Idaho Statewide Freight Data & Commodity Supply-Chain Analysis

October 26, 2017

Wilson Hall
Completed 1917

The SPARK
Completed 2017
Agenda

• Introductions

• Study Overview / Description

• Summary of Freight Data Availability

• Avenues for Collecting / Compiling Data

• Input on Freight Data Needs

• Next Steps
Project Tasks & Deliverables

Task 1: Assemble Research Advisory Committee

Task 2: Inventory & Assessment of Existing Freight Data Sources
  Deliverable 1: Interim Report 1: Freight Data Inventory

Task 3: Development of Freight Data Collection Plan
  Deliverable 2: Interim Report 2: Freight Data Collection Plan

Task 4: Implementation of Freight Data Collection Plan
Project Tasks and Deliverables

Task 5: Compile Freight Data into GIS Database (ArcGIS)

*Deliverable 3: Freight Database & Statewide Freight Data Dictionary*

Task 6: Idaho Freight Data & Supply-Chain Analysis

*Deliverable 4: Interim Report 3: Key Freight Supply-Chains in Idaho*

Task 7: Draft Report, Peer & Advisory Committee Review

*Deliverable 5: Draft Report*

Task 8: Final Report

*Deliverable 6: Final Report & ITD Presentation*
## Timeline

<table>
<thead>
<tr>
<th>Work Tasks</th>
<th>Months</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Task 1</strong> Assemble Research Advisory Committee</td>
<td>Oct-17 Nov-17</td>
</tr>
<tr>
<td><strong>Task 2</strong> Inventory &amp; Assessment of Freight Data Sources</td>
<td>Dec-17 Jan-18</td>
</tr>
<tr>
<td><strong>Task 3</strong> Freight Data Collection Plan</td>
<td>Feb-18 Mar-18</td>
</tr>
<tr>
<td><strong>Task 4</strong> Data Collection Implementation</td>
<td>Apr-18 May-18</td>
</tr>
<tr>
<td><strong>Task 5</strong> Compilation of Freight Data into Geographic Database</td>
<td>Jun-18 Jul-18</td>
</tr>
<tr>
<td><strong>Task 6</strong> Idaho Freight Data &amp; Supply Chain Analysis</td>
<td>Aug-18 Sep-18</td>
</tr>
<tr>
<td><strong>Task 7</strong> Draft Report &amp; Review</td>
<td>Oct-18 Nov-18</td>
</tr>
<tr>
<td><strong>Task 8</strong> Final Report &amp; Presentation</td>
<td>Dec-18 Jan-19</td>
</tr>
<tr>
<td></td>
<td>Feb-19 Mar-19</td>
</tr>
</tbody>
</table>

Deliverables:
- Deliverable 1: [Task 3] Freight Data Collection Plan
- Deliverable 2: [Task 5] Compilation of Freight Data into Geographic Database
- Deliverable 3: [Task 6] Idaho Freight Data & Supply Chain Analysis
Freight Data Currently Available

**Truck**
- FAF4
- USDA
- Vehicle Classification & Count (WIM/ATR)
- Port of Entry

**Rail**
- Public Waybill
- STB Weekly Progress Report
Freight Analysis Framework (FAF) Data
Inbound Freight

FREIGHT ARRIVING INTO IDAHO
000 TONS
2015
Inbound

FREIGHT ARRIVING INTO IDAHO VALUE (MILLION $)
2015
Outbound Freight

FREIGHT LEAVING IDAHO
000 TONS
2015
Outbound

FREIGHT LEAVING IDAHO
VALUE MILLION $

2015
Destinations for Freight Leaving Idaho (2015 FAF)
USDA Data
ATR / WIM Data
Average Trucks Counts, by Day of Week

- **Sunday**: Straight Truck = 500, Tractor Trailer = 450, Truck 2 Trailers = 400
- **Monday**: Straight Truck = 1000, Tractor Trailer = 850, Truck 2 Trailers = 800
- **Tuesday**: Straight Truck = 1100, Tractor Trailer = 950, Truck 2 Trailers = 900
- **Wednesday**: Straight Truck = 1200, Tractor Trailer = 1050, Truck 2 Trailers = 1000
- **Thursday**: Straight Truck = 1150, Tractor Trailer = 1000, Truck 2 Trailers = 950
- **Friday**: Straight Truck = 1250, Tractor Trailer = 1100, Truck 2 Trailers = 1050
- **Saturday**: Straight Truck = 700, Tractor Trailer = 650, Truck 2 Trailers = 600
Average Trucks Counts, by Month

