AIRSAGE

The Power of When and Where

Stantec | The Tahoe Transportation Authority

Lake Tahoe

LOCATION OVERVIEW

Lake Tahoe is a large freshwater lake in the Sierra Nevada Mountains, straddling the border of California and Nevada. Topaz blue and surrounded by majestic peaks, Lake Tahoe is known for its beaches and ski resorts. On the southwest shore, Emerald Bay State Park contains the 1929 Nordic-style mansion Vikingsholm. Along the lake's northeast side, Lake Tahoe Nevada State Park includes Sand Harbor Beach and Spooner Lake, a gateway to the long-distance Tahoe Rim Trail.

Surface elevation: 6,224 ft (1,897 m)
Area: 191.6 mi² (496.2 km²)
Location: The Sierra Nevada mountain range, along the state line of California and Nevada

Source: Wikipedia

Image source: tahoequarterly.com

In 2015, Stantec, a major engineering services company, worked with the Tahoe Transportation Authority to help them better understand travel trends at Lake Tahoe.

Traditional data collection via hotel stays, traffic counts, and intercept surveys indicated an annual visitation of 8-10 million people.

High traffic volumes in the peak summer season and heavy snowfall in the winter lead to equally problematic congestion in the Lake Tahoe area. The environmental constraints preclude building more roadways, so the expansion of mobility services is the only solution.

