

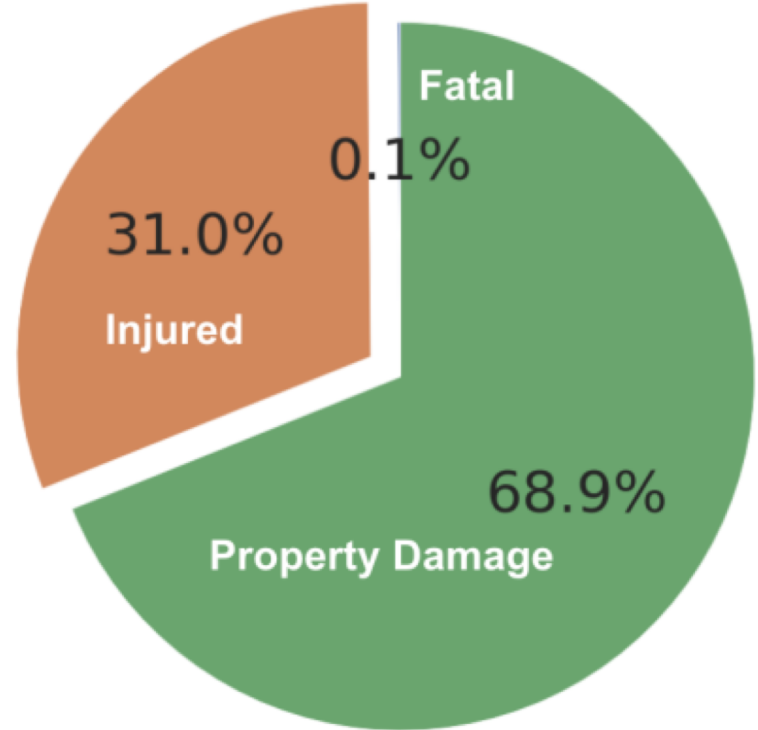
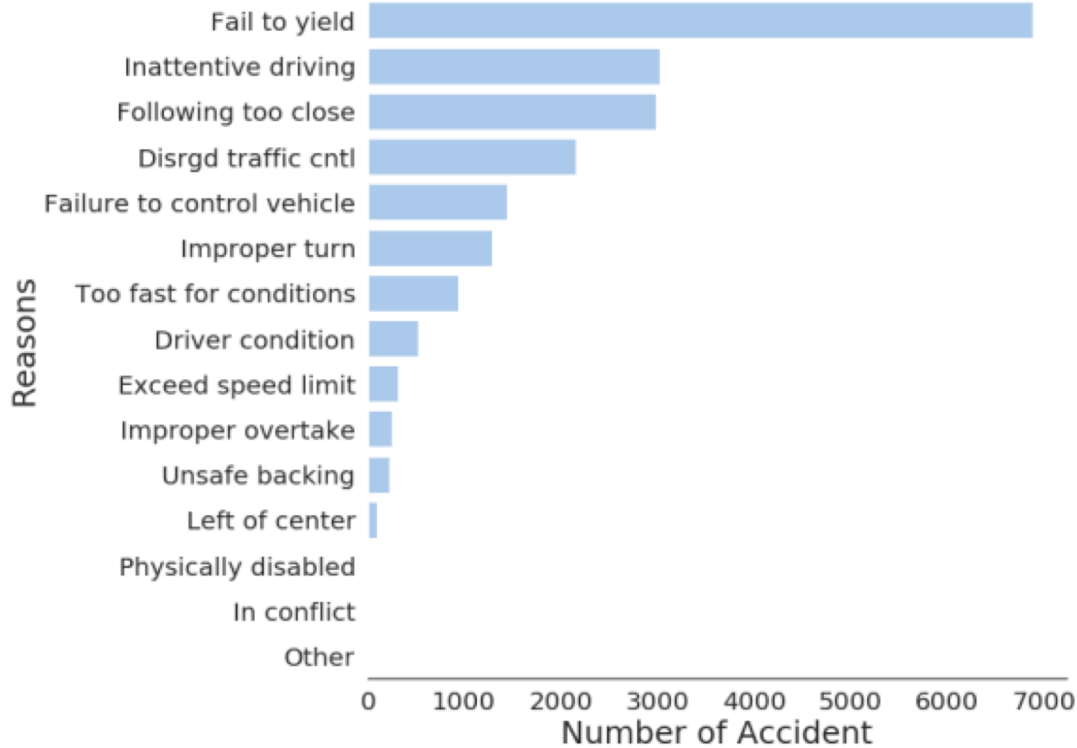
Vision Zero Madison

Tongkai Yang, Siyuan Ji, Clarence Kuo

3 Main Part:

- Intersection Crash
- Car to Truck Crash
- Bike Crash Analysis

Intersection Crash



The Most Dangerous Intersections

City Street: Mineral Point Rd & Pleasant View Rd

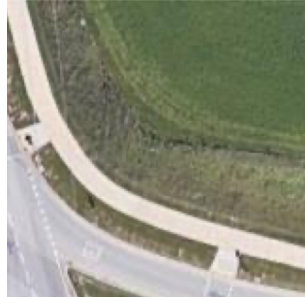
2009 - 2018

Total: **272**

Fail To Yield: **65%**

2015 - 2018

Enter Loop vs. On Loop: **35%**



Highway: E Washington Ave. & S Stoughton Rd.

