Mining Cellular Data to Improve Transit Planning in the Lake Tahoe Basin

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Who we are

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Destination
Lake Tahoe
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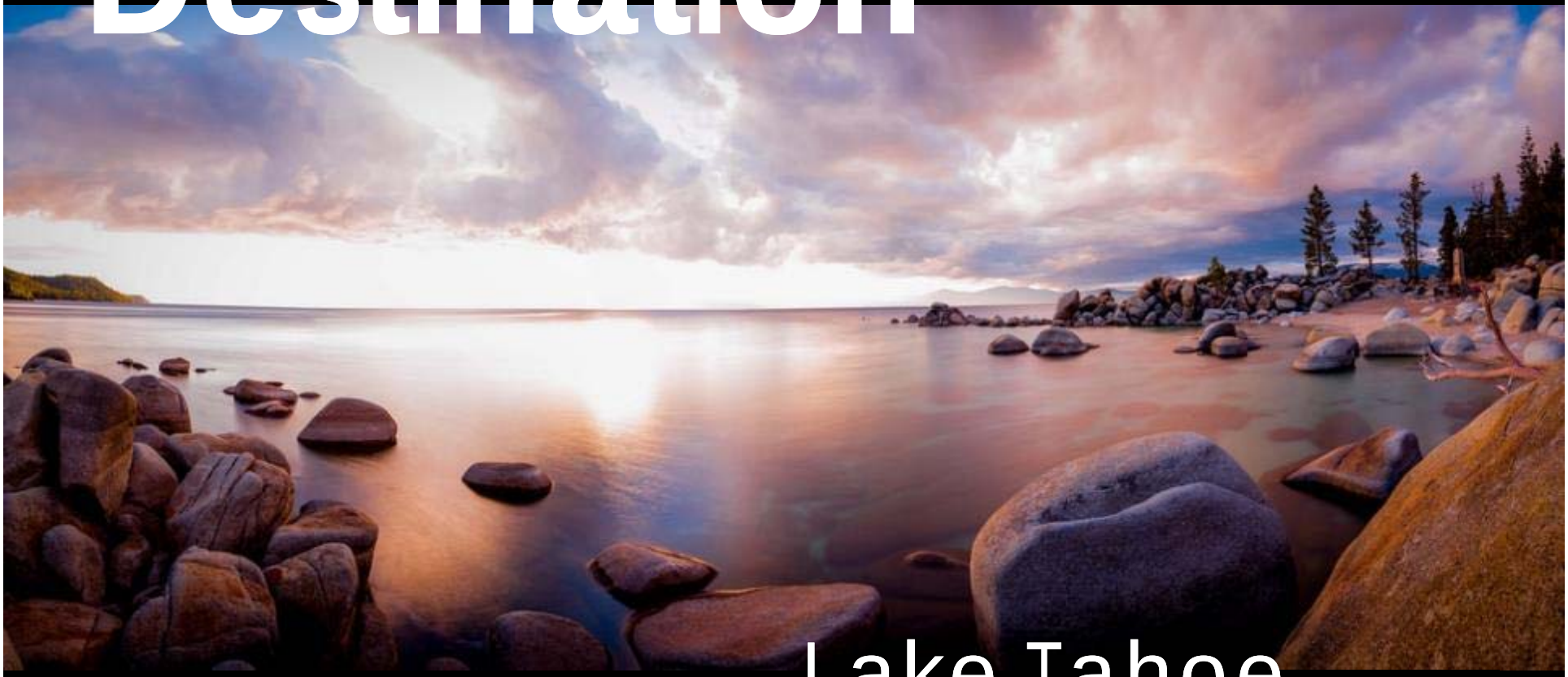
Destination



Lake Tahoe

Photo Credit: Jarrod Lopiccolo

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Lake Tahoe
FACTS
99 mi Shoreline
Water Clarity
100’ 1960s
77.8’ 2014
Photo Credit: Kim Tackett
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Project OVERVIEW

