



Signalized Arterial Performance Measures

(using trajectory data from 3rd parties)

BRTB Traffic Signal Subcommittee

Gregory Jordan

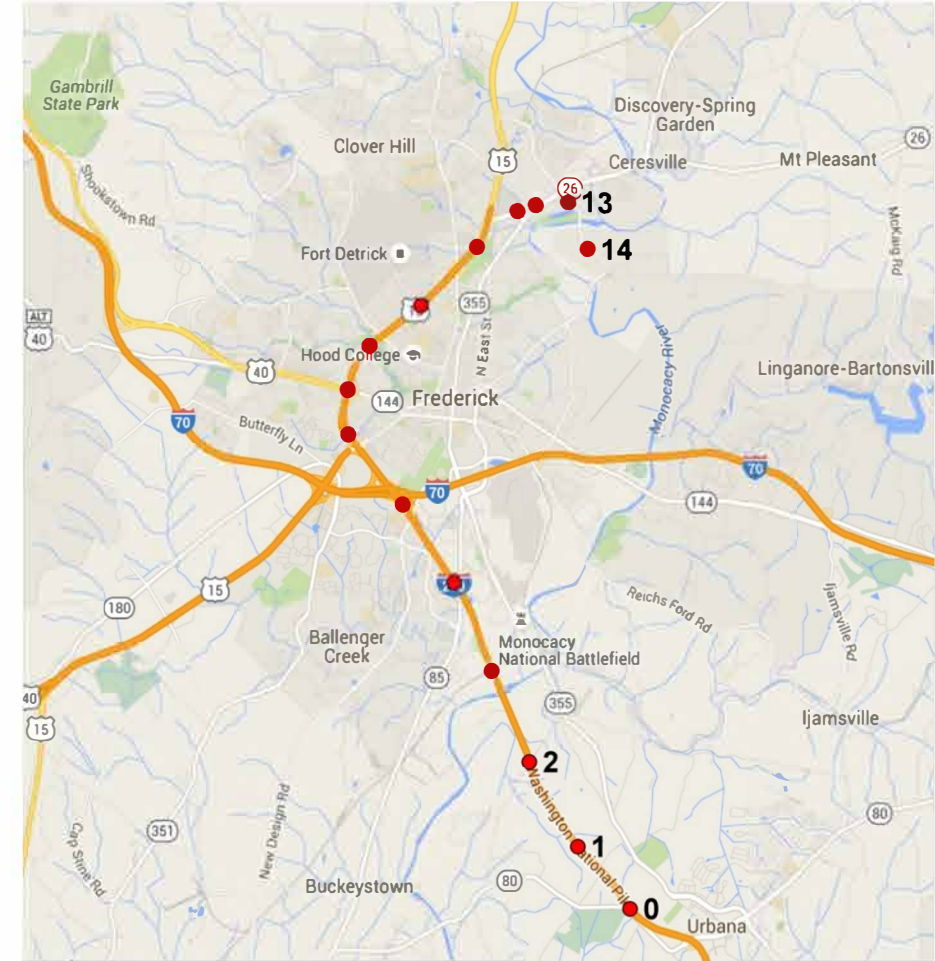
CATT Laboratory

Enabling agencies through
better communication
data-based decision making,
advanced insights discovery,
and enhanced operations
and planning capabilities.

Background

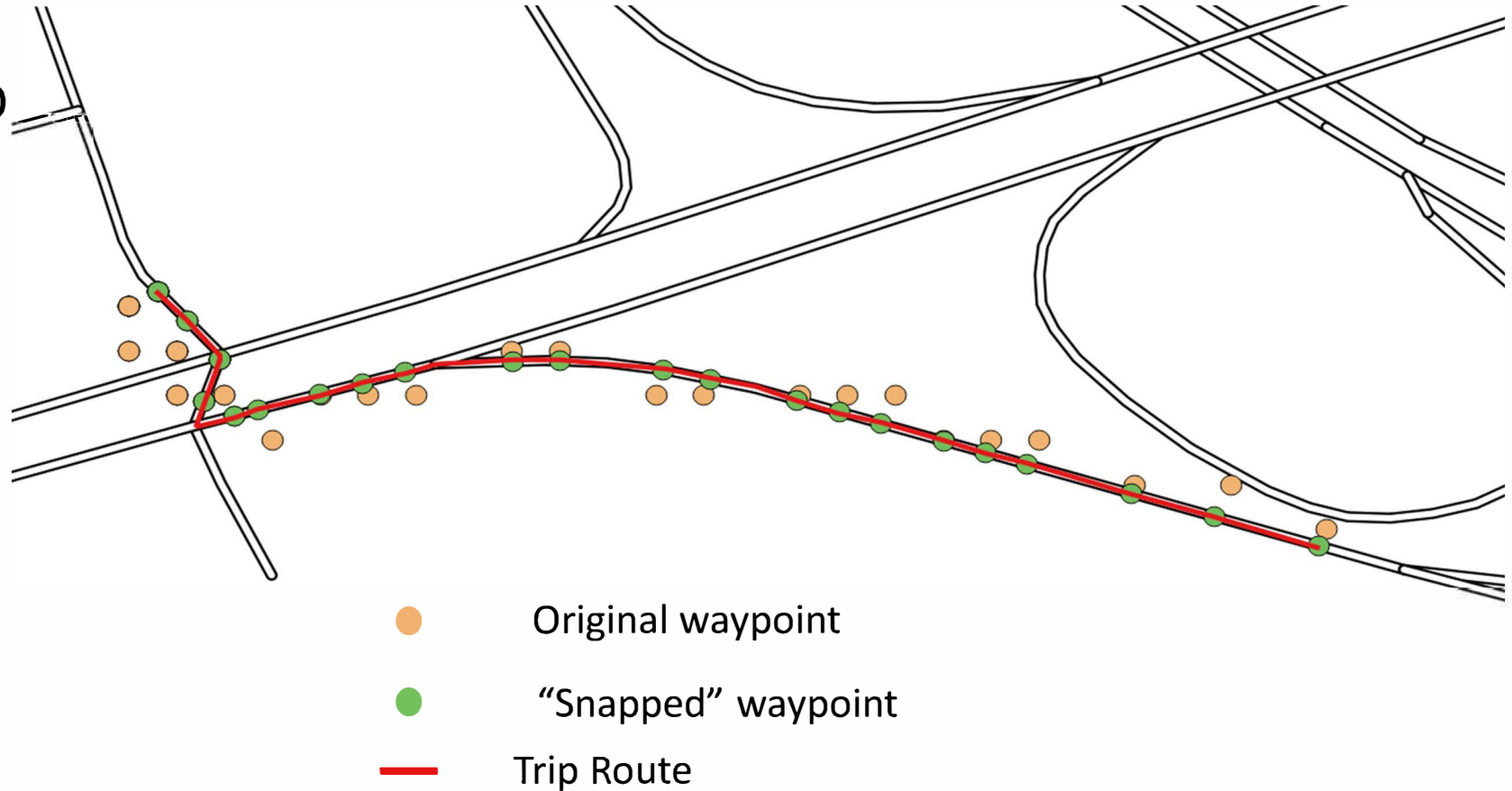
What is trajectory data?

- Time stamped location data from GPS-enabled devices
- Data is collected on individual trips
 - Departure time and location (trip origin)
 - Route selection and travel time
 - Arrival time and location (trip destination)
 - All personally identifiable info is removed



Challenges

- Big data
 - 4 Months of Data for MD
 - 20 Million trips
 - 1.4 Billion waypoints
 - 112 GB of data
- Data cleaning
 - Snapping
 - Routing



One day in D.C.

05:00 am

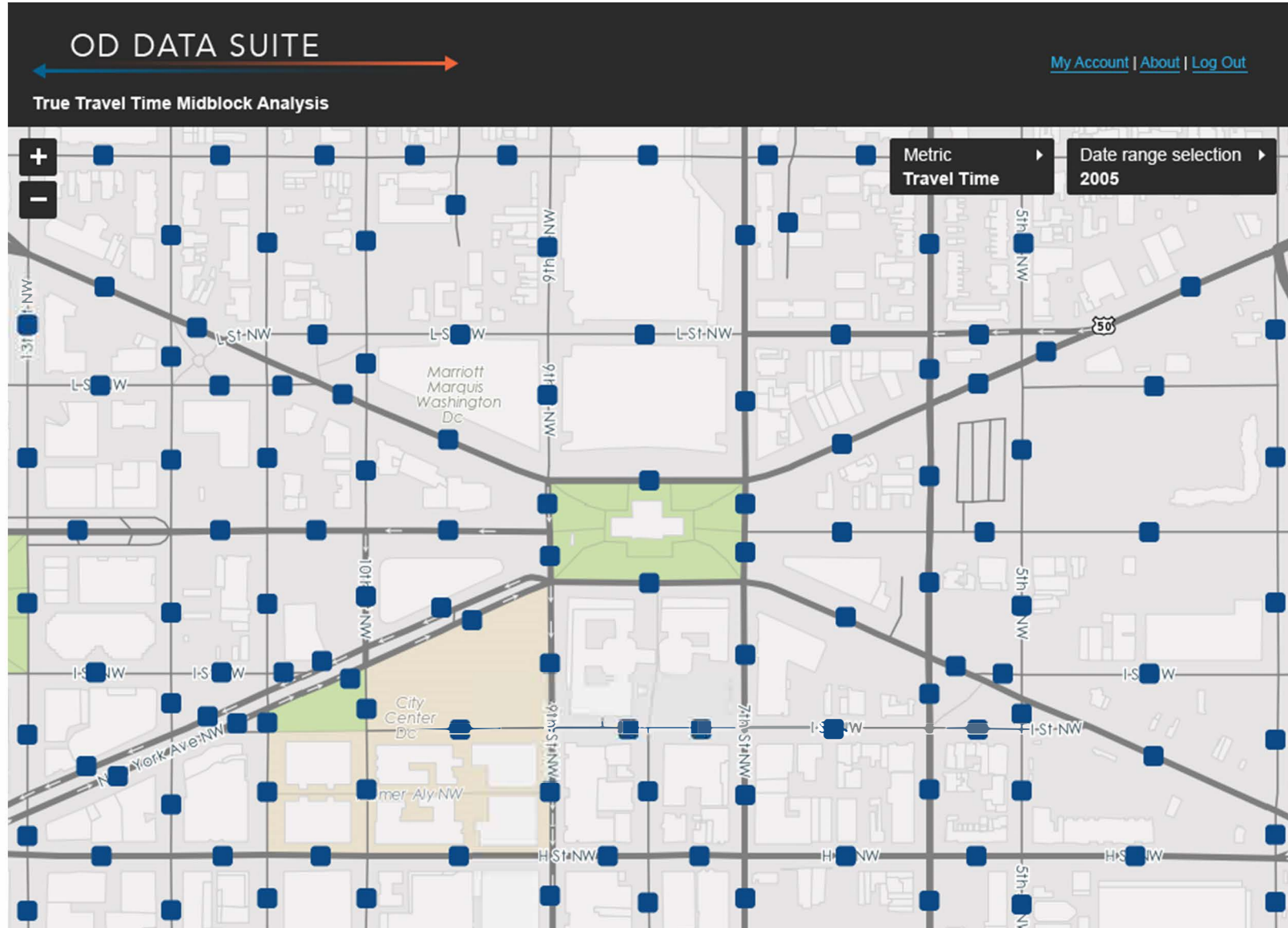


Trajectory Data for Signals

Mid-block travel time analysis...

