COG/TPB GEN3 TRAVEL MODEL

Status report

Feng Xie
TPB Transportation Engineer

TPB Travel Forecasting Subcommittee
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National Capital Region
Transportation Planning Board

Agenda Item #5

Overview

- Beta release of the Gen3/Version 1.0.5 Travel Model
- Post-beta model enhancements and bugfixes
- Planned official release of the Gen3/Version 1.1.0 Travel Model
- Next steps

Beta Release

- After announcing the beta release of the Gen3/Ver. 1.0.5 Model on November 7, we have received and fulfilled 11 requests for the beta model from various public and private agencies.
- On January 14, TPB staff followed up with the model recipients and solicited their feedback with an online survey.
- We are hopeful that the comments we receive from the beta testers will help us further improve the model.
- The beta model is still available for request if you are interested in testing it.

Post Beta Improvements and Bugfixes

- Additional model calibration: **Done**
  - Transit pass subsidy model and free parking model were re-calibrated to COG's 2019 State of the Commute (SOC) Survey data at the regional level.
  - The tour and trip mode choice models were subsequently re-calibrated.
- Bugfix associated with PNR parking cost: **Done**
  - The PT transit skimming process was updated to properly account for the parking cost at PNR transit stations.
  - A sensitivity test was conducted to verify the reasonableness of model effects on changes to PNR parking cost inputs.
- Cleanup of Visualizer files: **Done**
  - The 883 Visualizer files in the Inputs folder of each scenario occupied ~1.6 GB of space.
  - Most of them were removed because they were either model outputs or no longer needed; The remaining 60 files, which are not scenario specific and only 25 MB in size, were moved to *source/visualizer/dependencies/data.*

Post Beta Improvements and Bugfixes

- Software updates: **Done**
  - The ActivitySim software was upgraded from Version 1.3.4 to Version 1.5.1.
  - The package and environment manager was migrated from Conda to UV.
    - UV is a modern, light-weight, high-performance Python package manager.
    - UV enables a much faster installation of Python packages in the Gen3_ModelXXX environment; UV also reduces model runtime by about one hour.
    - UV eliminates the use of alternative Conda distributions (i.e., Anaconda/MiniForge3), which significantly simplifies the model configuration.
  - Staff also upgraded the PopulationSim software from Ver. 0.3.4 to Ver. 0.10.0.
    - The new software ensures the reproducibility of the output data.
    - The updates in the software result in marginal changes in travel model outputs.
    - The new software will be used to generate synthetic population data from the next round of Cooperative Forecasts.

Official Release

- As the TPB approved Visualize 2050 on December 17, staff are preparing a new Gen2/Ver. 2.4.6 Model transmittal package with Visualize 2050 inputs; In parallel, staff are also preparing a model transmittal package for the official release of the Gen3 Model this spring, which will contain:
  - Model script files for the next model version, Gen3/Version 1.1.0
  - Model base year 2018, with input data used for calibration/validation
  - All six Visualize 2050 analysis years with year-specific inputs files that are largely consistent with the official Visualize 2050 inputs in Gen2. For example:
    - Network inputs: Exported from the same geodatabase but in a different format (PT).
    - Land use inputs and synthetic population data: Developed based on the same round (Round 10.0) of Cooperative Forecasts of LU.
    - Toll inputs: Will be different despite using the same heuristic toll search algorithm.
- Gen3 Model official release will be recommended for production as TPB staff deem it is ready.

Next Steps

- In the next couple of months, TPB staff will:
  - Continue to distribute the beta version of the Gen3 Model per request.
  - Continue to improve the model based on feedback received from beta testing.
  - Complete post-beta model updates and tag the new model as Version 1.1.0.
  - Update model documentation (e.g., User's Guide, model flowcharts, calibration and validation report) in accordance with post-beta model updates.
  - Export network files in PT format from the final Visualize 2050 network database and perform additional QA/QC checks.
  - Prepare other year-specific model inputs.
  - Conduct model runs for analysis years contained in the transmittal package.
  - Work with the new contractor and develop scopes for other Gen3-related tasks.

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  - RSG/BMG (Through December 2025): Ali Etezady, Joel Freedman, and Mushtaq Rahman.

Feng Xie

TPB Program Manager, Model Development
(202) 962-3259
fxie@mwcog.org

mwcog.org

777 North Capitol Street NE, Suite 300
Washington, DC 20002

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