Presentation Content:

- Program Overview
- Manual Counts
- Automatic Counts
- Data storage
- Information
- Next Steps
PROGRAM OVERVIEW
Regional Partners:
Program Motivation

• Overall, why is non-motorized count data collected in the central Ohio Region?
  – For the same reasons we collect motorized count data
    • Support policy decisions/changes
    • Plan for cost-effective investments
    • Design safe facilities and infrastructure
    • Measure performance and progress toward goals
  – If you can’t quantify it, you can’t fund it.
Applications for Non-Motorized Counts

• Tracking changes in pedestrian and bicycle activity over time
• Evaluating the effects of new infrastructure on pedestrian and bicycle activity
• Prioritizing pedestrian and bicycle projects
• Determining operational requirements
• Conducting risk or exposure analyses
Monitoring cycle

1. Identify Uses & Users
2. Define Required Data
3. Identify Data Collection Tools
4. Develop Data Collection Plan
5. Execute Data Collection Plan
6. Analyze & Summarize Data
7. Report & Communicate Results
8. Make Decisions Based on Results
9. Improve Quality in Future Cycles

SOURCE: Texas A&M Transportation Institute
Resources for Non-Motorized Collection

Traffic Monitoring Guide

September 2013

NCHRP REPORT 797
Guidebook on Pedestrian and Bicycle Volume Data Collection
MANUAL COUNTS
Manual Counts

• Most accurate method, but can only cover shorter time spans
• Can record details that automatic counters can’t capture
• Follow National Bicycle and Pedestrian Documentation Project (NBPD) methodology
• Occur twice a year
• Mainly a volunteer effort
Manual Counts

- Manual count come in two varieties:
  - Screen line
  - Intersection

SOURCE: NCHRP Report 797
MORPC PEDESTRIAN & BICYCLE INTERSECTION COUNT FORM

Name: ___________________________  Location: ___________________________
Date: ________________________  Start Time: ________________________  End Time: ________________________
Weather Conditions: ___________________________

Please record pedestrian and bicycle volumes in the appropriate box using hash marks (¶). Please indicate directional movements for bicyclists entering the intersection. Please record volumes in 15-minute increments.

Please indicate north
**MORPC PEDESTRIAN & BICYCLE COUNT FORM**

Counter Name: __________________________
Specific Count Location: __________________________
Date: __________________________ Weather Conditions: __________________________

☐ Did you start on time? If not, please mark the correct times in the boxes below.
Please record numbers using hash marks (###). Please record numbers in 15-minute increments.

<table>
<thead>
<tr>
<th>Time</th>
<th>Pedestrians</th>
<th>Bicyclists</th>
<th>Mobility Aid*</th>
<th>Others**</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Female</td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
</tr>
<tr>
<td>11:00-11:15</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>11:15-11:30</td>
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<td>11:30-11:45</td>
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<td>11:45-12:00</td>
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<td>12:15-12:30</td>
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<tr>
<td>12:30-12:45</td>
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</tr>
<tr>
<td>12:45-1:00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* "Mobility Aid" includes people using a wheelchair, baby stroller, or similar device. It also includes small children being carried.
** "Others" includes people using skates, skateboards and other non-motorized methods of travel.

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**MORPC PEDESTRIAN & BICYCLE COUNT FORM (Multi-Use Path)**

Counter Name: __________________________
Specific Count Location: __________________________
Date: __________________________ Weather Conditions: __________________________

☐ Did you start on time? If not, please mark the correct times in the boxes below.
Please record numbers using hash marks (###). Please record numbers in 15-minute increments.

<table>
<thead>
<tr>
<th>Time</th>
<th>Pedestrians</th>
<th>Bicyclists</th>
<th>Mobility Aid*</th>
<th>Others**</th>
</tr>
</thead>
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</tr>
<tr>
<td>11:00-11:15</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11:15-11:30</td>
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<tr>
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<tr>
<td>12:30-12:45</td>
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</tr>
<tr>
<td>12:45-1:00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* "Mobility Aid" includes people using a wheelchair, baby stroller, or similar device. It also includes small children being carried.
** "Others" includes people using skates, skateboards and other non-motorized methods of travel.
Site Selection Criteria (Manual)

- Pedestrian and bicycle activity areas or corridors
- Representative locations in urban, suburban, and rural locations
- Key corridors that can be used to gauge the impacts of future improvements
- Locations where counts have been conducted historically
AUTOMATIC COUNTS
Automatic Counters

- Provide the ability to collect bicyclists and pedestrians at select locations 24-hours per day, 365-days per year
- MORPC owns 10 automatic counters
- MORPC doesn’t own or operate any of the permanent count facilities in the region
  - City of Columbus Recreation & Parks Department
  - Metro Parks
Automatic Counts

• Three types of automatic counters are used with central Ohio:
  – Infrared Counters
    • Passive
    • Active
  – Pneumatic Tube Counters
Trafx Counters (Passive infrared)

- The most common type of counter around the region
  - Around 30
- Do not differentiate between pedestrians and bicyclists
TrailMaster Counters (Active Infrared)

- MORPC owns 8 as part of the CS Equipment Library
- 16k Event limit
- Do not differentiate between pedestrians and bicyclists
ECO-Counter Tube Counters

- MORPC owns 2 as part of the CS Equipment Library
- Only counts bicyclists (Selective tubes allow for bicycle counts even in mixed traffic)
# Site Selection (Automatic)

