



Grant Deliverables and Reporting Requirements for UTC Grants

UTC Project Information	
Project Title	Measuring the Impact of the Large-scale Adoption of Ridesharing on the Spread of Infectious Diseases
University	University of South Florida
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Funding Source(s) and Amounts Provided (by each agency or organization)	USDOT: \$70,000 University of South Florida: \$35,000
Total Project Cost	\$105,000
Agency ID or Contract Number	Sponsor Source: Federal Government CFDA #: 20.701 Agreement ID: 69A3551747119
Start and End Dates	 Start date: 10/01/2019  End date: 03/31/2021
Brief Description of Research Project	In the near future, ride-sharing vehicles are expected to serve a significant fraction of the transportation demands in cities and urban areas. In the past two decades, there has been an increased occurrence of highly infectious diseases like COVID-19 in the world. The simultaneous increase in ride-sharing penetration in the cities and the occurrence of infectious diseases around the world raise a question about the safety of ride-sharing vehicles amid an infectious disease outbreak. In this project, we investigate the role of ride-sharing vehicles in the spread of COVID-19 in metropolitan areas. To this end, we consider a compartmental model to capture the progression of SARS-CoV-2 infections in an urban population and an agent-based simulation to capture the ride-sharing exposure to the disease. It is shown through the simulation that in the absence of any within-vehicle disease-control measures, ride-sharing can aggravate the spread of disease. Furthermore, it is shown that

	effective implementation of disease outbreak control measures at the ride-sharing level can almost nullify this aggravation.
Describe Implementation of Research Outcomes (or why not implemented) Place Any Photos Here	As the main focus of this project is impact assessment, the outcome of this project is not implemented.
Impacts/Benefits of Implementation (actual, not anticipated)	We created a novel hybrid simulation model to simulate the diseases transmission via ride-sharing services and shared computer codes: https://github.com/diwas07/Ride_hailing_disease_spread
Web Links • Reports • Project website	http://ctech.cee.cornell.edu/final-project-reports/ https://github.com/diwas07/Ride_hailing_disease_spread