Dero ZAP!
a model for incentivizing and tracking bicycling in an urban core

Andrew Rankin
Programs & Communications Coordinator
About Commuter Connection

- Transportation Management Organization
- Commuter Connection was created by the City Council in 1991 as a public-private partnership of the City of Minneapolis and downtown business community to:
  - maximize the use of existing transportation infrastructure
  - reduce traffic congestion
  - improve air quality
  - encourage and facilitate mode shift to non-drive-alone traffic
- Funded by a Congestion Mitigation and Air Quality (CMAQ) grant
About Dero ZAP!

- Dero is a bicycle parking company based out of Minneapolis
- ZAP! system was initial developed for SRTS programs
- ZAP! utilizes RFID technology to track bicycles
- ZAP! unites are easily moveable
About downtown Minneapolis

- Largest employment center in Minnesota with over 139,000 jobs
- 26% or 36,000 of individuals working in downtown live within 5 miles
- Approximately 45% of downtown commuters use alternative modes of transportation
How Dero ZAP! Works

1. Participants attach a tamper-proof RFID to their bike. The administer links the RFID tag to the participant.

2. Readers are placed. Commuters bike through the read zone to register their bike trip.

3. Participants can also record their trips and check how many trips they have accumulated online.

4. System administrators can view data and incentivize participants
How Dero ZAP! Works
Program Goals

• Automatically tracking bicyclers entering the downtown Minneapolis core using RFID technology
• Incentivize bicycling for program participants
• Education and Outreach
• Provide data to employers, property managers, city and other transportation partners
• Work with employers and property managers to increase bicycle friendliness at worksites in downtown Minneapolis
• Complete feasibility study with insurance industry to utilize program to reduce health insurance costs
Program Model

1. New participants bring their bikes in and an administrator attaches a tamper-proof RFID tag to their bike. The administrator links the RFID tag to the participant via a web-based interface. The participants bike is also registered with the National Bicycle Registry.

2. Readers are placed around the perimeter of downtown Minneapolis. Each reader is surrounded by a clearly indicated zone. Commuters bike through the read zone to register their bike trip and points are automatically applied to the commuters account. For each trip commuters are awarded 1 point to be used to redeem bicycle gear and services online.

3. After parking their bikes and sitting down at their desks, commuters can log in to a web site and check how many times that month they have been counted and how many points they have collected!

4. Participants can log in and redeem their points on an online store. The administrator can log in to the web site and download participant usage data.
ZAP! Installation

All counts were conducted by the City of Minneapolis in September 2007, 2008 & 2009.
1. Apply for grants
   - Grantors have been reluctant to fund a technology that is being utilized for a new purpose

2. Pass cost to program participant
   - Cost is too high to recoup through program participants

3. Pass cost to employers
   - Employers must see value in system prior to investing
Funding Models

4. Hybrid Funding model
   – Phased roll-out
   – Partnering with several local organizations to test and expand system
   – Initial cost of program will be paid for through already secured CMAQ dollars
   – Bike industry partners will provide cost-share funding model for incentives
   – Employers will be charged nominal fee to access data and for a branded ZAP! website
Partnerships

• University of Minnesota
  – Integrate system in to already established U of M system

• St Paul Smart Trips
  – Leverage CMAQ funding to establish system in downtown St Paul
  – Integrate systems
Next Steps

• Reprogram for phased role-out
• Establish formal partnership agreements
• Secure required variances for installation
• Develop program materials and advertising campaign
• Establish pilot employer sites
• Install ZAP! devices and launch program
• Promote program/sign up participants at pilot worksites
Questions?

