



FLORIDA TRANSPORTATION MODELING NEWSLETTER

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FSUTMS ONLINE: YOUR NEW GATEWAY TO TRANSPORTATION MODELING INFORMATION AND DATA SHARING

By: Albert Gan, PhD., Florida International University, Department of Civil and Environmental Engineering; and Terry Corkery, FDOT Systems Planning Office

FSUTMSOnline, the Florida Transportation Modeling Portal, is a new website designed to facilitate the exchange and sharing of information, data, and ideas for the Florida transportation modeling community. Unlike conventional websites which are relatively static and non-interactive, FSUTMSOnline is designed as a blog application that provides for easy updates and open communication between the providers and the recipients of information. Originating from the name weblog (i.e., a log published on the web), a blog allows a person (i.e., a “blogger”) with little or no web programming background to easily update and maintain a web page.

The initial version of FSUTMSOnline, to be launched in May 2006, includes individual blog pages for Model Task Force, modeling newsletters, training workshops, research reports, technical support, and FSUTMS Launcher. Blog pages are also created for individual FSUTMS standard models,

MPOs, and users’ groups to allow the bloggers to post related materials to their pages. For example, the blogger for the SERPM model blog page can post items related to model development updates, model data files, survey data, announcements, meetings, minutes, etc. while a visitor, on the other hand, can go to the page to get all the information and data available for the model. A visitor can also post a comment on a specific blog if he or she wishes to share it with others. The Systems Planning Office will monitor all web logs to ensure appropriate content. FSUTMSOnline also features an automated newsletter mailing list

sign up. This replaces the previous email-based sign-up process. If you are already on the mailing list, you will be signed up automatically and will receive a confirmation email that includes information on how to access the web portal when it is officially launched. ♦



In This Newsletter:

FSUTMS Launcher	2	Central Florida Regional Planning Model Workshop	7
West Central Florida Regional Planning Model.	3	Transit Speed Study Completed	8
2006 Workshops & Schedule	7	Users’ Group Meeting Dates	8

FSUTMS LAUNCHER GETS A MAKEOVER

By Albert Gan, PhD., Florida International University, Department of Civil and Environmental Engineering; and Yongqiang Wu, FDOT Systems Planning Office

The latest FSUTMS/Cube release to hit the streets includes a redesigned launcher that gives it a more flashy and professional look. The new launcher was designed in Macromedia Flash and consists of two major screens. The first is a greeting screen that includes a general introduction to FSUTMS and a clickable district map (see Figure 1). Clicking a district on the map will open the second screen, which displays all the current models in the district (see Figure 2). To select a model from another district, simply click on the district map on the same screen to refresh it.

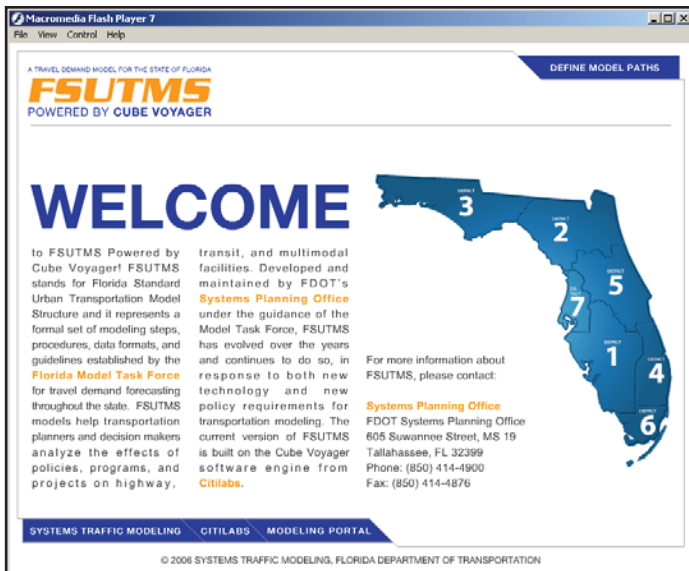


Figure 1

Unlike the previous version, this version pre-installs the folders for all the current models in this format: *C:\fsutms\d#\model_name\model_name.cat*, where # is the district number. All the folders are empty placeholders until the user copies data files into them. By default, the same name is used for both the model folder and the catalog file, but they do not have to be the same. The default path and the catalog file name may be changed in the screen shown in Figure 3. When a model is clicked, the launcher will look for the predefined catalog file in its designated folder. If the data files for the model are not installed, the name of the contact person will be displayed.



