Real Time Freight Data

Public Sector Initiatives to Provide and Use Real Time Freight Data

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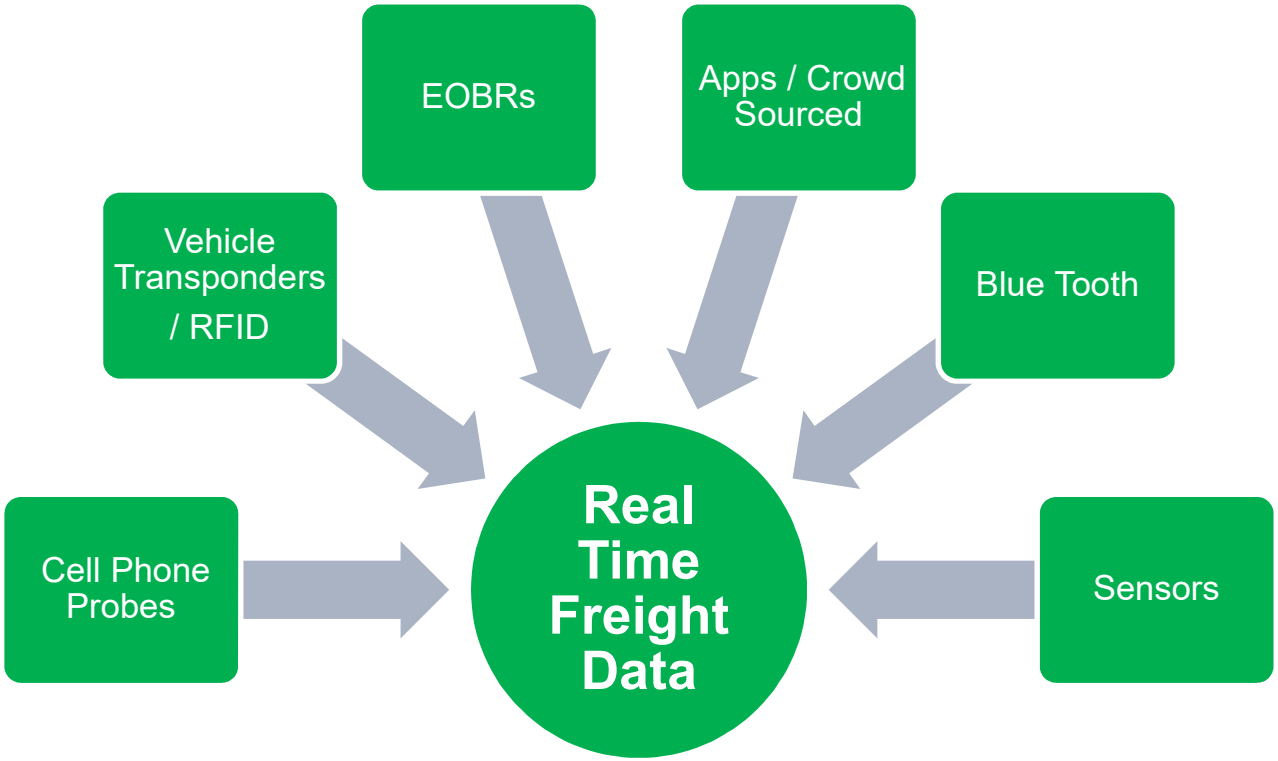
Overview

- **This presentation will highlight examples of how public sector is working with transportation stakeholders to provide and use real time information about transportation conditions.**

What is real-time freight data?

- Information delivered immediately
- Data can also be stored for later analysis
- Processed using real-time computing
- Location-enabled and wireless technology devices

What are the sources of real-time freight data?



