



DATE: November 30, 2016

AGENDA ITEM # 4

**TO:** Bicycle/Pedestrian Advisory Commission and  
Planning/Transportation Commission

**FROM:** Cedric Novenario, Staff Liaison

**SUBJECT:** Strava Data

**RECOMMENDATION:**

Receive a report regarding Strava data opportunities

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**BACKGROUND**

Strava is a San Francisco based social network for cyclists and runners. Strava uses a website (<https://www.strava.com/>) and a mobile application to upload, track, share user travel data and socialize within their network. There are 12,907 unique cycle users of Strava, with 7,222 being commute type use. There are 3,799 unique pedestrian users.

The Bicycle Transportation Plan subcommittee identified Strava as a data source that could potentially aid in any revisions to the Bicycle Transportation Plan.

**DISCUSSION**

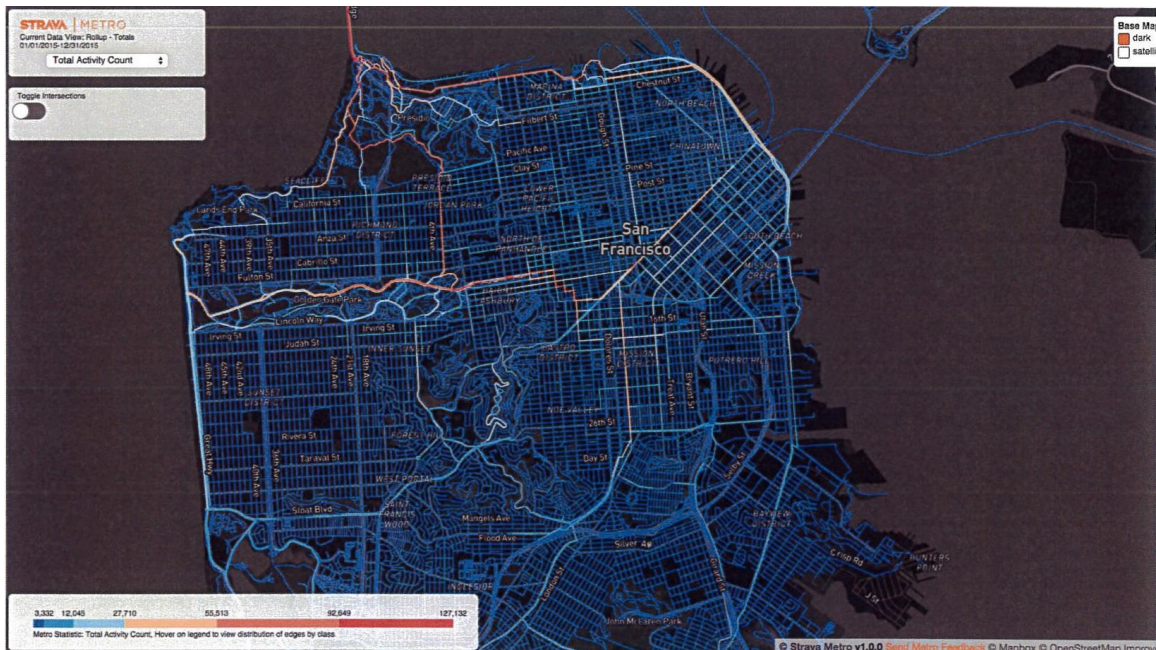
On November 17, 2016 staff from the Economic Development Division and Transportation Division held a conference call with Strava staff to discuss their data package services entitled, Strava Metro. Strava records over seven million activities a week worldwide (note, user data is anonymous). The typical types of cycling trips that are recorded are:

- Commutes
  - User initiated via web or app
  - Activity titled initiation, e.g “Tuesday Ride to Work”
  - Geo-spatial Matching – Point to Point with distance and time
- Recreation
  - Every recreation ride that starts in an urban setting commutes to the recreation portion
- Trails
  - On and off road matching rides

There are three core components of Strava Metro data (note, the majority of their presentation focused on the cycling mode of travel, but pedestrian data is also available):

