UBDC Active Travel Data Challenge Day

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Customer Success GIS Engineer

What is Strava?

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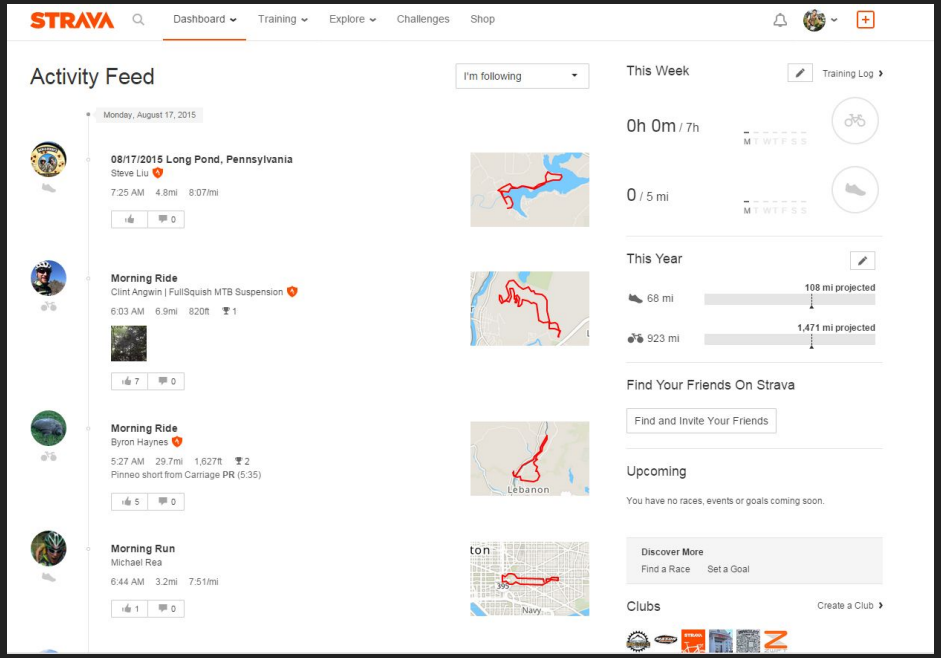
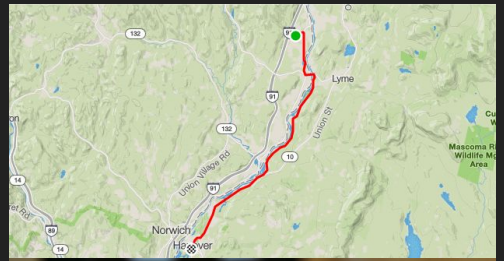
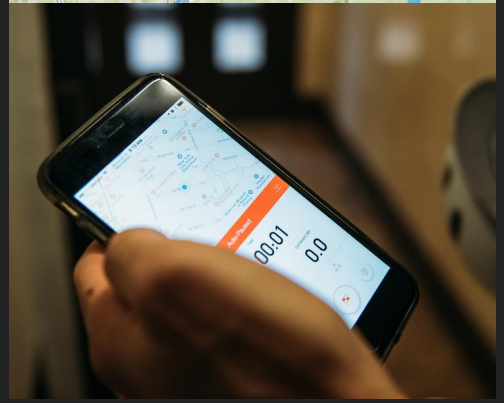
The social network for cyclists and runners





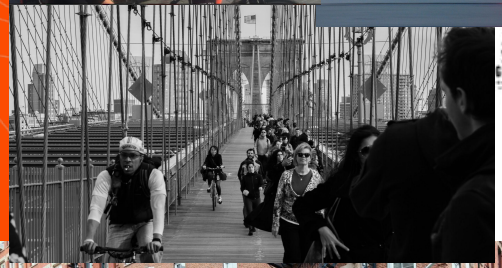
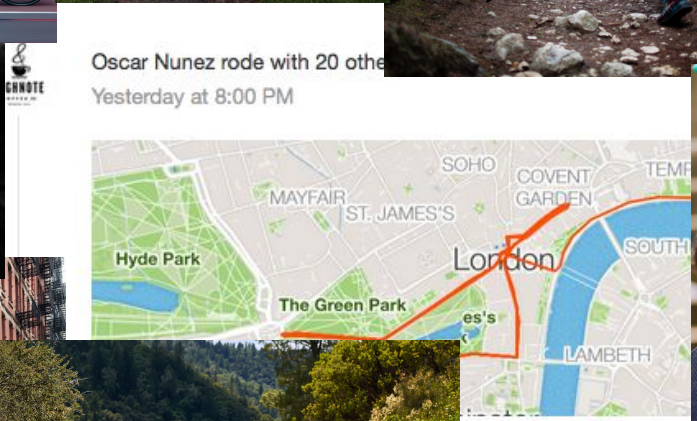



Tens of Millions of users around the world (80% outside the US)
About 140 employees: HQ in SF. small offices in Bristol. UK and Hanover, NH
More than 10 million activities uploaded every week
16 activities uploaded every second
Over 3 trillion GPS data points collected globally
2017

The Heart of Strava: Community










STRAVA | METRO

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.

