UBDC Active Travel Data Challenge Day

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What is Strava?
What is Strava?
The social network for cyclists and runners
Tens of Millions of users around the world (80% outside the US)

About 140 employees: HQ in SF, small offices in Bristol, UK and Hanover, NH

More than 10 million activities uploaded every week

16 activities uploaded every second

Over 3 trillion GPS data points collected globally
What is Strava Metro?
Strava Metro Mission Statement

To produce state-of-the-art spatial data products and services to make cycling, running, and walking in cities better.
What is Strava Metro?

- Aggregated, anonymized activity data from Strava’s tens of millions of users
- Allows for analysis of popular or avoided routes, peak commute times, intersection behavior times, and origin/destination zones
What is Strava Metro?

- **Enterprise**: Processed for compatibility with Geographic Information System (GIS) and relational database environments

- **DataView**: in-browser visualization
What is Strava Metro?

- Began when the first Strava Global Heatmap was published
- High demand for quantifiable bicycle and pedestrian data
Just use the heatmap?

What is the heatmap good for?

No temporal scale

Point saturation, not use saturation

Large cropping of start and ends

Showing that people ride bikes

Starting dialogues with the community

Editing your basemap / finding missing geometry
Strava Metro Data

Streets
Minute-by-minute counts across your entire network

Origin / Destination
Understand activity starting and ending points, by region

Intersections
Activity counts and wait times at every intersection
Why Build Strava Metro?

- Global need for consistent cycling data
- Continues to serve the Strava user
- Further bonds the cycling and pedestrian community
- It’s the right thing to do
Discovery

- Justification that people ride bikes
- When and what changes riding frequency
- Locating intersection hot zones and possible route conflicts
Static Maps

Used to discover key routes and corridors

- **Florida** - to prioritize street sweeping/cleaning
- **Vermont** - to prioritize snow plowing and state cycling tourism
Online Maps

Oakville, Ontario

- Display map for public
- Explain why new and improved infrastructure is justified
- Back-up requests with data
Story Maps

Brampton, Ontario

- Popular streets and trails from Strava Metro
- Announcements / Events calendar
- Linked with their Twitter account
- Community rides
- Active Transportation Master Plan information
Core Routes - Temporal

Rock Creek Park, Washington, DC

- Rock Creek Park is closed to cars on weekends and holidays
- Many more activities on safer roads when cars not present
Locating Missing Geometry

Using the Strava Heatmap

- Tile layer file that can be opened in ArcGIS or QGIS
- Overlaid with basemap to locate missing / misaligned geometry
Implementation

- Identify top Origin and Destination pockets
- Isolate speed and volumes to begin to locate slow down regions
- Evaluate the impact of new cycling investments
- Blending of count data with Strava Metro data to correlate and extrapolate
Origin / Destination Data

Use the starting and ending polygon to locate key zones

- Using a relational database (such as Postgres) to query for counts of activities that started in each polygon
- Can also query by destination
Delta Analysis

Queensland, Australia
Bike Count Correlation

Seattle, Washington

- Strava Metro’s use and impact is multiplied when used in conjunction with an established counting program
- Counting programs show saturation at a single point, and dilute from there
- Strava Metro shows the rest of the network
Bike Count Correlation

Fremont Bridge Bike Counter

Spokane Street Bike Counter
Bike Count Correlation

Seattle, Washington

Fremont Bridge Bike Counts

- Strava: 25,980
- Fremont Counter: 939,386
- Percent of Strava to Population: 2.77%
- R²: 0.9194

Spokane Bridge Bike Counts

- Strava: 13,602
- Fremont Counter: 266,850
- Percent of Strava to Population: 5.10%
- R²: 0.9443
Bike Count Correlation

Seattle, Washington

16,297 bike trips x 27 (multiplier) = 440,019 bike trips in 2014
63,253,198 bike miles traveled
Prediction

- Safety prediction modeling
- Building routing engines to isolate cycling habitat fragmentation
- Generate cycling traffic demand models
Crash Analysis

Seattle, Washington

- Overlaid Strava Metro data with crash data
- Created a model of dangerous infrastructure characteristics
- Prioritized improvements
Routing

Use and safety instead of road class and speed
OD Demand Modeling

Washington, DC

- Morning commutes to the city center
Thank you!