- Streets – Strava can extract bicycle and pedestrian counts from users at a street level, minute-by-minute
- Origin/Destination – When users log-in to begin tracking their activity and progress, Strava, can determine origins and destinations at a regional level.
- Intersections – Strava can extract bicycle and pedestrian counts and track their wait times at intersections before passing through

The strength of Strava data is the ability to overlay their bicycle and pedestrian user data over Geographic Information Systems (GIS) platforms like ARC GIS, which is the GIS platform Los Altos is looking to switch to. Below are some examples of layering Strava data with ARC GIS and the types of data that can be extracted (Four short Strava videos will also be presented at the Commission meeting):



- This photo depicts the number of Strava users traveling through the streets of San Francisco.
- Diagrams and charts can also be developed to depict time of day vs. mode travel count for a particular street segment



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### Strava Metro Correlation to Counting Programs

Metro's use and impact is multiplied when the data is used in conjunction with an established counting program.

Counting programs only show saturation at a single point and dilute from there.

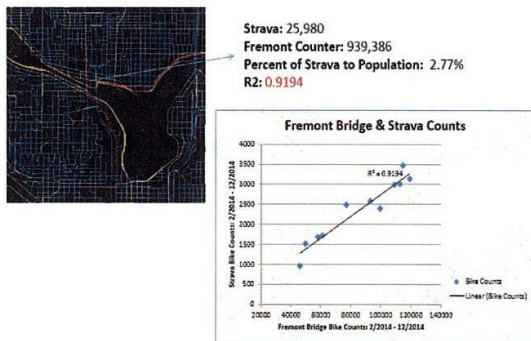
Metro shows the rest of the network – it is like a counter on every corner.



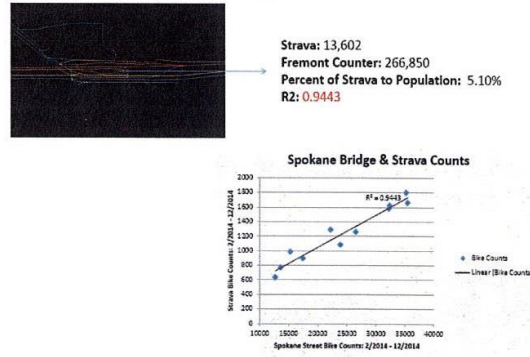
- Strava data can complement single spot location manual counts.

### Correlating Strava to Counting Programs Cont'

#### Fremont Bridge Bike Counts




#### Spokane Bridge Bike Counts



Using counting programs with the Metro data allows the data to become even more useful. Strava correlation with counting programs is statistically amazing, with r-squared values typically around 0.8.

- Example of use of Strava data vs. manual count data. This example determines the number of Strava users vs. the total amount of cyclists. Using this data, Strava data can be extrapolated City-wide to predict cyclist or pedestrian usage on corridors.



## Seattle Department of Transportation

Combining bike count and collision data with Strava Metro data.

SDOT uses Strava Metro to:

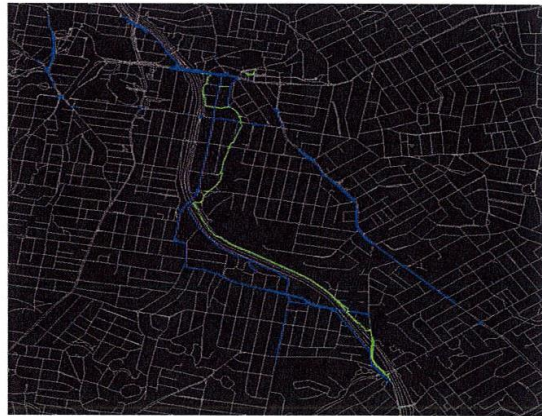
- Understand preferred routes
- Identify problem areas for vehicle/bicycle collisions.
- Model characteristics of dangerous roads

*“What we’ve really focused on is combining our count data with Strava to give us a broader picture of what’s happening with cycling across the city. The combination has really proved valuable because it’s allowing us to say things about parts of the network we didn’t have any data on.”*

- Craig Moore, SDOT traffic data and records group

- Strava can help local agencies identify highly used bike routes.
- Strava count data can be overlaid on traffic collision data recorded on GIS
  - This can help guide City Council to identify needed safety and infrastructure improvements.