Photo Credit: Ben Sheriff

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airsage
• Collect & analyze mobile signaling data
• We "see" over:
–1/3 of the U.S. population
–100 million devices / day
–each device average 100 times / day
• **Anonymous** - Consumer privacy
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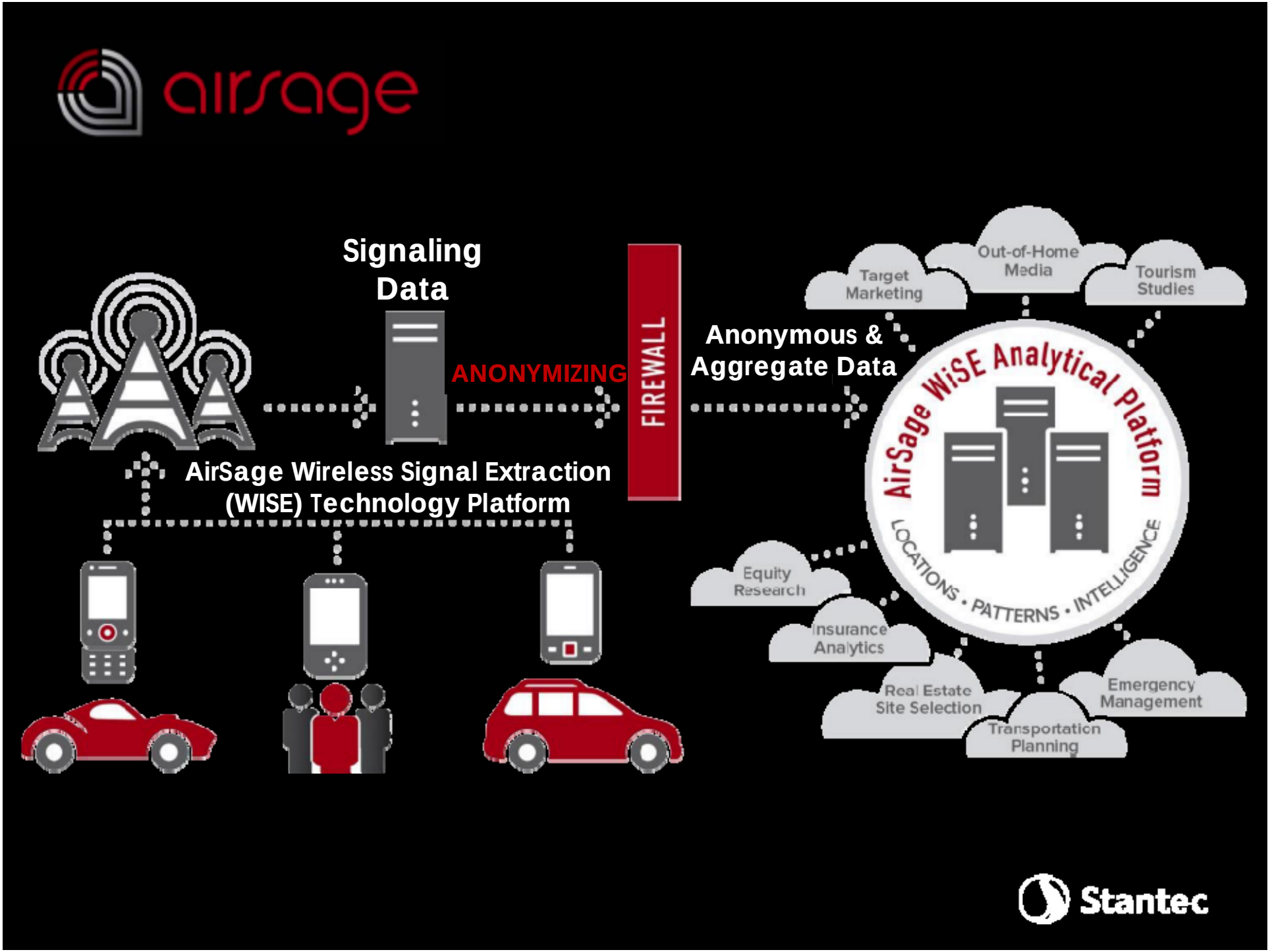
airsage
Signaling Data
ANONYMIZING
FIREWALL
Anonymous & Aggregate Data
AirSage Wireless Signal Extraction (WISE) Technology Platform
Target Marketing
Out-of-Home Media
Tourism Studies
AirSage WiSE Analytical Platform
LOCATIONS • PATTERNS • INTELLIGENCE
Equity Research
Insurance Analytics
Real Estate Site Selection
Transportation Planning
Emergency Management
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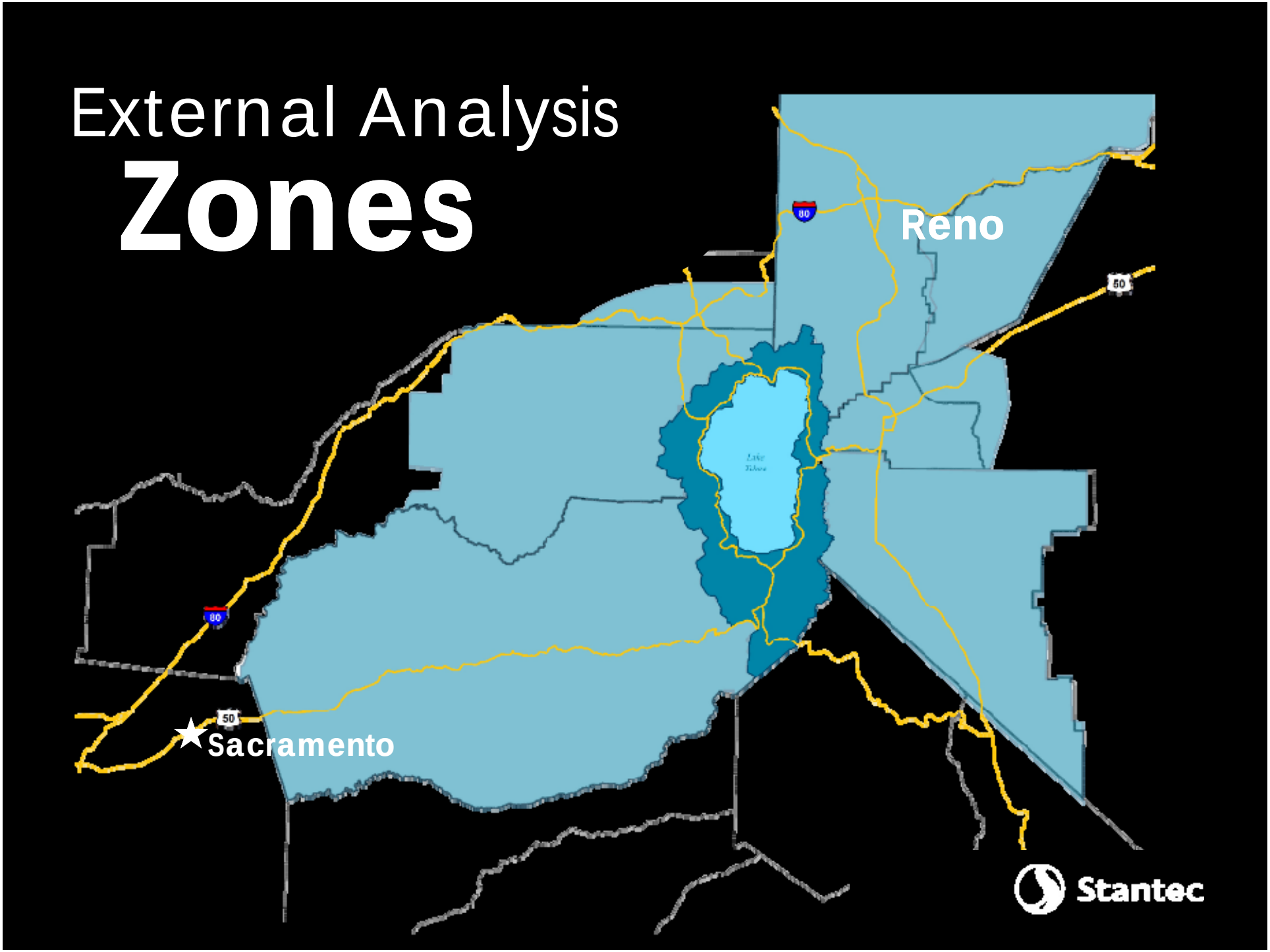
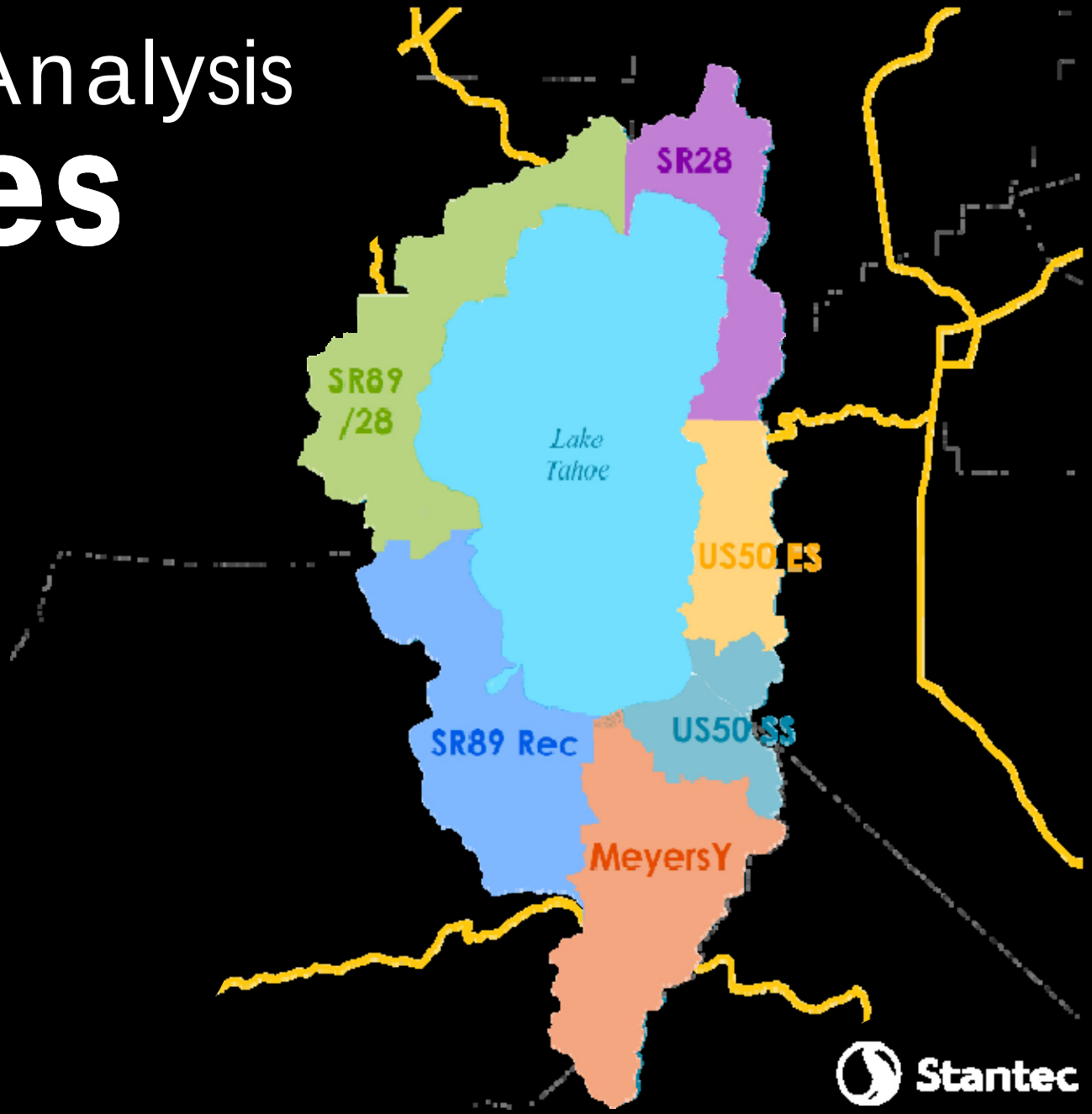
External Analysis
Zones



