

UTC Project Information	
Project Title	MPC-662 – Impacts of Wildfire Smoke and Other Area-Wide Air Pollution on Multimodal Traffic Volumes
University	Utah State University
Principal Investigator	Patrick A. Singleton, Ph.D. Keunhyun Park, Ph.D.
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Funding Source(s) and Amounts Provided (by each agency or organization)	<p>USDOT, Office of the Assistant Secretary for Research and Technology \$90,000</p> <p>Utah Department of Transportation – \$65,000 Utah State University – \$25,000</p>
Total Project Cost	\$180,000
Agency ID or Contract Number	69A3551747108
Start and End Dates	August 24, 2021 to July 31, 2024
Brief Description of Research Project	<p>Increasing episodes of area-wide air pollution – from wildfire smoke and other sources – in urban and rural communities in the western/central US suggest a need for transportation infrastructure managers to understand how traffic patterns across multiple transportation modes are affected by these air pollution events. This project studies the effects of wildfire smoke and other area-wide air pollution on multimodal traffic volumes in Utah by analyzing multiple fused traffic, air quality, weather, and geospatial data sources. First, we quantify how much and for how long air pollution impacts multimodal traffic volumes (motor vehicle volumes, transit ridership, and bicycle/pedestrian counts) after controlling for other factors, such as weather. Second, we identify how air pollution results in aggregate-level travel behavior changes, such as mode share adjustments, shifts of trips to later days, or changes in vehicle miles traveled. Third, we</p>

	characterize spatial variations in how air pollution impacts multimodal traffic volumes and aggregate travel behavior changes. This information could be used by transportation agencies to manage infrastructure operations and to prepare for and mitigate any traffic impacts and mode shifts due to smoke from wildfires, wintertime inversions, and other area-wide pollution events.
Describe Implementation of Research Outcomes (or why not implemented) Place Any Photos Here	These datasets and research findings have been integrated into transportation data analysis course taught by the PI (Patrick Singleton). It shows examples of transportation datasets and how to perform different kinds of regression analysis. It also shows examples of how to formulate research questions and assemble data to answer them, thus training students on general research methods.
Impacts/Benefits of Implementation (actual, not anticipated)	Overall, there was more evidence for “risk averse” reactions than for “altruistic” travel behavior changes, suggesting that newer or stronger policies may be needed in order to reduce driving and encourage more sustainable and healthful travel behavior changes in regions when faced with periods of area-wide poor air quality.
Web Links <ul style="list-style-type: none"> • Reports • Project Website 	<ul style="list-style-type: none"> • MPC Final Report – Impacts of Area-Wide Air Pollution on Multimodal Traffic Volumes in Utah