

FSUTMS Standards: Survey and Plan Forward

presented by
Thomas Rossi, Cambridge Systematics

October 18, 2017



FSUTMS Standards Discussion – Timeline



- Fall 2016
 - Several MTF members noted the need to discuss the state of FSUTMS standardization
 - Model Advancement Committee conducted limited survey of members on standardization
 - Presented and discussed at 2016 MTF meeting
 - Central Office decided to move forward with process to determine how standardization should be maintained

FSUTMS Standards Discussion – Timeline



- Spring/Summer 2017
 - Survey of entire FSUTMS user community administered
 - Central Office compiled survey results
 - Survey results presented at model Advancement Committee meeting
 - Report on survey results and plan forward prepared

SURVEY RESULTS



Survey Summary



- Common data formats, file names, and standards are important
- Similarity of structures/procedures of model components (trip generation, highway assignment, etc.) are also important
- Concerns regarding timing of model updates if standards were imposed/encouraged

Survey Respondent Characteristics



- Varied, with decent distributions by:
 - Type of model user (developer, applier, user of results, manager)
 - Organization type
 - Level of modeling experience
 - Location within Florida
 - Experience outside Florida
 - Experience within Florida

Survey Respondents



- 77 responses
- User type (multiple response)
 - 30% developers
 - 70% appliers
 - 70% users of model results
 - 45% managers
 - Most developers are also appliers
- Organizations
 - 55% consultants
 - 40% public agencies (split roughly evenly among FDOT, MPO, other)
- Where worked (multiple response)
 - 25% District 1
 - 20% District 2
 - 10% District 3
 - 50% District 4/6
 - 30% District 5
 - 30% District 7
 - 15% Central Office
 - 40% outside Florida



WHAT DID THEY (YOU) SAY?

Importance and Value of ...



- Importance of common data file formats
 - 94% agree (56% strongly)
- Importance of common file naming conventions
 - 90% agree (56% strongly)
- Value of validation to FHWA/FSUTMS guidelines
 - 92% agree (55% strongly)
- “Agencies that maintain models in Florida should adhere to all FSUTMS standards that pertain to their model.”
 - 83% agree, 12% disagree

Comments...



- “It is exactly what makes FSUTMS strong.”
- “This can lead to significant savings in both man-hours and can allow government to save money on data.”
- “Common data file formats make application across regional models possible.”
- “This allows for more users across multiple models by promoting greater common understanding.”
- “ ‘All’ is a strong wording, but would agree to having generally consistent standards.”
- “As long as the standards are defined in a way that do not conflict with the responsibilities of the agency.”
- “There should be exceptions when the outcome is better for the agency such as when incorporating new methods.”

Trip Purposes



- Results:
 - Each region should decide for itself (60%)
 - All FSUTMS trip based models should use the same set of trip purposes with exceptions for special circumstances (25%)
 - All FSUTMS trip based models should use the same set of trip purposes (10%)
 - The FL MTF should develop a list of appropriate trip purposes (5%)
- Comments:
 - “Let us respect each other's local needs.”
 - “I think standardization is important for this. It may mean that some agencies have more detail than they need, but it would allow for better comparison/data interoperability between model outputs.”
 - “Toolbox approach and flexibility is highly desirable.”
 - “It's best to use the same but different areas may need special consideration.”

Trip Distribution



- Results:
 - Each region should decide for itself whether to use the gravity model or logit destination choice for trip distribution (75%)
 - No opinion (10%)
 - Remainder split evenly whether to always use gravity or destination choice model
- Comments:
 - “It sure would be nice to have options...”
 - “Destination choice works better for some areas but not all based on existing research.”
 - “It's not what type of trip distribution model should be used. It's what can make the model more accurate without extra data inputs.”
 - “I think gravity models are more translatable between regions. Destination choice models are more sensitive to how the choice set is constructed and depend upon sufficient sample sizes corresponding to all choices.”

Mode Choice



- Results:
 - Multiple mode choice options should be made available under FSUTMS (40%)
 - Each region should decide the mode choice model structure for itself (30%)
 - A standard nested logit structure should be used for mode choice (20%)
 - No opinion (10%)
- Comments:
 - “The regions are just too different in modal characteristics to generalize a nested logit model across the state.”
 - “Through New Start applications for a decade, Florida has learned a great deal on what are the optimal designs of mode choice models without over specifications. The experts on transit modeling can specify a limited number of structures for different areas to choose from.”
 - “It should be up to the developing agency.”

Time of Day



- Results:
 - Time of day segmentation should be done at the same point in the modeling process (45%)
 - Each region should decide how to perform time of day segmentation for itself (45%)
 - No opinion (10%)
- Comments:
 - “This depends on available data and some regions may not have the data to support the development.”
 - “Peak hour varies quite a bit between regions.”
 - “Mode-choice and time-of-day decisions are often inter-dependent, so it is important to have some capability for feedback.”
 - “There are several factors to consider for this issue. These questions should be evaluated and determined at regional level.”

