The Problem

- Multi-modal corridor studies typically suffer from lack of corridor-level transit data that is
  - Up-to-date,
  - Sufficiently detailed, or
  - Of sufficient quality for corridor analysis

- Pre-planning for these types of studies is generally limited to the collection readily-available, system-/region-wide travel data
The Consequence

- Multi-modal corridor studies that use their resources inefficiently and suffer from high schedule-delay risk
  - Data collection: limited windows of opportunity (Jan-Apr/Sep-Nov), data processing time
  - Technical tools: regional models and TBEST are not sufficiently prepared for corridor analysis or may not be most appropriate for some corridors
  - Tight schedule because downstream funds are programmed in next FY (1-2 month delay → 1 fiscal year delay)

Objectives

- Identify issues in advance to inform project scope development
- Move data collection and model development outside of the project
  - Better control of costs/delivery of the data and models
  - Reduce study distractions from the data/model work
  - Keep focus on the study analysis and consensus efforts
- Faster delivery of projects to NEPA/design phases
- Reducing PM stress and extending life expectancy 😊
A Comparison of Approaches

<table>
<thead>
<tr>
<th></th>
<th>Traditional</th>
<th>With Pre-Planning &amp; Data Collection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Available corridor transit data</td>
<td>Aggregate boarding/alighting counts (by stop?), sometimes outdated</td>
<td>Stop-to-stop movements with travel details</td>
</tr>
<tr>
<td>Knowledge of corridor issues, ridership patterns</td>
<td>Anecdotal, general</td>
<td>Detailed understanding</td>
</tr>
<tr>
<td>Technical tools available</td>
<td>Regional travel model, TBEST</td>
<td>Enhanced regional travel model, simplified models</td>
</tr>
<tr>
<td>Applicability of technical tools</td>
<td>Regional model assumed to be applicable and “good to go” for corridor analysis</td>
<td>Developed/Enhanced with corridor in mind</td>
</tr>
<tr>
<td>Corridor analysis scope of work</td>
<td>Generic</td>
<td>Tailored to corridor needs and transportation problems</td>
</tr>
<tr>
<td>Percentage of budget devoted to data collection</td>
<td>Significant</td>
<td>Minimal</td>
</tr>
<tr>
<td>Schedule delay risk</td>
<td>High</td>
<td>Low</td>
</tr>
</tbody>
</table>

Pre-Planning & Data Collection Tasks

- Data collection
  - All readily-available data
  - Collect route-specific transit data
- Pre-planning
  - Assess regional travel model’s applicability and usefulness for corridor study
  - Fully analyze all transit and travel data
  - Develop preliminary Case for the Project
  - Enhance regional travel model or develop simplified model
Route-Specific Transit Data Collection

• Two surveys conducted simultaneously
  – Boarding-to-alighting (B2A) survey
    • Captures boarding and alighting stops for each rider
    • Card distributed to rider, and returned to surveyor when rider alights
    • 40-55% sample rate (4-5x standard transit O/D survey)
  – Simplified main survey, asking questions oriented to route:
    • Origin and destination
    • Up- and down-stream transfers
    • Trip purpose
    • Others as necessary
    • ~20% sample rates (2x standard transit O/D survey)

• Main survey data linked to B2A data → route-specific rider database
  – Easily converted into trip table
Preliminary Case for the Project

- Succinct, collective summary of project information (≤5-7 pages)
- Initial draft completed by MMSC Team (≤3 pages)
  - Project identification and setting
  - Current (base year) conditions
  - Near-term and horizon-year changes
  - Enumeration of corridor transportation problems
- Remaining sections to be completed by project team during corridor study (≤3-4 pages)
  - Purpose of the Project
  - Merits of the Low-Cost Alternative and Locally-Preferred Alternative (LPA)
  - Uncertainties: Ridership
  - Summary

Simplified Model

- Three main ingredients
  1. Route-specific transit data,
  2. Auto skims, and
  3. Auto/transit networks from regional travel model
- Incremental logit mode choice model (pivot-point)
  - Suggested in TCRP Report 118: BRT Practitioner’s Guide
  - 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
- 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)
Very good results, even at sub-route level...

...and transfer routes!
## A Comparison of Approaches: An Actual Example (Route 18)

<table>
<thead>
<tr>
<th></th>
<th>Traditional (Regional transit survey)</th>
<th>With Pre-Planning &amp; Data Collection (Corridor-specific transit survey)</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Riders making at least one transfer</td>
<td>49%</td>
<td>67%</td>
<td>More riders transferring than previously thought; different routes and magnitudes</td>
</tr>
<tr>
<td>Top 4 transfer routes</td>
<td>22, 72, 34, 36</td>
<td>72, 36, 7, 34</td>
<td></td>
</tr>
<tr>
<td>Percentage of work trips</td>
<td>43%</td>
<td>49%</td>
<td>Relatively similar</td>
</tr>
<tr>
<td>Average trip length (overall)</td>
<td>8.33 miles</td>
<td>7.18 miles</td>
<td>Previous estimates over-stated trip lengths (long-trip response bias)</td>
</tr>
<tr>
<td>Average trip length (on bus)</td>
<td>6.54 miles</td>
<td>4.93 miles</td>
<td></td>
</tr>
<tr>
<td>Sub-route travel movements</td>
<td>Insufficient information</td>
<td>Detail information; created trip table</td>
<td>Now have better data to inform route planning</td>
</tr>
</tbody>
</table>

Result: Improved, refined understanding of corridor transit travel patterns

## Reactions / Summary

- Highly favorable reactions by FTA (!!) and FDOT

- Pre-planning & data collection efforts provide many benefits to transit planners
  - Improved understanding of corridor
  - Focused use of resources
  - Reduced schedule delay in corridor studies