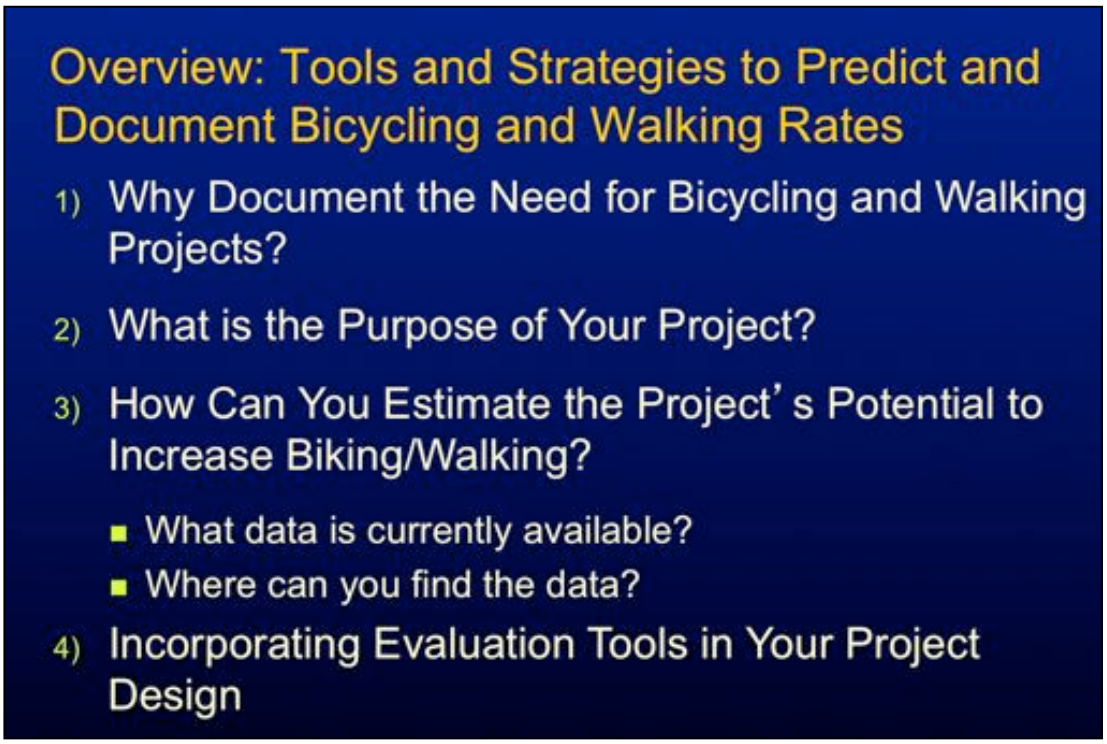
Developing Effective Active Transportation Projects and Programs

Support for Smaller Agencies and Disadvantaged Communities

Source: National Bicycle and Pedestrian Documentation Project

Module 5: Tools and Strategies for Predicting and Documenting Bicycling/Walking Rates

Caltrans | California Bicycle Coalition | California Walks | Local Government Commission | rails-to-trails conservancy



This presentation will review different methods of documenting existing and projected rates of bicycling and walking, drawing on examples from applications that were awarded funding in the first rounds of ATP; these applications are all available online if you are interested in getting more detail on the methodologies.

1) Why Document the Need for Bicyclist and Pedestrian Projects?

Identify and Prioritize Projects:

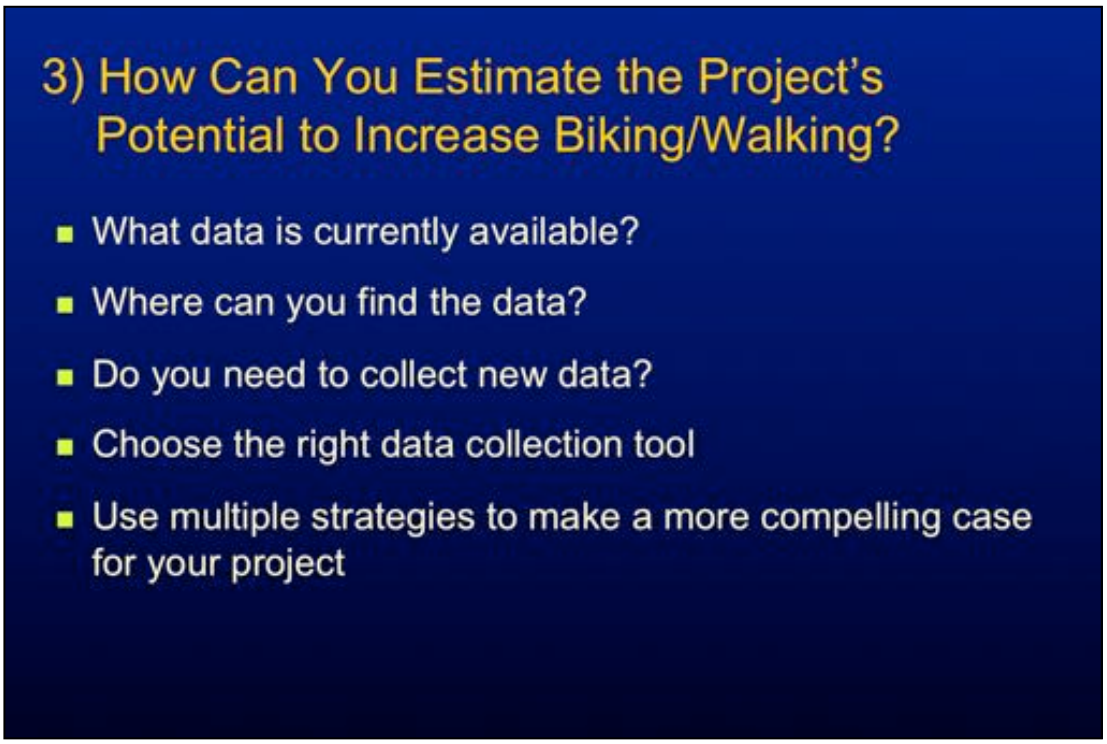
- Quantify demand/potential demand
- Evaluate project impact

Build Support and Secure Funding :

- Raise community awareness of impact of walk/bike projects
- Gain support from elected officials and community stakeholders
- Secure funding (ATP Application Q1)

Material focuses on how to use this information for ATP applications, and also how to enhance bicycle and pedestrian planning and improve your chances to secure other funding

Your project type will influence what existing data there may be, your ability to collect data, and how you can go about using this information



This is an overview slide for the next section of the module.
These strategies apply to:

- infrastructure projects that will enhance existing facilities
- non-infrastructure programs
- gap closure projects, and
- trails

