Empowering Southern California with Big Data Analytics

August 8, 2023

Toolbox Tuesday

WWW.SCAG.CA.GOV

Housekeeping

1. Meeting length: 1.5 hour
2. This meeting is being recorded
3. All participant lines will be muted
4. There will be a Q&A sessions at the end
5. If you have a question during the presentation, please type it into the chat box or press the "raise hand" function
6. We will log all questions and then voice a selection at the end of the presentation
7. A recording of this webinar and the PowerPoint slides will be available on the SCAG website. We will send a link to everyone who has registered after the event

Introduction

Scott Johnson, AICP
Senior Regional Planner
SCAG

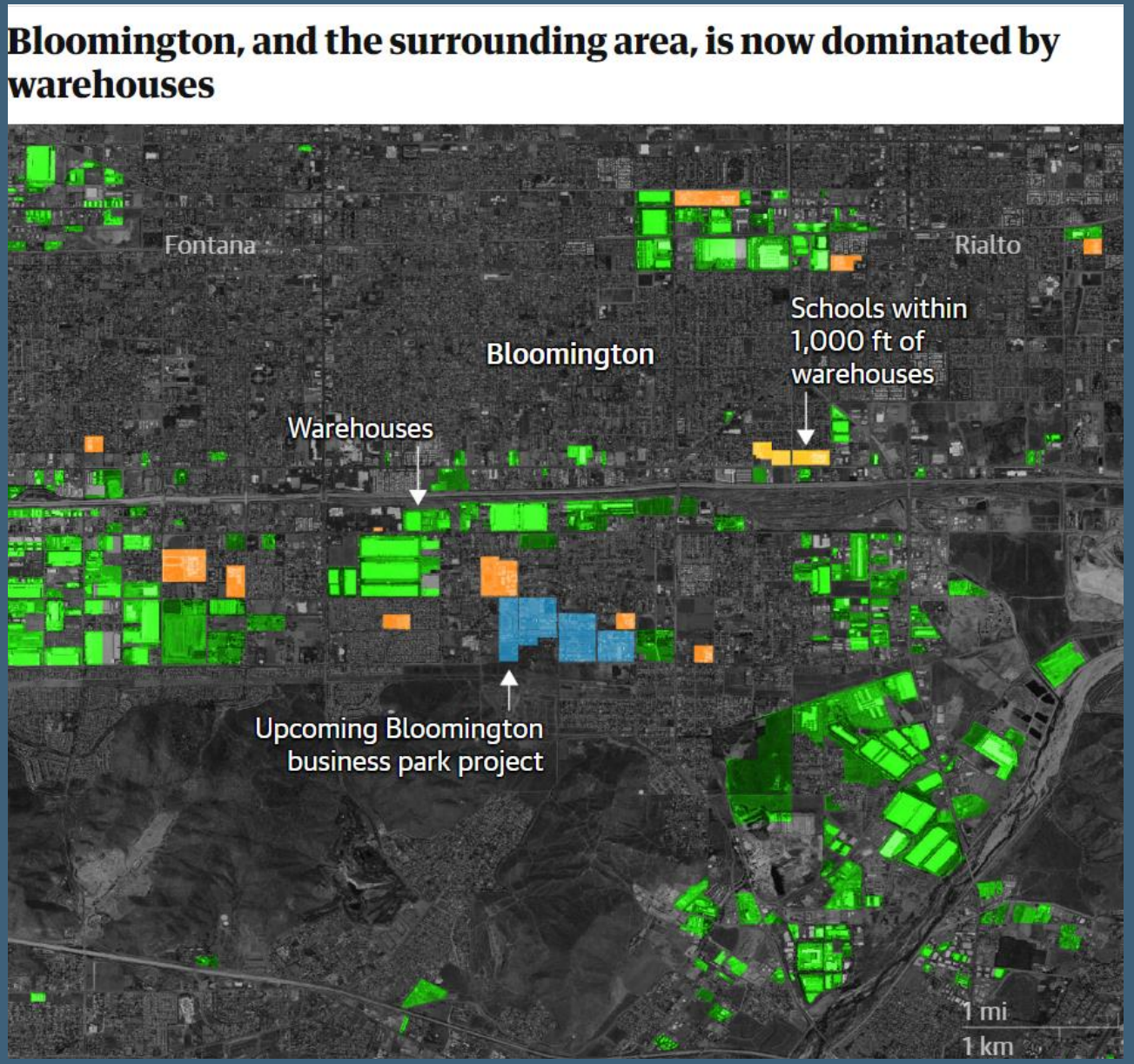
Andrew (Drew) Kent, PTP
Program Manager of Transportation Data & Service
Ventura County Transportation Commission

Session Goals

- Able to answer the question what is ‘Big Data’
- Understanding of where and when it makes sense to use Big Data analytics
- Knowledge of how to obtain Big Data access and training from SCAG

Agenda

- Big Data Analytics
- Connection to Regional Early Action Planning (REAP) 2.0 Program
- StreetLight Insight
- Use Case Examples
- Access/Training/Support
- Q&A



BIG DATA ANALYTICS

Describing Big Data

What exactly is 'Big Data'?

What is Big Data? A meme and a marketing term, for sure, but also shorthand for advancing trends in technology that open the door to a new approach to understanding the world and making decisions. There is a lot more data, all the time, growing at 50 percent a year, or more than doubling every two years, estimates IDC, a technology research firm.*

* Lohr, Steve, The age of Big Data, New York Times Feb 11, 2012

What is Big Data Analytics?

Translating large datasets into usable information

‘Big data uses mathematical analysis, optimization, inductive statistics, and concepts from nonlinear system identification to infer laws (regressions, nonlinear relationships, and causal effects) from large sets of data with low information density to reveal relationships and dependencies, or to perform predictions of outcomes and behaviors.’

Unique Use Cases

China launches national big data platform for rice industry chain

By Global Times

Published: Apr 02, 2023 10:44 PM Updated: Apr 02, 2023 10:38 PM

An agronomist checks the growth of rice seedlings at an intelligent seedling plant in Southwest China's Chongqing on March 27, 2023. The plant has a greenhouse area of 4,608 square meters, capable of growing 800 hectares of rice seedlings a year. Photo: VCG

Evidence-based Decision Making

Harvard Business Review

Analytics And Data Science | You May Not Need Big Data After All

Analytics And Data Science

You May Not Need Big Data After All

by Jeanne W. Ross, Cynthia M. Beath, and Anne Quaadgras

From the Magazine (December 2013)

Summary. Reprint: R1312F Why do companies have so little to show for their investments in big data? The biggest reason is that they aren't doing a good job using the data they already have. They don't know how to manage the information embedded in their operating systems,... **more**

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Artwork: Chad Hagen, Graphic Composition No. 2, 2009, digital

Companies are investing like crazy in data scientists, data warehouses, and data analytics software. But many of them don't have much to show for their efforts. It's possible they never will.

What's the problem? To begin with, big data has been hyped so heavily that companies are expecting it to deliver more value than it actually can. In addition, analytics-generated insights can be easy to replicate: A financial services company we studied built a model based on an analysis of big data that identified the best place to locate an ATM, only to learn that consultants had already built similar models for several other banks. Moreover, turning insights from data analytics into competitive advantage requires changes that businesses may be incapable of making. One retailer, for example, learned that it could increase profits substantially by extending the time items were on the floor before and after discounting. But implementing that change would have required a complete redesign of the supply chain, which the retailer was reluctant to undertake.

The biggest reason that investments in big data fail to pay off, though, is that most companies don't do a good job with the information they already have. They don't know how to manage it, analyze it in ways that enhance their understanding, and then make changes in response to

Privacy

The data store: on big data
Big data

Smart cities: are you willing to trade privacy for efficiency?

Data science may be helping cities get 'smarter', but questions remain over how long urban populations will tolerate an increasingly invasive level of data collection

Siraj Datoo

Fri 4 Apr 2014 10.07 EDT

2

Photograph: Alamy Photograph: Alamy

Privacy must play an instrumental role in any smart city strategy otherwise citizens might fear the introduction of other innovative technology, according to an executive at one of the world's largest infrastructure companies.

Wim Elfrink, executive vice president of industry solutions and chief globalisation officer of Cisco, heads up the company's smart cities team and warned that if cities did not give citizens the choice of whether or not to allow the government to use their data, they might opt-out of future initiatives.

Many Different Platform Providers

What are SCAG's Goals for Big Data?

- Provide free access to transportation 'Big Data' platforms
- Foster data driven decision-making
- Provide support and training to help answer regional and local transportation questions

CONNECTION TO REAP 2.0 PROGRAM

Big Data's Connection to the REAP 2.0 Program

REAP 2.0 Objectives

Transformative planning and implementation activities which implement the regional Sustainable Communities Strategy (SCS)

REAP 2.0 Objectives

Promote infill housing development AND

Reduce Vehicle Miles Travelled AND

Affirmatively Further Fair Housing

SCAG's REAP 2.0 Program Areas

Early Program Initiatives

- Subregional Partnership Program 2.0
- Decision-Making Tools and Technical Assistance
- Sustainable Communities Program Technical Assistance

Transportation Partnership Programs

- County Transportation Commission Partnership Program
- Regional Pilot Initiative Program

Programs to Accelerate Transformative Housing (PATH)

- NOFA: for Last Affordability
- Pilot: Regional Utilities Supporting Housing (RUSH)
- Pilot: Housing Infill on Public & Private lands (HIPP)

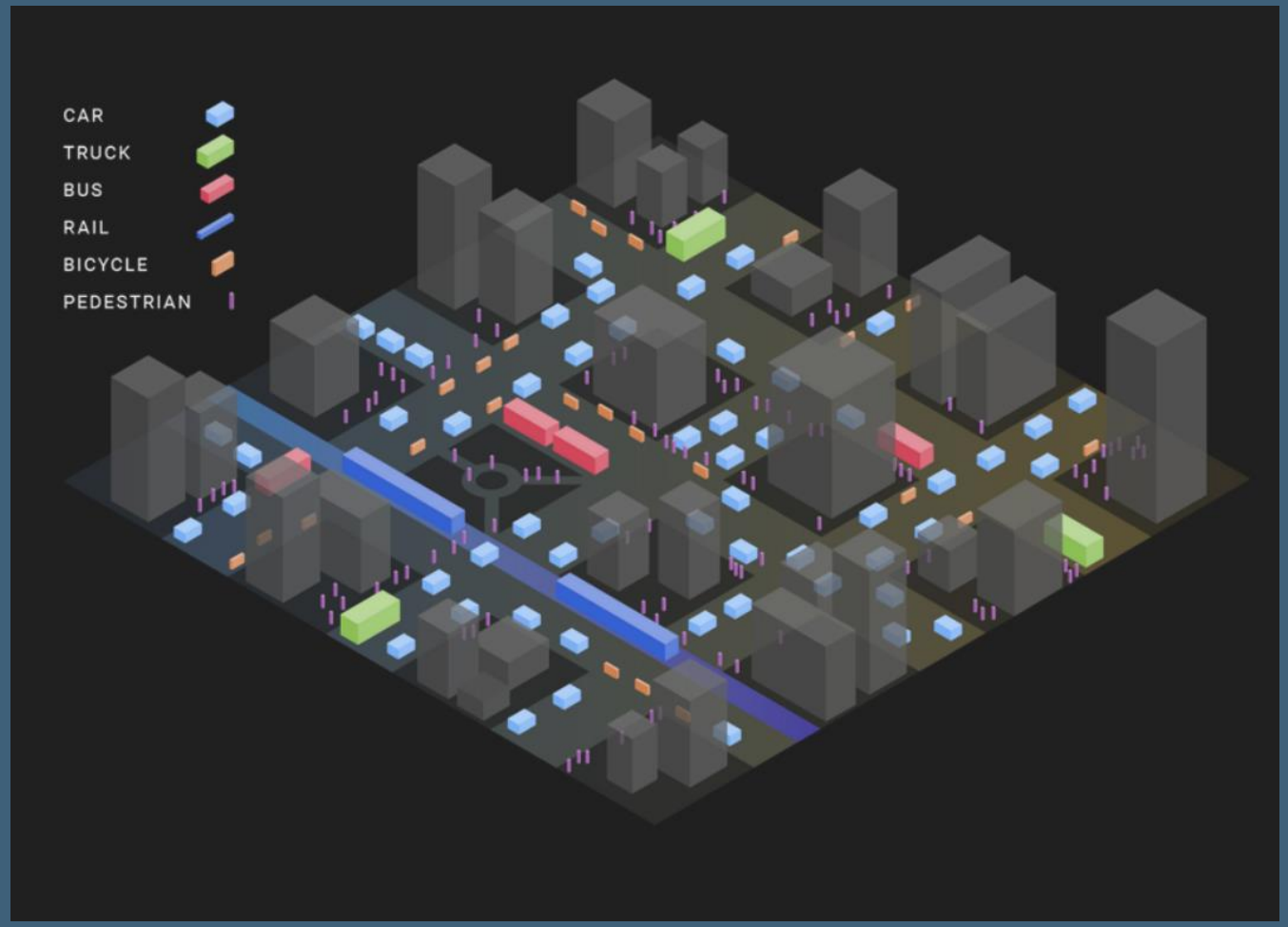
Program Development

- Coordination with State to meet REAP 2.0 objectives
- Convened discussion group of experts to inform RFP and data needs
- Awarded ‘Big Data’ platform contract to 2026

StreetLight Insight

Streetlight's Insight Web App platform provides users access to anonymized, and aggregated travel and safety information, sourced from mobile data and sensors.

