

---

## Mapping Mobility in the Capital Region: Methodology

The Capital Region has an extensive network of roadways, rail, transit service, and trails that serve the 10.2 million residents from Baltimore to Richmond. More than 75 entities - public and private - play a significant role in delivering mobility options and services in our region. However, much of the transportation system is not integrated and/or at capacity limiting mobility and access options to jobs, schools, and health care options. The interactive “Mapping Mobility in the Capital Region” includes 47 independent cities/counties in the Capital Region, encompassing the Baltimore, Washington, and Richmond metropolitan statistical areas (MSA). The map highlights the region’s extensive transportation assets, including the region’s roadways, metro and light rail systems, commuter rail, bus networks, trails, and bike share options.

The objective of the Greater Washington Partnership’s accessibility analysis is to measure how well the Capital Region’s transportation system connects its residents to destinations of importance such as jobs. To conduct this analysis, the Partnership used an accessibility model that was generated by the University of Maryland and the Partnership using Citilabs Sugar Access Transportation Network to measure the average number of jobs, activity centers (mixed-use areas where there is a high concentration of commercial and other land uses), higher education institutions, and hospitals accessible to residents by vehicle, transit, bicycle, and walking within 45 minutes. Access to jobs and education are key drivers to enhancing individual and regional economic opportunity.

### **Data Sources**

The data layer the model was built upon contains information regarding demographics, employment, activity centers, higher education institutions (two and four-year public institutions), and hospitals by vehicle, transit, biking, and walking. The data sources for this analysis consists of:

- **Citilabs:** The roadway and transit networks are integrated into one transportation network provided by Citilabs. The roadway network, comprising highways, principal and minor arterials, and local roads, was created by HERE, a navigation company. The transit networks were compiled from local General Transit Feed Specification (GTFS) data.
- **The 2012 to 2016 American Community Survey (ACS):** The 2012-2016 ACS provides demographic data, including race, poverty status, and vehicle ownership rates.
- **The 2014 LEHD Origin-Destination Employment Statistics (LODES) Data:** This data provides the number of jobs available at the census block level.
- **UMD, MWCOG, RRPDC:** The locations of activity centers were obtained from the University of Maryland, Metropolitan Washington Council of Governments, and the Richmond Region Planning District Commission.
- **State of Maryland, District of Columbia, VEDP:** The location of hospitals (licensed general, acute, specialty, government and university or college medical centers) were obtained through open data sources from the State of Maryland, the District of Columbia, and the Virginia Economic Development Partnership. The location of colleges and universities (public two-year and four-year higher education facilities) were also obtained through open data sources from the State of Maryland, the District of Columbia, and the Virginia Economic Development Partnership.

- **Baltimore City, Rails-to-Trails Conservancy, RRTPO:** The trail network, comprising multi-use trails, was obtained through MPO and local jurisdiction data sources and Rails-to-Trails Conservancy.

### **Creating Average Accessibility Metrics**

Accessibility analysis consists of estimating travel times between every individual Census block pair and by each mode of travel. This allows for the capability to understand and analyze every potential trip an individual could make. Travel times can be calculated accurately for each individual mode because of the detailed underlying transportation networks. Each roadway link consists of several modal attributes describing the modes of travel allowed on that link.

Using a threshold of 45 minutes, the model produced the average number of jobs, hospitals, colleges, and activity centers accessible by each mode from each census block. Using population-weighted averaging, these block level estimates were aggregated to county and metro area estimates. All models were run using an AM peak travel period defined as 6AM to 9AM on weekdays and a weekend travel period time of Sunday morning from 7AM to 10AM.