Examples of real-time freight data

- **Provision of Real Time Data**
  - Port Operations
  - Parking availability
  - Safety
- **Use of Data in Planning, Operations and Policy Making**
  - Freight Mobility Indicator Dashboards
  - Identification of freight generators & corridors in freight planning
  - Identification of unauthorized parking

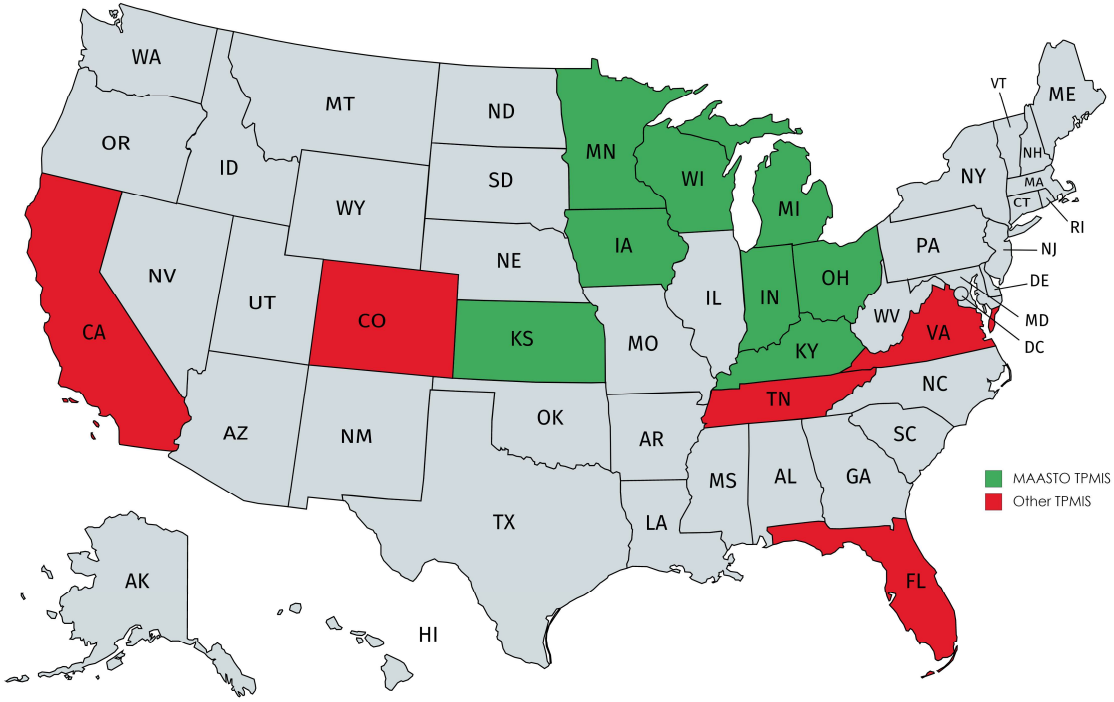
GeoStamp – Real Time Data for Port Operations

- GeoStamp partners with ports, terminal and carriers to provide real-time estimates of drayage truck turn times at ports and terminal yards
  - Port of Long Beach
- GeoStamp works with GPS providers and also has a mobile app
- Turn-time: the amount of time it takes a cargo truck to enter the port terminal, load or unload its cargo, and exit the port terminal
- Allows firms to geo-fence different areas in the port to identify where the waiting occurs:
  - Queue time
  - Terminal time
  - Customs windows
  - Chassis pits
- Turn time reports allow for improved invoicing.
- Ports and carriers use data to improve operations

MAASTO Truck Parking Management Information System

- **Mid-America Association of State Transportation Officials (MAASTO)**
  - TIGER Grant for TPMIS in Eight MAASTO states include Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, Ohio and Wisconsin
  - Allows system interoperability across state lines
- **Data from cameras, inductive loops and other sensors**
- **Information distributed via DMS, Smartphone applications, 511 systems and in-cab devices.**
  - Common API developed to exchange parking information
- **System launched January 2019**

State Truck Parking Management Information Systems



Crowd Sourced Data - Trucker Path Pro App

- **Trucker Path offers an App that aggregates information from long haul truck drivers**
  - Over 1.5 million downloads
  - Features over 6,000 locations where drivers can find available truck parking in real-time
  - Crowd-sourced app has over 400,000 monthly parking updates
  - Also provides a platform to distribute data from public TPMIS
  - Key information
    - Truck parking availability
    - Weigh stations
    - Low clearances
    - Truck dealerships
    - Other Retail

Drivewyze - Safety Notifications

- **Alerts provided for high-risk areas across the United States – audio and visual**
- **Drivers see alerts for upcoming high-risk areas.**
  - Roll over - 500 locations in 32 states identified with state partners.
  - Low bridge
- **Allows drivers to reduce over speeding in risk areas**

Connected Vehicle Future?

