
VDOT
Virginia Department of Transportation

ACTIVE TRANSPORTATION COUNTING IN VIRGINIA: LEVERAGING DATA FOR PROJECT DEVELOPMENT

Thomas Jefferson Planning District Commission

Charlottesville/Albemarle MPO

11/19/2025

Limitations of Travel Demand Models for Bike and Pedestrian Analysis

Technical and Practical Reasons

Lack of reliable and consistent data

- There is no comprehensive, statewide database of pedestrian and bicycle volumes, trip origins/destinations, or fully attributed facility inventories that satisfy the requirements of a TDM.
- Surveys like the NHTS (National Household Travel Survey) capture very few bike/ped trips, making statistical calibration unreliable.
- Count programs for bicycles and pedestrians are sparse and inconsistent among MPOs or localities.

Scale Mismatch

- Regional TDM zones (TAZs) are typically too large to capture short bike/ped trips, which often occur within a single zone or along local street grids. This leads to intra-zonal undercounting — many walking or biking trips never appear because they start and end inside the same zone.

Technical and Practical Reasons Continued

Inadequate network representation

- Most TDMs are roadway-based and built for motorized travel, using functional class and speed as primary attributes.
- Bike and pedestrian facilities require much higher spatial resolution — e.g., sidewalk continuity, crossings, grade, slope, and buffer type — details that are rarely available or standardized across jurisdictions.
- These missing elements make it impossible to accurately represent the real path choice or perceived safety for non-motorized modes.

Limited Model Sensitivity

- Existing models cannot realistically capture the effects of small-scale improvements — such as adding a crosswalk, protected lane, or trail connection.
- These micro-level changes have localized benefits that aggregate models (built for regional congestion analysis) cannot detect meaningfully.

An Overview of Virginia's Active Transportation Count Program

Counting Nonmotorized Trips Since 2018

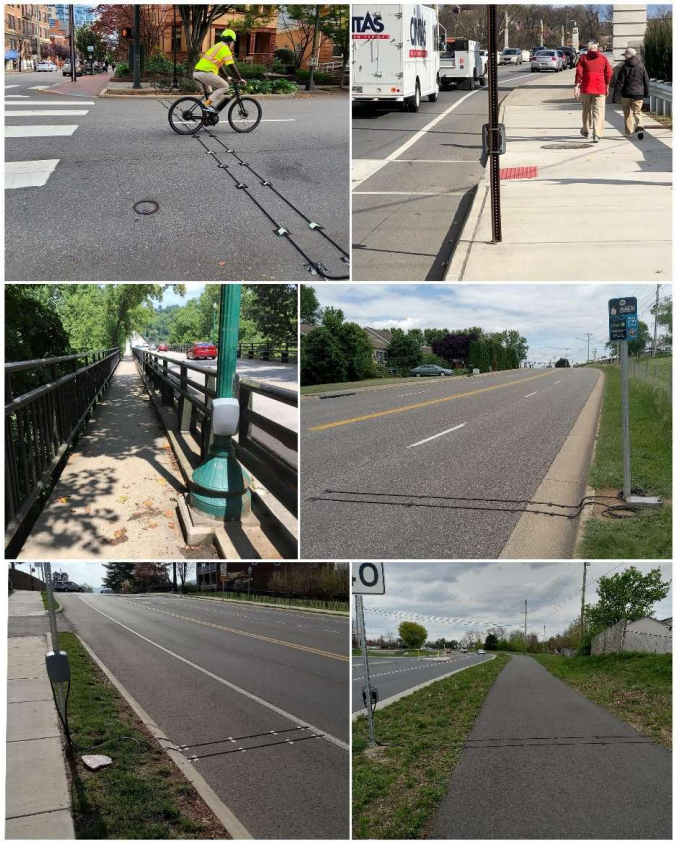
- Initiated in 2018 and managed by VDOT's Transportation and Mobility Planning Division
- Network of VDOT maintained automated counters and local partner counters with some dating back to 2012
- Utilize Eco-Counters to count pedestrians, bicyclists, and micromobility users on shared use paths, on-street bike facilities, sidewalks, and trails across Virginia
- Perform before and after counts on roadway reconfigurations, support active transportation investments, measure performance of newly built bicycle/pedestrian projects, and analyze year-over-year trends

