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Developing Travel Demand Modeling Data

By: Florida Department of Transportation, Policy Planning Office

With the 2010 Census just around the corner the transportation modeling community is anticipating what data will be available for travel demand modeling and applications.

Traditionally, transit modeling data has come from the U.S. Census long form questionnaire. Unfortunately, the long form is no longer a part of the decennial census; only the short form. The American Community Survey (ACS) is now the only available source for characteristics data. With increasing emphasis upon census confidentiality, the ACS meaningful characteristic data are being reported at larger geographic areas. This level of geographic reporting is contrary to the modeling communities' trend towards higher resolution data with which to conduct their analysis.

Various solutions are being proposed to allocate the 2010 census data into higher resolution geographic boundaries. These include statistical disaggregation of larger census geographic regions and multi-level Traffic Analysis Zones (TAZ).

An alternative solution available in Florida, as well as several other states, is the distribution of census data to the TAZ level via a common spatial variable contained in a high resolution dataset. The Florida

Department of Transportation (FDOT) has been exploring the use of this technique as a way to address modeling needs in the near-term, as well as providing data continuity for future analysis. The data source is the Florida Department of Revenue (FDOR) real property data and the common variable is dwelling units. ARMASI, a company that has been working with FDOR files for 25 years, has an enhanced geo-coded file for all of Florida (other states are in the process) as part of the Land Use Mapping System (LUMS).

The spatial resolution of the approximately 10 million records is the XY centroid location for each parcel. This accuracy allows the data to be assigned to a census block, TAZ, or any other area coverage. The file contains a land use description (100 categories), as well as several data fields indicating area and economic values.

The first step in the transfer of large area census data to TAZ geography is to determine the census

and TAZ location for each parcel. The next step is the assignment of census characteristics to each parcel record (single family, condominium, and multi-family are the main land use categories used). The final step is the summarizing of the parcel-census data by the TAZ that the parcel record is included within.

For example, a census tract has an average household size of 2.5 people and another tract has an average household size of 3.5. A TAZ that encompasses portions of each tract with 100 units in each tract will have a population of $250+350=600$. This procedure insures an accurate assignment of census data for use in small area analysis. In addition, as parcel data is available for the past 25 years, time series analysis can be employed in the modeling process offering insight into causal relationships and refining demographic projection techniques.

TBAG Sponsors Training for TBRPM v. 7.0 - June 2010

The TBRPM v 7.0 is scheduled for release by March 31, 2010. A TBAG e-mail will be sent notifying members of the availability of the new version. **See training dates in June on page 6.**

While the parcel data addresses demographic issues, the one million plus record FDOR tangible file, in conjunction with the Labor and Employment Statistics data file, can be used to develop an employment database. ARMASI developed “Where Florida Works (WFW),” which is a geocoded list of many of the tangible records for Florida. For example, Duval County (please see Figure 1) and other urban counties are nearly complete. Many other rural areas will require additional work.

To complete the geocoding of this database, one option is using the assistance of the Metropolitan Planning Organizations (MPOs) to geocode the remainder of the records. Once all records are geocoded, only a small fraction would require spatial assignment in subsequent years. The tangible file is a list of businesses and requires assistance from the Florida Bureau of Labor Statistics (FBLS) to develop a data file of employment. This merge will be created under guidelines established by FDOT and FBLS.

As with the LUMS data, all records will contain an XY coordinate location for flexible assignment to any geographic polygon scheme. When complete it will provide a comprehensive, spatially accurate, and current employment database. The standardized format and annual updates will insure consistent application, as well as the opportunity for time series analysis. Given Florida’s current demographic, land use, and economic circumstances, an accurate high resolution database is critical for the evaluation of alternatives by transportation planners.

For more information, please contact Matt Brady at matt.brady@dot.state.fl.us.

