Overview: Tools and Strategies to Predict and Document Bicycling and Walking Rates

1) Why Document the Need for Bicycling and Walking Projects?
2) What is the Purpose of Your Project?
3) How Can You Estimate the Project’s Potential to Increase Biking/Walking?
   - What data is currently available?
   - Where can you find the data?
4) Incorporating Evaluation Tools in Your Project Design

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 awareness of impact of walk/bike projects
- Gain support from elected officials and community stakeholders
- Improve grant applications

2) What’s the Purpose of Your Project?

Does the project...
- enhance an existing facility or connection?
- create a new facility or close gaps?
- promote or encourage bicycling or walking?
3) How Can You Estimate the Project’s Potential to Increase Biking/Walking?

- What data is currently available?
- Where can you find the data?
- Do you need to collect new data?
- Choose the right data collection tool
- Use multiple strategies to make a more compelling case for your project

3a) What Data is Currently Available?

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

3b) Where can you find the data?

- U.S. Census and American Community Survey (ACS) – commute trips by mode
- Metropolitan Planning Organization / Regional Transportation Planning Agency, Congestion Management Agency (CMA), local jurisdiction
  - Bicycle/pedestrian plan
  - Bicycle/pedestrian count program
  - Travel forecasting models
  - Transportation corridor studies
  - Environmental Impact Reports (EIR)

3c) Do You Need to Collect New Data?

<table>
<thead>
<tr>
<th>Data Collection Method</th>
<th>Type of Data</th>
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</thead>
<tbody>
<tr>
<td>Web-based Surveys</td>
<td>Collect data on both bicyclists and pedestrians, can distinguish between user type</td>
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<tr>
<td>Classroom Surveys</td>
<td></td>
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<tr>
<td>Manual Counts</td>
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<tr>
<td>Intercept Surveys (along trail or sidewalk)</td>
<td></td>
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<tr>
<td>Pneumatic Tubes</td>
<td>Bicyclists Only</td>
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<tr>
<td>Mobile Infrared Counters</td>
<td>Pedestrians Only</td>
</tr>
<tr>
<td>Permanent Infrared Counters + Pneumatic Tubes</td>
<td>Collect data on both bicyclists and pedestrians, can distinguish between user type</td>
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</tbody>
</table>
Collecting New Data: Surveying Bicyclists and Pedestrians

- Community surveys
  - Why people do not currently bike/walk
  - How many residents will bike or walk as a result of the project
  - For SRTS, can quickly disseminate to students and parents at school via email
  - Inexpensive to distribute survey and analyze data

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

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.

Collecting New Data: Automated Bike/Ped Counters

- Mobile and permanent counter options
- Enables data collection 24 hours/day, 7 days/week
- Minimal staff time required to retrieve data
- Counter unit costs range from approximately $500- $5,000 per counter
Commute vs. Recreational Use Patterns

Alternative Data Sources
- Where direct usage data not available, develop estimates on information collected from...
  - Surveys of potential users
  - Nearby intersections
  - Similar facility type
  - Facilities located near similar locations – schools, business districts, transit stations, etc.
  - Studies of bicycle/pedestrian usage in other parts of the country

Collecting New Data: Choosing the Right Tool
- **Data needed: Number of existing/potential users**
  - automated counters, manual counts, surveys
- **Data needed: User characteristics**
  - Age, sex, bike helmet use
  - manual counts, intercept surveys
- **Data needed: Usage pattern**
  - Time of day, day of week, time of year, commute trips
  - automated counters, intercept surveys

Low-Cost Strategies for Data Collection: Utilize Partnerships and Volunteers
- Partners frequently used to help...
  - Distribute surveys
  - Conduct manual user counts
- Potential partners include:
  - Schools
  - Bicycling or walking advocacy groups
  - Community-based organizations – PTA’s, Kiwanis or Rotary Club, neighborhood associations, churches
**Best Practice**

Manual Bike/Ped Counts and Surveys – National Bicycle and Pedestrian Documentation Project

- Effort to standardize counting practices
- National data collection effort
  - 2nd week in September
  - At least 1 day during week and a Saturday
  - Weekdays 5-7 PM, Saturday 12-2 PM
- Downloadable data collection instructions, forms, and data entry spreadsheet. Survey forms in English and Spanish.
- Information available at: www.bikepeddocumentation.org

**Tools to Facilitate Data Entry**

- Go Counter app created by Rails-to-Trails Conservancy
- Data entry for manual bike/ped counts
- Enter data off-line, upload later to database

**Case Study**

Manual Trail Count/Intercept Survey – City of San Jose

- Annual user counts and survey along trails for 10 years; documented significant increases in trail use
- Data collection objectives
  - # of daily trail users, usage over time
  - Trip purpose (transportation vs. recreation)
  - User needs, demographics, perceptions
- Partnerships key to implementation
  - Guadalupe River Parks Conservancy
  - Silicon Valley Bicycle Coalition
  - Five Wounds Neighborhood/Communiversity

