Florida Transportation Modeling
Newsletter

Florida MTF - Supporting the Modeling Community in 2011

The Florida Model Task Force (MTF) is the statewide support group that collectively directs research and adopts technical recommendations to be implemented with the Florida Standard Urban Transportation Model Structure (FSUTMS). The MTF provides support to the Florida modeling community including metropolitan planning organizations (MPOs), and local, regional and state agencies.

As part of the MTF, four technical committees exist to facilitate in-depth discussions of specific areas of concern to the modeling community; coordinate on-going research for areas most critical to the modeling community due to federal and state implementation deadlines; and provide technical recommendations to the MTF. The MTF is supported by the Data, GIS, Transit and Rail, and Model Advancement Committees. These groups have been

New Date for Model Task Force Meeting Winter/Spring 2012

New Date will include results from several on-going research efforts.

working successfully to coordinate on-going research to support the short- and long-term needs of the statewide modeling community. A summary of the progress for each Committee is provided below.

The **Data Committee** provides guidance regarding modeling data needs to assist members in developing better models through data collection, analysis, archiving, and modeling information management. The Data Committee has been proceeding with the development, in coordination with FDOT Systems Planning Office, of a Land Use Check (LUCHECK) program for social-economic zonal data development for Cube Voyager. The Data Committee is focusing on the implementation of the 2010 Census Update and incorporating the data into the current FSUTMS models. The findings for this LUCHECK program will be presented at the next MTF meeting.

The Data Committee is supported by the Land Use Modeling Subcommittee. The subcommittee has been coordinating Phase I of the Transportation Land Use Study, which is complete and under review by the MTF Tri-Chairs. A Transportation Land Use White Paper, including recommendations from the Data Committee, has also been completed and will be presented at the next MTF meeting. For more information on the Data Committee, please contact Gary Kramer at Email: gary.kramer@wfrpc.org.

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The **GIS Committee**, in coordination with FDOT Systems Planning Office, has been working on two related projects to increase interagency coordination and information sharing, as required by federal legislation: the FSUTMS Data Framework Standards and the Model Information eXchange System (MIXS). The FSUTMS Data Framework Standards adopted by the MTF in June 2010, are now available online at www.fsutmsonline.net. The purpose is to set data variables that allow for consistent modeling practices, shared resources, training, and new tool development applicable across multiple local models. The data framework standards are scalable to allow the addition or removal of elements such as field names. The GIS Committee is currently working to create an online opportunity to receive and approve such requests.

MIXS is a mechanism by which transportation and related data from a variety of sources can be seamlessly linked. The initial purpose of MIXS is to prepare data to be readily available and easily integrated into FSUTMS models, in conjunction with NAVTEQ, a global provider of maps. NAVTEQ was selected as the Florida Unified Roadway Basemap (FURB) in response to the 2005 SAFETEA-LU (Safe, Accountable, Flexible, and Efficient Transportation Equity Act – A Legacy for Users) legislation.

Additional information is available at www.dot.state.fl.us/research-center and www.fsutmsonline.net. For more information on the GIS Committee, please contact Nellie Fernandez at Email: nfernandez@palmbeachmpo.org.

The **Model Advancement Committee** identifies new opportunities for enhancements to the current FSUTMS processes; reviews alternative modeling methodologies and provides feedback on their relative strengths and weaknesses; and recommends enhancements to the current FSUTMS process. In an effort to streamline the research supporting these activities and to more efficiently address critical timelines for long-range transportation plan development, the MTF has reorganized the four supporting subcommittees into these two areas:

The *Advanced Traffic Assignment Subcommittee* will oversee dynamic traffic assignment and toll modeling activities. Advanced Traffic Assignment combined with simulation have been proposed to provide more realistic representation of traveler behaviors and time-variant traffic conditions, allowing better modeling of traffic congestion effects and alternative solutions to these effects.

Subcommittee Chair:
Neelam Fatima, St. Lucie TPO

Subcommittee Vice-Chair:
Jack Klodzinski, Florida's Turnpike Enterprise

Subcommittee Coordinator:
Vladimir Majano, Systems Planning Office, FDOT

For more information on the MTF and its Committees, please visit www.FSUTMSOnline.net.

The *Advanced Model Structure Subcommittee* will oversee activity-based models and time-of-day modeling activities. Activity-based (or tour-based) models represent the next generation of travel demand models and allow analysis of trip chains by time-of-day - a significant advancement beyond the conventional trip-based daily models in use today.

Subcommittee Chair
Milton Locklear, AICP, North Florida TPO

Subcommittee Coordinator:
Terry Corkery, Systems Planning Office, FDOT

For more information on the Model Advancement Committee, you may contact, Wilson Fernandez at Email: Wilson@miamidade.gov.

The **Transit and Rail Committee** is responsible for leading the MTF in improving transit modeling, and in addressing Federal and State planning requirements as they relate to transit planning. The Committee is proud to announce that Scott Seeburger will be serving as the new Chair. As FDOT District Four's Special Projects Manager, He has managed several high-profile projects in Southeast Florida, including the South Florida East Coast Corridor Study and the I-595 Light Rail Study. As part of his public and private sector work, Mr. Seeburger has participated in transit studies for the JFK International Airport; the Buffalo Metro light rail system; the Washington DC Metrorail; the Metro de Caracas heavy rail system; and South Florida's Tri-Rail. He has earned Civil Engineering degrees from the University of California-Berkeley and Purdue University. Thank you, Scott, for your continued commitment to the MTF!

MTF Research Projects Underway

This Section provides a summary of current projects underway to support the MTF's priorities. Detailed updates will be presented at the next MTF meeting in Winter/Spring 2012.

