	527	1655	-187	31	70	78	-64	-5143	2571	-2038	90	-3875	9	45	1	13	4	0	23562	
5 ARLCR	-155	-412	197	65	747	647	728	1340	41	-750	3	0	6	18	1	0	9	3	8	0	3	0	0	2498	
6 ARNCR	-669	-1942	231	-404	-1592	-2648	2546	1695	-371	852	11	1	22	46	3	0	34	20	38	0	13	0	0	-2115	
7 ALX	652	272	-27	688	959	2797	-2889	1698	201	1039	-374	0	23	91	11	2	-165	19	94	0	35	0	0	5128	
8 FFX	-914	-2094	-1021	1	755	-1552	692	-1244	-2974	-5123	47	2	68	-335	-207	2	182	-317	-85	-104	-618	1	0	-14838	
9 LDN	-216	17	-205	-246	5	-83	147	232	14276	304	-36	3	3	-176	0	0	1	-402	5	-2034	1	0	0	11597	
10 PW	23	-904	157	130	89	154	898	685	89	10543	8	0	13	14	3	3	-312	825	-1447	19	-481	10	0	10518	
11 FRD	14	57	-152	73	3	12	8	-154	373	3	2231	-126	-547	-143	0	0	0	2	0	-178	0	0	0	1479	
12 CAR	4	7	348	38	0	1	0	3	6	0	-333	7369	286	-826	0	0	0	0	0	23	0	0	0	6928	
13 HOW	127	525	1787	-207	8	-23	33	19	7	21	-465	-427	-2026	3314	8	0	19	1	0	14	0	0	0	2736	
14 AAR	220	1016	-2106	-12024	-13	-167	-49	-236	5	34	-308	-305	6498	1618	-1976	-73	-242	1	-450	2	0	0	0	-8556	
15 CAL	32	-126	40	-1419	2	5	15	-606	0	2	0	0	9	-84	1283	-85	-2097	0	0	0	0	3	0	-3028	
16 STM	3	3	1	-601	0	-394	2	1	0	0	0	0	0	9	301	-3171	-1897	0	0	0	0	25	0	-5718	
17 CHS	173	-511	-422	243	10	43	-149	-71	1	33	0	-363	19	-143	-675	-1867	-421	1	5	0	5	-239	0	-4328	
18 FAU	-315	3	14	2	2	11	11	408	-17	814	1	0	0	0	0	0	0	-2483	220	46	97	-177	0	-1362	
19 STA	15	10	-285	16	4	23	59	-1630	4	-711	-130	0	0	-393	0	0	2	234	-1923	0	1438	21	0	-3245	
20 CL/JF	0	0	30	0	0	0	0	17	413	14	-268	9	5	0	0	0	0	42	0	3237	0	0	0	3498	
21 SP/FB	4	1	4	4	2	7	22	-239	1	-611	0	0	0	0	0	0	1	100	-5824	-616	-19434	-499	0	-27079	
22 KGEO	0	0	0	1	0	0	0	-117	0	-171	0	0	0	0	0	-189	37	-177	120	0	-552	1630	0	582	
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
TOTAL	1283		34959		1360		2463		9965		16		2002		-3485		-8859		-9102		-19451		780		29517
		-1442		11996		-2665		296		5957		4000		6759		-5758		-2049		491		780			

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal NHO Trips MODE: Ratio (Est/Obs) Motorized Person

ORIGIN	DESTINATION																							TOTAL	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1 DC CR	1.09	0.80	1.65	1.51	2.53	0.67	0.54	0.81	0.05	0.51	1.12	1.68	163.55	0.88	25.14	0.00	0.38	13.66	31.96	0.42	12.97	0.01	0	0.97	
2 DC NC	0.71	1.00	0.74	1.37	0.51	0.60	0.88	0.74	1.55	0.39	52.52	0.02	1.55	14.82	48.96	3.09	2.21	9.93	21.90	0.35	7.16	0.06	0	0.94	
3 MTG	1.77	0.87	1.09	1.30	11.92	1.37	2.52	1.03	0.23	1.09	0.88	0.25	1.93	1.14	0.11	1.10	0.80	49.27	35.75	81.00	9.74	0.03	0	1.09	
4 PG	1.98	1.67	1.25	1.05	7.14	2.26	10.11	0.93	31.37	1.38	78.23	0.36	0.50	1.34	0.21	90.44	0.48	9.22	45.47	0.50	12.76	3.77	0	1.08	
5 ARLCR	0.77	0.49	196.77	1.58	2.96	1.46	2.27	3.70	41.08	0.16	2.72	0.20	5.89	17.92	1.28	0.06	8.61	3.32	7.74	0.15	2.85	0.02	0	1.47	
6 ARNCR	0.72	0.41	1.33	0.61	0.56	0.91	1.55	1.13	0.45	852.12	11.05	0.54	21.73	3.17	3.27	0.20	34.35	20.19	38.19	0.34	12.97	0.02	0	0.96	
7 ALX	1.90	1.29	0.95	2.31	4.40	1.65	0.93	1.09	201.34	2.77	0.02	0.37	23.13	91.16	11.19	1.65	0.43	19.43	93.92	0.20	35.03	0.44	0	1.07	
8 FFX	0.63	0.42	0.74	1.00	1.91	0.89	1.04	1.00	0.83	0.77	47.26	2.00	67.85	0.29	0.05	2.20	182.30	0.63	0.84	0.21	0.20	1.01	0	0.97	
9 LDN	0.07	17.34	0.40	0.04	1.20	0.72	147.11	1.02	1.16	1.22	0.88	3.16	2.78	0.01	0.02	0	0.74	0.36	5.47	0.20	1.19	0	0	1.11	
10 PW	1.34	0.07	157.12	129.79	5.22	1.30	3.13	1.05	1.06	1.06	8.00	0.02	12.56	13.90	3.23	2.87	0.07	2.07	0.57	19.01	0.51	9.89	0	1.05	
11 FRD	1.72	57.12	0.96	72.68	2.86	12.31	7.97	0.29	372.90	3.44	1.02	0.95	0.56	0.38	0	0	0.16	2.33	0.12	0.80	0.01	0	0	1.01	
12 CAR	3.77	6.79	2.32	38.45	0.25	0.68	0.44	3.38	5.93	0.08	0.88	1.10	1.39	0.12	0	0	0.01	0.03	0	23.12	0	0	0	1.09	
13 HOW	2.61	524.50	1.47	0.96	8.03	0.57	32.95	1.21	7.39	20.97	0.59	0.70	0.98	1.49	8.48	0.19	18.63	0.70	0.29	13.52	0.02	0	0	1.02	
14 AAR	1.71	10.58	0.57	0.47	0.62	0.34	0.70	0.46	5.33	34.30	0.22	0.26	2.71	1.01	0.21	0.10	0.40	0.76	0.01	1.78	0.37	0.17	0	0.97	
15 CAL	31.57	0.32	39.78	0.29	1.63	4.86	15.03	0.02	0.02	1.68	0	0	9.19	0.87	1.04	0.93	0.18	0	0.07	0	0	0	0	0.93	
16 STM	2.55	3.37	1.05	0.13	0.08	0.00	1.79	0.94	0	0.07	0	0	0.18	8.56	1.37	0.94	0.33	0	0.08	0	0.45	25.11	0	0.90	
17 CHS	8.19	0.42	0.23	1.07	10.19	43.07	0.49	0.73	1.32	32.89	0.23	0.00	19.24	0.55	0.40	0.33	0.99	0.53	5.33	0	4.51	0.31	0	0.95	
18 FAU	0.01	3.31	14.14	2.36	1.98	11.41	11.42	408.32	0.92	2.34	0.67	0	0.12	0.20	0	0	0.17	0.90	219.53	46.28	96.70	0.01	0	0.95	
19 STA	14.94	10.33	0.04	16.19	4.43	23.04	59.13	0.16	4.17	0.72	0	0	0.01	0.00	0	0	1.78	234.12	0.94	0	1.46	1.18	0	0.92	
20 CL/JF	0	0	29.94	0	0.03	0.04	0.01	16.57	412.71	14.29	0.54	8.94	5.27	0.42	0	0	0	41.71	0	1.17	0	0	0	1.17	
21 SP/FB	4.44	1.23	3.58	3.76	1.66	6.96	21.67	0.31	0.78	0.43	0	0	0.01	0.01	0	0.02	1.25	99.62	0.43	0	0.74	0.25	0	0.69	
22 KGEO	0	0	0	0.71	0	0	0.07	0.00	0	0.04	0	0	0	0	0	0.47	0.04	37.12	0.01	119.82	0	0.20	1.56	0	1.14
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
TOTAL	1.02		1.08		1.21		1.03		1.09		1.00		1.02		0.92		0.90		0.93		0.81		1.18		1.01
		0.99		1.04		0.95		1.00		1.03		1.05		1.03		0.90		0.93		1.02		1.18			

Appendix B Year 2007 mode choice summary

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
Purpose: Internal NHO Trips MODE: Est Auto Occ.

ORIGIN	DESTINATION																							TOTAL	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1 DC CR	1.32	1.40	1.38	1.23	1.37	1.45	1.61	1.36	1.91	1.66	2.80	2.51	1.62	1.73	1.88	2.84	1.64	2.88	2.39	3.50	3.37	0.01	0	1.35	
2 DC NC	1.40	1.34	1.33	1.20	1.42	1.53	1.72	1.38	1.96	1.77	2.57	2.10	1.56	1.66	1.71	2.06	1.53	2.96	2.70	3.50	3.43	3.00	0	1.33	
3 MTG	1.51	1.53	1.54	1.68	3.14	1.90	2.46	2.36	2.92	3.06	2.26	2.11	1.92	2.32	3.14	3.44	2.99	3.35	3.35	3.39	3.45	3.00	0	1.56	
4 PG	1.58	1.45	1.69	1.44	3.04	2.00	2.23	2.39	3.32	3.09	3.34	3.12	1.75	1.90	2.31	2.55	1.82	3.47	3.42	3.33	3.47	3.46	0	1.49	
5 ARLCR	1.19	1.31	1.55	1.38	1.21	1.28	1.52	1.49	2.44	1.92	3.36	3.33	2.25	2.44	2.78	3.00	2.22	3.19	2.85	3.75	3.43	2.00	0	1.38	
6 ARNCR	1.15	1.33	1.66	1.42	1.30	1.24	1.49	1.49	2.42	1.91	3.40	3.38	2.78	2.70	3.00	3.33	2.28	3.20	2.89	3.40	3.45	2.00	0	1.36	
7 ALX	1.15	1.39	1.94	1.51	1.41	1.30	1.54	1.54	2.78	1.97	3.47	3.36	3.07	2.86	3.02	3.37	2.03	3.37	2.87	3.33	3.45	3.38	0	1.52	
8 FFX	1.11	1.37	2.24	2.16	1.94	1.35	1.81	1.63	1.67	1.89	3.44	3.45	3.41	3.37	3.39	3.41	2.95	2.78	2.89	3.40	3.42	3.48	0	1.64	
9 LDN	1.56	2.40	3.11	3.36	3.12	2.41	3.05	1.96	1.38	2.19	2.04	3.40	3.47	3.47	2.00	0	3.52	2.34	3.44	2.06	3.50	0	0	1.44	
10 PW	1.38	2.14	3.25	3.13	2.57	2.03	2.47	2.02	2.11	1.38	3.49	2.00	3.44	3.47	3.36	4.00	3.43	1.93	1.87	3.34	2.87	3.31	0	1.43	
11 FRD	3.45	3.34	2.36	3.44	3.45	3.45	3.47	3.46	2.05	3.46	1.41	1.72	2.50	3.41	0	0	3.20	3.43	4.00	2.32	0.01	0	0	1.44	
12 CAR	3.46	3.45	2.28	3.30	3.57	3.40	3.38	3.45	3.39	4.00	1.78	1.27	1.85	3.12	0	0	0.01	3.00	0	3.36	0	0	0	1.29	
13 HOW	2.72	2.35	1.97	1.83	3.51	3.29	3.37	3.44	3.47	3.46	2.54	1.79	1.41	1.75	3.41	3.17	3.45	3.50	3.62	3.47	2.00	0	0	1.47	
14 AAR	2.84	2.39	2.42	1.95	3.47	3.24	3.31	3.41	3.46	3.47	3.39	2.98	1.75	1.40	1.78	3.39	3.08	3.45	3.44	3.49	3.36	3.40	0	1.44	
15 CAL	3.29	2.72	3.39	2.41	3.49	3.43	3.39	3.43	2.00	3.47	0	0	3.44	1.79	1.30	1.78	2.04	0	3.50	0	0	3.48	0	1.33	
16 STM	3.45	3.30	3.50	2.58	4.00	3.50	3.44	3.48	0	3.50	0	0	3.60	3.38	1.72	1.34	1.85	0	4.00	0	3.46	3.26	0	1.36	
17 CHS	2.85	2.24	3.33	1.76	3.45	3.16	2.90	3.40	3.47	3.43	3.29	0.01	3.44	2.97	2.07	1.81	1.34	3.53	3.46	0	3.47	2.88	0	1.37	
18 FAU	2.04	3.34	3.44	3.47	3.41	3.10	3.42	2.97	2.28	1.92	3.53	0	4.00	3.33	0	0	3.40	1.35	1.87	2.17	2.62	3.12	0	1.40	
19 STA	1.88	3.32	3.45	3.45	3.19	3.05	3.17	3.01	3.45	1.92	0	0	0.01	3.50	0	0	3.49	1.85	1.31	0	1.60	1.75	0	1.37	
20 CL/JF	0	0	3.43	0	3.00	4.00	0.01	3.45	2.05	3.39	2.40	3.37	3.44	3.50	0	0	0	2.21	0	1.29	0	0	0	1.31	
21 SP/FB	2.07	3.48	3.44	3.46	3.46	3.44	3.45	3.41	3.39	2.78	0	0	0	0.01	0	2.00	3.47	2.48	1.52	0	1.35	1.99	0	1.37	
22 KGEO	0	0	0	3.38	0	0	3.50	3.57	0	3.32	0	0	0	0	0	3.36	3.28	2.91	3.10	1.75	0	2.13	1.28	0	1.31
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
TOTAL	1.41	1.40	1.55	1.45	1.46	1.32	1.64	1.64	1.42	1.43	1.44	1.29	1.47	1.44	1.32	1.36	1.37	1.41	1.37	1.33	1.38	1.32	0	1.47	

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
Purpose: Internal NHO Trips MODE: Obs Auto Occ.

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	1.20	1.34	1.14	1.35	1.00	1.16	1.71	1.28	1.32	1.00	0	0	0	1.00	0	1.00	3.50	0	0	0	0	0	0	1.28
2 DC NC	1.55	1.36	1.32	1.50	1.58	1.11	1.10	1.06	0	1.00	0	1.00	1.00	0	0	0	1.00	0	0	0	0	0	0	1.37
3 MTG	2.15	1.33	1.41	1.57	0	1.42	1.00	1.22	1.51	1.00	1.29	1.42	1.27	1.29	1.00	0	1.00	0	0	0	0	0	0	1.41
4 PG	1.24	1.58	1.52	1.44	0	1.00	1.00	1.00	0	1.00	0	1.00	2.13	1.30	1.38	0	1.32	0	0	0	0	0	0	1.45
5 ARLCR	1.00	3.50	0	1.00	1.00	1.43	1.63	1.00	0	3.50	0	0	0	0	0	0	0	0	0	0	0	0	0	1.62
6 ARNCR	1.51	1.14	1.48	1.28	1.83	1.31	1.20	1.42	2.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.35
7 ALX	1.00	1.27	1.25	1.00	1.00	1.30	1.34	1.38	0	1.56	1.00	0	0	0	0	0	2.00	0	0	0	0	0	0	1.34
8 FFX	1.17	1.59	1.08	1.00	1.00	1.47	1.40	1.48	1.46	1.82	0	0	0	1.00	2.00	0	1.00	1.00	1.00	1.00	1.00	0	0	1.48
9 LDN	1.00	0	1.00	1.00	0	1.00	0	1.70	1.43	1.00	1.00	0	0	1.00	0	0	0	1.78	0	2.54	0	0	0	1.46
10 PW	0	1.50	0	0	0	1.00	2.00	1.80	1.29	1.65	0	0	0	0	0	0	2.00	1.00	1.94	0	2.69	0	0	1.66
11 FRD	0	0	1.44	0	0	0	0	1.00	0	0	1.49	1.47	1.20	1.00	0	0	0	0	0	1.58	0	0	0	1.48
12 CAR	0	0	1.00	0	0	0	0	0	0	0	1.55	1.59	1.29	1.43	0	0	0	0	0	0	0	0	0	1.58
13 HOW	0	0	1.89	1.87	0	1.00	0	1.00	0	0	1.14	1.67	1.57	1.49	0	0	0	0	0	0	0	0	0	1.58
14 AAR	1.00	1.00	1.94	1.75	0	1.00	1.00	1.00	0	0	1.00	1.00	1.74	1.53	1.18	1.00	1.00	0	1.00	0	0	0	0	1.54
15 CAL	0	1.00	0	1.43	0	0	0	1.21	0	0	0	0	0	1.00	1.35	1.21	1.80	0	0	0	0	0	0	1.36
16 STM	0	0	0	1.42	0	1.00	0	0	0	0	0	0	0	0	1.00	1.41	2.05	0	0	0	0	0	0	1.42
17 CHS	0	1.61	1.00	1.13	0	0	2.00	1.00	0	0	0	2.00	0	1.00	1.39	1.68	1.39	0	0	0	0	1.00	0	1.38
18 FAU	1.00	0	0	0	0	0	0	0	1.00	1.38	0	0	0	0	0	0	0	1.42	0	0	0	1.00	0	1.41
19 STA	0	0	1.00	0	0	0	0	2.15	0	1.28	1.00	0	0	1.00	0	0	0	0	1.59	0	1.63	1.00	0	1.57
20 CL/JF	0	0	0	0	0	0	0	0	0	0	1.49	0	0	0	0	0	0	0	0	1.50	0	0	0	1.50
21 SP/FB	0	0	0	0	0	0	0	1.00	0	1.00	0	0	0	0	0	0	0	0	1.70	2.00	1.77	1.70	0	1.74
22 KGEO	0	0	0	0	0	0	0	1.00	0	1.00	0	0	0	0	0	2.00	0	1.00	0	0	1.71	1.26	0	1.30
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	1.35	1.38	1.41	1.47	1.48	1.33	1.35	1.47	1.44	1.65	1.47	1.57	1.59	1.51	1.33	1.41	1.41	1.39	1.61	1.58	1.76	1.26	0	1.47

