

Fernandez retires from chair

After five years of untiring service, Wilson Fernandez announced that he was stepping down as tri-chair, effective at the close of the February 1999 meeting. Fernandez, one of the Model Task Force's charter tri-chairs, played a pivotal role in carrying the task force from its infancy to its current status as an effective, well-coordinated team. His farewell address included the nomination of Dennis Hooker as his replacement. Dennis was quickly and unanimously endorsed by the full Model Task Force. Wilson passed the gavel to Dennis with a few words of advice and great many words of encouragement. Thank you, Wilson, for all your hard work and for a job well done!

SPECIAL MODEL TASK FORCE ISSUE

This issue of the *Florida Transportation Modeling* newsletter is a special Model Task Force issue, listing subcommittee recommendations and other items discussed at the February MTF meeting.

Preparing FSUTMS for the 21st Century: FSUTMS 1999 & 2000

One of the highlights of the February 1999 Model Task Force Meeting in Kissimmee was a presentation of upcoming changes to Florida's standard model, FSUTMS, to meet the challenges of the 21st century. Bob McCullough of the FDOT Systems Planning Office gave a presentation outlining these changes. Recently, FSUTMS/TRANPLAN's software developer, the Urban Analysis Group (UAG), split into two firms: UAG and Fennessy & Associates. During the next several months, two distinct versions of FSUTMS will emerge: FSUTMS 99 and FSUTMS 2000. FSUTMS 99 will continue to provide the same level of support Florida modelers currently experience, with maintenance provided through Jim Fennessy. This version will generally remain unchanged to ensure compatibility with VIPER, a visualization platform linked to TRANPLAN.

The FSUTMS 2000 release (coming later in 1999) will provide the same standard model support for Florida, but with a greater ability to incorporate improvements requested by the Model Task Force with each new release. Jim Fennessy has been retained to continue working with the Department and the Model Task Force to make appropriate enhancements to the model which may include changes to FDOT source code.

FSUTMS 2000 will maintain a full compatibility with the Geographic Information Systems for Transportation Modeling (GIS-TM) program, FSUTMS's visualization partner software. GIS-TM will be expanded to include two levels: (1) a stand-alone version without the full powers of ArcView, and (2) a full-capability GIS-TM package requiring

In this issue	Page
Fernandez retires from chair	1
Preparing FSUTMS for the 21st Century	1
Florida Model Task Force adopts subcommittees' recommendations	2
MTF approves formation of Land Use Subcommittee	3
FDOT research projects underway	4
Awards - Words of thanks ...	4
MTF Presentations	5
MTF subcommittee presentations	7
FSUTMS 1999 Training Workshops	7
Update on FSUTMS users' group meetings	8
ArcView based percent walk routine for southeast Florida nested logit models	8
TMIP new publications summary	11
GIS subcommittee nears completion of GIS-TM version 2.0	12

Preparing FSUTMS for the 21st Century - FSUTMS 1999 & 2000

Continued

an ArcView license. The stand-alone version of GIS-TM will include its own GIS viewing software, enabling organizations that do not own ArcView to use the program. The Department is presently negotiating with ESRI to assist in providing ArcTransportation, a simplified “view-only” package that will work similar to ArcExplorer. ArcTrans will provide the user with an additional item in the FSUTMS toolbox for reviewing networks and other geographic features such as land use, local maps, and aerial photographs.

The FSUTMS 2000 structure will provide flexibility and growth and will be fully supported by GIS-TM for model visualization. The dynamic structure also means that approved changes will be distributed by FDOT as periodic updates to public-sector users. Consultants do not need a

TRANPLAN *source code* license but will be required to be licensed TRANPLAN users to receive updates from UAG. A TRANPLAN maintenance contract allows Fennessy to provide direct support to consultants. Fennessy’s support to the districts and MPOs will be provided through the department.

The Florida Model Task Force endorsed this process, which provides the robust transportation models necessary to carry us into the 21st century. To address day-to-day operational decisions required to carry out this process, the task force gave a vote of confidence to Bob McCullough, Manager of the FDOT Transportation Modeling Section, to maintain FSUTMS programs and structures, while consulting with the Tri-Chairs for future directions.

Florida Model Task Force adopts subcommittees’ recommendations

At the Florida Model Task Force (MTF) meeting, several subcommittees presented their findings to the full MTF. The MTF voted on the recommendations and all of them were passed unanimously. Following is a summary of the recommendations that were adopted.

