How Big Data can Support Safe and Equitable Streets

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metroplan orlando
A REGIONAL TRANSPORTATION PARTNERSHIP

STREETLIGHT

Agenda

1. StreetLight Overview
1. Big Data for Complete Streets Case Studies and Examples
1. Metroplan Orlando’s Speed Management Network Study

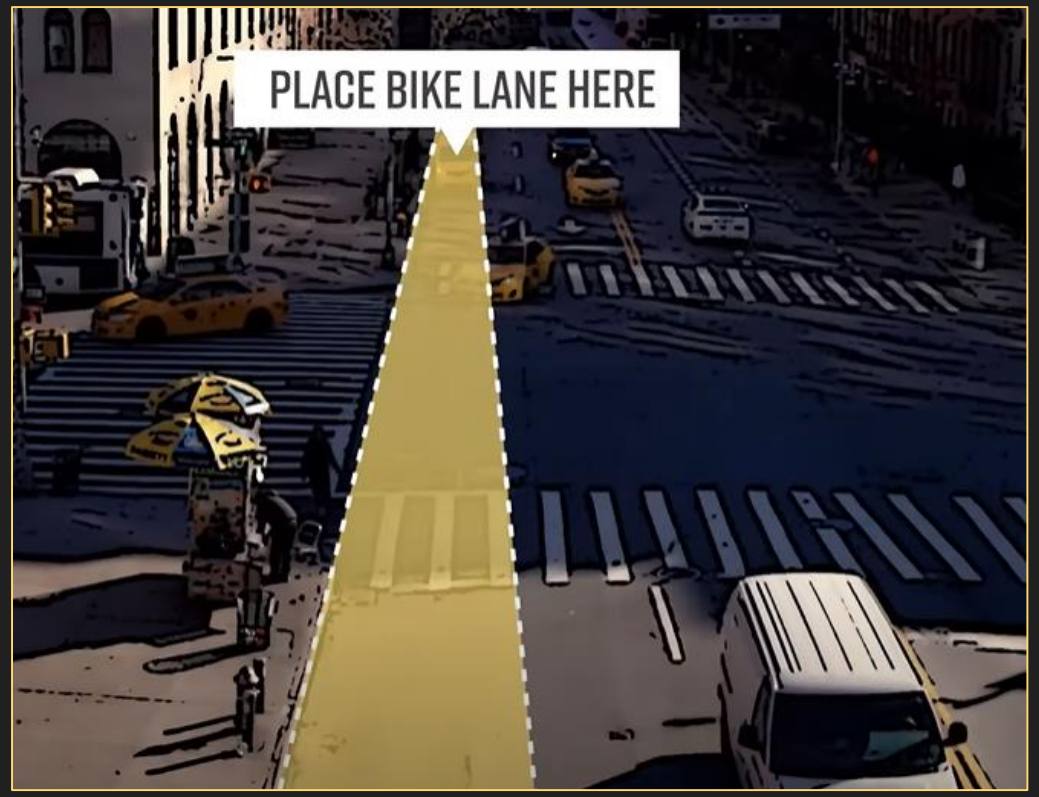
Section 1

StreetLight Overview

StreetLight distills massive amounts of transportation data into the actionable insights you need to keep your communities moving.

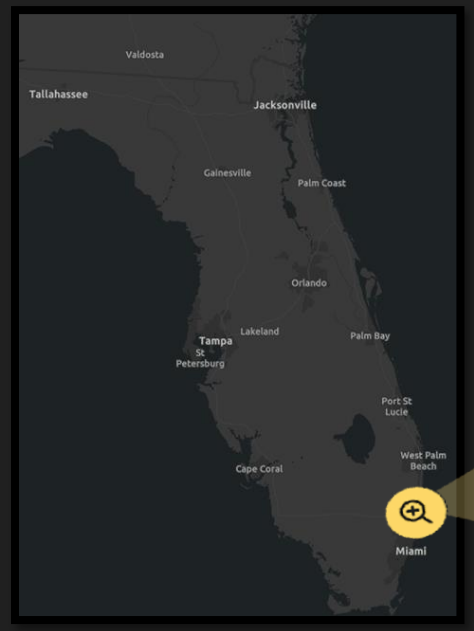
It's not just about the **data**

It's about the **decisions** it enables



Any road or geographic area. From network scans to local planning, measure transportation at any level of spatial granularity.

