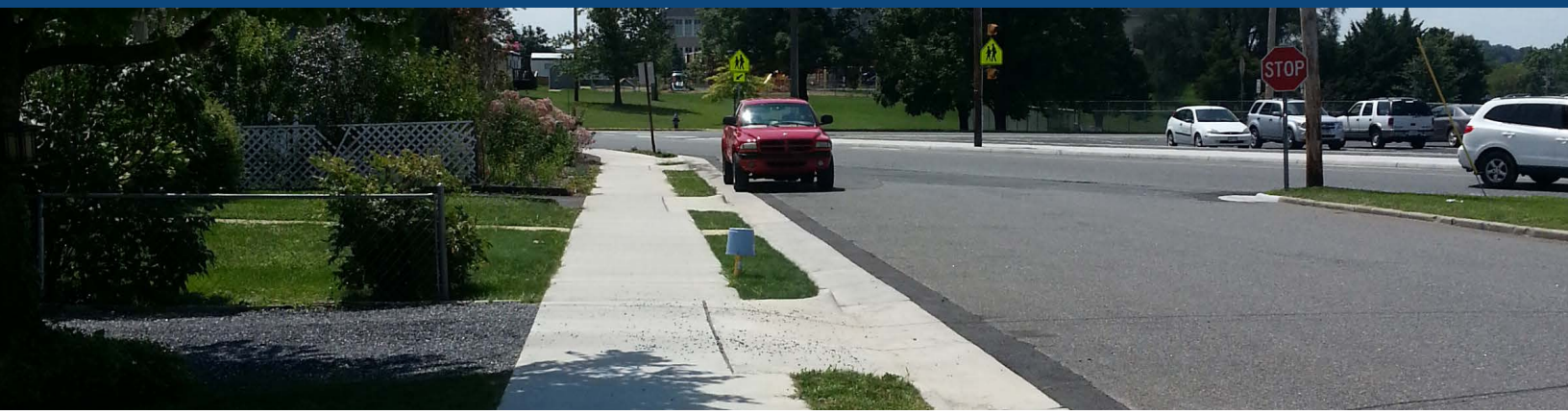

3.6 Need Category: Need for Pedestrian Access to Activity Centers

Measure: Activity Centers Pedestrian Walk-sheds

What it means: Areas within walking distance of VTrans Activity Centers. VTrans Activity Centers are identified as "areas of regional importance that have a high density of economic and social activity" and are associated with the Regional Networks Travel Market. Activity Centers have been identified through stakeholder input.

Applicable VTrans Travel Market: RN

Identification of Needs

- Data Sources:
  - OIPI, Shapefile of Activity Centers by category (Knowledge-based, Industrial, Local-serving) (See Appendix C)
  - Existing, Planned and Under-Construction Fixed-Guideway and bus rapid transit (BRT) lines: Northern Virginia and Fredericksburg Regional Networks, Dulles Corridor Metrorail Project, Hampton Roads Regional Network, Greater Richmond Transit Company, Washington Metropolitan Area Transit Authority
  - U.S. Census Bureau, American Community Survey Five-year Estimates:
    - i. Table B08534: Means of Transportation to Work by Travel Time to Work
  - U.S. Census Bureau, Shapefile of Metropolitan Planning Organization (MPO) boundaries in Virginia, 2014
  - *Manual on Uniform Traffic Control Devices* (MUTCD). 2009 Edition. Chapter 4E. Pedestrian Control Features
  - Virginia DRPT, Shapefile of transit stops in Virginia, 2019