Internal Analysis
Zones

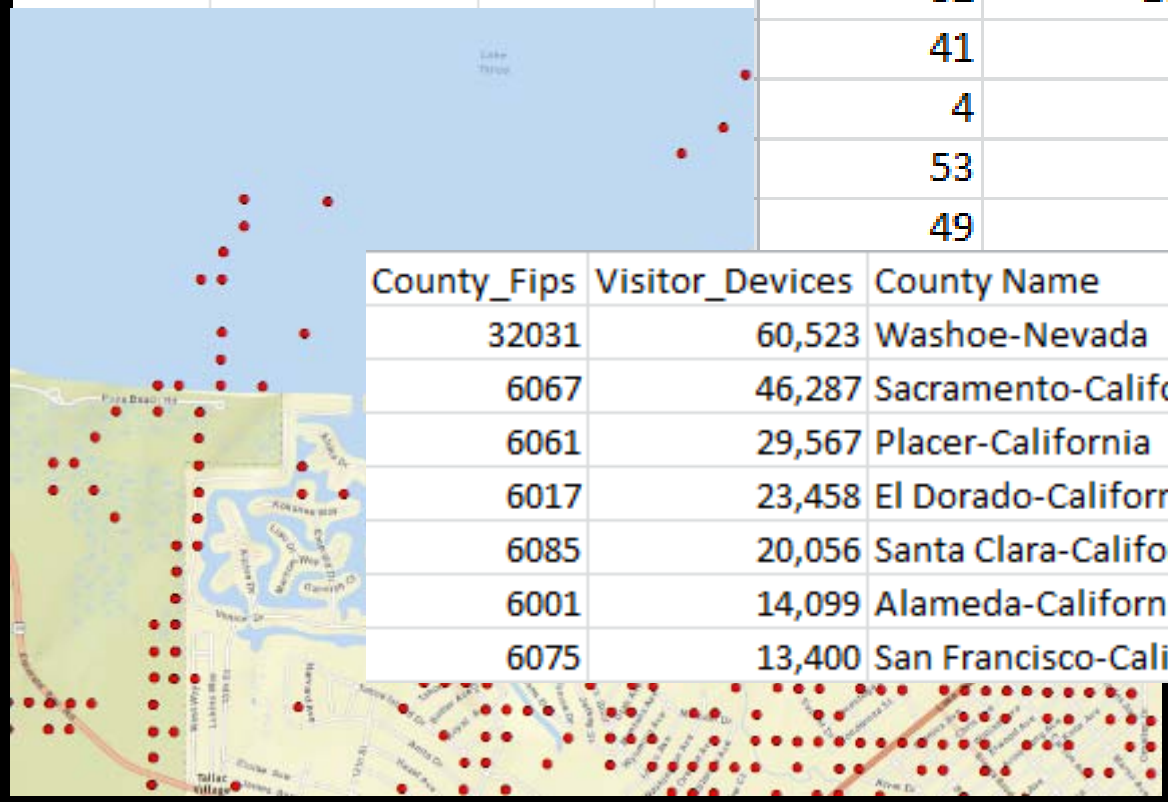


AirSage

Data Content

Origin_Zone	Destination_Zone	Start_Date	End_Da
1002	188	20140801	2014
1004	190	20140801	2014
181	224	20140801	2014

