MIOVISION

Smart Cities Start Here

Miovision TrafficLink hardware

Smart Intersections Made Easy

Miovision SmartLink

- Remote access through secure wireless communication.

Miovision SmartView 360

- Generates video for monitoring, detection, and analytics.

Miovision SmartSense

- Roadside video analysis for vehicle detection, traffic counts, and event alerts.

Miovision TrafficLink Portal

- Cloud-based software suite for traffic operations.

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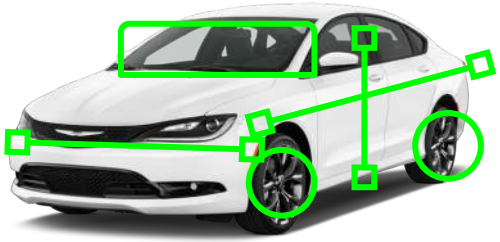
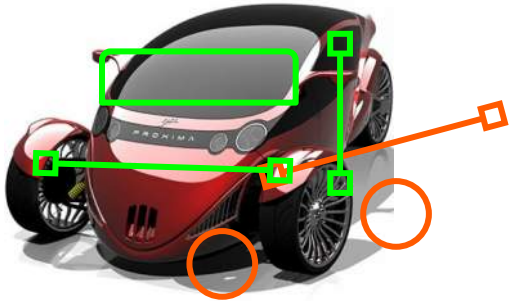
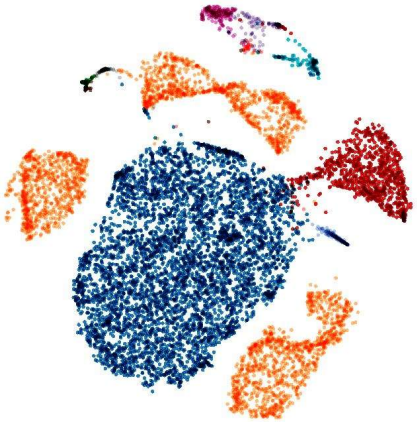
Teaching a computer to see





Label	
car	50344
background	30859
pickup_truck	9984
single_unit_truck	1262
articulated_truck	1699
pedestrian	1096
work_van	1659
bus	2025
bicycle	453
non-motorized_vehicle	249
motorcycle	370



Miovision Smart Intersection

City of Jersey City

Multi-use Miovision hardware to support several initiatives

- Strategic Development Partner for Safety Analytics & Vision Zero
- Improving operational efficiency and traffic congestion with remote signal monitoring and performance measures
- Constant Data collection for SPMs, TMC, Travel Time,

66 intersections installed by December 2019

Improving Vision Zero with Smart Intersections

Vision Zero programs rely on a combination of methods to improve safety.

Road Design
(eg.Protected Bike Lanes)

Policy Changes
(eg. Speed limits)

Signal Control
(eg. Protected left turns)

Environmental Design
(eg. Street Lighting)

But Vision Zero teams have told us they struggle with:

- **Data** to tell them where to focus safety investments
- **Data** to measure the impact of changes
- **Funding sources** to pay for Vision Zero programs