2009 - 2018

Total: **346**

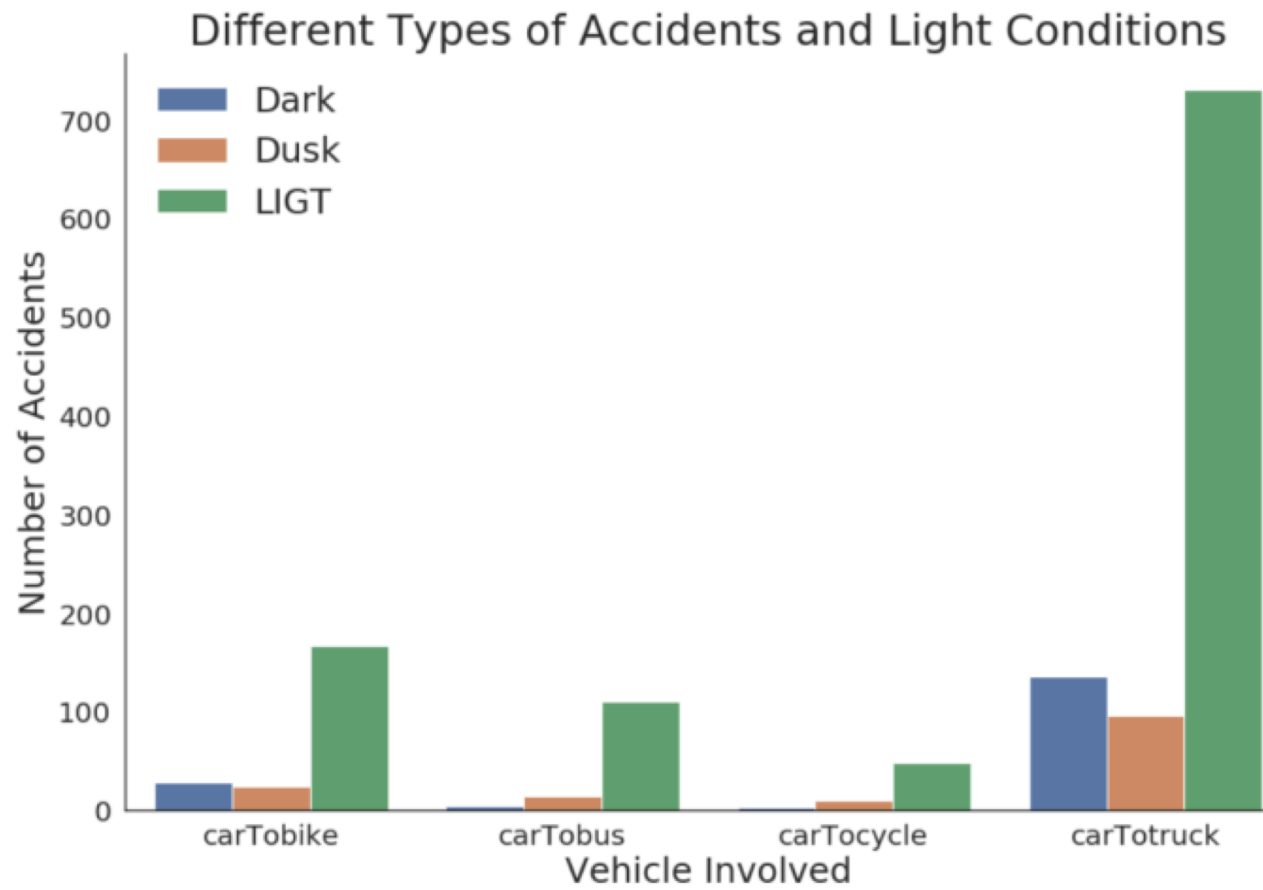
Inattentive Driving: **26%**

2015 - 2018

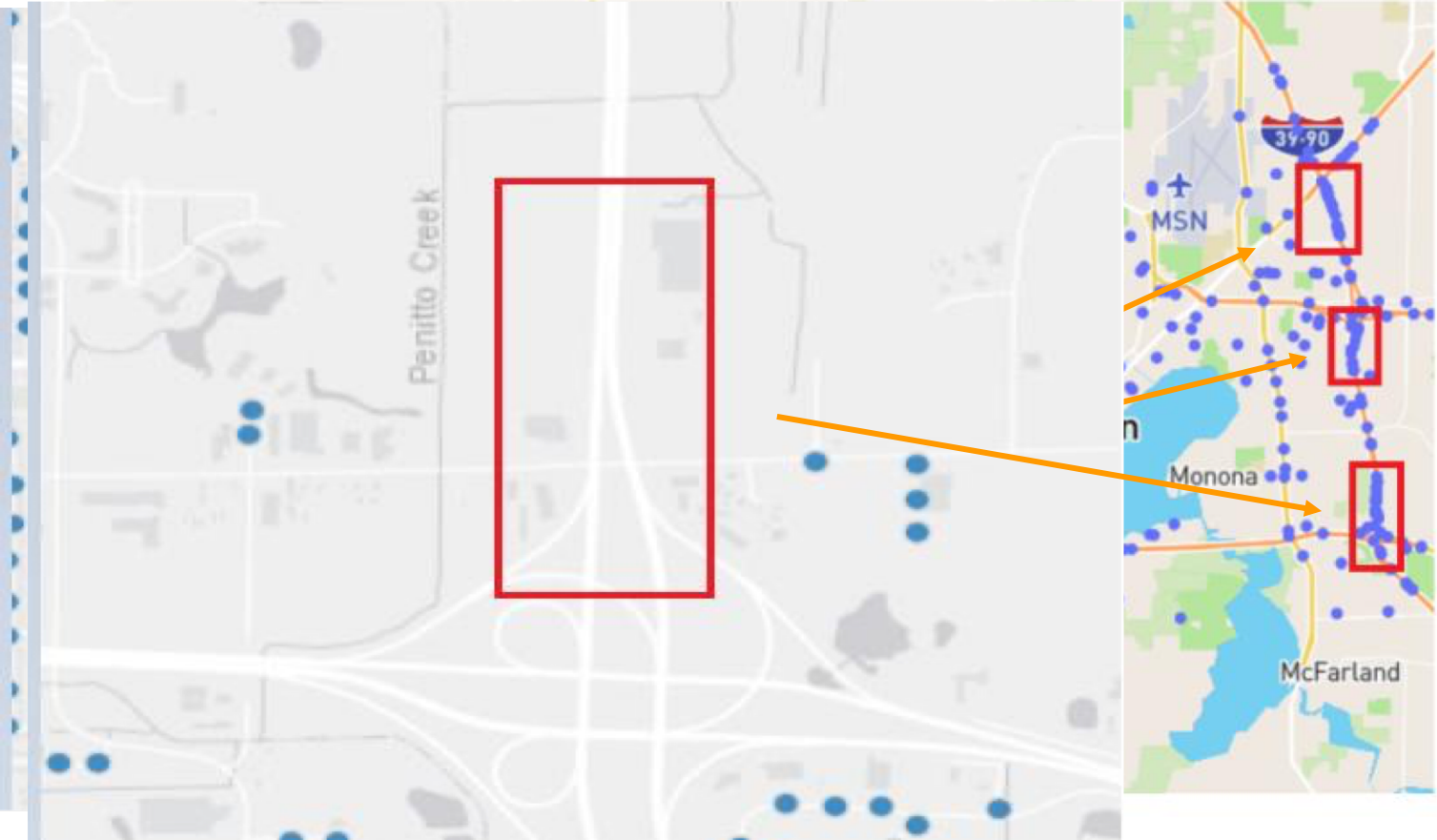
Go Straight vs. Left Turn: **20%**



Car to Truck Crash