Appendix B Year 2007 mode choice summary

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal NHO Trips MODE: Est Pct. Tran

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	19.9	18.9	12.8	5.5	90.7	31.7	12.1	6.1	0	7.9	0	0	0.3	0.4	0	0	0	0	0	0	0.2	0	0	17.3
2 DC NC	28.4	8.7	8.5	3.1	89.6	23.5	6.3	1.8	0	10.5	0	0	0.0	0.1	0	0	0	0	0	0	0	0	0	10.4
3 MTG	10.1	3.2	1.2	0.9	90.0	10.6	1.4	0.4	0	17.2	0	0	0.0	0	0	0	0	0	0	0	0	0	0	1.4
4 PG	7.0	1.7	0.8	0.4	91.1	20.1	0.4	0.5	0	16.4	0	0	0.0	0.0	0	0	0.0	0	0	0	0	0	0	0.8
5 ARLCR	92.2	13.1	3.8	0.4	3.8	10.6	6.9	0.6	0	2.9	0	0	0	0	0	0	0	0	0	0	0	0	0	11.6
6 ARNCR	83.3	7.1	1.3	0.1	12.2	4.2	4.5	0.6	0	2.8	0	0	0	0	0	0	0	0	0	0	0	0	0	6.0
7 ALX	52.3	2.0	0.5	0.0	5.7	3.9	1.9	0.4	0	2.0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.6
8 FFX	27.4	0.8	0.6	0.6	2.7	1.8	1.3	0.2	0.0	1.0	5.3	0	6.0	1.3	9.2	47.3	1.9	0	0	0	0.6	0	0	0.4
9 LDN	11.8	0	0	0	0	0.1	0	0.1	0.0	1.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1
10 PW	18.6	19.6	24.4	20.2	4.5	4.5	3.2	1.2	0.7	0.1	84.8	0	85.7	41.9	85.4	98.6	35.9	0	0.0	0	0.5	0	0	0.3
11 FRD	0	0	0	0	7.0	0.6	0	0.3	0	17.4	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0.1
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	8.2	0	0.0	0.0	81.2	14.0	0	5.9	0	77.5	0	0	0.0	0	0	0	0	0	0	0	0	0	0	0.0
14 AAR	5.8	0.0	0.0	0.0	83.3	16.7	0.0	7.5	0	52.8	0	0	0.0	0	0	0	0	0	0	0	0	0	0	0.0
15 CAL	0	0	0	0	8.0	2.5	0	0.9	0	25.6	0	0	0	0	0.0	0	0	0	0	0	0	0	0	0.0
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0	0.0
17 CHS	0.2	0	0	0	41.8	9.4	0	1.5	0	30.1	0	0	0	0	0	0.0	0.2	0	0	0	0	0	0	0.2
18 FAU	0	0	0	0	0	0	0	0.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
19 STA	0	0	0	0	0	0	0	0.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	6.3	12.2	40.5	16.2	4.2	3.2	2.3	8.9	0	0.1	0	0	100.0	0	0	0	0	0	0	0	0.0	0	0	0.0
22 KGEO	0	0	0	0	0	0	0	49.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	22.5	7.8	1.5	0.7	25.3	6.1	2.4	0.3	0.1	0.3	0.1	0	0.0	0.0	0.0	0.2	0	0.0	0	0.0	0	0	0	1.5

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Internal NHO Trips MODE: Obs Pct. Tran

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	18.8	18.1	20.5	9.8	55.9	54.5	6.9	3.7	2.2	12.5	100.0	0	0	83.6	0	0	0	0	0	0	0	0	0	18.7
2 DC NC	23.0	7.5	3.2	4.1	5.9	33.6	9.7	3.4	100.0	0	0	0	0	100.0	0	0	0	0	0	0	0	0	0	9.4
3 MTG	21.4	3.8	0.9	2.4	100.0	24.8	0	0	0	0	0.1	0	0	2.7	0	0	0	0	0	0	0	0	0	1.3
4 PG	11.0	5.3	1.4	1.0	100.0	50.8	0	0	0	0	0	0	0	0.9	0	0	0	0	0	0	0	0	0	1.3
5 ARLCR	73.3	8.8	0	0	10.3	15.1	5.9	0	0	0.8	0	0	0	0	0	0	0	0	0	0	0	0	0	16.1
6 ARNCR	71.1	27.7	17.1	1.3	2.7	3.4	2.5	0.8	1.3	0	0	0	0	100.0	0	0	0	0	0	0	0	0	0	7.1
7 ALX	53.2	16.5	3.1	0	14.9	6.5	0.6	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.7
8 FFX	20.1	3.6	0.3	0	1.3	2.5	1.0	0.4	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.5
9 LDN	8.2	0	0	0	100.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
10 PW	100.0	2.8	0	0	100.0	0	0	0	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1
11 FRD	100.0	0	0	0	0	0	0	0	0	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0.1
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	100.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14 AAR	62.5	12.3	0.3	0	100.0	29.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1
15 CAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16 STM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17 CHS	100.0	3.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1
18 FAU	9.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1
19 STA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20 CL/JF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 SP/FB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 KGEO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	23.6	8.7	1.2	1.2	8.3	9.1	1.4	0.4	0.1	0.1	0.1	0	0	0.3	0	0	0	0	0	0	0	0	0	1.6

Appendix B Year 2007 mode choice summary

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Total Internal Trips MODE: Est Transit

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	39587	20388	6006	2734	4615	6961	2276	2279	1	37	0	0	4	5	1	0	0	0	0	0	1	0	0	84895
2 DC NC	154634	87320	28288	11920	8677	14439	4512	5551	3	51	0	0	23	18	0	0	0	0	0	0	0	0	0	315435
3 MTG	80781	17807	82478	3945	5148	5352	1000	1390	0	131	0	0	31	4	0	0	0	0	0	0	0	0	0	198067
4 PG	59929	26115	13337	27534	6392	7350	1791	1492	0	105	0	0	115	69	0	0	4	0	0	0	0	0	0	144234
5 ARLCR	6171	772	281	59	589	2033	607	426	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	10945
6 ARNCR	46294	4903	1864	338	6168	17869	4274	4283	1	59	0	0	0	0	0	0	0	0	0	0	0	0	0	86052
7 ALX	21963	2290	804	173	2715	6574	7183	2752	0	62	0	0	0	0	0	0	0	0	0	0	0	0	0	44516
8 FFX	57980	7548	3672	537	9896	17498	7808	23685	107	637	10	0	25	19	10	56	34	0	0	0	15	0	0	129537
9 LDN	2470	455	250	20	633	745	113	313	921	124	0	0	0	0	0	0	0	0	0	0	0	0	0	6046
10 PW	5976	1776	1148	383	1553	2374	1115	3664	161	2981	24	0	59	49	20	109	75	0	0	0	32	0	0	21498
11 FRD	1215	187	481	15	82	82	13	19	0	5	1871	0	0	0	0	0	0	0	0	0	0	0	0	3971
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	4445	1197	938	353	421	434	84	85	0	68	0	0	667	25	0	0	0	0	0	0	0	0	0	8717
14 AAR	6784	1442	688	380	636	625	118	184	0	90	0	0	38	95	0	0	0	0	0	0	0	0	0	11080
15 CAL	652	283	89	39	108	115	27	11	0	3	0	0	0	1	45	1	0	0	0	0	0	0	0	1372
16 STM	331	118	43	13	50	52	12	7	0	0	0	0	0	0	2	154	17	0	0	0	0	0	0	797
17 CHS	2857	902	277	123	342	376	93	63	0	31	0	0	0	0	0	4	965	0	0	0	0	0	0	6031
18 FAU	67	23	9	1	31	38	16	14	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	203
19 STA	799	213	76	9	278	383	125	46	0	35	0	0	0	0	0	0	0	2	0	0	1	0	0	1968
20 CL/JF	94	42	56	4	35	35	7	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	284
21 SP/FB	618	193	83	13	226	322	149	103	0	68	0	0	0	0	0	0	0	0	2	0	11	0	0	1786
22 KGEO	15	6	2	0	7	9	5	5	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	51
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	493661		140868		48601		31328		1193		1906		962		77		1095		5		59		0	1077487
		173980		48593		83664		46385		4501		0		286		323		0		0		0		

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Total Internal Trips MODE: Obs Transit

ORIGIN	DESTINATION																							TOTAL					
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23						
1 DC CR	46083	25885	7714	3838	1893	11802	1783	2866	105	170	51	0	113	777	28	0	0	84	0	0	0	0	0	103192					
2 DC NC	148939	91714	21495	10810	3748	17143	5059	4268	301	158	0	0	112	280	0	0	17	17	0	18	22	0	0	304101					
3 MTG	82960	31936	72290	6021	1836	6453	1534	726	45	19	72	0	143	333	32	15	5	0	53	0	0	0	0	204473					
4 PG	74814	32511	14721	30489	3110	12013	2517	2939	170	0	3	0	166	341	0	0	7	0	0	0	0	0	0	173801					
5 ARLCR	4878	1523	214	280	52	1872	446	473	40	22	0	0	0	28	0	0	0	0	0	0	0	0	0	9828					
6 ARNCR	50768	12268	2248	1497	2745	15469	2780	3940	119	33	0	0	0	105	0	0	0	15	17	29	0	0	0	92033					
7 ALX	21211	5500	1028	681	1560	6790	7673	2754	36	44	0	0	0	0	0	0	0	0	0	0	0	0	0	47277					
8 FFX	54628	13963	1850	1267	5424	20211	6255	28838	249	114	0	0	10	32	0	0	0	29	0	0	0	0	0	132869					
9 LDN	1376	505	13	27	166	685	133	166	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3083					
10 PW	6883	2166	257	136	716	3302	772	886	70	2414	0	0	4	5	0	0	0	3	4	0	0	0	0	17620					
11 FRD	3014	602	1844	135	22	252	31	0	0	0	1877	0	0	0	0	0	0	0	0	0	0	0	0	7777					
12 CAR	236	18	0	0	0	64	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	318					
13 HOW	4191	587	147	80	162	772	58	67	0	0	0	0	27	0	0	0	0	0	0	0	0	57	0	6148					
14 AAR	6015	1729	243	102	442	1270	90	33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9924					
15 CAL	671	304	109	2	107	67	35	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1321					
16 STM	31	77	41	0	4	112	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	282					
17 CHS	2737	1094	120	258	258	1075	42	53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5637					
18 FAU	251	111	36	35	78	121	19	46	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	699					
19 STA	868	269	44	6	83	473	182	208	0	43	0	0	0	0	0	0	0	0	0	0	3	0	0	2179					
20 CL/JF	2	59	0	0	5	3	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	75					
21 SP/FB	222	306	11	46	59	264	184	163	0	59	0	0	0	0	0	0	0	0	9	0	3	0	0	1326					
22 KGEO	89	16	3	0	7	25	8	13	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	166					
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
TOTAL	510867		124428		22478		29623		1147		3084		2003		575		1901		60		29		148	83	47	85	0	0	1124129
		223143		55710		100238		48465		3084		0		1901		15		148		83		47		85	0	0			

Appendix B Year 2007 mode choice summary

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Total Internal Trips MODE: Difference (Est-Obs) Transit

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	-6496	-5497	-1708	-1104	2722	-4841	493	-587	-104	-133	-51	0	-109	-772	-27	0	0	-84	0	0	1	0	0	-18297
2 DC NC	5695	-4394	6793	1110	4929	-2704	-547	1283	-298	-107	0	0	-89	-262	0	0	-17	-17	0	-18	-22	0	0	11334
3 MTG	-2179	-14129	10187	-2076	3312	-1101	-534	664	-45	112	-72	0	-112	-329	-32	-15	-5	0	-53	0	0	0	0	-6407
4 PG	-14885	-6396	-1384	-2955	3282	-4663	-726	-1447	-170	105	-3	0	-51	-272	0	0	-3	0	0	0	0	0	0	-29567
5 ARLCR	1293	-751	67	-221	537	161	161	-47	-40	-13	0	0	0	-28	0	0	0	0	0	0	0	0	0	1117
6 ARNCR	-4474	-7365	-384	-1159	3423	2400	1494	343	-118	26	0	0	0	-105	0	0	0	-15	-17	-29	0	0	0	-5980
7 ALX	752	-3211	-224	-508	1155	-216	-490	-2	-36	18	0	0	0	0	0	0	0	0	0	0	0	0	0	-2762
8 FFX	3352	-6415	1822	-730	4472	-2713	1553	-5152	-142	523	10	0	15	-13	10	56	34	-29	0	0	15	0	0	-3332
9 LDN	1094	-50	237	-7	468	60	-20	147	909	124	0	0	0	0	0	0	0	0	0	0	0	0	0	2963
10 PW	-907	-389	890	246	837	-929	343	2778	91	567	24	0	56	44	20	109	75	-3	-4	0	32	0	0	3878
11 FRD	-1799	-415	-1363	-120	60	-170	-18	19	0	5	-6	0	0	0	0	0	0	0	0	0	0	0	0	-3806
12 CAR	-236	-18	0	0	0	-64	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-318
13 HOW	254	610	791	273	259	-338	26	18	0	68	0	0	640	25	0	0	0	0	0	0	0	0	-57	2569
14 AAR	769	-287	445	278	194	-645	28	151	0	90	0	0	38	95	0	0	0	0	0	0	0	0	0	1156
15 CAL	-19	-21	-20	37	1	48	-8	-15	0	3	0	0	0	1	45	1	0	0	0	0	0	0	0	51
16 STM	300	40	2	13	46	-60	-5	7	0	0	0	0	0	0	2	154	17	0	0	0	0	0	0	515
17 CHS	120	-192	157	-135	84	-699	51	10	0	31	0	0	0	0	0	4	965	0	0	0	0	0	0	394
18 FAU	-184	-89	-26	-34	-47	-83	-3	-32	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	-496
19 STA	-69	-56	32	4	195	-91	-57	-91	-162	-0	-8	0	0	0	0	0	0	-0	2	0	-2	0	0	-211
20 CL/JF	92	-17	56	4	29	32	2	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	210
21 SP/FB	396	-113	72	-33	167	58	-35	-60	0	8	0	0	0	0	0	0	0	-0	-7	0	8	0	0	460
22 KGEO	-74	-10	-1	0	-1	-16	-4	-8	0	-2	0	0	0	0	0	0	0	0	0	0	0	0	0	-115
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	-17206	-49163	16440	-7117	26123	-16574	1705	-2080	46	1417	-97	0	388	-1615	17	308	1066	-148	-78	-47	-26	0	0	-46642

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Total Internal Trips MODE: Ratio (Est/Obs) Transit

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	0.86	0.79	0.78	0.71	2.44	0.59	1.28	0.80	0.01	0.22	0	0	0.04	0.01	0.02	0.01	0.32	0	0	0	0.67	0	0	0.82
2 DC NC	1.04	0.95	1.32	1.10	2.32	0.84	0.89	1.30	0.01	0.32	0	0	0.21	0.06	0.08	0	0.02	0	0	0	0.00	0	0	1.04
3 MTG	0.97	0.56	1.14	0.66	2.80	0.83	0.65	1.92	0.00	6.88	0.00	0	0.21	0.01	0.00	0	0	0	0	0	0	0	0	0.97
4 PG	0.80	0.80	0.91	0.90	2.06	0.61	0.71	0.51	0	105.12	0	0	0.69	0.20	0	0	0.57	0	0	0	0	0	0	0.83
5 ARLCR	1.27	0.51	1.31	0.21	11.32	1.09	1.36	0.90	0.00	0.39	0	0	0	0.00	0	0	0	0	0	0	0	0	0	1.11
6 ARNCR	0.91	0.40	0.83	0.23	2.25	1.16	1.54	1.09	0.01	1.77	0	0	0.03	0.00	0	0	0	0	0	0	0	0	0	0.94
7 ALX	1.04	0.42	0.78	0.25	1.74	0.97	0.94	1.00	0.00	1.40	0	0	0	0	0	0	0	0	0	0	0	0	0	0.94
8 FFX	1.06	0.54	1.99	0.42	1.82	0.87	1.25	0.82	0.43	5.59	10.43	0	2.49	0.60	9.94	55.96	33.91	0	0.14	0	15.24	0	0	0.97
9 LDN	1.80	0.90	19.24	0.74	3.83	1.09	0.85	1.89	76.78	124.34	0	0	0	0	0	0	0	0	0	0	0	0	0	1.96
10 PW	0.87	0.82	4.46	2.81	2.17	0.72	1.44	4.13	2.30	1.23	24.21	0	16.93	9.09	19.99	108.95	74.57	0	0.08	0	31.54	0	0	1.22
11 FRD	0.40	0.31	0.26	0.11	3.73	0.33	0.43	19.28	0	5.12	1.00	0	0	0	0	0	0	0	0	0	0	0	0	0.51
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	1.06	2.04	6.38	4.41	2.60	0.56	1.46	1.27	0	67.75	0	0	24.71	24.69	0	0	0	0	0	0	0	0	0	1.42
14 AAR	1.13	0.83	2.83	3.72	1.44	0.49	1.31	5.59	0	89.94	0	0	38.45	94.63	0.20	0	0	0	0	0	0	0	0	1.12
15 CAL	0.97	0.93	0.81	19.70	1.01	1.71	0.76	0.41	0	3.16	0	0	0	1.33	44.57	0.54	0	0	0	0	0	0	0	1.04
16 STM	10.83	1.53	1.04	12.95	12.54	0.46	0.70	6.68	0	0	0	0	0	0	1.60	153.88	16.76	0	0	0	0	0	0	2.83
17 CHS	1.04	0.82	2.31	0.47	1.32	0.35	2.22	1.18	0	30.94	0	0	0.04	0.02	0	4.13	965.00	0	0	0	0	0	0	1.07
18 FAU	0.27	0.20	0.26	0.03	0.39	0.31	0.84	0.31	0	1.86	0	0	0	0	0	0	0	0	0	0	0	0	0	0.29
19 STA	0.92	0.79	1.71	1.68	3.35	0.81	0.69	0.22	0	0.82	0	0	0	0	0	0	0	0	9.33	0	0.35	0	0	0.90
20 CL/JF	48.91	0.71	55.89	3.60	6.51	11.31	1.36	240.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.81
21 SP/FB	2.78	0.63	7.55	0.28	3.81	1.22	0.81	0.63	0	1.14	0	0	0.06	0.05	0	0	0	0	0.23	0	3.55	0	0	1.35
22 KGEO	0.17	0.40	0.75	0.25	0.91	0.35	0.57	0.36	0	0.56	0	0	0	0	0	0	0	0	0	0	0.01	0	0	0.31
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0.97	0.78	1.13	0.87	2.16	0.83	1.06	0.96	1.04	1.46	0.95	0	1.67	0.15	1.28	21.56	37.75	0	0.06	0	0.70	0	0	0.96