**Case Study**

Mobile Automated Counters – East Bay Regional Parks District

- 1,250 mile trail network across 2 counties
- 55 counters, cost is $500/counter
- Peak use during commute hours demonstrated trails as transportation route
- Data used to help secure $10 million TIGER grant for Green Transportation Initiative
Mobile Counter Loaner Programs

- Agencies loan counters to local jurisdictions, which are responsible for installation and data collection.
- Training required for proper installation and data collection.
- Bicycle/pedestrian counter loaner programs include:
  - Fresno Council of Governments
  - Solano County Transportation Authority
  - Sonoma County Transportation Authority

Case Study
Public Health Partnerships (San Diego County)

- Established a network of automated bicycle and pedestrian count stations along regional bicycle network
- Collaboration between County of San Diego Health and Human Services Agency (HHSA), San Diego State University (SDSU), San Diego Association of Governments (SANDAG)
- HHSA provided $350,000 through a CDC grant, funding the purchase and installation of 35 counters at 26 sites.

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
  - Travel demand models
  - Proprietary consultant models

Forecasting Future Bicycle Travel
Benefit-Cost Analysis of Bicycle Facilities On-Line Tool

- Key features:
  - Easy to use
  - Customizable: can substitute detailed local data for Census data for greater accuracy
  - Can estimate facility costs and economic benefits
- Major data inputs:
  - Location
  - Year of construction
  - Facility type
  - Bike commute share
  - Residential density
  - Facility length

[Map of San Diego County showing locations of installed counters]
**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](http://www.pedbikeinfo.org/bikecost/index.cfm)

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**Case Study: East Bay Greenway**

**Alameda County Transportation Commission**

- Funded ATP Project Cycle 1: Trail Planning and Design
- Estimated bicyclists and pedestrians
- Linear regression of counts from 5 existing Alameda County trails. Accounted for:
  - Population and job density
  - Part of inter-jurisdictional trail
- Intercept surveys from other trails used to estimate:
  - Future number of bicyclist and pedestrian users
  - Recreational and utilitarian trips
- Analysis also included estimates of VMT reduction, health benefits, and other variables

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**Case Study: East Bay Greenway**

**Alameda County Transportation Commission**

- Future users estimated by trail segment

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**Case Study: Downtown Bicycle and Pedestrian Improvements**

**City of Pomona**

- Funded ATP Project Cycle 1: crossing improvements
- Methodology based on NCHRP 552 (*Benefit-Cost Analysis of Bicycle Facilities*)
- Data collection by volunteers from L.A. County Bicycle Coalition
- Key Data Inputs – current and future bike/ped trips
  - Census and ACS – commute trips and population for travel shed
  - Accounted for high rates of bicycling and walking in higher density areas
  - Accounted for non-commute trips
  - Future bike/ped travel based on population projections
- Data Outputs
  - Commute share, total bikes/peds, total bike/ped trips
Case Study: Downtown Bicycle and Pedestrian Improvements  
City of Pomona  
- Data collection by volunteers from L.A. County Bicycle Coalition

Case Study: Safe Connections and Complete Streets for West Side  
City of Hollister  
- Funded ATP Small Urban/Rural Cycle 3 : SRTS  
- Project includes sidewalk, bike lane, and infrastructure improvements  
- Documented current use with:  
  - Video counts of vehicles and pedestrians at intersections  
  - AM/PM manual counts of students entering campus  
  - Parent survey from SRTS plan

Case Study: Rincon Multi-Use Trail  
Santa Barbara County Assoc. of Governments  
- Funded ATP Small Urban/Rural Cycle 3  
- Construct multi-use trail over railroad to fill gap in CA Coastal Trail  
- Documented use using:  
  - Motion-detector camera to document trespassers on UPRR ROW  
  - Caltrans bicyclist count on U.S. 101  
  - Estimated 10-20% of park users using proposed trail

Case Study: SRTS, East Riverside (non-infrastructure)  
Riverside County DPH  
- Funded ATP Project, Statewide Cycle 2 SRTS  
- Expansion of pilot “chaperone,” student walk to school ambassadors, and education program  
- Documented use with:  
  - Manual counts by existing chaperones  
    - Growth projected at 10% per station  
  - School enrollment data used estimate total # of students within walking distance along key corridors
Forecasting Future Bicycle and Pedestrian Travel

Trail Traffic Calculator

- Use short-duration counts to develop annual trail use estimates
- Based on U.S. Department of Energy climatic zones to reflect geographic variations in trail use patterns
- Developed by Rails-to-Trails Conservancy, available at: https://www.railstotrails.org/trailcalculator/

Incorporating Evaluation Tools into Project Design

- Evaluation required by ATP
- Build measures into project design – quantitative and qualitative
- Counting equipment and final project evaluation activities (post-project) cannot be part of project cost
- Utilize partnerships – cost effective, build community support

Questions/Comments?