Figure 2

As with the previous versions, this new launcher is designed as an add-on program that can be updated by installing over an existing install without having to reinstall the entire Cube CD. As part of the launcher makeover, a new logo and a new splash screen were also created. The latest version of the launcher can be downloaded or installed directly from the Florida Transportation Modeling Portal, FSUTMSOnline (see article on page 1). ♦

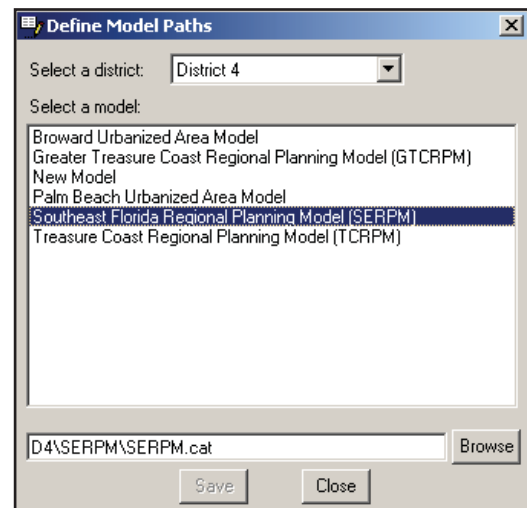


Figure 3

WEST CENTRAL FLORIDA REGIONAL PLANNING MODEL

By: Rich Tillery, Hoyt Davis, Chunyu Lu and Franco Saraceno, Gannett Fleming, Inc.

Introduction

In the fall of 2005, the Florida Department of Transportation, District 7, sponsored the development of the West Central Florida Regional Planning Model (WCFRPM). The WCFRPM was created to forecast travel patterns across eleven counties and to assist in planning regional multimodal transportation improvements for the West Central Florida region. The model development effort included a 2000 base year validation and forecast years. Five existing models were combined to form the WCFRPM, as shown in **Figure 1: Boundaries of WCFRPM**. These models include the:

1. Tampa Bay Regional Planning Model (TBRPM) v. 5.1;
2. Sarasota/Manatee/Charlotte (SMC) Model;
3. Polk County Model;
4. Hardee County Model; and
5. Desoto County Model.

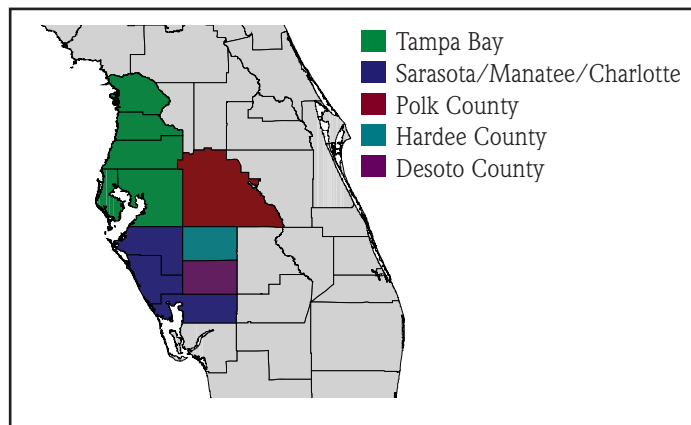


Figure 1: Boundaries of WCFRPM






Initial applications for the WCFRPM have been the testing of alternatives for two major regional studies: the *West Florida Outer Beltway Corridor Study* and the *West Central Florida Strategic Transit Needs Assessment Study*. This article discusses the major tasks associated with the development of the WCFRPM, as well challenges and results of the development effort.