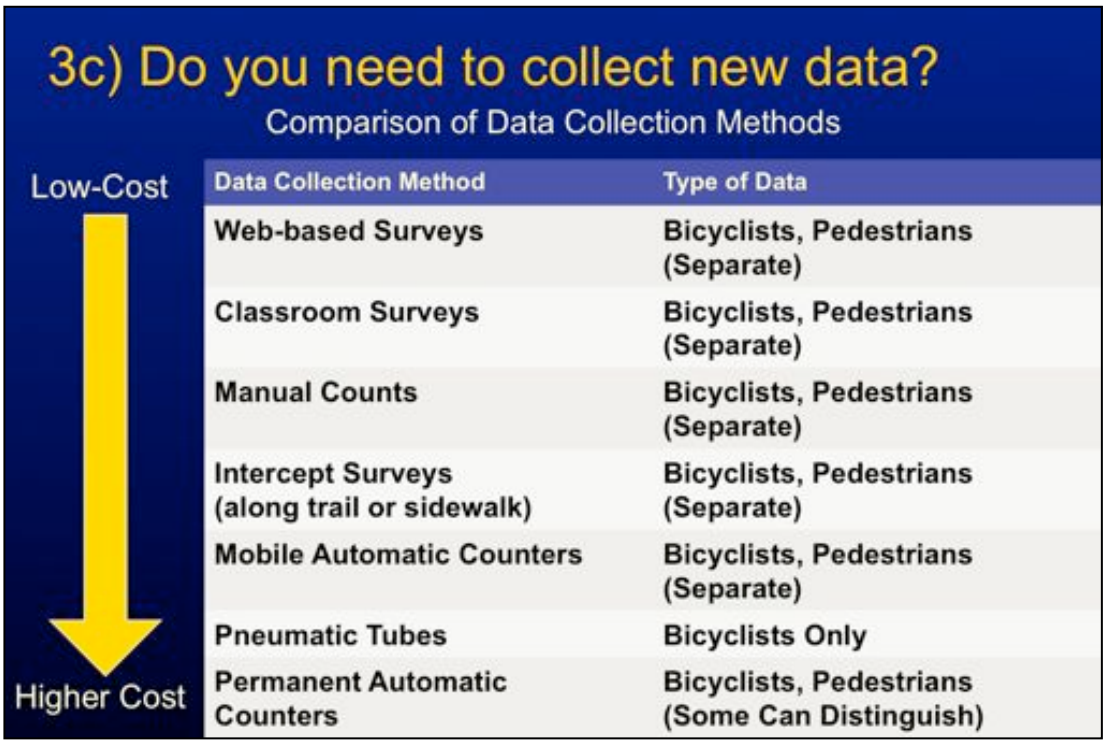
Data to use will vary depending on the type of project (see previous slide)
Applicants may want collect multiple types of data to make a stronger case for their project (counts of users, survey responses, account for other factors such as nearby transit stations or schools, etc.)

3a) What data is currently available?

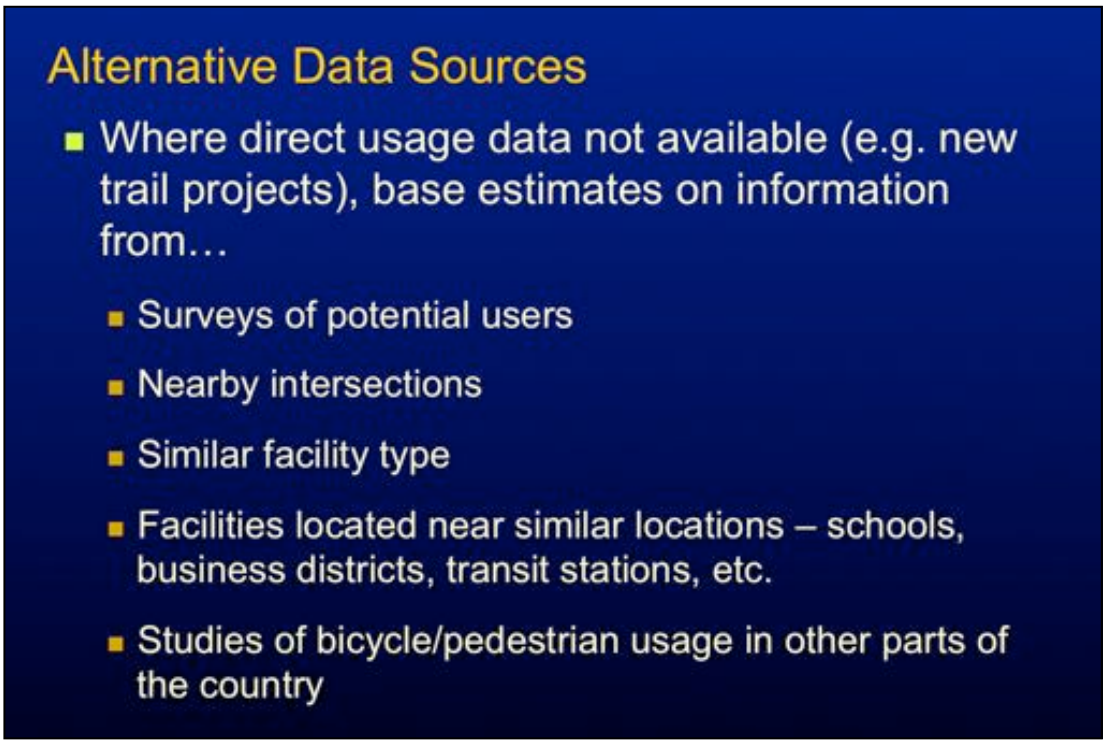
- Is there readily available data that…
  - Documents the number of bicyclists and pedestrians?
  - Estimates the share of trips made by bicycling or walking?
  - Predicts the number of bicyclists or pedestrians in the future?

List of agencies that are most likely to have the data and some specific data sources to ask about when you approach them. Studies and data sets may not be available, but these are likely places to find what is out there.

- MPO – regional bicycle or pedestrian plans, count programs
- CMA – often do bicyclist and pedestrian counts at selected locations for their Congestion Management Program, they may also have some kind of count program in place
- Local – Transportation planners and engineers may collect this information as part of their ongoing planning activities. Some jurisdictions bundle bicycle and pedestrian counts into their vehicle traffic data collection programs
- Travel demand models may have data on bicyclists and pedestrians – most valuable at the local level, since biking and walking trips are too short to be accounted for in a regional travel model
- Bicycle/pedestrian plans may have citywide or regional mode shares, also specific counts and projections of how the implementation of a plan will impact biking and walking
- Corridor/project studies and EIRs can focus on different scale projects – possibly a specific site or a much larger area. Best case scenario is that the location of your proposed ATP project matches up closely with the boundaries of a corridor study or EIR. Since biking and walking rates can vary significantly within a city – depending on proximity to commercial areas, schools, transit stations, etc. – more localized data will be more meaningful and will strengthen your application.



