Leveraging GIS to Systematically Evaluate Transit Service Design for Title VI

November 2009

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Metro Transit

Who are we?

• Provide regional bus, train, carpool, vanpool, walking and biking services
• 740 Peak Buses Operating 118 routes
  – 71 Local Routes
  – 49 Express Routes
• Hiawatha Light Rail - 27 Light Rail Cars
• Northstar Commuter Rail - 18 Rail Cars
• Employ over 2,500 staff - 1,800 Drivers
• 260,000 Weekday Daily Boardings
Who are we?

- Metro Transit Service Area

Presentation Overview

- Title VI Background
- General Reporting
- Program-Specific Reporting
The Civil Rights Act of 1964

- Title I Voting Rights
- Title II Public Accommodations (Hotels, etc)
- Title III Desegregation of Public Facilities
- Title IV Desegregation of Public Education
- Title V Commission on Civil Rights
- Title VI Nondiscrimination in Federally Assisted Programs and Activities
  - Title VII Equal Employment Opportunity
  - Title VII Registration and Voting Statistics

- Title VI
  - “No person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal Financial assistance.”

  - The FTA issued original guidelines in 1987

  - Re-issued guidelines on May 14, 2007, FTA Circular 4702.1A
II. Reporting Requirements

A. General Reporting Requirements

1. Annual DBE Certification & Assurance: Metropolitan Council submits a Title VI assurance as part of annual Certification and Assurance to the FTA. Metro Transit shall collect Title VI assurances from subrecipients prior to passing through FTA Funds.

   When: Annually
   Lead: Annual DBE Certification - BEO Diversity
   FTA Assurance:
   FTA Circular Pages: 5-1

2. Develop Complaint Procedure: Requires the development of procedures for investigating and resolving complaints filed against them. In addition, procedures for filing a complaint must be available to recipients of the subrecipient.

   When: One-Time (Completed)
   Lead: DBE Diversity
   Council Action/Policies: “Commitment to Fairness”
   http://www.metrotransit.org/docs/fta/Commitment_wsp
   FTA Circular Pages: 5-1, 5-5

3. Record Title VI Investigations: Annually and Encourage Receipt of Information

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2. Reference Chart: The following chart displays which chapters pertain to different FTA applicants, recipients, or subrecipients. (The "Y" refers to those chapters that pertain to the applicant or grantee.)

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Applicants</th>
<th>Recipients serving 200,000 or more</th>
<th>State DOT/CDOT receiving agencies</th>
<th>FTA</th>
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<tbody>
<tr>
<td>Chapter I</td>
<td>Y</td>
<td>Y</td>
<td></td>
<td></td>
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<tr>
<td>Chapter II</td>
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<td>Y</td>
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<td>Chapter IX</td>
<td>Y</td>
<td>Y</td>
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<td></td>
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<tr>
<td>Chapter X</td>
<td>Y</td>
<td>Y</td>
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<td>Appendix A</td>
<td>Y</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Appendix B</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appendix C</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appendix D</td>
<td></td>
<td></td>
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</table>
Areas of GIS Applications

- General Reporting
  - Provide Meaningful Access to Limited English Proficiency (LEP) Persons
  - Promoting Inclusive Participation
- Program-Specific Reporting
  - Collect Demographic Data
  - Setting Service Standards
  - Evaluating Service and Fare Changes
  - Monitoring Transit Service

General Reporting

- Providing Meaningful Access to LEP Persons
- Promoting Inclusive Participation
  - Help planning public input process by ensuring public meetings are accessible to predominantly low-income and predominantly minority areas
Program-Specific Reporting

• Collecting Demographic Data
  – **When:** Prior to Service Reductions & After Decennial Census
    • Option A: Demographic and Service Profile
    • Option B: Use of Surveys
    • Option C: Locally Developed Alternative

• Collect Demographic Data
  – Option A
    • Basemap
      – Census or TAZ zones, streets, transit facilities, major activity centers
      – Facilities recently modernized or scheduled for modernization in next 5 years
Program-Specific Reporting