Challenges and Solutions

The consolidation of these models included several challenges. While regional model development always creates unique and inherent compatibility issues, this was overly complicated due to the fact that it joined five existing models - two rural, developing single-county models (Hardee and Desoto Counties); an urban, single-county model located between two large urban areas (Polk County); and two well-developed, but rapidly growing regional, multi-county models (TBRPM and SMATS). The five models were analyzed to determine how each addressed the four-step model components of trip generation, trip distribution (plus external trips), mode choice, and trip assignment. All had to be unified under one consistent structure.

Traffic Analysis Zones, Highway Networks, and Transit Networks

One of the first and most basic steps in model development is the creation of a traffic analysis zone (TAZ) structure. Below are the existing traffic analysis zones within each of the component models.

-  TBRPM: 2,600 TAZs
-  SMC: 1,275 TAZs
-  Polk: 630 TAZs
-  Hardee: 150 TAZs
-  Desoto: 193 TAZs

The internal model structure for each of the five models was not changed. The TAZs for the five component models were consecutively renumbered for the WCFRPM. This resulted in 5,000 traffic analysis zones for the new WCFRPM.

In addition, highway and transit networks from each individual model were combined. Differences in facility type and area type, as well as speed/capacity table discrepancies existed across the models. To accommodate the five model networks and their individual TAZ structures, all of the model node structures were also renumbered and incorporated into one numbering scheme.

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The transit networks for Polk, Sarasota and Manatee Counties, as well as the TBRPM, were incorporated into the WCFRPM. In the case of the Polk transit network, the transit routes coded in the existing Polk County model were added to the TROUTE files that included the TBRPM transit networks. In the case of the Sarasota and Manatee transit networks, the transit route maps and schedules were provided by the transit agencies and had to be coded into the TROUTE file using Cube. The company codes for all the transit networks in the WCFRPM were renumbered for consistency and a two-digit numbering scheme was used to maintain a consistent code for the local and express routes in each respective county.

Other issues resolved when merging the five networks included the following:

- ✓ Modifying appropriate parameters in PROFILE.MAS for total number of zones, zone ranges, and other parameters
- ✓ Renumbering nodes for barriers in BARRIERS file, turn penalties in TCARDS file, toll links in TOLLINKS file, optional links in OPLINK files, transit routes in TROUTE files, and transit stations in STATDATA file and those file mergers
- ✓ Updating/Renumbering CBD and EXURBS zones files, as necessary
- ✓ Modifying Transit Company Codes for existing and future transit
- ✓ Modifying Transit Fares file
- ✓ Updated PCWALK file for transit access in Mode Choice Model
- ✓ Updating/Creating A1DECK file for use in Mode Choice Model
- ✓ Creating/Adding transit routes not in current highway only models
- ✓ Modifying/Appending new Transit Mode parameters as needed for future modes in RTNL file
- ✓ Updating/Modifying Screenline Definitions
- ✓ Modifying/Updating VFACTORS file, as necessary

External Zone Structure

In consolidating the models, the issue of properly treating external stations that fell on common model boundaries needed to be addressed. Of the 84 external zones from the five models, 57 of them fell on common model boundaries and were to be eliminated as an external zone as shown in **Figure 2: External Stations and Screenlines for the WCFRPM**. However, the traffic volumes that these zones carried needed to be properly reflected in the WCFRPM.