Trip Generation Subcommittee recommendations

At the MTF meeting, the MTF GEN Subcommittee Chairman Dennis Hooker presented the recommendations from the Trip Generation Subcommittee. The MTF Trip Generation Subcommittee recognized the need to enhance the existing FSUTMS GEN module by designing an open systems approach and providing end users with more flexibility. Documentation guidelines and peer review provisions were also recommended to protect the integrity of Florida transportation models under the new trip GEN structure. A brief summary of these recommendations are as follows:

1. Developing a Dynamic Trip Generation Structure
 - Allow User-Specified Equations
 - Convert to Life-Style/Cycle Variables and Apply Life-Style/Cycle Equations
 - Key on Index Variables
 - Identify Urban and Rural Conditions
2. Transitioning into a Database File Format — “dbf”
 - Standardized Interface Potential
 - Land Use and Transportation Data Transferability
3. Standardized File and Variable Naming Conventions
 - “Schema” File Describing “Standard” Variables
 - Establish Naming Conventions of New Variables to Avoid Conflicts
4. Enhancing the External Module by Incorporating Trip Purpose
 - Calculate Both EE & EI Trips by Purpose
 - Capability to Use Market Shares and TIME or DISTANCE Variables in Weighting
 - Attraction Equations for EI Trips
5. Separating the Balancing Submodule for Trip Productions and Attractions
 - Insert Trip Balancing as a Separate Module before



Florida Model Task Force adopts subcommittees' recommendations *continued*

DISTRIB

Subarea Balancing Performed by Specifying Zonal Ranges or Sectors for Each Area

6. Restructure the Standard FSUTMS Process

HNET

HPATH

GEN (Replace with a New Module)

EXT (Modified Module)

TRIP BALANCING (New Module)

DISTRIB

MODE

HASSIGN

HEVAL

7. Documentation, Software Documentation

Reference Manual & Users' Guide

GEN Documentation: Report Guideline

8. Establishing a Tiered Peer Review Process

Changes to the Florida Standard Model GEN

Module — Panel of National Experts

Modifications to Default GEN — Review

Committee Appointed by the MTF

A detailed description of these recommendations can be found on the FDOT web site: <http://www.dot.state.fl.us/planning>

Transit Subcommittee recommendations

MTF Transit Subcommittee Chairman Charles White presented the following Transit Subcommittee recommendations:

1. The GIS Subcommittee should enhance the GIS-TM software to include all transit inputs/outputs (such as auto connectors, walk access, barriers, etc.).



2. FDOT Central Office should further investigate the Modified Network Ratio Method to estimate transit walk access for base and future year conditions.

3. FDOT Central Office should further refine the integrated transit demand/supply (ITSUP) model to include an interface with FSUTMS.

Freight Subcommittee recommendations

MTF Freight Subcommittee Chairman Frank Baron presented the following Freight subcommittee recommendations:

1. The MTF supports ongoing efforts in freight modeling, especially the FDOT Systems Planning Office Task Work Order M-15, FIHS Goods Movement Support, addressing urban areas versus statewide concerns.
2. FDOT Central Office should pursue a separate task to investigate urban area freight, goods, and services trip distribution.
3. The MTF will explore the linkage between statewide and urban area freight modeling.
4. FDOT Central Office should develop guidance regarding the collection of vehicle classification data to satisfy freight modeling requirements.

MTF approves formation of Land Use Subcommittee

The Urban Land Use Allocation Model (ULAM), presented by Mike Brown, has been employed in the FDOT District 4 and 7 areas. The model has a Windows interface with ArcView serving as its backbone. This product can be used for testing land use policies as well as allocating land uses. The market index program calculates

accessibility to major activity centers including airports and seaports. It also allows for the creation of multiple land use scenarios by using the standard FSUTMS ZDATA as well as life-style ZDATA files, and highway skim files. The program utilizes a master setup file similar to the PROFILE.MAS that contains control totals. The software

allocates land uses to zones that have available land based on the market index procedure using the network travel times. The program will be enhanced so that it can be used at the true subarea level in the near future. ULAM will also read in productions and attractions so that the user can see the effects of land use changes. Error

MTF approves formation of Land Use Subcommittee *Continued*

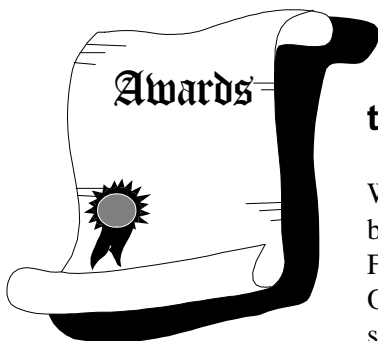
checking has also been added to make sure the output is logical.

The Model Task Force requested that FDOT Central Office make the ULAM software available for the FDOT districts, MPOs, and other local governments for a one-year evaluation period. In addition, a **Land Use Subcommittee was formed** to oversee the ULAM model development and to provide guidance on data collection efforts. The MTF encouraged the Land Use Subcommittee to involve both land use and transportation planners. ULAM will function as an interim

tool. The final product, when approved, will be incorporated into the FSUTMS “toolbox.”