Target Goals

INNOVATIVE MOBILITY SERVICES: REDUCING CONGESTION & GAINING ENVIRONMENTAL BENEFITS WITHIN 10 YEARS
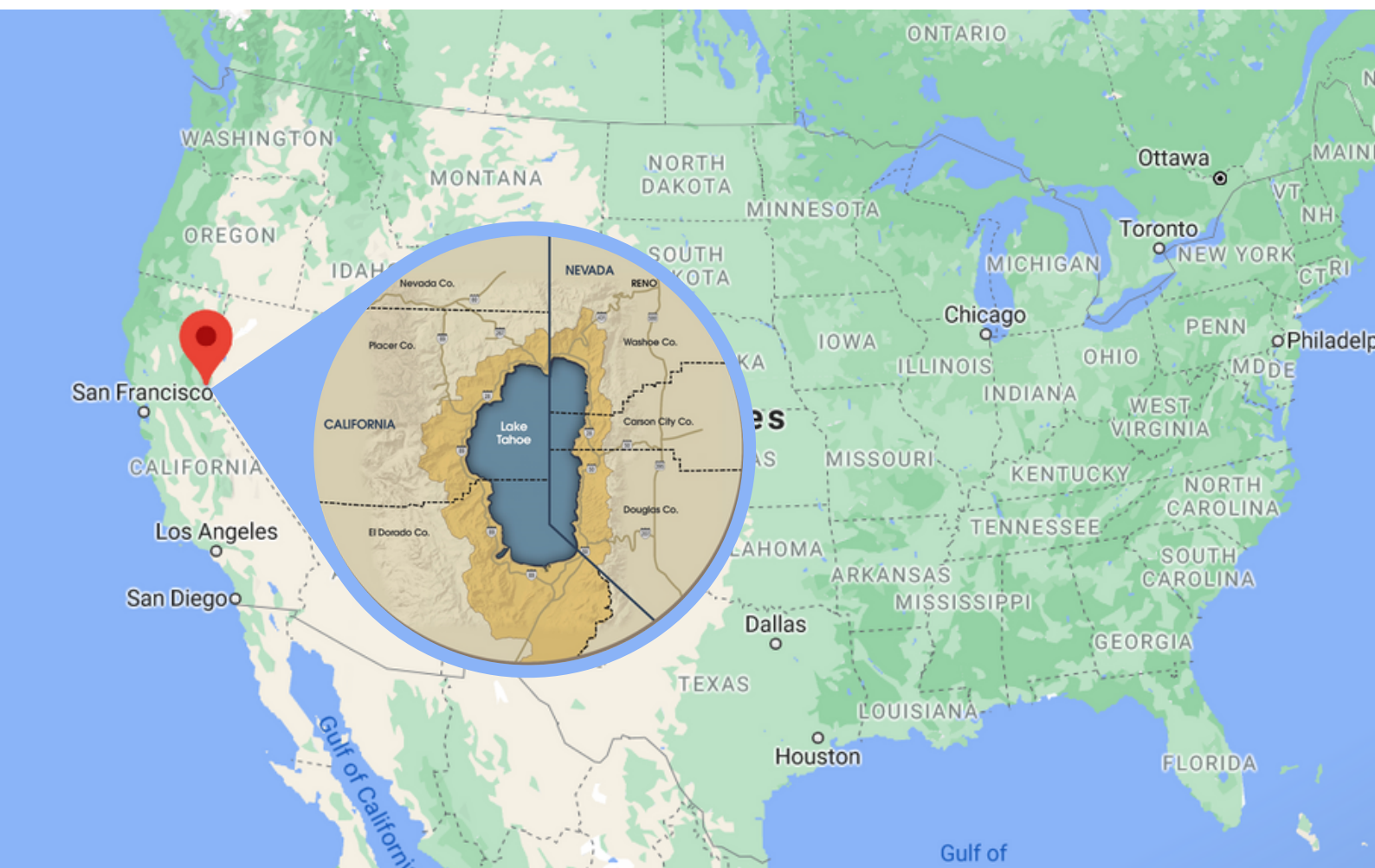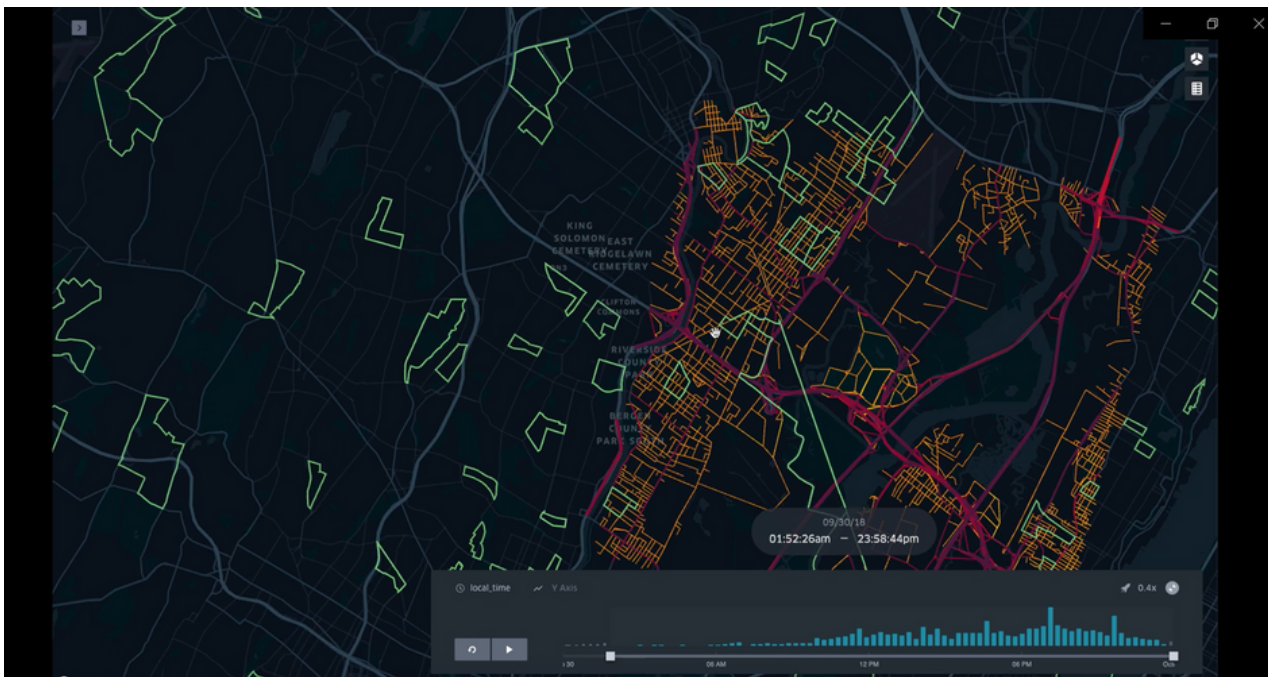
Challenge

COLLECTING AGGREGATED DATA

The geography of the Lake Tahoe area creates unique challenges, as it occupies two (2) states, five (5) counties, and the city of South Lake Tahoe. Additionally, two separate federal agencies manage the lake.

With this many entities overseeing activities in the area, data collected was very not representative of the entire basin. Therefore, it was difficult to make decisions efficiently and effectively across the entire Lake Tahoe area.

Solution:
Using mobile data for
transportation planning

In 2015, Stantec approached AirSage to aid them in data collection for the Lake Tahoe area. To solve this unique challenge, AirSage provided Stantec with GPS point classification files with high-quality spatial data collected over an extended period of time.