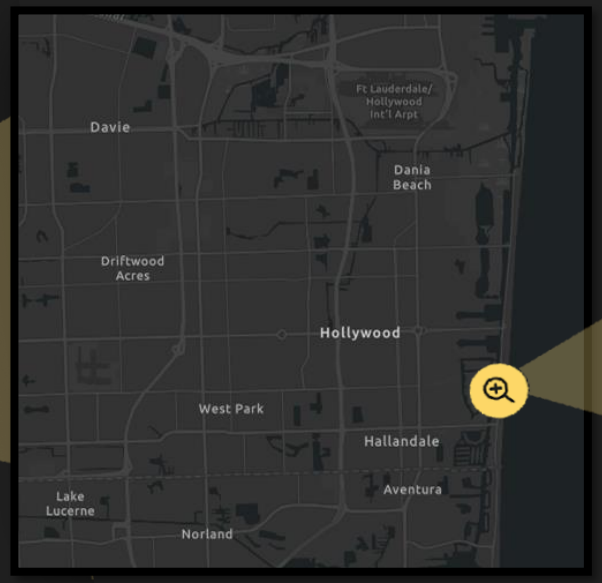
National or regional Level



Florida

Statewide AADT

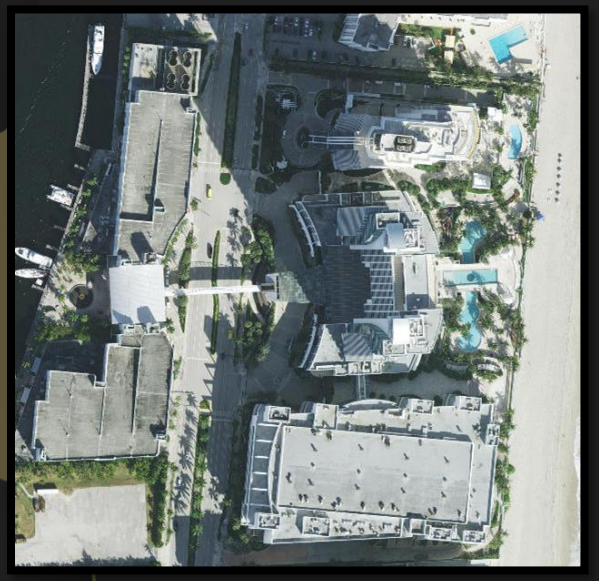
City or neighborhood Level



Broward County

Speed on any road

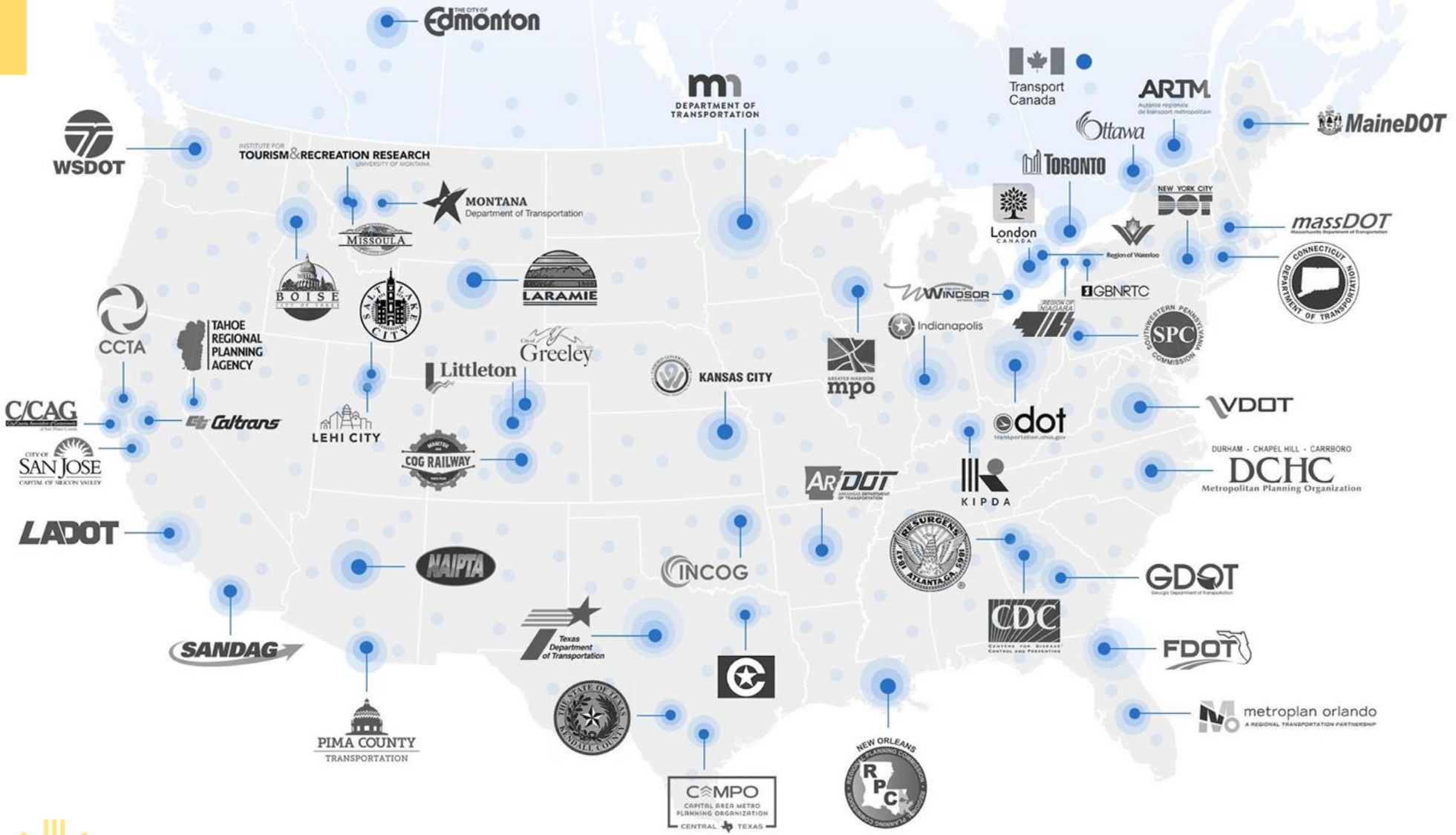
Any road, intersection or corridor



Ocean Drive @ Magnolia Terrace

40,000 AADT

Trusted by your agency peers since 2011



Jacobs · steer · CDM Smith · Fehr & Peers · Uber · Siemens · Parsons · AECOM · Stantec · Kimley»Horn · BCG · HDR · Alaska Airlines · Macquarie

+ many more!

What do all these customers do with StreetLight InSight®

CASE STUDIES

Complete Streets

Safety

Active Transportation

Section 2

Big Data for Complete Streets Case Studies and Examples

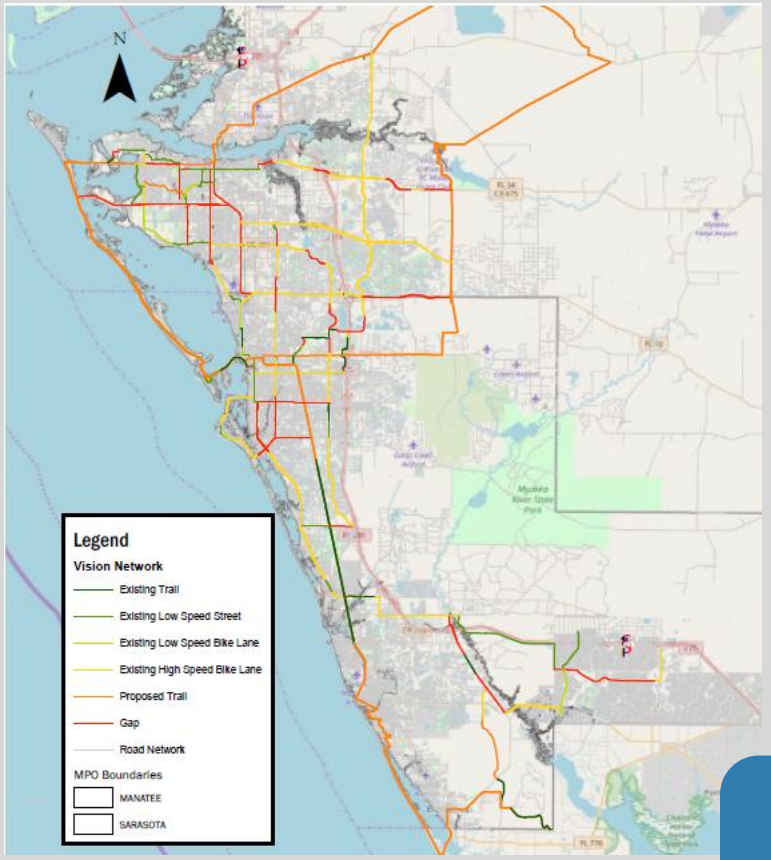
Active Transportation Plan for Sarasota

Challenge:

Sarasota/Manatee MPO wanted an Active Transportation Plan to guide decisions and funding for transit, bicycle, and pedestrian facilities. They needed to ensure that this multimodal network would make these modes safer, affordable, and more convenient for all users, including increasing the number of people walking, bicycling, and taking transit trips in the region and promoting equity throughout the process.

StreetLight Solution:

They worked with Kittleson & Associates to manage the project and provide recommendations. With StreetLight InSight®, Kittelson's team was able to analyze the region's origin and destination (O-D) travel in granular detail for peak versus off-peak season, weekday versus weekend, hour of the day, and income level, revealing top O-D pairs without surveys. The analyses informed the plan to prioritize direct routes and high-stress segments and was included in the Active Transportation Network plan.



The final Active Transportation Plan vision network prioritizes bike routes that exist today and smaller gaps that can be filled to improve route directness.

"The data enabled a clear understanding of how to address people's travel needs efficiently with fixed-route and, in some cases, flexible services."