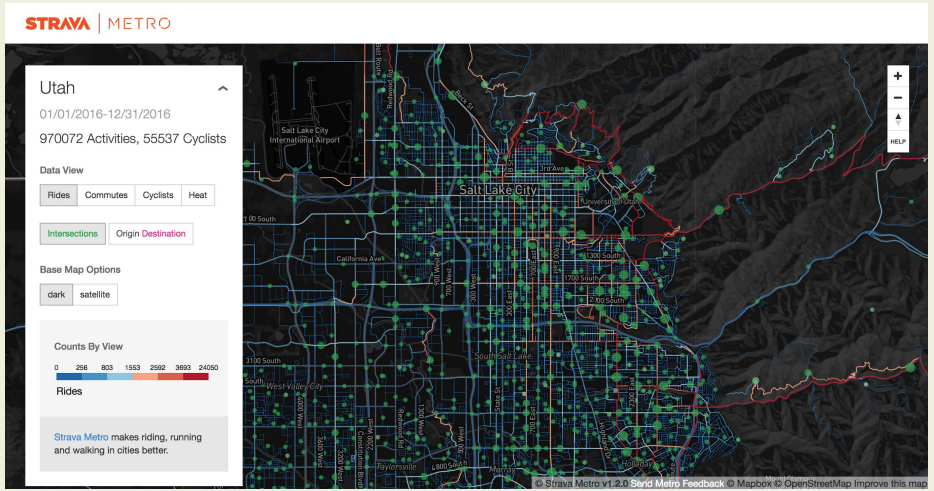
What is Strava Metro?

- 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?

No temporal scale

Point saturation, not use saturation

Large cropping of start and ends

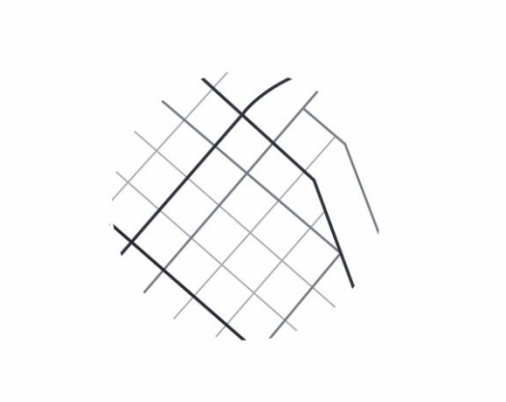
What is the heatmap good for?

Showing that people ride bikes

Starting dialogues with the community

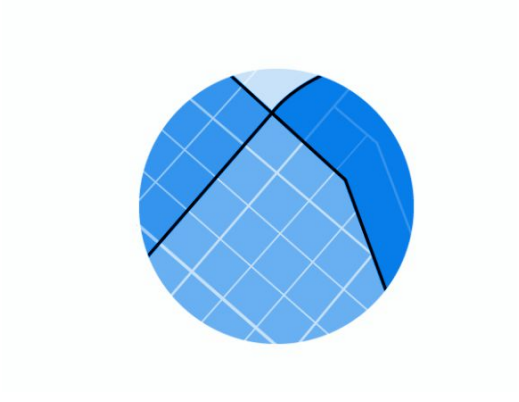
Editing your basemap / finding missing geometry

