Chapter 8—Evaluation

Introduction

Data are, in many ways, reflections of society's priorities. We collect data about things that we think are important. Data help us to focus our attention on meeting goals and objectives, and inform us of whether or not we are making progress. By extension, data help us to prioritize our efforts and resources in areas or on projects that are the highest priorities. It follows that those goals for which we have little data are less likely to be achieved.

In the world of transportation funding, it is often noted that "what gets measured, gets done." This simple statement describes an important obstacle to the advancement of non-motorized transportation projects. Projects and programs that can demonstrate a positive benefit to society are more likely to be funded than those for which evidence is lacking or unclear; and in order to demonstrate a benefit, it is necessary to measure outcomes.

Vehicular traffic trends have been measured for many years. By comparison, bicycling and walking have only recently begun to be measured on a consistent basis. As a result, transportation decision makers have a better understanding of vehicular traffic trends and are more easily able to formulate projects that will result in measurable improvements for vehicular travel. Since bicycling and walking have not received such attention in the past, planners and elected officials have less understanding about how to influence trends related to these modes.

Over the past few years, interest in bicycle and pedestrian data collection has increased greatly. This is reflected in the U.S. Department of Transportation's Policy Statement on Bicycle and Pedestrian Accommodation:

> *"The best way to improve transportation networks for any mode is to collect and analyze trip data to optimize investments. Walking and bicycling trip data for many communities are lacking. This data gap can be overcome by establishing routine collection of nonmotorized trip information. Communities that routinely collect walking and bicycling data are able to track trends and prioritize investments to ensure the success of new facilities. These data are also valuable in linking walking and bicycling with transit."*

There are several types of non-motorized data, including location counts, safety studies, behavioral and demographic factors, and trip behavior. In general, the most commonly collected pedestrian and bicycle data fall into the location count and safety study categories. More complex trip behavior data can be collected as part of a broader travel survey, such as the household surveys that are conducted during long-range transportation planning processes.

Each type of data has strengths and weaknesses related to cost, accuracy, and use. Additionally, there is often more than one method of obtaining non-motorized data for a given purpose. For example, location counts can be conducted by human observation or through one of several automatic counting technologies, such as infrared detection. Manual counts are superior to automatic counters in terms of accuracy, but automatic counters are useful for longer periods of time, and can be deployed at relatively little expense. Both methods can be worthwhile, depending on the goal.

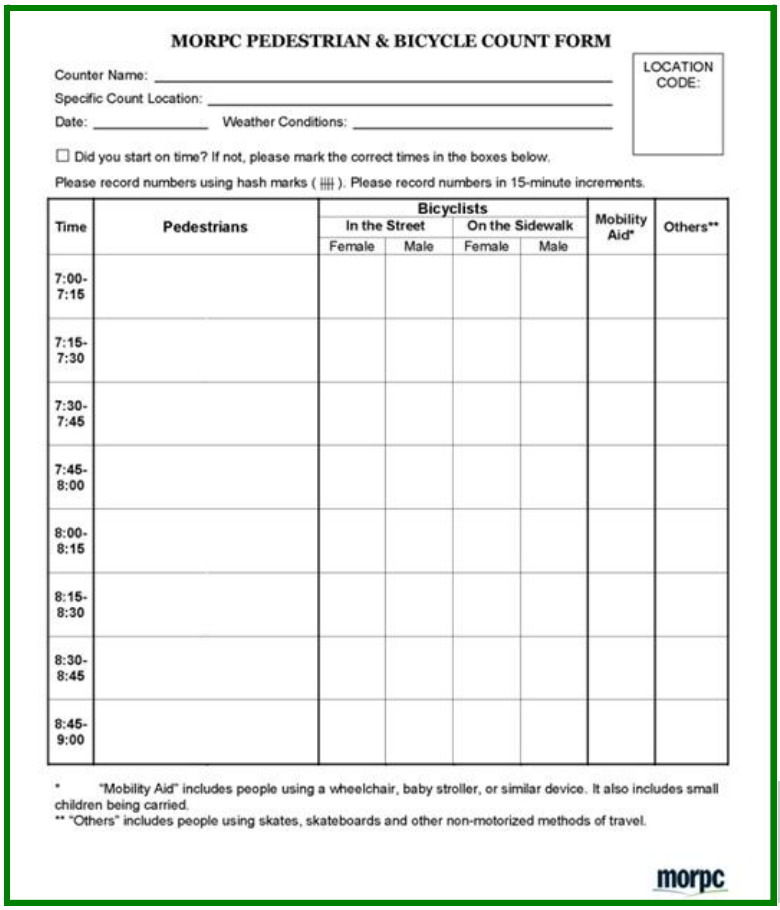
National Bicycle and Pedestrian Documentation Project

In order to address the lack of hard data for the bicycle and pedestrian modes, Alta Planning & Design and the Institute of Transportation Engineers Pedestrian & Bicycle Council developed the National Bicycle and Pedestrian Documentation Project (NBPDP) in 2003. Since then, the counting protocols have been used in many cities and regions around the U.S., including the mid-Ohio region.

