Preliminary Discussion on
Data-Driven Methods

presented to
MTF Transit Committee

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Definition

• Data driven means that progress in an activity is compelled by data, rather than by intuition or personal experience
  (en.wikipedia.org/wiki/Data_driven)
• In transit, data-driven models are compelled by travel data rather than models
  – Example: on-board surveys for synthesized O/D patterns and corridor route planning
  – Relatively simple, robust approach
  – Transferable using consistently available data
### Definition

- Straightforward calculations/representation of relatively simple and predictable project situations
- Some advantages
  - Straightforward; minimal “moving parts”
  - Reduced development costs
  - Reliable insights
  - Encouraged by FTA where appropriate
- Some disadvantages
  - Generally focused on specific corridors (not regional)
  - May not be able to evaluate wide range of alternatives and markets

### Types of Data-Driven Models

- “Standardized”
  - TBEST
  - ARRF
  - STOPS

- “Customized”
  - Broward County
  - US 192
“Standardized” Models: TBEST

- **Transit Boardings Estimation and Simulation Tool**
  - Transit boarding estimation tool for fixed-route bus routes at the stop-level
  - Owned and developed by FDOT Public Transit Office (PTO)
  - Commonly used for TDPs and short-term service planning
  - Direct-demand model: demand directly determined from supply characteristics (population, transit service, etc.)

- **Key variables:** transit service characteristics, demographic data
- **Project attributes best suited for using TBEST**
  - Small-scale, low-cost transit service impacts
  - Site- or bus-stop-specific impacts
  - Local bus service
  - Transportation development plan

“Standardized” Models: ARRF

- **Aggregate Rail Ridership Forecasting model**
- **Estimates boardings on rail projects**
- **Developed by Federal Transit Administration to supplement conventional forecasting models**
  - Insights into reasonableness of forecasts
  - Understanding of potential markets
  - Targets for travel model calibration in starter-lines
  - Basis for QC comparison in system-expansion lines

- **Key variables:** CTPP 2000 journey-to-work trip flows, transit service characteristics
- **Project attributes best suited for using ARRF**
  - Rail systems planning or feasibility study
  - New Starts project
**“Standardized” Models: STOPS**

- **Simplified Trips on Project System**
- Estimates boardings on transit projects
- Currently under development by FTA
- Key variables: CTPP 2000 journey-to-work trip flows, transit service characteristics (Google Transit Feeds from existing service), auto skims

**“Customized” Models: Broward County**

- Three main ingredients
  - Route-specific transit data,
  - Auto skims, and
  - Auto/transit networks from regional travel model
- Incremental logit mode choice model (pivot-point)
  - Auto and all transit travel modes
  - Peak and off-peak time periods
  - HBW, HBO and NHB trip purposes
  - Zero-car households and households with car
- On-Board Data ~$150,000
- Development time/cost: 1 month and ~$30,000 (for BCT’s highest-ridership route; ~25 miles in length)
- 15% of regional model running time (6x faster)
“Customized” Models: US 192

- Three main ingredients
  - LYNX systemwide O/D survey
  - Highway networks, and
  - Google Transit network files
- Incremental logit mode choice model (pivot-point)
- 2010 and 2030 analysis years
- Non-model estimates for new markets (e.g., SunRail, tourist)

For Discussion

- Should the Transit Committee make recommendations or provide guidance to the full MTF or FDOT Central Office regarding data-driven methods?

- What recommendations or guidance should the Transit Committee provide?
  - Research
  - R&D
  - Guidance in considering study needs and methodology selection
  - Compendium for state application
  - Method recommendations by context