Truck Bottleneck Identification
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Truck Bottleneck Identification: Bottleneck Definition

What is a Truck bottleneck?

- **Working definition:**
  - Locations where truck traffic experiences recurring slow speeds due to an operational or network deficiency
  - Important to mask locations with known construction from the analysis
  - Focus on locations with at least 10 hours of truck light congestion a day
Truck Bottleneck Identification:
Overview

- Background
- Data
- Screening Process
- Network Deficiency
- Next Steps
- Questions
Truck Bottleneck Identification: Background

Why locate truck bottlenecks?

- National freight hub
- Strategically target funds
- Congestion reduction
Truck Bottleneck Identification: Background

Previous work:
- Expressway traffic scans and other performance metrics
- Lack of data
Truck Bottleneck Identification: Probe Dataset

National Performance Measurement Research Data Set (NPMRDS):

- Provided by FHWA
- Average travel time in seconds by Traffic Message Channel (TMC)
  - TMC – pre-defined road segments based on industry standard for traffic reporting.
- Five-minute time slices
- Data is only provided when there is vehicle data
- Data reported for trucks, passenger cars, and all vehicles
  - Truck data provided by American Transportation Research Institute (ATRI) and includes primarily Classes 7 and 8
- Limited to National Highway System (NHS)
- TMC link shapefile provided to visualize data
Truck Bottleneck Identification : Probe Dataset

Source: NPMRDS Shapefile 2014Q3
NHS CMAP
Region

Source: NPMRDS Shapefile 2014Q3
Truck Bottleneck Identification: Process

Overall process:
- Calculate light congested hours to identify candidate bottleneck locations
- Map candidate locations
- Map network deficiency
- Link bottleneck to deficiency
- Develop solutions
- Rank in severity
- Results will highlight locations that warrant a more detailed engineering study
Truck Bottleneck Identification: Network Deficiency

Identify probable causes for bottleneck

- Network deficiencies:
  - Lane drop and pinch points
  - Lane imbalances
  - Lane use restrictions
  - Geometric issues
  - Interchanges (e.g., weaving movements)
  - Signal operations
  - Intersection and mainline capacity
  - Rail crossing

- Important to mask locations with known construction from the analysis
Truck Bottleneck Identification : Next Steps

- Determine how sequential links should be grouped as a single bottleneck
- Develop list of probable causes and solutions for most severe bottlenecks in the region
- Repeat process with historical and more current data
- Supplement raw ATRI probe data into analysis
Truck Bottleneck Identification:
Question for Committee

☐ Are the results reasonable?
☐ Feedback on the method to identify truck bottlenecks?
☐ Missing operational/network deficiency
Thank you.

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