Transit Model Update

By: William A. Davidson, Parsons Brinckerhoff

The Florida Department of Transportation (FDOT) Systems Planning Office in coordination with the MTF has supported a research project to update the Florida Standard Urban Transportation Model Structure (FSUTMS) Transit Model.

The FSUTMS Transit Modeling Project is moving into the final stages. A pilot workshop entitled Framing the Benefits of Transit Projects will be presented in late-2011 in Miami. A number of guideline reports will be produced by December 2011, including the following:

- On-Board Rider Survey – Synthesis of Practice;
- Principles of Model Calibration & Validation; and
- User Benefit Quality Control Guidelines.

The project includes the development of a report on User Benefit Analysis Guidelines and the report is currently under review. Work is also nearing completion on new methodologies and guidelines for the overall FSUTMS standard travel modeling framework. Reports have been prepared on trip generation, time-of-day stratification, and destination choice. Mode choice and model feedback and convergence reports are on the horizon.

For more information, you may contact the Systems Planning Office, Vladimir Majano (vladimir.majano@dot.state.fl.us).

Development of Activity-Based Travel-Demand Models for Florida: An Assessment of Feasibility and Transferability Using the National Household Travel Survey Data

By: Siva Srinivasan, University of Florida and Abdul Pinjari, University of South Florida

The Florida Department of Transportation (FDOT) utilized the 2009 National Household Travel Survey (NHTS) to improve Florida's travel characteristics data with the purchase of 15,000 add-on surveys. The results of the surveys provided consistent, one-day travel behavior and demographics data for households in several regions, including rural areas, across the state.

The MTF has supported a research project to analyze the data for use with model advancements, including developing feasible (i.e., implementable) structures for activity-based models (ABMs). The ABM research project requires assessing the extent to which models developed for one region can be transferred for use in other regions, and the development of standardized procedures for activity-based modeling within the state.

The project has included extensive processing of the NHTS data to identify and characterize tours. The cleaned analysis sample comprised data for over 22,300 persons (over 13,000 households). The analysis showed a total of 36,099 home-based tours were made. Thirty-seven percent of all tours had two or more stops indicating significant trip-chaining patterns.

Eighty-seven percent of all tours were made by auto, with 41% in a single-occupant vehicle. Nine percent were by walk mode, with the remaining modes including transit and other. Forty-percent of all tours involved joint travel with another household member.

The project includes undertaking an exploratory analysis of the data by region to (1) identify the quantity of data available by region and (2) assess similarities and differences in travel patterns across the state. This exploratory analysis is anticipated to be complete by the end of December 2011.

The project also includes a comparative analysis of the characteristic features of various existing ABMs, including the DaySim model implemented in Sacramento, California; the CT-RAMP model implemented in Atlanta, Georgia; and the CEMDAP model being implemented in Southern California. Over the next several months, research will include assessing selected ABM components (such

as tour generation and mode choice) for transferability of model components and parameters. An outline of project outcomes is provided below:

- A tour-based travel dataset derived from the NHTS add-on data for the entire state of Florida,

- Parameter estimates for selected ABM model components for selected regions in Florida,

- Feasible ABM structures for different regions in Florida, and

- Recommendations for standardized procedures for activity-based modeling in Florida.

It is anticipated that while the ABM structures recommended for large urban regions may contain a variety of modeling components, the ABM structure for smaller regions are likely to be much more simplified. The project outcomes are expected to produce an ABM structure tailored to the specific needs of the area, rather than a "one-size-fits-all" ABM framework. The projected completion date is late-November 2012.

Development of a Prototype Land Use Model for Statewide Transportation Planning Activities

By: Zhong-Ren Peng, University of Florida

The MTF, in conjunction with the Florida Department of Transportation (FDOT) Systems Planning Office, sponsored a research project for the development of a prototype land use model for statewide transportation planning activities. The objective of this study is to explore the feasibility of developing a land use model based on readily available data to serve the needs of the Florida Standard Urban Transportation Model Structure (FSUTMS). The research project is focused on developing a model that addresses:

- Providing land use data as input to FSUTMS models;
- Accurately reflecting land use changes in the past (accurate validation);
- Incorporating sensitivity to policy changes;
- Reflecting behavior changes of different players in the supply and demand of land use market;
- Conducting "what-if" scenario analyses;
- Incorporating a strong theoretical basis;
- Using existing readily available data; and
- Integrating seamlessly with GIS and FSUTMS models.

The project team has developed the LandSys model, using a combination of cellular automata (CA) and multi-agent models for modeling land use changes, and the bid-rent theory to represent the equilibrium of the market demand and supply of land use. These agents include the following: employer, household, developer and government. The LandSys model is estimated and validated using a cell-based representation of land (50 meters x 50 meters). The estimated land use changes produced by the LandSys model is plugged into a FSUTMS model as updated inputs. In response, the FSUTMS model updates the demand modeling of the transportation system. The updated traffic information is then fed back to LandSys to capture the interaction between land use and transportation and generate more accurate simulations.

LandSys simulates land use change at multiple spatial and temporal scales, as well as representing decision-making behaviors of households, employment centers, and land developers, as well as responding to government policies. Future land use patterns and socioeconomic data is produced to update inputs to the FSUTMS model. Policy scenarios, such as mixed land use growth management policies can be simulated and analyzed for decision makers.

The research project employs three indicators to compare the simulation accuracy between the integrated framework and standalone FSUTMS model, including link saturation in the transportation network, overall vehicle miles

traveled (VMT), and vehicle hours traveled (VHT). The project is scheduled to be completed by November 30, 2011. For more information, you may contact Terry Corkery, Systems Planning Office, Phone: (850) 414-4903, Email: terrence.corkery@dot.state.fl.us.