### Strava Metro Validating Investment in Cycling Infrastructure



Impact can be felt 10 - 20 blocks away from the point where the infrastructure was enhanced. Blue areas on the right lost over 100 bike trips while the green gained 100+.

- Strava can verify the use and effectiveness of new infrastructure based on user counts. This type of analysis is especially effective for obtaining outside funding sources.



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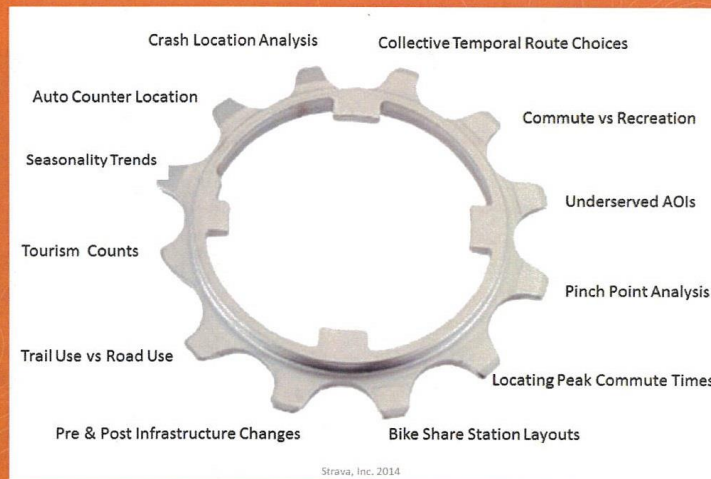
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## Additional Data Uses from Customers

- Understand cycle and road network impacts of new infrastructure
- Identify gaps in cycling network where facilities are unsuitable or not yet provided
- Route choice analyses and journey purpose
- Identify peak days and hours indicative of cyclist usage
- Understand cycle network usage (state-wide, on and off-road)
- Locating route preferences between on-road and off-road facilities
- Assess cyclists diversions to plan either new infrastructure or roadworks detours.
- Bikeway discovery and asset inventory to improve base-map.
- Wayfinding and focal point mapping
- Justify the case for facilities that will meet a network need
- Immediate fact checking and evidence to prove at a 'high level' indication of cycling activity
  - Especially in remote areas where no other data is available.
- Plan and identify traffic survey or bike counter locations
- Overlaying existing data sets for deeper and more complete analyses
  - Supplement existing traffic surveys
    - Revealed preference vs. stated preference
  - Cross reference with crash data:
    - Provide information on safety benefits of new off-road bikeways.
    - Understand characteristics of both safe and dangerous roads

STRAVA | METRO

## What else is Metro being used for?



STRAVA | METRO

Some questions to consider regarding Strava data:

- Is the Strava community in Los Altos actively using Strava so that the data can be trusted or dependent on to help make decisions?
- Are they primarily focused on heavily used routes like Foothill Expressway, San Antonio Road; will it tell us anything different from what we already know?
- Regarding wait times at intersections, how accurate is that knowing that some cyclists do not stop at stop signs or traffic signal locations.

For more Strava information and case studies, please see the following links below:

- [http://cdn2.hubspot.net/hubfs/1979139/Strava\\_Metro\\_Seattle\\_DOT\\_Case\\_Study.pdf](http://cdn2.hubspot.net/hubfs/1979139/Strava_Metro_Seattle_DOT_Case_Study.pdf)
- [http://cdn2.hubspot.net/hubfs/1979139/Strava\\_Metro\\_Queensland\\_Case\\_Study.pdf](http://cdn2.hubspot.net/hubfs/1979139/Strava_Metro_Queensland_Case_Study.pdf)
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