

ABMs for the Rest of the State

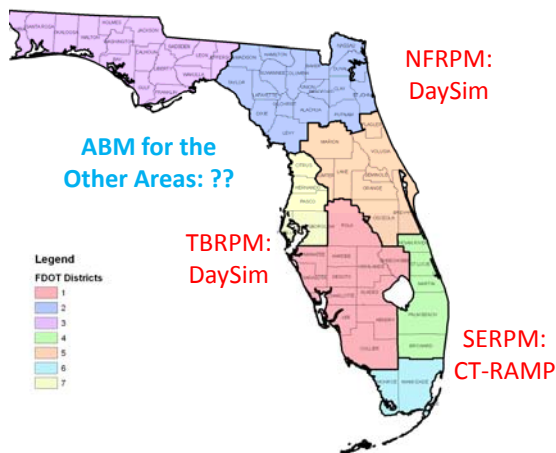
presented to
Advanced Model Structures Subcommittee

presented by
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Date
Wednesday, December 5, 2012



Background



Background



Focus:

“Rest of the State”

“Non-major-MPOs”

Regions of Florida **excluding** the areas covered by
NERPM, SERPM, TBRPM, and CFRPM



Setting the Stage for Today



It **IS NOT** expected that

Smaller regions will use ABMs for their next LRTP
update

We will have a “policy statement” to bring to vote
to this MTF meeting



Setting the Stage for Today



It IS expected that

Discussions about a state-wide move to ABM with emphasis on the “rest of the state” will be initiated

We will have a “policy statement” to bring to the next MTF meeting



Intent of Presentation



- Address some questions about ABM from the perspective of the “rest of the state”
- Identify possible next steps for Florida
- Stimulate discussions



Question:



Why do I need an advanced model (ABM) if my region does not have to answer the types of complex policy questions like Jacksonville, Tampa, Miami, or Orlando?

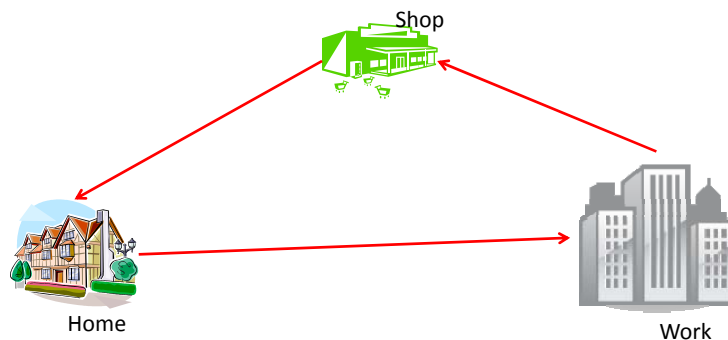


Response:



ABM leads to Increased Accuracy in Travel-Demand Predictions

Improved treatment of non-home-based trips



Response:



Trip-Chaining patterns in "Rest of the State"

Stops in Tour	HB Trips in Tour	NHB Trips in Tour	Freq.	Total HB Trips	Total NHB Trips
1	2	0	4336	8672	0
2	2	1	1287	2574	1287
3	2	2	802	1604	1604
4	2	3	407	814	1221
5	2	4	230	460	920
6	2	5	120	240	600
TOTAL			7182	14364	5632



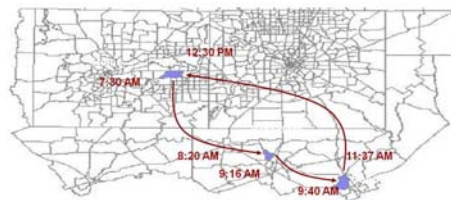
Response:




ABMs simulate travel demand person by person in the form of feasible and internally-consistent "travel diary"

HH ID	Pers. ID	Tour ID	Trip ID	Purpose	Mode	Start	End	Origin	Dest.
1	1	1	1	Meals	Auto	7:30	8:20	853	872
1	1	1	2	Shop	Auto	9:16	9:40	872	881
1	1	1	3	Home	Auto	11:17	12:30	881	853

HH ID	Pers. ID	HH Size	# Cars	Income	Gender	Age	.	.
1	1	1	1	50,000	M	40	.	.



Response:



Trip-based models

↓

“Aggregate” System
Performance Measures

- Number of Trips Generated
- Mode Shares
- Vehicle Miles Traveled (VMT)
- Vehicle Hours Traveled (VHT)


Activity-based models

↓


“Disaggregate” System
Performance Measures

- Number of Trips Generated
- Mode Shares
- Vehicle Miles Traveled (VMT)
- Vehicle Hours Traveled (VHT)