Wilson Fernandez nominated Danny Lamb as the coordinating tri-chair for the land use subcommittee. The MTF approved the nomination unanimously.

If you are interested in participating in the MTF Land Use Subcommittee please contact Huiwei Shen at the FDOT Central Office at (850)488-4642 or Suncom 278-4642



Words of thanks...

Warren Merrell (shown below, right), manager of the FDOT Systems Planning Office in Tallahassee, speaking before the Model Task Force, recognized the



FDOT research projects underway

The MTF was briefed by Bob McCullough on several research projects initiated during the last MTF meeting:

Department Research Projects – Seasonal Resident Modeling, Interim Time-Of-Day Modeling (generic peak and off-peak factors applied to trip generation), and Life-Style Trip Generation Variables

Planning Research Projects – Highway Freight Model Including Intermodal Connectors for Florida, Statewide Model: Incorporate state-of-the-art Integrated Modeling Methodologies into Florida’s Statewide Model, long-term Time-Of-Day Modeling Approach, Mode Choice (Nested Logit Model) Universal Calibration Factors, and Walk and Auto Access to Transit.

The research projects will be jointly managed by the FDOT Central and District Offices, under the guidance of the appropriate MTF Subcommittees.



outstanding efforts of the task force’s leadership. In thanks for their voluntary contributions of time, Mr. Merrell presented a plaque of appreciation to MTF Tri-Chairs Wilson Fernandez, Danny Lamb, and Joey Gordon; and subcommittee chairmen Frank Baron, Charles White, Dennis Hooker, and Glen Ahlert. A letter to each recipient’s supervisor was also sent from State Transportation Planner Ysela Llort, thanking them for their efforts with the MTF. (News of Wilson Fernandez’s retirement began the afternoon session; thus, his plaque for outstanding service was awarded “posthumously.”)

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.

Co-Editor: Jeanette F. Berk
Advanced Planning, Inc.
22820 NE 69th Avenue
Melrose, Florida 32666
(352) 475-2249, FAX (352) 475-2628
api@gnv.fdot.net

Co-Editor: Terrence Corkery, AICP
FDOT Systems Planning Office
605 Suwannee Street, Mail Station 19
Tallahassee, Florida 32399-0450
(850)488-9746, FAX (850) 921-6361
terrence.corkery@dot.state.fl.us

MTF Presentation:**Southeast Florida Regional Travel Characteristics Study***FDOT District 4 & 6, Broward, Miami-Dade, & Palm Beach MPOs*

The Southeast Florida Regional Travel Characteristics Study was presented to the Model Task Force by Ken Kaltenbach of Carr Smith Corradino. This study consists of a household travel survey, on-board transit survey, visitor travel survey, truck survey and a workplace survey. The overall sample sizes for the study will be as follows:

Survey Type	Sample Size
Household Survey	5,060
On-Board Transit Survey	9,561
Visitors Survey	640
Truck Survey	225 Freight Companies
Work Place Survey	Seven Activity centers (3 Dade, 2 Broward, and 2 Palm Beach)

The household survey was designed to collect data for calibrating travel forecasting models for several modules:

- Lifestyle trip productions;
- Trip distribution;
- Mode choice and auto occupancy;
- Time-of-day and peak spreading; and,
- Travel path selection.

The survey data may also be used to enhance existing models and formulate new travel forecasting methodologies.

The purpose of the transit on-board survey is to provide travel information for transit riders to be used in developing and calibrating the Southeast Florida Regional Planning Model. The visitor travel survey was designed to be conducted during the winter peak season. The truck survey will collect both freight and delivery truck movement data. All the freight companies in the region will be contacted and requested to participate in the survey. Responses will be sought from at least 225 freight companies and 225 delivery truck operators for collecting truck movement data. The samples will be drawn proportionally from each county based on the number of freight/truck operators. Information will be collected on the type of freight and goods, and the origins and destinations of truck trips. The workplace survey will gather information on the type of business at each workplace and characteristics of the work trip for each employee. Characteristics will include travel times, mode of travel, home location, and stops made between work and home.

(More detailed information on the Southeast Travel Characteristics Survey can be obtained from the Corradino Web site: <http://www.corradino.com>)

MTF Presentation:**Census 2000***USDOT - Bureau of Transportation Statistics*

Wende O'Neill presented and discussed the American Communities Survey, a replacement of the Census long form that is being tested in six counties around the country, including Broward County. The Bureau of Transportation Statistics plans to release journey-to-work data on an annual basis. Looking longer term, Ms. O'Neill mentioned that the 2010 census will strictly be a head count.

