EXHIBIT F

UTC Project Information	
Project Title	Epidemiological Models for Transportation Applications: Secondary Crashes
University	Embry-Riddle Aeronautical University
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Funding Source(s) and Amounts Provided (by each agency or organization)	Total - $150,000 =DOT-CATM- $100,000 + ERAU (cost share) $50000
Total Project Cost	$ 150, 000
Agency ID or Contract Number	
Start and End Dates	03-01-2020 to 03-01-2021
Brief Description of Research Project	Highway crashes can have an immediate and significant impact on the mobility of individuals and goods traveling within the area. Crashes that occur as a result of an initial or primary crash are known as secondary crashes. Estimates suggest that nearly ten percent of freeway crashes can be classified as secondary. These secondary crashes are exceptionally dangerous for the victims of the primary crash and the first responders dispatched to support them. Understanding why secondary crashes occur and predicting where and when secondary crashes are more likely can significantly improve emergency response and protect vulnerable road users such as primary crash victims and emergency responders. We will introduce a new paradigm in modeling this problem by utilizing the mathematical modeling concepts form epidemiology. In particular, we will analyze the data on secondary crashes in Florida for the past two years, and develop a self-excitation point process model for spatial and temporal distribution of secondary crashes. In addition, we will develop agent based models for detailed analysis of mitigation strategies. We will use this combination of models to analyze and suggest

	effective policies to the transportation and emergency response policymakers.
Describe Implementation of Research Outcomes (or why Not implemented) Place Any Photos Here	We will introduce a new paradigm in modeling this problem by utilizing the mathematical modeling concepts form epidemiology. The primary research outcomes are the following: • Application of the rich mathematical framework developed in the context of epidemic events to understand and construct predictive models for secondary crashes • Establish the dependence between primary and secondary crashes mathematically. Assess the temporal and spatial distribution of secondary crashes as a function of primary crash. • Utilize these models for effective policy analysis to mitigate secondary crashes and safety of first responders at the primary crash location. For example, generate recommendations for policy makers regarding resource allocation to minimize secondary crashes.
Impacts/Benefits of Implementation (actual, not anticipated)	1. Identify the temporal and spatial distribution of secondary crashes after a primary incident. This will help narrow down the focus area for policy makers. 2. Identify the policies that reduce the contagion aspect of secondary crashes. Identify the strategies that reduce the frequency and impact of secondary crashes. 3. Communicate the findings to policy makers including the local and federal Department of Transportation officials and emergency responders.
Web Links • Reports • Project Website	http://pages.erau.edu/~namilaes/EpidemicModelsforTransportation.pdf Links to reports will be added on project completion