Multimodal Freight in a Connected Vehicle Environment

A closer look at the transformation of the freight industry in relation to connected vehicles and impacts at the micro and macro levels.

WHAT IS THE NEED?

The United States Department of Transportation (USDOT) has shown leadership and strong support in adoption of automation-related technologies which are reflected in its preamble of Intelligent Transportation System (ITS) Strategic Plan. This has spurred several private freight manufacturing companies to roll out their next generation fleet of freight vehicles, especially commercial trucks, to be integrated with ITS and connected vehicle technology (CVT) features.

While safety, mobility and environmental benefits are clearly accrued and anticipated from ubiquitous CVT exhibited by a freight vehicle at the micro level, the role of the technology in mobility and resilience building of multimodal freight operations is currently unknown or at least needs an initial investigation at the macro level for freight planning purposes. CVT has the potential to become very relevant and crucial for multimodal transportation, which involves a synchronized operation of two or more modes of freight (such as trucks, rail, air cargo and ports) responsible for transfer of essential goods and commodities on a large scale. However, very little is known about the influence of reliability of CVT network on the freight industry.

WHAT WAS OUR GOAL?

The goal of this research was to understand the implications of CVT implementation for multimodal freight operations through the sequence of three interrelated objectives:

- Understanding constituents/factors for mobility and resilience of multimodal freight operations.
- Determining efficient routes for mobility and resilience with connected vehicles' network reliability.
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with CVT is found to be at least 1500 feet and 55 feet for vehicles to be fully connected under sparse traffic conditions and congested traffic conditions, respectively, and

4. An increase in motor carrier operational costs for the ‘with CVT’ case.

WHAT IS THE BENEFIT?

CVT has the potential to become very relevant and crucial for multimodal transportation, which involves a synchronized operation of two or more modes of freight (such as trucks, rail, air cargo and ports) responsible for transfer of essential goods and commodities on a large scale. This research aimed to understand the implications of CVT implementation for multimodal freight operations, thereby helping the state improve its economic competitiveness, along with enhancing the safety, mobility and environmental benefits of the state’s freight network.

LEARN MORE

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www.metrans.org/research/evaluating-economic-mobility-and-resilience-multimodal-freight-operations-connected-vehicle

IMAGES