NAPA VALLEY TRAVEL BEHAVIOR STUDY UPDATE

Key Findings

September 5, 2019

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Topics

- Big Data Overview

- Scope Overview

- Key Findings

Big Data Overview

New Approach

- Traffic Count Collection

- 3 Types of Mobile Device Data

- Census and CHTS Data

Location-Based Services Data

Our Location-Based Services data comes from smartphone apps that track devices' locations to provide specific services. These services include weather forecasts, shopping deals, restaurant reviews, and more. We get location data from hundreds of different apps.

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What is Big Data

- Archival location data from mobile devices

- Provides true origin-destination data passively and anonymously

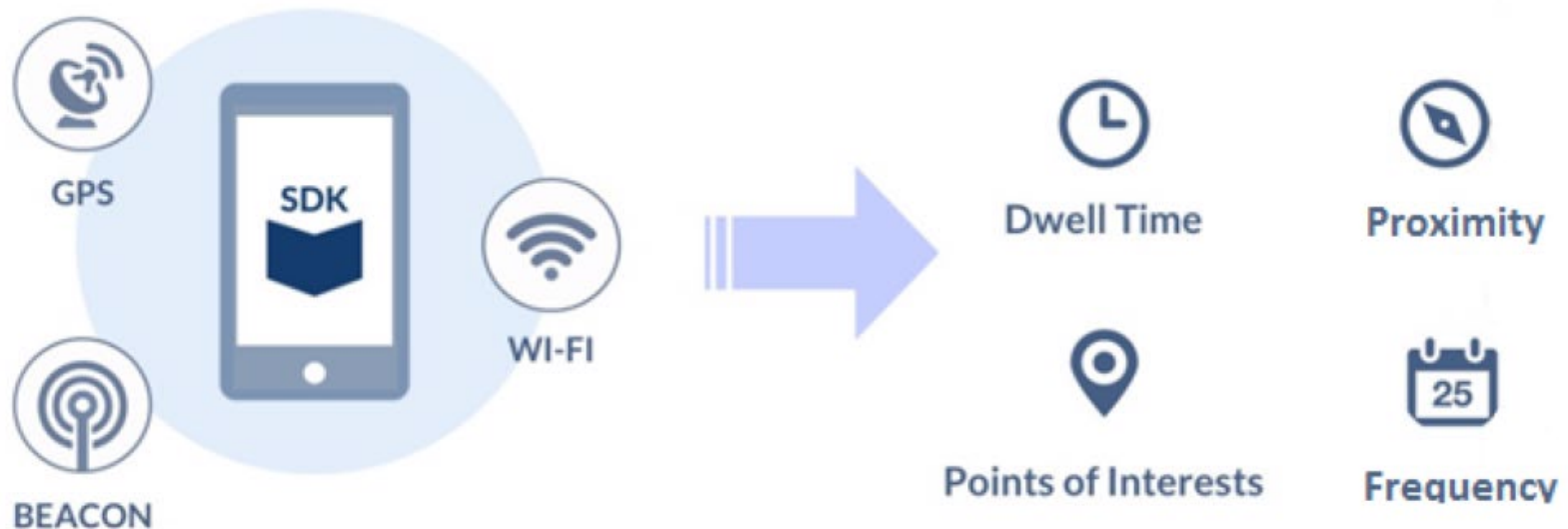FEHR ᐩ PEERS

Big Data Enhancements

- Increased sample size to around 20% of the US adult population

- Resident, worker, visitor classification

- Trip purpose, home/work location, demographic data based on home location

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Scope Overview

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Mobile Device Data

- Origin and destination analysis

- Home and work analysis

- Roadway segment analysis

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Mobile Device Data

Primary Data Period

- March 2018 through May 2018 (Spring)

Two Seasonal Variation Data Periods

- Mid-August 2018 through Mid-November 2018 (Fall)
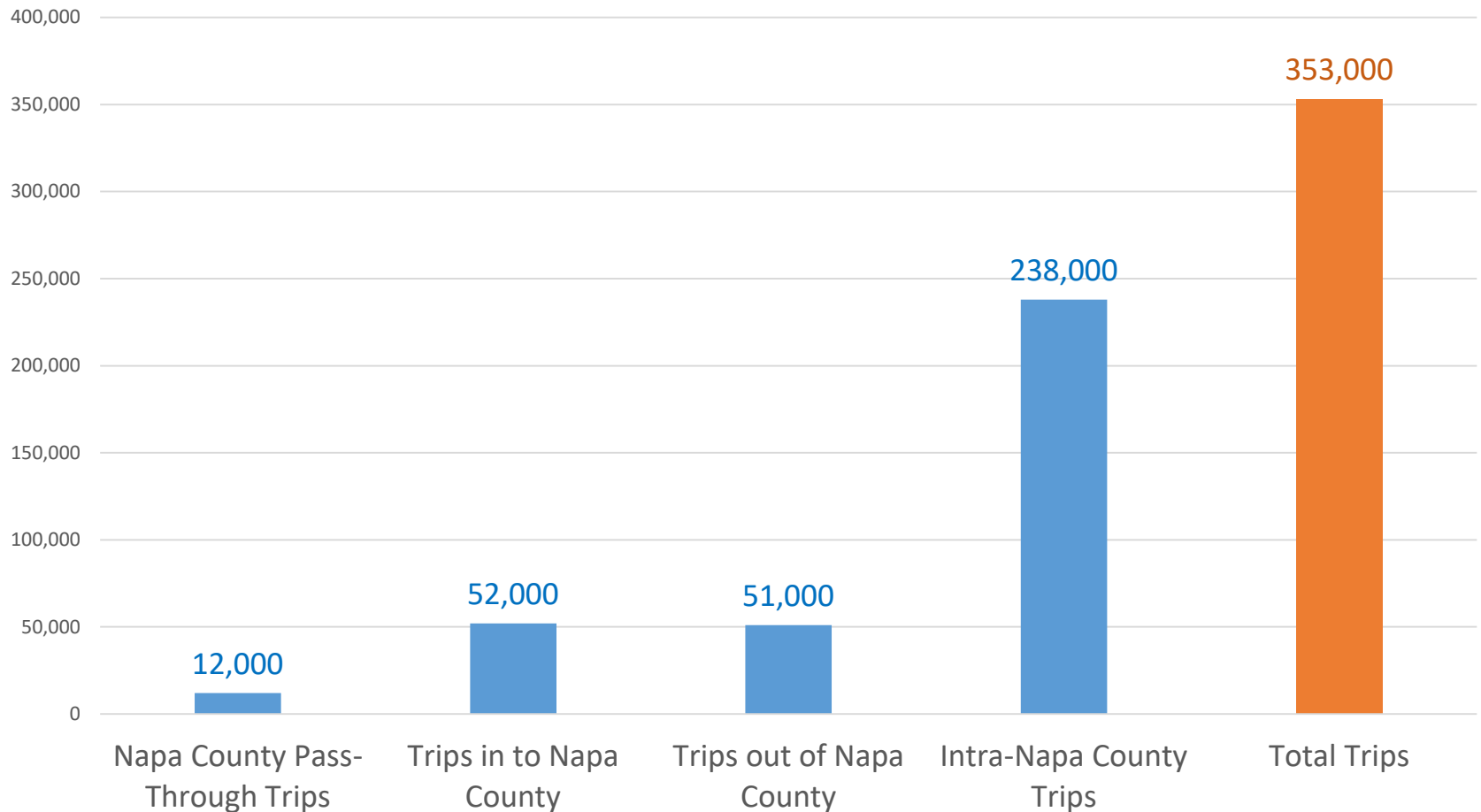
- June 2018 to Mid-August 2018 (Summer)

Yearly subscription!!!

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Key Findings

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Napa County Trip Types

What types of trips are occuring within Napa County on a Weekday?