Turning Movement support...

O-D, trips, marketing, etc...



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True Travel Time Midblock Analysis

+

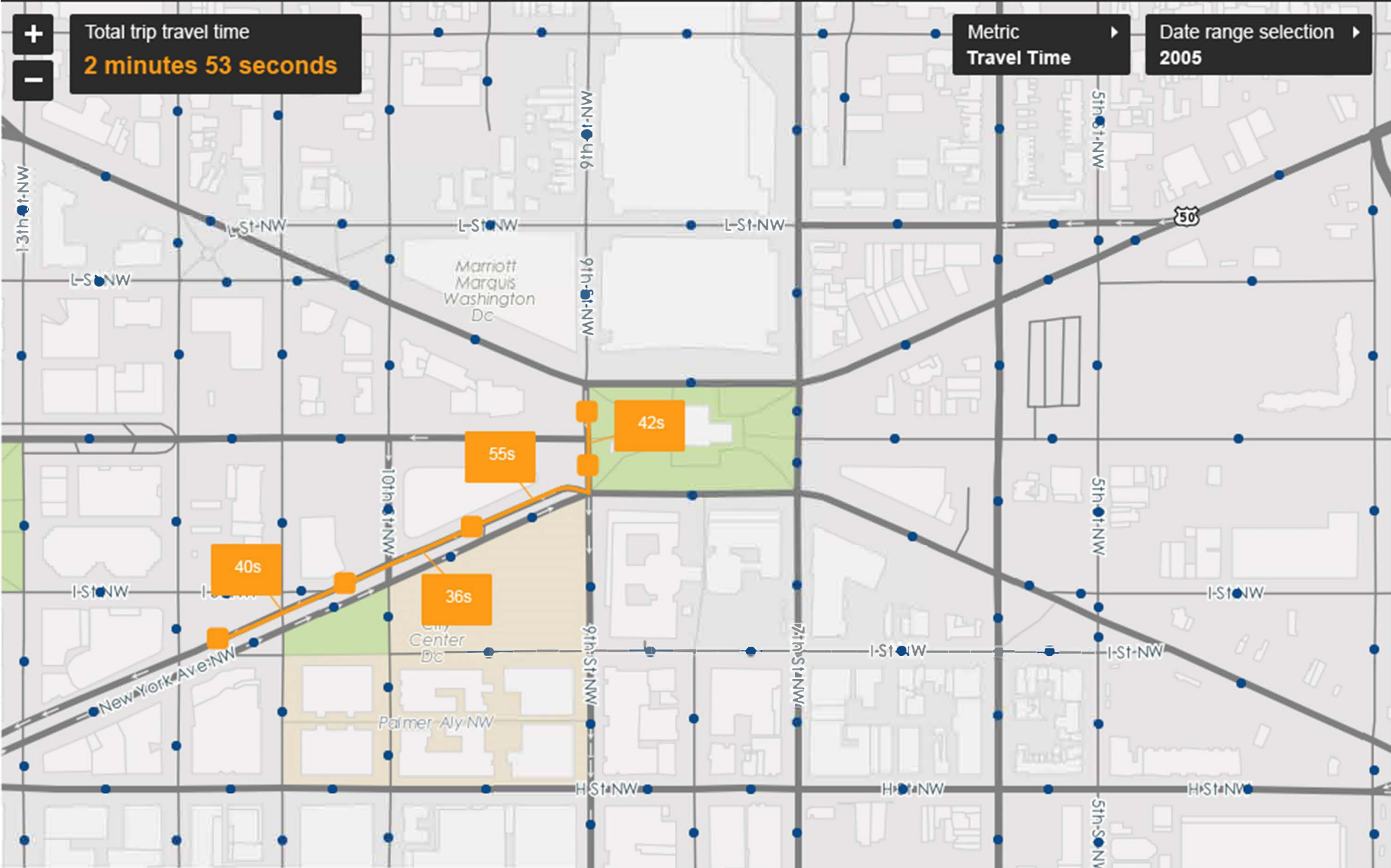
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Total trip travel time