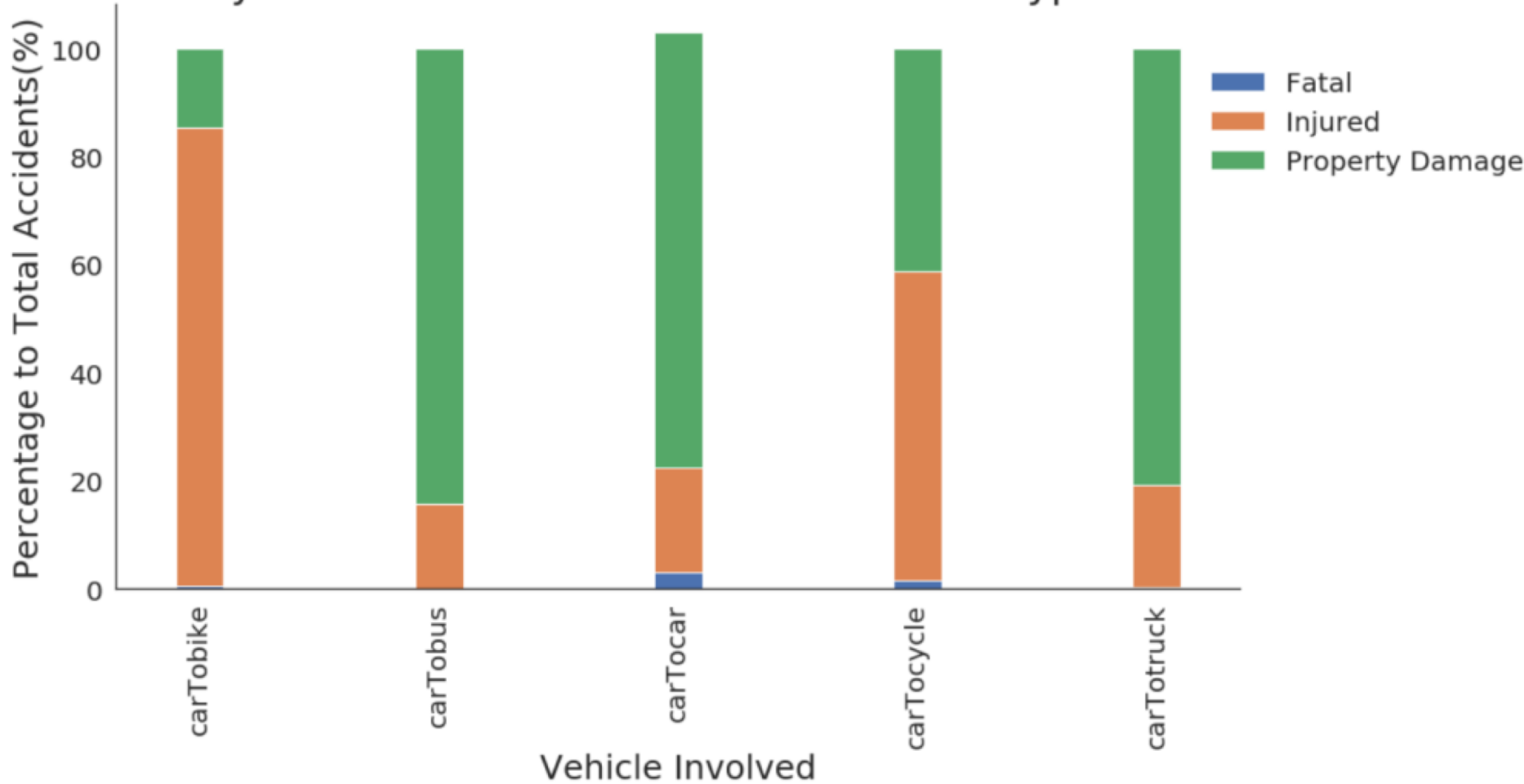
Data for CarToTruck Accidents Happended in Dark Time



I-90

I-39

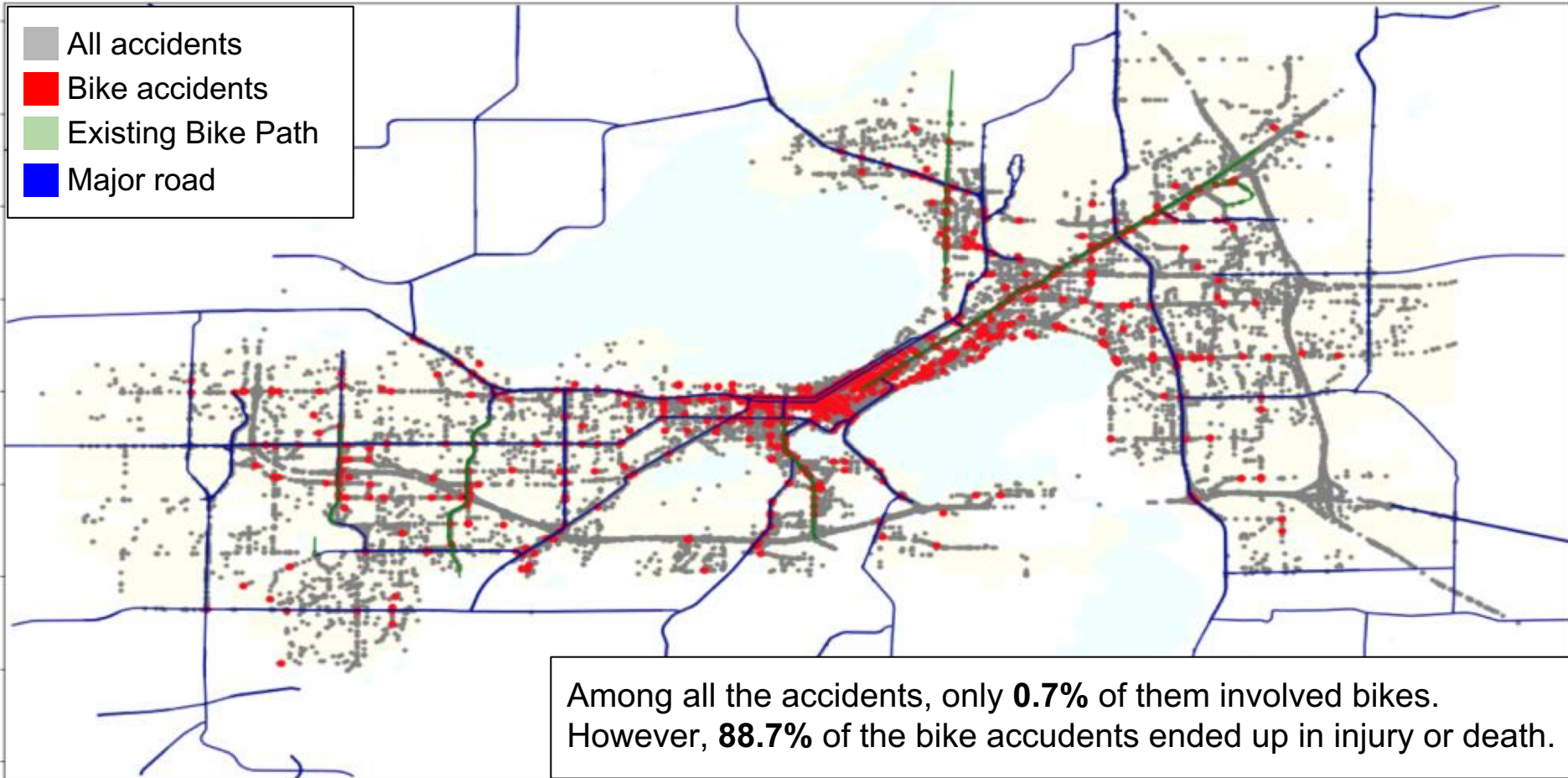
The Severity of Accidents Involved with Different Types of Vehicles