- transportation information for vehicle, truck, transit, rideshare (Uber & Lyft), bike and pedestrian travel modes,
- trip origin, destination, purpose, distance, route, and travel time,
- vehicle speeds,
- transportation safety, and
- linked origin and destination trip information with relevant built environment, demographics and socio-economics information.



Data Foundation

- Connected vehicle data
- Location-based service

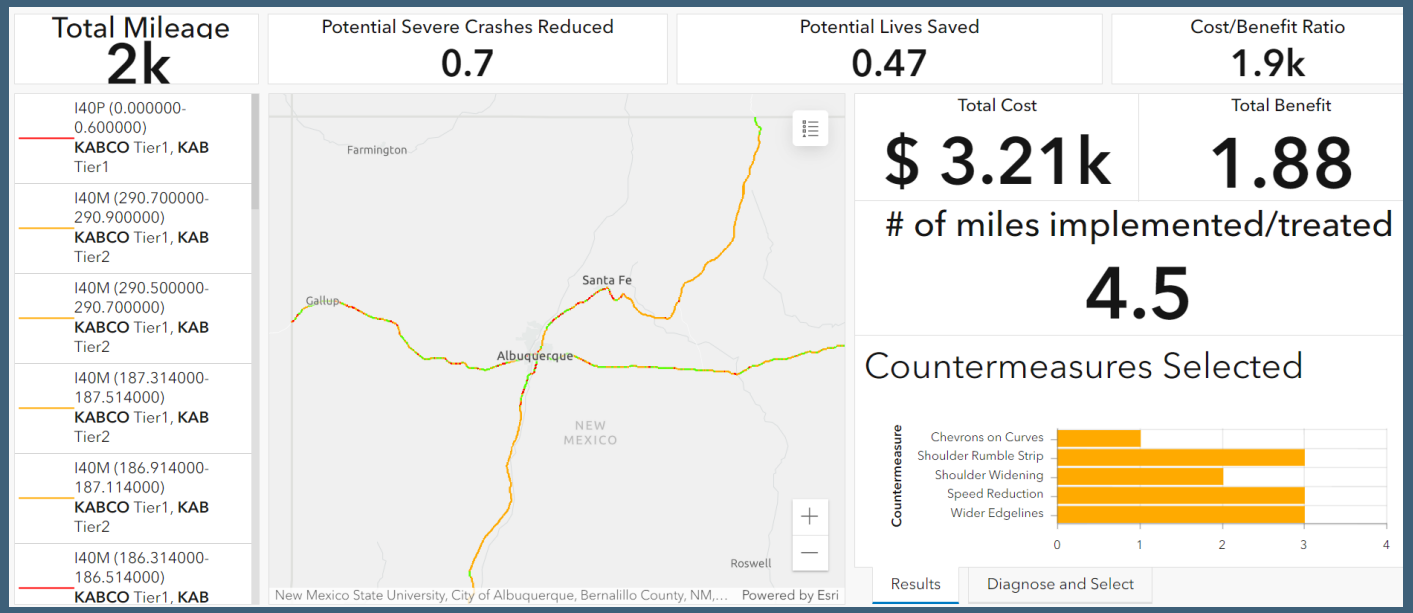
Validation

- Permanent counters for AADT, bike, & pedestrian

SCAG plans to continuously collect feedback from users and monitor

Additional Future Feature Integration

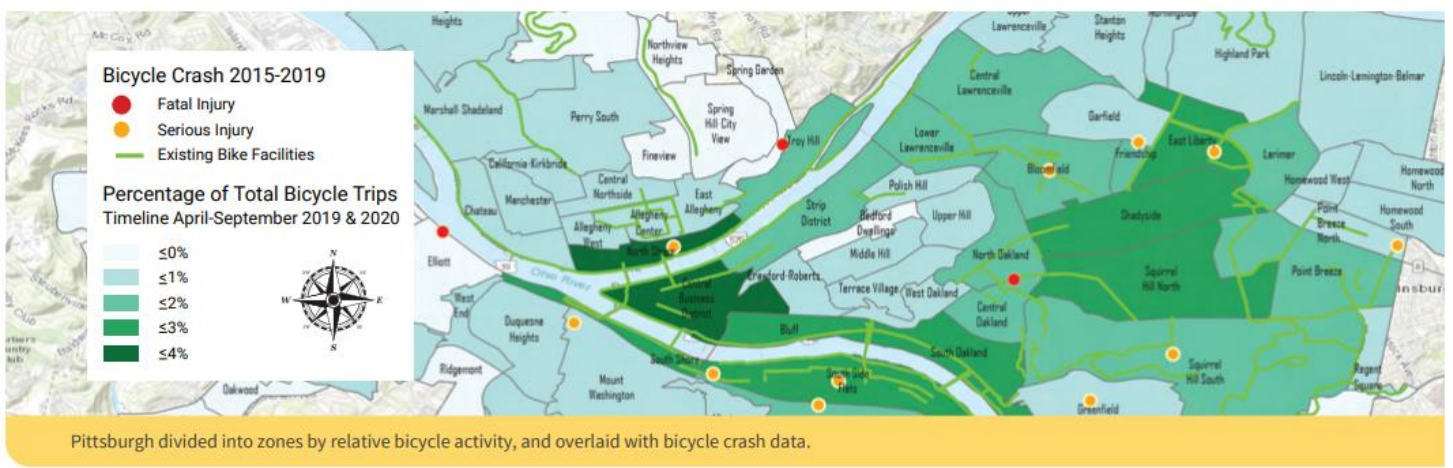
- Safety data with near-miss information
- Advanced truck data
- Corridor speed analysis



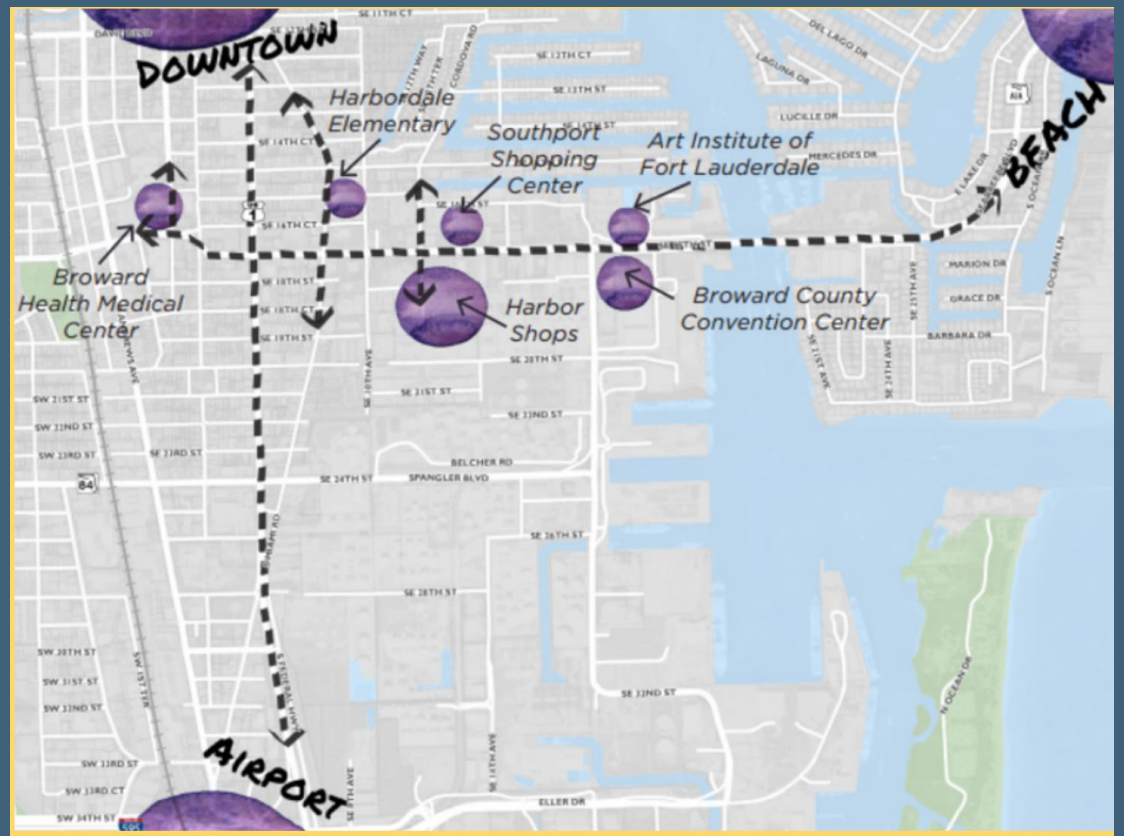
USE CASE EXAMPLES

Project examples using StreetLight Insight data

Safety – Evaluating Bike/Ped Ridership and Crash Data



Congestion Analysis – Building the Case for Transit



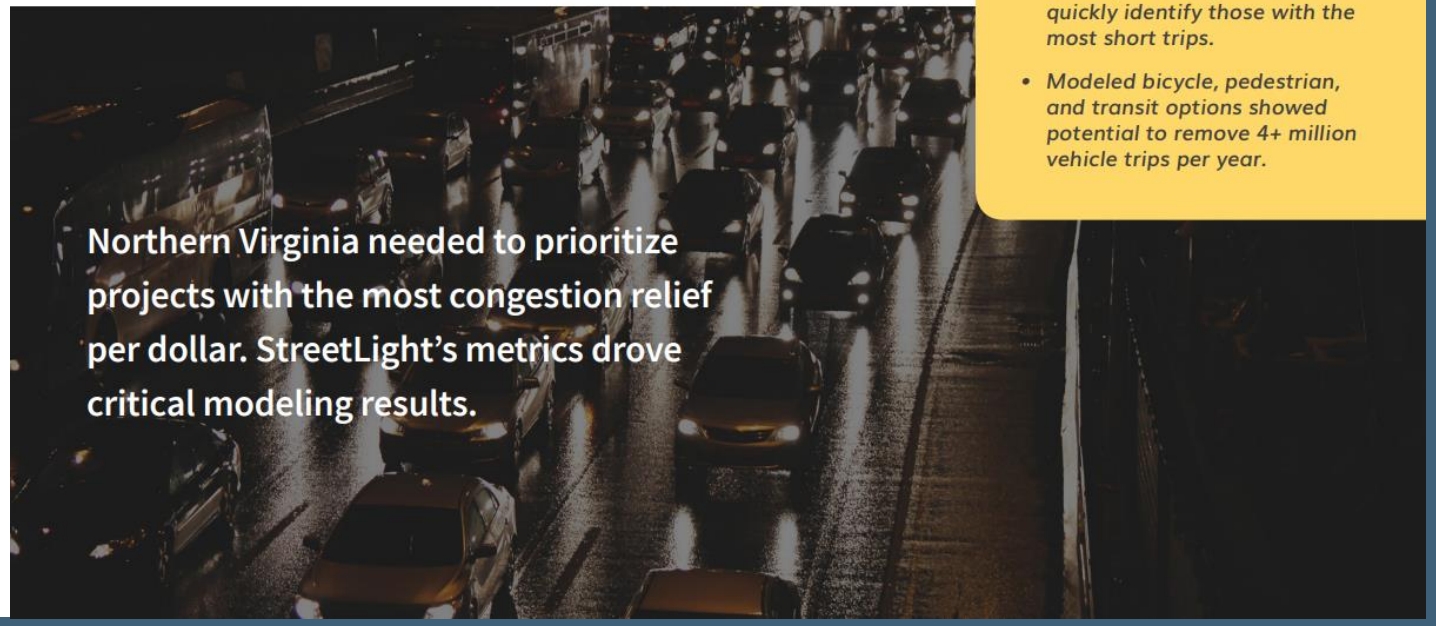
Insights from the analysis led planners to study transit options connecting top origins and destinations.