2 minutes 53 seconds

Metric
Travel Time

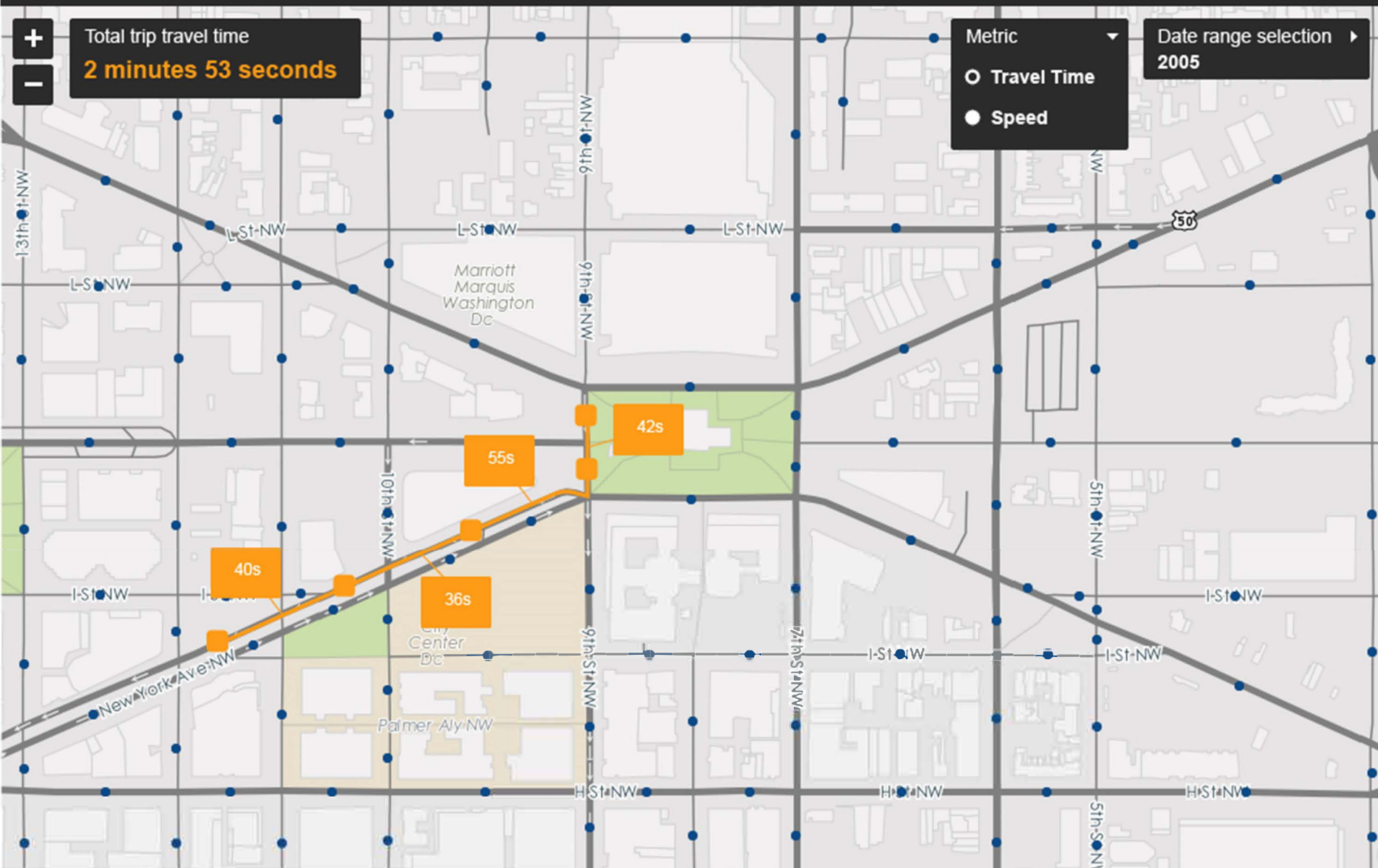
Date range selection
2005



OD DATA SUITE

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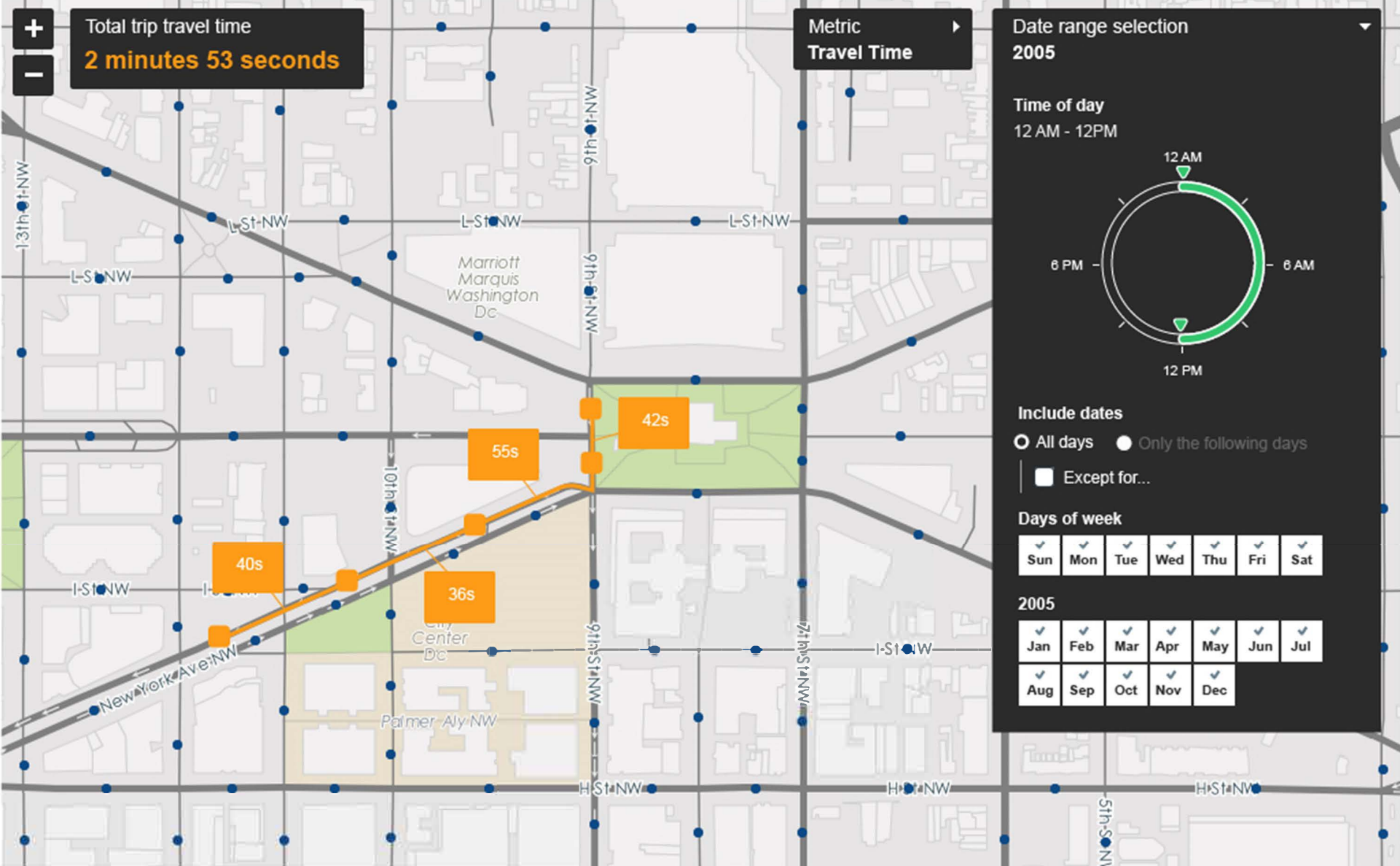
True Travel Time Midblock Analysis



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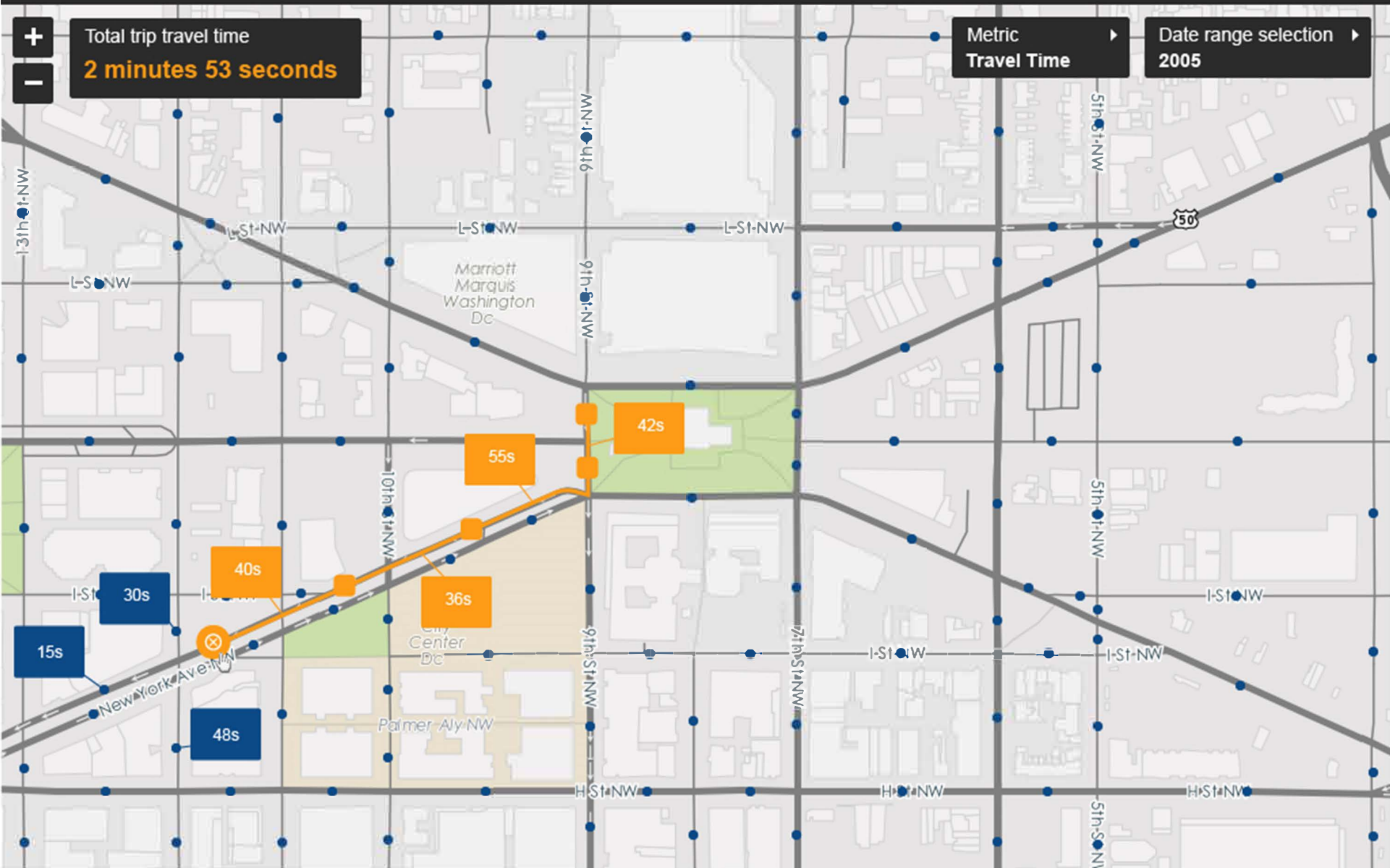
True Travel Time Midblock Analysis



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True Travel Time Midblock Analysis



INTERSECTION ANALYSIS TOOL

Explore different interstections and the impact of movements between and around them.

1. Select a region or intersection

☒ Region

Select a state

New York

Select a county

New York

Select a zip code

Enter zipe code...

