UNIVERSITY TRANSPORTATION CENTER

RESEARCH BRIEF

Developing Better Curb Management Strategies through Understanding Commercial Vehicle Driver Parking Behavior in a Simulated Environment

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Background

As e-commerce and urban deliveries spike, there is an increasing demand for curbside loading/unloading space. At the same time, cities grapple with managing urban freight more actively, and need to better understand commercial vehicle driver behaviors and factors affecting their parking decisions.

Commercial vehicle drivers face numerous challenges and have to adopt different travel and parking behaviors to perform deliveries and pickups efficiently. Yet, the unique needs of delivery trucks and commercial vehicles are not acknowledged in current design practices. Moreover, the literature on decision-making process and parking behavior of commercial vehicle drivers is scarce. The data for such studies usually come from empirical field studies, while there are only limited situations that can be observed in existing situations, and even with those, driver characteristics remain mostly unknown. This study will simulate several parking situations for commercial vehicle drivers and analyze their reactions.

The research findings will improve our understanding of the commercial vehicle driver parking behavior and interactions between commercial vehicles and other road users in an urban environment, and is intended to fill these gaps and serve as a valuable resource for policy makers, transportation engineers and urban planners.

Research Project

The Urban Freight Lab (UFL) at University of Washington in partnership with the Driving and Bicycling Simulator Laboratory (DBSL) at Oregon State University will use a driving simulator to design a simulation experiment to test the behavior of commercial vehicle drivers under various parking and delivery situations and to analyze their reactions.

The simulation experience will be designed in a quarter-cab truck simulator. Various simulation environments will be defined by changing road characteristics, curb allocations, and other road users. Drivers from various categories of age, gender, experience level and goods type will be invited to operate the simulator and make a parking decision in a few simulated environments. The simulator can also monitor distraction (through eye tracking) and the stress level of drivers (through galvanic skin response) when making these decisions and interacting with other road users.

Analyzing parking decisions and driver stress levels based on roadway and driver characteristics will provide insights on travel behaviors and the parking decision-making process of commercial vehicle drivers, and will help city planners improve street designs and curb management policies to accommodate safe and efficient operations in a shared urban roadway environment.

ABOUT THE AUTHORS

The research team consisted of Anne Goodchild, Ed McCormack, and Andisheh Ranjbari of the University of Washington, and David Hurwitz of Oregon State University.

ABOUT THE FUNDERS

This research was funded by the Pacific Northwest Transportation Consortium, with additional support from the Seattle Department of Transportation, Oregon Department of Transportation, and the Urban Freight Lab.

EXPECTED DATE OF COMPLETION

March 2022

FOR MORE INFORMATION

https://depts.washington.edu/pactrans/research/projects/developing-better-curb-management-strategies-through-understanding-commercial-vehicle-driver-parking-behavior-in-a-simulated-environment/