This is a list of the main methods for collecting data on bicyclist and pedestrian use. From top to bottom it indicates the relative cost of these methods.



Alternative Data Sources

These sources can be useful to help demonstrate the value of any project, but are especially important for projects such as highway overcrossings and trails developed in corridors where no facilities are currently available and current users cannot be counted.

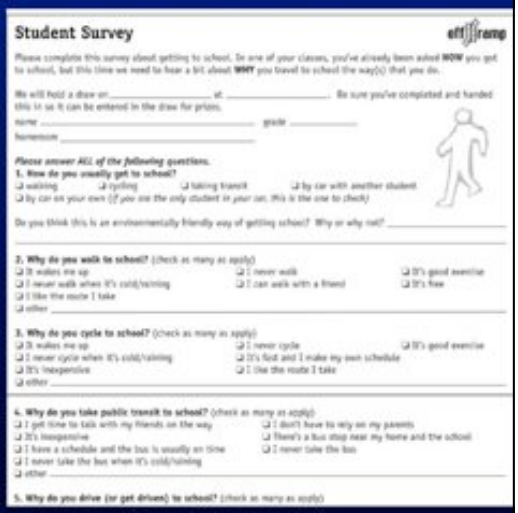
Surveys: potential users to help understand why they don't currently walk or bike and how the proposed project will affect their future willingness to walk or bike (or to let their kids walk or bike)

Estimates of users can also be based on the number of bikes/peds on similar facilities – e.g. trails or bike lanes – in similar environments. One possibility is to compare the increases in usage seen in other projects. Best to find multiple examples, perhaps take an average across several projects to reduce chance or appearance of cherry-picking data.

Examples from other parts of the country can also help identify an approximate rate of increase in usage if nothing local is available.

Collecting New Data: Surveying Bicyclists and Pedestrians

- Community surveys
  - Provide insight into reasons why people do **not** currently bike/walk
  - Ask how many residents will bike or walk **as a result of the project**
  - For Safe Routes to School projects, can quickly disseminate to students and parents at school via email
  - Inexpensive to distribute survey and analyze data


Student Survey

eff ramp

Please complete this survey about getting to school. In one of your classes, you've already been asked **HOW** you get to school, but this time we need to hear a bit about **WHY** you travel to school the way(s) that you do.

We will hold a draw on _____ at _____. Be sure you've completed and handed this in so it can be entered in the draw for prizes.

name _____ grade _____

homeroom _____

Please answer ALL of the following questions.

1. How do you usually get to school?

❑ walking ❑ cycling ❑ taking transit ❑ by car with another student

❑ by car on your own *(if you are the only student in your car, this is the one to check)*

Do you think this is an environmentally friendly way of getting school? Why or why not? _____

2. Why do you walk to school? (check as many as apply)

❑ It wakes me up ❑ I never walk ❑ It's good exercise

❑ I never walk when it's cold/raining ❑ I can walk with a friend ❑ It's free

❑ I like the route I take

❑ other _____

3. Why do you cycle to school? (check as many as apply)

❑ It wakes me up ❑ I never cycle ❑ It's good exercise

❑ I never cycle when it's cold/raining ❑ It's fast and I make my own schedule

❑ It's inexpensive ❑ I like the route I take

❑ other _____

4. Why do you take public transit to school? (check as many as apply)

❑ I get time to talk with my friends on the way ❑ I don't have to rely on my parents

❑ It's inexpensive ❑ There's a bus stop near my home and the school

❑ I have a schedule and the bus is usually on time ❑ I never take the bus

❑ I never take the bus when it's cold/raining

❑ other _____

5. Why do you drive (or get driven) to school? (check as many as apply)

Cost of survey can vary: a) inexpensive – distribute and collect surveys at schools. b) more expensive – "intercept" users along bike/ped facilities to get them to respond; depending on facility, may take considerable time to get sufficient number of completed surveys

Collecting New Data: Surveying Bicyclists & Pedestrians

- Intercept surveys
  - Survey subjects are "intercepted" along an existing facility
  - Can use survey form or interview format
  - Collect more fine-grained data, e.g. trip purpose or dollars spent
  - More time-consuming to collect sufficient data

Source: TX Transportation Institute

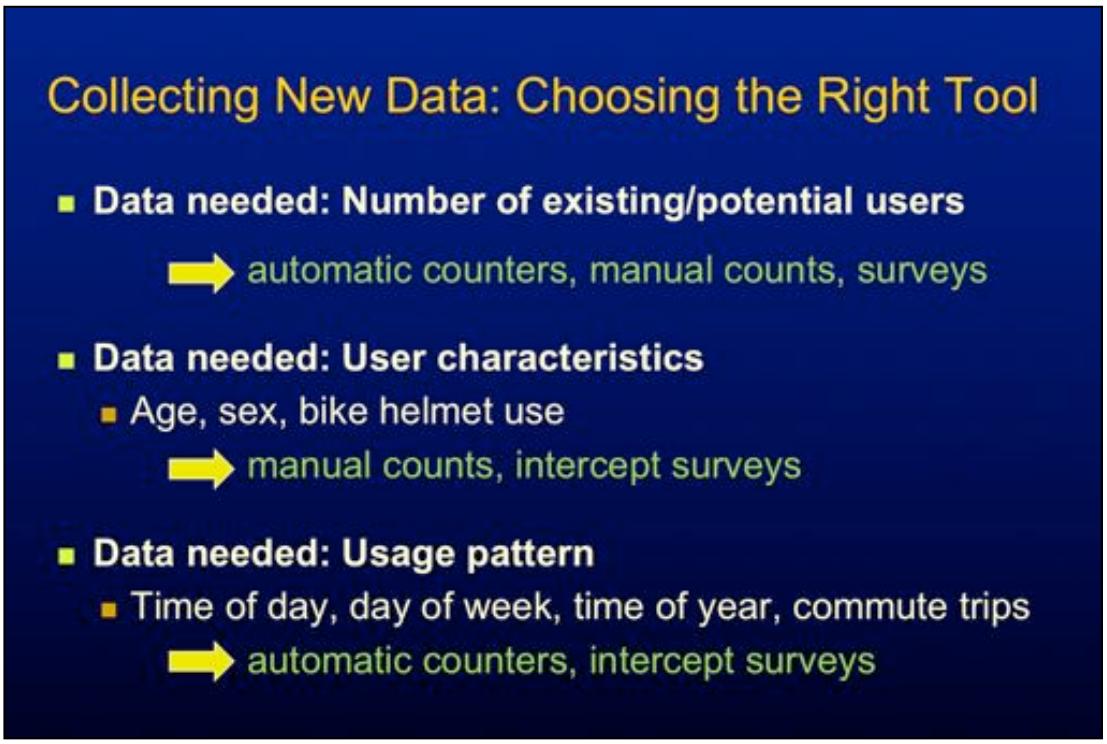
Collecting New Data: Manual Bike/Ped Counts

- Surveyors count users along bikeways, sidewalks or at intersections
- Count period typically includes peak travel (e.g. 7-9 AM, 4-6 PM), possibly additional hours
- Times adjusted based on local biking and walking patterns – school hours, heavy weekend traffic, etc.