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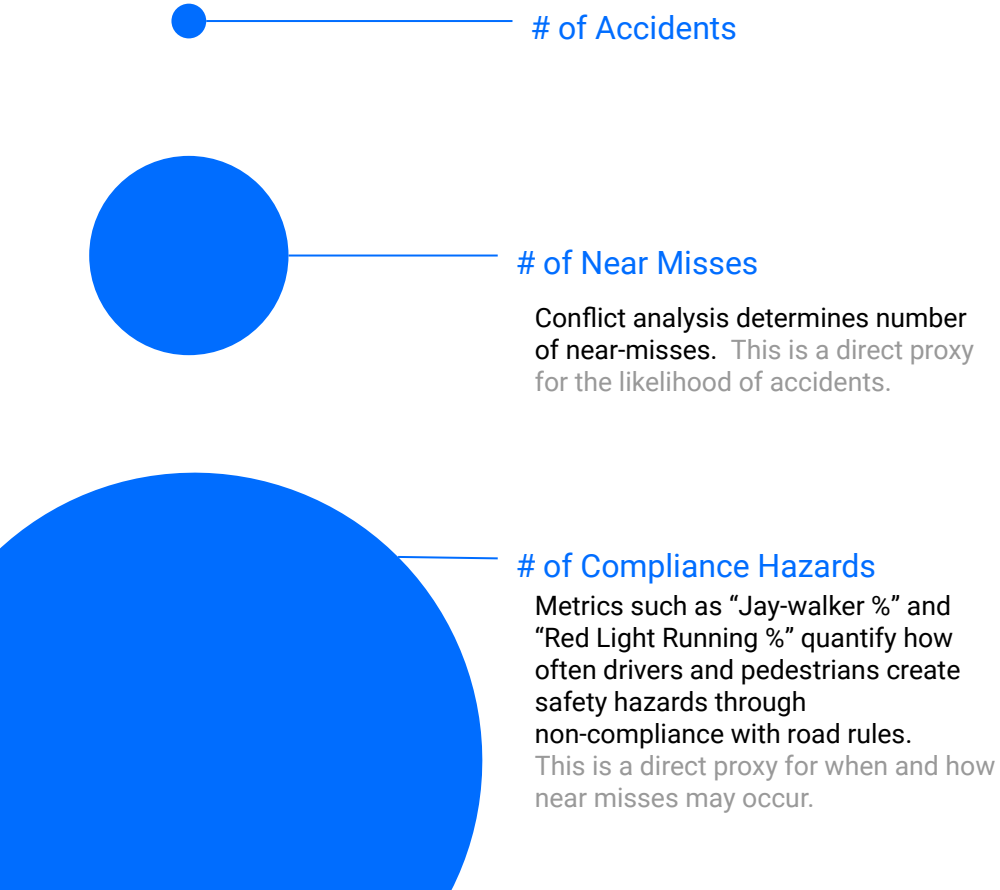
The Power of Predictive Safety Analytics



of Accidents

of Near Misses

Conflict analysis determines number of near-misses. This is a direct proxy for the likelihood of accidents.

of Compliance Hazards

Metrics such as “Jay-walker %” and “Red Light Running %” quantify how often drivers and pedestrians create safety hazards through non-compliance with road rules. This is a direct proxy for when and how near misses may occur.

Accident events are usually too infrequent and random to let engineers understand safety.

Predictive analytics provide a much larger data set for understanding hazards.

Surrogate Safety Measures

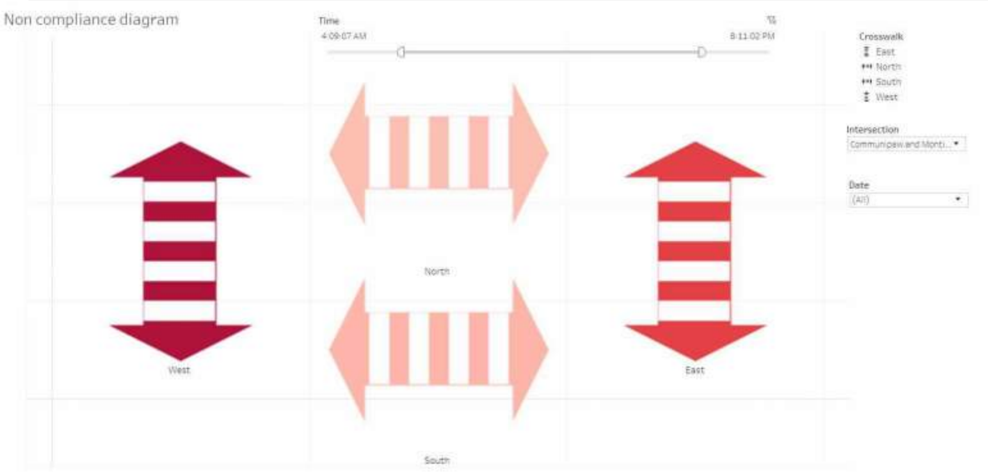
- Pedestrian and cyclist counts
- Lite Conflict Analysis
- Vehicle yellow and red light behavior
- Pedestrian Spatial behaviour
- Pedestrian count by pedestrian phase
- Pedestrian compliance
- Pedestrian exposure
- Pedestrian Clearance

Communipaw and Monticello

Non compliance of Pedestrians

- Visual representation of movements color coded based on movement during the DW phase