Active Transportation Count Activities in Virginia

- VDOT offers the following active transportation count services for localities:
  - Permanent counts
  - Year-over-year (YOY) counts
  - Short duration counts and technical assistance counts
  - Counting equipment loaner program (request form available)
  - Adopt-a-Counter program
  - Virginia Statewide Active Transportation Count Network Map
  - Provide raw data to localities and MPOs upon request

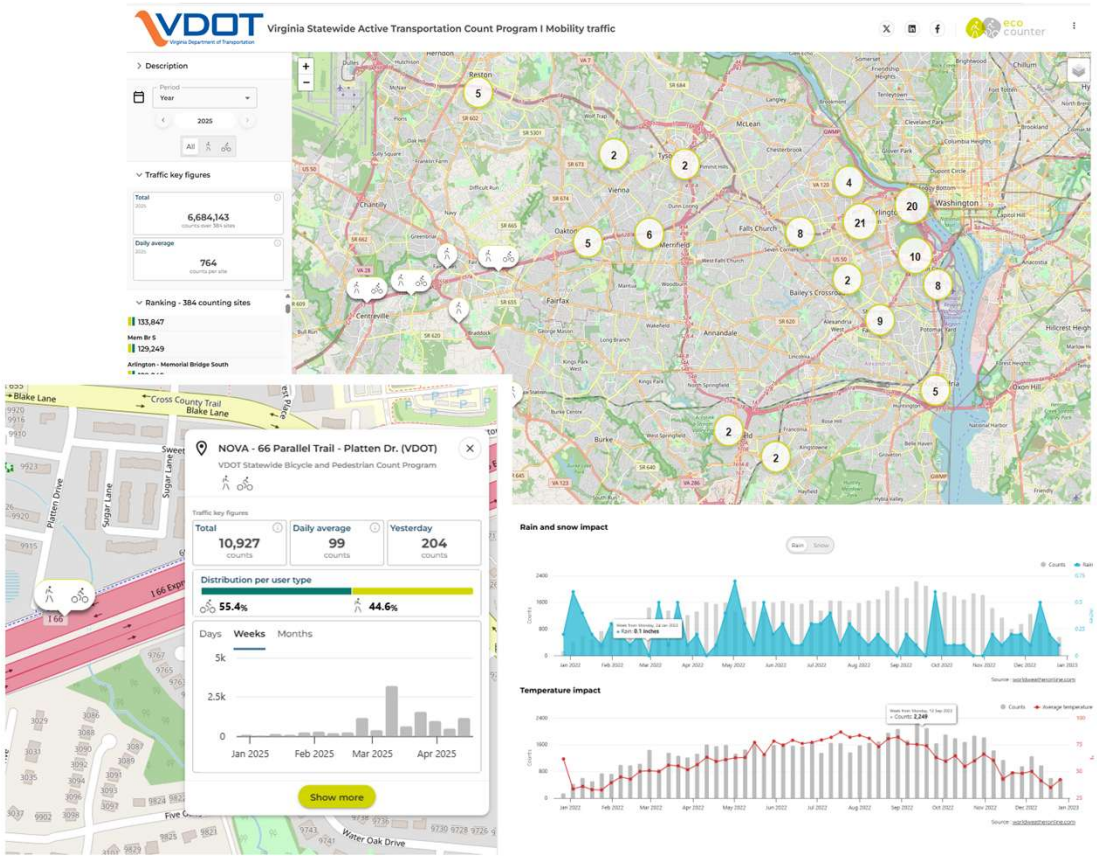
Counting Equipment

- VDOT utilizes Eco-Counter automated counting equipment to conduct counts across a range of facilities and durations
- Counters collect mode split bi-directional count data down to the 15-minute interval
- As of 2025, VDOT employs the following Eco-Counter types:
  - Infrared counters (PYRO-Box)
  - Pneumatic tube counters (TUBES)
  - Infrared and pneumatic tubes (Mobile MULTI)
  - Infrared and magnetic (zelt) loops (Urban MULTI)
- Routine equipment maintenance and testing to ensure proper functionality