☐ Intersection

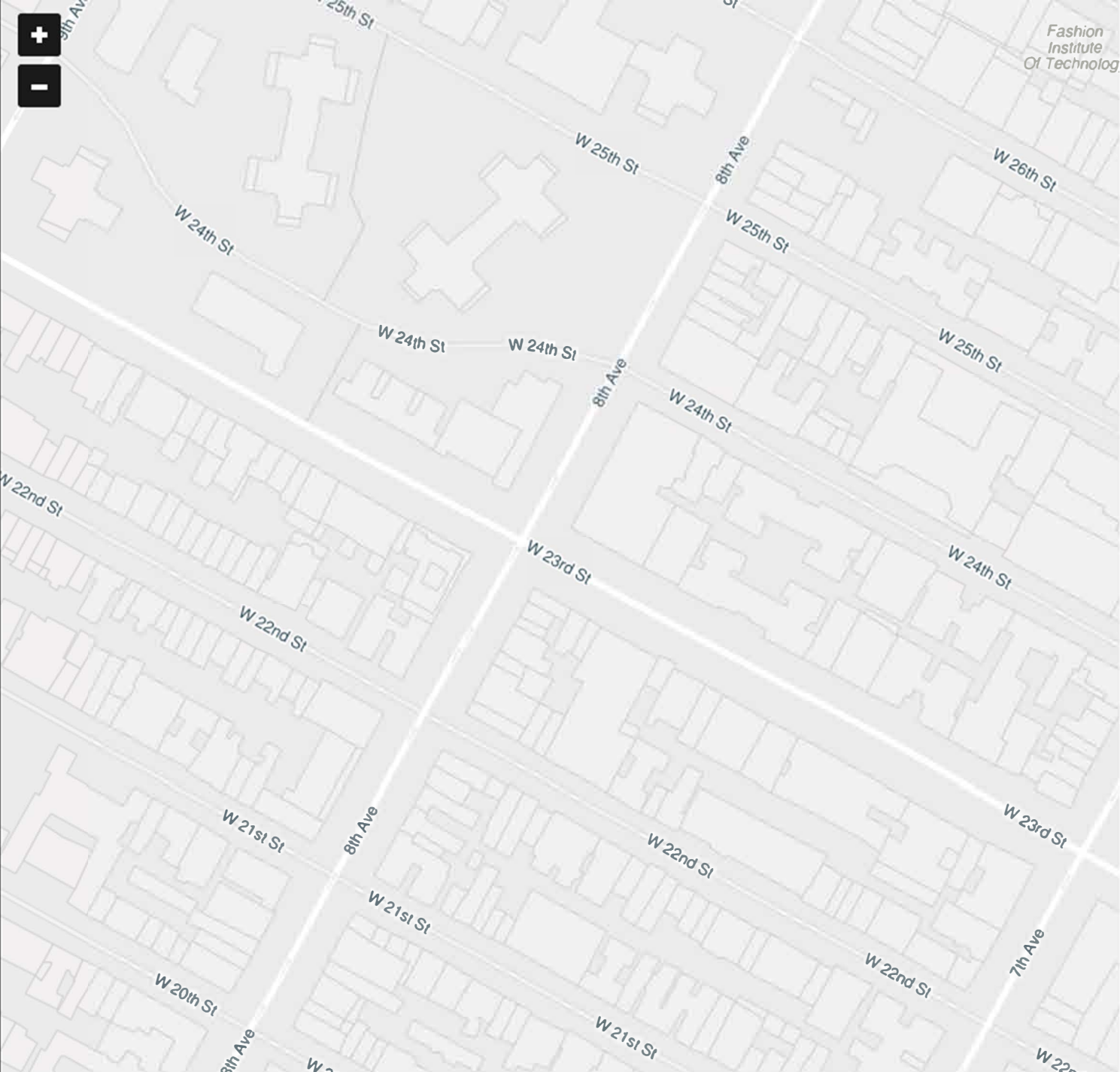
2. Select a date range

05/10/2018 -through- 05/10/2018

Select days of week

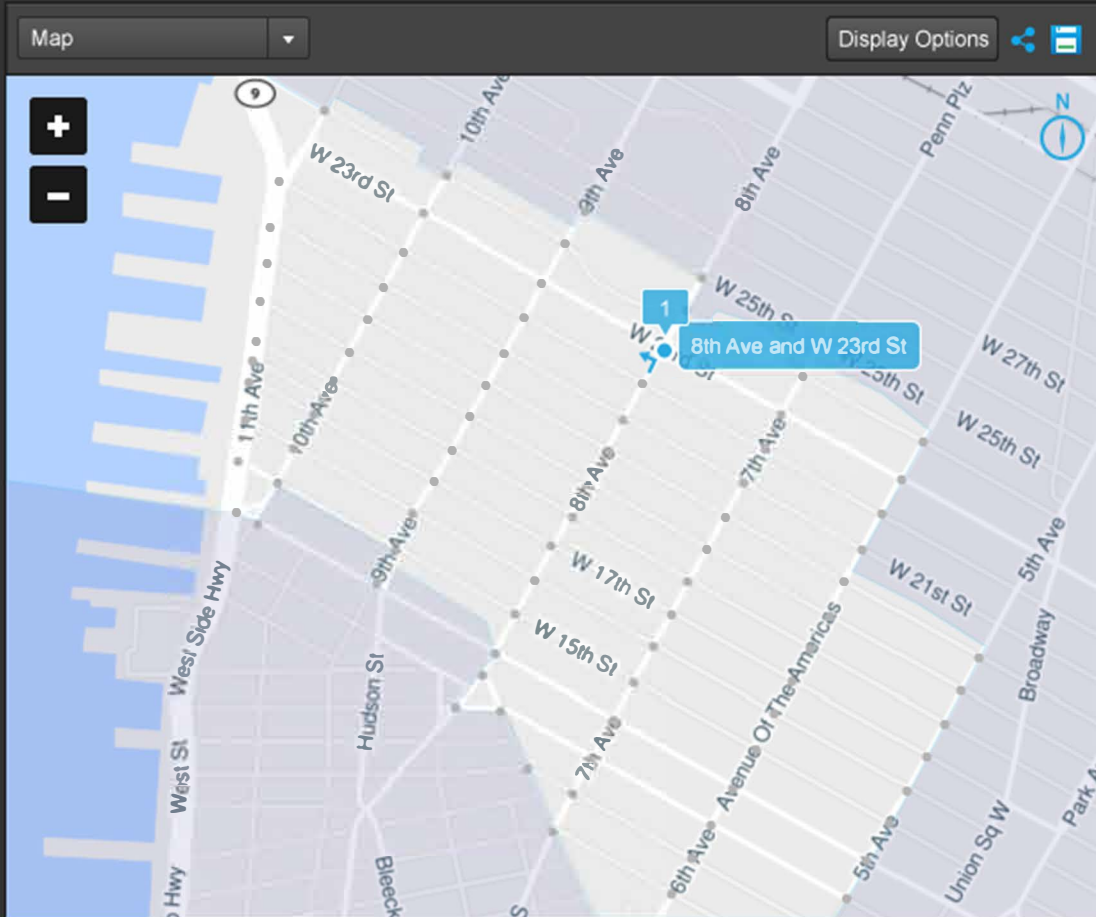
Sun Mon Tue Wed Thu Fri Sat

Find Intersection



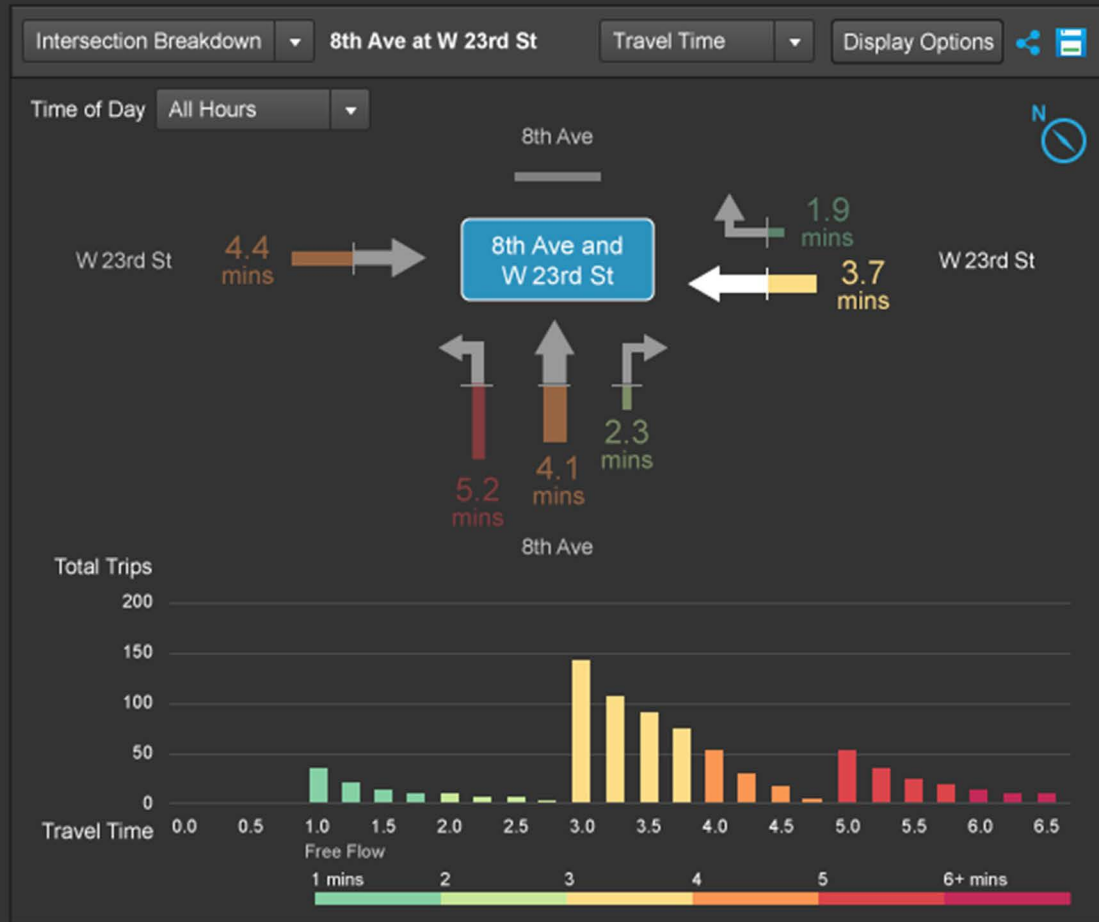
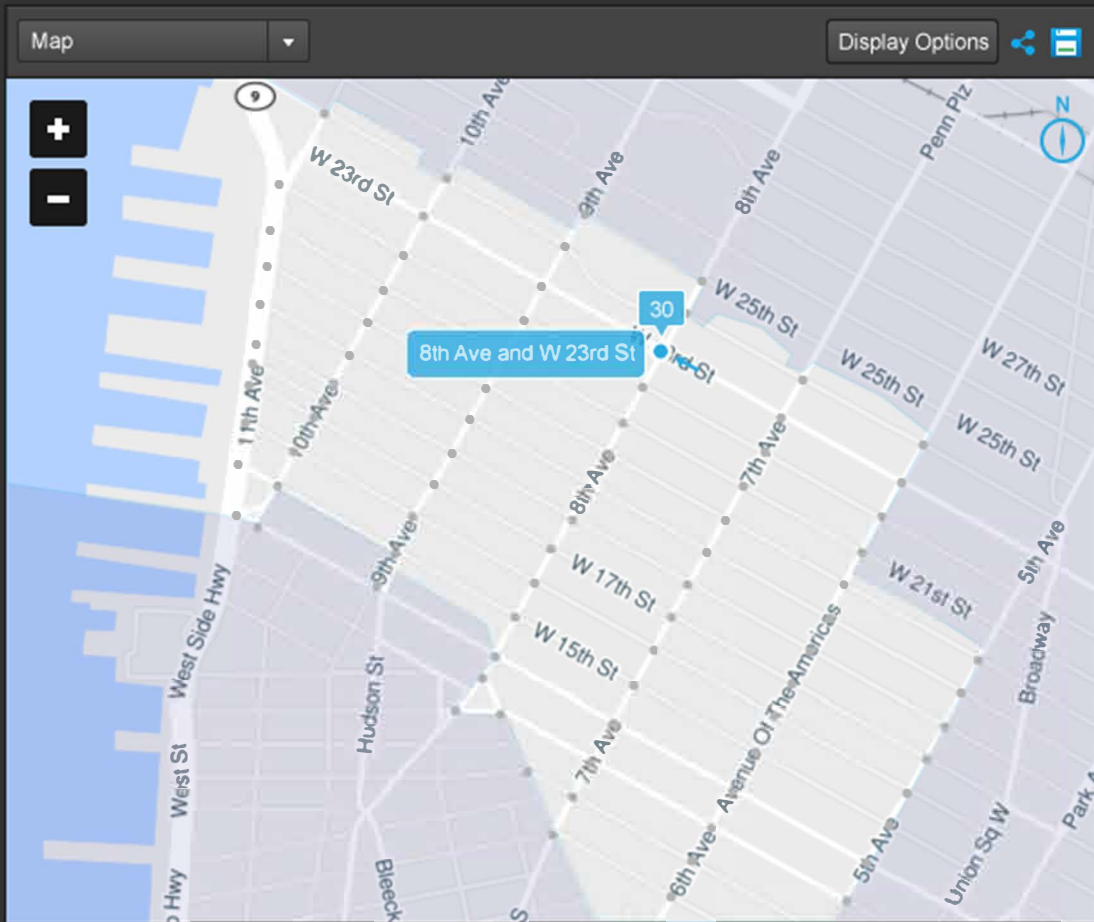
Ranked intersection movements in the 10011 zip code for the date range of 05/06/18 through 05/12/18