- Year of analysis: 2017

- Period of analysis: n/a

- Calculations:
  1. Retain only knowledge-based and local-serving Activity Centers inside of MPO boundaries.
  2. Create a shapefile of all fixed-guideway transit and commuter rail stations, and BRT lines inside of Metropolitan Planning Area boundaries
  3. Extract walk speed from Manual on Uniform Traffic Control Devices[1] (2.4 mph in 2009 Edition)
  4. Extract Virginia's 90th percentile single-mode walk commute time (25 minutes based on U.S. Census ACS Table B08534)
  5. Calculate walk needs radius by multiplying the walk speed (2.4 mph) by the walk commute time (25 minutes) and rounding the result (1.0) to the nearest integer.
  6. Generate walk needs buffers of 1 mile around the Activity Centers, fixed-guideway transit stations, and BRT lines.
  7. Identify applicable roadway segments as those within the 1-mile buffer that are characterized as a non-limited access facility and are functionally classified above Local Streets.
  8. **Policy Threshold for Need for Pedestrian Access to Activity Centers:** Applicable roadway segments within one mile of Activity Centers, fixed-guideway transit stations, and BRT lines are identified as those with a VTrans Mid-term Need for Pedestrian Access to Activity Centers.

[1] US DOT Federal Highway Administration, Manual on Uniform Traffic Control Devices, 2009. https://mutcd.fhwa.dot.gov/index.htm

4.2.6 Prioritization within Pedestrian Access to Activity Centers Need Category

Applicable VTrans Travel Market: RN

Utilized for: Establishing Construction District Priority Locations

Two criteria, Severity and Magnitude, are utilized to categorize VTrans Mid-term Needs for Pedestrian Access to Activity Centers as *Very High, High, Medium,* and *Low* in the following manner.

Severity of VTrans Mid-term Need for Pedestrian Access to Activity Centers

- Source data:
  - Walk Score®[1]
  - VDOT Transportation Mobility Planning Division, Existing documented pedestrian infrastructure
- Calculations
  - Access Walk Score® for Census Block centroids and assign to road segments based on the share of each Census Block area within a 200-foot buffer around the road segment.
  - The resulting area-weighted averages are the pedestrian Severity measure.

Magnitude of VTrans Mid-term Need for Pedestrian Access to Activity Centers

- Source data:
  - U.S. Census Bureau, American Community Survey 2018 5-Year Estimates "Total Population" by Block Group
  - U.S. Census Bureau, LEHD Origin-Destination Employment Statistics (LODES) Workplace Area Characteristics (WAC) employment data by Census Block
  - VDOT, Roadway Functional Classification
- Calculations
  - Aggregate Census Block-level employment data to the Block Group-level.
  - Calculate employment and population densities using each Census Block Group's total employment, population, and area in square miles.
  - Sum the resulting employment and population densities.
  - Assign a road segment the summed density value of the Block Group that its centroid intersects.

[1]Redfin Real Estate (2020). walkscore.com/VA

Consideration of Severity and Magnitude Criteria

- For roadway segments with no documented pedestrian infrastructure, or documented pedestrian infrastructure with deficiencies in observed infrastructure, and with an area-weighted average Walk Score® below 70, multiply Severity (Walk Score®) and Magnitude (population and employment densities, roadway functional classification) to develop a score.
- Multiply the output of the above calculation based on points assigned by a roadway segment's roadway functional classification as follows:
  - 7 points: Other Principal Arterial
  - 3 points: Minor Arterial
  - 1 point: All other functional classes

Prioritizing within Pedestrian Access to Activity Centers Need Category

Prioritization within this VTrans Mid-term Needs Category occurs in the following manner:

- For each VDOT Construction District, sort the score in descending order and assign the following values based on mileage[1] to develop VDOT Construction District-specific *Very High, High, Medium,* and *Low* categorizations for VTrans Mid-term Need for Pedestrian Access to Activity Centers.
  - *Very High* (Score 7): Top 5% of the total mileage
  - *High* (Score 6): 5.001%–10%
  - *High* (Score 5): 10.001%–15%
  - *Medium* (Score 4): 15.001%–20%
  - *Medium* (Score 3): 20.001%–25%
  - *Low* (Score 2): 25.001%–50%
  - *Low* (Score 1): Bottom 50.001%–100%
  - Assign other roadway segments with VTrans Mid-term Need for Pedestrian Access to Activity Centers a priority score of 1 *(Low)*.

[1] Where prioritization values do not break exactly at the percentile categories, assign all values to the higher category until there is a new prioritization value. For example, if the top 7% of roadway miles all have the same score, then 7% of miles would be classified as *Very High*.