Transportation Demand Management - Trip Reduction Potential

Link Description & Direction	Flow (000)	Top O-D Pair (%)	Trips < 5 mi (%)	Trips < 2 mi (%)	Trips < 1 mi (%)
Neabsco Mills Rd (US 1 - Optiz Blvd) SB	67.5	10.7	2.9	0.7	0.2
VA-28 (I-66 to Westfields Blvd) SB	60.3	1.4	3.4	1.1	0.3
I-66 (US-29 to VA-120) WB	55.7	2.0	0.0	0.0	0.0
US-50 (VA-286 to I-66) EB	51.3	1.4	3.3	1.4	0.4
VA-123 (George Wash. Pkwy to Chain Bridge)	47.8	10.6	0.5	0.1	0.0
US-50 (Stringfellow Rd to VA-286) EB	47.6	1.5	5.5	1.5	0.4
US-50 (VA-28 to Lees Corner Rd) EB	45.0	1.6	10.2	4.4	2.0
US-50 (Stringfellow Rd to VA-286) WB	43.2	1.4	3.8	1.4	0.3
I-66 (t-495 to VA-7) WB	41.0	0.9	0.4	0.1	0.0
US-50 (VA-609 to VA-28) WB	40.7	2.0	10.2	3.6	1.1
VA-7 (VA-123 to I-495) EB	37.5	2.9	15.3	11.1	4.4

Congested segments ranked to identify the links that would be impacted most by transit options. The orange shading indicates factors that make that link a good candidate for a multimodal project.

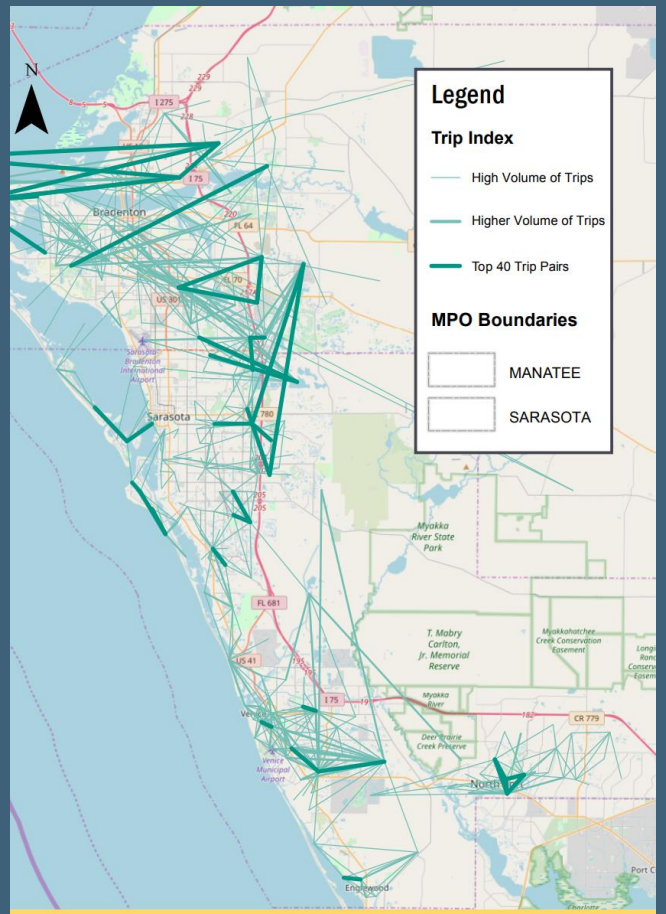
Measuring Congestion Relief Options in Northern Virginia



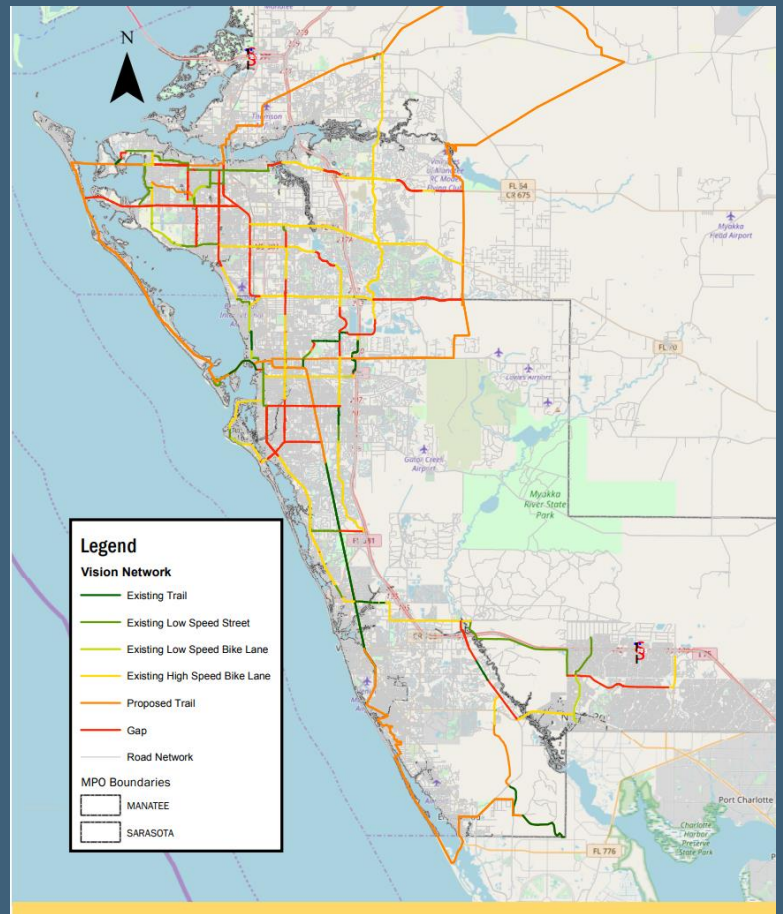
EXECUTIVE SUMMARY

- *In a high-demand area, planners needed alternatives to roadway expansion.*
- *StreetLight scanned hundreds of congested segments to quickly identify those with the most short trips.*
- *Modeled bicycle, pedestrian, and transit options showed potential to remove 4+ million vehicle trips per year.*

Planning – Active Transportation

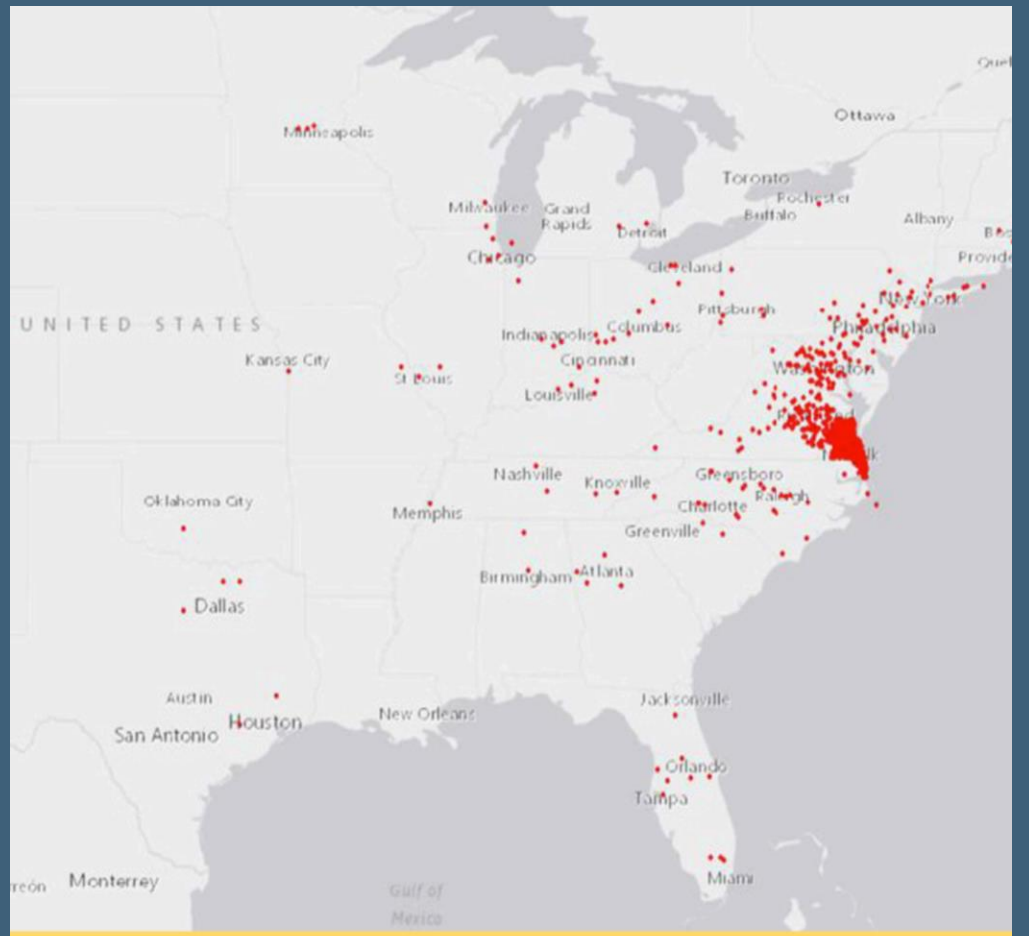


Granular analysis of O-D pair volume by season, day, hour, and income level revealed the top 40 overall.



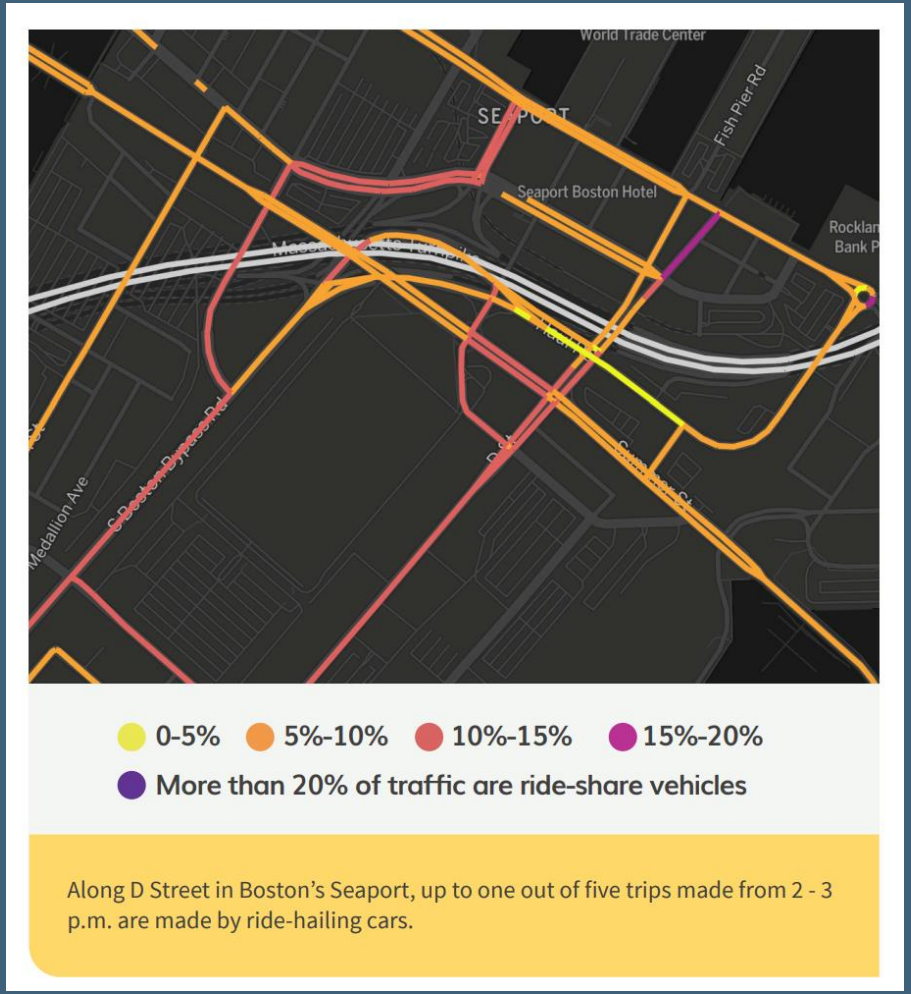
The final Active Transportation Plan vision network prioritizes bike routes that exist today and smaller gaps that can be filled to improve route directness.