<table>
<thead>
<tr>
<th>Location type</th>
<th>WWI$^a$</th>
<th>AMI$^b$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Utilitarian</td>
<td>&lt;0.8</td>
<td>&gt;1.5</td>
</tr>
<tr>
<td>Mixed-utilitarian</td>
<td>0.8 - 1.25</td>
<td>0.75 - 1.5</td>
</tr>
<tr>
<td>Mixed-recreational</td>
<td>1 - 1.8</td>
<td>0.35 - 1</td>
</tr>
<tr>
<td>Recreational</td>
<td>&gt;1.8</td>
<td>&lt;0.35</td>
</tr>
</tbody>
</table>

\[
WWI = \frac{V_{we}}{V_{wd}} \\
AMI = \frac{V_{am}}{V_{mid}}
\]
Site Selection (Automatic)

<table>
<thead>
<tr>
<th>Type</th>
<th>Weekday</th>
<th>Weekend</th>
<th>Daily Profile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primarily Utilitarian (PU)</td>
<td><img src="image1" alt="Weekday Profile" /></td>
<td><img src="image2" alt="Weekend Profile" /></td>
<td><img src="image3" alt="Daily Profile" /></td>
</tr>
</tbody>
</table>

Utilitarian locations exhibit two distinct weekday peaks, much like automobile commuter patterns, and have much higher ridership during the week than on the weekend. The weekend profile builds smoothly to a single PM peak. In general, they maintain the highest ridership in the winter.

<table>
<thead>
<tr>
<th>Type</th>
<th>Weekday</th>
<th>Weekend</th>
<th>Daily Profile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mixed Utilitarian (MU)</td>
<td><img src="image4" alt="Weekday Profile" /></td>
<td><img src="image5" alt="Weekend Profile" /></td>
<td><img src="image6" alt="Daily Profile" /></td>
</tr>
</tbody>
</table>

Mixed-utilitarian locations still exhibit two peaks at the hourly level on weekdays, though the level of ridership between the peaks may be slightly higher than at primarily utilitarian locations. The difference between weekday and weekend ridership is much less pronounced, and may even be negligible. Weekend ridership builds gradually to an AM peak, similar to primarily utilitarian locations. They may retain less ridership in the winter than PU locations.

<table>
<thead>
<tr>
<th>Type</th>
<th>Weekday</th>
<th>Weekend</th>
<th>Daily Profile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mixed Recreational (MR)</td>
<td><img src="image7" alt="Weekday Profile" /></td>
<td><img src="image8" alt="Weekend Profile" /></td>
<td><img src="image9" alt="Daily Profile" /></td>
</tr>
</tbody>
</table>

Mixed recreational locations tend to maintain a consistent level of daily ridership throughout the week. However, unlike mixed-utilitarian, their hourly profiles do not exhibit two distinct commuter peaks. Still, their early AM ridership during the workweek may be slightly higher than primarily recreational locations. The daily profile may exhibit slightly higher ridership on the weekend. Ridership at these locations is generally considerably lower than PU or MU locations in the winter.

<table>
<thead>
<tr>
<th>Type</th>
<th>Weekday</th>
<th>Weekend</th>
<th>Daily Profile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primarily Recreational (PR)</td>
<td><img src="image10" alt="Weekday Profile" /></td>
<td><img src="image11" alt="Weekend Profile" /></td>
<td><img src="image12" alt="Daily Profile" /></td>
</tr>
</tbody>
</table>

Primarily recreational locations are typically in parks or serve recreational areas. They exhibit considerably higher ridership on the weekend than during the week. The workweek hourly profile closely resembles the weekend profile, which increases steeply to and decreases steeply from a mid-day plateau. A slight dip around noon may be present as well. The decrease in ridership due to winter is most significant at recreational locations.

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*The pictured profiles are the mean values of the facilities belonging to each classification.*

Source: Miranda-Moreno et al. (2013).
CS Equipment Library

- MORPC maintains an equipment library where members can check out equipment designed to collect pedestrian and bicycle volumes, roadway operating speeds and project geometries.

- Available equipment includes:
  - 8 active infrared Trailmaster pedestrian/bicycle counters
  - 2 Eco-Counter on-road bicycle counters
  - 1 Stalker Radar Gun
  - 5 professional measuring wheels
Automatic Counts

• Automatic counters serve a number of proposes:
  – Complete Streets Equipment Library
  – Trail monitoring
  – Special Studies
DATA STORAGE
Current Practice
Statewide NMDS
Data Uses (Manual)
Data Uses (Manual)

Re-Validation Counts: Automated vs. Manual

\[ y = 1.5164x \]
\[ R^2 = 0.8628 \]
Average Annual Daily Trail Traffic
Impact of Trails Study

AADTT
- 17 - 133
- 134 - 259
- 260 - 474
- 475 - 745
- 746 - 1222
Figure 4F-1. Guidelines for the Installation of Pedestrian Hybrid Beacons on Low-Speed Roadways

**TOTAL OF ALL PEDESTRIANS CROSSING THE MAJOR STREET - PEDESTRIANS PER HOUR (PPH)**

**MAJOR STREET — TOTAL OF BOTH APPROACHES — VEHICLES PER HOUR (VPH)**

*Note: 20 pph applies as the lower threshold volume*
Top Pedestrian High-Crash Clusters (2010-2014)

SOURCE: ODPS/ODOT/MORPC

The information shown on this map is compiled from various sources made available to us which we believe to be reliable.
N:\ArcGIS\CORE\M\Safety\High_Crash_Locations\2010_2014\PB\Bike_Ped_High_Crash_2010_2014.mxd
7/13/2015
NEXT STEPS
Next Steps:

• Work with members to strategically collect data to support trend analysis.

• Look into the relationship between count volumes and land use or other factors that influence trail use.

• Move towards a common, consistent system to measure volume to understand:
  – Understand current trends
  – Model future Usage
  – Evaluate at different levels (site, corridor, region)
JORDAN WHISLER
jwhisler@morpc.org

111 Liberty Street, Suite 100
Columbus, Ohio 43215

Phone: 614.233.4148

www.morpc.org