Ms. O'Neill demonstrated an ArcView program that will be sent to all MPOs to help them to submit TAZ boundaries. When asked what would happen if an MPO did not agree with a polygon that the software identified as a TAZ's boundaries, Wende explained that MPOs are encouraged to review TAZs and submit changes to the Bureau. In fact, one of the purposes for Wende's presentation was to demonstrate the tools for reviewing TAZs and submit changes.

The Model Task Force extended their appreciation to BTS and especially to Wende for making the long trip to bring us this important information.

MTF Presentation:**Generalized Nested Logit Model***FDOT Systems Planning Office*

The generalized nested logit model structure for FSUTMS was presented by Jim Fennessy of Fennessy & Associates. This function will be incorporated into TRANPLAN and supported by UAG. It was stated that the Florida nested logit models are based on the Minneapolis/St. Paul nested logit model. Currently, Miami, Orlando, Jacksonville and the Tampa Bay area have nested logit models. All of these models are the same on the automobile side with drive-alone and shared ride and under the shared ride there are 2 and 3+ options. On the transit side, there exist many more options depending on the area. The focus of this contract is to take out the "black box" effect of having several different people modifying the programs internally. The focus of the generalized nested logit model approach is to have a program that is flexible enough to not require any software modifications. It was pointed out that with a generalized program instead of a unique program for each area, there is need for only one set of documentation. Some of the features of the software were discussed to demonstrate its flexibility.

Nested Logit Model *Continued*

The software's nesting structure is extremely flexible. The program is binomial and can handle four tree levels. Standard ZDATA inputs can be used or new variables can be entered. This is possible because the software allows the user to define the utility function.

It was stressed that this setup makes sure that calculations previously done in the "black box" are now part of the data

preparation step. It was also pointed out that the model will only run one purpose at a time. So if you have multiple purposes you must run the program multiple times.

Currently, conversion is in process for the Jacksonville and some turnpike models to the generalized nested logit format to demonstrate the flexibility and power of the software.

MTF Presentation:

Short Term Transit Planning Model

FDOT Public Transit Office

Ike Ubaka, FDOT Public Transit Office, introduced Steven Polzin of the Center for Urban Transportation Research to give a presentation on the Short Term Transit Planning Model. Steven began his presentation by stating the goals of the study. They are:

1. Update the Transit Development Planning Manual for the State of Florida,
2. Specifically provide guidance regarding demand forecasting,
 - Understand current needs and practices in Florida,
 - Search the industry for "Best Practice" ideas,
 - Author guidance for FDOT and industry review, and
 - Finalize guidance for inclusion in TDP manual.

The context of the study concerns the reliability of demand forecasts and the recognition that ridership drives capital needs and operating costs/subsidy as well and the desire to take advantage of new tools and methods. Other focal points of the study include the recognition that policy-maker and public support is contingent on progress in meeting travel demands, the expectation of transit's increasing role in providing urban mobility, that 10% to 40% of operating revenues come from the farebox and, that Florida's five-year ridership changes ranged from +57% to -27%.

The changing markets and the ridership responses to service changes were discussed. The desirable characteristics of ridership forecast should include the use of best available data and knowledge of relationships between changes in service and market conditions and changes in ridership. This will ensure that forecasts can be replicated/validated along with the use of methods that are sensitive to types of service changes and can work within constraints of budget, time, data and experience.

The observations that were documented from the field included:

1. Good service planning and demand forecasting can be accomplished if the time and money to do so are available.
2. Most properties extrapolate current knowledge on service use to predict future demand.
3. More knowledge on how the public reacts to expanded hours, increased frequency and different amenities would be useful.
4. Substantial progress is being made in using improved computing power and software to increase the knowledge base from which we develop forecasts.
5. The diversity of contexts does not provide a compelling case for a standardization of methods.

Based on the observations, the development of an appropriate process should include a sensitivity to various sizes of urban areas, offer flexibility, be responsive to changes in market conditions and to changes in service supply and characteristics, and have an appropriate level of detail for a 10 year TDP.

The presentation was concluded by outlining a three-step approach for forecasting ridership as an integrated process to the TDP process. Step 1 should include information gathering and the subsequent estimation of ridership potential and service demand. Step 2 should include the estimate of ridership response to service changes, and step 3 should be a peer review of the methodologies used.



MTF subcommittee presentations

In order to obtain meeting minutes or more information on the following presentations, please contact Huiwei Shen at the FDOT Systems Planning Office at (850) 488-4642 or Suncom 278-4642.

Transit Subcommittee

The MTF Transit Subcommittee heard three presentations. Jon Ausman from the FDOT Central Office Public Transit Office (PTO) presented the Transit Level of Service Software, which measures the availability of transit service based on frequency of service. Fang Zhao (below) from



Florida International University presented a Modified Network Ratio Method to Estimate Transit Access, which recognizes that population and employment are located along roads rather than evenly distributed in a TAZ. Ram Pendyala from the University of South Florida presented the Integrated Transit Demand/Supply (ITSUP) model under a contract with the PTO. ITSUP captures the interactive relationship

between transit demand and supply.