• Collect Demographic Data
  –Option A
    • Map Predominantly Low-Income Areas
      –Low-Income – a person whose median household income is at or below the Dept. of Health and Human Services poverty guidelines (DHHS)

      –Based on above/below regional average of Census Tracts
      –Low-Income data available to Blockgroup level

      -US Census poverty guidelines thresholds nearly identical to DHHS definition
        » Individuals in Poverty – Summary File 3

Program-Specific Reporting

• Collect Demographic Data
  – Option A
    • Map Predominantly Minority Areas
      – FTA General Definitions
        » American Indian or Alaska Native
        » Asian
        » Black or African American
        » Native Hawaiian and other Pacific Islander
        » Hispanic or Latino, regardless of race

  Minority Population = Total Population – Whites + White Hispanic
• Evaluating Significant Service Changes
  – Agencies should define a significant service change
    • i.e. 25% of Service Hours of a Route
    • Major Route Restructuring Effort
  – 2 Options
    • Option A – FTA Guidelines
    • Option B – Locally Developed Alternative

Program-Specific Reporting

• Evaluating Significant Service Changes
  – Specific Route
    • Recommend Option A
      – Assess Effects
      – Assess Alternatives
      – Mitigate Adverse Effects
      – Determine Disproportionate Effects
Program-Specific Reporting

• Evaluating Significant Service Changes
  – Proposed Route Network
    • Recommend Option B
Program-Specific Reporting

- Evaluating Significant Service Changes
  - Proposed Route Network

Legend
- Non-Stop Portions
- Boarding/Alighting Portions
- 1/4 Mile Service Areas

<table>
<thead>
<tr>
<th></th>
<th>Eastbound - Pattern A - 7 Trips</th>
<th>Eastbound - Pattern C - 20 Trips</th>
</tr>
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<tbody>
<tr>
<td>Transit Dependent Population:</td>
<td>1,950</td>
<td>1,585</td>
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</table>

<table>
<thead>
<tr>
<th></th>
<th>Westbound - Pattern B - 7 Trips</th>
<th>Westbound - Pattern D - 20 Trips</th>
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<tbody>
<tr>
<td>Transit Dependent Population:</td>
<td>1,955</td>
<td>1,566</td>
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</table>

Program-Specific Reporting

- Evaluating Significant Service Changes
  - Proposed Route Network
Program-Specific Reporting

• Evaluating Significant Service Changes
  – Measuring Current Route Network

HASTUS - Geo Scheduling Software

• Map Bus Stops and Transit Routes
  – Link Bus Stop ID with Street ID

• Route 2 Example
Program-Specific Reporting

• Evaluating Significant Service Changes
  – Measuring Current Route Network
    • Use Schedule Information by Bus Stop
    • Add 1/4 Mile Bus Stop Buffers
      – ½ Mile for Transitways (BRT, LRT, etc.) if Applicable
    • Measure Number of Trips by Census Division using Intersect Analysis

Program-Specific Reporting

• Evaluating Significant Service Changes
  – Comparing Proposed VS. Current Trip Levels
    - Measure by Census Division
    - Determine Disparate Impacts
    - Help Address Adverse Effects
**Program-Specific Reporting**

- **Setting Service Standards**
  - Headway Standards
  - On-Time Performance
  - Service Availability
    - Bus Route Spacing
    - Bus Stop Spacing - 6-8 Stops Per Mile Target
  - Distribution of Transit Amenities
    - Bus Shelters
    - Facility Amenities
  - Load Standards

**Agencies are recommended to monitor standards every 3 years in accordance with the Triennial Review**
Program-Specific Reporting

- Monitoring Service Standards
  - Headway Standards
    - FTA and Metro Transit define as:
      - Number of minutes between transit vehicles on a route moving in the same direction

