



# Quantifying Trail Use

A Survey of Greenway Trail Counting  
Practices in New York State



## About Parks & Trails New York

Parks & Trails New York is the leading nonprofit working statewide to create a network of parks, trails, and greenways so that New Yorkers can more easily access and fully enjoy the outdoors. Since 1985, Parks & Trails New York has helped create more than 1,500 miles of greenways, bike paths, river walks, and trails across New York and has led a campaign to promote and enhance one of the nation's largest state park systems.



## About the NYS Office of Parks, Recreation, and Historic Preservation

The New York State Office of Parks, Recreation and Historic Preservation (OPRHP) oversees more than 250 parks, historic sites, recreational trails, golf courses, boat launches and more. In 2021 OPRHP released the [Statewide Greenway Trails Plan](#) which establishes a vision for shared-use trails across New York. The following year OPRHP launched the Empire State Trail Program to promote and coordinate efforts for New York's preeminent multi-use trail. For more information, visit [parks.ny.gov](http://parks.ny.gov) or [empiretrail.ny.gov](http://empiretrail.ny.gov).

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U.S. Department of Transportation  
**Federal Highway Administration**

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# Introduction

In recent years, the importance of understanding how people use greenway trails has grown significantly across New York State and the nation. With the rise of active transportation, increased investment in trail infrastructure, and growing interest in outdoor recreation, trail-use data has become a critical resource for planners, policymakers, and advocates. This report explores current practices in trail-use data collection, with a particular focus on the methodologies employed to count users on greenway trails—ranging from manual observation to automated sensor- and video-based technologies. It also examines the evolution of statistical extrapolation techniques used to estimate total trail use from limited data in New York State.

Trail-counting methodologies fall broadly into two categories: manual and automated. Manual methods often involve volunteers or staff recording trail-user counts during set observation periods, sometimes using tally sheets or mobile applications. These methods can yield detailed user profiles, including mode of travel, demographics such as age, and behavior (like riding with or without a helmet), but are typically labor-intensive and time-limited. In contrast, automated counters—such as infrared sensors, pneumatic tubes, cameras, and inductive loops—offer a more cost-efficient method for counting, and can provide continuous, long-term data collection. While they may lack demographic detail, automated systems are indispensable for establishing consistent baseline data and identifying trends over time. Increasingly, agencies are experimenting with methods, including combining manual and automated methods, utilizing video-based counters with artificial intelligence to distinguish user types, and employing extrapolation models to estimate total trail usage by scaling short-term or sample data to broader timeframes and geographic areas.

This report seeks to catalog and compare the range of trail-counting practices currently employed throughout New York State. This report also identifies emerging best practices and provides some key takeaways for agencies and organizations aiming to develop or improve their trail-use data collection strategies. By highlighting the evolving methodologies and their applications, the goal of this report is to support a more consistent, data-informed approach to trail planning, funding, and advocacy statewide.

# Counting & Extrapolation Methodologies

Accurately measuring trail use is essential for understanding how and when trails are utilized, informing infrastructure investments, and supporting funding applications. Two primary methods are used to count trail users: manual counts, typically conducted by trained volunteers, and automated counts using sensor-based technology. While manual counts can offer rich, contextual data about user types and behavior, automated methods can be used for short-term counts or provide continuous, long-term coverage. To translate short-term or location-specific counts into broader estimates of trail use, statistical extrapolation methods can be employed. The [National Bicycle and Pedestrian Documentation Project](#) (NBPDP) provides widely accepted standards for both data collection and extrapolation, forming the foundation for many trail use studies in New York State. This section outlines current practices in counting and extrapolation, highlights the tools and methodologies in use, and discusses how these approaches are being adapted and could be refined to suit the unique needs of New York's trail networks.

## Manual Counts

Manual, or observational, counts are typically performed by persons stationed at set locations along a trail or pathway who record the number of users that pass by within a given time period. Information such as type of trail user (pedestrian, bicyclist, and more), direction of travel, demographic information, weather conditions, and more may be recorded, which allows for usage patterns and trends to be analyzed in addition to overall count numbers. The National Bicycle and Pedestrian Demonstration Project (NBPDP) provides a nationally-recognized method for conducting manual trail counts. The NBPDP was developed by Alta Planning + Design and the Institute of Transportation Engineers (ITE) Pedestrian and Bicycle Council to provide a consistent model of data collection, similar to the way in which motor vehicle usage is counted and modeled. The NBPDP provides standardized count and survey forms, instructions, and training materials for conducting counts.

Briefly, the manual counting methodology follows the following outline. Individuals conducting the count visit the site to count on at least two separate two-hour occasions (the methodology requires each site be counted on one to three weekdays and one to three weekend days), in order to account for changes in weather or unforeseen circumstances and provide a varied, accurate picture of use at the count locations. According to the National Bicycle and Pedestrian Documentation Project, differences in travel patterns on Tuesdays, Wednesdays, and Thursdays are not statistically significant, meaning that counts on any of those days may be considered equivalent for report estimates. Recommended times are from 5 to 7 p.m. on weekdays<sup>1</sup> (to correspond with peak travel times) and noon to 2 p.m. on Saturdays to target recreational users. Secondary times can include any two-hour window between 7 a.m. and 7 p.m. for both weekdays and weekends.

Counts should be performed at locations where there are not a wide array of users entering and exiting from different directions. Individuals are directed to count every person that passes on the trail in either direction, delineating the trail user by mode (bicyclists, walkers, etc.). Information is typically filled out on a sheet or using a digital application to record this information, as well as basic information about the count location and the weather conditions at the time of counting. An advantage of manual counting is that the counter may also collect additional data about people using the trail beyond mode of use, including perceived gender, helmet use, and/or presence of an assistive device other than a bicycle (e.g. a stroller, scooter, or wheelchair).

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<sup>1</sup>The Dutchess County Transportation Council has found 5-7pm to be too late and shifted their manual counts to 4-6pm.

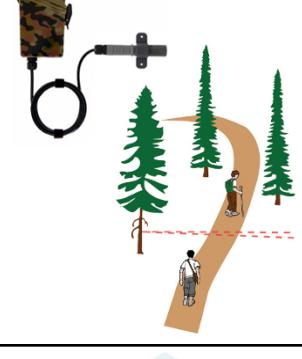
More information about the National Bicycle & Pedestrian Documentation Project manual counting methodology can be found here: <https://bikepeddocumentation.org/downloads>

## Automated Counts

Many technologies now exist for conducting automated trail counts, which typically involve installing a sensor alongside the trail or on top of the trail surface to count the number of users that pass a specific point. Some popular methods and devices include pneumatic tubes that are placed on the trail surface and detect when bicycle tires pass over them; devices with passive infrared sensors that detect infrared radiation when a user passes by; piezoelectric sensors that emit electrical signals when deformed; and video-based counters, which record videos of movement along the trail to count users and may be used in conjunction with advanced AI and machine learning technology to differentiate different types of uses and collect other data such as speed and direction of travel. In some cases, multiple technologies may be combined to provide additional data and result in better performance, such as combining infrared counters with induction loops cut into the pavement to differentiate user types. Each of these automated methods has strengths and weaknesses, and the type of data collected may range from simple count numbers to differentiation between different types of users and may or may not include the time of day and weather patterns. The table below describes the popular brands and types of counters in use across New York State. A more comprehensive breakdown and evaluation of all bicycle and pedestrian counting technologies in use across the U.S. may be found in NCDOT's 2021 publication [\*State-of-the-Art Approaches to Bicycle and Pedestrian Counters\*](#).

Note that it is difficult to compare the costs of these different technologies, as the cost per unit can depend on what kind of entity is doing the procurement, whether they are being bought in bulk, and whether they must be purchased with a subscription plan for data transmission. It is recommended that entities obtain their own quotes from the companies.



Automated & Video-based Counting Technologies in NYS				
Technology Type	Common Companies	Common Models	Differentiate User Types?	Image
Infrared	Eco-Counter	PYRO-Box	✗	
		Urban Post	✗	
		Wooden Post	✗	
	TRAFx	Infrared Counter	✗	
Induction Loops	Eco-Counter	ZELT	✓	
		Easy ZELT	✓	

Infrared + Induction Loop	Eco-Counter	<a href="#">Urban MULTI</a>	✓	
Pneumatic Tubes	Eco-Counter	<a href="#">Tubes</a>	✓	
	MetroCount	<a href="#">RidePod BT</a>	✓ (wheeled uses only - does not detect pedestrians)	
Piezoelectric	MetroCount	<a href="#">RidePod BP</a>	✓	
Video-Based	Miovision	<a href="#">Scout</a>	✓	

	Vivacity Labs	<a href="#">Viva Sensor</a>	✓	
	Numina	<a href="#">Numina</a>	✓	

## Extrapolating Trail Use

In addition to providing the national standard for conducting manual trail counts, the National Bicycle & Pedestrian Demonstration Project also developed a widely-accepted standard for extrapolating count data to estimate peak usage. The NBPDP provides detailed methodology and tools for extrapolating count data to produce daily, weekly, monthly, and annual estimated usage. While the NBPDP no longer appears to be an active effort (the website has not been updated since 2019), the resources, which themselves have not been updated since 2009, are available online for download.

The NBPDP methodology has been adapted for use by PTNY and other partners for conducting counts and calculating annual trail use estimates throughout New York State. The extrapolation spreadsheet calls for five input variables - count dates, count times, type (multi-use path or street/sidewalk), climate region, and two-hour count volume. Count dates provide the spreadsheet with information on the day of week and month of the count, and count time provides the inputs on what times were observed. The “type” factor allows the extrapolation methodology to be used for multi-use pathways or for users cycling on the street or walking on sidewalks in medium- to high-density areas. Climate region gives users one of three choices: “Long Winter-Short Summer,” “Moderate Climate,” or “Very Hot Summer-Mild Winter.” All of the counts in New York were categorized in the “Long Winter-Short Summer” climate region. Finally, the input calls for the two-hour count total. Based on these five variables, the NBPD spreadsheet is set up to return the daily, weekly, monthly, and annual count figures based on a two-hour count total.