By:
income levels,
age,
car ownership levels,
time of day,

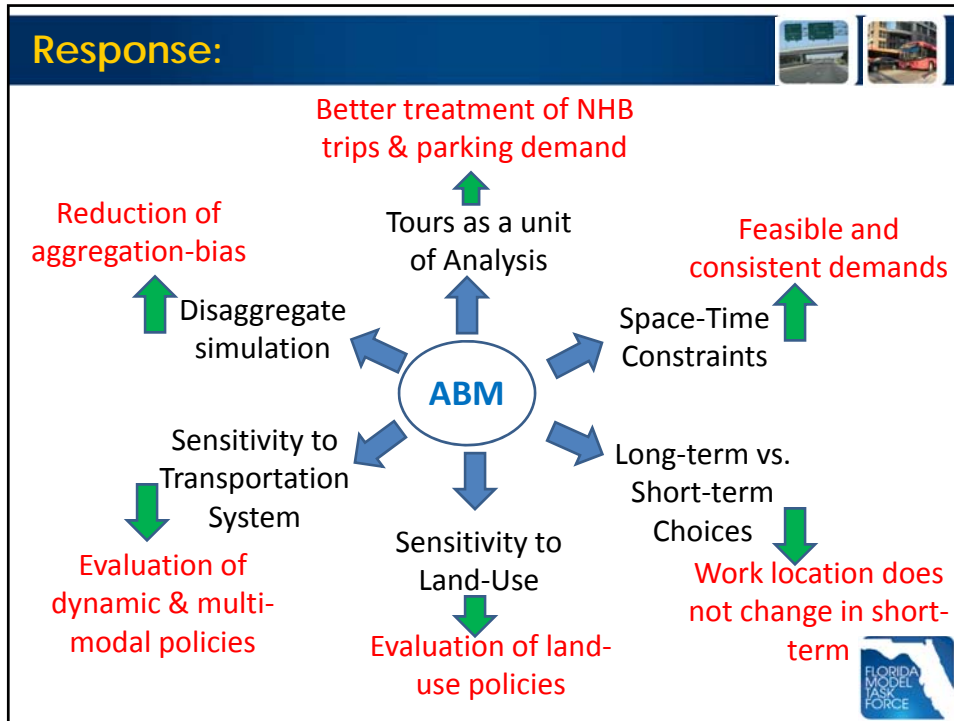


Question:



I do not have the type of detailed land-use data (parcels and micro-zones). So how can I have an ABM?

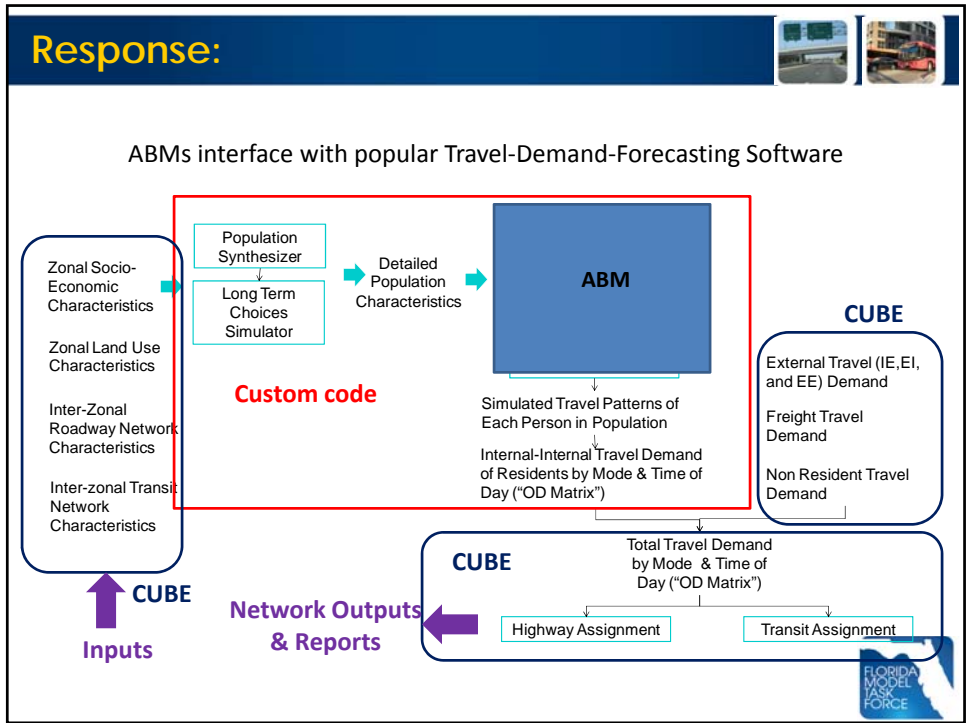




Question:

Do I have to learn a whole new software?

FLORIDA MODEL TASK FORCE



Question:

What about the Costs?

Response:



The net “cost” of an ABM model is decreasing

Several working implementations already exists across the country

“Comparable to costs of a four-step model update”

Florida specific

Data: the NHTS 2009 add-on surveys

Possibility of a statewide standard (economies of scale)

Training provided by central office





Question:



How do we move towards using ABMs as standard modeling practice?



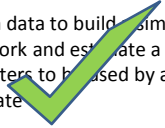






Model-by-Model Update

- Replace each of the existing models by a corresponding ABM
 - Build models using local data (travel surveys)
 - Borrow data to estimate parameters
 - Borrow (Transfer) model structure and parameters and Calibrate to NHTS & Other Data

Statewide Standard

- Use NHTS add-on data to build a simple, standard framework and estimate a common set of model parameters to be used by all regions in the rest of the state 
- Small data samples for each specific region but total volume of NHTS data is significant
- Consistency -> cost, training, software, user-group interactions
- Can still support region-specific model customizations
- Starting point for transition into advanced ABM

Summary

The Vision: FSUTMS- ABM

Conceptual Standardization with Implementation Flexibility- The Approach for Future FSUTMS?

<u>Conceptual Standardization</u>	<u>Implementation Flexibility</u>
<ul style="list-style-type: none"> • Forecast travel person-by-person (not zone by zone) • Consistently model tours/trip chains instead of trips • Destination-choice models instead of gravity models • Predict travel mode for tours as a whole, not for trips 	<p>Variability in richness of features: Major urban areas deal with</p> <ul style="list-style-type: none"> • finer temporal resolution • Greater land use sensitivity • More population segments • Additional travel behavior patterns (such as escort & joint travel)