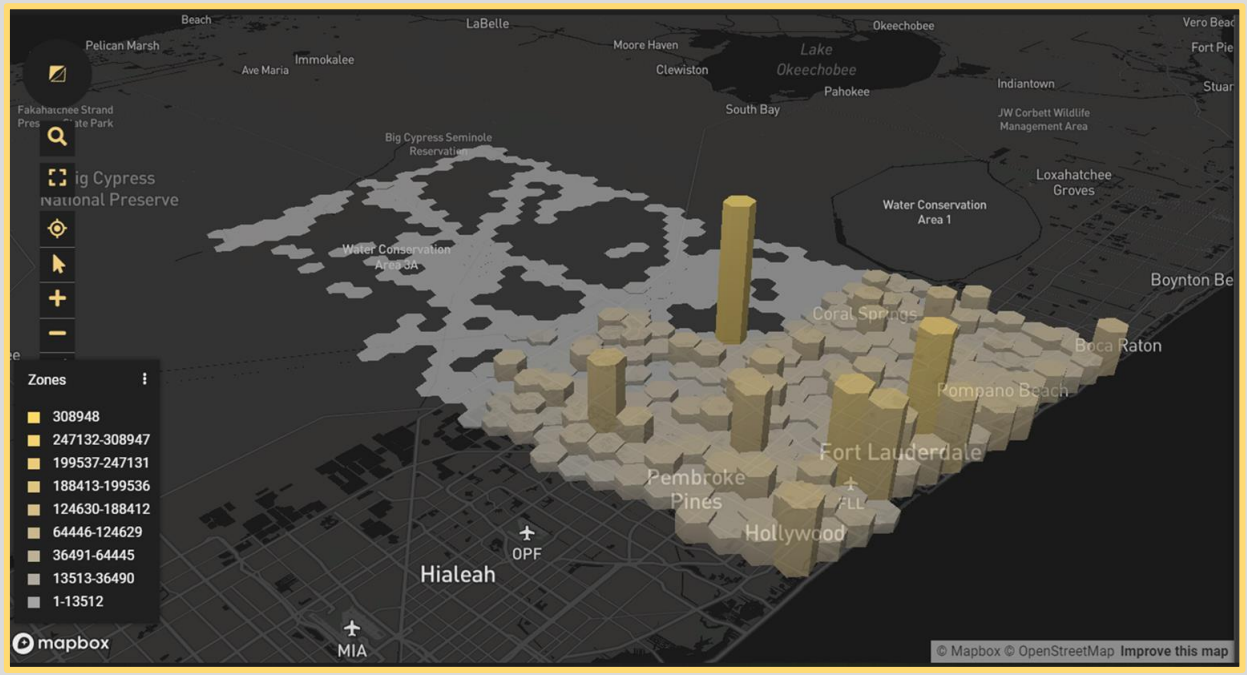
SARASOTA./MANATEE MPO REPORT

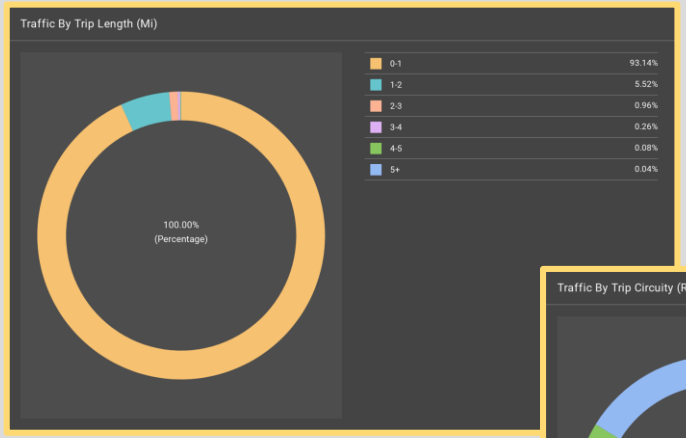
Identify Areas of High Existing Non-Motorized Activity

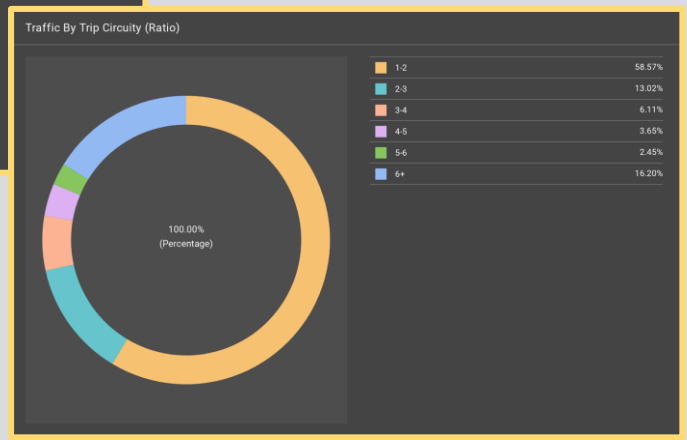
“Zone Activity” for pedestrian trips across Broward County in 2021:

- Pedestrian Volumes that identify **trip activity hotspots**
- **Trip attributes** that provide context to that activity

Hone in on, compare, and contrast the types of travel occurring at specific sites.





