

## Summary of Options to Count People Walking

Options to Count People Walking	Strengths	Limitations
Pen-and-Paper on Clipboard	<ul style="list-style-type: none"> <li>• Portable, easy to move among count locations.</li> <li>• Low cost of equipment.</li> <li>• Low-tech approach is suitable for recruiting volunteers.</li> </ul>	<ul style="list-style-type: none"> <li>• Unless volunteers are used, cost per hour of data collection can be more expensive than automated methods.</li> <li>• Labor intensive for both counting and data entry.</li> </ul>
Smartphone or Tablet App	<ul style="list-style-type: none"> <li>• Portable, easy to move among count locations.</li> <li>• Simplifies data reduction and summary after field counting.</li> <li>• Readily available technology and apps.</li> </ul>	<ul style="list-style-type: none"> <li>• Can be labor intensive if many times and locations are counted.</li> <li>• May require tablet purchases if personal devices are not used.</li> <li>• Screen glare in sunny locations.</li> </ul>
Video Recording with Manual Reduction	<ul style="list-style-type: none"> <li>• Pedestrian behavior and characteristics (gender, age range, etc.) can be gathered from the digital video.</li> <li>• Digital video provides permanent record of walking activity.</li> <li>• Count data can be collected for much longer periods of time than manual methods.</li> <li>• Human observers not required to be at data collection site for entire duration of count.</li> </ul>	<ul style="list-style-type: none"> <li>• Manual video reduction can be labor-intensive.</li> <li>• Equipment costs are higher than other simpler options (can be lower cost if existing video surveillance cameras can be used).</li> </ul>
Automated Infrared Counter	<ul style="list-style-type: none"> <li>• Count data can be collected for much longer periods of time than manual methods.</li> <li>• Human observers not required to be at data collection site for entire duration of count.</li> <li>• Low overall cost per hour of data collection, only requires one person to set up and retrieve.</li> </ul>	<ul style="list-style-type: none"> <li>• Initial equipment costs are higher than other simpler options (but operating costs are lower overall per hour of data collection).</li> <li>• Requires technology know-how for placing and using automated infrared counters and retrieving data from counters.</li> <li>• May be less accurate when pedestrians walk side-by-side.</li> </ul>

## Pen-and-Paper on Clipboard

### Description

In this simplest option, human observers make tally marks on paper to record each person that walks past a designated count location. Data collection forms are readily available, so minimal equipment is required. These manual clipboard counts are usually recorded for one to four hours during the busiest times of the day for walking. Human observers will need to take breaks on a regular basis to ensure count accuracy. After field data collection, the tally marks on paper will need to be transcribed into a spreadsheet for summary.

### Strengths

- Portable, easy to move among count locations.
- Low cost of equipment.
- Low-tech approach is suitable for recruiting volunteers.

### Limitations

- Unless volunteers are used, cost per hour of data collection can be more expensive than automated methods.
- Labor intensive for both counting and data entry.

STANDARDIZED COUNT FORM			
Name: _____	Location: _____	# _____	
Date: _____	Time Period: _____	Weather Conditions: _____	
	Bicycles	Pedestrians	Others
Hr 1: 00-:15			
Hr 1: :15-:30			
Hr 1: :30-:45			
Hr 1: :45-1:00			
Hr 2: 1:00-1:15			
Hr 2: 1:15-1:30			
Hr 2: 1:30-1:45			
Hr 2: 1:45-2:00			
Hr 3: 2:00-2:15			
Hr 3: 2:15-2:30			
Hr 3: 2:30-2:45			
Hr 3: 2:45-3:00			
Hr 4: 3:00-3:15			
Hr 4: 3:15-3:30			
Hr 4: 3:30-3:45			
Hr 4: 3:45-4:00			



## Smartphone or Tablet App

### Description

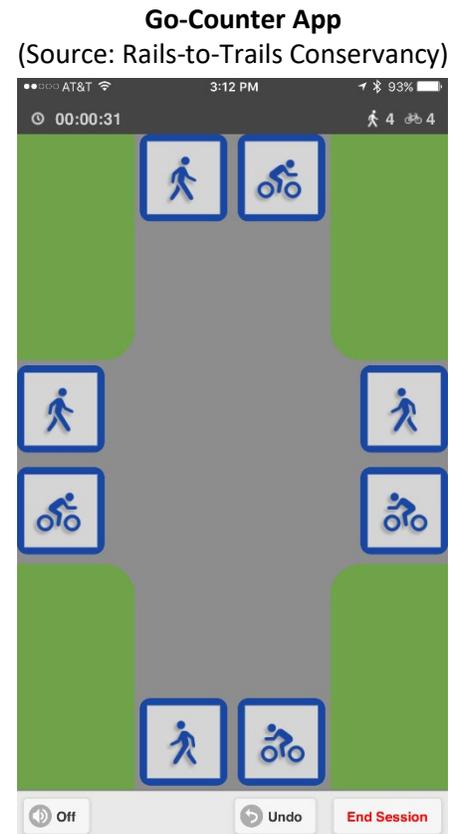
In this option, human observers use a smartphone or tablet computer app to record each person who walks past a designated count location. There are several commercially-available counter apps, some of which are free. These counts are usually recorded for one to four hours during the busiest times of the day for walking. Human observers will need to take breaks on a regular basis to ensure count accuracy. These phone or tablet-based apps simplify data entry and associated time stamps, which make it easier to summarize the count data after it has been collected.