To provide competitive insights, AirSage uses rich data driven by millions of daily anonymous mobile device sightings. Compared to traditional limited travel data collected from manual interviews, AirSage's data is collected through the objective data of tens of millions of devices, enabling not only a much greater geographical resolution, but also much higher accuracy. Its visualized heatmap displays where and how a population moves within a given timeframe, such as monthly, weekly, daily or hourly.
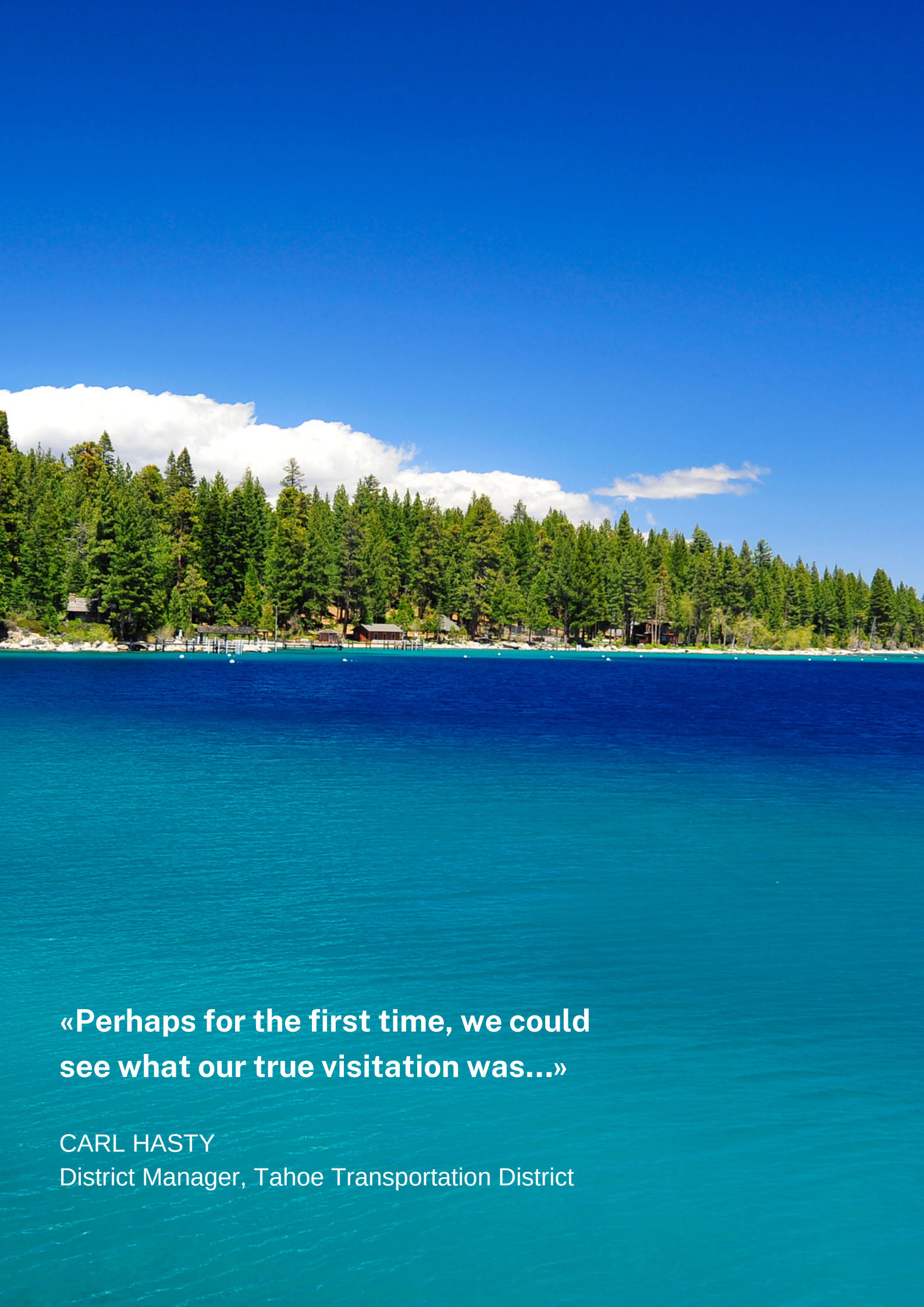
Key Insights

AND HOW AIRSAGE DATA WAS USED

To take full advantage of AirSage data, Stantec visualized the data via REDIS, creating individual hourly snapshots of the Points of Interest (POI). This tool allowed Stantec to view and analyze animated streams of data.

AirSage was able to identify each Origin-Destination (OD) movement by subscriber class, for a study area with a full-time population of 55K.

Stantec valued the ability to filter trips by zone, date, day, trip purpose, and time of day. But the most important feature was the ability to identify distinct travel patterns using data from single anonymous devices. Thus, Stantec identified that transportation and mobility service options may need to be improved to increase ridership.