Appendix B Year 2007 mode choice summary

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Total Internal Trips MODE: Est Auto Person

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	71858	38104	15455	20492	2951	7840	5494	14369	684	1024	364	78	905	2268	196	116	880	143	252	43	156	13	0	183685
2 DC NC	88136	376844	85048	85688	7023	19710	13175	45381	1749	1316	510	89	3310	5927	324	162	1945	155	273	42	155	13	0	736976
3 MTG	94179	1159182050887	121983	5298	15704	7037	51226	3297	1744	18653	3531	26777	19051	482	443	1475	346	423	770	442	36	0	0	2539701
4 PG	92312	166605	1447791290941	7677	21539	21138	55346	1691	1773	871	275	29427	52452	3655	2250	29288	189	500	63	291	203	0	0	1923264
5 ARLCR	2405	2915	1370	1307	9044	8362	3741	8419	302	544	41	8	56	148	16	10	67	35	65	10	41	3	0	38911
6 ARNCR	22560	20584	10053	7075	21409	208829	33844	96644	2364	2992	122	15	187	531	35	37	290	147	327	26	252	12	0	428334
7 ALX	17046	11974	5096	7173	9373	33887	159895	84605	1356	4155	80	12	151	480	59	59	559	115	454	20	302	19	0	336871
8 FFX	105579	65191	53065	34504	27978	112379	1130092356631	70143	67735	1001	100	1069	2649	239	490	2827	3600	6046	578	6110	316	0	0	3031240
9 LDN	12633	8521	11777	4270	3035	9025	4689	117028	507132	10841	8918	477	478	739	27	92	347	2459	537	12618	760	36	0	716437
10 PW	14745	8786	8170	5036	3908	11894	12010	176551	13170	857365	288	18	205	565	45	133	464	12433	15908	408	10182	330	0	1152613
11 FRD	5554	4203	52669	3747	867	2037	759	11405	12814	487	521804	20823	12604	5179	54	91	143	121	27	5134	25	1	0	660547
12 CAR	3225	2092	15850	2349	361	730	271	2468	1052	96	16405	364993	12746	3628	37	50	90	21	6	305	7	1	0	426784
13 HOW	9402	10023	39154	34249	867	1967	1005	4910	412	192	7387	8513	542959	64149	204	223	449	32	26	244	28	6	0	726398
14 AAR	19655	21185	28837	67863	2305	5592	3899	12604	678	553	1642	852	669121171666	5565	1175	2687	55	96	87	75	29	0	0	1414013
15 CAL	5435	4124	3014	10155	623	1548	1471	4335	134	168	70	16	553	6055	184623	14610	5581	9	21	4	29	44	0	242622
16 STM	4039	2749	1750	5371	523	1199	1621	4078	97	155	42	7	265	1252	10877	258800	18965	17	74	2	123	397	0	312403
17 CHS	10836	8470	4551	22060	1338	3326	4117	11552	345	469	99	20	599	2459	4532	8071	310480	30	99	7	129	972	0	394563
18 FAU	1721	874	1212	497	485	1189	725	13353	3627	13640	86	7	37	75	8	28	48	103855	2945	422	2027	65	0	146925
19 STA	2813	1483	1510	1040	783	2133	1977	15406	1145	24516	42	5	48	142	29	133	172	3056	195448	77	39553	910	0	292420
20 CL/JF	751	454	4003	353	206	506	235	8531	18358	1538	4853	213	498	223	2	3	9	1127	34	107511	36	2	0	149447
21 SP/FB	1553	821	953	628	442	1294	1189	11234	872	11519	30	3	31	92	34	148	197	2037	31199	63	246893	854	0	312084
22 KGEO	739	417	286	571	167	364	291	2355	125	2437	3	0	15	60	55	308	2172	335	4721	9	4838	29237	0	49506
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	587175	2539490	106664	391591	641547	583314	699831	211100	400055	1339789	287432	130318	259479	312453	33497	16215743								
	872338	1727353	471052	3108432	1005257	400055	1339789	287432	130318	259479	312453	33497	16215743											

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Total Internal Trips MODE: Obs Auto Person

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	55830	43958	13491	18055	501	11845	9581	17408	2980	958	0	0	412	2882	0	474	1757	0	610	0	0	218	0	180960
2 DC NC	116348	367456	112711	75824	2738	17312	7211	36998	5289	1386	0	339	892	6399	1266	0	2633	0	568	0	809	0	0	756179
3 MTG	82534	1148022082308	86034	4177	15480	5589	59419	9544	3391	18941	3286	22108	19432	310	0	1253	0	928	821	2174	0	0	0	2532530
4 PG	89121	127994	1553351289616	1706	17150	8899	38989	4741	1768	383	1703	33005	69023	8726	286	43306	0	0	0	0	198	0	0	1891949
5 ARLCR	1682	2482	1178	690	2748	6676	2017	6435	0	1900	0	0	178	221	0	0	0	0	0	0	0	0	0	26207
6 ARNCR	35759	16582	11640	3150	18994	231117	28387	97400	2929	1685	93	0	547	1374	91	0	675	102	1215	0	0	0	0	451740
7 ALX	22917	10004	4284	5399	4086	26911	184009	76897	1600	2746	382	0	1832	2330	0	683	262	320	0	0	0	0	0	344663
8 FFX	98677	43252	48778	17650	25854	110011	966962463366	88928	89682	1587	0	2852	1370	881	235	2334	2574	6939	2063	2349	132	0	0	3106210
9 LDN	10388	3168	7884	1239	607	8505	2134	143514	495169	7028	1611	0	0	852	0	0	0	3408	548	3735	0	0	0	689790
10 PW	13740	11163	6489	4074	5821	16154	15071	180556	12313	864444	0	0	0	0	0	957	632	9523	8025	0	4396	360	0	1153717
11 FRD	2071	3891	53221	4919	480	227	793	2830	4410	594	548527	22828	11119	4728	0	0	0	0	0	2298	0	0	0	662936
12 CAR	553	756	12523	4645	0	0	164	264	0	0	8915	351125	21831	8858	0	0	0	0	0	0	0	0	0	409636
13 HOW	7206	5005	32749	43823	165	1250	2220	4026	274	0	2107	7862	554444	60919	0	0	667	571	0	323	0	0	0	723613
14 AAR	15221	14328	30935	99734	1222	3556	2027	8722	0	769	839	4349	662851167700	7216	688	1483	0	453	143	0	0	0	0	1425672
15 CAL	5034	2465	2038	15138	152	888	255	7114	0	360	0	0	1550	14822	170369	14074	6977	0	0	0	0	0	0	241235
16 STM	1963	3354	457	6710	0	785	0	1302	0	0	0	0	0	1096	13678	262953	20646	0	460	0	0	0	0	313403
17 CHS	9029	8779	3551	38871	2481	3486	3975	6635	251	0	0	363	145	4276	4892	11778	297059	0	0	0	290	926	0	396787
18 FAU	814	565	900	0	408	766	374	12556	6647	15808	0	0	0	0	0	0	0	93795	939	2418	214	179	0	136383
19 STA	1561	2857	1285	279	124	3579	1186	13912	0	23843	130	0	0	393	0	0	0	0	174103	536	62287	1129	0	287206
20 CL/JF	509	0	690	0	0	0	0	4890	13799	78	6236	0	0	236	0	0	0	393	0	100259	539	297	0	127926
21 SP/FB	1865	2984	1084	1011	2153	1112	0	2035	0	10501	0	0	0	0	0	615	0	258	35083	3466	270364	6346	0	338876
22 KGEO	608	333	0	0	0	0	0	564	0	1325	0	0	0	489	0	441	1597	423	4835	0	7935	33983	0	52533
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	573430	2583530	1716860	74417	370587	648875	589750	717435	1367164	292501	381702	111309	235027	351359	43767	16250149								
	786178	1716860	476812	3185833	1028266	391856	717435	1367164	292501	381702	111309	235027	351359	43767	16250149									

Appendix B Year 2007 mode choice summary

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Total Internal Trips MODE: Difference (Est-Obs) Auto Person

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	16028	-5854	1964	2437	2450	-4005	-4087	-3039	-2296	66	364	78	493	-614	196	-358	-878	143	-358	43	156	-206	0	2725
2 DC NC	-28211	9388	-27663	9865	4285	2398	5964	8383	-3540	-70	510	-250	2419	-472	-943	162	-688	155	-295	42	-654	13	0	-19203
3 MTG	11645	1116	-31421	35949	1121	224	1448	-8193	-6247	-1647	-287	245	4670	-382	172	443	222	346	-505	-51	-1732	36	0	7171
4 PG	3191	38610	-10556	1325	5971	4389	12239	16357	-3050	5	488	-1428	-3578	-16571	-5071	1964	-14018	189	500	63	291	5	0	31315
5 ARLCR	723	433	192	617	6297	1687	1724	1984	302	-1356	41	8	-122	-74	16	10	67	35	65	10	41	3	0	12704
6 ARNCR	-13198	4002	-1587	3925	2414	-22288	5457	-756	-565	1307	28	15	-360	-843	-56	37	-384	46	-889	26	252	12	0	-23406
7 ALX	-5872	1970	812	1774	5288	6977	-24114	7707	-244	1408	-301	12	-1681	-1850	59	59	-124	-146	134	20	302	19	0	-7792
8 FFX	6903	21938	4288	16855	2125	2367	16313	-106735	-18785	-21948	-586	100	-1783	1279	-642	255	493	1026	-893	-1485	3761	184	0	-74970
9 LDN	2245	5353	3893	3031	2428	519	2555	-26486	11963	3813	7307	477	478	-112	27	92	347	-950	-11	8883	760	36	0	26647
10 PW	1005	-2377	1681	962	-1913	-4260	-3061	-4005	857	-7079	288	18	205	565	45	-824	-168	2910	7883	408	5786	-30	0	-11104
11 FRD	3483	312	-552	-1171	388	1809	-34	8575	8403	-107	-26722	-2005	1485	451	54	91	143	121	27	2836	25	1	0	-2389
12 CAR	2671	1336	3327	-2297	361	730	107	2204	1052	96	7490	13868	-9085	-5230	37	50	90	21	6	305	7	1	0	17148
13 HOW	2196	5018	6405	-9574	701	716	-1215	884	138	192	5280	650	-11485	3230	204	223	-218	-539	26	-80	28	6	0	2786
14 AAR	4433	6857	-2098	-31872	1083	2036	1872	3882	678	-216	803	-3497	627	3967	-1651	487	1204	55	-357	-56	75	29	0	-11658
15 CAL	400	1660	976	-4982	471	660	1216	-2779	134	-192	70	16	-997	-8766	14254	536	-1396	9	21	4	29	44	0	1387
16 STM	2076	-605	1293	-1338	523	413	1621	2776	97	155	42	7	265	156	-2801	-4153	-1681	17	-386	2	123	397	0	-1000
17 CHS	1807	-309	1000	-16811	-1143	-160	142	4917	94	469	99	-343	454	-1817	-359	-3707	13421	30	99	7	-161	45	0	-2224
18 FAU	908	309	312	497	77	423	351	798	-3020	-2168	86	7	37	75	8	28	48	10060	2006	-1996	1813	-114	0	10542
19 STA	1252	-1374	224	761	659	-1446	791	1494	1145	673	-88	5	48	-252	29	133	172	3056	21345	-459	-22735	-219	0	5215
20 CL/JF	242	454	3314	353	206	506	235	3641	4559	1459	-1382	213	262	223	2	3	9	734	34	7251	-504	-295	0	21520
21 SP/FB	-312	-2163	-131	-384	-1711	181	1189	9199	872	1018	30	3	31	92	34	-467	197	1779	-3885	-3403	-23471	-5492	0	-26791
22 KGEO	131	84	286	571	167	364	291	1791	125	1112	3	0	15	-429	55	-133	575	-88	-114	9	-3097	-4745	0	-3027
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	13745		-44040	10493	32248	-5760	21004	-77401	-7328	-23009	-6436	8199	-17604	-27375	3671	-5069	-2567	19009	24452	-38906	-10270	0	0	-34406

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Total Internal Trips MODE: Ratio (Est/Obs) Auto Person

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	1.29	0.87	1.15	1.14	5.89	0.66	0.57	0.83	0.23	1.07	364.34	77.76	2.19	0.79	196.07	0.25	0.50	142.85	0.41	42.86	156.28	0.06	0	1.02
2 DC NC	0.76	1.03	0.75	1.13	2.56	1.14	1.83	1.23	0.33	0.95	510.14	0.26	3.71	0.93	0.26	161.93	0.74	155.27	0.48	41.72	0.19	13.28	0	0.97
3 MTG	1.14	1.01	0.98	1.42	1.27	1.01	1.26	0.86	0.35	0.51	0.98	1.07	1.21	0.98	1.56	442.98	1.18	345.67	0.46	0.94	0.20	35.64	0	1.00
4 PG	1.04	1.30	0.93	1.00	4.50	1.26	2.38	1.42	0.36	1.00	2.28	0.16	0.89	0.76	0.42	7.86	0.68	189.36	499.68	63.36	291.01	1.02	0	1.02
5 ARLCR	1.43	1.17	1.16	1.89	3.29	1.25	1.85	1.31	301.91	0.29	40.87	8.04	0.31	0.67	15.89	10.30	67.36	35.09	65.43	9.67	41.35	2.89	0	1.48
6 ARNCR	0.63	1.24	0.86	2.25	1.13	0.90	1.19	0.99	0.81	1.78	1.30	14.66	0.34	0.39	0.39	36.63	0.43	1.45	0.27	25.86	251.71	11.89	0	0.95
7 ALX	0.74	1.20	1.19	1.33	2.29	1.26	0.87	1.10	0.85	1.51	0.21	12.24	0.08	0.21	59.16	58.75	0.82	0.44	1.42	20.26	301.95	18.79	0	0.98
8 FFX	1.07	1.51	1.09	1.95	1.08	1.02	1.17	0.96	0.79	0.76	0.63	100.09	0.37	1.93	0.27	2.09	1.21	1.40	0.87	0.28	2.60	2.40	0	0.98
9 LDN	1.22	2.69	1.49	3.45	5.00	1.06	2.20	0.82	1.02	1.54	5.54	476.76	477.50	0.87	26.88	91.80	346.72	0.72	0.98	3.38	760.21	36.25	0	1.04
10 PW	1.07	0.79	1.26	1.24	0.67	0.74	0.80	0.98	1.07	0.99	287.65	18.41	204.62	564.79	45.41	0.14	0.73	1.31	1.98	408.31	2.32	0.92	0	1.00
11 FRD	2.68	1.08	0.99	0.76	1.81	8.96	0.96	4.03	2.91	0.82	0.95	0.91	1.13	1.10	54.00	90.84	142.59	121.29	26.58	2.23	24.85	1.38	0	1.00
12 CAR	5.83	2.77	1.27	0.51	361.35	730.02	1.65	9.341051.93	96.28	1.84	1.04	0.58	0.41	37.34	50.41	89.53	20.50	6.44	305.18	6.89	0.58	0	0	1.04
13 HOW	1.30	2.00	1.20	0.78	5.24	1.57	0.45	1.22	1.50	192.19	3.51	1.08	0.98	1.05	204.34	222.65	0.67	0.06	25.84	0.75	27.52	6.19	0	1.00
14 AAR	1.29	1.48	0.93	0.68	1.89	1.57	1.92	1.45	678.42	0.72	1.96	0.20	1.01	1.00	0.77	1.71	1.81	54.82	0.21	0.61	75.06	29.48	0	0.99
15 CAL	1.08	1.67	1.48	0.67	4.10	1.74	5.76	0.61	134.18	0.47	69.84	15.62	0.36	0.41	1.08	1.04	0.80	9.38	20.59	3.57	28.80	43.82	0	1.01
16 STM	2.06	0.82	3.83	0.80	522.51	1.531620.95	3.13	96.62	155.39	42.01	7.43	264.84	1.14	0.80	0.98	0.92	16.90	0.16	2.40	123.34	396.62	0	0	1.00
17 CHS	1.20	0.96	1.28	0.57	0.54	0.95	1.04	1.74	1.38	468.94	99.10	0.06	4.13	0.58	0.93	0.69	1.05	30.40	99.42	6.60	0.44	1.05	0	0.99
18 FAU	2.12	1.55	1.35	496.76	1.19	1.55	1.94	1.06	0.55	0.86	86.31	6.59	36.87	74.57	7.57	27.75	48.22	1.11	3.14	0.17	9.46	0.36	0	1.08
19 STA	1.80	0.52	1.17	3.72	6.31	0.60	1.67	1.111144.91	1.03	0.32	4.82	47.66	0.36	29.36	133.27	171.833056.08	1.12	0.14	0.64	0.81	0	0	1.02	
20 CL/JF	1.48	453.89	5.80	353.44	206.24	505.59	235.26	1.74	1.33	19.63	0.78	212.76	2.11	222.52	2.49	3.21	8.95	2.87	34.11	1.07	0.07	0.01	0	1.17
21 SP/FB	0.83	0.28	0.88	0.62	0.21	1.161188.87	5.52	871.73	1.10	30.05	3.27	31.37	92.42	33.92	0.24	196.94	7.89	0.89	0.02	0.91	0.13	0	0	0.92
22 KGEO	1.22	1.25	285.61	571.31	167.29	363.61	290.90	4.18	124.71	1.84	2.92	0.18	14.97	0.12	55.31	0.70	1.36	0.79	0.98	8.97	0.61	0.86	0	0.94
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	1.02		0.98	1.01	1.43	0.99	1.06	0.98	0.99	0.99	0.99	1.02	0.98	0.98	1.02	0.98	0.99	1.17	1.10	1.11	0.89	0.77	0	1.00

