

<b>UTC Project Information</b>	
Project Title	Data Fusion for Non-Motorized Safety Analysis
University	Texas A&M Transportation Institute
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Funding Source(s) and Amounts Provided (by each agency or organization)	Safe-D funding: \$315,750 Expected matching funding: \$162,687
Total Project Cost	\$478,437
Agency ID or Contract Number	Grant No: 69A3551747115 Project: 03-049
Start and End Dates	06/01/2018 – 05/31/2020
Brief Description of Research Project	<p>Data-driven approaches play a critical role in developing safety improvement investment decisions. However, for non-motorized travel, exposure to risk has often been the missing piece of the puzzle. Safety analysts have been struggling with the lack of availability of exposure data, making it difficult to discern a trend in crash rates and identify high-risk locations for pedestrians and bicyclists. While short-term counts cannot be considered policy relevant (until they are scaled to a long-term representative value), continuous monitoring of non-motorized traffic using automatic sensors are often not cost effective. Moreover, every sensor has some limitations in terms of coverage, accuracy, and reliability. In the era of big data, GPS data, cell phone tracking apps, fitness tracking devices or bike sharing systems hold great potential to observe travel activity but they include a range of biases related to representation. Recognizing these limitations and benefiting from the advancements in technologies, this project aims to develop effective methodologies to fuse together different data sources to develop accurate and reliable exposure estimates for safety analysis. The proposed framework will bring together traditional and emerging data sources, and will be developed in such a way that it can be up- or down-scaled based on the available data sources of a study area. The exposure estimation output will then be used for crash assessment tailored to the needs of the study area. The proposed approach will increase the quality and representativeness of data and help safety analysts to effectively derive benefits from potential sources in their decision making.</p>

<p>Describe Implementation of Research Outcomes (or why not implemented)</p> <p>Place Any Photos Here</p>	<p>1) The deliverables of the final report and data: The expected products/outcomes for this project includes three primary components: final project report, a visual trifold and a one pager of research results, and a toolbox with sample data.</p> <p>2) Education and Workforce Development (EWD) Plan: Different aspects of the proposed project will serve different audiences including students, researchers and practitioners. Besides, the data compiled and the methodology developed as part of this project are expected to become new lecture materials in graduate- or undergraduate-level courses and a short course for transportation practitioners to provide a hands-on experience in using/applying the tool with the sample data provided.</p> <p>3) Technology Transfer (T2) Plan: This project will be presented in various conferences and is expected to be disseminated in webinars, such as the ones hosted by FHWA or ITE. Several publications in peer-reviewed journals are also expected including meta reviews, methodological papers and application papers. Moreover, the project provides an opportunity to be able to benefit from many different databases that MPOs and agencies might have, but cannot use due to the lack of expertise, time or other resources. The data providers will also be benefitted by the final products. The research team will share research study publications and end products with local and regional agencies and professional committees (e.g. Highway Safety Performance Committee).</p>
<p>Impacts/Benefits of Implementation (actual, not anticipated)</p>	<p>This project will develop a conceptual framework, which will utilize the emerging data sources, that recognize travel behavior at an unprecedented level of detail but contain inherent biases, to develop a reliable exposure measure for non-motorized safety analysis. The data driven safety analytics approach will not only process big data's information but also articulate the opportunities for integrating big data to facilitate decision making regarding non-motorized facilities and safety issues. The EWD and T2 plans bring immense opportunity to bridge the research-to-practice gaps in the transportation industry. In addition to the publications and presentations in peer-reviewed journals and conferences, the visual trifold, the toolbox with sample data and the training materials will be beneficial for several transportation agencies, data providers and researchers who intends to harness big data to better understand non-motorized travel activity and their safety impacts.</p>
<p>Web Links</p> <ul style="list-style-type: none"> <li>• Reports</li> <li>• Project website</li> </ul>	