Highway Assignment



- Results:
 - All FSUTMS models using static highway assignment should use the same assignment procedures tailored to their own regional situations (70%)
 - Each region should decide for itself how to do highway assignment (20%)
 - All FSUTMS models using static highway assignment should use the same assignment procedures (5%)
- Comments:
 - “FDOT should ensure one or two basic methodologies are provided for in the model structure.”
 - “Want to ensure that comparisons of model data across regions can still be made, without a lot of post-processing...”
 - “Any regional tailoring should be appropriately documented as determined by MTF.”

How to Treat FSUTMS Standards When Developing/Updating Models



- Responses:
 - There should be no established FSUTMS standard structures, file names, or data formats (zero respondents chose this option)
 - FSUTMS standard structures, file names, and data formats should be established; regions should be encouraged to adhere to these standards, but it should be up to each region to decide whether and how to use them (30%)
 - All FSUTMS models should be required to be updated to established FSUTMS standard structures, file names, and data formats at the time of their next regular model update (50%)
 - All FSUTMS models should be required to be updated to use FSUTMS standard structures, file names, and data formats as soon as the standards are established by the Florida Model Task Force (15%)

Comments on Implementing FSUTMS Standards



- “This could be up for debate depending on what the defined standards are and if all regions have agreed upon some basic standards to adhere by.”
- “The standards should be generic, helpful, and also flexible. The standards should not be too rigid.”
- “Regions should be able to view and understand each other's models.”

Other Comments



- “It is crunch time for the Model Task Force and the FSUTMS standards.”
- “I see no drawbacks as long as we allow deviation when it benefits the agency asking for the deviation.”
- “The ‘one size fits all’ approach is not a good one to follow. That being said, the strength of FSUTMS and the MTF is to provide the common datasets, filenames as well as the modeling options.”
- “Over the past twenty years the number of users, model understanding and acceptance have deteriorated.”
- “Having standards should not be construed as obstruction to innovation.”

Conclusions from Survey



- All respondents agree that having established standards is a good idea
 - A majority believe models should use FSUTMS standard structures, file names, and data formats (though some say it should not be required)
 - Most think that if standards are established, they should be included in the next scheduled model update
- The survey does provide some other clear directions regarding model components
 - Having standards helps agencies help each other by having a common framework
 - But flexibility is important for agencies that have differing needs

STANDARDIZATION - PLAN FORWARD



Standardization Guidelines



- Central Office proposes to develop guidelines for standardization of FSUTMS models that will adhere to the following principles:
 - Model outputs should be directly useful in a decision making process;
 - Models should demonstrate correct sensitivity to policy measures;
 - Models should be able to provide reasonable and explainable forecasts;
 - Models should be easy to use and understandable to any reasonably educated analyst; and
 - Model code and design should be well documented, understandable, and transferable if so desired.

Proposed Next Steps - Immediate



- Develop common data format
 - Typical input file
 - Typical output file
- Develop common file naming convention
 - Typical input file
 - Typical output file
- Review FHWA/FSUTMS validation guidelines
 - Static model guidelines
 - ABM guidelines – develop standards
 - Discussion topic intermediate or long term

Proposed Next Steps - Immediate



- Position Statement
 - Not a rigid guideline
 - Reasons for having standards
 - How to treat FSUTMS Standards in model development
- Trip Purposes
 - Identify minimally acceptable list of trip purposes
- Allow for Expansion Based on Local Needs
- Optional List Development
 - Based on relevant travel data
- Review of supporting documentation already provided on FSUTMS Online

Proposed Next Steps - Intermediate



- Trip Distribution – Intermediate Action
 - Gravity model vs. destination choice
 - Review data requirements and need for household travel survey
- Options and list of requirements
 - Output format
 - Guidelines for selection
- Mode Choice
 - Review of Transit Model Improvement Program
 - Review FTA guidelines
 - Impact of STOPS on transit modeling

Proposed Next Steps - Intermediate



- Toll Modeling Guidance
 - Review and develop standards and processes for evaluating tolls
 - Express lanes
- Time of Day
 - Summarize standards
 - Peak hour or peak period
 - Peak period coordination with performance measures
 - Time period definition guidance
 - Where to segment daily trips into trips by time period
 - Outline data requirements
 - Investigate mode choice and time of day feedback loop

A GOOD PLACE TO BE ~~NON-STANDARD~~...



~~...IS ON THE FINAL SLIDE OF A
PRESENTATION!~~

...IS ON THE FINAL SLIDE OF A
PRESENTATION!