Virginia Statewide Active Transportation Count Map

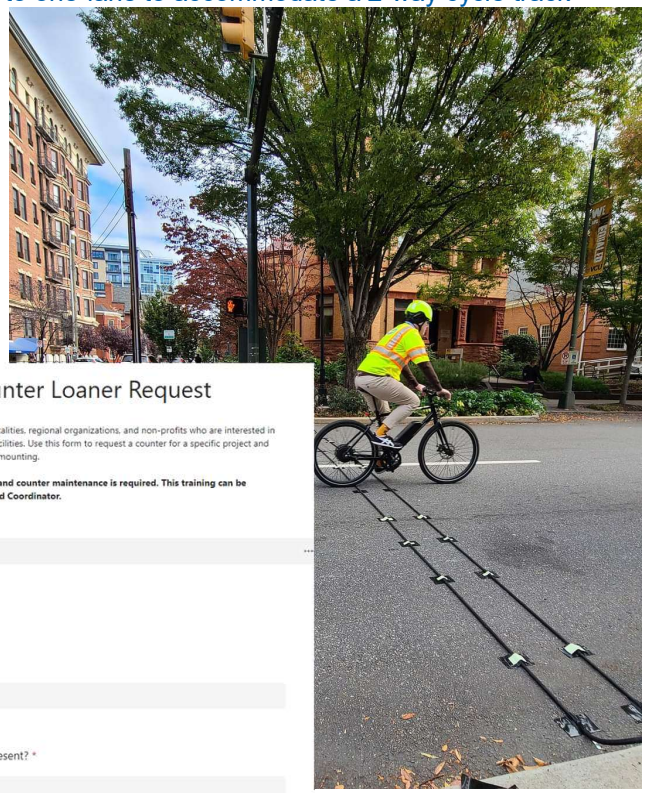
- Intuitive user interface design
- Weather and temperature impacts
- Multiple basemaps including CyclOSM to view underlying bike facilities
- Mode split distribution visualizations
- View data by year, month, or day
- New map can be viewed on VDOT's maps page publicly
- All VDOT and locality maintained short duration and permanent active trans. counters displayed (395 count locations to-date)
- View the map



Short Duration, Loaner and Technical Assistance Counts

- **Short duration, loaner, and technical assistance counts provided by TMPD to provide support for local, regional, and statewide active transportation planning efforts including:**
  - **Before and after roadway reconfiguration counts**
  - **Planning studies**
  - **Support active transportation investment**
  - **State funded project assessments**
- **Loaned counters typically perform counts for 2 – 4 weeks upon request using an online request form**
- **Free for localities and MPOs/PDCs to use**

West Franklin Street in Richmond will soon be reduced to one-lane to accommodate a 2-way cycle track



VDOT Bike/Ped Counter Loaner Request

VDOT loans Eco-Visio bike/ped counters out to localities, regional organizations, and non-profits who are interested in collecting bike/ped count data on bike and ped facilities. Use this form to request a counter for a specific project and location. Note, Counters require a secure post for mounting.

Note: some training on the Eco-Visio platform and counter maintenance is required. This training can be scheduled by reaching out to the VDOT Bike Ped Coordinator.