Freight Subcommittee

Three presentations were given to the Freight Subcommittee. The first was Freight Stakeholders Task Force and Various Freight Initiatives at the Statewide Level by Warren Merrell, manager of FDOT Central Systems Planning Office. One of the items Warren discussed was the development of a Florida Intrastate Transportation System (FITS) which will consist of the Florida Intrastate Highway System (FIHS) plus all major water and air ports, and the connectors to those ports. Ram Pendyala from the University of South Florida presented his Assessment of Freight Modeling Needs in Florida. Ram explained the importance of socioeconomic variables and highway networks in freight and goods movement. The FIHS Modal Plan - Freight Movement was presented by Terry Shaw, Jamie Cochran and Dan Beaty, working under a task work order with the FDOT Systems Planning Office. Members were briefed on available data and the origin & destination surveys that were completed at the FIHS stations.

GIS Subcommittee

Two presentations were given to the GIS subcommittee. The first presentation was on the Florida Geographic Data Library given by Paul Zwick. This presentation showed the vast amount of data available for the state of Florida. The second presentation was by Ernie Ott of ESRI. Ernie presented Various Uses of GIS in Transportation Modeling that ESRI has been or is currently involved in.

FSUTMS 1999 Training Workshops

The FDOT Systems Planning Office announces the following FSUTMS training workshops:

The **Advanced FSUTMS Travel Demand Modeling Workshop** is designed for experienced transportation modelers who are interested in learning specialized assignment procedures and other advanced modeling techniques. This workshop provides instruction in special assignment techniques such as Select Link/Complex Weave Analysis and Selected Zone Analysis. **In-depth discussions on site impact analysis procedures are also included in this workshop.**

The workshop will be held at 1:00 pm May 17 until 12:00 noon May 20, 1999, at Treasure Island Inn (\$68 per night) located at 2025 South Atlantic Avenue, Daytona Beach Shores, Florida 32118. Hotel telephone number is (904) 255-8371. Registration deadline: May 14, 1999.

The **Freight Modeling/Planning Workshop** provides instruction and hands-on computer exercises on FSUTMS freight modeling techniques. A guest modeler with extensive freight modeling experience, anticipated to be an FHWA

representative, is invited to assist in assembling and presenting this workshop.

The workshop will be held at 1:00 pm June 7 until 12:00 noon June 9, 1999, at the Ramada Plaza Hotel Gateway (\$74 per night) located at 7470 Highway 192 West, Kissimmee, Florida 34747. Hotel telephone number is (407) 396-4400. Registration deadline: June 4, 1999.

An **FSUTMS Special Update Workshop** This workshop is designed to present new modeling technology, new features added to FSUTMS, and new policy requirements for transportation modeling. A detailed demonstration of the Visual Planning Environment (VIPER), the replacement package of HNIS, is included. Discussions on Version 5.3 FSUTMS enhancements and GIS-TM (GIS for Transportation Modeling) are also presented.

The workshop will be held at 1:00 pm June 21 until 4:00 noon June 22, 1999, at the Tampa Hilton, 2225 Lois Avenue, Tampa. Hotel telephone number is (813) 877-6688.

Questions? Please call Huiwei Shen at (850) 488-4642.

Update on FSUTMS Users' Group meetings

CENTRAL FLORIDA FSUTMS USERS GROUP

A Central Florida FSUTMS Users Group held a meeting on **April 22, 1999**. All meetings are held from 1:30-3:30 PM at the FDOT District 5 Office at 5151 Andanson Street in Orlando. The April meeting focused on the PLEMO process, GIS applications for growth forecasting and the Long Range Transportation Plan Status for Volusia MPO. For more information call Ms. Susan Sadighi at (407)623-1085 or Suncom: 334-1085.

TAMPA BAY FSUTMS USERS GROUP

A Tampa Bay FSUTMS Users Group meeting will be held on **May 12, 1999** at 11:30 AM at the District 7 Office at 11201 N McKinley Drive, Tampa. The meeting will focus on New Planning Software and Methodologies. For more information call Chairman, Christopher Hatton at (813) 620-1460.

SOUTHEAST FSUTMS USERS GROUP

The Southeast FSUTMS Users Group held a meeting on **April 8, 1999** at 1:30 PM at the District 4 Office at 3400 West Commercial Blvd in Fort Lauderdale. The topic of the meeting was Miscellaneous SERPM IV, Broward, and Palm Beach model updates. For more information call Shi-Chang Li at (954)777-4601 or Suncom: 436-4601.

