



CTPP Status Report

May 2012

U.S. Department of Transportation
Federal Highway Administration
Bureau of Transportation Statistics
Federal Transit Administration
AASHTO Standing Committee on Planning
In cooperation with the TRB Census Subcommittee

Census Transportation Planning Products (CTPP) AASHTO Update

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The CTPP Oversight Board met in February by teleconference. Discussions included:

- 2006-2010 CTPP: This special tabulation is expected to be delivered to AASHTO in mid-2013. The contract between AASHTO and the Census Bureau is currently under development.
- Long-term strategies for the CTPP program: Matt Hardy, Program Director for Planning and Policy at AASHTO was tasked with developing a framework for a long-term strategy for the CTPP Program.
- How to prioritize research: Many ideas were generated at the TRB Conference held in October 2011, and the CTPP program includes a robust budget for research. Phil Mescher, Iowa DOT Office of Systems Planning, chairs the CTPP Research subcommittee.

The CTPP training team continues to “spread the word” by visiting states and MPOs to provide day-and-a-half-long training, and attending conferences and meetings with workshops and presentations, covering what the CTPP is, how to best use it and caveats for use. Additional ways to learn about

TAZs and TADs for 2006-2010 CTPP are available in the Census Bureau website

Traffic Analysis Zone (TAZ) and Traffic Analysis District (TAD) boundaries delineated for 2006-2010 CTPP are available now in the Census Bureau FTP site. Shapefiles are provided and can be opened in ArcGIS. Please note no ACS or CTPP data are contained in the TAZ/TAD files.

[ftp://ftp2.census.gov/geo/tiger/TIGER2010/TAZ/2010/](http://ftp2.census.gov/geo/tiger/TIGER2010/TAZ/2010/)

[ftp://ftp2.census.gov/geo/tiger/TIGER2010/TAD/](http://ftp2.census.gov/geo/tiger/TIGER2010/TAD/)

CTPP products and issues are through the e-Learning modules <http://ctpp.training.transportation.org/>. Topics include American Community Survey (ACS), CTPP based on ACS, Geography, Margins of Error, and Changes to the CTPP related to the discontinuation of the Census Long Form. More e-Learning modules are expected.

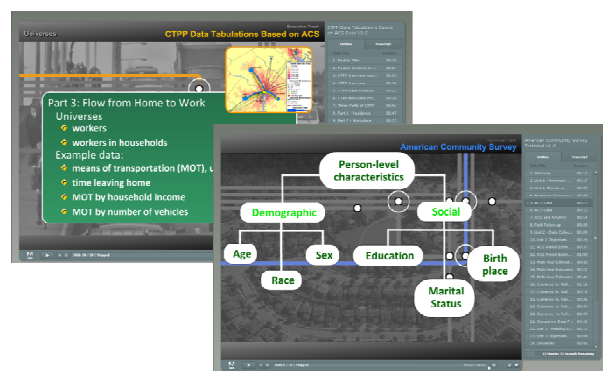


Figure 1.
Sample Screens from e-Learning Modules

Census Activities at the 2012 Annual TRB Meeting

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The Sunday morning workshop kicked off census activities at this year's annual Transportation Research Board (TRB) meeting. The workshop was entitled "C2KX + ACS1, 3, 5 = The Census Data of the Future" and sponsored by the Committee on Urban Transportation Data and Information Systems (ABJ30). Attendees learned about recent census data products, including the Census 2010, the American Community Survey (ACS), the Census Transportation Planning Products (CTPP), and the ACS Public Use Microdata Sample (PUMS). They also learned tips and tricks for gathering data from the latest American FactFinder version (AFF2) on the Census Bureau's web site.

The Census subcommittee meeting was another opportunity for TRB conference attendees to learn about the latest Census activities. Census Bureau staff shared information about their programs and another AFF2 tutorial was given. The preliminary findings from the TRB "Using Census Data for Transportation" conference held in Irvine, CA during October 2011 also were discussed among the group.