Section 1

Contact Information

1. Name *

Enter your answer

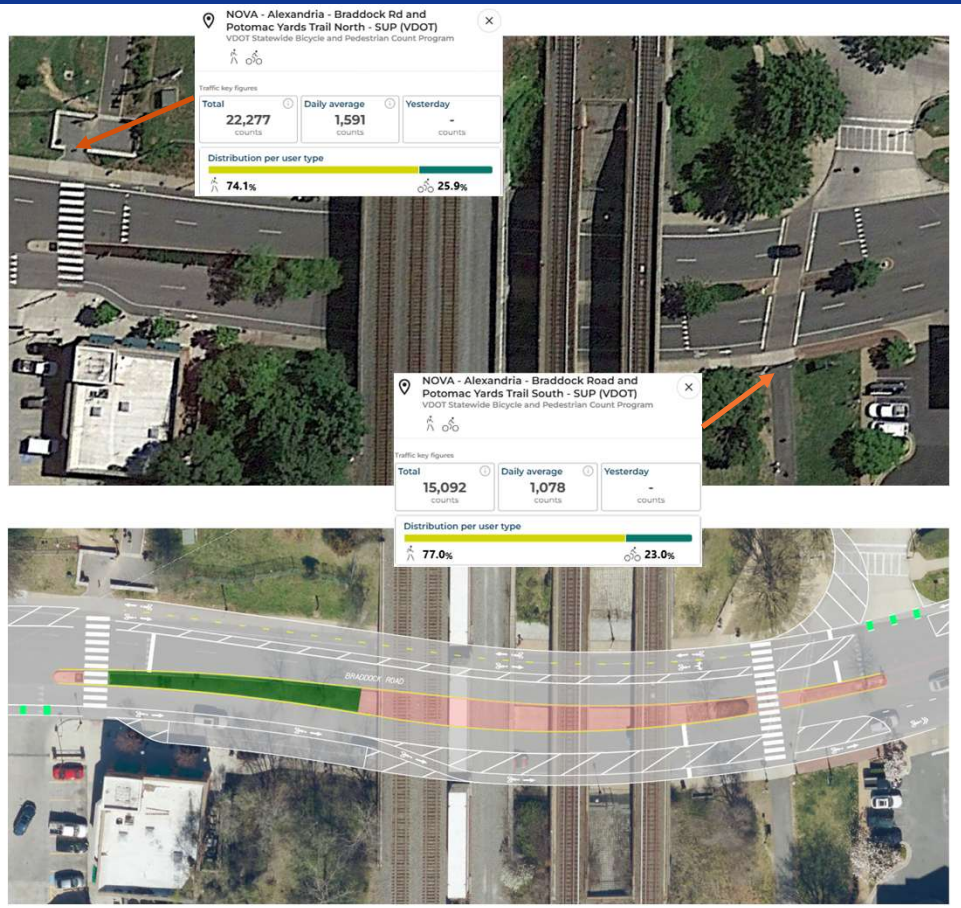
2. What organization/agency do you represent? *

Enter your answer

Virginia's Active Transportation Count Program Use Cases

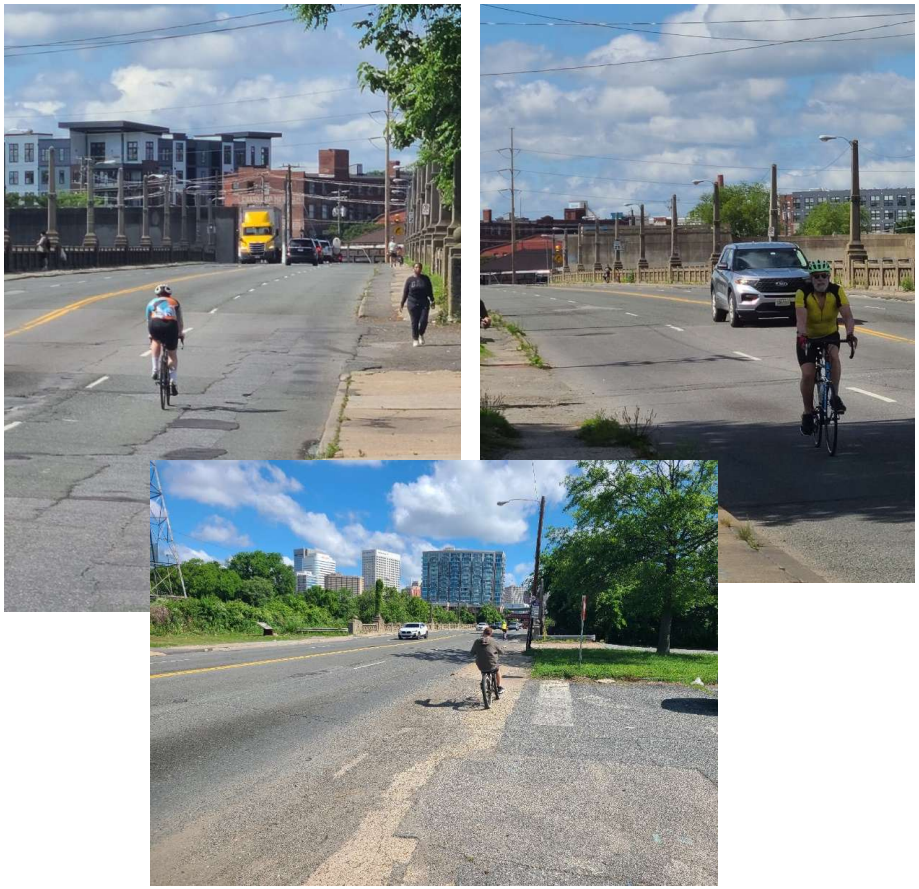
Using count data for safer crossings and complete streets: Braddock Road (Alexandria)