Florida Model Information eXchange System

By: Frank Tabatabaee, Florida Department of Transportation, Systems Planning Office

A Model Information eXchange System (MIXS) is a mechanism by which transportation and related data from diverse sources and databases are seamlessly linked, based on common geographic features. The Florida Model Task Force (MTF) has supported research to address the initial goal for MIXS to serve the data needs of the Florida Standard Urban Transportation Model Structure (FSUTMS) modeling community so that these data can be readily available and easily integrated into FSUTMS models.

The project investigates methods for the development and implementation of MIXS in order to facilitate the information exchange amongst Florida-based transportation models. The anticipated completion date for this research project is December 31, 2012.

The principal investigator working in coordination with the MTF is Ilir Bejleri, Geoplan Center, Department of Urban and Regional Planning, University of Florida, For more information, you may contact the Project Manager: Frank Tabatabaee, Systems Planning Office, Phone: (850) 414-4931, Email: Frank.Tabatabaee@dot.state.fl.us

Development of Speed Models for Improving Travel Forecasting and Highway Performance Evaluation

By: Frank Tabatabaee, Florida Department of Transportation, Systems Planning Office

The Florida Model Task Force (MTF) has initiated a research project to develop a statewide speed model that predicts speed at forecasted link volume levels and estimated speed validated against existing data collected from TTMS sites and other sites. The overall goal of this project is to strengthen the mission of the Systems Planning Office by providing traffic modeling support to other agencies and local governments for statewide planning, including support for models developed by metropolitan planning organizations (MPOs) and local governments. The anticipated completion date for this research project is December 31, 2012.

The principal investigator working in coordination with the MTF is Ren Moses, Department of Civil Engineering, FAMU-FSU College of Engineering. For more information, you may contact the Project Manager, Frank Tabatabaee, Systems Planning Office, Phone: (850) 414-4931, Email: Frank.Tabatabaee@dot.state.fl.us.

SHRP 2 C10A Research Project

By: Stephen Lawe, Resource Systems Group

The SHRP 2 C10A project is a nationally-recognized project being conducted in Florida by a Resource Systems Group-led team. The project has several important objectives including development of the DaySim activity based model (ABM) system in the North Florida TPO (NFTPO) and Tampa Bay regions; the assessment of activity-based model structure and parameter transferability within Florida MPOs; and the integration of the DaySim ABM with both a dynamic traffic assignment (DTA) model for the NFTPO, as well as with traditional traffic assignment models for both the North Florida and Tampa Bay regions.

The 2005 base year NFTPO DaySim activity-based model is now complete and is fully-integrated with the dynamic traffic assignment model. The result of this DaySim/DTA model integration was recently shared with a national panel of modeling experts. Policy testing with the integrated model is currently underway and is expected to be completed by February of 2012. Development of 2010 base-year ABM/traditional-assignment models for North Florida and Tampa Bay is progressing well. These models are expected to be completed by early 2012, with plans to use them for the LRTP process. Transferability testing of activity based model structure and parameters will be completed by June of 2012 and will be presented to FDOT and the MTF.

Time-of-Day Enhancements to the Central Florida Regional Planning Model

By: Betty McKee, FDOT District 5, Intermodal Systems Development; and Scot Leftwich, Arturo Perez, Charlotte Davidson, James Taylor (Leftwich Consulting Engineers, Inc.)

Introduction

The Central Florida Regional Planning Model (CFRPM) serves as the regional model for the Florida Department of Transportation (FDOT) in District Five. The model is also utilized by numerous Metropolitan Planning Organizations (MPOs) and Transportation Planning Organizations (TPOs) for their modeling efforts. The nine counties within District Five are: Brevard, Flagler, Lake, Marion, Orange, Osceola, Seminole, Sumter, and Volusia Counties. In addition, the CFRPM encompasses portions of Indian River and Polk Counties. As part of the Department's recent enhancements a Time-of-Day (TOD) component has been incorporated into the model. The CFRPM Version 5.5 TOD Model is an extension of the CFRPM Version 5.0 base year 2005 daily model and is the first step in developing a TOD transit model in District 5. The main purpose of the TOD model is to support upcoming transit studies in Central Florida. The CFRPM 5.0 is the FDOT's adopted model in District 5. The new CFRPM TOD Model includes a combined 24-hour assignment that has been validated to not only traditional traffic counts but also to selected corridor travel speeds.

Work on the model began in October 2010 with the development of a comprehensive 15-minute traffic count database. The model's structure and scripts were updated in mid-November 2010, with an initial highway validation completed at the end of March 2011 (approximately four and one-half months). The development of the model was coordinated through weekly meetings with a Study Team comprised of FDOT and its consultants.

Release of Cube 6

By: Heejoo Ham, Director of Technical Support, Tallahassee

Citilabs will release Cube 6.0 in late-2011. The Cube 6.0 version will offer two major changes, along with various smaller improvements:

#1 Change - Cube's Cloud Computing

Cube 6.0 brings with it the option of Cube's Cloud.

Speed - Citilabs has been using cloud computing in beta for several months to improve power and storage for running models. Cloud computing brings the ability to run models across vast arrays of processors. Citilabs has successfully run existing urban models in the cloud, cutting run times up to 80% as compared to the typical desktop environment.

Scalability – Cloud computing provides the power of multiple computers. The user can launch several scenarios and they all run simultaneously in the cloud.

Sharing - Citilabs refers to cloud computing as 'safe-sharing.' When a model is 'published' to Cube's Cloud, the scripts and data are kept behind a web browser-accessed interface. The owner of the model can invite others to use the model or to access data through an email-based invite.