Strava Metro Data



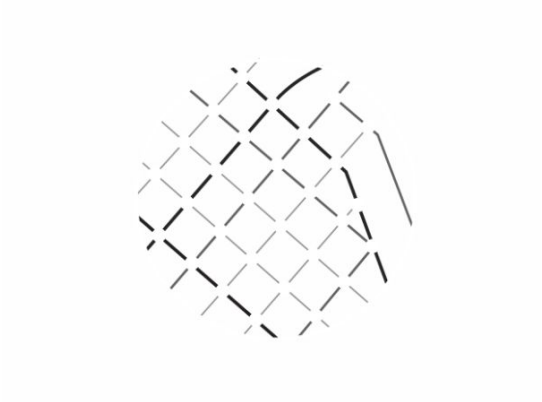
Streets

Minute-by-minute counts across your entire network



Origin / Destination

Understand activity starting and ending points, by region

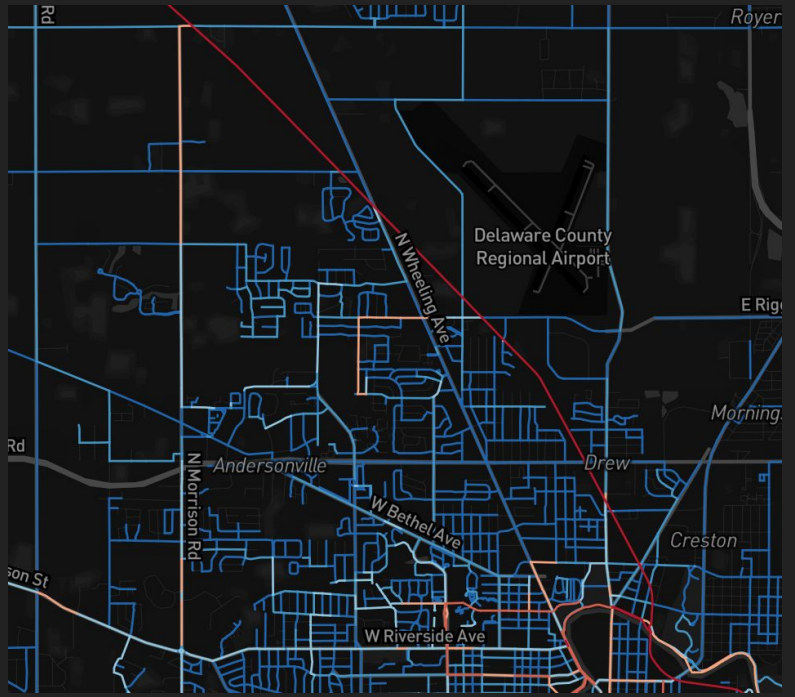


Intersections

Activity counts and wait times at every intersection

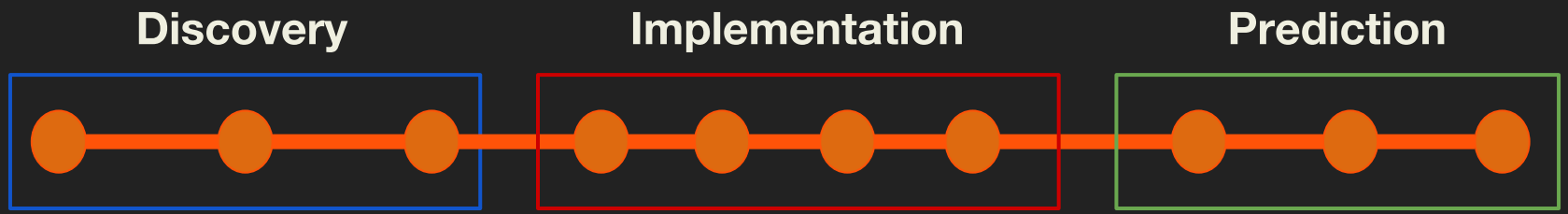
Why Build Strava Metro?

- 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



Strava Metro
Global Use Cases

Bike/Ped Planning Spectrum



Discovery

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

Static Maps

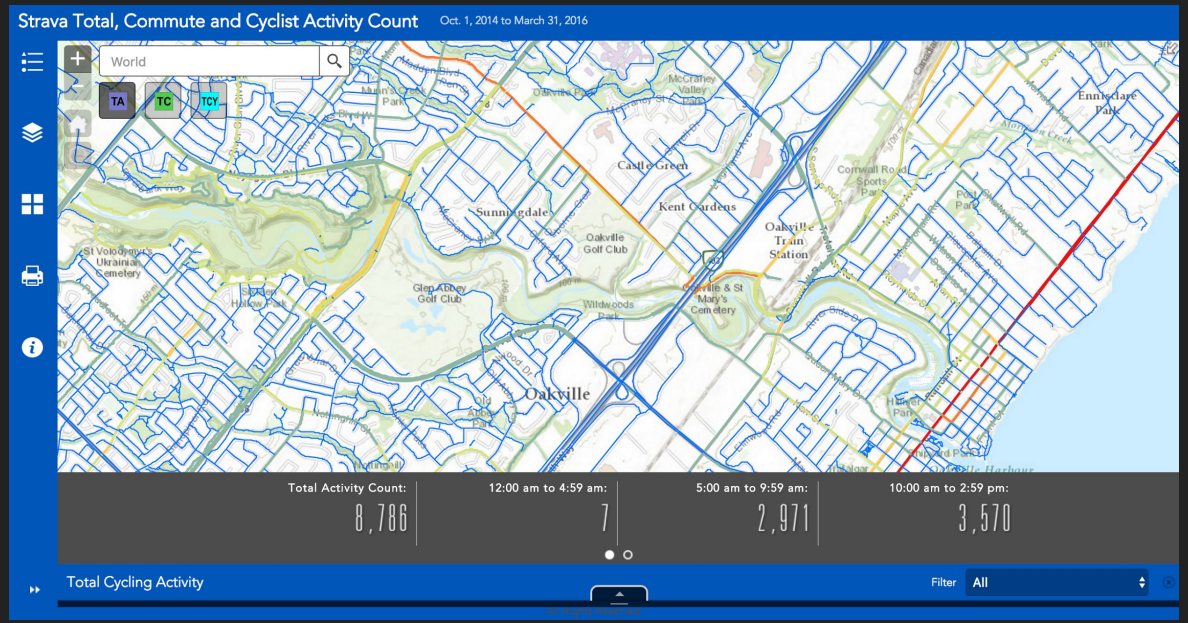
Used to discover key routes and corridors