However, the observed data collected by automated count methods has differed from the broad trends suggested by the NBPDP methodology. Data collected shows less overnight use than the NBPDP methodology would estimate (the formulas estimate that 5% of daily trail use occurs from 10 PM to 6 AM), and less use in the colder months than the methodology’s formulas. These differences between these trends and collected data across the state have not yet been fully verified; exploring a more accurate methodology will require additional analysis. The development of a more accurate set of New York State-specific guidelines for extrapolating limited duration trail count efforts to longer stretches of time would also allow for the addition of other variables that may impact trail use, such as trail surface and broader trail context (i.e. urban, suburban, rural).

## Quantifying the Use & Impact of NY's Greenway Trails

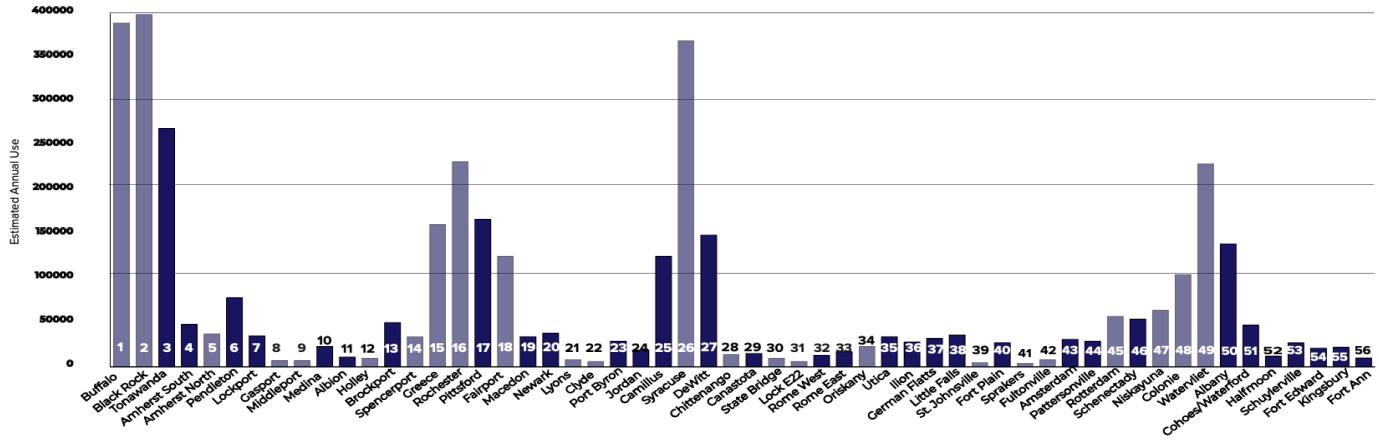
Since 2010, PTNY, in partnership with the New York State Canal Corporation, has adapted the NBPDP extrapolation methodology to produce annual trail use estimates for locations along the Canalway Trail system for their annual [Who's on the Trail reports](#), primarily utilizing data collected from automated Eco-Counters installed for periods of a few weeks to multiple years. When counts performed manually or through other automated methods have been available through volunteers or other partners, PTNY has included analysis and an annual use estimate for those counts as well.

A full trail use estimate for the Erie Canalway Trail (ECT) was conducted by PTNY in 2012, when it released an [economic impact report](#) for the trail. The study counted trail use using a combination of observational techniques and automated counters, and the counts were extrapolated to estimate total annual trail traffic as well as generate user spending profiles. The study estimated that the ECT received 1.6 million annual visits, resulting in \$253 million in total sales, \$28.5 million in federal, state, and local taxes generated, and 3,440 total jobs created or supported. This report provided a key benchmark for quantifying the economic impact of the Erie Canalway Trail- and other greenway trails- in New York State.

In anticipation of the completion of the Empire State Trail by the end of 2020, the Hudson River Valley Greenway, with the assistance of Alta Planning + Design, published the report [Empire State Trail: Trail User Projections](#) (2018), which estimated the potential number of annual users on the EST. The report utilized the NBPDP extrapolation methodology and estimated that the full 750-mile trail would host 8.6 million visitors per year once complete.

In 2019, PTNY began to use a modified version of Alta Planning + Design's methodology to calculate a total annual use estimate for the entire Canalway Trail system (Erie Canalway Trail and Champlain Canalway Trail) in the *Who's on the Trail* report. The core assumption underlying the estimates is that trail use correlates with population density over the area surrounding the trail. This assumption is supported by research cited in Alta's 2018 report. The report does not claim an estimated use figure for a single year specifically. Rather, the report estimates average total annual use based on data collected along the Canalway Trail over the previous five years. By aggregating multiple years of data, the estimate relies more heavily on observed data than estimated data. At locations where automated counts had not been conducted, trail use was estimated based on the surrounding population. Through this method, use was estimated roughly every nine miles along the trail, for a total of 40 estimate points along the 360-mile trail. The use at these points was summed together to arrive at the total trail use estimate figure. A full explanation of PTNY's counting and extrapolation methodology used in the *Who's on the Trail* reports can be found [here](#).

**MAP - SAMPLE AND COUNT LOCATIONS FOR TRAIL USER PROJECTIONS (2020-2024)**

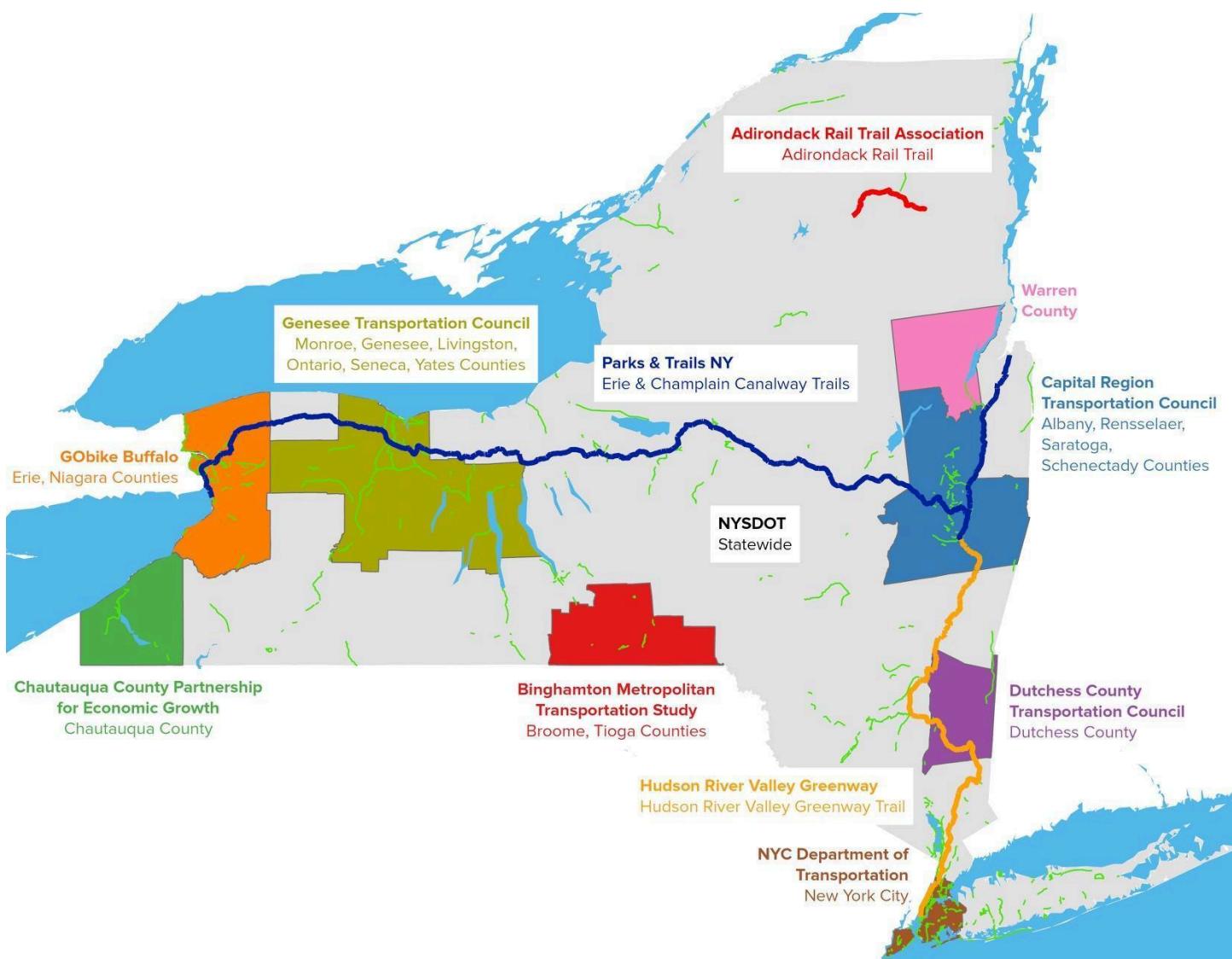


Sample page from PTNY's Who's on the Trail Methodology Report 2024 showing the count and estimate locations used to calculate the total projected use of the entire Canalway Trail system.

[Plans are currently underway](#) to produce an updated visitation estimate and economic impact for the full Empire State Trail, now that five years have passed since its completion. In August 2025, PTNY engaged LaBella Associates and the Institute for Transportation Research and Education as the consultants to complete an Economic Impact Study of the Empire State Trail. The report will consist of a data-driven study to quantify the trail's economic contributions across sectors such as tourism, health, small business development, and transportation—both statewide and by trail segment. The study will utilize cell phone-based visit data, surveys, and existing count data provided by partners to model the economic impact using an input-output model.

## Statewide Survey of Trail Counting Efforts

The following section is a survey of organizations performing trail user counts in New York State and the trails where counts are being conducted. This list is not necessarily exhaustive, but represents a diverse group of organizations and agencies performing counts in every corner of the state. Both manual and automated count methods are cited, with Eco-Counter brand electronic counters with infrared sensors being the most popular type of counter among organizations performing trail counts. Video-based counting systems are also frequently used to count trail use across the state, with many now utilizing advanced AI technology to facilitate quicker analysis. Many organizations make the data and results available to the public through published reports, interactive dashboards, or direct downloads of spreadsheets containing the raw data. The stated purpose for collecting trail user data ranges from supporting decision-making for new trail building, to advocating for and informing the location of protected bike and pedestrian infrastructure.



