Mode Choice Model Pseudo Code

This documents the order of operation of the subroutines in the Mode Choice model.

Input parameters are provided to the model via a set of trip purpose-specific text files (MC_[purpose]_NAMELIST.TXT). This setup allows for all trip purposes to be processed simultaneously. Each trip purpose also has a specific file of random seeds applied to each zonal interchange.

Additional documentation of table attributes is included in the Travel Demand Model Documentation.

1. **HOV Mode Choice**
   This version produces floating point trip estimates in an attempt to reduce the noise in the results for alternative comparison.
   - Open [purpose]_MC_LOG.TXT (unit=31)
   - Open MC_[purpose]_NAMELIST.TXT.TXT (unit=33)
   - Open MCxx_M01.TXT (unit=34)
   - Open MCxx_M023.TXT (unit=35)
   - Open MCHW_CBDPARK.TXT (unit=36)
   - Open MCxx_DISTR.TXT (unit=37)

   Include:
   - **INCLUDE 'Common_params.fi' –** namelist parameters (&PARAM, &OPTION, &PROCESS, &SYSTEM)
   - **INCLUDE 'Common_auto_params.fi' –** namelist parameters (&AUTOTAB) for HOV & toll options
   - **INCLUDE 'Common_data.fI'**
   - **INCLUDE 'Common_emme4bank.fi'**
   - **INCLUDE 'Common_auto_emme4bank.fi'**
   - **INCLUDE 'Common_approach_model.fi'**
   - **INCLUDE 'Common_cbdparking.fi'**

   1.1. **CALL DATA1 -** reads the namelist parameters input by the user, defaults those parameters not specified.
   1.2. **CALL AUTO_DATA1 -** reads the namelist parameters for the submode auto skim trees
   1.3. **CALL DATA2 -** reads zonal, zone type & system-wide parameters; read MCHW_HH.TXT (unit=71); set HO vehicle occupancy to 1.66 & NH vehicle occupancy to 1.19
   1.3.1. **Call REPORT1 –** write M01 file inputs to log file
   1.3.2. **Call REPORT2 -** write DISTR file inputs to log file

1.4. **CALL OPEN_EMME4** - open up the emmebank and get the emme parameters
1.5. **CALL DATA3** - reads the emmebank matrices for transit.
- Open first mode matrix (unit=901)
- Open last mode matrix (unit=902)
- Open in-vehicle time matrix (unit=903)
- Open out-of-vehicle time matrix (unit=904)
- Open headway matrix (unit=905)
- Open priority mode matrix (unit=906)
- Open fare matrix (unit=907)
- Open highway time matrix (unit=908)
- Open highway distance matrix (unit=909)
- Open person trips matrix (unit=910)

1.6. **CALL DATA4** - reads matrices from a separate highway emmebank for hov and toll routes
- Open SOV time matrix (unit=921)
- Open SOV distance matrix (unit=922)
- Open HOV time matrix (unit=923)
- Open HOV distance matrix (unit=924)

1.7. CALL TRIPS - trips is the basic binary auto-transit split (used for non-work trips), get random seed value for zonal interchange

1.7.1. Call AUTCST – calculate auto operating costs in cents

1.7.2. Call INCDIS - obtains the income of the tripmaker. Note: for a non-home based trip, TRIPS uses $59,300 (average regional household income from the 2007 ACS).

1.7.2.1. Call RNORM

1.7.3. Call PRKCST - obtains the cost of parking for a highway trip

1.7.3.1. Call PRKCBD – determine if zone has special parking structure

1.7.4. Call TRAPP - will return the transit approach times

1.7.4.1. Call ADIST – computes approach distance to first/last modes using DISTR parameters

1.7.4.1.1. Call DISGEN – distance generator

1.7.4.1.1.1. Call LINE - for straight-line distribution

1.7.4.1.1.2. Call RNORM - for normal distribution

1.8. **CALL TRIPS_HOV -** splits auto trips into SOV and two HOV categories (only for HBW trips)

(same Calls as TRIPS)