Batch Instructions-2010-10-28

# Input Files

1. TripRate.bin – cross-class production rates (not including NHBV)
2. ITE trip rate.xlsx – ITE trip rate for special generator
3. AttractionRates.xlsx –

* attraction coefficients for HBW, HBO, NHBO, ILDB, ILDO
* attraction coefficients for NHBV
* production coefficients for NHBO, NHBV

1. EI 2003.bin – EI passenger vehicle trip and by purpose person trips
2. FrictionFactor.xlsx – initial FFs
3. 2003 pass dist rd SPMAT.mtx – fake skims
4. SAMTAZ2003.bin – TAZ demographics
5. Missing – final SG files

# Trip Generation

## Trip Production

1. Update area type field
   1. Area type density (ATD)= population/acres + (employment/acres) \* (state total pop/state total emp)
   2. Aggregate to get area type number. The criteria are listed in the table below:

|  |  |
| --- | --- |
| Area type number | Criteria |
| 1 | ATD>=18 |
| 2 | ATD>=6 & ATD<18 & MSA2000<>null |
| 3 | ATD>=2 & ATD<6 & MSA2000<>null |
| 4 | ATD>=6 & ATD<18 & MSA2000=null |
| 5 | ATD>=2 & ATD<6 & MSA2000=null |
| 6 | ATD<2 & ATRural=’East/Central’ |
| 7 | ATD<2 & ATRural=’West’ |
| 8 | ATD<2 & ATRural=’Panhandle’ |

1. Create household cross-classification fields:
   * H1INC1
   * H2INC1
   * H3INC1
   * H4INC1
   * H1INC2
   * H2INC2
   * H3INC2
   * H4INC2
   * H1INC3
   * H2INC3
   * H3INC3
   * H4INC3
   * H1INC4
   * H2INC4
   * H3INC4
   * H4INC4
2. Calculate household size proportions

|  |  |  |
| --- | --- | --- |
| **Proportions** | **Coefficients** | **Value** |
| HH1 | B0 | 2.0261 |
| B1 | -1.3261 |
| B2 | 0.3103 |
| B3 | -0.0242 |
| HH2 | B0 | -0.7914 |
| B1 | 1.2639 |
| B2 | -0.4382 |
| B3 | 0.0457 |
| HH4+ | B0 | -0.2723 |
| B1 | 0.2001 |

HH3=1-hh1-hh2-hh4

Threshold conditions for calculating household proportions by household size:

If avghhsize<1

Hh1=1

Hh2=hh3=hh4=0

If avghhsize<=1.36,

hh4=0,

hh2=0.6\*(1-hh1),

hh3=0.4\*(1-hh1)

If avghhsize>4.6

hh1=0

hh2=0.4\*(1-hh4)

hh3=0.6\*(1-hh4)

1. Calculate household income group proportions

|  |  |  |
| --- | --- | --- |
| **Proportions** | **Coefficients** | **Value** |
| Group 1 | p2 | 0.0203 |
| p1 | -0.5784 |
| p0 | 3.9780 |
| Group 2 | p2 | -0.0804 |
| p1 | 1.5282 |
| p0 | -6.8855 |
| Group 4 | p2 | 0.1576 |
| p1 | -2.9940 |
| p0 | 14.3167 |

Threshold conditions for calculating household income group proportions:

If median income<6000 (or x<8.7)

Inc4=0

If median income>109000 (or x>11.59)

Inc4=1

Inc1=inc2=inc3=0

1. Calculate household joint distribution:

HH(i)INC(j) = hh(i) \* inc(j) \* households

1. Normalize to statewide control total

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Income Group** | **HH1** | **HH2** | **HH3** | **HH4+** | **Total** |
| Group 1 | 6.44% | 3.00% | 1.59% | 2.31% | 13.33% |
| Group 2 | 8.38% | 7.44% | 4.06% | 6.72% | 26.60% |
| Group 3 | 5.60% | 8.49% | 4.73% | 8.30% | 27.11% |
| Group 4 | 3.24% | 11.44% | 6.56% | 11.72% | 32.96% |
| Total | 23.66% | 30.36% | 16.93% | 29.04% | 100.00% |

Step 1:

Step 2:

Then rescale back to total household by zone,

New

Step 3: Goes back to step 1

Step 4: goes back to step 2

…….