State_Fips	Visitor_Device:	State_Name	Percent
6	257101	California	61.5%
32	107481	Nevada	25.7%
41	4969	Oregon	1.2%
4	4556	Arizona	1.1%
53	4375	Washington	1.0%
49	4014	Utah	1.0%



County_Fips	Visitor_Devices	County Name	Percent	Region
32031	60,523	Washoe-Nevada	14.475%	Reno-Carson
6067	46,287	Sacramento-California	11.070%	Sacramento
6061	29,567	Placer-California	7.071%	Sacramento
6017	23,458	El Dorado-California	5.610%	Sacramento
6085	20,056	Santa Clara-California	4.797%	Bay Area
6001	14,099	Alameda-California	3.372%	Bay Area
6075	13,400	San Francisco-California	3.205%	Bay Area

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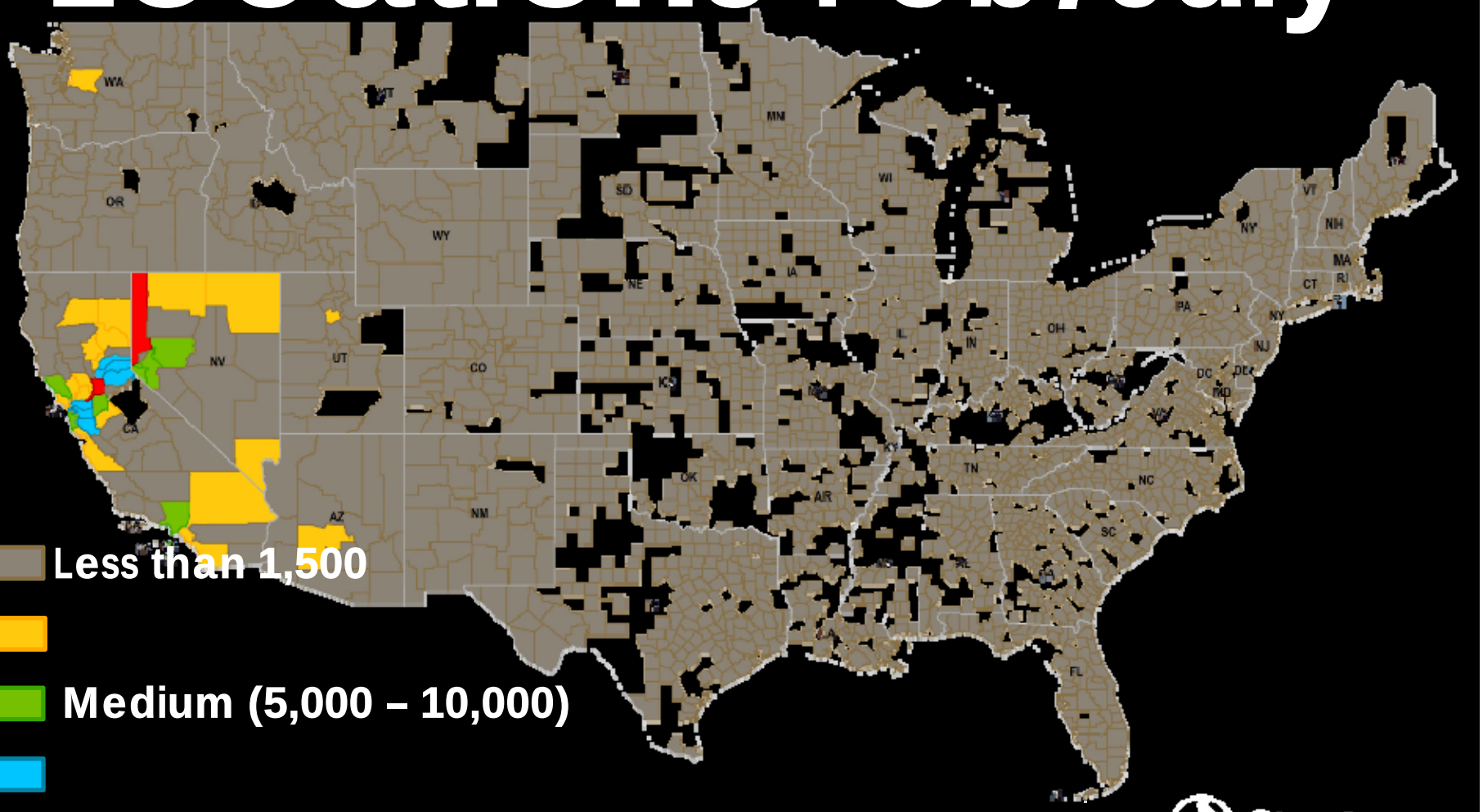
Visitor Home Locations Feb/July



Less than 1,500

Medium (5,000 – 10,000)

High (Greater than 35,000)

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Additional Data

1	Origin_Zone	De	Count	Monthly_Count	Trip_Type
4	1003		0.95	14.25	EI
33	2002		4.12	61.8	EI
35	1003		1.26	18.9	II
40	2002		2.51	37.65	II
47	2002		2.42	36.3	II
62	2002		0.04	0.6	II
64	2002		15.68	235.2	IE
70	2002		2.72	40.8	IE
73	2001		2.13	31.95	II
79	2001		1.26	18.9	II
83	1004				
84	2001				
88	1004				
91	1003				
92	2002				
94	1003				
96	1004				
103	2001		203	20140201	20140223 WE Short Term Vis
104	1002		280	20140201	20140223 WE Outbound Con
108	1004		202	20140201	20140223 WE Resident Work
110	2002		500	20140201	20140223 WE Inbound Comn
119	2002		152	20140201	20140223 WE Long Term Visi
124	1003		82	20140201	20140223 WE Outbound Con
126	1003		238	20140201	20140223 WE Inbound Comn
129	1004		220	20140201	20140223 WE Long Term Visi
131	1003		56	20140201	20140223 WE Inbound Comn
132	2002		224	20140201	20140223 WE Short Term Vis