<table>
<thead>
<tr>
<th></th>
<th>Area I</th>
<th>Area II</th>
<th>Area III</th>
<th>Area IV</th>
<th>Area V</th>
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<tbody>
<tr>
<td>Express</td>
<td>30' Peak</td>
<td>30' Peak</td>
<td>3 Peak Trips</td>
<td>3 Peak Trips</td>
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<td>30' Offpeak</td>
<td>60' Peak</td>
<td>60' Offpeak</td>
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<tr>
<td>Urban Crosstown</td>
<td>30' Peak/ 60' Offpeak</td>
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<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
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<tr>
<td>Suburban Local Circulator</td>
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<td>30' Peak/ 60' Offpeak</td>
<td>60' Peak</td>
<td>90' Offpeak</td>
<td>N/A</td>
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</tbody>
</table>

*Additional service may be added at demand requests. Applies primarily to peak-hour direction.*
Program-Specific Reporting

- Monitoring Service Standards
  - Evaluate On-Time Performance
    - GPS Automatic Vehicle Location (AVL)
    - Create Report by Route

Route Adherence Percent Summary

<table>
<thead>
<tr>
<th>Route</th>
<th>On Time</th>
<th>Late %</th>
<th>Early %</th>
<th>Total Overage</th>
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<td>1</td>
<td>91.1</td>
<td>7.7</td>
<td>1.1</td>
<td>63600</td>
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<td>3</td>
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<td>8.8</td>
<td>0.6</td>
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<td>4</td>
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<td>7</td>
<td>97.9</td>
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<td>0.6</td>
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<td>8</td>
<td>93.8</td>
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<td>91.2</td>
<td>7.5</td>
<td>1.3</td>
<td>80900</td>
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</tbody>
</table>

Program-Specific Reporting

- Monitoring Service Standards
  - Evaluate On-Time Performance
    - Measure Demographic Make-Up of Route
      - Trips by Street Segment
      - Find Nearest Function (Courtesy of SRF)
Program-Specific Reporting

• Monitoring Service Standards
  – Service Availability
    • Bus Stop Spacing
      – Target 6-8 Stops Per Mile
      – Links As Crow Flies
      – Stop Distances are Actual
Program-Specific Reporting

- Monitoring Service Standards
  - Distribution of Transit Amenities
    - Facility Amenities
      - Qualitative Review

- Bus Shelters
  - 40 boardings per day or more in Minneapolis & St. Paul
  - 25 boardings per day or more in suburbs
  - Evaluate APC boardings by bus stop
  - Evaluate distribution patterns to ensure they are not disproportionately distributed
Program-Specific Reporting

• Monitoring Service Standards
  – Service Availability
  • Bus Route Spacing

  Route Spacing: Maximum desired distance between bus routes, in miles.

<table>
<thead>
<tr>
<th></th>
<th>Area I</th>
<th>Area II</th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Express</td>
<td>Subject to availability and demand</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban Radial</td>
<td>0.5</td>
<td>1</td>
<td>S</td>
</tr>
<tr>
<td>Urban Crosstown</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Suburban Local/Circulator</td>
<td>n/a</td>
<td>2</td>
<td>S</td>
</tr>
</tbody>
</table>

*Specific* means the route structure will be adapted to demographics, programs and such.
Program-Specific Reporting
- Title VI Reporting
  - Evaluating Fare Changes
    - Northstar Commuter Rail
  - Utilize Longitudinal Employer Household Dynamics (LEHD)
    - Search “On the Map” Census.gov
    - Download Raw Data too
Program-Specific Reporting

- Title VI Reporting
  - Evaluating Fare Changes
    - Northstar Commuter Rail
      *Good to have rider survey fare information

- Requirement to Submit Title VI Program
  - Submitted to FTA every 3 years
  - Copy of demographic analysis and surveys
  - Copy of service standards and policies
  - Copies of service and fare change evaluations
  - Copy of monitoring service standards
Conclusions

• Work with the data you have access to help ensure reviews are in the spirit of Title VI
• Keep a good understanding of Title VI data definitions
• Be sure ridership survey questions correlate to Title VI requirements (utilize cross check analysis)
• Have sound statistical approaches to your reviews
• Build and maintain transit route shapefiles throughout your route system planning process
• Utilize various Census division levels to have a clean analysis

Questions?

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