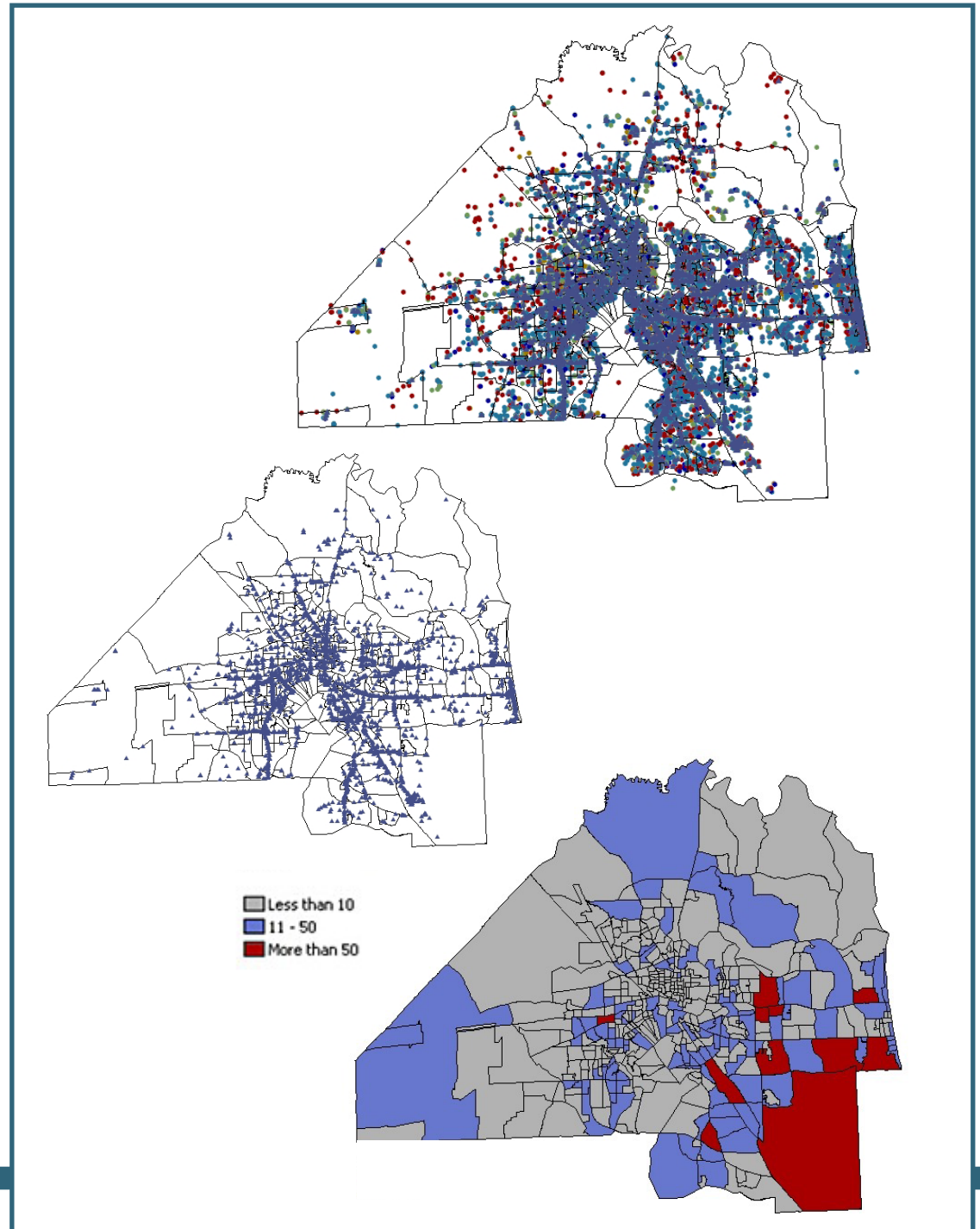


Figure 1. Duval County 2009 Distribution of Employers

Top map is all employers by NAICS category. Middle shows just retail trade and bottom is retail establishments assigned to census tracts.