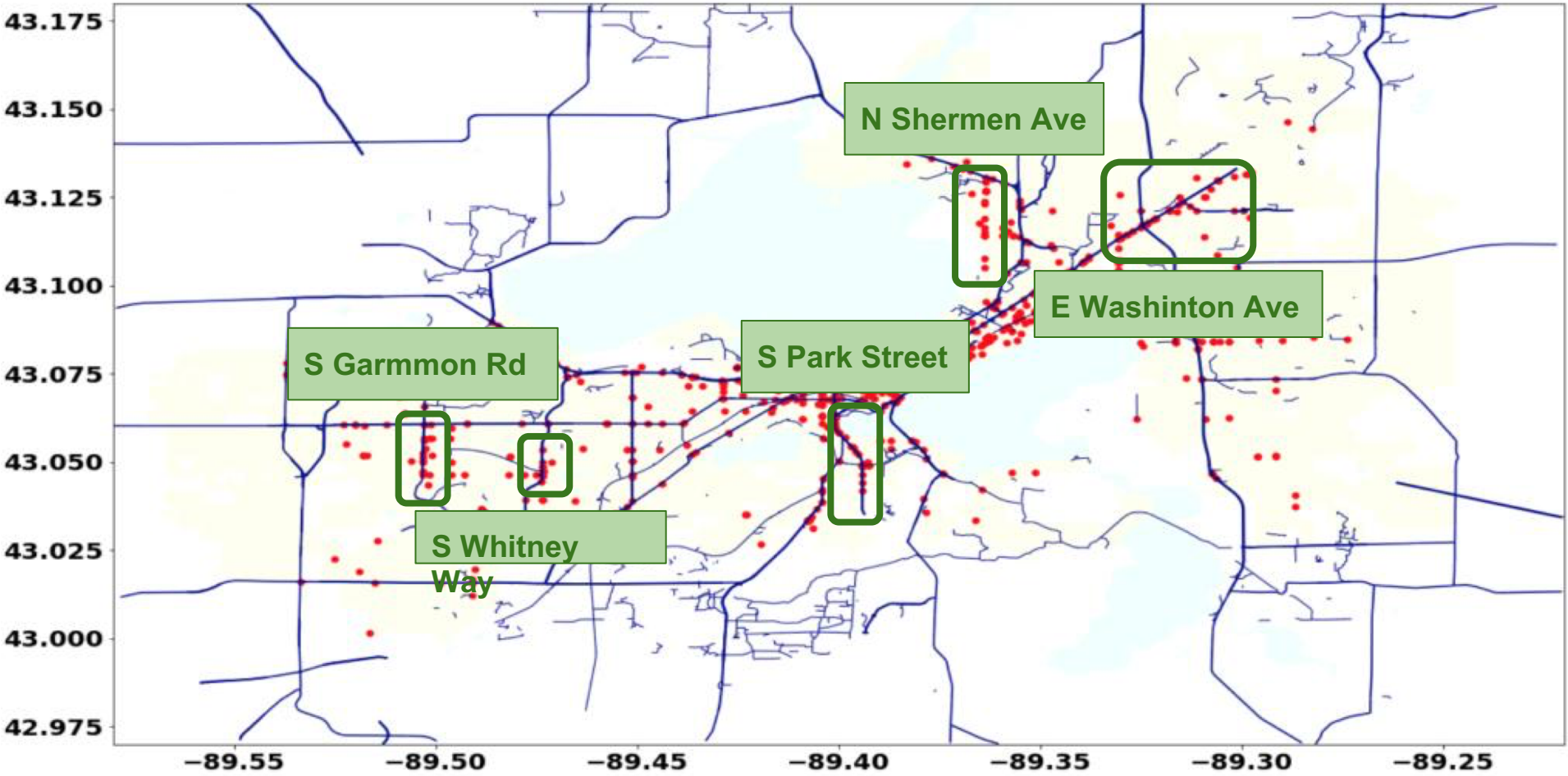
Bike Crash Analysis

Clarence

Why Bikes?

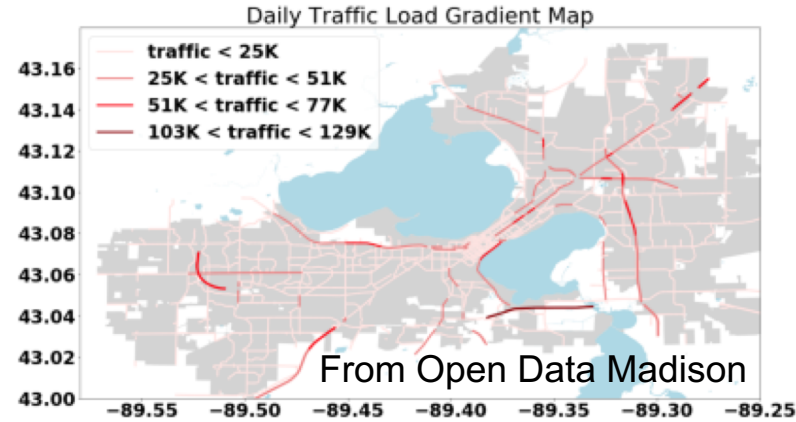


Dangerous sections



Analysis and Ranking

1. Check current status of the target
 - a. Google maps
 - b. Dane County Bike Map



1. Is there enough room for new bike facilities?
 - a. Check traffic load/ lane for availability:
 - i. The average theoretical maximum saturation flow rate per lane is **1800** vehicles/ hour
 - ii. Assume **70%** of the daily traffic load occurred within **3** hours of peak time.

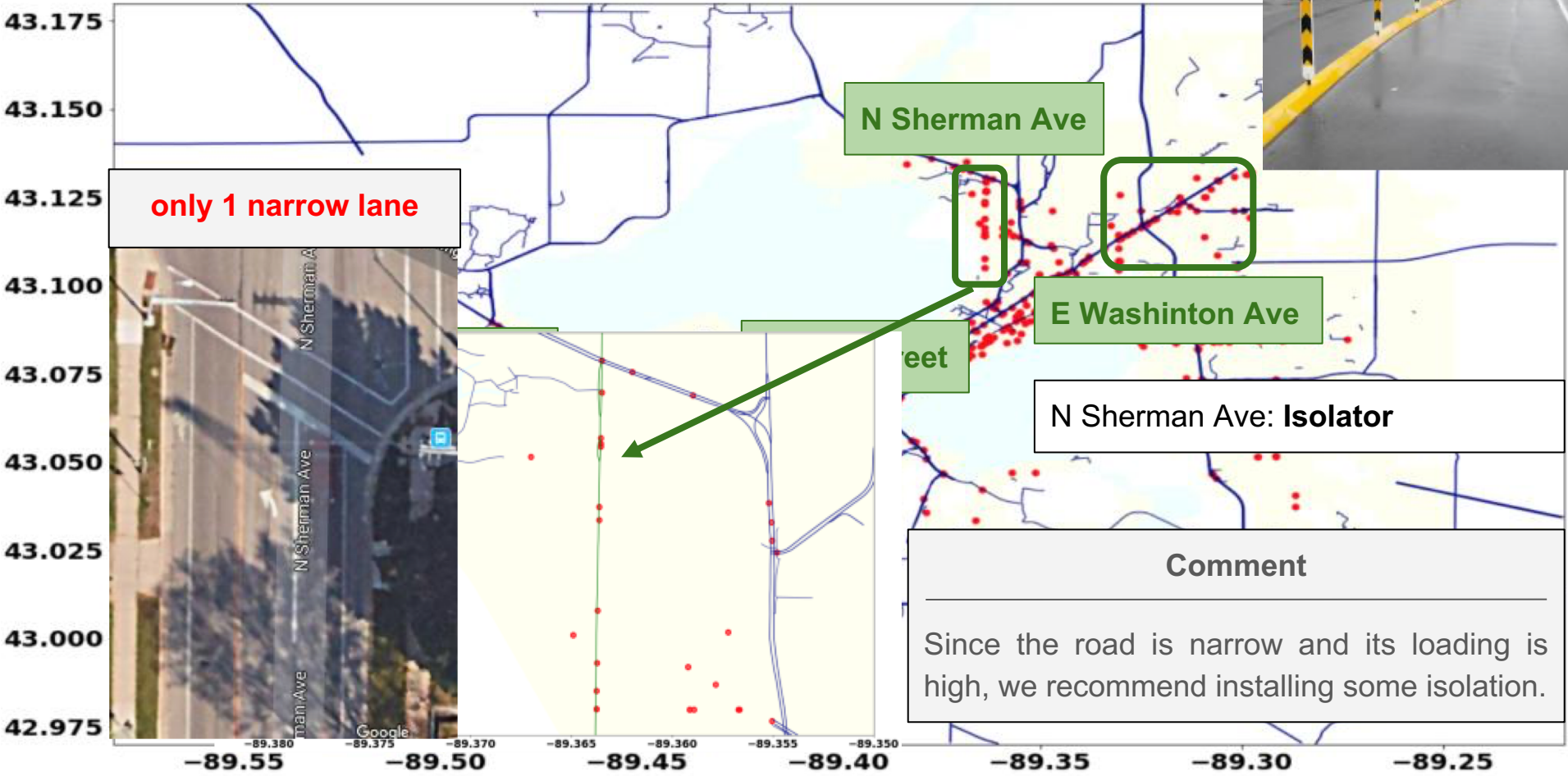
$$\text{Loading} = \frac{0.7 * \text{daily loading}}{3 \text{ hours} * \text{num of Lanes}}$$

