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# Model Task Force praises FDOT… and requests continued support

*By Bob McCullough, Systems Planning Office*

At their March 29 meeting, the Model Task Force praised the Florida Department of Transportation for the last decade of transportation modeling improvements, as reflected in the opening remarks by tri-chair Dennis Hooker (MPO Orlando). Dennis started out by recognizing the Office of the State Transportation Planner for support given to the MTF for the past eight years and for the atmosphere of decentralization—a true partnership with the MPOs. The entire body of the MTF joined in and before long the list of "good" was most impressive. Dennis then discussed the modernization of the FDOT presently under development.

Dennis suggested that it would be timely to send a letter of acknowledgement to the FDOT and emphasize the importance of transportation modeling support to the MPOs and to other MTF members. Only Dennis could have made it so clear: FDOT has been doing a *good* job; let's tell them about it, and let them know that it is important to us for it to continue.

Floor discussions quickly pointed out that since some of the members were FDOT, the request should come from the MPO members only. This would remove any tone of self-preservation by FDOT staff. Before it was over, the recommendation was to present a resolution to the MPO Advisory Committee, and for the MPOAC to send a letter to FDOT.

As administrator of the Central Office Modeling Section and support staff to the MTF (a non-voting member of the MTF), my staff and I would like to thank the MTF on behalf of the Department for recognition of our *good* work, and to let everyone know that management recognizes your need for continued support to the MTF.

The following salient points taken from the MTF resolution, presented by Dennis at the April 26 MPOAC meeting in Orlando, reflect the importance of transportation modeling as a cornerstone to the partnering required for effective transportation planning.

- Healthy economic growth of Florida and its metropolitan areas is highly dependent upon robust

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intermodal and multimodal transportation systems for the efficient movement of people and goods.

- The cooperative development of these transportation systems requires integrated transportation plans from all MPO areas and their coordination with the FDOT statewide plans.

- The development of regional transportation plans requires the cooperative efforts of MPOs working together with each other and the FDOT.

- The Florida Department of Transportation coordinates all 25 MPO plans, many regional plans, and ensures that these plans form the basis for the Department's development of a robust statewide transportation plan addressing transportation needs for Florida's healthy economic growth.

- Each of these plans are developed using the Florida Standard Model process, FSUTMS, it is important to ensure that these models continue to follow a universal approach, providing consistent methodologies throughout the state, allowing efficient interchange of transportation planning information.

- Modeling support is essential to ensure that all Florida models are able to communicate with each other and provide transportation policy makers with transportation analysis of proposed improvements in a consistent format throughout the state.

- This consistency is the mission of the Florida Model Task Force, which comprises representatives from all MPOs, all FDOT districts, Federal Highway Administration (FHWA), Department Environmental Protection, Department of Community Affairs, and others, working cooperatively with each member.

The MTF actions highlight a successful relationship among the FDOT Central Office, districts, and MPOs in coordinating transportation modeling efforts. Decentralization has worked well in modeling, due in large part to the efforts of the Model Task Force.

# Model Task Force examines new directions for the future

Nearly 75 of Florida's transportation modeling practitioners participated during the Model Task Force meeting on March 29, 2001 in Orlando. The key focus of the Thursday morning meeting was a roundtable discussion to gather input from the members on how well the Florida Standard Model is dealing with emerging issues in transportation modeling and what the MTF should do to further improve the process. The meeting started with a brief introduction from each of the tri-chairs.

Danny Lamb focused his introduction on the changing demands for current transportation models. Rather than accepting systems-wide performance measures, the data requests from the decision makers are highly complex. Examples of these requests range from the impact of implementing Intelligent Transportation Systems (ITS), Transportation Demand Management (TDM), intersection improvements, to the impact of installing bike paths. These requests are going beyond the limits of the traditional four-step model. The Florida Standard Model processes need to be updated to handle these issues.