Census Bureau Launches Online Mapping Tool Showing 2000 Census Participation Rates to Help Communities Prepare for 2010 Census

The Census Bureau is looking back to 2000 to hopefully improve the 2010 return rate. The Census Bureau unveiled a new on-line mapping tool that allows communities to prepare for the 2010 Census by viewing how well they did mailing back their 2000 Census forms.

A screenshot of the on-line map is on page 4. The online tool is available at <http://2010.census.gov/2010census/take10map/>

Visitors to the new Google-based map will be able to find the 2000 Census mail participation rates for states, counties and cities, as well as smaller areas called “census tracts.” The map is helpful to transportation planners when reviewing Census data information. The higher the return for a community, the greater the confidence in the housing, population and employment information used to develop socioeconomic data and populate travel demand models.

After the 2010 Census forms are mailed out in mid-March 2010, the online map will be updated to include a tracking tool with daily updates of the 2010 Census mail participation rates for local areas across the nation. Communities will be able to compare their 2010 Census progress using their 2000 Census rates as a benchmark.

In 2000, 72 percent of households that received a form mailed it back. The mail participation rate is a

new measure designed to give a better picture of actual participation by factoring out census forms that the U.S. Postal Service was unable to deliver as addressed. It should be particularly useful in areas with seasonal populations or a large number of vacancies or foreclosures.

The emphasis on encouraging mail participation in the Census is a practical one. For every 1 percent increase in mail response, taxpayers will save an estimated \$85 million in federal funds. These funds would otherwise be required to send census takers to collect census responses in person from households that don't mail back the forms. The data also help determine how more than \$400 billion in federal funds are distributed to state local and tribal governments every year.

After the 2000 Census, the Census Bureau was able to return \$305 million in savings to the federal Treasury because mail rates exceeded expectations – a move the Census Bureau would like to repeat in 2010.

For more information on the Census, including topics such as census in the constitution, a portrait of America, how the census works, protecting your answers, news events and much more, please visit the website: <http://2010.census.gov/2010census>.

Identifying the Census Taker

- All census takers carry official government badges marked with just their name.
- You may also ask them for a picture ID from another source to confirm their identity.
- Some census workers might carry a “U.S. Census Bureau” bag.
- The Census Bureau will NEVER, under any circumstances, ask to enter your home.

Offices Contact Information Covering:

(Alabama, Florida, Georgia)

Regional Census Center: **(404)-335-1555**
Regional Partnership Group: **(404)-335-1467**

Upcoming TBAG Meetings

May 20, 2010

(Meeting rescheduled in June for RTA model training)

August 26, 2010

October 28, 2010

December 2010 (TBA)