Continue iteration, until the following three conditions are met:

Set alpha=0.001

For each i j pair,

And

For example, Suppose area wide total hh=1000, 3 zones,

|  |  |  |
| --- | --- | --- |
| Zone | H3Inc2 (original) | H3inc2 (Normalized) |
| 1 | 10 | 10/60\*4.06%\*1000=6.76 |
| 2 | 20 | 20/60\*4.06%\*1000=13.53 |
| 3 | 30 | 30/60\*4.06%\*1000=20.3 |
| Total | 60 | 40.6 |

1. Apply prod\_crossclass.rsc. The output:
   * Crosclas\_inc1.bin - production for income group 1
   * Crosclas\_inc2.bin – production for income group 2
   * Crosclas\_inc3.bin – production for income group 3
   * Crosclas\_inc4.bin – production for income group 4

These productions will remain separate by income group and purpose. The trip distribution’s output will be OD tables by income group and purpose. Only after mode choice and time of day, the income group and purpose will be aggregated.

### Note:

* Trip rate is by area type, income and household size
* NHBV\_P is not calculated yet (May need to create a NHBV field)
* Treatment of year –append 2-digit year for network attributes, keep separate demographic file for each scenario year
* The calculated NHBO\_P will be used as control total

## Trip Attraction

1. Calculate employment variables (Zonal employment may need to modified if the zone has a special generator)

|  |  |
| --- | --- |
| **Employment Type** | **Two-Digit NAICS** |
| Basic | 11, 21-23, 31-33, 42, 48-49, 51 |
| Retail Other (retoth) | 44-45 |
| Service | 52-56, 62, 81, 92, 9999 |
| Recreational Retail (Retrec) | 71-72 |

* 1. Basic = EMP11 + EMP21 + EMP22 + EMP23 + EMP31 + EMP42 + EMP48 + EMP51
  2. RETOTH = EMP44
  3. RETREC = EMP71 + EMP72
  4. Service = EMP52 + EMP53 + EMP54 + EMP55 + EMP56 + EMP62 + EMP81 + EMP92 + EMP99
  5. Edu\_ser = EMP61
  6. Retail = EMP44 + EMP71 + EMP72
  7. Nonret = Basic + Service

1. Calculate attractions using regression equations by area type and income group in two steps:
   1. Calculate attractions using attraction rate 1 for the following purposes:
      1. HBW
      2. HBO
      3. NHBO
      4. ILDB
      5. ILDO
   2. Calculate attractions using attraction rate 2 for the following purposes:
      1. NHBV
2. Calculate NHBV and NHBO **production** using regression equations (lookup table - production rate2)

All attraction equations are linear:

Purpose A\_ attraction for area type A income group i for zone k= sum (coefficient \* variable corresponding to that coefficient)

If zone k has area type 1, we need to look up area type 1 in the table, then looking for each trip purpose:

HBW\_inc 1 through inc 4

HBO\_inc 1 through inc 4

….

ILDO\_inc1 through inc 4

Then using the above mentioned equation, we can get

HBWA\_inc1

HBWA\_inc2

HBWA\_inc3

HBWA\_inc4

And for all other purpose in the same manner

Then arrange those attractions by income group and put them into corresponding income group productions.

### Note:

* Two step attraction calculations are because NHBV\_A uses the ILDB\_A and ILDO\_A as independent variables. Also, NHBV and NHBO productions need attraction values as inputs.
* K-12 schools are treated as special generators, so HBS\_A is calculated in special generator step.
* Regression equations are applied using coefficient lookup tables. Lookup coefficients **by purpose and area type and income**.
* Daniel needs to decide whether to store attractions in a separate file or create many fields so as to fill in the attraction calculation results.