- a. Calculate score:

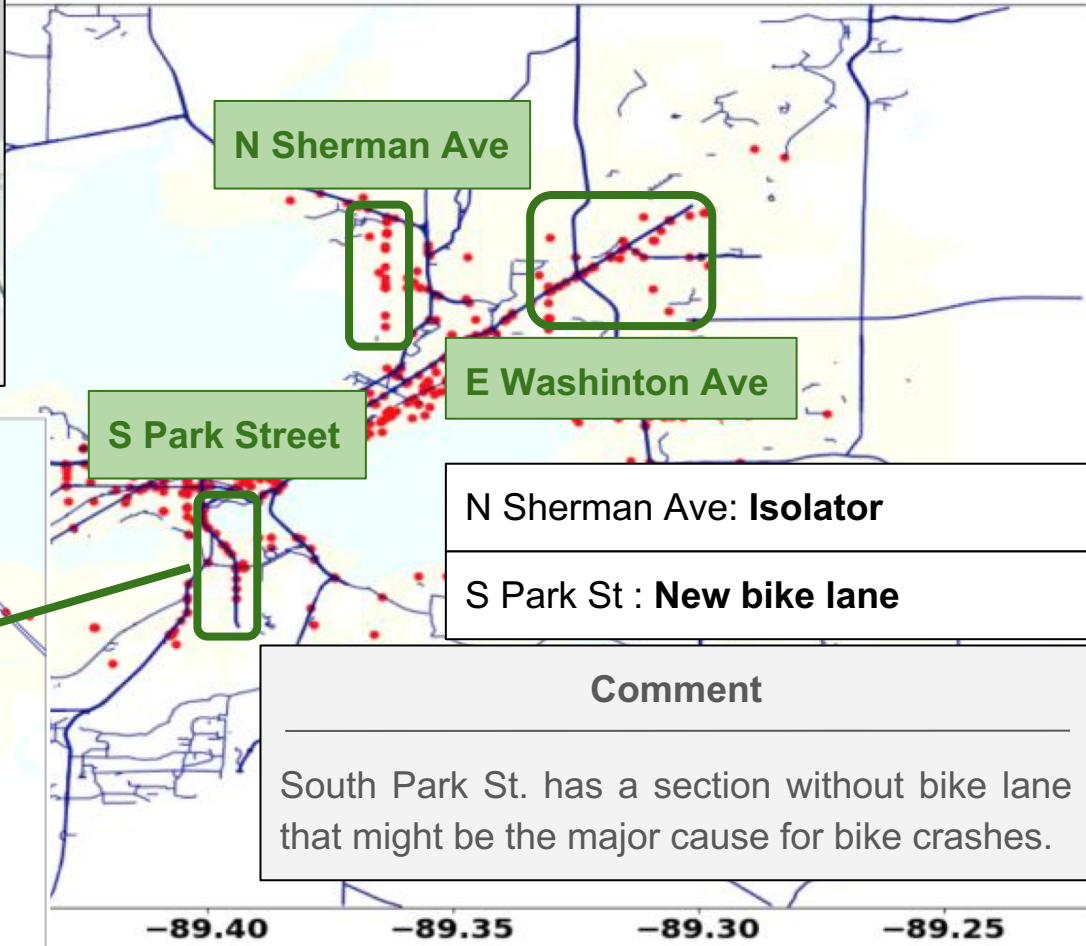
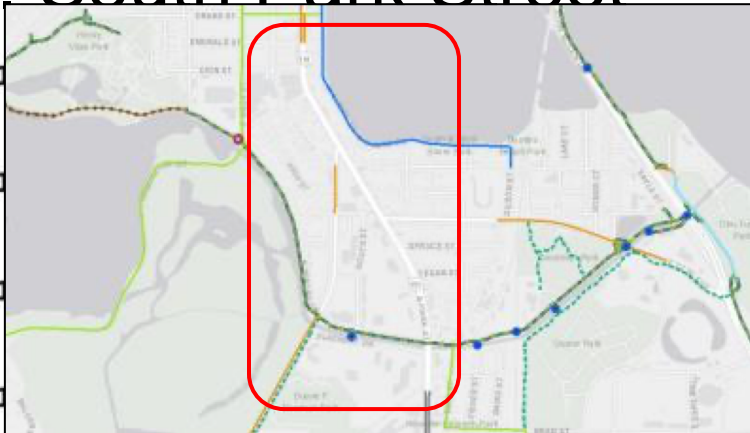
$$\text{Score} = \frac{\text{Average accident count}}{\text{Length}}$$

The higher the score, the higher the priority.

