

# Freight Deliveries Directly Generated by Residential Units: An Analysis with the 2009 NHTS Data

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## Abstract

As a result of the rapid growth of online shopping, more goods and services are delivered directly to residential units. The door-to-door deliveries improve residents' accessibility to retailing sector, and at the same time create truck delivery trips. However, partially due to the data limitation, most existing freight research focuses on freight trips generated by business establishments, little is known about freight trips generated by residential units. As more and more urban areas are pushing for dense and mixed development, it is necessary to understand the pattern of truck freight trips directly generated by residential units. For this paper, dataset from NHTS is used to investigate the freight trips generated by residential units. NHTS 2009 provides accurate, comprehensive and timely information on trips, land use, household characteristics and social economic factors. It is the first time NHTS data is used to estimate freight trips. A set of right censored negative binomial models are used to identify the impacts of influential factors such as housing density, type of house and house ownership. A case study for the Capital District in New York State is then presented. The predicted freight trips generated by residential units are also compared to freight trips generated by business establishments. Such a study will supplement city logistics studies that traditionally focus on business behaviors, help reconstruct the complete picture of freight activities in urban areas.

**Key words:** Freight delivery; Online shopping; Residential units; NHTS