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

Online Maps

Oakville, Ontario

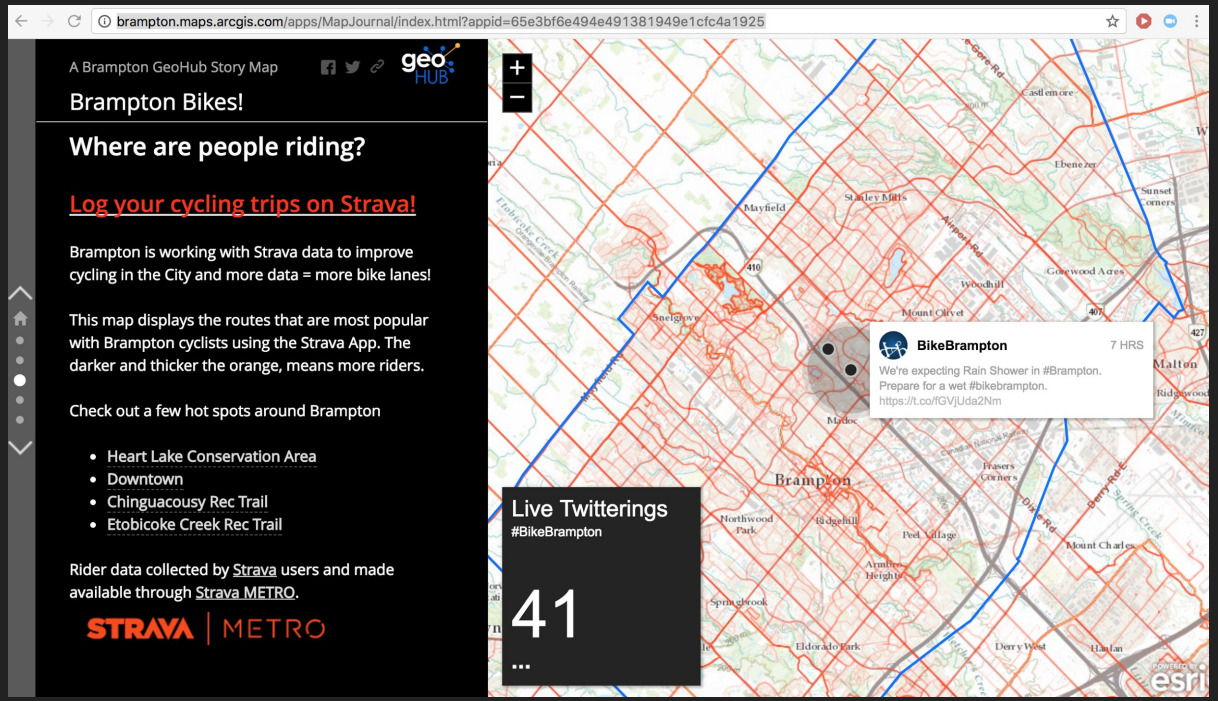
- Display map for public
- Explain why new and improved infrastructure is justified
- Back-up requests with data



Story Maps

Brampton, Ontario

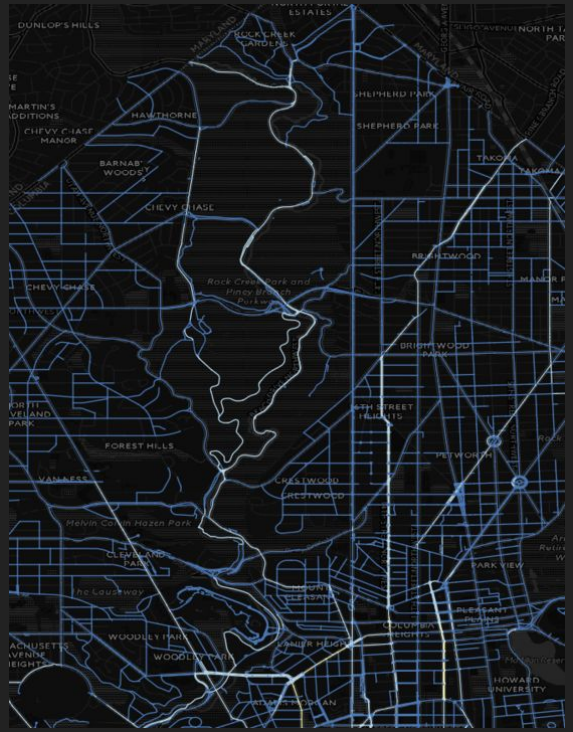
- Popular streets and trails from Strava Metro
- Announcements / Events calendar
- Linked with their Twitter account
- Community rides
- Active Transportation Master Plan information



