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The identification of truck-related greenhouse gas emissions and critical impact factors in an urban logistics network

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Abstract

Trucking activities in urban logistics networks (ULNs) are a major source of greenhouse gas (GHG) emissions. Diversified logistics demand leads to a variety of truck trip purpose, to study truck related emissions by trip purpose is necessary. This study aims to analyze the characteristics of trucking activities in a ULN by trip purpose and to investigate the relationships between trucks' trip emissions and critical influential factors from a ULN perspective, with a particularly focuses on the effects of the Euclidean distance of a trip, the vehicle curb weight, as well as the population density at a trip's origin/destination (OD). By combining a large set of empirical GPS trucking data and analytical information of ULN properties from Shenzhen, China, an imputation matrix approach is first developed to classify the truck data, based on trip purposes. Then, the trucking characteristics in terms of each trip purpose are extracted from the processed data. The GHG emissions associated with the trucking activities are

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