  Pedestrian crosswalk compliance by Volume (Highest Level, Most non compliant intersections)



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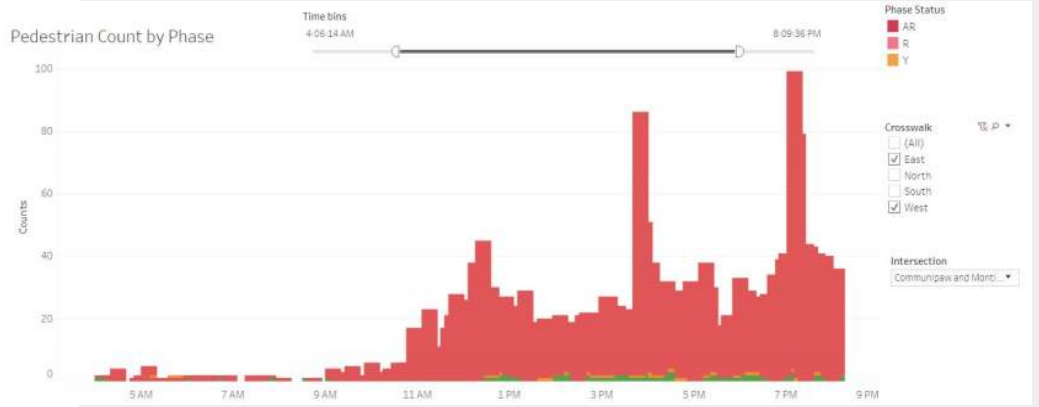
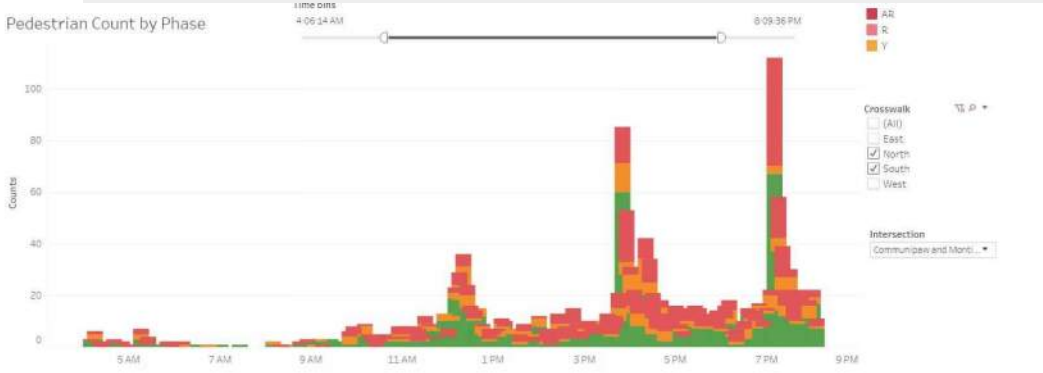
Communipaw and Monticello

Pedestrian Count by Phase Throughout the Day

- Count of pedestrians crossing during each phase throughout the day
- Digging into time of day plans





