

METHODOLOGY TO IDENTIFY HIGH-CRASH LOCATIONS

The Miami Valley Regional Planning Commission (MVRPC) analyzes crash data to identify locations where a high frequency and severity of roadway crashes have occurred. These analyses provide a preliminary list of roadway locations that may require further analysis to determine a need for improvement. Additionally, the list informs the transportation planning process and project evaluation system.

The Data

To conduct these analyses, MVRPC relies on crash information collected by law enforcement agencies, which has been geo-located by the Ohio Department of Transportation (ODOT). The latest three years of data available is used. Crashes that were animal or construction-related are omitted.

Regional Roadway Network

The analyses are focused on regionally significant roads. Most local or non-federal classified roads are omitted. Additionally, analyses are not performed on limited-access roadways, interstates, expressways, and ramps. Regional network roads are divided into short segments and intersections to be individually analyzed.

Ranking

Crashes are assigned to each segment based on the road reported in the crash details and to each intersection if the crash was reported as intersection-related and was within a 250-foot radius of the intersection. Segments and intersections were ranked based on the following four measurements:

1. Crash Frequency/Density: Measures the frequency with which crashes occurred per mile (segment) or location (intersection).
2. Crash Rate: Measures the rate at which crashes occurred per million vehicle miles traveled (segment) or million entering vehicles (intersection).
3. Relative Severity Index (RSI): Measures the severity of crashes based on a dollar value given to each crash type. More severe crash types such as head-on, pedestrian, and angle are assigned a higher dollar value than less severe crash types (e.g. sideswipe, rear-end).
4. Equivalent Property Damage Only (EPDO): Measures severity by assigning a quantity of property damage only (PDO) crashes equivalent to the crash severity (fatal or disabling injury, evident injury, possible injury, or PDO). Locations with high EPDO values were typically areas of frequent fatal or injury crashes.

After the four measures are calculated for each segment and intersection, they are given a point value based on the 2020 ODOT Highway Safety Program Project Scoring Matrix. The points from each measure are summed, assigned to each segment and intersection, and then ranked for each location. Locations with the highest frequency and severity of crashes had the highest total points and are higher ranked. To be on the list, locations must have had at least 10 crashes.