Economic Impact – Active Transportation

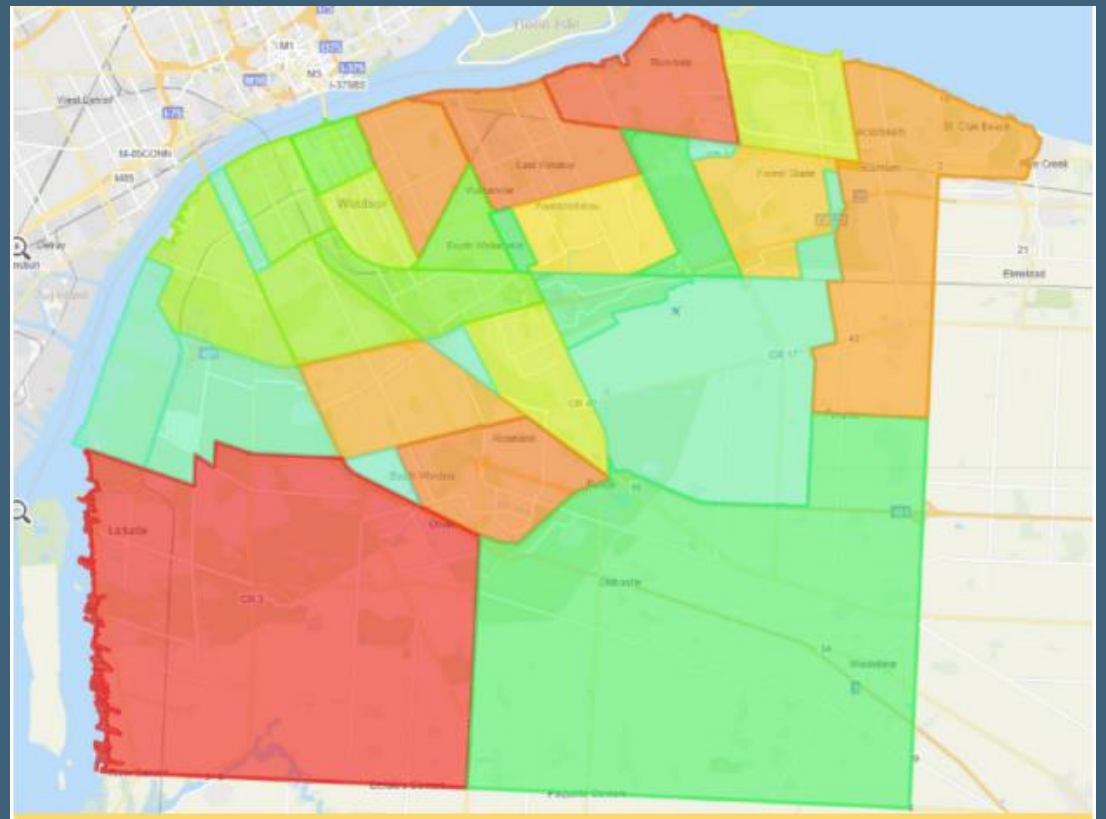


Trail Visitor Data Visualization

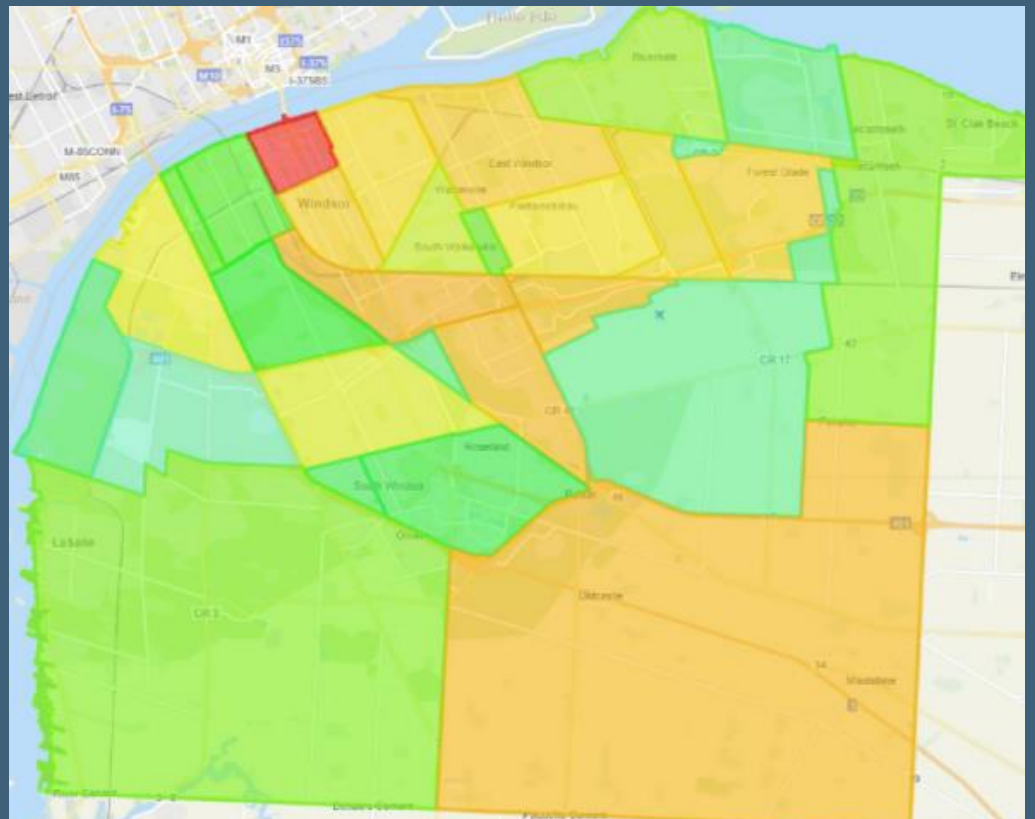
Evaluating Ride-hailing



Transit Planning – Revamping Legacy Routes

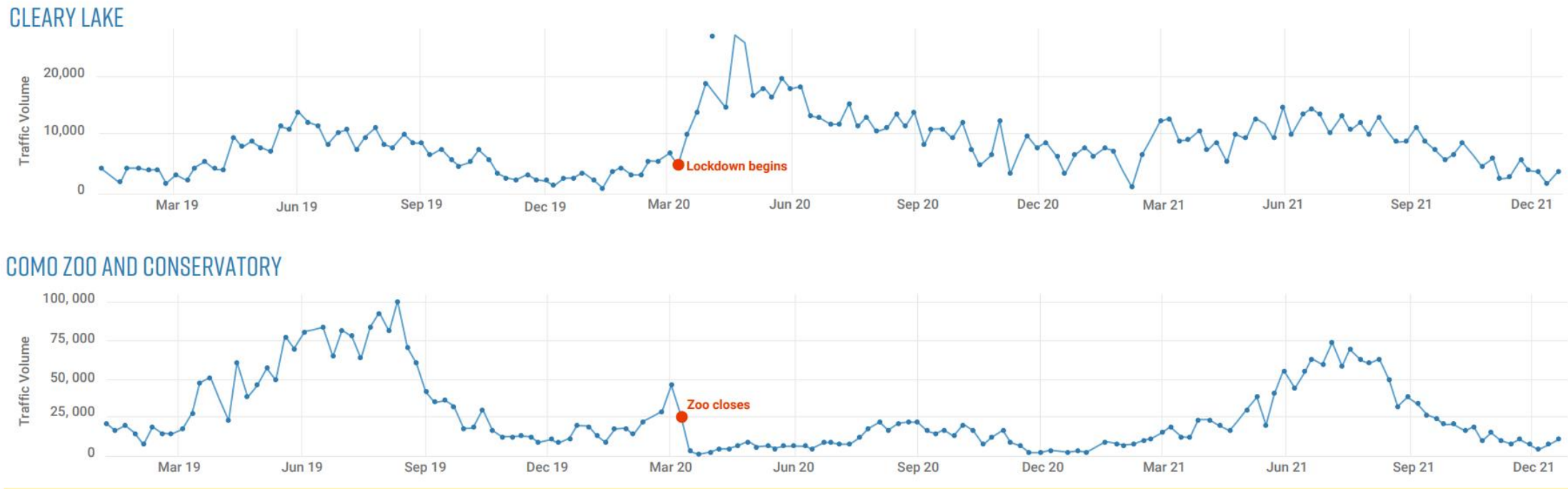


Distribution of Windsor's morning peak trip origins.



Distribution of morning peak trip destinations.

Transport to Regional Amenities – Who is Accessing and When



Analyses show disrupted park visitation patterns after COVID lockdowns, validating StreetLight counts against known visitor variation.

COVID Impacts – SCAG Using StreetLight Data

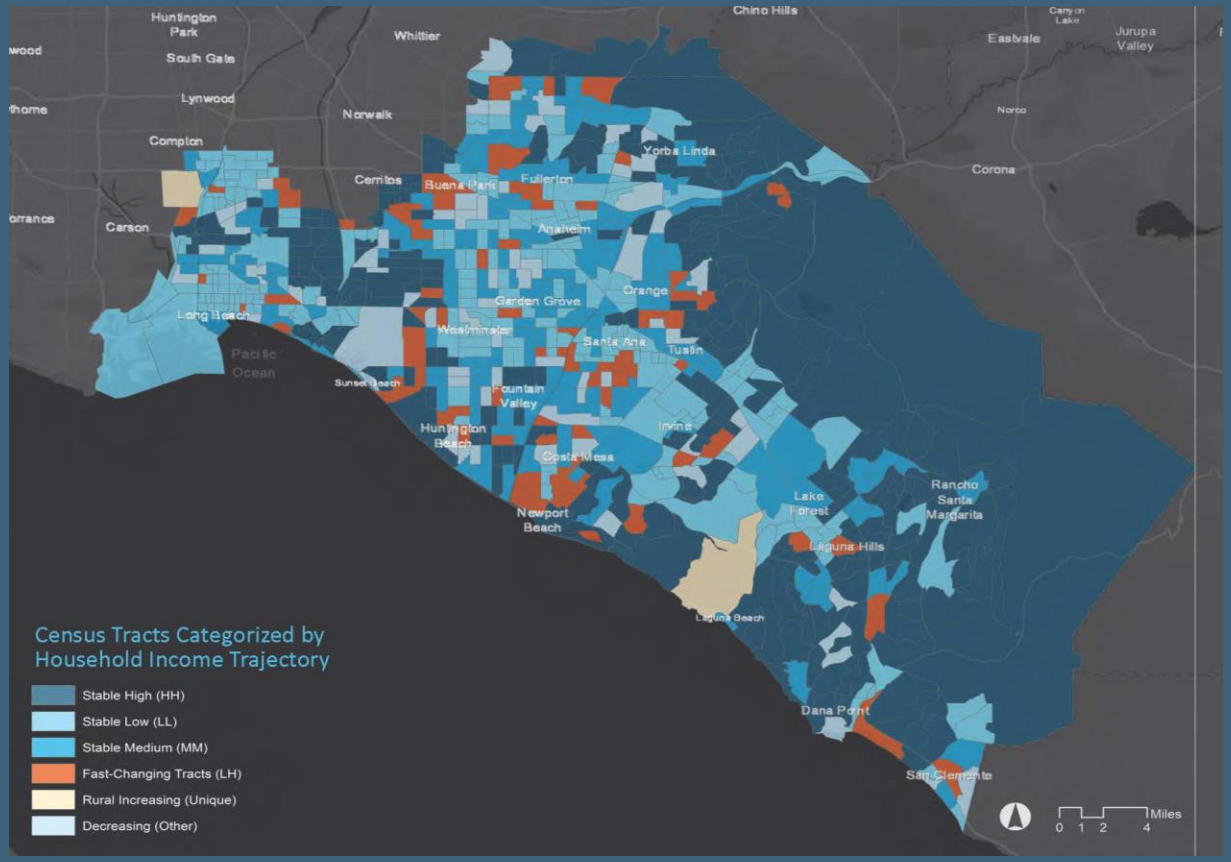
How Did COVID-19 Disrupt Travel Behaviors of Residents in the 'Fast-Changing' Neighborhoods in Southern California?