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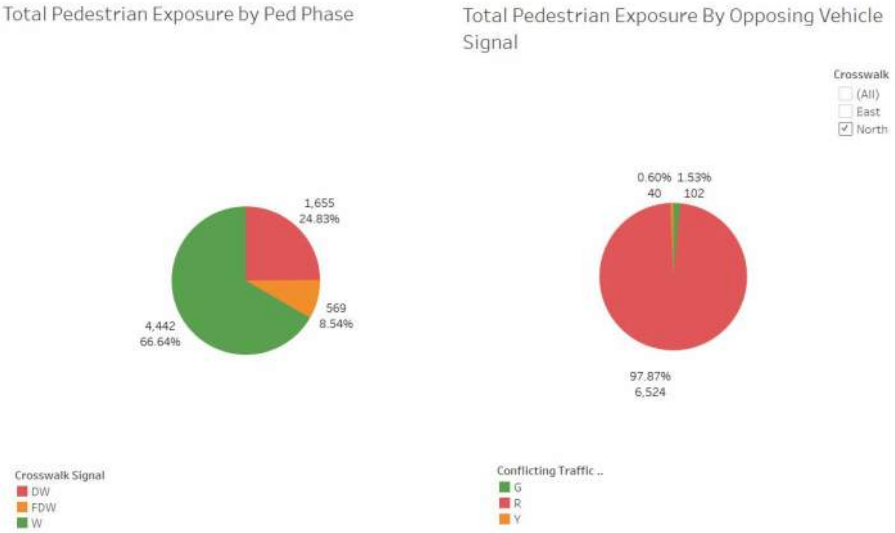
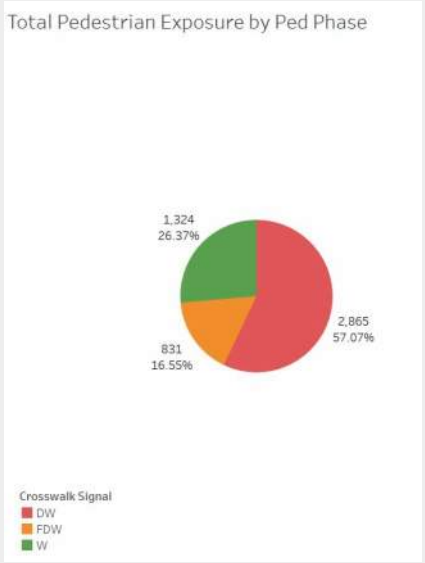
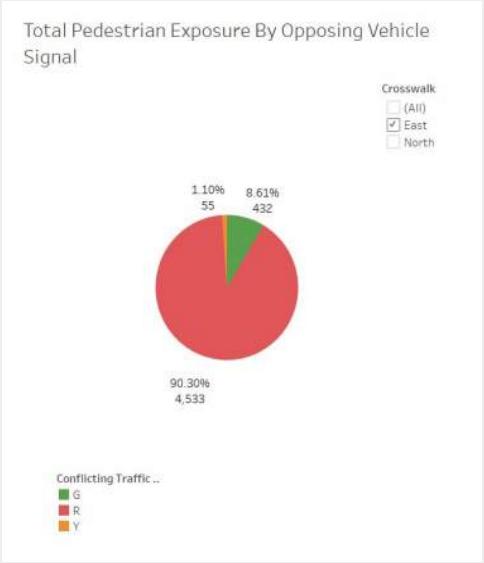
Pedestrian Exposure

- Exposure by ped phase
- Exposure by conflicting signal
- Would it make sense to allow ped recall?







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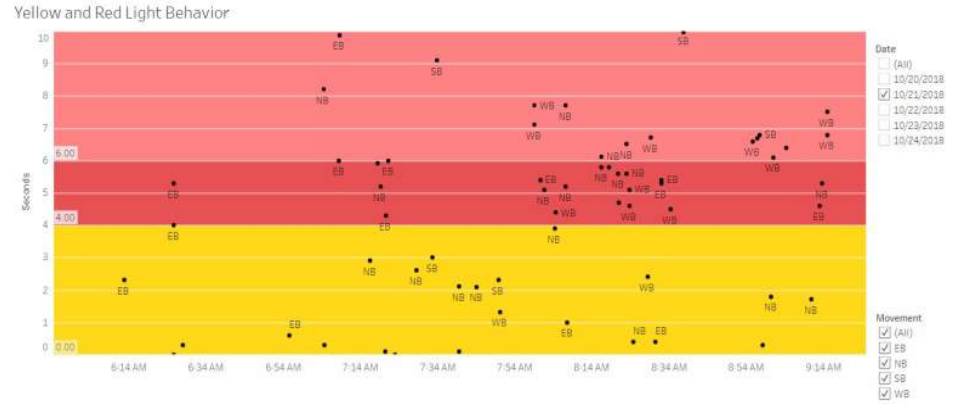
Red Light Running