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Programs & Communications Coordinator

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PEDESTRIAN PLANNING INDICATORS

Gizachew Andargeh
DC Office of Planning

District of Columbia Office of Planning
DC OFFICE OF PLANNING

Mission:
The Mission of the Office of Planning (OP) is to guide development of the District of Columbia, including the preservation and revitalization of our distinctive neighborhoods, by informing decisions, advancing strategic goals, encouraging the highest quality outcomes, and engaging all communities.
SMALL AREA PLANS (SAP)

Elements of a Small Area Plan:

- Existing conditions analysis: identify neighborhood strengths, opportunities, etc.
- Market study: determines supportable retail, office, and housing square footage
- Development framework: provides guidance on the intensity of development and urban design guidelines
- Community development agenda: topic based goals and action items
- Implementation strategy: resources, partnerships, and responsibilities
14th St. and Walkscore

The plan analyzes land use, public realm and market potential for three commercial nodes along 14th Street.

Public Realm Goal: Improve the aesthetics along the 14th St. corridor while improving the pedestrian safety and connectivity.
BENEFITS AND DRAWBACKS

Benefits

● Great quantitative measure of varying types of neighborhood amenities

● Helpful when making real estate decisions (residential & commercial)

● Good benchmark for walkable urbanity

Drawbacks

● No qualitative measure of those neighborhood amenities

● Until recently worked on radius system, i.e. not realistic walking paths

● Lack of synergy with other online tools, e.g. Yelp, Crime Report, etc.

● No historical baseline
FUTURE USES OF WALKSCORE

DCOP will continue to use Walkscore as a point of reference:

a) Implementations indicator

b) Correlating increased health benefits to an increase in walkable urbanity

c) Assisting in advertising neighborhoods for increased retail & residential development
PEDESTRIAN PLANNING INDICATORS

Thank you!

Gizachew Andargeh
DC Office of Planning
CycleTracks App for Android and iPhone

Elizabeth Sall, San Francisco County Transportation Authority
Outline

1. Why make CycleTracks?
2. What does CycleTracks do?
3. Who used CycleTracks and why?
4. What data did we get from CycleTracks?
5. What did we do with that data?
6. Evolution and future of CycleTracks
1. Why CycleTracks?
Why CycleTracks?

• Need to prioritize projects, including bike projects.
  – calculate changes performance metrics associated with bike infrastructure investments
  – bike route choice model that evaluates tradeoffs that cyclists are willing to make to use bike infrastructure (AKA the “value” associated with them)
  – bike route choice data (on a budget)
2. What does CycleTracks do?
Enter personal data (optional)

CycleTracks

Thanks for using CycleTracks! Please enter your user details here. It's optional, anonymous, and will really help us understand different people's biking preferences.

Age
29

Male  Female

Cycling Frequency:  Several times per week

Home ZIP  Work ZIP  School ZIP
94110  94102  School

Email address: for news and updates !!
cycletracks@sfcta.org
Enter New Trip

The primary reason for this bike trip is going to or from a social activity (e.g. at a friend's house, the park, a restaurant, the movies).
Review Saved Trips

- **Shopping:** 0m
  - Oct 27, 2009 10:12:56 AM
  - (recording in progress)

- **Social:** 2806m
  - Oct 22, 2009 7:35:36 AM
  - (trip saved & uploaded)

- **Commute:** 0m
  - Oct 21, 2009 9:38:14 AM
  - (trip saved & uploaded)

- **Commute:** 2481m
  - Oct 21, 2009 7:59:27 AM
  - (trip saved & uploaded)
That’s it?

- Bells and whistles could promote deviation from planned route.

3. Who used CycleTracks and Why?

- User Recruitment
- Participants
SF Transportation Authority Launches iPhone App to Track Cyclists
by Matthew Roth on November 12, 2009

The San Francisco County Transportation Authority (TA), the city's congestion management agency responsible for modeling transportation and development patterns, has released its new bicycle route data application, Cycle Tracks, for iPhones and GPS-enabled iTunes players at the iTunes store. Like similar applications that give information such as speed and distance traveled, users of the TA app can map their bicycle ride, but the data they collect will be aggregated anonymously in the TA's server so that it can be applied to their SF-CHAMP modeling and travel forecasting tool.

"This app will help the cycling community help itself," TA Executive Director José Luis Moscovich said in a statement. "The data they log will contribute to better planning of bicycle facilities, and they'll also have a record of their personal cycling history. I'm sure it will be very popular."