- **Wyoming CV Pilot**
  - Improve monitoring and reporting of road conditions to vehicles on I-80.
    - Forward collision warning
    - I2V Situational Awareness
    - Work Zone Warning
    - Spot Weather Impact Warning
- **Tampa-Hillsborough Expressway Authority (THEA) Connected Vehicle Pilot (THEA Pilot)**
  - Curve speed warnings
- **Connected-Vehicle Data Possibilities**
  - Heavy breaking events
  - Traction control engagement
  - Rollover warnings

Public Sector Use of Real Time Freight Information

- **Typically freight planners and policymakers have used archived real time data sources to get access to more data**
- **Definition of real time for planning**
- **Use cases highlighted**
  - Provide freight mobility indicators
  - Identify freight trip generators
  - Identify the location where trucks are parked to characterize the need for additional truck parking

FHWA's Freight Mobility Indicators

- **Data Source: National Performance Management Research Data Set (NPMRDS)**
  - Calculations using every Traffic Message Channel (TMC) for entire NHS.
- **Preparing Freight Mobility Indicators**
  - Delay
    - Total delay (vehicle-hours)
    - Delay per mile for sections (vehicle-hours per mile)
    - Truck delay percentage of total delay
  - Mobility
    - Travel Time Index (TTI)
  - Reliability
    - Planning Time Index (PTI)
    - Buffer Index (BI)
    - Truck Travel Time Reliability (TTTR) – as defined for MAP-21
- **Environmental metrics**
  - Wasted fuel (gallons), CO2 generated due to congestion (pounds), cost (of wasted fuel and delay) (dollars)

