



DDOT Traffic Safety Input (TSI) Prioritization Model

The TSI 2.0 prioritization model evaluates objective criteria and generates a unique score for each intersection within the District. Traffic Safety Inputs (TSIs) are scored and ranked based on the score of their respective intersections. If a TSI address is located between multiple intersections, it receives the highest score of the adjacent intersections. The criteria used for prioritization of the TSIs are grouped in five (5) main categories consisting various criteria that were thoughtfully selected based on the equity and safety needs, availability of robust data, and the safety interventions available in the TSI toolbox.

Lastly, calculated intersection scores are subject to change, due to the ever-changing conditions on the District's roadway network. Therefore, DDOT will periodically re-calculate the intersection scores, to ensure that changes in below criteria are accounted for and that prioritization of TSIs is based on the most recent conditions.

Below is a detailed description of the criteria used in the TSI 2.0 prioritization scheme:

Crash Patterns (30%)

- Non-Motorist Crashes: This criterion is based on whether the intersection has one or more traffic crashes involving non-motorists (i.e., pedestrians, cyclists, and micro-mobility users) in the last three complete calendar years. The criterion is pass-fail, giving full points if the minimum value is met.
- Different-Direction Crashes: This criterion is based on whether the intersection has a minimum number of traffic crashes of certain collision types in the last three complete calendar years. The collision types include head-on, left turn, right turn, right angle, and opposite-direction sideswipe. The minimum is three (3) crashes for locations on the local and collector roadway network and five (5) crashes for locations on the arterial roadway network. The criterion is pass-fail, giving full points if the minimum value is met.

Vision Zero High Injury Network (20%)

- Proximity to Vision Zero High Injury Network: This criterion is based on proximity to Vision Zero High Injury Network (HIN) corridors. Locations receive additional points for each HIN corridor and final scores are normalized on a scale of 0 to 1.

Equity (20%)

- Race and Ethnicity: This criterion is based on adjacent Census Blocks, DC Equity Area Study
- Disability: This criterion is based on adjacent Census Blocks, DC Equity Area Study
- Income: This criterion is based on adjacent Census Tracts

Vulnerable Road User (VRU) Trip Generators (20%)

- Schools: This criterion is based on the number of schools within varying walksheds. Locations receive additional points for each school and final scores are normalized on a scale of 0 to 1.
- Transit Stations: This criterion is based on the number of transit stations (Metrorail, Streetcar, Metrobus, Circulator) within varying walksheds. Locations receive additional points for each transit station and final scores are normalized on a scale of 0 to 1.
- Senior Centers: This criterion is based on the number of senior centers within varying walksheds. Locations receive additional points for each senior center and final scores are normalized on a scale of 0 to 1.
- Recreation Centers/Parks: This criterion is based on the number of recreation centers within varying walksheds. Locations receive additional points for each recreation center and final scores are normalized on a scale of 0 to 1.