1. North Sherman Avenue



2 South Park Street



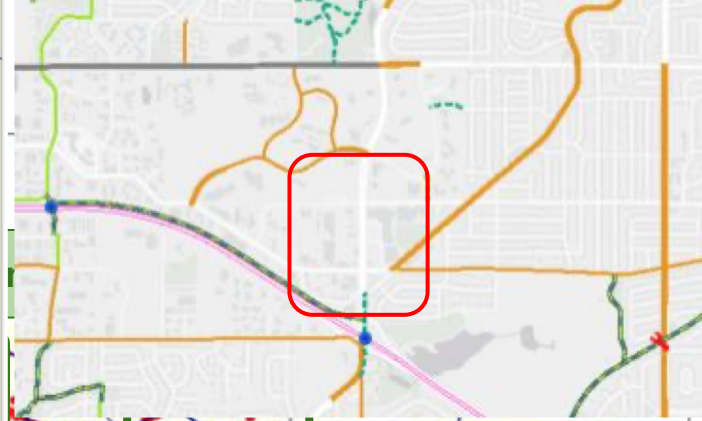
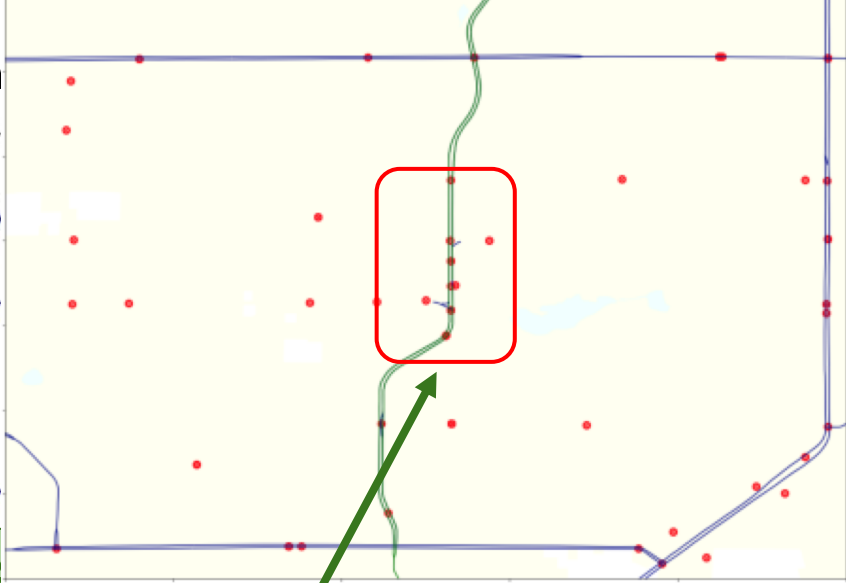
- N Sherman Ave: **Isolator**
- S Park St : **New bike lane**

Comment

South Park St. has a section without bike lane that might be the major cause for bike crashes.

3. South W

43.175
43.150
43.125
43.100
43.075
43.050
43.025
43.000
42.975



S Whitney



E Washinton Ave

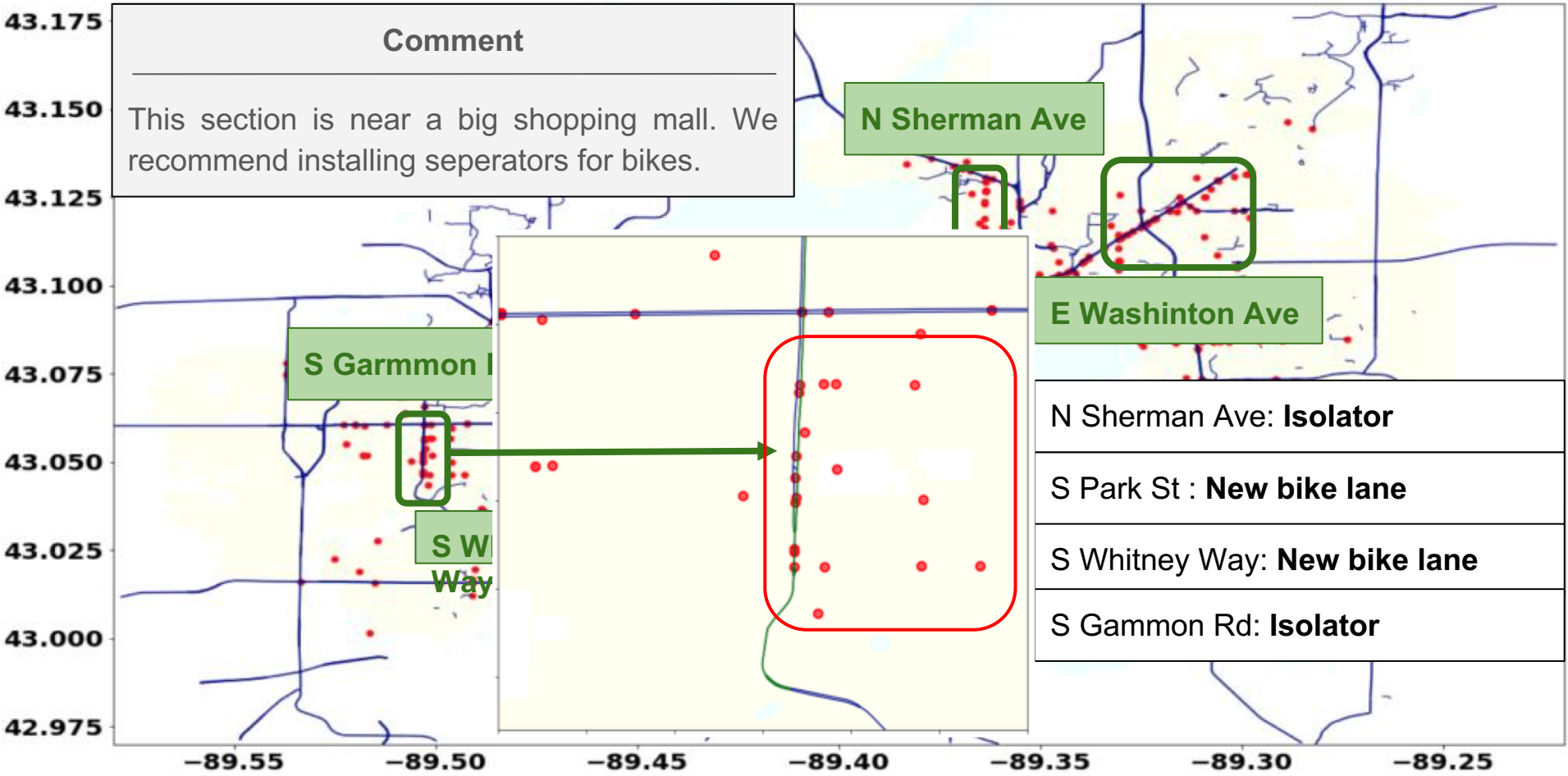
N Sherman Ave: Isolator
S Park St : New bike lane
S Whitney Way: New bike lane

Comment

Similarly, South Whitney Way also has the same condition as South Park St.

