

UTC Project Information	
Project Title	MPC 479- Modeling multi-class truck traffic assignment method with different traffic restraint constraints
University	Utah State University
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Project Duration	September 30, 2013 to September 30, 2018
Brief Description of Research Project	Traffic assignment is an essential and fundamental step in the transportation planning and management processes (Sheffi, 1985; Patriksson, 1994; Bell and Iida, 1997). Given constant travel demands between each origin-destination (O-D) pair (i.e., travelers), and travel cost functions for each link of the network (i.e., transportation network), the traffic assignment problem is to determine the traffic flow pattern as well as network performance measures (e.g., total system travel time, vehicle miles of travel, vehicle hours of travel, fuel consumption and emission, etc.). In practice, most traffic assignment models are single user class and make a number of modeling assumptions including: separability assumption on the link travel time function (i.e., no interactions), deterministic user equilibrium (DUE) or stochastic user equilibrium (SUE) without accounting for route overlapping, and no side constraints to describe the limited supply of certain scarce resources (e.g., link capacities) in a network which are shared by multiple vehicle types (e.g., passenger cars and multiple truck types) or to limit certain classes of vehicles (e.g., trucks) on underpasses due to height restriction, bridges due to weight restriction, and prohibited lanes due to lane restriction. However, as truck traffic continues to grow as a result of increasing freight shipments transported by trucks, there is an increasing interest to model multiple vehicle classes separately, especially in addressing the impacts of truck traffic on

	<p>congestion, infrastructure deterioration, safety, and environmental concerns in many urban cities. According to the Bureau of Transportation Statistics (BTS), freight shipments transported by trucks account for 71 percent by value in U.S. dollars and 76 percent by weight in tons of all commodity shipments (BTS, 2014). Hence, the purpose of this proposal is to develop advanced traffic assignment method and computation algorithm for addressing the asymmetric vehicle interactions, route overlapping, and traffic restraints in multi-class traffic assignment problems involving multiple types of trucks.</p> <p>Research Objectives: The overall goal of this research is to develop advanced method and computation algorithm for the multi-class traffic assignment problem involving multiple types of trucks with different traffic restraint constraints. Specifically, the objectives include the followings:</p> <ol style="list-style-type: none"> 1. Develop advanced multi-class traffic assignment method involving multiple types of trucks with various traffic restraint constraints. 2. Develop computation algorithm for solving the multi-class truck traffic assignment problem. <p>Collect data from different sources to develop a case study for evaluating the multi-class truck traffic assignment method and computation algorithm.</p>
<p>Describe Implementation of Research Outcomes (or why not implemented)</p> <p>Place Any Photos Here</p>	

<p>Impacts/Benefits of Implementation (actual, not anticipated)</p>	
<p>Web Links</p> <ul style="list-style-type: none">• Reports• Project Website	