

From: [Lisa Kay Schweyer](#)
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Modeling and Enhancing Freight Mobility in the Philadelphia Region

The Philadelphia region has a large and complex freight transportation network that includes more than 1,000 miles of the National Highway System and 9.8 million vehicle-miles of daily truck travel. The mobility of commercial trucks and the efficiency of freight infrastructure are essential to regional transportation infrastructure planning and economic development. Unfortunately, characteristics of freight demand, such as when and how trucks travel, freight destinations and truck routing behavior, are unclear. This becomes the main hurdle for improving truck mobility. There lacks of freight models that predict the mobility of truck demand induced by 'what-if scenarios', such as roadway construction, new freight terminals and land-use change. This research will analyze the freight movements from the intermodal facilities in the Delaware Valley Regional Planning Commission (DVRPC) region, including ports, airports, and rail terminals, to understand travel destinations, travel routes, touring behaviors, time of day of travel and other travel patterns of the freight truck movements generated from these facilities, using the truck GPS data purchased and provided by DVRPC. By incorporating the characteristics of truck demand, this research will also develop a regional network model that encapsulates route choices of car and trucks, and estimate/predict high-granular car and truck network flow. As a proof-of-concept experiment, we use this network model to forecast the traffic conditions of trucks induced by the closure of an I-95 highway segment between Ben Franklin Bridge and Broad St. In addition, we develop a prototype web application to integrate and visualize truck demand characteristics, the regional network model and modeling outputs. This tool will be provided to DVRPC for their decision making on freight planning and operation.

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Carnegie Mellon University
Mobility21 National USDOT UTC for Mobility of Goods and People
Pittsburgh, PA United States 15213

Project Managers:

Kline, Robin

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Principal Investigators:

Qian, Sean

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Lisa Kay Schweyer, [MPM](#) & [TDM-CP](#)®

(*"Lisa Kay" first name, "Schweyer" last name*)

Program Manager, [Traffic21](#) Institute, and [Mobility21](#) National University Transportation Center

Carnegie Mellon University, 3046 Hamburg Hall, 5000 Forbes Avenue, Pittsburgh, PA 15213

Phone: 412-268-1178

Email: LKSchweyer@cmu.edu

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