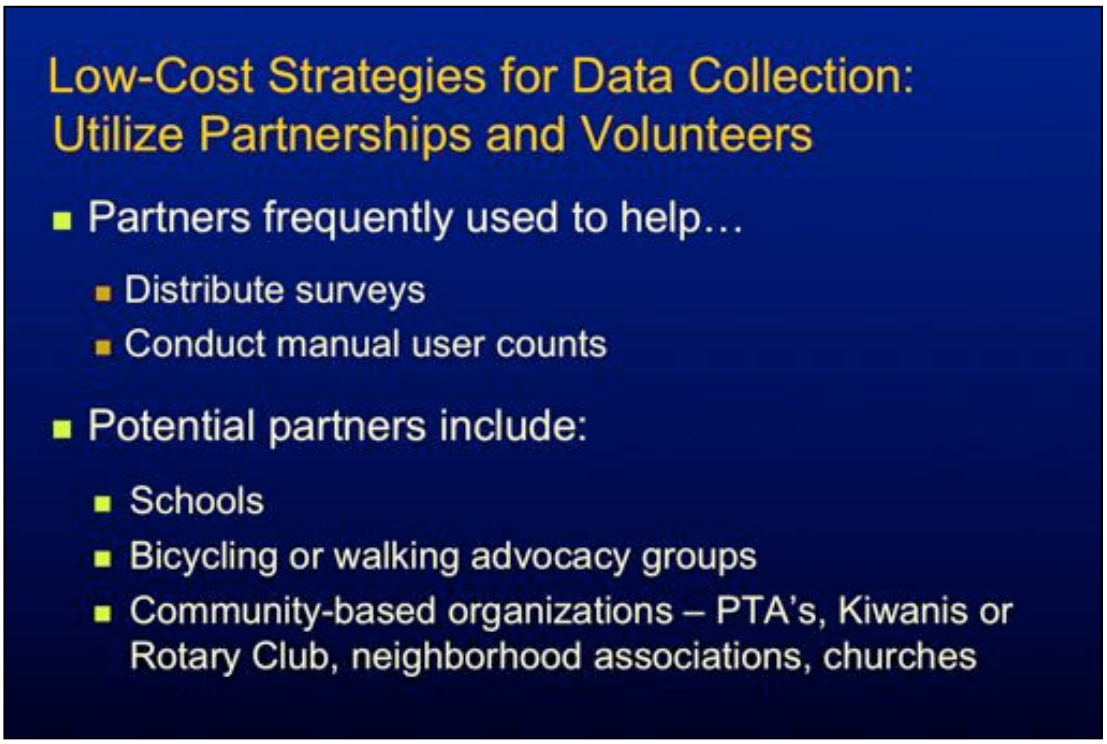
Source: MN DOT

Manual bicycle/pedestrians counts can be conducted in a limited time frame at a particular site (e.g. AM and PM peak hours over several days). May want to adjust count hours – AM and PM peak correspond to work commute, may be different if near a school, a lunchtime destination, or if there is heavy weekend use.

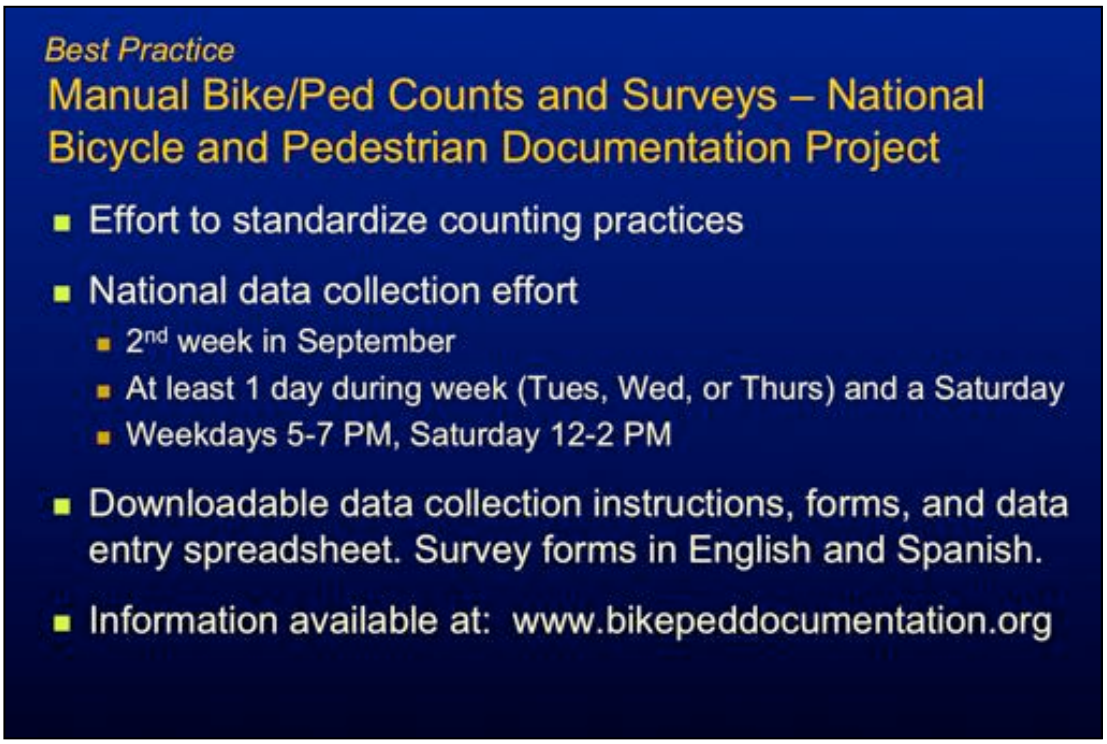
Mobile vs. permanent counters – permanent can only be used at one location, but the counters may provide more robust data.
Photo is a combination of inductive loop (in-ground) and infrared beam (from the adjacent post), can differentiate between bicyclists and pedestrians.
Operations costs: some counters equipped with a modem to allow for remote download of data, reducing staff time to go out to site to collect data and to determine if counter is functioning; subscription required for remote data download capability ($400/yr for Eco Counter), but staff time savings may make this worthwhile. For other counters (e.g. mobile counters like Trafx), there may be a subscription fee for access to data analysis software.