## Adirondack Rail Trail Association

**Location:** Adirondacks

**Trails:** Adirondack Rail Trail

**Count Method:** Automated

**Count Technology:** Eco-Counter Wooden Post

Under a Volunteer Stewardship Agreement with the New York State Department of Environmental Conservation (DEC), the Adirondack Rail Trail Association has been collecting monthly trail counter data since July 2024.

Wooden Post Eco-Counters were installed near Old Military Road in Lake Placid and Pine Street in Saranac Lake before the full trail has even opened and will remain installed as the trail develops. DEC anticipates using counters along all phases of the trail once fully complete as a method to assess use of the trail. A brief snapshot of the numbers is available on [NYSDEC's Adirondack Rail Trail's webpage](#). Available [data](#) from July 2024 to June 2025 reveal that the trail has seen a total of 148,897 visits – a total reached by summing the visits at the two count locations.



*Wooden Post Eco-Counter installed along the Adirondack Rail Trail.*

# Binghamton Metropolitan Transportation Study

**Location:** Broome and Tioga Counties

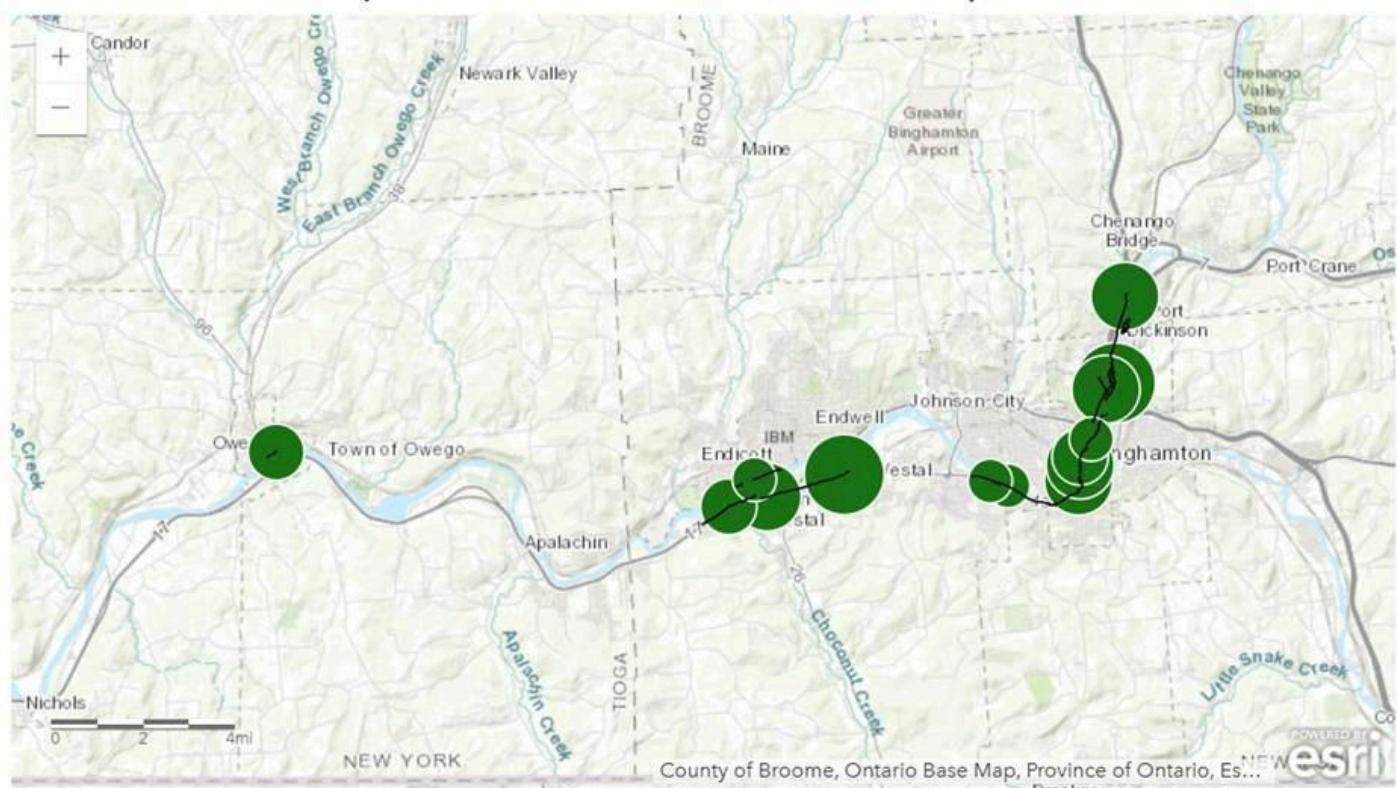
**Trail:** Two Rivers Greenway

**Count Method:** Automated

**Count Technology:** Eco-Counter Urban Post & Wooden Post

The Binghamton Metropolitan Transportation Study (BMTS) is the designated MPO for the Binghamton area and includes parts of Tioga and Broome Counties. BMTS has 16 permanent Eco-Counters—nine metal [Urban Post Evo](#) counters and seven [Wooden Post Evo](#) counters—installed along the Two Rivers Greenway system, from Otsiningo Park in the north, to the Owego Riverwalk in the west. All but two of the counters are able to differentiate bicyclists from pedestrians using induction loops cut into the pavement. BMTS has published monthly reports along with an [interactive map](#) that showcases monthly and running total counts broken down by user type, but is now considering producing quarterly reports. BMTS also provides count data and customized count reports upon request. The 2024 count program was summarized in an interactive [Story Map](#).

## October 2024 Bicyclist & Pedestrian Counts Map



The Two Rivers Greenway *interactive map*

# Brooklyn Greenway Initiative, Regional Plan Association, Numina, and New York City Department of Transportation

**Location:** Brooklyn

**Trails:** Brooklyn Waterfront Greenway

**Count Method:** Automated

**Count Technology:** Numina video-based counters

The [Brooklyn Greenway Initiative](#) (BGI) is a nonprofit organization focused on building and advocating for the Brooklyn Waterfront Greenway, as well as other greenway trails in and around Brooklyn and New York City. In 2024, BGI, alongside its partners Regional Plan Association, Numina, and NYC DOT, released the [Brooklyn Waterfront Greenway User Study](#). The User Study aggregates the findings from three different methods of trail data collection: field interviews of greenway users; a panel survey of residents in zip codes that contain the Greenway; and the installation of 32 Numina sensors installed on light posts to count greenway use and mode of usage. Numina sensors are a video-based counting technology that utilize machine learning techniques to count and differentiate between different user types. Analyzed together, the data collected from the Numina sensors, interviews, and user surveys were able to create a complete picture of greenway usage to foster support for completing the Brooklyn Waterfront Greenway and advocating for other greenways across the city.



*The Brooklyn Waterfront Greenway, with locations of 32 installed Numina sensors*

# Capital Region Transportation Council

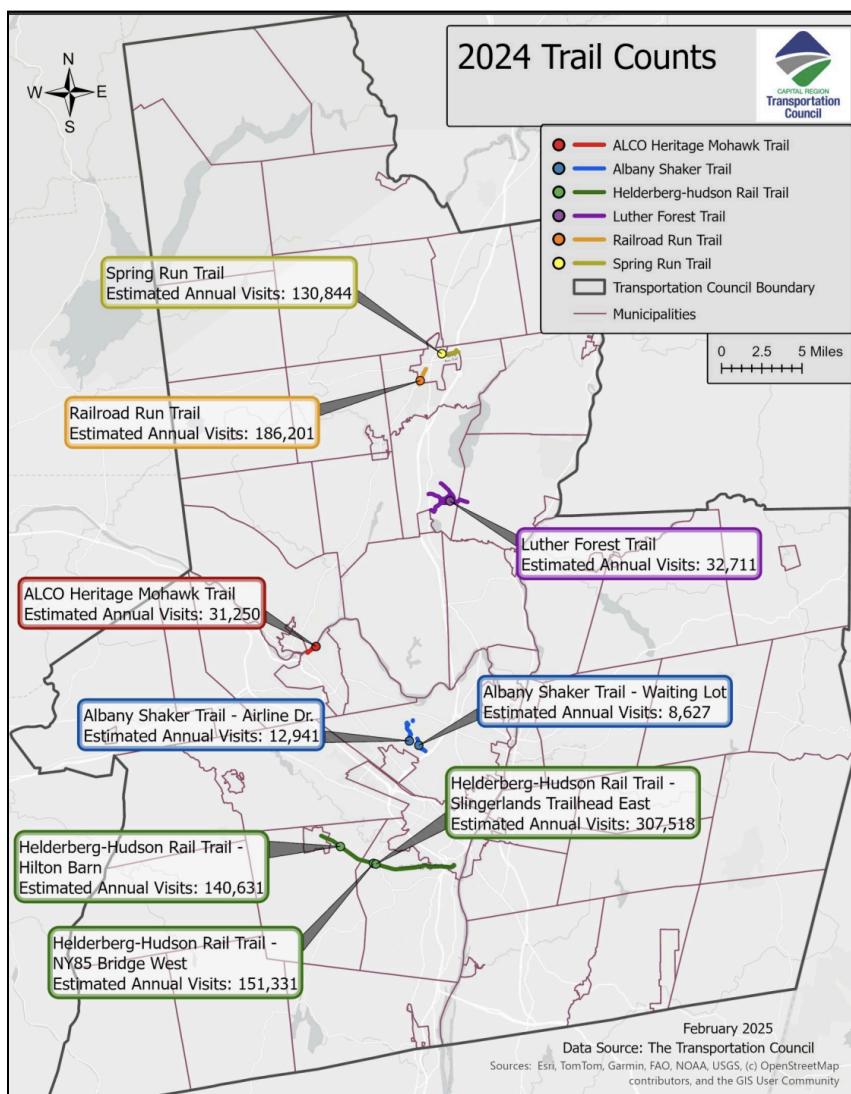
**Location:** Albany, Rensselaer, Saratoga, and Schenectady Counties

**Trails:** ALCO Heritage Mohawk Trail, Albany Shaker Trail, Helderberg-Hudson Rail Trail, Luther Forest Trail, Railroad Run Trail, Spring Run Trail, South End Connector Trail, Zim Smith Trail

**Count Method:** Automated, manual

**Count Technology:** Eco-Counter PYRO-Boxes

The Capital Region Transportation Council (CRT) is the MPO for New York's Capital Region. CRT has collected trail use data since 1997, with a study on the Mohawk Hudson Bike-Hike Trail. In 2016, CRT completed a project called [Regional Trail Perspectives](#) as part of their Regional Transportation Plan. This study included both automated trail counts, as well as manual counts using the NBPDP count methodology, at 22 locations across the region's multi-use trail system. The organization continues to conduct trail user counts as part of its effort to obtain funding to close the gaps in its regional trail system. The annual count program currently utilizes three Eco-Counter PYRO-Boxes, which are installed for up to three weeks at a time at strategic locations along the trail network during the summer. Upon completion of data collection, CRT develops seasonal and annual use estimates using the NBPDP methodology, and the findings are released in an [annual report](#).