Census 2000 Mail Participation Rates for Florida

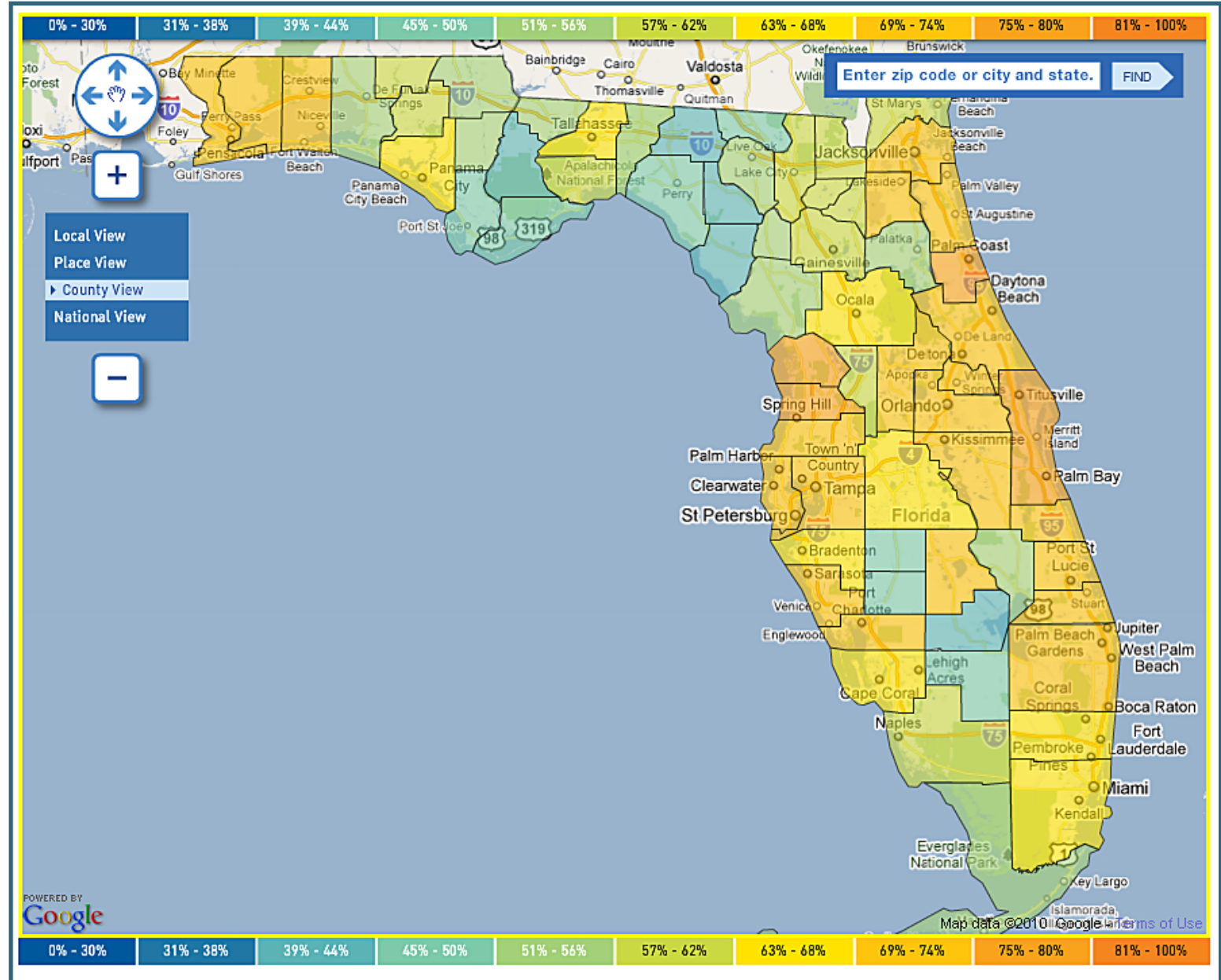
**Census 2000 National
 Participation Rate:
 72%**

**Census 2000 Florida
 Participation Rate:
 69%**

**Census 2000 County
 Participation Rate for
 FDOT District 7:**

- Citrus County 77%**
- Hernando County 77%**
- Hillsborough County 70%**
- Pasco County 74%**
- Pinellas County 71%**

Take 10 Map located at <http://2010.census.gov/2010census/take10map/>



Census Data Update by FHWA

On March 4, 2010, Ed Christopher with the Federal Highway Administration (FHWA) conducted a presentation on data resources available to transportation planners. Mr. Christopher is the Founding Chair for the Transportation Research Board (TRB) Subcommittee on Census Data for Transportation Planning. Mr. Christopher's contact address is: edc@EdtheFed.com.

His presentation is located at the following address: [http://www.edthefed.com/presentations/CTPP\(03-04-2010\).ppt](http://www.edthefed.com/presentations/CTPP(03-04-2010).ppt). Specific topics regarding the Census Transportation Planning Package (CTPP) were discussed, including Florida's representation on the AASHTO CTPP Oversight Board (ACOB) by Huiwei Shen, with FDOT, Office of Policy Planning, Tallahassee.