#2 Change - Cube Base gets a Facelift

Cube Base, the heart of Cube, has three major windows:

- The Application Manager Window – this window provides the flow-chart environment where the user designs and builds the models;
- The Scenario Manager Window – this window assists users to build, run and store planning scenarios; and
- The GIS Window – this window is where Citilabs has developed a transportation geographic information system (GIS) based on ArcGIS from ESRI and Citilabs' own transportation topology and editing tools.

Every user of Cube uses Cube Base and will benefit from the latest facelift. Cube Base now has a ribbon-based, tabbed, dockable, tool bar-style interface. Citilabs has moved Cube Base to the latest standards in Microsoft styles and made improvements to the scripting text editor.

Citilabs is coordinating with FDOT Central Office and the Florida Model Task Force (MTF) on the release of this new version. For more information, please contact Vidya Mysore with FDOT Central Office at Vidya.mysore@dot.state.fl.us, or you may contact Citilabs: Heejoo Ham, Director of Citilabs' Tallahassee Office, at hham@citilabs.com or Colby Brown at cbrown@citilabs.com.

TOD Traffic Count and Speed Databases

A critical component of the CFRPM TOD Model was the development of 15-minute traffic count and travel speed databases. The traffic count database utilized 2005 base year data and included extensive coordination with local agencies. Given that not all 2005 traffic counts were available in the desired 15-minute format, surrogate counts were prepared for some locations. Surrogate data was developed by applying 15-minute proportions from other sources of historical count data (e.g. 2008, 2009, 2010) to the available 2005 daily counts. In some cases directional information was unavailable as well, which meant that directionality had to be inferred from nearby locations. Other issues which had to be addressed were the selection of traffic counts where multiple agency counts existed for the same location, as well as where the directionality of numerous counts were incorrectly referenced by the traffic count installer. The CFRPM TOD Model contains 7,264 daily counts and 5,630 TOD counts.

Travel speed data was collected during the fall of 2010. Three methods were used to collect the data; namely Bluetooth (arterials and collectors), AVI Readers (Expressways), and SunGuide (Interstates). A number of issues were encountered when the travel speed data was reviewed: reader location sensitivity (Bluetooth), accessibility of data (SunGuide), and speed "capped" at the posted speed limit (AVI/SunGuide). Extensive coordination efforts were made with Study Team members to ensure that as much of the data could be used as possible, depending on the application to the modeling process (e.g. corridor validations and VFACTOR file adjustments). In all, thirty different speed corridors were used in the development of the model.

Defining TOD Model Process and Periods

A comprehensive literature review was prepared early on, looking at research on both National and Florida TOD models. Five TOD models were reviewed in detail, emphasizing models which most closely resemble the District Five area (e.g.

Baltimore, Maryland; Las Vegas, Nevada; Memphis, Tennessee; Phoenix, Arizona; and Sacramento, California). A majority of larger MPO's use a TOD model (75%), which includes significant variation in model step applications and number of TOD periods. Generally, not all National TOD models contain TOD counts and those that do typically focus on a.m. and p.m. peak validations. The Florida review centered on the Southeast Regional Planning Model (SERPM) Version 6.5—the only TOD model in place at the time—along with a general status report on both the Northeast Regional Planning Model and the Tampa Bay Regional Transit Model TOD efforts. In terms of the application of TOD in the CFRPM within the FSUTMS framework, the SERPM model served as an appropriate example relative to the CFRPM efforts and New Starts transit requirements. Therefore, TOD is being incorporated into the CFRPM at the post-Trip Generation (pre-Distribution) step with adjustments being made to both Productions and Attractions.
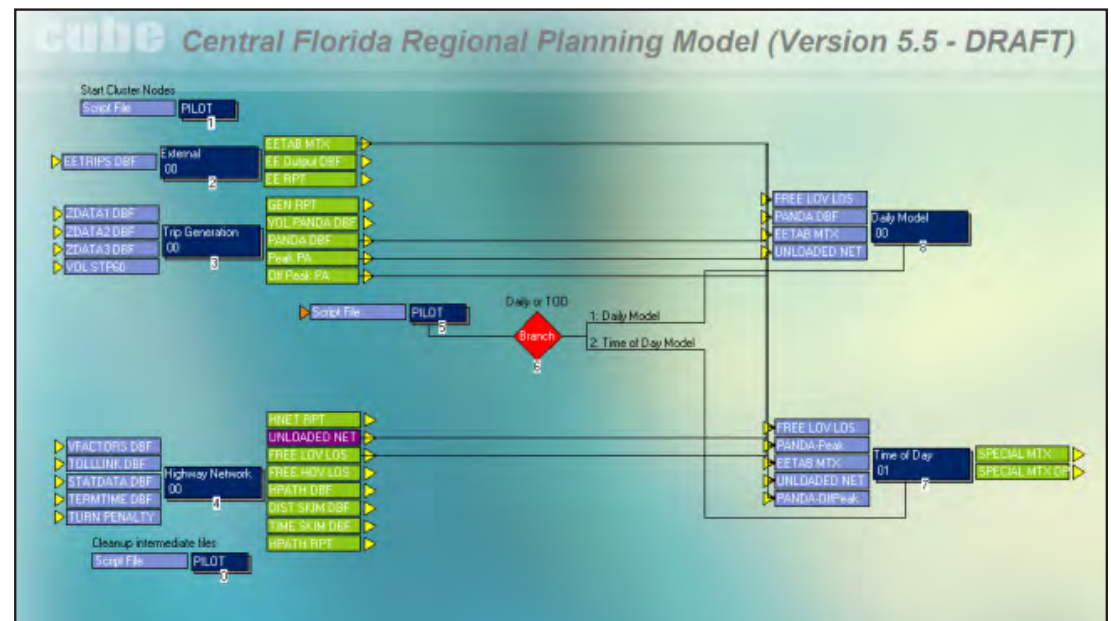
Exhibit 1 shows the CUBE model flow chart.