## **Chautauqua County Partnership for Economic Growth**

**Location:** Chautauqua County

**Trails:** Chautauqua Rails to Trails, Westside Overland Trail

**Count Method:** Automated

**Count Technology:** Eco-Counter infrared counters

The Chautauqua County Partnership for Economic Growth (CCPEG) has utilized three electronic Eco-Counters since 2019 to collect trail usage data to support the County's push for improvements to the greenway trail network. The counters are mobile, and counter placement is focused on the highest traffic areas, with particular emphasis on capturing the heaviest snowmobile usage during the busy winter months. As of 2025, one counter is installed on the Chautauqua Rails to Trails in Mayville, and two are located on the Westside Overland trail, a multi-use hiking and biking trail spanning 24 miles in the western half of the county. Data is typically collected on a quarterly basis and shared with local trail user groups and government agencies to support grant-writing purposes.



*Chautauqua Rails-to-Trails. This picture was taken on the Nadine and Paul Webb Trail Segment closest to Morris Road near Mayville.*

# Dutchess County Transportation Council

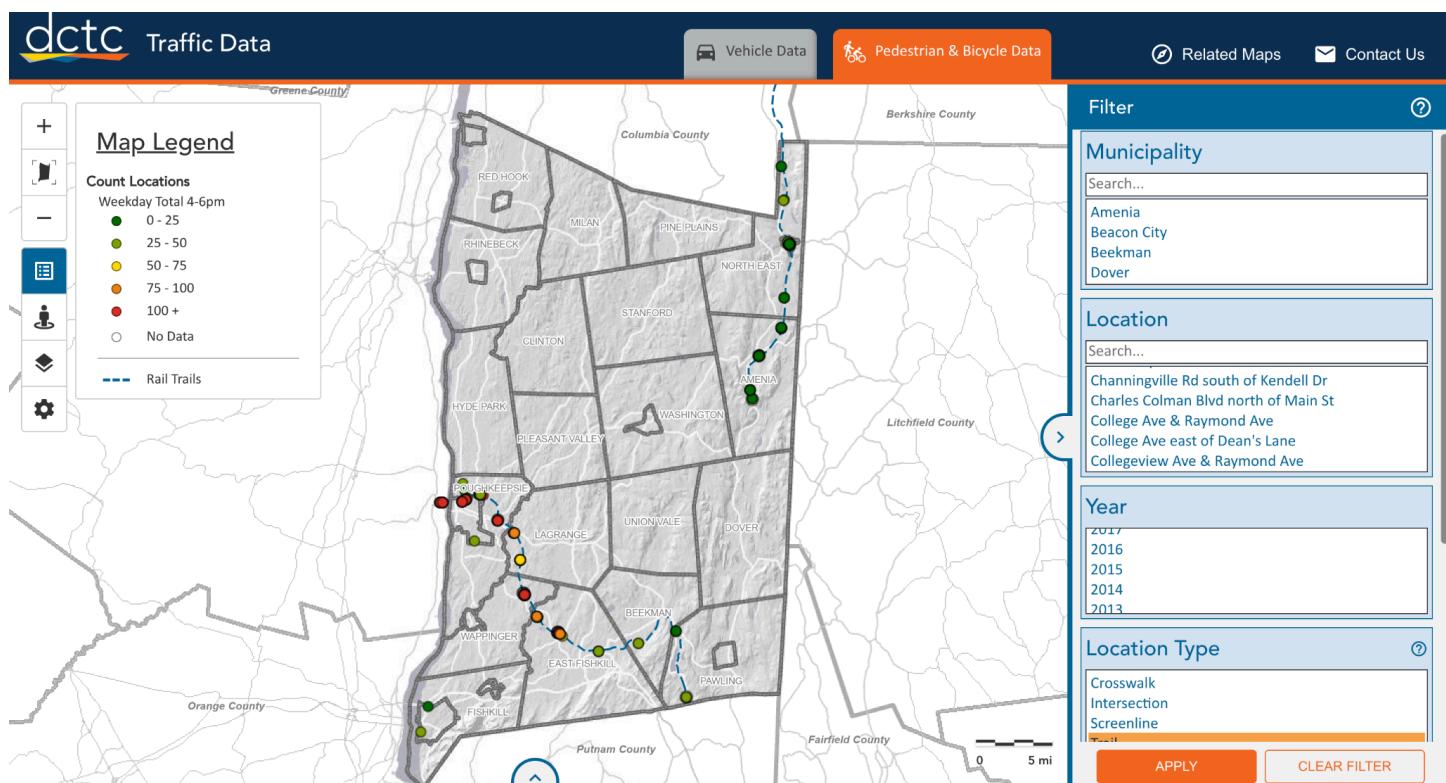
**Location:** Dutchess County

**Trails:** WRS Dutchess Rail Trail, Harlem Valley Rail Trail, Maybrook Trailway, Walkway Over the Hudson, Northside Line

**Count Method:** Automated, manual

**Count Technology:** Pneumatic tube counters; video-based counters (via a contractor)

The Dutchess County Transportation Council (DCTC) serves as the designated Metropolitan Planning Organization (MPO) for Dutchess County. Dutchess County began a volunteer bicycle and pedestrian count program in 2012 to address the lack of data available about how many people were walking and biking in the county, and bicycle and pedestrian counts were integrated into DCTC's annual traffic count contract starting in 2016. Today, DCTC conducts volunteer counts every September utilizing a modified version of the NBPDP counting methodology and collects automated counts using video-based counting performed by an outside contractor. Typically, the contractor provides data from 7am to 7pm on a Thursday and Saturday. In the past, contractors also used bicycle-specific pneumatic tube counters, but that data was found to be less reliable. All of the count data is made available alongside the County's other traffic data through an [online mapping application](#).



DCTC Traffic Data viewer on the Pedestrian & Bicycle Data tab filtered for counts conducted on “Trails”.

# Genesee Transportation Council

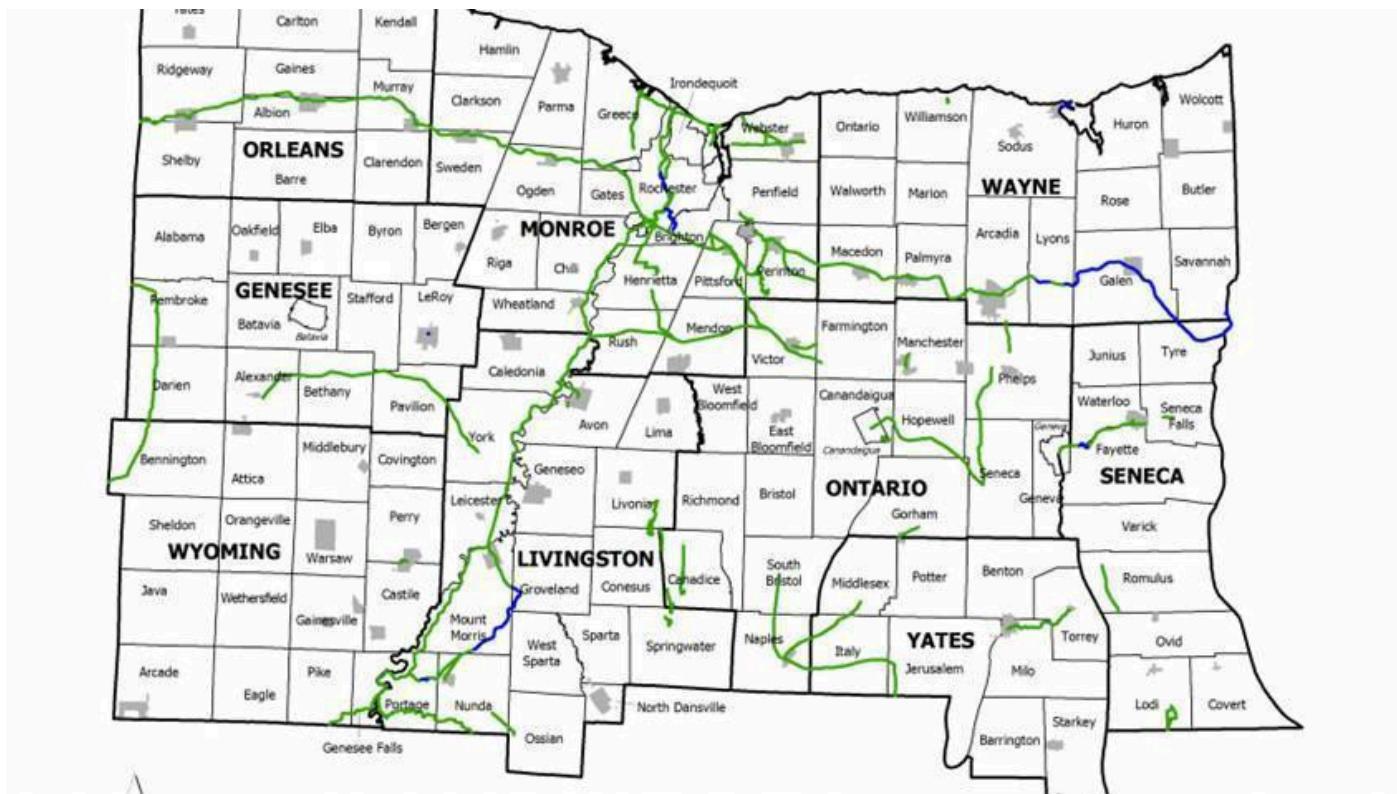
**Location:** Monroe, Genesee, Livingston, Ontario, Seneca, and Yates Counties

