

Trail Counts with Automatic Counters

The National Bicycle and Pedestrian Documentation Project

Responding to the Need for Improved Data on Bicycling and Walking



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What is NBPD?

- A pro bono effort by Alta Planning + Design with support from ITE
- Annual national bicycle and pedestrian count and survey effort
- Fulfills need for in-depth analysis of why people bike and walk
- Objectives
 - Consistent data collection
 - Open access data
 - Shared research



Presentation Overview

1. What is NBPD?
2. Why count?
3. Available count technologies
4. Where to put your counter
5. What your count data can tell you

The Need for NBPD

- Lack of consistent data
- Lack of support for non-motorized funding
- Forecasting and modeling bicycle and pedestrian travel



Why Count?

- Evaluate need for new trails and trail upgrades
- Evaluate community demand
- Explain trail value to community, elected officials, grant agencies
- Justify resource allocation
- Forecast demand
- Support grant applications



Counts Inform Design

- Multi use pathway capacity ranges
- >8ft path – 50-100 users per hour
- >10ft path – 100-125 users per hour



Why Use Automatic Counters?

- Consistent data rather than a snap shot
 - › Weather
 - › Seasonal variations in use
 - › Events
 All influence manual counts
- More cost effective than coordinating volunteers
- More in-depth data than manual counts



Count Technologies

Passive Infrared	Detects change in thermal contrast
Active Infrared	Detects obstruction in beam
Video Imaging	Analyzes pixel changes or Data is played by and analyzed by a person
In-Pavement Magnetic Loop	Sense change in magnetic field as metal passes over
Slab Sensor	Detects change in pressure to measure footsteps



Passive Infrared

- Little maintenance
- Easy to move
- Can detect travel in both directions
- 70-95% accuracy
- Can not distinguish between bicycles and pedestrians
- Grouping poses problem

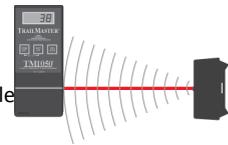


Cost estimate:
\$1,000-\$3,000 each



Active Infrared

- Little maintenance
- Easy to move
- Can distinguish between bicycles and pedestrians
- 90-95% accurate
- Can not detect travel direction
- Requires equipment on both sides of path
- Grouping poses problem



Cost estimate:
\$700-\$1,000 each



Video Imaging

- Little maintenance
- Can record travel in both directions
- Can distinguish between bicycles and pedestrians
- Difficult to move
- Requires review



Cost estimate:
Varies on hours and
number of locations



In-Pavement Loop Detection

- Little maintenance
- Grouping does not cause significant problem
- Can detect travel in both directions
- 95% accurate
- Difficult to move
- More expensive



Cost estimate:
\$1,800-\$3,000 each



Acoustic Slab

Cost estimate:
\$1,000-\$3,000 each

- Little maintenance
- Grouping does not cause significant problem
- Can detect travel in both directions
- 95% accurate
- Only detects pedestrians
- Difficult to move
- More expensive



Working with the equipment

- Installation & Mounting
 - Narrow area
 - Clear view of path
 - Avoid sun soaked trees
- Data downloads



Issues

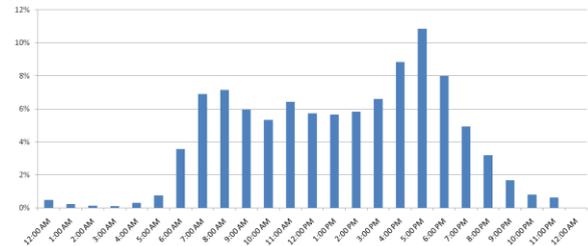
- Rains and Flooding
- Vandalism

Where to put your counter

- Historic (manual) count location
- Trail head approach
 - › Major access point
 - › Near transit
 - › High use areas
- Areas of planned improvement
- High conflict areas
- Stakeholder recommendations



What the data will tell you

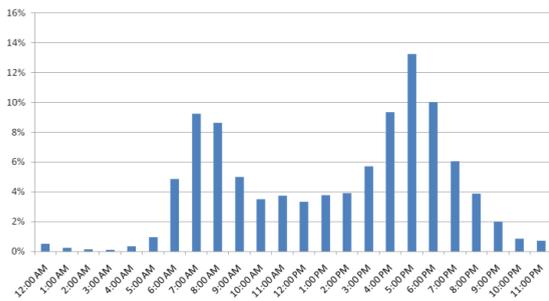


Average Activity by Hour



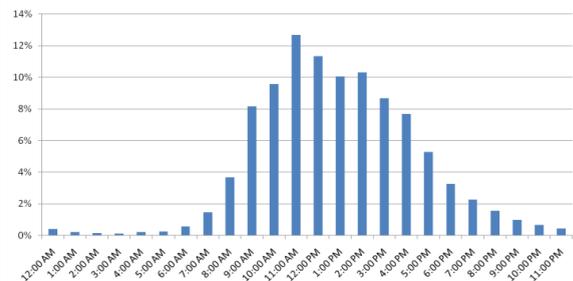
What the data will tell you

Weekday Counts

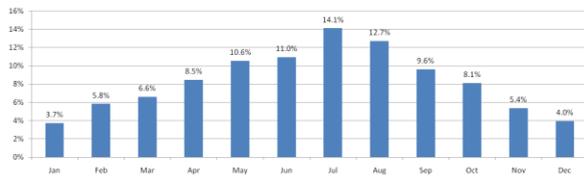


What the data will tell you

Weekend Counts



What the data will tell you



Activity by Month



What the data will tell you

Metric	Number of bicyclists and pedestrians
Total Activity	
Annual total	113,541
Averages	
Average Monthly Activity	9,462
Average Weekly Activity	2,183
Average Weekday Activity	310
Average Weekend Activity	334
Average Weekday Peak Hour Volume	41
Average Weekend Peak Hour Volume	42
Peak Periods	
Weekday Peak Hour	5:00 PM
Weekend Peak Hour	11:00 AM
Month with Highest Activity	July
Month with Lowest Activity	January



What does this all mean?

- Is your facility used for
 - › Recreation?
 - › Transportation?
 - › Both?
- Does your facility have high enough volumes to warrant separating users?
- Is more maintenance needed at peak times?

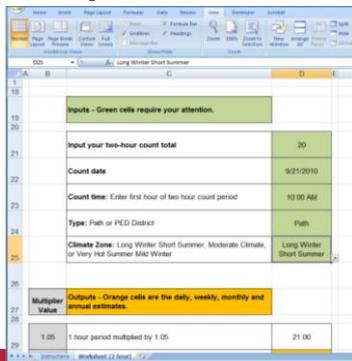


What does this all mean?

- What benefit does your trail provide to your community?
 - › High use and therefore valued?
 - › Contribute to biking and walking as transportation?
 - › Contribute to active lifestyles?
 - › Support community strategies for sustainability?



Extrapolation Factors



How Communities Use Data

1. Understand use
2. Forecast demand for
 - Existing
 - Proposed
3. Support grant applications
4. Design



Who's Counting?

- Cities
 - Arlington, VA
 - Lincoln, NE
 - Portland, OR
 - San Francisco, CA
- Regional
 - East Bay Regional Parks District
 - San Francisco MPO
 - Mid-Ohio Regional Planning Commission
- State
 - Washington
 - Colorado



Questions?



Thank you!

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