Shi-Chiang Li's discussion focused on a paradigm shift in transportation modeling, represented by fundamental conceptual changes in technology and practice in modeling methodology. One example of the paradigm shift is the development of the TRANSIMS microsimulation model, sponsored by the federal government. The TRANSIMS model is behaviorally based, focuses on the individual person or household trip making patterns, and reflects a dynamic time-of-day approach. The TRANSIMS models deal with issues such as lifestyle concepts, trip chaining, time allocation to various activities and travel, time space prisms (constraints faced by individuals due to work and household obligations) and interdependency among trips (mode choice of trips in the same trip chain). How to keep the Florida

# Model Task Force examines new directions for the future *continued*

models compatible with this new approach and how to integrate this new technology into the existing framework make up the key challenges in the future development of FSUTMS.

Dennis Hooker's introduction dealt with the changing transportation modeling needs of the MPOs and local governments. Dennis pointed out that the consistency between all the Florida models is essential for a greater understanding of these models. MPOs and local governments need technical support from the FDOT Central and District Offices in order to keep all models consistent with each other. Dennis asked the MTF to support the tri-chairs in drafting a resolution, outlining the importance of technical support in the transportation modeling process, for adoption by the MPOAC.

## Blue-ribbon panel recommended to help set new direction

Danny asked the attendees to organize into six groups and discuss three questions the task force needs to address.

After forty-five minutes of group discussions, each group presented their findings to the full MTF. The three questions and summaries of the group concerns are listed below.

**What are the most important emerging issues for modeling?**

The most important emerging issues for modeling are focused on improving the accuracy of the model and the incorporation of real-time data. Specific issues are listed as follows:

· Update trip generation model with trip rates from the ITE manual and expand the attraction model
· Restructure highway and transit network data in a GIS environment
· Update the LUCHECK program and add more land use tools
· Update model validation standards
· Add details to the networks to provide capabilities of analyzing intersection operations
· Expand the standard model process to incorporate trip chaining, multimodal (including para-transit) and time-of-day capabilities, and other micro simulations such as ITS.
· Transition input files from ASCII to database format
· Incorporate cost-benefit analysis tools
· Improve air quality analysis
· Analyze the impact of induced travel to find out what is the effect of increased capacities on trip generation
· Improve the model to better answer questions posed by decision makers
· Maintain and expand technical support to the users

**In what future directions should modeling be moving into in order to address these issues?**

With the advent of new technology in computers and transportation modeling, the Florida Standard Model process needs to stay updated in order to have the capabilities to address the emerging issues identified by the MTF members.
· A study needs to be conducted to identify what our current system is good for and where it fails. The study should evaluate TRANPLAN and other modeling packages to determine the best way to address time-of-day, trip chaining, and land use sensitivity issues.
· A uniform structure of all Florida models is essential in keeping Florida models communicating with each other. On the other hand, the standard structure should be flexible, easy to use, and should support an open architecture for local adaptations.
· A study needs to be conducted to investigate TRANSIMS capabilities and funding sources. The MTF needs to take a more proactive approach in integrating microscopic models, activity trip chain models, economic models, and pursue further integration with GIS allowing real time networks and socioeconomic data.

**What should be the role of the Florida Model Task Force in addressing these issues?**

The MTF provides policy directions and procedural guidelines for modeling activities in Florida. In light of these emerging issues, the MTF should take the lead in improving and updating the Florida Standard Model. The following are some of the areas the MTF should be actively involved in:

· Work with MTF members, Florida MPOs, and the users groups to obtain more recognition from the MPOs and politicians
· Maintain the standardized model system and explore new modeling tools and methods
· Guide the development of planning tools and analyses, continue providing software implementations, such as the statewide model and the generalized nested logit model
· Request funding for studies and research projects, coordinate and encourage data collection

# Model Task Force examines new directions for the future *continued*

· Request to maintain strong technical support from the FDOT Central Office and District Offices
· Improve the MTF web site to facilitate better communications among the members

The tri-chairs announced that they would assemble a blue-ribbon panel of nationwide experts to analyze all the ideas brought forward and aid in setting new direction for FSUTMS in response to these concerns.

For more information on the Model Task Force, please refer to http://www.dot.state.fl.us/planning/ or contact Huiwei Shen, FDOT Systems Planning office at (850) 414-1911.

# Trip Generation subcommittee reviews lifestyle models

The Florida Model Task Force (MTF) Trip Generation met in Orlando last March. The subcommittee chairman Imran Ghani welcomed everybody at the meeting and stated that the focus of the meeting was to discuss project approach of the life-style trip generation research project. The purpose of the project is to test the applicability of the life-style trip generation models on a statewide basis. The trip generation project is organized into several steps: literature review, the analysis of seasonal household data, survey of the MPOs, and the research approaches.