Category	Value
Napa County Pass-Through Trips	12,000
Trips in to Napa County	52,000
Trips out of Napa County	51,000
Intra-Napa County Trips	238,000
Total Trips	353,000

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Peaking Characteristics

Weekday Peaking Characteristics

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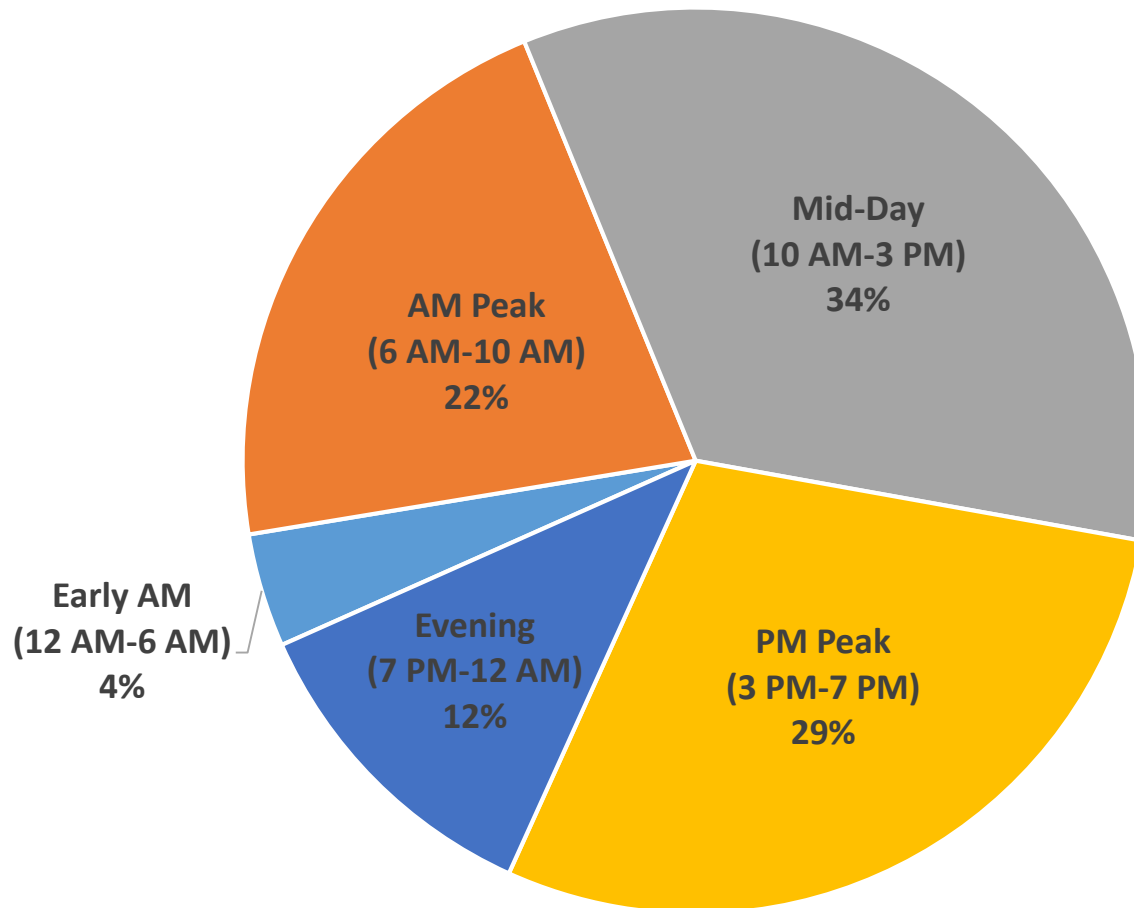
Inter-County Trip Types

Average Weekday	What types of trips are occuring at Napa County gateways?	
	Total Trips	Napa County Pass-Through Trips
SR 29 at Napa/Solano CL - Northbound	23,000	4%
SR 29 at Napa/Solano CL - Southbound	24,000	6%
SR 12 at Napa/Solano CL - Westbound	24,000	16%
SR 12 at Napa/Solano CL - Eastbound	22,000	16%
SR 29 at Napa/Lake CL - Southbound	4,000	56%
SR 29 at Napa/Lake CL - Northbound	4,000	48%
SR 128 at Napa/Sonoma CL - Eastbound	1,000	22%
SR 128 at Napa/Sonoma CL - Westbound	1,000	26%
SR 12 at Napa/Sonoma CL - Westbound	16,000	29%
SR 12 at Napa/Sonoma CL - Eastbound	15,000	29%
SR 128 at Napa/Solano CL - Westbound	600	17%
SR 128 at Napa/Solano CL - Eastbound	600	11%
SMR at Napa/Sonoma CL - Westbound	400	3%
SMR at Napa/Sonoma CL - Eastbound	300	7%
All Napa County Gateway Trips	**124,000**	**10%**

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Inter-County Trip Types

Weekday Inter-County Trips
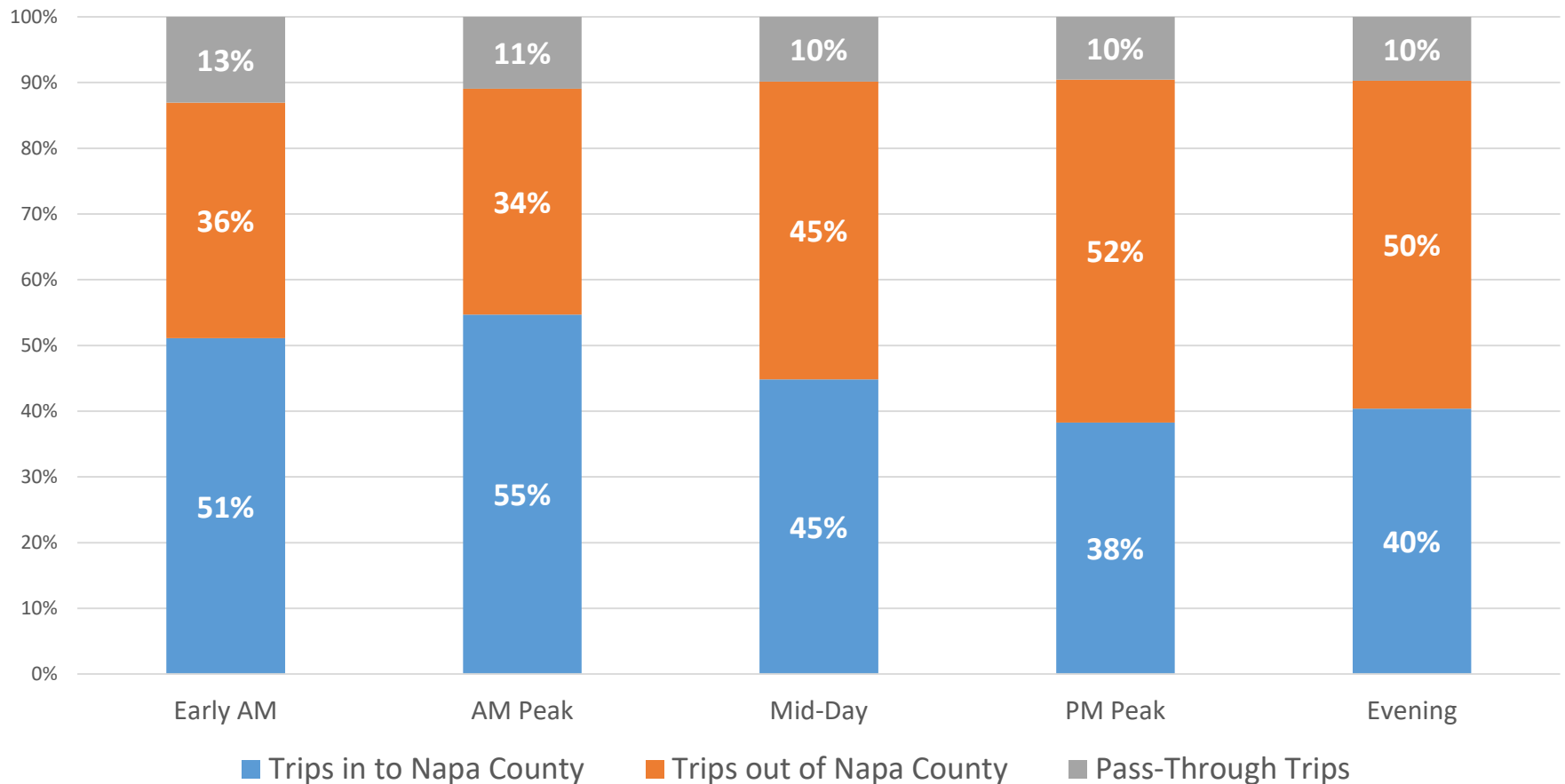
Inter-County Trips

What Types of Inter-County Trips Occur in the Morning?

21%
Trips into Napa County

13%
Trips out of Napa County

4%
Napa County Pass-Through Trips

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Inter-County Trips

Where are Trips Leaving Napa County Going in the Morning?

41% SOLANO
29% SONOMA
11% CONTRA COSTA
5% ALAMEDA
4% SACRAMENTO
4% MARIN
2% SAN FRANCISCO
1% SANTA CLARA
1% SAN MATEO
1% LAKE

Where are Trips Entering Napa County Coming From in the Morning?