The NBPDP specifies dates and times to conduct counts which, upon completion, are submitted to Alta for entry into a national database. This allows for comparison across locations in different cities. Since the same locations are generally used for each count, long-term trends can also be analyzed.

In addition to pedestrian and bicycle counts, the NBPDP has developed a standardized survey which allows agencies to better understand the behaviors of bicyclists and pedestrians. The Caltrans Seamless Travel Study provides an excellent example of how the survey results can be used to get a better understanding of non-motorized travel trends.

MORPC has used the NBPDP methodology since 2005 to conduct counts at various locations throughout Franklin County. Additionally, some member agencies, such as Dublin, Pickerington, and Westerville, have used the methodology in their own counts. MORPC encourages any interested member agencies to participate in the NBPDP to improve local knowledge of bicycle and pedestrian transportation trends. MORPC also makes the local count data and trends available on its website and through annual reports.



MORPC PEDESTRIAN & BICYCLE COUNT FORM

Counter Name: _____

Specific Count Location: _____

Date: _____ Weather Conditions: _____

LOCATION CODE:

☐ Did you start on time? If not, please mark the correct times in the boxes below.

Please record numbers using hash marks (𝍸). Please record numbers in 15-minute increments.

Time	Pedestrians	Bicyclists				Mobility Aid*	Others**
		In the Street		On the Sidewalk			
		Female	Male	Female	Male		
7:00-7:15							
7:15-7:30							
7:30-7:45							
7:45-8:00							
8:00-8:15							
8:15-8:30							
8:30-8:45							
8:45-9:00							

* "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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◀ Example of MORPC Pedestrian & Bicycle Count Form

Trip Purpose

Just as with other modes of transportation, bicycle and pedestrian trips may be made for a variety of purposes. The most important distinction is between recreation and utilitarian trips. Breaking down utilitarian trips further, there are work trips, errands, and family or other social trips. Bicycling and walking are encouraged for all trip types; however, the different types of trips have differing implications for the transportation system, and different strategies are needed to encourage each type.

Non-motorized utilitarian trips are more likely than recreational trips to replace automobile trips, which is very important in terms of reducing congestion, emissions, and transportation costs. The benefits of recreational trips are also important, but they are likely to be limited to health and quality-of-life benefits. Since utilitarian trips also offer health benefits, non-motorized utilitarian trips offer a greater benefit to society compared to recreational trips.

Just as the benefits of non-motorized transportation depend on the type of trip, the strategy to encourage such trips also depends on the type of trip. For instance, encouragement of recreation trips may rely on health and quality-of-life messages while utilitarian trips may be better served with messages relating to reduced expenses and environmental benefits, in addition to health messages.

Trip purpose also relates to the types of facilities needed to encourage non-motorized modes. Recreational trips are best served with scenic and relaxing facilities such as off-street trails in river corridors. These facilities may also serve a transportation-related purpose, but other facilities such as sidewalks, traffic-calmed streets, and bike lanes are equally necessary to provide access to destinations. One important consideration is that individuals making utilitarian trips typically prefer a fast and direct route from origin to destination, whereas people are more tolerant of indirect paths and other diversions during recreational activities.

Safety

The concept of Complete Streets is closely related to safety. Where walking and bicycling feel unsafe, people will be unlikely to use those modes. As a result, evaluating the safety of a street is a good step in determining whether it serves the needs of its users.

Crash data are one important means by which to evaluate the transportation system. Crash data often point to specific problems, such as dangerous intersections, maintenance needs, and opportunities for facility improvements; but whereas motor vehicle crashes have been subject to rigorous study over the past several decades, bicycle and pedestrian crashes have received considerably less attention. Nonetheless, crash data analysis remains a fundamental aspect of safety evaluation for all modes.

MORPC dedicates a considerable amount of resources and effort to crash data analysis. Along with high-crash location lists for each of its member jurisdictions, MORPC analyzes the most dangerous intersections and corridors for bicyclists and pedestrians. This analysis provides a good starting point in terms of reducing pedestrian and bicycle crashes, and specifically injuries and fatalities that result from these crashes.