Currently, there are two lifestyle models in Florida, the Southeast Florida Life Style models (Broward, Palm Beach, Treasure Coast, Indian River, St. Lucie, and Martin Counties) and the Tampa Bay Life Style Model (Hillsborough, Pinellas, Hernando and Pasco Counties). The most significant difference between these two models is that in the Tampa Bay model, retiree households do not generate work trips. A comparison was made, using Lee County and Southeast Florida survey data, on the trip-making characteristics of the seasonal population and the retired population. Based on the available data it was determined that separate trip rates for seasonal residents and retirees are warranted. A seasonal resident was defined as a person who stays in Florida longer than 30 days but less than 6 months.

A survey was sent out to the MPOs in March in an effort to identify areas with significant retired and seasonal households. The surveys also tried to determine data availability, model preference, and if the MPOs wanted to participate in the study. Information was requested on travel survey activities and data development methods as well.

The research team will start collecting and preparing trip production data and perhaps attraction data for different lifestyle models based on responses from the survey. Then tests would be conducted to run the existing life-style models for each of the MPOs using the most current household travel characteristic surveys and/or census data. The results from the test model runs will be summarized and compared. Seasonal household trip rates will be developed. In addition, an analysis would be conducted on the spatial transferability of the trip rates for the different areas. The end product of the project is a guideline for MPOs to use when selecting a life-style trip generation model structure.

Imran Ghani stated that based on preliminary information gathered from the survey, it appears that Tallahassee, Gainesville, Orlando have the lowest percentage of retired population, while Tallahassee, Gainesville and Jacksonville have the lowest percentage of seasonal population. For these areas there might not be a real benefit in adopting a life-style model. Additional information regarding project progress is available on the web at http://www.fiu.edu/~zhaof/research/lifestyle/lifestyle.html

A suggestion was made to extend the project schedule to allow examination of results from travel surveys conducted in Volusia, Indian River, St. Lucie and Martin Counties. Survey data from these counties might enable the research to determine the transferability of seasonal resident trip rates. Imran indicated that he would discuss the possibility of a contract extension with the Central Office and the members of the trip generation subcommittee.

# Freight model to follow the traditional four-step process

At the last Freight subcommittee meeting, held in Orlando, the Freight Subcommittee chairman Frank Baron (Miami MPO) welcomed everybody and asked the members to give a status report on any ongoing freight planning activities in their area. Dennis Hooker with the Orlando MPO reported that they are embarking on a freight study. At the next MTF meeting in October, the survey information should be summarized and perhaps a presentation could be made. Danny Lamb reported that FDOT District 7 is currently conducting a freight study. This study is concentrating on the current needs and on modeling. At the end of May the truck model should be completed and integrated into the LRTP. Frank Baron reported that two truck studies are being conducted in Miami. The studies focus on the short-term needs of trucks. One of the studies focuses on the truck-parking problem in residential areas. More information should be available at the next MTF meeting.

As a culmination of these efforts, the FDOT Systems Planning Office is sponsoring a study to develop a Florida Intermodel Highway Freight Model. Huiwei Shen, the Task Manager, announced that the model application phase of the process was nearing completion. Currently two technical memoranda have been published. The first memorandum lists all existing freight models; the second is a complete inventory of all databases available. FDOT purchased the Reebie database for all public agencies. A copy of the memorandum or database can be obtained by contacting Huiwei Shen at (850) 414-4911. Huiwei went on to state that the Florida Intermodel Highway Freight Model follows the four-step modeling process. It is commodity-based and uses population and SIC employment in the trip generation step. The model has a gravity model for trip distribution.

All input data needed to create a model was readily available; spatial data on a county level, network data from the statewide model, shipment information from the Reebie Database and existing truck information through surveys and counts.

During the development of the model, it became apparent that freight commodities can follow the four-step model. For actual application the statewide model process and zonal structure will be used (approximately 2,500 zones.) For specification purposes the most common data is available at the county level, which will be used as districts. The commodity flows were reduced to the top five commodities to simplify the process. The highest commodity is warehousing and second is clay/concrete.