January - February - March - April - May - June - July - August - September - October - November - December

- Straight Truck
- Tractor Trailer
- Truck 2 Trailers
**Straight Trucks (Commercial)**

**Avg. Monthly Truck Volume**

- 347 - 16,299
- 16,300 - 42,728
- 42,729 - 86,221
- 86,222 - 156,127
- 156,128 - 272,749

The USDA-FSA Aerial Photography Field office asked to be credited in derived products.
Straight Trucks (Commercial)
Range as a Percent of Average Monthly
- 17.6% - 58.4%
- 58.5% - 89.6%
- 89.7% - 134.7%
- 134.8% - 199%
- 199.1% - 277.9%
Truck & Trailer (Commercial)
Avg. Monthly Truck Volume
- 155 - 6,961
- 6,962 - 18,384
- 18,385 - 39,469
- 39,470 - 70,480
- 70,481 - 127,809

The USDA-FSA Aerial Photography Field office should be credited in derived products.
Avenues for Supplementing Freight Data

GPS Vehicle Route: Private

- INRIX, NAVTEQ, OnStar, TomTom, AirSage, CellInt, Delcan, SpeedInfo
- EROADS
- others

Surveys / Questionnaires

- Roadside
- Establishment
- Shipper / Trucker

Video Streaming / Image Capture
INRIX

3 Sources:

✓ Automotive Manufacturers
✓ Truck Fleets
✓ Service Provider (AT&T, Verizon)
INRIX Trips Details

Trip Records with Waypoints

Travel route data related to the start, end and waypoints of a particular type of vehicle within a user-defined region

Use Cases:

- Trips patterns with routing
- Detailed speed and travel time profiles
- Assessing system changes over time
- Linking demographic information with associated trips
### INRIX Trips Report – Sample Output