- Vehicle volume: 7,600 AADT
- Braddock Road Metro Station entrance located in top right (currently EB bicyclists must cross twice or travel contraflow to traffic in the WB bike lane to access from Potomac Yard Trail)
- PBSAP top 1% risk exposure segment
- Lane configuration: 3 lanes on western side and 4 on eastern side. 5’ standard bike lanes
- Active transportation count data at crossing: 1,078 - 1,591 (25% bicycle). Data collected month of April 2025
- Data presented to Alexandria planning and engineering staff as a part of a VDOT study on the corridor and used to develop a roadway reconfiguration alternative with 2-way cycle track to access Braddock Road Metro and shorter # of lane crossings. Two 11’ travel lanes, 6’ bike lanes with 4’ buffer
- Public engagement favorable. Final presentation to the Alexandria Traffic and Parking Board this Fall with implementation in Winter/Spring 2026



Using count data to support new multimodal bridge in downtown Richmond: Mayo Bridge Replacement

- Current conditions:
  - Four 11’ travel lanes
  - 5’ sidewalks that do not meet ADA requirements
  - 35 MPH posted speeds. Vehicles routinely go faster
  - No existing bicycle facilities
  - Transitions to two lanes on the southern side of the bridge after the flood wall
  - 17,000 vehicles per day
  - Three bus routes
  - 112 years old with a poor bridge rating
  - City purchased Mayo Island in 2024 to convert to large public park in 2026 (funded)
  - Replacement of bridge structure offers opportunity to connect to rapidly growing parts of the city (Manchester and downtown) with improved multimodal facilities and traffic calming improvements



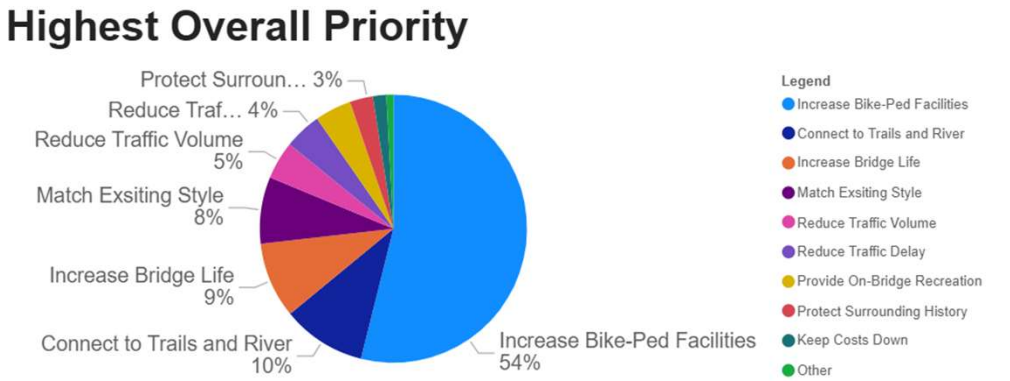
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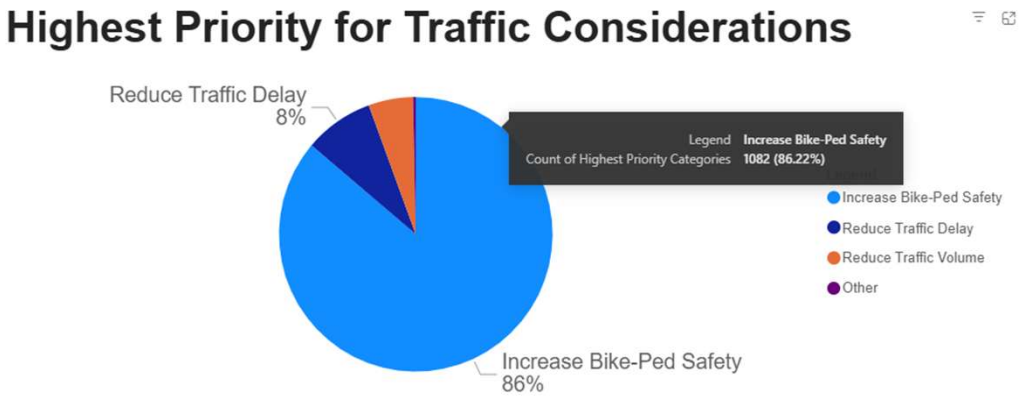
- VDOT Richmond District requested on behalf of the City of Richmond and local bike advocacy groups to collect count on the bridge and engage with the public to support expanded bike and pedestrian facilities and look into the potential for a road diet
- VDOT installed mounted Eco multi counters on both sidewalk facilities to count bicyclists and pedestrians and selective pneumatic tube counters in road to count bicyclists
- Count data collected for 2 weeks in May/June 2024
- Final bi-directional daily count average was 700 of which 25% were bicyclists (incredible given the speeds and lack of bike facilities!)