Appendix B Year 2007 mode choice summary

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Total Internal Trips MODE: Est Auto Driver

ORIGIN	DESTINATION																							TOTAL	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1 DC CR	54907	28363	11716	17752	2142	5641	3801	11165	494	819	194	45	718	1718	140	58	699	76	155	15	69	4	0	140691	
2 DC NC	62146	269549	62162	68103	5134	13610	8827	32560	1232	1003	328	57	2497	4479	248	104	1511	88	169	16	76	6	0	533905	
3 MTG	75481	869051	423457	88893	4267	12483	5241	38164	2322	1115	12547	2232	18910	13349	311	333	976	175	212	463	243	21	0	1788099	
4 PG	70700	124829	101884	925057	5838	16208	14579	37982	1145	1090	512	138	20670	37321	2472	1580	20265	91	241	29	141	123	0	1382893	
5 ARLCR	1709	2376	1089	1161	6631	6451	2782	6491	201	413	20	4	105	11	4	52	19	40	3	18	1	0	0	29625	
6 ARNCR	17195	15571	7812	5791	15235	151846	24601	72335	1667	2175	71	7	144	385	24	23	221	87	203	10	140	6	0	315547	
7 ALX	13634	9352	3972	5768	6822	25769	111357	61331	911	2799	39	5	101	308	36	36	403	59	263	8	159	9	0	243140	
8 FFX	88092	52291	41995	25758	20978	87822	8089216	09606	52481	47763	640	50	722	1783	151	364	1804	2331	3645	370	3653	186	0	2123377	
9 LDN	10055	7011	9816	3353	2335	7157	3619	87605	360435	8012	6005	311	392	572	22	82	234	1729	346	8273	484	23	0	517869	
10 PW	10078	7053	6510	3887	2712	9057	8669	133311	9906	603097	220	13	148	404	33	113	311	8627	10595	302	6442	209	0	821696	
11 FRD	4321	3488	36306	3084	664	1546	570	7554	8041	373	380769	14943	9652	4293	42	78	111	82	12	3372	13	1	0	479315	
12 CAR	2596	1804	11297	1988	293	597	225	1843	666	80	12642	270530	9049	2980	31	44	75	15	3	216	4	0	0	316979	
13 HOW	7626	8175	28797	25129	705	1621	785	3720	302	140	5594	5782	385469	47325	149	187	328	16	11	161	14	4	0	522036	
14 AAR	15221	16433	20859	48367	1702	4112	2639	8381	444	353	1221	552	47392	841047	3887	899	1874	24	40	52	34	17	0	1015551	
15 CAL	4291	3316	2366	7474	456	1111	944	2784	96	115	55	11	424	4486	134093	11125	4033	5	12	2	20	29	0	177247	
16 STM	3053	2202	1418	4036	368	834	935	2451	71	110	32	5	211	976	7977	198731	13108	11	46	1	79	249	0	236906	
17 CHS	8550	6942	3638	16948	996	2445	2713	7388	225	298	71	12	459	1901	3321	6043	226610	15	52	3	78	582	0	289289	
18 FAU	1160	692	966	371	351	936	587	9913	2789	10128	62	4	23	45	5	23	31	74008	2101	310	1431	49	0	105983	
19 STA	1528	1077	1038	734	466	1529	1473	10961	940	17895	26	2	27	84	22	117	132	2397	139061	69	28751	688	0	209019	
20 CL/JF	556	382	2724	294	154	399	192	5761	11393	1146	3257	140	351	174	1	2	5	781	28	80125	29	1	0	107896	
21 SP/FB	779	558	616	430	245	869	830	7366	674	8206	19	1	16	50	27	124	159	1619	22677	55	178845	667	0	224832	
22 KGEO	504	356	225	487	106	257	207	1464	103	1594	2	0	12	50	45	224	1325	250	3145	8	3351	21223	0	34941	
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	454180		1780664		78600		276468		456536		424326		497431		153049		274267		183056		224073		0		11616836
		648727		1254862		352300		2160136		708725		294844		963834		220294		92505		93861		24098			

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Total Internal Trips MODE: Obs Auto Driver

ORIGIN	DESTINATION																							TOTAL	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1 DC CR	44873	33514	12182	14831	352	9943	7107	15253	2711	958	0	0	412	2882	0	474	1423	0	174	0	0	218	0	0	147309
2 DC NC	80194	262158	77628	59666	2169	13931	6156	29284	3820	1204	0	339	892	5429	949	0	1910	0	162	0	374	0	0	0	546265
3 MTG	66922	856331	484401	70897	3110	13775	4393	51028	7671	1837	15255	2585	19056	14891	310	0	816	0	928	821	621	0	0	0	1844951
4 PG	69535	93398	113981	909987	1559	12519	6636	34840	3430	1547	383	1521	22210	53459	6390	286	28190	0	0	0	0	198	0	0	1360071
5 ARLCR	1062	1959	1178	690	2499	5158	1808	6067	0	1267	0	0	178	221	0	0	0	0	0	0	0	0	0	0	22088
6 ARNCR	26649	14354	9098	2718	11786	165377	22605	75785	2382	1396	93	0	547	674	91	0	675	102	1215	0	0	0	0	0	335548
7 ALX	17215	7651	3809	4365	3398	21778	132041	58359	1273	2536	382	0	730	1071	0	0	539	262	320	0	0	0	0	0	255729
8 FFX	79846	35714	40837	16118	21073	85430	744671	722390	63820	65823	1587	0	2852	1370	771	235	1854	2364	3713	1399	2231	132	0	0	2224024
9 LDN	9132	3027	7884	1239	607	6062	2134	113257	333842	6030	881	0	0	852	0	0	0	2686	404	2196	0	0	0	0	490234
10 PW	7398	8774	4916	2501	4143	12063	10768	139594	10682	568226	0	0	0	0	0	491	463	6830	6301	0	1887	262	0	0	785300
11 FRD	1511	3444	41807	4207	480	227	793	2830	4087	594	393147	16497	8511	2912	0	0	0	0	0	0	1970	0	0	0	483018
12 CAR	553	278	10843	3677	0	0	164	264	0	0	6675	237554	17313	8173	0	0	0	0	0	0	0	0	0	0	285494
13 HOW	5738	4304	26593	35347	165	772	1392	3251	274	0	1969	5804	377715	48130	0	0	667	571	0	323	0	0	0	0	513016
14 AAR	11356	11164	18581	73498	1222	2910	2027	6285	0	769	767	3264	46485	827649	5811	425	1483	0	453	143	0	0	0	0	1014295
15 CAL	4415	1976	1098	11922	152	444	255	5190	0	360	0	0	1550	11445	119097	12674	4124	0	0	0	0	0	0	0	174702
16 STM	1963	2904	457	5978	0	785	0	1302	0	0	0	0	0	832	9891	200778	14504	0	460	0	0	0	0	0	239854
17 CHS	7614	7134	2568	32479	1477	2846	3352	5850	251	0	0	182	145	3884	4376	8683	210568	0	0	0	145	781	0	0	292335
18 FAU	814	565	900	0	204	766	374	12556	4689	13041	130	0	0	0	0	0	0	67249	577	1319	214	179	0	0	103445
19 STA	1561	2247	1285	140	124	1624	1186	10628	0	20930	130	0	393	0	0	0	0	0	112072	536	40373	1129	0	0	194359
20 CL/JF	509	0	690	0	0	0	0	4117	9882	78	5695	0	236	0	0	0	0	393	0	71008	539	297	0	0	93445
21 SP/FB	1865	1366	1084	1011	2153	1112	0	2035	0	7095	0	0	0	0	0	308	0	258	25537	2274	179949	5944	0	0	231989
22 KGEO	608	333	0	0	0	0	0	564	0	1325	0	0	0	489	0	343	1597	423	3140	0	5506	24545	0	0	38873
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	441333		1861819		56674		277658		448816		426964		498832		147687		268813		155457		231839		0		11676343
		581898		1251272		357525		2300730		695016		267747		984758		224696		81136		81990		33685			

Appendix B Year 2007 mode choice summary

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
Purpose: Total Internal Trips MODE: Difference (Est-Obs) Auto Driver

ORIGIN	DESTINATION																						TOTAL	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22		23
1 DC CR	10034	-5151	-466	2921	1790	-4302	-3306	-4088	-2217	-138	194	45	306	-1164	140	-416	-724	76	-19	15	69	-214	0	-6618
2 DC NC	-18047	7391	-15466	8436	2965	-320	2671	3276	-2588	-201	328	-282	1605	-951	-702	104	-399	88	7	16	-298	6	0	-12360
3 MTG	8559	1271	-60944	17995	1157	-1292	848	-12864	-5348	-722	-2708	-353	-147	-1542	2	333	160	175	-717	-358	-379	21	0	-56853
4 PG	1165	31431	-12098	15070	4279	3689	7943	3142	-2286	-457	130	-1383	-1540	-16139	-3919	1293	-7925	91	241	29	141	-75	0	22822
5 ARLCR	647	418	-89	470	4133	1293	974	423	201	-854	20	4	-135	-116	11	4	52	19	40	3	18	1	0	7538
6 ARNCR	-9454	1217	-1287	3072	3449	-13531	1996	-3451	-715	779	-23	7	-403	-289	-67	23	-454	-14	-1012	10	140	6	0	-20001
7 ALX	-3581	1701	163	1403	3424	3990	-20684	2973	-363	263	-343	5	-629	-763	36	36	-135	-202	-57	8	159	9	0	-12589
8 FFX	8246	16577	1159	9640	-95	2392	6426	-112784	-11339	-18060	-947	50	-2129	413	-620	129	-50	-33	-68	-1029	1422	54	0	-100647
9 LDN	923	3984	1932	2114	1728	1094	1485	-25652	26592	1981	5124	311	392	-280	22	82	234	-957	-59	6076	484	23	0	27634
10 PW	2680	-1721	1594	1386	-1431	-3006	-2099	-6283	-776	34871	220	13	148	404	33	-379	-153	1797	4294	302	4555	-53	0	36397
11 FRD	2809	44	-5500	-1123	184	1318	-222	4724	3954	-221	-12378	-1554	1141	1381	42	78	111	82	12	1402	13	1	0	-3703
12 CAR	2042	1526	454	-1689	293	597	60	1579	666	80	5967	32976	-8264	-5192	31	44	75	15	3	216	4	0	0	31486
13 HOW	1888	3871	2204	-10218	539	850	-607	469	28	140	3625	-22	7754	-806	149	187	-339	-555	11	-162	14	4	0	9021
14 AAR	3865	5269	2278	-25132	480	1201	612	2095	444	-415	454	-2712	907	13398	-1925	474	391	24	-412	-91	34	17	0	1256
15 CAL	-124	1340	1268	-4448	303	667	688	-2405	96	-244	55	11	-1126	-6960	14996	-1549	-91	5	12	2	20	29	0	2545
16 STM	1090	-702	962	-1942	368	49	935	1149	71	110	32	5	211	144	-1913	-2047	-1396	11	-414	1	79	249	0	-2949
17 CHS	935	-192	1070	-15531	-481	-400	-639	1538	-26	298	71	-170	314	-1983	-1055	-2639	16041	15	52	3	-67	-200	0	-3045
18 FAU	346	127	67	371	147	170	214	-2643	-1901	-2913	62	4	23	45	5	23	31	6760	1525	-1009	1216	-130	0	2538
19 STA	-33	-1170	-247	595	342	-96	287	333	940	-3035	-103	2	27	-310	22	117	132	2397	26988	-468	-11622	-441	0	14659
20 CL/JF	47	382	2035	294	154	399	192	1643	1511	1068	-2438	140	116	174	1	2	5	388	28	9117	-510	-296	0	14451
21 SP/FB	-1086	-808	-468	-581	-1908	-244	830	5331	674	1110	19	1	16	50	27	-183	159	1361	-2860	-2218	-1103	-5276	0	-7158
22 KGEO	-103	23	225	487	106	257	207	900	103	269	2	0	12	-439	45	-118	-272	-173	6	8	-2155	-3322	0	-3932
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	12847		-81155		21927		-1190		7721		-2638		-1400		5362		5454		27599		-7766		0	
		66829		3590		-5225		-140594		13709		27098		-20924		-4402		11368		11871		-9587		-59507

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
Purpose: Total Internal Trips MODE: Ratio (Est/Obs) Auto Driver

ORIGIN	DESTINATION																						TOTAL	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22		23
1 DC CR	1.22	0.85	0.96	1.20	6.08	0.57	0.53	0.73	0.18	0.86	193.89	44.90	1.74	0.60	139.73	0.12	0.49	76.28	0.89	14.81	68.71	0.02	0	0.96
2 DC NC	0.77	1.03	0.80	1.14	2.37	0.98	1.43	1.11	0.32	0.83	327.62	0.17	2.80	0.82	0.26	104.07	0.79	87.66	1.04	15.87	0.20	5.90	0	0.98
3 MTG	1.13	1.01	0.96	1.25	1.37	0.91	1.19	0.75	0.30	0.61	0.82	0.86	0.99	0.90	1.01	332.51	1.20	174.87	0.23	0.56	0.39	20.79	0	0.97
4 PG	1.02	1.34	0.89	1.02	3.74	1.29	2.20	1.09	0.33	0.70	1.34	0.09	0.93	0.70	0.39	5.52	0.72	91.06	241.06	28.56	141.05	0.62	0	1.02
5 ARLCR	1.61	1.21	0.92	1.68	2.65	1.25	1.54	1.07	200.89	0.33	20.45	4.06	0.24	0.47	10.52	4.47	52.08	18.82	40.17	3.09	17.96	0.95	0	1.34
6 ARNCR	0.65	1.08	0.86	2.13	1.29	0.92	1.09	0.95	0.70	1.56	0.76	6.78	0.26	0.57	0.27	22.79	0.33	0.86	0.17	10.14	139.89	5.89	0	0.94
7 ALX	0.79	1.22	1.04	1.32	2.01	1.18	0.84	1.05	0.71	1.10	0.10	4.50	0.14	0.29	35.94	36.44	0.75	0.23	0.82	7.78	159.28	9.29	0	0.95
8 FFX	1.10	1.46	1.03	1.60	1.00	1.03	1.09	0.93	0.82	0.73	0.40	49.98	0.25	1.30	0.20	1.55	0.97	0.99	0.98	0.26	1.64	1.41	0	0.95
9 LDN	1.10	2.32	1.25	2.71	3.85	1.18	1.70	0.77	1.08	1.33	6.81	311.27	391.95	0.67	21.52	82.40	233.86	0.64	0.86	3.77	483.60	23.08	0	1.06
10 PW	1.36	0.80	1.32	1.55	0.65	0.75	0.81	0.95	0.93	1.06	220.12	12.58	147.77	403.71	33.03	0.23	0.67	1.26	1.68	301.71	3.41	0.80	0	1.05
11 FRD	2.86	1.01	0.87	0.73	1.38	6.80	0.72	2.67	1.97	0.63	0.97	0.91	1.13	1.47	42.32	77.88	110.98	82.28	11.51	1.71	12.62	0.77	0	0.99
12 CAR	4.69	6.49	1.04	0.54	293.09	597.12	1.37	6.98	666.10	80.41	1.89	1.14	0.52	0.36	31.40	44.17	74.84	14.86	3.01	215.98	3.98	0.45	0	1.11
13 HOW	1.33	1.90	1.08	0.71	4.26	2.10	0.56	1.14	1.10	139.65	2.84	1.00	1.02	0.98	149.49	186.51	0.49	0.03	10.87	0.50	14.04	3.65	0	1.02
14 AAR	1.34	1.47	1.12	0.66	1.39	1.41	1.30	1.33	443.69	0.46	1.59	0.17	1.02	1.02	0.67	2.12	1.26	23.98	0.09	0.36	33.96	16.86	0	1.00
15 CAL	0.97	1.68	2.15	0.63	2.99	2.50	3.70	0.54	96.34	0.32	55.31	11.26	0.27	0.39	1.13	0.88	0.98	5.36	11.55	1.98	19.57	28.62	0	1.01
16 STM	1.55	0.76	3.11	0.68	368.22	1.06	935.38	1.88	70.60	110.39	32.11	4.67	210.80	1.17	0.81	0.99	0.90	11.05	0.10	1.03	78.93	249.31	0	0.99
17 CHS	1.12	0.97	1.42	0.52	0.67	0.86	0.81	1.26	0.90	298.30	71.07	0.07	3.17	0.49	0.76	0.70	1.08	14.77	51.78	2.74	0.54	0.74	0	0.99
18 FAU	1.43	1.23	1.07	370.77	1.72	1.22	1.57	0.79	0.59	0.78	62.12	3.69	22.75	45.36	4.66	23.21	31.00	1.10	3.64	0.23	6.67	0.27	0	1.02
19 STA	0.98	0.48	0.81	5.26	3.75	0.94	1.24	1.03	939.68	0.85	0.20	2.27	27.43	0.21	22.43	116.96	132.24	2397.10	1.24	0.13	0.71	0.61	0	1.08
20 CL/JF	1.09	381.61	3.95	293.80	153.92	399.17	192.07	1.40	1.15	14.63	0.57	139.52	1.49	173.63	1.32	2.28	5.38	1.99	27.74	1.13	0.05	0.00	0	1.15
21 SP/FB	0.42	0.41	0.57	0.43	0.11	0.78	829.67	3.62	674.23	1.16	18.52	1.29	16.20	49.58	26.97	0.40	159.29	6.27	0.89	0.02	0.99	0.11	0	0.97
22 KGEO	0.83	1.07	225.42	486.73	105.89	256.96	206.79	2.60	103.34	1.20	2.15	0.11	12.34	0.10	44.66	0.65	0.83	0.59	1.00	8.28	0.61	0.86	0	0.90
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	1.03		0.96		1.39		1.00		1.02		0.99		1.00		1.04		1.02		1.18		0.97		0	
		1.11		1.00		0.99		0.94		1.02		1.10		0.98		0.98		1.14		1.14		0.72		0.99