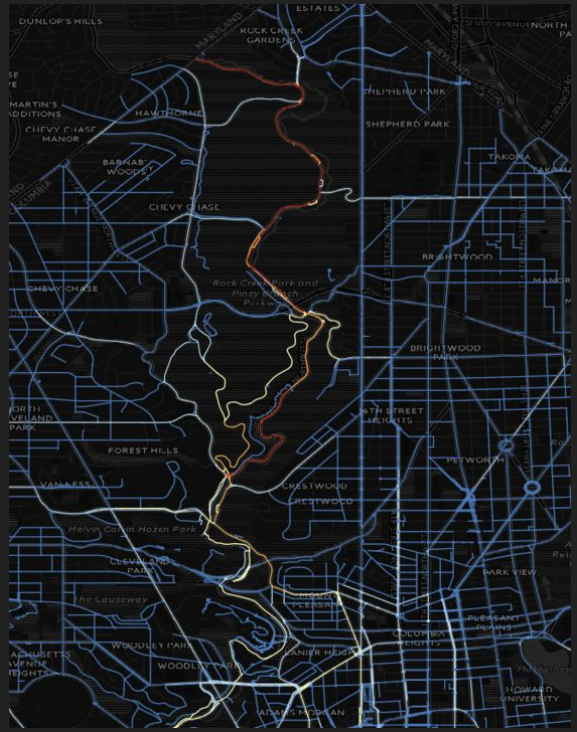
Core Routes - Temporal

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



Weekday



Weekend

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

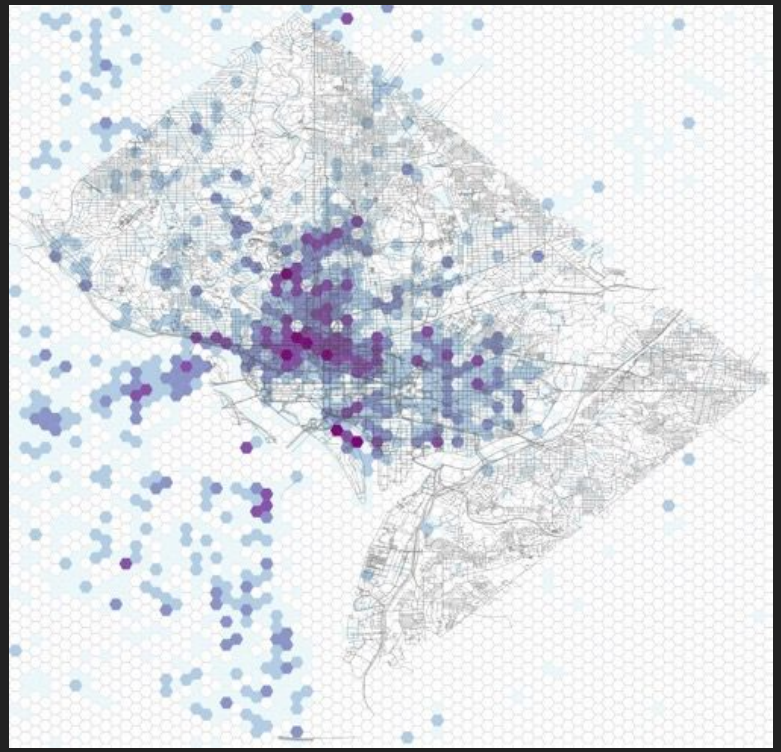
Implementation

- 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

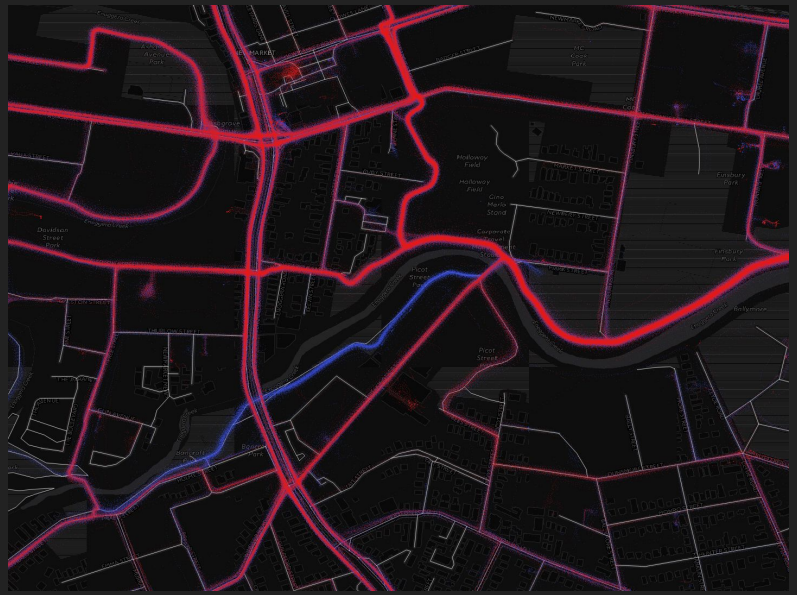
Use the starting and ending polygon to locate key zones

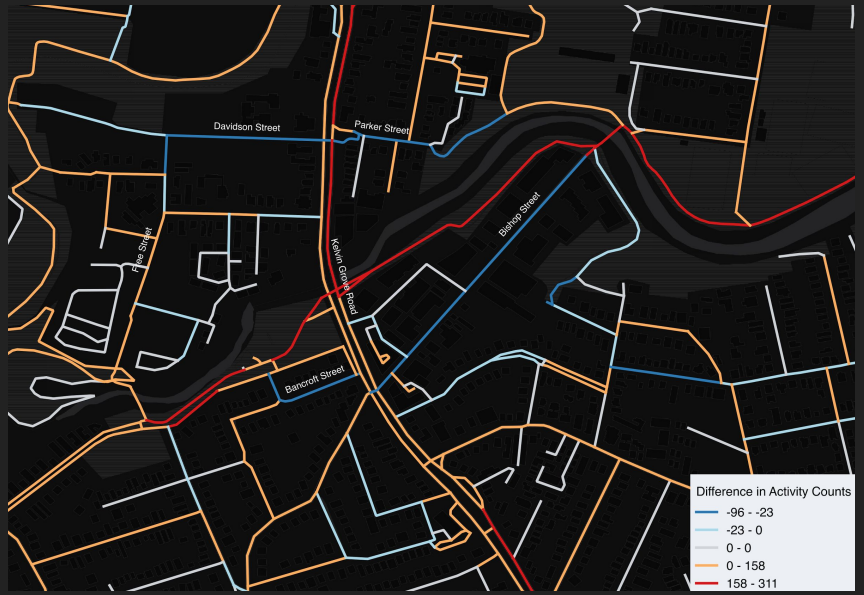
- Using a relational database (such as Postgres) to query for counts of activities that started in each polygon
- Can also query by destination