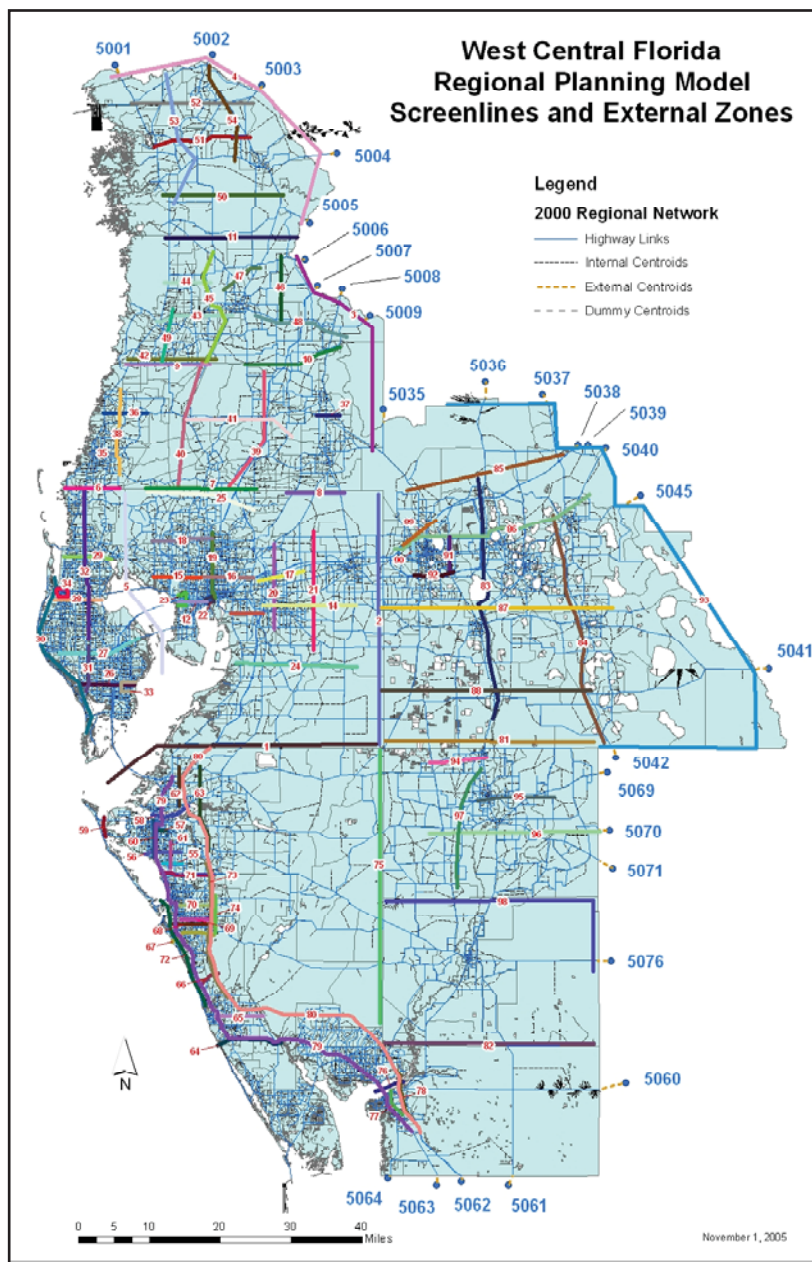


Figure 2: External Stations and Screenlines for the WCFRPM

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The major challenge with the external stations was how they coordinated with each other. The goal was to represent all of the trips made at these external zones accordingly, but yet zero out volumes of the common model boundary externals in the new WCFRPM model so that they became dummy zones as to only leave the true external zones with external volumes for the WCFRPM. With such a large model network, all of the previously existing External-External (EE) trips of the individual models most likely only represent External-Internal (EI) trips within the WCFRPM study area, so all EE trips were first converted to EI trips as EI productions and attractions for all of the external zones within each individual model. In other words, all EE origins became EI productions and EE destinations became EI attractions. The total number of EI trip-ends as productions and attractions of the external zones between two model boundaries was then totaled and the differences were calculated matching the productions of one model's EI trips to the attractions of the other model. A weighting technique was used to spread any production or attraction differences between two models into the zones of the model with the deficit. The volumes of the external zones that lie on the common model boundaries are then zeroed out in the combined WCFRPM zonal productions and attractions data before Trip Distribution, but after Trip Generation.

