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A Recipe for an Online, Geospatial Transit Performance Archive

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OF WEB-BASED, GEOSPATIAL TRANSIT PERFORMANCE DATA ARCHIVES

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Happy Valentine’s Day
About GIS in Transit

• Center for Urban Transportation Research at University of South Florida has hosted biennial “GIS in Transit” conference since 2009 (see www.transitgis.org)

• Accessibility is a key term
  – WMATA, for example, uses GIS to comprehensively track the accessibility of its services and facilities
  – Accessibility Observatory at University of Minnesota uses transit service data for demographic, geospatial analysis

• Emergence of standardized, open data is enabling new generation of analytical tools
  – Oregon State/ODOT Research Project
  – SUNY Albany’s AVAIL (service analysis)

• Travel time reliability isn’t just a highway concept
Why?

• More informed decision making through visualization
• Efficient support for user requests for data
• Enable innovative performance analysis
What Will We Cook Today?

Transit Performance Data

Geospatial

Web-based
Ingredients
Menu Planning

- Percent On-Time
  - 0% - 50%
  - 50% - 65%
  - 65% - 75%
  - 75% - 85%
  - 85% - 100%

- Average Performance
  - Percent Early
  - Percent On-Time
  - Percent Late
  - Bus Stop

- Total Average Stop Activity
  - Size represents total activity
  - Ons
  - Offs
  - Bus Stop
Prepare the Ingredients!

- Prepare GTFS data and set aside
- Collect daily APC and AVL data
- Clean the data based on error messages, mismatched ons and offs, more
- Aggregate by quarter for “typical” data
- Be prepared for partial people
- Export data with enough fields to support GTFS matching
Step 1: Convert GTFS to Feature Class

```
routes.txt
route_id,route_short_name,agency_name,R10,10,Airport - Downtown

trips.txt
route_id,trip_id,trip_headway,R10,T-10-1,Airport,CBD
R10,T-10-2,Downtown,
```
Step 2: ArcPy converts pattern lines to stop segments
Step 3: Create Minimum Stop Segments

Now you can aggregate across routes!
Garnish and Serve!

Weekday service during all service times

Performance Metrics

- TriMet Segment Load
- TriMet Utilized Capacity
- TriMet Stop activity
  - 0 - 13.34
  - 13.34 - 71.48
  - 71.48 - 206.85
  - 206.85 - 405.54
  - 405.54 - 625.85
  - 625.85 - 912.96
  - 912.96 - 4000
- TriMet Stop on-time performance

Timeframe

Day of week: Weekday, Saturday, Sunday

Time of Day: AM Peak

Garnish and Serve!
Garnish and Serve!
Garnish and Serve!
Dessert
(aka, next steps)

• Cartographic refinements
  - Line Offsets
  - Point symbology

• Integrate data visualizations (pie charts & plots)

• Data download capability

• Non-temporal queries
Please Visit Us:

Compass
An open way to traffic data
Portland State University’s Transportation Data Lab

Transit
In-vehicle technology records how transit service is supplied and consumed. This application explores how transit performance and ridership vary over time and place.

View Transit ➔

Highways
In the Portland/Vancouver region, Portal captures data from loop detectors and other devices, revealing trends in highway performance. This application examines points, corridors and networks.

View Highways ➔

Arterials
Traffic signal hardware, Bluetooth detectors, and other sources reveal activity on arterial streets. These applications illustrate travel time and other metrics.

View Arterials ➔

WIM
Weigh-in-Motion data provide insight regarding the movement of trucks on designated routes. Origin-destination data and routing patterns tell stories about how goods travel.

View WIM ➔

On Ramp
As a laboratory, Compass usually has new applications under development. Visit this area to see what we’re working on, often with a limited set of data.

View On Ramp ➔

About
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Thank You!

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