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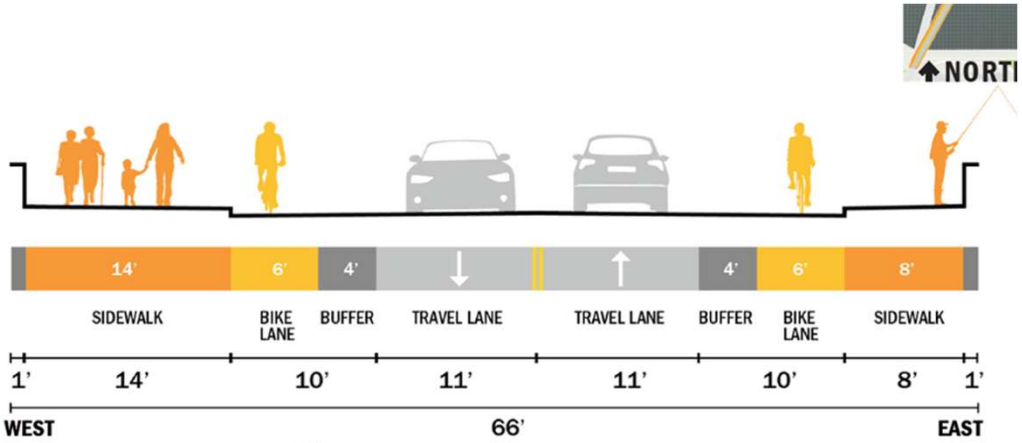
- Data was presented to the public and city officials
- Public engagement survey indicated that 1,082 survey responses (86%) considered increased bike/ped safety to be the highest priority. Only 8% indicated that reduce traffic delay was the highest priority
- 64% of survey responses would like to see increased bike/ped facilities or better connections to trails and the James River





Using count data to support new multimodal bridge in Downtown Richmond: Mayo Bridge Replacement

- Initial VDOT recommendation before data collection kept the road with four lanes and unprotected 5’ bike lanes. Count data and public feedback was key to reconsidering this configuration
- New cross section recommends reducing travel lanes from 4 to 2 to accommodate buffered bike lanes, a wide sidewalk, and shared use path
- Safety and count data was cited by city officials as key to their decision to expand bicycle and pedestrian facilities across the bridge
- New configuration endorsed by the mayor
- Currently $170 million of state and local funds has been allocated to the project
- Expected CN phase: 2032



“The current bridge very clearly does not serve the biking and walking community,” Tyndall told VPM News. “It's dangerous and crumbling, and just has a perception that it lacks safety.”

The bridge “carries nearly 36,000 person-trips per day over the James River,” including about 700 people who walk or bike across it daily,” the city said.

Richmond BizSense
February 11 ·

Newly installed Mayor Danny Avula has endorsed a design for the next incarnation of the Mayo Bridge that would be more pedestrian and bike friendly.



RICHMONDBIZSENSE.COM
Latest Mayo Bridge redesign shows two car lanes, plus bikes lanes, sidewalks and shared-use path - Richmond BizSense

Using count data to support permanent closure of roadway after pilot period: Free Bridge Lane in Albemarle County

- Albemarle County planning staff requested short duration counter assistance to count pedestrians and bicyclists before and after road closure as a part of a pilot project
- Located adjacent to the City of Charlottesville separated by the Rivanna River
- Car-free promenade pilot period is for 12 months. County planning staff aiming to make the closure permanent and add new pilot locations leveraging before and after count data and public input
- Before counts collected July 27 – August 2, 2024, required installation of counters at four locations
- Total before closure counts: 4,157 bikes and pedestrians on the shared use path and road
- After closure counts collected: May 21 – June 15, 2025
- Total after closure counts: 6,297 bikes and pedestrians on the shared use path and road
- Albemarle County BOS voted to permanently close Free Bridge Lane in August 2025



Home / Free Bridge Promenade Pilot Project

Free Bridge Promenade Pilot Project

We are running a 12-month pilot project to turn Free Bridge Lane into a car-free promenade.