Exhibit 1: CFRPM Version 5.5 Flow Chart

The Diurnal patterns associated with local traffic counts and travel speeds on I-4 were utilized in developing four TOD periods for the CFRPM: 1) a.m. (6:30 a.m. to 9:00 a.m.), 2) MD (9:00 a.m. to 3:30 p.m.), 3) p.m. (3:30 p.m. to 6:30 p.m.), and 4) NT (6:30 p.m. to 6:30 a.m.). The CFRPM TOD Model also contains a combined 24-hour assignment, which is created by summing the four individual TOD travel assignments.

TOD Input Files

The 2009 National Household Travel Survey (NHTS) was a key source of data used in the development of several input files for the CFRPM TOD Model. Specifically, the NHTS data was used to develop Diurnal Factors to convert traditional FSUTMS Productions and Attractions into TOD. The NHTS data was supplemented by external-internal and special attractions traffic count data. The Diurnal file follows the general format of converting daily total trips into Peak and Off-Peak trips respectively using percentages. Subsequently, the Peak and Off-Peak trips are split into a.m. vs. p.m. and MD vs. NT trips. **Figure 1** shows the Diurnal Factors applied to the CFRPM TOD Model.

The NHTS data was also used to develop TOD Friction Factors. There was insufficient data in the NHTS survey database to create 60 individual Friction Factor files for the CFRPM TOD Model (e.g. 6 MPO areas x 5 trip purposes x 2 Peak/Off-Peaks). Instead, the NHTS data was used to successfully create Peak Friction Factor tables by setting the MPO-based files as the Off-Peak and factoring each county according to the NHTS ratios between Peak and Off-Peak trip lengths.

PURPOSE	PERIOD	F_PK	F_OP	F_AMP	F_MID	F_PMP	F_NT	PA_AMP	PA_MID	PA_PMP	PA_NT
HBW	PK			0.538		0.463		0.979		0.076	
HBW	OP				0.433		0.567		0.556		0.436
HBW	ALL	0.546	0.455								
HBNW	PK			0.357		0.644		0.754		0.407	
HBNW	OP				0.587		0.413		0.503		0.317
HBNW	ALL	0.352	0.649								
HBSH	ALL	0.282	0.718								
HBSR	ALL	0.277	0.724								
HBO	ALL	0.452	0.548								
NHB	PK			0.300		0.700		0.500		0.500	
NHB	OP				0.748		0.252		0.500		0.500
NHB	ALL	0.305	0.695								
Taxi	ALL	0.600	0.400								
EI	ALL	0.450	0.550								
SPEC	LOV			0.141	0.411	0.210	0.238	0.567	0.489	0.428	0.528
SPEC	HOV			0.141	0.411	0.210	0.238	0.567	0.489	0.428	0.528
SPEC	LTRK			0.172	0.466	0.191	0.172	0.567	0.489	0.428	0.528
SPEC	HTRK			0.140	0.441	0.147	0.272	0.567	0.489	0.428	0.528
MCO	ALL			0.111	0.463	0.221	0.205	0.500	0.500	0.500	0.500
OCC	ALL			0.048	0.608	0.206	0.138	0.500	0.500	0.500	0.500
UNI	ALL			0.077	0.483	0.281	0.158	0.500	0.500	0.500	0.500
SEW	ALL			0.056	0.482	0.273	0.189	0.500	0.500	0.500	0.500
DIS	ALL			0.110	0.456	0.255	0.179	0.500	0.500	0.500	0.500
IDR	ALL			0.300	0.200	0.300	0.200	0.500	0.500	0.500	0.500
KSC	ALL			0.000	0.612	0.384	0.004	0.500	0.500	0.500	0.500
PTC	ALL			0.022	0.808	0.141	0.029	0.500	0.500	0.500	0.500

Figure 1: CFRPM Version 5.5 Diurnal Factors

Another critical set of files that were adjusted during the model development process were the BPR curves (e.g. VFACTOR file). Speed and traffic count data were collected simultaneously along I-4 and 29 other non-interstate corridors (Bluetooth data). Based on these 30 corridors, the VFACTOR file (e.g. Alpha, Beta, and UROAD) was adjusted for the following facility types: Freeway (FTs 11-12), Divided Arterials (FTs 21-26), Undivided Arterials (FTs 31, 32 & 36), and Collectors (42, 43, & 46). **Figure 2** shows a sample VFACTOR adjustment.

TOD Model Validation Performance Measures and Results

Two new sets of model validation performance measures were established for the CFRPM TOD Model. First, it was acknowledged that traditional daily model standards do not reflect lower count ranges associated with TOD models, nor do they account for the addition of separate TOD periods into a 24-hour assignment. Based on the "Add-a-Lane/Drop-a-Lane" concept and the extrapolation of daily mid-point %RMSE values, a new set of guidelines were developed for 7 traffic count groups (as compared to the traditional 12 groups). The new aggregated daily %RMSE standards were expanded to allow higher maximum values to accommodate the NT period of travel, since this time period cannot be modeled accurately due to the lack of iterations [this may be countered in future models by combining the MD and NT into a combined Off-Peak assignment]. **Figure 3** shows the validated model results relative to the new traffic count performance measures.