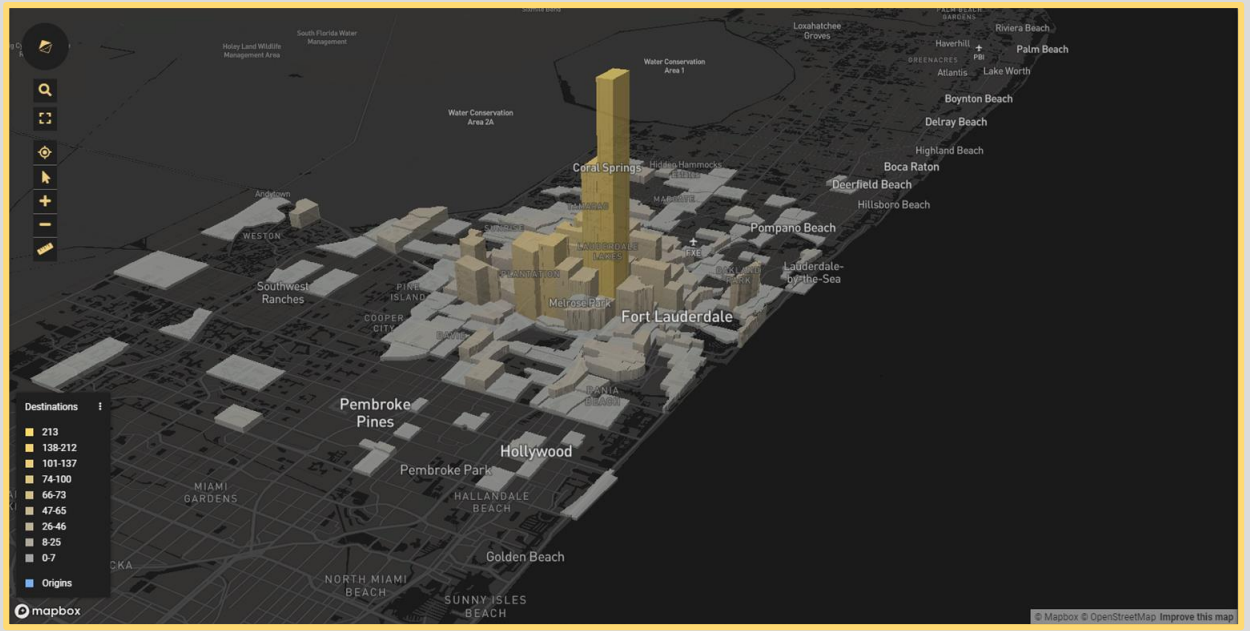


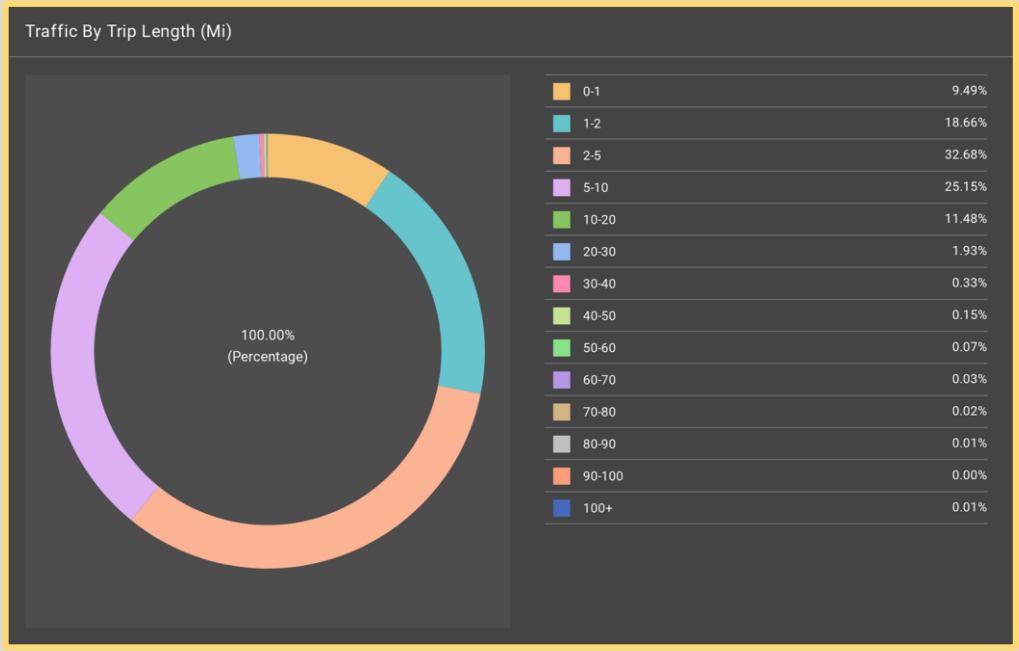
Understand Regional Patterns to Improve Alternative Mode Connections

“Origin-Destination” for all vehicular trips across Broward County in 2021:

- Identify origin-destination pairs with a **high-density trip activity** and compare to existing infrastructure
- **Trip attributes** help to identify trips candidate for mode shift

Use up to date regional patterns of vehicular travel to ensure alternative modes are serving current demands



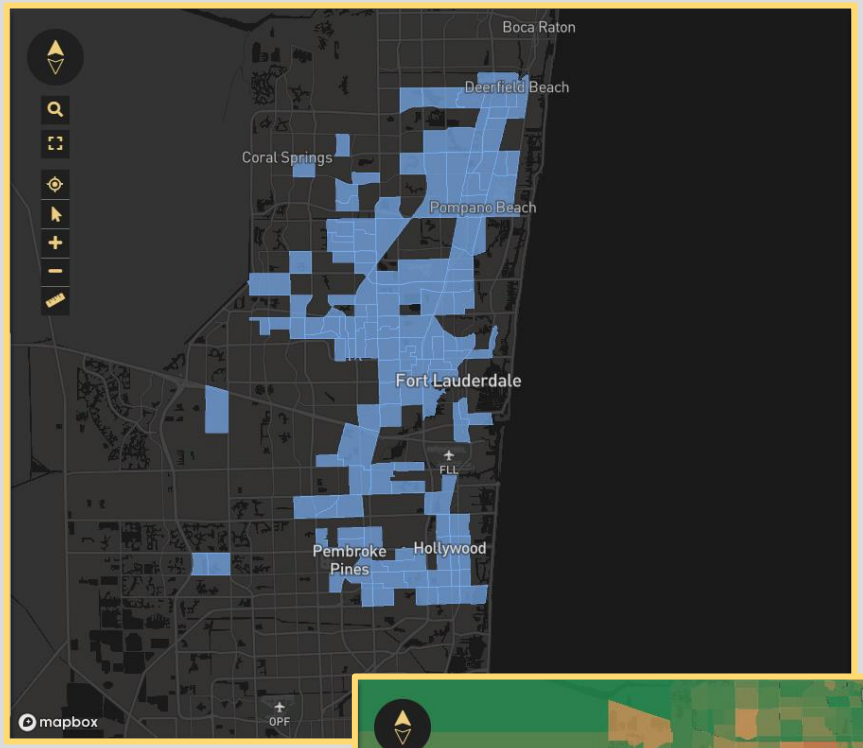


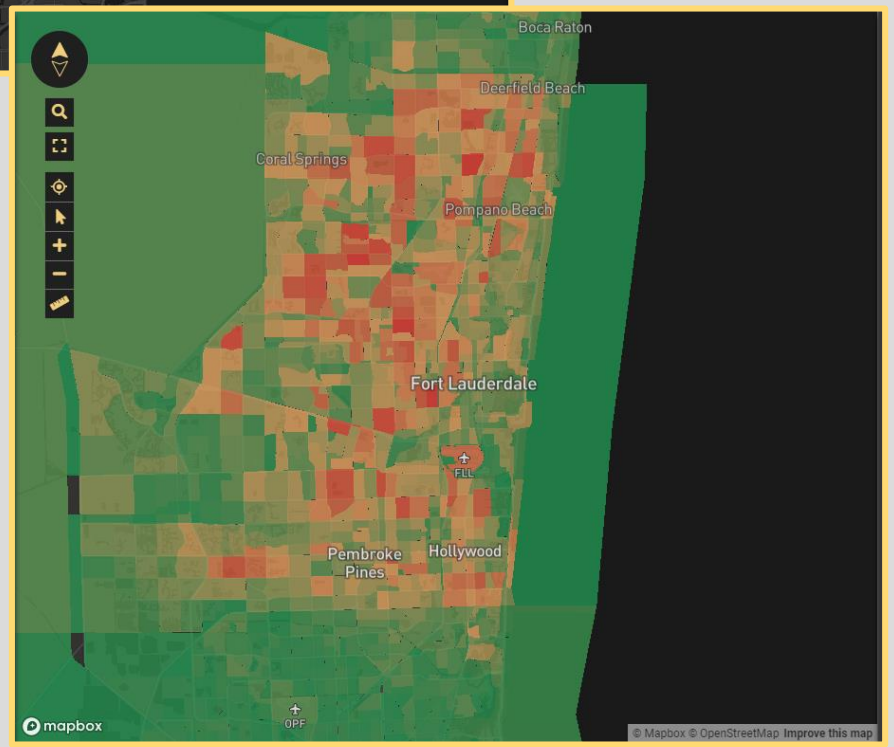
Consider Equity Impacts of Planning Decisions

“Trips to/from pre-set geography” for all vehicular trips starting in Broward County Justice40 tracts in 2021:

- Identify **where trips are going** from underserved communities
- Compare **trip attributes** to regional statistics to assess equity with existing infrastructure

Ensure that complete corridors are serving the needs of those who need it most and those who have been historically neglected