55% SOLANO
21% SONOMA
8% CONTRA COSTA
4% LAKE
3% SACRAMENTO
3% ALAMEDA
3% YOLO
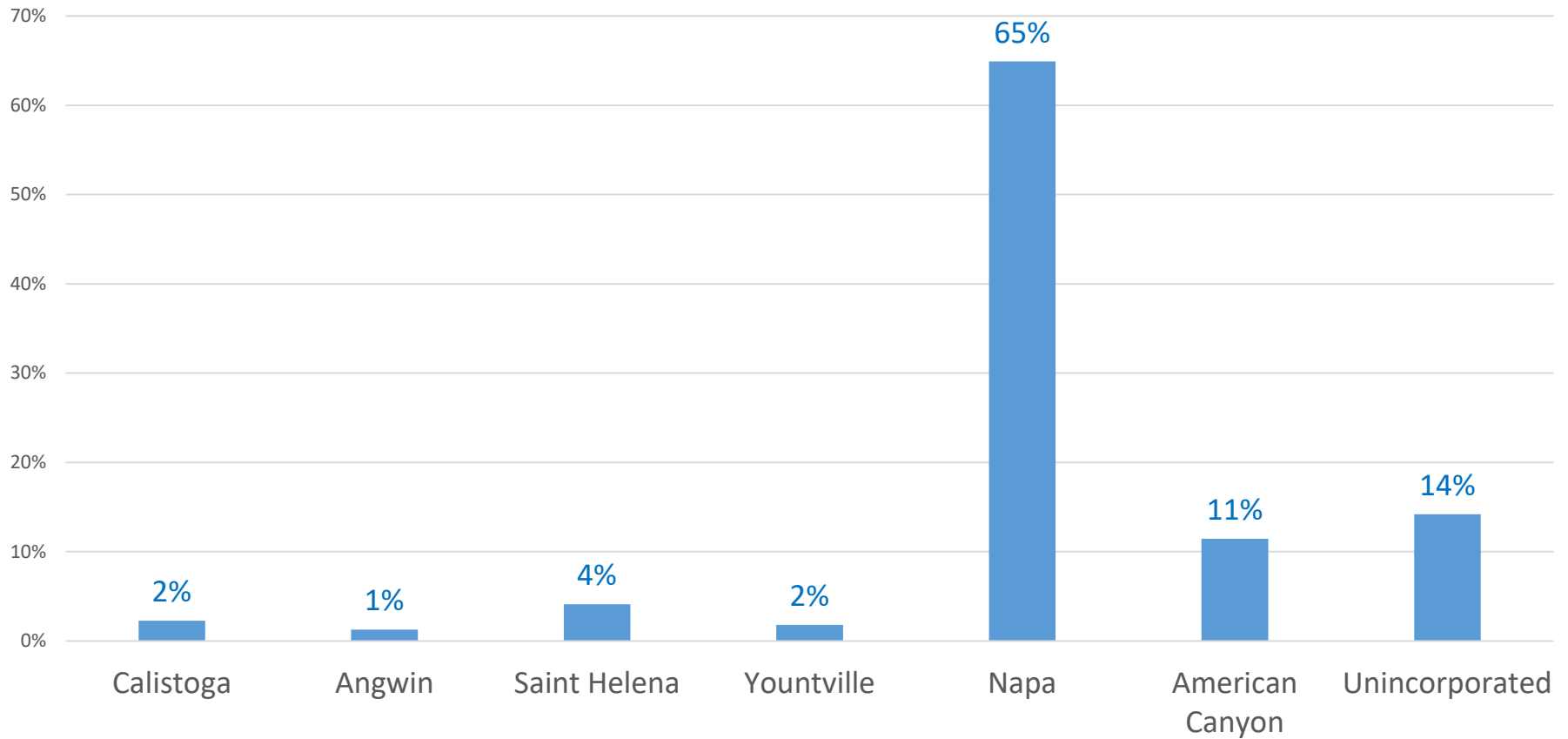**1%** SAN FRANCISCO
1% SAN MATEO
1% MARIN

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Top 5 Generators of Inbound Trips

Destination of Trips from Top 5 Generators of Inbound Trips

Average Weekday	Vallejo		Fairfield		Santa Rosa Area		Vacaville		City of Sonoma	
Jurisdiction	Trips	Percent	Trips	Percent	Trips	Percent	Trips	Percent	Trips	Percent
Unincorporated Napa	1,374	10%	1,271	17%	1,350	26%	762	22%	303	16%
Calistoga	16	0%	35	0%	149	3%	9	0%	4	0%
Angwin	48	0%	0	0%	7	0%	0	0%	4	0%
Saint Helena	67	1%	207	3%	189	4%	126	4%	66	3%
Yountville	69	1%	75	1%	26	1%	107	3%	105	5%
City of Napa	5,125	39%	4,384	59%	3,131	60%	2,005	59%	1,290	67%
American Canyon	6,534	49%	1,449	20%	326	6%	412	12%	154	8%
Trips in to Napa County	13,232		7,421		5,178		3,420		1,925	

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Trips by Jurisdiction

Percent of Weekday Trips by Jurisdiction

Jurisdiction	Percent
Calistoga	2%
Angwin	1%
Saint Helena	4%
Yountville	2%
Napa	65%
American Canyon	11%
Unincorporated	14%

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Top Trip Generators

Weekday All-Day Largest Trip Generators

#	Selected Trip Generator	Trips	Percent of Countywide Trips
1	Napa Bel Aire Plaza	23,300	7%
2	South Napa Market Place	16,900	5%
3	Downtown Napa	16,000	5%
4	American Canyon Walmart	11,600	3%
5	Napa Town Center	9,500	3%
6	Napa Valley College	7,000	2%
7	Napa Queen Medical	5,000	1%
8	Napa Oxbow	3,800	1%
9	Napa Department of State Hospitals	3,600	1%
10	Napa County Services	2,300	<1%
11	Saint Helena Hospital	2,000	<1%
12	Angwin Pacific Union College	1,600	<1%
13	Yountville VA Hospital	1,100	<1%
14	Napa County Airport	900	<1%

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Trip Demographic Information

**Percent of Weekday Trips by
Average Household Income**

31%
More Than $100K A Year

69%
Less Than $100K a Year

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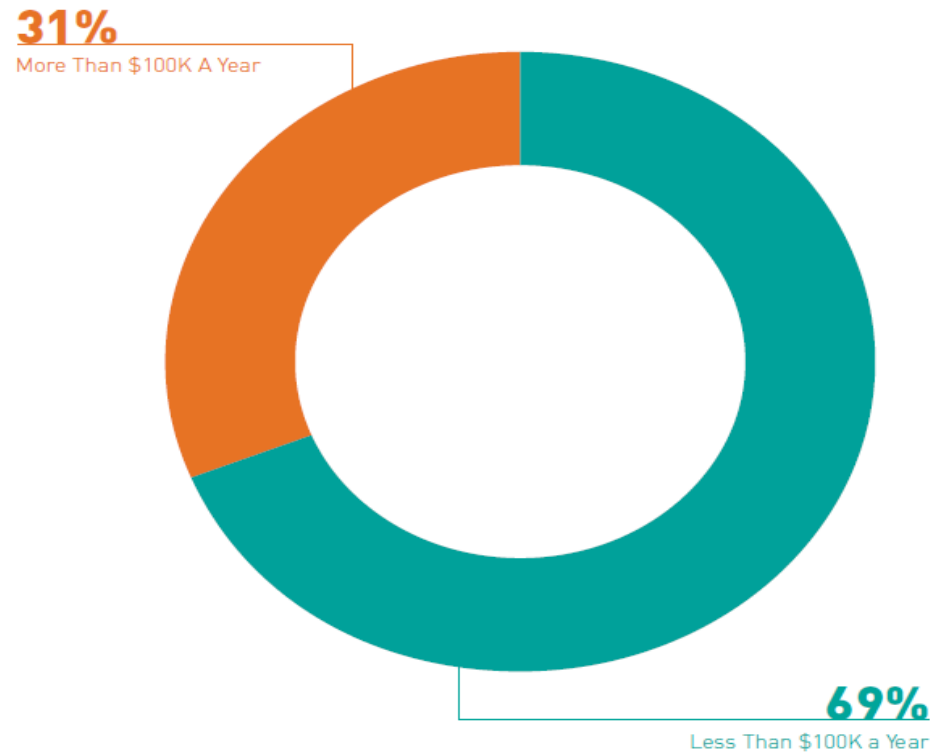
Trip Purpose Information