Though a few TOD models do include results for travel speed corridors, no specific standards have been established. Initial performance measurement guidelines were identified for the CFRPM TOD Model. The measures were based on a general reasonability check and on a review of the results of other TOD models with travel speed corridor statistics. The measures follow the following guidelines: Overall Corridors +/- 10% for each TOD period and +/- 40% for each individual corridor.
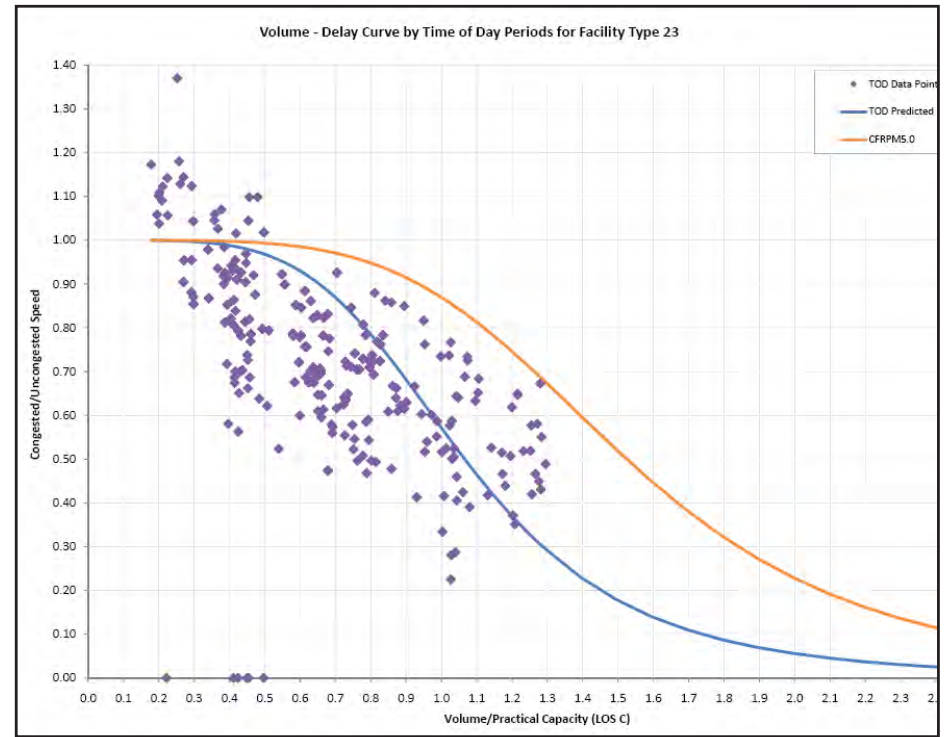
Figure 2: CFRPM Version 5.5 Sample VFACTOR Adjustment

Vol Group	Count Range	Allow RMSE Range	AM	MD	PM	NT
1	1–500	60 –160%	103.1%	113.6%	115.3%	95.5%
2	500–1,250	50 –140%	61.7%	83.6%	64.0%	80.3%
3	1,250–2,500	44 – 94%	40.0%	65.4%	42.3%	60.8%
4	2,500–5,000	38 – 60%	29.1%	46.2%	29.0%	44.7%
5	5,000–10,000	32 – 42%	29.7%	28.7%	23.2%	32.9%
6	10,000–20,000	27 – 35%	17.3%	23.5%	18.8%	45.6%
7	20,000–50,000	LT 27 %	0.0%	18.6%	22.0%	65.8%
ALL	1–50,000	42 – 90%	41.8%	38.0%	35.1%	65.5%

Vol Group	Count Range	Allow RMSE Range	24-Hour
ALL	1–500,000	35 –50%	36.01%

Figure 3: CFRPM Version 5.5 TOD %RMSE Traffic Count Results

As indicated in **Figure 4**:

⬤ 10 corridors are within +/- 10%

⬤ 5 corridors are between 10-20%

⬤ 3 corridors are between 20-40%

⬤ 2 corridors are greater than 40%.

Ten corridors could not be evaluated because of their unique characteristics (i.e. signal spacing, short corridor length, or variation in geometry from 2005 to 2010).

In summary, the initial CFRPM TOD Model provides desired model validation results for both traffic counts and travel speeds, travel speed corridors, and, for the first time ever in the CFRPM, this version offers initial performance measure guidelines for TOD validation. The following summarizes the model validation statistics reflected in the recently validated Year 2005 CFRPM Version 5.5 TOD Model, including:

- Volume-to-Count (0.94 to 1.00)
- %RMSE (35.1 to 41.8, 65.5 NT)
- Speed Corridors (1.01 to 1.08)

The initial guidelines have the opportunity to be applied to other TOD models.

Please contact Betty McKee at the following address: betty.mckee@dot.state.fl.us, or you may contact: D. Scot Leftwich, at (407) 281-8100 or by email at Scot.Leftwich@LCE-FL.com.