Three-year CTPP data profiles using 2005-2007 American Community Survey (ACS) data are available: the profiles are focused on transportation and include significance tests. The website for these profiles is provided at http://download.ctpp.transportation.org/profiles_2005-2007/ctpp_profiles.html.

A sample table for Tampa, Florida is shown below:

Mode to Work Tampa, FL	CTPP2000			2005-2007 ACS			Is Change Significant?
	Population = 303,512			Population = 325,265			
	Nos.	%	MOE	Nos.	%	MOE	
Total Workers	135,425	100.0	1,410	149,156	100.0	2,830	Yes
Drove alone	103,730	76.6	1,346	115,969	77.8	2,720	Yes
Carpooled	18,510	13.7	679	14,029	9.4	1,568	Yes
Public transportation	3,489	2.6	302	4,300	2.9	1,009	No
Walked	3,170	2.3	288	3,898	2.6	848	No
Taxicab, m-cycle, bike, oth.	2,935	2.2	278	4,065	2.7	953	Yes
Worked at home	3,585	2.6	307	6,895	4.6	939	Yes

Important resources provided in the presentation include: <http://www.trbcensus.com/>. You can join the Internet Mailing List to stay up-to-date on data issues and news presented by TRB.

Census Data for Transportation Planning
TRB Subcommittee on Census Data for Transportation Planning, ABJ30(1)

Encouraging Research and Innovation in Transportation Since 1920

Site Navigation

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TAZUP / WORKUP
Old Data (pre-2000)
PUMS & PUMAs

Welcome to our web site. We hope you find this site fun, informative and above all useful. We are organized under the [Committee on Urban Transportation Data and Information Systems](#) of the Transportation Research Board. We are very interested in census data matters as they relate to transportation planning. As a result, our focus spans the entire spectrum of census related activities including applied uses of the data, the content of censuses, collection procedures and dissemination programs all within the context of past, present and future censuses. This site was developed to help provide a forum for those with an interest in transportation planning and census data.

What's New

- [Most recent CTPP Status Report \(PDF only\)](#) [31-Dec-2009]
- [NCHRP Proposal-Identifying Methods for ACS 5-year Tabs](#) [02-2009]
- [The Latest on TAZs](#) [05-Dec-2009]

Another important resource is <http://www.fhwa.dot.gov/ctpp/status.htm>. The "Status Report" is a newsletter developed by the CTPP Planning Group to inform the transportation planning community on matters relating to the developments of the CTPP and other census data issues of relevance to their needs.

CTPP Status Report

The "Status Report" is a newsletter developed by the CTPP Planning Group, friends and anyone else wishing to write about the Census Transportation Planning Package, its use or any other census data for transportation planning issues. Its purpose is to inform the transportation planning community on matters relating to the developments of the CTPP and other census data issues of relevance to their needs.

To view PDF files, you need the [Acrobat® Reader](#).

[Index of Articles in the Previous Status Reports](#)

- Current (December 2009) Status Report in [HTML](#) or [PDF](#) (182 KB)
- September 2009 Status Report in [HTML](#) or [PDF](#) (67 KB)
- April 2009 Status Report in [HTML](#) or [PDF](#) (244 KB)
- December 2008 Status Report in [HTML](#) or [PDF](#) (106 KB)
- May 2008 Status Report in [HTML](#) or [PDF](#) (79 KB)

- Data Products
- Training
- Articles
- CTPP Status Report
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History of the Census

(taken from Census website)

August 2, 1790 was the first Census day, which began more than a year after the inauguration of President Washington and shortly before the second session of the first Congress ended. Congress assigned responsibility for the 1790 Census to the marshals of the U.S. judicial districts. The pay allowed for the "enumerators" did not exceed \$1 for 50 people properly recorded on the rolls.