Appendix B Year 2007 mode choice summary

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Total Internal Trips MODE: Est Motr Psn

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	111444	58492	21461	23226	7566	14800	7771	16648	685	1061	364	78	909	2273	197	116	880	143	252	43	157	13	0	268580
2 DC NC	242770	464163	113336	97608	15700	34149	17687	50932	1752	1367	510	89	3334	5945	324	162	1945	155	273	42	155	13	0	1052411
3 MTG	174959	1337262	133365	125928	10446	21056	8037	52617	3297	1875	18653	3531	26808	19055	482	443	1475	346	423	770	442	36	0	2737768
4 PG	152241	192720	158117	1318476	14068	28889	22929	56838	1691	1878	871	275	29541	52521	3655	2250	29292	189	500	63	291	203	0	2067498
5 ARLCR	8576	3687	1651	1366	9633	10396	4347	8845	302	553	41	8	56	148	16	10	67	35	65	10	41	3	0	49856
6 ARNCR	68854	25487	11917	7413	27576	226698	38118	100928	2365	3050	122	15	187	531	35	37	290	147	327	26	252	12	0	514386
7 ALX	39009	14264	5901	7345	12088	40461	167078	87357	1356	4216	80	12	151	480	59	59	559	115	454	20	302	19	0	381386
8 FFX	163559	72739	56737	35042	37874	129877	120817	2380316	70250	68371	1012	100	1093	2668	249	546	2861	3600	6046	578	6125	316	0	3160777
9 LDN	15103	8976	12028	4290	3668	9769	4802	117341	508053	10965	8918	477	478	739	27	92	347	2459	537	12618	760	36	0	722483
10 PW	20722	10562	9318	5419	5461	14267	13125	180215	13331	860345	312	18	264	614	65	242	539	12433	15908	408	10213	330	0	1174112
11 FRD	6769	4390	53150	3763	949	2118	772	11425	12814	492	523676	20823	12604	5179	54	91	143	121	27	5134	25	1	0	664518
12 CAR	3225	2092	15850	2349	361	730	271	2468	1052	96	16405	364993	12746	3628	37	50	90	21	6	305	7	1	0	426784
13 HOW	13847	11220	40092	34602	1288	2401	1089	4995	412	260	7387	8513	543626	64174	204	223	449	32	26	244	28	6	0	735115
14 AAR	26438	22627	29525	68242	2941	6218	4017	12788	678	643	1642	852	66951	1171761	5566	1175	2687	55	96	87	75	29	0	1425094
15 CAL	6086	4407	3102	10195	731	1663	1498	4345	134	171	70	16	553	6057	184668	14611	5581	9	21	4	29	44	0	243994
16 STM	4370	2867	1792	5384	573	1250	1633	4085	97	155	42	7	265	1252	10878	258954	18981	17	74	2	123	397	0	313199
17 CHS	13693	9373	4828	22183	1679	3701	4210	11614	345	500	99	20	599	2459	4532	8075	311445	30	99	7	129	972	0	400594
18 FAU	1789	897	1221	498	516	1227	740	13367	3627	13644	86	7	37	75	8	28	48	103855	2945	422	2027	65	0	147128
19 STA	3612	1696	1585	1050	1062	2516	2102	15452	1145	24551	42	5	48	142	29	133	172	3056	195450	77	39554	910	0	294388
20 CL/JF	845	496	4059	357	241	541	242	8543	18358	1538	4853	213	498	223	2	3	9	1127	34	107511	36	2	0	149731
21 SP/FB	2171	1014	1036	640	668	1616	1338	11336	872	11587	30	3	31	92	34	148	197	2037	31201	63	246903	854	0	313870
22 KGEO	754	424	288	572	174	372	296	2360	125	2440	3	0	15	60	55	308	2172	335	4721	9	4835	29237	0	49557
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	1080836	2680358	1775946	155265	554716	422919	642741	1009758	585220	700793	400055	1340075	287755	380229	211177	380229	259484	130318	128442	312512	33497	0	0	17293230

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Total Internal Trips MODE: Obs Motr Psn

ORIGIN	DESTINATION																							TOTAL	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1 DC CR	101913	69843	21205	21893	2394	23647	11364	20274	3085	1128	51	0	525	3659	28	474	1757	84	610	0	0	218	0	284152	
2 DC NC	265287	459170	134206	86634	6486	34455	12270	41266	5590	1544	0	339	1004	6679	1266	0	2650	17	568	18	831	0	0	1060280	
3 MTG	165494	1467382	154598	92055	6013	21933	7123	60145	9589	3410	19013	3286	22251	19765	342	15	1258	0	981	821	2174	0	0	2737003	
4 PG	163935	160505	1700561	320105	4816	29163	11416	41928	4911	1768	386	1703	33171	69364	8726	286	43313	0	0	0	0	198	0	2065750	
5 ARLCR	6560	4005	1392	970	2800	8548	2463	6908	40	1922	0	0	178	249	0	0	0	0	0	0	0	0	0	36035	
6 ARNCR	86527	28851	13888	4647	21739	246586	31167	101340	3048	1718	93	0	547	1479	91	0	675	117	1232	29	0	0	0	543773	
7 ALX	44128	15505	5312	6080	5646	33701	191682	79651	1636	2790	382	0	1832	2330	0	0	683	262	320	0	0	0	0	391940	
8 FFX	153305	57215	50627	18917	31278	130222	102950	2492204	89177	89796	1587	0	2862	1402	881	235	2334	2603	6939	2063	2349	132	0	3239079	
9 LDN	11764	3673	7897	1266	772	9190	2267	143680	495181	7028	1611	0	0	852	0	0	0	3408	548	3735	0	0	0	692873	
10 PW	20624	13329	6746	4210	6537	19456	15844	181442	12383	866858	0	0	4	5	0	957	632	9526	8029	0	4396	360	0	1171338	
11 FRD	5085	4493	55065	5054	502	479	824	2830	4410	594	550404	22828	11119	4728	0	0	0	0	0	0	2298	0	0	670713	
12 CAR	789	774	12523	4645	0	64	164	264	0	0	8915	351125	21831	8858	0	0	0	0	0	0	0	0	0	409954	
13 HOW	11397	5592	32896	43903	327	2022	2278	4093	274	0	2107	7862	554471	60919	0	0	667	571	0	323	57	0	0	729761	
14 AAR	21236	16057	31178	99836	1664	4826	2117	8755	0	769	839	4349	66285	1167700	7216	688	1483	0	453	143	0	0	0	1435596	
15 CAL	5705	2769	2147	15140	259	955	290	7140	0	360	0	0	1550	14822	170369	14074	6977	0	0	0	0	0	0	242556	
16 STM	1994	3431	498	6710	4	897	17	1302	0	0	0	0	0	1096	13678	262953	20646	0	460	0	0	0	0	313685	
17 CHS	11766	9873	3671	39129	2739	4561	4017	6688	251	0	0	363	145	4276	4892	11778	297059	0	0	0	290	926	0	402424	
18 FAU	1065	676	935	35	486	887	393	12602	6647	15811	0	0	0	0	0	0	0	93795	939	2418	214	179	0	137082	
19 STA	2429	3126	1329	285	207	4052	1368	14120	0	23886	130	0	0	393	0	0	0	0	174103	536	62290	1129	0	289384	
20 CL/JF	511	59	690	0	5	3	5	4890	13799	78	6236	0	0	236	0	0	0	0	393	0	100259	539	297	0	128001
21 SP/FB	2087	3289	1095	1057	2212	1376	184	2197	0	10560	0	0	0	0	0	615	0	258	35092	3466	270367	6346	0	340202	
22 KGEO	697	349	3	0	7	25	8	577	0	1330	0	0	0	0	489	0	441	1597	423	4835	0	7935	33983	0	52698
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
TOTAL	1084297	2707958	1772570	96894	577050	400210	650022	1031350	591753	391856	718010	1369065	292516	381731	211177	380229	259484	130318	128442	312512	33497	0	0	17374278	

Appendix B Year 2007 mode choice summary

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Total Internal Trips MODE: Difference (Est-Obs) Motorized Person

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	9531	-11350	256	1334	5171	-8846	-3593	-3626	-2400	-67	313	78	384	-1386	169	-358	-877	59	-358	43	157	-206	0	-15572
2 DC NC	-22517	4994	-20871	10975	9214	-306	5417	9665	-3839	-177	510	-250	2330	-734	-943	162	-704	138	-295	24	-676	13	0	-7869
3 MTG	9466	-13012	-21233	33873	4433	-877	914	-7529	-6292	-1535	-359	245	4557	-711	140	428	217	346	-558	-51	-1732	36	0	764
4 PG	-11694	32215	-11940	-1630	9253	-274	11513	14910	-3220	110	485	-1428	-3630	-16843	-5071	1964	-14021	189	500	63	291	5	0	1748
5 ARLCR	2015	-318	259	395	6833	1848	1884	1937	262	-1369	41	8	-122	-102	16	10	67	35	65	10	41	3	0	13821
6 ARNCR	-17672	-3364	-1971	2766	5837	-19888	6952	-412	-683	1332	28	15	-360	-948	-56	37	-384	31	-906	-3	252	12	0	-29387
7 ALX	-5119	-1241	588	1266	6443	6760	-24604	7706	-280	1426	-301	12	-1681	-1850	59	59	-124	-146	134	20	302	19	0	-10554
8 FFX	10254	15524	6110	16125	6596	-346	17867	-111888	-18928	-21425	-575	100	-1768	1266	-632	311	527	997	-893	-1485	3776	184	0	-78302
9 LDN	3339	5303	4131	3024	2896	579	2535	-26339	12872	3938	7307	477	478	-112	27	92	347	-950	-11	8883	760	36	0	29610
10 PW	98	-2767	2571	1209	-1076	-5189	-2719	-1227	948	-6513	312	18	260	608	65	-715	-93	2906	7880	408	5818	-30	0	2774
11 FRD	1684	-103	-1915	-1291	447	1639	-51	8594	8403	-102	-26728	-2005	1485	451	54	91	143	121	27	2836	25	1	0	-6195
12 CAR	2435	1318	3327	-2297	361	666	107	2204	1052	96	7490	13868	-9085	-5230	37	50	90	21	6	305	7	1	0	16830
13 HOW	2450	5627	7196	-9301	960	379	-1189	902	138	260	5280	650	-10845	3255	204	223	-218	-539	26	-80	-29	6	0	5355
14 AAR	5202	6570	-1653	-31594	1277	1391	1900	4033	678	-126	803	-3497	665	4061	-1651	487	1204	55	-357	-56	75	29	0	-10502
15 CAL	381	1638	956	-4945	472	708	1208	-2794	134	-189	70	16	-997	-8765	14299	537	-1396	9	21	4	29	44	0	1438
16 STM	2376	-564	1295	-1325	569	353	1616	2783	97	155	42	7	265	156	-2799	-3999	-1664	17	-386	2	123	397	0	-485
17 CHS	1927	-501	1157	-16946	-1059	-860	193	4927	94	500	99	-343	454	-1817	-359	-3703	14386	30	99	7	-161	45	0	-1830
18 FAU	724	220	286	463	30	340	348	766	-3020	-2166	86	7	37	75	8	28	48	10060	2006	-1996	1813	-114	0	10046
19 STA	1183	-1430	256	765	855	-1536	734	1333	1145	665	-88	5	48	-252	29	133	172	3056	21347	-459	-22737	-219	0	5004
20 CL/JF	334	437	3369	357	236	538	237	3653	4559	1459	-1382	213	262	223	2	3	9	734	34	7251	-504	-295	0	21730
21 SP/FB	84	-2275	-59	-417	-1544	239	1154	9139	872	1026	30	3	31	92	34	-467	197	1778	-3891	-3403	-23464	-5492	0	-26332
22 KGEO	57	74	285	572	167	348	287	1783	125	1109	3	0	15	-429	55	-133	575	-88	-114	9	-3097	-4745	0	-3141
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	-3461	36997	-27600	3376	58371	-22334	22709	-7282	-6533	-21592	-8199	-17216	-28990	3688	-4761	-1501	18861	24374	-38932	-10270	0	0	0	-81048

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Total Internal Trips MODE: Ratio (Est/Obs) Motorized Person

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	1.09	0.84	1.01	1.06	3.16	0.63	0.68	0.82	0.22	0.94	7.14	77.76	1.73	0.62	7.02	0.25	0.50	1.70	0.41	42.86	156.95	0.06	0	0.95
2 DC NC	0.92	1.01	0.84	1.13	2.42	0.99	1.44	1.23	0.31	0.89	510.14	0.26	3.32	0.89	0.26	161.93	0.73	9.13	0.48	2.32	0.19	13.28	0	0.99
3 MTG	1.06	0.91	0.99	1.37	1.74	0.96	1.13	0.87	0.34	0.55	0.98	1.07	1.20	0.96	1.41	29.53	1.17	345.67	0.43	0.94	0.20	35.64	0	1.00
4 PG	0.93	1.20	0.93	1.00	2.92	0.99	2.01	1.36	0.34	1.06	2.26	0.16	0.89	0.76	0.42	7.86	0.68	189.36	499.68	63.36	291.01	1.02	0	1.00
5 ARLCR	1.31	0.92	1.19	1.41	3.44	1.22	1.77	1.28	7.55	0.29	40.87	8.04	0.31	0.59	15.89	10.30	67.36	35.09	65.43	9.67	41.35	2.89	0	1.38
6 ARNCR	0.80	0.88	0.86	1.60	1.27	0.92	1.22	1.00	0.78	1.78	1.30	14.66	0.34	0.36	0.39	36.63	0.43	1.26	0.26	0.89	251.71	11.89	0	0.95
7 ALX	0.88	0.92	1.11	1.21	2.14	1.20	0.87	1.10	0.83	1.51	0.21	12.24	0.08	0.21	59.16	58.75	0.82	0.44	1.42	20.26	301.95	18.79	0	0.97
8 FFX	1.07	1.27	1.12	1.85	1.21	1.00	1.17	0.96	0.79	0.76	0.64	100.09	0.38	1.90	0.28	2.32	1.23	1.38	0.87	0.28	2.61	2.40	0	0.98
9 LDN	1.28	2.44	1.52	3.39	4.75	1.06	2.12	0.82	1.03	1.56	5.54	476.76	477.50	0.87	26.88	91.80	346.72	0.72	0.98	3.38	760.21	36.25	0	1.04
10 PW	1.00	0.79	1.38	1.29	0.84	0.73	0.83	0.99	1.08	0.99	311.86	18.41	75.39	113.68	65.40	0.25	0.85	1.31	1.98	408.31	2.32	0.92	0	1.00
11 FRD	1.33	0.98	0.97	0.74	1.89	4.42	0.94	4.04	2.91	0.83	0.95	0.91	1.13	1.10	54.00	90.84	142.59	121.29	26.58	2.23	24.85	1.38	0	0.99
12 CAR	4.08	2.70	1.27	0.51	361.35	11.41	1.65	9.341051.93	96.28	1.84	1.04	0.58	0.41	37.34	50.41	89.53	20.50	6.44	305.18	6.89	0.58	0	1.04	
13 HOW	1.21	2.01	1.22	0.79	3.93	1.19	0.48	1.22	1.50	259.94	3.51	1.08	0.98	1.05	204.34	222.65	0.67	0.06	25.84	0.75	0.48	6.19	0	1.01
14 AAR	1.24	1.41	0.95	0.68	1.77	1.29	1.90	1.46	678.42	0.84	1.96	0.20	1.01	1.00	0.77	1.71	1.81	54.82	0.21	0.61	75.06	29.48	0	0.99
15 CAL	1.07	1.59	1.45	0.67	2.82	1.74	5.16	0.61	134.18	0.47	69.84	15.62	0.36	0.41	1.08	1.04	0.80	9.38	20.59	3.57	28.80	43.82	0	1.01
16 STM	2.19	0.84	3.60	0.80	143.17	1.39	96.05	3.14	96.62	155.39	42.01	7.43	264.84	1.14	0.80	0.98	0.92	16.90	0.16	2.40	123.34	396.62	0	1.00
17 CHS	1.16	0.95	1.32	0.57	0.61	0.81	1.05	1.74	1.38	499.88	99.10	0.06	4.13	0.58	0.93	0.69	1.05	30.40	99.42	6.60	0.44	1.05	0	1.00
18 FAU	1.68	1.33	1.31	14.22	1.06	1.38	1.89	1.06	0.55	0.86	86.31	6.59	36.87	74.57	7.57	27.75	48.22	1.11	3.14	0.17	9.46	0.36	0	1.07
19 STA	1.49	0.54	1.19	3.68	5.13	0.62	1.54	1.09	114491	1.03	0.32	4.82	47.66	0.36	29.36	133.27	171.83	305608	1.12	0.14	0.63	0.81	0	1.02
20 CL/JF	1.65	8.39	5.88	357.04	45.27	173.87	47.58	1.75	1.33	19.63	0.78	212.76	2.11	222.52	2.49	3.21	8.95	2.87	34.11	1.07	0.07	0.01	0	1.17
21 SP/FB	1.04	0.31	0.95	0.61	0.30	1.17	7.26	5.16	871.73	1.10	30.05	3.27	31.43	92.47	33.92	0.24	196.94	7.89	0.89	0.02	0.91	0.13	0	0.92
22 KGEO	1.08	1.21	104.99	571.56	24.24	15.17	35.87	4.09	124.71	1.83	2.92	0.18	14.97	0.12	55.31	0.70	1.36	0.79	0.98	8.97	0.61	0.86	0	0.94
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	1.00	1.04	0.99	1.00	1.60	0.96	1.06	0.98	0.99	0.98	0.98	1.02	0.98	0.98	1.02	0.98	1.00	1.17	1.10	1.11	0.89	0.77	0	1.00

Appendix B Year 2007 mode choice summary

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
Purpose: Total Internal Trips MODE: Est Auto Occ.