FDOT pedestrian and bicyclist safety statewide analysis

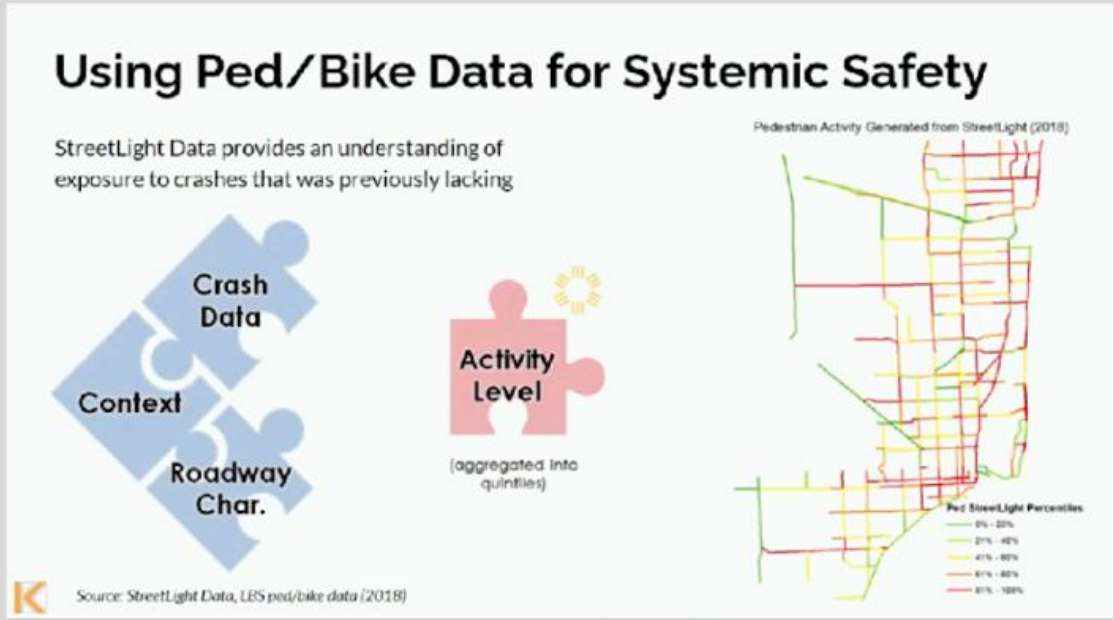
Challenge:

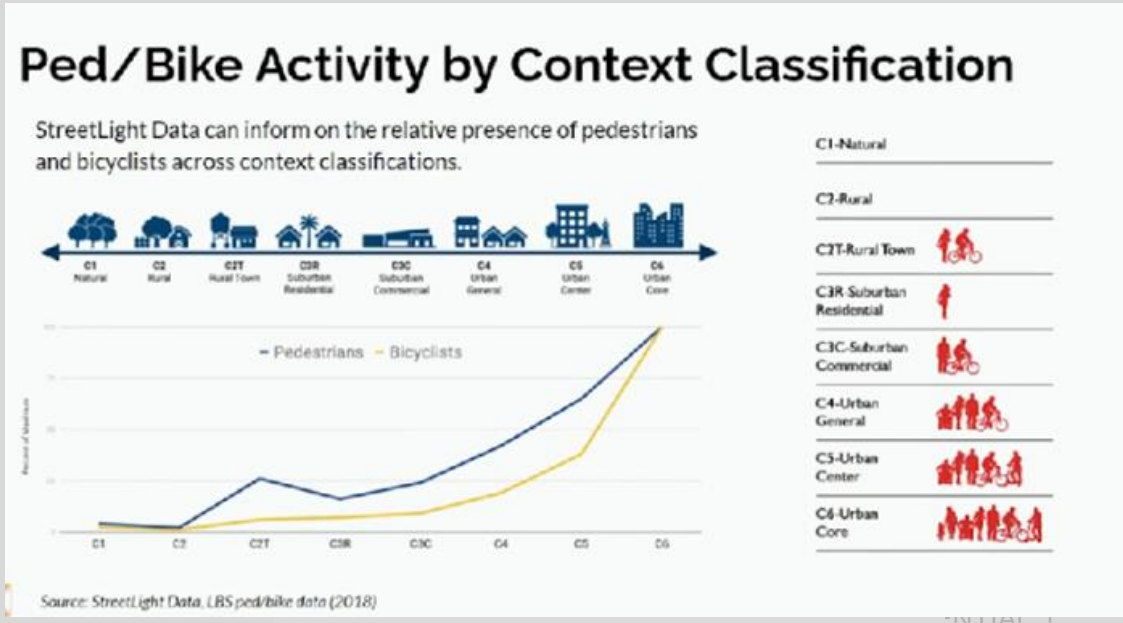
There was a history of crashes in the state and there wasn't an easy way for FDOT to access continuous bike and pedestrian O-D data to overlay with their crash data. Before using StreetLight InSight®, FDOT didn't have a good understanding or exposure map of where people were biking and walking and they didn't have the staff time and counters to understand where people were going.

StreetLight Solution:

Installing counters would have been too expensive, but with StreetLight InSight®, FDOT was able to verify daily relative counts, look at travel time and trip speed to help managers understand where to prioritize placing count stations with limited funds and resources.

View the full video here: https://youtu.be/72kz-iM89Wk



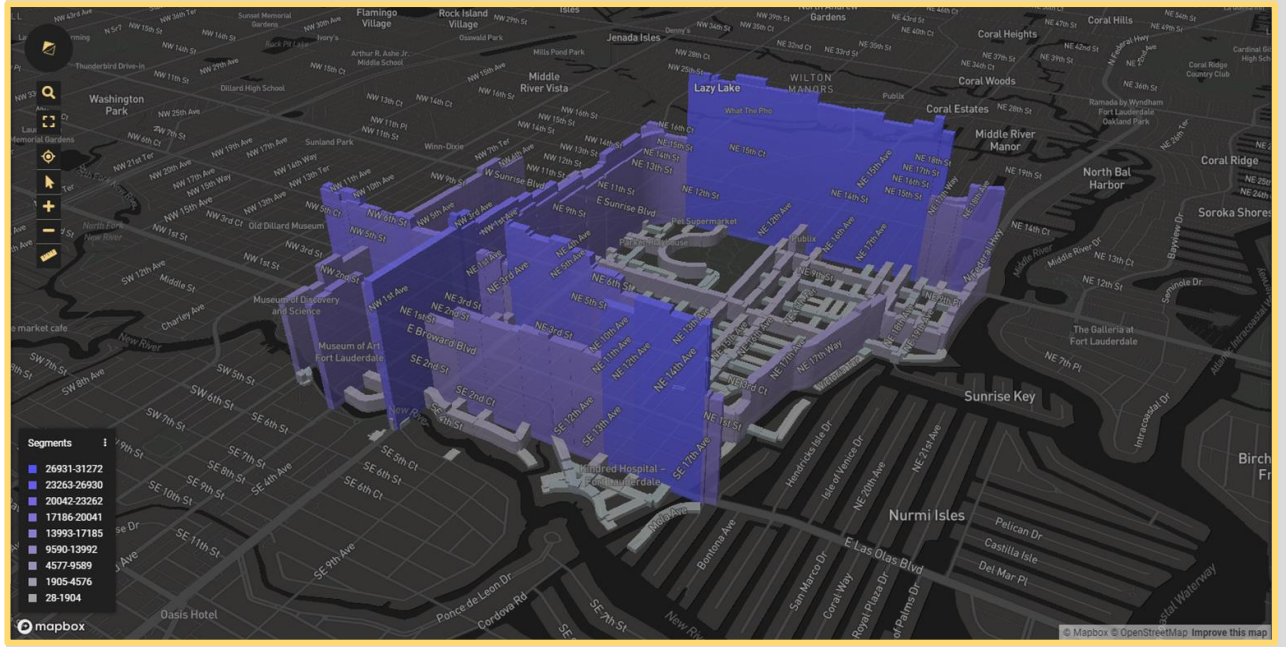


Identify Segments with High Bicycle and Pedestrian Exposure

“Zone Activity” for pedestrian and vehicle trips on roadways within a pedestrian activity hot spot in Fort Lauderdale 2021:

