A Blueprint for Travel Demand Forecasting in Florida

presented to
Florida Model Task Force

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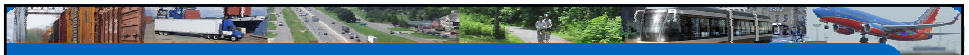
Presentation Outline

- Yesterday, Today and Tomorrow
- Forecasting Needs and Capabilities
- The Plan Forward



Yesterday
What we already know

- Forecasts used for
  - Long Range Plans
  - Corridor Studies – How many lanes?
  - Regional Emissions
- Needs Characterized by
  - Regional Orientation
  - Highway and Vehicle focus
  - Daily Travel
  - Assumption of stable travel behavior

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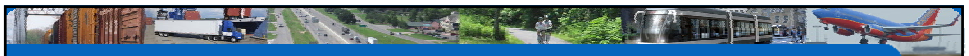

Today
What we are figuring out

- Forecasts needed for
  - Land Use Impacts
  - Transit Demand
  - Reaction to pricing
  - Site development impacts
- Needs Characterized by
  - Smaller Geographies and corridors
  - New modes
  - Need to understand traveler response

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Tomorrow
Something to worry about!

- Questions being asked about
  - Dynamic Pricing and Pricing Policy
  - Non-Motorized Travel
  - Induced Travel
  - Traveler response to congestion
  - Freight
  - Temporal shifts
  - New Starts Requirements
  - Regional Land Use/Travel Demand interaction
  - MOVES and Air Quality

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Tomorrow
Something to worry about!

- Needs Characterized by:
  - Fundamental travel choice behavior
  - Time-specific effects
  - Driver behavior
  - Macro and micro economic influences over time

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Forecasting Needs and Capabilities

- Generally FSUTMS meets yesterday's needs, and can be used to address today's needs.
- However, future needs stretch our forecasting needs to the breaking point.

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The Plan Forward

- Short term (1-2 years)
  - State of the practice improvements to models
  - Emphasize better practices
- Long term (3-5+ years)
  - Develop an Activity-Based Framework
  - Develop time-dependent assignment routines
  - Continued development in data, validation/calibration and training

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Not just better models, better forecasts

- How do we achieve this?
  - Improved Tools
  - Sufficient Data
  - Knowledgeable Construction
  - Advanced Modelers

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Improved Tools

- Short term -- Implement State of the practice elements as standard model design. Some examples:
  - Time of Day stratification for distribution & mode choice
  - "Faithful" transit station coding
  - Appropriate Trip purpose expansion or contraction
  - Feedback through distribution, with closure criteria

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Improved Tools -- Continued

- Medium-Long Term
  - Evolutionary development of AB model
  - Truck model → Freight Flows →Commodity Flow model
  - Land use models
  - Time-Specific Assignment (DTA “flavors”)

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Sufficient Data

- Transit Survey Standards
  - Survey Instrument
  - Need-based sample size determination
  - Survey Collection Techniques, QA/QC
  - Survey weighting and expansion
  - Survey data processing and examination

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Sufficient Data -- Continued

- Other surveys
  - Home Interview – Long range plan for systematic collection
  - NHTS, QEW, AHS
  - Special Generators & Special Events
  - Establishment Surveys

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Knowledgeable Construction
Model Calibration and Validation

- Examples
  - Adjusting Mode Specific constants that result in matching observed mode shares ***and*** represent reasonable equivalent in-vehicle times.
  - Matching district to district flows without
    - Distorting friction factors and average trip lengths
    - Using excessive or arbitrary k-factors or DC utility equation constants
    - Resorting to HUGE district definitions
  - Matching Counts and model estimates without resorting to arbitrary and selective link adjustments

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Knowledgeable Construction -- Continued
Model Calibration and Validation

- What is it?
  - Taking an objective and disciplined approach to modeling travel behavior
  - Recognizing problems – and knowing what to do about them
  - Taking advantage of techniques and skills learned the hard way by others
  - Asking "How does this reflect real behavior" of each model parameter.
  - No Guesses, No Excuses
  - Hard Work!

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Advanced Modelers

Better models, better construction, better data is of no use if we don't have better modeling professionals

- It starts with formal training (and willingness!)
- Better modelers require time to practice and learn
- An environment of
  - Cooperation
  - Efficient sharing of knowledge
  - Easy access to experts

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Advanced Modelers
How do we build them?

1. Leverage Existing FDOT training
2. Bring training up to state of the practice
3. Set high standards
4. Provide an efficient knowledge-sharing mechanism
5. Provide a way to "ask the expert" – and know who that is!

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Next Steps

- Model Task Force Endorsement
- Develop a coordinated model improvement plan, all efforts pulling together in the same direction, fund it.
- Develop a strategy for evolutionary approach to AB and time-sensitive assignment techniques, and begin evaluation → design →implementation process
- Update standards for model design, construction and validation/calibration.
- Update training course materials, and develop formal support and modeler communication services

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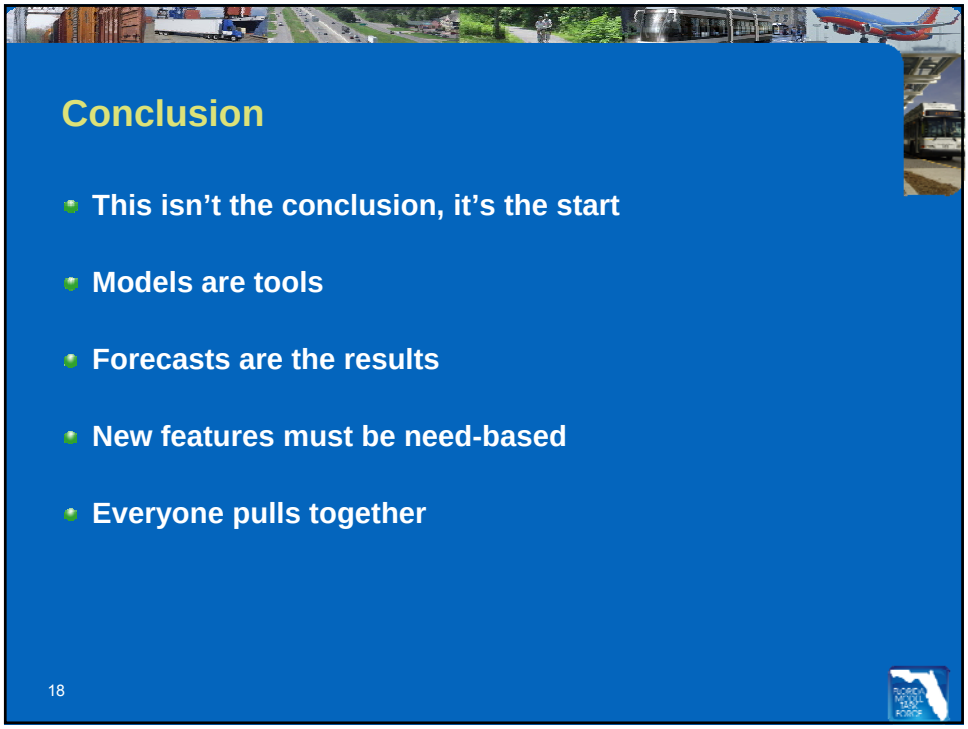

Conclusion

- This isn't the conclusion, it's the start
- Models are tools
- Forecasts are the results
- New features must be need-based
- Everyone pulls together

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