In the trip generation step, the production and attractions equations were developed based on the employment, household information and consumption tonnages. In the distribution step, friction factors needed to be developed. These friction factors are quite different than the standard ones due to the trip length involved with freight movements. In the mode choice model the air and water mode share is held constant through time, and a mode split is applied between truck and rail.

A discussion took place on the interface of the statewide model and the urban models. The statewide model would be able to forecast the external-to-external truck travel and the external-internal truck movements for the urban models. The question was asked about how seaports are handled in the freight model. It was pointed out that seaports were best handled as special generators. A motion was made to accept the proposed methodology and for Cambridge continue with the development of the Florida Intermodel Highway Freight Model study. The motion was seconded and the meeting was adjourned.

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Coeditor: Jeanette F. Berk
Advanced Planning, Inc.
52 Saint Augustine Blvd.
Saint Augustine, Florida 32080
(904) 823-8982, FAX (904) 823-8953
api@aug.com

Coeditor: Terrence Corkery, AICP
FDOT Systems Planning Office
605 Suwannee Street, Mail Station 19
Tallahassee, Florida 32399-0450
(850) 414-4903, FAX (850) 921-6361
terrence.corkery@dot.state.fl.us

# Ask Harry …….

*Byy Harry Gramling, FDOT Systems Planning Office*

*This column is dedicated to providing information on new features and releases of FSUTMS along with user questions and answers that may be of general interest.*

The Systems Planning Office (SPO) needs to know if anyone is still using the old UTPS toll model instead of the **Toll Facilities Model**. If you are, please let us know, otherwise all references to the old toll model will be removed from the script files and FTOWN's PROFILE.MAS file in the next release. Upon implementation you will be advised to delete 80 lines of data in your PROFILE.MAS file, i.e., &TOLLS01 – 20 and &SERVT01 – 20. Please ensure that you are running the Toll Facilities Model by checking your PROFILE.MAS file. For example, if your model contains toll roads, and a tilde character (~) is entered under the &TOLLFM input item, be sure to advise me that you are using the old UTPS toll process and need to retain it in future versions of FSUTMS.

The SPO is managing a contract with URS to implement the **Generalized Nested Logit process** to facilitate transit modeling. The District 1 Office in Bartow and Polk County MPO allowed us to use the Polk County Model as a "How-to" example to demonstrate the methodology recommended to convert highway-only, single-path, and multi-path transit models into a nested-logit model. In return, the Polk Model has undergone a thorough review by recognized experts in the field of transit modeling. Our thanks go to the Polk folks for their help in this effort.

During the development process, SPO staff discovered that the version of INET distributed with FSUTMS.V54 incorrectly permitted transit routes through centroid connectors in the network building phase. But, transit paths would not build through centroids, resulting in an inconsistency that has now been resolved. The revised INET program will reject any route coded through a centroid node. The updated version of INET.EXE will be delivered electronically to FSUTMS users at the close of this project.

A companion task includes the development of electronic documentation for the nested logit process.

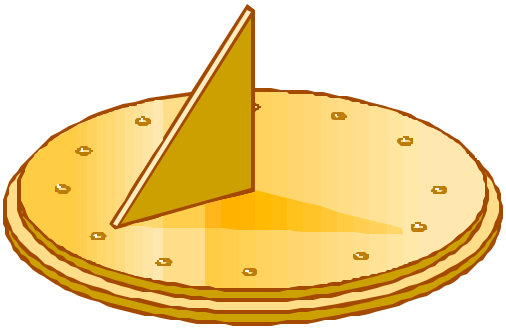
**Mobile6**, EPA's emission model, is undergoing extensive end-user review at this time and is scheduled for official release mid-year. The SPO will incorporate Mobile6 into FSUTMS and will provide sample input script files to use as templates to create locally specific scripts. The use of Mobile6 will not be mandatory until approximately two years after release. Initial indications are that Mobile6 will be beneficial to FDOT for those developing Conformity Determination Reports because, in general, Mobile6, when compared to Mobile5a, estimates higher emissions in the past and lower emissions in the future, i.e., good for us.

**RMSE.EXE** has been updated to correctly report volumes and ratios for models that exceed ten iterations of equilibrium. Thanks to Tallahassee PBS&J staff for identifying this problem. Email me if you need a copy.