Delta Analysis

Queensland, Australia



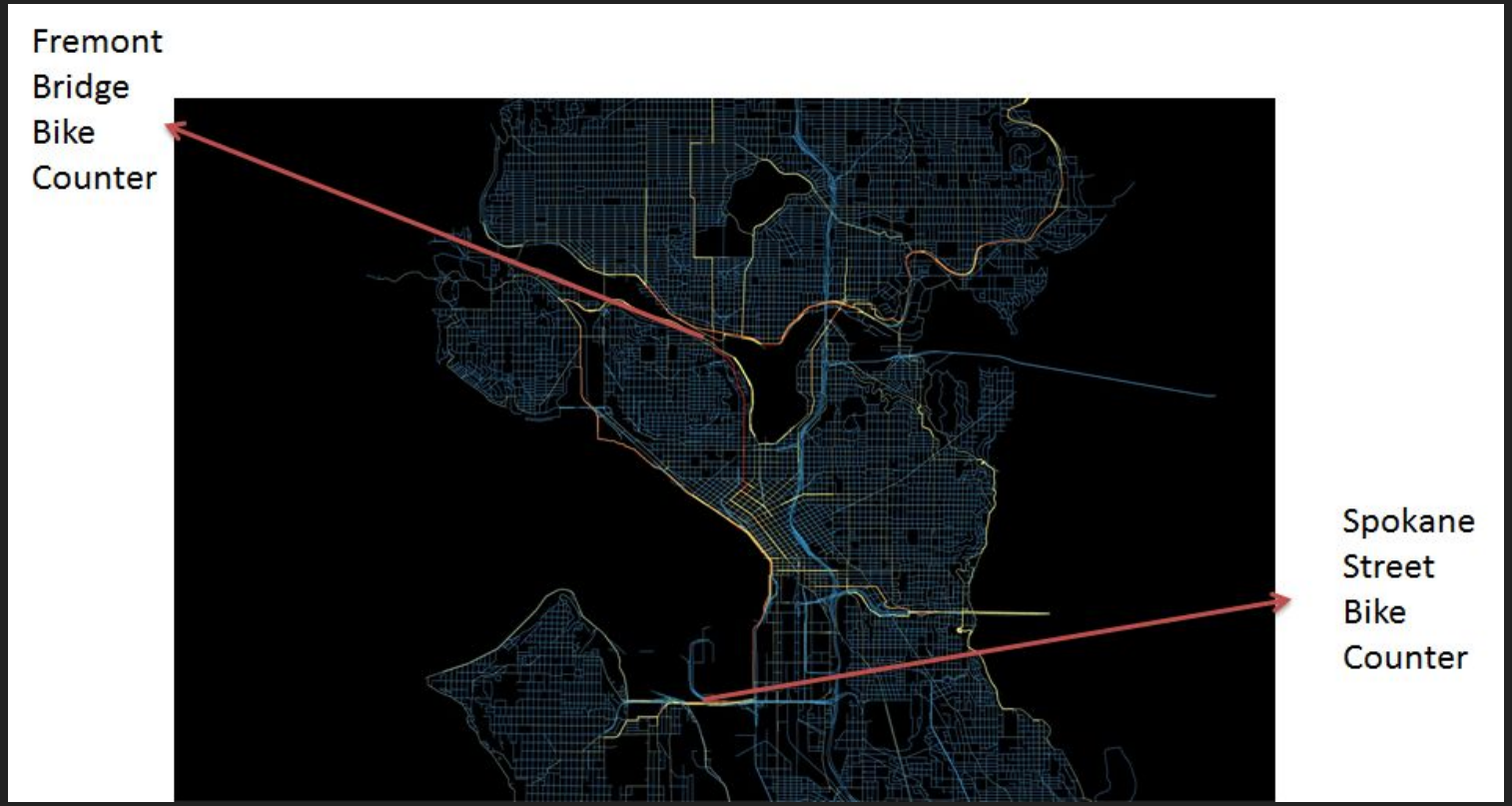


Bike Count Correlation

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

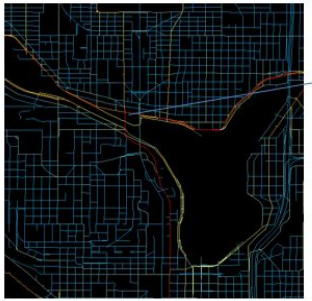
Bike Count Correlation



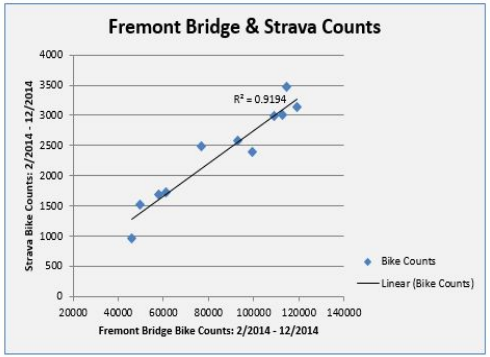
Bike Count Correlation

Seattle, Washington

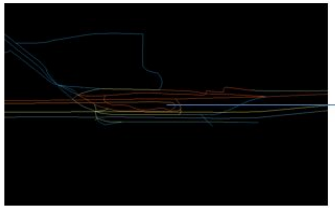
Fremont Bridge Bike Counts



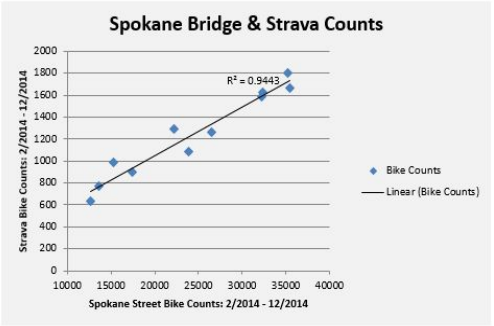
Strava: 25,980
Fremont Counter: 939,386
Percent of Strava to Population: 2.77%
R2: 0.9194



