A More Standardized Approach to Identify and Understand the High-Injury Network

CTIPS-027 – UTC Project Information

Recipient/Grant Number:	North Dakota State University, University of Colorado Denver Grant No. 69A3552348308
Center Name:	Center for Transformative Infrastructure Preservation and Sustainability
Research Priority:	Preserving the Existing Transportation System
Principal Investigator(s):	Wesley Marshall, PhD, PE Aditi Misra, PhD Manish Shirgaokar, PhD, AICP Bruce Janson, PhD
Project Partners:	USDOT, Office of the Assistant Secretary for Research and Technology – $125,665 University of Colorado Denver – $125,665
Total Project Cost:	$251,330
Project Start and End Date:	8/17/2024 to 8/16/2026

Project Description

In trying to develop a more data-driven approach to road safety, many cities have created their own version of a high-injury network analysis. The results typically reveal that a disproportionate number of road fatalities are concentrated on a relatively small fraction of streets. Despite the usefulness of the high-injury network thinking, the lack of a consistent methodology across different cities keeps us from being able to compare different cities and from identifying trends. The proposed project seeks to develop a generalizable, standardized approach to high-injury network analysis that leverages existing data sources in a way that can similarly applied across different cities. After developing the approach, we will apply it to the principal city within each of the 100 largest metropolitan areas in the United States, thereby offering a broad, comparative perspective of what traffic safety. Through this analysis, we explore the specific street and network design features that contributes to urban road fatalities. By standardizing the approach to defining high-injury networks, this research aims to enable more consistent safety analyses, facilitate more widespread adoption, and promote evidence-based strategies to enhancing road safety.

USDOT Priorities

This project directly supports the USDOT's strategic goal of enhancing safety. By creating a common data-driven methodology to help cities identify and compare their high-injury networks, the project offers a scalable and replicable approach that can be adopted both regional and nationally. This will facilitate data informed decision-making, comparative analysis, as well as benchmarking. But still, the bottom line is that this project will help cities share best practices and improve safety outcomes.

Outputs

The overarching goal is to disseminate the findings in a fashion that helps cities improve their road safety outcomes. So, in addition to publishing papers in peer-reviewed journals and presenting at major transportation and urban planning conferences, we intend to share our methods and findings in less academic venues via op-eds, online videos, and workshops. We will also be sure to collect and organize our data and results in a non-proprietary format so that other researchers can contribute to the work.

Outcomes/Impacts

The anticipated outcomes of this research include:

- Development of a standardized approach to high-injury network analysis
- Understanding into common conditions of high-injury networks across different cities
- Identification of street and network design issues that may be contributing to high injury and fatality rates
- Fostering of a more unified approach across cities when it comes to identifying road safety issues and improving road safety outcomes
- Supporting the broader goal of preserving existing transportation infrastructure by arming cities with the information needed to target their road safety interventions

Final Report

Upon completion, the final report link will be added to the project page on the CTIPS website.