- Pedestrian Volumes that identify **high volume pedestrian corridors**
- Identify locations where there may be high conflict points because high pedestrian and **high vehicle volume**

Fill in an often-missing piece in vulnerable road user safety studies: Exposure

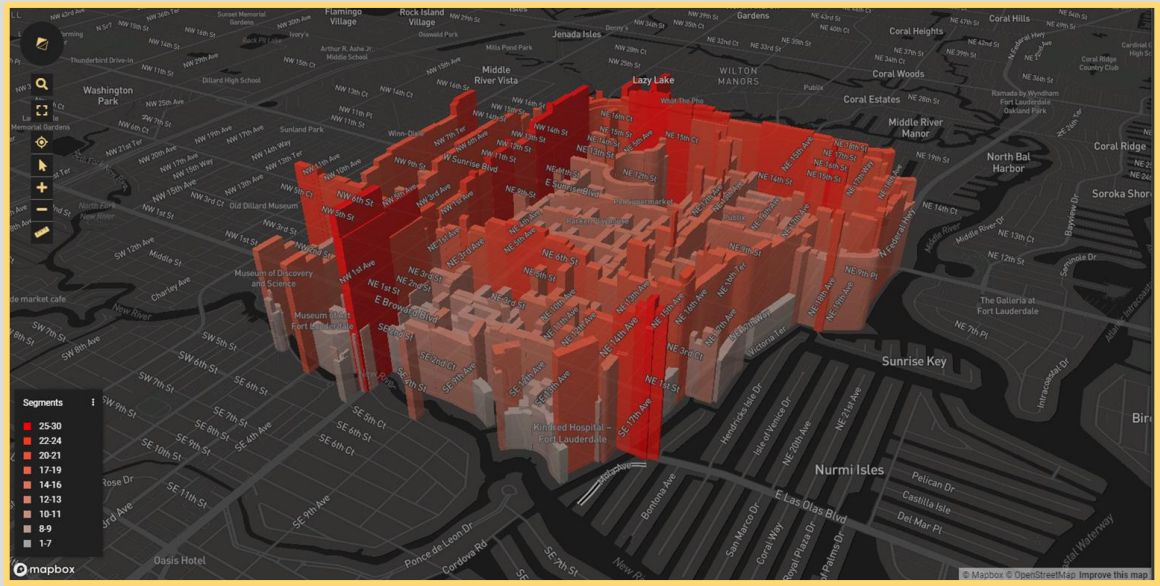


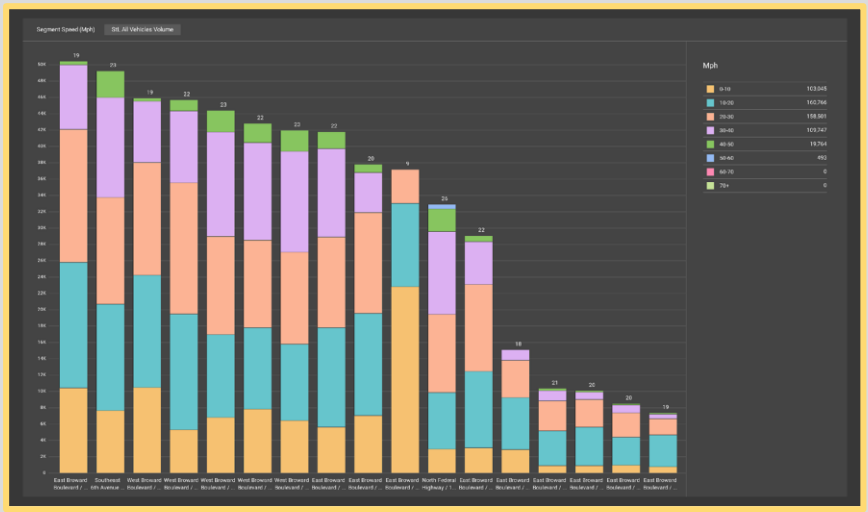
Compare Exposure and Crashes with Vehicular Speeds

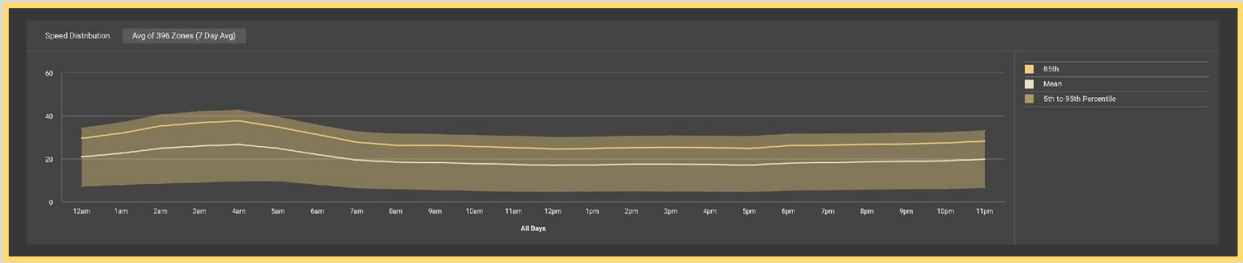
“Segment Analysis” for vehicular trips on roadways within a pedestrian activity hot spot in Fort Lauderdale 2021:

- Assess **average and 85th percentile vehicle speeds** in mixed modal corridors
- Identify segments with **high instances of speeding**

Understanding speeds in complete corridors is vital to the Safe Systems Approach







Section 3

MetroPlan Orlando's Speed Management Network Study

Speed Management Network Screening

Safe Streets Summit

February 2, 2023

MetroPlan Orlando Regional Transportation Survey 2021

79%	Speed and safety are closely related and that lower speeds mean greater safety for everyone on the road
33%	Feel it's ok to speed when the roads are clear
19%	Respondents report driving 10, 15, 20, or 25+ MPH over the speed limit

Project Overview

✓ Utilize	Crash, Speed, and Roadway Geometric Data
✓ Perform	Preliminary Context Classification Review
✓ Conduct	Crash, Speed, Geometric, and Context Class Comparison Analysis
✓ Identify	Critical Speed Management Segments/Corridors
✓ Determine	Target Speed Recommendations
✓ **Coordinate**	Vulnerable Users Safety Working Group

Connected Vehicle Data

Crystal Lake Drive:
Posted Speed: 25 MPH
Portion Speed: 89%
50% Speed: 29 MPH
85% Speed: 34 MPH
Max Speed: 63 MPH