Rank	Map	Intersection	Approach	Movement	Volume	User Delay Cost	▲ Average Travel Time	25th Percentile	75th Percentile	5th Percentile	95th Percentile
1	<input checked="" type="checkbox"/>	8th Ave at W 23rd St	Northbound	Left	489	\$4,235.00	5.5 mins	2.5 mins	7.2 mins	1.5 mins	7.5 mins
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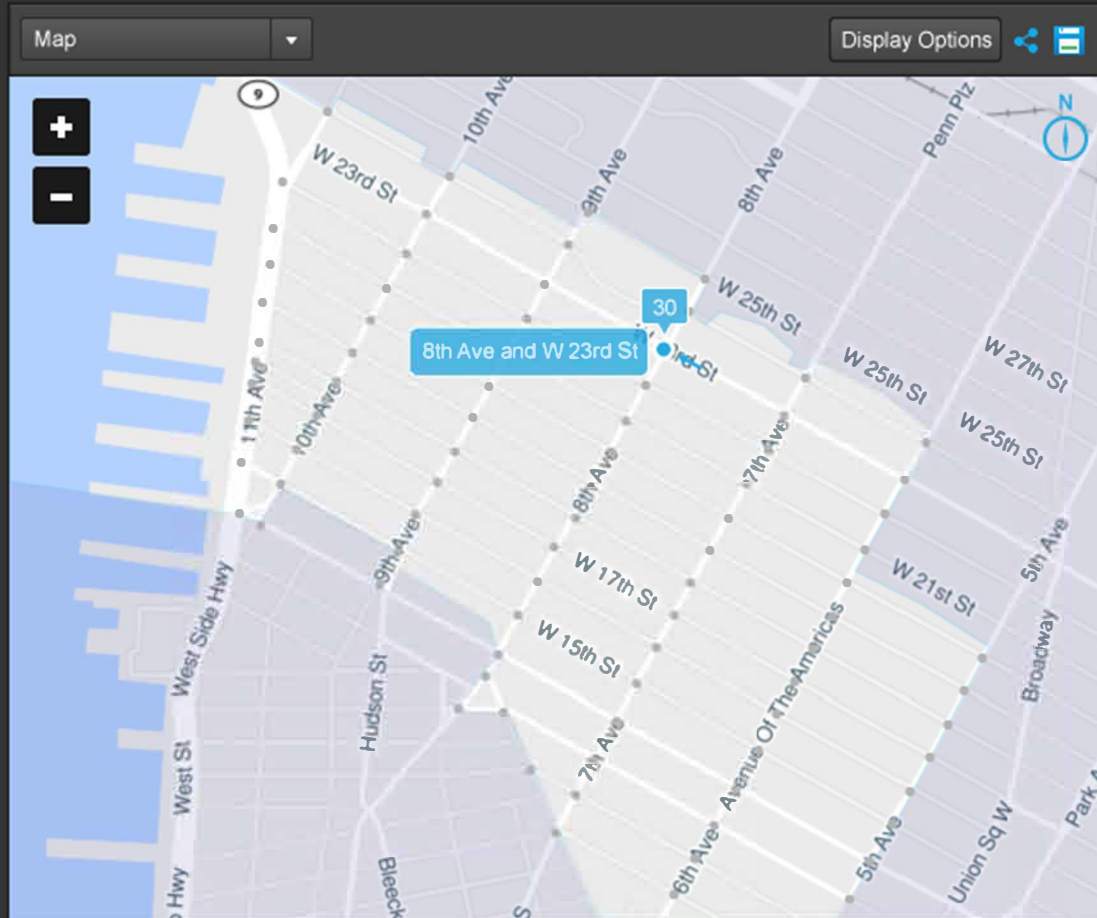