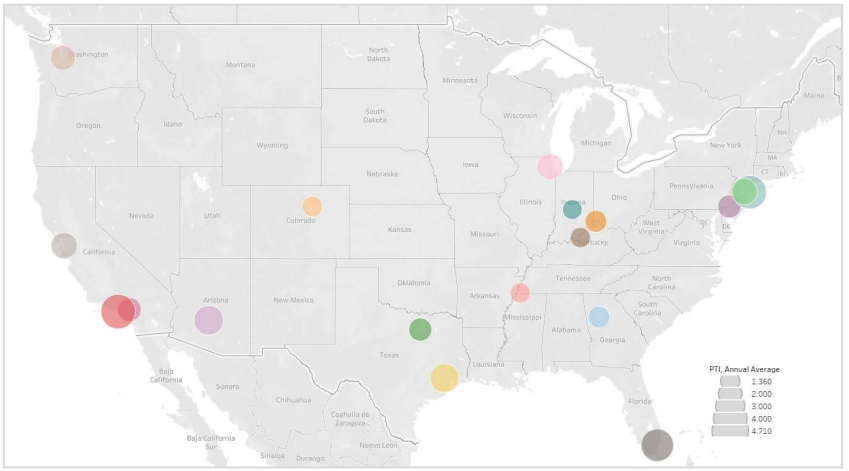
Freight Corridors

FHWA's Freight Mobility Indicator Dashboard

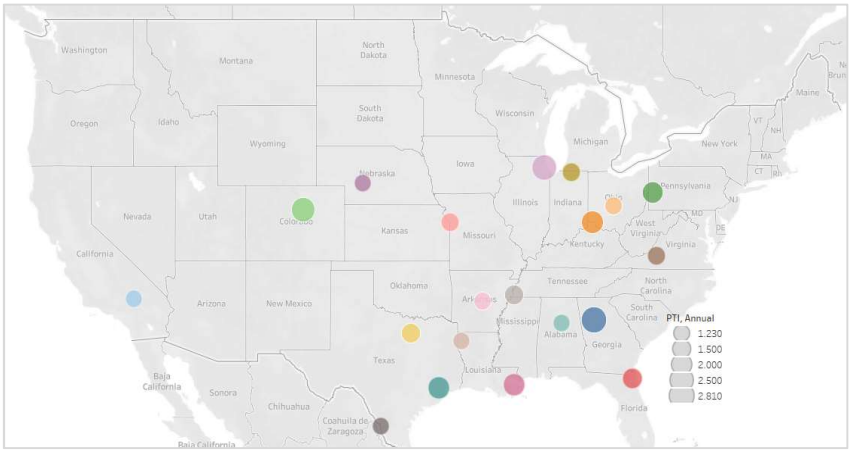
- **Provides the ability to zoom into many different facilities \ geographies**

  - Interstate
  - Interstate and Freeway
  - Freeway
  - Arterials
  - Urban/rural
  - States by urban/rural
  - States by road type
  - 20 Cargo Airports
  - 26 Border Crossings
  - 20 Rail intermodal facilities
  - 25 Ports
  - 30 Major Freight Corridors

PTI magnitude for each of the top 18 cargo bearing airports in the U.S.



PTI for Rail Intermodal Facilities

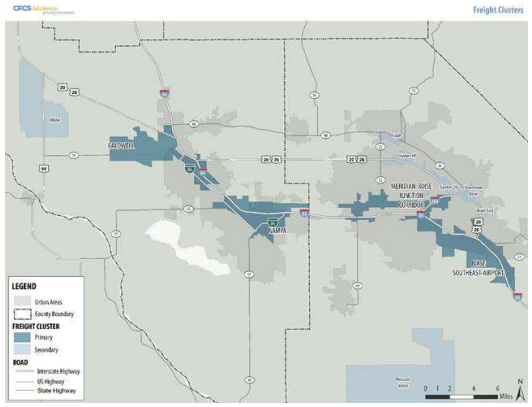


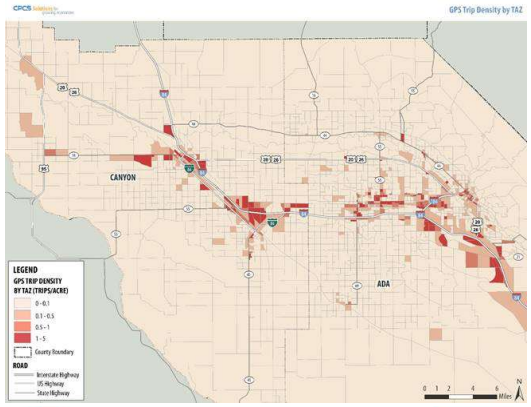
2017 Missouri State Freight Plan

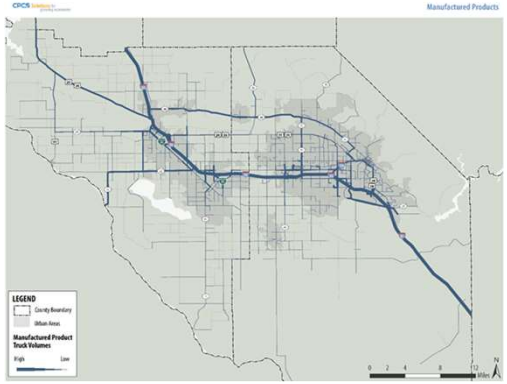
- **Analyzed truck Global Positioning System (GPS) data from Missouri to identify census block groups where freight activity is most intense.**
  - 400 freight-significant block groups out of a total of 4,506 in the State based on truck GPS data activity within each block group. ATRI's sample included.
  - only stopped trucks to identify 400 block groups with the greatest freight intensity.
  - Removed data points that fell on major roadways or at truck stops were removed from the dataset using various GIS based filters.
  - Used aerial imagery to identify data that fell within a block group but outside of a freight generator.
  - The end result was was a dataset that included only vehicle GPS positions within the vicinity of a freight generator facility.
  - Top 100 most intense freight generators among the 400 block groups in the state.