Please Email your comments or questions to harry.gramling@dot.state.fl.us or call (850)414-4928, SUNCOM 994-4928.

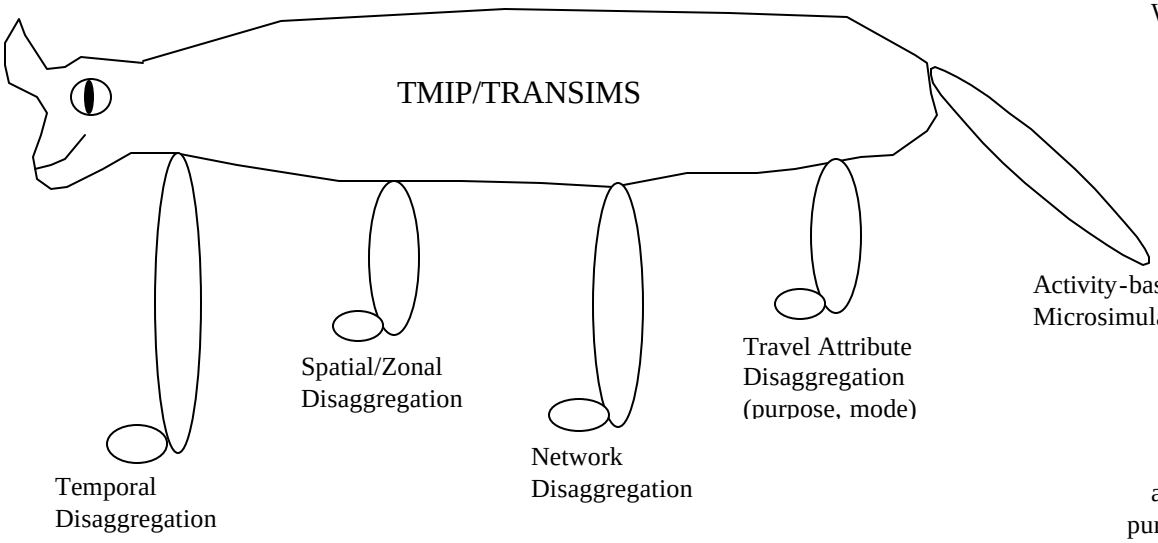
# Would You Like the Time of Day?

*By Ram M. Pendyala, University of South Florida Civil & Environmental Engineering*



Ever since the beginning of time, people have been interested in the notion of time. In the prehistoric ages, people tracked time by following the position of the sun. This concept eventually resulted in the invention of the sundial, a great way to tell time based on the shadow cast by the sun. But as the need to track time during the night and on rainy overcast days became increasingly felt by society, the sundial was relegated to serving as an exhibit in museums worldwide. Over time, inventions such as the analog clock, digital clock, and atomic clock have made it possible to tell the time of day with greater and greater degrees of accuracy and precision.

And then came TMIP, the Travel Model Improvement Program, from the USDOT. Under this program, the equivalent of an atomic transportation model, called TRANSIMS, is being developed. TRANSIMS is a rather strange four-legged animal with a tail. It is certainly an interesting creature that has caught the fancy of travel demand modelers worldwide.




Well, as USDOT gets ready to deliver TRANSIMS as a new pet to all MPOs and State DOTs in the country, planners and modelers around the world are getting ready for the big day. Many areas around the country have collected and stocked up on food, known as activity-based data, to feed the young one. Other areas have begun purchasing toys, also known as high-end computers, and arranging them in parallel so that TRANSIMS can run fast. And other areas are developing support systems for the legs and the tail so that TRANSIMS can run and iterate immediately upon arrival in its new home.

FDOT Systems Planning has and is funding several research projects aimed at making the transition for the new arrival easy and fun. One among them is the "Development of Time of Day Modeling Procedures for Implementation in Florida." The project team consists of the University of South Florida Civil Engineering Department (lead), Cambridge Systematics, Inc., and Gannett Fleming, Inc. This project provides a support system for the first leg of TRANSIMS, namely, temporal disaggregation.