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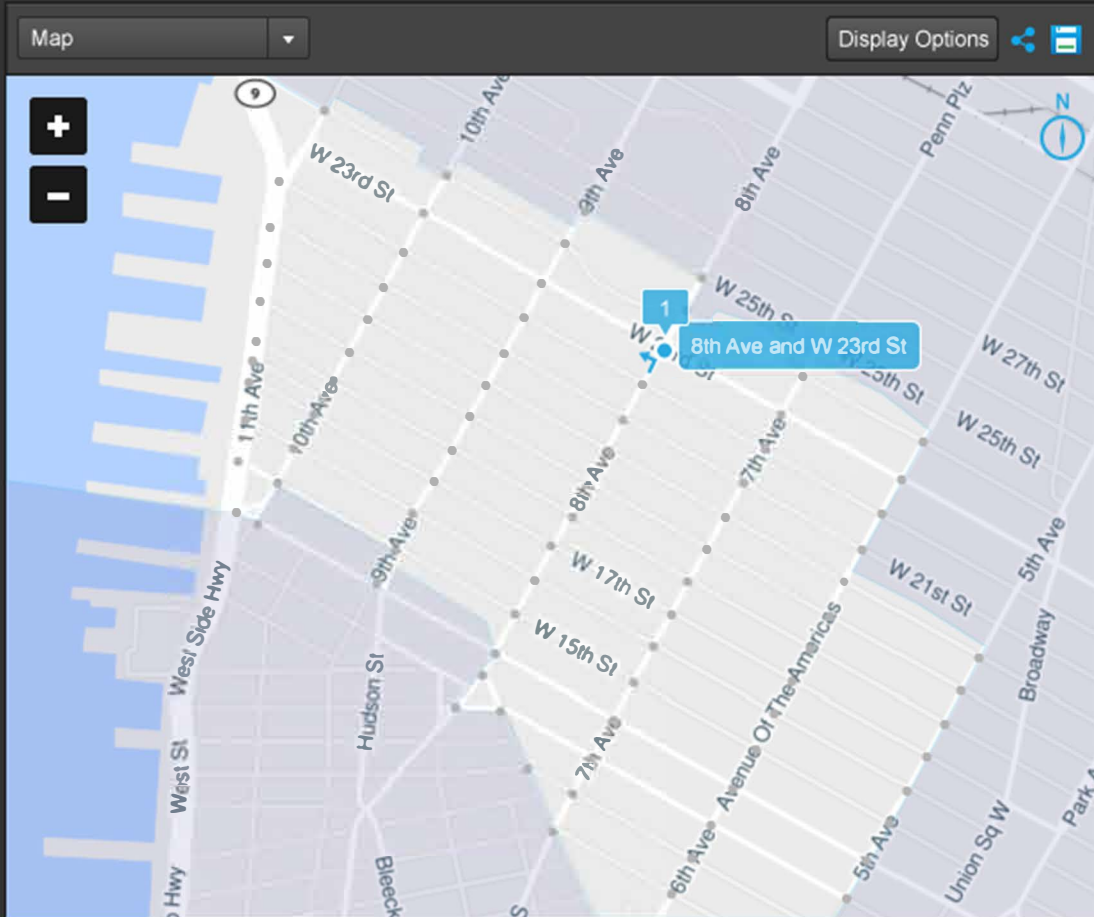
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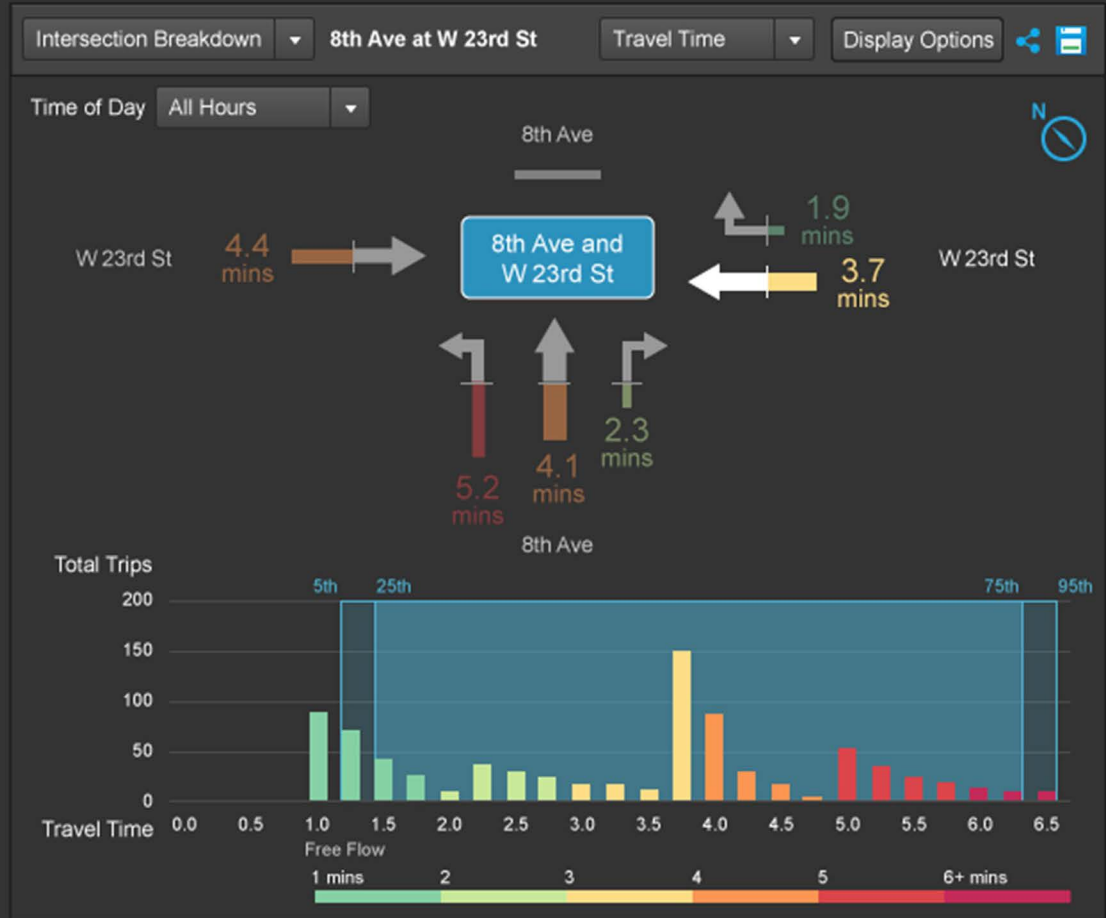
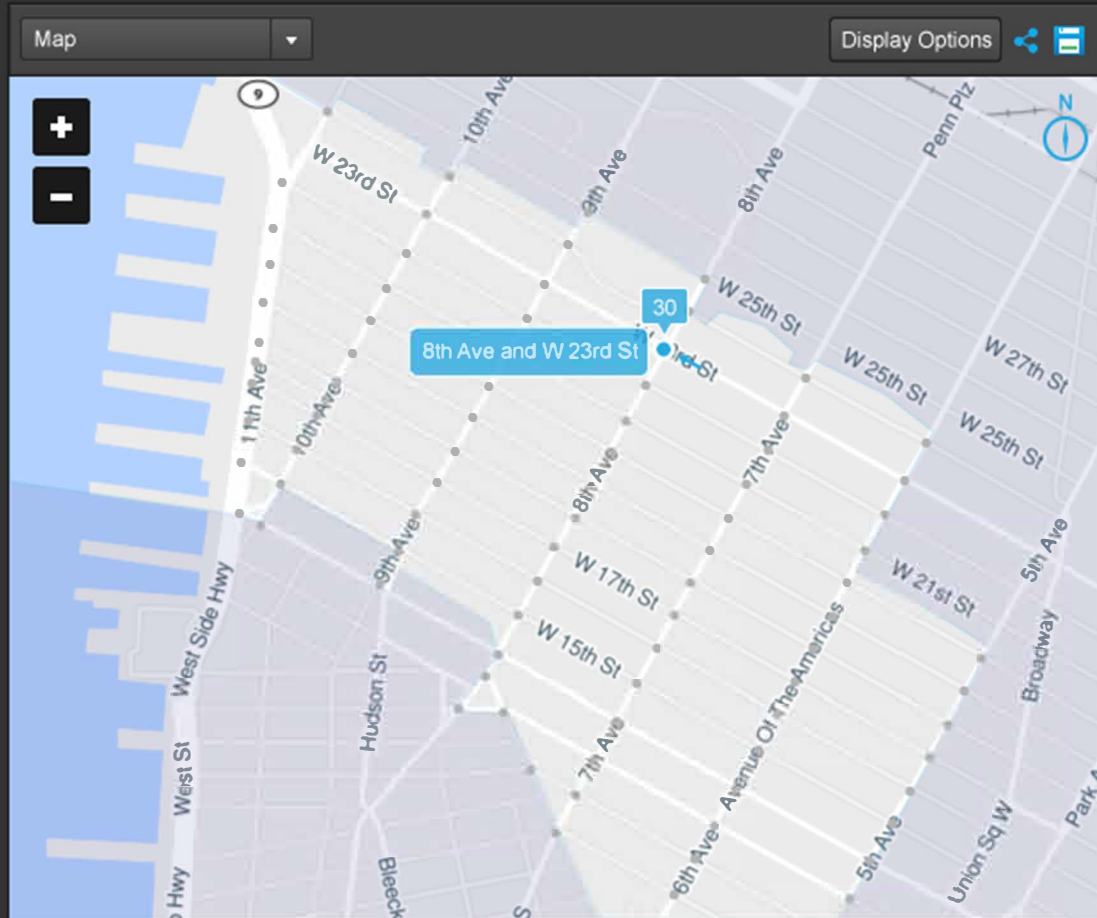
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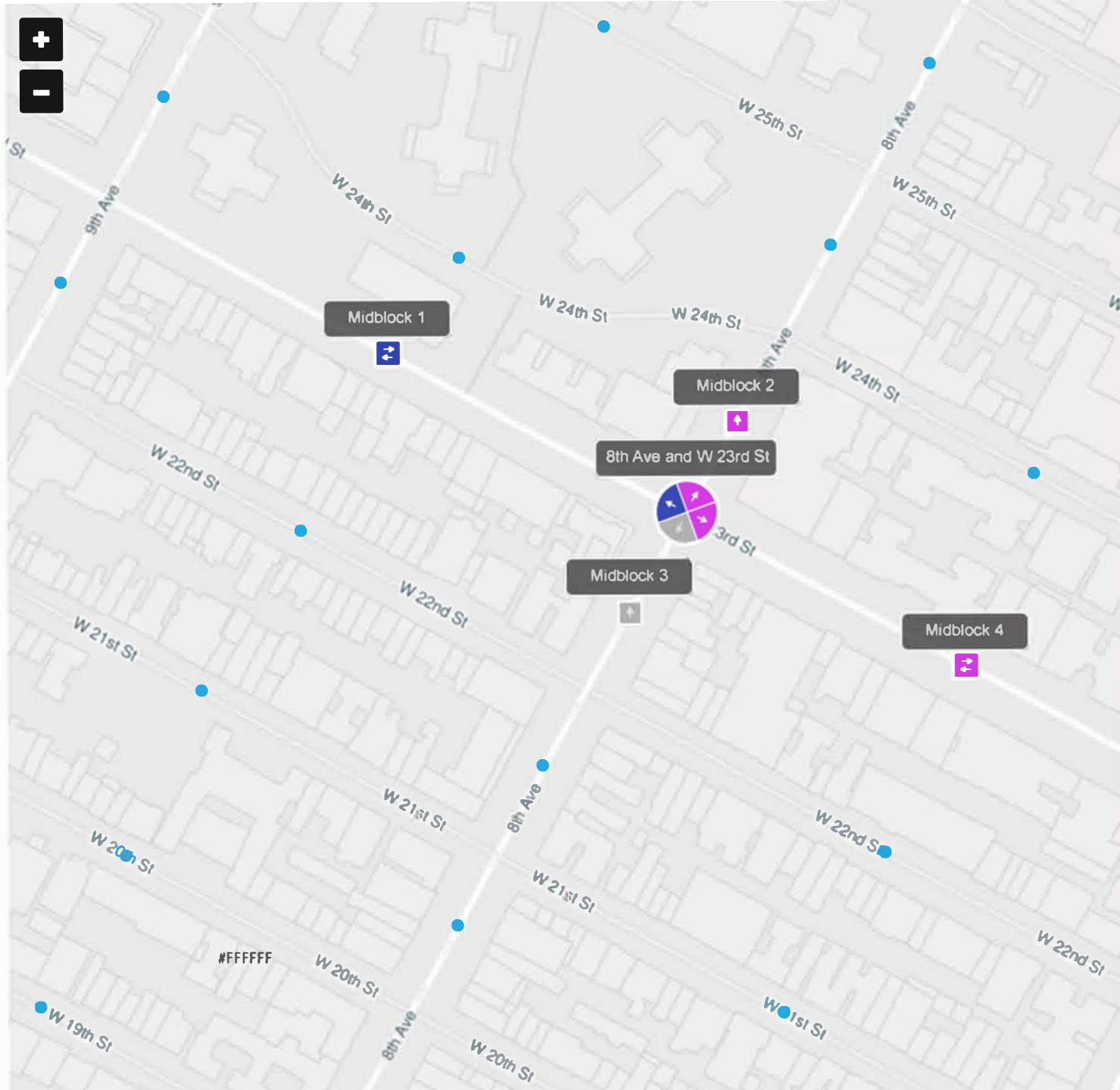
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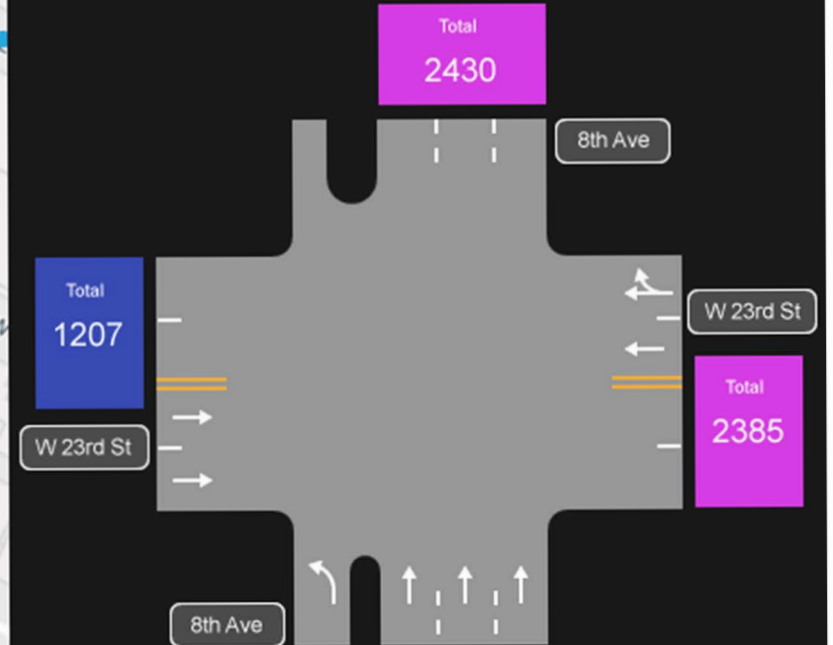