## Special Generator

Two procedures need to be kept in the model.

1. One is the procedure we used in WAMPO and MDOT etc.
2. The other is designed to deal with airports and military base.

In the special generator table, create a method flag field (1, 2 or 3).

* If 1, calculate SG trips using our normal SG procedure. Need subtract SG employment from zonal employment by employment type
* If 2, do not subtract SG employment from zonal employment. In the SG tables, add a field containing an amount to be added or subtracted. In essence, SG trips are calculated using regular attraction models and plus/minus some trips assigned by model developers.
* If 3, do not subtract SG employment from zonal employment. Calculate SG trips using our normal SG procedure. Apply to k-12 schools only.

Detailed description of each method is listed after the example.

For example:

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **TAZ** | **SG** | **Dorms** | **Method** | **Emp** | **Non Retail** | **Retail** | **Service** | **Basic** | **Other Variables  (enroll, beds etc.)** | **Institutional  Pop** | **Vehicle Trips** | **Adjust Amount** |
| 1 | university |  | 1 | 10000 |  |  | 10000 |  | 25000 |  |  | 0 |
| 3 | K-12 school |  | 3 | 70 |  |  | 0 |  | 300 |  |  |  |
| 97 | airport | No | 2 | 90 |  |  | 90 |  |  |  |  | 1000 |
| 15 | Military base | No | 2 | 15000 |  |  | 15000 |  |  |  |  | -500 |

University employment will be subtracted from the zonal employment. Apply our normal SG procedure.

k-12 school employment won’t be subtracted from the zonal employment. Just apply a per enrollment rate to K-12 schools to get HBS person trips. Assume K-12 schools do not generate any other trip purposes.

Airport and military employment won’t be subtracted from zonal employment. Apply attraction rate lookup table to generate zonal attractions. Due to the special generator, those zones attraction will plus 1000 or -500 in this example. The 1000 or -500 will be allocated according to the shares among income group and purpose. Then store the results in the SG trip table. The zonal production and attraction will be cleared.

### Method 1:

1. Create a set of vehicle trip by income group factor, such as 0.25, 0.25, 0.25, 0.25
2. Apply ITE trip rates to special generator table to get vehicle trips I.
3. Apply vehicle by income group factor to vehicle trip I calculated from step 1.
4. Calculate special generator person trip production and attractions with the regular attraction rates from the main trip generation model. Home based purposes will have no productions here. Non-home based production will be calculated using NHB production rates.
5. Apply vehicle occupancy factors to convert the calculated person trips to vehicle trips by purpose, and to get the total vehicle trips II (SumVEH).
6. Scale special generator person trips according to the ratios between vehicle trips I and vehicle trips II to get the final special generator person trips by purpose.

Example: for each income group

|  |  |  |  |
| --- | --- | --- | --- |
|  | **HBW** | **HBO** | **NHB** |
| **Occupancy** | 1.14 | 1.85 | 1.54 |

* SumVEH= NHBP/1.54 + HBWA/1.14 + HBOA/1.85 + NHBA/1.54
* Final HBOA person trip = HBOA \* (vehicle trip I / SumVEH)
* Final HBWA person trip = HBWA \* (vehicle trip I / SumVEH)

Keep in mind we need to separate those trips also by income group.

Only consider HBWA, HBOA, NHBOP, NHBOA, NHBVP, NHBVA, ILDBA, ILDOA, Light, Medium, Heavy truck production and attraction in the SG calculation.