**Trails:** Erie Canalway Trail, Genesee Riverway Trail, Genesee Valley Greenway, Groveland Secondary Trail, Ellicott Trail, Route 390 Multi-Use Trail, Lake Ontario State Parkway Shared-Use Path, Irondequoit Lakeside Multi-Use Trail, Route 590 Multi-Use Trail, El Camino Trail, Lehigh Valley Trail, Webster Route 104 Trail, Auburn Trail, Ontario Pathways, Cayuga-Seneca Canal Trail, Keuka Outlet Trail

**Count Method:** Automated

**Count Technology:** Eco-Counter pneumatic tube counters, TRAFx Infrared Trail Counter, Miovision Scout

As the Metropolitan Planning Organization (MPO) for the Genesee-Finger Lakes region, the Genesee Transportation Council (GTC) performs counts on trails and other bicycle and pedestrian facilities throughout their service area as part of their Bicycle and Pedestrian Transportation Program. GTC uses [a variety of counter types](#), including pneumatic tube Eco-Counters, time-lapse cameras, infrared sensors ([TRAFx counters](#)), and telescoping cameras (Miovision Scout) at various locations. The data informs GTC and partner transportation studies, and is shared in an [interactive map](#). Their counts along the Canalway Trail system have also been included in PTNY's Who's on the Trail reports.



Trails in the GTC service area

## GObike Buffalo

**Location:** Erie and Niagara Counties

**Trails:** Erie Canalway Trail, Tonawanda Rails to Trails, Scajaquada Creek Trail, Shoreline Trail, Clarence Pathways, Niagara Scenic Parkway Trail, Two Mile Creek Trail, LaSalle Park Trail

**Count Method:** Manual

**Count Technology:** n/a

GObike Buffalo is a non-profit organization that promotes active mobility in the greater Buffalo-Niagara region. Since 2019, GObike has led a volunteer-driven bicycle and pedestrian count program using the NBPDP established two-hour observational count methodology. Volunteers performed observational counts at sites throughout the region, and the data was then tabulated and extrapolated to generate estimated daily traffic values. Counts were performed on all types of bicycle and pedestrian facilities, including greenway trails, roads with bike lanes, and heavily used bicycle corridors without dedicated bicycle infrastructure. Two reports detailing the methodology and results of the count efforts were released in [2020](#) and [2022](#), and the raw data is available through a public ArcGIS Online [feature layer](#).



**Bicycle and Pedestrian Counts in  
the Buffalo-Niagara Region**  
September 2022



# Hudson River Valley Greenway

**Location:** Hudson River Valley Corridor

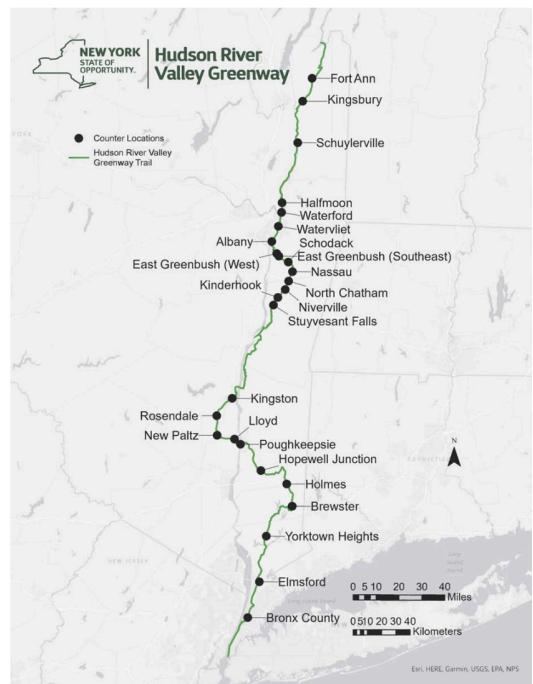
**Trails:** Hudson Valley Greenway Trail, Albany-Hudson Electric Trail, Mohawk-Hudson-Bike-Hike-Trail, Dugway Trail, Wallkill Valley Rail Trail, Manhattan Greenway Trail, Maybrook Trailway, North County Trailway, Van Cortlandt Park, Kingston Point Rail Trail, WRS Dutchess Rail Trail

**Count Method:** Automated, manual

**Count Technology:** Eco-Counter PYRO-Boxes

The Hudson River Valley Greenway (HRVG) is the state agency tasked with facilitating preservation and economic development along the Hudson River Valley corridor. In 2021, HRVG launched an initiative to gather data on public use of the HRVG Trail, which is the portion of the Empire State Trail that spans 275 miles from New York City to Whitehall in Washington County. HRVG utilizes 11 Eco-Counter PYRO-Boxes installed for 12-month periods to collect detailed trail visitation data. The [2023 report](#) presented trail use data for 26 locations from two years of counting use along the trail, ranging broadly from busy urban sites to lower usage rural sites. In total, 2.06 million visits were counted across the 26 sites, with an average of 79,200 visits per site. The Year 3 HRVG Trail Use report is in progress as of summer 2025 and will include annual trail visitation data for nearly 40 sites. PTNY has included HRVG count locations located along the Champlain Canalway Trail in its Who's on the Trail Reports.

**Hudson River Valley Greenway Trail – 26 Trail Counter Locations**



The Hudson River Valley Greenway also serves as the manager of the Albany-Hudson Electric Trail (AHET), a 36-mile section of the Empire State Trail in Rensselaer and Columbia Counties. HRVG administers a formal program to collect data on the public's use of the AHET trail. Trail use information is provided to community partners, non-profit groups, and the general public, to inform trail operations, maintenance, and tourism promotion efforts. In 2025, HRVG published the [Albany-Hudson Electric Trail 2024 Trail Use Report](#), which covers the three-year period 2022 through 2024 and includes data from 12 locations (the same counters that inform the comprehensive Hudson River Valley Greenway Trail Use Reports). To understand how people use the AHET trail, HRVG staff completed visual surveys of trail users at varied locations during 2022 and 2024. Surveys were collected at 10 locations along the trail, and were conducted over a mix of weekends and weekdays, across a range of summer, fall, and winter months. This survey information provided an understanding of mode breakdown that complemented the automated trail counts. For this report, HRVG also conducted a statistical analysis, combining the results of the trail user types and the highly detailed trail visitation data collected by the automated counters at twelve locations. HRVG's data analysis estimates the 36-mile Albany-Hudson Electric Trail attracts a total of 630,000 annual visits.