Trip Generation

All five trip generation models were run separately to preserve the productions and attractions from the component models. Due to certain differences in the trip generation step among the models, the model streams were combined after the trip generation steps. In order to accomplish this, the productions (P's) and the attractions (A's) for each model were combined into one super structure of TAZs for use in the model distribution step. The TBRPM structure was then used from trip distribution through trip assignment.

The largest challenge within the trip generation step was how to address trip purpose differences among the models. Since the TBRPM contained the most purposes, the trips were split from the other four models into the distinct TBRPM purposes rather than consolidate the TBRPM purposes. The home-based other trips from the other models were split into school, airport, and college. The

nonhome-based trips were split into the nonhome-based work and nonhome-based other categories. Similarly, the truck/taxi trips were split into light truck, heavy truck, and taxi.

Differences in the trip purposes from the TBRPM and the other standard FSUTMS models were also addressed.

Table 1: Comparison of Trip Purposes shows the comparison of the TBRPM model trip purposes to that of the trip purposes identified in the other four models.

Model Step	TBRPM	POLK, SMC, Hardee, and DeSoto
External	EE	EE
Generation	HBW	HBW
	HBSH	HBSH
	HBSR	HBSR
	HBSC	HBO
	HBO	
	AIRPORT	
	COLLEGE	
	NHBW	NHB
	NHBO	
	LTRK	TRUCK/TAXI
	HTRK	
TAXI		
EI	EI	
Distribution	HBW	HBW
	HBSH	HBSH
	HBSR	HBSR
	HBSC	HBO
	HBO	
	AIRPORT	
	COLLEGE	
	NHBW	NHB
	NHBO	
	LTRK	TRUCK/TAXI
	HTRK	
TAXI		
EI	EI	
Mode Choice	HBW	HBW
	HBSH	HBNW
	HBSR	
	HBO	
	NHB	NHB
Assignment	TRUCK	TOTAL
	LOV	
	HOV	

Table 1. Comparison of Trip Purposes

continued on page 6

continued from page 5

Trip Distribution

The WCFRPM was based on all of the enhancements that are a part of the TBRPM after trip generation, which included distribution through transit assignment. Therefore, the distribution step included the distribution of the thirteen trip purposes identified in the TBRPM. The friction factors that were used in the TBRPM were also used for the new WCFRPM.

For validation purposes, a trip purpose comparison was made for each of the trip lengths of the individual models to the trips length of the new WCFRPM. The trip length analysis illustrated a relatively strong consistency and similar trip length frequencies among the individual models and the new WCFRPM.

Mode Choice

The WCFRPM mode choice model was validated to the observed ridership for the transit systems. The targets used for this validated effort were the unlinked transit boardings in the respective systems that are reported in the transit assignment module. The variables that were manipulated in the validation process included the mode bias constants and the CBD area-type bias.

Future revisions to the mode choice model will utilize county-specific constants in order to properly validate each respective transit system. This is appropriate given that there is little to no interaction expected among the transit systems in the outlying counties.

Highway Assignment

After merging the highway networks, additional edits, including the revisions and refinements to the screenlines for validation and future year comparisons, were performed. A map of the screenlines for the WCFRPM was shown previously as **Figure 2: External Stations and Screenlines for WCFRPM**. The highway assignment results are provided in **Table 2: WCFRPM Screenline Comparisons**.

The table compares the overall original model volume-to-count (v/c) ratios to the WCFRPM v/c ratios. As indicated, overall v/c ratio for the WCFRPM is 1.01. However, the SMC model is somewhat underestimated and the Hardee and Desoto models are somewhat overestimated. Hardee and Desoto counties do not have an overall impact to the regional model due to the relative proportion of traffic volume per county to the regional model.