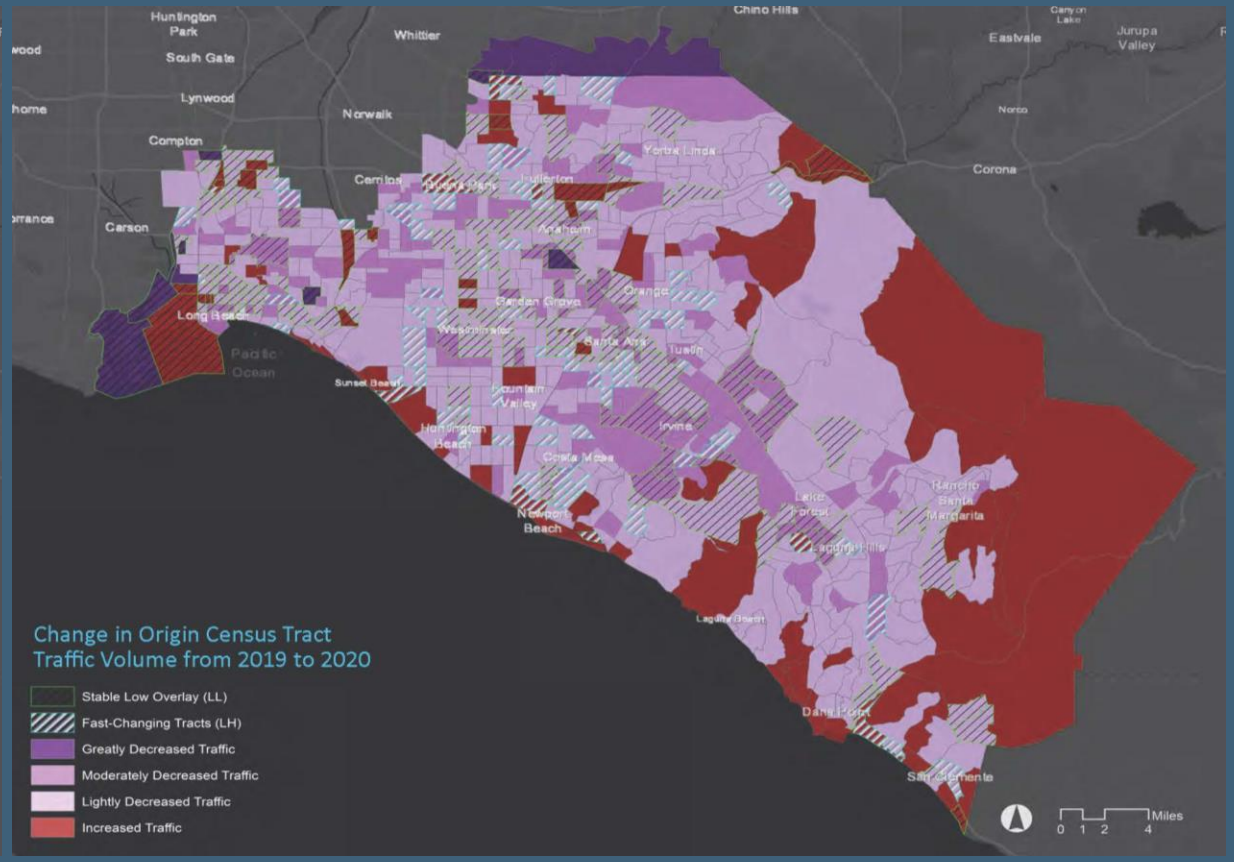
2023 Transportation Research Board **Poster Session #3198** - Census Data Fusion: Using Data to Understand Equity and Travel Behavior Disruptions

Tom Vo (vo@scag.ca.gov), Jonah Pellecchia, John Cho, Kevin Kane, Jung Seo, Frank Wen, and Hsi-Hwa Hu