### Strengths

- Portable, easy to move among count locations.
- Simplifies data reduction and summary after field counting.
- Readily available technology and apps.

### Limitations

- Can be labor intensive if many times and locations are counted.
- May require tablet purchases if personal devices are not used.
- Screen glare in sunny locations.



## Video Recording with Manual Reduction

### Description

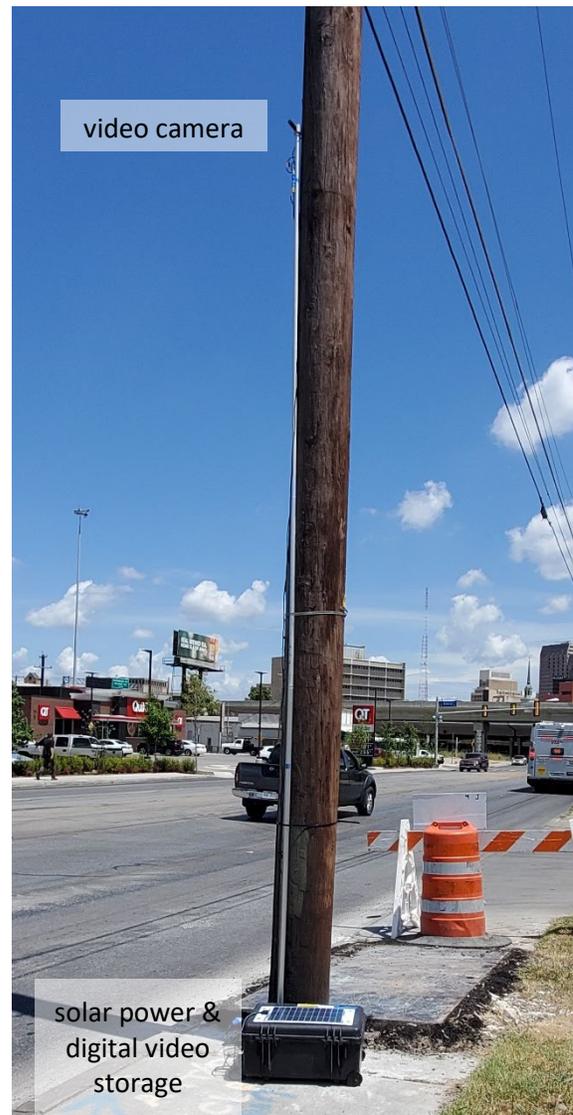
In this option, digital video files are recorded from a portable video camera aimed at a designated count location. The portable video camera is typically in a weather-resistant enclosure and locked to a sign post or utility pole, and left unattended for several days (i.e., up to maximum battery life). Digital video files are stored on a small disk memory card, which is later reviewed by human observers on an office computer, where counts are manually transcribed into a spreadsheet or other data summary application.

### Strengths

- Pedestrian behavior and characteristics (gender, approximate age, etc.) can be gathered from the digital video.
- Digital video files provide permanent record of walking activity.
- Count data can be collected for much longer periods of time than manual methods.
- Human observers not required to be at data collection site for entire duration of count.

### Limitations

- Manual video reduction can be labor-intensive.
- Equipment costs are higher than other simpler options (can be lower cost if existing video surveillance cameras can be used).



## Automated Infrared Counter

### Description

Most infrared counters for pedestrians operate just like the automatic doors at grocery or other stores—they detect a change in temperature patterns in a targeted area. If the change in temperature patterns meet pre-defined criteria, then a person count is registered.

Infrared counters perform best in areas where the walkway is well-defined, and people seldom wander outside this well-defined walkway. Because of their basic operating principle, infrared counters sometimes cannot distinguish multiple persons in a group (i.e., side-by-side or closely spaced front-to-

back). In addition, infrared sensors cannot differentiate between bicyclists and pedestrians; therefore, if separate counts of bicyclists are required, infrared sensors will need to be paired with another technology able to accurately count bicycles.

Most infrared counters have a small profile and go unnoticed by people walking. For portable applications, infrared counters can be enclosed in a vandal-resistant, lockable box and attached to an existing pole, fence post, or tree. For permanent applications, infrared sensors are often enclosed within a wooden fence or other vertical metal posts. Infrared counters are typically placed at a data collection site for at least one to two weeks, to capture day-to-day variability in walking patterns.

### Strengths

- Count data can be collected for much longer periods of time than manual methods.
- Human observers not required to be at data collection site for entire duration of count.
- Low overall cost per hour of data collection, only requires one person to set up and retrieve.

### Limitations

- Initial equipment costs are higher than other simpler options (but operating costs are lower overall per hour of data collection).
- Requires technology know-how for placing and using automated infrared counters and retrieving data from counters.
- May be less accurate when pedestrians walk side-by-side.

