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Research Focus

Innovative methods to collect and fuse multi-modal freight data to support freight travel demand modeling and planning

Static Data Sources

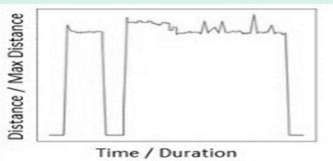
Methods: Adapting ITS sensors and creating new technologies to gather site-specific, population-level, high-resolution truck characteristics data

Applications: Supplement Vehicle Inventory and Use Surveys (VIUS) and commodity flow estimation

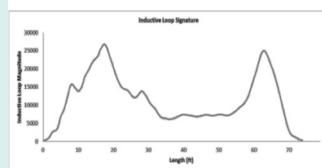


Truck types: Tank, Intermodal, Reefer, Van, Livestock, Hopper, etc.

Lidar "Signature"



Loop "Signature"

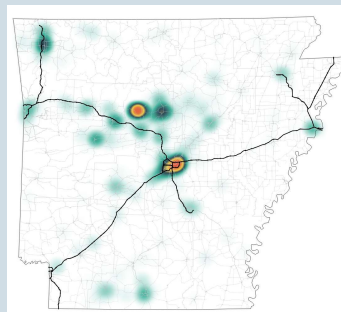


Non-intrusive Lidar Sensors¹ and Advanced Inductive Loop Detectors² to Classify Freight Trucks by Body-Type

Mobile Sensor Data

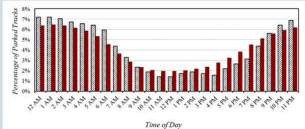
Methods: Mining commodity and industry information from anonymized truck and marine vessel GPS data

Applications: Estimate demand for transportation assets like ports and truck parking

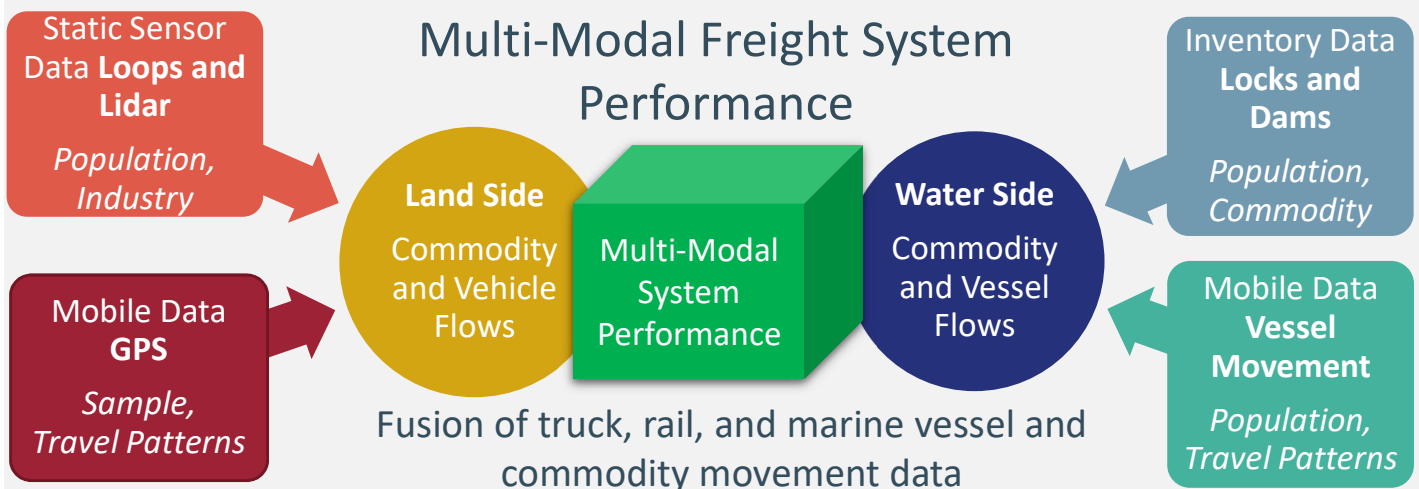


Stop concentration of internal truck movements

Parking facility time of day usage pattern



Anonymous Truck GPS Data to Analyze Freight Flow Patterns³ and Truck Parking Availability⁴



References:

1. Asborn, M., Burris, C., and Hernandez, S., "Truck Body-Type Classification Using Single-Beam Lidar", Forthcoming, TRR, 2018.
2. Hernandez, S., Tok, A., and Ritchie, S.G., "Multiple-Classifer Systems for Truck Body Classification at WIM Sites with Inductive Signature Data", Transportation Research Part C: Emerging Technologies, 68:1-21, June, 2016.
3. Akter, T., Hernandez, S., Diaz-Corro, K., and Ngo, C., "Leveraging open-source GIS tools to determine freight activity patterns from anonymous GPS data", AASHTO GIS-T Conference, 2018.
4. Diaz-Corro, K., Akter, T., and Hernandez, S., "Comparison of Truck Parking Counts to GPS Derived Count for Truck Parking Facility Utilization Analysis", Forthcoming, TRR, 2019.