### Method 2:

1. Calculate those zones using regular attraction rates.
2. Determine the shares among the calculated purpose and income group. The shares can be subjective. We can set a series of factors, as long as these factors add up to 1 for each income group. For example, see table below.
3. Split the adjust person trip amount based on the above shares set in Step 2

|  |  |
| --- | --- |
|  | SHARES1 |
| HBWP | 0 |
| HBWA | 0.3 |
| HBOP | 0 |
| HBOA | 0.1 |
| HBSP | 0 |
| HBSA | 0 |
| NHBOP | 0.1 |
| NHBOA | 0.1 |
| NHBVP | 0.05 |
| NHBVA | 0.05 |
| ILDBP | 0 |
| ILDBA | 0 |
| ILDOP | 0 |
| ILDOA | 0 |
| LTP | 0.1 |
| MTP | 0.05 |
| HTP | 0 |
| LTA | 0.1 |
| MTA | 0.05 |
| HTA | 0 |

|  |  |
| --- | --- |
|  | Share2 |
| Inc1 | 0.126 |
| Inc2 | 0.26 |
| Inc3 | 0.237 |
| Inc4 | 0.377 |

SG HBWA by income group = regular zone HBWA by income group + share2 \* total adjust amount \_person trips\* Share1for HBWA

Only consider HBWA, HBOA, NHBOP, NHBOA, NHBVP, NHBVA, Light, Medium, Heavy truck production and attraction in the SG calculation.

### Method 3:

Same as Method 1, except that we only consider HBS trips and no need to remove school employment from the regular zone employment. Store the calculated HBSA in the regular zone production and attraction file to allow for HBS to be balanced to production.

HBSA by income group = total ITE vehicle trips \* vehicle trip by income group factor \* occupancy by income group

**Final Steps for SG procedure:**

1. After calculating all three SG methods, aggregate SG trips by purpose by TAZ (to account for multiple SGs in one TAZ).
2. Join SG production and attraction table (SGCCIncSum1.bin) back to regular TAZ Productions and attraction tables (CrossClass1.bin) by TAZ number
3. For TAZs which are associated with a Method 2 SG, add regular zonal production and attractions to the SG production and attractions, store the results in the SG production and attraction field
4. Zero out the P’s and A’s in the regular production and attraction file
5. After trip balancing, add these SG trips back to the regular production and attraction file

## EI Trips

Input: EI vehicle count

### EI trip purposes:

* Passenger vehicle- short trip (PVS)
* Passenger vehicle – long trip (PVL)
* Light truck trips (EILT)
* Medium truck trips (EIMT)
* Heavy truck trips (EIHV)

|  |  |  |
| --- | --- | --- |
| Income | PVS | PVL |
| Income group 1 | S1 | L1 |
| Income group 2 | S2 | L2 |
| Income group 3 | S3 | L3 |
| Income group 4 | S4 | L4 |
| total | Alpha\_s | Alpha\_l |

Alpha\_s + alpha\_l = 100% (passenger vehicle count)

Si - Shares of vehicle trips from each income group for PVS trips

Li – shares of vehicle trips from each income group for PVL trips

F1=f2 =0.5

PVS \_P\_inc(i) = EI passenger vehicle count \*alpha\_s \* S(i) \* f1

PVS \_A \_inc(i) = EI passenger vehicle count \* alpha\_s \* S(i) \* f2

PVL \_P\_inc(i) = EI passenger vehicle count \*alpha\_l \* L(i) \* f1

PVL \_A\_inc(i) = EI passenger vehicle count \* alpha\_l \* L(i) \* f2

EILT\_P= EI truck count \* alpha\_LT\*f1

EILT\_A= EI truck count \* alpha\_LT\*f2

EIMT\_P=EI truck count \* alpha\_MT\*f1

EIMT\_A=EI truck count \* alpha\_MT\*f2

EIHT\_P=EI truck count \* alpha\_HT\*f1

EIHT\_A=EI truck count \* alpha\_HT\*f2

alpha\_LT +alpha\_MT +alpha\_HT = 100% (EI truck count)

### Output of this step

* PSV production and attraction by income group
* PLV production and attraction by income group
* LT, MT, HT production and attraction

