

UTC Project Information	
Project Title	Changing Retail Business Models and the Impact on CO2 Emissions from Transport: E-commerce Deliveries in Urban and Rural Areas
University	University of Washington
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Funding Source(s) and Amounts Provided (by each agency or organization)	
Total Project Cost	\$40,000.00
Agency ID or Contract Number	DTRT12-G-UTC10
Start and End Dates	7/1/2013-10/31/2014
Brief Description of Research Project	<p>While researchers have found relationships between passenger vehicle travel and smart growth development patterns, similar relationships have not been extensively studied between urban form and goods movement trip making patterns. In rural areas, where shopping choice is more limited, goods movement delivery has the potential to be relatively more important than in more urban areas. As such, this work examines the relationships between certain development pattern characteristics including density and distance from warehousing. This work models the amount of CO₂, NO_x, and PM₁₀ generated by personal travel and delivery vehicles in a number of different scenarios, including various warehouse locations. Linear models were estimated via regression modeling for each dependent variable for each goods movement strategy. Parsimonious models maintained nearly all of the explanatory power of more complex models and relied on one or two variables – a measure of road density and a measure of distance to the warehouse. Increasing road density or decreasing the distance to the warehouse reduces the impacts as measured in the dependent variables (VMT, CO₂, NO_x, and PM₁₀). We find that delivery services offer relatively more CO₂ reduction benefit in rural areas when compared to CO₂ urban areas, and that in all cases delivery services offer significant VMT reductions. Delivery services in both urban and rural areas, however, increase NO_x and PM₁₀ emissions.</p>
Describe Implementation of Research Outcomes (or why not implemented)	
Place Any Photos Here	

Impacts/Benefits of Implementation (actual, not anticipated)	
Web Links <ul style="list-style-type: none"> • Reports • Project website 	Changing Retail Business Models and the Impact on CO2 Emissions from Transport: E-commerce Deliveries in Urban and Rural Areas http://depts.washington.edu/pactrans/wp-content/uploads/2013/11/PacTrans-23-626637-Goodchild-Anne-Small-Project.pdf



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