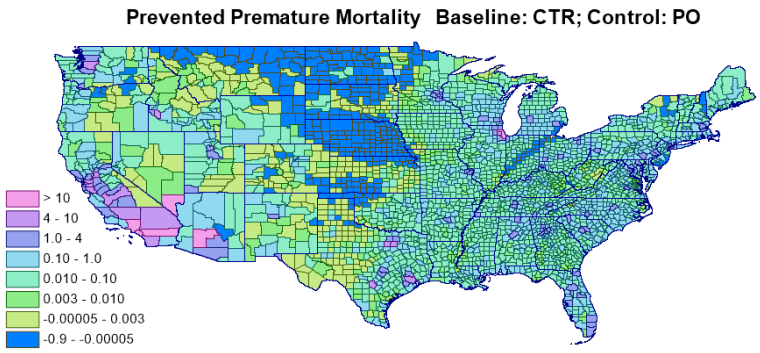
Grant Deliverables and Reporting Requirements for UTC Grants

UTC Project Information	
Project Title	The air quality and health impacts of projected long-haul truck and rail freight transportation in the United States in 2050
University	Cornell University
Principal Investigator	H. Oliver Gao
PI Contact Information	hg55@cornell.edu 607-254-8334
Funding Source(s) and Amounts Provided (by each agency or organization)	USDOT: $27,655 Cornell: $12,888
Total Project Cost	$40,543
Agency ID or Contract Number	Sponsor Source: Federal Government CFDA #: 20.701 Agreement ID: 69A3551747119
Start and End Dates	Start date: 07/01/2017 End date: 12/31/2018
Brief Description of Research Project	Diesel emissions from freight are a key threat to public health. By considering fleet turnover, climate policy, and technology evolution, this study examined the air quality and public health impacts of projected freight emissions in 2050 over the continental United States. Using a WRF-SMOKE-CMAQ-BenMAP modeling framework, we quantified the impacts of diesel fine particulate matter ($PM_{2.5}$) emissions change on air quality, health, and economic benefits. With a projected business-as-usual socioeconomic growth and fleet turnover in freight, simulated $PM_{2.5}$ concentrations have widespread reductions, between 1-1.5 μg m^{-3}.

Describe Implementation of Research Outcomes (or why not implemented) Place Any Photos Here	 Prevented premature mortality due to the changes in $PM_{2.5}$ concentrations between the PO case and CTR case (PO minus CTR) at the county-level.
Impacts/Benefits of Implementation (actual, not anticipated)	These results support that a combination of continuous adoption of stringent emission standards and strong improvements in vehicle technology and fuels are necessary as well as rewarding to meet the sustainable freight and community heath goals. States and metropolitan areas with high population density can take more immediate actions such as elimination of super-emitters to improve air quality and health benefits.
Web Links • Reports • Project website	http://ctech.cee.cornell.edu/final-project-reports/