Spokane Bridge Bike Counts

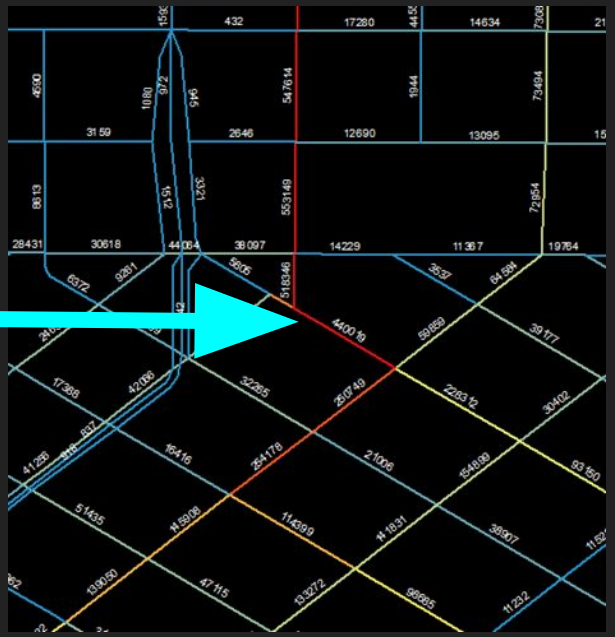


Strava: 13,602
Fremont Counter: 266,850
Percent of Strava to Population: 5.10%
R2: 0.9443