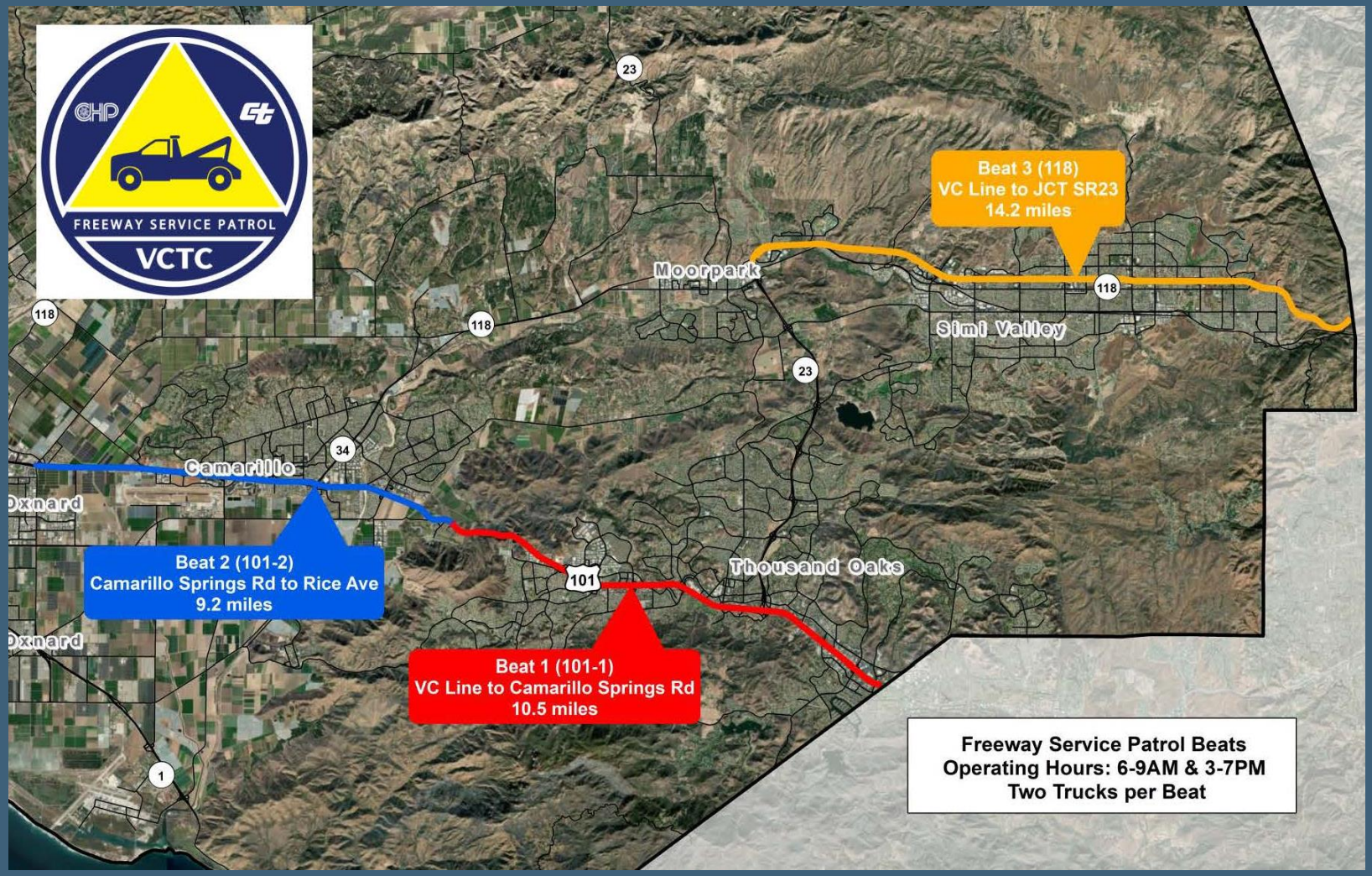
SCAG

TRB Transportation Research Board



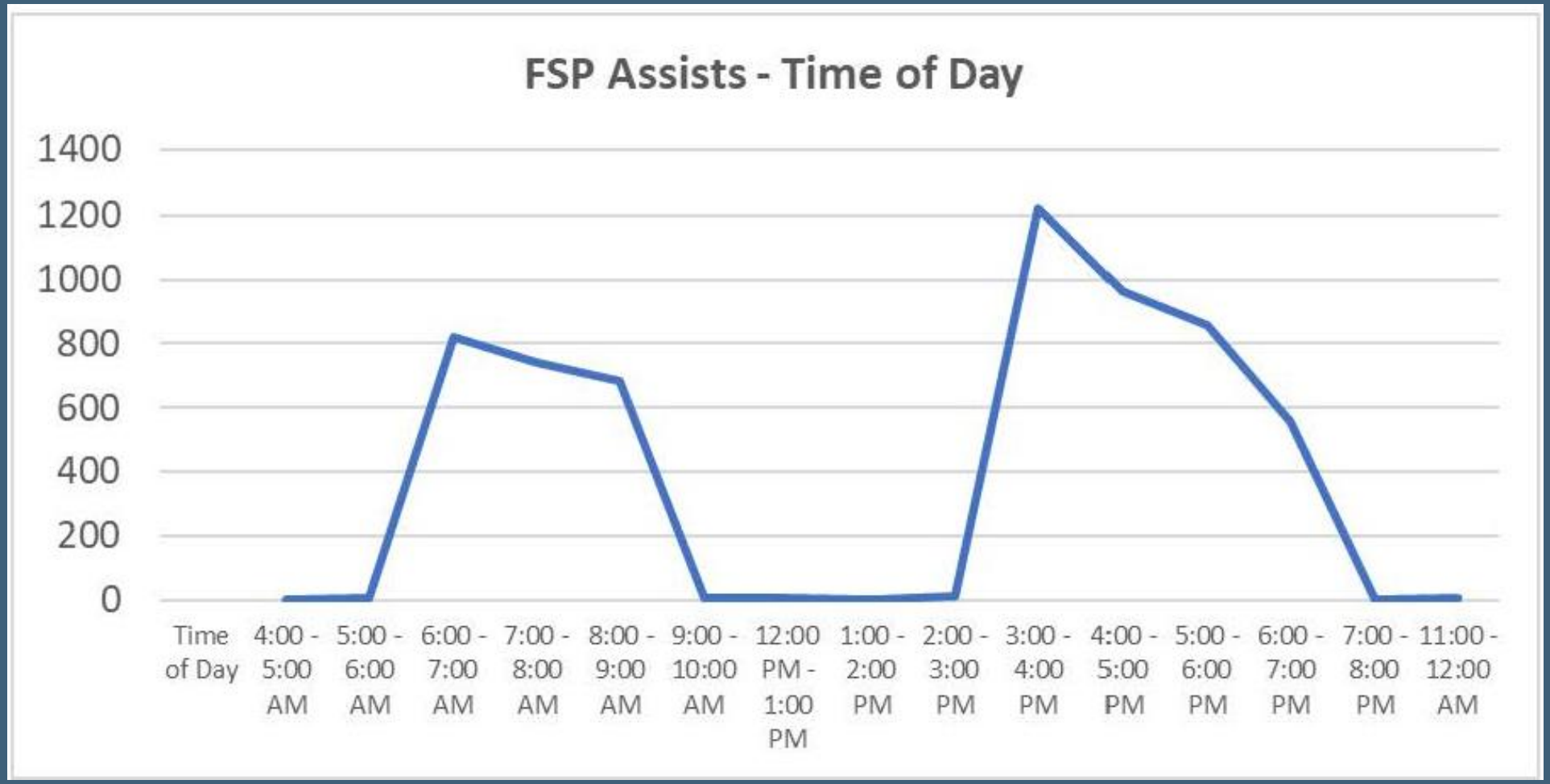


Ventura County Transportation Commission

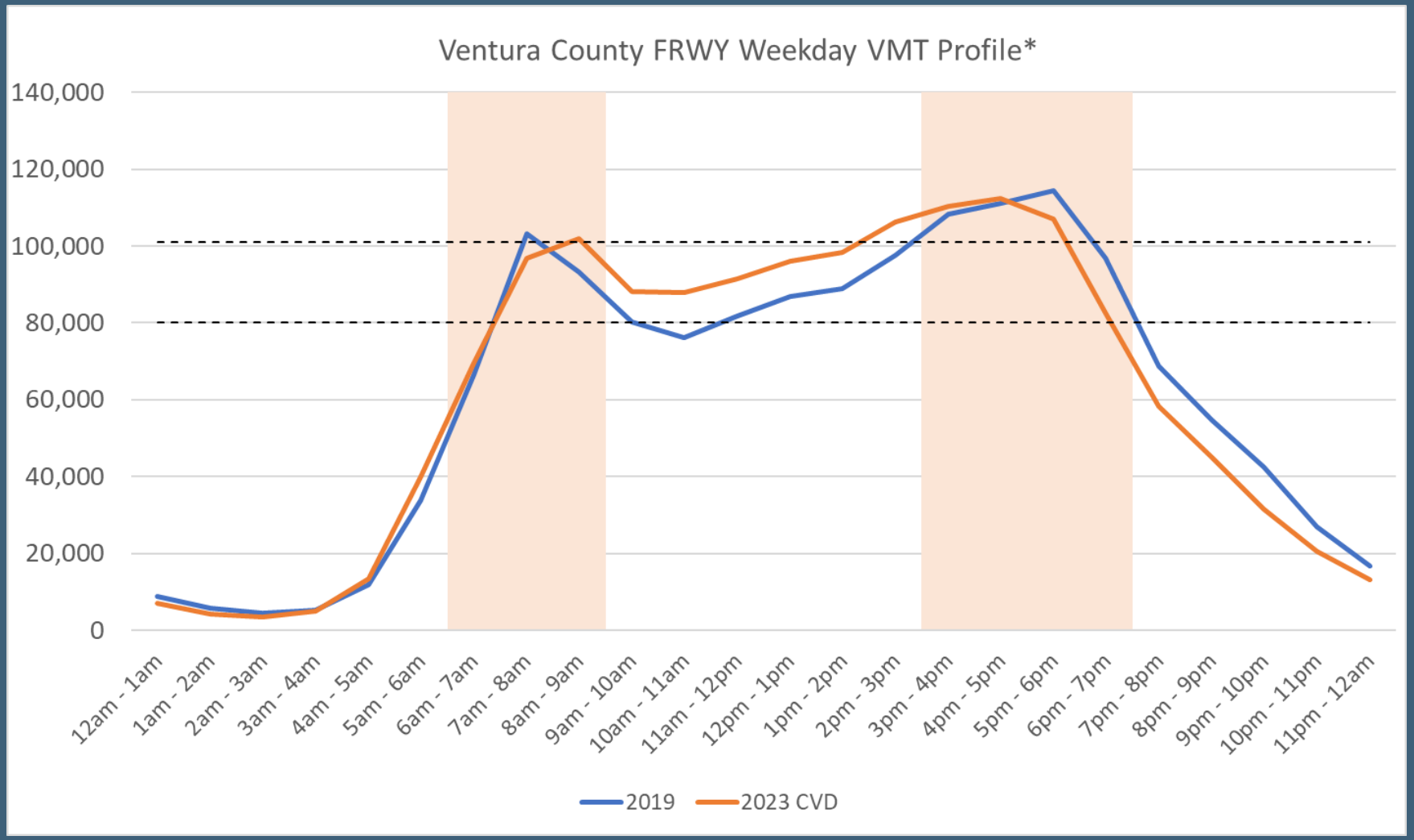


Ventura County FRWY Volumes

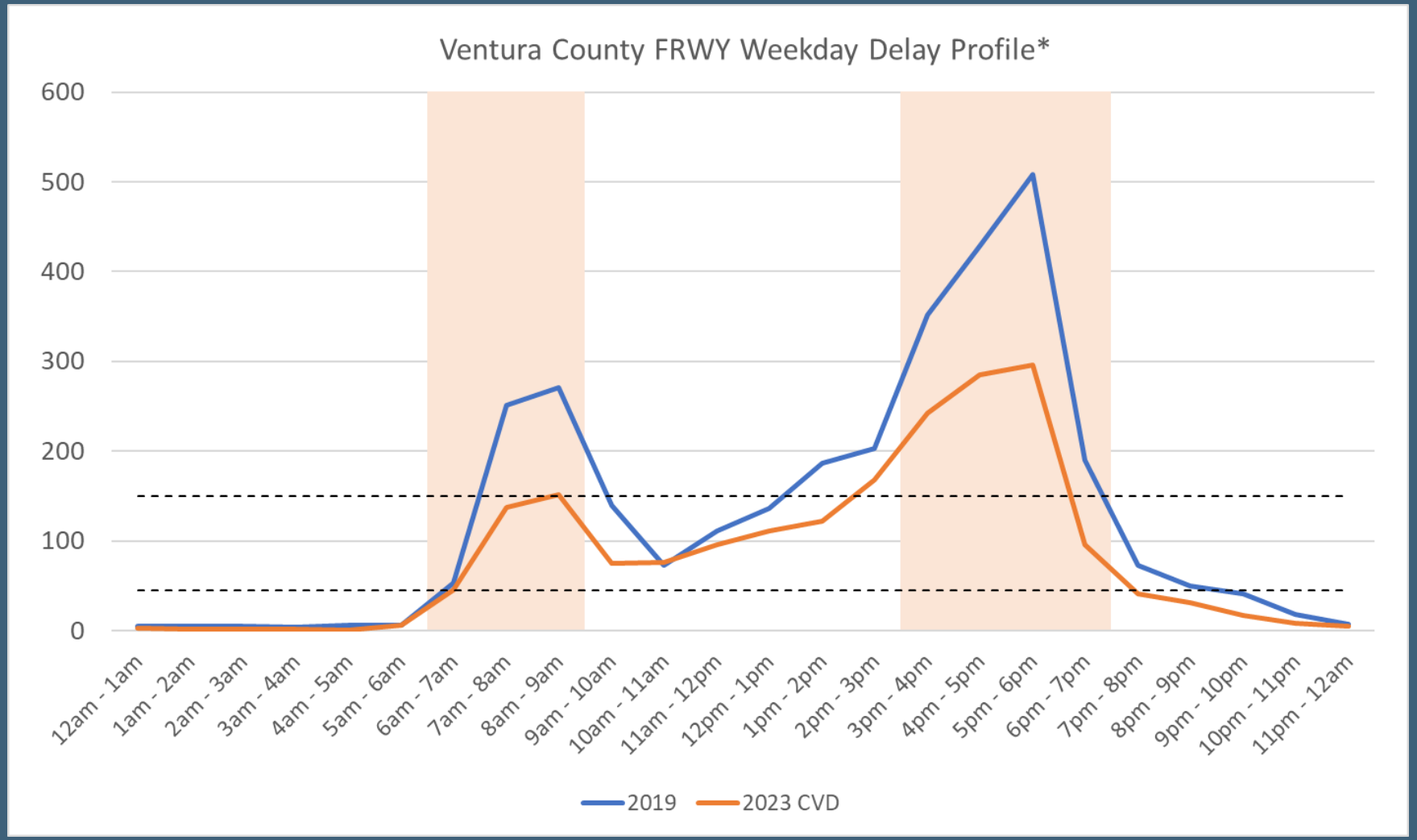
FSP Assists


FSP Assists - Time of Day
1400
1200
1000
800
600
400
200
0
Time of Day
4:00 - 5:00 AM
5:00 - 6:00 AM
6:00 - 7:00 AM
7:00 - 8:00 AM
8:00 - 9:00 AM
9:00 - 10:00 AM
12:00 PM - 1:00 PM
1:00 - 2:00 PM
2:00 - 3:00 PM
3:00 - 4:00 PM
4:00 - 5:00 PM
5:00 - 6:00 PM
6:00 - 7:00 PM
7:00 - 8:00 PM
11:00 - 12:00 AM