Depending on the kind of data you want to collect, some data collection approaches are better than others. This slide features examples of which tools can best be used to collect specific types of data.



Use of volunteers – such as PTA's and community-based organizations such as bike coalitions – can be a great way to collect data on a small budget, and help build support for projects in the community. While this saves staff time, will require volunteers to be trained to maintain quality control.



Best practice:
This project is being used across the country by many agencies – an effort to develop a standardized method for conducting manual counts. Agencies may want to participate in the annual national count but can also use this methodology for other data collection. Downloadable information (data collection sheets, methodology, etc.) makes it relatively easy to use this approach. Includes factors for estimating annual usage based on limited data – accounts for changes in weather throughout the year.

Case Study:
San Jose conducts both manual counts and intercept surveys – conducting these every year has been especially effective in demonstrating increased use of the trails, the use of trails for commuting, and making the case for the importance of trails to local elected officials.

Case Study:
East Bay Regional Parks District (EBRPD) currently uses primarily mobile counters, though they are gradually purchasing permanent counters. One factor which has helped them make this work is that they have field staff who are in the general area and are able to retrieve data.
The image on the slide is an example of one of the mobile counters (Trafx) used by EBRPD and the dock that is used to retrieve the data from the counter in the field.

Case Study

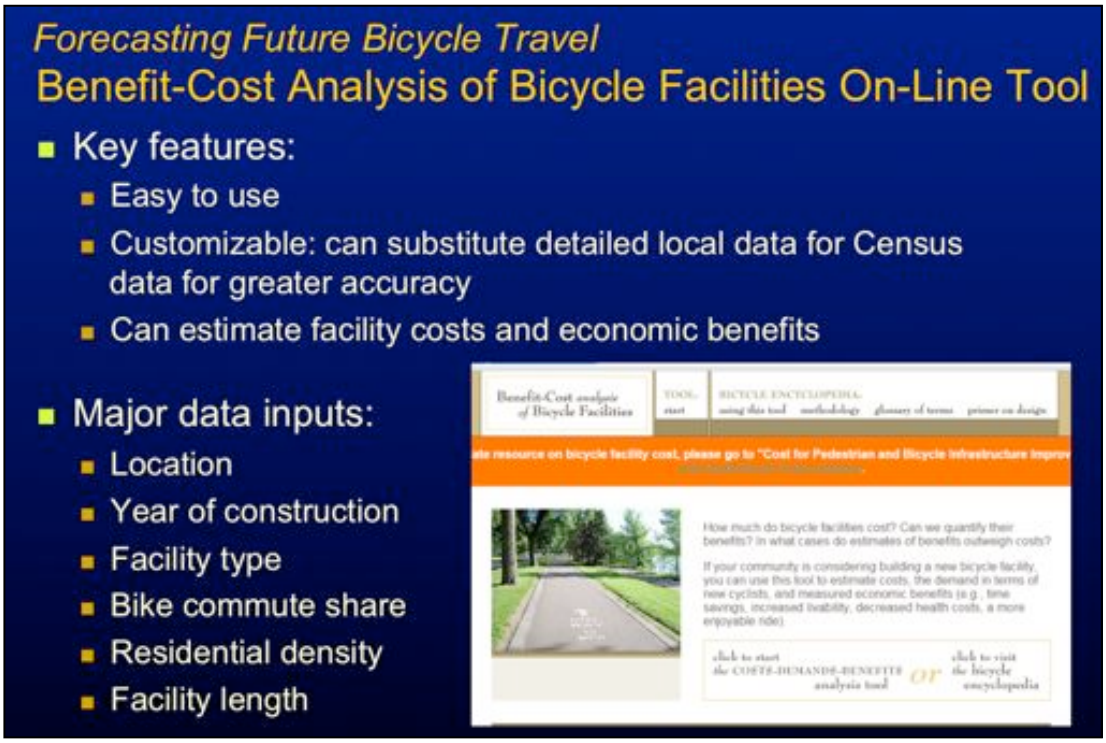
Public Health Partnerships (LA County)

- LA County Department of Public Health purchased automated equipment for counting bicyclists and pedestrians
- Equipment currently being tested in a pilot project by partners participating in the Healthy Eating Active Living (HEAL) Initiative and Healthy Policies Initiative (HPI)
- DPH may make the equipment available to other cities depending on need and availability.
- Please contact Louisa Franco at lfranco@ph.lacounty.gov for more information.

Case Study:
San Diego: Example of use of permanently installed automatic counters
Collaboration between public health professionals (County of San Diego Health and Human Services Agency (HHSA)), academic researchers (San Diego State University (SDSU)), and transportation planning professionals (SANDAG).
Grant was provided by the Centers for Disease Control and Prevention (Communities Putting Prevention to Work) ultimate goal is to have counters installed at 170 locations

3d) Forecasting Tools to Estimate Future Users

- Low-cost options
  - Surveys of potential users
  - "Sketch planning" methods
    - Modify methodology with localized data
  - Customized method using relevant local data
    - Rely on alternative data sources
- Technical Tools
  - Seamless Travel Model
  - Travel demand models
  - Consultants may be able to run models



Important: The tool's web site is somewhat unreliable, and Cycle 1 applicants have noted that it was not available when they attempted to use it. It is highly recommended that if you choose to use this tool that you do this well in advance of the application deadline to avoid such problems.

The four case studies that follow are examples of ATP Cycle 1 projects that were awarded funding. All applications from funded projects are available for review on the CTC web site.