Bike Count Correlation

Seattle, Washington



16,297 bike trips x 27 (multiplier) = 440,019 bike trips in 2014

63,253,198 bike miles traveled

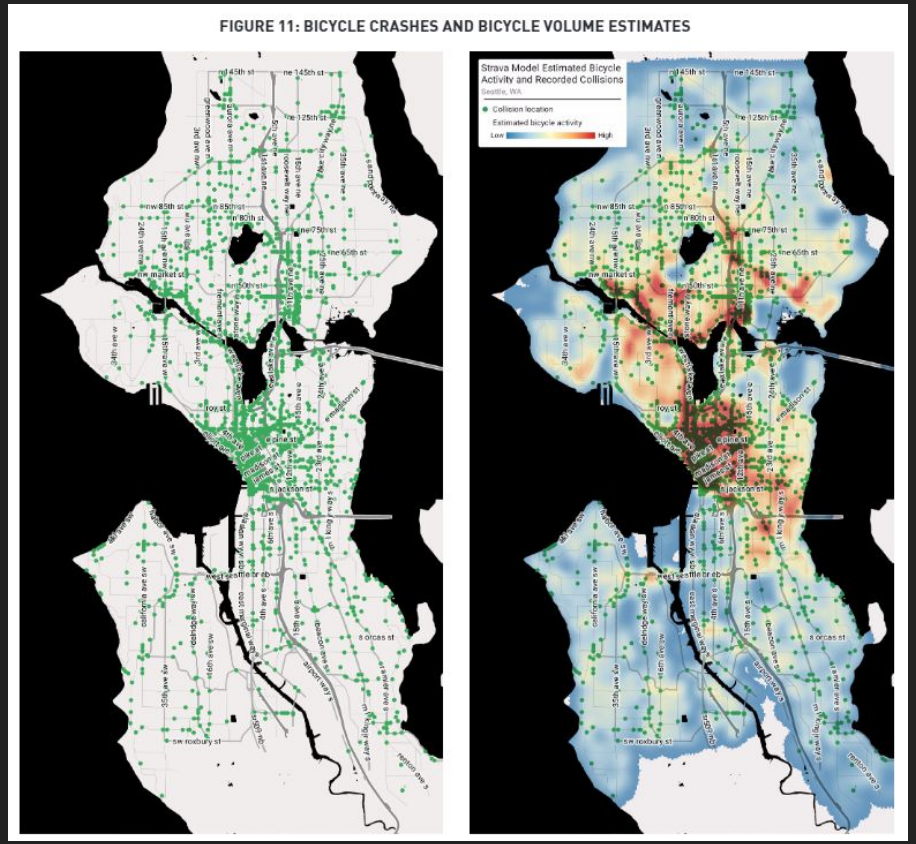
Prediction

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

Crash Analysis

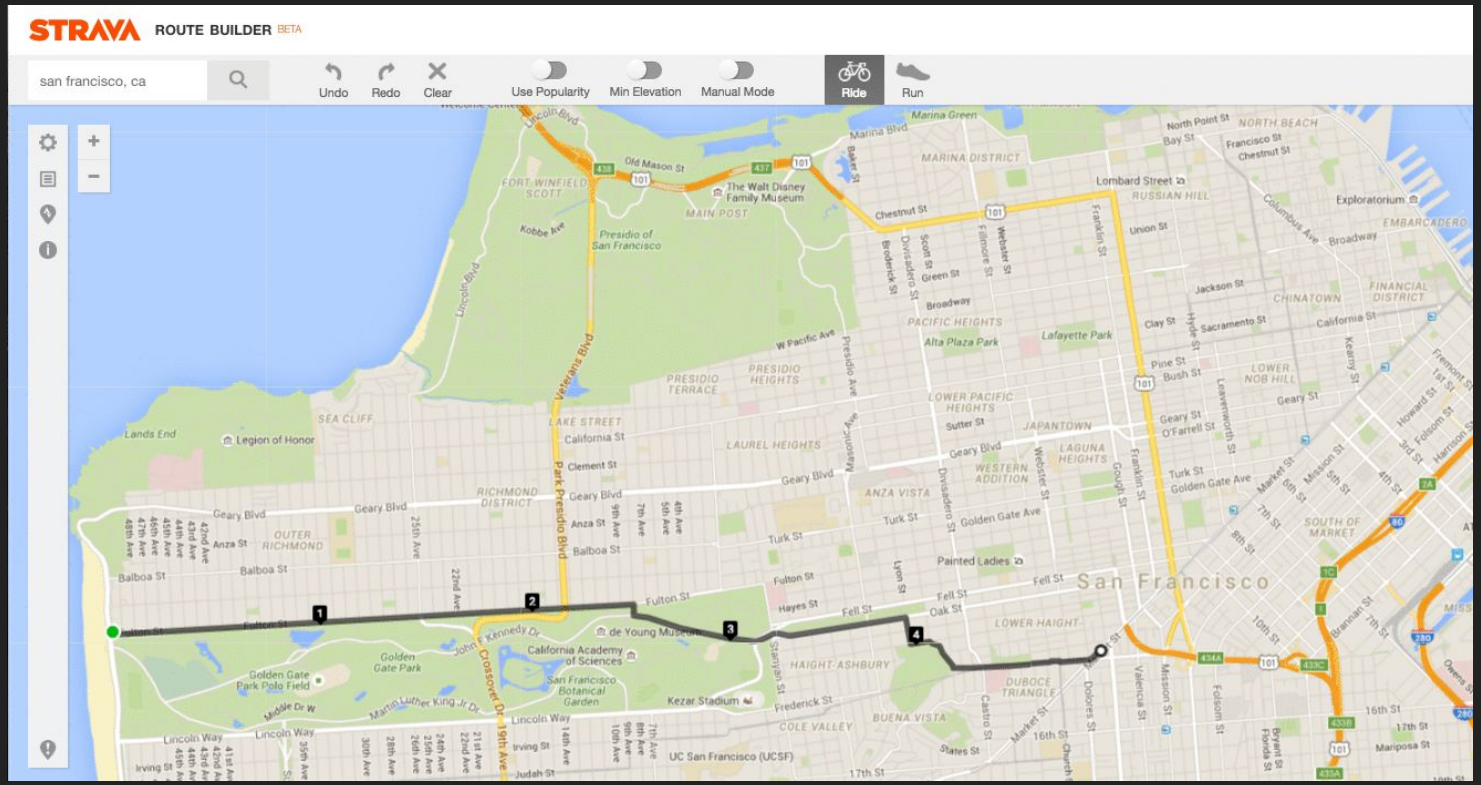
Seattle, Washington

- 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

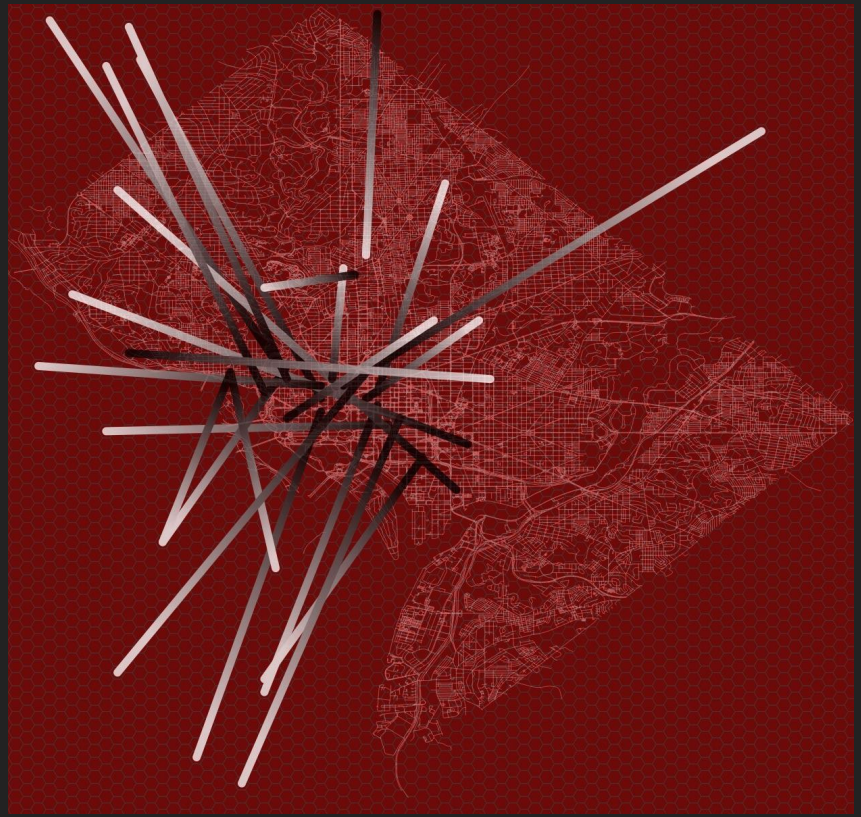


OD Demand Modeling

Washington, DC

- Morning commutes to the city center

Starting_Polygon	Ending_Polygon	Count_Activities_Before_Noon	Count_Activities_After_Noon	Count_Total_Activities
18	146450		1	1
18	146502		4	4
24	29786		1	1
24	101268	1		1
24	151569	1	1	2
25	2739	1		1
25	15571		1	1
25	53168		1	1
25	54397		1	1
25	73827	1		1
25	75851		2	2
25	78139		1	1
25	94485	1		1
25	121738		1	1
27	15702	1		1
31	61284	1		1
42	299	2	4	6



Thank you!