<table>
<thead>
<tr>
<th>TripId</th>
<th>DeviceId</th>
<th>ProviderId</th>
<th>Mod</th>
<th>StartDate</th>
<th>Start</th>
<th>EndDate</th>
<th>End</th>
<th>StartL</th>
<th>StartLoc</th>
<th>EndL</th>
<th>EndLoc</th>
<th>IsStartH</th>
<th>IsEndH</th>
<th>IsStartHome</th>
<th>IsEndHome</th>
<th>ProviderTyp</th>
<th>ProviderDr</th>
</tr>
</thead>
<tbody>
<tr>
<td>5eaf7dcb-2da99c8b6-a8c88a0055f</td>
<td>12015-10-12T16</td>
<td>1</td>
<td>2015-10-12T16</td>
<td>1</td>
<td>24.5457</td>
<td>46.6719</td>
<td>24.5467</td>
<td>46.6702</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1c34352ae-bd52b5a7e-a8c88a0055f</td>
<td>12015-10-12T04</td>
<td>1</td>
<td>2015-10-12T04</td>
<td>1</td>
<td>24.5546</td>
<td>46.5097</td>
<td>24.5447</td>
<td>46.5132</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2d5a4d24-e1846b8eaf-3fe94a00231</td>
<td>12015-10-13T13</td>
<td>2</td>
<td>2015-10-13T13</td>
<td>2</td>
<td>24.5914</td>
<td>46.5704</td>
<td>24.5986</td>
<td>46.6914</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>97e3bafcl-a7733ffbf0-58238e99ae2</td>
<td>12015-10-12T15</td>
<td>1</td>
<td>2015-10-12T15</td>
<td>1</td>
<td>24.7537</td>
<td>46.6546</td>
<td>24.7802</td>
<td>46.6344</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6b72ab74-8267ba2bcf-3fe94a00231</td>
<td>12015-10-12T19</td>
<td>1</td>
<td>2015-10-12T19</td>
<td>1</td>
<td>24.5966</td>
<td>46.6544</td>
<td>24.5991</td>
<td>46.65</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>31cc5b4be-8c194cae77-a8c88a0055f</td>
<td>12015-10-12T15</td>
<td>1</td>
<td>2015-10-12T15</td>
<td>1</td>
<td>24.7537</td>
<td>46.6546</td>
<td>24.7802</td>
<td>46.6344</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>011b59af-e1125f00dd-7e58238e99ae2</td>
<td>12015-10-12T10</td>
<td>1</td>
<td>2015-10-12T10</td>
<td>1</td>
<td>24.5718</td>
<td>46.8252</td>
<td>24.5743</td>
<td>46.8673</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3694f7ec-c2e756893-58238e99ae2</td>
<td>12015-10-12T13</td>
<td>1</td>
<td>2015-10-12T13</td>
<td>1</td>
<td>24.5315</td>
<td>46.7176</td>
<td>24.5272</td>
<td>46.7144</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8938770c-947c868a8-a8c88a0055f</td>
<td>12015-10-12T05</td>
<td>2</td>
<td>2015-10-12T05</td>
<td>2</td>
<td>24.5914</td>
<td>46.7415</td>
<td>24.5751</td>
<td>46.7714</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0537159c-072cb331af-3fe94a00231</td>
<td>12015-10-12T16</td>
<td>1</td>
<td>2015-10-12T16</td>
<td>1</td>
<td>24.5817</td>
<td>46.7374</td>
<td>24.5799</td>
<td>46.7394</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>baedc667-8b5b90dd-2c3fe94a00231</td>
<td>12015-10-12T02</td>
<td>1</td>
<td>2015-10-12T02</td>
<td>1</td>
<td>24.5748</td>
<td>46.7268</td>
<td>24.5808</td>
<td>46.7834</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e12f4efc-bb82d29187-e8c88a0055f</td>
<td>12015-10-12T18</td>
<td>1</td>
<td>2015-10-12T18</td>
<td>1</td>
<td>24.7794</td>
<td>46.8386</td>
<td>24.7819</td>
<td>46.8085</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>fff7a4b91-a77133f6b0-58238e99ae2</td>
<td>12015-10-12T15</td>
<td>1</td>
<td>2015-10-12T15</td>
<td>1</td>
<td>24.7783</td>
<td>46.6411</td>
<td>24.7543</td>
<td>46.6547</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4be40e06-819d57c0-a8c88a0055f</td>
<td>12015-10-12T16</td>
<td>1</td>
<td>2015-10-12T16</td>
<td>1</td>
<td>24.7807</td>
<td>46.6376</td>
<td>24.768</td>
<td>46.6816</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Raw trips in long csv file
- Includes vehicle type and driver profile attributes
Summary of Sample

- Sample data from Austin, December 2016
- Considered any trip that touched the area shown

1,5 million trips
64 million waypoints

Note - State of Texas one day sample:
Trips - 1,457,864
Waypoints - 51,209,924
Trip Start/End Locations

- High level of granularity – road layout clearly visible from start/end points alone
Advisory Committee Input

- Knowledge of other data sources
- Specific needs / applications for study output
- Other concerns / issues
Next Steps

- Interim Report 1: Freight Data Availability
- Interim Report 2: Freight Data Collection Plan
- Implement Plan
- Progress Meetings
Washington State University  
School of Economic Sciences  

Eric Jessup, Associate Professor  
eric_jessup@wsu.edu  
509-335-4987

Oregon State University  
School of Civil & Construction Engineering  

Sal Hernandez, Assistant Professor  
Sal.Hernandez@oregonstate.edu  
541-737-4740