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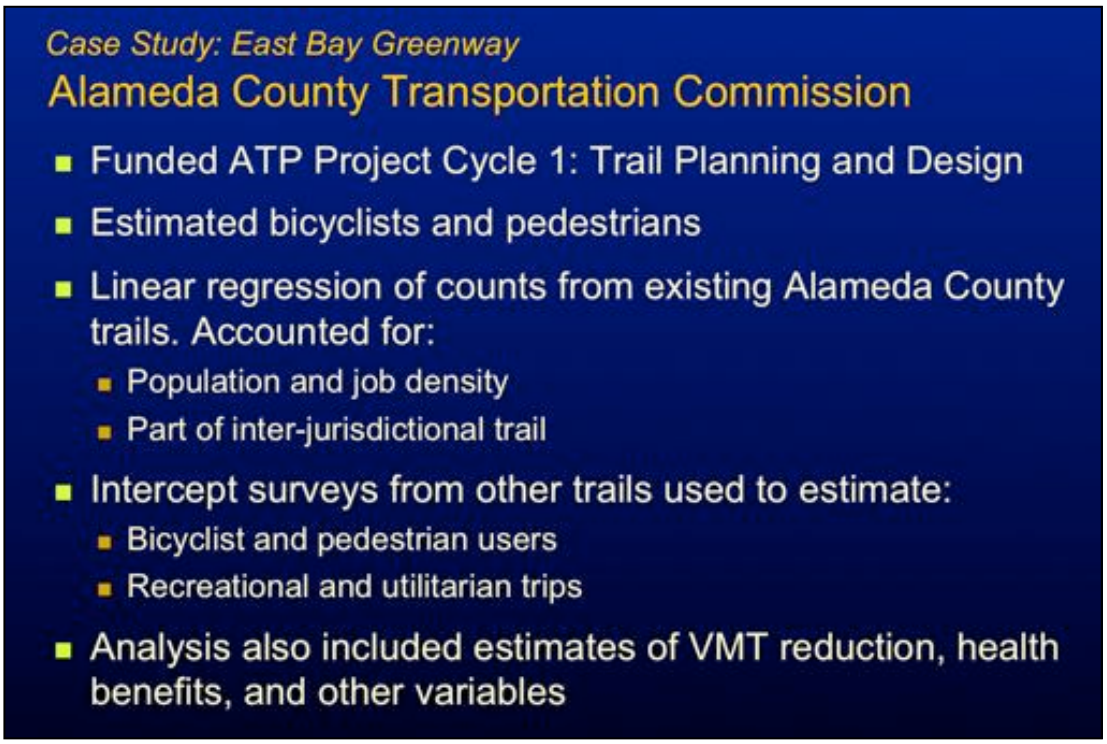
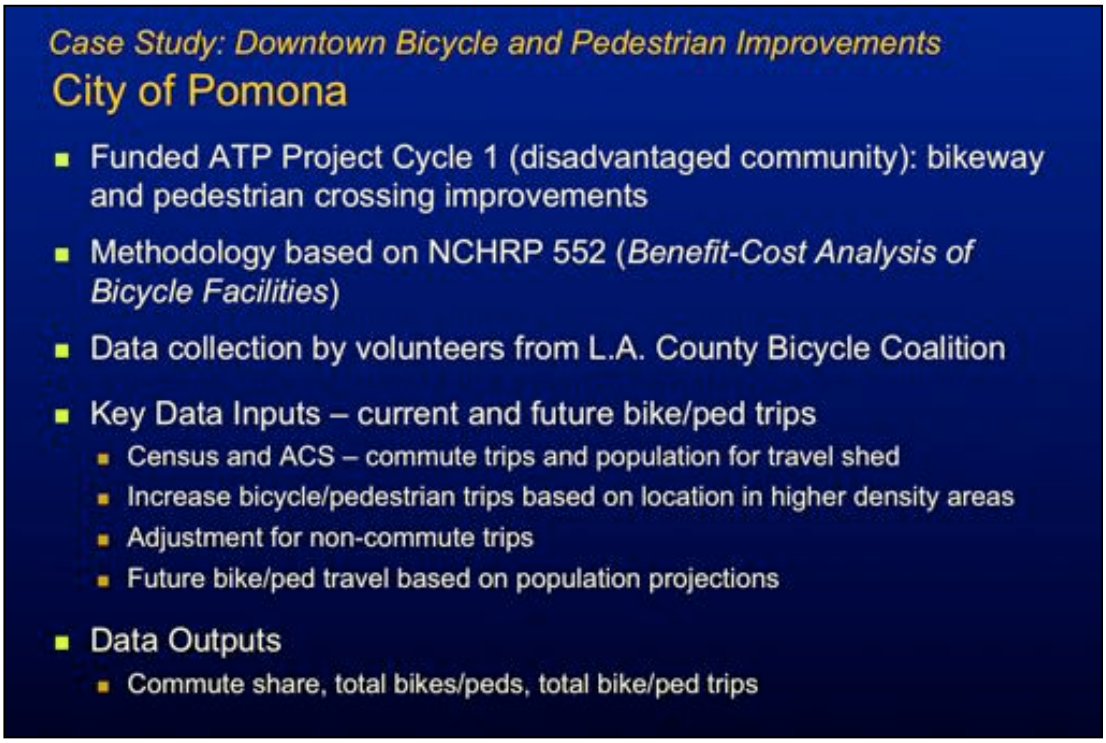
Forecasting Future Bicycle Travel

Benefit-Cost Analysis of Bicycle Facilities On-Line Tool (cont.)

- Outputs:
  - Total new bicyclists
  - New adult bicyclists
  - New bicycle commuters
  - New child bicyclists
- Also estimates mobility, health, and economic benefits
- Based on research completed for National Highway Cooperative Research Program (NCHRP) Report 552
- Model available at Pedestrian Bicycle Information Center: http://www.pedbikeinfo.org/bikecost/index.cfm



This examples requires some sophisticated calculations, but this type of data is available to agencies looking to adopt a similar approach



Case Study:
Similar to the on-line tool highlighted 2 slides earlier, but adjusted the method to incorporate local data – one key adjustment was to increase the number of bike/ped trips for higher density areas

Key points:

- Counts were collected in partnership with LA County Bicycle Coalition
- Used a simplified version of Pedestrian and Bicycle Information (PBIC) tool based on NCHRP 552
- Used data from the 2010 US Census and the 2012 American Communities Survey (ACS) (5-Year Estimates).
- Multiplying the mode-share from the ACS by the total population given in the Census produces an estimate for the total number of pedestrians and bicyclists.
- Scaled estimates down to proportion of city's square mileage contained within the project area
- Forecasted estimates into the future using population growth rate (identified in General Plan)
- Adjusted estimates to account for projects' locations (denser areas more likely to contain more than an exact proportional number of pedestrians and bicyclists, particularly under future conditions where the improvements built).
- For the bicycle estimates, adjustment is based on studies that show an increase in mode-share once an entire downtown network is built out

Case Study: Downtown Bicycle and Pedestrian Improvements

City of Pomona

- Data collection by volunteers from L.A. County Bicycle Coalition

Case Study: Downtown Bicycle and Pedestrian Improvements

City of Pomona

Table 1-8: Estimated Number of Future Pedestrians in Pomona

Current Population (2010 US Census) (A)	2030 Population (1% annual increase) (B)	Commute Share (C)	Total Future Pedestrians (B)*(C)=(D)
149,058	**181,879**	**0.6%**	**10,913**