Billy Charleton, Deputy Director for Technology Services at the TA, explained that SF-CHAMP doesn't currently have
Wrong location spot
When I ride home at Howard and Spear, it sometimes puts my location in the bay, just north of the bay bridge. This seems to nullify my recording.

January 10 at 7:50pm · Participate

Recent activity
Jennifer Gile discussed Cycletracks on Android on the CycleTracks discussion board.
Dave Mangot discussed Cycletracks on Android on the CycleTracks discussion board.
Billy Charlton and Dave Mangot discussed Cycletracks on Android on the CycleTracks discussion board.

Dave Mangot
Cycletracks on Android
I tried recording two different trips on my Samsung Moment (cupcake) and in both cases, it said 0 miles. After that I discovered that after I hit Start Trip it says elapsed time 1 second, and that's the end. Never advances past one second. (and thus, my distance, etc...)

December 16, 2009 at 10:13am · Participate

Jeffrey Carl Faden
Cycle Tracks
@CycleTracks  San Francisco
CycleTracks uses the iPhone’s GPS support to track users’
bicycle trip routes. CycleTracks is a mopimp
production. ©2009 SFCTA.
http://www.sfcta.org/CycleTracks

About @CycleTracks

You and @CycleTracks
You follow accounts that follow @CycleTracks · view

Similar to @CycleTracks · view all

Wuss912 Follow
Unbomber in Training, We are the cyclists the inter...
mopimp Follow
Feeling less pimp? Give us a call. We can help! Let’s ...
AmericanCyclery Follow
Purveyor of the finest bicycles since 1941

Following · view all

About Help Blog Mobile Status Jobs Terms Privacy
Shortcuts Advertisers Businesses Media Developers
Resources © 2011 Twitter
Participants: who gave us data?
SF Participants: Fall 2009 to Spring 2010

<table>
<thead>
<tr>
<th></th>
<th>CycleTracks N-366</th>
<th>BATS N=153</th>
<th>z-stat</th>
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<tbody>
<tr>
<td>Age Mean</td>
<td>34</td>
<td>33</td>
<td>1.1</td>
</tr>
<tr>
<td>Gender Female</td>
<td>21%</td>
<td>36%</td>
<td>-3.5</td>
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<tr>
<td>Cycling Frequency</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daily</td>
<td>60%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Several Times/Week</td>
<td>34%</td>
<td></td>
<td></td>
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<tr>
<td>Several Times/Month</td>
<td>7%</td>
<td></td>
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</tr>
<tr>
<td>Less than once a month</td>
<td>0%</td>
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</table>
4. What data did we get?
- Data Quality
- Data Summaries
Data Quality: some good, some bad
Urban Canyon Effect

Downtown VS Haight Ashbury
GPS Signal at Beginning of Trip
Not on a Bike
Post Processing Warranted

5,178 traces
497 users

Gaussian smoothing

Activity & mode detection

Map matching

3,034 bike stages
366 users

(Schüssler & Axhausen 2009)
5. What did we do with the CycleTracks Data?
Matched Route Features to the Chosen Route...
...as well as to a set of routes that were not chosen
What makes us choose one bike route over another?

Route Choice Model

- Personal Info
- Trip Features
- Route Features of Available Routes
- Which route was chosen?
Estimation results