	Corridor			Model Speed to Observed Speed Ratio				Criteria Check
				AM Period	MD Period	PM Period	NT Period	
1	Dean Rd	University Blvd	SR 426	0.97	0.98	0.95	0.93	within ± 40%
2	Alafaya Tr	Avalon Park Blvd	Lake Underhill Rd	1.04	0.93	1.00	1.01	within ± 40%
3	US 17-92	SR 436	Airport Blvd	1.07	1.09	1.05	1.08	within ± 40%
4	SR 436	Lake Blvd	Red Bug Lake Rd	1.25	1.36	1.32	1.30	within ± 40%
5	Buenaventura Blvd	Boggy Creek Rd	Town Center Blvd	1.25	1.45	1.36	1.24	> ± 40%
6	Kissimmee Park Rd	US 192	Canoe Creek Rd	no rep	no rep	no rep	no rep	No Rep
7	Canoe Creek Rd	Kissimmee Park Rd	US 192	no rep	no rep	no rep	no rep	No Rep
8	US 441	CR 561	Lincoln Ave	0.99	0.94	1.06	1.00	within ± 40%
9	SR 19	Ardice Ave	Lakeview Ave	1.29	1.37	1.55	1.28	> ± 40%
10	US 441	SR 438	SR 46	0.96	0.95	0.97	1.03	within ± 40%
11	SR 482	International Dr	SR 528	1.11	1.21	1.07	1.25	within ± 40%
12	John Young Pkwy	Central Florida Pkwy	SR 482	no rep	no rep	no rep	no rep	No Rep
13	US 17-92	Poinciana Blvd	US 441	0.96	0.89	0.87	1.08	within ± 40%
14	Poinciana Blvd	US 17	US 192	no rep	no rep	no rep	no rep	No Rep
15	SR 434	SR 414	San Sebastian Prado	0.97	0.95	0.93	1.14	within ± 40%
16	Edgewater Dr	SR 50	Par St	no rep	no rep	no rep	no rep	No Rep
17	CR 426	Franklin St	Snow Hill Rd	1.11	1.13	1.11	1.09	within ± 40%
18	US 17	Glenwood Rd	SR 40	1.07	1.07	1.08	1.05	within ± 40%
19	SR 50	US 27	Tubb St	no rep	no rep	no rep	no rep	No Rep
20	SR A1A	Moody Blvd	Camino Del Mar Pkwy	1.04	1.06	1.08	1.07	within ± 40%
21	CR 470	I-75	Florida's Turnpike	no rep	no rep	no rep	no rep	No Rep
22	CR 484	SW 180th Ave Rd	SW 83rd Ave Rd	0.94	0.92	0.91	1.00	within ± 40%
23	SR 35	US 441	SE 38th St	1.01	0.98	1.02	1.02	within ± 40%
24	SR 44	SR 15A	N Prevatt Ave	1.13	1.09	1.15	1.02	within ± 40%
25	US 1	SR 528	Kings Hwy	no rep	no rep	no rep	no rep	No Rep
26	US 1	I-95	Seminole Woods Blvd	0.98	1.02	1.05	1.03	within ± 40%
27	US 1	Pineda Causeway	Gus Hipp Blvd	no rep	no rep	no rep	no rep	No Rep
28	US 27/US 441	SE 165th St	CR 484	1.11	1.15	1.20	1.13	within ± 40%
29	US 92	CR 415	S Peninsula Dr	no rep	no rep	no rep	no rep	No Rep
30	I 4	SR 417	I 95	0.83	0.68	0.62	1.15	within ± 40%
	Average by Period (weighted by distance)			1.02	1.01	1.01	1.08	within ± 10%
	Average Overall (excluding Night)				1.01		-	within ± 5%

no rep = The corridor was "not a good with representation" for the speed statistics due to unique characteristics of the facility.

Figure 4: CFRPM Version 5.5 TOD %RMSE Speed Corridor Results

13th National TRB Transportation Planning Applications Conference Success in Reno

By Robert G. Schiffer, AICP, Principal, Cambridge Systematics, Inc.

The 13th TRB Transportation Planning Applications Conference was held in Reno, Nevada, on May 8-12, 2011, at the Peppermill Resort. This conference, held every other year since 1987, provided a forum for the exchange of workable ideas, methodologies, and experiences in transportation planning, with a strong focus on modeling. One of the conference tracks was devoted entirely to travel demand modeling, while two other tracks (planning and data/operations) included several presentations related to modeling, as well.

Over 300 transportation professionals attended the Reno conference, exceeding attendance over the previous 2009 Conference held in Houston. The conference presentations addressed Federal data sources, livability and sustainability, and advances in modeling as indicated below:

- Activity-Based Modeling
- Dynamic Traffic Assignment
- Transit Modeling and FTA New Starts
- Toll Facilities Modeling
- Statewide Travel Forecasting Models
- Time-of-Day Modeling

Activities were held each evening, including tours of the regional bus transfer facility and bus rapid transit line, and a meeting of the TRB Special Committee for Travel Forecasting Resources. This special committee was formed in response to TRB Special Report 288 on Metropolitan Travel Forecasting, which can be downloaded at the following address: http://onlinepubs.trb.org/onlinepubs/sr/sr288.pdf.

The special committee was tasked with creating a website that includes training materials and procedural guides on travel demand modeling. For those interested, the Travel Forecasting Resource website can be accessed at the following site: http://www.tfresource.org/en/About.aspx.

The Conference website, maintained by Albert Gan and Atiosis Blanco of FIU, is a repository for downloading abstracts, presentations, and papers that comprised the Conference program. Please go to http://www.trb-appcon.org/program.html to download presented materials from the Conference.

New Release—NCHRP 08-36, Task 098 Improving Employment Data for Transportation Planning

The NCHRP 08-36, Task 098 Report on Improving Employment Data for Transportation Planning has been released. This guidebook investigates three alternative publicly available sources of employment data that may be useful for transportation planning and travel behavior research applications. The sources explored in the report are the Quarterly Census of Employment and Wages collected by the Bureau of Labor Statistics, and two databases produced from the Census Bureau's Longitudinal Employment Household Dynamics Program - the Quarterly Workforce Indicators and OnTheMap.

Please visit the www.FSUTMSOnline.net website to download the report.

Online FSUTMS Training Courses

FSUTMS modeling training workshops are offered FREE OF CHARGE by FDOT to the Florida transportation modeling community to maintain quality assurance for consistent statewide modeling standards and to provide up-to-date information on recent model enhancements. All of our live workshops focus exclusively on the new FSUTMS platform powered by the Cube Voyager software. Online web-based training is also available for the FSUTMS Executive Summary Modeling Seminar and the FSUTMS Comprehensive Modeling Workshop.