# NYC Department of Transportation

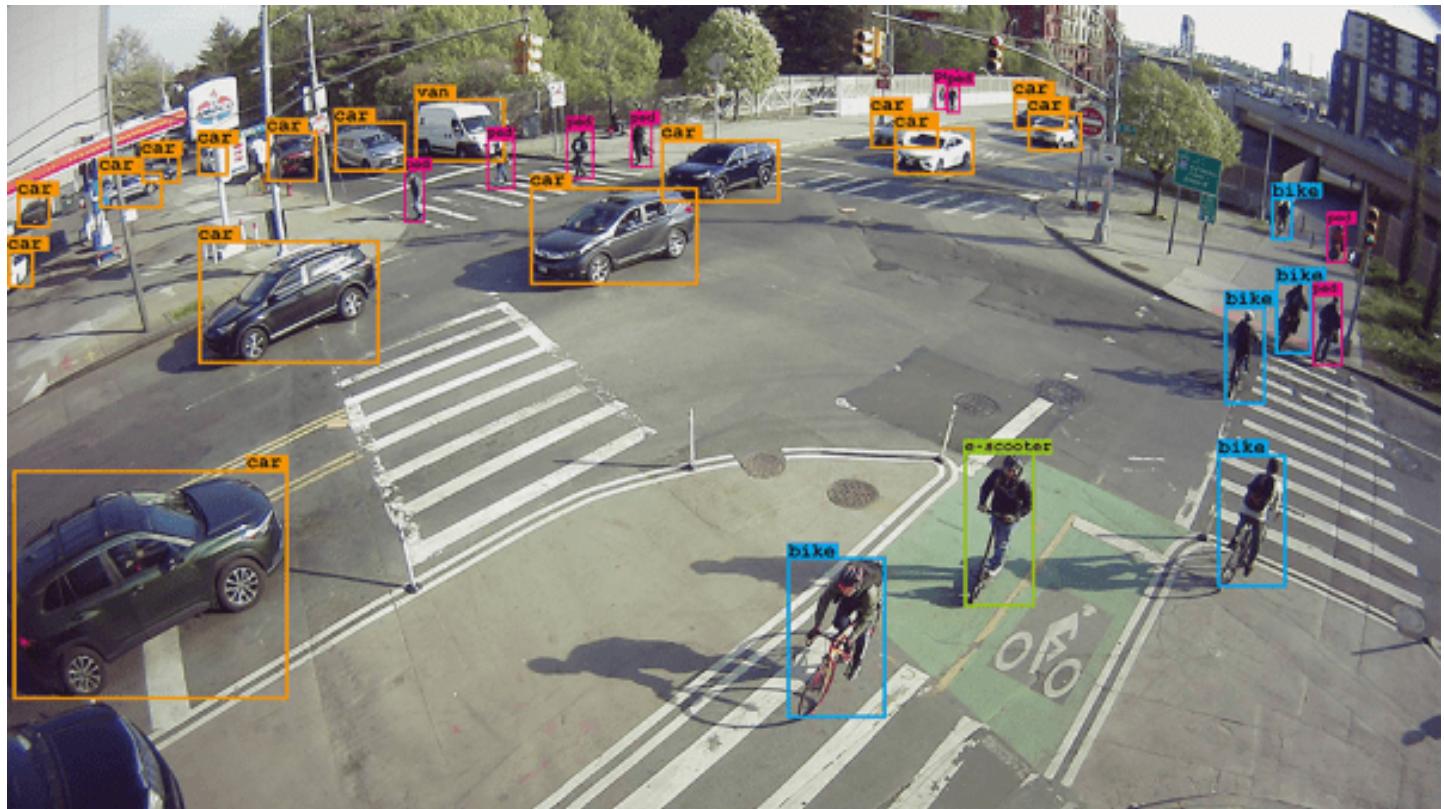
**Location:** New York City

**Trails:** NYC Greenways

**Count Method:** Automated, manual

**Count Technology:** Eco-Counter, Viva Sensor

New York City has a robust and well-established bicycle and pedestrian count program, with counts performed on both multi-use trails and protected bike lanes throughout the city through a variety of means, including manual counts and Eco-Counters. The City's data-driven approach to bicycle and pedestrian infrastructure is longstanding, with manual bicycle count data available for the [East River Bridges](#) dating back to 1980. The [counter locations](#) and [raw count data](#) are updated regularly and made available to the public through the NYC Open Data portal, and presented in map form alongside bicycle crash locations, bike-share usage and locations, and other bicycle-related data on the [NYC DOT website](#). In 2023, NYC DOT [piloted a program](#) using a new street activity sensor technology from [Vivacity Labs](#), intended to replace the city's time-consuming manual count program. The innovative devices are installed on light poles and can detect different modes of travel, including bicycles, pedestrians, and e-scooters; measure travel speed; and detect "near miss" incidents between users.



Viva's advanced AI technology differentiates between types of uses

# NYS Department of Transportation

**Location:** Statewide (Currently Menands, DeWitt, New Paltz, Manhattan)

**Trail:** Empire State Trail, Manhattan 9A Bikeway

**Count Method:** Automated

**Count Technology:** Video-based counters, piezoelectric strips, infrared counters

In 2024, the New York State Department of Transportation (NYSDOT) published a document outlining a [standardized protocol](#) for all micromobility (including bicycle and pedestrian) traffic monitoring data collection undertaken by NYSDOT, or by any non-NYSDOT organization supporting any project or study for which New York State-provided funds are used. The guide specifies standards and minimum criteria for various types of manual and automated count methods, as well as a required reporting format for all data. NYSDOT conducts its own bicycle and pedestrian counts through an outside contractor and currently has a variety of counter types installed throughout the state, including video-based counting devices, infrared counters, and piezoelectric sensors for bicycle and pedestrian traffic installed in DeWitt, Menands, and New Paltz on the Empire State Trail, as well as Manhattan's 9A Bikeway. All micromobility count data is being released on NYSDOT's [Traffic Data Viewer](#) when available. We look forward to receiving more data and information from NYSDOT as their micromobility data collection program continues to mature.

The Field Technician must complete detailed documentation about the counter location, as specified in Appendix B.

## **6. Accuracy**

The New York State Department of Transportation, through its Highway Data Services Bureau, maintains coverage and continuous count elements of the NYSDOT traffic monitoring program and are in the development stages of a micromobility count program.

All portable traffic counters must be tested annually, prior to the count season, to ensure consistency of the count data. Additionally, device type, model accuracy, precision documentation, and operation and maintenance records will be maintained by the counting organization and provided to the Main Office before the beginning of each count season and upon request.

## **7. Minimum Micromobility Traffic Monitoring Standards**

Validity of counts shall be determined by the Main and Regional Offices. All minimum criteria must be satisfied for each count unless otherwise specified in writing by either the Regional Office or the Main Office.

- All data files provided shall have 15-minute intervals.
- Unless otherwise noted micromobility short counts shall have a minimum of 12 hours of collected data each day.
- All 3 Day 36 Hour Counts must include at least two valid counts for each hourly count interval within the requested collection times, regardless of data collection method.
- Unless otherwise requested 3 Day 36 Hour counts shall contain 2 weekdays and one weekend day of data.
- All 3 Day 36 Hour counts shall have 12 hours of collected data each day; these hours may be nonconsecutive. The times for collection will be specified when the count is requested.
- Unless specific days are requested, for 3 Day 36 Hour counts the contractor shall attempt to collect the data on fair weather days.
- 7 Day 84 Hour counts shall have 12 hours of collected data each day; these hours may be nonconsecutive. The times for collection will be specified when the count is requested.
- All counts must be collected by direction and count zone.
- Minimum recording intervals for signalization studies, including roundabouts, will be specified in writing by the Regional Office.

# Parks & Trails New York

**Location:** Statewide

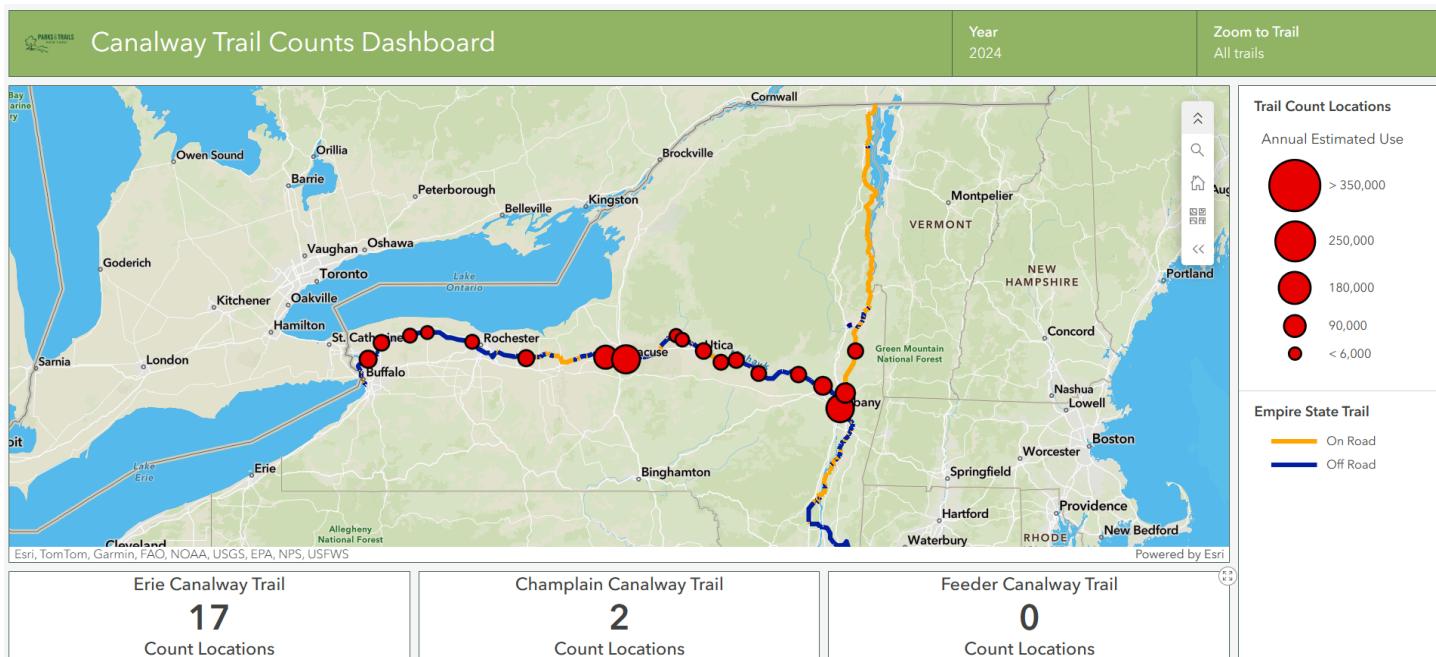
**Trails:** Erie Canalway Trail, Empire State Trail, Genesee Valley Greenway Trail

**Count Method:** Automated, manual

**Count Technology:** Eco-Counter PYRO-Boxes

PTNY has been the statewide leader in collecting trail user count data since it launched its trail count program in 2005 to support anecdotal claims of the Erie Canalway Trail's popularity among walkers and cyclists. PTNY has conducted trail user counts in dozens of locations across the state, utilizing both Eco-Counter PYRO-Boxes and manual counting methods, and partnering with organizations such as New York State Canal Corporation, the Department of Health, MPOs, and local municipalities. PTNY has experience analyzing data provided by partners, like the City of Rome, which purchased its own Eco-Counter in 2023.

The annual [\*Who's on the Trail: Canalway Trail\*](#) report summarizes the annual trail count program conducted by PTNY and the New York State Canal Corporation, which is an effort to develop a comprehensive profile of trail usage across the Canalway Trail system. The collected data is extrapolated using a formula closely based on the NBPDB methodology to produce full-year profiles of trail usage at each count and estimate location, and to estimate a total trail usage across the trail system. The most recent 2024 report estimates that the Erie and Champlain Canalway Trails together receive an average of 3.97 million visits per year. The Erie Canalway Trail alone sees approximately 3.84 million visits annually, while the Champlain Canalway Trail boasts about 130,000 visits each year. An interactive dashboard provides access to recent years' data from the report, with plans to eventually include all historic trail count data. PTNY also published a [\*Who's on the Trail: Genesee Valley Greenway\*](#) as part of its Western New York Trail Towns Initiative, based on trail user counts conducted between 2021 and 2023.



PTNY's interactive dashboard for *Who's on the Trail (Canalway Trail)*.