Average Weekday Trip Purpose

22% Home-Based Work

41% Home-Based Other

37% Non-Home-Based

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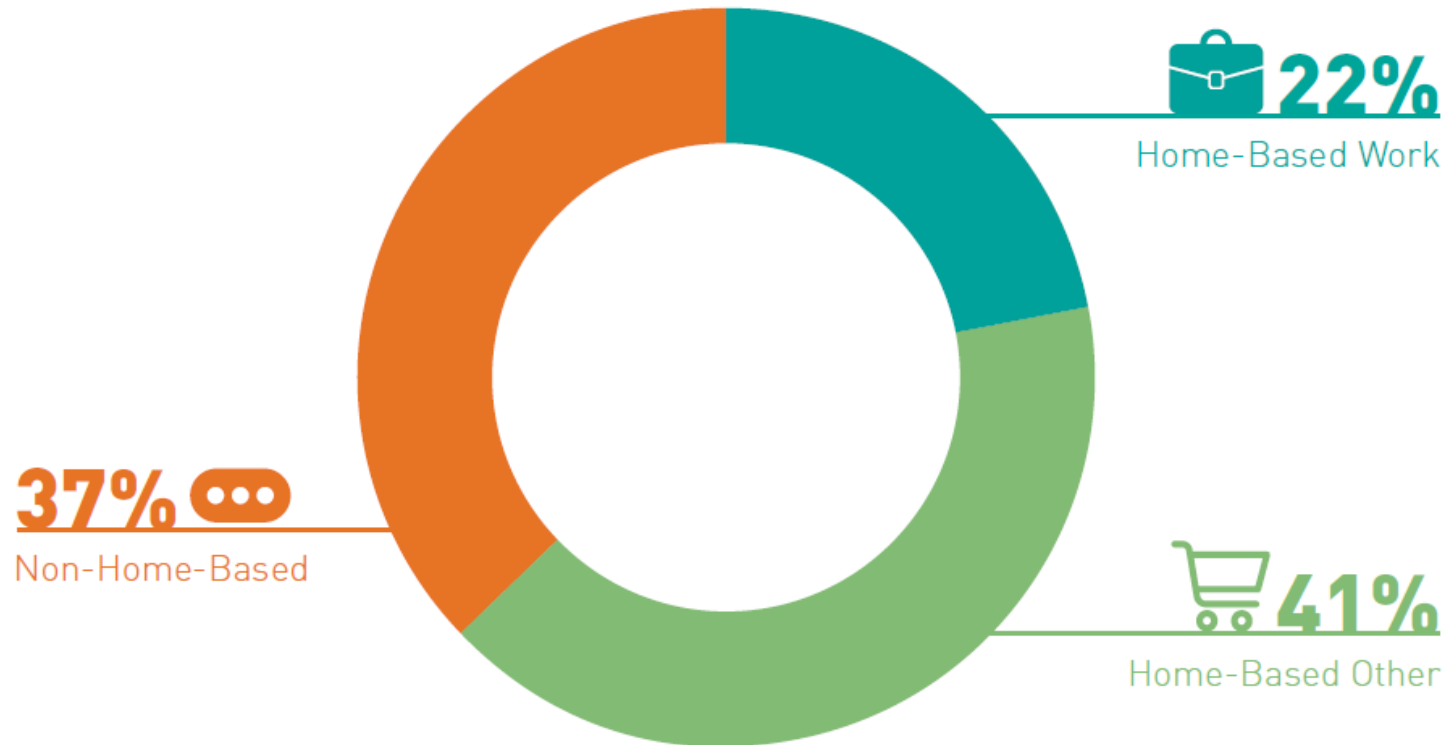
Work-Related Trips

Percent of Total Trips by Time Period

Time Period	Percent
Weekday	22%
Early AM (12 AM-6 AM)	42%
AM Peak (6 AM-10 AM)	37%
Mid-Day (10 AM-3 PM)	16%
PM Peak (3 PM-7 PM)	18%
Evening (7 PM-12 AM)	19%

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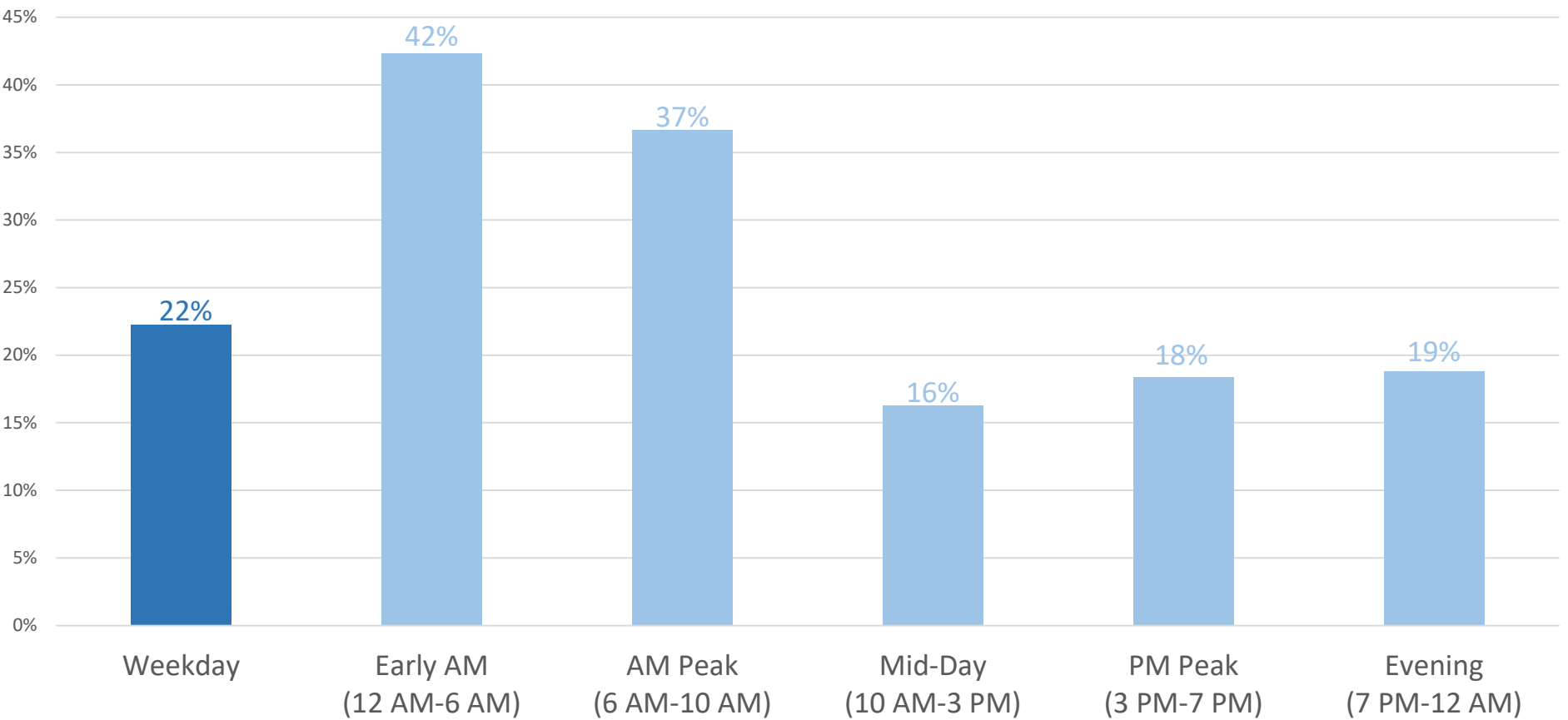
Imported and Exported Workers

Weekday Work Trip Types

Stacked bar chart showing weekday work trip types by time period.

Time Period	Internal Work Trips	Imported Work Trips	Exported Work Trips
Early AM	4,000	5,000	2,000
AM Peak	20,000	14,000	8,000
Mid-Day	14,000	5,000	4,000
PM Peak	12,000	2,000	3,000
Evening	5,000	1,000	1,000