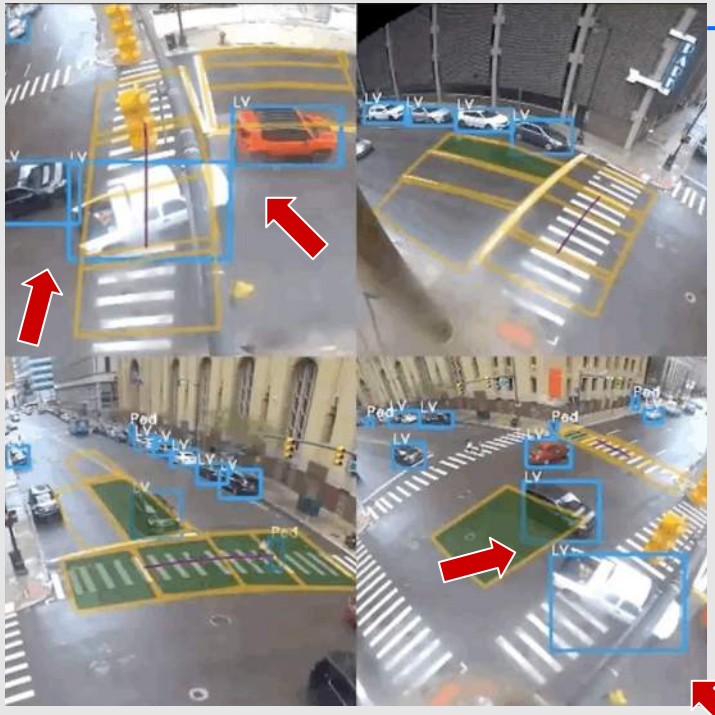
- Quantify the number of vehicles triggering the RLR post stopbar detector overlaid with the signal phasing
- Filtering enabled based on time, date and movement
- Westside appears to have the highest number of red light runners



Total ped counts diagram

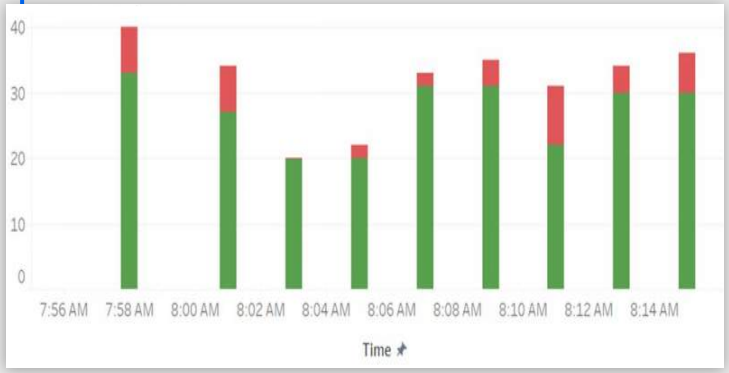
Example

Pedestrian Compliance



Spatial Compliance
Pedestrian Heatmap, Jaywalker %, etc.