Methodology to Identify Critical Speed Management Segments

1. Identified segments where 85th percentile speeds were 10+ MPH over the posted speed

2. Identified segments that also had a “very high” crash rate OR “very high” EPDO score

3. Cross referenced Steps 1 and 2 to identify initial segments

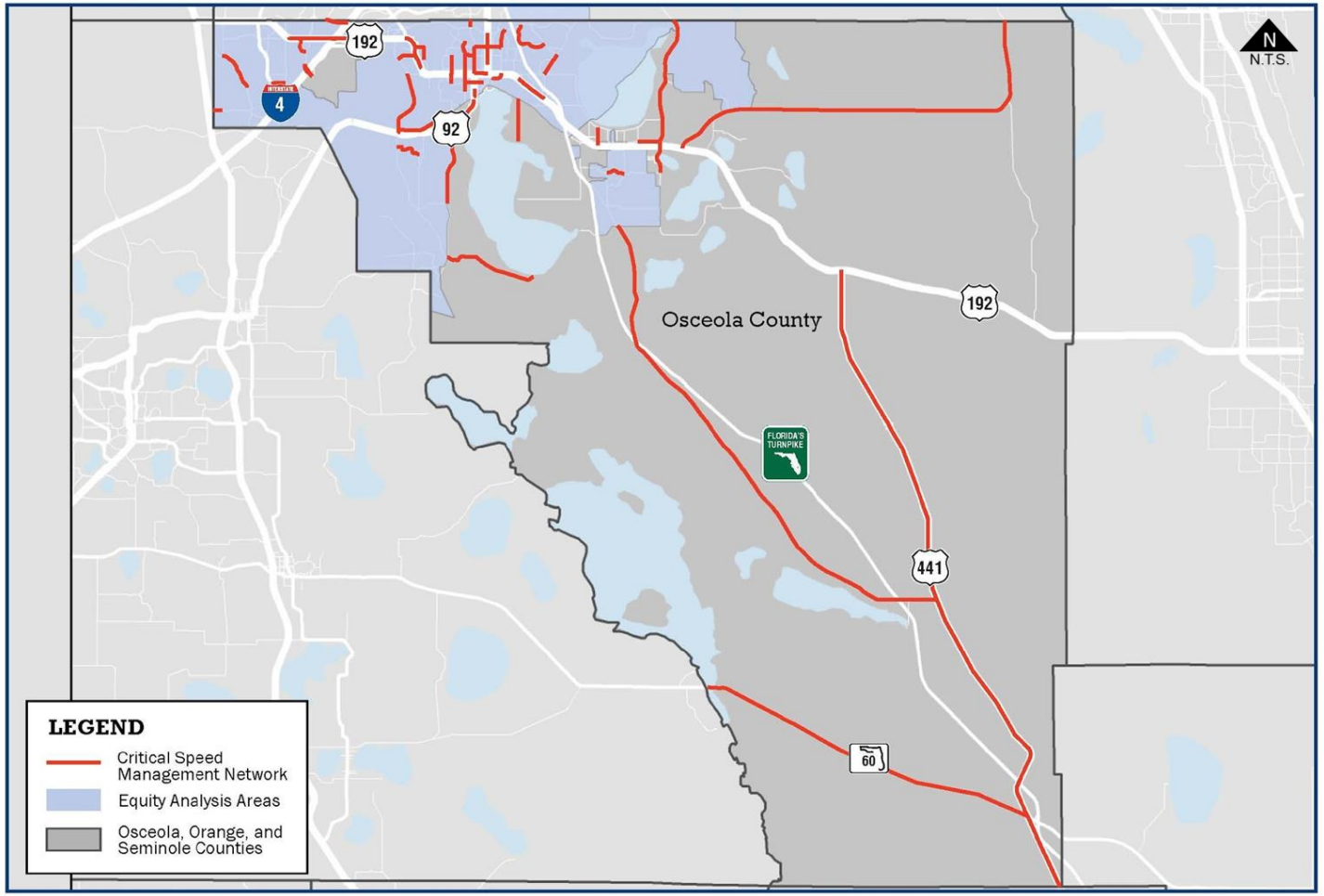
4. Reviewed segments where 50th and 95th percentile speeds were 20+ MPH over posted speed

