



Vermont Bicycle and Pedestrian Counting Program

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Project Summary

The goal of this project was to lay the foundation for a comprehensive non-motorized count program for the state of Vermont. To date, data has been collected without a standard protocol or common repository. This project will help the Agency better implement its non-motorized count program statewide.

The key outcomes of this work included:

- Creation of a new data input tool that standardized the data formats and response options based on national protocols
- Creation of a new database with a linked site ID consistent with national protocols to prevent data duplication and loss
- Creation of a new web portal to view or download the existing count data
- Recommendations for 20 new count sites to generate a more representative count database, as counting to date has been focused on sidewalks and multiuse paths where high non-motorized volumes are expected
- Automated infrared counts can be multiplied by a correction factor of 1.16 to account for occlusion, but this factor is affected greatly by the social context of the pedestrian activity at the site – occlusion is more prevalent when pedestrians travel together in large groups.
- Strava Metro data tracks about 0.8% of Vermont's daily non-motorized travel. It can be a useful source of complete-screenline data when sidewalk or multiuse path counts need to be supplemented with roadway volumes.

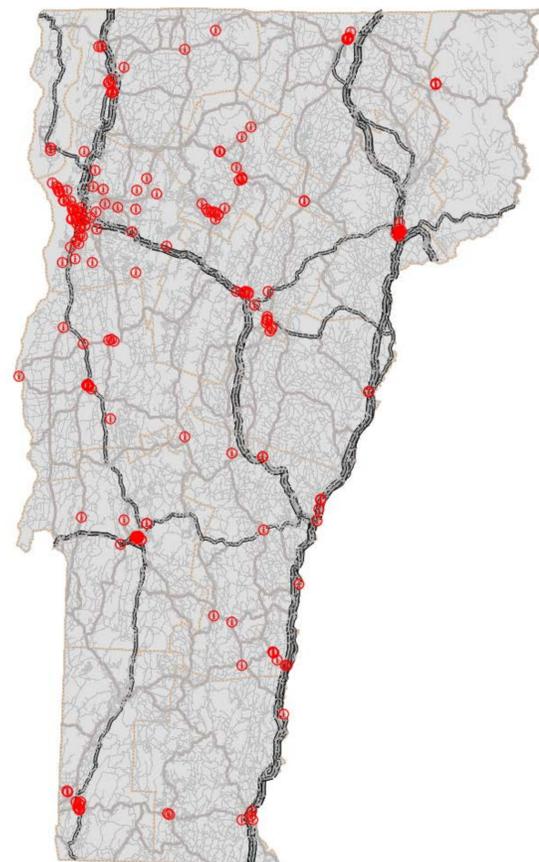


Figure 1. Count Locations in Vermont

Table 1. Count Summary Statistics

	Sites	Min.	Max.	Mean
Avg. Daily Travel	69	4	1,864	312
Peak Hourly Travel	194	0	899	182
Peak Daily Travel	69	4	4,966	781
Duration (hours)	194	5	73,165	2,962

Count Data

All existing counts in Vermont were compiled into a new unified database, with four separate tables linked by a new site ID. The database contains over 200,000 hours of observation at 194 locations (see Figure 1). Average daily travel was computed at 69 of these locations where at least one full calendar day of data was collected. Table 1 provides the minimum, maximum, and mean of selected summary values across the state. The average hourly volume of cyclists and pedestrians in Vermont provides an indication of travel throughout the average day (Figure 2). Average daily volumes at the automated infrared sites provide an indication of the seasonal fluctuations in walking and cycling behavior statewide (Figure 3).

Web Portal and Data Input Tool

A web portal was developed with an html index script that enlists map tiles from OpenStreetMap and CartoDB (now CARTO), and aerial imagery from USGS to view and interact with the Site Data in a GIS web environment (see Figure 4). The tool includes a number of useful features for viewing and accessing data.

In order to achieve organized and uniformly-formatted data input from many different resources, controlling the input data accepted by the Agency was critical. A LimeSurvey tool was designed and administered from UVM's secure and redundant servers. The first page of the data input tool prompts the user to identify their affiliation and provide contact information (see Figure 5).

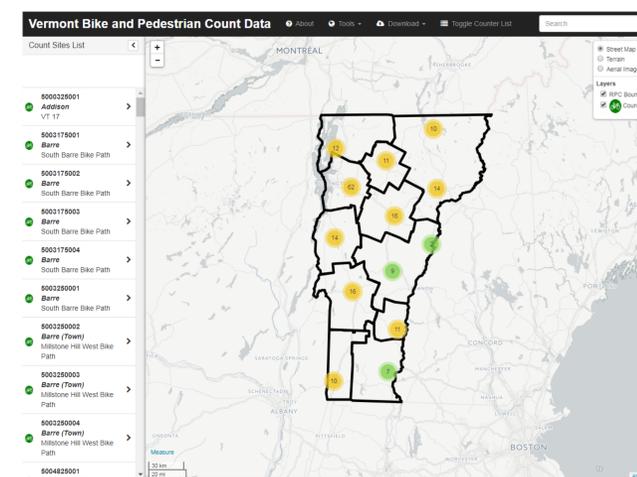


Figure 4. Web Portal Developed for this Project

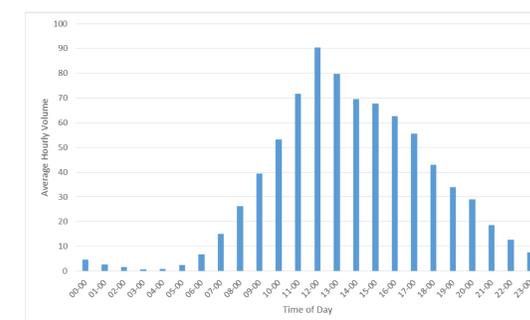


Figure 2. Average Hourly Volumes in Vermont

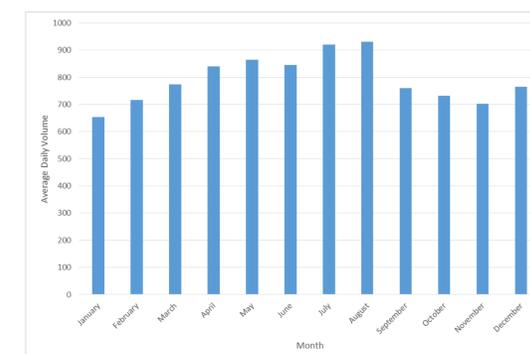


Figure 3. Average Daily Volumes by Month in Vermont

Figure 5. Example from Data Input Tool

Acknowledgments

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