Aggregation: WD = Weekday
WE = Weekend

Subscriber Class: Short Term Visitor
Long Term Visitor
Home Worker
Resident Worker
Inbound Commuter
Outbound Commuter

Purpose: NHB = Non-Home Based
HBW = Home Based Worker;
HBO = Home Based Other

Trip Type: II = Internal-Internal
IE = Internal-External
EI = External-Internal
EE = External-External

Corridors: 1 - SR 89/28
2 - NV SR28 National Scenic Byway
3 - US50 East Shore
4 - US50 South Shore
5 - Meyers Y
6 - SR 89 Recreation

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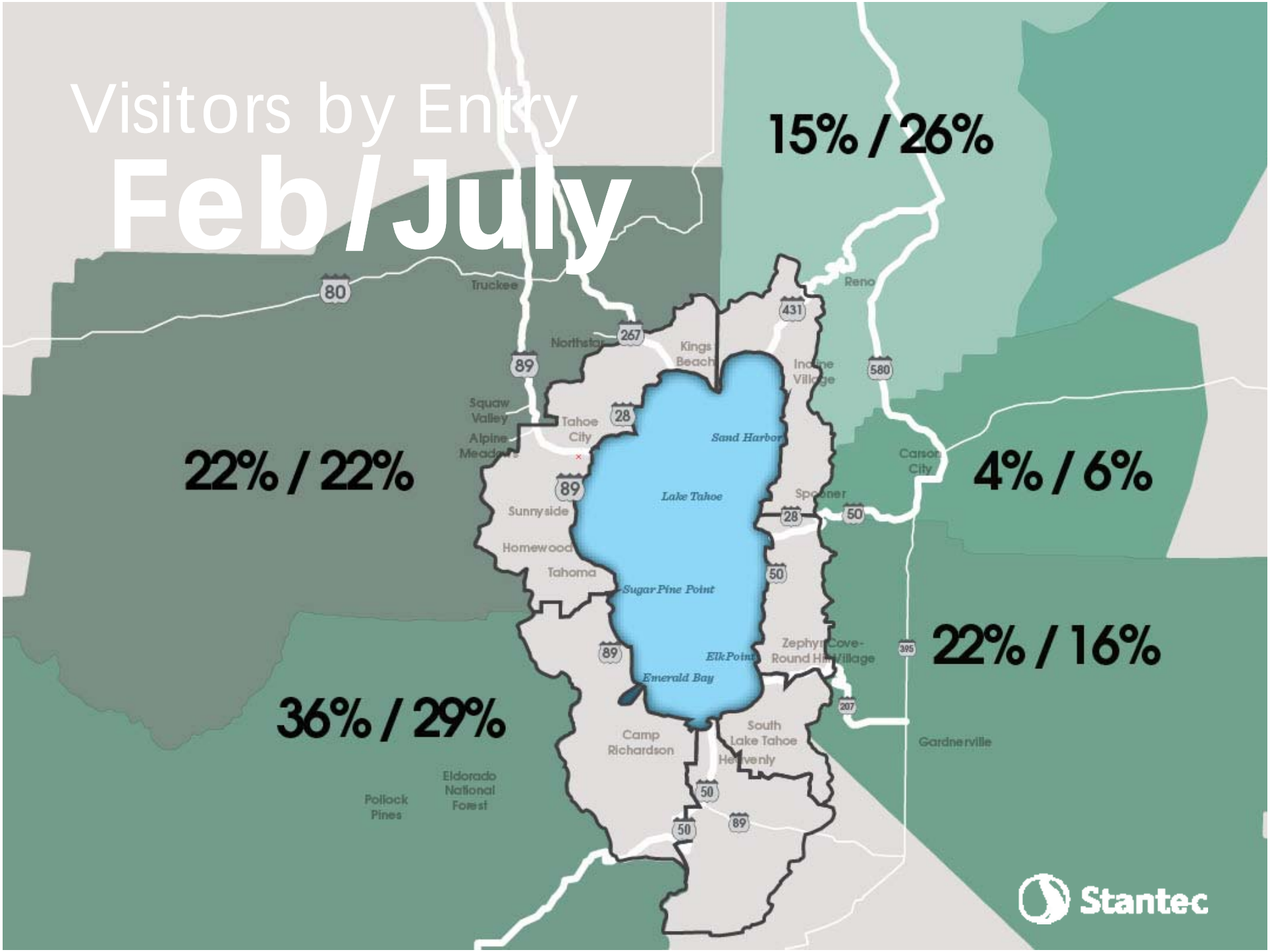
Visitors by Entry
Feb/July
15% / 26%
22% / 22%
4% / 6%
22% / 16%
36% / 29%
Truckee
Reno
Kings Beach
Tahoe City
Squaw Valley
Alpine Meadows
Sunnyside
Homewood
Tahoma
Sand Harbor
Lake Tahoe
Sugar Pine Point
Elk Point
Emerald Bay
Carson City
Zephyr Cove-Round Hill Village
Gardnerville
South Lake Tahoe
Heavenly
Camp Richardson
Pollock Pines
Eldorado National Forest
80
89
267
431
580
28
50
395
207
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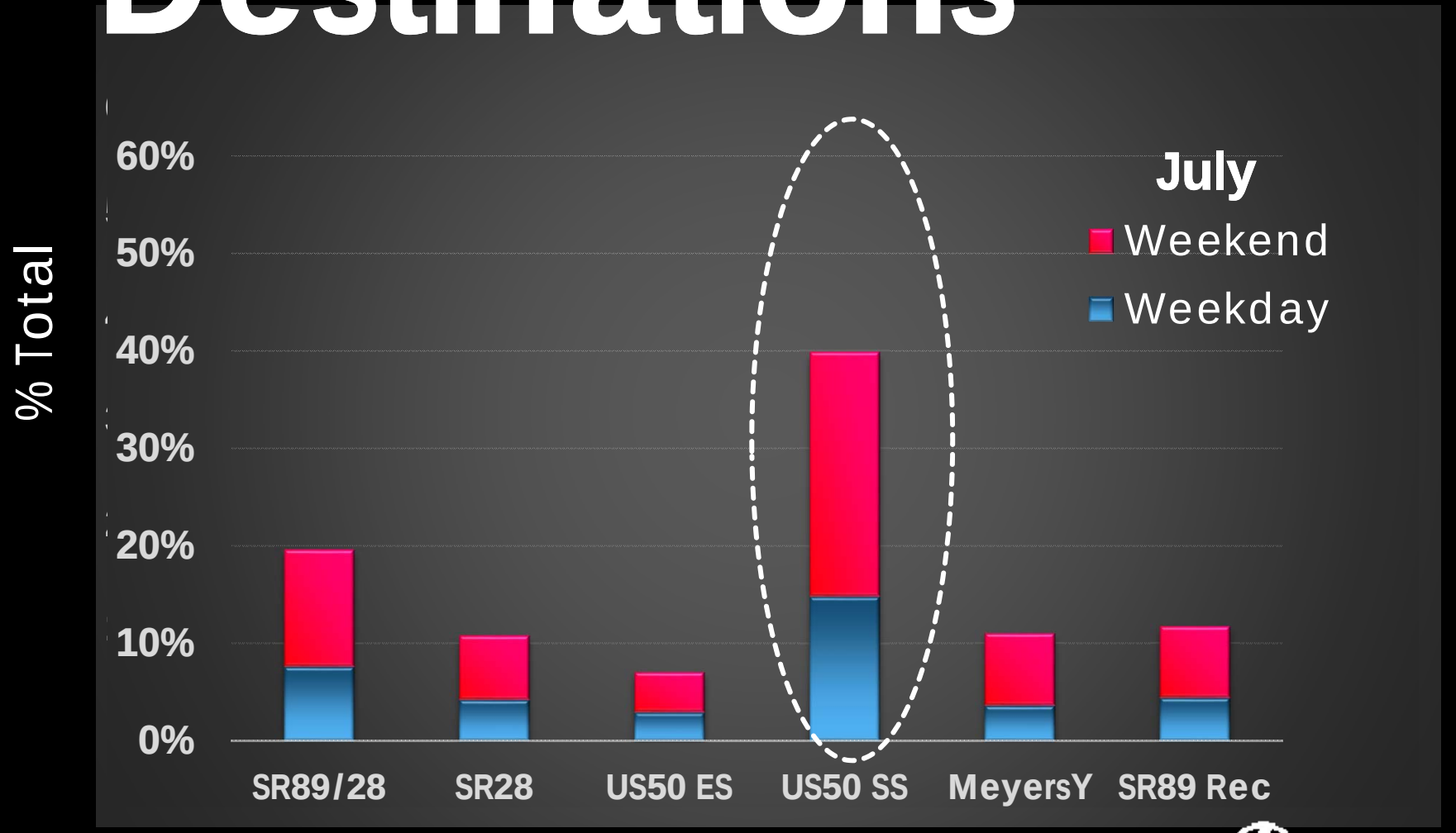
Visitor Device
Destinations