## EE Trips

Use FRATAR to external counts

## Non-Freight Truck trips

* Assume production=attraction, and no need for this non-freight truck trip balancing
* Use WAMPO model database coefficients

vLightTruckTrip = TRLightCMVEHPHH \* Nz(vHH) + TRLightCMVEHPRetail \* Nz(vRetail) + TRLightCMVEHPTotalEmployment \* Nz(vTotalEmp)

vMediumTruckTrip = TRMediumCMVEHPHH \* Nz(vHH) + TRMediumCMVEHPRetail \* Nz(vRetail) + TRMediumCMVEHPTotalEmployment \* Nz(vTotalEmp)

vHeavyTruckTrip = TRFreightPHH \* Nz(vHH) + TRFreightPRetail \* Nz(vRetail) + TRFreightPTotalEmployment \* Nz(vTotalEmp)

## Trip Balancing

* HBW: balance to production
* HBO: balance to production
* HBS: balance to production. This is done by using total production to obtain an attraction rate per enrollment because HBS attraction is handled in the special generator.
* NHBO: use cross-class to get NHBOP control total. The attractions will be balanced to the control total. The NHBOP regression model result will be balanced to the NHBOA (in essence, both production and attraction are balanced to the cross-class control total)
* NHBV: balance to attraction
* ILDB: balance to production
* ILDO: balance to production
* LT: balance to attraction
* MT: balance to attraction

HBW & HBO & HBS: attraction balance to production (V1 Option = 0/V2 Option = 1)

* Regular total new HBWA = Regular total HBWP + total SGHBWP – total SGHBWA
* Regular total new HBOA = Regular total HBOP + total SGHBOP – total SGHBOA
* Regular total new HBSA = Regular total HBSP + total SGHBSP – total SGHBSA

NHBO: balance attraction to a total, balance production to a total (V1 Option = 1/V2 Option = 1)

* Regular total NHBOA = pre attraction control total + total SGNHBOP – total SGNHBOA
* Regular total NHBOP = pre attraction control total + total SGNHBOP – total SGNHBOA

NHBV: balance to attraction (V1 Option = 1/V2 Option = 0)

* Regular total NHBVP = Regular total NHBVA + total SGNHBVA – total SGNHBVP

ILDB & ILDO: balance to production (V1 Option = 0/V2 Option = 1)

* Regular total new ILDBA = Regular total ILDBP + total SGILDBP – total SGILDBA
* Regular total new ILDOA = Regular total ILDOP + total SGILDOP – total SGILDOA

Keep special generator trips fixed; balance the difference to the regular zones.

Finally, add SG trips to zonal trips to get attractions for each purpose and income group.

# Trip Distribution

## I-I Trip Distribution

### Intrazonal travel time

0.5 \* average of the nearest 3 zones

### Terminal time

Assume terminal time by area type (8 types)

Look into the WAMPO database for terminal time.

### Skim

1. Highway travel time
2. Distance (for ILDB and ILDO purposes)
   1. If distance<150 then distance=0
   2. If distance>=150 then distance=distance-150

### Distribution by income group

* Use FF lookup table to assign value to a, b, c
* Keep PA tables separate by purpose and income group

## EI Trip distribution

### EI passenger vehicle trips and truck trips:

* Clear E-E portion of the skim
* Distribute EI trips by its own TLFD by purpose and income group
* Keep PA tables separate by purpose and income group

1. **For each income group**, create a EI PA tables like the following example:

EIPVSP for internal zones will be all zeros, EIPVSP for external zones will be current EIPVS multiply by 2; EIPVSA for internal zones will be calculated using the EIPVSd formula below, EIPVSA for external zones will be zero. For other EI trip purposes, the formula for distribution’s inputs are listed below:

EIPVSPd= EIPVSP\*2

EIPVSA d= HBWA/occu\_hbw + HBOA/occu\_hbo + HBSA/occu\_hbs + NHBOA/occu\_nhbo + NHBVA/occu\_nhbv

EIPVLPd= EIPVLP\*2

EIPVLA d= ILDBA/occu\_ildb + ILDO/occu\_ildo

EILTPd= EILTP\*2

EILTA d= LTA

EIMTPd= EIMTP\*2

EIMTA d= MTA

EIHTPd= EIHTP\*2

EIHTA d= HTA

Keep in mind that all EI productions at internal zones are zeros, all EI attractions at external zones are set to zeros.