<table>
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<tr>
<th>Attribute</th>
<th>Coef.</th>
<th>SE</th>
<th>t-stat.</th>
<th>p-val.</th>
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<tbody>
<tr>
<td>Length (mi)</td>
<td>--1.05</td>
<td>0.09</td>
<td>--11.80</td>
<td>0.00</td>
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<tr>
<td>Turns per mile</td>
<td>--0.21</td>
<td>0.02</td>
<td>--12.15</td>
<td>0.00</td>
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<tr>
<td>Prop. wrong way</td>
<td>--13.30</td>
<td>0.67</td>
<td>--19.87</td>
<td>0.00</td>
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<tr>
<td>Prop. bike paths</td>
<td>1.89</td>
<td>0.31</td>
<td>6.17</td>
<td>0.00</td>
</tr>
<tr>
<td>Prop. bike lanes</td>
<td>2.15</td>
<td>0.12</td>
<td>17.69</td>
<td>0.00</td>
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<tr>
<td>Cycling freq. &lt; several per wk.</td>
<td>1.85</td>
<td>0.04</td>
<td>44.94</td>
<td>0.00</td>
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<tr>
<td>Prop. bike routes</td>
<td>0.35</td>
<td>0.11</td>
<td>3.14</td>
<td>0.00</td>
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<tr>
<td>Avg. up-slope (ft/100ft)</td>
<td>--0.50</td>
<td>0.08</td>
<td>--6.35</td>
<td>0.00</td>
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<tr>
<td>Female</td>
<td>--0.96</td>
<td>0.22</td>
<td>--4.34</td>
<td>0.00</td>
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<tr>
<td>Commute</td>
<td>--0.90</td>
<td>0.11</td>
<td>--8.21</td>
<td>0.00</td>
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<tr>
<td>Log(path size)</td>
<td>1.07</td>
<td>0.04</td>
<td>26.38</td>
<td>0.00</td>
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2,678 weighted observations, $\rho^2 = 0.28$
## Average marginal rates of substitution

MRS of Length on street for:

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<th></th>
<th>Value</th>
<th>Units</th>
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<tr>
<td>Length on bike paths</td>
<td>0.57</td>
<td>none</td>
</tr>
<tr>
<td>Length on bike lanes</td>
<td>0.49</td>
<td>none</td>
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<tr>
<td>Length on bike routes</td>
<td>0.92</td>
<td>none</td>
</tr>
<tr>
<td>• Length wrong way</td>
<td>4.02</td>
<td>none</td>
</tr>
<tr>
<td>• Turns</td>
<td>0.10</td>
<td>mi/turn</td>
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<tr>
<td>Total rise</td>
<td>1.12</td>
<td>mi/100ft</td>
</tr>
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</table>

**User benefit of bike lanes:** $0.98 per mile per trip
Bike Accessibility in SF-CHAMP

Auto Route Choice -> Transit Route Choice -> Accessibility -> Travel Pattern for the Day -> Mode Choice -> Bike Route Choice

Workplace Location Choice -> Auto Assignment

Transit Assignment -> Bike Assignment

Vehicle Availability -> Bicycle Availability
SF-CHAMP Predicted Bike Trips

Bikes / hour

0  180
20  360

SF-CHAMP v4.1 “Harold”
6. Evolution and Future of CycleTracks
All Open Source

- GPL3 License
- Code on GitHub
- Fork us!

www.github.com/sfctca
e.g. AggieTrack

http://aggietrack.com
CycleTracks Works Everywhere...

• We already have the database set up
• Agencies can download “scrubbed” data

Austin, TX
Monterey Bay, CA

...and more!
Where: Santa Clara San Francisco San Mateo Monterey Austin
Or enter in latitude: 30.267074 and longitude: -97.742958
Latitude Max Dist: 1
Longitude Max Dist: 1
Type: Map Table CSV (will trigger file download; recommended for large counts)
Count: 100
Start index: 0

Found 3040 trips. Showing 0 - 99. The lat/long bounding box is shown in dark grey.
## Credits

<table>
<thead>
<tr>
<th>Development</th>
<th>Support</th>
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<tbody>
<tr>
<td>Billy Charlton</td>
<td>Matt Paul</td>
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<tr>
<td>Lisa Zorn</td>
<td>Caltrans</td>
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<tr>
<td>Michael Schwartz</td>
<td>Prop-K Sales Tax</td>
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<td>Jeff Hood</td>
<td>NSF</td>
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<tr>
<td>Outreach</td>
<td>Nadine Schussler</td>
</tr>
<tr>
<td>Bay Area Bike Coalition</td>
<td>Kay Axhausen</td>
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<td>San Francisco Bike</td>
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<td>Coalition</td>
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PBIC Livable Communities Webinar Series
Questions?

elizabeth.sall at sfcta dot org

www.sfctta.org/cycletracks