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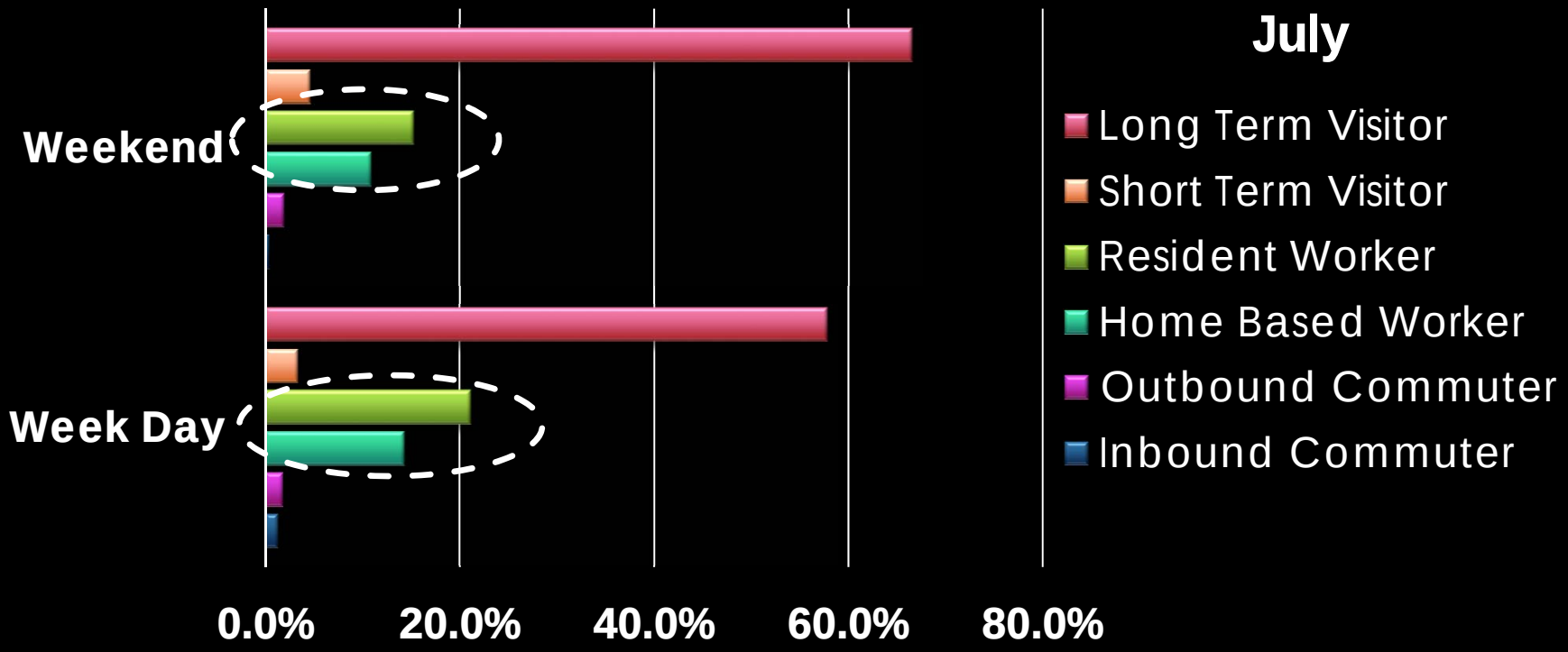
Internal to Internal Trips

