

To: SCDOT

From: Stantec and Alta Planning + Design

Date: 10/08/2024, Revised 04/04/2025

Re: Method for SCDOT Regional Bike/Ped Vulnerable Road User Analysis

Methods

The team compiled the below key variables from the U.S. Census, percentile ranked the proportion of each relative to the study region (MPO), assigned points, and then combining the point values through an equal sum. Inspiration was drawn from the North Carolina Transportation Disadvantage Index, and the SCDOT Complete Streets policy encouraging a safe, comfortable, integrated transportation network for all users, regardless of age, ability, income, ethnicity, or mode of transportation.

Other variables were considered, and a weighting scheme was considered, but for simplicity weights were not used.

Percentile ranks were used instead of z-scores due to the non-normal distribution of several of the variables.

The project team used the following variables at census block group level to complete the equity analysis. All are based on ACS 5-Year summary data 2018-2022.

- Low Income (Poverty): Table C17002
- Zero vehicle households: B25044
- Persons of Color: Table B03002
- Limited English Proficiency, at the tract level, then proportionally allocated to block groups: B16002
- Youth (≤ 15 years): Table B01001
- Seniors (≥ 65 years): Table B01001
- Mobility impairment
- Median Age of Structure: Calculated from Table B25035

As described above, the proportion of households or people in each category within a block group was percentile ranked against all other block groups in the region. Any block group with a proportion higher than 80th percentile, was assigned one point towards the overall Vulnerable Road User (VRU) score. Through iterations of the process, 90th percentile was initially used, but after stakeholder feedback, a lower threshold was chosen.

Once the index was calculated, one map of the results was generated for each region by categorizing all the census block groups into three bins that indicate how high they score on the index. The census block groups are categorized using quartile method, which means that the distribution of their index scores is broken out into the three bins comprised of an equal number of census block groups in each bin.

Higher scores will indicate areas or communities with a higher likelihood of not having access to vehicles or needing to walk or bike as a mode of transportation. We call these places: VRU priority communities. These areas with highest VRU scores can help inform potential walking and biking infrastructure improvement decisions, serving to aid both local and regional engagement and decision making.



