



UTC Project Information – Center for Transportation, Environment, and Community Health	
<i>Project Title</i>	The Impact of Mobility on the Spread of Infectious Diseases to and from High Risk Environments
<i>University</i>	Cornell University
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<i>Funding Sources and Amount Provided (by each agency or organization)</i>	USDOT: \$60,636 Cornell: \$30,000
<i>Total Project Cost</i>	\$90,636
<i>Agency ID or Contract Number</i>	Sponsor Source: Federal Government CFDA #: 20.701 Agreement ID: 69A3551747119
<i>Start and End Dates</i>	06/01/2020 – 09/30/2021
<i>Brief Description of Research Project</i>	Transportation flows play a critical role in the propagation of infectious diseases. Mitigating the spread of such diseases requires understanding this dependency and building epidemiological models that explicitly account for transportation flows. In epidemiological studies, compartmental models such as the susceptible, exposed, infectious, and recovered (SEIR) model are an important tool in understanding how infectious diseases propagate through a population. Due to the importance of travel on the dynamics of the disease spread, there has been renewed interest in directly modeling transportation flows through the use of spatial meta-population SEIR models. This project explored models for explicitly integrating transportation flows in SEIR models with a focus on high-risk environments.
<i>Describe Implementation of Research Outcomes (or why not implemented)</i> <i>Place Any Photos Here</i>	<ul style="list-style-type: none"> • Increased understanding and awareness of the interplay between mobility and epidemics. In particular, understanding how to curb the spread of disease through public transit while minimizing the disruptions to mobility and the resulting economic losses. • Increased body of knowledge via academic publications (Transportation Research Part C) and presentations (TRB 2022 Annual Meeting). • Increased awareness of transportation specific considerations within the community of researchers working on epidemic modeling. In particular, through collaborative research between researchers from Civil Engineering (transportation) and Mathematics.

<i>Impacts/Benefits of Implementation (actual, not anticipated)</i>	<ul style="list-style-type: none">• Provided tools that can potentially improve the safety of the transportation system with minimal disruptions to it during an epidemic.• Increased the body of scientific knowledge and technologies through new modeling and evaluation techniques.• Enlarged the pool of people trained to develop knowledge via the training of students.
<i>Web Links</i> <ul style="list-style-type: none">• <i>Reports</i>• <i>Project website</i>	http://ctech.cee.cornell.edu/final-project-reports