5. Added segments from Step 4 to the initial segments from Step 3

Critical Speed Management Network

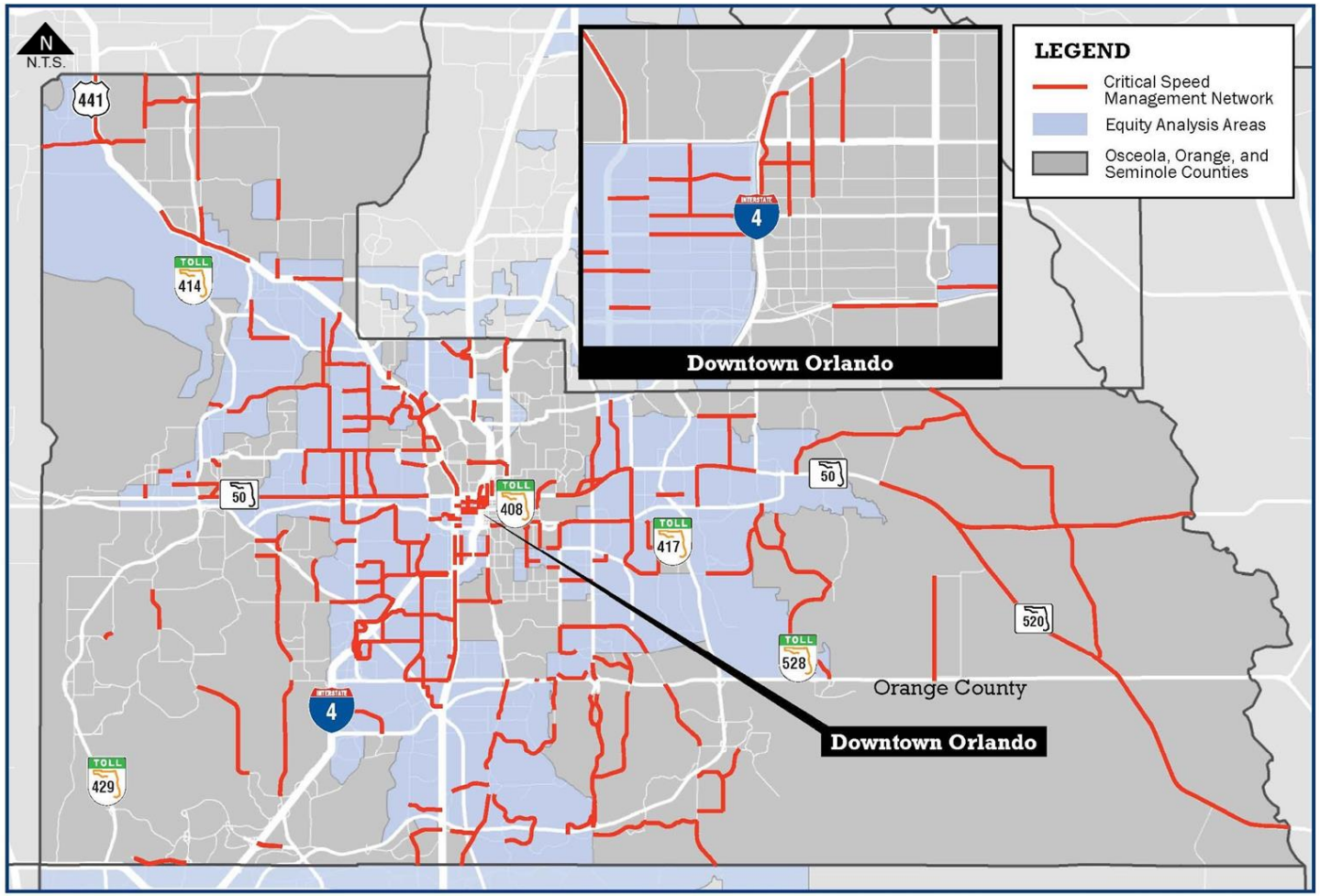
Critical Speed Management Network

Osceola County



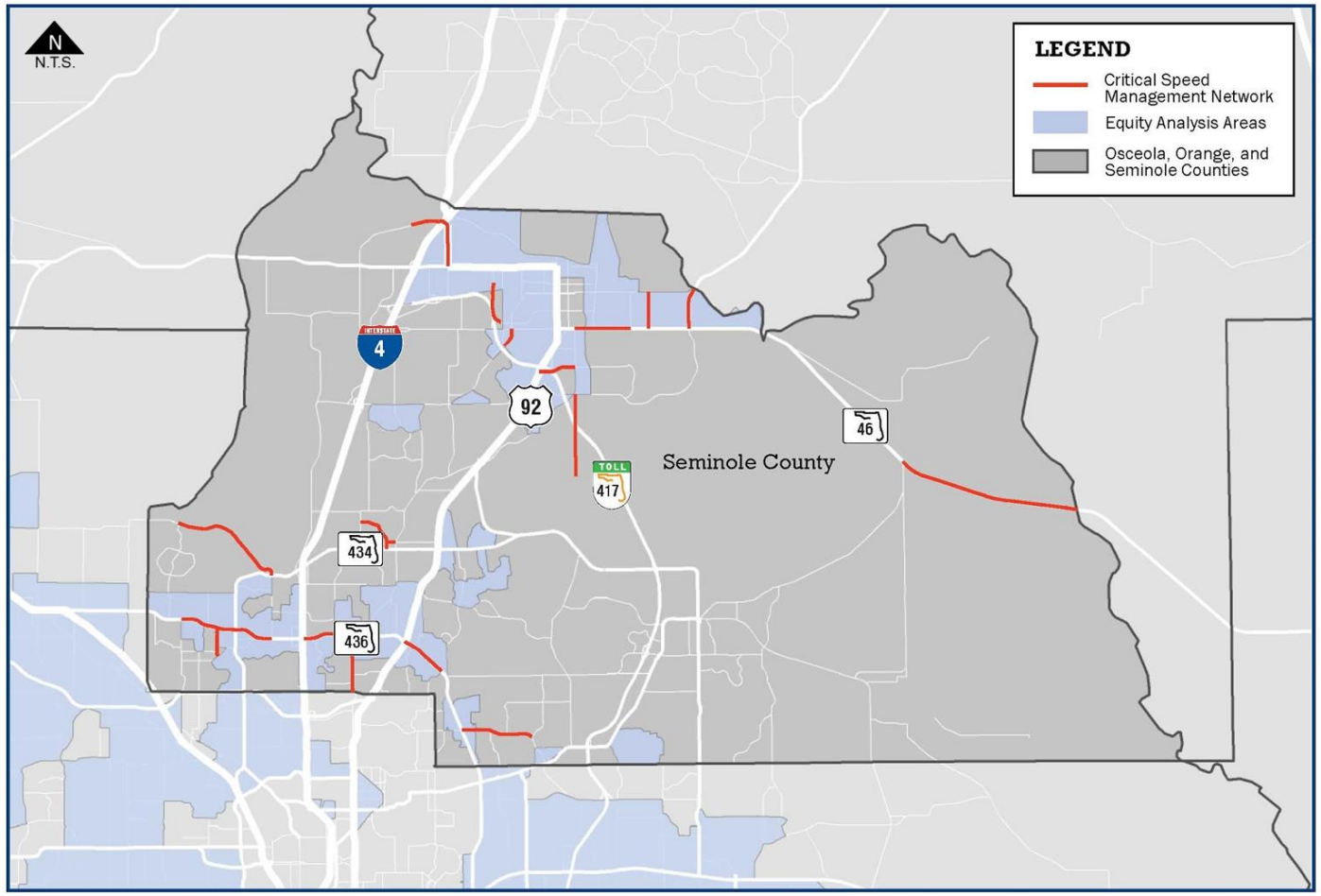
Critical Speed Management Network

Orange County



Critical Speed Management Network

Seminole County



Preliminary Target Speed

Operating Speed

Measured speed at which vehicles are currently traveling.

Context Classification Design Speed

A selected speed used to determine the various geometric design features of the roadway.

Posted Speed

Legal allowable speed typically based on the 85th percentile operating speed.

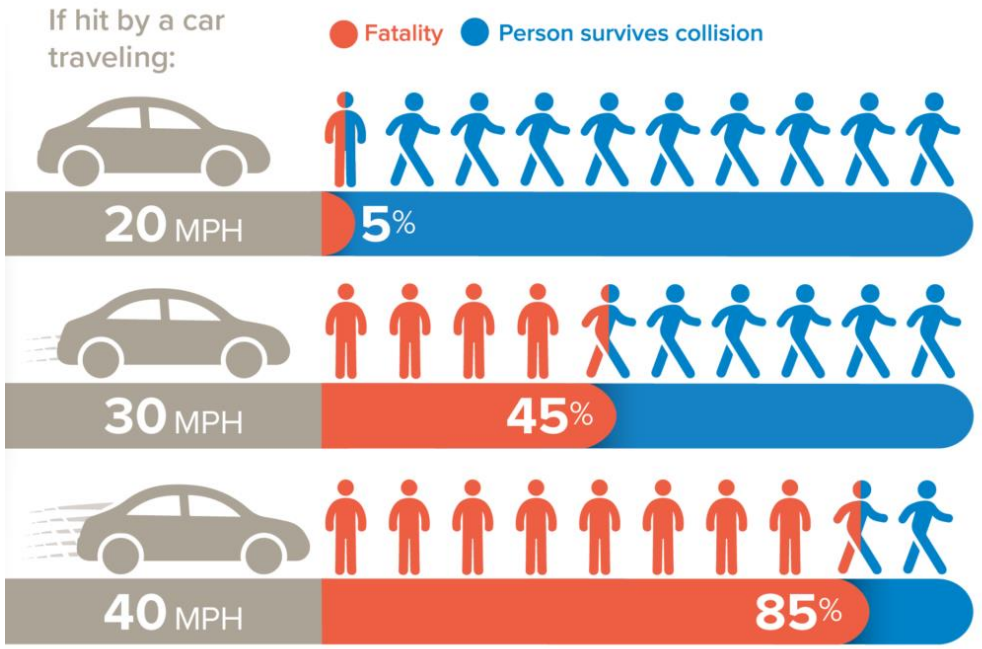
Preliminary Target Speed

The highest speed at which vehicles should operate in a specific context considering:

- Multi-modal activity generated by adjacent land uses
- Mobility for motor vehicles
- Creating a supportive environment for pedestrians, bicyclists, and public transit users

Preliminary Target Speed Results

- Should be used as starting point during corridor-specific projects
- Multiple projects may be needed to achieve a target speed
- Any reduction in vehicle operating speeds is a step in the right direction



National Traffic Safety Board (2017) Reducing Speeding-Related Crashes Involving Passenger Vehicles. Available from: https://www.ntsb.gov/safety/safety-studies/Documents/SS1701.pdf

Thank You

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10 YEAR ANNIVERSARY SAFE STREETS SUMMIT