ACS Program Review Updates

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In April 2011, the Director of the Census Bureau commissioned a team to plan and implement a comprehensive assessment of the ACS program to ensure that it is meeting the needs of data users. The Census Bureau's ACS team wants feedback from stakeholders on four ACS program components:

- Communications and Stakeholder Management,
- Survey Design and Methods,
- Research and Evaluation, and
- Data Products.

These reviews focus on program-specific technical, methodological, and product-related improvement areas that increase quality and customer satisfaction. All feedback collected by the ACS Program Review team will be shared with a National Research Council Panel. The Panel will release recommendations for ACS program optimization.

The Census Bureau conducted a webinar on March 6. The last day for providing feedback was April 30, 2012. Although the deadline for feedback has officially passed, interested parties can still submit their comments to [Cheryl V. Chambers](mailto:Cheryl.V.Chambers@cen.gov) (cheryl.v.chambers@cen.gov) at the Census Bureau. AASHTO submitted a consolidated response via the CTPP Oversight Board including feedback from AMPO and NARC. More information can be found at the ACS Program Review web site: https://www.census.gov/acs/www/about_the_survey/acs_program_review/

In addition, the Census Bureau asked the Committee on National Statistics to organize a Workshop on the "Benefits (and Burdens) of the ACS." The workshop is tentatively scheduled for June 14-15 in Washington, D.C. with a steering committee chaired by Linda Gage (California Department of Finance) and Ken Hodges (Nielsen). The workshop is intended to highlight important and innovative uses of ACS data outside of the Federal agencies, as well as to take stock of how the ACS data are being used day-to-day now that the full range of products is coming into use. Kristen Rohanna from San Diego Association of Governments (SANDAG) and Vincent Sanders from Metropolitan Transit Authority of Harris County will represent transportation community at the workshop. The workshop will be inviting 'case studies' of ACS use; interested parties may contact Daniel Cork, the study director for the workshop, at dcork@nas.edu.

Travel Surveys: Moving from Tradition to Innovation

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In a time of economic uncertainty, agencies are in need of accurate and high-quality data to inform travel demand models, policy questions, and livability initiatives. The main source of data for these efforts has traditionally been travel surveys. Those involved in travel surveys have only limited opportunities to learn from each other – whether they are designing a survey or recently completed a survey effort and are seeking ways to keep the data “fresh” until funding is approved for a new survey in 10 to 15 years. In recent years, some MPOs and state DOTs have included an expert panel when they begin a major model update and data collection, but survey methods research is typically not possible due to time and budget constraints.

The 1995 TRB conference, “Household Travel Surveys: New Concepts and Research Needs” developed a robust list of applied research proposals, many of which were implemented. Since 17 years have passed, it is timely to revisit our needs for personal travel data needs and methods for acquisition. To provide a discussion forum, the Texas Transportation Institute will be hosting a 1.5-day symposium in Austin, TX in the fall of 2012. The objectives of the symposium are to provide a venue for those involved in travel surveys to brainstorm what the future of travel surveys may look like, what applied research and methods testing is needed to get there, and potential funding mechanisms (including pooled funds).

Please contact the author for more information on the date, location, and program.

Using CTPP 2000 Employment and Worker Flow Data to Build Integrated Land Use-Travel Demand Models of Small Communities and Rural Areas

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Introduction

Planners and residents working and living in small towns, villages, and rural areas across America are engaged in efforts to develop inspired, aspirational long-term plans that aim to maintain or regenerate their economic vitality and their attractiveness to not only the current neighbors but also to the new households that will make the difference between future vitality and decay. The Village of Williamsport and Deer Creek Township in south-central Ohio developed a comprehensive plan dedicated to maintaining a small town atmosphere, increasing industrial and commercial development, retaining agriculture and woodlands, and concentrating development in the village. The 2030 land use plan adopted by Boone (NC) envisions a small mountain town that is “vibrant, attractive, walkable, bikeable and transit friendly” and a “regional center for commerce, health care, and higher education.”