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	1.31	1.34	1.32	1.15	1.38	1.39	1.45	1.29	1.39	1.25	1.88	1.73	1.26	1.32	1.40	2.02	1.26	1.87	1.62	2.89	2.27	2.96	0	1.31
2 DC NC	1.42	1.40	1.37	1.26	1.37	1.45	1.49	1.39	1.42	1.31	1.56	1.56	1.33	1.32	1.31	1.56	1.29	1.77	1.61	2.63	2.05	2.25	0	1.38
3 MTG	1.25	1.33	1.44	1.37	1.24	1.26	1.34	1.34	1.42	1.56	1.49	1.58	1.42	1.43	1.55	1.33	1.51	1.98	2.00	1.66	1.82	1.71	0	1.42
4 PG	1.31	1.33	1.42	1.40	1.31	1.33	1.45	1.46	1.48	1.63	1.70	1.99	1.42	1.41	1.48	1.42	1.45	2.08	2.07	2.22	2.06	1.65	0	1.39
5 ARLCR	1.41	1.23	1.26	1.13	1.36	1.30	1.34	1.30	1.50	1.32	2.00	1.98	1.28	1.41	1.51	2.30	1.29	1.86	1.63	3.13	2.30	3.04	0	1.31
6 ARNCR	1.31	1.32	1.29	1.22	1.41	1.38	1.38	1.34	1.42	1.38	1.72	2.16	1.30	1.38	1.45	1.61	1.31	1.69	1.61	2.55	1.80	2.02	0	1.36
7 ALX	1.25	1.28	1.28	1.24	1.37	1.32	1.44	1.38	1.49	1.48	2.09	2.72	1.50	1.56	1.65	1.61	1.39	1.95	1.72	2.60	1.90	2.02	0	1.39
8 FFX	1.20	1.25	1.26	1.34	1.33	1.28	1.40	1.46	1.34	1.42	1.57	2.00	1.48	1.49	1.58	1.35	1.57	1.54	1.66	1.56	1.67	1.70	0	1.43
9 LDN	1.26	1.22	1.20	1.27	1.30	1.26	1.30	1.34	1.41	1.35	1.49	1.53	1.22	1.29	1.25	1.11	1.48	1.42	1.55	1.53	1.57	1.57	0	1.38
10 PW	1.46	1.25	1.26	1.30	1.44	1.31	1.39	1.32	1.33	1.42	1.31	1.46	1.38	1.40	1.37	1.18	1.49	1.44	1.50	1.35	1.58	1.58	0	1.40
11 FRD	1.29	1.20	1.45	1.22	1.31	1.32	1.33	1.51	1.59	1.30	1.37	1.39	1.31	1.21	1.28	1.17	1.28	1.47	2.31	1.52	1.97	1.79	0	1.38
12 CAR	1.24	1.16	1.40	1.18	1.23	1.22	1.21	1.34	1.58	1.20	1.30	1.35	1.41	1.22	1.19	1.14	1.20	1.38	2.14	1.41	1.73	1.29	0	1.35
13 HOW	1.23	1.23	1.36	1.36	1.23	1.21	1.28	1.32	1.37	1.38	1.32	1.47	1.41	1.36	1.37	1.19	1.37	2.01	2.38	1.51	1.96	1.70	0	1.39
14 AAR	1.29	1.29	1.38	1.40	1.35	1.36	1.48	1.50	1.53	1.57	1.34	1.54	1.41	1.39	1.43	1.31	1.43	2.29	2.38	1.67	2.21	1.75	0	1.39
15 CAL	1.27	1.24	1.27	1.36	1.37	1.39	1.56	1.56	1.39	1.45	1.26	1.39	1.31	1.35	1.38	1.31	1.38	1.75	1.78	1.80	1.47	1.53	0	1.37
16 STM	1.32	1.25	1.23	1.33	1.42	1.44	1.73	1.66	1.37	1.41	1.31	1.59	1.26	1.28	1.36	1.30	1.45	1.53	1.61	2.33	1.56	1.59	0	1.32
17 CHS	1.27	1.22	1.25	1.30	1.34	1.36	1.52	1.56	1.54	1.57	1.39	1.69	1.30	1.29	1.36	1.34	1.37	2.06	1.92	2.41	1.65	1.67	0	1.36
18 FAU	1.48	1.26	1.25	1.34	1.38	1.27	1.23	1.35	1.30	1.35	1.39	1.79	1.62	1.64	1.62	1.20	1.56	1.40	1.40	1.36	1.42	1.33	0	1.39
19 STA	1.84	1.38	1.45	1.42	1.68	1.40	1.34	1.41	1.22	1.37	1.59	2.12	1.74	1.69	1.31	1.14	1.30	1.27	1.41	1.12	1.38	1.32	0	1.40
20 CL/JF	1.35	1.19	1.47	1.20	1.34	1.27	1.22	1.48	1.61	1.34	1.49	1.52	1.42	1.28	1.89	1.41	1.66	1.44	1.23	1.34	1.22	1.14	0	1.39
21 SP/FB	1.99	1.47	1.55	1.46	1.80	1.49	1.43	1.53	1.29	1.40	1.62	2.53	1.94	1.86	1.26	1.19	1.24	1.26	1.38	1.14	1.38	1.28	0	1.39
22 KGEO	1.47	1.17	1.27	1.17	1.58	1.42	1.41	1.61	1.21	1.53	1.36	1.64	1.21	1.20	1.24	1.37	1.64	1.34	1.50	1.08	1.44	1.38	0	1.42
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	1.29	1.34	1.43	1.38	1.36	1.34	1.42	1.44	1.41	1.42	1.37	1.36	1.41	1.39	1.38	1.30	1.38	1.41	1.42	1.37	1.39	1.39	0	1.40

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
Purpose: Total Internal Trips MODE: Obs Auto Occ.

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	1.24	1.31	1.11	1.22	1.42	1.19	1.35	1.14	1.10	1.00	0	0	1.00	1.00	0	1.00	1.24	0	3.50	0	0	1.00	0	1.23
2 DC NC	1.45	1.40	1.45	1.27	1.26	1.24	1.17	1.26	1.38	1.15	0	1.00	1.00	1.18	1.33	0	1.38	0	3.50	0	2.17	0	0	1.38
3 MTG	1.23	1.34	1.40	1.21	1.34	1.12	1.27	1.16	1.24	1.85	1.24	1.27	1.16	1.30	1.00	0	1.54	0	1.00	1.00	3.50	0	0	1.37
4 PG	1.28	1.37	1.36	1.42	1.09	1.37	1.34	1.12	1.38	1.14	1.00	1.12	1.49	1.29	1.37	1.00	1.54	0	0	0	0	1.00	0	1.39
5 ARLCR	1.58	1.27	1.00	1.00	1.10	1.29	1.12	1.06	0	1.50	0	0	1.00	1.00	0	0	0	0	0	0	0	0	0	1.19
6 ARNCR	1.34	1.16	1.28	1.16	1.61	1.40	1.26	1.29	1.23	1.21	1.00	0	1.00	2.04	1.00	0	1.00	1.00	1.00	0	0	0	0	1.35
7 ALX	1.33	1.31	1.12	1.24	1.20	1.24	1.39	1.32	1.26	1.08	1.00	0	2.51	2.18	0	0	1.27	1.00	1.00	0	0	0	0	1.35
8 FFX	1.24	1.21	1.19	1.10	1.23	1.29	1.30	1.43	1.39	1.36	1.00	0	1.00	1.00	1.14	1.00	1.26	1.09	1.87	1.47	1.05	1.00	0	1.40
9 LDN	1.14	1.05	1.00	1.00	1.00	1.40	1.00	1.27	1.48	1.17	1.83	0	0	1.00	0	0	0	1.27	1.36	1.70	0	0	0	1.41
10 PW	1.86	1.27	1.32	1.63	1.40	1.34	1.40	1.29	1.15	1.52	0	0	0	0	0	1.95	1.36	1.39	1.27	0	2.33	1.37	0	1.47
11 FRD	1.37	1.13	1.27	1.17	1.00	1.00	1.00	1.00	1.08	1.00	1.40	1.38	1.31	1.62	0	0	0	0	0	1.17	0	0	0	1.37
12 CAR	1.00	2.72	1.15	1.26	0	0	1.00	1.00	0	0	1.34	1.48	1.26	1.08	0	0	0	0	0	0	0	0	0	1.43
13 HOW	1.26	1.16	1.23	1.24	1.00	1.62	1.59	1.24	1.00	0	1.07	1.35	1.47	1.27	0	0	1.00	1.00	0	1.00	0	0	0	1.41
14 AAR	1.34	1.28	1.66	1.36	1.00	1.22	1.00	1.39	0	1.00	1.09	1.33	1.43	1.41	1.24	1.62	1.00	0	1.00	1.00	0	0	0	1.41
15 CAL	1.14	1.25	1.86	1.27	1.00	2.00	1.00	1.37	0	1.00	0	0	1.00	1.30	1.43	1.11	1.69	0	0	0	0	0	0	1.38
16 STM	1.00	1.16	1.00	1.12	0	1.00	0	1.00	0	0	0	0	0	1.32	1.38	1.31	1.42	0	1.00	0	0	0	0	1.31
17 CHS	1.19	1.23	1.38	1.20	1.68	1.22	1.19	1.13	1.00	0	2.00	1.00	1.10	1.12	1.36	1.41	0	0	0	2.00	1.19	0	0	1.36
18 FAU	1.00	1.00	1.00	0	2.00	1.00	1.00	1.00	1.42	1.21	0	0	0	0	0	0	1.39	1.63	1.83	1.00	1.00	0	0	1.32
19 STA	1.00	1.27	1.00	2.00	1.00	2.20	1.00	1.31	0	1.14	1.00	0	0	1.00	0	0	0	0	1.55	1.00	1.54	1.00	0	1.48
20 CL/JF	1.00	0	1.00	0	0	0	0	1.19	1.40	1.00	1.09	0	1.00	0	0	0	0	1.00	0	1.41	1.00	1.00	0	1.37
21 SP/FB	1.00	2.18	1.00	1.00	1.00	1.00	0	1.00	0	1.48	0	0	0	0	2.00	0	1.00	1.37	1.52	1.50	1.07	0	0	1.46
22 KGEO	1.00	1.00	0	0	0	0	0	1.00	0	1.00	0	0	0	1.00	0	1.29	1.00	1.00	1.54	0	1.44	1.38	0	1.35
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	1.30	1.35	1.39	1.37	1.31	1.33	1.38	1.45	1.48	1.38	1.46	1.44	1.39	1.40	1.30	1.42	1.37	1.51	1.42	1.52	1.30	0	0	1.39

Appendix B Year 2007 mode choice summary

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Total Internal Trips MODE: Est Pct. Tran

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	35.5	34.9	28.0	11.8	61.0	47.0	29.3	13.7	0.1	3.5	0	0	0.5	0.2	0.3	0.0	0.0	0	0	0	0.4	0	0	31.6
2 DC NC	63.7	18.8	25.0	12.2	55.3	42.3	25.5	10.9	0.1	3.7	0	0	0.7	0.3	0.0	0	0.0	0	0	0	0.0	0	0	30.0
3 MTG	46.2	13.3	3.9	3.1	49.3	25.4	12.4	2.6	0.0	7.0	0.0	0	0.1	0.0	0.0	0	0	0	0	0	0	0	0	7.2
4 PG	39.4	13.6	8.4	2.1	45.4	25.4	7.8	2.6	0	5.6	0	0	0.4	0.1	0	0	0.0	0	0	0	0	0	0	7.0
5 ARLCR	72.0	20.9	17.0	4.3	6.1	19.6	14.0	4.8	0.0	1.6	0	0	0	0.0	0	0	0	0	0	0	0	0	0	22.0
6 ARNCR	67.2	19.2	15.6	4.6	22.4	7.9	11.2	4.2	0.0	1.9	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0	16.7
7 ALX	56.3	16.1	13.6	2.3	22.5	16.2	4.3	3.2	0.0	1.5	0	0	0	0	0	0	0	0	0	0	0	0	0	11.7
8 FFX	35.4	10.4	6.5	1.5	26.1	13.5	6.5	1.0	0.2	0.9	1.0	0	2.3	0.7	4.0	10.2	1.2	0	0.0	0	0.2	0	0	4.1
9 LDN	16.4	5.1	2.1	0.5	17.3	7.6	2.4	0.3	0.2	1.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0.8
10 PW	28.8	16.8	12.3	7.1	28.4	16.6	8.5	2.0	1.2	0.3	7.8	0	22.5	8.0	30.6	45.1	13.8	0	0.0	0	0.3	0	0	1.8
11 FRD	17.9	4.3	0.9	0.4	8.6	3.9	1.7	0.2	0	1.0	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0.6
12 CAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13 HOW	32.1	10.7	2.3	1.0	32.7	18.1	7.8	1.7	0	26.1	0	0	0.1	0.0	0	0	0	0	0	0	0	0	0	1.2
14 AAR	25.7	6.4	2.3	0.6	21.6	10.1	2.9	1.4	0	14.0	0	0	0.1	0.0	0.0	0	0	0	0	0	0	0	0	0.8
15 CAL	10.7	6.4	2.9	0.4	14.8	6.9	1.8	0.2	0	1.9	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0.6
16 STM	7.6	4.1	2.4	0.2	8.8	4.1	0.7	0.2	0	0	0	0	0	0.0	0.1	0.1	0	0	0	0	0	0	0	0.3
17 CHS	20.9	9.6	5.7	0.6	20.4	10.1	2.2	0.5	0	6.2	0	0	0.0	0.0	0	0.1	0.3	0	0	0	0	0	0	1.5
18 FAU	3.8	2.5	0.8	0.2	5.9	3.1	2.1	0.1	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1
19 STA	22.1	12.6	4.8	0.9	26.2	15.2	6.0	0.3	0	0.1	0	0	0	0.1	0	0	0	0.0	0	0.0	0	0	0	0.7
20 CL/JF	11.1	8.5	1.4	1.0	14.4	6.5	2.9	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2
21 SP/FB	28.5	19.0	8.0	2.0	33.8	19.9	11.1	0.9	0	0.6	0	0	0.2	0.1	0	0	0	0	0.0	0	0.0	0	0	0.6
22 KGEO	2.0	1.5	0.7	0.0	3.8	2.3	1.6	0.2	0	0.1	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0.1
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	45.7	16.6	5.3	2.7	31.3	15.1	7.4	1.5	0.2	0.4	0.3	0	0.1	0.0	0.0	0.1	0.3	0	0.0	0	0.0	0	0	6.2

Year: 2007 Estimate/Observed Trips - (Note: HTS trips Adjusted to On-board transit Survey data and CTPP Auto Occs.
 Purpose: Total Internal Trips MODE: Obs Pct. Tran

ORIGIN	DESTINATION																							TOTAL
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1 DC CR	45.2	37.1	36.4	17.5	79.1	49.9	15.7	14.1	3.4	15.1	100.0	0	21.5	21.2	100.0	0	0	100.0	0	0	0	0	0	36.3
2 DC NC	56.1	20.0	16.0	12.5	57.8	49.8	41.2	10.3	5.4	10.2	0	0	11.2	4.2	0	0	0.6	100.0	0	100.0	2.6	0	0	28.7
3 MTG	50.1	21.8	3.4	6.5	30.5	29.4	21.5	1.2	0.5	0.6	0.4	0	0.6	1.7	9.4	100.0	0.4	0	5.4	0	0	0	7.5	
4 PG	45.6	20.3	8.7	2.3	64.6	41.2	22.0	7.0	3.5	0	0.8	0	0.5	0.5	0	0	0.0	0	0	0	0	0	8.4	
5 ARLCR	74.4	38.0	15.4	28.9	1.9	21.9	18.1	6.8	100.0	1.1	0	0	0	11.2	0	0	0	0	0	0	0	0	27.3	
6 ARNCR	58.7	42.5	16.2	32.2	12.6	6.3	8.9	3.9	3.9	1.9	0	0	0	7.1	0	0	0	12.9	1.4	100.0	0	0	16.9	
7 ALX	48.1	35.5	19.4	11.2	27.6	20.1	4.0	3.5	2.2	1.6	0	0	0	0	0	0	0	0	0	0	0	0	12.1	
8 FFX	35.6	24.4	3.7	6.7	17.3	15.5	6.1	1.2	0.3	0.1	0	0	0.3	2.3	0	0	0	1.1	0	0	0	0	4.1	
9 LDN	11.7	13.8	0.2	2.1	21.4	7.5	5.9	0.1	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4	
10 PW	33.4	16.2	3.8	3.2	11.0	17.0	4.9	0.5	0.6	0.3	0	0	100.0	100.0	0	0	0	0.0	0.0	0	0	0	1.5	
11 FRD	59.3	13.4	3.3	2.7	4.4	52.6	3.8	0	0	0	0.3	0	0	0	0	0	0	0	0	0	0	0	1.2	
12 CAR	29.9	2.3	0	0	0	100.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	
13 HOW	36.8	10.5	0.4	0.2	49.5	38.2	2.5	1.6	0	0	0	0	0.0	0	0	0	0	0	0	0	100.0	0	0.8	
14 AAR	28.3	10.8	0.8	0.1	26.6	26.3	4.3	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.7	
15 CAL	11.8	11.0	5.1	0.0	41.3	7.0	12.1	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.5	
16 STM	1.5	2.2	8.2	0	100.0	12.5	100.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	
17 CHS	23.3	11.1	3.3	0.7	9.4	23.6	1.0	0.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.4	
18 FAU	23.6	16.5	3.8	100.0	16.1	13.6	4.8	0.4	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0.5	
19 STA	35.7	8.6	3.3	2.0	40.1	11.7	13.3	1.5	100.0	0.2	0	0	0	0	0	0	0	100.0	0.0	0	0.0	0	0.8	
20 CL/JF	0.4	100.0	0	0	100.0	100.0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	
21 SP/FB	10.7	9.3	1.0	4.3	2.7	19.2	100.0	7.4	0	0.6	0	0	0	0	0	0	0	0.1	0.0	0	0.0	0	0.4	
22 KGEO	12.7	4.6	100.0	0	100.0	100.0	2.3	0	0.4	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0.3	
23 EXTL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
TOTAL	47.1	22.1	4.6	3.1	23.2	17.4	7.4	1.5	0.2	0.3	0.3	0	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0	6.5	