On November 1, 2024, the road was closed to motor vehicles to create a safe, scenic space for walking, running, and biking. This project is part of the County's commitment to improving public spaces and making recreational areas safer and more enjoyable. Located along the Rivanna River between Darden Towe Park and Route 250, the new promenade will allow pedestrians and cyclists to enjoy the area without vehicle traffic. During the next year, we will closely monitor the usage of the



Key figures

Total (2025)	Yesterday
5,492 counts	- counts

Daily average (2025)	Week day average (2025)	Weekend day average (2025)
183 counts	168 counts	213 counts

Maximum traffic

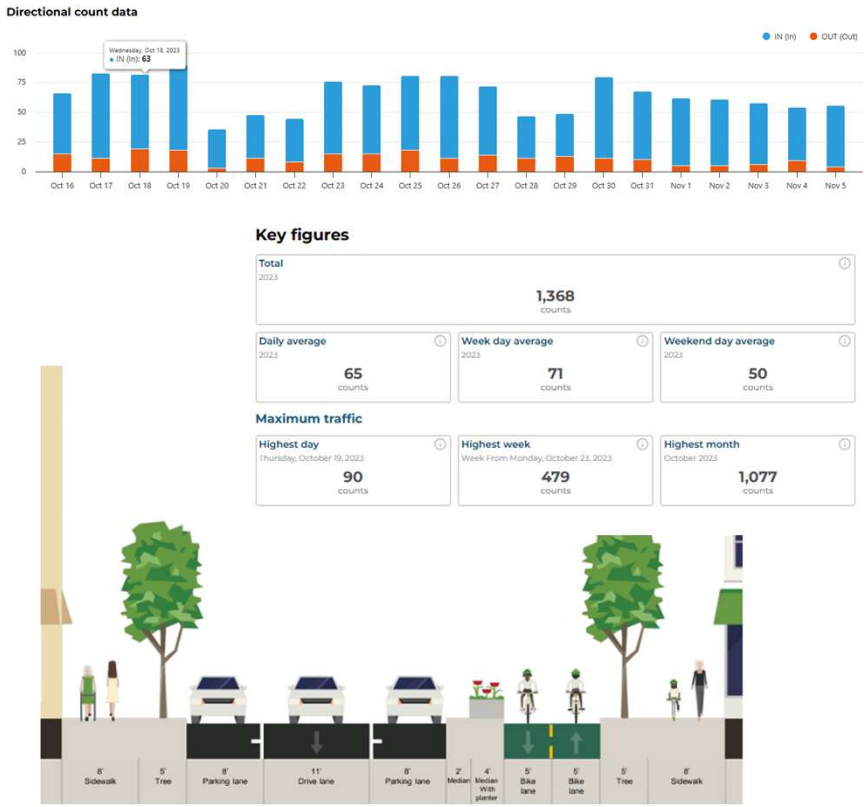
Highest day	Highest week	Highest month
Saturday, May 31, 2025	Week From Monday, May 19, 2025	May 2025
335 counts	1,419 counts	2,912 counts

Distribution per user type

91.1% 8.9%

Using count data to support road diet: Franklin Street 2-way cycle track extension in the City of Richmond

- Current configuration:
  - 2 one-way traffic lanes in EB direction
  - 25 MPH posted speed
  - AADT: 5,800
  - Runs through the center of Virginia Commonwealth University in central Richmond
  - No existing bicycle facilities
- Project would extend the existing parking separated 2-way cycle track west from the existing terminus at Belvidere Street 0.6 miles to Stuart Circle to allow for 2-way bicycle traffic on a one-way street and remove a travel lane
- Existing cycle track average daily volume: 427 (2024)
- City of Richmond requested bi-directional count data to support TAP application
- 1,136 bicycles counted over 21 days (highest day was 90 counts) of which 17% were traveling contraflow to traffic
- Could see 4X that number post implementation
- City has submitted an application for current round of TAP



Questions?