Table 1: Sample EI trip table for distribution

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Zone** | **EIPVSP** | **EIPVSA** | **EIPVLP** | **EIPVLA** | **EILTP** | **EILTA** | **EIMTP** | **EIMTA** | **EIHTP** | **EIHTA** |
| 1 | 0 | EIPVSAd | 0 | EIPVLAd | 0 | EILTAd | 0 | EIMTAd | 0 | EIHTAd |
| 2 | 0 | EIPVSAd | 0 | EIPVLAd | 0 | EILTAd | 0 | EIMTAd | 0 | EIHTAd |
| … | … | … | … | … | … | … | … | … | … | … |
| 4400 | 0 | EIPVSAd | 0 | EIPVLAd | 0 | EILTAd | 0 | EIMTAd | 0 | EIHTAd |
| 4401 | EIPVSPd | 0 | EIPVLPd | 0 | EILTPd | 0 | EIMTPd | 0 | EIHTPd | 0 |
| … | … | 0 | … | 0 | … | 0 | … | 0 | … | 0 |
| 4154 | EIPVSPd | 0 | EIPVLPd | 0 | EILTPd | 0 | EIMTPd | 0 | EIHTPd | 0 |

Table 2: Auto occupancy by purpose and income

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | inc1 | inc2 | inc3 | inc4 |
| HBW | 1.17 | 1.21 | 1.11 | 1.10 |
| HBO | 2.07 | 1.84 | 1.68 | 1.70 |
| HBS | 1.34 | 1.67 | 1.28 | 1.25 |
| NHBO | 1.88 | 1.56 | 1.48 | 1.45 |
| NHBV | 1.03 | 1.40 | 1.84 | 1.72 |
| ILDB | 1.00 | 1.00 | 1.12 | 1.21 |
| ILDO | 1.73 | 1.28 | 1.90 | 2.25 |

1. EI trip distribution will be **SINGLY CONSTRAINED** to productions.

# Mode Choice – I-I trip only

# Time of Day and PA2OD

### I-I trip

PA2OD is done for each purpose and income group only to the mode choice output matrices on the **Drive alone**, **share ride 2** and **share ride 3+** cores.

1. Run the script PA2OD.rsc
2. PA2OD.rsc is only batched for ILDB income group 1 (drive alone, share ride 2 and share ride 3+), using income group 1 hourly factor (HourlyFactor1.bin)
3. Copy this script to each purpose (sections to be changed are:
   1. Input matrix (e.g. ILDB1\_Test1\_appl.mtx, ILDO1\_test1\_appl.mtx)
   2. Output matrix (e.g. ILDB1\_AM)
   3. The purpose associated hourly factor field (e.g. DEP\_ILDB, RET\_ILDB, DEP\_HBW, RET\_HBW)
   4. Average auto occupancy factor for Share ride 3+ for that purpose and income group
4. Copy this script for each income group (sections to be changed are:
   1. Input matrix (e.g. ILDB1\_test1\_appl.mtx, ILDB2\_test1\_appl.mtx)
   2. Hourly factor files (e.g. HourlyFactor1.bin, HourlyFactor2.bin, HourlyFactor3.bin, …)
   3. Output matrix names (e.g. ILDB2\_AM)
5. Run addNt1\_NT2.rsc. The script adds NT1+NT2 output matrices to the NT2 matrices because the night period was from 19-24, 0-7. And we need to add these two periods together to get the overnight period final output.