Phase Compliance
Walking on *Walk* and *FDW* Signal vs *Don't Walk*



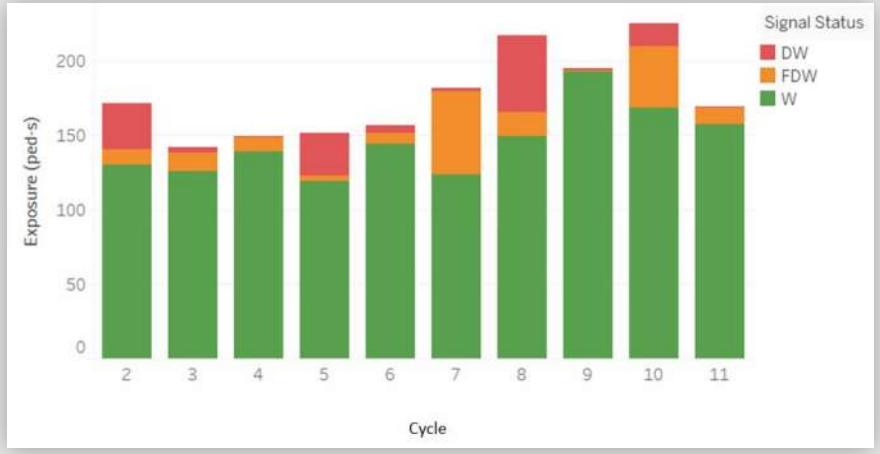
Spatial Heatmap of Ped Activity

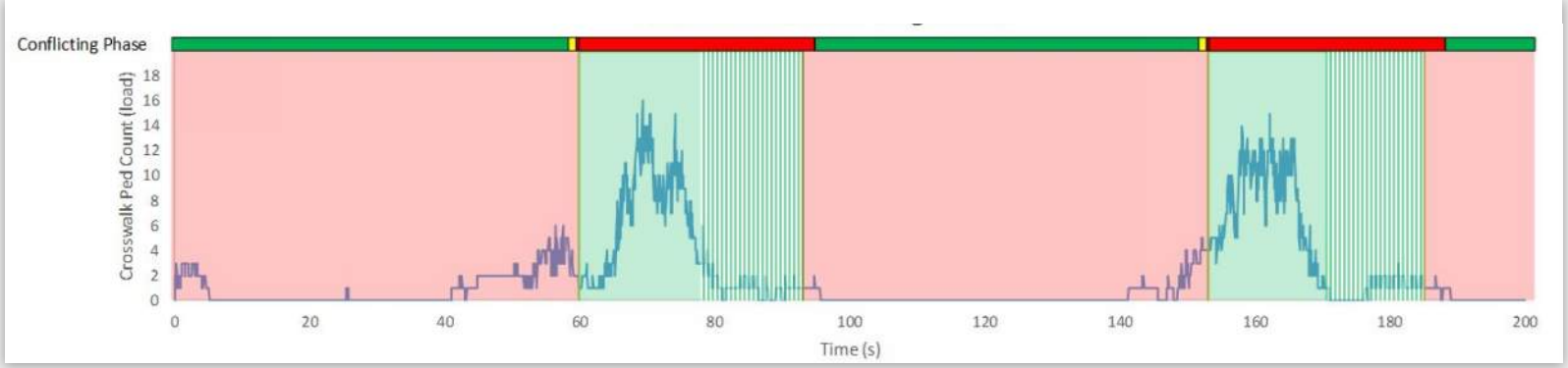
Example

Pedestrian Exposure

Concept combining average crossing time and a per- 0.1 second count of all pedestrians in the crosswalk to identify total **“pedestrian seconds”** of exposure.

Higher Exposure = Higher Risk.





Example

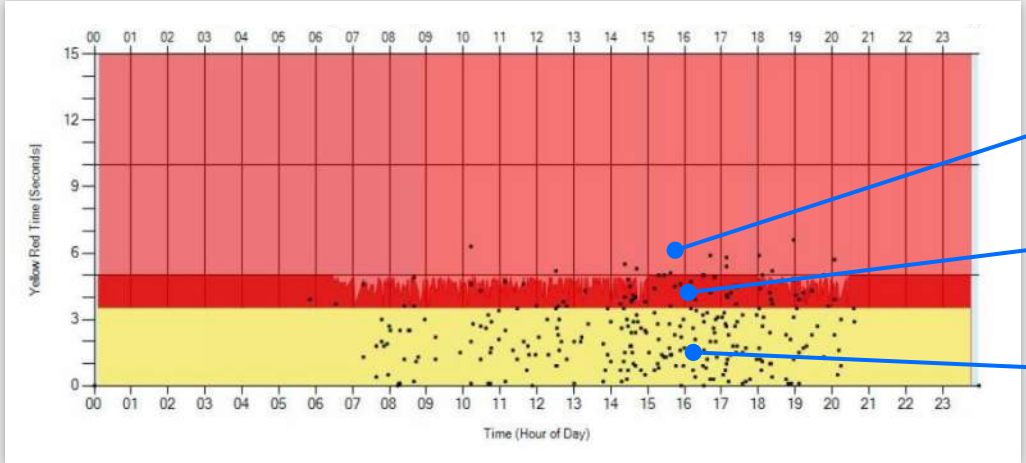
DRIVER COMPLIANCE

Red-light running contributes to an average of 720 deaths and 140,000 injuries every year (IIHS).

Georgia, as well as many other states, have banned the use of Automated Red Light Enforcement cameras.

Collecting anonymous red-light runner data can help inform strategies for signal control, intersection design, and enforcement.