The project calls for the development of time of day modeling procedures that can be implemented in FSUTMS while providing for the arrival of TRANSIMS. The project has involved a review of different time of day modeling methods and the evaluation of the relative advantages and disadvantages of each method. Time of day modeling is <u>not</u> new to Florida. Virtually all of the FSUTMS models provide for the factoring of daily volumes to obtain peak volumes, akin to a post-assignment time of day modeling procedure. However, recent transportation planning and policy issues, the availability of disaggregate data and greater computing power, and the impending arrival of TRANSIMS have called for the development of enhanced time of day modeling procedures that can provide trip tables by time of day (prior to the assignment step).

Currently, the project team is working with two data sets, the 1996 Tampa Bay household travel characteristics survey and the 2000 Southeast Florida Regional Travel Characteristics Study, to study of time of day distributions of different trip purposes and develop time of day factors for factoring trip tables. In addition to these two data sets, the project team will also utilize a data set from a smaller area to develop time of day factors that may be more appropriate in smaller metropolitan areas of the state.

Time of day factors are being developed based on time of day distributions for various trip purposes. For example, Figures 1 and 2 show the time of day distributions for ALL trips from the Tampa Bay and Southeast Florida data sets. These distributions are being used to establish the number of time periods and define their time-boundaries.

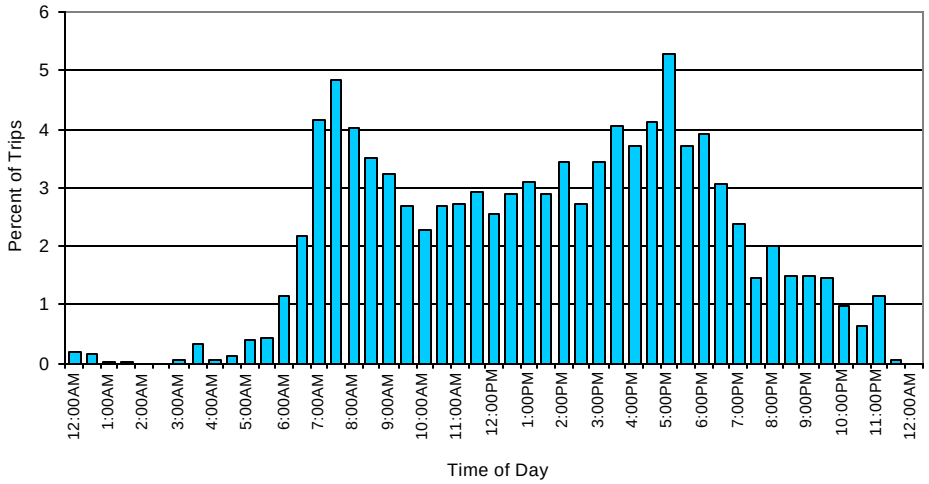



**Figure 1. Time of Day Distribution of All Trips (Tampa Bay)**

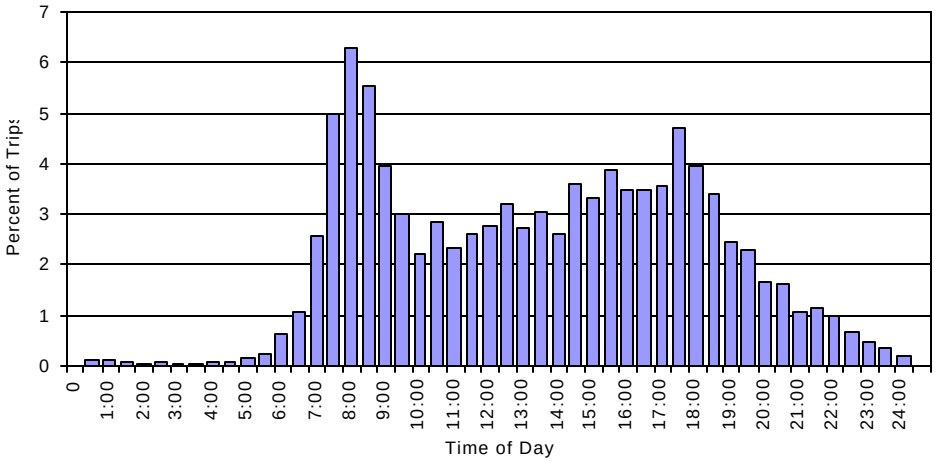



**Figure 2. Time of Day Distribution of All Trips (Southeast Florida)**

Once the time periods are defined, time of day distributions by trip purpose are being used to develop time of day factors that can be applied to daily trip tables to obtain trip tables by purpose and time of day.