Table 1-9: Estimated Number of Future Pedestrians in Project Area

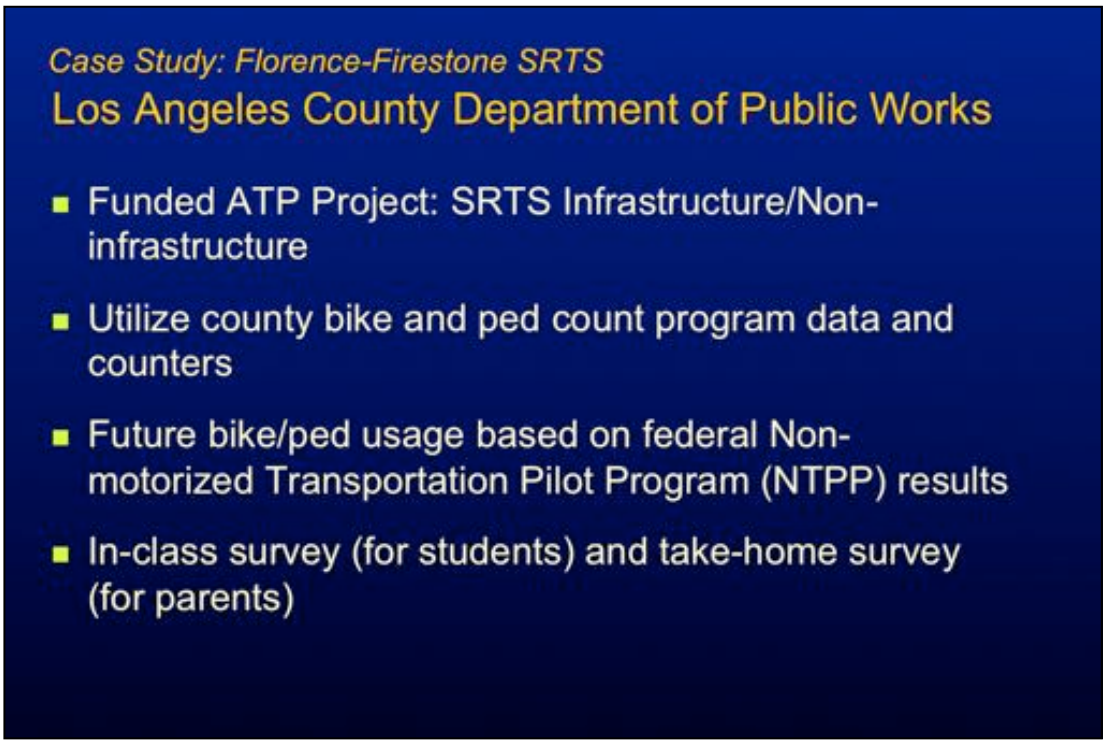
Baseline 2030 Pedestrians (A)	Percent of "high activity" area within Project Area (B)	Percent of all pedestrian activity occurring within "high activity" area (C)	Total Future Pedestrians in Project Area (A)*(B)*(C)=(D)
10,913	**75%**	**60%**	**4,911**

Table 1-10: Estimated Number of Future Pedestrian Trips and Future Pedestrian Miles Traveled

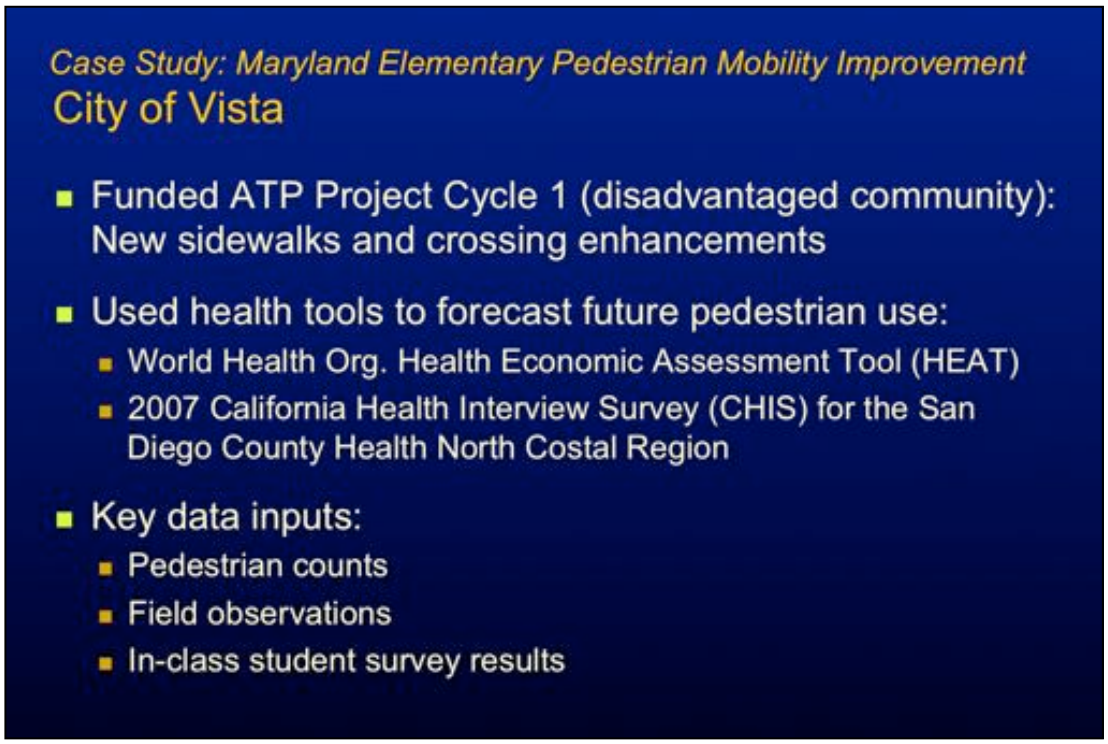
Pedestrians in Project Area (A)	Average Daily Trips Per Pedestrian[1] (B)	Annual Average Daily Pedestrian Trips (A)*(B)*365=(C)	Average Trip Length[2] (D)	Annual Pedestrian Miles Traveled (C)*(D)=(E)
4,911	**1.6 trips**	**2,868,024**	**0.5 miles**	**1,434,012**

[1] Ibid. The same average number of trips has been applied to pedestrians as well as bicyclists.

[2] The average trip length for pedestrians is assumed to be the same as the walk shed for transit facilities, 0.5 miles.