FRWY VMT Profile

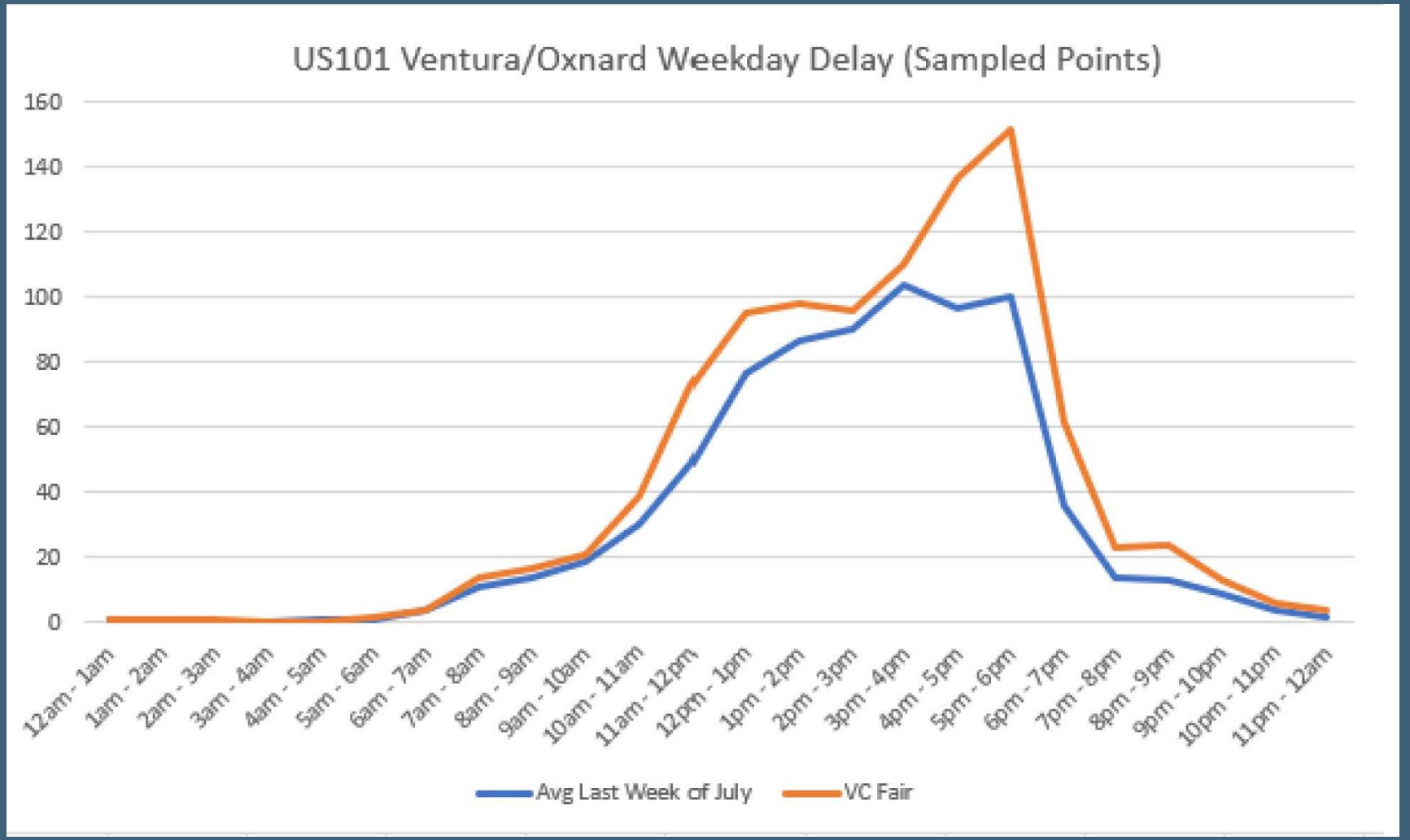


FRWY Delay Profile

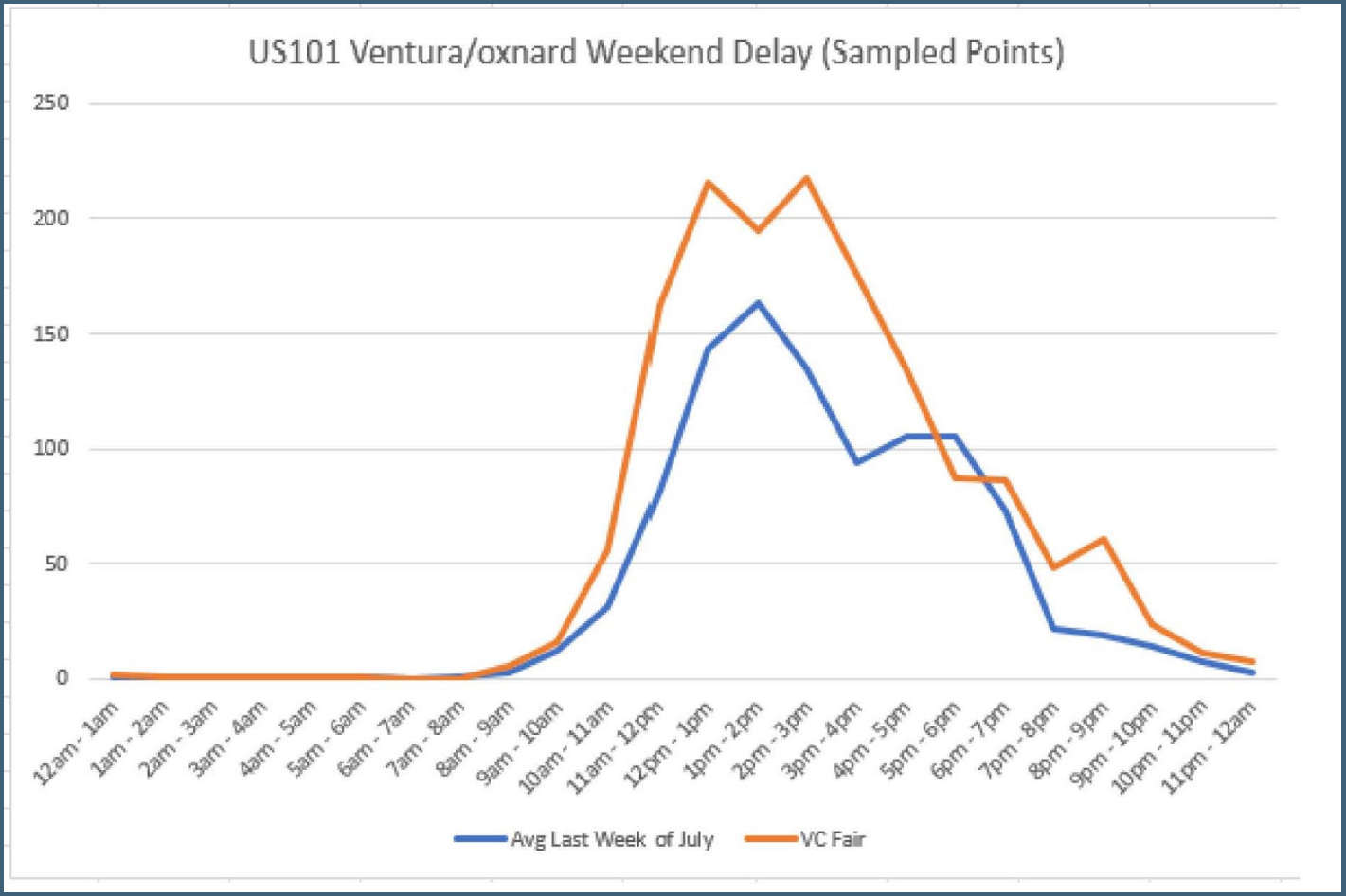


Freeway Service Patrol

Roadway Weekday Delay

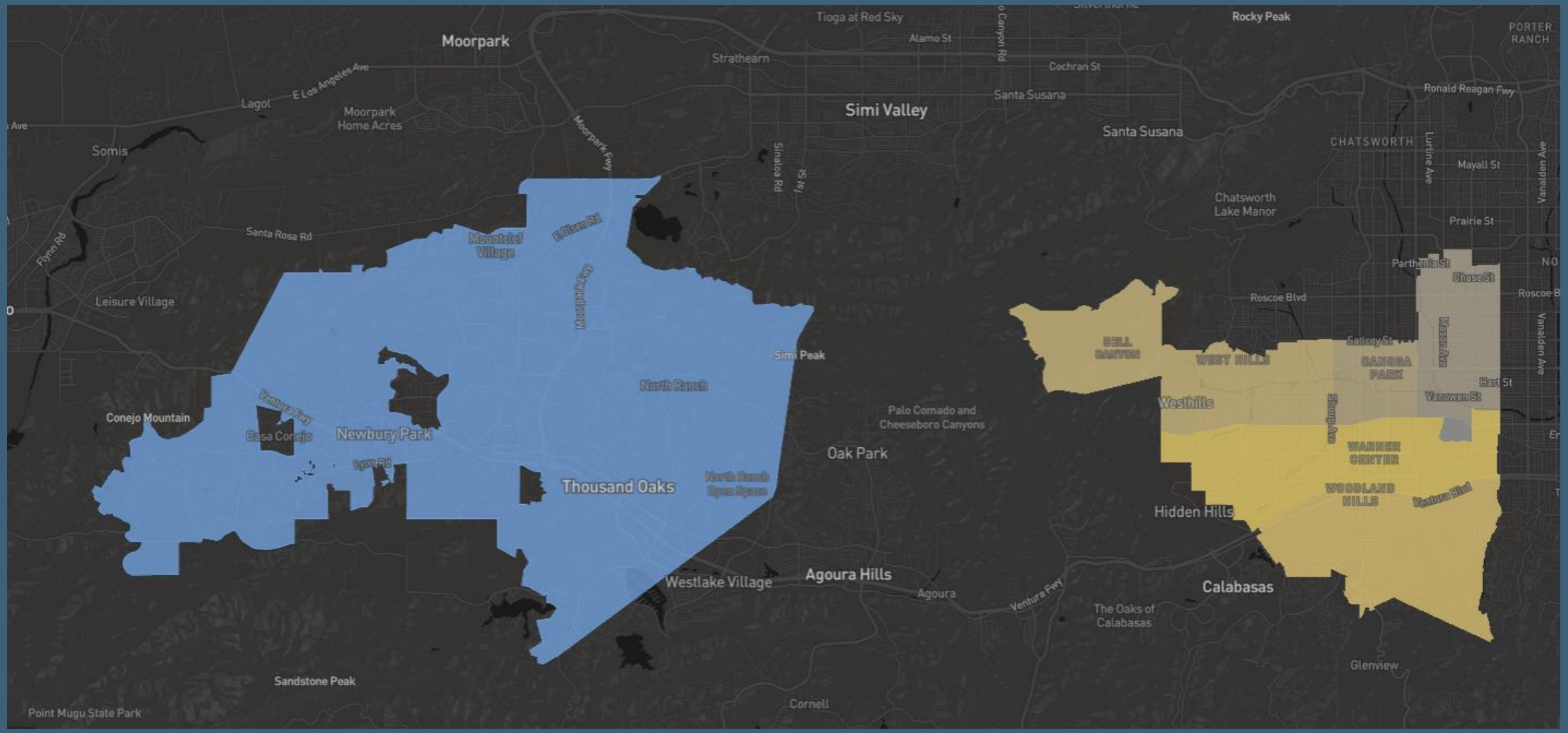


Roadway Weekend Delay

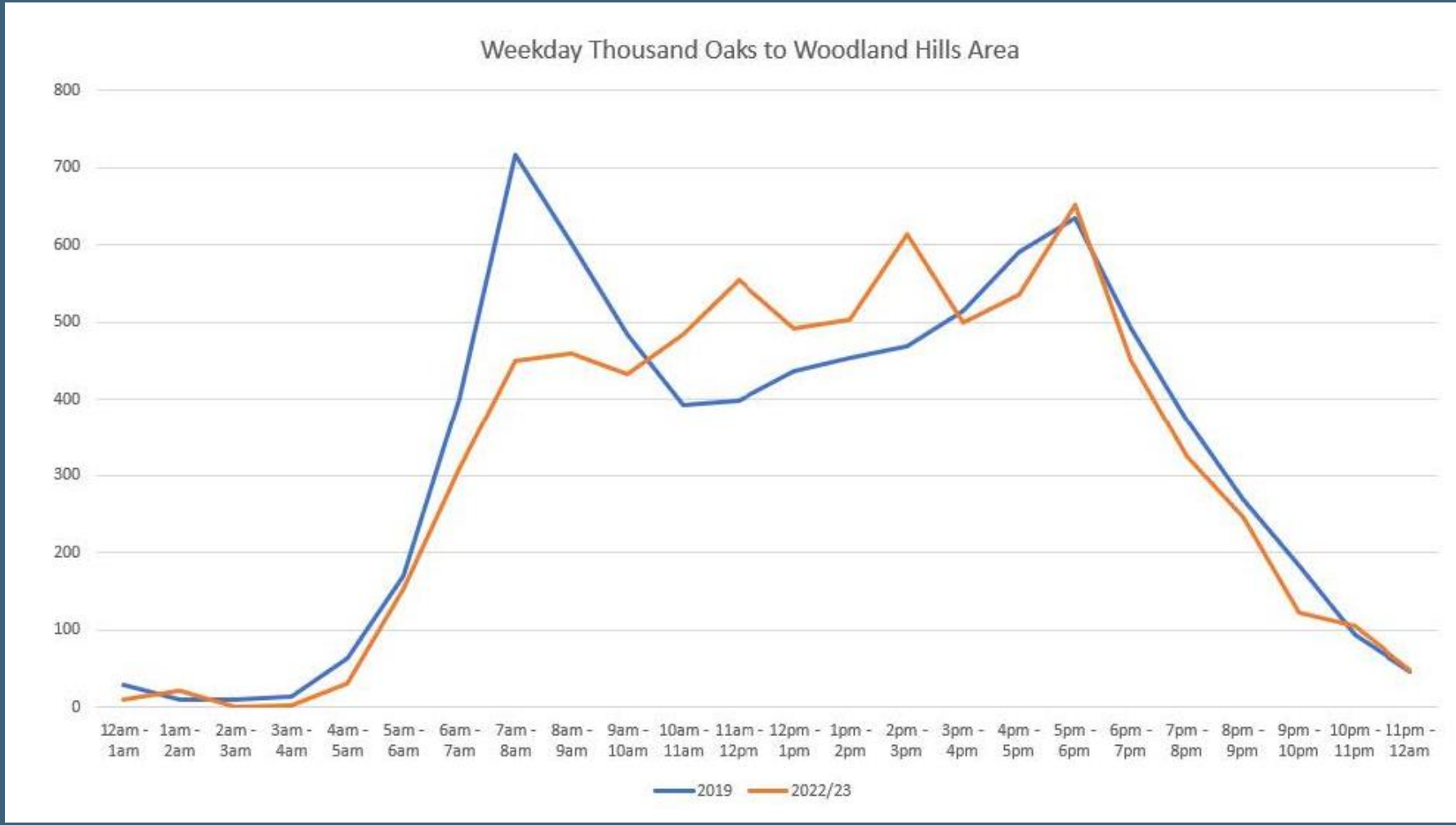


Transit Line Evaluation

Transit Line Evaluation

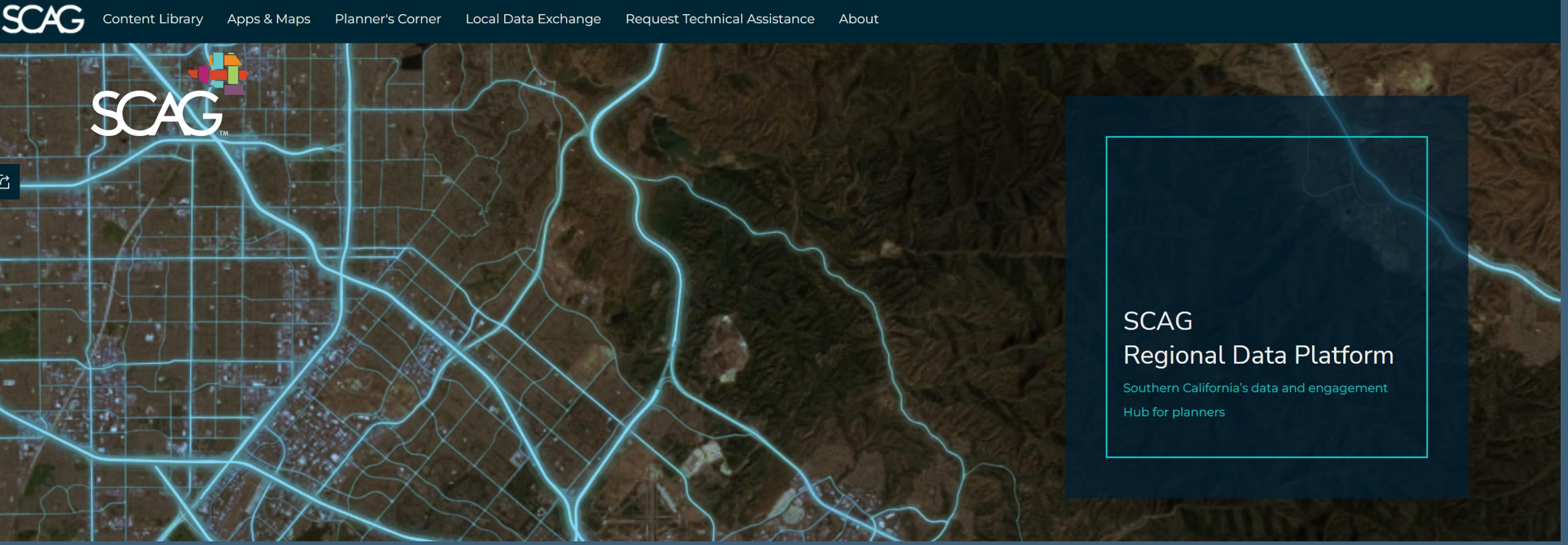


Transit Line Evaluation



Sample of New Anticipated Projects in SCAG Region

- **Transit Operations -** Conduct a Comprehensive Operational Transit Analysis to study the existing service to inform/make recommendations for future service changes, sustainability goals, fair housing initiatives, etc.
- **Quick-build Corridor Project -** For use on the East Pico Safety Enhancements Project in Santa Monica, which explores improvements to maximize pedestrian safety on Pico Blvd.
- **Developing Grants -** For use in developing transit + non-motorized grant applications (REAP 2.0, ATP, RAISE, MEGA, FTA, etc.)and research for project concepts.