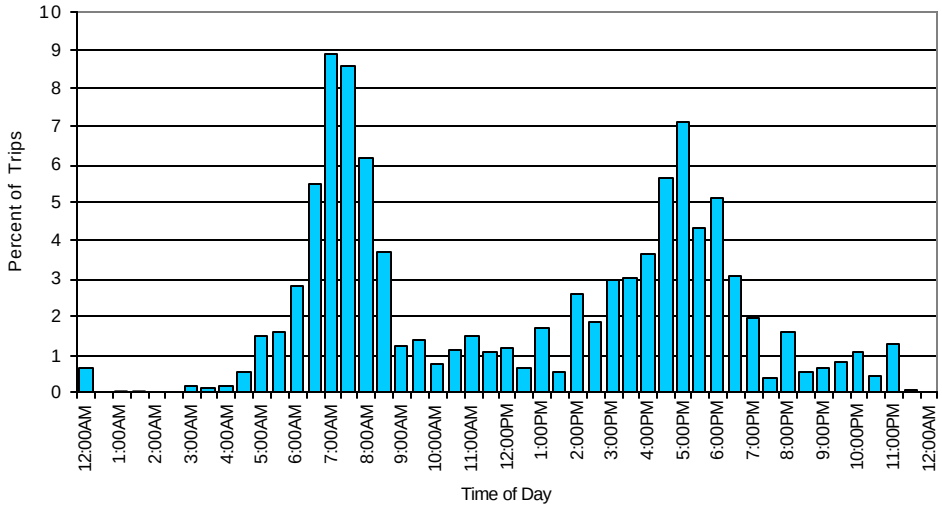



**Figure 3. Time of Day Distribution of Home-Based Work Trips (Tampa Bay)**

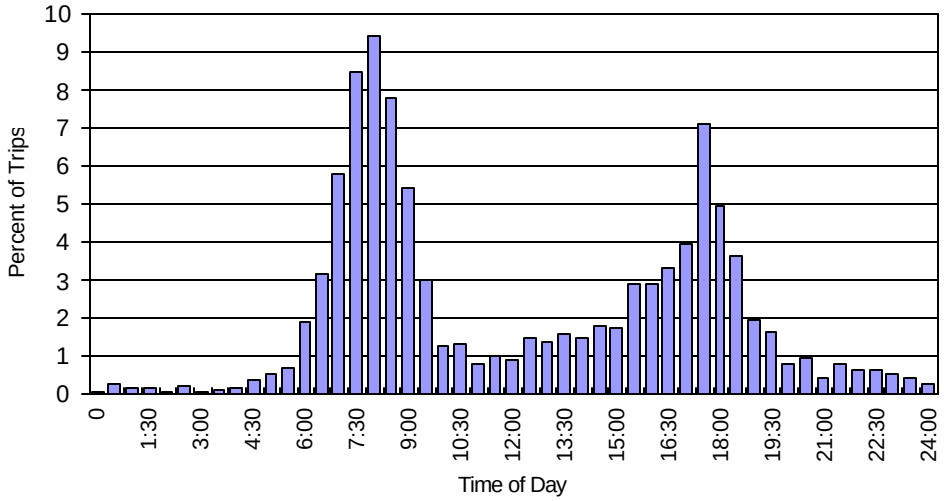



**Figure 4. Time of Day Distribution of Home-Based Work Trips (Southeast Florida)**

While there are similarities in time of day distributions between areas, there are some differences that should not be ignored. In order to provide areas the ability to develop customized time of day factors, the research project is developing time of day choice models in addition to sets of time of day factors. The time of day choice models can be used to determine the proportion of trips (of a certain trip purpose) that will be undertaken in each time period as a function of the socio-economic characteristics of the zones. These proportions serve as time of day factors similar to those derived from the time of day distributions shown in Figures 3 and 4. The multinomial logit models that are being developed for this purpose will provide the mechanism for areas to plug in their own socio-economic data (ZDATA variables) and estimate customized time of day factors for different zone pairs and trip purposes. Technical memoranda describing the time of day factors and the time of day choice models are currently under preparation and will be available soon.