County staff will be able to use existing counters from the county's bike/ped count program. Will work with community members to conduct automatic and manual counts Based their estimates of bike/ped travel on mode share increases demonstrated in the National Transportation Pilot Project (NTPP) results from the 4 funded communities that completed the projects funded through the program



Case Study:
City of Vista, CA.
Used health data in addition to counts and surveys
Key points:

- City conducted manual pedestrian counts in April 2014 prior to submitting application
- Also conducted a student travel tally in May 2014: reached 13 classes, or roughly 51-75% of all students; determined that an average of 35% of students currently walk to school
- Conducted traffic speed surveys in December 2013
- Used a simple calculation that was provided in the application based on these recent data collection efforts, as well as outputs from the WHO HEAT tool
- Final estimate was rounded down to be conservative: recognized that their methodology is not the most complex, so this was a smart strategy to not overstate the estimated increases

Case Study: Maryland Elementary Pedestrian Mobility Improvement

City of Vista

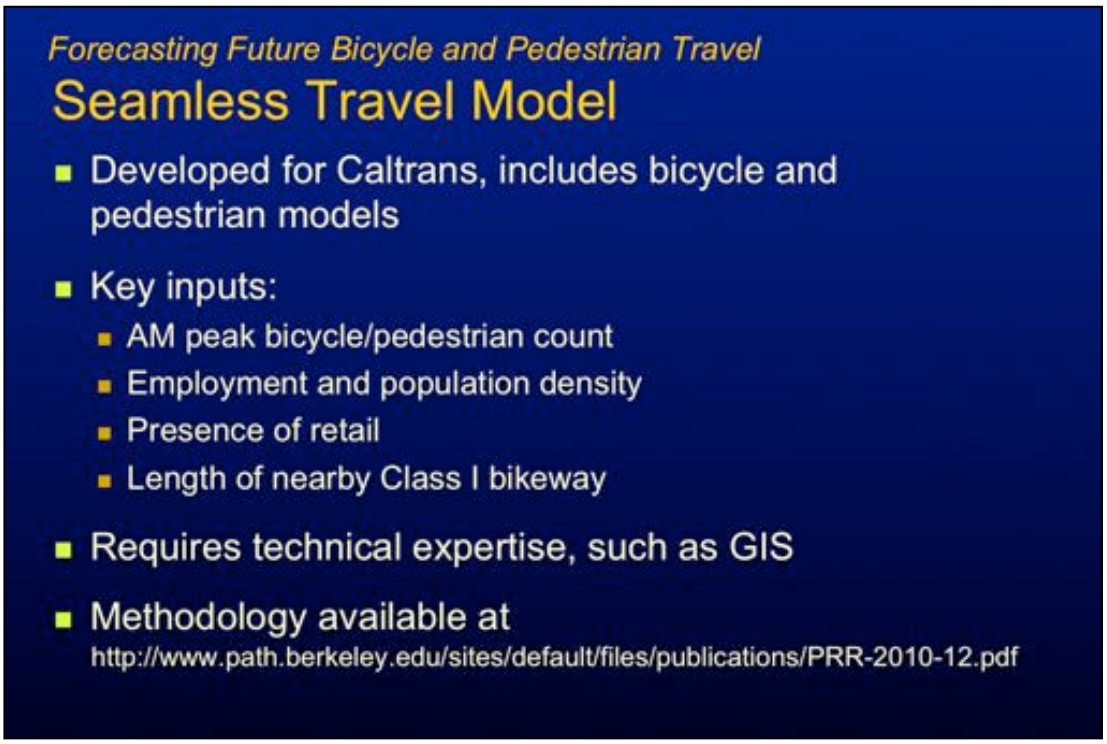
Calculations for % Shifted to Walking/Biking

$$Shift = (Enrolled\ Students)(\%\ Don't\ Walk)(\%\ Could\ Who\ Don't)(\%Benefit)$$

$$Shift = (589)(73.5\%)(46.9\%)(18\%) = \mathbf{37}$$

$$\%\ Shift = \frac{Shift}{589\ enroEnrolled\ Students} = \frac{37}{589}$$

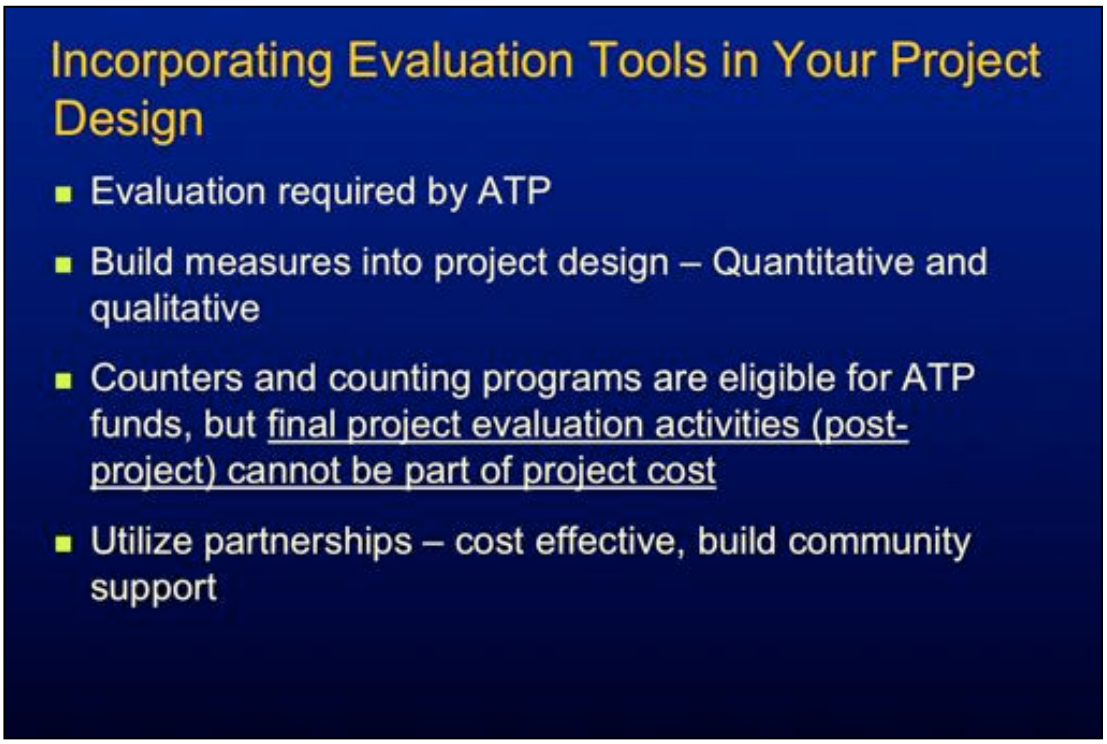
$$\%\ Shift = 6.28\% \approx 5\%\ to\ be\ conservative$$



A more technical approach:
Not something where you can just plug in a few numbers and have it generate the numbers. It requires the ability to use GIS and make additional refinements to the data.
Many agencies may not have the capabilities to implement this or the resources to hire a consultant.
Model developed for Caltrans, it is available for use by anyone

Trail Modeling and Assessment Platform (TMAP) currently under development by Rails-to-Trails Conservancy, supported by national team of university researchers and other experts

- First 3 bullets describe the types of tools that will be developed through this project.
- Data currently being collected at 12 sites around the country (San Diego is the site in CA), sites were selected from different climatic zones, since trail use patterns vary significantly across the country.
- This can be accounted for when developing usage estimates for trails in different parts of the country (note: the fact sheet pictured on the slide is available at the link indicated)



Build measures into project design – Quantitative and qualitative

- Install counters to monitor use
- Conduct periodic manual counts
- Surveys – reference previous survey discussion

Questions/Comments?