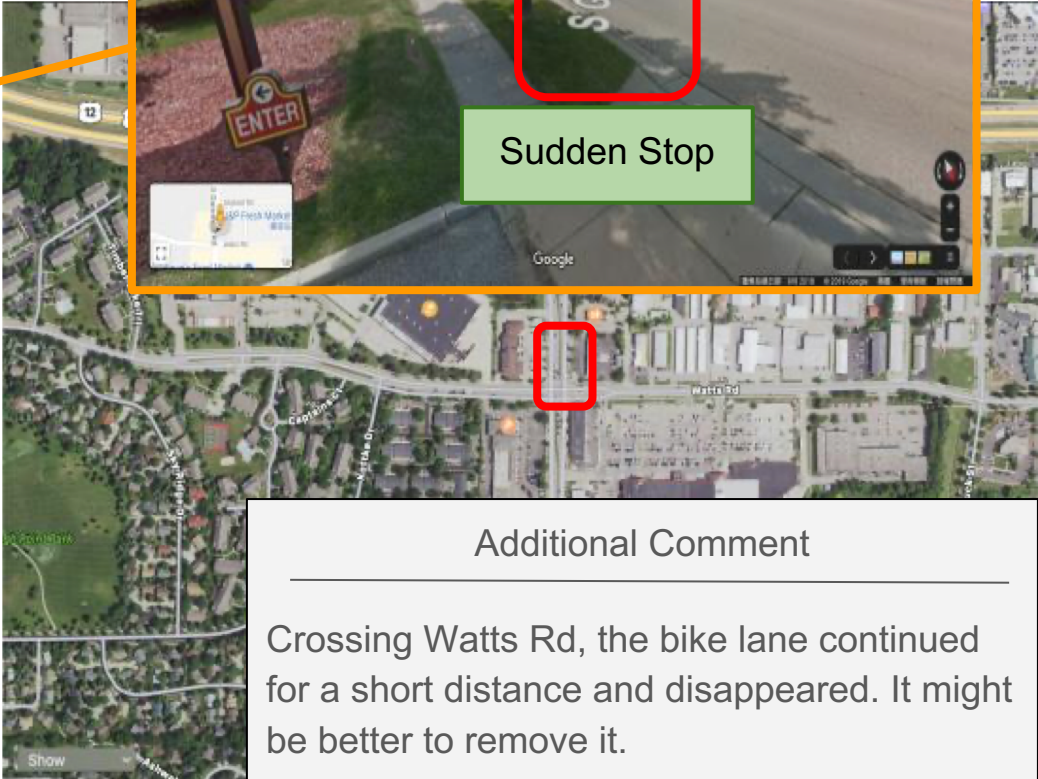
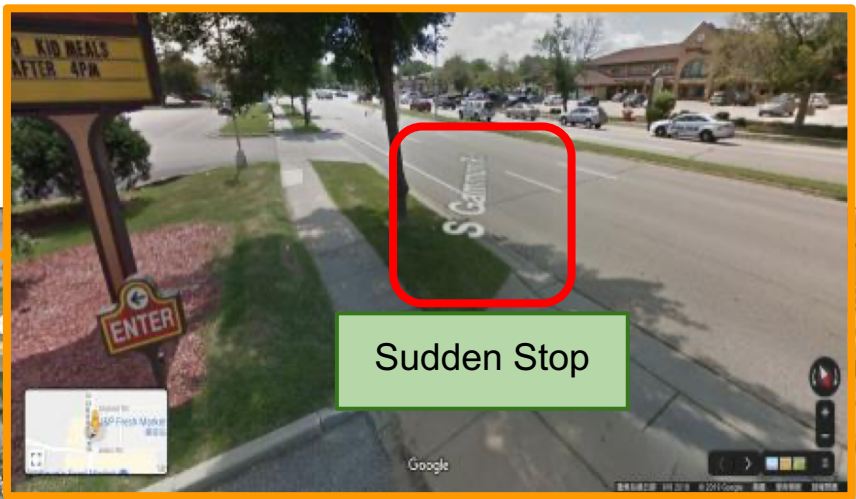
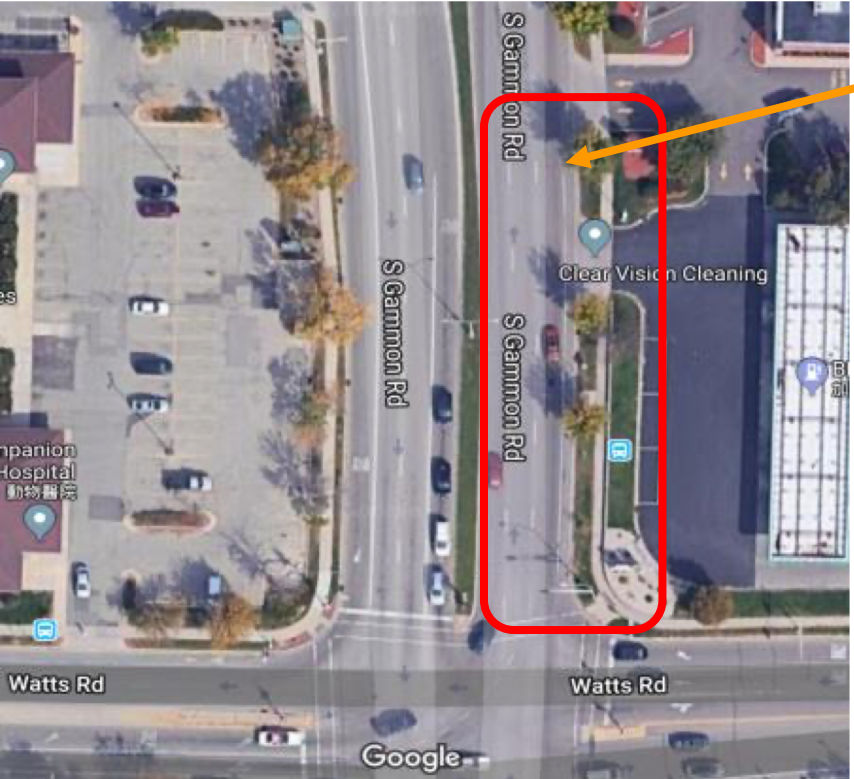
0 -89.35 -89.30 -89.25