Purposes that can be apply the above procedures:

* HBW
* HBONHB
* HBS
* ILDB
* ILDO

Purpose LT, MT and HT can also apply the above procedure except that it is not by income group

### Passenger EI

PA2OD procedure is done for each income group and purpose to the distribution output matrices

Run EIPA2OD.rsc

Follow the steps in II trip PA2OD procedure

Purposes:

* EIPVS
* EIPVL
* EILT - not by income group (occupancy =1)
* EIMT – not by income group (occupancy =1)
* EIHT – not by income group (occupancy =1)

PVS and PVL will be apply some global shares to split into auto occupancy (drive alone and share ride).

Note: since EI is already in vehicle format when conducting PA2OD, to split EI passenger vehicle trips by drive alone and share ride, we can use the following table:

Table 3: EI passenger vehicle trip split among auto modes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| EIPURP | MODE | inc1 | inc2 | inc3 | inc4 |
|  | DA | 0.6072 | 0.4304 | 0.6477 | 0.6485 |
| EIPVS | SR2 | 0.1861 | 0.2491 | 0.1863 | 0.1437 |
|  | SR3+ | 0.2067 | 0.3205 | 0.1660 | 0.2078 |
|  | DA | 0.0000 | 0.3034 | 0.6708 | 0.5523 |
| EIPVL | SR2 | 1.0000 | 0.6189 | 0.1332 | 0.2615 |
|  | SR3+ | 0.0000 | 0.0777 | 0.1960 | 0.1863 |

### EE

EE trips will be split into commtrk and htrk by percentages

Use EE time of day.rsc script to apply certain period percentages to split Commtrk and htrk into different period

### Aggregating PA2OD results

1. Split the PA2OD results of EIPVS and EIPVL into work and non-work purpose by income group

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| External PURP | PURP | inc1 | inc2 | inc3 | inc4 |
| PVS | Work | 0.25013 | 0.142709 | 0.156308 | 0.190812 |
|  | NonWork | 0.74987 | 0.857291 | 0.843692 | 0.809188 |
| PVL | ILDB | 0 | 0.621359 | 0.572273 | 0.507327 |
|  | ILDO | 1 | 0.378641 | 0.427727 | 0.492673 |
| EE | Work | 0 | 0.621359 | 0.572273 | 0.507327 |
|  | NonWork | 1 | 0.378641 | 0.427727 | 0.492673 |

1. Aggregate the results by occupancy. The occupancy we will be kept:
   1. drive alone
   2. share ride
2. Aggregate among purposes
   1. NonWork purpose = HBONHB + HBS + EIPVS\_nonwork
   2. Work purpose = HBW + EIPVS\_work
   3. ILDB = ILDB + EIPVL\_work
   4. ILDO = ILDO + EIPVL\_nonwork
   5. Commtrk = LT + MT + EILT + EIMT
   6. Htrk = HT + EIHT
3. Further aggregate among income group by aggregated purpose
   1. Low-med income = income 1 + income 2 + income 3
   2. High income = income 4

The final output of PA2OD and aggregation results will be the following purposes for four time period (2 and 4 represents low-med income and high income group):

|  |
| --- |
| HBW2da |
| HBW2sr |
| NonWork2da |
| NonWork2sr |
| ILDB2da |
| ILDB2sr |
| ILDO2da |
| ILDO2sr |
| HBW4da |
| HBW4sr |
| NonWork4da |
| NonWork4sr |
| ILDB4da |
| ILDB4sr |
| ILDO4da |
| ILDO4sr |
| CommTRK |
| Htrk |

# Assignment

2011-3-31 NHBV production and attraction

NHBVA will be calculated exactly the same as NHBOA

NHBVP will be calculated exactly the same as NHBOP

Places need to be changed at:

Regular attraction : ln 824 – ln834, pay attention to places such as : AttFields[t - 5][v]

SG attraction: ln 1049 – ln1059, pay attention to places such as : AttFields[t - 5][v]

Balance (we have changed the )