A significant finding through the use of AirSage data was the fact that the annual visitations to Lake Tahoe totaled 25.6 million people, compared to the 8-10 million people estimated by traditional means.
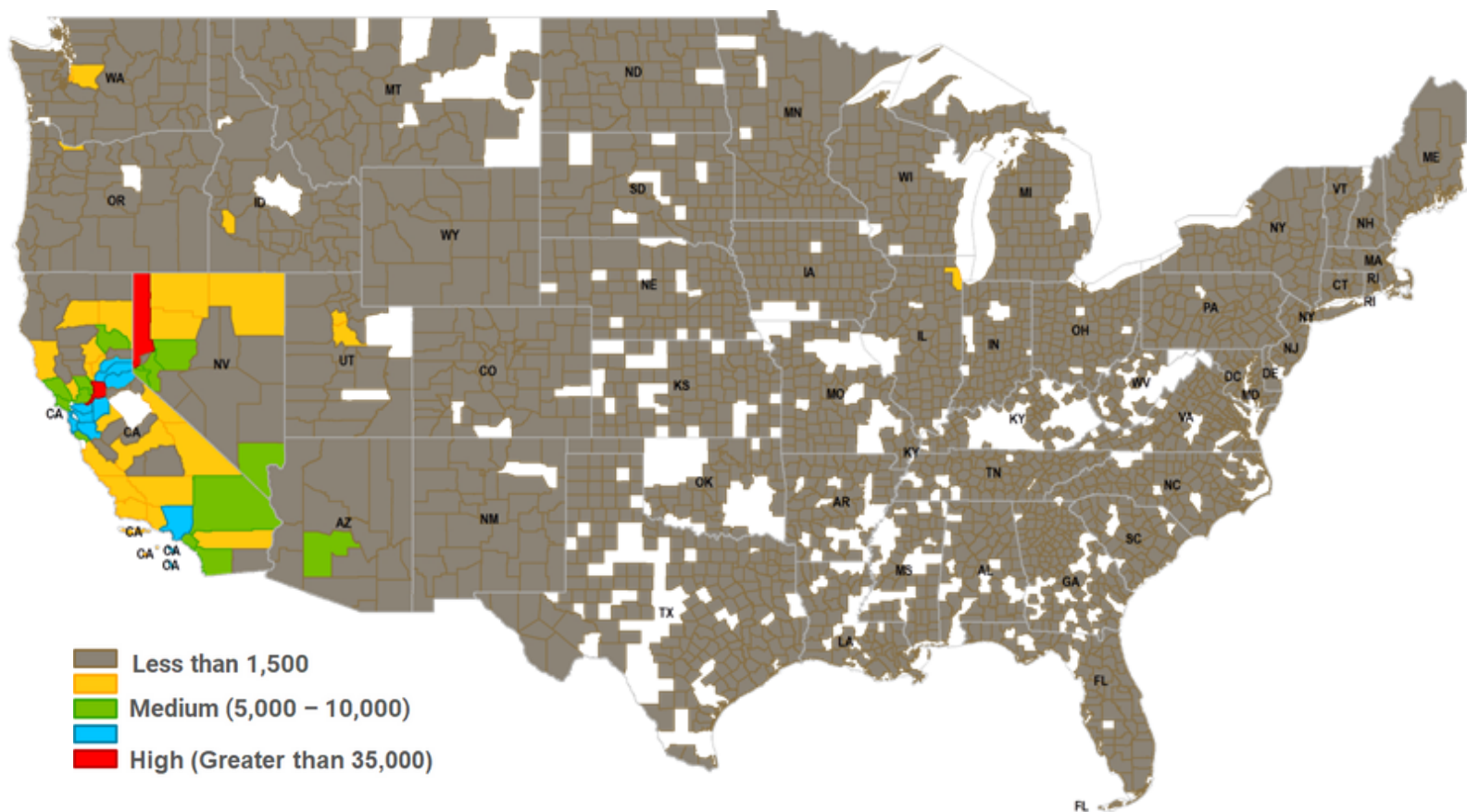
«Perhaps for the first time, we could
see what our true visitation was...»

CARL HASTY
District Manager, Tahoe Transportation District

Less than 1,500
Medium (5,000 – 10,000)
High (Greater than 35,000)