The six inquiries in 1790 called for questions on gender, race, relationship to the head of household, and name of the head of household. Marshals in some states went beyond these questions and collected data on occupation and dwellings. The 2010 questionnaire is one of the shortest in history, and comes very close to the length and scope of inquiries asked in 1790.

The 1790 Census was managed by Thomas Jefferson, the Secretary of State, and included the original 13 states plus the districts of Kentucky, Maine, and Vermont, and the Southwest Territory (Tennessee). The U.S. Constitution empowers the Congress to carry out the census in "such manner as they shall by Law direct" (Article I, Section 2). The plan was to count every person living in the newly created United States of America, and to use that count to determine representation in the Congress. Previously censuses had been used mainly to tax or confiscate property or to conscript youth into military service.

Cube GIS and Avenue Workshops - April 14 and 15, 2010

The FDOT Systems Planning Office and District Seven are pleased to offer Cube Training Workshops to the transportation planning modelers in the Tampa Bay area. Dates and workshops are described below.

April 14 – Cube GIS Workshop

This live training course is designed to introduce Florida modelers to useful ArcGIS functions embedded in FSUTMS/Cube software. This course is designed for Cube users who are interested in storing their model data in geodatabases and using ArcGIS-based techniques to edit data and create maps. (One day workshop – 8:30 AM to 4:30 PM)

April 15 – Cube Avenue Workshop

This live training course is designed to introduce Florida modelers to Cube Avenue, an add-on to FSUTMS/Cube Voyager that enables dynamic traffic assignment (DTA) with mesoscopic simulation. Topics include basic principles of Cube Avenue, converting static assignments to Avenue, and corridor and subarea simulation in Cube Avenue. (One day workshop – 8:30 AM to 4:30 PM)

District Seven will host the workshops in the Tampa Headquarters OIS Training Room. The training room is equipped with computers which will have the necessary software pre-loaded, so you will not need to bring your own computer. The courses will be taught by Citilabs staff.

These are separate workshops, and a separate registration will be required for each session. **FDOT is restricted to 14 attendees for each**

training session so please carefully consider who among your staff would be most appropriate and beneficial to attend each session.

Please contact Andrew Tyrell if you wish to attend one or both workshops at Andrew.Tyrell@dot.state.fl.us. Include your name, phone number,

e-mail address and the name of the agency or firm for which you work.

The deadline for requesting attendance in these sessions is Monday, March 29, 2010. A confirmation for your attendance in the session(s) will be sent by Friday, April 2, 2010.

TBAG Sponsors Training for TBRPM v. 7.0

The Tampa Bay Applications Group is sponsoring training to support the release of the new Tampa Bay Regional Planning Model (TBRPM) version 7.0.

The TBRPM v 7.0 is scheduled for release by March 31, 2010. A TBAG e-mail will be sent notifying members of the availability of the new version. A link to the model will be available at the Tampa Bay Regional Transportation Analysis (RTA) website: www.TBRTA.com.

The dates for the training are **June 2, 2010** and **June 16, 2010**. Two training sessions will

be conducted to provide ample opportunity for the transportation planning community to attend. **Kasey Cursey, TBAG Coordinator, will distribute a registration form in early-April, and attendees will be asked to select a day (1st and 2nd choice) for training.**

The TBRPM v. 7.0 training will be held at the St. Petersburg College Corporate Training Center, 13805 58th Street North, Largo Florida 33760. A link to the training center is <http://www.spcollege.edu/Ct/>.

THE AMERICAN COMMUNITY SURVEY STATISTICAL ANALYZER

BY: XUEHAO CHU, PH.D.

Center for Urban Transportation Research (CUTR) University of South Florida (USF)

Introduction

Transportation planning in general and transit planning in particular in Florida and throughout the nation have relied heavily on the commuting and socio-demographic data from the long-form survey of the decennial census at various levels of geography. While the short-form count will continue every 10 years, the long-form survey has been replaced by the American Community Survey (ACS).