4. South Gammon Road

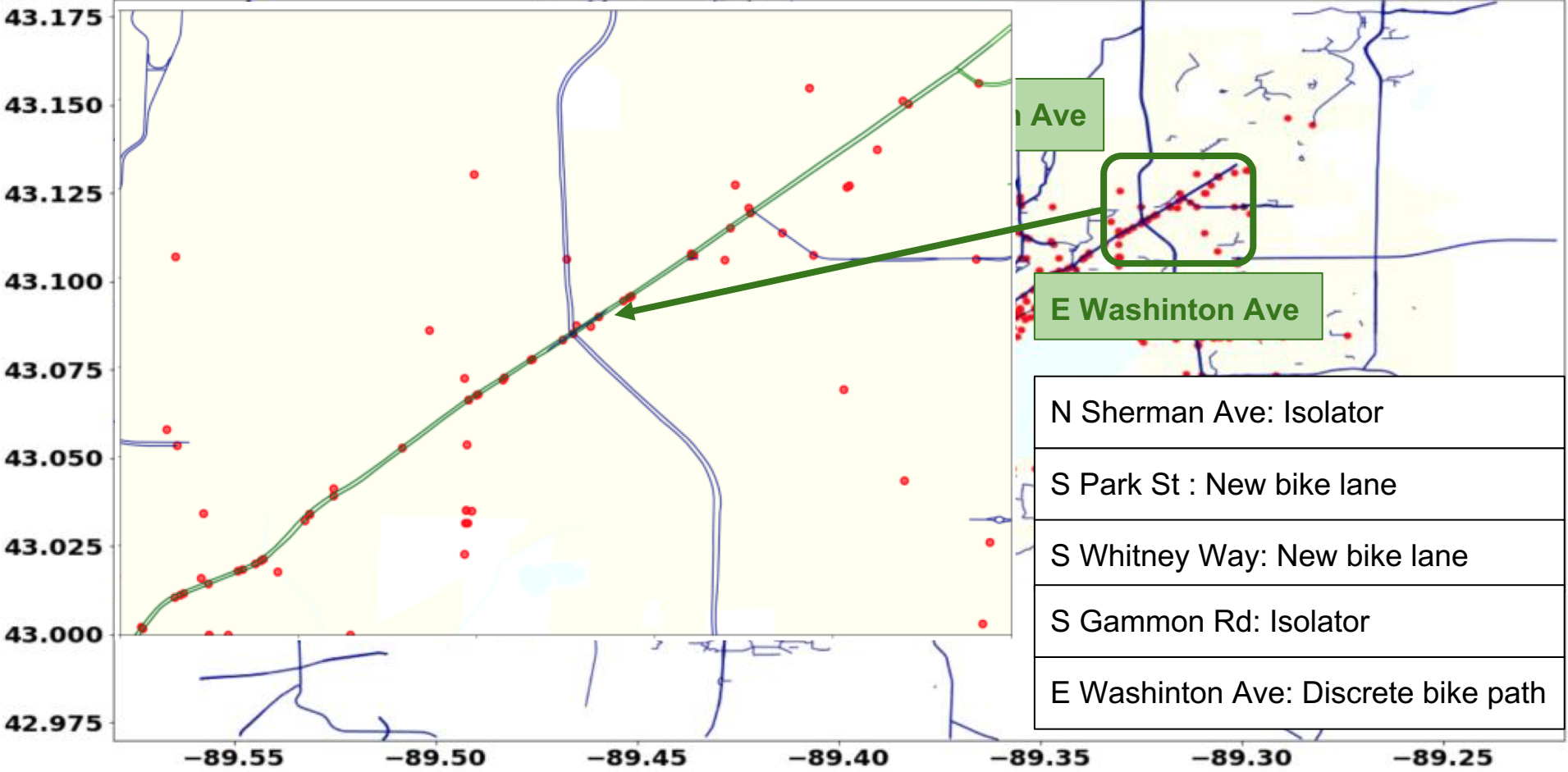


4. South Gammon Road

Extra Bike Lane



5. East Washington Avenue

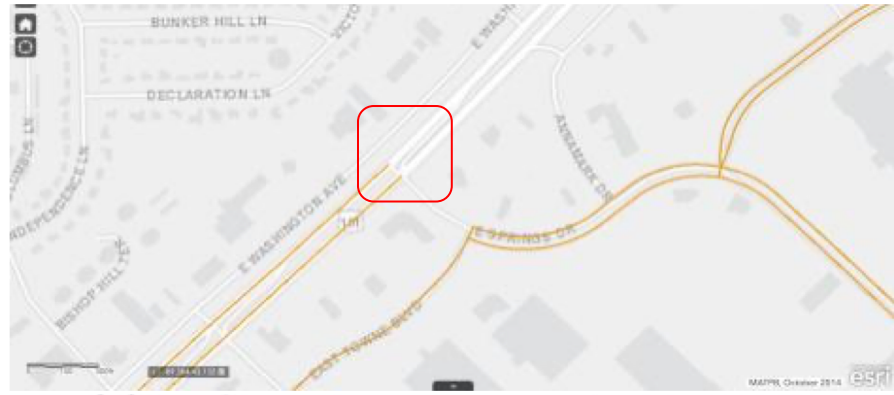
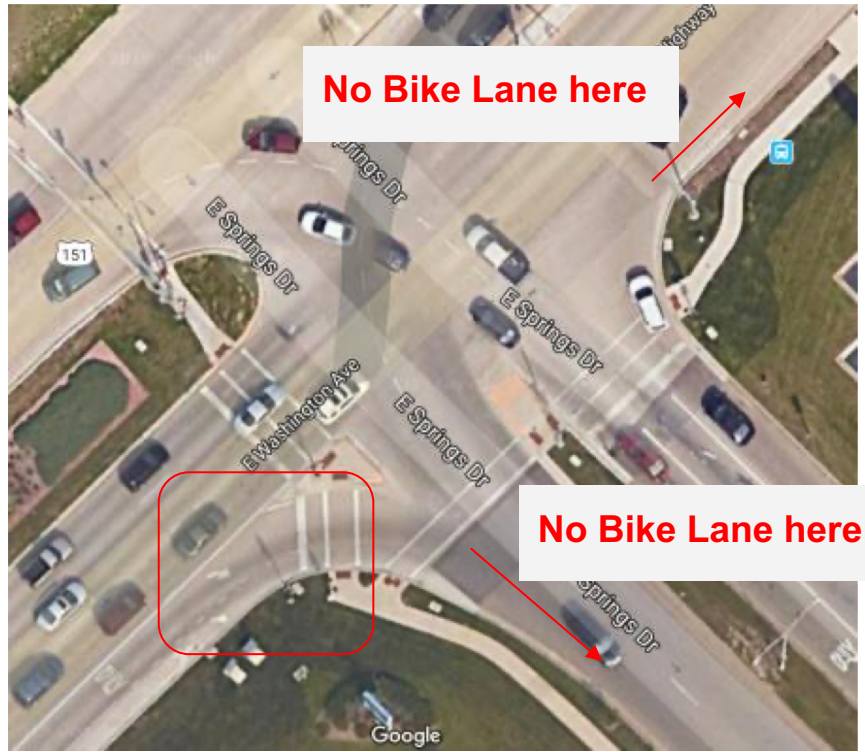


5. East Washinton Avenue

Additional Comment

The bike lane comes to a sudden stop at the cross of E Springs Drive. We suggest connecting it with adjacent bike lanes.

- Disconnected Bike Lane



Conclusion

$$Loading = \frac{0.7 * \text{daily loading}}{3 \text{ hours} * \text{num of Lanes}}$$

Loading/lane: 🚗
 Accident rate: 🔥🔥🔥
 Rank: 2

S Gammmon Rd

Loading/lane: 🚗
 Accident rate: 🔥🔥
 Rank: 3

S Whitney Way

Loading/lane: 🚗🚗🚗
 Accident rate: 🔥🔥
 Rank: 4

S Park Street

Loading/lane: 🚗🚗🚗🚗
 Accident rate: 🔥
 Rank: 5

N Sherman Ave

Loading/lane: 🚗🚗🚗🚗
 Accident rate: 🔥🔥🔥🔥
 Rank: 1

E Washinton Ave

N Sherman Ave: Isolator
S Park St : New bike lane
S Whitney Way: New bike lane
S Gammmon Rd: Isolator
E Washinton Ave: Discrete bike path

References

- Dane County Bike Map

<https://cityofmadison.maps.arcgis.com/apps/webappviewer/index.html?id=5d9b5793e6404b8c89872c06bd5f26c2>

- Open Data Madison

<https://data-cityofmadison.opendata.arcgis.com/>

- Google Maps

<https://www.google.com/maps>

- Distance calculator

<https://www.movable-type.co.uk/scripts/latlong.html>

Thank you!