Appendix C Year 2007 mode choice output vs. targets

Ref: "I:\ateam\nest_log\calibms_2011-09hov\newSegSumm5purps2007_2011-09.xlsx"

Appendix C. Year 2007 mode choice output vs. targets

Seg	Path #	HBW		HBS		HBO		NHW		NHO	
		Target	Model	Target	Model	Target	Model	Target	Model	Target	Model
(1) DC CORE / URBAN-DC CORE	DR ALONE	9,177	9,190	8,923	8,935	21,352	21,358	28,230	28,245	16,521	16,534
	SR2	3,145	3,149	5,503	5,511	21,272	21,278	11,622	11,628	10,252	10,260
	SR3+	923	924	2,547	2,551	12,297	12,300	3,971	3,973	4,090	4,093
	WK-CR	0	0	0	0	0	0	0	0	38	0
	WK-BUS	43,051	43,121	1,502	1,504	12,653	12,656	4,810	4,825	2,883	2,902
	WK-BU/MR	16,438	16,485	279	279	3,640	3,641	2,342	2,285	898	898
	WK-MR	51,755	51,637	664	665	14,539	14,543	20,682	20,766	4,423	4,452
	PNR-CR	0	22	0	0	0	0	0	0	0	0
	KNR-CR	15	15	0	0	0	0	0	0	0	0
	PNR-BUS	964	964	0	3	72	72	55	55	61	61
	KNR-BUS	207	208	0	0	147	147	99	99	210	210
	PNR-BU/MR	1,011	1,012	0	1	47	47	119	119	75	75
	KNR-BU/MR	332	333	0	0	52	52	225	221	45	45
PNR-MR	5,461	5,457	57	53	1,274	1,274	761	760	497	497	
KNR-MR	1,922	1,926	14	14	269	269	723	727	300	300	
(2) DC CORE / URBAN-VA CORE	DR ALONE	1,235	1,298	804	806	3,102	3,109	2,163	2,161	38	65
	SR2	227	239	1,310	1,252	2,110	2,114	480	480	45	73
	SR3+	111	117	0	60	908	910	1,660	1,659	0	4
	WK-CR	0	0	0	0	0	0	0	0	0	0
	WK-BUS	503	642	0	4	50	48	0	189	10	87
	WK-BU/MR	2,410	2,719	0	11	555	528	681	596	255	249
	WK-MR	6,734	6,112	145	121	2,448	2,278	3,135	3,044	1,410	1,277
	PNR-CR	0	1	0	0	0	0	0	0	0	0
	KNR-CR	0	0	0	0	0	0	0	0	0	0
	PNR-BUS	0	19	0	0	0	3	0	1	0	1
	KNR-BUS	0	1	0	0	8	8	0	0	0	9
	PNR-BU/MR	154	166	0	0	0	13	8	8	0	1
	KNR-BU/MR	16	17	0	0	0	0	0	0	0	1
PNR-MR	503	547	0	2	0	175	113	111	14	13	
KNR-MR	155	174	0	6	81	77	344	342	191	181	
(3) DC CORE / URBAN-URBAN	DR ALONE	6,284	6,817	47,643	47,643	108,019	108,002	43,946	44,029	53,563	53,610
	SR2	1,512	1,640	20,439	20,439	75,193	75,181	4,779	4,788	26,760	26,784
	SR3+	515	559	10,860	10,860	65,325	65,315	13,518	13,544	17,880	17,896
	WK-CR	0	0	0	12	0	49	0	178	0	18
	WK-BUS	24,338	27,416	3,132	3,127	24,891	24,857	7,291	7,249	4,780	4,776
	WK-BU/MR	14,825	16,690	1,167	1,165	5,167	5,160	2,810	2,790	971	970
	WK-MR	27,917	21,643	2,365	2,360	10,030	10,017	13,087	13,019	4,667	4,663
	PNR-CR	0	24	0	0	0	0	0	0	0	0
	KNR-CR	0	3	0	0	0	0	0	0	0	0
	PNR-BUS	225	269	0	15	133	133	26	26	107	107
	KNR-BUS	98	117	37	37	189	189	231	231	200	200
	PNR-BU/MR	65	77	50	45	241	241	23	23	125	125
	KNR-BU/MR	430	508	49	49	107	107	250	250	215	215
PNR-MR	1,636	1,877	105	94	764	764	635	636	28	28	
KNR-MR	1,482	1,736	36	36	392	392	639	641	442	442	
(4) DC CORE / URBAN-OTHER	DR ALONE	23,947	26,341	16,189	16,429	39,879	40,064	39,330	39,673	26,353	27,052
	SR2	4,197	4,617	14,368	14,581	18,262	18,347	9,260	9,346	14,326	14,706
	SR3+	1,557	1,713	11,789	11,964	20,241	20,335	2,005	2,025	3,479	3,571
	WK-CR	64	71	21	20	134	134	0	192	235	218
	WK-BUS	3,667	4,038	682	656	1,273	1,279	322	339	427	445
	WK-BU/MR	7,973	8,780	280	269	2,060	2,070	1,410	1,489	574	597
	WK-MR	7,667	3,383	255	245	1,181	1,168	3,992	3,490	1,123	1,156
	PNR-CR	23	31	0	0	0	0	0	2	15	10
	KNR-CR	10	13	0	0	24	23	0	0	130	113
	PNR-BUS	16	21	0	2	49	45	67	72	0	4
	KNR-BUS	83	110	0	2	0	10	46	49	42	50
	PNR-BU/MR	189	252	0	8	0	15	76	82	0	3
	KNR-BU/MR	412	547	0	18	75	72	39	41	55	65
PNR-MR	391	509	0	10	117	106	500	491	16	15	
KNR-MR	443	576	0	25	115	110	181	184	64	76	

Appendix C. Year 2007 mode choice output vs. targets

Seg	Path #	HBW		HBS		HBO		NHW		NHO	
		Target	Model	Target	Model	Target	Model	Target	Model	Target	Model
(5) MD URBAN-DC CORE	DR ALONE	5,031	5,215	1,749	1,667	3,997	4,006	1,876	1,875	2,566	2,572
	SR2	1,398	1,450	0	38	2,646	2,652	0	11	534	509
	SR3+	329	341	0	43	953	955	747	741	0	25
	WK-CR	0	0	0	0	0	0	0	0	0	0
	WK-BUS	1,387	1,549	25	24	374	381	136	136	50	50
	WK-BU/MR	4,005	4,491	78	72	656	667	272	270	22	22
	WK-MR	10,454	9,247	99	91	1,783	1,743	1,226	1,231	261	262
	PNR-CR	0	78	0	0	0	0	0	0	0	0
	KNR-CR	0	24	0	0	0	0	0	0	0	0
	PNR-BUS	24	25	0	1	0	37	0	7	0	4
	KNR-BUS	102	107	0	0	0	5	0	0	0	0
	PNR-BU/MR	218	228	0	0	165	153	63	62	34	32
	KNR-BU/MR	197	207	0	0	24	23	0	0	0	0
PNR-MR	3,028	3,168	0	4	397	376	289	284	49	47	
KNR-MR	961	1,009	0	9	94	91	103	103	51	51	
(6) MD URBAN-VA CORE	DR ALONE	699	709	0	8	0	37	0	2	0	1
	SR2	215	218	0	7	0	30	0	6	0	2
	SR3+	23	23	0	8	0	35	0	48	0	19
	WK-CR	0	0	0	0	0	0	0	0	0	0
	WK-BUS	24	25	0	16	31	146	0	62	0	17
	WK-BU/MR	302	320	0	25	65	207	42	76	0	23
	WK-MR	787	741	32	51	87	272	150	365	35	81
	PNR-CR	0	9	0	0	0	0	0	0	0	0
	KNR-CR	0	4	0	0	0	0	0	0	0	0
	PNR-BUS	0	3	0	0	0	0	0	0	0	0
	KNR-BUS	0	1	0	0	0	1	0	0	0	0
	PNR-BU/MR	30	30	0	0	0	3	0	0	0	0
	KNR-BU/MR	0	1	0	0	0	0	0	0	0	0
PNR-MR	378	374	0	13	0	51	0	23	0	8	
KNR-MR	232	232	0	20	0	93	0	54	0	23	
(7) MD URBAN-URBAN	DR ALONE	15,293	15,450	16,808	16,820	31,996	32,008	23,619	23,640	18,111	18,132
	SR2	3,057	3,088	7,652	7,657	27,570	27,580	2,206	2,208	14,321	14,338
	SR3+	647	654	6,344	6,348	21,239	21,247	4,427	4,431	3,496	3,500
	WK-CR	0	0	0	0	0	4	0	6	0	1
	WK-BUS	6,421	6,509	690	642	3,496	3,499	694	693	534	529
	WK-BU/MR	2,864	2,907	118	110	620	621	288	285	80	79
	WK-MR	4,729	4,421	92	86	2,179	2,147	882	882	187	185
	PNR-CR	0	20	0	0	0	1	0	0	0	0
	KNR-CR	1	1	0	0	0	0	0	0	0	0
	PNR-BUS	23	23	0	7	143	143	2	2	160	149
	KNR-BUS	61	63	0	6	39	37	46	46	23	23
	PNR-BU/MR	60	60	0	3	23	23	41	41	0	1
	KNR-BU/MR	173	178	0	4	0	3	53	53	0	0
PNR-MR	584	581	0	12	122	122	47	47	0	18	
KNR-MR	494	507	0	29	34	32	31	31	30	30	
(8) MD URBAN-OTHER	DR ALONE	18,737	18,920	15,296	15,366	24,056	24,108	18,644	18,670	21,192	21,271
	SR2	2,380	2,403	9,752	9,797	23,604	23,655	2,293	2,296	13,545	13,596
	SR3+	1,024	1,034	3,677	3,694	12,803	12,831	3,954	3,960	3,264	3,276
	WK-CR	27	27	0	1	0	9	0	7	19	19
	WK-BUS	3,003	3,009	288	261	1,519	1,492	1,363	1,360	891	881
	WK-BU/MR	1,411	1,415	0	17	191	188	157	157	60	59
	WK-MR	1,259	1,135	25	23	317	311	321	321	26	26
	PNR-CR	0	8	0	0	0	2	0	0	0	0
	KNR-CR	2	2	0	0	0	0	0	0	0	0
	PNR-BUS	35	35	0	1	604	556	0	1	0	1
	KNR-BUS	57	59	77	70	17	16	0	1	60	55
	PNR-BU/MR	45	45	0	3	0	34	0	1	0	1
	KNR-BU/MR	72	74	0	3	11	10	0	2	0	1
PNR-MR	124	122	0	7	0	42	22	21	0	12	
KNR-MR	21	21	0	6	0	3	38	36	0	7	

Appendix C. Year 2007 mode choice output vs. targets

Seg	Path #	HBW		HBS		HBO		NHW		NHO	
		Target	Model	Target	Model	Target	Model	Target	Model	Target	Model
(9) VA CORE / URBAN-DC CORE	DR ALONE	4,457	5,262	940	944	3,169	3,208	3,098	3,100	273	332
	SR2	1,302	1,537	1,148	1,099	2,954	2,990	1,077	1,078	173	200
	SR3+	317	375	0	53	2,339	2,368	2,303	2,304	0	10
	WK-CR	4	6	0	0	0	0	0	0	0	0
	WK-BUS	2,502	3,860	0	7	251	276	0	179	40	80
	WK-BU/MR	9,581	14,535	0	15	1,191	1,326	509	482	160	318
	WK-MR	30,058	21,093	169	133	5,387	5,074	4,277	4,128	1,988	1,547
	PNR-CR	22	0	0	0	0	0	0	0	0	0
	KNR-CR	0	0	0	0	0	0	0	0	0	0
	PNR-BUS	315	440	0	0	0	3	0	2	0	12
	KNR-BUS	0	35	0	0	0	1	0	0	0	0
	PNR-BU/MR	228	318	0	1	72	76	79	78	31	43
	KNR-BU/MR	215	289	28	23	87	83	27	27	45	43
PNR-MR	1,332	1,855	0	12	426	440	132	132	150	199	
KNR-MR	2,020	2,758	0	6	275	296	403	403	126	201	
(10) VA CORE / URBAN-VA CORE	DR ALONE	7,255	7,314	3,031	3,029	7,738	7,741	8,501	8,501	4,649	4,650
	SR2	1,349	1,360	3,165	3,163	6,649	6,652	1,846	1,846	1,868	1,869
	SR3+	494	498	1,759	1,758	6,322	6,324	3,663	3,663	510	510
	WK-CR	0	0	0	0	0	0	0	0	0	0
	WK-BUS	2,403	2,500	247	217	62	58	278	279	26	24
	WK-BU/MR	658	684	0	2	34	32	134	134	0	18
	WK-MR	3,675	3,467	0	24	842	749	2,353	2,351	432	396
	PNR-CR	0	0	0	0	0	0	0	0	0	0
	KNR-CR	0	0	0	0	0	0	0	0	0	0
	PNR-BUS	32	31	0	0	0	3	0	12	0	7
	KNR-BUS	0	2	0	0	0	3	13	13	0	6
	PNR-BU/MR	0	11	0	0	0	0	31	28	0	0
	KNR-BU/MR	0	1	0	0	0	0	0	0	38	32
PNR-MR	166	160	0	1	0	6	128	118	0	15	
KNR-MR	226	230	0	9	0	77	40	40	90	86	
(11) VA CORE / URBAN-URBAN	DR ALONE	16,709	18,034	27,858	27,914	46,606	46,631	30,921	30,943	25,818	25,876
	SR2	2,755	2,973	15,828	15,860	37,644	37,664	6,416	6,421	12,211	12,238
	SR3+	772	833	8,572	8,589	29,944	29,960	3,014	3,016	5,234	5,245
	WK-CR	8	9	0	0	0	0	0	0	0	0
	WK-BUS	5,065	6,154	793	720	2,410	2,425	1,016	1,016	640	604
	WK-BU/MR	3,733	4,533	59	54	953	951	548	545	111	105
	WK-MR	10,467	6,743	525	466	1,973	1,927	2,843	2,852	1,262	1,165
	PNR-CR	1	0	0	0	0	0	0	0	0	0
	KNR-CR	7	0	0	0	0	0	0	0	0	0
	PNR-BUS	86	107	0	2	0	26	0	8	0	50
	KNR-BUS	0	27	0	12	42	39	17	17	0	12
	PNR-BU/MR	80	99	0	0	60	52	31	29	0	2
	KNR-BU/MR	78	95	0	21	0	13	0	1	188	168
PNR-MR	282	350	20	16	129	111	114	108	0	92	
KNR-MR	647	785	0	94	114	105	57	56	59	53	
(12) VA CORE / URBAN-OTHER	DR ALONE	27,048	27,637	19,067	19,161	29,010	29,102	25,431	25,505	17,928	18,073
	SR2	3,188	3,257	11,159	11,214	19,767	19,829	4,392	4,405	11,141	11,231
	SR3+	1,529	1,562	2,881	2,895	17,732	17,788	2,274	2,281	9,563	9,640
	WK-CR	0	9	0	0	19	19	0	5	21	18
	WK-BUS	1,828	1,831	466	422	1,006	1,009	422	430	194	181
	WK-BU/MR	1,694	1,697	0	25	327	328	241	245	17	16
	WK-MR	1,595	907	0	10	512	482	767	731	117	108
	PNR-CR	0	0	0	0	0	0	0	0	0	0
	KNR-CR	0	0	0	0	27	0	0	0	0	0
	PNR-BUS	57	58	0	4	0	3	33	34	0	16
	KNR-BUS	65	75	0	2	7	7	48	49	25	22
	PNR-BU/MR	0	19	0	1	0	0	50	51	0	5
	KNR-BU/MR	65	75	0	7	0	32	20	20	0	1
PNR-MR	90	90	0	1	20	17	109	106	0	5	
KNR-MR	79	90	0	4	73	69	13	13	0	2	