Transit Assignment

The Transit Assignment results showed good overall results – an estimated to observed ridership ratio of 1.00 for local bus and 1.23 for express bus. At a county level, the Sarasota and Manatee, and Polk County ratios are not as good of a match compared with the Tampa Bay Area. However, these do not have a great impact on the overall results due to the relative proportion of the ridership in those systems.

Summary

The development of the WCFRPM presented an opportunity to create a regional modeling tool for Florida’s Central West Coast Area. Challenges were encountered, but addressed systematically with the result being a validated regional model. The model is providing valuable information for two current major regional studies. In future updates of the WCFRPM, consistency in model development will be necessary and will add to the confidence in using this model to forecast future regional trips. ♦

West Central Florida Regional Planning Model Screenline Comparisons								
Individual Validation Models vs. 2000 Base Year								
Model	Original Screenline	New Screenline	Original Models			WCFRPM		
			Estimated Volume	Count	V/C	Estimated Volume	Count	V/C
TBRPM	TBRPM SubTotal		9,313,828	9,059,869	1.03	9,382,127	8,948,325	1.05
SMC	SMC SubTotal		5,424,086	5,443,996	1.00	5,119,501	5,573,662	0.92
Polk	Polk SubTotal		1,562,776	1,572,144	0.99	1,418,704	1,408,284	1.01
Hardee	Hardee SubTotal		54,054	57,789	0.94	87,903	57,789	1.52
Desoto	Desoto SubTotal		N/A	N/A	N/A	61,568	31,028	1.98
Screenline Total			16,354,744	16,133,798	1.01	16,069,803	16,019,088	1.00
Non Screenline Total			N/A	N/A	N/A	51,882,444	51,316,576	1.01
WCF Model Total			N/A	N/A	N/A	67,952,247	67,335,664	1.01

Table 2: West Central Florida Regional Planning Model Screenline Comparisons

2006 FSUTMS CUBE WORKSHOPS & SCHEDULE

FSUTMS Model Scripting Workshop

Dates: June 12-15, 2006
 Starting Time: Monday at 1:00 p.m.
 Ending Time: Thursday at noon
 Location: Homewood Suites
 8745 International Drive
 Orlando FL 32819
 Rate: \$99/night
 Phone: 407-248-2232

Res Deadline: June 1, 2006

Detailed Workshop Descriptions are available at <http://www.dot.state.fl.us/planning/systems/stm/training/default.htm>.

Registration Information

Log on to the FDOT Systems Planning Office Model Training Web site: <http://www.dot.state.fl.us/planning/systems/stm/training/default.htm>, or contact **Ms. Sandy Colson**: sandy.colson@dot.state.fl.us, 850-414-4937.

The Systems Planning Office will develop the FY 2006-07 modeling workshop schedule in July 2006.



CENTRAL FLORIDA REGIONAL PLANNING MODEL (CFRPM) WORKSHOP

MAY 23, 2006

The Florida Department of Transportation, District 5 is offering a “hands on” workshop addressing the Central Florida Regional Planning Model (CFRPM) version 4.0 using Cube 4.0.

The workshop will be held on May 23, 2006 at the Orlando Urban Office from 9 a.m. - 5 p.m. The Orlando Urban Office is located at 133 South Semoran Boulevard, Orlando, Florida 32807.

Seating is limited and is available on a first come, first serve basis. If you are interested in attending, please email **Kacia Monts** at kmonts@hntb.com by May 15, 2006 for information on seating availability.