While providing more current information, ACS data represent challenges for transportation planning professionals to use them effectively. One of these challenges results from the precision of estimates from the ACS. The ACS estimates are significantly lower than the precision of estimates from the traditional decennial census long-form survey. This requires transportation planning professionals to explicitly take into account the precision of estimates from the ACS when they use these estimates either individually or for comparisons. A few difficulties in overcoming the precision challenge include the following:

- Estimates in published ACS tables at American FactFinder come with a margin of error (MOE) but without other measures of precision. This makes it difficult for transportation planning professionals to judge the usability of these estimates

- Some estimates do not come with any measure of precision. While necessary statistical procedures and formulas are available in various documents from the U.S. Census Bureau, they are not easily accessible to many transportation planning professionals.
- When the procedures and formulas are accessible, they typically involve statistical procedures and formulas that many transportation planning professionals do not feel comfortable working with.

ACS Analysis Tool

The Center for Urban Transportation Research (CUTR), in coordination with the Florida Department of Transportation, Public Transit Office, Tallahassee, conducted a research project to develop a tool that helps transportation planning professionals overcome difficulties in using ACS data. The *ACS Statistical Analyzer* tool can be used to assess the precision of individual estimates in terms of several measures of precision without the need to work directly with the statistical procedures and formulas involved. The tool is comprehensive and covers a full range of functions and sub-functions for transportation planning professionals to derive measures of precision in individual estimates and to compare estimates.

Release of ACS Statistical Analyzer

The implementation of the *ACS Statistical Analyzer* is expected to reduce agencies' cost and lessen the technical barriers to dealing with the precision of ACS estimates. These direct benefits, in turn, can lead to wider and more effective use of ACS data for transportation planning. It is anticipated that the *ACS Statistical Analyzer* tool will be released for use by late-March 2010. For more information, you may contact Daniel Harris, Transit Planning Project Manager, at (850) 414-4532, daniel.harris@dot.state.fl.us.

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Tampa Bay Applications Group Brown Bag Meeting

Survey Efforts: 2010 Census and American Community Survey

Presentation material from the March 4, 2010 TBAG meeting is available at www.tbrta.com/tbagarchives/march2010

FDOT District Seven Office from 12:00 p.m. to 2:00 p.m.



American Community Survey (ACS): Data, Usage, and Guidelines

Xuehao Chu, Ph.D., Center for Urban Transportation Research (CUTR), USF

Dr. Chu will present on the American Community Survey (ACS) and how it differs from the 2000 Census long-form survey. Dr. Chu will discuss what data are available, where the data can be obtained, and uses of the data. Dr. Chu has been working with ACS data as part of a research project for the Center for Urban Transportation Research. His research has addressed the precision of the ACS data and what strategies may be used to improve precision. He will provide insight into the main guidelines for using ACS data and tools to help with statistical issues.

Federal Highway Administration: Survey Data Collection Efforts and Applications

Ed Christopher, Federal Highway Administration (FHWA), Resource Center Planning Team

Mr. Christopher will address data collection efforts such as the 2010 Census, American Community Survey (ACS), and AASHTO's Census Transportation Planning Package and Program. He will discuss uses of current data and possible changes from the newly collected data such as changes in congressional districts, metropolitan statistical areas, census tracts and block groups, and urbanized boundaries. Mr. Christopher will discuss transportation planning analysis at the traffic analysis zone (TAZ) level and additional tools for further augmenting the Census data (such as property appraiser information) to support transportation planning analysis.

United States[™] Census 2010

2010 Census Data and Coordination

Bernadine White King, U. S. Census Bureau

Bernadine White King is part of the speakers' bureau for the 2010 Census effort. She is the West Florida Partnership Specialist Team Leader and travels the eastern part of the U.S. educating the public on the importance of the 2010 Census. Ms. King will address the 2010 Census data collection effort and the logistics for coordinating such a large effort, including public concerns for identity theft.



IT'S IN OUR HANDS