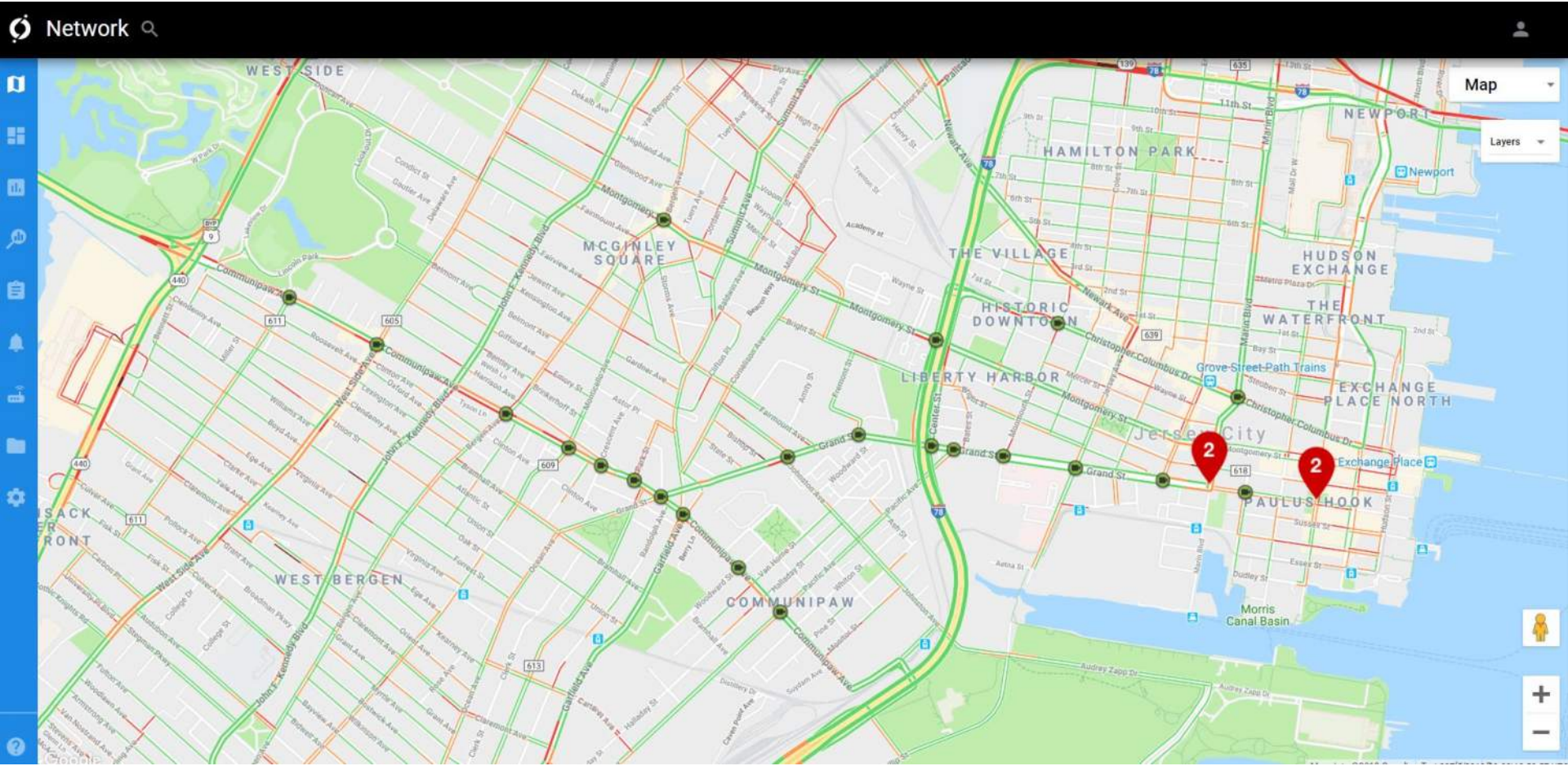
Possible Strategy from MnDOT



Red Actuations (Conflicting Green)

Red Actuations (Clearance)

Yellow Actuations


Network
Map
Layers
WEST SIDE
MCGINLEY SQUARE
HAMILTON PARK
NEWPORT
Newport
THE VILLAGE
HUDSON EXCHANGE
HISTORIC DOWNTOWN
THE WATERFRONT
LIBERTY HARBOR
Grove Street Path Trains
EXCHANGE PLACE NORTH
Jersey City
Exchange Place
PAULUS HOOK
WEST BERGEN
COMMUNIPAW
Morris Canal Basin
2
2

Thank you

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