SOUTHWEST FSUTMS USERS GROUP

A Southwest FSUTMS Users meeting was held on **April 14, 1999** at 10:00AM in Charlotte County Airport MPO Meeting room at 28000 Airport Road in Punta Gorda. The meeting focused on the results of the Model Task Force Meeting held in February. For more information call Jim Baxter at (941) 519-2562 or Suncom:557-2562.

Year 1999 Calender for the Tampa Bay FSUTMS Users Group

Date: August 25, 1999
Topic: Corridor Studies in the Tampa Bay Area

Date: October 13, 1999
Topic: Land Use and Transportation

Date: To be Announced
Topic: 1999 Awards Banquet

Year 1999 Calender for the Southeast FSUTMS Users Group

Date: May 27, 1999
Topic: Miami-Dade Intergrated Transportation Management System (ITMS)

Date: September 16, 1999
Topic: To be Announced

Date: November 18, 1999
Topic: Findings of S.E. Travel Characteristics Study

ArcView-Based Percent Walk Routine for Southeast Florida Nested Logit Models

Kenneth D. Kaltenbach, P.E. - The Corradino Group

The nested logit models used in Southeast Florida require for each TAZ an estimate of the percentage of trips that can walk to transit. Two estimates are needed: a "long walk," generally estimated as one mile, and a "short walk," generally estimated as 1/4 mile. Additionally, the nested logit model requires estimates of long and short walk percentages for productions and attractions. The traditional method has been to estimate the production TAZ walk percentage as the percentage of a TAZ's area inside a walk buffer drawn about the transit routes. The usual convention has been to assume that attractions are more concentrated near transit service, and thus, the attraction walk percentage is twice the production percentage, capped at 100%. This paper and method do not

address the correctness of this method. There are a host of assumptions here, and there may be better ways of estimating walk percentage, such as the "modified network ratio" method.

Nevertheless, practitioners using the nested logit model need a manageable method for generating the PCWALK input file. The Corradino Group developed a PC-ARCINFO procedure for generating the PCWALK file, and the procedure is well documented in reports prepared for the Florida Department of Transportation. There were a few problems with the PC-ARCINFO procedure, however. Some agencies and consultants did not have access to ARCINFO, and some had access only to the workstation version. The Corradino Group has not tested the

PCWALK procedure with workstation ARCINFO. Additionally, it was Corradino's experience that often the PC-ARCINFO buffer and overlay procedures would fail. The remedy was to "tweak" the ARCINFO tolerances. While this usually worked, the procedure was not clean and straightforward.

To create a better and more reliable procedure, Corradino developed a procedure based on ArcView 3.0a. This paper documents the use of this procedure. It requires two Fortran programs, a compiled dBASE program, and the "kwalk.apr" ArcView project. The underlying method is identical to that described in the SERPM and Palm Beach reports.

ArcView-Based Percent Walk Routine for Southeast Florida Nested Logit Models *Continued*

SUMMARY

The Southeast Florida Regional Planning Model (SERPM) uses a nested logit model to subdivide the person trip tables among travel modes. One of the inputs of this model is a file specifying for each traffic analysis zone (TAZ):

- . TAZ number
- . Short walk percentage for peak period productions
- . Short walk percentage for peak period attractions
- . Long walk percentage for peak period productions
- . Long walk percentage for peak period attractions
- . Short walk percentage for midday productions
- . Short walk percentage for midday attractions
- . Long walk percentage for midday productions
- . Long walk percentage for midday attractions

The idea behind the need for this file is that the mode choice logit equation should be applied only when there is a choice that can be estimated by the logit curve. If, for a given trip, either the origin or destination of a walk access trip is not within walking distance of transit service, then the trip cannot be a walk-to-transit trip and so the logit equation does not apply. In such cases the choice of modes is determined by the access conditions alone. The authors of Florida's nested logit model have defined the long walk distance to be one mile, and the short walk distance to be one-third of a mile. These distances apply to the production end (home) of trips. For the attraction end, the percentage of activity within the walk area is assumed to be twice that of the production end on the assertion that trip attraction activities (like jobs and shopping) are more clustered, and that bus stops serve these areas directly.

Within the usual concept of transportation modeling input data, the idea of "percent walk" creates a dilemma, because it creates a set of zonal data that is dependent on the configuration of the transit network. This means that the percent walk zonal data should change if significant changes are made to the coverage of the transit network. This situation occurred in SERPM4 when the 1990 Palm Beach and Broward transit networks were used. The percent walk files already existed for Dade County, which was already using the nested logit model, but did not exist for Broward and Palm Beach Counties. Thus, the consultant was faced with the challenge of developing these files.

METHOD

GIS spatial analysis techniques were employed to estimate the percentage walk file for SERPM4. The GIS software used was ArcView 3.0a.