% of Total by Subscriber Class



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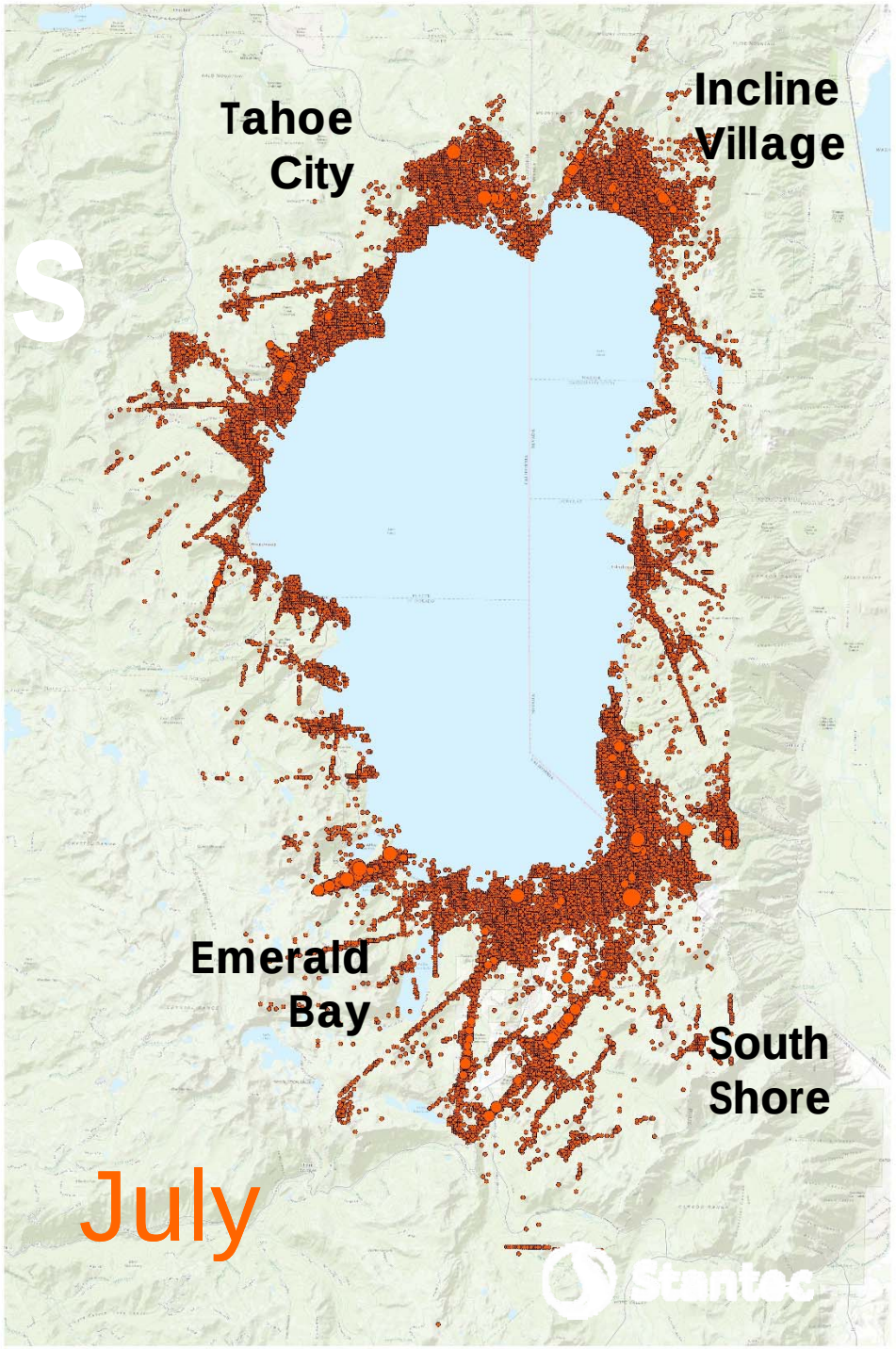
Activity Density