Training workshops qualify for professional development hour (PDH) credit for Florida professional engineers. The number of PDH credits for each workshop is equal to the number of classroom hours. If you would like to obtain PDH credits, please provide your PE registration number to the Systems Planning Office prior to the workshop. (FDOT's PDH provider number is 4094.)

FSUTMS Executive Summary Modeling Seminar

This online FSUTMS seminar provides an overview of the transportation planning process, travel demand forecasting methodologies, and FSUTMS modules under Cube. Participants will learn the underlying theories of modeling and see the benefits of Cube's abilities to produce presentation graphics for reports and meetings. This workshop is designed for managers and other non-modelers who review model outputs.

This web-based training has been designed with an optional registration/login system for those who would like to receive a certificate of completion. This seminar is approved by the Florida Board of Professional Engineers (FBPE) for four (4) PDH credits. To receive a certificate or PDH credits, you must first register to receive a user account. You will then log into the account to complete the seminar (it takes about four hours) and then take and pass an exam.

2011 Online Training

The seminar includes:

- Introduction
- What is a Model?
- Who Uses the Model?
- Do I Have a Good Model?
- What do I Need?
- Exercise
- Additional Training

FSUTMS Comprehensive Modeling Workshop

The FSUTMS Comprehensive Modeling Workshop provides an overview of the transportation planning process, travel demand forecasting methodologies, and FSUTMS modules and data requirements. Participants learn to execute FSUTMS powered by Cube, use the menu systems, interpret and create standard output results, and create and edit networks through a series of hands-on computer exercises. Previous modeling experience is not required for this workshop.

The workshop includes:

- Introduction
- Travel Demand Model
- FSUTMS Basics
- FSUTMS Standards
- Trip Generation and External Model
- Highway Networks and Highway Paths
- Trip Distribution
- Transit Network and Transit Paths
- Mode Choice
- Highway Assignment and Transit Assignment
- Post Processing
- Advanced Tools
- Traffic Impact Analysis
- Acknowledgements

To register for either online FSUTMS training course go to http://www.fsutmsonline.net/online_training/index.html.

Please direct comments and questions to:

Diana Fields
605 Suwannee Street, MS 19
Tallahassee, FL 32399-0450
Diana.Fields@dot.state.fl.us
850-414-4901

The Panhandle Transportation Applications and FSUTMS Users' Group

Resides in the Panhandle of Northwest Florida. Sixteen counties are represented, including four MPO/TPO urban areas and two Regional Planning Councils (RPC). Meetings, when scheduled, are usually held on the same day as the quarterly MPO meetings and are held at the Washington County Public Library, 1444 Jackson Avenue (U.S. Hwy. 90), Chipley, FL from 1:30 p.m. to 3:00 p.m. A notice will be sent to members prior to users' group meetings. For additional information, please contact Linda Little by email: linda.little@dot.state.fl.us.

The Northeast Florida Transportation Applications Forum

Jointly organized by the FDOT, District 2 Planning Office and the North Florida TPO. The meetings are held at the North Florida TPO facility on 1022 Prudential Drive, Downtown Jacksonville, 32225 from 12:00 p.m. to 2:00 p.m. The meetings are open to the public and private sector. Professionals are encouraged to either bring their own lunch or order pizza by the slice. For additional information concerning the Forum, please contact Thomas Hill by email: thomas.hill@dot.state.fl.us.

The Southwest Florida Users' Group

Meets at the Charlotte County-Punta Gorda MPO, 1105 Taylor Road, Suite G, Punta Gorda. For additional information, please contact Bob Crawley, FDOT, District 1, by e-mail: bob.crawley@dot.state.fl.us.

The Tampa Bay Applications Group (TBAG)

A transportation planning users' group which meets quarterly to hear speakers address technical issues on travel demand modeling and project applications. Previous meeting topics, newsletters, and presentations are available on the www.tbrta.com website under TBAG Archives. The meetings are brown bag and are held at the Florida Department of Transportation, District 7 Office, 11201 N. McKinley Drive, Tampa, Florida, 33612 from 12:00 p.m. to 2:00 p.m.

The meetings are free and open to all transportation planning professionals. If you are interested in receiving meeting notices, the TBAG newsletter and other users' group information, please contact Danny Lamb by email: daniel.lamb@dot.state.fl.us.

Southeast Florida FSUTMS Users' Group

Promotes understanding and proper application of FSUTMS to the solution of transportation planning and engineering problems. The goal of the group is to enhance the accuracy and reliability of local travel demand models. Membership shall be granted any time during the year to interested individuals involved in FSUTMS applications. General membership meetings will be held quarterly. Special meetings may be held at such other times as considered necessary by the members. Meetings are tentatively scheduled to be held at the FDOT, District 4 Headquarter's first floor Auditorium from 9:30 a.m. to noon. For additional information, please contact Shi-Chiang Li at FDOT, District 4 by email: shi-chiang.li@dot.state.fl.us.

The Central Florida Transportation Planning Group

Meets quarterly to provide presentations on travel demand modeling, transportation planning, and growth management topics. The meetings are brown bag, and all are welcome. The meetings are held at the FDOT, District 5 Urban Office, Lake Apopka Conference Room, 133 South Semoran Boulevard, Orlando, Florida 32807 from 12:00 p.m. to 2:00 p.m. For additional information, please contact Betty McKee by email: betty.mckee@dot.state.fl.us.

Users' Groups

Local FSUTMS users' groups provide a forum to promote understanding and proper application of the models. These groups maintain mailing lists and hold regular meetings that usually feature one or more guest presenters. Check for schedule updates on the web at: http://www.fsutmsonline.net/index.php?/user_groups_pages/user_groups_pages/