This section outlines the steps that were used to develop the percent walk file. While this section provides a complete explanation of the process, it assumes the reader is familiar with ArcView, and GIS spatial analysis concepts.

DIGITIZED TAZ MAPS

TAZ maps in the same coordinate system as the networks are required to run the procedure.

All coordinates referenced in this paper are state plane coordinates, and the coordinate unit is feet. The TAZ maps can be either an ArcView shape file or ArcInfo coverage. The TAZs must have fields called "area" with the polygon area, and "name" with the TAZ number.

TRANSIT MAPS

Station nodes and transit lines must be imported into ArcView as shape files. The consultant wrote a Fortran

program, called NET2AV that reads the model files, and writes files that could be read by ArcView to create shape files. The required input files are:

AM and Midday HUDNET.TEM
transit network files
Highway links
Highway coordinates (XY.YYA)
Transit coordinates not in the
highwayfile
(NEWXY.YYA)
Station data (STATDATA.YYA)
Control file read from the
command line

Input file names are specified in the control file read from the command line, and the transit modes and highway facility types that have transit walk access are specified in this file. A listing of the input file is:

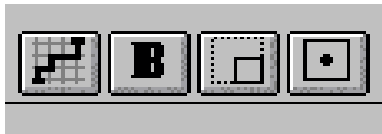
```
&files
fhud='hdnetam.sav',flink='links.90a',
      fxy='xy.90a',
      fout='tnetam.lin',ferr='tnet.err'
fsi='statdata.90a',fso='stat.pts' /
&param tmode=0,0,0,1,1,1,
      tft= 0,1,1,1,1,1,1 /
```

The input is a Fortran namelist file with data as follows:

```
fhud      = the HUDNET.TEM
           file
flink     = the FSUTMS highway
           links file
fxy       = transit coordinates not
           in the highway net
fsi       = the station data file
fout      = the transit network
           output file in a format
           that can be read by
           ArcInfo
fso       = the station points used
           in the ArcInfo station
           coverage
ferr      = an error report file
tmode    = valid walk access
           modes, 0=no access (can't walk to
           rail lines, only to
           stations),
           1=access permitted
tft       = valid access
```

ArcView-Based Percent Walk Routine for Southeast Florida Nested Logit Models *Continued*

The files produced from NET2AV can be read by ArcView using the "Get Transit Net" button, which is the left most button in the group of four in the "kwalk.apr."



Thus, the three coverages (stations, AM lines, and midday lines) are brought into ArcView as shape files.

CALCULATION OF PERCENTAGE WALK BY TAZ

To calculate percentage walk, the following must be accomplished:

- Construct station buffers
- Construct buffers around the routes
- Merge station and route buffers
- Clip (overlay) the TAZs with the walk buffers to make PCWALK buffers
- Update the "area" field in the PCWALK buffers
- Summarize the data

This routine must be repeated for AM short walk, AM long walk, MD short walk, MD long walk.

To construct the station buffers, select all station nodes in station shape file, and execute the buffer routine (the new button with the "B"). You will be prompted for the distance in feet. This should be 1760 for the short walk and 5280 for the long walk. This will create the station buffer graphic. Then, make the appropriate transit lines shape file active, select all lines and again execute the buffer routine. This will create the walk buffer graphic. Then under the "edit" menu, select all graphics and union graphics. This will create a single graphic with the walk area buffer (AM or MD, long or short, depending on how you built it). Next, make the TAZ shape file active, and

select all TAZs. Then, push the "clip" button (second from the right). You will be prompted for a file name for the output shape file. You must use these names because later programs will expect them: AMSHORT, AMLONG, MDSHORT, and MDLONG. Note this must be done for each of the four buffers. Finally, for each buffer, update the area and perimeter by pushing the right button. Don't skip this step because if you do ArcView will make every TAZ 100% walk.

After the buffer shape files are built and updated, exit ArcView. Then run xacc.exe. You will be prompted for the TAZ coverage name (you probably called it TAZ) and the walk buffer names (AMSHORT, AMLONG, MDSHORT, and MDLONG). This program must be run four times. Then run mkwk.exe. The syntax is:

Mkwk hunfile zones

Where

Hunfile is a file with the TAZs that are 100% covered, even if the buffer doesn't cover the TAZ (like coastal zones that include water). The file contains one TAZ number per line and nothing else.

Zones is the number of TAZs
—2987 for SERPM4.

The output of mkwk.exe is called PCWALK.OUT. The user would rename this file to, say for example, PCWALK.90A, for use in the FSUTMS model stream.

SUMMARY

The steps for developing the PCWALK file are as follows:

- NET2AV - to build the line and station ASCII files suitable for ArcView input.
- Start ArcView and open project kwalk.apr.