Draft Workshop Outline

1. Introductions & Workshop Overview
2. Model Overview and Background
3. Special Features of CFRPM 4.0 Model
4. Installation and Execution of CFRPM 4.0
5. Managing Scenarios Exercises
6. Network Editing Exercises (Highway and Transit)
7. Special Features Exercises
 - 7.1. Volusia Lifestyle Dataset
 - 7.2. Select Link Analyses
 - 7.3. Select Zone Analyses
8. General Discussion
9. Adjourn

**The Florida Transportation Modeling Newsletter
can be found at the following address:**

<http://www.dot.state.fl.us/planning/systems/stm/modnews/index.htm>

USERS' GROUP MEETING DATES

The **Panhandle Transportation Applications and FSUTMS Users' Group** meets at the Washington County Public Library in Chipley from 1:15 p.m. to 3:00 p.m. Meeting dates and times will be announced as scheduled. Please contact **Linda Little** 850-638-0250.

The **Northeast Florida Transportation Applications Forum** meets at the new First Coast MPO location on 1022 Prudential Drive. The luncheon meetings are held from 12:00 p.m. to 2:00 p.m. For additional information, please contact **Karen Taulbee** (904) 360-5652 or **Jeanette Berk** 904-823-8982. Meeting dates for 2006 are provided below:

Thursday, May 18, 2006

Thursday, August 17, 2006

Thursday, November 16, 2006

The **Southeast Florida Users' Group** meets at the FDOT-District 4, Auditorium at 9:30 a.m. Please contact **Phil Steinmiller** 305-377-5896. The Meeting date for 2006 is provided below:

Friday, May 5, 2006 - **New Auditorium**

The **Central Florida Traffic Data Users' Group** meets at the Lake Apopka Room of the FDOT District Five Urban Offices in Orlando from 2:00 p.m. to 4:00 p.m. The Central Florida Traffic Data Users' Group is open to all interested parties. It brings together members of the FDOT District Five FSUTMS Users' Group, the Central Florida GIS Traffic Data Working Group, and other individuals interested in transportation data. For additional information, Please contact **Jon Weiss** 407-482-7881 or **Mark Sievers** at sievers@ecfrpc.org.

The **Tampa Bay Applications Group** meets at the FDOT-District 7 Tampa Office from 12:00 p.m. to 2:00 p.m. For additional information, please contact **Danny Lamb** 813-975-6437. Meeting dates for 2006 are provided below:

Thursday, May 18, 2006

Thursday, August 24, 2006

Thursday, November 2, 2006

The **Southwest Florida Users' Group** is in the process of establishing a new meeting location. Meeting dates and times will be announced as scheduled. Please contact **Jim Baxter** 863-519-2562. ♦

TRANSIT SPEED AND DELAY STUDY COMPLETED

by Tara Bartee, FDOT Public Transit Office

The Department of Transportation recently completed a Speed and Delay study in Jacksonville. The final report is available at:

<http://www.dot.state.fl.us/transit/Pages/transitspeeddelayfinalreport.PDF>

Conclusions in this report were compared to another study done recently in Tampa. The Jacksonville and Tampa study conclusions were similar to each other and both studies found significant differences from an earlier set of studies done in 1985.

- * The relationship between bus and auto travel times and speeds is linear across the range of sampled auto times.
- * Observed bus speeds are higher than earlier supposed.
- * The relationship between bus and auto travel times does not change in peak periods or in peak direction.

Four models are recommended based on the data collected:

- Bus vs Auto (segment)
- Bus segment times (planning level)
- Bus vs Auto (trip)
- Bus trip times (planning level).

Florida Transportation Modeling is published under contract to the FDOT Systems Planning Office in Tallahassee. All information and materials contained in the newsletter are contributed by FSUTMS users and Model Task Force members. Please contact the editors to submit articles for future issues or to get on the mailing list.

Coeditor: Terrence Corkery

FDOT Systems Planning Office
605 Suwannee Street, Mail Station 19
Tallahassee, Florida 32399-0450
850-414-4903, FAX 850-414-4876
terrence.corkery@dot.state.fl.us

Coeditor: Kasey Cursey

Gannett Fleming, Inc
WestLake Corporate Center
9119 Corporate Lake Drive, Suite 150
Tampa, Florida 33634-6323
813-882-4366, FAX 813-884-4609
kcursay@gfnet.com