Well, it looks like we'll be all set to take care of TRANSIMS when the big day arrives. In the interim, the time of day modeling procedures being developed in this project should provide planners and modelers a greater ability to address issues that are temporal in nature, for example, the demand for and supply of transit services.

TRANSIMS is just wagging its tail in glee!!

# FSUTMS Users' Group Year 2001 Meeting Dates

The **Central Florida Users' Group** has no meetings scheduled at this time. If you would like to obtain additional information about the group, please contact *Susan Sadighi (407) 482-7883*

The **Southwest Florida Users' Group** has no meetings scheduled at this time. If you would like to obtain additional information about the group, please contact *Jim Baxter (863) 519-2562*

This year's meeting dates for the **Northeast Florida Users' Group** are set on **August 22 and November 7**. All meetings are held at the FDOT-District 2 Jacksonville Urban Office-Training Facility. The meetings start at 2:00 PM and run until approximately 4:00 PM. The topics will be announced. If you would like to obtain additional information, please contact *Imran Ghani (904)360-5682*

This year's meeting dates and topics for the **Tampa Bay Users' Group** are as follows. The **August 30th** meeting will focus on the Land-Use and Transportation relationship. On **October 25th** the group will discus New Methodologies and Analysis Techniques. An Awards Banquet will be held in December (date to be announced).The brown-bag lunch meetings are all from 12:00 PM to 2:00 PM at the FDOT-District 7 office. For more information, please contact *Danny Lamb (813) 975-6437*

The **Southeast Florida Users' Group** meeting schedule for this year will be **September 4 and November 13**. The meetings all start at 2:00 PM and are held at the FDOT District 4 office. The topics will be announced. If you would like to obtain additional information, please contact *Shi-Chiang Li (954) 777-4655*

# 8th TRB Conference on Transportation Planning Applications held in Corpus Christi, Texas

*By Robert G. Schiffer, AICP, PBS&J/Tallahassee*

The 8th TRB Conference on Transportation Planning Applications was held in Corpus Christi, Texas April 22-26, 2001. As always, the conference was filled with relevant presentations on transportation planning and travel demand modeling studies from around the U.S. Also, as usual, a number of presentations evolved around current themes in planning and demand modeling.

The conference included four sessions on travel demand modeling. One of these had a dual focus on air quality conformity and freight. Another session was devoted solely to activity-based travel demand models, with two presentations each on model development efforts in Portland (Oregon) and San Francisco. The other two modeling sessions emphasized practical innovations in travel demand forecasting. In addition to the four travel demand modeling sessions, there were separate sessions on household travel surveys and data collection.

In addition to travel demand modeling, there were two sessions devoted to transportation/land use studies and tools, one of the most popular topics. In fact, the first land use session had a "standing room only" audience. Other sessions were devoted to environmental justice, subarea studies, statewide planning, public involvement, transit assessments, access management, value pricing strategies, and planning processes. The well-attended environmental justice session included presentations on analytical procedures to address this critical, emerging issue. A special evening session was held on Census 2000, including the CTPP, PUMS, data access, and geographic areas.

Once again, the State of Florida was well represented with presentations on Access Management for Interchange Areas and Value Pricing in Florida, the Southeast Florida Workplace Survey, the West Florida Trip Attraction Survey, the Urban Land-Use Allocation Model, a GIS Tool for Integrating Land Use and Transportation Planning in Florida, the Community-Based Planning Model, the Perdido Key Transportation Planning Study, a Decision Support Tool for Assessing Regional Transit Services in Florida, New Trip Attraction Equations for Southeast Florida, and Addressing Environmental Justice through Community Impact Assessment in Charlotte County.

A CD is being prepared with abstracts, papers, and presentations from the conference. For further information, please contact Julie Dunbar, Corpus Christi Conference Chair, at (309) 661-1767. The next conference will be held April 6-10, 2003 in Baton Rouge, Louisiana. Mark your calendars!

FDOT Systems Planning Office
605 Suwannee Street, MS 19
Tallahassee, Florida 32399-0450