Appendix C. Year 2007 mode choice output vs. targets

Seg	Path #	HBW		HBS		HBO		NHW		NHO	
		Target	Model	Target	Model	Target	Model	Target	Model	Target	Model
(13) MD OTHER-DC CORE	DR ALONE	94,737	97,120	6,286	6,369	20,600	20,640	10,442	10,512	3,103	3,156
	SR2	26,030	26,685	2,836	2,739	13,927	13,954	2,128	2,142	3,611	3,673
	SR3+	10,915	11,190	0	131	16,714	16,746	1,348	1,357	4,536	4,613
	WK-CR	958	926	0	0	42	40	0	1	54	45
	WK-BUS	7,510	7,247	48	47	1,349	1,346	180	181	101	108
	WK-BU/MR	16,167	15,608	80	77	1,381	1,379	655	658	72	77
	WK-MR	12,772	10,180	0	14	1,828	1,792	1,066	1,069	79	84
	PNR-CR	7,875	7,918	0	1	207	207	0	35	167	169
	KNR-CR	470	473	0	1	11	11	0	11	12	12
	PNR-BUS	1,073	1,084	32	33	194	194	0	4	0	2
	KNR-BUS	337	340	0	0	0	1	19	19	8	8
	PNR-BU/MR	7,428	7,451	18	18	486	481	371	349	40	40
	KNR-BU/MR	1,742	1,751	38	38	165	165	119	117	77	78
PNR-MR	54,824	54,947	78	79	4,916	4,927	1,775	1,776	263	268	
KNR-MR	10,972	10,977	83	84	574	574	516	511	93	95	
(14) MD OTHER-VA CORE	DR ALONE	13,760	13,857	136	138	2,581	2,587	997	1,002	0	2
	SR2	2,927	2,948	730	742	984	986	1,210	1,144	0	5
	SR3+	1,213	1,222	357	363	3,455	3,463	0	72	0	82
	WK-CR	12	12	0	0	0	0	0	0	0	0
	WK-BUS	241	238	0	0	0	10	0	4	0	5
	WK-BU/MR	1,489	1,469	27	23	82	79	127	125	0	13
	WK-MR	846	796	0	4	187	177	71	70	35	58
	PNR-CR	314	315	0	0	0	9	0	1	11	34
	KNR-CR	10	10	0	0	0	9	0	1	74	160
	PNR-BUS	192	192	0	0	0	1	0	0	0	92
	KNR-BUS	0	33	0	0	0	0	0	0	0	1
	PNR-BU/MR	1,358	1,356	0	0	102	99	0	0	76	36
	KNR-BU/MR	318	310	0	0	29	28	25	25	0	13
PNR-MR	8,255	8,229	0	1	590	584	195	195	47	172	
KNR-MR	1,037	1,007	0	0	446	437	75	75	52	131	
(15) MD OTHER-URBAN	DR ALONE	155,093	157,191	24,782	24,978	105,698	105,946	37,724	37,944	29,913	30,186
	SR2	25,914	26,265	22,956	23,137	72,486	72,656	6,529	6,567	20,895	21,085
	SR3+	6,750	6,841	16,106	16,233	62,977	63,125	2,963	2,980	18,810	18,981
	WK-CR	323	313	0	1	0	8	0	5	16	15
	WK-BUS	16,313	15,774	1,269	1,278	8,934	8,952	1,331	1,339	1,136	1,148
	WK-BU/MR	11,985	11,606	149	150	2,190	2,194	640	643	187	189
	WK-MR	6,961	5,909	235	236	967	969	523	528	117	118
	PNR-CR	1,869	1,902	0	0	53	53	0	7	15	14
	KNR-CR	213	217	0	0	56	56	0	14	0	4
	PNR-BUS	2,199	2,231	0	4	284	285	44	44	0	14
	KNR-BUS	788	800	0	2	638	639	358	353	97	97
	PNR-BU/MR	3,628	3,683	0	4	509	510	194	193	105	98
	KNR-BU/MR	1,355	1,377	21	19	339	340	137	135	259	259
PNR-MR	17,059	17,279	92	85	1,935	1,939	551	550	64	60	
KNR-MR	5,369	5,428	13	12	573	574	206	203	81	81	
(16) MD OTHER-OTHER	DR ALONE	968,321	970,194	624,202	624,794	1,139,599	1,140,423	432,717	433,164	645,396	645,782
	SR2	110,852	111,066	399,510	399,890	946,926	947,608	75,148	75,226	437,946	438,207
	SR3+	32,035	32,097	348,424	348,755	827,604	828,198	62,810	62,875	324,228	324,423
	WK-CR	122	122	0	9	15	15	0	3	17	17
	WK-BUS	25,851	25,832	5,231	5,212	17,871	17,886	3,358	3,359	2,606	2,546
	WK-BU/MR	5,666	5,664	72	72	1,517	1,518	267	267	73	76
	WK-MR	1,110	1,104	33	33	241	241	227	227	14	14
	PNR-CR	706	708	0	0	0	36	0	0	0	12
	KNR-CR	194	195	0	6	56	61	0	15	0	1
	PNR-BUS	2,643	2,651	27	20	1,081	938	22	22	1,180	1,054
	KNR-BUS	1,049	1,052	81	74	597	593	441	430	80	72
	PNR-BU/MR	1,220	1,224	0	15	51	176	13	13	0	109
	KNR-BU/MR	739	741	0	4	156	156	97	95	0	3
PNR-MR	1,636	1,640	0	0	134	116	56	56	0	70	
KNR-MR	1,159	1,162	0	5	90	89	24	23	0	7	

Appendix C. Year 2007 mode choice output vs. targets

Seg	Path #	HBW		HBS		HBO		NHW		NHO	
		Target	Model	Target	Model	Target	Model	Target	Model	Target	Model
(17) VA OTHER-DC CORE	DR ALONE	64,687	67,025	2,693	2,784	19,195	19,296	5,041	5,122	1,295	1,383
	SR2	17,650	18,288	1,598	1,652	11,119	11,178	514	522	393	397
	SR3+	19,358	20,070	1,633	1,688	2,021	2,032	673	684	0	22
	WK-CR	114	108	0	0	0	12	0	3	0	0
	WK-BUS	2,601	2,457	20	16	241	238	74	74	0	26
	WK-BU/MR	16,081	15,183	0	18	1,157	1,141	504	500	123	116
	WK-MR	9,604	6,564	95	67	1,110	1,012	360	329	123	107
	PNR-CR	1,303	1,321	0	2	0	14	0	9	0	0
	KNR-CR	136	138	0	0	0	6	0	2	0	0
	PNR-BUS	3,622	3,671	0	2	204	203	10	10	0	10
	KNR-BUS	567	575	0	0	0	4	0	36	0	5
	PNR-BU/MR	5,957	6,026	44	39	528	524	261	259	52	53
	KNR-BU/MR	1,417	1,436	0	1	241	238	79	75	81	83
PNR-MR	26,121	26,372	59	55	2,970	2,955	1,313	1,317	284	292	
KNR-MR	8,507	8,572	0	18	741	731	619	588	90	93	
(18) VA OTHER-VA CORE	DR ALONE	18,214	18,524	2,573	2,577	7,516	7,525	5,785	5,800	988	991
	SR2	4,183	4,254	1,616	1,618	6,955	6,963	490	460	993	996
	SR3+	4,828	4,912	2,238	2,241	6,847	6,855	0	31	2,086	2,092
	WK-CR	49	47	0	0	0	1	0	0	0	0
	WK-BUS	2,850	2,723	17	6	100	100	26	26	34	30
	WK-BU/MR	3,140	3,004	0	17	94	94	53	53	68	60
	WK-MR	1,467	1,225	0	0	259	249	43	43	0	10
	PNR-CR	1,146	1,153	0	0	0	4	0	1	0	0
	KNR-CR	92	93	0	0	0	0	0	0	0	0
	PNR-BUS	2,500	2,512	4	5	5	5	4	4	0	1
	KNR-BUS	242	244	0	0	0	8	0	20	0	0
	PNR-BU/MR	1,099	1,104	0	0	22	22	21	21	0	0
	KNR-BU/MR	275	277	0	0	53	49	53	48	0	0
PNR-MR	6,304	6,323	0	1	471	467	301	301	21	18	
KNR-MR	2,248	2,251	0	4	57	53	175	160	0	6	
(19) VA OTHER-URBAN	DR ALONE	98,401	100,281	23,531	24,019	55,367	55,685	20,331	20,441	18,443	18,721
	SR2	13,991	14,257	17,535	17,899	39,176	39,401	4,753	4,779	8,922	9,056
	SR3+	8,612	8,780	3,548	3,622	26,884	27,038	1,680	1,689	4,281	4,345
	WK-CR	118	111	0	0	0	3	0	2	0	0
	WK-BUS	4,876	4,551	282	230	1,549	1,534	383	383	238	242
	WK-BU/MR	9,040	8,461	157	135	1,359	1,341	429	429	258	262
	WK-MR	3,779	2,830	100	79	908	847	482	437	75	76
	PNR-CR	2,650	2,678	0	2	0	66	0	5	0	9
	KNR-CR	235	238	0	18	0	32	0	4	0	7
	PNR-BUS	1,499	1,512	0	1	114	111	0	20	0	12
	KNR-BUS	258	261	0	4	104	101	0	13	0	7
	PNR-BU/MR	3,997	4,034	0	4	279	271	72	67	21	20
	KNR-BU/MR	983	994	0	45	297	287	51	48	0	8
PNR-MR	9,446	9,507	58	48	1,274	1,234	230	214	130	112	
KNR-MR	4,200	4,218	0	35	378	365	191	181	149	129	
(20) VA OTHER-OTHER	DR ALONE	792,489	794,225	405,087	405,833	820,506	821,074	322,630	322,885	414,713	415,105
	SR2	85,469	85,656	329,163	329,769	669,146	669,609	74,999	75,058	317,542	317,844
	SR3+	27,861	27,922	307,187	307,751	642,269	642,712	58,847	58,891	257,442	257,685
	WK-CR	50	48	0	33	0	104	0	3	0	17
	WK-BUS	17,400	16,664	3,741	2,395	8,984	7,854	2,001	1,944	1,634	1,226
	WK-BU/MR	2,680	2,571	21	175	457	417	308	299	31	100
	WK-MR	529	447	19	12	126	110	92	85	54	40
	PNR-CR	738	759	0	52	0	136	0	7	0	0
	KNR-CR	87	90	0	1	23	66	0	14	0	48
	PNR-BUS	462	475	19	584	147	366	92	85	15	30
	KNR-BUS	639	657	4	112	216	634	108	99	135	244
	PNR-BU/MR	758	777	0	324	115	347	29	39	0	43
	KNR-BU/MR	429	440	0	119	97	337	35	40	0	119
PNR-MR	364	372	0	4	118	14	0	3	0	0	
KNR-MR	620	633	0	0	130	18	0	8	13	16	

Appendix C. Year 2007 mode choice output vs. targets

Seg	Path #	HBW		HBS		HBO		NHW		NHO	
		Target	Model	Target	Model	Target	Model	Target	Model	Target	Model
All 20 Segments	DR ALONE	2,341,574	2,360,603	1,247,598	1,250,215	2,489,986	2,492,548	1,061,426	1,063,213	1,300,863	1,303,491
	SR2	311,741	315,351	866,268	868,063	1,998,390	2,000,328	210,142	210,410	895,478	897,067
	SR3+	119,813	121,668	727,922	729,607	1,778,874	1,780,536	169,857	170,225	658,899	660,034
	WK-CR	1,849	1,809	21	77	210	399	0	407	400	368
	WK-BUS	171,834	176,138	18,433	16,784	87,044	86,047	23,685	24,067	16,224	15,907
	WK-BU/MR	132,142	138,821	2,487	2,709	23,696	23,882	12,417	12,330	3,960	4,248
	WK-MR	194,165	159,582	4,853	4,720	46,904	46,109	56,579	55,968	16,428	15,826
	PNR-CR	16,647	16,948	0	57	260	529	0	67	208	248
	KNR-CR	1,472	1,515	0	27	197	265	0	60	216	345
	PNR-BUS	15,967	16,325	82	684	3,030	3,127	355	409	1,523	1,625
	KNR-BUS	4,553	4,768	199	323	2,004	2,440	1,426	1,475	880	1,020
	PNR-BU/MR	27,525	27,972	112	467	2,700	3,086	1,482	1,462	559	687
	KNR-BU/MR	9,248	9,652	136	350	1,733	1,997	1,210	1,200	1,003	1,136
	PNR-MR	137,984	139,762	469	496	15,657	15,721	7,271	7,248	1,563	1,942
	KNR-MR	42,794	44,292	146	417	4,436	4,456	4,378	4,379	1,831	2,011
	TOTALS		3,529,308	3,535,205	2,868,726	2,874,995	6,455,121	6,461,470	1,550,228	1,552,920	2,900,035

Appendix C. Year 2007 mode choice output vs. targets

Total person trips by market segment

Market Segment	HBW		HBS		HBO		NHW		NHO		ALL	
	Target	Model	Target	Model	Target	Model	Target	Model	Target	Model	Target	Model
1	134,786	134,427	19,348	19,352	87,303	87,263	72,382	72,460	39,716	39,739	353,535	353,241
2	12,133	11,990	2,227	2,235	9,206	9,169	8,690	8,695	1,950	1,955	34,206	34,044
3	79,319	79,415	85,457	85,738	289,420	289,716	86,681	87,053	109,231	109,589	650,108	651,510
4	49,745	50,918	43,616	44,349	83,705	84,443	57,723	58,272	46,846	48,384	281,635	286,365
5	27,519	27,155	1,958	1,949	11,182	11,133	4,746	4,750	3,575	3,573	48,980	48,559
6	2,742	2,692	145	147	875	876	652	653	173	176	4,587	4,543
7	34,331	34,424	31,372	31,397	86,556	86,589	31,830	31,875	36,666	36,716	220,755	221,001
8	27,760	28,338	29,406	29,575	63,881	64,099	27,209	27,279	39,287	39,473	187,543	188,764
9	52,190	52,461	2,292	2,318	16,163	16,156	12,000	12,029	2,962	2,973	85,607	85,936
10	16,031	16,095	8,284	8,273	21,747	21,737	16,567	16,567	7,556	7,553	70,185	70,225
11	41,084	40,698	53,099	53,175	118,878	118,881	44,467	44,520	45,094	45,181	302,622	302,455
12	37,068	37,421	34,013	34,225	69,317	69,619	34,541	34,675	39,452	39,821	214,391	215,760
13	254,417	254,051	9,364	9,571	62,069	62,327	18,769	18,970	12,171	12,477	356,790	357,396
14	32,461	32,129	1,239	1,271	8,429	8,486	2,774	2,793	801	815	45,704	45,494
15	255,653	256,798	66,070	66,577	259,012	259,667	51,863	52,187	72,183	72,871	704,781	708,100
16	1,151,911	1,155,234	1,377,161	1,378,466	2,934,719	2,936,808	574,027	574,808	1,411,015	1,411,833	7,448,833	7,457,149
17	176,264	177,492	6,141	6,364	39,390	39,639	9,578	9,716	2,374	2,597	233,747	235,808
18	48,179	48,732	6,395	6,427	22,321	22,377	7,159	7,195	4,222	4,258	88,276	88,989
19	160,827	162,780	45,796	46,763	128,770	129,499	29,273	29,395	32,867	33,433	397,533	401,870
20	933,426	931,950	1,044,636	1,046,466	2,141,388	2,142,647	457,862	458,389	991,263	992,035	5,568,575	5,571,488
Total Person	3,527,846	3,535,199	2,868,019	2,874,636	6,454,331	6,461,132	1,548,793	1,552,280	2,899,404	2,905,451	17,298,393	17,328,698
Total Transit	756,180	732,948	26,938	26,737	187,871	187,041	108,803	108,424	44,795	44,566	1,124,587	1,099,715
Transit Pct	21.4%	20.7%	0.9%	0.9%	2.9%	2.9%	7.0%	7.0%	1.5%	1.5%	6.5%	6.3%

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Transit person trips by market segment

Market Segment	HBW		HBS		HBO		NHW		NHO		ALL	
	Target	Model	Target	Model	Target	Model	Target	Model	Target	Model	Target	Model
1	121,156	120,830	2,516	2,494	32,693	32,643	29,816	29,838	9,430	9,407	195,611	195,211
2	10,475	10,274	145	140	3,142	3,110	4,281	4,292	1,880	1,857	19,923	19,673
3	71,016	70,406	6,941	6,925	41,914	41,917	24,992	25,074	11,535	11,542	156,398	155,863
4	20,938	18,528	1,238	1,250	5,028	5,021	6,633	6,453	2,681	2,728	36,518	33,980
5	20,376	19,892	202	182	3,493	3,441	2,089	2,083	467	453	26,627	26,051
6	1,753	1,706	32	33	183	173	192	193	35	32	2,195	2,138
7	15,410	15,275	900	889	6,656	6,605	2,084	2,056	1,014	1,002	26,064	25,827
8	6,056	5,999	390	372	2,659	2,638	1,901	1,885	1,056	1,047	12,062	11,941
9	46,277	45,356	197	183	7,689	7,572	5,427	5,429	2,540	2,461	62,130	61,001
10	7,160	7,073	247	246	938	922	2,977	2,953	586	570	11,908	11,763
11	20,454	18,725	1,397	1,371	5,681	5,634	4,626	4,604	2,260	2,235	34,418	32,569
12	5,473	4,846	466	471	1,991	1,935	1,703	1,662	374	352	10,007	9,264
13	122,128	118,147	377	358	11,153	11,123	4,701	4,719	966	951	139,325	135,298
14	14,072	13,682	27	22	1,436	1,420	493	479	295	287	16,323	15,890
15	68,062	66,130	1,779	1,765	16,478	16,471	3,984	3,988	2,077	2,043	92,380	90,397
16	42,095	41,998	5,444	5,434	21,809	21,786	4,505	4,468	3,970	3,963	77,823	77,648
17	76,030	71,137	218	202	7,192	7,102	3,220	3,205	753	808	87,413	82,454
18	21,412	20,626	21	32	1,061	1,025	676	654	123	114	23,293	22,451
19	41,081	38,659	597	584	6,262	6,148	1,838	1,792	871	855	50,649	48,038
20	24,756	23,661	3,804	3,784	10,413	10,356	2,665	2,596	1,882	1,861	43,520	42,257
Total Transit	756,180	732,948	26,938	26,737	187,871	187,041	108,803	108,424	44,795	44,566	1,124,587	1,099,715