With funding from the Transportation Research Board (NCHRP 25-36), a research team at the University of North Carolina-Chapel Hill and North Carolina State University is developing integrated land use-travel demand models that are appropriate for identifying small-community and rural-area development patterns that are likely to reduce the transportation sector’s greenhouse gas emissions and that simultaneously support the “great places” that the recent planning processes envision.

Due to the level of complexity of the models, a summary description of how CTPP data are useful for achieving a very important goal of model development is provided rather than details about model structure, function and

development. The primary goal of the modeling effort is to produce a model that simulates a region’s economic system, population, and transportation system, socioeconomic data and interactions that are consistent with transportation data and network flows.

The models are a challenge to build, and the challenge is made more interesting by the prevalence in CTPP of “residual” geographies in small communities and rural areas.

Integrated Models in Brief

The hallmark of integrated models is automatic feedback between the land-use module and the travel-demand module. Consequently, a change in transportation policy or provision stimulates an adaptive evolution of land use. The other side of the coin, also automatically captured by integrated models, is that land use changes affect travel patterns, and the ensuing changes in transportation costs and disutilities stimulate further land use changes in response to the new distribution of destination accessibility. Figure 2 portrays those interrelationships.

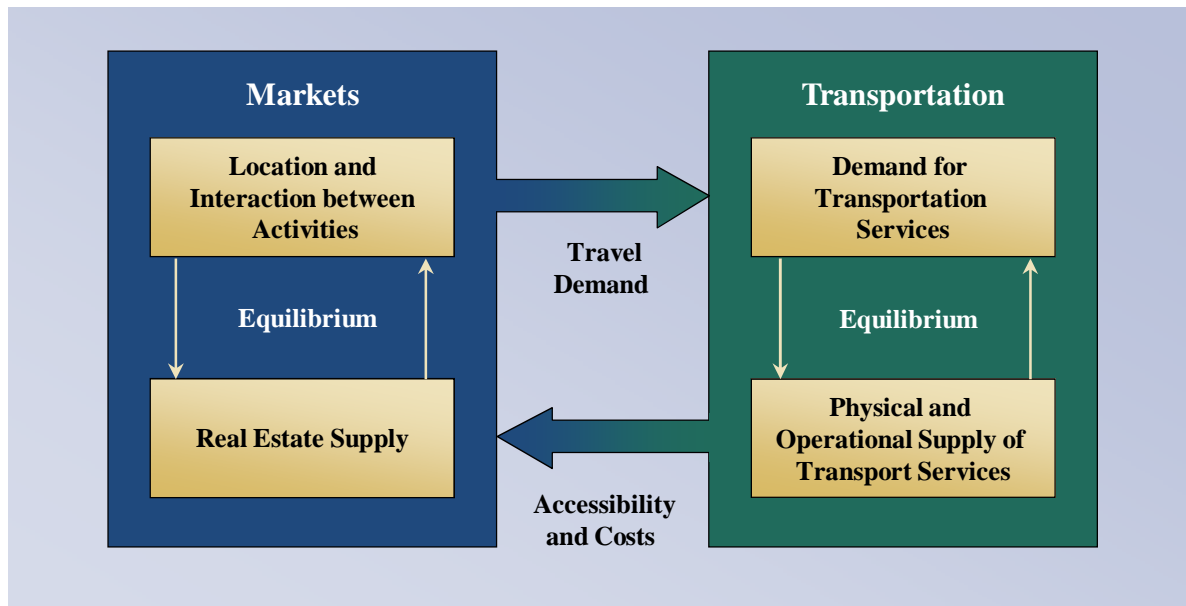


Figure 2. Land Use-Transportation Integration: Essential Relationships

Source: (modified) in Modelistica, [n.d.], TRANUS: Integrated land use and transport modeling system, Caracas, Venezuela: Modelistica, <http://www.tranus.com/tranus-english/download-install>

Our models are specific examples of the class known as spatial-input model, and they are built on the TRANUS modeling platform developed by Dr. Tomás de la Barra and colleagues. A defining characteristic of spatial-input models is economy-population interaction. For example, retail establishments demand employees, some of whom but not all live in a study area, and the study area’s residents demand retail goods and services, some but not all of which are provided locally.