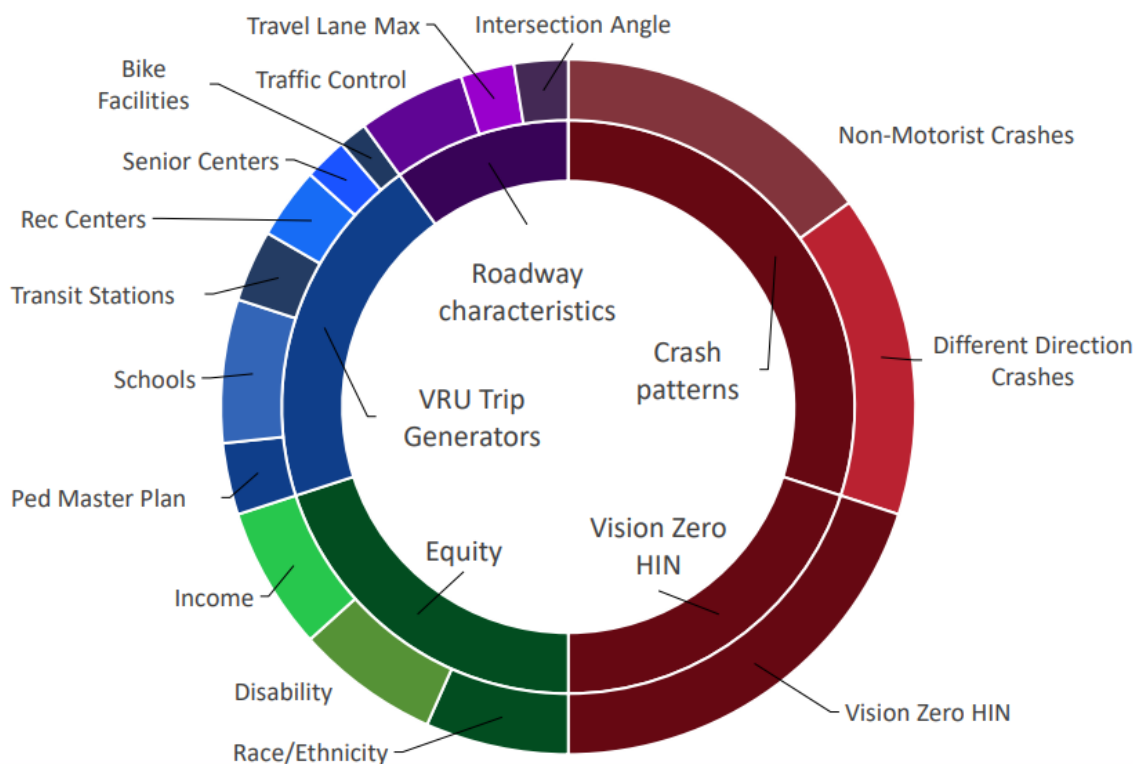
- Bicycle Facilities: This criterion is based on the presence of bicycle facility in MoveDC Plan. The criterion is pass-fail, giving full points if the criterion is met.
- DDOT Pedestrian Master Plan Score: Criterion is based on the average pedestrian demand score of all segments at the intersection, normalized on a scale of 0 to 1.

Roadway Characteristics (10%)

- Intersection Traffic Control: This criterion is based on the traffic control type of the intersection. Locations with higher control type receive lower score on a scale of 0 to 1. Intersection control type hierarchy from highest to lowest control type is as follows: full traffic signal, all-way stop control, two-way stop control, yield, uncontrolled.
- Travel Lane Count: This criterion is based on the number of travel lanes at unsignalized intersections, as a measure of challenging geometry, normalized on a scale of 0 to 1.
- Intersection Angle: Criterion is based on the intersection skew angle less than 80 degrees for non-signalized intersections, as a measure of challenging geometry. The criterion is pass-fail, giving full points if the criterion is met.

Final Score (100%)

The final location score is based on all the components described above. Scores are normalized to provide a 0 to 100 scale, with the lowest score being set to 0 and the highest score being set to 100. Below graphic is a schematic demonstration of the prioritization criteria used. The inner rings demonstrate the main categories (i.e., Crash Patterns, Vision Zero High Injury Network, Equity, Vulnerable Road Users Trip Generators, Roadway Characteristics) and the outer rings demonstrate the individual criteria in each category. The lengths of the rings represent the relative weight of each criterion.



In addition to the above factors, TSIs are prioritized based on the functional classification of the roadway, meaning that of the 200 priority locations advanced each quarter, 160 locations (i.e., 80%) are pulled from the local and collector roadway network and 40 locations (i.e., 20%) are pulled from the arterial roadway network. This was determined based on below important facts:

- TSI Toolbox is most suited for addressing small-scale spot safety improvements on local and collector neighborhood roadways.
- DDOT has several proactive safety initiatives and programs that primarily focus on roadways of higher functional classification (i.e., arterial roadways) and are the best vehicles for delivering transformative safety improvements on these roadways. These programs include but are not limited to Annual Safety Improvement Program (ASaP), Bus Priority projects, Protected Bike Lane (PBL) projects, and our High Injury Network (HIN) corridor projects.
- The 80/20 percent split is in line with the ratio of roadway miles in the local/collector and the arterial roadways categories in the District of Columbia.

Lastly, to ensure that TSIs are prioritized in all 8 Wards during every quarter, a minimum of 10 top priority TSI locations in each Ward are prioritized (i.e., 80 TSIs) every quarter, while the remaining 120 locations are prioritized based on their universal score/rank.