Instructions for using spreadsheet "template" tool to calibrate "Ds" travel demand model post-processor

A spreadsheet template is provided to help MPOs and other agencies with travel forecasting models to test their models' sensitivities to the D variables and develop calibration adjustments to the degree that their models do not fully capture the effects found in the research. In addition to being of use to MPOs, the Ds Analysis Modules developed in this study may also improve modeling performed by counties and cities and regional transportation agencies whose models capture regional travel demand, whether through comprehensive coverage of the entire region or through focus-area methods such as windowing or detailing the regional network and zone systems as long as their travel model captures the full length of travel generated by land use located within their agency's geographic boundaries, even the external portions of trips that extend beyond the boundaries.

When appropriately calibrated and validated, Ds Analysis Modules can be used to equip each model with the adjustments necessary to capture the effects of smart growth and other changes to built environment such as development density, diversity, design, distance to transit and destination accessibility in the degrees needed to match empirical evidence found in travel surveys in households within the same or similar California regions. Agencies within California's Central Valley, Northern Sacramento Valley, Central Coast and Inland Empire may use the Ds Analysis Modules developed for small and medium sized MPOs and described in detail in Appendix D, Attachment D3 for both two-step and three-step module options. For the Sacramento region, the recommended two-step and three step modules are contained, respectively, in Tables 3 and 4 of the SACOG attachment to Appendix D, Attachment 1. For San Diego the modules to be used are presented Tables 3 and 4 in the SANDAG attachment, Appendix D Attachment 2. For rail corridors in the priority development areas of the San Francisco region, the recommended model is described in section 4.2.2 of Attachment D4. Agencies in other parts of California should consult Fehr & Peers for assistance in developing modules appropriate to their region.

Agencies with trip-based models may use the methods described in Appendix D to evaluate their model performance and follow the procedures applied in the examples presented for the demonstrations in the Fresno, Tulare, Kern, Merced, Stanislaus, San Joaquin and San Luis Obispo regions to test and calibrate their models. Regions with activity-based models should consult Fehr & Peers for assistance in calibrating their models.

To generate regionally-calibrated Ds post-processor analysis modules, agencies need to provide regionally-specific land use data and travel model performance data and apply the attached calibration spreadsheets. This will require an agency to run the statistical analysis described in Appendix "D" to the final report for "Improved Data and Tools for Integrated Land Use-Transportation Planning in California." This includes the calibration equations presented in Appendix D, Attachments 1-4 re: regionally-specific results. The form of the template can be used to guide analysis in other regions, though the pre-entered data in the example setup only covers the demo regions, all smaller MPOs

The attached spreadsheet tool is provided in order to help simplify this process. This spreadsheet was built to function with calibrated and validated travel demand forecasting models.

Agencies will need to prepare their data in a way that mimics the template spreadsheet inputs. The spreadsheet has “macros” to import data which require input to be prepared using the indicated Cube scripts. The format of the SED (socio-economic data) table is consistent with that standardized format.

This spreadsheet is completely self-contained, thus it has multiple tabs. The spreadsheet template contains sample data points to provide an example of the calculations, to allow users to follow the process. However, users may also benefit from one-on-one training from the module developers. This may be the case for agencies with unique modeling processes (which are not similar to those included in the eight demonstration case studies described in Appendix E).

For agencies choosing to develop their own post-processing spreadsheets to implement the equations contained in the regionally-specific Ds Analysis Modules, the recommended equations are reported in Appendix D, Attachments 1 thru 4. The recommended two-step Ds Analysis Modules are Model #4 for both the vehicle trip model and the VMT model. For agencies choosing to implement modeling post-processors through the advanced three-step Ds Analysis Modules, the recommended module for vehicle trip probability is Model #4, and the recommended models for vehicle trips and trip length are Models #5.

For additional information and assistance, please contact:

Richard Lee,
925-930-7100
r.lee@fehrandpeers.com