It is not always possible to rely on crash data to proactively find dangerous locations, however, since pedestrian and bicycle crashes tend to be infrequent even in the most

problematic spots. For this reason, methods to address pervasive safety concerns on a system-wide basis are another important way to reduce pedestrian and bicycle crashes.

In recent years, attention to bicycle and pedestrian crashes has increased, due to the increasing popularity and interest in these modes. Along with this, several evaluation methodologies and resources have been developed to help practitioners better understand and prevent bicycle and pedestrian crashes. A few examples of pedestrian and bicycle safety evaluation methodologies and resources are listed here:

- PedSafe: Pedestrian Safety Guide and Countermeasure Selection System. http://www.walkinginfo.org/pedsafe/
- BikeSafe: Bicycle Countermeasure Selection System. http://www.bicyclinginfo.org/bikesafe/
- Pedestrian and Bicyclist Intersection Safety Indices. http://www.bicyclinginfo.org/library/details.cfm?id=2802
- How to Develop a Pedestrian Safety Action Plan. http://katana.hsrc.unc.edu/cms/downloads/howtoguide2006.pdf

Although not strictly oriented towards safety, there have been a variety of level of service models developed that attempt to capture how well a street serves pedestrians or bicyclists. These LOS models tend to focus on how a street is perceived by its users, but they can also reveal safety problems, since user satisfaction is very closely related to safety for bicyclists and pedestrians. Some examples include:

- Modeling the Roadside Walking Environment: A Pedestrian Level of Service. http://www.sprinkleconsulting.com/Images/UserSubmitted/Modeling%20the%20Roadside%20Environment_A%20Pedestrian%20Level%20of%20Service.pdf
- Bicycle Level of Service: Applied Model. http://www.sprinkleconsulting.com/Images/UserSubmitted/BicylceLevelofServiceModel.pdf

Economic Impacts

Another aspect of Complete Streets evaluation relates to the economic impacts they may bring. Although it is difficult to relate economic development to the implementation of Complete Streets with absolute certainty, there have been some studies that suggest that streets designed for bicycling and walking bring about economic benefits, such as increased spending at local businesses and increased tourism.

One study that looked at the potential impact of bike lane installation in Toronto concluded that, contrary to some popular perceptions, replacing on-street parking with bike lanes would increase economic activity. The authors found that bicyclists and pedestrians were among the more frequent patrons of adjacent business, with higher average spending on a monthly basis, compared to patrons arriving in vehicles (Clean Air Partnership, 2009).

Another study found that housing values are considerably higher in walkable neighborhoods compared to those that are less walkable (Cortright, 2009). In this case, “walkability” was defined as having access to a variety of land uses, as measured by Walk Score (http://www.walkscore.com).

For more information on the economic impacts of Complete Streets, see http://www.completestreets.org/complete-streets-fundamentals/factsheets/economic-revitalization/.

Safe Routes to School

The Safe Routes to School (SRTS) program gives community leaders, schools, and parents the opportunity to improve safety around schools and encourage more children, including those with disabilities, to walk and bike to school safely. By Increasing the number of students walking and biking to school, the program helps to reduce traffic congestion around schools and improve health and the environment; in return communities become for livable for everyone (The National Center for Safe Routes to School).

There are five areas that are covered by a successful Safe Routes to School program. The five E's include: Engineering, Education, Enforcement, Encouragement, and Evaluation. This section will focus on evaluation.

Safe Routes to School Evaluation

As with any type of program, it is important to measure the success of the implemented strategies to ensure that resources are spent toward efforts that show the greatest likelihood of success and to better to assess how the program is making a difference. Evaluation begins when the program is initially started and ends after a program or project is complete.

Evaluation involves collecting a lot of data to determine baseline information that now can be measured. Data collection methods in SRTS programs often include student travel tallies, parent surveys, or sidewalk and bikeway inventories. These data can help evaluate the impact of the activities by understanding if changes in travel mode and safety have occurred. As such, every SRTS program can benefit from evaluation. Evaluation allows for:

- Making sure that the underlying problem is identified so that proper strategies to address the problem are selected
- Setting reasonable expectations about what the program can do
- Identifying changes that will improve the program
- Determining if the program is having desired results

Benefits of the evaluation strategy go beyond local programs. The data collected during this process can be used to influence future funding at the local, state, and national level for the SRTS program.

