PORTAL 2.0: Data and Performance Metrics

Kristin Tufte
Portland State University

Oregon Transportation Summit
Sept 10, 2010
Background

- Official transportation data archive for the Portland–Vancouver metropolitan region
- Established 2004
- ~1TB of transportation–related data
  - Web site (http://portal.its.pdx.edu)
  - Data: freeway, transit, weather, incident, freight, traffic counts

Uses
- Local transportation professionals
- Regional Transportation Plan
- Local news media
- Research projects
Themes

- Context
- Raw data
- Visualizations

Information

Intelligent Transportation Systems: Saving Lives, Time and Money
PORTAL 2.0 Data Sources

- Freeways: ODOT/WSDOT loop detector data (20-second granularity)
- Incidents: ODOT incident data; statewide crash data (OrTSDA)
- Weather
- Transit: TriMet (and soon C–TRAN)
- Arterial: signal (City of Pdx) and probe (MAC)
- Freight: WIM
Performance Measures Used

Volume
Speed
Occupancy

Vehicle Miles Traveled
Vehicle Hours Traveled
Travel Time
Delay

Initial work on: emissions, energy consumption
PORTAL 2.0 Interface

- Wide variety of users; different needs and interests
  - Analysis or understanding of a current event (traffic managers)
  - Trending and forecast information (planners)
  - In-depth analysis (researchers)

- Design Principles
  - Intuitive, interactive, user-driven graphical interface
  - User-driven selections and advanced options
  - Good set of defaults
PORTAL 2.0 Interface

Intelligent Transportation Systems: Saving Lives, Time and Money
Live Speeds & Cameras

Intelligent Transportation Systems: Saving Lives, Time and Money
PORTAL 2.0 – Systems Page

Portal 2.0

Region One Dashboard

Average Speed Comparison Map

Display Interval

Date & Time

Full Peak

15-Minute Intervals:

Days to Compare

Weekdays:

Same Day of the Week:

Number of Days to Compare:

Average Speed for Selected Date & Time

Average Speed during the Same Time on Selected Comparison Days
Stations – Map

Please, click on a pin to explore a station or select a station from the list in the upper left hand corner and click go.
Stations – Expanded

Intelligent Transportation Systems: Saving Lives, Time and Money
Stations – Two Quantity

Graph Data

<table>
<thead>
<tr>
<th>start time</th>
<th>speed</th>
<th>volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>6/9/2010 12:00 am</td>
<td>55.88</td>
<td>161</td>
</tr>
<tr>
<td>6/9/2010 1:00 am</td>
<td>56.30</td>
<td>109</td>
</tr>
<tr>
<td>6/9/2010 2:00 am</td>
<td>56.71</td>
<td>107</td>
</tr>
<tr>
<td>6/9/2010 3:00 am</td>
<td>57.78</td>
<td>112</td>
</tr>
<tr>
<td>6/9/2010 4:00 am</td>
<td>59.03</td>
<td>244</td>
</tr>
<tr>
<td>6/9/2010 5:00 am</td>
<td>61.06</td>
<td>615</td>
</tr>
</tbody>
</table>
Sustainability Metrics
Arterial Data Archive

- Access to City of Portland signal system data
- Obtaining data from Bluetooth collection
- Data will be archived in PORTAL
Adding Signal and System Detectors

- 1) count, speed, and calculated occupancy from system detectors;
- 2) cycle split logs
- 3) data from other detectors
  - advanced loops in bicycle lanes
  - pedestrian push-button activations.
Detector Data
**Arterial Emissions**

- Concept: Use probe data & MOVES model to estimate arterial emissions
- Validated concept using probe runs
Current & Related Work

Integrate Transit Data

Oregon Traffic Safety Data Archive

WIM Data Archive

Integrate Arterial Data
Thank you!

- http://portal.its.pdx.edu
Acknowledgments

- R.L. Bertini – ITS Lab and PORTAL founder
- Colleagues –
  - Chris Monsere, Miguel Figliozzi, Kelly Clifton, Ashley Haire, Portland State University
  - Peter Koonce, Shaun Quayle, Kittelson and Associates
- Students –
  - Dan Colish, John Chee, Rafael J. Fernandez–Moctezuma, Sathish Periasamy, Shreemoyee Sarkar, Poonam Singh, James Whiteneck, Spicer Matthews, Nevin Freeman
- Sponsors –
  - Transport ITS Coordinating Committee
  - RTC (Southwest Washington Regional Transportation Council)
  - OTREC
  - City of Portland, Office of Transportation
  - Oregon Department of Transportation
  - TriMet
  - Federal Highway Administration
  - National Science Foundation
  - Oregon Engineering and Technology Industry Council