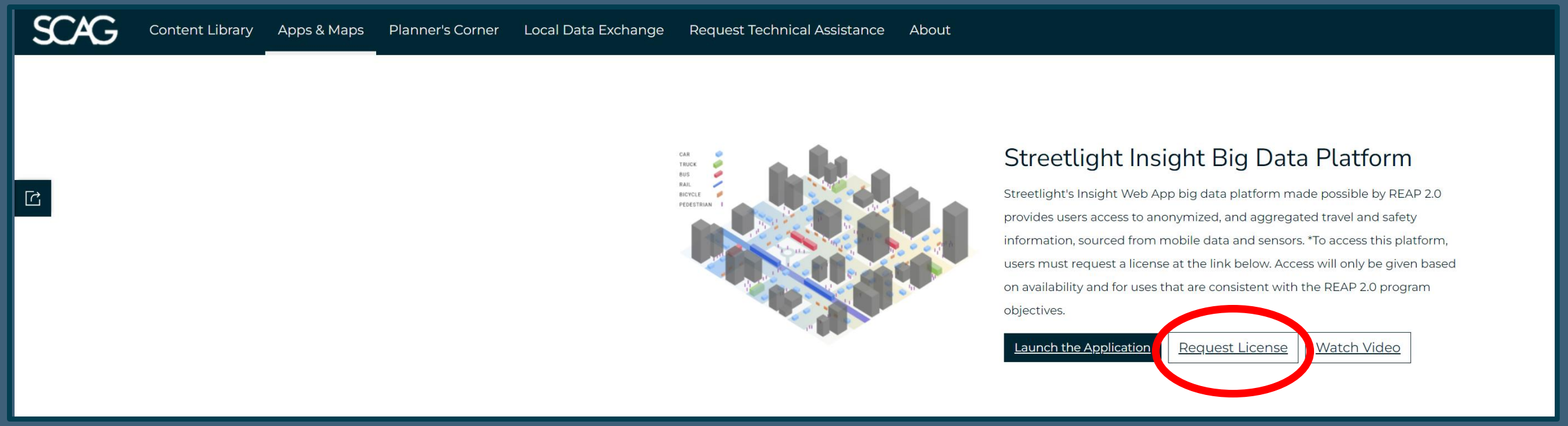
ACCESS/TRAINING/SUPPORT

How to get StreetLight access, trainings, and support

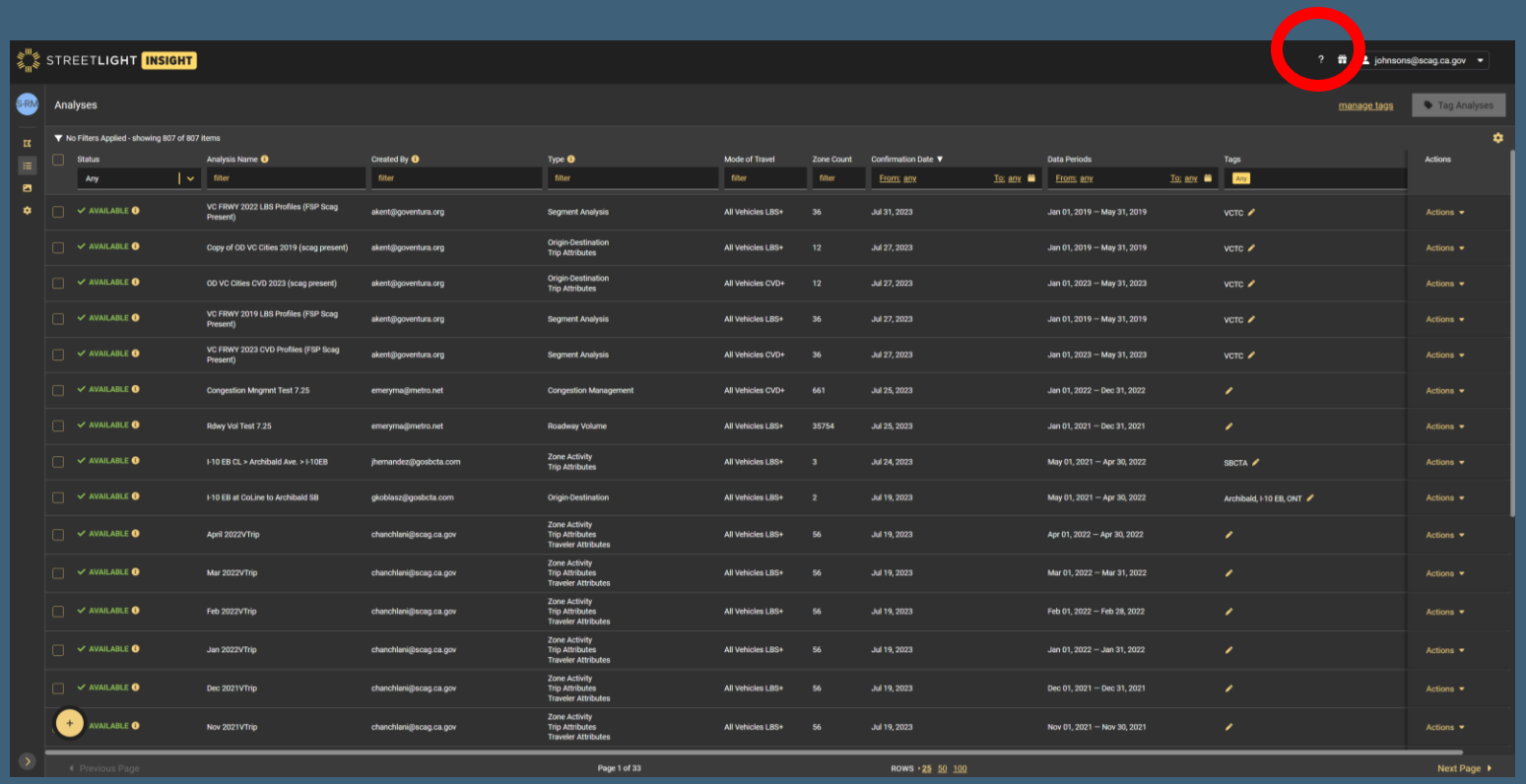
USER SIGNUP

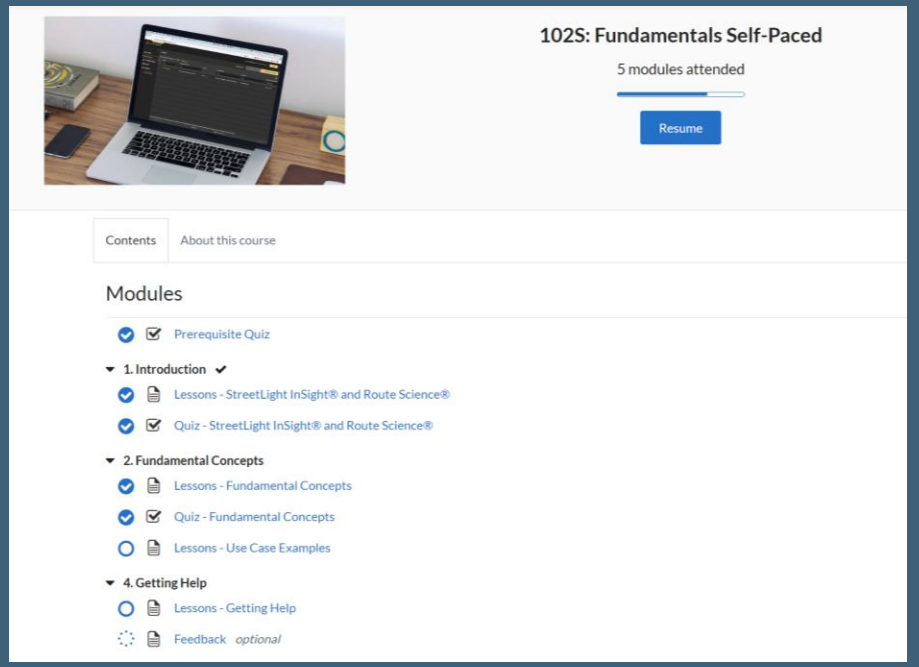
- Key Users: SCAG Staff, CTCs, COGs, Academic Institutions, and other public entities
- Available to consultants directly supporting public entity for duration of respective project
- Must be used in alignment with REAP 2.0 Objectives
- Interested in Access? Website hub.scag.ca.gov or Email: list@scag.ca.gov or johnsons@scag.ca.gov

Website – hub.scag.ca.gov



Training Modules





Live Training Schedule

April 25, 2023	May 23, 2023	August 15, 2023	2023-2026
Intro & VMT	Transit	**Active Transportation**	9 Trainings

Select 'Register' to attend an event below:

0 event registration(s)

Aug
15
10:00 a.m. PDT

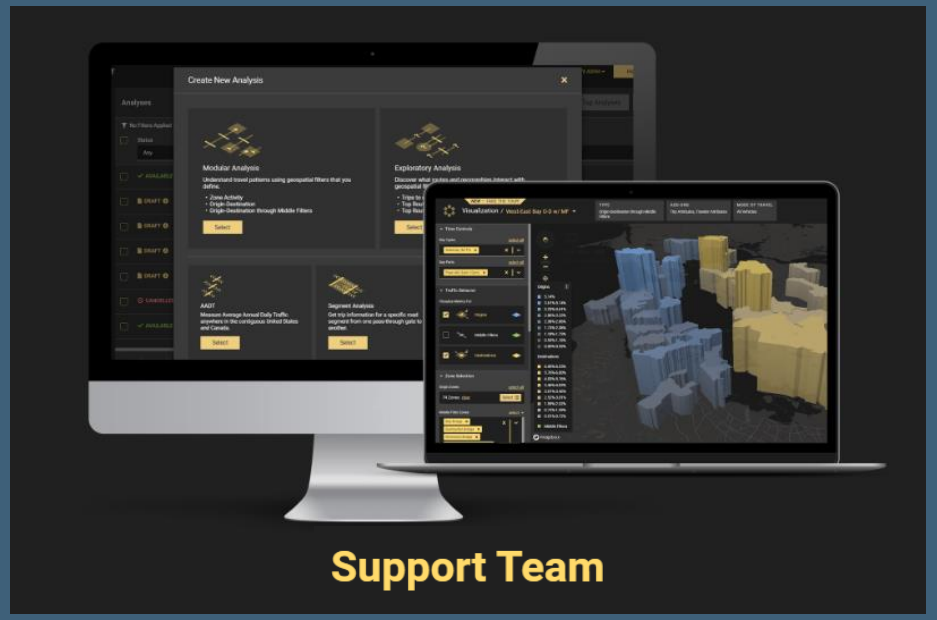
August 15, 2023 - SCAG Regional - Live! - StreetLight InSight® and Active Transportation

Register

From: Aug. 15, 2023, 10 a.m. PDT
To: Aug. 15, 2023, 11:30 a.m. PDT
Instructor: STL Training
Spaces left: 64

Tech Support

- Email: support@streetlightdata.com
- Provide project scope & timeline
- User will run analysis, but StreetLight can provide guidance on setup



REAP 2.0 Regional Pilot Initiative

- Provide data analyst consultant support to public agencies
- Developing program late 2023/early 2024
- Email johnsons@scag.ca.gov for further details/discuss project ideas

Big Data Research

Big Data Research projects will work with small and underserved local jurisdictions to identify and research key transportation planning and policy questions using powerful analytical tools like the StreetLight Big Data Platform, also funded by REAP 2.0. These projects will drive usage of existing big data platform contracts, build capacity for the use of tools and data-driven decision-making, and will have the flexibility to tailor the work to specific local community needs and contexts.

Key Highlights

- StreetLight Insight Platform available for public agencies to 2026
- Information/request a license email Scott Johnson Johnsons@scag.ca.gov or list@scag.ca.gov or go to the SCAG Regional Data Platform website at hub.scag.ca.gov
- Next live training August 15, 2023
- SCAG is interested in feedback and gathering input on use in the region


Thanks!
Q&A

Tell us how we did!

Take a quick 2-minute survey to help us improve future Toolbox Tuesdays!