# Warren County

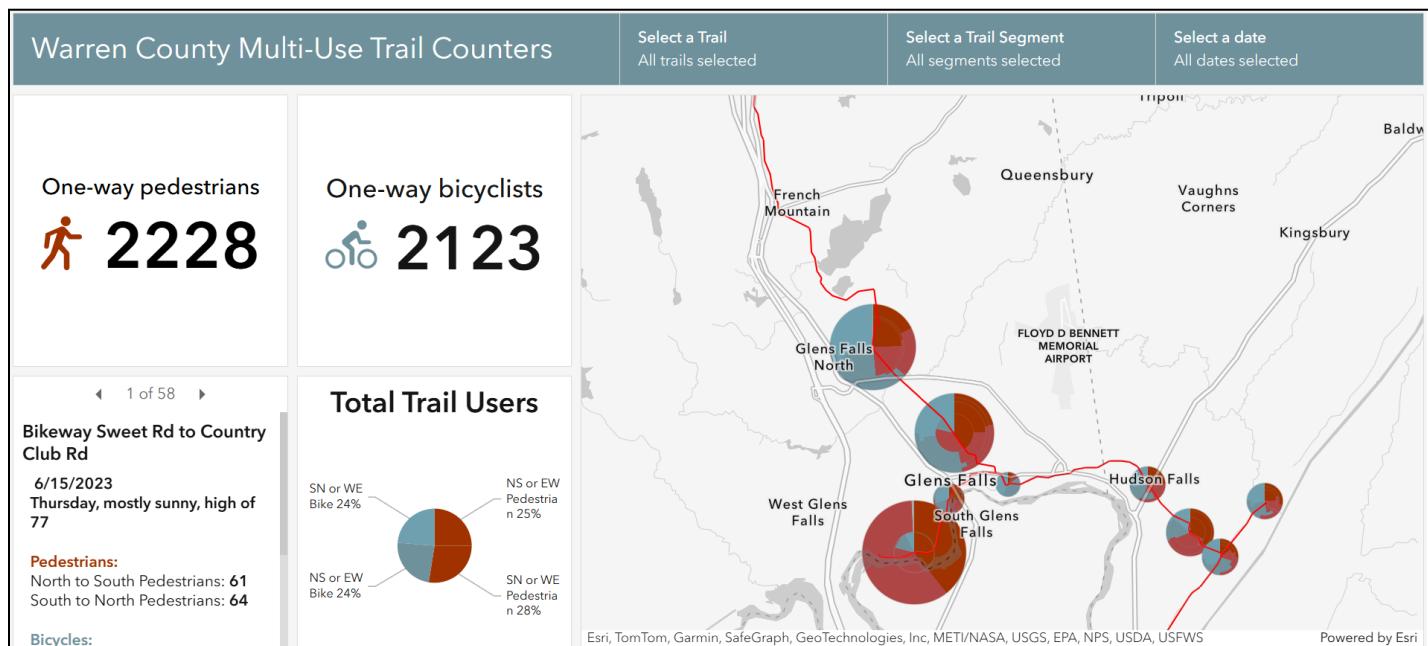
**Location:** Warren County

**Trails:** Champlain Canalway Trail, Feeder Canal Trail, Warren County Bikeway

**Count Method:** Automated

**Count Technology:** Video-based ATR Counters (Automatic Traffic Recorders) conducted by Tri-State Traffic Data, Inc.

In June 2023, the NYS Department of Transportation conducted trail counts for the Warren County Planning Department as part of a large-scale [trail improvement plan](#). Counts were conducted using a video-based counting system at six locations, including two along the Champlain Canalway Trail between Fort Edward and Kingsbury, four along the Feeder Canal Trail in Hudson Falls and Glens Falls, and two along the Warren County Bikeway in Glens Falls. The results of the count program were published in an [interactive ArcGIS Online Dashboard](#), and included PNTY's [2023 Who's on the Trail Report](#).



*The Warren County interactive data dashboard*

# **Analysis of Counting Efforts**

This following analysis examines the trail count practices of thirteen organizations across New York State (see Appendix 1 for an overview table), highlighting who is collecting data, the types of technology in use, the purposes of counting efforts, and the challenges faced in implementation. These organizations represent a diverse mix of nonprofits, government agencies, and planning bodies, each with varying levels of experience and capacity. As trail use grows and the demand for data-driven planning increases, understanding the current landscape of trail counting programs provides valuable insight into both existing gaps and emerging opportunities for statewide coordination, technological advancement, and data sharing.

## **Who is Performing Counts?**

Of the thirteen organizations evaluated for this report, four are nonprofits, four are MPOs, one is a county government, one is a regional economic development agency, one is a city-wide agency, and two are state agencies. While five groups have been collecting data for many years, most of the count programs included in this survey were initiated within the last six years, with four programs starting in 2019 and five programs starting since then. Most count programs are long-term, meaning that counts are conducted and reported year after year. There are, however, a few examples of counts conducted for specific projects, including the Brooklyn Waterfront Greenway User Study and the Warren County Modernization and Connectivity Plan for Multi-Use Trails. There are also count programs that are generally long-term, but that may not collect or report data every single year due to staff capacity. For organizations performing automated counts, most of them own and maintain their own counters, but some, including NYSDOT and Dutchess County Transportation Council, use outside vendors.

## **Types of Counts & Technology**

Most organizations across the state are currently using electronic infrared counters, especially those manufactured by Eco-Counter. The most popular counters are Eco-Counter's PYRO-Box (now discontinued) and PYRO-Box Evo counters, which are small, portable boxes with infrared sensors that may be temporarily or permanently installed on surfaces such as fences or signposts. Eco-Counter's Urban Post and Wooden Post, which are permanently-installed infrared counters, are also in use on several trail systems. While the standard infrared sensor-based Eco-Counters do not differentiate between cyclists and pedestrians, the infrared counters may be paired with Eco-Counter's induction loop counter, called ZELT, to enable differentiation between use types. The requirement to have subscriptions for many of Eco-Counter's products has been cited as a deterrent to using Eco-Counters, especially by state agencies who must follow specific procurement protocols.

A few organizations continue to perform manual counts either exclusively or as a supplement to their electronic count program. One of the benefits of manual counts is that they may provide additional context that cannot be achieved with most basic automatic counters, including differentiating use types and observing behaviors, such as bicycles riding on sidewalks and helmet usage. They are also a cost-effective method to obtain quantitative bicycle and pedestrian usage data when automated counters prove cost-prohibitive.

Several organizations, most notably in New York City, are beginning to utilize advanced video-based and AI counting technologies from Vivacity Labs, Numina, and Miovision. These emerging technologies pair video-based sensors with AI and machine learning techniques to simultaneously collect and catalog highly accurate data, including advanced object classification (such as differentiating between bicycles and

pedestrians, as well as different types of micromobility devices), speed, and direction of travel. A few organizations that previously conducted manual counts, including Dutchess County Transportation Council and NYCDOT, have indicated that they are transitioning away from their manual count program in favor of these automated video-based technologies. In the future, it is anticipated that this technology (including open-source or low-cost processing software) will continue to become more widely available and affordable, and an ever-increasing share of data collection will employ these methods.

### **Purpose of Counting Efforts**

An analysis of the cited purposes for conducting trail user counts reveals several key themes and functions. These counts are used not only to assess how trails are used and track trends over time, but also to inform infrastructure planning, safety improvements, and maintenance needs. They support broader goals such as securing funding, justifying investments, and evaluating the impact of projects and programs. Importantly, trail counts also serve advocacy and engagement efforts by providing concrete data to communicate the value of trails to stakeholders, funders, and the public.

### **Challenges**

The cost of obtaining and maintaining automated counters may be a barrier to organizations wishing to begin or expand their trail count programs. While specific costs were not compared for this study due to differences in pricing depending on organization type, quantity of counters purchased, subscription types, and other differences, it is clear that trail count technology can be a substantial investment. In addition to the startup cost of purchasing trail counters, there are often significant ongoing operating costs associated with the counters, including subscription fees for data retrieval and analysis, battery replacement, equipment maintenance and upgrade costs, and internal costs associated with staff time, travel to counter locations, data analysis, and reporting. Manual counting remains an option for organizations when funding or long-term management is an obstacle to investing in automated count technology. Many of the organizations with manual count programs, however, rely heavily on volunteers to perform counts, and volunteer coordination and availability has been cited as a challenge.

In addition, several organizations reported equipment and data accuracy issues as an ongoing challenge. For all types of automated counters, counter placement must be carefully considered. Common placement-related challenges that may impact the reliability of trail count data include interference from nearby roadways, environmental obstructions (e.g. vegetation blocking sensors or insect activity impacting internal counter components), construction activity, vandalism, and poor cellular reception. While many newer electronic counters provide automated data transmission, which makes it easier to continually monitor and perform quality control on incoming count data, low batteries, outdated software, and poor cellular reception in remote locations may prevent reliable data transmission. Some have found pneumatic tube counters to be less accurate than video-based counting methods and have transitioned away from this method.

For both automated and manual count programs, limited internal capacity and staff turnover have led multiple organizations to put their trail count programs on pause over the years. Logistical challenges also exist for organizations performing trail counts across a wide geographic area, as most counters require regular visits to perform data retrieval and move counters to new locations.

## Data sharing and reporting

The majority of organizations surveyed are sharing their collected trail count data with the public in some way, whether through interactive dashboards, direct links to download count data, or written reports. While most entities report and share the data, not all of them provide a way for the public to download the data directly, although raw data is often available upon request. One key observation from the study is that none of the count programs surveyed currently incorporate real-time data displays, representing a missed opportunity to communicate the popularity and value of the trail to the public. Trail counters with real-time data displays are increasingly being used on trails and shared-use paths as a method for communicating trail usage. While some real-time displays do exist in New York City, more organizations should consider adopting these displays on high-usage trails. In addition, two organizations are currently using PTNY's extrapolation methodology to develop annual trail usage estimates: Hudson River Valley Greenway and the Capital Region Transportation Council. Improving this methodology and encouraging more widespread adoption remains an area for improvement in the future.

## Key Takeaways

This report seeks to provide, for the first time, an overview and analysis of the locations across New York State where trail use is being counted and to assess the methods by which trail use data is collected and trail use estimates are calculated. By starting to engage in the following practices, trail user-counting entities can ensure that trail count efforts by state agencies, municipalities, MPOs, nonprofits and other relevant entities around New York State are performed in a consistent manner and provide comparable, reliable data.