Standard Evaluation is done before, during, and after the program, and Basic Evaluation is done before and after the program. Standard evaluation is ideal for receiving the most data, but must be balanced with the time and resources available. Standard and Basic evaluation include collecting baseline information using tools such as a student travel tally and parent survey. As part of the SRTS program, there are 2 main evaluation goals:

- To create a change in mode choice; i.e., increasing the number of children walking and biking to school.
- To decrease the amount of crashes by improving the infrastructure and by providing increased enforcement and evaluation.

The figure below shows six steps that can be taken to conduct Standard and Basic Evaluation.

Six-Step Process for SRTS Program Evaluation

Standard & Basic Evaluation

Before

1. Plan the program/Collect Information
2. Write Objectives
3. Decide what, how and when to measure

During

4. Conduct the program and monitor progress

After

5. Collect information and interpret findings
6. Use results

◄ Chart showing Standard & Basic Evaluation Step process (Source: National Center for Safe Routes to School)

- Chart shows the steps one should take when evaluating an SRTS program.

The so-called "walking map" is one way to evaluate how safe it currently is to walk or bike to school and what obstacles one may face when walking or biking to school.

◄ Walking Map (Source: City of Columbus, Public Health)

- Walking Map showing good and bad places and intersections for walking safely.
- When creating a walking map, use the variables as indicated below.

Good Places

- Grocery Story
- Park
- Recreation Center
- Restaurant
- Library
- Other schools
- Nice Homes

X Bad Places

- Places where you feel unsafe
- Mean dogs
- Vacant and abandoned homes
- Overgrown lawns

Green Streets

- Intersection has crosswalks
- Intersection has traffic lights
- Pedestrian signals are apparent
- Street is narrow
- Sidewalks are there and in good condition
- Sidewalks have room for two
- Drivers respect walkers
- Cars travel through intersection slowly
- Dogs are chained
- Streets lights are bright
- People are outside

Yellow Streets

- Unmarked or faded crosswalk, but still feels safe
- No traffic light
- No pedestrian signal
- Sidewalks present, but not wide
- Some drivers drive fast
- Street lights are not bright
- Fewer people outside

Red Streets

- Streets have no sidewalks
- Sidewalks are cracked
- Drivers drive fast
- Dogs are unchained
- No street lights
- No people outside

Sources

City of Columbus Public Health Department. *Creating a Walking School Map*. http://www.morpc.org/pdf/WalkingSchoolMap.pdf (retrieved January 14, 2011).

Clean Air Partnership. Bike Lanes, On-Street Parking and Business: A Study of Bloor Street in Toronto. February 2009. http://www.cleanairpartnership.org/pdf/bike-lanes-parking.pdf (retrieved July 18, 2011).

Cortright, Joe, and CEOs for Cities. Walking the Walk: How Walkability Raises Home Values in U.S. Cities. August 2009. http://www.ceosforcities.org/pagefiles/WalkingTheWalk_CEOsforCities.pdf (retrieved July 18, 2011).

MORPC. Pedestrian and Bicycle Traffic Counts. http://morpc.org/transportation/bicycle_pedestrian/project.asp (retrieved June 9, 2011).

MORPC. Walk to School. www.morpc.org/walktoschool (retrieved January 12, 2011).

National Bicycle and Pedestrian Documentation Project. http://bikepeddocumentation.org/ (retrieved June 9, 2011).

National Center for Safe Routes to School. www.saferoutesinfo.org (retrieved January 11, 2011).

National Center for Safe Routes to School. *Evaluation*. www.saferoutesinfo.org (retrieved January 11, 2011).

Ohio Department of Transportation. Safe Routes to School. www.dot.state.oh.us/saferoutes (retrieved January 14, 2011).

Pedestrian and Bicycle Information Center and the National Center for Safe Routes to School. *Evaluation Guide for Community Safe Routes to School Programs.* http://www.saferoutesinfo.org/guide/pdf/SRTS-Guide_Evaluation.pdf (retrieved (January 11, 2011).

UC Berkeley Safe Transportation Research & Education Center. Seamless Travel: Measuring Bicycle and Pedestrian Activity in San Diego County and its Relationship to Land Use, Transportation, Safety, and Facility Type. 2010. http://www.altaplanning.com/App_Content/files/Seamless-Final-Report-June-2010.pdf (retrieved June 9, 2011).

United States Department of Transportation. Policy Statement on Bicycle and Pedestrian Accommodation Regulations and Recommendations. March 11, 2010. http://www.fhwa.dot.gov/environment/bikeped/policy_accom.htm (retrieved June 9, 2011).