Legend: ■ Internal Work Trips ■ Imported Work Trips ■ Exported Work Trips

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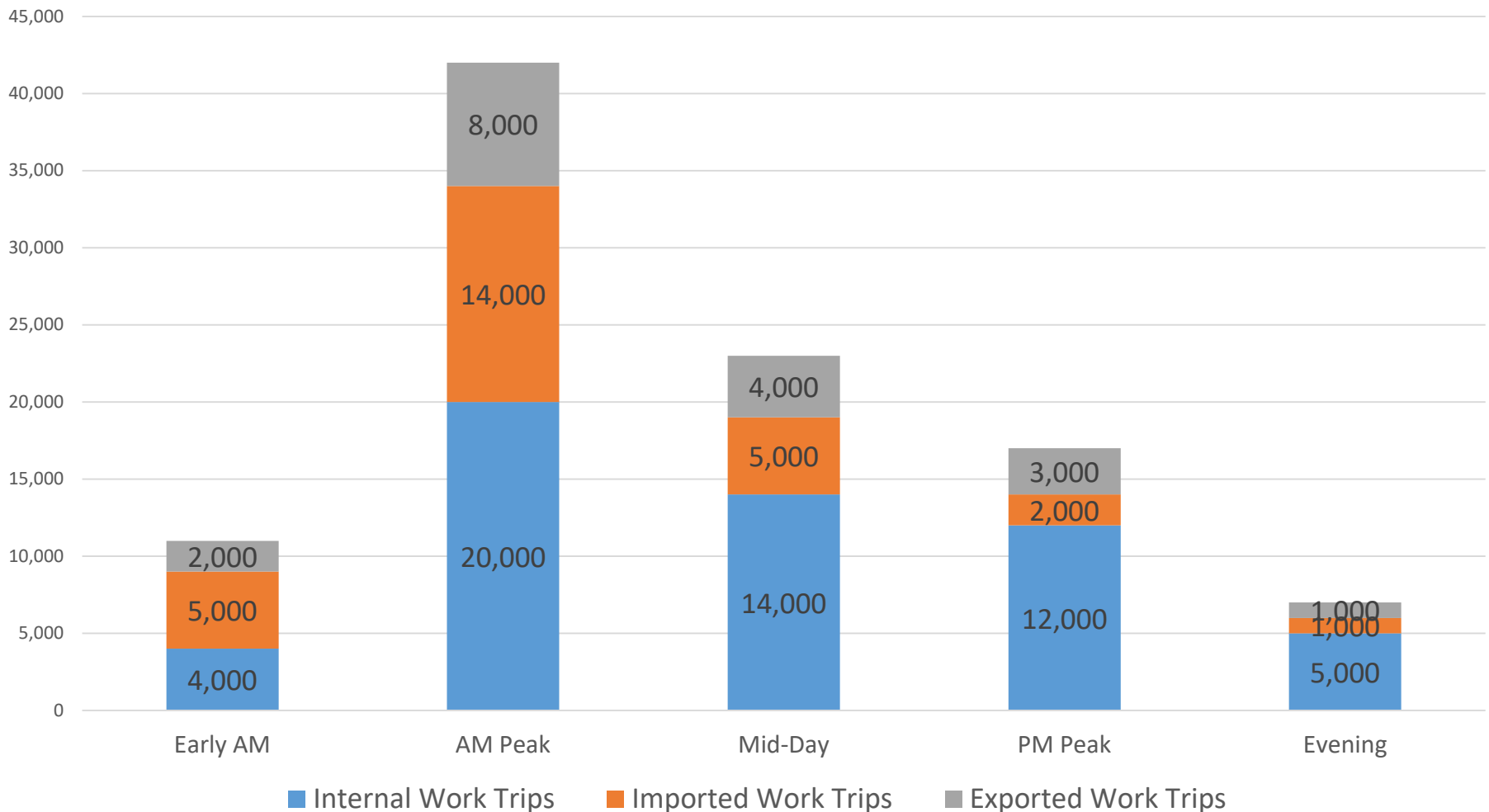
Visitor Trips
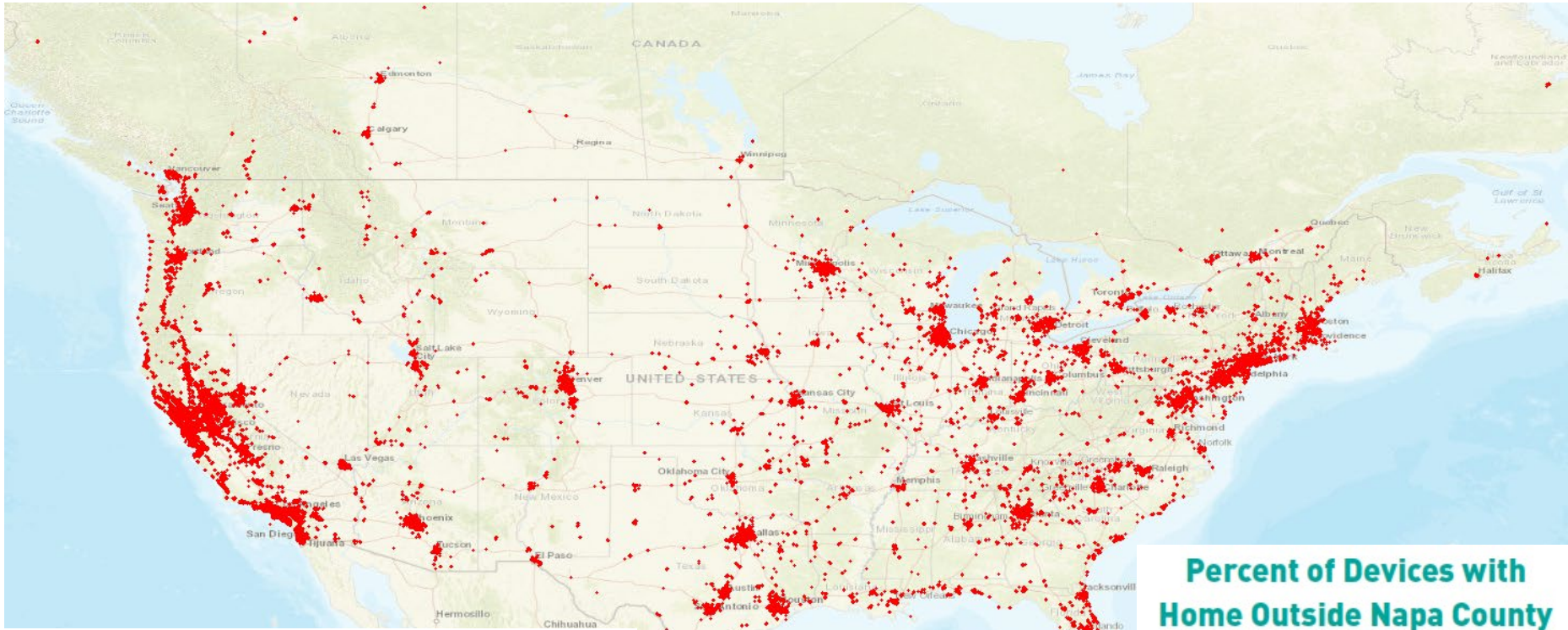
What Metro Areas are Visiting Napa Valley on a Weekend?	
Metro Area	**Percent of Visitors**
Vallejo-Fairfield, CA	**33%**
San Francisco-Oakland-Fremont, CA	**24%**
Santa Rosa-Petaluma, CA	**11%**
Sacramento--Arden-Arcade--Roseville, CA	**8%**
Los Angeles-Long Beach-Santa Ana, CA	**3%**
San Jose-Sunnyvale-Santa Clara, CA	**3%**
Clearlake, CA	**2%**
Stockton, CA	**1.5%**
New York-Northern New Jersey-Long Island, NY-NJ-PA	**1.0%**
San Diego-Carlsbad-San Marcos, CA	**0.9%**

Percent of Devices with Home Outside Napa County

38%	43%
Weekday	Weekend

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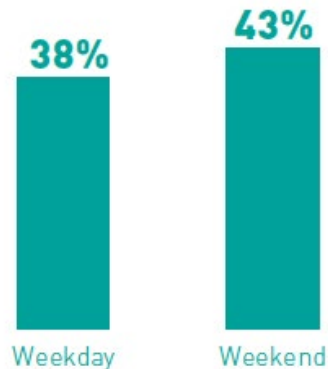
Day of Week Variation

Day of Week Total Napa County Trip Variation

- 353,000 Weekday
- 359,000 Friday
- 285,000 Saturday
- 280,000 Sunday
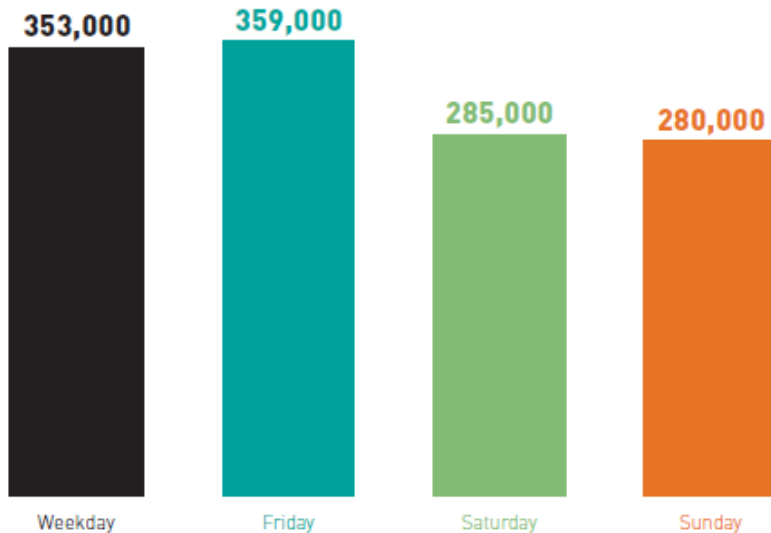
Work-Related Trips by Day of Week