### Address Resource and Capacity Challenges

- **Budget for the full lifecycle:** Include startup, maintenance, battery replacement, data subscriptions, data reporting, and staff costs in budgeting for counter programs.
- **Plan for staff turnover:** Develop documentation and training protocols to maintain continuity in count programs.
- **Install counters during project construction:** During trail construction and capital maintenance planning and budgeting, incorporate funds for the installation of permanent counters.

### Facilitate Public Data Sharing, Analysis, and Reporting

- **Make data accessible:** Provide both **summarized** reports for public understanding and **raw data** downloads for advocates, researchers, and planners.
- **Communicate counter technology:** When reporting data, the counter technology utilized should be shared to encourage transparency.
- **Use visualization tools:** Dashboards and maps help communicate trends and trail value to diverse audiences.
- **Coordinate regionally:** For entities operating across jurisdictions, standardized data sharing can enhance collaboration and system-wide planning.
- **Data extrapolation methodology:** Continue to explore methods to improve trail count extrapolation methodology in order to more accurately communicate statewide trail visitation trends, building upon the NBPDP-based methodology developed by PTNY and used by several organizations in their trail count visitation reports.

## Tie Data Collection to Clear Planning and Advocacy Goals

- **Use data to tell stories:** Communicate how trail use supports health, safety, access, equity, and economic impact to strengthen advocacy and investment.
- **Show real-time trail use:** Consider trail counters with real-time displays on popular trail segments to demonstrate the value and use of the trail.
- **Schedule strategically:** Conduct counts seasonally and before/after infrastructure changes to evaluate impact.

While this report includes many major agencies and organizations conducting trail counts in New York State, there may be organizations performing counts that PTNY is not aware of and that are not included in the report. We encourage these groups to publicize their count programs on their websites and other avenues in order to facilitate regional and statewide coordination of trail count efforts, as well as promote free public use of trail count data and resources. Any organization conducting trail count efforts that are not included in this report are invited to reach out to share information about their counting practices with PTNY so that they can be included in future reports.

# Additional Resources

National Bike and Pedestrian Documentation Project: [Program Forms and Materials](#)

State-of-the-Art Approaches to Bicycle and Pedestrian Counters. North Carolina Department of Transportation Research Project No. RP 2020-39.

<https://connect.ncdot.gov/projects/research/RNAProjDocs/RP2020-39%20Final%20Report.pdf>

Automatic Trail Counter Vendors:

- Eco-Counter: <https://www.eco-counter.com/>
- MetroCount: <https://www.metrocount.com/bike-pedestrian-counting>
- Miovision: <https://miovision.com/scout-plus/scout-hardware/>
- Vivacity Labs: <https://vivacitylabs.com/north-america/products/viva-sensors/>
- Numina: <https://community.numina.co/>

Data Extrapolation:

- Parks & Trails New York - [Who's on the Trail Methodology Report \(2024\)](#)
- Alta - [Empire State Trail User Projections \(2018\)](#)

Adirondack Rail Trail:

- <https://dec.ny.gov/places/adirondack-rail-trail>
- <https://www.bikeadirondacks.com/blog/big-adk-rail-trail-user-numbers>

Binghamton Metropolitan Transportation Study:

- [Bicyclist and Pedestrian Counts Webpage](#)
- [Two Rivers Greenway 2024 in Review](#)

Brooklyn Greenway Initiative:

- [Brooklyn Waterfront Greenway User Study](#)

Capital Region Transportation Council:

- [2024 Trail Count Program Report](#)

Dutchess County Transportation Council

- [Traffic Data Dashboard](#)

Genesee Transportation Council

- [Active Transportation Count Spatial Database](#)

GObike:

- [Bicycle and Pedestrian Counts in the Buffalo-Niagara Region \(2022\)](#)
- [GObike Bike/Ped Counts Feature Layer](#)

Hudson River Valley Greenway

- [2023 Trail Use Report](#)
- [Albany Hudson Electric Trail 2024 Trail Use Report](#)

New York City Department of Transportation

- [Bike Network and Ridership Webpage](#)

New York State Department of Transportation

- [NYS Traffic Monitoring Standards for Micromobility Short Count Data Collection \(2024\)](#)
- [NYSDOT Traffic Data Viewer](#)

Parks & Trails New York

- [Trail Counts Webpage](#)
- [Who's on the Trail: Canalway Trail 2024](#)
- [Who's on the Trail: Genesee Valley Greenway \(2021-2023\)](#)

Warren County

- [Multi-use Trail Counter Dashboard \(2023\)](#)

## Appendix 1: Summary Table of NYS Trail User Counting Efforts

Organization	Type of Entity	Count Type	Technology & Methodology	Extrapolation	Differentiate User Types	Public Data	Reporting	Time Period
Adirondack Rail Trail Association	Nonprofit	Automated counters	Eco-Counter Wooden Post infrared counters - permanently installed	No	No	Yes - No downloadable raw data, but monthly and annual totals presented on <a href="#">Bike ADK website</a> and <a href="#">NYSDEC website</a>	2024 data presented in a <a href="#">article</a> on Bike ADK website	2024 - Present
Binghamton Metropolitan Transportation Study	MPO	Automated counters	Eco-Counter Urban Post & Wooden Post MULTI - permanently installed infrared counters with induction loops to differentiate use types	No	Yes	Yes - Interactive map on <a href="#">BMITS website</a> with monthly and overall count totals broken down by user type	Monthly data reports available on BMITS website <a href="#">Year-end interactive story map</a>	2019 - Present
Brooklyn Greenway Initiative	Nonprofit	Automated counters Field interviews Panel survey of residents	Numina video-based counters - permanently installed	No	Yes	Count and survey data available on public <a href="#">GitHub repository</a>	<a href="#">Brooklyn Waterfront Greenway User Study</a>	2019 - 2024
Capital Region Transportation Council	MPO	Automated counters Manual counts	Eco-Counter PYRO-Box (infrared counters) Short duration manual counts based on NBPDP	Yes - Estimates seasonal and annual trail use based on PTNY and NBPDP methodology	No	Yes - No downloadable raw data, but monthly and annual totals presented in annual reports	<a href="#">Regional Trail Perspectives (2016)</a> <a href="#">Annual Trail Count Program Report</a>	2016 - Present
Chautauqua County Partnership for Economic Growth	Economic Development Agency	Automated counters	Eco-Counter infrared counters	No	N/A	No - Currently share data with local trail user groups and government agencies	N/A	2019 - Present
Dutchess County Transportation Council	MPO	Automated counters Manual counts	Video-based counting performed by outside contractor over multiple days Pneumatic tubes (no longer used) Two hour manual counts performed by volunteers every September utilizing a modified version of the NBPDP methodology	No	Yes	Yes - Downloadable data is available for all count sites through DCTC's <a href="#">Traffic Data mapping platform</a>	Manual counts are summarized in an <a href="#">annual report</a> available on DCTC's website	2012 - Present

Organization	Type of Entity	Count Type	Technology & Methodology	Extrapolation	Differentiate User Types	Public Data	Reporting	Time Period
Genesee Transportation Council	MPO	Automated counters	TRAFx Infrared Trail Counters Miovision Scout video-based counters Eco-Counter pneumatic tube counters	No	Yes	Yes - Interactive map on <a href="#">GTC website</a> with downloadable data. Data from the Erie Canalway Trail has also been included in PTNY's Who's on the Trail reports		2017 - Present (program mostly dormant since 2023 due to limited staff capacity)
GObike Buffalo	Nonprofit	Manual counts	Volunteers performing short-duration manual counts based on NBPDP	Yes - Use NBPDP methodology to create daily traffic estimates from short-duration counts	Yes	Yes - Publicly-available <a href="#">ArcGIS feature layer</a>	Results released in <a href="#">annual summary reports</a>	2019 - Present
Hudson River Valley Greenway	State Agency	Automated counters Manual counts	Eco-Counter PYRO-Box infrared counters Short-duration visual surveys are performed at various locations spread out over the year	Yes - Uses PTNY and NBPDP extrapolation methodology to extrapolate data from count locations to create a full trail system usage estimate	Only with manual counts	Yes - No downloadable raw data, but individual site and network-wide data summaries included in annual reports	<a href="#">Albany-Hudson Electric Trail 2024 Trail Use Report</a> <a href="#">2023 Report</a>	2021 - Present
NYCDOT	City Agency	Automated counters Manual counts	Eco-Counters Vivacity Labs Viva Sensor video-based sensors with advanced AI image classification Short-duration manual counts	No	Yes	Yes - <a href="#">Counter locations</a> and raw <a href="#">count data</a> available, with data summaries on <a href="#">NYC Open Data Portal</a>	Data trends and analysis provided on <a href="#">NYCDOT website</a>	Manual counts began in 1980 Automated counting has been performed since at least 2014

Organization	Type of Entity	Count Type	Technology & Methodology	Extrapolation	Differentiate User Types	Public Data	Reporting	Time Period
NYSDOT	State Agency	Automated counters	<p>Mix of piezoelectric counters (including MetroCount), infrared, and video-based counters (including Vivacity Labs counters)</p> <p>Include both short term count sites and continuous count locations</p> <p>All counts performed by outside vendor</p>	No	Yes	Yes - Downloadable data available through NYSDOT's <a href="#">Traffic Data Viewer</a>	N/A	2024 - Present
Parks & Trails New York	Nonprofit	<p>Automated counters</p> <p>Manual counts</p>	<p>Eco-Counter PYRO-Box &amp; Pyro Evo infrared counters</p> <p>Short duration manual counts based on NBPDP</p>	<p>Yes - Use NBPDP-based methodology to create full-year profiles of trail usage at actual count and estimate locations, as well as estimate total trail usage across the Erie and Champlain Canalway Trail system.</p>	Only with manual counts	Yes - Public data dashboard with downloadable data on <a href="#">PTNY website</a>	<a href="#">Annual Who's on the Trail Reports</a>	2005 - Present
Warren County	County	Automated counters	Video-based counts performed by outside contractor	No	Yes	Yes - <a href="#">Interactive dashboard</a> with downloadable raw data	Results presented in PTNY's <a href="#">Who's on the Trail Report</a>	2023