Intersection
8th Ave and W 23rd St

Date range
05/10/2018 SMTWTFS

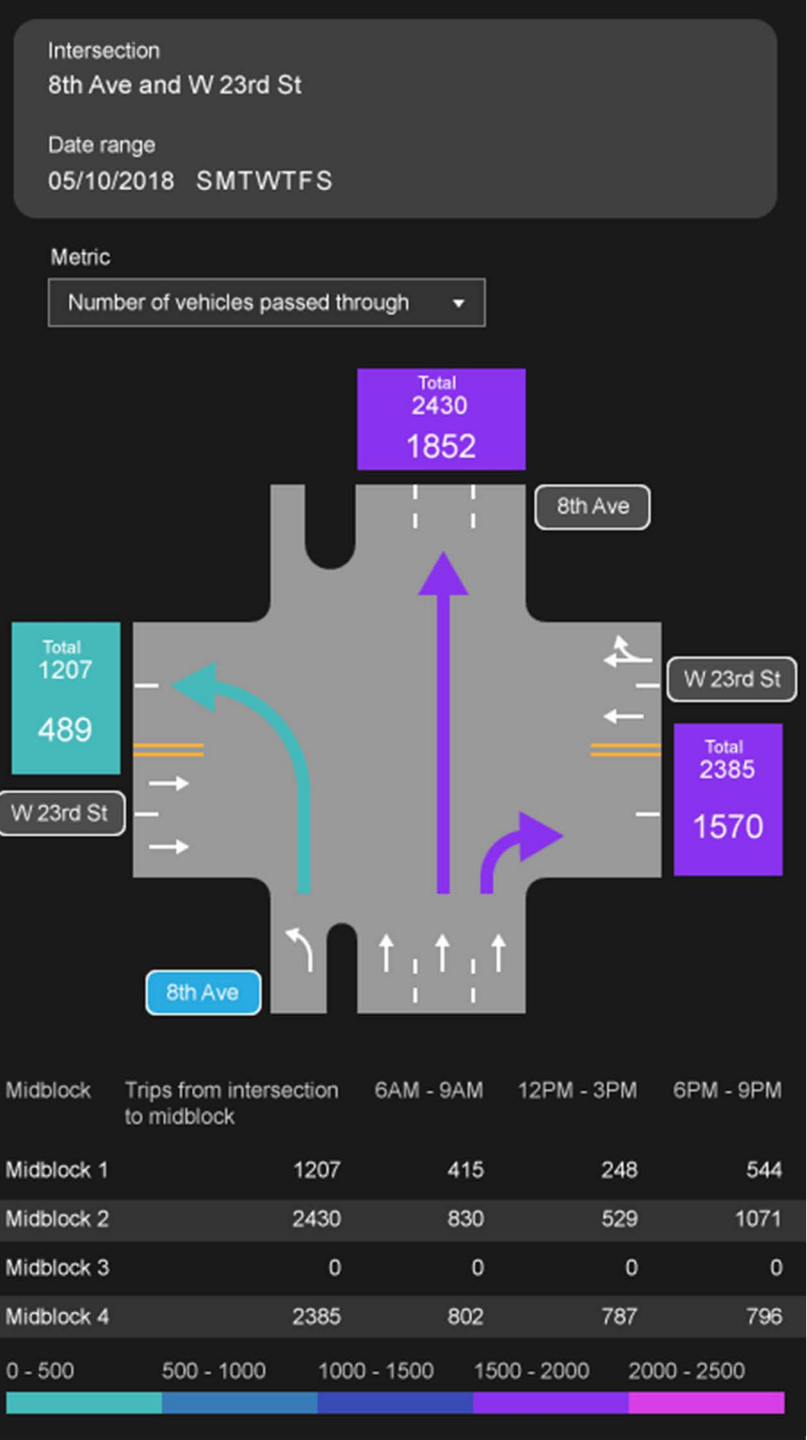
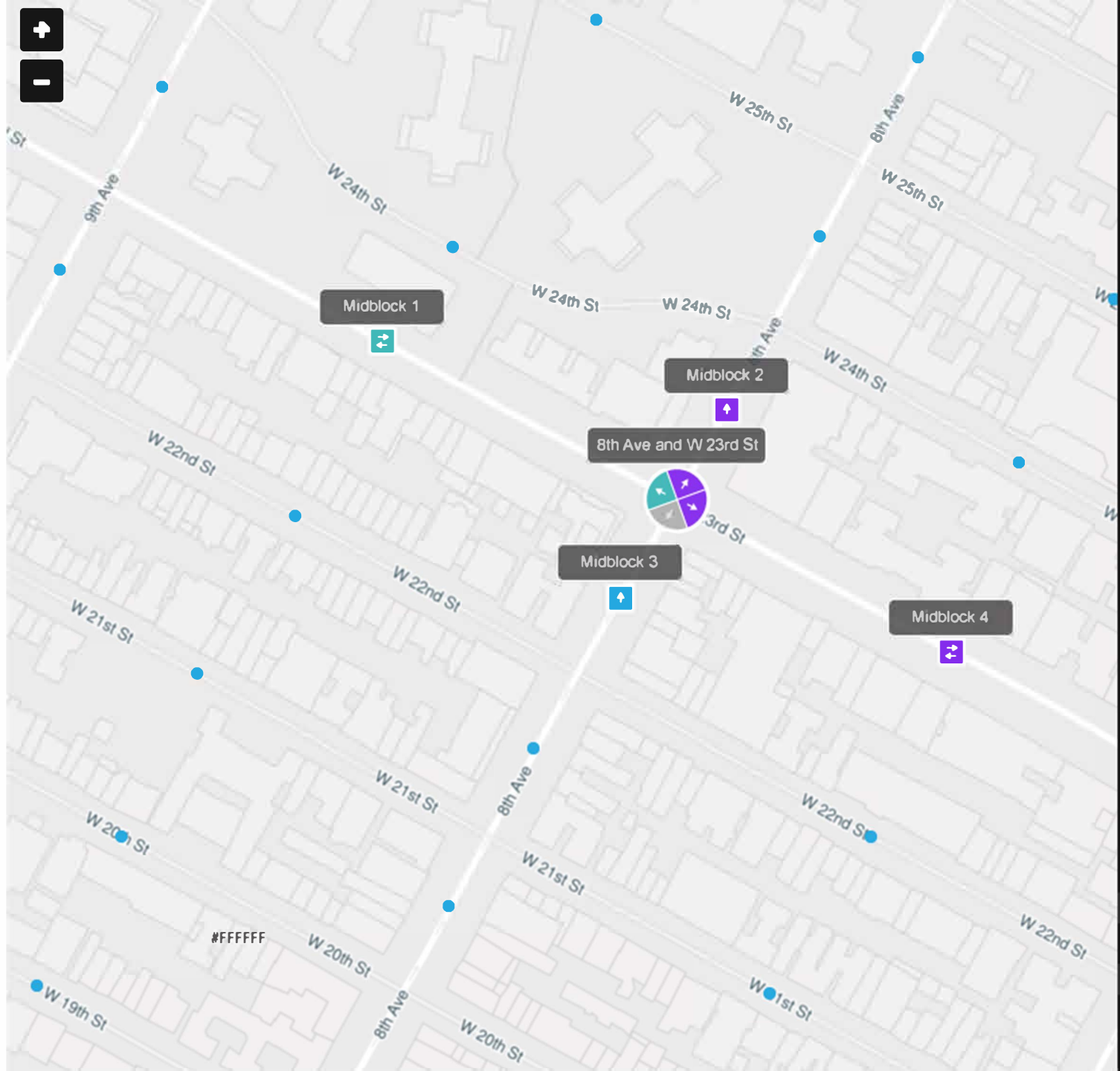
Metric

