

C7
Travel Demand Modeling

AN ONLINE TOOL FOR CHECKING TRAVEL MODEL ZONE DATA CONSISTENCY

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The process of developing zonal socioeconomic data for travel demand modeling is prone to errors resulting from combining data sources, data preparation and coding mistakes and, in the case of inexperienced staff, lack of awareness of rules of thumb. The traffic analysis zone (TAZ) socioeconomic attributes are the primary demand-side inputs to travel forecasting models and are updated often for a variety of analyses, such as long-range planning and development impact studies. The consequences of errors in these processes could be misallocation of demand, inaccurate forecasts, and potentially misleading conclusions. Moreover, such mistakes are sometimes discovered late in a study and require costly reworking of analysis.

Developing socioeconomic data sets for future-year scenarios is more prone to errors in logical consistency than preparing base-year forecasts because data values are based on projections rather than observed data. Analysts typically start with exogenously-derived household and employment control totals for a large area, such as a county or municipality. Using a variety of methods, some systematic and others more ad hoc, they then engage in a sub-area allocation process. This process often involves obtaining projections from local planners in multiple jurisdictions, but may also involve research and trend analysis to account for changing demographics, such as declining average household size, aging population, and future levels of auto ownership.

The Travel Model Improvement Program (TMIP) has developed an on-line tool for checking the consistency of TAZ data for both base-year and future-year scenarios. The objective of the tool is to help transportation planners save time and avoid mistakes. Users are able to upload GIS shapefiles and/or tabular data through a web-based graphical user interface. The user is then able to specify which fields in the data set to check for consistency and the various attribute levels for categorical variables, such as households by number of persons, income group or auto ownership level. The user may also enter thresholds for tolerances, such as the ratio of regional workers to regional employment, median income values, acceptable deviations for TAZ average auto ownership, etc., that may be used to check reasonableness. The TMIP TAZ Checker is designed to trap common computational errors by TAZ, such as the sum households in five household size variables not adding up to the total households in the TAZ, as well as consistency with acceptable ratios and threshold values for most of the variables and data types commonly used in TAZ data sets. For future-year scenarios, the user may supply a second TAZ shapefile or table, and the scenario comparison tool will make comparisons with key variables in the baseline scenario, flagging inputs where changes may be considered unreasonable or unusual.

If shapefiles are provided, the TAZ Checker is capable of displaying thematic maps highlighting the TAZs where errors or exceptions have been found and can display the results of each field individually. In addition, the checked results are saved in tabular format and can be returned to the user in spreadsheet format as well as updated shapefile format.

Now undergoing pilot testing, the TMIP TAZ checker will be made available in 2016. At the Tools of the Trade Conference, the authors will demonstrate the tool.