- **22%** WEEKDAY
- **19%** FRIDAY
- **10%** SATURDAY
- **10%** SUNDAY

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Day of Week Variation

Average Napa County-Generated Trip Length (miles) by Day of Week

Weekday	Friday	Saturday	Sunday
8.5	8.7	9.5	9.7

Average Napa Gateway Trip Length (miles) by Day of Week

Weekday	Friday	Saturday	Sunday
36.8	37.7	39.7	42.1

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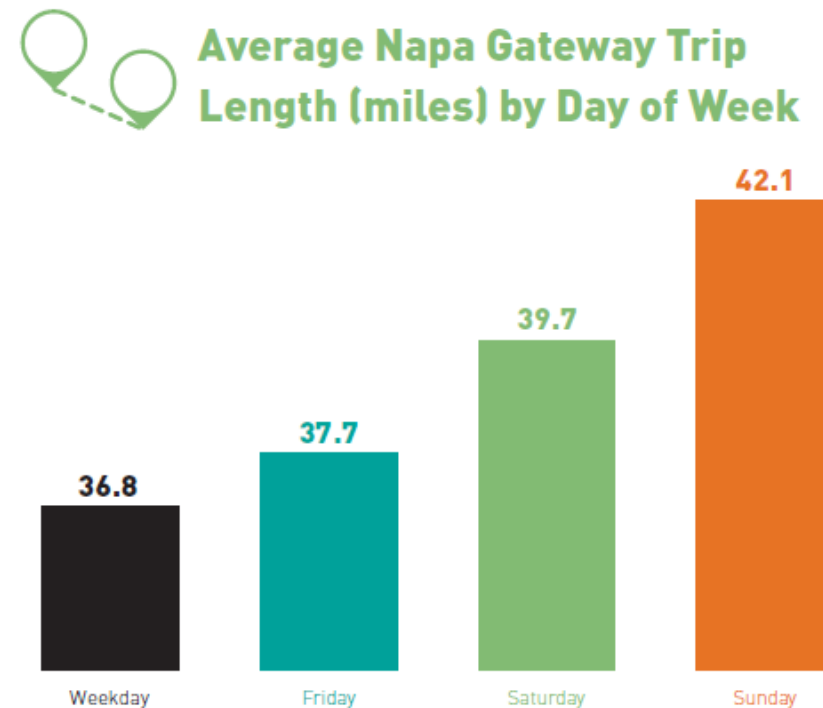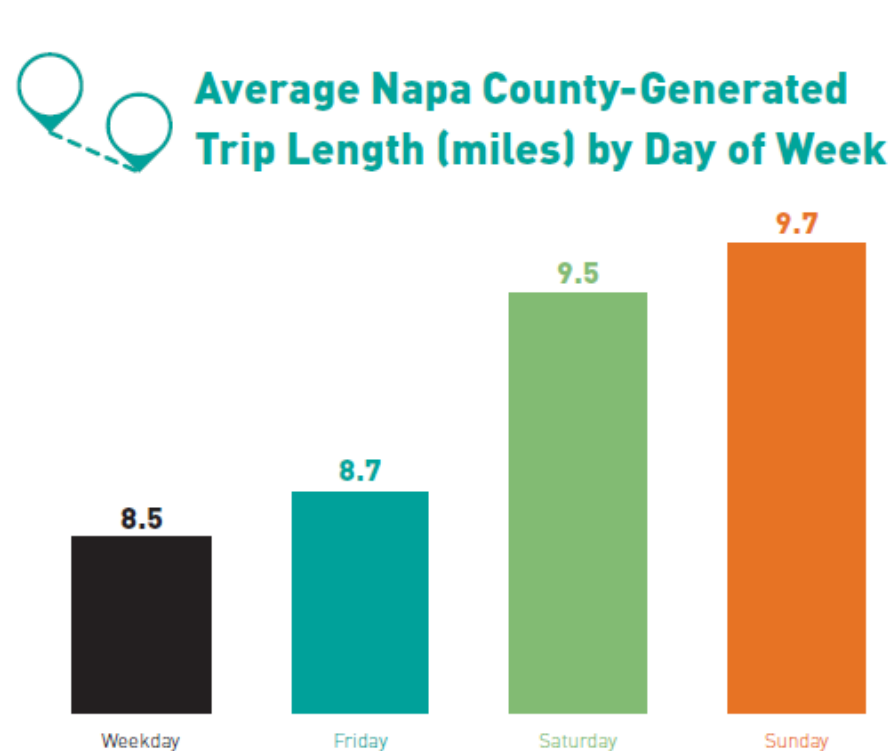
Seasonal Variation

Seasonal Total Napa County Trip Variation

Season	Trips
Spring	353,000
Fall	430,000
Summer	383,000
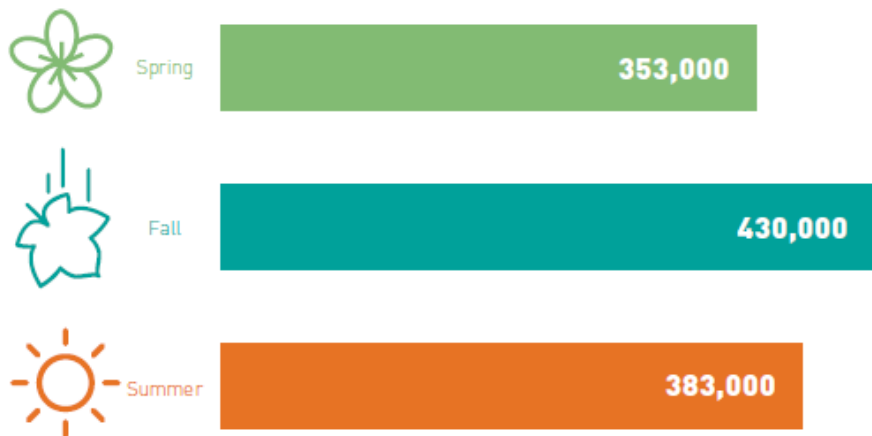
Work-Related Trips by Season

Season	Percent
Spring	22%
Fall	20%
Summer	17%

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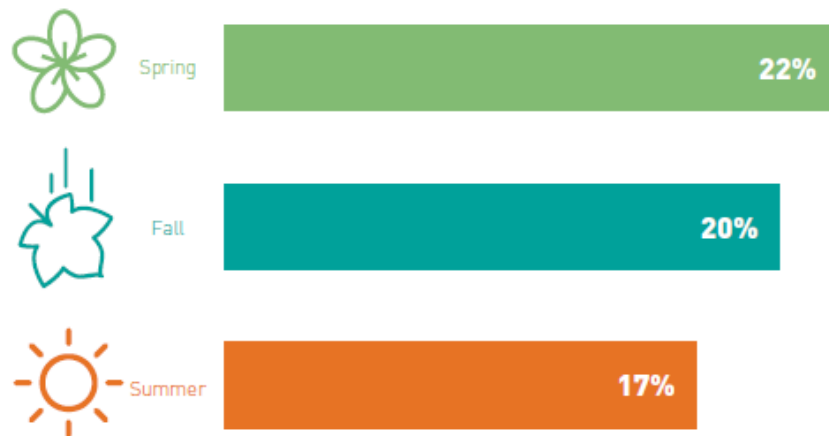
Seasonal Variation

Average Napa County-Generated Trip Length (miles) by Season
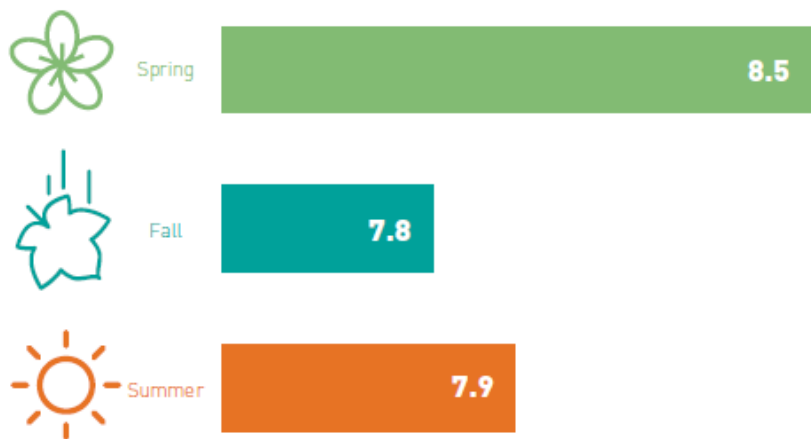
Season	Miles
Spring	8.5
Fall	7.8
Summer	7.9

Average Napa Gateway Trip Length (miles) by Season

Season	Miles
Spring	36.8
Fall	37.0
Summer	38.7

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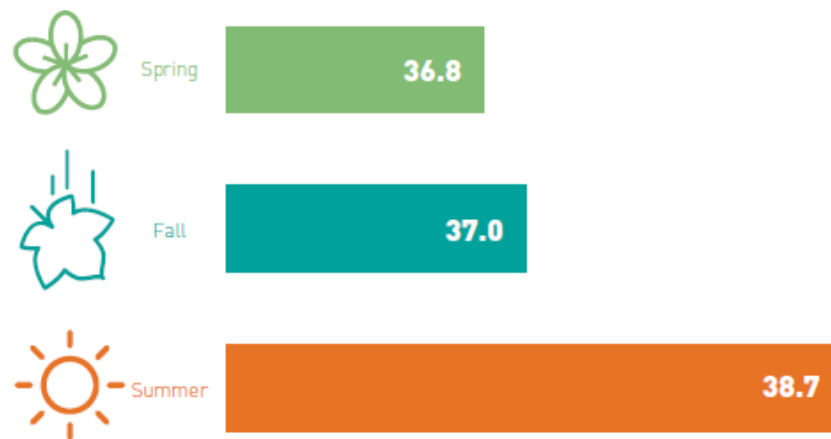
Vehicle Miles Travelled