Understand Visitors Home Locations

Powerful insights derived from AirSage data helped Stantec's client visualize visitor home locations. This information serves two important purposes: First, it enables local leaders to have more meaningful and direct discussions with elected officials at federal, state, and local agencies to help fund their transportation solutions. The second important purpose is to send more targeted information to visitors in their home locations of the mode choice options and locations of mobility hubs. Local entities are now working on adding sensors in the roadways at each area entry point that will push a notification to smart phones with a "Welcome" message, and "here's where you can park" information. The goal is to get people out of their cars as quickly as possible.
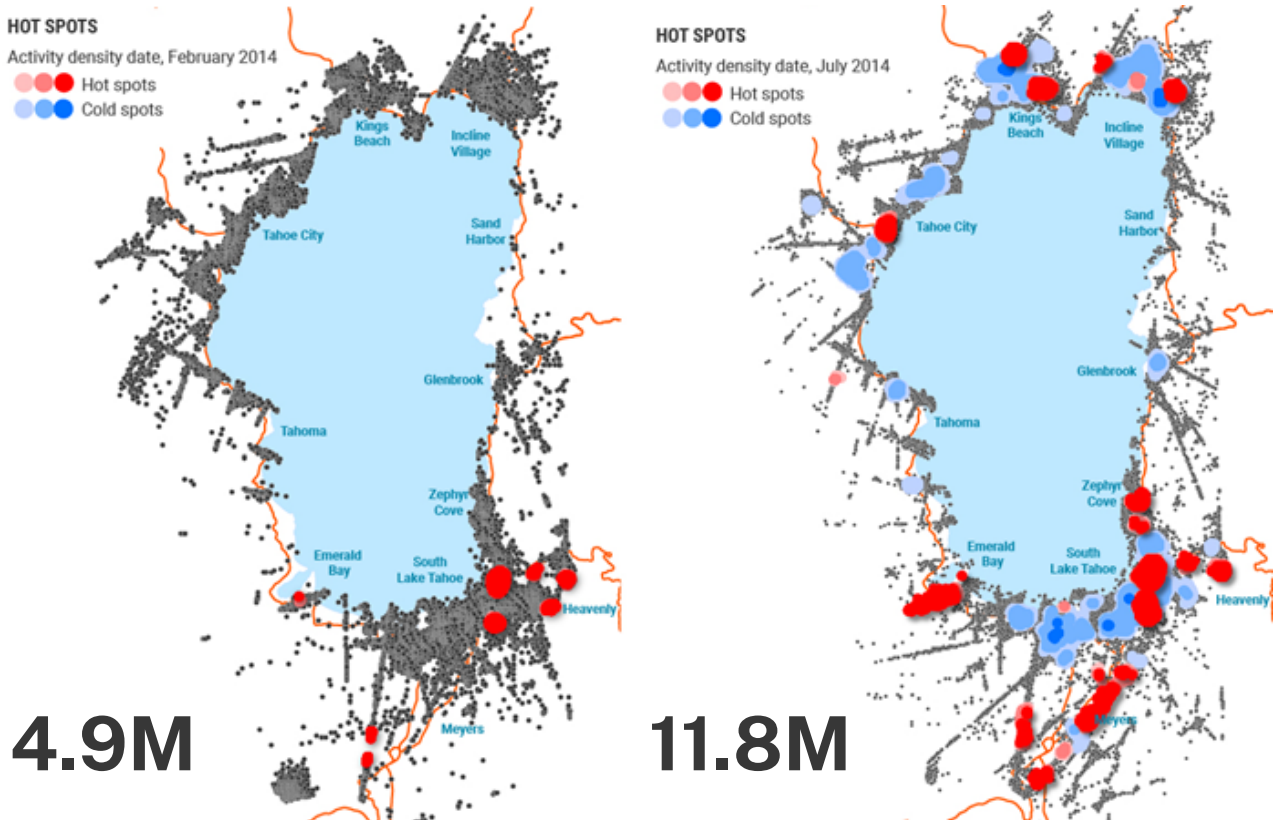
Determine Seasonal Visitors Flow
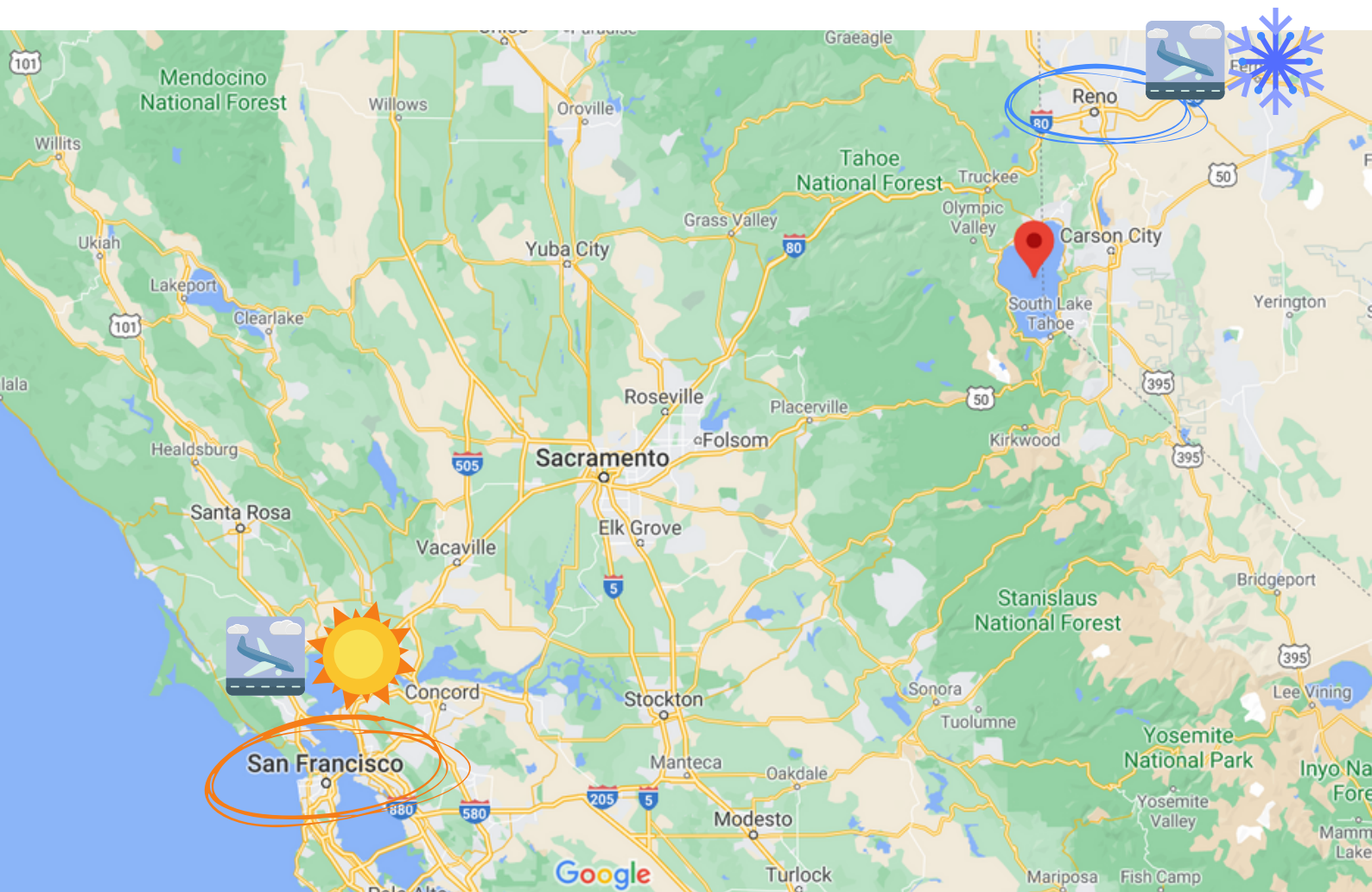
One of the most exciting findings of Stantec was the identification of visitor flow in different seasons. Using AirSage data, Stantec was able to view the airports, highways and routes utilized by visitors arriving in the area.