For example, in each of the study area’s zones, total retail employees must equal the sum of

- 1) retail employees who reside in the study area and commute to the zone and 2) retail employees who reside outside the study area but commute to the zone. The model components responsible for trip generation and trip distribution must yield the required number of commuting workers, zone by zone, including the “external” zones that mark the gateways between the study area and the rest of the world. A model must be internally consistent of course, and that can require creative use of data that were not collected specifically for the purpose of building spatial-input output models.

Building Integrated Models of Small Communities and Rural Areas Using CTPP 2000 Employment Data by Place of Work and Worker Flow Data

Six counties in south-central Ohio, south of Columbus: Jackson, Pickaway, Pike, Ross, Scioto, and Vinton make up the study area for the model. The counties comprise a “commuting zone,” which encompasses local labor markets, and the commuting zone’s boundaries were determined by the U.S. Department of Agriculture’s Economic Research Service (<http://www.ers.usda.gov/briefing/rurality/lmacz/>). The spatial unit of analysis (zone) in our model is census block group in Pickaway County but tract in the others.

The process of building an integrated model feels a bit like putting together a 1,000-piece puzzle that is joined to another 1,000 piece puzzle, which is joined to....One of those puzzles is the component of the model’s activities database that describes employment in the “other industries” sector in the base year, 2000. The sector comprises several two-digit NAICS industries, including transportation/warehousing/utilities and construction. (Our model contains two additional composite industry sectors.)

For the other-industries sector, the puzzle that needs to be assembled is a table of employment by place of work – with a further distinction based on place of residence. Thus, the table distinguishes between resident employees and externally-internally commuting employees.

We used CTPP 2000 Table 2-004 as the source of data on industry-specific employment by place of work, and Table 3-001 as the source of data on worker flows. Those data are puzzle-making because they contain “residual” geographies; worker flows are reported at the census-tract level; and worker flows are not reported by industry sector – features that mean CTPP’s data do not perfectly align with the model’s input requirements.

Because of the small/rural profile of the Ohio case study, we encountered multiple counties for which employment is reported by census tract but not by census block group. And we found multiple tracts for which employment in a

residual geography is large relative to a county’s employment. A residual geography has an identifier like this one: RS 390799999.99. Appendix N in the CTPP 2000 training materials point out that if working with “outlying” counties not near metropolitan areas, potential caveats includes ungeocoded workplaces. Thus “data for detailed geographic levels like tracts and TAZs will include workers assigned to a residual workplace category.” This first subpuzzle was solved in the simplest imaginable way (to leave time for solving the other puzzles) by allocating residual employment to the actual tracts on the basis of their share of specifically attributed employment; the allocation was done separately for each two-digit sector that constitutes the all-other sector.

Then we turned to the second subpuzzle, how to bring the externally-internally commuting workers into the model. The solution to that little puzzle simultaneously helps populate the activities database and creates an origin-destination matrix of commuting trips.

To be included in the model, an externally-internally commuting worker must live in a census tract that is an 80-mile buffer around the study area’s perimeter. The data in CTPP 2000 Table 3-1 must be manipulated in three ways. Flows to the residual geographies (nontracts) must be allocated to the genuine tracts in the respective counties. The flows to the tracts in Pickaway County must be allocated to its block groups. The tract- or block-group level flows must be allocated to the model’s industry sectors.