Total Weekday VMT by Jurisdiction

23% NAPA UNINCORPORATED
1,040,000

AMERICAN CANYON **12%**
538,000

3% CALISTOGA
116,000

1% ANGWIN
48,000

5% SAINT HELENA
239,000

NAPA **53%**
2,413,000

3% YOUNTVILLE
118,000

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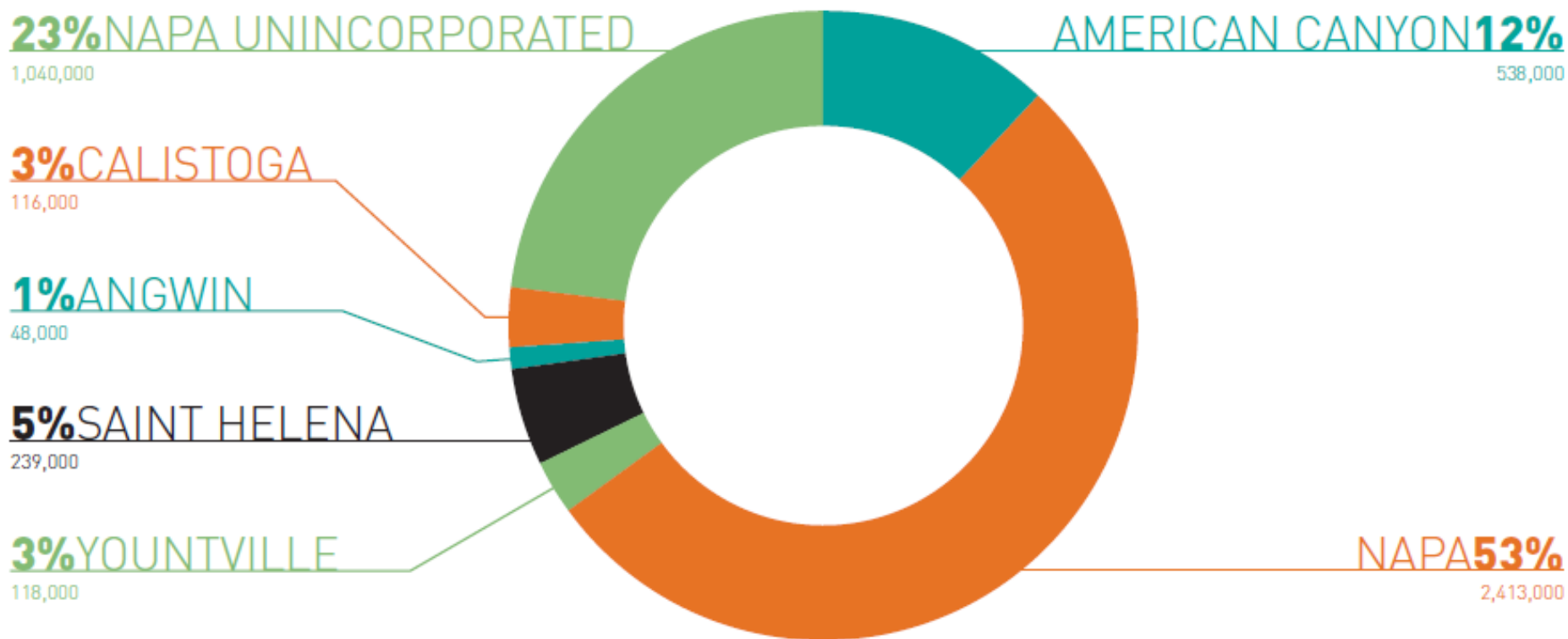
Vehicle Miles Travelled

Total Weekday VMT by Trip Type

Bar chart showing Trips (left axis) and VMT (right axis) by trip type:

Trip Type	Trips	VMT
Trips in to Napa County	52,000	1,440,000
Trips out of Napa County	51,000	1,406,000
Intra-Napa County Trips	238,000	1,093,000

Legend: Trips (bars), VMT (line)

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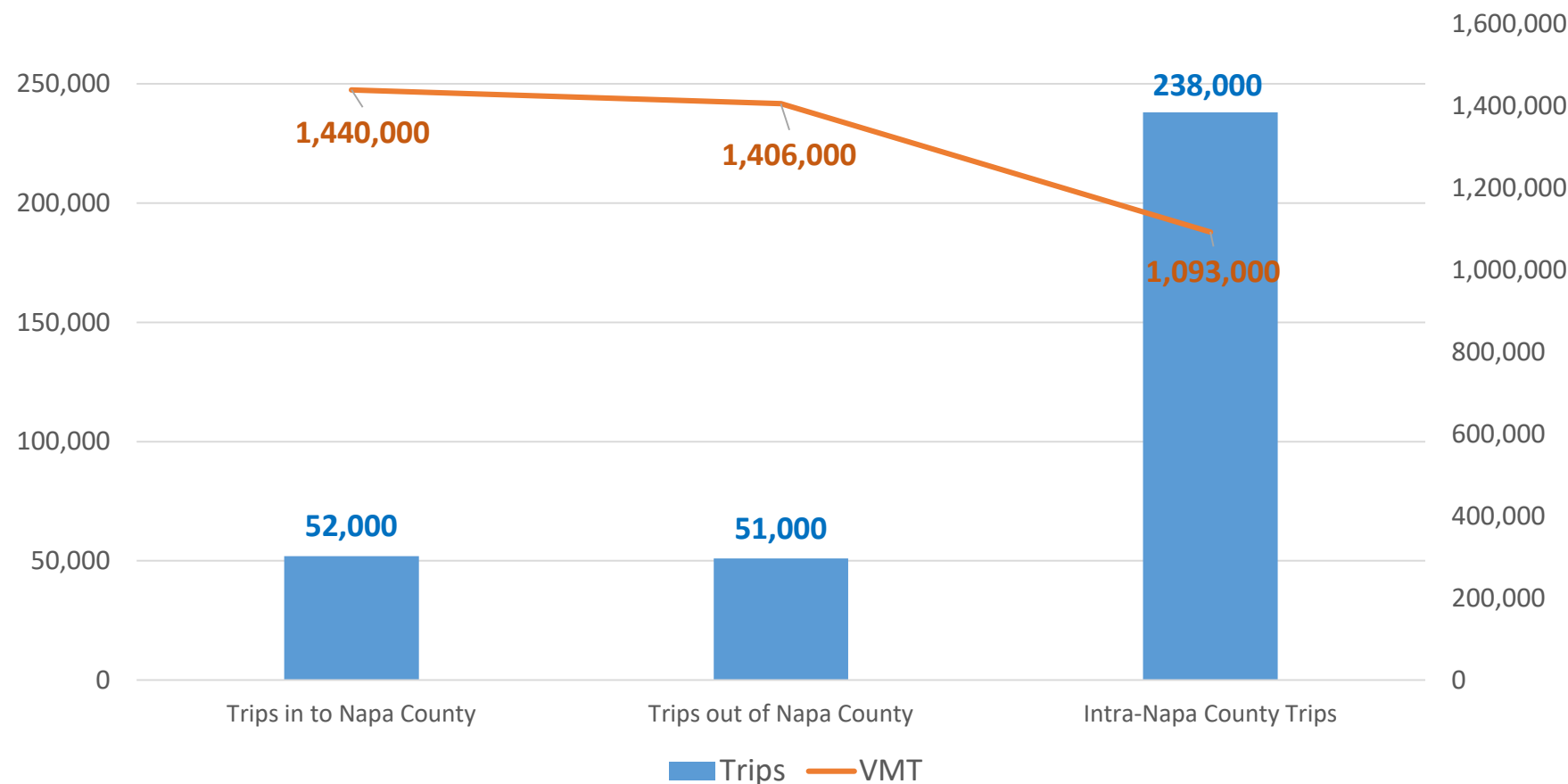
Trip Length Distribution

Average Weekday Trip Length Distribution

Distance	Percentage
0-1 miles	12%
1-2 miles	19%
2-5 miles	32%
5-10 miles	15%
10-20 miles	11%
20-30 miles	5%
30-40 miles	2%
40-50 miles	1%
>50 miles	2%