For example, they observed that 56% of visitors over the winter season arrived from Reno-Tahoe International Airport via Highway 431. However, over the summer period this number declined by 6%. Conversely, the number of visitors traveling from San Francisco International Airport doubled during the summer season from 11% to 22%.

Identify New Destinations

HOT SPOTS
Activity density date, February 2014
● ● ● Hot spots
● ● ● Cold spots

Kings Beach · Incline Village · Tahoe City · Sand Harbor · Glenbrook · Tahoma · Zephyr Cove · Emerald Bay · South Lake Tahoe · Heavenly · Meyers

4.9M

HOT SPOTS
Activity density date, July 2014
● ● ● Hot spots
● ● ● Cold spots

Kings Beach · Incline Village · Tahoe City · Sand Harbor · Glenbrook · Tahoma · Zephyr Cove · Emerald Bay · South Lake Tahoe · Heavenly · Meyers

11.8M

Through AirSage's data, Stantec identified destinations their client did not realize were popular, and that therefore had inadequate transit services in place. Stantec provided a map presenting 11.8 million destination points, compared to the previous monitored total of 4.9 million.

This information allowed Stantec to recommend appropriate mobility options to serve these destinations in the most cost-efficient manner and get vehicles off the road. With the knowledge of the destinations for high concentrations of people throughout the community, the client was able to focus on addressing their actual needs.
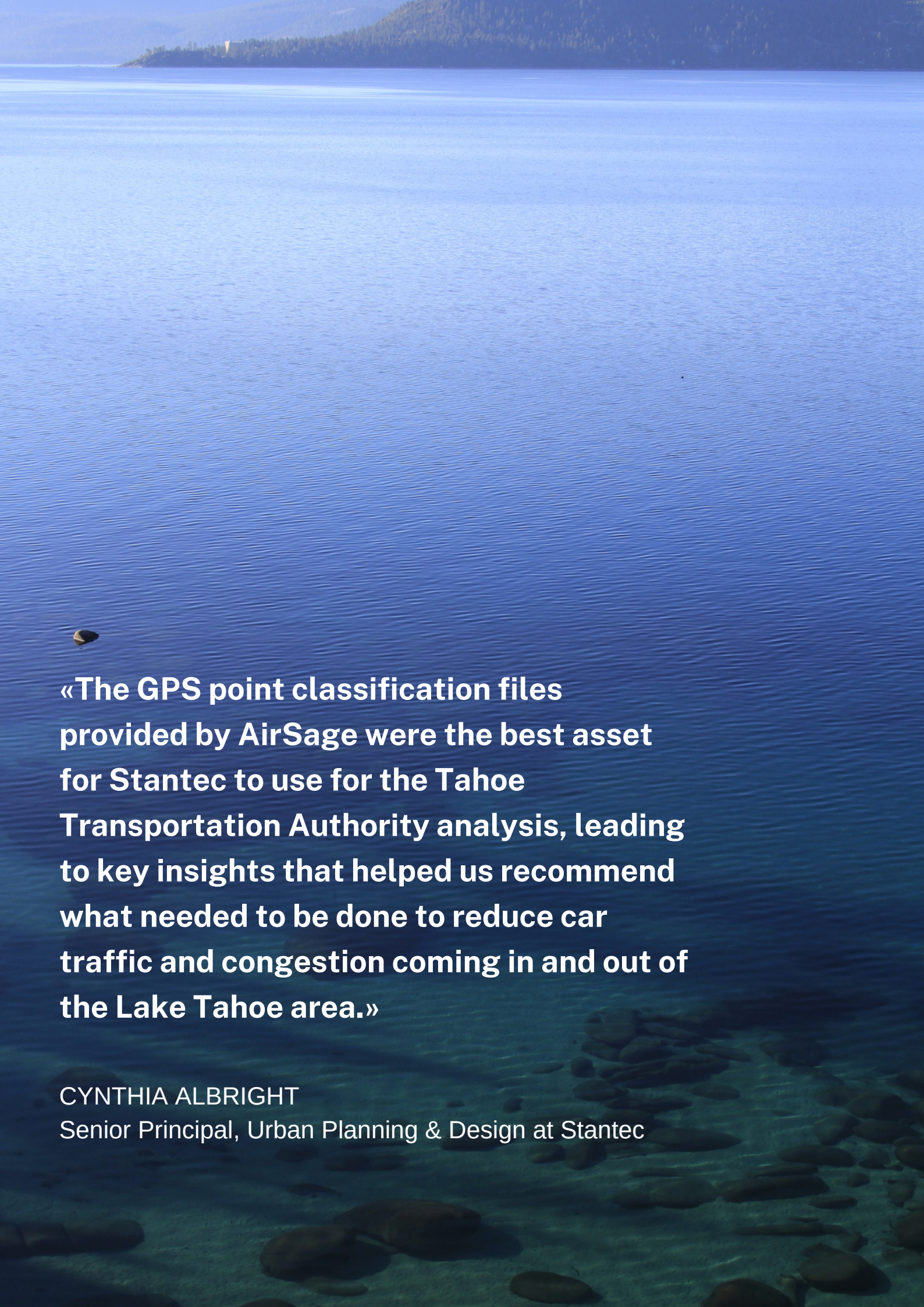
Using AirSage data, Stantec was able to determine the number one visited destination in the Lake Tahoe area.

Based on this data, Stantec evaluated all trips to all locations and overlaid transit ridership by route. Through this practice, they were able to identify that the top destination in the Lake Tahoe area was Emerald Bay, yet this destination had one of the lowest ridership routes.

Stantec was also able to compare the number of transit riders to other modes of travel to/from Emerald Bay.

