

Vision Zero High-Injury Roadways Methodology

Car crashes can impact anyone who is on our roadways, and their loved ones. In Austin, someone is seriously injured or killed on Austin's roadways every day, on average. We know that these crashes occur across the city and needed a way to narrow down and focus engineering, education and enforcement efforts.

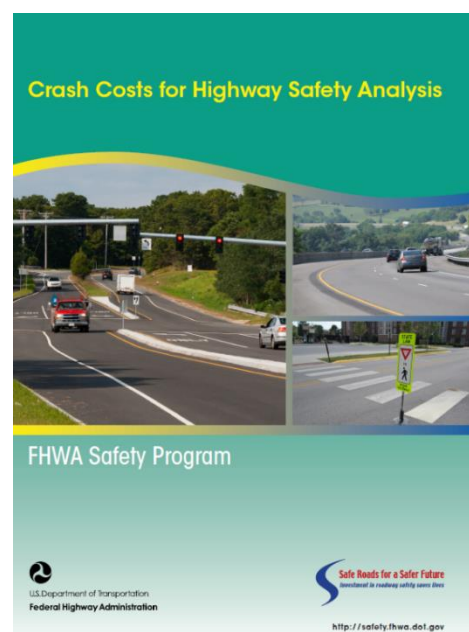
Developing a quantifiable approach based on national guidance allowed us to compare locations using a consistent standard and then determine a limited number of streets where focused efforts might have the biggest impact. Using a comprehensive cost scale allows analysts to recognize the, "calculable costs of motor-vehicle crashes are wage and productivity losses, medical expenses, administrative expenses, motor vehicle damage, and employers' uninsured costs." It also "include(s) a measure of the value of lost quality of life which was obtained through empirical studies of what people actually pay to reduce their safety and health risks."¹ (Please note that this approach does not attempt to put a dollar value on a life, only to represent the loss of calculable costs and the loss of quality of life depending on the severity of the injuries resulting from a crash.)

Define a comprehensive cost scale

The Vision Zero team began by researching national guidance on how to appropriately reflect the impact of injuries and deaths due to car crashes. While various approaches exist, the primary sources referenced seemed to be the [National Safety Council](#) and the [Federal Highway Administration's](#) guidance on how to develop a localized scale.

The first step in developing a comprehensive cost scale is to group person-injuries by severity and calculate weighting ratios. We grouped "killed" and "suspected serious injuries" together, "non-incapacitating" and "possible" injuries together, and "not injured" was on its own. Each grouping was then applied a percentage based on the actual data from Austin for the period of 2014 through 2018. Then we began with the National Safety Council's average comprehensive cost by injury severity scale for 2017, and adjusted it using CPI inflation to represent 2019 dollars.

Then we applied the inflation-adjusted costs to the severity-weighted injury groupings, applying the localized ratios to the original cost scale from NSC. The final step was to apply a ten percent addition to deaths, as this reflects the larger impact that typically results from a death versus a serious injury outcome.



¹ https://www.nsc.org/Portals/0/Documents/NSCDocuments_Corporate/estimating-costs.pdf

Aggregate crashes to locations on the transportation network

After all crashes had a comprehensive cost applied to them through our new scale, we needed a way to compare specific locations to each other throughout the city. Through a GIS process, we developed a polygon dataset that includes every street segment and intersection in the city, excluding highways, using standard distances from an intersection center point for the downtown area and rest of the city, respectively. All crashes were then associated to these polygons so we could see the aggregated comprehensive costs for any location.



Analyze top comprehensive cost locations and determine segments

With that step complete, we had a list of all locations throughout the city ranked by comprehensive cost. We noticed that over half of the top 100 locations were showing up on just 13 street segments that could be defined. These 13 segments represent over 350 people killed or seriously injured over a five-year period, or over 13% of the total. This resulted in 13 segments that we've labeled High Injury Roadways, listed below. Our cross-functional team of engineers and planners have started to understand prevalent crash patterns, time of day trends, and where relatively quicker and lower-cost solutions may have impacts on these 13 segments.

High Injury Roadways

- Airport Blvd. (Manor Rd. to Springdale)
- Riverside Dr. (Lakeshore Blvd. to Montopolis Dr.)
- Burnet Rd. (US 183 to MoPac)
- South Congress Ave. (Ben White Blvd. to William Cannon Dr.)
- Cameron Rd. (E St. Johns Ave. to Rundberg Ln.)
- South Pleasant Valley Rd. (Cesar Chavez St. to Oltorf St.)
- East Martin Luther King Jr. Blvd. (Airport Blvd to Johnny Morris Rd.)
- Slaughter Ln. (Menchaca Rd. to IH-35)
- North Lamar Blvd. (US 183 to Braker Ln.)
- South First St. (Stassney Ln. to Slaughter Ln.)
- North Lamar Blvd. (Koenig Ln. to US 183)
- William Cannon Dr. (Menchaca Rd. to Elm Creek Dr.)
- Parmer Ln. (Metric Blvd. to Dessau Rd.)

Note: All of these 13 segments are included in Austin's [High Injury Network](#) (HIN), developed using data from 2013-2017, which shows that almost 70% of our non-freeway serious injuries and deaths occur on just 8% of our road network. This new initiative is a way to prioritize our efforts using more recent data on the highest opportunity segments on the HIN.