Pie chart:
- 0-5 miles: 63%
- 5-10 miles: 15%
- 10-20 miles: 11%
- 20-30 miles: 5%
- 30+ miles: 6%
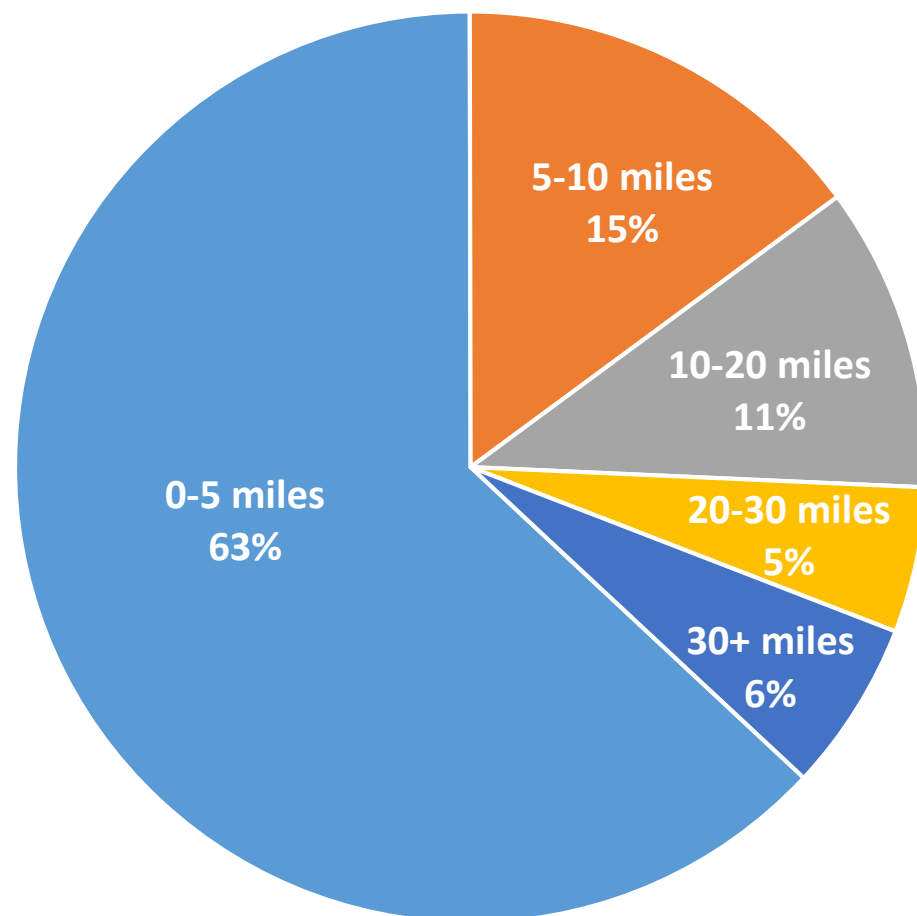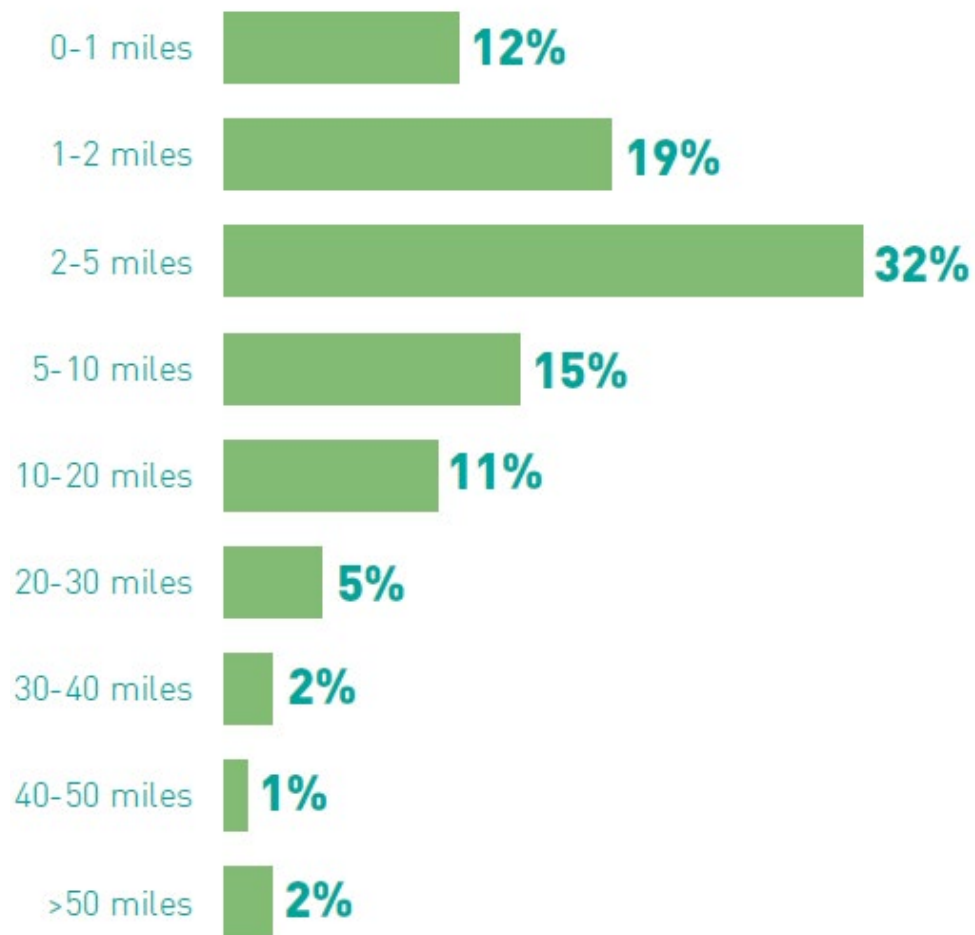
Gateway Trip Lengths

Napa County Gateway Average Trip Length (miles)

Gateway	Miles
SMR at Napa/Sonoma County Line - Eastbound	23
SMR at Napa/Sonoma County Line - Westbound	21.2
SR 128 at Napa/Solano County Line - Eastbound	64.6
SR 128 at Napa/Solano County Line - Westbound	63.3
SR 12 at Napa/Sonoma County Line - Eastbound	43.5
SR 12 at Napa/Sonoma County Line - Westbound	42.4
SR 128 at Napa/Sonoma County Line - Westbound	55.1
SR 128 at Napa/Sonoma County Line - Eastbound	52.6
SR 29 at Napa/Lake County Line - Northbound	45
SR 29 at Napa/Lake County Line - Southbound	49
SR 12 at Napa/Solano County Line - Eastbound	46
SR 12 at Napa/Solano County Line - Westbound	44
SR 29 at Napa/Solano County Line - Southbound	22
SR 29 at Napa/Solano County Line - Northbound	21

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City-to-City Travel Patterns

Weekday City-to-City Trips	Calistoga	Angwin	St Helena	Yountville	Napa	American Canyon	Unincorporated	Gateway	Total
Calistoga	3,500	100	600	0	300	100	1,400	700	**6,600**
Angwin	100	2,300	600	0	200	0	400	100	**3,600**
St Helena	600	500	4,500	200	1,600	100	2,800	1,600	**11,800**
Yountville	0	0	200	1,500	1,800	100	1,000	600	**5,200**
Napa	300	200	1,500	1,900	139,000	3,700	13,800	27,100	**187,600**
American Canyon	100	0	100	100	3,600	15,900	1,200	12,200	**33,100**
Unincorporated	1,400	300	2,800	900	12,800	1,600	12,600	8,800	**41,000**
Gateway	700	100	1,600	800	27,300	12,000	9,800	11,900	**64,200**
Total	**6,600**	**3,600**	**11,900**	**5,400**	**186,500**	**33,400**	**43,000**	**62,900**	**353,300**

City-to-City Travel Patterns

Weekday City-to-City Trips	Calistoga	Angwin	St Helena	Yountville	Napa	American Canyon	Unincorporated	Gateway	Total
Calistoga	1%	0%	0%	0%	0%	0%	0%	0%	**2%**
Angwin	0%	1%	0%	0%	0%	0%	0%	0%	**1%**
St Helena	0%	0%	1%	0%	0%	0%	1%	0%	**3%**
Yountville	0%	0%	0%	0%	1%	0%	0%	0%	**1%**
Napa	0%	0%	0%	1%	39%	1%	4%	8%	**53%**
American Canyon	0%	0%	0%	0%	1%	5%	0%	3%	**9%**
Unincorporated	0%	0%	1%	0%	4%	0%	4%	2%	**12%**
Gateway	0%	0%	0%	0%	8%	3%	3%	3%	**18%**
Total	**2%**	**1%**	**3%**	**2%**	**53%**	**9%**	**12%**	**18%**	**100%**

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Pass-Through Travel Patterns

Weekday Pass-Through Trips	Lake	Sonoma	Marin	Solano	Yolo	Sacramento	Alameda	Contra Costa	San Francisco	San Mateo	Santa Clara	Total
Lake	5	939	16	66	0	0	43	77	124	10	15	**1,295**
Sonoma	837	157	16	2,484	260	610	111	206	18	13	44	**4,756**
Marin	23	2	2	64	0	19	4	5	1	0	0	**120**
Solano	50	2,986	20	723	4	30	32	74	27	4	0	**3,950**
Yolo	0	231	10	19	5	6	0	6	0	0	0	**277**
Sacramento	22	579	3	20	4	11	4	1	9	1	2	**656**
Alameda	30	54	0	20	3	2	17	18	4	2	3	**153**
Contra Costa	69	303	0	39	0	0	8	26	3	3	0	**451**
San Francisco	36	21	2	48	4	11	2	9	15	7	0	**155**
San Mateo	4	10	0	15	0	6	4	1	4	2	3	**49**
Santa Clara	10	6	0	7	4	0	1	0	0	0	0	**28**
Total	**1,086**	**5,288**	**69**	**3,505**	**284**	**695**	**226**	**423**	**205**	**42**	**67**	**11,890**

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Pass-Through Travel Patterns

Weekday Pass-Through Trips	Lake	Sonoma	Marin	Solano	Yolo	Sacramento	Alameda	Contra Costa	San Francisco	San Mateo	Santa Clara	Total
Lake	0%	8%	0%	1%	0%	0%	0%	1%	1%	0%	0%	**11%**
Sonoma	7%	1%	0%	21%	2%	5%	1%	2%	0%	0%	0%	**40%**
Marin	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	**1%**
Solano	0%	25%	0%	6%	0%	0%	0%	1%	0%	0%	0%	**33%**
Yolo	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	**2%**
Sacramento	0%	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	**6%**
Alameda	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	**1%**
Contra Costa	1%	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	**4%**
San Francisco	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	**1%**
San Mateo	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	**0%**
Santa Clara	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	**0%**
Total	**9%**	**44%**	**1%**	**29%**	**2%**	**6%**	**2%**	**4%**	**2%**	**0%**	**1%**	**100%**

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Questions

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