Find Top Destination

7,428
transit trips
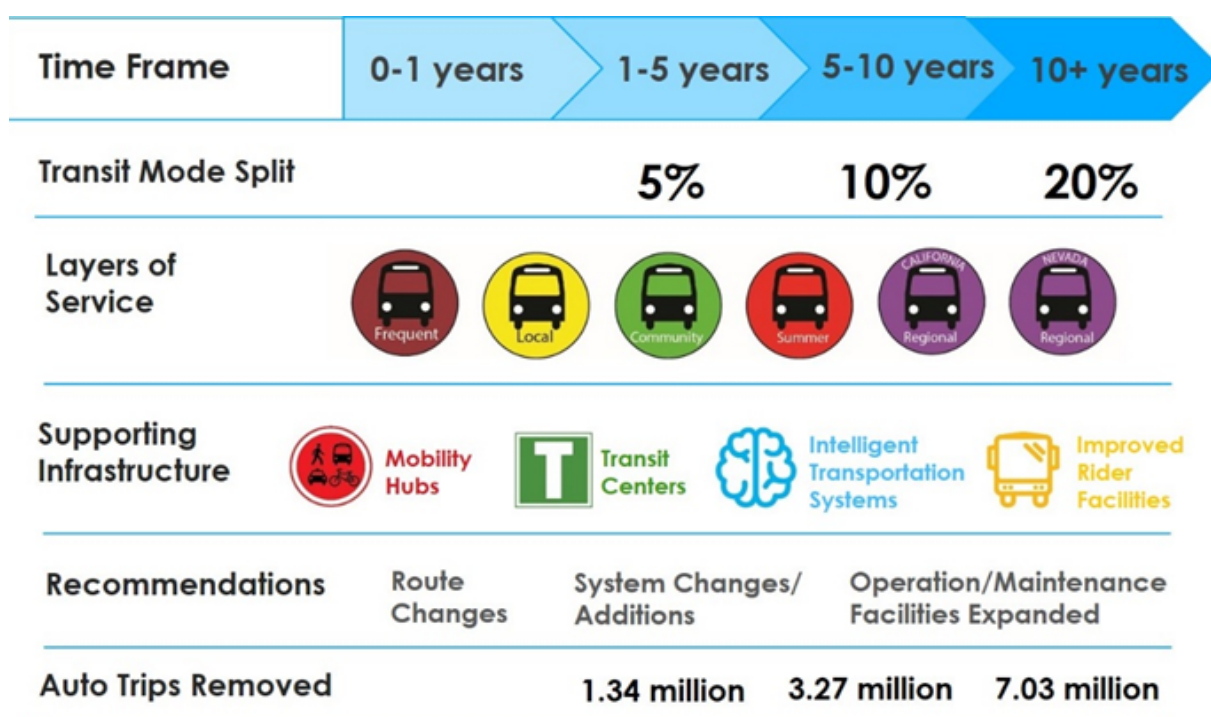vs.
1.6 million
vehicle trips
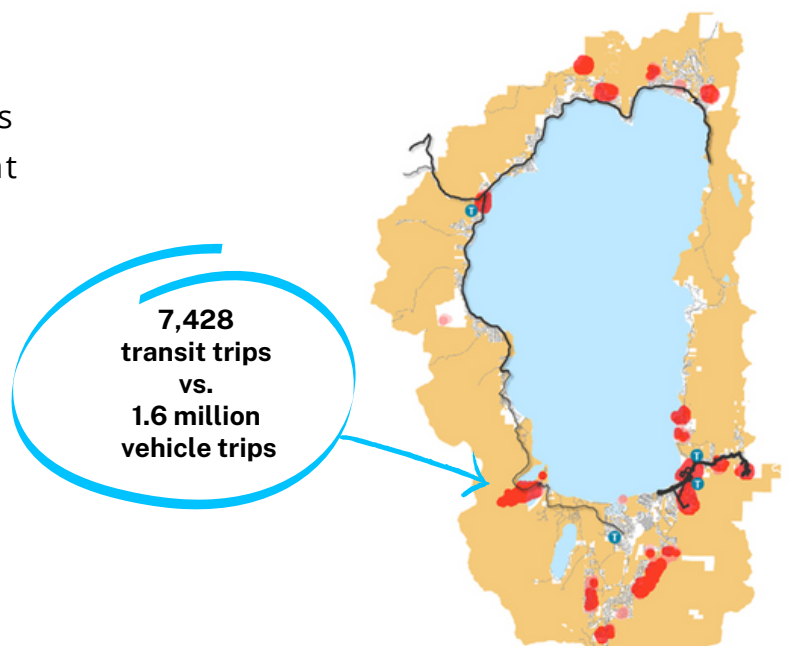
«The GPS point classification files provided by AirSage were the best asset for Stantec to use for the Tahoe Transportation Authority analysis, leading to key insights that helped us recommend what needed to be done to reduce car traffic and congestion coming in and out of the Lake Tahoe area.»

CYNTHIA ALBRIGHT
Senior Principal, Urban Planning & Design at Stantec

Award-Winning Results

Time Frame	0-1 years	1-5 years	5-10 years	10+ years
Transit Mode Split		5%	10%	20%
Layers of Service	Frequent / Local / Community	Summer	California Regional	Nevada Regional
Supporting Infrastructure	Mobility Hubs	Transit Centers	Intelligent Transportation Systems	Improved Rider Facilities
Recommendations	Route Changes	System Changes/ Additions	Operation/Maintenance Facilities Expanded	
Auto Trips Removed		1.34 million	3.27 million	7.03 million

With all the impressive and unexpected insights obtained via AirSage, Stantec delivered a comprehensive Lake Tahoe Transit Vision and Improvement Plan.

Do in part to a long-term partnership with AirSage, Stantec won the 2019 Gold Award for Excellence in Transportation planning by the APA. It was deservedly received for Stantec's comprehensive plan that included ferry services and land use planning on the north and south shores of Lake Tahoe.

Stantec continues using AirSage data to deliver outstanding results for their clients - Leveraging the Power of When and Where.

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