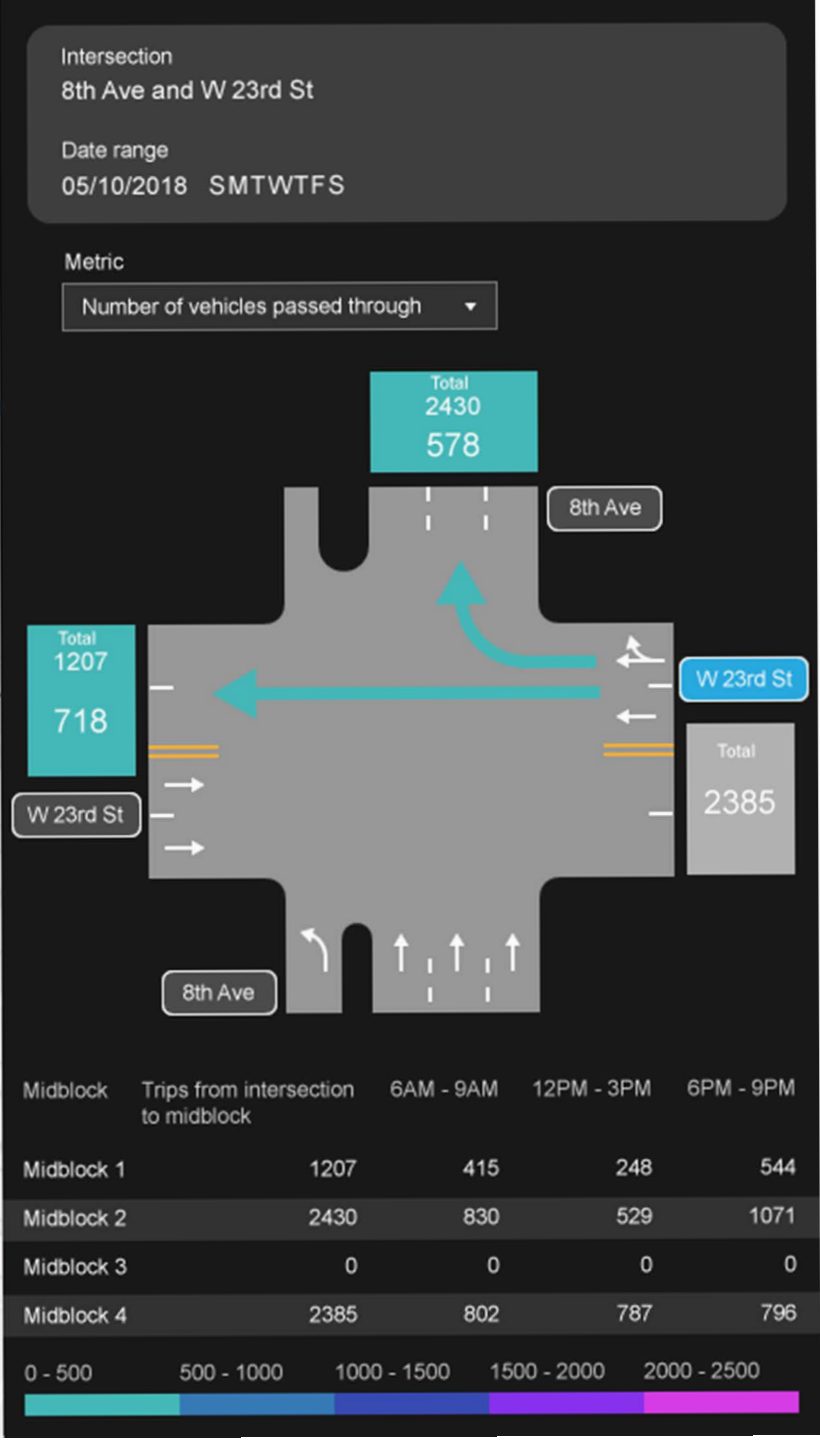
Number of vehicles passed through

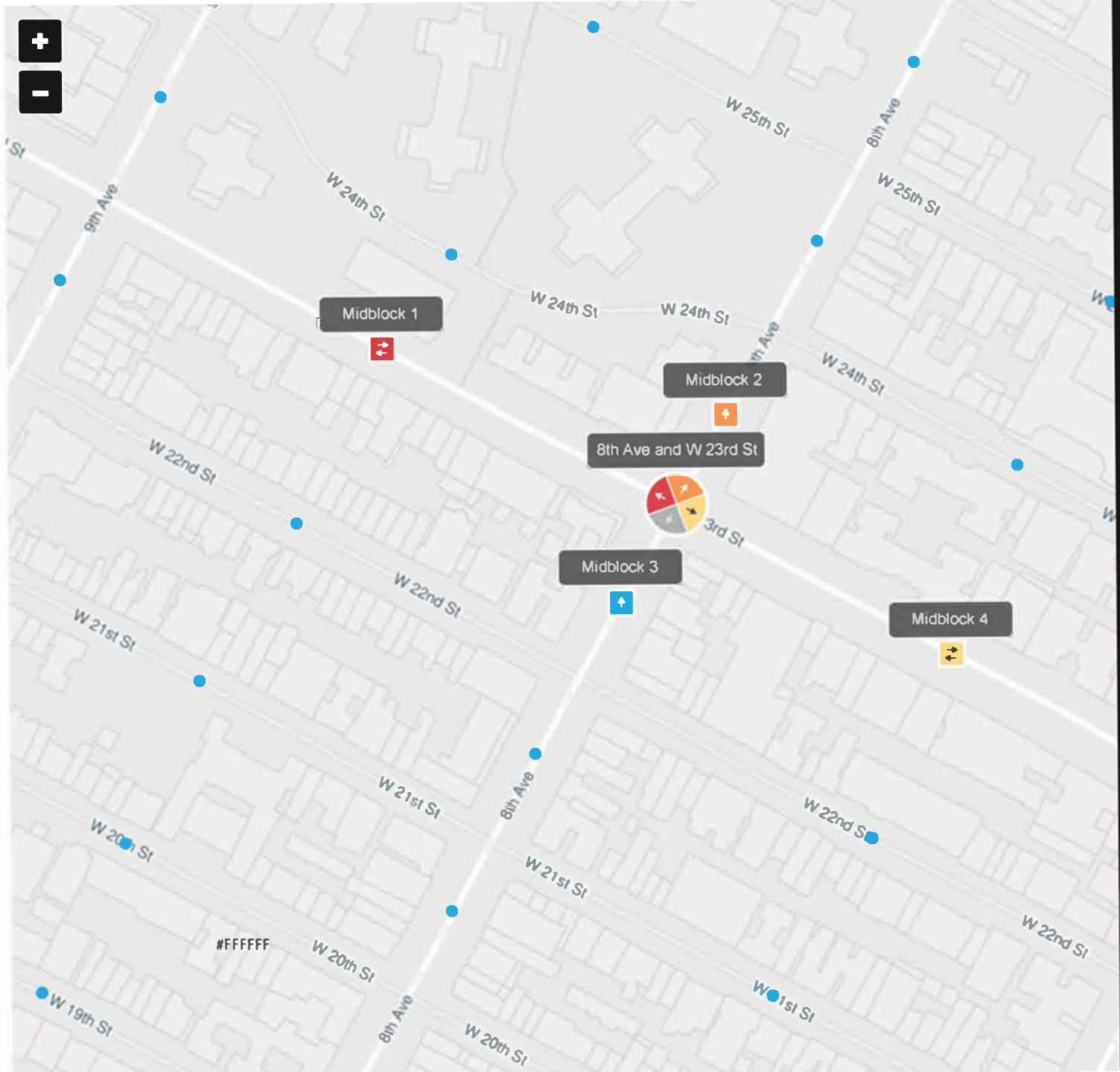


Midblock	Trips from intersection to midblock	6AM - 9AM	12PM - 3PM	6PM - 9PM
Midblock 1	1207	415	248	544
Midblock 2	2430	830	529	1071
Midblock 3	0	0	0	0
Midblock 4	2385	802	787	796

0 - 500 500 - 1000 1000 - 1500 1500 - 2000 2000 - 2500



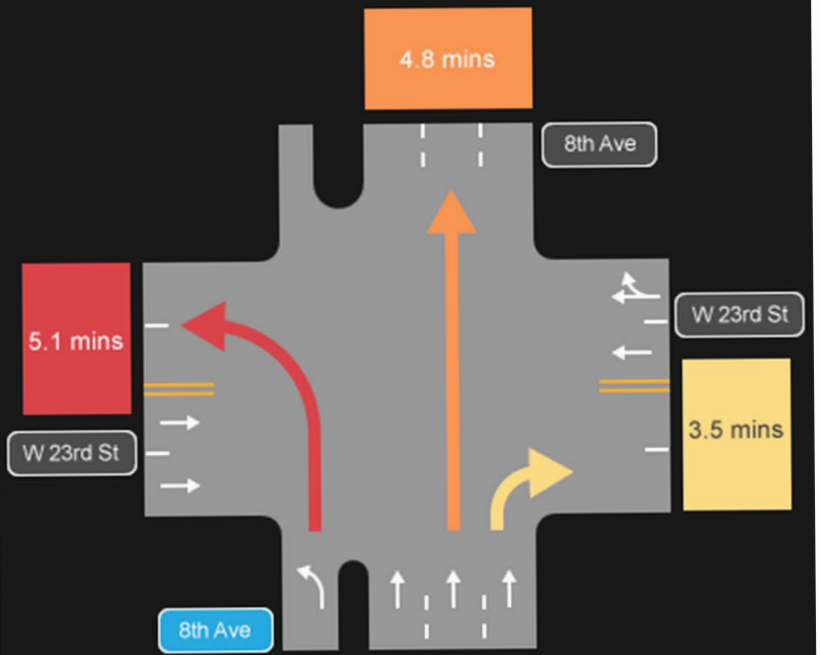




Intersection
8th Ave and W 23rd St

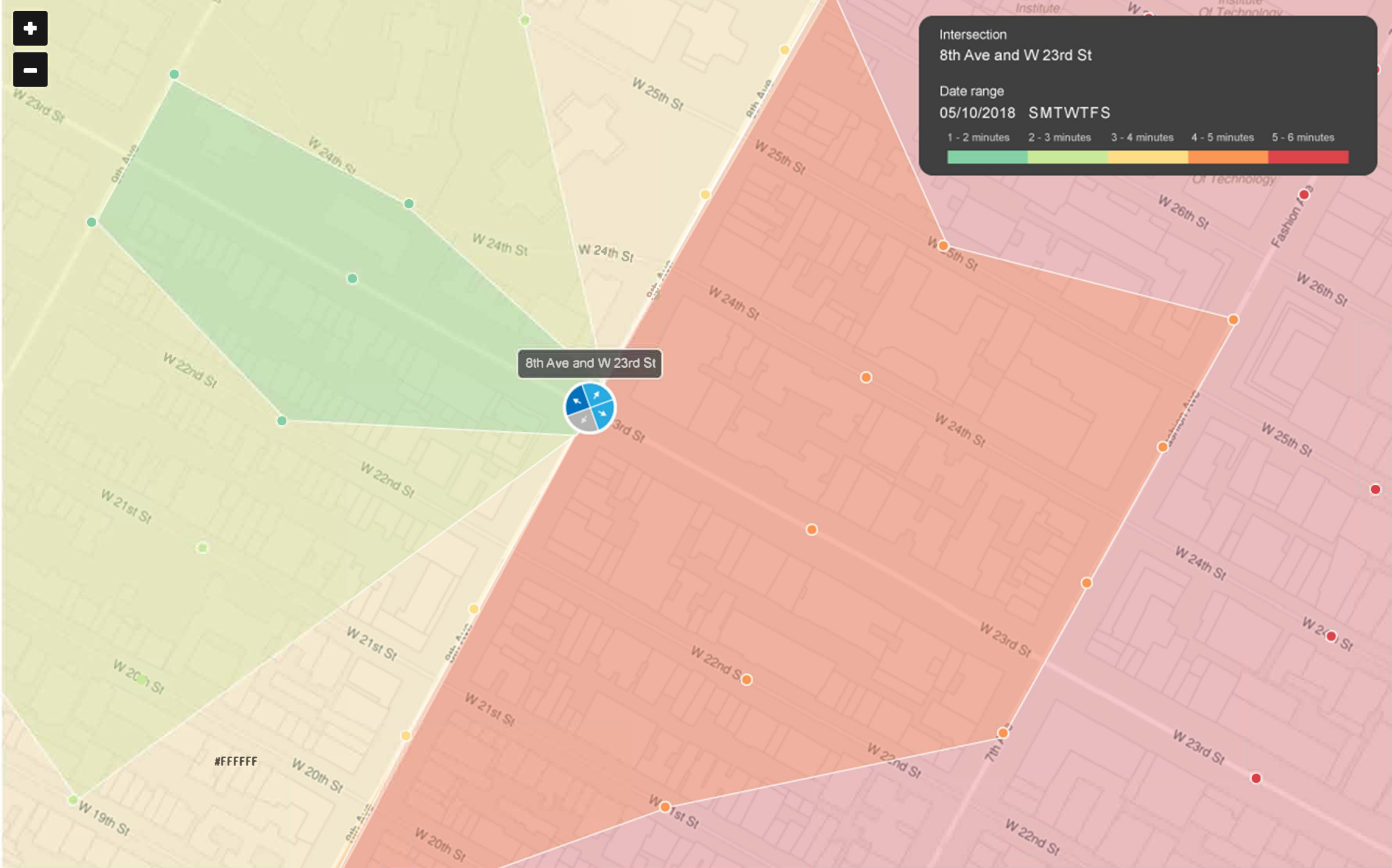
Date range
05/10/2018 SMTWTFS

Metric
Travel time through intersection



Midblock	Avg Travel Time to midblock	6AM - 9AM	12PM - 3PM	6PM - 9PM
Midblock 1	5.5 mins	5.9 mins	5.1 mins	5.4 mins
Midblock 2	4.2 mins	4.5 mins	3.8 mins	4.2 mins
Midblock 3	-	0	0	0
Midblock 4	3.1 mins	3.6 mins	2.9 mins	2.7 mins

1 - 2 minutes 2 - 3 minutes 3 - 4 minutes 4 - 5 minutes 5 - 6 minutes





Michael Pack, Director
PackML@umd.edu