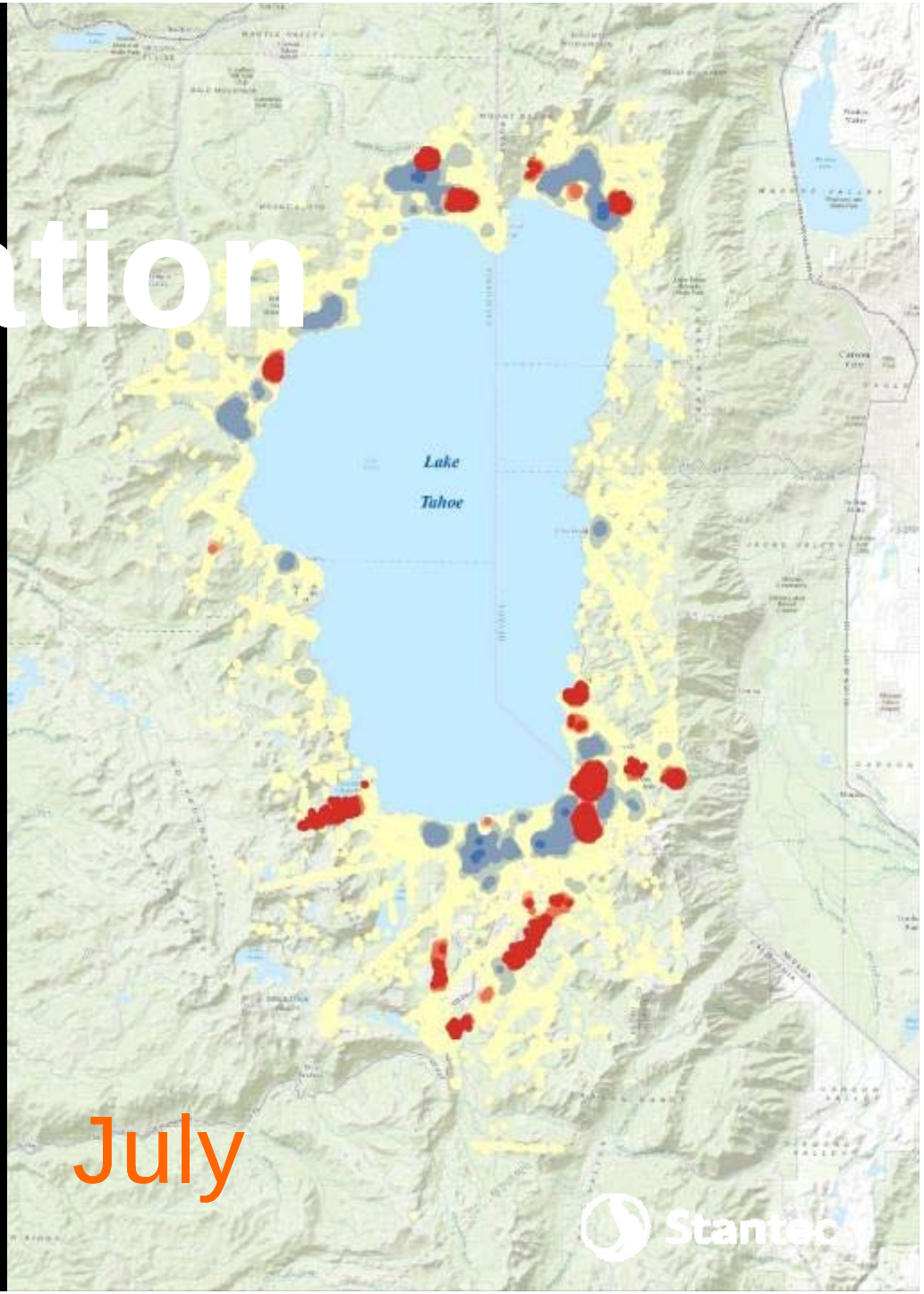
Locations

All devices seen during the month



Hot Spot **Optimization**

- Cold Spot – 99% Confidence
- Cold Spot – 99% Confidence
- Cold Spot – 95% Confidence
- Not Significant
- Hot Spot – 90% Confidence
- Hot Spot – 95% Confidence
- Hot Spot – 99% Confidence



4.7M Visitor *Trips*

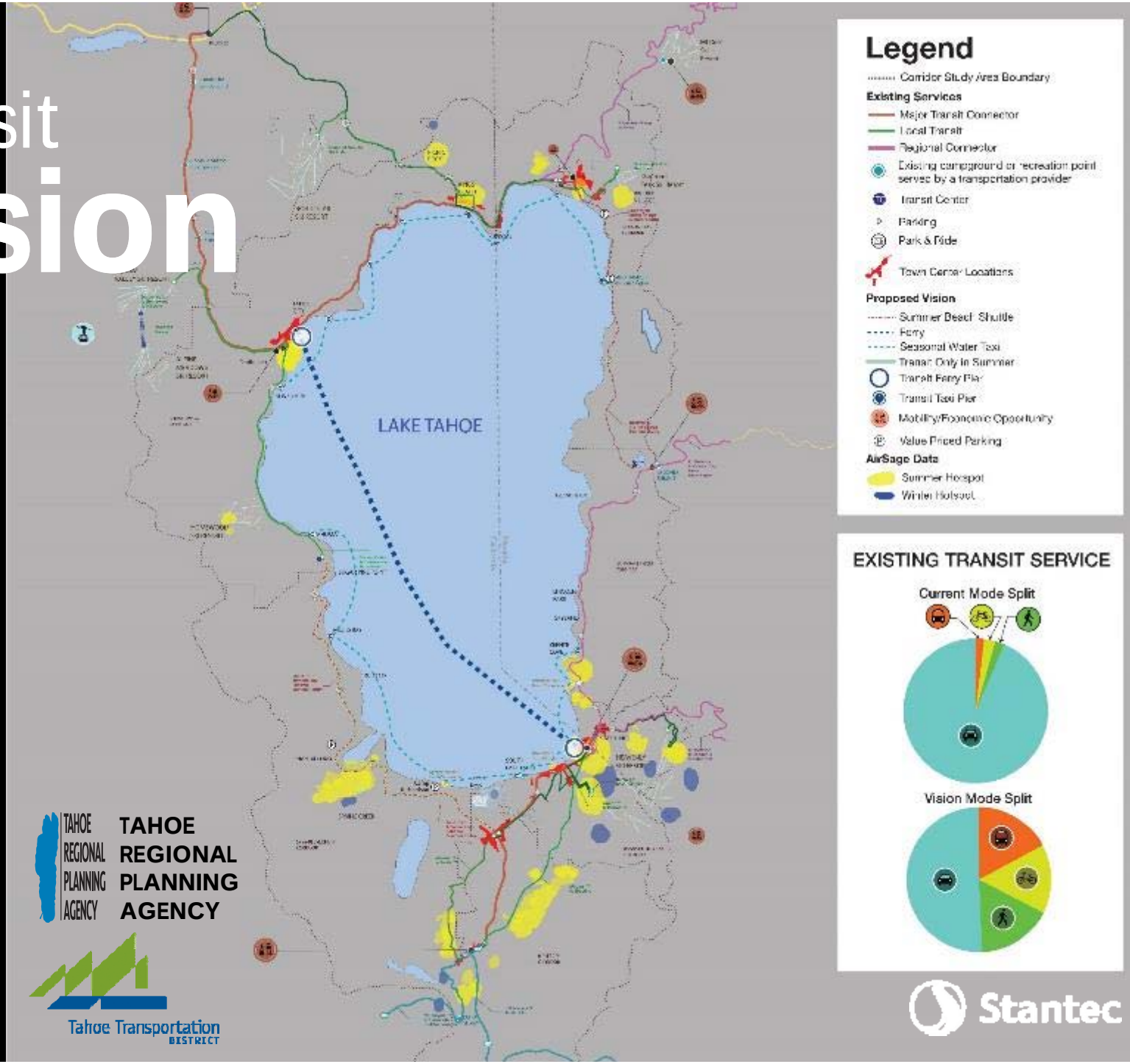
Tahoe Basin

Feb 2014

11.8M Visitor *Trips*

Tahoe Basin July 2014

Transit Vision



TAHOE REGIONAL PLANNING AGENCY

Tahoe Transportation DISTRICT

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Linking Tahoe through more robust and diverse local and regional services to improve water quality and the daily and infrequent experiences of residents and visitors.
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