- Import transit lines and stations.
- Buffer stations for AM long walk.
- Buffer lines for AM long walk.
- Union station and line buffers.
- Clip TAZs with the graphic buffer to produce a PCWALK shape file.
- Update the area and perimeter.
- Repeat for AM short, MD long and MD short.
- Leave ArcView.
- Run xacc.exe four times.
- Run mkwk.exe.
- Rename PCWALK.OUT as appropriate.

Use of these procedures requires ArcView, net2av.exe, xacc.exe, mkwk.exe, kwalk.apr and the input data files.



TMIP new publication summaries

The following new reports are available from the Travel Model Improvement Program (TMIP) a multi-year effort to improve travel modeling. TMIP is funded by the Department of Transportation and the Environmental Protection Agency.

Time-of-Day Modeling Procedures: State-of-the-Art, State-of-the Practice, DOT-T-99-01

Because of the growing interest in being able to estimate travel demand during various times of the day, this report identifies commonly used methods, the most innovative methods, and emerging methods to estimate time of day travel demands.

Time of day factors are determined in several ways. They can be determined through household/travel survey data, from on-board transit and intercept surveys, or twenty-four hour machine, transit, and truck counts. Time of day factors can also be adjusted during the model calibration process after being borrowed from another area. Then, the time of day assignment can take place in four places in the modeling process. It can take place after trip assignment, between mode choice and trip assignment, between trip distribution and mode choice, or between trip generation and trip distribution.

Three main innovative methods being used by MPOs and state agencies are discussed in this report. These three methods are link-based peak spreading, trip-based peak spreading, and system-wide peak spreading. These methods work in the current "four step" modeling process. The pros, cons, applicability, and data required are also discussed.

Emerging approaches include a time choice component that can be applied to the "four step" modeling process. Although there are no current models that implement these techniques, several MPOs have considered their use.

Land Use Compendium, DOT-T-99-03

Because land use issues have become so prominent in transportation modeling, the Federal Highway and Federal Transit Administrations have assembled three main papers on land use. It is being distributed as a part of the Travel Model Improvement Program (TMIP). The three documents are "A Technical Review of Urban Land Use - Transportation Models as Tools for Evaluating Vehicle Travel Reduction Strategies," "Review of Land Use Model and Recommended Model for DVRPC," and "Land Use and Travel Model Survey Data."

The first paper provides a technical review of land use models and gives a state-of-the-practice review of the methods used by various MPOs. The second document provides a lot of information that can be utilized by agencies that are considering developing analytical land use forecasting methodologies. The last paper gives the reader a clear view of where the science of land use data collection stands through the use of a survey given to thirty-five MPOs.

Guidelines for Network Representation of Transit Access, State-of-the-Practice Summary, DOT-T-99-05

More sophisticated travel demand forecasting models require more complex and detailed strategies for

network representation of transit access. This report focuses on techniques to address three main issues. These issues are 1)The method of getting to the transit is not uniform in any certain zone, 2)Patrons of the transit system do not necessarily park at the park and ride location closest to them, and 3)For each mode of transit, the access can vary. This report describes procedures that have been useful in transit planning and travel demand forecasting applications. Methods that have been successfully tested are described, even though every method is not applicable for every situation.

The Dallas Case Study, DOT-T-99-04

The report summarizes the TRANSIMS microsimulation procedure that was applied in Dallas, Texas. The purpose of this case study, itself a part of the whole TRANSIMS transportation simulation system, was to simulate individual vehicles in a simulated transportation network and then track their movements. The case study examined how two different improvements would affect traffic congestion in Dallas. The two procedures were 1)Adding a lane in each direction on the freeways and 2)changing arterial street operations, intersections and capacity.

One free copy of these reports can be obtained by writing USDOT, Subsequent Distribution Center, Ardmore East Business Center, 3341 Q 75th Ave., Landover, MD 20785. Please include the complete report title, the report number, and your complete mailing address. Information on additional TMIP reports or the TMIP Program is available from Kim Fisher at (202)366-4054 or at e-mail address kim.fisher@fhwa.dot.gov.

GIS subcommittee nears completion of GIS-TM version 2.0

MTF GIS Subcommittee Chairman Glen Ahlert briefed the MTF on the status of the GIS subcommittee and the GIS-TM software. The subcommittee is almost ready to release the beta version of GIS-TM version 2.0 which

includes enhanced transit capabilities including the visualization of routes. The inclusion of all transit input and output files into GIS-TM would be a major work effort and will have a

positive outcome for modeling. The MTF was informed that along with enhancements to GIS-TM, the subcommittee began work on a system-level transit level of service procedure.

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

BULK RATE U.S. POSTAGE PAID PERMIT NO. 06 MELROSE, FLORIDA
--