Processing flows to the nontracts. Where possible, the allocation is made on a proportional basis that preserves a tract’s original share, for the external zone (gateway) of interest, of the workers whose workplace is specifically reported. That share-preserving approach is not always possible because some tracts have no reported trips in CTPP 2000 Table 3-001, but trips are reported for the corresponding residual geography. A different approach to allocation is used: residual geography trips are allocated to each tract in proportion to the tract’s original share of all externally-internally commuting workers whose destination is the county of interest.

Allocating Pickaway County's tract-level flows to block groups. A tract-level flow is allocated to a block group in proportion to the block group's share of total employees.

Allocating external-internal worker flows to industry sectors. The CTPP flows represent all workers, and they must be allocated to the model's industry sectors, of which one is the other-industries sector. For each industry sector, the geography-specific, external-internal worker flows are allocated in proportion to a tract's or block group's share of total employment, including residual employment.

Finally, the number of other-industries employees who work and reside in the study area is determined, zone by zone, by subtracting the number of externally-internally commuting workers from the total number of workers including the spatially allocated residual workers. Puzzle solved: the activities database for the other-industries sector is complete.

Conclusion

It's rare for "outsiders" to get a behind-the-scenes look at a model's innermost details. And it's a bit unnerving for the model builder. Yet, compared to travel demand models per se, integrated models have superior ability to comprehensively project the impacts of compact, transportation-efficient development that is the goal of aspirational small communities and rural areas.

Note: In the CTPP2000, tabulations for small geography were often suppressed. For the 2006-2010 CTPP, the Census Bureau will be using a data perturbation approach developed by NCHRP 08-79 (http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_w180.pdf) to reduce the reliance on suppression to protect individual confidentiality.

Transportation Statistics Interest Group (TSIG)

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In July 2011, the American Statistical Association (ASA)'s Council of Sections Governing Board unanimously approved the reformation of the Transportation Statistics Interest Group (TSIG). The TSIG was established to bring transportation statisticians together, share their experiences with transportation data, and help to shape the role of transportation statisticians in supporting the nation's transportation system. A steering committee was also established to help guide the TSIG. The steering committee is chaired by David Banks from Duke University and members include Elaine Murakami (Federal Highway Administration), Liang Long (Cambridge Systematics), Edward Spar (The Council of Professional Associations on Federal Statistics), Cliff Spiegelman (Texas A&M University), Alan Karr (The University of North Carolina), Ali Dadpay (Clayton State University), Deo Eustace (University of Dayton), Peg Young (Bureau of Transportation Statistics Liaison) and Li Leung (Bureau of Transportation Statistics).

The TSIG will meet at the Joint Statistical Meeting (JSM) in San Diego (July 28-August 2). The first meeting was held at the 2011 JSM in Miami Beach. The Bureau of Transportation Statistics (BTS) will also host the TSIG at the Transportation Research Board (TRB) annual meeting to encourage collaboration between ASA and TRB.

For more information about how to join TSIG and the TSIG listserv, please contact Dr. Peg Young at peg.young@dot.gov or by phone at (202) 366-2483.

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CTPP Listserv: <http://www.chrispy.net/mailman/listinfo/ctpp-news>

CTPP web site: <http://www.dot.gov/ctpp>

FHWA web site for Census issues: <http://www.fhwa.dot.gov/planning/census>

2005-2007 ACS Profiles: http://ctpp.transportation.org/profiles_2005-2007/ctpp_profiles.html

AASHTO web site for CTPP: <http://ctpp.transportation.org>

1990 and 2000 CTPP data downloadable via Transtats: <http://transtats.bts.gov/>

TRB Subcommittee on census data: <http://www.trbcensus.com>

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CTPP Listserv

The CTPP Listserv serves as a web-forum for posting questions, and sharing information on Census and ACS. Currently, over 700 users are subscribed to the listserv. To subscribe, please register by completing a form posted at: <http://www.chrispy.net/mailman/listinfo/ctpp-news>.

On the form, you can indicate if you want e-mails to be batched in a daily digest. The web site also includes an archive of past e-mails posted to the listserv.