Compass Freight Study

- **Freight Study for Boise-Nampa MPO (COMPASS).**
- **Used truck GPS data to identify**
  - freight generators (map 1)
  - freight clusters (map 2)
  - identify the use of freight corridors in the region by manufacturing industries (map 3)
- **COMPASS Freight Plan developed a freight improvement strategy based on this analysis**

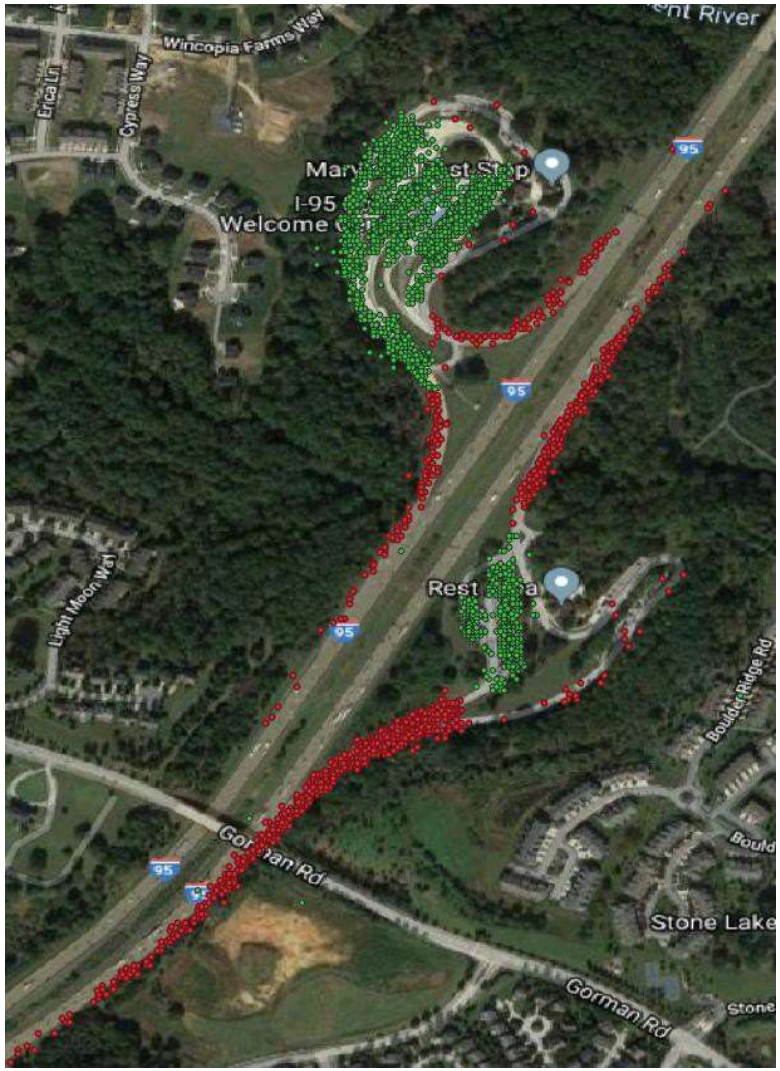






Maryland Statewide Truck Parking Study

- **Analyzed Four Months of INRIX GPS Data**
  - Used to Identify "Stop Events" - over 1.9 million Stops in Maryland
- **Process used to Classify Stop Events:**
  - Identify parcels associated with freight
  - Classify portions in MDOT Rest Areas as designated or undesignated
  - Cluster and manually classify remaining stop events
- **Truck Stop Events Over 3 Hours**
  - 1,300+ Undesignated Stop Events
  - 5,500 Designated Stop Events



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Conclusions

- **Many exciting developments occurring in public sector partnerships to produce and use real time data**
- **Proliferation of mobile data collection devices and falling costs to process data means that the future will be data rich**
- **In the future new data from many sources, including connected and autonomous vehicles, will greatly expand real time data applications that are feasible and efficient for the public and private sectors**
- **Data distribution is often most successful when it relies on multiple methods of distribution and can leverage multiple existing platforms to deliver information to users.**

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