Grant Deliverables and Reporting Requirements for UTC Grants

UTC Project Information	
Project Title	Air quality implications of COVID-19 in California
University	Cornell University
Principal Investigator	H. Oliver Gao
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Funding Source(s) and Amounts Provided (by each agency or organization)	USDOT: $2,639
Total Project Cost	$2,639
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: 09/30/2020
Brief Description of Research Project	The COVID-19 pandemic has caused enormous adverse impacts on human health and the economy. To combat the virus spread, many regional and national governments have issued the stay-at-home orders in order to improve social distancing and minimize person-to-person contact. The implementation of such practices (including telecommuting), however, have led to notable improvements in air quality. Several studies have assessed the impacts of the stay-at-home orders on air quality in worldwide regions. Generally, they reported reductions in concentrations of nitrogen dioxide (NO2) and fine particulate matter (PM2.5), and in some cases an increase in ground-level ozone (O3). Hence, change in air quality due to the pandemic may potentially affect the health outcomes. To date, no similar detailed quantitative analysis has been conducted for the state of California. In California, the Greater Los Angeles Area (LA) and San Joaquin Valley (SJV) are classified as “Moderate” nonattainment areas for PM2.5, by the United States Environmental Protection Agency (U.S. EPA). Additionally, the LA, SJV, and San Francisco Bay Area (SF) are respectively classified as “Extreme”, “Extreme”, and “Marginal” nonattainment areas for O3. Thus, air quality issues are still a major concern in these

	areas. In this study, we investigate the change in air quality using measurements from surface monitoring stations operated by the U.S. EPA's AirNow and Air Quality System (AQS) networks. This study aims to answer the following questions: (1) What are the magnitudes of changes in regional PM2.5 and O3 concentrations during the pandemic time period? (2) What are the magnitudes of PM2.5- and O3- attributable premature mortality? How could the health outcome vary across regions in California? (3) How could the transportation activity change due to the pandemic? What are the opportunities in attaining air quality improvement in the post-pandemic period?
Describe Implementation of Research Outcomes (or why not implemented) Place Any Photos Here	While the research outcomes of this project have significant policy and practice implications for transportation and traffic management in terms of reducing GHG emissions, improving air quality, and reducing adverse health impacts, as shown in the results and discussion section of the report, it will take time for such findings to find their way to adoption and implementation by policy makers, city planners, and transportation managers. Results from the study have been reported to the public via journal publication.
Impacts/Benefits of Implementation (actual, not anticipated)	N/A
Web Links • Reports • Project website	http://ctech.cee.cornell.edu/final-project-reports/